

System 800xA

Upgrade

System Version 5.1

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System 800xA

Upgrade

System Version 5.1

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About this User Manual



Any security measures described in this document, for example, for user access, password security, network security, firewalls, virus protection, etc., represent possible steps that a user of an 800xA System may want to consider based on a risk assessment for a particular application and installation. This risk assessment, as well as the proper implementation, configuration, installation, operation, administration, and maintenance of all relevant security related equipment, software, and procedures, are the responsibility of the user of the 800xA System.

This User Manual describes how to manually perform upgrade procedures for the 800xA Base System and Functional Area software.

All 800xA Base System and Functional Area software described in this User Manual will be upgraded from latest revisions of System Version 5.0 Service Pack 2 or System Version 4.1 to the latest release of System Version 5.1.

Unless otherwise noted, the version of all 800xA Base System and Functional Area software described in this instruction is the latest release of 800xA 5.1. The procedures described require Windows Administrator privileges.

This User Manual does not include information on site planning, engineering planning, software configuration, network design, security measures, tools, maintenance, etc. that can be found in other 800xA User Manuals.

Version Described in this Document

All information and procedures described in this document are specific to the latest release of 800xA 5.1 that includes latest revisions and Feature Packs.

User Manual Conventions

Microsoft Windows conventions are normally used for the standard presentation of material when entering text, key sequences, prompts, messages, menu items, screen elements, etc.

Feature Packs

Feature Packs are intended to release new features and functions in between system version releases. Feature Packs are intended as "add-ons" to an already available system version. Feature Packs allow a more agile response to market requirements without revising or releasing a system version.

Feature Packs are available to holders of a Sentinel agreement. The expiry date of the sentinel agreement is checked at installation time, and the license system will continue to remind the user until a license file with a valid Sentinel expiry date is installed.

Users are not forced to adopt the Feature Pack. A new installation can choose to install the main version only, or to also add the Feature Pack. An existing installation can choose to stay on the main version, or to install the Feature Pack at any time.

A Feature Pack is compatible with one particular system version, including revision level. Feature Packs follow the life cycle of its main system version (transitions to Classic and Limited will follow the system version the Feature Pack is compatible with).

Feature Packs are accumulative. If additional features become available after the initial Feature Pack release, the Feature Pack is updated (a new version of it). This means there is only one Feature Pack available per system version.

A Feature Pack is one package. Users cannot "pick and choose" among features. Separate features can however be released. Those will be purchased through a price list, and will be possible to install independent from other features and Feature Packs.

Revisions contain error corrections only. A user can choose to update to the current revision and keep the installation at that level. This means users will get the recently found problems corrected, and the functionality of the system will remain like it was at the point in time when the original installation was made. This improves the

stability of the actual installation, and the user does not have to adopt any new functions, updated user interfaces or anything else that differs from before the revision was installed.

The Feature Pack installation kits will in many cases contain also the revision (this is the case for Feature Pack 1 on 800xA 5.1), which means that when checking the installation after it is done there is usually only one entry in addition to the base installation. For some functional areas in 800xA, where the whole installation of it is replaced when an update is made, there is only one entry visible for the whole functional area. An installation that has the Feature Pack installed at some point in time needs to follow that track (the Feature Pack cannot be uninstalled).

Revisions to features released in Feature Packs will be part of upcoming Feature Packs, or possibly pure Feature Pack revisions when there are no longer new features added to the system version (this is when the system version is in classic life cycle). In practice this means that users have to install consecutive Feature Packs in order to have revisions to previously released feature.

The Feature Pack content (including text, tables, and figures) included in this User Manual is distinguished from the existing content using the following two separators:

Feature Pack Functionality

<Feature Pack Content>

Feature Pack functionality included in an existing table is indicated using a table footnote (*):

*Feature Pack Functionality

Unless noted, all other information in this User Manual applies to 800xA Systems with or without a Feature Pack installed.

Warning, Caution, Information, and Tip Icons

This publication includes **Warning**, **Caution**, and **Information** where appropriate to point out safety related or other important information. It also includes **Tip** to

point out useful hints to the reader. The corresponding symbols should be interpreted as follows:



Electrical warning icon indicates the presence of a hazard which could result in *electrical shock*.



Warning icon indicates the presence of a hazard which could result in *personal injury*.



Caution icon indicates important information or warning related to the concept discussed in the text. It might indicate the presence of a hazard which could result in *corruption of software or damage to equipment/property*.



Information icon alerts the reader to pertinent facts and conditions.



Tip icon indicates advice on, for example, how to design your project or how to use a certain function

Although **Warning** hazards are related to personal injury, and **Caution** hazards are associated with equipment or property damage, it should be understood that operation of damaged equipment could, under certain operational conditions, result in degraded process performance leading to personal injury or death. Therefore, **fully comply** with all **Warning** and **Caution** notices.

Terminology

A complete and comprehensive list of Terms is included in *System 800xA System Guide Functional Description (3BSE038018*)*. The listing includes terms and definitions that apply to the 800xA System where the usage is different from commonly accepted industry standard definitions and definitions given in standard

dictionaries such as *Webster's Dictionary of Computer Terms*. Terms that uniquely apply to this instruction are listed in the following table.

Term/Acronym	Description
Backup	<p>800xA Backup: Backup using the 800xA Backup Definition aspect.</p> <p>Functional Area Backup: Backup via defined tools or copy of Functional Area configuration and/or data to a safe media for items not covered by 800xA Backup.</p> <p>The specific operations called out for the Functional Area within the Backup/Restore procedure in <i>System 800xA Maintenance (3BSE046784*)</i> for same version to same version backup and restore.</p>
Restore	<p>800xA Restore: Restore via Configuration Wizard.</p> <p>Functional Area Restore: Restore via defined tools or copy of Functional Area configuration and/or data from a safe media for items not covered by 800xA Backup.</p> <p>The specific operations called out for the Functional Area within the Backup/Restore procedure in <i>System 800xA Maintenance (3BSE046784*)</i> for same version to same version backup and restore.</p>
Upgrade	Moving from one 800xA release to a later 800xA release, whether it be a major or minor release.
Update	Adding service packs, patches, hot fixes, or rollups to an existing 800xA System.

Related Documentation

A complete list of all documents applicable to the 800xA System is provided in *System 800xA Released User Documents, 3BUA000263**. This document lists applicable Release Notes and User Instructions. It is provided in PDF format and is included on the Release Notes/Documentation media provided with the system. Released User Documents are updated with each release and a new file is provided that contains all user documents applicable for that release with their applicable document number. Whenever a reference to a specific instruction is made, the instruction number is included in the reference.

Section 1 Introduction



This document reflects 800xA System and Functional Area software at the time of release. All 800xA System and Functional Area Release Notes must be read and understood before performing any automated or manual installation, post installation, or upgrade procedures. The Release Notes contain any last minute changes that must be performed when installing or upgrading the 800xA System. All Release Notes can be found on the CD labeled *System Version 5.1 Released Documents*.

This instruction describes how to upgrade to ABB Industrial IT 800xA 5.1. It covers the following scenarios:

- [Upgrading Redundant Domain Controllers.](#)
- [Upgrading 800xA 5.0 SP2 to 800xA 5.1 Online.](#)
- [Upgrading 800xA 5.0 SP2 to 800xA 5.1 Offline.](#)
- [Upgrading 800xA 4.1 to 800xA 5.1 Offline.](#)
- [Upgrading 800xA 3.1 SP3 to 800xA 5.0 SP2.](#)



If virus checking software is installed on a node, disable it until after the 800xA System is installed and configured (post installation).

Supported Upgrade/Update Paths



Upgrading directly from 800xA 5.0 or 800xA 5.0 SP1a to 800xA 5.1 Feature Packs is not supported. If running this version, it is necessary to upgrade to the latest revision of 800xA 5.0 SP2 and then to latest revision of 800xA 5.1 before upgrading to latest 800xA 5.1 Feature Pack.



Upgrading directly from 800xA 4.0 to 800xA 5.1 is not supported. If running this version, it is necessary to upgrade to the latest revision of 800xA 4.1 before upgrading to 800xA 5.1.



Upgrading directly from 800xA 3.1 SP3 to 800xA 5.1 is a two-step process. It is necessary to upgrade to 800xA 5.0 SP 2 before upgrading to 800xA 5.1. Perform the procedures in [Section 6, Upgrading 800xA 3.1 SP3 to 800xA 5.0 SP2](#) and then in [Section 3, Upgrading 800xA 5.0 SP2 to 800xA 5.1 Online](#) or [Section 4, Upgrading 800xA 5.0 SP2 to 800xA 5.1 Offline](#).



Refer to *System 800xA Upgrade (3BSE036342*)* for information on upgrading a SB 2.1/2 800xA System.



800xA for DCI was not included with the initial release of 800xA 5.1 and thus 800xA for DCI upgrade instructions are not documented in this user manual. Refer to *800xA for DCI 5.1 Installation (3BUA001686*)* user manual for upgrade of 800xA for DCI 5.1.



If it is upgrade from 800xA 5.0 SP2 revisions (32-bit) to 800xA 5.1 revisions (64-bit), **upgrade.ini** file is used to plan the system. Perform the procedures in [Section 3, Upgrading 800xA 5.0 SP2 to 800xA 5.1 Online](#) or [Section 4, Upgrading 800xA 5.0 SP2 to 800xA 5.1 Offline](#).

If it is upgrade from 800xA 5.1 Revisions or Feature Packs (32-bit) to 800xA 5.1 Revisions or Feature Packs (64-bit), then the System Planner of 64-bit must be used to re-plan the system. For more information on planning the system, refer to *System 800xA System Planning (3BSE041389*)*.

The supported upgrade/update paths of System 800xA 5.1 Feature Pack 4 Revision E are described in the Section: **Upgrade Matrix** in the *System 800xA Software Product Life Cycle Plan (3BSE049081)*.

Graphics

800xA 5.1 supports Process Graphics 2 as a default with optional VB Graphics extensions that can be installed and loaded when upgrading. 800xA 5.0 SP2 supported VB Graphics as the default with Process Graphics 2 extensions that could be installed and loaded. 800xA SV 5.0 SP1 and earlier supported VB Graphics as the default with no option for Process Graphics 2.

Customers upgrading from previous 800xA versions can still view and modify their VB Graphics, but they must install their previously licensed version of Visual BASIC 6.0 with SP6 in order to do so. They must also install and load the VB Graphics extensions.

New 800xA 5.1 customers should not install the VB Graphics extensions as they will only have the VB runtime and will not be able to create and/or modify VB graphics.

Reference Instructions

The following instructions are used in conjunction with this one. These instructions are needed to perform the required installation, post installation, and backup/restore procedures.

- If performing the upgrade manually:
 - *System 800xA Manual Installation (3BSE034678*)*.
 - *System 800xA Post Installation (3BUA000156*)*.
 - *System 800xA Maintenance (3BSE046784*)*.
- If performing the upgrade using System Installer:
 - *System 800xA Automated Installation (3BSE034679*)*.

Online Upgrade

Online Upgrade makes it possible to upgrade an existing 800xA System (latest revision of 800xA 5.0 SP2 or later) without a process shutdown. Plant operations are not disturbed while upgrading server and client software, including OCS connectivity services, and AC 800M Controllers (processor units and

communication interfaces (CI)). The 800xA System being upgraded must have redundant Aspect and Connectivity Servers, and redundant AC 800M Controllers consisting of two redundant processing units connected to I/O modules either directly to the modulebus or via various CI modules.

Online Upgrade Controller Level allows AC 800M controllers to be upgraded with new firmware versions online. Online upgrade is initiated from Control Builder by a nine-step wizard.



This procedure is only applicable to the latest revision of 800xA 5.0 SP2 to 800xA 5.1 upgrade path with redundant Aspect and Connectivity Servers. Refer to [Section 3, Upgrading 800xA 5.0 SP2 to 800xA 5.1 Online](#) for more information.



The OCS connectivity services are possible to upgrade online; however, the OCS system itself is upgraded following the rules defined for the OCS system being used.

- The nodes are upgraded in the following order:
 - Domain Controller.
 - One redundant Aspect Server.
 - One redundant 800xA for Harmony Configuration Server for each redundant 800xA for Harmony Configuration Server configuration.
 - 800xA for AC 870P/Melody Configuration Server.
 - One redundant Connectivity Server for each redundant Connectivity Server configuration.
 - Third Aspect Server (if 2oo3 redundancy).
 - Some clients.
 - IM Server.
 - All other Application Servers (Batch, Asset Optimization, PC, Network and Software Monitoring, etc.).
 - All other nodes except Primary Aspect Server.
 - Primary Aspect Server.

- The client and server level is upgraded and the plant is fully operable, although the controllers are not upgraded. The controller level is upgraded as follows:



This instruction does not contain procedures for upgrading the AC 800M controller level. Refer to [Appendix C, Online Upgrade Controller Level](#) for a general description.

- Some redundant Controller pairs (and CEX units if needed).
- Remaining redundant Controller pairs (if desired).
- Nonredundant controllers (no CEX units). Upgrading nonredundant controllers will require minimal plant downtime.

Supported Operating Systems

System 800xA 5.1 version runs on 64-bit (x64) and 32-bit (x86) operating systems. The initial System 800xA 5.1 version was 32-bit and Revision A had separate media boxes for 64- and 32-bit operating systems. The later revisions and feature packs are in a single media supporting both options. New installations should be installed on 64-bit operating systems. However, if desired older hardware and available operating system licenses can be used, it is possible to install the 800xA software on a 32-bit operating system.

It is possible to install **mixed 64- and 32-bit systems**. The most common use case is when a client is added or exchanged. Here it is possible to use a 64-bit node with 64-bit operating system, even if the rest of the system is running on 32-bit. Exchanging a Connectivity Server or even an Aspect Server to a node running on a 64-bit operating system is possible under certain circumstances. It is recommended to discuss this with Product Management. Swapping nodes to a 32-bit operating system on a system generally running on a 64-bit operating system is not considered as a relevant use case and should not be done.

The supported operating systems, service packs, and hot fixes are listed in *System 800xA 5.1, 5.0, 4.x, 3.1 Third Party Software (3BUA000500)*. This document can be found in ABB SolutionsBank.



Server Operating System and Workstation Operating System will be used throughout the remainder of this document.

The same capabilities and performance as the previously released 32-bit version apply also to the 64-bit version.

The US English version of the operating system is required even if a translation NLS package for System 800xA is used.

Upgrades from previous versions that are still supported (Version 4.1, 5.0 SP2) to the new 64-bit version is supported, including on-line upgrade for 5.0.

The following conditions affect the decision on which operating system to use:

- Certain 800xA Server types can run on the Workstation Operating System as well as on the Server Operating System. The Server Operating System must be used for the following applications:
 - Domain Server.
 - Aspect Server when it runs the Domain Controller and Domain Name System (DNS).
 - Batch Server (except in a Single Node Engineering System).
 - Information Management Server.



The IM Server can only be installed on a Single Node Engineering System if the Operating System is the Server Operating System.

- Servers that run Asset Optimization (except in a Single Node Engineering System).
- 800xA for Harmony Connectivity Server, Configuration Server, and Configuration Server with Connectivity Server.
- 800xA for AC 870P/Melody Connectivity Server and Configuration Server.
- 800xA for MOD 300 Connectivity Server.
- Systems using the Workstation Operating System for the Aspect Server nodes are limited to nine PC nodes, not counting Domain Server nodes. Systems using the Workstation Operating System for any other server nodes, other than the Aspect Server nodes, are limited to 11 PC nodes, not counting the Domain Server nodes. These limitations depend on Microsoft licensing rules for the Workstation Operating System and Internet Information Services (IIS).

- The Workstation Operating System may be used in most other instances, although some performance benefits may be gained by using the Server Operating System. If the Server Operating System is not required, then the Workstation Operating System is generally recommended.
- The Windows operating system may be purchased from any Microsoft reseller.
- Preconfigured servers/clients that come from the server/client manufacturer must be preconfigured by the server/client manufacturer to meet 800xA System specifications. If they are not, they must be reconfigured by the user to meet 800xA System specifications.
- Existing nodes that **are not running** the Workstation Operating System or the Server Operating System must be reformatted and the compatible Operating System must be installed.
- Click **Advanced** when installing the Workstation Operating System or the Server Operating System. This is required to delete the existing partition and recreate a new one. Failure to perform this step will leave old data on the hard drive.

Planning for the Upgrade

Planning for the upgrade can save time and resources. The upgrade paths in this instruction are presented in sequential order; however, depending on the plant performing the upgrade, some of the actions can be performed in advance or in parallel. For example, the upgrade flows are written to reflect upgrading and using existing servers and clients. If new servers and clients are being used, prepare those before beginning the upgrade (load and configure the Windows Operating System, third party software, etc.), or while performing the pre-upgrade procedures.

For optimal software prerequisites, refer to *Third Party Software System 800xA (3BUA000500*)*. The prerequisites depend on the functions installed in the system, or on each node type. This document is accessible from ABB SolutionsBank.

For an upgrade, performance will be determined by the actual hardware of the system. System performance after the upgrade is completed will be determined by the hardware being upgraded. Memory size and processor speed have a direct impact on system performance. Refer to System 800xA Verified Third Party

Products (3BSE046579*) for a list of hardware verified for use with the 800xA System. This document is accessible from ABB SolutionsBank.

1. **800xA Licensing:** Order the licenses required for the current system version and revision. Licenses from previous versions will not work.
2. **AC 800M Licensing:** The licensing model for the AC 800M Control Software Integration has changed beginning with 800xA 5.1. Licensing is now scaled on installed controller capacity instead of licensing on connected signals and devices to the controllers (CLPs).
Each installed controller or redundant pair in the plant requires a separate Control Software license. Each controller type has its own license, where the price of it depends on the capacity of the controller. Existing CLP-based licenses must be converted to new licenses based on the installed controller capacity.
ABB requires data from the existing system in order to perform the conversion. The data is collected by running the License Report Tool in the existing system.
 - a. Copy `LicenseReport.exe` from the following directory on 800xA System Installation DVD 1 to a directory on any node in the old system.
`Engineering & Development\Control Builder
M\Tools\LicenseReport`



The `LicenseReport.exe` file can alternatively be downloaded from ABB SolutionsBank (document identity 3BSE062832).

- b. Verify the system is running.
 - c. Double-click `LicenseReport.exe`.
 - d. A file named `LicenseReport.bin` is created a few seconds later in the newly created directory.
 - e. The file contains signature data unique for the actual system, and is in an encrypted format. Provide this file while requesting an upgrade to the new 800xA 5.1 licenses.
3. If new servers and clients are being used, prepare those before beginning the upgrade (load and configure the Windows Operating System, third party software, etc.).

4. Consider other issues that are important prior to starting the upgrade, such as:



The following considerations may vary depending on the system version being upgraded and if the upgrade will be performed online or offline.

Concurrent access to the current 800xA System version and the 800xA 5.1 system is recommended until the upgrade has been performed. This makes it possible to easily retrieve any data or files that have been missed. Concurrent access depends upon many different factors, including:

- Configuration of the existing system.
- Desired configuration of the 800xA 5.1 system.
- Server and client use strategy.
- Configuration of user and user groups.
- Use of service accounts.
- Domain controllers.
- Redundancy.
- Logical and physical networks.

One strategy is to leave a minimal part of the existing system intact, such as an Aspect Server, while preparing a major part of the 800xA 5.1 System. Another strategy is to prepare a minimal 800xA 5.1 System.

Retaining an Aspect Server from the existing system minimizes the time it takes to retrieve data or files from it. A disk drive image provides a quick way to recover, but often it requires no hardware upgrade. Try to delay the upgrade of the hardware in one Aspect Server as long as possible.

If it is not necessary to do the complete upgrade in one process, it may be possible to perform the upgrade in steps by stopping selected system functions or by stopping some parts of the plant, or a combination of the two.

5. Prepare the Device Library (select the set of devices used at the customer site and prepare the files on a transportable media, ready to install). The latest files at the time of the 800xA 5.1 are available on DVD2, DVD3, and DVD4. Check for newer version of Device Libraries in ABB SolutionsBank.
6. Refer to [System Installer](#) on page 38 and determine whether or not System Installer can be used to perform the upgrade.

System Installer

Upgrades from the latest revisions of 800xA 5.0 SP2 to 800xA 5.1 and from 800xA 4.1 to 800xA 5.1 can be executed either semi-automatically using the System Installer as described in *System 800xA Automated Installation (3BSE034679*)*, or manually as described in this instruction.

The System Installer is more efficient since it performs many of the time-consuming and difficult tasks, and verifies that the software is installed in the correct order, the desired configurations are supported, etc.

System Configuration Console

Some procedures described in this instruction use the 800xA System Configuration Wizard. A new feature, the System Configuration Console, can also be used to perform many of these procedures. Refer to *System 800xA Tools (2PAA101088*)* for information and instructions on using the System Configuration Console.

System Language Package

The 800xA System includes support for US English only. Translations of the operator interface (System 800xA Language Packages) are released separately after the main release of the 800xA System. Upgrade of a system including a Language Package requires an upgrade of the Language Package when it is released.

Refer to the Language Package release notes for information on upgrading a Language Package to 800xA 5.1.

Precautions

There are third party backup/restore and disk imaging utilities that are useful when software or data becomes corrupted to the point that the node will no longer function correctly. A limited number of hardware failures can also be compensated for by using these utilities. However, it is important to understand the limitations and ramifications associated with these utilities. In some cases (such as corrupted data, corrupted software, or hard disk failures) these utilities can be useful while in other cases (such as replacing a node) these utilities may be of limited use.

It is recommended that a third party backup/restore and/or disk imaging utility be used to save (and restore if necessary) an image of node hard disks after installation of third party software and/or after installing all software.

The 800xA System import/export utility can be used to save 800xA System information one portion at a time. However, the 800xA System backup utility is the functional equivalent of exporting all 800xA System information at one time. The critical difference between these utilities is that individually exported portions of 800xA System information can be imported back into the original system or into a completely different system while backed up 800xA System information can only be used to restore a specific system on specific nodes. The 800xA System allows for scheduled 800xA System backups. Refer to *System 800xA Maintenance (3BSE046784*)* for information on performing precautionary scheduled 800xA System backups.

Windows Hardening

Use the stand-alone Windows Config Tool, which is part of the System Installer package, to perform automated Windows hardening for the 800xA System. Refer to *System 800xA Post Installation (3BUA000156*)* for more information.

Firmware Memory Consumption

When upgrading, consideration should be given to memory usage in the controller. The firmware size has grown slightly, resulting in slightly less free memory for user applications. However, this is offset by improvements in application and library handling, and for most projects, the net difference in memory usage is insignificant.

If PM851, PM856, or PM860 controllers with a small amount of free memory in are being used, refer to the instructions in *System 800xA System Guide Technical Data and Configuration (3BSE041434*)* for information on memory requirements.

Section 2 Upgrading Redundant Domain Controllers



There may be some 800xA software on nodes (such as 800xA RNRP on the Domain Controller node) that does not include Process Portal software. The operating system and 800xA software on these nodes also requires upgrading.

This section covers the following:

- Upgrading redundant Domain Controllers from Windows Server 2003 to Windows Server 2008.
- Replacing server hardware without losing contact with the Active Directory (AD) and Domain Name Service (DNS).

Prerequisites

The following is required before starting the Domain Controller upgrade procedure:

- Windows Server 2003 support tools must be installed.
- Must be logged on to the schema master as a member of the Enterprise Admins, Schema Admins, and Domain Admins groups in the forest root domain.
- Ensure that Windows 2003 Server or later is installed on all Domain Controllers in the forest.
- ADPREP/forestprep must be run on the schema master.
- Ensure that replication is working throughout the entire forest. Ensure that all Domain Controllers are up and running and that the schema master has been up long enough for a complete replication cycle to occur for the Schema partition.

Upgrading Combined Domain Controllers/Aspect Servers

The upgrade order described in this section must be changed when upgrading 800xA Systems with combined Domain Controllers/Aspect Servers. Rather than upgrading both Domain Controllers before everything else in the 800xA System, the first Domain Controller must stay a part of the 800xA 5.0 SP2 System until the end of the upgrade where it will be upgraded with the 800xA 5.0 SP2 Primary Aspect Server.

Preparation

Prepare for the upgrade by ensuring that the following are available:

- Windows Server 2008 Installation DVD media.
- New server hardware installed with Windows Server 2008.
- *System 800xA Manual Installation (3BSE034678*)* for Domain Controller installation procedures.
- IP addresses planned for the new servers.
- Domain name must adhere to Windows conventions for Windows Server 2008 Domain Controllers.
- Firewall disabled on the Windows Server 2003 Domain Controllers as well as on the new servers.
- Backups/disk images taken on both Windows Server 2003 Domain Controllers.
- Both Windows Server 2003 Domain Controllers up and running.

Preparing the Active Directory to Accept Windows Server 2008

Perform the following to prepare the existing Windows Server 2003 AD for accepting Windows Server 2008 before running dcpromo on the secondary Domain Controller.

- This procedure must be performed on the Domain Controller that holds the schema master role.
- Administrative credentials: An account that is a member of all of the following groups is required to perform this procedure:

- Enterprise Admins.
 - Schema Admins.
 - Domain Admins for the domain that contains the schema master.
1. Log on to the schema master as a member of the Enterprise Admins, Schema Admins, and Domain Admins groups in the forest root domain.



Run `netdom query fsmo` on any Domain Controller to ensure which Domain Controller hosts the schema master role. Make a record of who has the different roles.

2. Insert the Windows Server 2008 DVD into the CD or DVD drive.

If Windows Server 2008 R2 DVD is inserted the following message is displayed ([Figure 1](#)), ignore this message by clicking OK and continue with the following steps.



Figure 1. Windows Setup Error Message

- a. Select:
Start > All Programs > Accessories
- b. Right-click **Command Prompt**.
- c. Select **Run as Administrator**.
- d. Select **The following user** in the dialog box that appears.
- e. Enter the administrator user name and password and click **OK**.
- f. Type the following command, and then press **ENTER**:
CD or DVD drive letter: **\support\adprep\adprep32**
/forestprep
- g. A warning will appear stating that Windows 2000 Server SP4 or later must be running. Type **c** and press **ENTER**.

3. Allow the operation to complete (this can take several minutes to several hours).
4. Allow the changes to replicate throughout the forest before preparing any domains for a Windows Server 2008 Domain Controller. Wait 15 to 30 minutes, and then check the Windows Event Viewer for any related error or warning messages.

Preparing a Domain for Windows Server 2008

Perform the following to identify the domain infrastructure operations master (also known as flexible single master operations or FSMO) role holder.

- This procedure must be performed on the Domain Controller that holds the schema master role.
- Administrative credentials: An account that is a member of the Domain Admins group is required to perform this procedure. Membership in the Enterprise Admins group is not sufficient to perform this procedure.

1. Login as a member of the Domain Admins group to the Domain Controller node that holds the schema master role.
2. **Step f** can only be run with the Domain Controller in Native Mode. Select:

Start > All Programs > Administrative Tools > Active Directory Domains and Trusts

Right-click the **domain name** and select **Raise Domain Functional Level...** from the menu

3. Select **Windows Server 2003** in the **Select an available domain functional level** drop-down list box.
4. Click **OK**.
5. Insert the Windows Server 2008 DVD into the CD or DVD drive.

If Windows Server 2008 R2 DVD is inserted the following message is displayed (**Figure 1**), ignore this message by clicking OK and continue with the following steps.

- a. Select:

Start > All Programs > Accessories

- b. Right-click **Command Prompt**.
- c. Select **Run as Administrator**.
- d. Select **The following user** in the dialog box that appears.
- e. Enter the administrator user name and password and click **OK**.
- f. Type the following command, and then press ENTER:

*CD or DVD Drive letter:***\support\adprep\adprep32 /domainprep /gpprep**

6. Allow the operation to complete (this can take several minutes).
7. Allow the changes to replicate throughout the forest before installing a Windows Server 2008 Domain Controller.

Preparing a Forest for a Read-Only Domain Controller

Perform the following to prepare a forest for a Read-Only Domain Controller (RODC).

1. Log in to any Domain Controller in the forest as a member of the Enterprise Admins group.
2. Insert the Windows Server 2008 DVD into the CD or DVD drive.

If Windows Server 2008 R2 DVD is inserted the following message is displayed ([Figure 1](#)), ignore this message by clicking OK and continue with the following steps.

- a. Select:

Start > All Programs > Accessories

- b. Right-click **Command Prompt**.
- c. Select **Run as Administrator**.
- d. Type the following command, and then press **ENTER**:

*CD or DVD Drive letter:***\support\adprep\adprep32 /rodcprep**

3. Allow the operation to complete.

4. Allow the changes to replicate throughout the forest before removing the redundant Domain Controller.

Removing the Redundant Domain Controller

A redundant Windows Server 2003 Domain Controller can be removed using the Windows interface.

Perform the following to remove the redundant Windows Server 2003 Domain Controller by using the Windows interface.

- This procedure must be performed on the redundant Windows Server 2003 Domain Controller.
 - Administrative credentials: An account that is a member of following group is required to perform this procedure:
 - Domain Admins.
1. Verify that both Domain Controllers are global catalog servers.
 - a. Start AD Sites and Services.
 - b. Navigate to `NTDS Settings` of one Domain Controller in the left pane.
 - c. Right-click `NTDS Settings` and select **Properties** from the context menu to open the NTDS Settings Properties dialog box.
 - d. Verify that the **Global Catalog** check box is selected under the **General** tab.
 - e. Repeat for the other Domain Controller.
 2. If the Domain Controller is a global catalog server, a message box appears warning about the effect of removing a global catalog server from the environment. Click **OK** to continue.
 3. Select:

Start > Run
 4. Enter `dcpromo` in the Run dialog box and click **OK**.
 5. Click **Next** in the Welcome to the Active Directory Installation Wizard dialog box.

6. Make no selection in the **This server is the last domain controller in the domain** dialog box and click **Next**.
7. Type and confirm a secure password for the local Administrator account in the Administrator Password dialog box and click **Next**.
8. Click **Next** in the Summary dialog box.
9. Click **Finish** in the Completing the Active Directory Installation Wizard dialog box.
10. Click **Restart Now** in the Active Directory Installation Wizard dialog box.
11. Remove the server from the domain.
12. Select:
 - Start > All Programs > Administrative Tools > DNS**
13. Remove the DNS Role.
 - a. Click **Add or remove a role** in the Manage Your Server Wizard.
 - b. Read and follow the steps in the Preliminary Steps dialog box and click **Next**.
 - c. Select `DNS server` in the Server Role dialog box and click **Next**.
 - d. Select the **Remove the DNS server role** check box in the Role Removal Confirmation dialog box and click **Next**.
 - e. Click `Finish` in the DNS Server Role Removed dialog box.
14. Move to the remaining Windows Server 2003 Domain Controller node, select:
 - Start > All Programs > Administrative Tools**
 - a. Verify that the redundant Domain Controller node has been removed from Active Directory Users and Computers. If it has not, remove it manually.
 - b. Verify that the redundant Domain Controller node has been removed from Active Directory Sites and Services. If it has not, remove it manually.
 - c. Verify that the redundant Domain Controller node has been removed from DNS. If it has not, clean all the traces in the **Name Server** Tab for both Forward Lookup and Reverse Lookup Zones.

Installing an Additional Windows Server 2008 Domain Controller

Perform the following to install an additional Windows Server 2008 Domain Controller in an existing domain using the Windows interface.

- This procedure must be performed on the additional Windows Server 2008 Domain Controller.
 - Login as a local administrator.
 - Administrative credentials: Check that there is an account available that is a member of Domain Admins in the domain in which the additional Domain Controller is being installed. It is required to perform [Step 14](#) of this procedure:
 1. Open Windows Control Panel.
 2. Double-click **Administrative Tools**.
 3. Double-click **Server Manager** to launch the Server Manager.
 4. Click **Add Roles** in the Roles Summary.
 5. Review the information in the Before You Begin dialog box and click **Next**.
 6. Click the **Active Directory Domain Services** check box in the Select Server Roles dialog box. Select **Add Required Features** on the popup that is displayed and click **Next**.
 7. Review the information in the Active Directory Domain Services dialog box and click **Next**.
 8. Click **Install** in the Confirm Installation Selections dialog box.
 9. In the Installation Results dialog box click **Close this Wizard and launch the Active Directory Domain Services Installation Wizard (dcpromo.exe)**.
-  Ensure that all networks are disabled except networks that are used for the 800xA System (Plant Network and/or Control Network).
10. Click **Next** in the Welcome to the Active Directory Domain Services Installation Wizard dialog box.
 11. Review the warning about the default security settings for Windows Server 2008 Domain Controllers in the operating system Compatibility dialog box and click **Next**.

12. Click **Existing Forest** and **Add a Domain Controller to an Existing Domain** in the Choose a Deployment Configuration dialog box and click **Next**.
13. Type the name of any existing domain in the forest where it is planned to install the additional Domain Controller in the Network Credentials dialog box.
14. Click **My Current Logged On Credentials** or **Alternate Credentials** under Specify the Account Credentials to use to Perform the Installation and click **Set**.
15. Provide the user name and password for an account that can install the additional Domain Controller in the Windows Security dialog box.



The installer must be a member of the Domain Admins group to install an additional Domain Controller.

16. Click **Next** when the credentials are provided.
17. Select the domain of the additional Domain Controller in the Select a Domain dialog box and click **Next**.



If Read-only Domain Controller is not installed a message appears: You will not be able to install a read-only domain controller in this domain because "adprep /rodcprep" was not yet run. Do you want to continue? Click **Yes** to proceed.

18. Select a site from the list or select the option to install the Domain Controller in the site that corresponds to its IP address in the Select a Site dialog box and click **Next**.
19. Make the following selections in the Additional Domain Controller Options dialog box and click **Next**.
 - **DNS Server:** This option is selected by default so that the Domain Controller can function as a Domain Name System (DNS) server.
 - **Global Catalog:** This option is selected by default. It adds the global catalog, read-only directory partitions to the Domain Controller, and enables global catalog search functionality.

- **Read-only Domain Controller:** This option is not selected by default and is not possible to select.



ABB recommends disabling the IPv6 protocol.



If static IPv4 and IPv6 addresses are not assigned to the network adapters, a warning message box might appear advising the setting of static addresses for both of these protocols before continuing. If static IPv4 address have been assigned to the network adapter and the organization does not use IPv6, this message can be ignored by clicking **Yes, the computer will use a dynamically assigned IP address (not recommended)**.



A message box may appear that indicates that - A delegation for this DNS server cannot be created because the authoritative parent zone cannot be found or it does not run Windows DNS server. If you are integrating with an existing DNS infrastructure, you should manually create a delegation to this DNS server in the parent zone to ensure reliable name resolution from outside the domain <domain name>. Otherwise, no action is required. Do you want to continue? Click **Yes** and disregard the message if this is the case.

20. Type or browse to the volume and folder locations for the following in the Location for Database, Log Files, and SYSVOL dialog box and click **Next**.
 - Database file.
 - Directory service log files.
 - System volume (SYSVOL) files.



Windows Server Backup backs up the directory service by volume. For backup and recovery efficiency, store these files on separate volumes that do not contain applications or other nondirectory files.

21. Type and confirm the restore mode password in the Directory Services Restore Mode Administrator Password dialog box and click **Next**. This password must be used to start AD DS in Directory Service Restore Mode (DSRM) for tasks that must be performed offline.

22. Review the selections in the Summary dialog box. Click **Back** to change any selections. Click **Next** when the selections are accurate to install.



To save the selected settings to an answer file that can be used to automate subsequent AD DS operations, click **Export Settings**, type the name for the answer file, and click **Save**.

23. Click **Next** when the selections are accurate to install AD DS.
24. Click **Finish** in the Completing the Active Directory Domain Services Installation Wizard dialog box.



Select either the **Reboot on Completion** check box to have the server restart automatically, or restart the server to complete the AD DS installation when prompted.

Transferring the FSMO Roles to the Secondary Domain Controller

Perform the following to transfer the FSMO roles to the Secondary Domain Controller:

- [Transferring the Schema Master Role](#) on page 51.
- [Transferring the Domain Naming Master Role](#) on page 53.
- [Transferring the RID Master, PDC Emulator, and Infrastructure Master Roles](#) on page 54.

Transferring the Schema Master Role

Perform the following to transfer the Schema Master Role.

- This procedure must be performed on the Windows Server 2003 Domain Controller that is the Role Holder.

To transfer the Schema Master Role it is necessary to:

- Register the Schmmgmt.dll.
- Run the Active Directory Schema Master snap-in.

Registering Schmmgmt.dll

Perform the following to register Schmmgmt.dll.

1. Select:
Start > Run
2. Enter **regsvr32 schmmgmt.dll** in the Run dialog box and click **OK**.
3. Click **OK** when the message indicating that the operation succeeded appears.

Running the Active Directory Schema Master Snap-in

Perform the following to run the Active Directory Schema Master Snap-in.

1. Select:
Start > Run
2. Enter **mmc** in the Run dialog box and click **OK**.
3. Click **Add/Remove Snap-in** on the **File** menu.
4. Click **Add**.
5. Click **Active Directory Schema**.
6. Click **Add**.
7. Click **Close**.
8. Click **OK**.
9. Right-click **Active Directory Schema** in the console tree and select **Change Domain Controller** to launch the Change Domain Controller dialog

box (Figure 2).

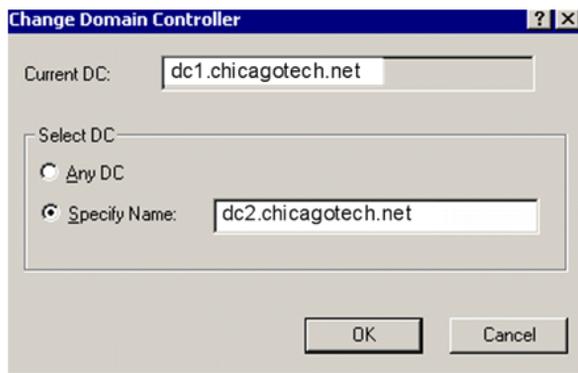


Figure 2. Change Domain Controller Dialog Box

10. Select **Specify Name**.
11. Type the name of the Domain Controller that will be the new role holder and click **OK**.
12. Right-click **Active Directory Schema** in the console tree and select **Operations Master**.
13. Click **Change**.
14. Click **Yes** to confirm the transferring of the role.
15. Accept the question that follows and click **Close**.

Transferring the Domain Naming Master Role

Perform the following to transfer the Domain Naming Master Role.

1. Open Active Directory Domains and Trusts from Administrative Tools.
 -  Perform [Step 2](#) and [Step 3](#) only if not on the Domain Controller to which the role will be transferred.
2. Right-click **Active Directory Domains and Trusts** and select **Connect to Domain Controller** to launch the Connect to Domain Controller dialog box

(Figure 3).

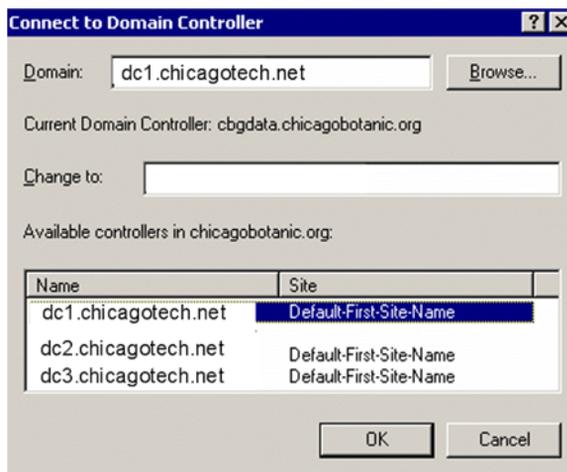


Figure 3. Connect to Domain Controller Dialog Box

3. Select an available Domain Controller list, click the Domain Controller that will be the new role holder, and click **OK**.
4. Right-click **Active Directory Domains and Trusts** in the console tree and select **Operations Master**.
5. Click **Change**.
6. Click **Yes** to confirm the transferring of the role.
7. Accept the question that follows and click **Close**.

Transferring the RID Master, PDC Emulator, and Infrastructure Master Roles

Perform the following to transfer the RID Master, PDC Emulator, and Infrastructure Master Roles.

1. Open **Active Directory Users and Computers** from **Administrative Tools**.
-  Perform [Step 2](#) and [Step 3](#) only if not on the Domain Controller to which the role will be transferred.
2. Right-click **Active Directory Users and Computers** and select **Connect to Domain Controller**.

3. Perform one of the following:
 - Type the name of the Domain Controller that will be the new role holder in the Enter the Name of Another Domain Controller dialog box and click **OK**.
 - or-
 - Select an available Domain Controller list, click the Domain Controller that will be the new role holder, and click **OK**.
4. Right-click `Active Directory Users and Computers` in the console tree.
5. Point to **All Tasks**.
6. Click **Operations Masters** to launch the Operations Masters dialog box (Figure 4).

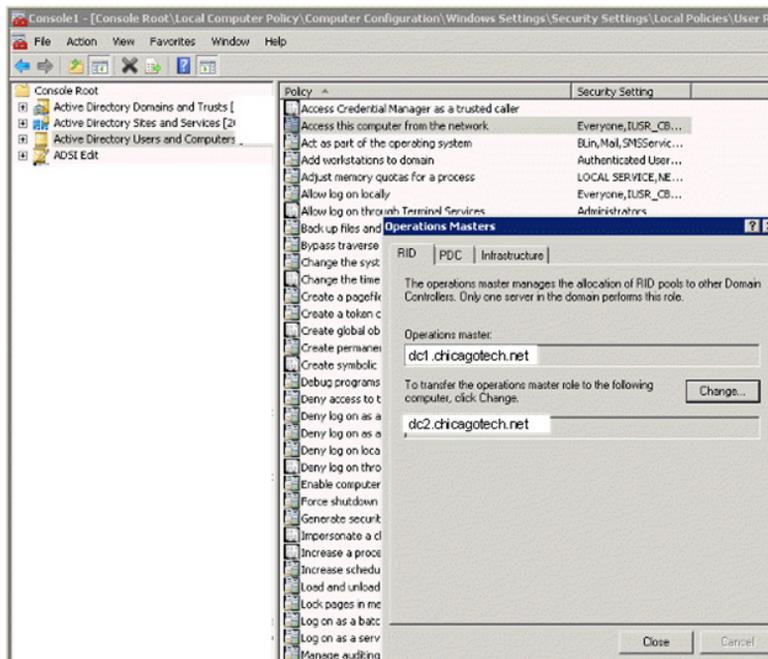


Figure 4. Operations Master Dialog Box

7. Click the appropriate tab for the master role to transfer (RID Master, PDC Emulator and Infrastructure), and then click **Change**.
8. Click **OK** to confirm transferring of the role and click **Close**.

Removing the Remaining Windows Server 2003 Domain Controller

The remaining Windows Server 2003 Domain Controller can be removed using the Windows interface.

Perform the following to remove the remaining Windows Server 2003 Domain Controller by using the Windows interface.

- This procedure must be performed on the remaining Windows Server 2003 Domain Controller.
 - Administrative credentials: An account that is a member of following group is required to perform this procedure:
 - Domain Admins.
1. Verify that both Domain Controllers are global catalog servers.
 - a. Start AD Sites and Services.
 - b. Navigate to `NTDS Settings` of one Domain Controller in the left pane.
 - c. Right-click `NTDS Settings` and select **Properties** from the context menu to open the NTDS Settings Properties dialog box.
 - d. Verify that the **Global Catalog** check box is selected under the **General** tab.
 - e. Repeat for the other Domain Controller.
 2. If the Domain Controller is a global catalog server, a message box appears warning about the effect of removing a global catalog server from the environment. Click **OK** to continue.
 3. Select:

Start > Run

4. Enter **dcpromo** in the Run dialog box and click **OK**.
5. Click **Next** in the Welcome to the Active Directory Installation Wizard dialog box.
6. Make no selection in the **This server is the last domain controller in the domain** dialog box and click **Next**.
7. Type and confirm a secure password for the local Administrator account in the Administrator Password dialog box and click **Next**.
8. Click **Next** in the Summary dialog box.
9. Click **Finish** in the Completing the Active Directory Installation Wizard dialog box.
10. Click **Restart Now** in the Active Directory Installation Wizard dialog box.
11. Remove the server from the domain.
12. Select:
 - Start > All Programs > Administrative Tools > DNS**
13. Remove the DNS Role.
 - a. Click **Add or remove a role** in the Manage Your Server Wizard.
 - b. Read and follow the steps in the Preliminary Steps dialog box and click **Next**.
 - c. Select `DNS server` in the Server Role dialog box and click **Next**.
 - d. Select the **Remove the DNS server role** check box in the Role Removal Confirmation dialog box and click **Next**.
 - e. Click `Finish` in the DNS Server Role Removed dialog box.
14. Move to the Windows Server 2008 Domain Controller node, select:
 - Start > All Programs > Administrative Tools**
 - a. Verify that the remaining Windows Server 2003 Domain Controller node has been removed from Active Directory Users and Computers. If it has not, remove it manually.

- b. Verify that the remaining Windows Server 2003 Domain Controller node has been removed from Active Directory Sites and Services. If it has not, remove it manually.
- c. Verify that the remaining Windows Server 2003 Domain Controller node has been removed from DNS. If it has not, clean all the traces in the **Name Server** Tab for both Forward Lookup and Reverse Lookup Zones.

Installing an Additional Windows Server 2008 Domain Controller

Perform the following to install an additional Windows Server 2008 Domain Controller in an existing domain using the Windows interface.

- This procedure must be performed on the additional Windows Server 2008 Domain Controller.
 - Login as a local administrator.
 - Administrative credentials: Check that there is an account available that is a member of following group as it is required to perform [Step 14](#) of this procedure:
 - Domain Admins in the domain in which the additional Domain Controller is being installed.
1. Open Windows Control Panel.
 2. Double-click **Administrative Tools**.
 3. Double-click **Server Manager** to launch the Server Manager.
 4. Click **Add Roles** in the Roles Summary.
 5. Review the information in the Before You Begin dialog box and click **Next**.
 6. Click the **Active Directory Domain Services** check box in the Select Server Roles dialog box. Select **Add Required Features** on the popup that is displayed and click **Next**.
 7. Review the information in the Active Directory Domain Services dialog box and click **Next**.

8. Click **Install** in the Confirm Installation Selections dialog box.
9. In the Installation Results dialog box click **Close this Wizard and launch the Active Directory Domain Services Installation Wizard (dcpromo.exe)**.



Ensure that all networks are disabled except networks that are used for the 800xA System (Plant Network and/or Control Network).

10. Click **Next** in the Welcome to the Active Directory Domain Services Installation Wizard dialog box.
11. Review the warning about the default security settings for Windows Server 2008 Domain Controllers in the operating system Compatibility dialog box and click **Next**.
12. Click **Existing Forest** and **Add a Domain Controller to an Existing Domain** in the Choose a Deployment Configuration dialog box and click **Next**.
13. Type the name of any existing domain in the forest where it is planned to install the additional Domain Controller in the Network Credentials dialog box.
14. Click **My Current Logged On Credentials** or **Alternate Credentials** under Specify the Account Credentials to use to Perform the Installation and click **Set**.
15. Provide the user name and password for an account that can install the additional Domain Controller in the Windows Security dialog box.



The installer must be a member of the Enterprise Admins group or the Domain Admins group to install an additional Domain Controller.

16. Click **Next** when the credentials are provided.
17. Select the domain of the additional Domain Controller in the Select a Domain dialog box and click **Next**.



If Read-only Domain Controller is not installed a message appears: You will not be able to install a read-only domain controller in this domain because "adprep /rodcprom" was not yet run. Do you want to continue? Click **Yes** to proceed.

18. Select a site from the list or select the option to install the Domain Controller in the site that corresponds to its IP address in the Select a Site dialog box and click **Next**.

19. Make the following selections in the Additional Domain Controller Options dialog box and click **Next**.
 - **DNS Server:** This option is selected by default so that the Domain Controller can function as a Domain Name System (DNS) server. Clear the option if it is not desired to have the Domain Controller be a DNS server.
 - **Global Catalog:** This option is unselected by default. If selected, it adds the global catalog, read-only directory partitions to the Domain Controller, and enables global catalog search functionality.
 - **Read-only Domain Controller:** This option is not selected by default and is not possible to select.



ABB recommends disabling the IPv6 protocol.



If static IPv4 and IPv6 addresses are not assigned to the network adapters, a warning message box might appear advising the setting of static addresses for both of these protocols before continuing. If static IPv4 address have been assigned to the network adapter and the organization does not use IPv6, this message can be ignored by clicking **Yes, the computer will use a dynamically assigned IP address (not recommended)**.



A message box may appear that indicates that -A delegation for this DNS server cannot be created because the authoritative parent zone cannot be found or it does not run Windows DNS server. If you are integrating with an existing DNS infrastructure, you should manually create a delegation to this DNS server in the parent zone to ensure reliable name resolution from outside the domain <domain name>. Otherwise, no action is required. Do you want to continue? Click **Yes** and disregard the message if this is the case.

20. Type or browse to the volume and folder locations for the following in the Location for Database, Log Files, and SYSVOL dialog box and click **Next**.
 - Database file.
 - Directory service log files.

- System volume (SYSVOL) files.



Windows Server Backup backs up the directory service by volume. For backup and recovery efficiency, store these files on separate volumes that do not contain applications or other nondirectory files.

21. Type and confirm the restore mode password in the Directory Services Restore Mode Administrator Password dialog box and click **Next**. This password must be used to start AD DS in Directory Service Restore Mode (DSRM) for tasks that must be performed offline.
22. Review the selections in the Summary dialog box. Click **Back** to change any selections. Click **Next** when the selections are accurate to install.



To save the selected settings to an answer file that can be used to automate subsequent AD DS operations, click **Export Settings**, type the name for the answer file, and click **Save**.

23. Click **Next** when the selections are accurate to install AD DS.
24. Click **Finish** in the Completing the Active Directory Domain Services Installation Wizard dialog box.



Select either the **Reboot on Completion** check box to have the server restart automatically, or restart the server to complete the AD DS installation when prompted.

Required 800xA Software

The only 800xA software installed on a separate Domain Controller node is:

- 800xA Common Third Party Install Tool.
- RNRP.
- Diagnostics Collection Tool.

Section 3 Upgrading 800xA 5.0 SP2 to 800xA 5.1 Online

Online Upgrade makes it possible to upgrade an existing 800xA System (800xA 5.0 SP2 or later) without a process shutdown. Plant operations are not disturbed while upgrading server and client software, including OCS connectivity services, and AC 800M Controllers (processor units and communication interfaces (CI)).

The 800xA System being upgraded must have redundant Aspect and Connectivity Servers, and redundant AC 800M Controllers consisting of two redundant processing units connected to I/O modules either directly to the modulebus or via various CI modules. The client and server level can be upgraded without upgrading the controllers.



Redundancy is not supported for the Batch Management and IM combined node type.



The OCS connectivity services are possible to upgrade online. The OCS controller level is upgraded following the rules defined for the OCS system being upgraded.



This instruction addresses only the client and server level software. It does not provide detailed instruction for upgrading the controller level; however, a high level discussion about the controller level appears in [Appendix C, Online Upgrade Controller Level](#).

800xA Systems without redundant Aspect and Connectivity Servers require a process shutdown (refer to [Section 4, Upgrading 800xA 5.0 SP2 to 800xA 5.1 Offline](#)).

Control Builder M Compatibility Issues

Refer to the compatibility issues detailed in [Appendix B, Control Builder M Compatibility Issues](#) before beginning the upgrade.

Considerations

The following considerations must be taken into account before performing the upgrade.

- Unless otherwise indicated, the person performing this upgrade must use the same user account that was used during the installation of the 800xA System software.
- To guarantee the functionality of the upgraded system, follow these instructions carefully and perform them in a well defined order.
- It is recommended that a disk image be taken of all disks on each node before beginning and after completing the upgrade.
- Backing up the aspect directory (800xA System Backup), reports, history data, graphics, and other application data is required before performing the upgrade.
- Take an inventory of all software on all nodes in the 800xA System before performing the upgrade.

Upgrade Flow

This section is organized so that the instructions are presented in the proper upgrade order. Do not skip any steps that pertain to 800xA software being used in the current or upgraded system. Refer to [Planning for the Upgrade](#) on page 35 for additional information and ideas on how to streamline the upgrade process.

All paths require, after backup and before restore, installing the 800xA System software and creating the system as if it were a new installation.

Central Licensing System



Order the 800xA licenses required for the current system version and revision. The 800xA 5.0 SP2 licenses will not work.

Online Upgrade

The following is the online upgrade procedure. The remainder of this section provides detailed information and procedures and they will be referred to in this procedure.

1. Document all Windows settings including the domain, DNS, policies, users, etc.
2. Refer to the Diagnostics Collection Tool section in *System 800xA Tools (2PAA101888*)* and run the Software Analyzer from the Primary Aspect Server in the 800xA 5.0 SP2 System. This allows for an analysis of the software installed on the different nodes in the 800xA System with an opportunity to correct errors in the 800xA 5.0 SP2 System before upgrading. This is especially helpful when using the System Installer to generate setup packages based on the 800xA 5.0 SP2 System. If there is missing or incorrect software in that version, the System Installer will duplicate that installation in the 800xA 5.1 System.
3. Refer to [Appendix D, Consistency Check](#) and perform the necessary consistency checks.



- Perform a consistency check before performing the 800xA System backup. Failure to do so could result in problems when restoring the system after the upgrade.
4. Refer to [Appendix E, Recording the Number of Aspects and Objects](#) and record the number of aspects and objects in the system before performing the 800xA System Backup.
 5. It is important to create backups of node hard disks and the 800xA System before starting the upgrade procedures. Valid backups ensure that the system can be restored if necessary.
 - a. It is recommended that a third party backup/restore and/or disk imaging utility be used to save (and restore if necessary) all disks on each node before starting the upgrade procedures.
 - b. This procedure only applies to installations with IEC 61850 Connect installed, which use a user-defined Graphic Library for applications.

While updating from previous system version, it is observed in Functional Structure that all PG2 Faceplate Element and PG2 Graphic Element aspects have the same name as **Faceplate Element**.

Before performing System Backup in the previous system revision, select Object Type Structure > IEC61850 user-defined Library and perform the following for all PG2 Faceplate Element and PG2 Graphic Element aspects of all Conducting Equipment objects:

- Right-click the aspect and select Details option.
- In the **Aspect info** tab,
 - Remove **Auto Instantiate** aspect and **Template** aspect.
 - Select the **Inheritance Enabled** option.
- Perform Upload operation with the relevant scd file.



Use the updated scd file if the [Step b](#) is performed in running Plant conditions, to ensure that there are no disturbances after performing the upload operation.

- c. This step only applies to installations using the Application Scheduler and/or Calculations Services:
 - Open a Plant Explorer Workplacet.
 - Use the Structure Selector to open the **Service Structure**.
 - Select the Scheduling Service Object (Calculations Service Object).
 - Select the Service Definition aspect.
 - Click the **Configuration** tab.
 - Clear the **Enabled** check box and click **Apply**.
 - The Schedules/Calculations will have to be manually enabled following the upgrade.
- d. Perform the 800xA System backup from the **Maintenance Structure** (Aspect Directory backup type).



Avoid engineering or any other changes especially to the Aspect system during the 800xA Backup process.

The 800xA Backup/Restore function makes it possible to make an online backup of the Aspect Directory on the Primary Aspect Server in the 800xA 5.0 SP2 System and restore it to the new Primary Aspect Server in the 800xA 5.1 System.

A full backup stores all aspect objects and aspect data (application data) in the Aspect Directory.



Verify the Batch Management Servers are operating normally before and during 800xA System backups of systems containing Batch Management nodes. This will ensure the backup of all batch data.

All system extensions that are part of the system must be installed and loaded on the node where the backup will be taken (usually the primary Aspect Server node).

When backing up a system with Environments, both the Production and Engineering Environments will be included in the backup. Only the current version of each aspect will be included in the backup. This means that all version history will be removed.



It is only possible to perform the 800xA System backup from the Production Environment.

- Open a Plant Explorer Workplace.
 - Use the Structure Selector to open the Maintenance **Structure**.
 - Create a Full Backup Definition object.
 - Configure the **Scope** and **Storage** tabs.
 - Check the disk space and path in the **Storage** tab. A large configuration could require a minimum of five gigabytes of free space.
 - Start the backup process.
 - Refer to the How to Make a Full Backup topic in *System 800xA Maintenance (3BSE046784*)* for more detailed information on performing the 800xA System Backup.
6. Place the process in a low level of production where the likelihood of process upsets is minimized.
 7. If Batch Management is installed and running, all batches must be in the complete state (no running batches or active phases).

8. Refer to [Pre-Upgrade Procedures](#) on page 83 and perform the pre-upgrade procedures that are applicable to the installed system.



Do not make any configuration changes such as modifying displays, modifying or deleting objects, etc. as these changes to the 800xA 5.0 SP2 System will be lost from this point forward.



Do not perform the pre-upgrade procedures for Information Management at this point in the upgrade process. This must be performed immediately before upgrading the IM Server to allow the history and event data to be stored, without losing data, in the history and event storage in the Connectivity Servers while upgrading the IM Server. History and event storage will not be able to collect all of the data if the time period between disconnecting the IM Server from the 800xA 5.0 SP2 System and reconnecting it to the 800xA 5.1 System is too long.

Redundant Aspect Server

1. Remove a redundant Aspect Server from the 800xA 5.0 SP2 System via the Remove Server feature in the Configuration Wizard. This server can be a stand-alone Aspect Server or it can be combined with a redundant Connectivity Server. If working in a domain this server needs to be removed from the Domain Controller. When this server is upgraded it will become the Primary Aspect Server in the 800xA 5.1 System.



The other redundant Aspect Server, if running 2oo3 redundancy, will be removed from the 800xA 5.0 SP2 System later.

2. Reformat the hard drive.
3. Install the new operating system defined for the 800xA 5.1 System. Click **Advanced** when installing the Workstation Operating System or the Server Operating System. This is required to delete the existing partition and recreate a new one. Failure to perform this step will leave old data on the hard drive.
4. Refer to Section 2 - Prerequisites in:
 - Manual Upgrades - *System 800xA Manual Installation (3BSE034678*)*.
 - Automated Upgrades using System Installer - *System 800xA Automated Installation (3BSE034679*)*.

and perform all procedures relating to operating system settings, Windows service packs, miscellaneous Windows components installation, other third

party software, group policy, 800xA Service User privileges, and Windows updates and hot fixes.

5. Refer to *System 800xA Manual Installation (3BSE034678*)* and install the 800xA 5.1 Central Licensing System Server software and install the license file, as this will be the Primary Aspect Server in the 800xA 5.1 System. This step is not necessary if performing an automated upgrade using System Installer.
6. Refer to *System 800xA Manual Installation (3BSE034678*)* and install all 800xA 5.1 System software per the software inventory taken earlier. This step is not necessary if performing an automated upgrade using System Installer.
7. Refer to [Requirements for VB Graphics Extension Software](#) on page 102 to install Visual BASIC 6.0 with SP6 and the VB Graphics extensions if required.

Feature Pack Functionality

8. Perform the system update to the latest Feature Pack:
 - Use the System Feature Pack Update Tool (FUT) to perform the update. Refer to the *System 800xA 5.1 System Feature Pack Update Tool (2PAA107435*)* for user instructions.

-
9. Perform the 800xA System Restore.



Refer to [Requirements for VB Graphics Extension Software](#) on page 102 before performing the 800xA System Restore.



Perform this procedure only on the first Aspect Server connected to the 800xA 5.1 System.



The User Account that is used for 800xA System restore via the Configuration Wizard must be a member of the following groups:

- IndustrialITUser.
- IndustrialITAdmin.
- Local Administrators.

The backup/restore utility supports the restoring of 800xA system information. The following steps outline the 800xA system restore procedure.



Refer to *System 800xA Maintenance (3BSE046784*)* for more information on restoring the system.

10. Start the restore procedure.
 - a. Select:
Start > All Programs > ABB Industrial IT 800xA > System > Configuration Wizard
 - b. The Select Type of Configuration dialog box appears. Select **Restore System** and click **Next**.
 - c. When a dialog box appears with the **Generate new system id** check box available, select the check box. This is necessary because during online upgrade there will be two systems in one network.
 - d. Enter a system name and click **Next**.
 - e. Change the first Aspect Server to the last Aspect Server (this is now going to be the Primary Aspect Server) in the Node Configuration dialog box under the Primary nodes frame.
 - f. Change the first Aspect Server to last Aspect Server in the Primary nodes frame and click **Next**.
11. Check for messages in the log file (select the **View Log** check box in the Configuration Wizard). Refer to [Appendix A, Warning and Error Messages](#) to resolve any received warning or error messages.



Restart the node when advised during the restore procedure.

12. Check the CPU load in the node. The System Message service may generate a high load (>90%). If this continues for longer than approximately 10 minutes, restart the service.



If a message appears stating that a full deploy of the Generic Control Network is needed, click **OK**.

13. Refer to [Appendix E, Recording the Number of Aspects and Objects](#) and record the number of aspects and objects in the system. Compare these values to those recorded when the system was backed up.
14. Verify the affinity settings to ensure best system performance. Refer to *System 800xA Post Installation (3BUA000156*)* for more information on how to configure affinity.
15. Refer to [Appendix D, Consistency Check](#) and perform the necessary consistency checks.
16. Load the VB Graphics Extensions.



Perform this procedure only if the restored system makes use of VB graphics.

- a. Refer to [Table 1](#) for a list of VB Graphics extensions available to be loaded.

Table 1. VB Graphics Extensions

Directory	Software
800xA Connectivities	AC 800M Connect VB Graphics Extension
	ABB 800xA for Advant Master VB Graphics Extension
	ABB 800xA for Harmony VB Graphics Extension
	ABB 800xA for IEC61850 VB Graphics Extension
	ABB 800xA for MOD 300 VB Graphics Extension
	ABB 800xA for Safeguard VB Graphics Extension
	ABB PLC Connect VB Graphics Extension
Asset Optimization	ABB Asset Optimization VB Graphics Extension
	ABB PC, Network and Software Monitoring VB Graphics Extension
Batch Management	Batch VB Graphics Extension
	Batch Advanced Templates VB Graphics Extension
Device Management & Fieldbuses	ABB Device Management FOUNDATION Fieldbus VB Graphics Extension

- b. Start the Configuration Wizard from the primary Aspect Server node.
Select:
Start > All Programs > ABB Industrial IT 800xA > System > Configuration Wizard
- c. Open the System Extension Load dialog box by going to:
System Administration > Select System > System Extension Load
- d. A view appears with the available VB Graphics extensions listed in the left pane. Select the system extension to load in the list in the left pane and move it to the list in the right pane by clicking >. To move all the system extensions from the left pane to the right pane, click >>.
- e. The red cross, green check mark, and warning icons indicate the status of the dependency evaluation.
 - The green check mark indicates that the system extension must be loaded first.
 - The red cross icon indicates that the system extension can not be loaded until the one with the green check mark icon is loaded.
 - The warning icon indicates that the system extension can be loaded, but that there is additional information available in the Description frame in the lower part of the dialog box. The additional information can, for example, be that the system extension contains aspect types that are not environment aware.
- f. If the list in the right pane contains more than one system extension, click **Press header to autosort** to sort the system extension load order with regard to dependencies.
- g. All system extensions in the right pane should be marked with the green check mark or the warning icon.
- h. Click **Next** and the Apply Settings dialog box appears.
- i. Click **Finish** to load all system extensions.

- j. A progress dialog box is shown during the load. Click **View Log** to view log messages during load.



The load is aborted if:

- The user clicks **Abort**.
- An error occurs; for example, if the Configuration Wizard fails to load a file into the system.

An aborted system extension load can be resumed from the System Extension Maintenance dialog box.

- k. When the load operation is finished, click **Finished** and view the Configuration Wizard log to verify that no errors occurred during the load.
- l. Close the Configuration Wizard.
- m. Refer to [Post Upgrade Procedures](#) on page 105 and perform the applicable post upgrade procedures for the upgraded server.



Operation and monitoring of the plant are only possible from clients in the 800xA 5.0 SP2 System at this point in the upgrade process.

Redundant 800xA for Harmony and 800xA for AC 870P/Melody Servers



Perform this procedure only if 800xA for Harmony or 800xA for AC 870P/Melody are installed in the 800xA System.

1. Remove a redundant 800xA for Harmony Configuration Server, 800xA for Harmony Configuration Server with Connectivity Server, or 800xA for AC 870P/Melody Configuration Server via the Remove Server feature in the Configuration Wizard. If working in a domain this server needs to be removed from the Domain Controller.
2. Reformat the hard drive.
3. Install the new operating system defined for the 800xA 5.1 System. Click **Advanced** when installing the Server Operating System. This is required to delete the existing partition and recreate a new one. Failure to perform this step will leave old data on the hard drive.
4. Refer to Section 2 - Prerequisites in:
 - Manual Upgrades - *System 800xA Manual Installation (3BSE034678*)*.

- Automated Upgrades using System Installer - *System 800xA Automated Installation (3BSE034679*)*.

and perform all procedures relating to operating system settings, Windows service packs, miscellaneous Windows components installation, other third party software, group policy, 800xA Service User privileges, and Windows updates and hot fixes.

5. Refer to *System 800xA Manual Installation (3BSE034678*)* and install all 800xA 5.1 System software per the software inventory taken earlier. This step is not necessary if performing an automated upgrade using System Installer.
6. Refer to [Requirements for VB Graphics Extension Software](#) on page 102 to install Visual BASIC 6.0 with SP6 and the VB Graphics extensions if required.
7. Point the Central Licensing Client to the new 800xA 5.1 Central Licensing Server.
8. Connect the server to the upgrade 800xA 5.1 System via the Connect Node feature in the Configuration Wizard.
9. Refer to [Post Upgrade Procedures](#) on page 105 and perform the applicable post upgrade procedures for the upgraded server.
10. Repeat this procedure for every redundant 800xA for Harmony Configuration Server, 800xA for Harmony Configuration Server with Connectivity Server, or 800xA for AC 870P/Melody Configuration Server.



Upgrade the servers one-by-one in order to keep redundancy of the system as long as possible.



Operation and monitoring of the plant are only possible from clients in the 800xA 5.0 SP2 System at this point in the upgrade process.

Redundant Connectivity Servers

1. Remove a redundant Connectivity Server from the 800xA 5.0 SP2 System via the Remove Server feature in the Configuration Wizard. If working in a domain this server needs to be removed from the Domain Controller.
2. Reformat the hard drive.
3. Install the new operating system defined for the 800xA 5.1 System. Click **Advanced** when installing the Workstation Operating System or the Server

Operating System. This is required to delete the existing partition and recreate a new one. Failure to perform this step will leave old data on the hard drive.

4. Refer to Section 2 - Prerequisites in:
 - Manual Upgrades - *System 800xA Manual Installation (3BSE034678*)*.
 - Automated Upgrades using System Installer - *System 800xA Automated Installation (3BSE034679*)*.

and perform all procedures relating to operating system settings, Windows service packs, miscellaneous Windows components installation, other third party software, group policy, 800xA Service User privileges, and Windows updates and hot fixes.

5. Refer to *System 800xA Manual Installation (3BSE034678*)* and install all 800xA 5.1 System software per the software inventory taken earlier. This step is not necessary if performing an automated upgrade using System Installer.
6. Refer to [Requirements for VB Graphics Extension Software](#) on page 102 to install Visual BASIC 6.0 with SP6 and the VB Graphics extensions if required.
7. Point the Central Licensing Client to the new 800xA 5.1 Central Licensing Server.
8. Connect the server to the upgraded 800xA 5.1 System via the Connect Node feature in the Configuration Wizard.
9. Refer to [Post Upgrade Procedures](#) on page 105 and perform the applicable post upgrade procedures for the upgraded server.
10. Repeat this procedure for every redundant Connectivity Server.



Upgrade the servers one-by-one in order to keep redundancy of the system as long as possible.



Operation and monitoring of the plant are only possible from clients in the 800xA 5.0 SP2 System at this point in the upgrade process.

Redundant Aspect Server (2oo3 Redundancy Only)



Perform this procedure only if the Aspect Servers in the 800xA System have 2oo3 redundancy.

1. Remove the other redundant Aspect Server (if 2oo3 redundant) from the 800xA 5.0 SP2 System via the Remove Server feature in the Configuration Wizard. If working in a domain this server needs to be removed from the Domain Controller.
2. Reformat the hard drive.
3. Install the new operating system defined for the 800xA 5.1 System. Click **Advanced** when installing the Workstation Operating System or the Server Operating System. This is required to delete the existing partition and recreate a new one. Failure to perform this step will leave old data on the hard drive.
4. Refer to Section 2 - Prerequisites in:
 - Manual Upgrades - *System 800xA Manual Installation (3BSE034678*)*.
 - Automated Upgrades using System Installer - *System 800xA Automated Installation (3BSE034679*)*.and perform all procedures relating to operating system settings, Windows service packs, miscellaneous Windows components installation, other third party software, group policy, 800xA Service User privileges, and Windows updates and hot fixes.
5. Refer to *System 800xA Manual Installation (3BSE034678*)* and install all 800xA 5.1 System software per the software inventory taken earlier. This step is not necessary if performing an automated upgrade using System Installer.
6. Refer to [Requirements for VB Graphics Extension Software](#) on page 102 to install Visual BASIC 6.0 with SP6 and the VB Graphics extensions if required.
7. Point the Central Licensing Client to the new 800xA 5.1 Central Licensing Server.
8. Connect the server to the upgraded 800xA 5.1 System via the Connect Node feature in the Configuration Wizard.

9. Refer to [Post Upgrade Procedures](#) on page 105 and perform the applicable post upgrade procedures for the upgraded server.



Operation and monitoring of the plant are only possible from clients in the 800xA 5.0 SP2 System at this point in the upgrade process.

Clients

1. Remove some clients from the 800xA 5.0 SP2 System via the Remove Client feature in the Configuration Wizard. If working in a domain the clients need to be removed from the Domain Controller.



Do not remove all of the clients from the 800xA 5.0 SP2 System at this point. Keeping some clients in the 800xA 5.0 SP2 System will allow the operators to continue to observe and control the process.



The procedure for the client nodes can be performed one-by-one or in a group.

2. Reformat the hard drive on each client.
3. Install the new operating system defined for the 800xA 5.1 System on each client. Click **Advanced** when installing the Workstation Operating System. This is required to delete the existing partition and recreate a new one. Failure to perform this step will Refer to Section 2 - Prerequisites in:
 - Manual Upgrades - *System 800xA Manual Installation (3BSE034678*)*.
 - Automated Upgrades using System Installer - *System 800xA Automated Installation (3BSE034679*)*.and perform all procedures relating to operating system settings, Windows service packs, miscellaneous Windows components installation, other third party software, group policy, 800xA Service User privileges, and Windows updates and hot fixes.
4. Refer to *System 800xA Manual Installation (3BSE034678*)* and install all 800xA 5.1 System software per the software inventory taken earlier. This step is not necessary if performing an automated upgrade using System Installer.
5. Refer to [Requirements for VB Graphics Extension Software](#) on page 102 to install Visual BASIC 6.0 with SP6 and the VB Graphics extensions if required.

6. Point the Central Licensing Client to the new 800xA 5.1 Central Licensing Server on each client.
7. Connect each client to the upgraded 800xA 5.1 System via the Connect Node feature in the Configuration Wizard.
8. Refer to [Post Upgrade Procedures](#) on page 105 and perform the applicable post upgrade procedures for the upgraded server.



Operation and monitoring of the plant are only possible from clients in the 800xA 5.0 SP2 System at this point in the upgrade process.

Information Management Server

1. Check that history and event data storage is available in the Connectivity Servers to overlap, with margin, the time it takes to upgrade the IM Server. This includes time to:
 - Reformat the hard drive.
 - Load all required software.
 - Connect the IM Server to the 800xA 5.1 System.
 - Reboot the IM Server.
 - Collect data from the Connectivity Servers from the time when the IM Server was removed from the 800xA 5.0 SP2 System.
2. Perform the [Information Management Pre-Upgrade Procedures](#) on page 453 in [Appendix , Information Management Upgrade](#).
3. Remove the IM Server from the 800xA 5.0 SP2 System via the Remove Server feature in the Configuration Wizard. If working in a domain this server needs to be removed from the Domain Controller.
4. Reformat the hard drive.
5. Install the new operating system defined for the 800xA 5.1 System. Click **Advanced** when installing the Server Operating System. This is required to delete the existing partition and recreate a new one. Failure to perform this step will leave old data on the hard drive.
6. Refer to Section 2 - Prerequisites in:

- Manual Upgrades - *System 800xA Manual Installation (3BSE034678*)*.
- Automated Upgrades using System Installer - *System 800xA Automated Installation (3BSE034679*)*.

and perform all procedures relating to operating system settings, Windows service packs, miscellaneous Windows components installation, other third party software, group policy, 800xA Service User privileges, and Windows updates and hot fixes.

7. Refer to *System 800xA Manual Installation (3BSE034678*)* and install all 800xA 5.1 System software per the software inventory taken earlier. This step is not necessary if performing an automated upgrade using System Installer.
8. Refer to [Requirements for VB Graphics Extension Software](#) on page 102 to install Visual BASIC 6.0 with SP6 and the VB Graphics extensions if required.
9. Point the Central Licensing Client to the new 800xA 5.1 Central Licensing Server.
10. Verify that the ABB Process Administration Service (PAS) is set to manual in the Services Control Panel (run Services.msc from the Run dialog box). Stop the service if it is running.
11. Connect the server to the upgraded 800xA 5.1 System via the Connect Node feature in the Configuration Wizard.
12. Reboot the node.
13. Refer to [Information Management Post Upgrade Procedures](#) on page 458 in [Appendix , Information Management Upgrade](#) and perform the applicable post upgrade procedures for the upgraded server.



Operation and monitoring of the plant are only possible from clients in the 800xA 5.0 SP2 System at this point in the upgrade process.

Application Servers



Perform the procedures for the Application Servers (Batch Management, Asset Optimization, PC, Network and Software Monitoring, etc.) one at a time.



When upgrading redundant Batch Management Servers, the Primary Batch Server must be upgraded first, followed by the Secondary Batch Server. Do not upgrade the Secondary Batch Server followed by the Primary Batch Server.

1. Remove an Application Server from the 800xA 5.0 SP2 System via the Remove Server feature in the Configuration Wizard. If working in a domain this server needs to be removed from the Domain Controller.
2. Reformat the hard drive.
3. Install the new operating system defined for the 800xA 5.1 System. Click **Advanced** when installing the Server Operating System. This is required to delete the existing partition and recreate a new one. Failure to perform this step will leave old data on the hard drive.
4. Refer to Section 2 - Prerequisites in:
 - Manual Upgrades - *System 800xA Manual Installation (3BSE034678*)*.
 - Automated Upgrades using System Installer - *System 800xA Automated Installation (3BSE034679*)*.

and perform all procedures relating to operating system settings, Windows service packs, miscellaneous Windows components installation, other third party software, group policy, 800xA Service User privileges, and Windows updates and hot fixes.

5. Refer to *System 800xA Manual Installation (3BSE034678*)* and install all 800xA 5.1 System software per the software inventory taken earlier. This step is not necessary if performing an automated upgrade using System Installer.
6. Refer to [Requirements for VB Graphics Extension Software](#) on page 102 and install the required VB Graphics extension software.
7. Point the Central Licensing Client to the new 800xA 5.1 Central Licensing Server.
8. Connect the server to the upgraded 800xA 5.1 System via the Connect Node feature in the Configuration Wizard.

9. Refer to [Post Upgrade Procedures](#) on page 105 and perform the applicable post upgrade procedures for the upgraded server.
10. Repeat this procedure for every Application Server.



The 800xA System is now running in nonredundant mode in both the 800xA 5.0 SP2 and the 800xA 5.1 systems. Operation and monitoring of the plant are possible from clients in both systems at this point in the upgrade process.

11. Operators should move to the 800xA 5.1 System to operate and control the plant at this point in the upgrade process.

Remaining Nodes

1. Remove the remaining nodes in the 800xA 5.0 SP2 System and connect them to the 800xA 5.1 System. If working in a domain these nodes need to be removed from the Domain Controller.
2. Repeat the applicable procedures for the remaining nodes in the 800xA 5.0 SP2 System, except for the 800xA 5.0 SP2 Primary Aspect Server.



Operation and monitoring of the plant are only possible from clients in the 800xA 5.1 System at this point in the upgrade process.

800xA 5.0 SP2 Primary Aspect Server

Upgrade the 800xA 5.0 SP2 Primary Aspect Server.

1. Use the Configuration Wizard to stop the 800xA 5.0 SP2 System on the 800xA 5.0 SP2 Primary Aspect Server.
2. Use the Configuration Wizard to delete the system from the 800xA 5.0 SP2 Primary Aspect Server.
3. Reformat the hard drive.
4. Install the new operating system defined for the 800xA 5.1 System. Click **Advanced** when installing the Workstation Operating System or the Server Operating System. This is required to delete the existing partition and recreate a new one. Failure to perform this step will leave old data on the hard drive.
5. Refer to Section 2 - Prerequisites in:

- Manual Upgrades - *System 800xA Manual Installation (3BSE034678*)*.
- Automated Upgrades using System Installer - *System 800xA Automated Installation (3BSE034679*)*.

and perform all procedures relating to operating system settings, Windows service packs, miscellaneous Windows components installation, other third party software, group policy, 800xA Service User privileges, and Windows updates and hot fixes.

6. Refer to *System 800xA Manual Installation (3BSE034678*)* and install all 800xA 5.1 System software per the software inventory taken earlier. This step is not necessary if performing an automated upgrade using System Installer.
7. Refer to [Requirements for VB Graphics Extension Software](#) on page 102 and install the required VB Graphics extension software.
8. Point the Central Licensing Client to the new 800xA 5.1 Central Licensing Server.
9. Connect the server to the upgraded 800xA 5.1 System via the Connect Node feature in the Configuration Wizard.
10. Refer to [Post Upgrade Procedures](#) on page 105 and perform the applicable post upgrade procedures for the upgraded server.



Operation and monitoring of the plant are only possible from clients in the 800xA 5.1 System at this point in the upgrade process.

Remaining Steps

1. Refer to *System 800xA Post Installation (3BUA000156*)* and configure Windows Firewall and Windows Services on every node in the 800xA System.
2. It is important to create backups of node hard disks and the 800xA System after completing the upgrade procedures. Valid backups insure that the system can be restored if necessary.
 - a. It is recommended that a third party backup/restore and/or disk imaging utility be used to save (and restore if necessary) all disks on each node before starting the upgrade procedures.
 - b. Perform the 800xA full backup from the **Maintenance Structure** (Aspect Directory backup type).

Pre-Upgrade Procedures

The 800xA System and software require preparatory steps before performing the online upgrade. Perform the applicable procedures in the order presented.

Customized Alarm Priority Mapping Aspects

Some customized Alarm Priority Mapping Aspects may be overwritten during the upgrade. Record all values in the Alarm Priority Mapping aspects before beginning the upgrade so that they can be recreated after the upgrade.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Library Structure**.
3. Use the Object Browser to navigate to:
`Alarm & Event > Alarm Collector Definitions, Alarm Collector Definitions`
4. Select a Alarm Collector Definition object with customized Alarm Priority Mapping Aspect.
5. Select Alarm Priority Mapping in the Aspect List Area.
6. Record the values in the Alarm Priority Mapping aspects.
7. Repeat for all customized Alarm Priority Mapping aspects.

800xA for AC 800M

Use the following procedure to prepare for the 800xA for AC 800M upgrade:

1. Record the service account settings in the OPC Server Setup Wizard.
2. Control Builder stores its settings (systemsetup.sys) on disk in the following directory:

```
... \ABB Industrial IT Data \Engineer IT Data \Control  
Builder M Professional
```

Copy this file to a safe media.

3. Save OPC configurations by selecting:

File > Save Configuration

in the OPC Server Panel.

4. The OPC Server stores configuration files (*.cfg) and settings (systemsetup.sys) on disk. Copy these files to a safe media. The systemsetup.sys file is located in:

```
... \ABB Industrial IT Data \Control IT Data \OPC Server  
for AC 800M
```

The configuration files are stored in the Files folder in the same location.

5. If the system to be upgraded originates from System Baseline 2.1 and has been upgraded in steps through system versions, verify that the Control Builder projects do not use the old obsolete SB2 (System Baseline 2) libraries (libraries of version 1.0-0. For example: ControlStandardLib 1.0/0.

Structured Data Logger

Use the following procedure to prepare for the Structured Data Logger (SDL) upgrade.

1. Back up the SQL Server 2000 SDL Database.
 - a. Open SQL Server Enterprise Manager.
 - b. Right-click **SDL data base** and select **All Tasks > Backup Database...** from the context menu.
 - c. Save the backup file (with .bak extension) to a safe location.

Engineering Studio Function Designer System Extensions

Use the following procedures to prepare for the Engineering Studio upgrade.

The Function Designer system extensions:

- Signal Extension for AC800M Connect
- Function Designer for AC800M Connect
- Topology Designer for AC800M Connect
- CI Extension for AC800M Connect
- Signal Extension for TRIO Connect
- Topology Designer for AC800M High Integrity
- Function Designer for AC 800M Classic
- Topology Designer for AC800M Classic
- Function Designer for Fieldbus Builder Profibus/Hart
- AC 800M Signal Extension Classic

mainly consist of:

- Functional Planning Object Types, including a Function Settings aspect at the Settings Object Type Group.
- Extension Libraries that add Function Designer aspects to Object Types (Control Modules, Function Blocks, etc.) created by basic libraries (AC800M Connect, AC 800M Classic, etc.).

After loading any of the listed system extensions in the 800xA 5.0 SP2 System, some of these aspects may be modified; for example, to adapt Function Settings, or to change the color or layout of Function Blocks in Function Diagrams. During the 800xA System upgrade to 800xA 5.1 the system extensions of the new system are loaded. To keep the information about modified aspects, all aspects that were created by a Function Designer system extension, but modified later are listed in the Configuration Wizard log, and are written to Afw files.

The only way to bring these modifications back into the 800xA 5.1 System is to manually merge the changes. Do not import the listed Afw files into the 800xA 5.1 System, because some additional properties/data might get lost. In the case of

Function Settings aspects, record the property settings from the 800xA 5.0 SP2 System and perform the modifications again in the 800xA 5.1 System. In the case of modified Function aspects (e.g. Diagram Template, Component Template), record the modifications done in the 800xA 5.0 SP2 System and perform the modifications again in the 800xA 5.1 System.



All the local language parameters used in the Function Designer need to be changed to English before the upgrade. Usage of non-English parameters in the Function Diagrams results in errors while generating configuration data.

Engineering Studio Add-Ins

Before updating/upgrading the system from previous release to the latest release ensure the Engineering Studio Add-Ins are listed in **Active Application Add-Ins** in MS-Excel.

If the Add-ins are not listed, perform [Step 3](#) through [Step 5](#) to enable them in the MS-Excel:

1. Open MS-Excel.
2. Navigate to **File > Excel Options > Add-Ins > Active Application Add-ins**. Refer to [Figure 5](#) to view the Engineering Studio Add-ins.

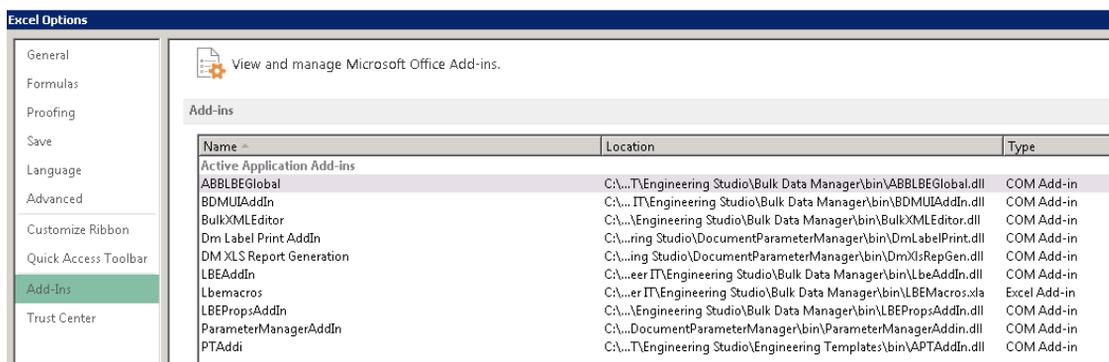


Figure 5. Engineering Studio Add-Ins

3. Select **COM Add-ins** from **Manage** drop-down and click **Go...** List of COM Add-ins window appears.

4. Select all the Engineering Studio Add-ins from the list and click **OK**.
5. View the Add-Ins in the **Active Application Add-ins** panel on the Excel Options window.

Device Management FOUNDATION Fieldbus

Perform the following to prepare for the Device Management FOUNDATION Fieldbus upgrade.

- [User-Made Modifications to Library Objects Representing FF Standard Blocks](#).
- [Exporting Locally Stored Parameter Value Sets](#).

User-Made Modifications to Library Objects Representing FF Standard Blocks

User-made modifications to library objects representing FF standard blocks (these are blocks supported by the Device Type Standard FBs as indicated in the **Block Info** tab of the block class parameter dialog box) will be overwritten during upgrade. If such changes have been made, they can be reconstructed manually. Refer to [Device Management FOUNDATION Fieldbus](#) on page 122.

Exporting Locally Stored Parameter Value Sets

Export the locally stored parameter value sets as follows:

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Object Type Structure**.
3. Use the Object Browser to navigate to:
`FF Libraries, Object Type Group`
4. Select `FF Upload` in the Aspect List Area.
5. Click **Open Library in Fieldbus Builder FF**.
6. Select the Function Block from `FF Block Library > Function Blocks` in the Library view.
7. Double-click on the Function Block to open the properties dialog box for the chosen Function Block.

- Right-click and select **Export** from the context menu (Figure 6).

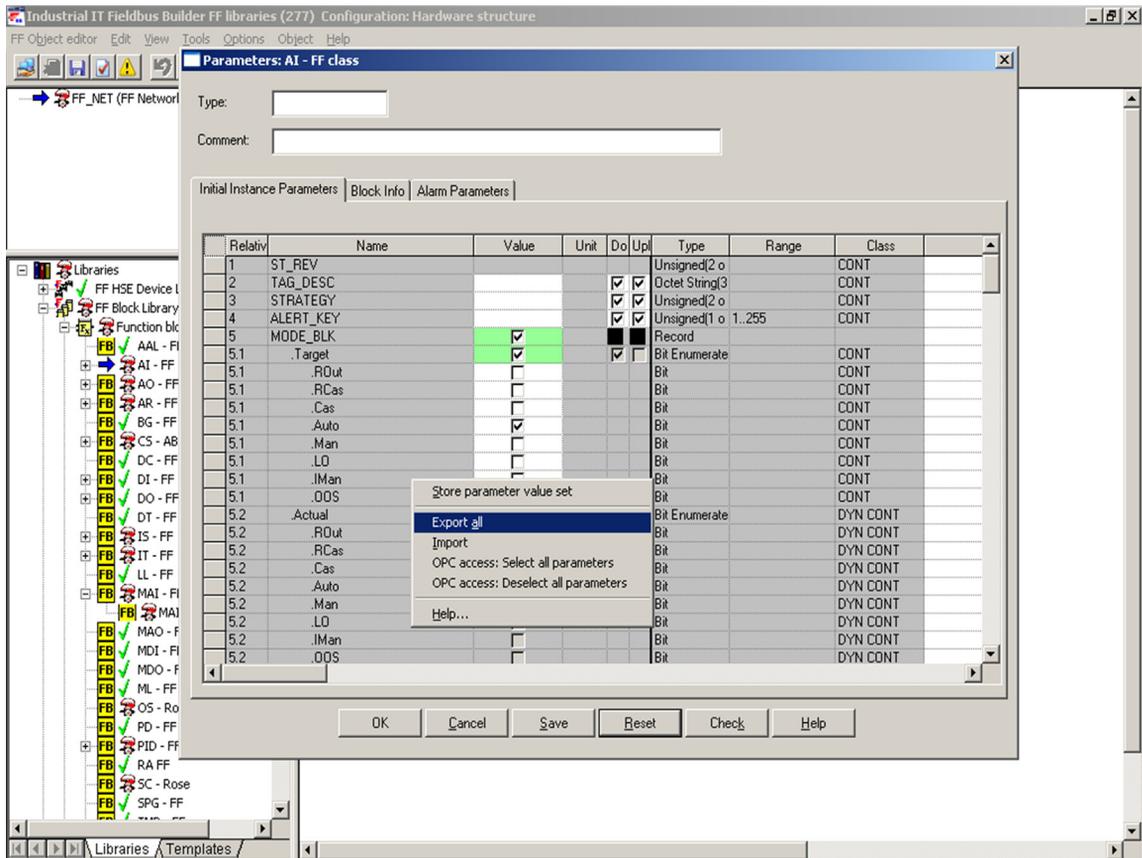


Figure 6. Exporting Locally Stored Parameter Value Sets

- Specify the name and location of the .csv file and Click **OK**.

800xA for Advant Master and 800xA for Safeguard

Perform the following to prepare for the 800xA for Advant Master and 800xA for Safeguard upgrade.

- Save the Advant Master Controller Licenses.txt.

- [Save the Configuration Files.](#)
- [Save the DATHR Files.](#)
- [Document the RTA Board Control Aspect Settings.](#)

Save the Advant Master Controller Licenses.txt

Perform the following on the Primary Aspect Server in the 800xA 5.0 SP2 System:

1. Save the following file to a safe location.
 - Advant Master Controller Licenses.txt

The default location for the file is:

```
... \Program Files\ABB Industrial IT\Operate IT\AC 400  
Connect\Licenses
```

Save the Configuration Files

The configuration files in the Connectivity Servers can contain special configuration settings for Alarm and Event or Data access. Refer to *800xA for Advant Master; Configuration (3BSE030340*)* for more information about these special configuration settings.

If such changes are available in the configuration files, perform the following on each 800xA for Advant Master and 800xA for Safeguard Connectivity Server node: Save the following files to a safe location:

- AdvDsMasterAdapter.csv
- AdvMbAeOPCServer.csv

The default location for the files is:

```
... \Program Files\ABB Industrial IT\Operate IT\AC 400  
Connect\Bin
```

Save the DATHR Files

Perform the following on each 800xA for Advant Master and 800xA for Safeguard Connectivity Server node:

1. Save the following files to a safe location:

- DATHR1.CD
- DATHR2.CD
- DATHR3.CD

from the folder:

```
...\Program Files\ABB Industrial IT\Operate IT\AC 400  
Connect\AdvantBase\Data\RTA\Init\
```

and record which files belong to which node.

Document the RTA Board Control Aspect Settings

Perform the following on each 800xA for Advant Master and 800xA for Safeguard Connectivity Server node:

1. Document the following settings in the RTA Board Control aspect for reconfiguration after the upgrade.
 - MB300 node and network address.
 - **800xA as Clock Master (REVERSED_SYNC_MODE)** check box.

800xA for Harmony

Perform the following to prepare for the 800xA for Harmony upgrade.

- [Disable Harmony Services on 800xA for Harmony Servers.](#)
- [Save 800xA for Harmony Information.](#)

Disable Harmony Services on 800xA for Harmony Servers

Stop the following 800xA for Harmony services on the 800xA for Harmony Server node being upgraded.

1. Select:
 - Start > Control Panel > Administrative Tools > Services**
2. Disable the following services:
 - Time synchronization daemon.
 - SoapSymTagAtomSrv.
 - EbDataSyncService.
 - EbServerBroker.

- ABBDiagnosticService.
- DD_xxxx - Where xxxx identifies the semAPI or hAPI device being used (this may or may not exist).

Perform the following steps to disable these services:

- a. Locate the service in the Services list.
 - b. Double-click the service to open the Properties dialog box for that service.
 - c. Change the Startup type to **Disabled**.
 - d. Click **Apply** and then **OK**.
 - e. Repeat for each of the services listed.
3. Restart the 800xA for Harmony Server node.

Save 800xA for Harmony Information

Use the following procedure to save 800xA for Harmony information:

1. Create a backup of the Configuration Server database.
 - a. Select:
Start > All Programs > ABB Industrial IT 800xA > 800xA for OCS Systems > Harmony > Configuration > Backup Configuration
 - b. Click **Connect**.
 - c. Click **Browse** to name the backup file and choose a location to save it.
 - d. Click **Backup**.
 - e. Click **Exit** when the backup is complete.

800xA for AC 870P/Melody



Disable the Melody AutoConfigurator service in **Plant Explorer > Service Structure** (the service must be disabled when the system maintenance backup is started).



Back up project specific changes (if applicable):

- DHCP Server Configuration.
- ETC Host files for Melody Connectivity Servers from:
...\\Windows\\system32\\Drivers
- Changes in the Default Object Types (e.g. manual changes for permissions in Control Connection Aspects).
- ConvDB changes only on Configuration Server (change to the directory ...\\Program Files\\ABB Industrial IT\\Configuration and backup the files MELCONVERTER.BAT, ConvDB.mdb and ConvDB_<Hostname>.mdb.



ConfigServer node: Ensure that no Commissioning will be done from the Melody Composer during this upgrade.

Use the following procedure to save 800xA for AC 870P/Melody information:

1. Log in to the 800xA Service account on the Configuration Server node.
 - a. Create a backup of the Configuration Server database.
 - b. Select:
Start > All Programs > ABB Industrial IT 800xA > 800xA for Melody > Configuration > Backup Configuration
 - c. Click **Connect**.



Save the backup file to a safe media like a network share or removable disk. Otherwise, the file will be deleted once an upgrade occurs due to a reload of the node.

- d. Click **Backup**.
- e. Click **Exit** when the backup is complete.

800xA for MOD 300

Ensure that the configuration data noted in the **Customized Data for Backup** appendix in *800xA for MOD 300 Configuration (3BUR002417*)* has been recorded.

IEC 61850 Connect

Make backups for the IEC 61850 CET OPC Server projects. Refer to the topic **CET Project Maintenance** in the *System 800xA IEC 61850 Configuration (9ARD171387*)* user manual to export CET OPC Server projects.



Handling of IET/CCT projects and PCM 600 projects is not described here as they are external tools contributing to the IEC 61850 workflow. They do not reside on 800xA System nodes.

PLC Connect

Perform the following procedure to prepare for the PLC Connect upgrade.

1. If the PLC Connect IEC 60870 feature is installed and configured, the IEC configuration must be saved. Refer to the section on configuring the IEC 60870 driver in *System 800xA PLC Connect Configuration (3BSE035041*)* for more information.
2. If the PLC Connect Communication Server Pre Treatment function is being used in the application (refer to *System 800xA PLC Connect Configuration (3BSE035041*)* for more information), make a backup of the Pretreat dll (Pretreat3.dll or Pretreat4.dll, be sure to select the version used). The Pretreat dll is located in the following folder on the PLC Connect Connectivity Server:

```
... \ABB Industrial IT \Operate IT \PLC Connect \Bin
```



The path is the default location of the file. If it has been placed somewhere else, make a backup from that location.

3. Make a backup of the application project and source files for the Pretreat dll.

Engineering Studio IO Allocation

Deactivate the auto update mode in IO Allocation.

1. Start the Engineering Workplace.
2. Open the IO Allocation tool on any object by right-clicking on the object and selecting **Advanced > IO Allocation** from the context menu that appears.
3. Verify that no check mark symbol is visible in the **Options > Autoupdate CBM** menu item in the IO Allocation tool.

Asset Optimization

Preparing for the Asset Optimization upgrade requires backing up data to a safe media.

Use the following procedure to back up Asset Optimization information (perform only the steps applicable to the system):

1. Asset Monitoring:



Asset Monitoring directories will be found on every Asset Optimization Server node and any other node defined as an Asset Monitoring Server.

- a. If Runtime Asset Monitors are being used in the system, save the Runtime Asset Monitor data directory (DeviceRunTimeMSLogicStore) to a safe media. This directory stores the runtime information calculated by the Runtime Asset Monitors running in this node. This directory is located in:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset Optimization\AssetMonitorEnvironment\Bin
```

- b. If XY Profile Deviation Asset Monitors are being used in the system, save the XY Profile Deviation Asset Monitor data directory (XY_Reference_Profiles) to a safe media. This directory is located in:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset Optimization\AssetMonitorEnvironment\Bin
```

- c. If Counter Check Asset Monitors are being used in the system, save the Counter Check Asset Monitors data directory named:

```
{66E71F7B-90D6-4E62-9881-38388B24CBDF}
```

to safe media. This directory exists for each AO Server in the system. These directories are located in:

```
<install drive>:\OperateITData\AoEng\<AO Server ID>\AmCat\<Counter Check ID>
```

Where each <AO Server ID> directory represents one AO Server instance running on the selected node. The <AO Server ID> directory name is formatted as two consecutive GUIDs, for example:

```
{F9C150F5-2929-4A12-BC28-E00ED6DB1585} {B925E77F-2A82-41C6-A981-FAB4386D5701} .
```



For correct system operation it is important that only the directories identified by the Counter Check Asset Monitor category GUID be saved, as other data in the tree structure above these directories will not be consistent with a restore.

2. Maximo Integration:



If using Maximo Integration, the Maximo Integration information (Maximo Equipment ID and Maximo Credentials aspects) **must** be saved from all Asset Optimization Server nodes. Refer the **Service Structure** for the name of the Asset Optimization Server nodes.

- a. The MxDef files provide the mapping between the 800xA System environment and the Maximo system. If the MxDef files were customized per the instructions in *System 800xA Asset Optimization Configuration (3BUA000118*)*, back up the customized MxDef files to safe media.

- The customized MxDef Files for Maximo versions 4.1 and 4.1.1 are located in the following directory:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset Optimization\ABB AO\Services\MOM\MxDefs\
```

- The customized MxDef files for Maximo version 5.1 and 5.2 are located in the following directory:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset Optimization\ABB AO\Services\MOM\MxDefs\Maximo5\MxServer
```

- The customized MxDef files for Maximo version 6.2 are located in the following directory:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset Optimization\AOECSConnector\MaximoDef
```

- b. Back up the AOMaximoModel.xml file to a safe location. A backup of AOMaximoModel.xml is necessary because the ECS model for Maximo also needs to be modified if the MXDef files are customized.

The model file is available at the following location:

```
... \program files\ABB Industrial IT\Optimize IT\Asset
Optimization\AOECSCconnector\ECSDefinitions
```



The pending fault reports residing in the system are available in the following directory structure:

```
... \OperateITData\OptaoACDs
```

Backup the entire OptaoACDs folder.

3. SAP/PM Integration:



If using SAP/PM Integration, the SAP/PM Integration information (SAP Equipment ID and SAP Credentials aspects) **must** be saved from all Asset Optimization Server nodes. Reference the **Service Structure** for the name of the Asset Optimization Server nodes.

- a. Although the SAP/PM system is separate from the 800xA System, it is a good idea to back up the system in use. Follow SAP/PM standard practices for SAP/PM system backup.
- b. The SAPPMDef files provide the mapping between the 800xA System environment and the SAP/PM system. If the SAPDef files were customized per the instructions in *System 800xA Asset Optimization Configuration (3BUA000118*)*, back up the customized SAPDef files to safe media.

The customized SAPPMDef files for SAP version 4.7 are located under:

```
... \Program Files\ABB Industrial IT\Optimize IT\
Asset Optimization\AOECSCconnector\SAPPMDef
```

- c. Back up the AOSAPModel.xml file to a safe location. A backup of AOSAPModel.xml is necessary because the ECS model for SAP also needs to be modified if the SAPPMDef files are customized.

The model file is available at the following location:

```
... \program files\ABB Industrial IT\Optimize IT\Asset
Optimization\AOECSCconnector\ECSDefinitions
```



The pending fault reports residing in the system are available in the following directory structure. Backup the entire OptaoACDs folder.

```
... \OperateITData\OptaoACDs
```

4. DMS Calibration Integration:



The DMS Calibration Integration approach is changed in 800xA 5.1. Upgrade of DMS Calibration Integration is not supported. Reconfigure the DMS Calibration Integration based on an engineered solution.

Contact ABB technical support for more information.

PC, Network and Software Monitoring

Use the following procedure to prepare for the PC, Network and Software Monitoring upgrade.

1. If there are user defined Script, Resource, and Assembly files they need to be backed up. The user files are located in:

```
... \Program Files\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Scripts\User
```

```
... \Program Files\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Assemblies\User
```

```
... \Program Files\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Resources\User directory
```

Copy the files in these directories to a safe location.

PC, Network and Software Monitoring Device Library

Use the following procedure to prepare PC, Network and Software Monitoring Device Library upgrade:

1. Back up MOF files (if they exist) to a safe location. The MOF files are located in:

```
... \Program Files\ABB Industrial IT\Optimize IT\PC,  
Network and Software Monitoring\MOFS
```

2. Back up Custom Asset Monitor dlls to a safe location if object types with Custom Asset Monitors are loaded. The dlls are located in:

```

... \Program Files\ABB Industrial IT\Optimize
IT\PC, Network and Software Monitoring\Asset
Monitoring\Bin

```

SMS and e-mail Messaging

Save all GSM Device hardware information. Record information for the GSM device on the SMS and e-mail Messaging GSM Hardware Setup Worksheet shown in [Table 2](#).

Table 2. SMS and e-mail Messaging GSM Hardware Setup Worksheet

Item	Setting/Value
Spooler Settings	
Activate Outbox Spooler	Checked (check and leave checked)
Activate Inbox Spooler	Checked (check and leave checked)
Interval for Checking for Incoming Messages	Value: _____ Seconds Minutes (circle 1)
Port Settings	
COM Port	Value: COM _____
Baud Rate	Value: _____
Data Bits	Value: _____
Parity	Value: _____
Stop Bits	Value: _____
PIN and Properties	
Query PIN	Checked or Unchecked (circle one)
PIN (only if Query PIN is checked)	Value: _____
Save PIN (only if Query PIN is checked)	Checked or Unchecked (circle one)

Table 2. SMS and e-mail Messaging GSM Hardware Setup Worksheet (Continued)

Item	Setting/Value
Own Number (telephone number of SIM card (including Country Code) in GSM hardware)	Value: _____
Initialization String for GSM Hardware	Value: _____ _____ _____ _____
General Service Properties	
Name (GSM service provider)	Value: _____
Port	Value: COM _____
SMSC	Value: _____
Default Country Code	Value: _____
Default Prefix	Value: _____
Number of Attempts	Value: _____
Splitting Service Properties	
Splitting	Checked or Unchecked (circle one)
Optimize Splitting	Checked or Unchecked (circle one)
Enumerate Splitting	Checked or Unchecked (circle one)
Narrowband Sockets	Checked or Unchecked (circle one)
Messaging Service Properties	
Add Before Message	Blank (verify and do not change)
Use for Delivery Notification Only	Unchecked (verify and do not change)
Default Option	0 (verify and do not change)

Table 2. SMS and e-mail Messaging GSM Hardware Setup Worksheet (Continued)

Item	Setting/Value
Message General Properties	
Replace CR LF for Incoming Messages	Checked or Unchecked (circle one)

Batch Management

Verify all the scheduled batches are completed or terminated.

Scheduler Service (Application Scheduler)

Disable Schedules before stopping the servers and performing the upgrade. This is performed only once and not on every node. The Schedules will need to be manually enabled following the upgrade.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Service Structure**.
3. Select the Scheduling Service Object.
4. Select the Service Definition aspect.
5. Click the **Configuration** tab.
6. Clear the **Enabled** check box and click **Apply**.

Calculations Service

Disable Calculations before stopping the servers and performing the upgrade. This is performed only once and not on every node. The Calculations will need to be manually enabled following the upgrade.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Service Structure**.
3. Select the Calculations Service Object.
4. Select the Service Definition aspect.

5. Click the **Configuration** tab.
6. Clear the **Enabled** check box and click **Apply**.

Basic History Service Data



Back up the Basic History folder for each Basic History Service Provider in the **Service Structure**. Depending on the system, the Basic History Service data can be present on a number of different node types (Connectivity Servers, IM Servers, AO Servers, etc.). It is best to search for the directory described in this procedure on all nodes, and if there is data present, back up that data.

To save Basic History Service data:

1. Stop the Basic History Server from the **Service Structure** by the following procedure:
 - a. Open a Plant Explorer Workplace.
 - b. Use the Structure Browser to open the **Service Structure**.
 - c. Select the **Basic History, Service > Basic, Service Group**.
 - d. Select the Service Group Definition aspect.
 - e. Click the **Configuration** tab.
 - f. Clear the **Enabled** check box and click **Apply**.
2. Use Windows Backup (not the 800xA Backup) to backup the files in the:
`... \OperateITData\History\{provider ID}`
directory.
3. Start the Basic History Server manually again from the **Service Structure** following the upgrade.

Process Engineering Tool Integration

Back up Process Engineering Tool Integration information. The project data is located in the following directory:

```
... \Program Files\ABB Industrial IT\Engineer  
IT\Engineering Studio\Process Engineering Tool  
Integration\Xml
```

Save the entire Xml data directory to a safe media such as a network share or removable disk. The directory contains the default mapping files (*.dmf) modified on the project, accelerator files (*.acc), and configuration files (*.pcf and *.fcf).

Requirements for VB Graphics Extension Software



Perform these procedures only if the restored system makes use of VB graphics.



- [Installing Visual BASIC 6.0 with SP6](#) must be followed for all nodes that use Graphics Builder and the Primary Aspect Server node. This must be done before performing the procedures under [Perform the 800xA System Restore](#).
- [Installing the VB Graphics Extension Software](#) must be followed for each VB Graphics extension software package on all nodes in the 800xA 5.1 System, if the base product was installed on the 800xA 5.0 SP2 System. This must be done before performing the procedures under [Perform the 800xA System Restore](#).



To deploy VB Graphics, the user must belong to the Application Engineer IndustrialIT user group and Windows Local Administrators.



Refer to *System 800xA Engineering, Process Graphics Migration Tool* for information on migrating VB Graphics to Process Graphics 2.

Installing Visual BASIC 6.0 with SP6



Use of an Aero Theme with the Workstation Operating System will lead to screen latency issues in the VB Graphics Builder. This is because the Aero theme uses advanced rendering schemes. Turn off the Windows Aero theme and switch to either none or Windows Classic for use of VB Graphics. The behavior of VB IDE in the Workstation Operating System will then be the same as that in Windows XP.

All nodes that use the Graphics Builder and the Primary Aspect Server node need a Professional or Enterprise Edition of Microsoft Visual BASIC 6.0 with SP6. The licensed copy used on the 800xA 5.0 SP2 System must be installed on the 800xA 5.1 System. Follow the installation procedure provided with Visual BASIC.

Installing the VB Graphics Extension Software

Perform the following procedure to install the VB Graphics extension software on all nodes in the 800xA 5.1 System, if the base product was installed on the 800xA 5.0 SP2 System.

1. Insert System Installation DVD 5 into the drive.
2. Wait for the Installation AUTORUN screen to appear.
3. Select:
 - Manual Installation > VB Graphics Extensions** (see [Figure 7](#))
4. Select a VB Graphics extension to install (the installation of the Batch Management VB Graphics extensions is described later in this procedure).
5. The Installation Wizard for the selected VB Graphics extension appears.
6. Follow the Installation Wizard to complete the installation. Choose **Typical** as the installation type.
7. Repeat the procedure for each required VB Graphics extension that appears in the Installation AUTORUN Screen.
8. This step only applies to the VB Graphics extensions for Batch Management when using System Installer to upgrade the 800xA System. If Batch Management was installed manually during the upgrade, the VB Graphics extensions for Batch Management were installed at that time.
 - a. Select:
 - Manual Installation > Batch Management**
 - b. The Installation Wizard for Batch Management appears.

- c. Select **Modify** when the dialog box appears that offers that choice.

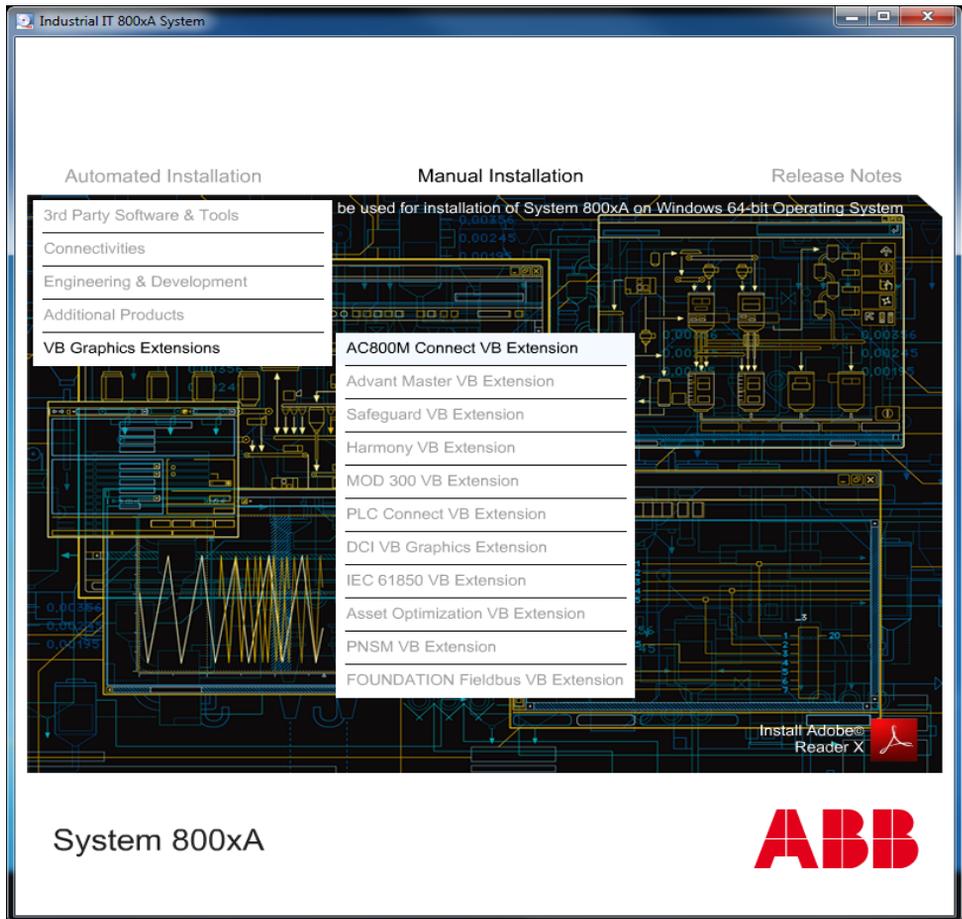


Figure 7. Installation AUTORUN Screen

- d. Select to install the Batch Management VB Graphics extensions in the Installation Type dialog box.
- e. Follow the Installation Wizard to complete the installation.

Post Upgrade Procedures

The remainder of this section describes how to:

- Migrate the Structured Data Logger SQL Database.
- Restore the backups of the IEC 61850 CET OPC Server projects.
- Restore historical data.
- Restore the necessary data for each Functional Area.

Migrating the Structured Data Logger SQL Database

Perform the following post upgrade procedure for Structured Data Logger (SDL).



Upgrading SDL from 800xA 5.0 SP2 to 800xA 5.1 involves transfer of database data from SQL Server 2000 to SQL Server 2008.

1. Open Microsoft SQL Management Studio and connect to the `SDL_INSTANCE` server.
2. Delete SDL database from `SDL_INSTANCE` if already created during the installation.
3. Restore the SDL database using the .bak file (from SQL Server 2000) that was stored to a safe location during the pre-upgrade process.
 - a. Right-click **Databases** and select **Restore Database...** from the context menu.
 - b. Select the **From Device** option and browse for the .bak file that was stored to a safe location during the pre-upgrade process.
 - c. Select/Enter **SDL** in **To database** and click **OK**.
4. Use Windows Explorer to navigate to:

```
... \Operate IT\Structured Data Logger\vbs
```
5. Double-click `RunCreateScripts_SDL.vbs`. This will upgrade the SDL database schema.
6. Verify that the SDL Control Application exists in the system and that the SDL Log aspects contain data.

IEC 61850 Connect

Restore the backups of the IEC 61850 CET OPC Server projects. Refer to the topic **CET Project Maintenance** in the *System 800xA IEC 61850 Configuration (9ARD171387*)* user manual to import CET OPC Server projects.



Handling of IET/CCT projects and PCM 600 projects is not described here as they are external tools contributing to the IEC 61850 workflow. They do not reside on 800xA System nodes.

Customized Alarm Priority Mapping Aspects

Some customized Alarm Priority Mapping Aspects may have been overwritten during the upgrade. Recreate the Alarm Priority Mapping Aspects using the data recorded during [Customized Alarm Priority Mapping Aspects](#) on page 83.

Reconfiguring Group Displays

New Group Display aspects that are created and configured in the **Object Type Structure** on the object types and instances in 800xA 5.1 will work correctly even if there is more than one aspect with the same name but each aspect has a different Aspect Category.

Configured Group Display aspects that existed in the **Object Type Structure** and on the object types and instances in 800xA 5.0 SP2 should have their Aspect Categories reconfigured for the aspects to display correctly. (This is required for the reference to an aspect to be stored along with its Category ID.)

Upgrading Faceplates

The Faceplate aspects created in all versions prior to 800xA 5.1 use a different method to identify the references to faceplate elements or other properties than those in 800xA 5.1.

Upgrading a faceplate is optional, but is strongly recommended for the following reasons:

- Better runtime performance, as no name server access is required when a faceplate is opened.
- More reliable because the references continue to work even if the target object is renamed.

- Upgraded faceplates function efficiently with the Consistency Checker and Reference Tool. This behaves similar to a Process Graphics 2 graphic aspect.
- The upgrade to new reference handling can also repair some broken references.

Refer to the Upgrading Faceplates appendix in *System 800xA Engineering Process Graphics (3BSE049230*)* for the procedure to upgrade the faceplates.

800xA for AC 800M

Perform the following procedure to restore 800xA for AC 800M information:

1. Use the OPC Server Setup Wizard to enter the previously used and recorded service account settings.
2. Control Builder stores its settings (systemsetup.sys) on disk in the following directory:

```
... \ABB Industrial IT Data \Engineer IT Data \Control  
Builder M Professional
```

Copy the previously saved file from the safe media to this folder.

3. The OPC Server stores configuration files (*.cfg) and settings (systemsetup.sys) on disk. Add the files saved on the safe media to the system. The systemsetup.sys file is located in:

```
... \ABB Industrial IT Data \Control IT Data \OPC Server  
for AC 800M
```

The configuration files are stored in the Files folder in the same location.

4. Select **File > Load Configuration** to restore OPC configurations in the OPC Server Panel.

Engineering Studio

Perform the following post upgrade procedures for Engineering Studio:

- [Check and Repair AES Variable Table.](#)
- [Upgrade Diagram References and Diagram Variables.](#)
- [Engineering Studio Function Designer System Extensions](#)
- [Deleting Engineering Base Service from the Service Structure.](#)

Check and Repair AES Variable Table

The Check and Repair AES Variable Table (Applications, Controllers, Diagrams/SCMs, and Diagram (Cm) Types) function can be used to:

- Correct possible inconsistent data used for display of online values and external cross references.
- Delete obsolete data and reduce aspect size.

Perform the following procedure to use this application.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Object Type Structure**.
3. Use the Object Browser to navigate to:
Object Types > Functional Planning > Settings
4. Select **Function Upgrade** in the Aspect List Area to open the Function Upgrade aspect in the Preview Area.
5. Select the **Check and Repair AES Variable Table (Applications, Controllers, Diagrams/SCMs, and Diagram (Cm) Types)** check box and click **Apply**.
6. Click **Run Upgrade** to perform this upgrade.



Executing the Check and Repair AES Variable Table procedure makes the environment support work for Function Designer.

Upgrade Diagram References and Diagram Variables

In the 800xA 5.1 System (opposite to the 800xA 5.0 SP2 System) Diagram References and Diagram Variables are by default created as Symbol Objects. This is not true for Diagram References and Diagram Variables created during upgrade (restore) from 800xA 5.0 SP2 Systems. Convert them from Aspect Objects to Symbol Objects by use of the conversion function described in the following procedure.



Differences between Aspect Objects and Symbol Objects are described in *System 800xA Engineering, Engineering Studio Function Designer (3BDS011224*)*.

1. Open a Plant Explorer Workplace.

2. Use the Structure Selector to open the **Object Type Structure**.
3. Use the Object Browser to navigate to:
Object Types > Functional Planning > Settings
4. Select **Function Upgrade** in the Aspect List Area to open the Function Upgrade aspect in the Preview Area.
5. Select the **Convert Diagram References/Variables from Aspect Objects to Symbol Objects** check box and click **Apply**.
6. Click Run Upgrade to perform the upgrade.



This function is not suitable in the case of additional aspects on input/output references, e.g. Graphic Elements, for typical diagrams with input/output references that will get copied and connected via the Bulk Data Manager.

Engineering Studio Function Designer System Extensions

Refer to [Engineering Studio Function Designer System Extensions](#) on page 85 and recreate the configuration changes that were recorded before the upgrade.



After the System is upgraded, some of the Function Diagrams appear in the modified state. This is due to the modification of Standard and BU specific libraries whose blocks are instantiated in the Function diagrams. Perform configuration data generation for such Function Diagrams.

The following are some of the instances where Function Diagrams are modified when there are:

- Changes in properties of the parameter except **FDport** in the Control and Function block type.
- Change in the **CMT** type.

Deleting Engineering Base Service from the Service Structure

When the 800xA System is running, delete the Engineering Base Service from the **Service Structure**.

1. Use Windows Explorer to navigate to the following directory:
...\\Program Files (x86)\\ABB Industrial IT\\Engineer IT\\
Engineering Studio\\DocumentParameterManager\\
bin\\support
2. Double-click `EbServiceCleanUpUtil.exe` to delete the service.

Device Management and Fieldbuses

Perform the post upgrade procedures for Device Management and Fieldbuses.

Device Library Wizard

Perform the following post upgrade procedures for Device Library Wizard.

Restore Device Types

Third party software, such as Device Type Managers for the Device Type must be reinstalled since the hard drive of the 800xA System node has been reformatted.

The following steps for Fieldbus Device Types need to be carried out on every 800xA system node. Perform the System Restore Wizard procedure on the nodes in the following sequence:

- Aspect Servers (including redundant Aspect Servers).
- Connectivity Servers (including redundant Connectivity Servers).
- Application Servers.
- Clients.



Restore the Device Types on the Primary Aspect Server node before starting to install them on other system nodes. Do not run parallel installations of Device Types on other system nodes unless all Device Types are restored on the Primary Aspect Server node. Installation of Device Types on other system nodes can be done in parallel after they are restored on the Primary Aspect Server node.



If the system contains FOUNDATION Fieldbus Device Types, check the following before proceeding to the next step:

- Open a Plant Explorer Workplace.
- Use the Structure Selector to open the **Object Type Structure > FF Libraries**.
- Check to see if there is more than one entry of FF H1 Device Library, FF Object Type Group.
- If there is more than one entry, perform FF Upload once so there is only one instance of FF H1 Device Library, FF Object Type Group present. If there is only one entry, proceed to the next step using the Device Library Wizard.

1. Start the Device Library Wizard. Select:

Start > All Programs > ABB Industrial IT 800xA > Device Mgmt > Device Library Wizard

-or-

double-click the Device Library Wizard icon on the desktop.



If the Device Library Wizard - Client has not been connected to the Device Library Wizard - Server, navigate first to:

Device Library Wizard Administration > Connect Client

and follow the Device Library Wizard Procedure

2. Select the **Enable Trace File** check box as shown in [Figure 8](#) from the path:

Device Library Wizard > Device Library Wizard Administration > Diagnostics

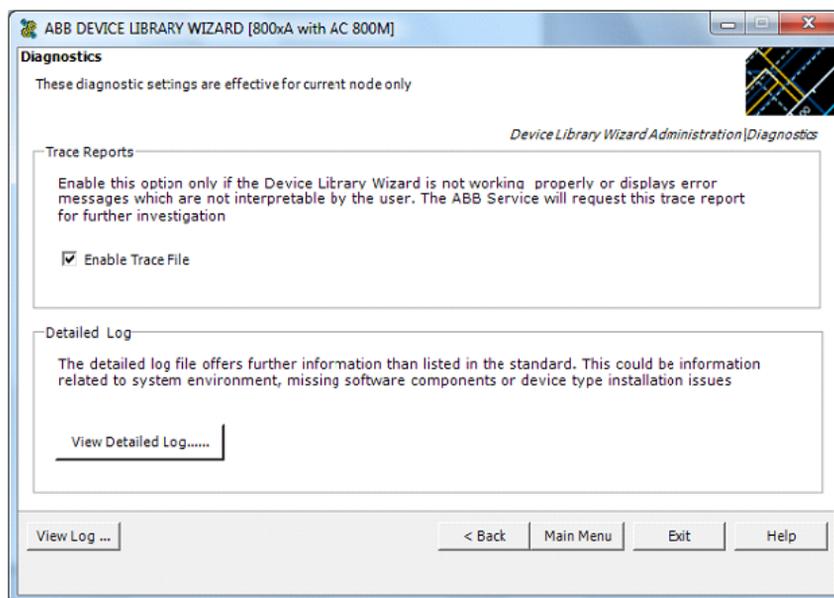


Figure 8. Enabling the Trace File

3. Navigate to:

Device Type Administration > System Restore Wizard

4. Choose the second option in the System Restore Wizard as shown in [Figure 9](#) and click **Next**.

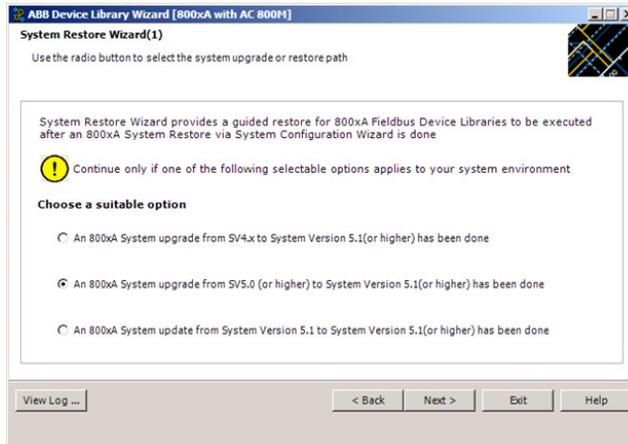


Figure 9. System Restore Wizard (1)

5. Choose the first option as shown in [Figure 10](#) and click **Next**.

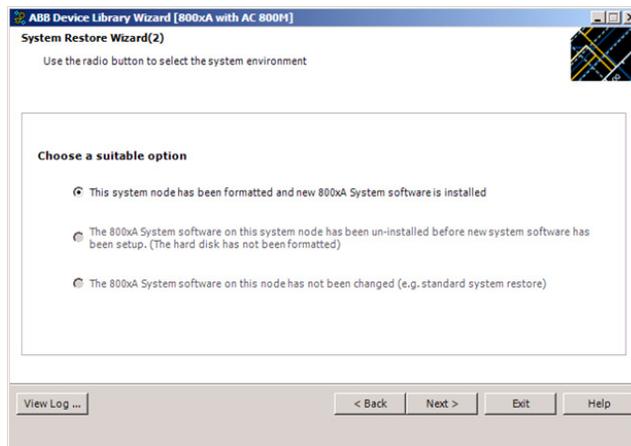


Figure 10. System Restore Wizard (2)

6. Depending on which fieldbus protocol is used in the previous system version environment, insert one of the delivered Device Library system DVDs in the DVD drive (e.g. Device Library HART – DVD).
7. Click **Browse** and navigate to the DVD drive.
8. When the drive has been selected in the Browse for folder dialog box, click **OK** in that dialog box and then **Next** in the ABB Device Library Wizard. This step may take one or two minutes to complete.
9. The Device Library Wizard scans the 800xA System for fieldbus device types that are already used and compares the results with the contents of the DVD. Device Types available in the 800xA System and the DVD are shown in the **Extract** tab of the Device Library Wizard (Figure 11).

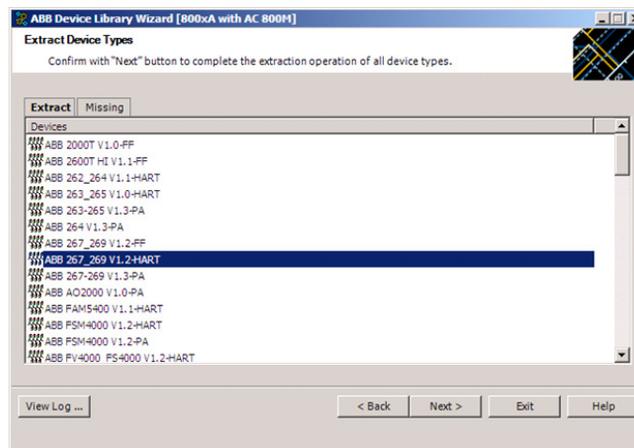


Figure 11. Extract Device Type Files

10. Device Types available in the 800xA System but not on the DVD are displayed in the **Missing** tab. If there are any Device Types showing in the **Missing** tab, navigate to the Browse dialog box by clicking **Back** and inserting a new Device Library DVD in the DVD drive.
11. Click **Next** to start the extraction process.
12. Repeat [Step 6](#) to [Step 11](#) for each fieldbus protocol if more than one fieldbus protocol is used.

- There may be some Object Types that are either customer created, or are the latest Device Types downloaded from ABB SolutionsBank. These will not be available on the DVDs. The Device Library Wizard will prepare a list for these Device Types (Figure 12). Install these Device Types manually.

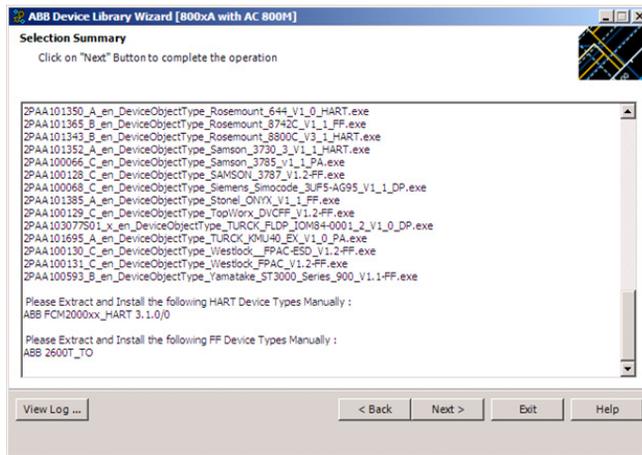


Figure 12. List of Files to be Manually Installed

- Repeat this procedure until all Device Types are extracted to the 800xA System node and the **Missing** tab does not list any device types.



During extraction, if a dialog box pops up asking for an overwrite, select **No** and continue.

- If the Device Library DVDs do not contain all Device Types used in the previous system version, the missing Device Types must be downloaded from ABB SolutionsBank.



It is only possible to complete the Wizard if all Device Types have been successfully extracted.

- When the extraction process is completed successfully, the Device Types need to be re-installed on the 800xA System node. Click **Next** to launch the Re-installation of Device Types dialog box shown in Figure 13.

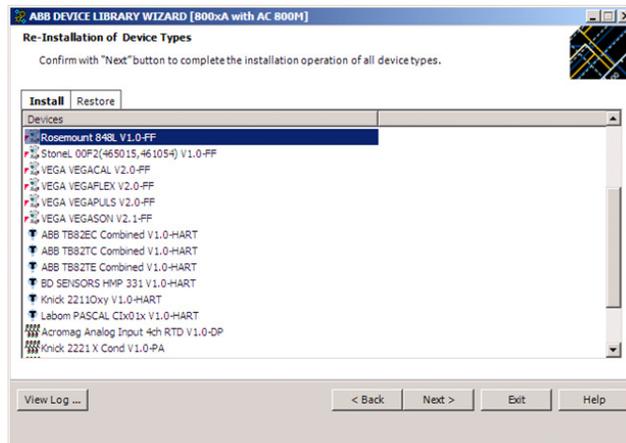


Figure 13. Re-install Device Types Dialog Box

- Follow the Device Library Wizard procedure to complete the installation. The Device Library Wizard will automatically navigate to the main window after the process is completed.



If, during installation the Device Library Wizard main window becomes hidden in the background:

- Open Windows Task Manager.
 - Select the Device Library Wizard in the **Applications** tab.
 - Select: **Windows > Bring to Front**
- Exit the Device Library Wizard and repeat the procedure on the other 800xA System nodes, if applicable.
 - Perform the Configure OPC P/H Server on the 800xA 5.1 Primary Aspect Server.

Device Management PROFIBUS & HART

Perform the following post upgrade procedures for Device Management PROFIBUS & HART.

Compressing Aspect Data

The aspect data in the system is compressed using the Data Compression Tool. This tool is available from System 800xA 5.1 Feature Pack 4 Revision D and System 800xA Revision D (see [Figure 14](#)).



AC800M Connect and AC800M High Integrity system extensions must be loaded before loading PROFIBUS Device Integration Library - Basic and HART Device Integration Library - Basic system extension. Therefore, install AC800M Connect and AC800M high Integrity also when installing Device Management PROFIBUS and HART.

After the system upgrade, perform the following to compress the aspect data using the Data Compression Tool:

1. Double-click and open the Data Compression Tool from the following location:
C:\Program Files (x86)\ABBIndustrialIT\EngineerIT\FieldbusBuilder\bin\DMAAspectDataCompression.exe

The Data Compression Tool is opened as shown in [Figure 14](#).



The callouts in [Figure 14](#) represent the corresponding steps in this procedure.

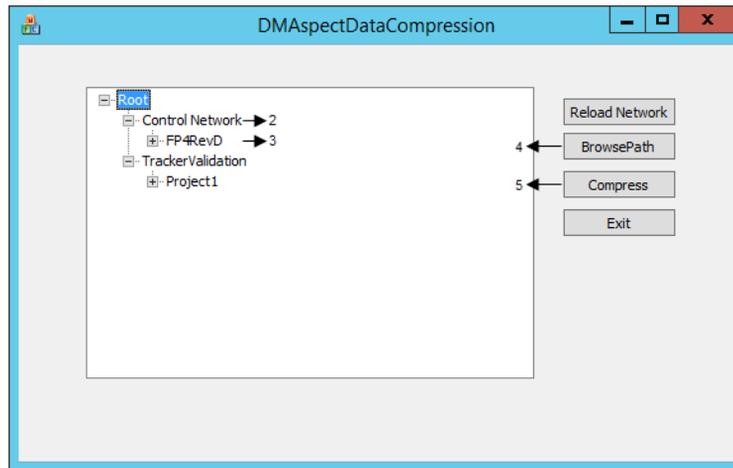


Figure 14. Data Compression Tool

2. Select **Control Network** on the Data Compression Tool.
3. Expand the **Control Network** group and select a project or a controller from the list.
4. Click **BrowsePath** to browse and select a folder location to save the .csv file.
5. Click **Compress** to compress the aspect data.

A message will be displayed stating the actual number of device instances in the project and the actual number of device instances that are compressed using the tool as shown in [Figure 15](#).

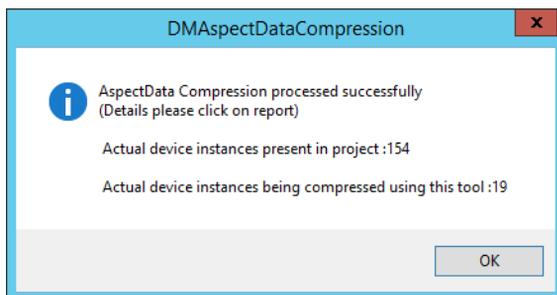


Figure 15. Data Compression Details Message

The Data written successfully in the following path: <path specified in Step 4> will be displayed at the bottom of the tool upon successful completion of aspect data compression as shown in Figure 16.

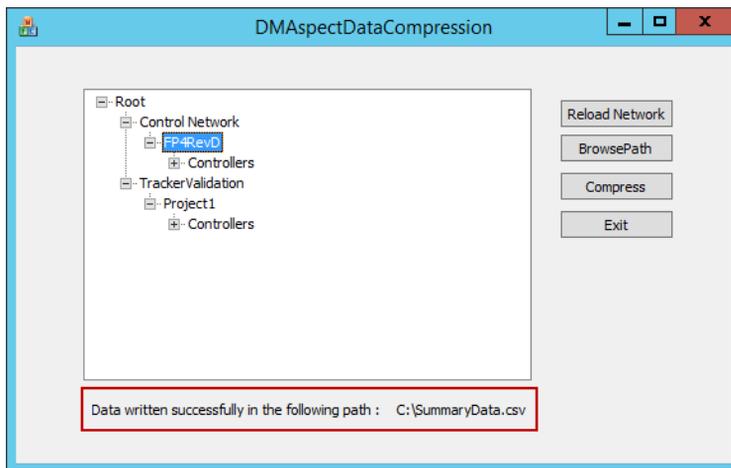


Figure 16. Successful Completion of Device Types Compression

6. Click **Exit**.

OPC Server PROFIBUS & HART

After system upgrade, PH OPC service providers may be reconfigured. For more information on configuration of PROFIBUS & HART devices (Fieldbus Builder

PROFIBUS/HART, OPC Server, DTM's and Device Type Objects in 800xA), refer to *System 800xA Device Management PROFIBUS & HART Configuration (3BDD011934*)* manual.



This step must be performed after project upgrade as mentioned in [800xA for AC 800M](#) Post-upgrade procedures.

License Count Tool

License Count Tool is an User Interface tool that counts and verifies the list of licenses for the device types. The User Interface for this tool is available in the System 800xA 5.1 Feature Pack 4 Revision E and System 800xA Revision E release (see [Figure 17](#)).

After the system upgrade, the licenses required for the device types in the new system must be checked and verified.

Perform the following to check the licenses for the device types in the system:

1. Run the License Count Tool from the following location:

*C:\Program Files (x86)\ABBIndustrialIT\EngineerIT\FieldbusBuilder
bin\LicenseCounting.exe*

2. On the License Counting wizard, expand the Root element, select the Control Network, and then click **Count License** as shown in [Figure 17](#).

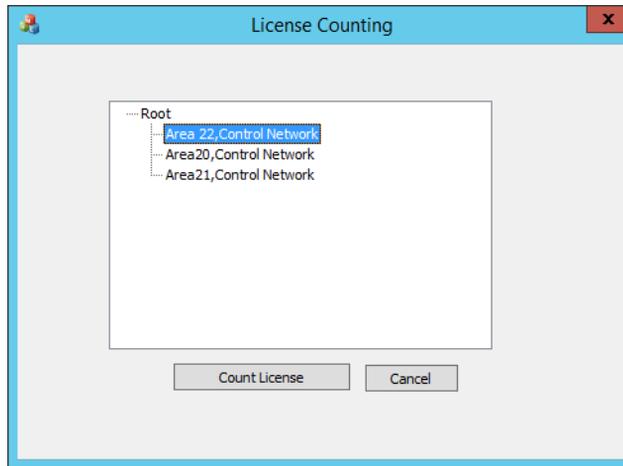


Figure 17. License Count Tool Wizard



If there is more than one control network, you need to individually select the network and click **Count License** to know the number of licenses used per control network.

A message stating the number of device type instances in the system and the number of licenses required is displayed as shown in the [Figure 18](#).

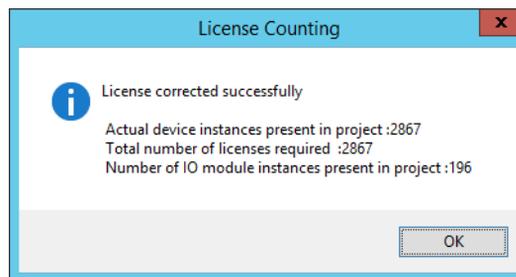


Figure 18. License Count Message

3. Perform the following to verify the number of licenses used in the system:
 - a. Open a Plant Explorer workplace.
 - b. Use the structure selector to select the **Control Structure**.
 - c. Click **Root** and select **License Usage** in the Aspect List area.
 - d. Check the number of licenses used in the system for the 800xA FIELDBUS Profibus and Hart feature. Refer to [Figure 19](#) for more information.

Product	Feature	Total	In Use
800xA ENGINEERING	ENG_MOC	50000	0
800xA ENGINEERING	ENG_REUSE	10	0
800xA ENGINEERING	ENG_SCRIPT	11	0
800xA ENGINEERING	ENG_WPL	11	0
800xA ENGINEERING	PETI_BASE	Unlimited	0
800xA ENGINEERING	PETI_CREATE	Unlimited	0
800xA EXTENSIONS	TT_SDL_DATA_LG	100	0
800xA FIELDBUS	CON_IEC61850	10	0
800xA FIELDBUS	CON_RED_IEC61850	10	0
800xA FIELDBUS	FBUS_FF	10000	0
800xA FIELDBUS	FBUS_HART	10000	0
800xA FIELDBUS	FBUS_HMULX	Unlimited	0
800xA FIELDBUS	FBUS_PROFI	10000	0
800xA FIELDBUS	FBUS_PROFI_HART	20000	121
800xA FIELDBUS	IEC61850_FP_LIB	Unlimited	0
800xA HISTORY	HIST_SIG_BAS	100	0
800xA HISTORY	HIST_SIG_DAC	100	0
800xA HISTORY	HIST_SIG_DUAL	100	0
800xA INFORMATION MANA...	EXCEL_DA	12	0

Figure 19. License Usage Aspect in Control Structure



The number of licenses displayed by the License Count Tool and the number displayed against the License Usage aspect in the Control Structure must be the same.

Device Management FOUNDATION Fieldbus



Do not change the IP address of the OPC server FF during the online plant update. Changing the HSE IP address of the PC changes the HSE Default Gateway entry in the HSE subnet network configuration dialog, which in turn reboots all CI860 at subsequent configuration downloads.

Perform the following to complete updating Device Management FOUNDATION Fieldbus.

1. **Update LD 800HSE Linking Devices:** Update all LD 800HSE linking devices to the latest firmware version released for this system environment following the update procedure described in the user instructions for the particular device.



Refer to *Field IT, Foundation Fieldbus Linking Device, LD 800HSE, Version Table (3BDS009910)* in ABB SolutionsBank for the latest linking device firmware released for this system environment.

From Downloads Explorer, navigate to:

Control Products and Systems/800xA/Device Management Foundation Fieldbus/Foundation Fieldbus Linking Device LD800HSE

2. Check, Save, and Upload FF Libraries:
 - a. Open a Plant Explorer Workplace.
 - b. Use the Structure Selector to open the **Object Type Structure**.
 - c. Use the Object Browser to navigate to:
FF Libraries, Object Type Group
 - d. Select FF Management in the Aspect List Area.
 - e. Click **Open Project**.
 - f. Check the libraries for plausibility.
 - g. Exit Fieldbus Builder FF and save changes if prompted to do so.
 - h. Return to the Plant Explorer Workplace and select FF Upload in the Aspect List Area.
 - i. If the traffic light symbol shows red, click **Upload**.
 - j. The green traffic light symbol indicates that the FF libraries have been synchronized.

3. Optional: Reconstruct User-made Changes to Library Objects representing FF Standard Blocks:



This step is only required if changes were made to library objects representing FF standard blocks.

During upgrade, **user-made changes to library objects representing FF standard blocks have been overwritten**. Important substitutions have been logged.

- a. If such changes were made, display the substitutions as follows:
 - Open a Plant Explorer Workplace.
 - Use the Structure Selector to open the **Object Type Structure**.
 - Use the Object Browser to navigate to:
FF Libraries, Object Type Group
 - Select FF Upload in the Aspect List Area.
 - Select **Library Merge Logger** tab and read the log.
- b. For reconstructing user-made changes, reapply the changes to the library objects manually.

4. Check, Save, Commission, and Upload the HSE Subnet.



Perform the following procedure for each HSE Subnet.

- a. Open a Plant Explorer Workplace.
- b. Use the Structure Selector to open the **Control Structure**.
- c. Use the Object Browser to navigate to:
HSE Subnet
- d. Select FF Management in the Aspect List Area.
- e. Click **Open Project**.
- f. Check to see if the configured HSE subnet ID is used for the OPC Server FF configuration in **FF Network > Properties** and modify it if required.
- g. **Check whole project** for plausibility.

- h. If required, perform device assignment for all linking devices LD 800HSE. Typically, no device assignment is lost during the upgrade.
- i. If required, perform precommissioning/commissioning for all objects for which this is necessary (discernible from engineering status). A precommissioning may be required if the firmware has been changed.



To assign all H1 devices in one step, use the **Assign all devices** function from the HSE Subnet context menu: **Object > Assign all devices...**



For downloading use the online dialog from the HSE Subnet context menu: **Object > Online Dialog...**

- j. Exit Fieldbus Builder FF and save changes if prompted to do so.
 - k. Return to the Plant Explorer Workplace and select **FF Upload** in the Aspect List Area.
 - l. If the traffic light symbol shows red, click **Upload HSE Subnet**.
 - m. The green traffic light symbol indicates that the HSE Subnet has been synchronized.
5. Check whether the blocks of used devices from 800xA 5.0 SP2 use the datatype bitstring and that the value is uploaded into the configuration database. Upload these parameters from the device to the configuration database again.

Perform the following procedure for each HSE Subnet:

- a. Open a Plant Explorer Workplace.
- b. Use the Structure Selector to open the **Control Structure**.
- c. Use the Object Browser to navigate to **HSE Subnet**.
- d. Select **FF Management** in the Aspect List Area.
- e. Click **Open Project** to open the subnet in FBB FF.
- f. Identify the devices containing Function Block with Parameter datatype as bitstring.
- g. Upload all parameters of datatype bitstring from the device to the configuration database.

6. Import the locally stored parameter value sets as follows:
 - a. Open a Plant Explorer Workplace.
 - b. Use the Structure Selector to open the **Object Type Structure**.
 - c. Use the Object Browser to navigate to:
 FF Libraries, Object Type Group
 - d. Select FF Management in the Aspect List Area.
 - e. Click **Open Project** to open the FF Libraries project in Fieldbus Builder FF.
 - f. Open the block properties dialog for the Function Block where the parameters were exported during the pre-upgrade procedure.
 - g. Right-click on the dialog box and select **Import** from the context menu.
 - h. Browse the .csv file and restore the value sets.



Ensure that the stored value sets are imported to the corresponding Function Blocks.

- i. Right-click and select **Store parameter value set** from the context menu.
- j. Specify an appropriate name for the new value set and click **OK**.
- k. Click **Cancel**. Do NOT overwrite the Initial Instance Parameters with the imported parameters, and then close the block properties dialog box.

PROFINET IO Feature Pack 1.2

Some settings on CI871 are reset to default values when performing the upgrade of PROFINET IO Feature Pack 1.2 to 800xA 5.1. The following are affected:

- Default Gateway.
- Red.Eth.recovery time.
- Watchdog factor.

Check the CI871 settings after upgrade and enter the previous values if the settings are changed.

800xA for Advant Master and 800xA for Safeguard

Perform the following post upgrade procedures for 800xA for Advant Master and 800xA for Safeguard.

- [Copy the Advant Master Controller Licenses.txt.](#)
- [Update the Configuration Files.](#)
- [Copy the DATHR Files.](#)
- [Reconfigure RTA Board Control Aspect Settings.](#)

Copy the Advant Master Controller Licenses.txt

Perform the following on the Primary Aspect Server in the 800xA 5.1 System:

1. Copy the following updated file:
 - Advant Master Controller Licenses.txt

The default location to copy the file in the 800xA 5.1 system:

For 64-bit:

```
...\Program Files (x86)\ABB Industrial IT\Operate  
IT\AC 400 Connect\Licenses
```

For 32-bit:

```
...\Program Files\ABB Industrial IT\Operate IT\AC 400  
Connect\Licenses
```

Update the Configuration Files

For each Connectivity Server, compare the following files saved in a safe location during the 800xA for Advant Master pre upgrade phase:

- AdvDsMasterAdapter.csv
- AdvMbAeOPCServer.csv

with the installed version of the files at the following location:

For 64-bit:

```
...\Program Files (x86)\ABB Industrial IT\Operate IT\AC 400  
Connect\Bin
```

For 32-bit:

```
...\Program Files\ABB Industrial IT\Operate IT\AC 400  
Connect\Bin
```

If any customization was done to the old files, update the installed version of the files with the corresponding changes.

Copy the DATHR Files

Perform the following on each Connectivity Server node:

1. Copy the saved files:

- DATHR1.CD
- DATHR2.CD
- DATHR3.CD

to the folder:

```
...\ProgramData\ABB\AC400Connect\AdvantBase\Data\  
RTA\Init\
```

to the node where they belong.

Reconfigure RTA Board Control Aspect Settings



If the RTA board IP is configured different than the default IP (172.16.168.50), change the RTA board IP in the registry of Advant Connectivity Server before proceeding.

Path: **HKEY_LOCAL_MACHINE > SYSTEM > CurrentControlSet > Services > PU410 > Parameters > slvBoard**

Change the IP in string **IPAddress**.

1. Open the MB 300 RTA Settings dialog box in Configuration Wizard and reconfigure:
 - MB 300 Node and Network Numbers.
 - Check **800xA as Clock Master (REVERSED_SYNC_MODE)** in case the time synchronization key REVERSED_SYNC_MODE was previously enabled.

2. Always Restart the RTA board.
3. The Audible property must be 0 for events and 1 for alarms 800xA for Advant Master version 4.1 SP1 RU6 and newer. Refer to *System 800xA Configuration (3BDS011222*)* for configuration of audible alarms.

Safeguard standardevent 300 - 326 does not comply with this rule before 800xA for 800xA for Advant Master Version 5.0 SP2. The Event numbers where the Audible property should be changed from 1 to 0 are:

- EVENT302.
- EVENT305.
- EVENT310.
- EVENT312.
- EVENT320.
- EVENT321.
- EVENT322.
- EVENT325.

800xA for Harmony

Use the following procedure to restore 800xA for Harmony information:

1. Log in to the 800xA Installing User account (or a local Administrator account) on the Configuration Server or Configuration Server with Connectivity Server node.
2. Restore the 800xA for Harmony Configuration information that was saved during [800xA for Harmony](#) on page 90.
 - a. Select:
Start > All Programs > ABB Industrial IT 800xA > 800xA for OCS Systems > Harmony > Configuration > Restore Configuration
 - b. Click **Connect** in the Harmony Connect Configuration Backup/Restore window.
 - c. Enter the name of the Harmony Configuration Server database backup file in the Backup File field.
 - d. Click **Restore**.

- e. If a prompt appears indicating that the system version does not match the backup version, click **Yes**.
- f. If the message `Services must be stopped, REBOOT system now then restart this application!` is displayed, restart the node and repeat [Step a](#) through [Step e](#).
- g. The Backup/Restore program compares the old configuration in the backup file to the current configuration of the newly installed system. If the hosts of the Primary and Redundant Connectivity Servers do not match, a dialog box will appear allowing the user to map the old Connectivity Server node names to the new Connectivity Server node names.
- h. Leave the **Create Missing Servers in Installed Configuration (Disaster Recovery)** check box disabled.
- i. Click **Exit** when the restore operation is complete.

800xA for AC 870P/Melody



Restore existing backups for project specific changes (if available) for: (Refer also to [800xA for AC 870P/Melody](#) on page 92.)

- DHCP Server Configuration.
- ETC Host files for 800xA for AC 870P/Melody Connectivity Servers.
- Changes in the Default Object Types.
- ConvDB changes of the Configuration Server.

Perform the following post upgrade procedures for 800xA for AC 870P/Melody.

- [Restore 800xA for AC 870P/Melody Information](#).
- [Additional 800xA for AC 870P/Melody Configuration Steps](#).

Restore 800xA for AC 870P/Melody Information

Perform the following procedure to restore 800xA for AC 870P/Melody information:

1. Log in to the 800xA Installing User account (or a local Administrator account) on the Configuration Server node.

2. Restore the 800xA for AC 870P/Melody Configuration information that was saved during [800xA for AC 870P/Melody](#) on page 92.
 - a. Select:
Start > All Programs > ABB Industrial IT 800xA > 800xA for AC 870P Melody > Configuration > Restore Configuration
 - b. Click **Connect** in the Melody Connect Configuration Backup/Restore window.
 - c. Enter the name of the Melody Configuration Server database backup file in the Backup File field.
 - d. Click **Restore**.
 - e. If a prompt appears indicating that the system version does not match the backup version, click **OK**.
 - f. If the message `Services must be stopped, REBOOT system now then restart this application!` is displayed, restart the node and repeat [Step a](#) through [Step e](#).
 - g. Click **Exit** when the restore operation is complete.



If there are specific faceplates in use (process industries or utilities), the faceplates must also be upgraded. Refer to the faceplate related documents for further instructions.

Additional 800xA for AC 870P/Melody Configuration Steps



Information on performing these additional configuration steps can be found in *800xA for AC 870P/Melody Configuration (3BDD011741*)* and *System 800xA Post Installation (3BUA000156*)*.

Perform the following configuration steps after adding the 800xA for AC 870P/Melody **Configuration Server** to the 800xA System.

1. Melody Executive Service Provider.
2. Tag Importer.
3. Enable the Melody AutoConfigurator service in **Plant Explorer > Service Structure**.
4. Replication Monitor Internet Explorer Security Settings.

Perform the following configuration steps after adding each 800xA for AC 870P/Melody **Connectivity Server** to the 800xA System.

1. Melody Executive Service Provider.
2. OPC Data Source Definition.
3. Alarm and Event Provider Setup.
4. Replication Monitor Internet Explorer Security Settings.

800xA for MOD 300

1. Re-initialize PAS System Services on the Connectivity Server.



The PAS System Services will not start until the communications settings are initialized as described in the following steps.

2. Initialize the OMF settings to start system services. Use the Administrative Tools in Windows Control Panel to select:

PAS > Settings

This displays the Communications Configuration Tool.



The message:

Would you like to revert back to saved settings?

is displayed if settings were previously saved. To restore the previous settings, perform [Step a](#) through [Step d](#).

- a. Select **Yes** at the message

Would you like to revert back to saved settings?

This opens the Communication Settings display.

- b. Select **OK** on the Communication Settings display to save the settings and close the window.

- c. Select **OK** to the message:

Settings have been saved . . .

- d. Select **OK** when the message appears that indicates the settings have been changed. A restart is always required if the Control Network Setting, OMF Memory, or TCP/IP enabled setting are changed.

3. Restart Windows at this time.
4. Reverse_Time synch will be disabled following the re-installation of PAS. If the Connectivity Server node sets the time on the Real-Time Accelerator Board (RTAB), Reverse_Time_Synch must be enabled. Refer to the **800xA for MOD 300** section in *System 800xA Post Installation (3BUA000156*)*.
5. If any objects were customized, those changes must be implemented again on objects delivered with 800xA for MOD 300 Version 5.1.
6. Update the registry settings previously recorded. Refer to *800xA for MOD 300 Configuration (3BUR002417*)*.

PLC Connect

Perform the following post upgrade procedures for PLC Connect.

Modify Installation for IEC 60870 or Basic Project Objects

If either the IEC 60870 or Basic Project Objects features were installed:

1. Use standard Windows procedures to access Programs and Features in Windows Control Panel.
2. Select ABB PLC Connect.
3. Select Change/Modify.
4. The InstallShield Wizard for PLC Connect appears. Refer to *System 800xA Manual Installation (3BSE034678*)* to select and install the desired features.
5. If the IEC60870 feature is installed refer to *System 800xA PLC Connect Configuration (3BSE035041*)* and reload the saved IEC configuration.

Restoring the Pretreat dll

To restore the Pretreat dll:

1. If the PLC Connect Communication Server Pre Treatment function is being used in the application, copy the Pretreat dll file (Pretreat3.dll or Pretreat4.dll) from the backup location to the same folder as it was backed up from on the PLC Connect Connectivity Server. If the default folder is used, that location is:

... \ABB Industrial IT\Operate IT\PLC Connect\Bin

2. Register the Pretreat dll file (refer to *System 800xA PLC Connect Configuration (3BSE035041*)* for more information).
3. Restart the PLC Connect Connectivity Server for the changes to take effect.
4. Restore the project and source files for the Pretreat dll.

Update the Sattbus Configuration

Perform the following if the Sattbus protocol is used for any of the controllers:

1. Select the PLC Controller Configuration aspect for the controller that uses Sattbus protocol and click **Edit Driver**.
2. Configure the Common System Settings and click **OK**.
3. Restart the Connectivity Server.

Redeploy the PLC Connect Configuration

To redeploy the PLC Connect configuration:

1. Use the Structure Selector to open the **Control Structure** in the Plant Explorer Workplace.
2. Use the Object Browser to navigate to the first Generic Control Network object.
3. Select **Deploy** in the Aspect List Area.
4. Press the SHIFT key and click **Deploy** in the Preview Area to ensure that a full deploy is done.
5. The deploy begins and the progress is displayed in the Preview Area. The deploy is completed when **Deploy ended** is displayed.
6. Repeat the procedure for any additional Generic Control Network objects.

Asset Optimization

Use the following procedure after updating Asset Optimization. Perform only the steps applicable to the system.

1. Asset Monitoring:



Asset Monitoring directories **must** be restored on every Asset Optimization Server node defined in the system.

- a. If Runtime Asset Monitors are being used in the system, restore the Runtime Asset Monitor data directory (DeviceRunTimeMSLogicStore) to the following directory:

```
... \Program Files (x86) \ABB Industrial IT \Optimize
IT \Asset Optimization \AssetMonitorEnvironment \Bin
```



The saved data contains the Runtime Asset Monitor data present at the time of the save. Use the Runtime Asset Monitor faceplate to reset the Asset Monitors by adding the lost time to their accumulated run time or with some known values based on other records. Ignore any alarms occurring during the backup.

- b. If XY Profile Deviation Asset Monitors are being used in the system, restore the XY Profile Deviation Asset Monitor data directory (XY_Reference_Profiles) to the following directory:

```
... \Program Files (x86) \ABB Industrial IT \Optimize
IT \Asset Optimization \AssetMonitorEnvironment \Bin
```

- c. If Counter Check Asset Monitors are being used in the system, restore the Counter Check Asset Monitors data directory named:

```
{66E71F7B-90D6-4E62-9881-38388B24CBDF}
```

from safe media. This directory exists for each AO Server in the system. These directories are located in:

```
<install drive>:\OperateITData\AoEng\<<AO Server ID>\
AmCat
```

Where each <AO Server ID> directory represents one AO Server instance from which the directory:

```
{66E71F7B-90D6-4E62-9881-38388B24CBDF}
```

was originally saved from. The <AO Server ID> directory name is formatted as two consecutive GUIDs, for example:

```
{F9C150F5-2929-4A12-BC28-E00ED6DB1585}{B925E77F-2A82-
41C6-A981-FAB4386D5701}.
```

2. Maximo Integration:



cpmPlus Enterprise Connectivity Version 4.0 (ECS 4.0) must be installed in order to access Maximo Server Version 6.2.



The Maximo Integration information (Maximo Equipment ID and Maximo Credentials aspects) **must** be restored on all Asset Optimization Server nodes. Reference the **Service Structure** for the Asset Optimization Server.

- a. Refer to *System 800xA Asset Optimization Configuration (3BUA000118*)* to configure ECS.
- b. If the MxDef files were customized, restore the MxDef files to the following directory:

```
... \Program Files (x86) \ABB Industrial IT \Optimize  
IT \Asset  
Optimization \AOECSConnector \MxDef \
```

Refer to *System 800xA Asset Optimization Configuration (3BUA000118*)* for more information on MxDef files.

- c. Restore the AOMaximoModel file to the following location if the ECS model was customized:

```
... \Program Files (x86) \ABB Industrial IT \Optimize  
IT \Asset Optimization \AOECSConnector \ECSDefinitions
```
- d. Ensure that the ABB Maximo Connectivity system extension is loaded.



The pending fault reports residing in the system can be restored to the following directory structure:

```
... \OperateITData \OptaoACDs
```

Restore the entire OptaoACDs folder.

3. SAP/PM Integration:



cpmPlus Enterprise Connectivity Version 4.0 (ECS 4.0) must be installed in order to access SAP Server Version 4.7.



The SAP/PM Integration information (SAP Equipment ID and SAP Credentials aspects) **must** be restored on all Asset Optimization Server nodes. Reference the **Service Structure** for the Asset Optimization Server.

- a. Refer to *System 800xA Asset Optimization Configuration (3BUA000118*)* to configure ECS.
- b. If the SAPDef files were customized, restore the SAPDef files to the following directory:


```
... \Program Files (x86) \ABB Industrial IT \Optimize IT \Asset Optimization \AOECSConnector \SAPPMDef
```
- c. Restore the AOSAPModel file to the following location if the ECS model was customized:

```
... \Program Files (x86) \ABB Industrial IT \Optimize IT \Asset Optimization \AOECSConnector \ECSDefinitions
```

Refer to *System 800xA Asset Optimization, Configuration (3BUA000118*)* for more information on SAPDef files.

- d. Ensure that the ABB SAP Connect system extension is loaded.



The pending fault reports residing in the system can be restored to the following directory structure:

```
... \OperateITData \OptaoACDs
```

Restore the entire OptaoACDs folder.

4. DMS Calibration Integration.



The DMS Calibration Integration approach is changed in 800xA 5.1. Upgrade of DMS Calibration Integration is not supported. Reconfigure the DMS Calibration Integration based on an engineered solution.

Contact ABB technical support for more information.

5. Asset Monitors that are assigned (via the Configure option drop-down list box on the Asset Monitor Instance on an Object) to a particular AO Server object and Asset Optimization Server aspect (by Object name:Aspect name pair), will not be correctly configured after the upgrade. The AO Server property will be unconfigured and the following error message will appear:

```
Unable to resolve AO Server for this Asset Monitor configuration
```

This must be resolved before the Asset Monitor Logic can be loaded into an AO Server:Asset Optimization Server for execution. Refer to the **Object Type Structure** for Asset Optimization, Object Type Group:AO Server, Object Type.

6. After a restore of a 800xA 5.0 SP2 system, the Asset Optimization Server (Monitor Server/Engine) is running. The **AO Server** tab of the Asset Monitoring Server aspect will show a status of good: AM Engine running.
 - a. Clicking the **Asset Monitors** tab and selecting **AMs assigned to this AO Server** will show that the values in the Status column are NOT Loaded, enabled.
 - b. Click **Load all AMs** to reload all enabled Asset Monitors assigned to this AO Server.



:The **Enable Write Access** check box must be selected in the Asset Monitor Data Source aspect before loading Runtime Asset Monitors into the AO Server. Refer to *System 800xA Asset Optimization Configuration (3BUA000118*)* for more information.

PC, Network and Software Monitoring

In the 800xA 5.1 and later releases, a set of IT Asset type objects are deprecated. The new enhancements, Process Graphics 2 and Native Language Support (NLS), are not applied to deprecated IT Asset type objects. Replacements of deprecated IT Asset type objects are delivered in PNSM Device Library. It is recommended to migrate deprecated IT Asset type objects to PNSM Device Library in case the system being upgraded has all Process Graphics 2 graphics and no VB graphics. Refer to [Appendix H, Mapping of Deprecated IT Asset Object Types](#).



Migration from deprecated IT Asset type objects to the PC, Network and Software Monitoring Device Library is not mandatory in case the system being upgraded already has VB graphics.

The following steps describe the migration procedure.

1. Download IT Asset type objects in PNSM Device Library that replaces the deprecated IT Asset type objects which are used in the current configuration. The download link is <http://www.abb.com/controlsystems>.
2. Migrate each deprecated IT Asset type object to its replacement IT Asset type object in PNSM Device Library

- a. Instantiate and configure PNSM Device Library objects.
- b. Delete deprecated IT Asset type objects.



Reconfigure all applications referring to deprecated IT Asset type objects. For example, Logging of OPC data into history archive.

3. To upgrade to a newer version of the Light Generic Computer Process object type, it is required to delete all old instances and replace them with the newer version of the Light Generic Computer Process object type. Refer to the Process Monitoring section of *System 800xA PC, Network and Software Monitoring Configuration*.

Perform the following post upgrade procedure for PC, Network and Software Monitoring.

1. If user defined Script, Resource, and Assembly files were backed up, copy the saved files from the safe media to the following directories:

```
...\Program Files (x86)\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Scripts\User
```

```
...\Program Files (x86)\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Assemblies\User
```

```
...\Program Files (x86)\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Resources\User
```



There are more PC, Network and Software Monitoring steps that need to be performed after the system extension maintenance has been performed. Refer to [PC, Network and Software Monitoring](#) on page 147.

800xA for Harmony/Melody Connectivity Server Node Update

The following procedure is only applicable to 800xA for Harmony and 800xA for Melody Connectivity Server nodes.



Do not perform this procedure on a server node that is running Shadow OPC Server as AfwService.

Determining the Node Running ShadowOPC Server as AfwService

To identify the node that is running ShadowOPC Server as AfwService:

1. Refer to *System 800xA 5.1 PC, Network and Software Monitoring Configuration (3BUA000447*)* and verify that the Shadow OPC Service is configured.
2. Open a Plant Explorer Workplace.
3. Use the Structure Selector to open the **Control Structure**.
4. Use the Object Browser to navigate to:
`IT Server, IT OPC Server Network`
5. Select `OPC Data Source Definition` in the Aspect List Area.
6. Click **View** in the Preview Area to launch the Service Group Definition dialog.
7. Select `service provider` from the Providers list.
8. Click **View** to launch the Service Provider Definition dialog.
9. The *Node* in the **Configuration** tab is the name of the node that is running ShadowOPC Server as AfwService.
10. Close all dialogs.

Applying the Update

Perform the following procedure on all 800xA for Harmony and 800xA for Melody Connectivity Server nodes.

1. Insert the System Version 5.1 Released Documents CD into the drive.
2. Use Windows Explorer to locate and copy `ABBShadowOPC.exe.config` in the `Updates` directory on the CD.
3. Use Windows Explorer to navigate to the following directory on the local hard drive:
`...:\Program Files\ABB Industrial IT\Optimize IT\PC, Network and Software Monitoring\bin`
4. Make a backup of the existing `ABBShadowOPC.exe.config` file.

5. Paste the file copied in [Step 2](#) to the hard drive location navigated to in [Step 3](#).
6. Restart the node.
7. After the restart, use Windows Task Manager to verify the KeepAliveApp.exe is not in the list of processes.

PNSM Device Library Restore Procedure

Perform the following post upgrade procedure for PNSM Device Library:

1. Copy the MOF files from the safe location to the directory, if MOF files were backed up:

```
... \Program Files\ABB Industrial IT\Optimize IT\PC,  
Network and Software Monitoring\MOFS
```

2. Copy the Custom Asset Monitor dlls from the safe location to the following location for object types with Custom Asset Monitors:

```
... \Program Files\ABB Industrial IT\Optimize  
IT\PC, Network and Software Monitoring\Asset  
Monitoring\Bin
```

Use the Register.dll bat file present in the Object Type to register this dll automatically.

3. Copy the Windows Management Instrumentation (WMI) repository to the directory if the files were backed up. Perform the following steps to back up and restore the the WMI repository.
 - a. Right-click **Computer** and select **Manage. Computer Management** is displayed.
 - b. Expand **Configuration** on the left panel. Select **WMI Control**.
 - c. Right-click WMI Control and select **Properties**. The Properties dialog box is displayed.
 - d. Click **Backup/Restore** Tab.
 - e. Click **Back Up Now...**, Specify a name for your backup file window is displayed.

- f. Enter the name of the backup file and click **Save**.

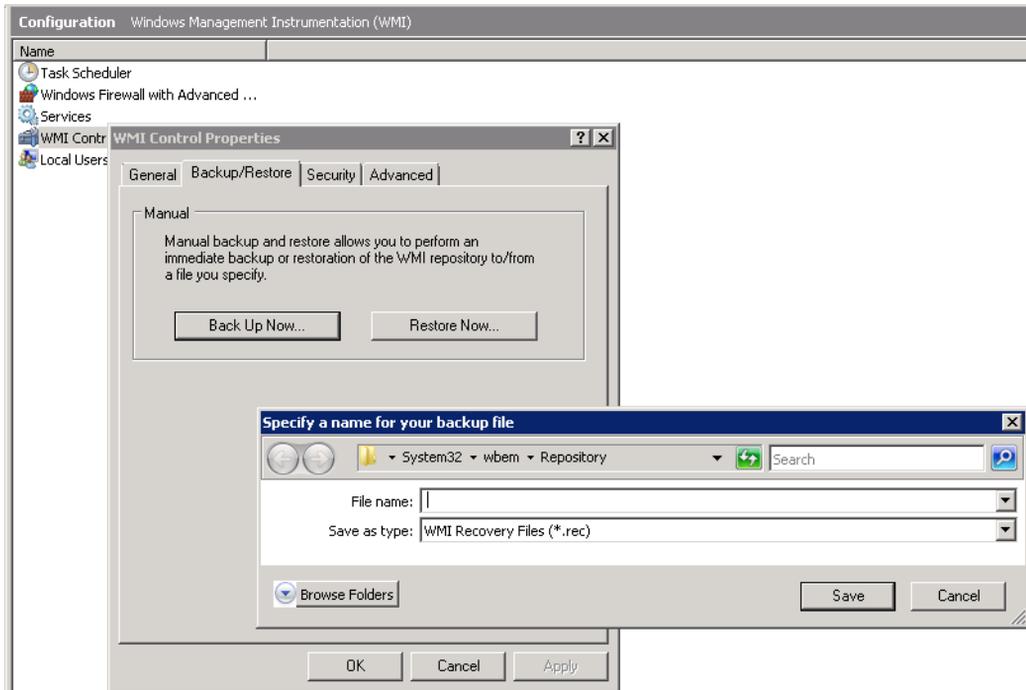


Figure 20. WMI Backup File

- g. Click **Restore Now...**, Specify a backup file to restore window is displayed.
- h. Select the file and click **Open** to restore the backed up file.

SMS and e-mail Messaging

Reconfigure the GSM Device hardware information recorded in the save operation (refer to [SMS and e-mail Messaging](#) on page 98).



It may be necessary to stop and start the Messenger Server Service in the **Service Structure** after the SMS and e-mail Messaging restore operation.

Batch Management

Verify that the primary Batch Server is in primary mode (P is displayed in the Windows Task bar) and the secondary Batch Server is in secondary mode (S displayed in the Windows Task bar). If the proper modes are not displayed, enable the Batch Service Group before proceeding.

To enable the Batch Service Group:

1. Open a Plant Explorer Workplace.
2. Select the **Service Structure**.
3. Select the Services\Batch Service, Service\batch_group_name, Service Group\Service Group Definition aspect.
4. Select the Configuration tab.
5. Select the provider that is currently the secondary Batch Server.
6. Select the **Enabled** check box and click **Apply**.
7. Select the provider that is currently the primary Batch Server.
8. Select the **Enabled** check box and click **Apply**.

Batch data can be reloaded to the batch database from wherever it was archived.



The Batch history archive and restore aspect has been removed in SV5.1.

Perform the following to view any Batch data archived from SV5.0 or previous versions of the Batch product:

1. Create a Virtual Machine (VM) node with the existing system version and its components.
2. Restore Batch data using the Batch Restore window onto this virtual machine.

Once the restored data is in the batch database, it can be viewed using the Batch History Overview window.

Do not restore directly from CDs or DVDs. Restore from hard disk drives which can be restored from CDs or DVDs using commercially available software.

Selecting the Alarm Server

To select the Alarm Server:

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Service Structure**.
3. Use the Object Browser to select:

```
Services > Event Collector, Service >  
Batch_AE_Service, Service Group
```
4. Select `Service Group Definition` in the Aspect List Area.
5. Select the **Special Configuration** tab in the Preview Area.
6. Select Produce IT Batch OPC AE Server in the Alarm Server field.
7. Click **Apply**.



Always perform the Toolbar configuration as described in *System 800xA Batch Management Configuration* and shutdown script procedure as described in the Batch Management section of *System 800xA Post Installation (3BUA000156*)*.

Basic History Service

Restore the Basic History Service data as follows. Perform this procedure on every node where the Basic History Service is running.

1. Stop the Basic History Server from the **Service Structure** by the following procedure:
 - a. Open a Plant Explorer Workplace.
 - b. Use the Structure Browser to open the **Service Structure**.
 - c. Select the **Basic History, Service > Basic, Service Group**.
 - d. Select the Service Group Definition aspect.
 - e. Click the **Configuration** tab.
 - f. Clear the **Enabled** check box and click **Apply**.
2. If it is necessary to keep historical data for the time since the upgraded system was started, copy the current Basic History log files in the following directory:

```
... \OperateITData\History\{provider ID}
```

to a temporary directory.

These files will be inserted by using the Archive Tool.

3. Delete all files under:

```
... \OperateITData\History\{provider ID}
```

4. Restore the files from the backup of Basic History Service Data to:

```
... \OperateITData\History\{provider ID}
```

5. Start the Basic History Service from the **Service Structure**.

6. If [Step 2](#) was performed:

- a. Open the AdvHtArchiveTool located by default in the following directory:

```
... \Program Files\ABB Industrial IT\Operate IT\Process  
Portal A \bin
```

- b. Use the File/Select/Open Archive command and browse to the directory containing the history log files.
- c. Open the Action/Insert Data into Logs command.
- d. Accept the default values in the Time Selection dialog box.
- e. Click **OK** to start the insertion of the saved data to the logs.

Calculations Service

Calculations that were disabled prior to the upgrade must be enabled by selecting the **Enabled** check box in the Calculations dialog box. Refer to the section on Calculations in *System 800xA Information Management Data Access and Reports (3BUF001094*)*.

To enable the Calculations Service:

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Service Structure**.
3. Select the Calculations Service Object.
4. Select the Service Definition aspect.

5. Click the **Configuration** tab.
6. Select the **Enabled** check box and click **Apply**.

Scheduling Service (Application Scheduler)

Schedules that were disabled prior to the upgrade must be enabled by selecting the **Enabled** check box in the Scheduling dialog box. Refer to the section on Scheduling in *System 800xA Information Management Data Access and Reports (3BUF001094*)*.

To enable the Scheduling Service:

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Service Structure**.
3. Select the Scheduling Service Object.
4. Select the Service Definition aspect.
5. Click the **Configuration** tab.
6. Select the **Enabled** check box and click **Apply**.

Process Engineering Tool Integration

Use the following procedure after updating Process Engineering Tool Integration:

Restore the backed up data directory (in preparation-step prior to upgrade) to the installed directory of Process Engineering Tool Integration. Restore the entire Xml directory contents to:

```
...\Program Files\ABB Industrial IT\Engineer  
IT\Engineering Studio\Process Engineering Tool  
Integration\Xml
```

Miscellaneous Procedures

Perform the following procedures:

- [Upgrade Control Builder M Projects.](#)
- [PC, Network and Software Monitoring.](#)
- [Add Autostart Shortcut.](#)

Upgrade Control Builder M Projects



After upgrading a configuration containing one Engineering and one Production system to 800xA 5.1 Feature Pack, the Control Builder M projects in the two systems should be made identical using the Import/Export tool, Engineering Repository, or by recreating the Engineering System using Backup/Restore before engineering work is restarted. Otherwise there will be a lot of false differences on the AC 800M aspects reported in the import difference report when moving solutions between the systems.

800xA 5.1 Feature Pack 4 has introduced a new (*major*) version. The 800xA 5.0 SP2 version of BasicHWLib (5.0-2) and the 800xA 5.1 version of BasicHWLib (5.1-0) can coexist with the new version (5.1-1) in the 800xA System, and must be used if any controllers are going to stay with the firmware from 800xA 5.0 SP2 and/or 800xA 5.1.

The Control Builder project upgrade will be started automatically the first time the project is opened. It can also be explicitly triggered by starting an empty Control Builder and selecting:

Tools > Maintenance > Upgrade Project

During the upgrade Control Builder asks if the user wants to use the new (5.1-1) or old (5.0-2 or 5.1-0) BasicHWLib version for the controllers in the project. If the intention is to upgrade controller firmware the new version should be selected. If the intention is to not upgrade controller firmware the old version must be selected.

PC, Network and Software Monitoring

1. Perform the following steps on the PC, Network and Software Monitoring Server node.
 - a. Use the Structure Selector to open the **Service Structure** in the Plant Explorer Workplace.
 - b. Use the Object Browser to navigate to the:
`Services > OpcDA_Connector, Service > SG_IT Server` object. If there is no object to navigate to, skip to **Step 1** (letter I, not number 1).

- c. Open the OPCDA_Provider_<servername> object and double-click on the Service Provider Definition aspect.
 - d. On the **Configuration** tab, clear and select the **Enabled** check box and click **Apply**. The **Current** field should change to *Service*.
 - e. Use the Structure Selector to open the **Control Structure**.
 - f. Use the Object Browser to navigate to the IT Server object.
 - g. Double-click OPC Data Source Definition in the Aspect List Area.
 - h. Click on the **Service Group** drop-down menu and select the SG_IT Server.
 - i. Click on the OPCDA_Provider_<servername> which was configured in [Step c](#).
 - j. Click **Apply**.
 - k. Skip to Migrate the IT Asset Monitors ([Step 2](#)).
 - l. Use the Structure Selector to open the **Control Structure**.
 - m. Use the Object Browser to navigate to the IT Server object.
 - n. Double-click OPC Data Source Definition in the Aspect List Area.
 - o. Select **New**.
 - p. Click **Add** and select the appropriate Service Provider from the list.
 - q. Click **OK** twice.
 - r. Click **Apply**.
2. Migrate the IT Asset Monitors. If Asset Optimization **and** PC, Network and Software Monitoring were installed on the 800xA 5.0 SP2 System, then the following must be done for any existing IT Assets that had IT Asset Monitors configured for them.
 - a. Use the Find Tool in the Plant Explorer Workplace to locate all the IT Asset Monitor aspect instances in the **Control Structure**.
 - b. Right-click on each of the found aspects and select **Goto Object**.

- c. Open the IT Device Manager aspect and click **Generate** to recreate the IT Asset Monitor.
- d. Repeat [Step c](#) for each object in the Find list.
- e. Use the Object Browser to navigate to:
Root, Domain > Asset Optimization, Asset Optimization > AO Server 1, AO Server
- f. Select Asset Optimization Server in the Aspect List Area.
- g. Select the **Enabled** check box in the **AO Server** tab and click **Apply**.
- h. Click **Load all AMs** in the **Asset Monitors** tab.



Basic Computer Monitoring will not upgrade properly from a previous version to the current version. Use the Basic Computer Monitoring Configuration Tool to recreate the configuration.

Add Autostart Shortcut

If it is desired to enable the autostart of the Operator Workplace on client nodes, perform the following:

1. Define a default workplace.
2. The shortcut must be created from the ABB Workplace login window.
3. The shortcut is located in:

```
...:\Users\Username\AppData\Roaming\Microsoft\Windows\Start Menu\Programs\Startup
```

4. Right-click the shortcut and select **Properties** from the context menu.
5. Add the following to the shortcut target:

```
/WS
```

-or-

```
/WaitForSystem
```

6. Click **OK**.

Online Upgrade of a Multisystem Integration System

Perform the following to upgrade a Multisystem Integration 800xA System online.

1. Refer to [Online Upgrade](#) on page 64 and perform all steps for the Subscriber System.
2. Refer to [Online Upgrade](#) on page 64 and perform all steps for each Provider System where it is desired to perform an upgrade.

System Backup

Make complete hard disk and 800xA System backups of the upgraded system.

Section 4 Upgrading 800xA 5.0 SP2 to 800xA 5.1 Offline



Upgrading the 800xA System from 800xA 5.0 SP2 to 800xA 5.1 for systems without redundant Aspect and Connectivity Servers requires the plant to be shut down. To guarantee the functionality of the upgraded system, follow the upgrade instructions for the installed products and perform them in the order presented.



Refer to the 800xA for Harmony section of *System 800xA Release Notes New Functions and Known Problems (2PAA106188*)* before upgrading an 800xA 4.1 System if 800xA for Harmony is installed on any node in the system.

Unless otherwise indicated, the person performing this upgrade must use the same user account that was used during the installation of the 800xA System software.

Considerations

The following considerations must be taken into account before performing the upgrade.

- Unless otherwise indicated, the person performing this upgrade must use the same user account that was used during the installation of the 800xA System software.
- To guarantee the functionality of the upgraded system, follow these instructions carefully and perform them in a well defined order.
- It is recommended that a disk image be taken of all disks on each node before beginning and after completing the upgrade.
- Backing up the aspect directory (800xA System Backup), reports, history data, graphics, and other application data is required before performing the upgrade.

- Take an inventory of all software on all nodes in the 800xA System before performing the upgrade.

Control Builder M Compatibility Issues

Refer to the compatibility issues detailed in [Appendix B, Control Builder M Compatibility Issues](#) before beginning the upgrade.

Upgrade Flow

This section is organized so that the instructions are presented in the proper upgrade order. Do not skip any steps that pertain to 800xA software being used in the current or upgraded system. Refer to [Planning for the Upgrade](#) on page 35 for additional information and ideas on how to streamline the upgrade process.

Central Licensing System



Order the 800xA licenses required for the current system version and revision. The 800xA 5.0 SP2 licenses will not work.

System Upgrade

Perform the following to upgrade the 800xA System.

1. Document all Windows settings including the domain, DNS, policies, users, etc.
2. Refer to the Diagnostics Collection Tool section in *System 800xA Tools (2PAA101888*)* and run the Software Analyzer from the Primary Aspect Server in the 800xA 5.0 SP2 System. This allows for an analysis of the software installed on the different nodes in the 800xA System with an opportunity to correct errors in the 800xA 5.0 SP2 System before upgrading. This is especially helpful when using the System Installer to generate setup packages based on the 800xA 5.0 SP2 System. If there is missing or incorrect software in that version, the System Installer will duplicate that installation in the 800xA 5.1 System.

3. Refer to [Appendix D, Consistency Check](#) and perform the necessary consistency checks.



Perform a consistency check before performing the 800xA System backup. Failure to do so could result in problems when restoring the system after the upgrade.

4. Refer to [Appendix E, Recording the Number of Aspects and Objects](#) and record the number of aspects and objects in the system before performing the 800xA System Backup.
5. It is important to create backups of node hard disks and the 800xA System before starting the upgrade procedures. Valid backups insure that the system can be restored if necessary.
 - a. It is recommended that a third party backup/restore and/or disk imaging utility be used to save (and restore if necessary) all disks on each node before starting the upgrade procedures.
 - b. This procedure only applies to installations with IEC 61850 Connect installed, which use a user-defined Graphic Library for applications.

While updating from previous system version, it is observed in Functional Structure that all PG2 Faceplate Element and PG2 Graphic Element aspects have the same name as **Faceplate Element**.

Before performing System Backup in the previous system revision, select Object Type Structure > IEC61850 user-defined Library and perform the following for all PG2 Faceplate Element and PG2 Graphic Element aspects of all Conducting Equipment objects:

- Right-click the aspect and select Details option.
- In the **Aspect info** tab,
 - Remove **Auto Instantiate** aspect and **Template** aspect.
 - Select the **Inheritance Enabled** option.
- Perform Upload operation with the relevant scd file.



Use the updated scd file if the [Step b](#) is performed in running Plant conditions, to ensure that there are no disturbances after performing the upload operation.

- c. Perform the 800xA full backup from the **Maintenance Structure** (Aspect Directory backup type).



Avoid engineering or any other changes especially to the Aspect system during the 800xA Backup process.

The 800xA Backup/Restore function makes it possible to make an online backup of a node and perform an offline restore of the same node. A full backup stores all aspect objects and aspect data (application data) in the Aspect Directory.



Verify the Batch Management Servers are operating normally before and during 800xA System backups of systems containing Batch Management nodes. This will ensure the backup of all batch data.

All system extensions that are part of the system must be installed and loaded on the node where the backup will be taken (usually the primary Aspect Server node). No changes can be made (especially to the Aspect directory) during the 800xA Backup process.

When backing up a system with Environments, both the Production and Engineering Environments will be included in the backup. Only the current version of each aspect will be included in the backup. This means that all version history will be removed.



It is only possible to perform the 800xA System backup from the Production Environment.

- Open a Plant Explorer Workplace.
- Use the Structure Selector to open the **Maintenance Structure**.
- Create a Full Backup Definition object.
- Configure the **Scope** and **Storage** tabs.
- Check the disk space and path in the **Storage** tab. A large configuration could require a minimum of five gigabytes of free space.
- Start the backup process.

- Refer to the How to Make a Full Backup topic in *System 800xA Maintenance (3BSE046784*)* for more detailed information on performing the 800xA System Backup.



If using the System Installer to perform the upgrade, generate the setup packages before shutting down services.

6. Refer to [Pre-Upgrade Procedures](#) on page 157 and perform the pre-upgrade procedures that are applicable to the installed system.
7. Perform the following procedure to shut down the 800xA System:
 - a. Stop all external clients to the 800xA System (OPC DA, HDA, and AE clients that access the 800xA System) before a system shutdown.
 - b. From the Configuration Wizard, select **System Administration** and click **Next**.
 - c. Select the system to stop and click **Next**.
 - d. Select **Systems** and click **Next**.
 - e. From the Systems dialog box, select **Stop** and click **Next**.
 - f. From the Apply Settings dialog box, click **Finish**.



The 800xA System will shut down within a couple of minutes. The time it takes to shut down may be more or less depending on the size of the 800xA System.

8. Reformat the hard drives of all 800xA System nodes.
9. Install the new operating system defined for the 800xA 5.1 System on all 800xA System nodes. Click **Advanced** when installing the Workstation Operating System or the Server Operating System. This is required to delete the existing partition and recreate a new one. Failure to perform this step will leave old data on the hard drive.
10. Refer to Section 2 - Prerequisites in:
 - Manual Upgrades - *System 800xA Manual Installation (3BSE034678*)*.
 - Automated Upgrades using System Installer - *System 800xA Automated Installation (3BSE034679*)*.

and perform all procedures relating to operating system settings, Windows service packs, miscellaneous Windows components installation, other third

- party software, group policy, 800xA Service User privileges, and Windows updates and hot fixes.
11. Refer to *System 800xA Manual Installation (3BSE034678*)* and install the 800xA 5.1 Central Licensing System Server software and install the license file, as this will be the Primary Aspect Server in the 800xA 5.1 System. This step is not necessary if performing an automated upgrade using System Installer.
 12. Refer to *System 800xA Manual Installation (3BSE034678*)* and install all 800xA 5.1 System software per the software inventory taken earlier. This step is not necessary if performing an automated upgrade using System Installer.
 13. Refer to [Installing the VB Graphics Extension Software](#) on page 176 to install Visual BASIC 6.0 with SP6 and the VB Graphics extensions if required.

Feature Pack Functionality

14. Perform the system update to the latest Feature Pack:
 - Use the System Feature Pack Update Tool (FUT) to perform the update. Refer to the *System 800xA 5.1 System Feature Pack Update Tool (2PAA107435*)* for user instructions.
-
15. Refer to [Post Upgrade Procedures](#) on page 178 of this instruction and perform all necessary steps.
 16. Perform all of the procedures described in [Miscellaneous Procedures](#) on page 225.
 17. Refer to *System 800xA Post Installation (3BUA000156*)* and configure Windows Services and Windows Firewall.
 18. It is important to create backups of node hard disks and the 800xA System after completing the upgrade procedures. Valid backups insure that the system can be restored if necessary.
 - a. It is recommended that a third party backup/restore and/or disk imaging utility be used to save (and restore if necessary) all disks on each node before starting the upgrade procedures.

- b. Perform the 800xA full backup from the **Maintenance Structure** (Aspect Directory backup type).

Pre-Upgrade Procedures

Some 800xA System software requires preparatory steps before shutting down 800xA System processes. Perform the applicable procedures in the order presented.

Customized Alarm Priority Mapping Aspects

Some customized Alarm Priority Mapping Aspects may be overwritten during the upgrade. Record all values in the Alarm Priority Mapping Aspects before beginning the upgrade so that they can be recreated after the upgrade.

800xA for AC 800M

Use the following procedure to prepare for the 800xA for AC 800M upgrade:

1. Record the service account settings in the OPC Server Setup Wizard.
2. Control Builder stores its settings (systemsetup.sys) on disk in the following directory:

```
... \ABB Industrial IT Data \Engineer IT Data \Control  
Builder M Professional
```

Copy this file to a safe media.

3. Save OPC configurations by selecting:

File > Save Configuration

in the OPC Server Panel.

4. The OPC Server stores configuration files (*.cfg) and settings (systemsetup.sys) on disk. Copy these files to a safe media. The systemsetup.sys file is located in:

```
... \ABB Industrial IT Data \Control IT Data \OPC Server  
for AC 800M
```

The configuration files are stored in the Files folder in the same location.

5. If the system to be upgraded originates from System Baseline 2.1 and has been upgraded in steps through system versions, verify that the Control Builder projects do not use the old obsolete SB2 (System Baseline 2) libraries (libraries of version 1.0-0. For example: ControlStandardLib 1.0/0.

Structured Data Logger

Use the following procedure to prepare for the Structured Data Logger (SDL) upgrade.

1. Back up the SQL Server 2000 SDL Database.
 - a. Open SQL Server Enterprise Manager.
 - b. Right-click **SDL data base** and select **All Tasks > Backup Database...** from the context menu.
 - c. Save the backup file (with .bak extension) to a safe location.

Engineering Studio

Use the following procedures to prepare for the Engineering Studio upgrade.

The Function Designer system extensions:

- Signal Extension for AC800M Connect
- Function Designer for AC800M Connect
- Topology Designer for AC800M Connect
- CI Extension for AC800M Connect
- Signal Extension for TRIO Connect
- Topology Designer for AC800M High Integrity
- Function Designer for AC 800M Classic
- Topology Designer for AC800M Classic
- Function Designer for Fieldbus Builder Profibus/Hart
- AC 800M Signal Extension Classic

mainly consist of:

- Functional Planning Object Types, including a Function Settings aspect at the Settings Object Type Group.
- Extension Libraries that add Function Designer aspects to Object Types (Control Modules, Function Blocks, etc.) created by basic libraries (AC800M Connect, AC 800M Classic, etc.).

After having loaded such a system extension in the 800xA 5.0 SP2 System, some of these aspects may have been modified; for example, to adapt Function Settings, or to change the color or layout of Function Blocks in Function Diagrams. During the 800xA System upgrade to 800xA 5.1 the system extensions of the new system are loaded. To keep the information about modified aspects, all aspects that were created by a Function Designer system extension, but later on modified are listed in the Configuration Wizard log, and are written to Afw files.

The only way to bring these modifications back into the 800xA 5.1 System is to manually merge the changes. Do not import the listed Afw files into the 800xA 5.1 System, because some additional properties/data might get lost. In the case of Function Settings, look for each settings property in the 800xA 5.0 SP2 System and perform the modifications again in the 800xA 5.1 System. In the case of modified Function Aspects (e.g. Diagram Template, Component Template), check the modifications done in the 800xA 5.0 SP2 System and perform the modifications again in the 800xA 5.1 System.



All the local language parameters used in the Function Designer need to be changed to English before the upgrade. Usage of non-English parameters in the Function Diagrams results in errors while generating configuration data.

Engineering Studio Add-Ins

Before updating/upgrading the system from previous release to the latest release ensure the Engineering Studio Add-Ins are listed in **Active Application Add-Ins** in MS-Excel.

If the Add-ins are not listed, perform [Step 3](#) through [Step 5](#) to enable them in the MS-Excel:

1. Open MS-Excel.

- Navigate to **File > Excel Options > Add-Ins > Active Application Add-ins**. Refer to [Figure 21](#) to view the Engineering Studio Add-ins.

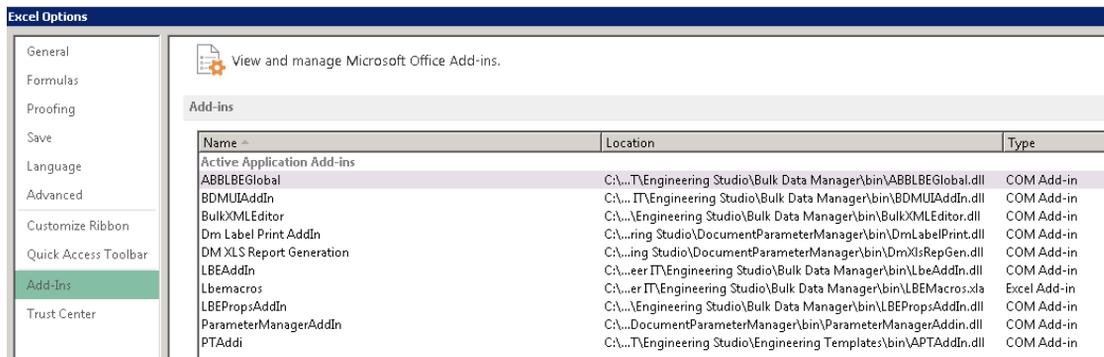


Figure 21. Engineering Studio Add-Ins

- Select **COM Add-ins** from **Manage** drop-down and click **Go...** List of COM Add-ins window appears.
- Select all the Engineering Studio Add-ins from the list and click **OK**.
- View the Add-Ins in the **Active Application Add-ins** panel on the Excel Options window.

Device Management FOUNDATION Fieldbus

Perform the following to prepare for the Device Management FOUNDATION Fieldbus upgrade.

- [User-Made Modifications to Library Objects Representing FF Standard Blocks.](#)
- [Exporting Locally Stored Parameter Value Sets.](#)

User-Made Modifications to Library Objects Representing FF Standard Blocks

User-made modifications to library objects representing FF standard blocks (these are blocks supported by the Device Type Standard FBs as indicated in the **Block Info** tab of the block class parameter dialog box) will be overwritten during upgrade. If such changes have been made, they can be reconstructed manually. Refer to [Device Management FOUNDATION Fieldbus](#) on page 201.

Exporting Locally Stored Parameter Value Sets

Export the locally stored parameter value sets as follows:

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Object Type Structure**.
3. Use the Object Browser to navigate to:
FF Libraries, Object Type Group
4. Select FF Upload in the Aspect List Area.
5. Click **Open Library in Fieldbus Builder FF**.
6. Select the Function Block from FF Block Library > Function Blocks in the Library view.
7. Double-click on the Function Block to open the properties dialog box for the chosen Function Block.

8. Right-click and select **Export** from the context menu (Figure 22).

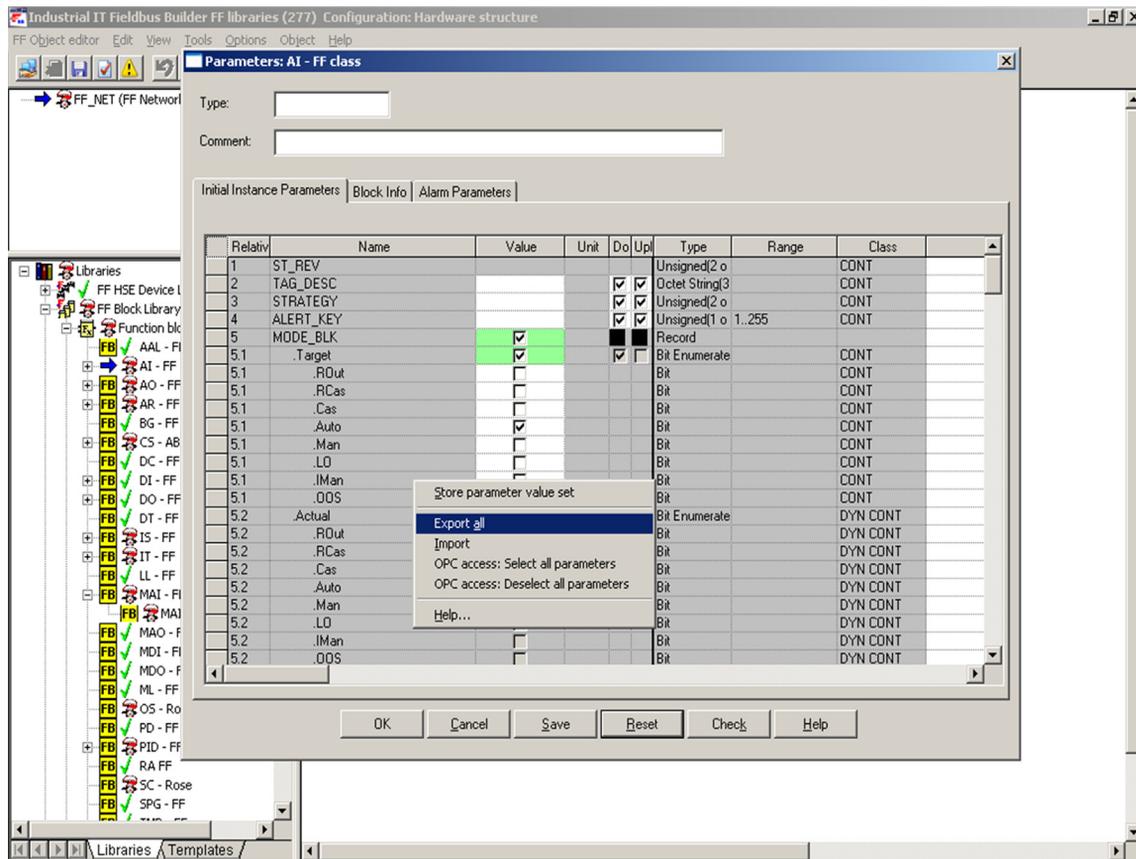


Figure 22. Exporting Locally Stored Parameter Value Sets

9. Specify the name and location of the .csv file and Click **OK**.

PROFINET IO Feature Pack 1.2

Some settings on CI871 are reset to default values when performing the upgrade of PROFINET IO Feature Pack 1.2 to 800xA 5.1. The following are affected:

- Default Gateway.
- Red.Eth.recovery time.
- Watchdog factor.

Check the CI871 settings after upgrade and enter the previous values if the settings are changed.

800xA for Advant Master and 800xA for Safeguard

Perform the following to prepare for the 800xA for Advant Master and 800xA for Safeguard upgrade.

- [Save the Advant Master Controller Licenses.txt.](#)
- [Save the Configuration Files.](#)
- [Save the DATHR Files.](#)
- [Document the RTA Board Control Aspect Settings.](#)

Save the Advant Master Controller Licenses.txt

Perform the following on the Primary Aspect Server in the 800xA 5.0 SP2 System:

1. Save the following file to a safe location.
 - Advant Master Controller Licenses.txt

The default location for the file is:

```
... \Program Files\ABB Industrial IT\Operate IT\AC 400  
Connect\Licenses
```

Save the Configuration Files

The configuration files in the Connectivity Servers can contain special configuration settings for Alarm and Event or Data access. Refer to *800xA for Advant Master; Configuration (3BSE030340*)* for more information about these special configuration settings.

If such changes are available in the configuration files, perform the following on each 800xA for Advant Master and 800xA for Safeguard Connectivity Server node: Save the following files to a safe location:

- AdvDsMasterAdapter.csv
- AdvMbAeOPCServer.csv

The default location for the files is:

```
... \Program Files\ABB Industrial IT\Operate IT\AC 400  
Connect\Bin
```

Save the DATHR Files

Perform the following on each 800xA for Advant Master and 800xA for Safeguard Connectivity Server node:

1. Save the following files to a safe location:

- DATHR1.CD
- DATHR2.CD
- DATHR3.CD

from the folder:

```
... \Program Files\ABB Industrial IT\Operate IT\AC 400  
Connect\AdvantBase\Data\RTA\Init\
```

and record which files belong to which node.

Document the RTA Board Control Aspect Settings

Perform the following on each 800xA for Advant Master and 800xA for Safeguard Connectivity Server node:

1. Document the following settings in the RTA Board Control aspect for reconfiguration after the upgrade.
 - MB300 node and network address.
 - **800xA as Clock Master (REVERSED_SYNC_MODE)** check box.

800xA for Harmony

Perform the following to prepare for the 800xA for Harmony upgrade.

Disable Harmony Services on 800xA for Harmony Servers

Stop the following 800xA for Harmony services on the 800xA for Harmony Server node being upgraded.

1. Select:

Start > Control Panel > Administrative Tools > Services

2. Disable the following services:
 - Time synchronization daemon.

- SoapSymTagAtomSrv.
- EbDataSyncService.
- EbServerBroker.
- ABBDiagnosticService.
- DD_xxxx - Where xxxx identifies the semAPI or hAPI device being used (this may or may not exist).

Perform the following steps to disable these services:

- a. Locate the service in the Services list.
 - b. Double-click the service to open the Properties dialog box for that service.
 - c. Change the Startup type to **Disabled**.
 - d. Click **Apply** and then **OK**.
 - e. Repeat for each of the services listed.
3. Restart the 800xA for Harmony Server node.

Save 800xA for Harmony Information

Use the following procedure to save 800xA for Harmony information:

1. Create a backup of the Configuration Server database.
 - a. Select:
Start > All Programs > ABB Industrial IT 800xA > 800xA for OCS Systems > Harmony > Configuration > Backup Configuration
 - b. Click **Connect**.
 - c. Click **Browse** to name the backup file and choose a location to save it.
 - d. Click **Backup**.
 - e. Click **Exit** when the backup is complete.

800xA for AC 870P/Melody



Disable the Melody AutoConfigurator service in **Plant Explorer > Service Structure** (the service must be disabled when the system maintenance backup is started).



Back up project specific changes (if applicable):

- DHCP Server Configuration.
- ETC Host files for Melody Connectivity Servers from:
...\\Windows\\system32\\Drivers
- Changes in the Default Object Types (e.g. manual changes for permissions in Control Connection Aspects).
- ConvDB changes only on Configuration Server (change to the directory ...\\Program Files\\ABB Industrial IT\\Configuration and backup the files MELCONVERTER.BAT, ConvDB.mdb and ConvDB_<Hostname>.mdb.



ConfigServer node: Ensure that no Commissioning will be done from the Melody Composer during this upgrade.

Use the following procedure to save 800xA for AC 870P/Melody information:

1. Log in to the 800xA Service account on the Configuration Server node.
 - a. Create a backup of the Configuration Server database.
 - b. Select:
Start > All Programs > ABB Industrial IT 800xA > 800xA for Melody > Configuration > Backup Configuration
 - c. Click **Connect**.



Save the backup file to a safe media like a network share or removable disk. Otherwise, the file will be deleted once an upgrade occurs due to a reload of the node.

- d. Click **Backup**.
- e. Click **Exit** when the backup is complete.

800xA for MOD 300

Ensure that the configuration data noted in the **Customized Data for Backup** appendix in *800xA for MOD 300 Configuration (3BUR002417*)* has been recorded.

IEC 61850 Connect

Make backups for the IEC 61850 CET OPC Server projects. Refer to the topic **CET Project Maintenance** in the *System 800xA IEC 61850 Configuration (9ARD171387*)* user manual to export CET OPC Server projects.



Handling of IET/CCT projects and PCM 600 projects is not described here as they are external tools contributing to the IEC 61850 workflow. They do not reside on 800xA System nodes.

PLC Connect

1. If the PLC Connect IEC 60870 feature is installed and configured, the IEC configuration must be saved. Refer to the section on configuring the IEC 60870 driver in *System 800xA PLC Connect Configuration (3BSE035041*)* for more information.
2. If the PLC Connect Communication Server Pre Treatment function is being used in the application (refer to *System 800xA PLC Connect Configuration (3BSE035041*)* for more information), make a backup of the Pretreat dll (Pretreat3.dll or Pretreat4.dll, be sure to select the version used). The Pretreat dll is located in the following folder on the PLC Connect Connectivity Server:

```
... \ABB Industrial IT \Operate IT \PLC Connect \Bin
```



The path is the default location of the file. If it has been placed somewhere else, make a backup from that location.

3. Make a backup of the application project and source files for the Pretreat dll.

Engineering Studio IO Allocation

Deactivate the auto update mode in IO Allocation.

1. Start the Engineering Workplace.
2. Open the IO Allocation tool on any object by right-clicking on the object and selecting **Advanced > IO Allocation** from the context menu that appears.
3. Verify that no check mark symbol is visible in the **Options > Autoupdate CBM** menu item in the IO Allocation tool.

Asset Optimization

Preparing for the Asset Optimization upgrade requires backing up data to a safe media.

Use the following procedure to back up Asset Optimization information (perform only the steps applicable to the system):

1. Asset Monitoring:



Asset Monitoring directories will be found on every Asset Optimization Server node and any other node defined as an Asset Monitoring Server.

- a. If Runtime Asset Monitors are being used in the system, save the Runtime Asset Monitor data directory (DeviceRunTimeMSLogicStore) to a safe media. This directory stores the runtime information calculated by the Runtime Asset Monitors running in this node. This directory is located in:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset Optimization\AssetMonitorEnvironment\Bin
```

- b. If XY Profile Deviation Asset Monitors are being used in the system, save the XY Profile Deviation Asset Monitor data directory (XY_Reference_Profiles) to a safe media. This directory is located in:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset Optimization\AssetMonitorEnvironment\Bin
```

- c. If Counter Check Asset Monitors are being used in the system, save the Counter Check Asset Monitors data directory named:

```
{66E71F7B-90D6-4E62-9881-38388B24CBDF}
```

to safe media. This directory exists for each AO Server in the system. These directories are located in:

```
<install drive>:\OperateITData\AoEng\<AO Server ID>\AmCat\<Counter Check ID>
```

Where each <AO Server ID> directory represents one AO Server instance running on the selected node. The <AO Server ID> directory name is formatted as two consecutive GUIDs, for example:

```
{F9C150F5-2929-4A12-BC28-E00ED6DB1585} {B925E77F-2A82-41C6-A981-FAB4386D5701} .
```



For correct system operation it is important that only the directories identified by the Counter Check Asset Monitor category GUID be saved, as other data in the tree structure above these directories will not be consistent with a restore.

2. Maximo Integration:



If using Maximo Integration, the Maximo Integration information (Maximo Equipment ID and Maximo Credentials aspects) **must** be saved from all Asset Optimization Server nodes. Refer the **Service Structure** for the name of the Asset Optimization Server nodes.

- a. The MxDef files provide the mapping between the 800xA System environment and the Maximo system. If the MxDef files were customized per the instructions in *System 800xA Asset Optimization Configuration (3BUA000118*)*, back up the customized MxDef files to safe media.

- The customized MxDef Files for Maximo versions 4.1 and 4.1.1 are located in the following directory:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset Optimization\ABB AO\Services\MOM\MxDefs\
```

- The customized MxDef files for Maximo version 5.1 and 5.2 are located in the following directory:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset Optimization\ABB AO\Services\MOM\MxDefs\Maximo5\MxServer
```

- The customized MxDef files for Maximo version 6.2 are located in the following directory:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset Optimization\AOECSConnector\MaximoDef
```

- b. Back up the AOMaximoModel.xml file to a safe location. A backup of AOMaximoModel.xml is necessary because the ECS model for Maximo also needs to be modified if the MXDef files are customized.

The model file is available at the following location:

```
... \program files\ABB Industrial IT\Optimize IT\Asset
Optimization\AOECSCconnector\ECSDefinitions
```



The pending fault reports residing in the system are available in the following directory structure:

```
... \OperateITData\OptaoACDs
```

Backup the entire OptaoACDs folder.

3. SAP/PM Integration:



If using SAP/PM Integration, the SAP/PM Integration information (SAP Equipment ID and SAP Credentials aspects) **must** be saved from all Asset Optimization Server nodes. Reference the **Service Structure** for the name of the Asset Optimization Server nodes.

- a. Although the SAP/PM system is separate from the 800xA System, it is a good idea to back up the system in use. Follow SAP/PM standard practices for SAP/PM system backup.
- b. The SAPPMDef files provide the mapping between the 800xA System environment and the SAP/PM system. If the SAPDef files were customized per the instructions in *System 800xA Asset Optimization Configuration (3BUA000118*)*, back up the customized SAPDef files to safe media.

The customized SAPPMDef files for SAP version 4.7 are located under:

```
... \Program Files\ABB Industrial IT\Optimize IT\
Asset Optimization\AOECSCconnector\SAPPMDef
```

- c. Back up the AOSAPModel.xml file to a safe location. A backup of AOSAPModel.xml is necessary because the ECS model for SAP also needs to be modified if the SAPPMDef files are customized.

The model file is available at the following location:

```
... \program files\ABB Industrial IT\Optimize IT\Asset
Optimization\AOECSCconnector\ECSDefinitions
```



The pending fault reports residing in the system are available in the following directory structure. Backup the entire OptaoACDs folder.

```
... \OperateITData\OptaoACDs
```

4. DMS Calibration Integration:



The DMS Calibration Integration approach is changed in 800xA 5.1. Upgrade of DMS Calibration Integration is not supported. Reconfigure the DMS Calibration Integration based on an engineered solution.

Contact ABB technical support for more information.

PC, Network and Software Monitoring

Use the following procedure to prepare for the PC, Network and Software Monitoring upgrade.

1. If there are user defined Script, Resource, and Assembly files they need to be backed up. The user files are located in:

```
... \Program Files\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Scripts\User
```

```
... \Program Files\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Assemblies\User
```

```
... \Program Files\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Resources\User directory
```

Copy the files in these directories to a safe location.

PC, Network and Software Monitoring Device Library

Use the following procedure to prepare PC, Network and Software Monitoring Device Library upgrade:

1. Back up MOF files (if they exist) to a safe location. The MOF files are located in:

```
... \Program Files\ABB Industrial IT\Optimize IT\PC,  
Network and Software Monitoring\MOFS
```

2. Back up Custom Asset Monitor dlls to a safe location if object types with Custom Asset Monitors are loaded. The dlls are located in:

```

... \Program Files\ABB Industrial IT\Optimize
IT\PC, Network and Software Monitoring\Asset
Monitoring\Bin

```

SMS and e-mail Messaging

Save all GSM Device hardware information. Record information for the GSM device on the SMS and e-mail Messaging GSM Hardware Setup Worksheet shown in [Table 3](#).

Table 3. SMS and e-mail Messaging GSM Hardware Setup Worksheet

Item	Setting/Value
Spooler Settings	
Activate Outbox Spooler	Checked (check and leave checked)
Activate Inbox Spooler	Checked (check and leave checked)
Interval for Checking for Incoming Messages	Value: _____ Seconds Minutes (circle 1)
Port Settings	
COM Port	Value: COM _____
Baud Rate	Value: _____
Data Bits	Value: _____
Parity	Value: _____
Stop Bits	Value: _____
PIN and Properties	
Query PIN	Checked or Unchecked (circle one)
PIN (only if Query PIN is checked)	Value: _____
Save PIN (only if Query PIN is checked)	Checked or Unchecked (circle one)
Own Number (telephone number of SIM card (including Country Code) in GSM hardware)	Value: _____

Table 3. SMS and e-mail Messaging GSM Hardware Setup Worksheet (Continued)

Item	Setting/Value
Initialization String for GSM Hardware	Value: _____ _____ _____
General Service Properties	
Name (GSM service provider)	Value: _____
Port	Value: COM _____
SMSC	Value: _____
Default Country Code	Value: _____
Default Prefix	Value: _____
Number of Attempts	Value: _____
Splitting Service Properties	
Splitting	Checked or Unchecked (circle one)
Optimize Splitting	Checked or Unchecked (circle one)
Enumerate Splitting	Checked or Unchecked (circle one)
Narrowband Sockets	Checked or Unchecked (circle one)
Messaging Service Properties	
Add Before Message	Blank (verify and do not change)
Use for Delivery Notification Only	Unchecked (verify and do not change)
Default Option	0 (verify and do not change)
Message General Properties	
Replace CR LF for Incoming Messages	Checked or Unchecked (circle one)

Batch Management

Verify all the scheduled batches are completed or terminated.

Information Management

Refer to [Information Management Pre-Upgrade Procedures](#) on page 453 in [Appendix , Information Management Upgrade](#) to perform the Information Management pre-upgrade procedures.

Scheduler Service (Application Scheduler)

Disable Schedules before stopping the servers and performing the upgrade. This is performed only once and not on every node. The Schedules will need to be manually enabled following the upgrade.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Service Structure**.
3. Select the Scheduling Service Object.
4. Select the Service Definition aspect.
5. Click the **Configuration** tab.
6. Clear the **Enabled** check box and click **Apply**.

Calculations Service

Disable Calculations before stopping the servers and performing the upgrade. This is performed only once and not on every node. The Calculations will need to be manually enabled following the upgrade.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Service Structure**.
3. Select the Calculations Service Object.
4. Select the Service Definition aspect.
5. Click the **Configuration** tab.
6. Clear the **Enabled** check box and click **Apply**.

Basic History Service Data



Back up the Basic History folder for each Basic History Service Provider in the **Service Structure**. Depending on the system, the Basic History Service data can be present on a number of different node types (Connectivity Servers, IM Servers, AO Servers, etc.). It is best to search for the directory described in this procedure on all nodes, and if there is data present, back up that data.

To save Basic History Service data:

1. Stop the Basic History Server from the **Service Structure**.
2. Use Windows Backup (not the 800xA Backup) to backup the files in the:

```
... \OperateITData\History\{provider ID}
```

directory.
3. Start the Basic History Server again from the **Service Structure**.

Process Engineering Tool Integration

Back up Process Engineering Tool Integration information. The project data is located in the following directory:

```
... \Program Files\ABB Industrial IT\Engineer  
IT\Engineering Studio\Process Engineering Tool  
Integration\Xml
```

Save the entire Xml data directory to a safe media such as a network share or removable disk. The directory contains the default mapping files (*.dmf) modified on the project, accelerator files (*.acc), and configuration files (*.pcf and *.fcf).

Requirements for VB Graphics Extension Software



Perform these procedures only if the restored system makes use of VB graphics.



- [Installing Visual BASIC 6.0 with SP6](#) must be followed for all nodes that use Graphics Builder and the Primary Aspect Server node. This must be done before performing the procedures under [800xA System Restore](#)
- [Installing the VB Graphics Extension Software](#) must be followed for each VB Graphics extension software package on all nodes in the 800xA 5.1 System, if the base product was installed on the 800xA 5.0 SP2 System. This must be done before performing the procedures under [800xA System Restore](#)



To deploy VB Graphics, the user must belong to the Application Engineer IndustrialIT user group and Windows Local Administrators.



Refer to *System 800xA Engineering, Process Graphics Migration Tool* for information on migrating VB Graphics to Process Graphics 2.

Installing Visual BASIC 6.0 with SP6



Use of an Aero Theme with the Workstation Operating System will lead to screen latency issues in the VB Graphics Builder. This is because the Aero theme uses advanced rendering schemes. Turn off the Windows Aero theme and switch to either none or Windows Classic for use of VB Graphics. The behavior of VB IDE in the Workstation Operating System will then be the same as that in Windows XP.

All nodes that use the Graphics Builder and the Primary Aspect Server node need a Professional or Enterprise Edition of Visual BASIC 6.0 with SP6. The licensed copy used on the 800xA 5.0 SP2 System must be installed on the 800xA 5.1 System. Follow the installation procedure provided with Visual BASIC.

Installing the VB Graphics Extension Software

Perform the following procedure to install the VB Graphics extension software on all nodes in the 800xA 5.1 System, if the base product was installed on the 800xA 5.0 SP2 System.

1. Insert System Installation DVD 5 into the drive.
2. Wait for the Installation AUTORUN screen to appear.
3. Select:

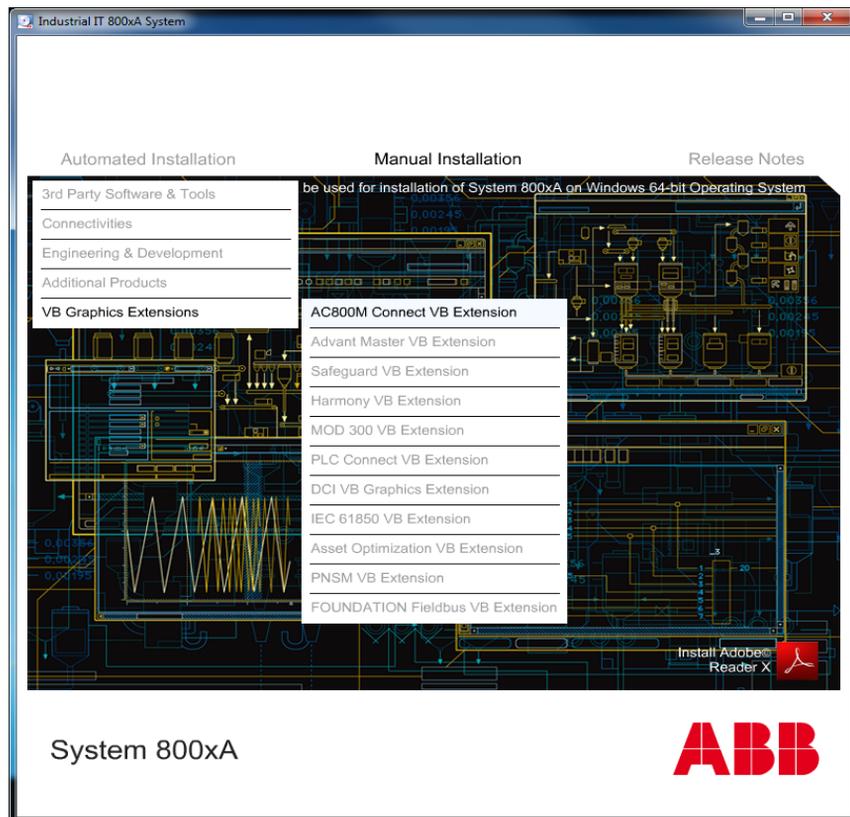
Manual Installation > VB Graphics Extensions (see [Figure 23](#))

Figure 23. Installation AUTORUN Screen

4. Select a VB Graphics extension to install (the installation of the Batch Management VB Graphics extensions is described later in this procedure).
5. The Installation Wizard for the selected VB Graphics extension appears.
6. Follow the Installation Wizard to complete the installation. Choose **Typical** as the installation type.
7. Repeat the procedure for each required VB Graphics extension that appears in the Installation AUTORUN Screen.

8. This step only applies to the VB Graphics extensions for Batch Management when using System Installer to upgrade the 800xA System. If Batch Management was installed manually during the upgrade, the VB Graphics extensions for Batch Management were installed at that time.
 - a. Select:
Manual Installation > Batch Management
 - b. The Installation Wizard for Batch Management appears.
 - c. Select **Modify** when the dialog box appears that offers that choice.
 - d. Select to install the Batch Management VB Graphics extensions in the Installation Type dialog box.
 - e. Follow the Installation Wizard to complete the installation.

Post Upgrade Procedures

The remainder of this section describes how to:

- Migrate the Structured Data Logger SQL Database.
- Restore the backups of the IEC 61850 CET OPC Server projects.
- Perform the 800xA Restore procedure.
- Perform a consistency check.
- Load the VB Graphics extensions on the Primary Aspect Server.
- Restore historical data.
- Restore the necessary data for each Functional Area.

Migrating the Structured Data Logger SQL Database

Perform the following post upgrade procedure for Structured Data Logger (SDL).



Upgrading SDL from 800xA 5.0 SP2 to 800xA 5.1 involves transfer of database data from SQL Server 2000 to SQL Server 2008.

1. Open Microsoft SQL Management Studio and connect to the `SDL_INSTANCE` server.
2. Delete SDL database from `SDL_INSTANCE` if already created during the installation.

3. Restore the SDL database using the .bak file (from SQL Server 2000) that was stored to a safe location during the pre-upgrade process.
 - a. Right-click **Databases** and select **Restore Database...** from the context menu.
 - b. Select the **From Device** option and browse for the .bak file that was stored to a safe location during the pre-upgrade process.
 - c. Select/Enter **SDL** in **To database** and click **OK**.
4. Use Windows Explorer to navigate to:
`... \Operate IT \Structured Data Logger \vbs`
5. Double-click `RunCreateScripts_SDL.vbs`. This will upgrade the SDL database schema.
6. After performing the [800xA System Restore](#) on page 180, verify that the SDL Control Application exists in the system and that the SDL Log aspects contain data.

IEC 61850 Connect

Restore the backups of the IEC 61850 CET OPC Server projects. Refer to the topic **CET Project Maintenance** in the *System 800xA IEC 61850 Configuration (9ARD171387*)* user manual to import CET OPC Server projects.



Handling of IET/CCT projects and PCM 600 projects is not described here as they are external tools contributing to the IEC 61850 workflow. They do not reside on 800xA System nodes.

800xA System Restore



Refer to [Requirements for VB Graphics Extension Software](#) on page 175 before performing the 800xA System Restore.



The User Account that is used for 800xA System restore via the Configuration Wizard must be a member of the following groups:

- IndustrialITUser.
- IndustrialITAdmin.
- Local Administrators.

The backup/restore utility supports the restoring of 800xA system information. The following steps outline the 800xA system restore procedure.



Refer to *System 800xA Maintenance (3BSE046784*)* for more information on restoring the system.

1. Start the restore procedure.
 - a. Select:
Start > All Programs > ABB Industrial IT 800xA > System > Configuration Wizard
 - b. The Select Type of Configuration dialog box appears. Select **Restore System** and click **Next**.



Restart the node when advised during the restore procedure.

2. Check for messages in the log file (enable the **View Log** check box in the Configuration Wizard). Refer to [Appendix A, Warning and Error Messages](#) to resolve any received warning or error messages.
3. Check the CPU load in the node. The System Message service may generate a high load (>90%). If this continues for longer than approximately 10 minutes, restart the service.



If a message stating that a full deploy of the Generic Control Network is needed, click **OK**.

4. One node at a time, start up and connect all nodes to the 800xA System in the following order:

- Aspect Server nodes.
- Connectivity Server nodes.
- Application Server nodes.
- Client nodes.
- a. Use the following guidelines while connecting nodes, using the Configuration Wizard. This must be performed on the node that is going to be connected, not on the node on which the restore was performed.
- b. Select the Primary Aspect Server (the server on which the system will run) in the **Connect to another System on Node** drop down-list box, in the Connect to System dialog box.
- c. If the node is an IM Server, verify that the ABB Process Administration Service (PAS) is set to manual in the Services Control Panel (run Services.msc from the Run dialog box). Stop the service if it is running.
- d. Select **Connect Node** from the Select Type of Configuration dialog box.
- e. Set the current system as the default system when connecting nodes to the system.
- In some cases, problems may be encountered when connecting nodes to the system. Verify that the system software user settings are correct using the Configuration Wizard. Restarting the node again may also solve the problem.
- Wait until all services in the newly connected node are up and running before connecting the next node. Select the Node Administration Structure\connected_node_name\System Status Viewer aspect to monitor the status of services. If some services will not start up, restarting the node may help.



Do not include services that were stopped manually as part of the pre-upgrade procedures. These will be manually restarted later in the post upgrade procedures.

- f. Restart each node after it has been connected to the system.



Run the System Software User Settings until OK. Restart if it is not working and if the message:

Invalid User

appears.

5. Refer to [Appendix E, Recording the Number of Aspects and Objects](#) and record the number of aspects and objects in the system. Compare these values to those recorded when the system was backed up.
6. Verify the affinity settings to ensure best system performance. Refer to *System 800xA Post Installation (3BUA000156*)* for more information on how to configure affinity.

Consistency Check

Refer to [Appendix D, Consistency Check](#) and perform the necessary consistency checks.

Loading the VB Graphics Extensions



Perform this procedure only if the restored system makes use of VB graphics.

Perform the following procedure on the Primary Aspect Server to load the VB Graphics extensions:

1. Refer to [Table 4](#) for a list of VB Graphics extensions available to be loaded.

Table 4. VB Graphics Extensions

Directory	Software
800xA Connectivities	AC 800M Connect VB Graphics Extension
	ABB 800xA for Advant Master VB Graphics Extension
	ABB 800xA for Harmony VB Graphics Extension
	ABB 800xA for IEC61850 VB Graphics Extension
	ABB 800xA for MOD 300 VB Graphics Extension
	ABB 800xA for Safeguard VB Graphics Extension
	ABB PLC Connect VB Graphics Extension
Asset Optimization	ABB Asset Optimization VB Graphics Extension
	ABB PC, Network and Software Monitoring VB Graphics Extension

Table 4. VB Graphics Extensions (Continued)

Directory	Software
Batch Management	Batch VB Graphics Extension Batch Advanced Templates VB Graphics Extension
Device Management & Fieldbuses	ABB Device Management FOUNDATION Fieldbus VB Graphics Extension

2. Start the Configuration Wizard from the primary Aspect Server node. Select:
Start > All Programs > ABB Industrial IT 800xA > System > Configuration Wizard
3. Open the System Extension Load dialog box by going to:
System Administration > Select System > System Extension Load
4. A view appears with the available VB Graphics extensions listed in the left pane. Select the system extension to load in the list in the left pane and move it to the list in the right pane by clicking >. To move all the system extensions from the left pane to the right pane, click >>.
5. The red cross, green check mark, and warning icons indicate the status of the dependency evaluation.
 - The green check mark indicates that the system extension must be loaded first.
 - The red cross icon indicates that the system extension can not be loaded until the one with the green check mark icon is loaded.
 - The warning icon indicates that the system extension can be loaded, but that there is additional information available in the Description frame in the lower part of the dialog box. The additional information can, for example, be that the system extension contains aspect types that are not environment aware.
6. If the list in the right pane contains more than one system extension, click **Press header to autosort** to sort the system extension load order with regard to dependencies.

7. All system extensions in the right pane should be marked with the green check mark or the warning icon.
8. Click **Next** and the Apply Settings dialog box appears.
9. Click **Finish** to load all system extensions.
10. A progress dialog box is shown during the load. Click **View Log** to view log messages during load.



The load is aborted if:

- The user clicks **Abort**.
- An error occurs; for example, if the Configuration Wizard fails to load a file into the system.

An aborted system extension load can be resumed from the System Extension Maintenance dialog box.

11. When the load operation is finished, click **Finished** and view the Configuration Wizard log to verify that no errors occurred during the load.
12. Close the Configuration Wizard.

Customized Alarm Priority Mapping Aspects

Some customized Alarm Priority Mapping Aspects may have been overwritten during the upgrade. Recreate the Alarm Priority Mapping Aspects using the data recorded during [Customized Alarm Priority Mapping Aspects](#) on page 157.

Reconfiguring Group Displays

New Group Display aspects that are created and configured in the **Object Type Structure** on the object types and instances in 800xA 5.1 will work correctly even if there is more than one aspect with the same name but each aspect has a different Aspect Category.

Configured Group Display aspects that existed in the **Object Type Structure** and on the object types and instances in 800xA 5.0 SP2 should have their Aspect Categories reconfigured for the aspects to display correctly. (This is required for the reference to an aspect to be stored along with its Category ID.)

Upgrading Faceplates

The Faceplate aspects created in all versions prior to 800xA 5.1 use a different method to identify the references to faceplate elements or other properties than those in 800xA 5.1.

Upgrading a faceplate is optional, but is strongly recommended for the following reasons:

- Better runtime performance, as no name server access is required when a faceplate is opened.
- More reliable because the references continue to work even if the target object is renamed.
- Upgraded faceplates function efficiently with the Consistency Checker and Reference Tool. This behaves similar to a Process Graphics 2 graphic aspect.
- The upgrade to new reference handling can also repair some broken references.

Refer to the Upgrading Faceplates appendix in *System 800xA Engineering Process Graphics (3BSE049230*)* for the procedure to upgrade the faceplates.

800xA for AC 800M

Perform the following procedure to restore 800xA for AC 800M information:

1. Use the OPC Server Setup Wizard to enter the previously used and recorded service account settings.
2. Control Builder stores its settings (systemsetup.sys) on disk in the following directory:

```
... \ABB Industrial IT Data \Engineer IT Data \Control  
Builder M Professional
```

Copy the previously saved file from the safe media to this folder.

3. The OPC Server stores configuration files (*.cfg) and settings (systemsetup.sys) on disk. Add the files saved on the safe media to the system. The systemsetup.sys file is located in:

```
... \ABB Industrial IT Data \Control IT Data \OPC Server  
for AC 800M
```

The configuration files are stored in the Files folder in the same location.

4. Select **File > Load Configuration** to restore OPC configurations in the OPC Server Panel.

Engineering Studio

Perform the following post upgrade procedures for Engineering Studio:

- [Check and Repair AES Variable Table.](#)
- [Engineering Studio Function Designer System Extensions](#)
- [Deleting Engineering Base Service from the Service Structure.](#)

Check and Repair AES Variable Table

The Check and Repair AES Variable Table (Applications, Controllers, Diagrams/SCMs, and Diagram (Cm) Types) function can be used to:

- Correct possible inconsistent data used for display of online values and external cross references.
- Delete obsolete data and reduce aspect size.

Perform the following procedure to use this application.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Object Type Structure**.
3. Use the Object Browser to navigate to:
`Object Types > Functional Planning > Settings`
4. Select `Function Upgrade` in the Aspect List Area to open the Function Upgrade aspect in the Preview Area.
5. Select the **Check and Repair AES Variable Table (Applications, Controllers, Diagrams/SCMs, and Diagram (Cm) Types)** check box and click **Apply**.
6. Click **Run Upgrade** to perform this upgrade.



Executing the Check and Repair AES Variable Table procedure makes the environment support work for Function Designer.

Upgrade Diagram References and Diagram Variables

In the 800xA 5.1 System (opposite to the 800xA 5.0 SP2 System) Diagram References and Diagram Variables are by default created as Symbol Objects. This is not true for Diagram References and Diagram Variables created during upgrade (restore) from 800xA 5.0 SP2 Systems. Convert them from Aspect Objects to Symbol Objects by use of the conversion function described in the following procedure.



Differences between Aspect Objects and Symbol Objects are described in *System 800xA Engineering, Engineering Studio Function Designer (3BDS011224*)*.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Object Type Structure**.
3. Use the Object Browser to navigate to:
Object Types > Functional Planning > Settings
4. Select Function Upgrade in the Aspect List Area to open the Function Upgrade aspect in the Preview Area.
5. Select the **Convert Diagram References/Variables from Aspect Objects to Symbol Objects** check box and click **Apply**.
6. Click Run Upgrade to perform the upgrade.



This function is not suitable in the case of additional aspects on input/output references, e.g. Graphic Elements, for typical diagrams with input/output references that will get copied and connected via the Bulk Data Manager.

Engineering Studio Function Designer System Extensions

Refer to [Engineering Studio](#) on page 158 and recreate the configuration changes that were recorded before the upgrade.



After the System is upgraded, some of the Function Diagrams appear in the modified state. This is due to the modification of Standard and BU specific libraries whose blocks are instantiated in the Function diagrams. Perform configuration data generation for such Function Diagrams.

The following are some of the instances where Function Diagrams are modified when there are:

- Changes in properties of the parameter except **FDport** in the Control and Function block type.
- Change in the **CMT** type.

Deleting Engineering Base Service from the Service Structure

When the 800xA System is running, delete the Engineering Base Service from the **Service Structure**.

1. Use Windows Explorer to navigate to the following directory:

```
... \Program Files (x86) \ABB Industrial IT \Engineer IT \
Engineering Studio \DocumentParameterManager \
bin \support
```

2. Double-click `EbServiceCleanUpUtil.exe` to delete the service.

Device Management and Fieldbuses

Perform the post upgrade procedures for Device Management and Fieldbuses.

Device Library Wizard

Perform the following post upgrade procedures for Device Library Wizard.

Restore Device Types

Third party software, such as Device Type Managers for the Device Type must be reinstalled since the hard drive of the 800xA System node has been reformatted.

The following steps for Fieldbus Device Types need to be carried out on every 800xA system node. Perform the System Restore Wizard procedure on the nodes in the following sequence:

- Aspect Servers (including redundant Aspect Servers).
- Connectivity Servers (including redundant Connectivity Servers).
- Application Servers.
- Clients.



Restore the Device Types on the Primary Aspect Server node before starting to install them on other system nodes. Do not run parallel installations of Device Types on other system nodes unless all Device Types are restored on the Primary Aspect Server node. Installation of Device Types on other system nodes can be done in parallel after they are restored on the Primary Aspect Server node.



If the system contains FOUNDATION Fieldbus Device Types, check the following before proceeding to the next step:

- Open a Plant Explorer Workplace.
- Use the Structure Selector to open the **Object Type Structure > FF Libraries**.
- Check to see if there is more than one entry of FF H1 Device Library, FF Object Type Group.
- If there is more than one entry, perform FF Upload once so there is only one instance of FF H1 Device Library, FF Object Type Group present. If there is only one entry, proceed to the next step using the Device Library Wizard.

1. Start the Device Library Wizard. Select:

Start > All Programs > ABB Industrial IT 800xA > Device Mgmt > Device Library Wizard

-or-

double-click the Device Library Wizard icon on the desktop.



If the Device Library Wizard - Client has not been connected to the Device Library Wizard - Server, navigate first to:

Device Library Wizard Administration > Connect Client

and follow the Device Library Wizard Procedure

2. Select the **Enable Trace File** check box as shown in [Figure 24](#) in the path:

Device Library Wizard > Device Library Wizard Administration > Diagnostics

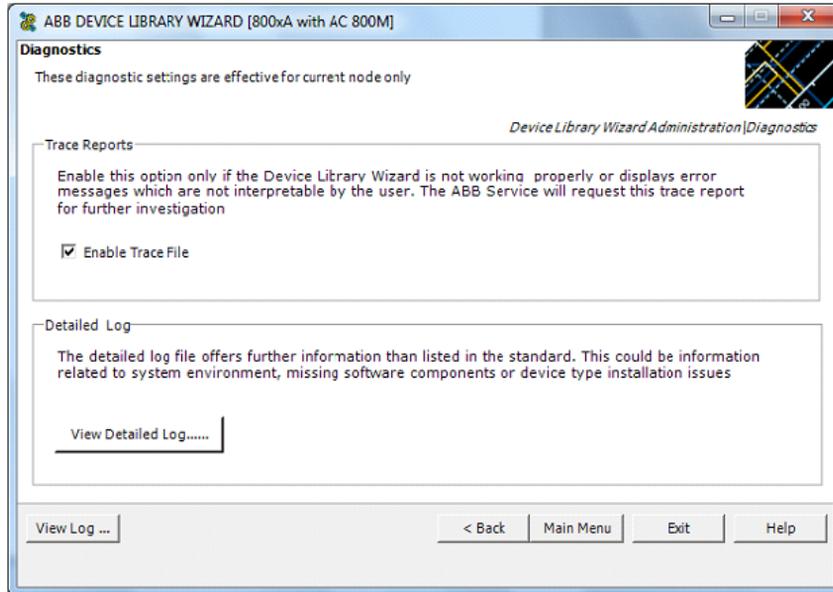


Figure 24. Enabling the Trace File

3. Navigate to:

Device Type Administration > System Restore Wizard

- Choose the second option in the System Restore Wizard as shown in [Figure 25](#) and click **Next**.

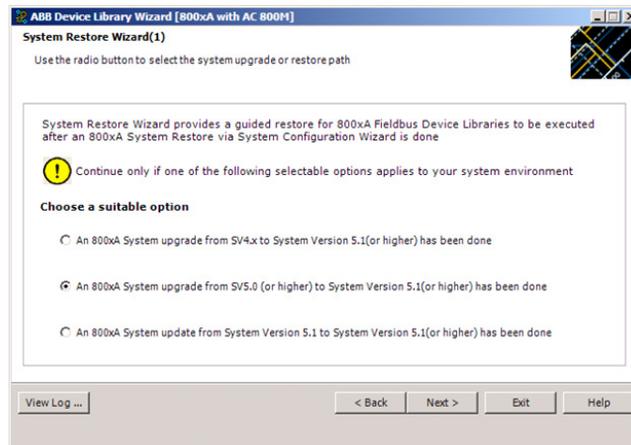


Figure 25. System Restore Wizard (1)

- Choose the first option as shown in [Figure 26](#) and click **Next**.

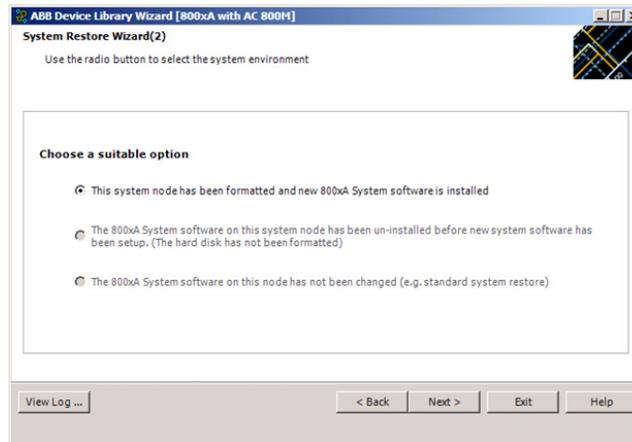


Figure 26. System Restore Wizard (2)

6. Depending on which fieldbus protocol is used in the previous system version environment, insert one of the delivered Device Library system DVDs in the DVD drive (e.g. Device Library HART – DVD).
7. Click **Browse** and navigate to the DVD drive.
8. When the drive has been selected in the Browse for folder dialog box, click **OK** in that dialog box and then **Next** in the ABB Device Library Wizard. This step may take one or two minutes to complete.
9. The Device Library Wizard scans the 800xA System for fieldbus device types that are already used and compares the results with the contents of the DVD. Device Types available in the 800xA System and the DVD are shown in the **Extract** tab of the Device Library Wizard (Figure 27).

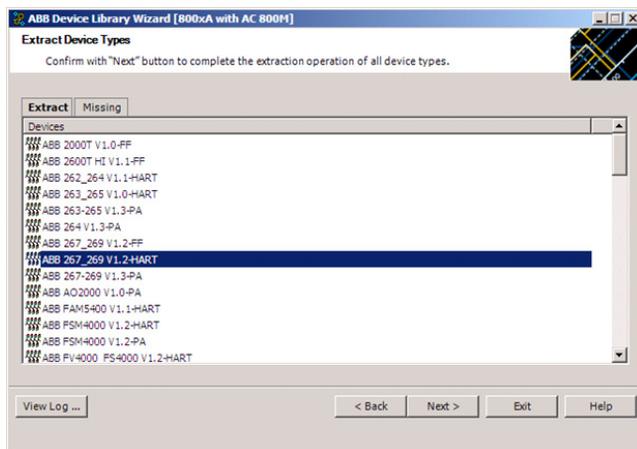


Figure 27. Extract Device Type Files

10. Device Types available in the 800xA System but not on the DVD are displayed in the **Missing** tab. If there are any Device Types showing in the **Missing** tab, navigate to the Browse dialog box by clicking **Back** and inserting a new Device Library DVD in the DVD drive.
11. Click **Next** to start the extraction process.
12. Repeat [Step 6](#) to [Step 11](#) for each fieldbus protocol if more than one fieldbus protocol is used.

- There may be some Object Types that are either customer created, or are the latest Device Types downloaded from ABB SolutionsBank. These will not be available on the DVDs. The Device Library Wizard will prepare a list for these Device Types (Figure 28). Install these Device Types manually.

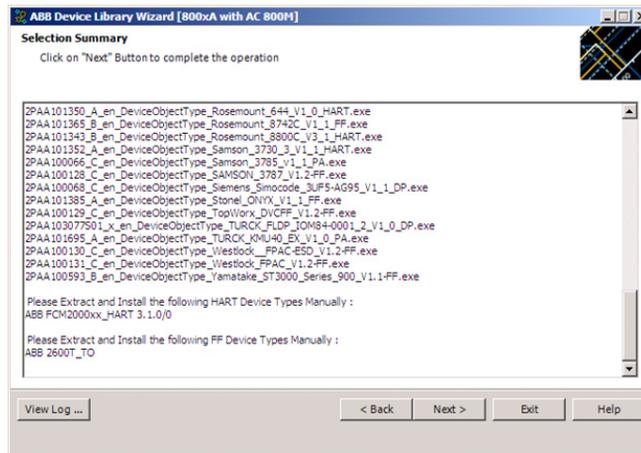


Figure 28. List of Files to be Manually Installed

- Repeat this procedure until all Device Types are extracted to the 800xA System node and the **Missing** tab does not list any device types.



During extraction, if a dialog box pops up asking for an overwrite, select **No** and continue.

- If the Device Library DVDs do not contain all Device Types used in the previous system version, the missing Device Types must be downloaded from ABB SolutionsBank.



It is only possible to complete the Wizard if all Device Types have been successfully extracted.

- When the extraction process is completed successfully, the Device Types need to be re-installed on the 800xA System node. Click **Next** to launch the Re-installation of Device Types dialog box shown in [Figure 29](#).

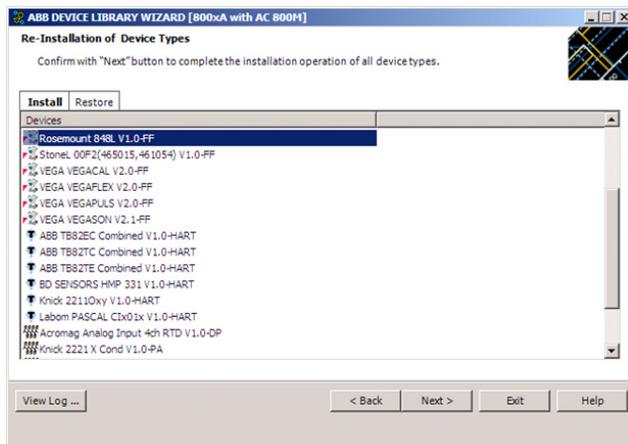


Figure 29. Re-install Device Types Dialog Box

- Follow the Device Library Wizard procedure to complete the installation. The Device Library Wizard will automatically navigate to the main window after the process is completed.



If, during installation the Device Library Wizard main window becomes hidden in the background:

- Open Windows Task Manager.
 - Select the Device Library Wizard in the **Applications** tab.
 - Select: **Windows > Bring to Front**
- Exit the Device Library Wizard and repeat the procedure on the other 800xA System nodes, if applicable.

Device Management PROFIBUS & HART

Perform the following post upgrade procedures for Device Management PROFIBUS & HART.

Compressing Aspect Data

The aspect data in the system is compressed using the Data Compression Tool. This tool is available from System 800xA 5.1 Feature Pack 4 Revision D and System 800xA Revision D (see [Figure 30](#)).



AC800M Connect and AC800M High Integrity system extensions must be loaded before loading PROFIBUS Device Integration Library - Basic and HART Device Integration Library - Basic system extension. Therefore, install AC800M Connect and AC800M high Integrity also when installing Device Management PROFIBUS and HART.

After the system upgrade, perform the following to compress the aspect data using the Data Compression Tool:

1. Double-click and open the Data Compression Tool from the following location:

*C:\Program Files (x86)\ABBIndustrialIT\EngineerIT\FieldbusBuilder
bin\DMAspectDataCompression.exe*

The Data Compression Tool is opened as shown in [Figure 30](#).



The callouts in [Figure 30](#) represent the corresponding steps in this procedure.

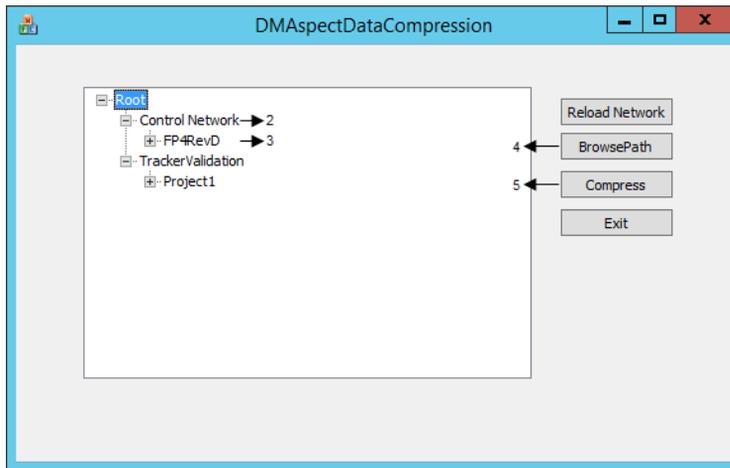


Figure 30. Data Compression Tool

2. Select **Control Network** on the Data Compression Tool.
3. Expand the **Control Network** group and select a project or a controller from the list.
4. Click **BrowsePath** to browse and select a folder location to save the .csv file.
5. Click **Compress** to compress the aspect data.

A message will be displayed stating the actual number of device instances in the project and the actual number of device instances that are compressed using the tool as shown in [Figure 31](#).

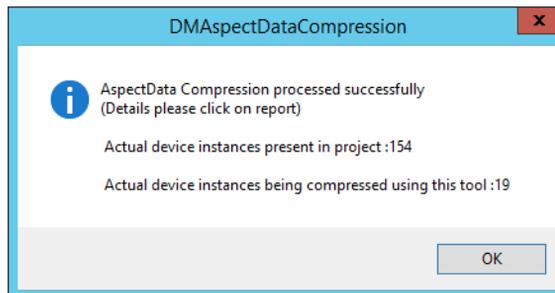


Figure 31. Data Compression Details Message

The Data written successfully in the following path: <path specified in [Step 4](#)> will be displayed at the bottom of the tool upon successful completion of aspect data compression as shown in [Figure 32](#).

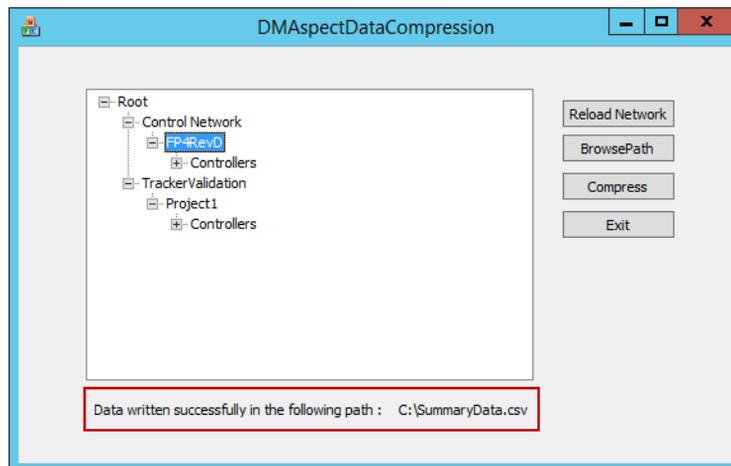


Figure 32. Successful Completion of Device Types Compression

6. Click **Exit**.

OPC Server PROFIBUS & HART

After system upgrade, PH OPC service providers may be reconfigured. For more information on configuration of PROFIBUS & HART devices (Fieldbus Builder PROFIBUS/HART, OPC Server, DTM's and Device Type Objects in 800xA), refer to *System 800xA Device Management PROFIBUS & HART Configuration (3BDD011934*)* manual.



This step must be performed after project upgrade as mentioned in [800xA for AC 800M](#) Post-upgrade procedures.

License Count Tool

License Count Tool is an User Interface tool that counts and verifies the list of licenses for the device types. The User Interface for this tool is available in the System 800xA 5.1 Feature Pack 4 Revision E and System 800xA Revision E release (see [Figure 33](#)).

After the system upgrade, the licenses required for the device types in the new system must be checked and verified.

Perform the following to check the licenses for the device types in the system:

1. Run the License Count Tool from the following location:

```
C:\Program Files (x86)\ABBIndustrialIT\EngineerIT\FieldbusBuilder  
  \bin\LicenseCounting.exe
```

2. On the License Counting wizard, expand the Root element, select the Control Network, and then click **Count License** as shown in [Figure 33](#).

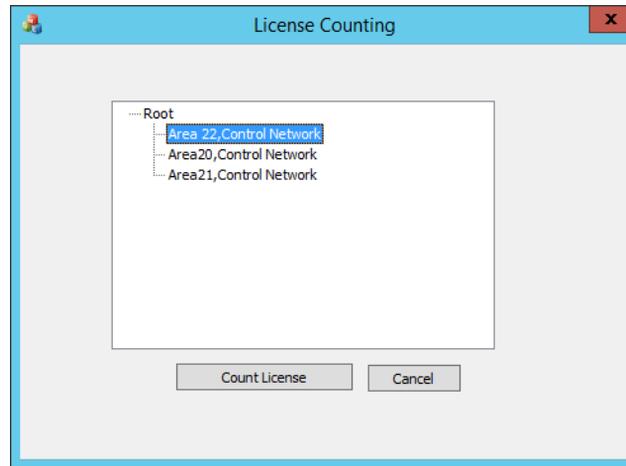


Figure 33. License Count Tool Wizard



If there is more than one control network, you need to individually select the network and click **Count License** to know the number of licenses used per control network.

A message stating the number of device type instances in the system and the number of licenses required is displayed as shown in the [Figure 34](#).

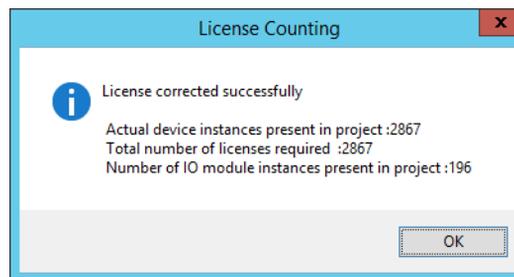


Figure 34. License Count Message

3. Perform the following to verify the number of licenses used in the system:
 - a. Open a Plant Explorer workplace.
 - b. Use the structure selector to select the **Control Structure**.
 - c. Click **Root** and select **License Usage** in the Aspect List area.
 - d. Check the number of licenses used in the system for the 800xA FIELDBUS Profibus and Hart feature. Refer to [Figure 35](#) for more information.

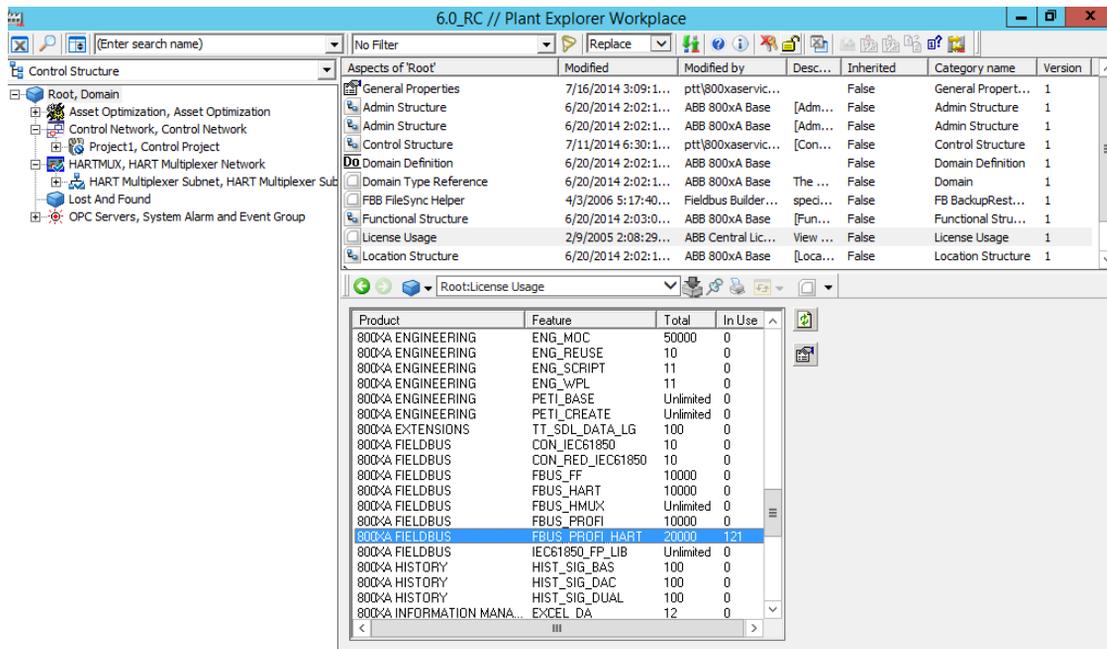


Figure 35. License Usage Aspect in Control Structure



The number of licenses displayed by the License Count Tool and the number displayed against the License Usage aspect in the Control Structure must be the same.

Device Management FOUNDATION Fieldbus

Perform the following to complete updating Device Management FOUNDATION Fieldbus.

1. **Update LD 800HSE Linking Devices:** Update all LD 800HSE linking devices to the latest firmware version released for this system environment following the update procedure described in the user instructions for the particular device.



Refer to *LD 800HSE Version Table (3BDS009910)* in ABB SolutionsBank at for the latest linking device firmware released for this system environment.

From Downloads Explorer, navigate to:

Control Products and Systems/800xA/Device Management Foundation Fieldbus/Foundation Fieldbus Linking Device LD800HSE

2. Check, Save, and Upload FF Libraries:
 - a. Open a Plant Explorer Workplace.
 - b. Use the Structure Selector to open the **Object Type Structure**.
 - c. Use the Object Browser to navigate to:
FF Libraries Object Type Group
 - d. Select FF Management in the Aspect List Area.
 - e. Click **Open Project**.
 - f. Check the libraries for plausibility.
 - g. Exit Fieldbus Builder FF and save changes if prompted to do so.
 - h. Return to the Plant Explorer Workplace and select FF Upload in the Aspect List Area.
 - i. If the traffic light symbol shows red, click **Upload**.
 - j. The green traffic light symbol indicates that the FF libraries have been synchronized.
3. Optional: Reconstruct User-made Changes to Library Objects representing FF Standard Blocks:



This step is only required if changes were made to library objects representing FF standard blocks.

During upgrade, **user-made changes to library objects representing FF standard blocks have been overwritten**. Important substitutions have been logged.

- a. If such changes were made, display the substitutions as follows:
 - Open a Plant Explorer Workplace.
 - Use the Structure Selector to open the **Object Type Structure**.
 - Use the Object Browser to navigate to:
FF Libraries Object Type Group
 - Select FF Upload in the Aspect List Area.
 - Select **Library Merge Logger** tab and read log.
 - b. For reconstructing user-made changes, reapply the changes to the library objects manually.
4. Check, Save, Commission, and Upload the HSE Subnet.



Perform the following procedure for each HSE Subnet.

- a. Open a Plant Explorer Workplace.
- b. Use the Structure Selector to open the **Control Structure**.
- c. Use the Object Browser to navigate to:
HSE Subnet
- d. Select FF Management in the Aspect List Area.
- e. Click **Open Project**.
- f. Check to see if the configured HSE subnet ID is used for the OPC Server FF configuration in **FF Network > Properties** and modify it if required.
- g. **Check whole project** for plausibility.
- h. If required, perform device assignment for all linking devices LD 800HSE. Typically, no device assignment is lost during the upgrade.
- i. If required, perform precommissioning/commissioning for all objects for which this is necessary (discernible from engineering status). A

precommissioning may be required if the firmware has been changed.



To assign all H1 devices in one step, use the **Assign all devices** function from the HSE Subnet context menu: **Object > Assign all devices...**



For downloading use the online dialog from the HSE Subnet context menu: **Object > Online Dialog...**

- j. Exit Fieldbus Builder FF and save changes if prompted to do so.
 - k. Return to the Plant Explorer Workplace and select `FF Upload` in the Aspect List Area.
 - l. If the traffic light symbol shows red, click **Upload HSE Subnet**.
 - m. The green traffic light symbol indicates that the HSE Subnet has been synchronized.
5. Check whether the blocks of used devices from 800xA 5.0 SP2 use the datatype bitstring and that the value is uploaded into the configuration database. Upload these parameters from the device to the configuration database again.

Perform the following procedure for each HSE Subnet:

- a. Open a Plant Explorer Workplace.
 - b. Use the Structure Selector to open the **Control Structure**.
 - c. Use the Object Browser to navigate to `HSE Subnet`.
 - d. Select `FF Management` in the Aspect List Area.
 - e. Click **Open Project** to open the subnet in FBB FF.
 - f. Identify the devices containing Function Block with Parameter datatype as bitstring.
 - g. Upload all parameters of datatype bitstring from the device to the configuration database.
6. Import the locally stored parameter value sets as follows:
- a. Open a Plant Explorer Workplace.
 - b. Use the Structure Selector to open the **Object Type Structure**.

- c. Use the Object Browser to navigate to:
 FF Libraries, Object Type Group
- d. Select FF Management in the Aspect List Area.
- e. Click **Open Project** to open the FF Libraries project in Fieldbus Builder FF.
- f. Open the block properties dialog for the Function Block where the parameters were exported during the pre-upgrade procedure.
- g. Right-click on the dialog box and select **Import** from the context menu.
- h. Browse the .csv file and restore the value sets.



Ensure that the stored value sets are imported to the corresponding Function Blocks.

- i. Right-click and select **Store parameter value set** from the context menu.
- j. Specify an appropriate name for the new value set and click **OK**.
- k. Click **Cancel**. Do NOT overwrite the Initial Instance Parameters with the imported parameters, and then close the block properties dialog box.

800xA for Advant Master and 800xA for Safeguard

Perform the following post upgrade procedures for 800xA for Advant Master and 800xA for Safeguard.

- [Copy the Advant Master Controller Licenses.txt.](#)
- [Update the Configuration Files.](#)
- [Copy the DATHR Files.](#)
- [Reconfigure RTA Board Control Aspect Settings.](#)

Copy the Advant Master Controller Licenses.txt

Perform the following on the Primary Aspect Server in the 800xA 5.1 System:

1. Copy the following updated file:
 - Advant Master Controller Licenses.txt

The default location to copy the file in the 800xA 5.1 system:

For 64-bit:

```
... \Program Files (x86) \ABB Industrial IT \Operate  
IT \AC 400 Connect \Licenses
```

For 32-bit:

```
... \Program Files \ABB Industrial IT \Operate IT \AC 400  
Connect \Licenses
```

Update the Configuration Files

For each Connectivity Server, compare the following files saved in a safe location during the 800xA for Advant Master pre upgrade phase:

- AdvDsMasterAdapter.csv
- AdvMbAeOPCServer.csv

with the installed version of the files at the following location:

For 64-bit:

```
... \Program Files (x86) \ABB Industrial IT \Operate IT \AC 400  
Connect \Bin
```

For 32-bit:

```
... \Program Files \ABB Industrial IT \Operate IT \AC 400  
Connect \Bin
```

If any customization was done to the old files, update the installed version of the files with the corresponding changes.

Copy the DATHR Files

Perform the following on each Connectivity Server node:

1. Copy the saved files:

- DATHR1.CD
- DATHR2.CD
- DATHR3.CD

to the folder:

```
... \ProgramData\ABB\AC400Connect\AdvantBase\Data\
RTA\Init\
```

to the node where they belong.

Reconfigure RTA Board Control Aspect Settings



If the RTA board IP is configured different than the default IP (172.16.168.50), change the RTA board IP in the registry of Advant Connectivity Server before proceeding.

Path: **HKEY_LOCAL_MACHINE > SYSTEM > CurrentControlSet > Services > PU410 > Parameters > slvBoard**

Change the IP in string **IPAddress**.

1. Open the MB 300 RTA Settings dialog box in Configuration Wizard and reconfigure:
 - MB 300 Node and Network Numbers.
 - Check **800xA as Clock Master (REVERSED_SYNC_MODE)** in case the time synchronization key REVERSED_SYNC_MODE was previously enabled.
2. Always Restart the RTA board.
3. The Audible property must be 0 for events and 1 for alarms 800xA for Advant Master version 4.1 SP1 RU6 and newer. Refer to *System 800xA Configuration (3BDS011222*)* for configuration of audible alarms.

Safeguard standardevent 300 - 326 does not comply with this rule before 800xA for 800xA for Advant Master Version 5.0 SP2. The Event numbers where the Audible property should be changed from 1 to 0 are:

- EVENT302.
- EVENT305.
- EVENT310.

- EVENT312.
- EVENT320.
- EVENT321.
- EVENT322.
- EVENT325.

800xA for Harmony

Use the following procedure to restore 800xA for Harmony information:

1. Log in to the 800xA Installing User account (or a local Administrator account) on the Configuration Server or Configuration Server with Connectivity Server node.
2. Restore the 800xA for Harmony Configuration information that was saved during [800xA for Harmony](#) on page 164.
 - a. Select:
Start > All Programs > ABB Industrial IT 800xA > 800xA for OCS Systems > Harmony > Configuration > Restore Configuration
 - b. Click **Connect** in the Harmony Connect Configuration Backup/Restore window.
 - c. Enter the name of the Harmony Configuration Server database backup file in the Backup File field.
 - d. Click **Restore**.
 - e. If a prompt appears indicating that the system version does not match the backup version, click **Yes**.
 - f. If the message `Services must be stopped, REBOOT system now then restart this application!` is displayed, restart the node and repeat [Step a](#) through [Step e](#).
 - g. The Backup/Restore program compares the old configuration in the backup file to the current configuration of the newly installed system. If the hosts of the Primary and Redundant Connectivity Servers do not match, a dialog box will appear allowing the user to map the old Connectivity Server node names to the new Connectivity Server node names.

- h. Leave the **Create Missing Servers in Installed Configuration (Disaster Recovery)** check box disabled.
- i. Click **Exit** when the restore operation is complete.

800xA for AC 870P/Melody



Restore existing backups for project specific changes (if available) for: (Refer also to [800xA for AC 870P/Melody](#) on page 166.)

- DHCP Server Configuration.
- ETC Host files for 800xA for AC 870P/Melody Connectivity Servers.
- Changes in the Default Object Types.
- ConvDB changes of the Configuration Server.

Perform the following post upgrade procedures for 800xA for AC 870P/Melody.

- [Restore 800xA for AC 870P/Melody Information.](#)
- [Additional 800xA for AC 870P/Melody Configuration Steps.](#)

Restore 800xA for AC 870P/Melody Information

Perform the following procedure to restore 800xA for AC 870P/Melody information:

1. Log in to the 800xA Installing User account (or a local Administrator account) on the Configuration Server node.
2. Restore the 800xA for AC 870P/Melody Configuration information that was saved during [800xA for AC 870P/Melody](#) on page 166.
 - a. Select:
Start > All Programs > ABB Industrial IT 800xA > 800xA for AC 870P Melody > Configuration > Restore Configuration
 - b. Click **Connect** in the Melody Connect Configuration Backup/Restore window.
 - c. Enter the name of the Melody Configuration Server database backup file in the Backup File field.
 - d. Click **Restore**.
 - e. If a prompt appears indicating that the system version does not match the backup version, click **OK**.

- f. If the message Services must be stopped, REBOOT system now then restart this application! is displayed, restart the node and repeat [Step a](#) through [Step e](#).
- g. Click **Exit** when the restore operation is complete.



If there are specific faceplates in use (process industries or utilities), the faceplates must also be upgraded. Refer to the faceplate related documents for further instructions.

Additional 800xA for AC 870P/Melody Configuration Steps



Information on performing these additional configuration steps can be found in *800xA for AC 870P/Melody Configuration (3BDD011741*)* and *System 800xA Post Installation (3BUA000156*)*.

Perform the following configuration steps after adding the 800xA for AC 870P/Melody Configuration Server to the 800xA System.

1. Melody Executive Service Provider.
2. Tag Importer.
3. Enable the Melody AutoConfigurator service in **Plant Explorer > Service Structure**.
4. Replication Monitor Internet Explorer Security Settings.

Perform the following configuration steps after adding each 800xA for AC 870P/Melody Connectivity Server to the 800xA System.

1. Melody Executive Service Provider.
2. OPC Data Source Definition.
3. Alarm and Event Provider Setup.
4. Replication Monitor Internet Explorer Security Settings.

800xA for MOD 300

1. Re-initialize PAS System Services on the Connectivity Server.



The PAS System Services will not start until the communications settings are initialized as described in the following steps.

2. Initialize the OMF settings to start system services. Use the Administrative Tools in Windows Control Panel to select:

PAS > Settings

This displays the Communications Configuration Tool.



The message:

Would you like to revert back to saved settings?

is displayed if settings were previously saved. To restore the previous settings, perform [Step a](#) through [Step d](#).

- a. Select **Yes** at the message

Would you like to revert back to saved settings?

This opens the Communication Settings display.
 - b. Select **OK** on the Communication Settings display to save the settings and close the window.
 - c. Select **OK** to the message:

Settings have been saved . . .
 - d. Select **OK** when the message appears that indicates the settings have been changed. A restart is always required if the Control Network Setting, OMF Memory, or TCP/IP enabled setting are changed.
3. Restart Windows at this time.
 4. Reverse_Time synch will be disabled following the re-installation of PAS. If the Connectivity Server node sets the time on the Real-Time Accelerator Board (RTAB), Reverse_Time_Synch must be enabled. Refer to the **800xA for MOD 300** section in *System 800xA Post Installation (3BUA000156*)*.
 5. If any objects were customized, those changes must be implemented again on objects delivered with 800xA for MOD 300 Version 5.1.
 6. Update the registry settings previously recorded. Refer to *800xA for MOD 300 Configuration (3BUR002417*)*.

PLC Connect

Perform the following post upgrade procedures for PLC Connect.

Modify Installation for IEC 60870 or Basic Project Objects

If either the IEC 60870 or Basic Project Objects features were installed:

1. Use standard Windows procedures to access Programs and Features in Windows Control Panel.
2. Select ABB PLC Connect.
3. Select Change/Modify.
4. The InstallShield Wizard for PLC Connect appears. Refer to *System 800xA Manual Installation (3BSE034678*)* to select and install the desired features.
5. If the IEC60870 feature is installed refer to *System 800xA PLC Connect Configuration (3BSE035041*)* and reload the saved IEC configuration.

Restoring the Pretreat dll

To restore the Pretreat dll:

1. If the PLC Connect Communication Server Pre Treatment function is being used in the application, copy the Pretreat dll file (Pretreat3.dll or Pretreat4.dll) from the backup location to the same folder as it was backed up from on the PLC Connect Connectivity Server. If the default folder is used, that location is:

```
... \ABB Industrial IT \Operate IT \PLC Connect \Bin
```
2. Register the Pretreat dll file (refer to *System 800xA PLC Connect Configuration (3BSE035041*)* for more information).
3. Restart the PLC Connect Connectivity Server for the changes to take effect.
4. Restore the project and source files for the Pretreat dll.

Update the Sattbus Configuration

Perform the following if the Sattbus protocol is used for any of the controllers:

1. Select the PLC Controller Configuration aspect for the controller that uses Sattbus protocol and click **Edit Driver**.
2. Configure the Common System Settings and click **OK**.
3. Restart the Connectivity Server.

Redeploy the PLC Connect Configuration

To redeploy the PLC Connect configuration:

1. Use the Structure Selector to open the **Control Structure** in the Plant Explorer Workplace.
2. Use the Object Browser to navigate to the first Generic Control Network object.
3. Select `Deploy` in the Aspect List Area.
4. Press the **SHIFT** key and click **Deploy** in the Preview Area to ensure that a full deploy is done.
5. The deploy begins and the progress is displayed in the Preview Area. The deploy is completed when `Deploy ended` is displayed.
6. Repeat the procedure for any additional Generic Control Network objects.

Asset Optimization

Use the following procedure after updating Asset Optimization. Perform only the steps applicable to the system.

1. Asset Monitoring:



Asset Monitoring directories **must** be restored on every Asset Optimization Server node defined in the system.

- a. If Runtime Asset Monitors are being used in the system, restore the Runtime Asset Monitor data directory (`DeviceRunTimeMSLogicStore`) to the following directory:

```
... \Program Files (x86) \ABB Industrial IT \Optimize  
IT \Asset Optimization \AssetMonitorEnvironment \Bin
```



The saved data contains the Runtime Asset Monitor data present at the time of the save. Use the Runtime Asset Monitor faceplate to reset the Asset Monitors by adding the lost time to their accumulated run time or with some known values based on other records. Ignore any alarms occurring during the backup.

- b. If XY Profile Deviation Asset Monitors are being used in the system, restore the XY Profile Deviation Asset Monitor data directory (`XY_Reference_Profiles`) to the following directory:

```
... \Program Files (x86) \ABB Industrial IT \Optimize
IT \Asset Optimization \AssetMonitorEnvironment \Bin
```

- c. If Counter Check Asset Monitors are being used in the system, restore the Counter Check Asset Monitors data directory named:

```
{66E71F7B-90D6-4E62-9881-38388B24CBDF}
```

from safe media. This directory exists for each AO Server in the system. These directories are located in:

```
<install drive>:\OperateITData\AoEng\<AO Server ID>\
AmCat
```

Where each <AO Server ID> directory represents one AO Server instance from which the directory:

```
{66E71F7B-90D6-4E62-9881-38388B24CBDF}
```

was originally saved from. The <AO Server ID> directory name is formatted as two consecutive GUIDs, for example:

```
{F9C150F5-2929-4A12-BC28-E00ED6DB1585} {B925E77F-2A82-
41C6-A981-FAB4386D5701}.
```

2. Maximo Integration:



cpmPlus Enterprise Connectivity Version 4.0 (ECS 4.0) must be installed in order to access Maximo Server Version 6.2.



The Maximo Integration information (Maximo Equipment ID and Maximo Credentials aspects) **must** be restored on all Asset Optimization Server nodes. Reference the **Service Structure** for the Asset Optimization Server.

- Refer to *System 800xA Asset Optimization Configuration (3BUA000118*)* to configure ECS.
- If the MxDef files were customized, restore the MxDef files to the following directory:

```
... \Program Files (x86) \ABB Industrial IT \Optimize
IT \Asset Optimization \AOECSConnector \MxDef \
```

Refer to *System 800xA Asset Optimization Configuration (3BUA000118*)* for more information on MxDef files.

- c. Restore the AOMaximoModel file to the following location if the ECS model was customized:

```
... \Program Files (x86) \ABB Industrial IT \Optimize  
IT \Asset Optimization \AOECSConnector \ECSDefinitions
```

- d. Ensure that the ABB Maximo Connectivity system extension is loaded.



The pending fault reports residing in the system can be restored to the following directory structure:

```
... \OperateITData \OptaoACDs
```

Restore the entire OptaoACDs folder.

3. SAP/PM Integration:



cpmPlus Enterprise Connectivity Version 4.0 (ECS 4.0) must be installed in order to access SAP Server Version 4.7.



The SAP/PM Integration information (SAP Equipment ID and SAP Credentials aspects) **must** be restored on all Asset Optimization Server nodes. Reference the **Service Structure** for the Asset Optimization Server.

- a. Refer to *System 800xA Asset Optimization Configuration (3BUA000118*)* to configure ECS.
- b. If the SAPDef files were customized, restore the SAPDef files to the following directory:

```
... \Program Files (x86) \ABB Industrial IT \Optimize  
IT \Asset Optimization \AOECSConnector \SAPPMDef
```

- c. Restore the AOSAPModel file to the following location if the ECS model was customized:

```
... \Program Files (x86) \ABB Industrial IT \Optimize  
IT \Asset Optimization \AOECSConnector \ECSDefinitions
```

Refer to *System 800xA Asset Optimization, Configuration (3BUA000118*)* for more information on SAPDef files.

- d. Ensure that the ABB SAP Connect system extension is loaded.



The pending fault reports residing in the system can be restored to the following directory structure:

```
... \OperateITData \OptaoACDs
```

Restore the entire OptaoACDs folder.

4. DMS Calibration Integration.



The DMS Calibration Integration approach is changed in 800xA 5.1. Upgrade of DMS Calibration Integration is not supported. Reconfigure the DMS Calibration Integration based on an engineered solution.

Contact ABB technical support for more information.

5. Asset Monitors that are assigned (via the Configure option drop-down list box on the Asset Monitor Instance on an Object) to a particular AO Server object and Asset Optimization Server aspect (by Object name:Aspect name pair), will not be correctly configured after the upgrade. The AOServer property will be unconfigured and the following error message will appear:

```
Unable to resolve AO Server for this Asset Monitor  
configuration
```

This must be resolved before the Asset Monitor Logic can be loaded into an AO Server:Asset Optimization Server for execution. Refer to the **Object Type Structure** for Asset Optimization, Object Type Group:AO Server, Object Type.

6. After a restore of a 800xA 5.0 SP2 system, the Asset Optimization Server (Monitor Server/Engine) is running. The **AO Server** tab of the Asset Monitoring Server aspect will show a status of `good: AM Engine running`.
 - a. Clicking the **Asset Monitors** tab and selecting **AMs assigned to this AO Server** will show that the values in the Status column are `NOT Loaded, enabled`.
 - b. Click **Load all AMs** to reload all enabled Asset Monitors assigned to this AO Server.



:The **Enable Write Access** check box must be selected in the Asset Monitor Data Source aspect before loading Runtime Asset Monitors into the AO Server. Refer to *System 800xA Asset Optimization Configuration (3BUA000118*)* for more information.

PC, Network and Software Monitoring

In the 800xA 5.1 and later releases, a set of IT Asset type objects are deprecated. The new enhancements, Process Graphics 2 and Native Language Support (NLS), are not applied to deprecated IT Asset type objects. Replacements of deprecated IT Asset type objects are delivered in PNSM Device Library. It is recommended to migrate deprecated IT Asset type objects to PNSM Device Library in case the system being upgraded has all Process Graphics 2 graphics and no VB graphics. Refer to [Appendix H, Mapping of Deprecated IT Asset Object Types](#).



Migration from deprecated IT Asset type objects to the PC, Network and Software Monitoring Device Library is not mandatory in case the system being upgraded already has VB graphics.

The following steps describe the migration procedure.

1. Download IT Asset type objects in PNSM Device Library that replaces the deprecated IT Asset type objects which are used in the current configuration. The download link is <http://www.abb.com/controlsystems>.
2. Migrate each deprecated IT Asset type object to its replacement IT Asset type object in PNSM Device Library
 - a. Instantiate and configure PNSM Device Library objects.
 - b. Delete deprecated IT Asset type objects.



Reconfigure all applications referring to deprecated IT Asset type objects. For example, Logging of OPC data into history archive.

3. To upgrade to a newer version of the Light Generic Computer Process object type, it is required to delete all old instances and replace them with the newer version of the Light Generic Computer Process object type. Refer to the Process Monitoring section of *System 800xA PC, Network and Software Monitoring Configuration*.

Perform the following post upgrade procedure for PC, Network and Software Monitoring.

1. If user defined Script, Resource, and Assembly files were backed up, copy the saved files from the safe media to the following directories:

```
... \Program Files (x86)\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Scripts\User
```

```
... \Program Files (x86)\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Assemblies\User
```

```
... \Program Files (x86)\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Resources\User
```



There are more PC, Network and Software Monitoring steps that need to be performed after the system extension maintenance has been performed. Refer to [PC, Network and Software Monitoring](#) on page 225.

800xA for Harmony/Melody Connectivity Server Node Update

The following procedure is only applicable to 800xA for Harmony and 800xA for Melody Connectivity Server nodes.



Do not perform this procedure on a server node that is running Shadow OPC Server as AfwService.

Determining the Node Running ShadowOPC Server as AfwService

To identify the node that is running ShadowOPC Server as AfwService:

1. Refer to *System 800xA 5.1 PC, Network and Software Monitoring Configuration (3BUA000447*)* and verify that the Shadow OPC Service is configured.
2. Open a Plant Explorer Workplace.
3. Use the Structure Selector to open the **Control Structure**.
4. Use the Object Browser to navigate to:

```
IT Server, IT OPC Server Network
```
5. Select OPC Data Source Definition in the Aspect List Area.
6. Click **View** in the Preview Area to launch the Service Group Definition dialog.
7. Select service provider from the Providers list.

8. Click **View** to launch the Service Provider Definition dialog.
9. The *Node* in the **Configuration** tab is the name of the node that is running ShadowOPC Server as AfwService.
10. Close all dialogs.

Applying the Update

Perform the following procedure on all 800xA for Harmony and 800xA for Melody Connectivity Server nodes.

1. Insert the System Version 5.1 Released Documents CD into the drive.
2. Use Windows Explorer to locate and copy `ABBSshadowOPC.exe.config` in the `Updates` directory on the CD.
3. Use Windows Explorer to navigate to the following directory on the local hard drive:

```
...:\Program Files\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin
```
4. Make a backup of the existing `ABBSshadowOPC.exe.config` file.
5. Paste the file copied in [Step 2](#) to the hard drive location navigated to in [Step 3](#).
6. Restart the node.
7. After the restart, use Windows Task Manager to verify the `KeepAliveApp.exe` is not in the list of processes.

PNSM Device Library Restore Procedure

Perform the following post upgrade procedure for PNSM Device Library:

1. Copy the files from the safe location to the directory if MOF files were backed up:

```
... \Program Files\ABB Industrial IT\Optimize IT\PC,  
Network and Software Monitoring\MOFS
```
2. Copy the `Custom Asset Monitor` dlls from the safe location to the following location for object types with Custom Asset Monitors:

```
... \Program Files\ABB Industrial IT\Optimize  
IT\PC, Network and Software Monitoring\Asset  
Monitoring\Bin
```

Use the Register.dll bat file present in the Object Type to register this dll automatically.

3. Copy the Windows Management Instrumentation (WMI) repository to the directory if the files were backed up. Perform the following steps to back up and restore the the WMI repository.
 - a. Right-click **Computer** and select **Manage. Computer Management** is displayed.
 - b. Expand **Configuration** on the left panel. Select **WMI Control**.
 - c. Right-click WMI Control and select **Properties**. The Properties dialog box is displayed.
 - d. Click **Backup/Restore** Tab.
 - e. Click **Back Up Now...**, Specify a name for your backup file window is displayed.

- f. Enter the name of the backup file and click **Save**.

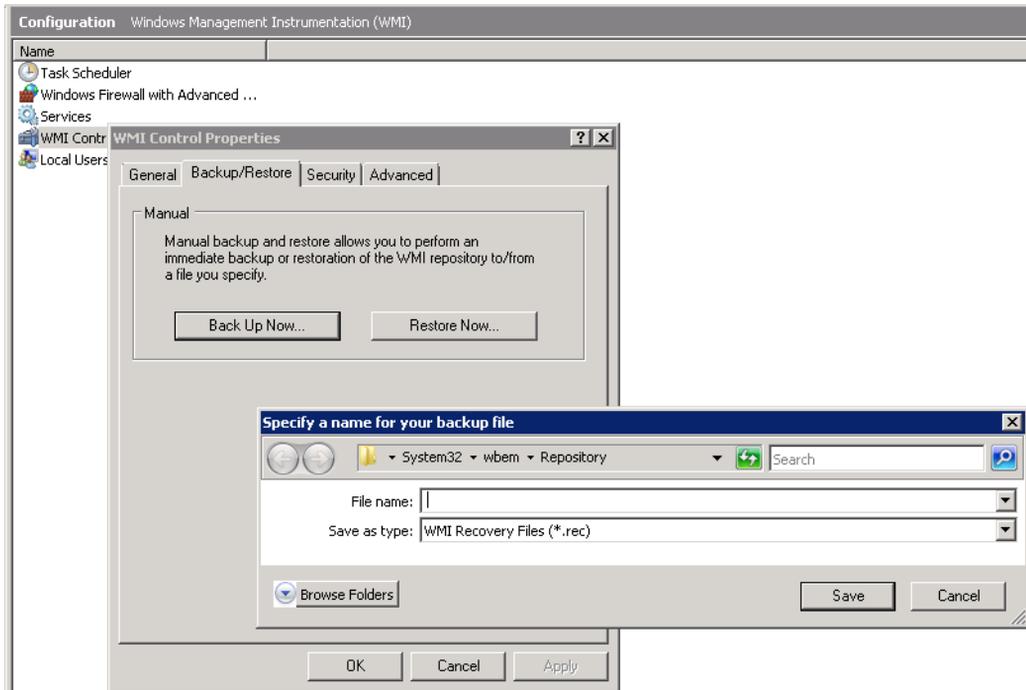


Figure 36. WMI Backup File

- g. Click **Restore Now...**, Specify a backup file to restore window is displayed.
- h. Select the file and click **Open** to restore the backed up file.

SMS and e-mail Messaging

Reconfigure the GSM Device hardware information recorded in the save operation (refer to [SMS and e-mail Messaging](#) on page 172).



It may be necessary to stop and start the Messenger Server Service in the **Service Structure** after the SMS and e-mail Messaging restore operation.

Batch Management

Verify that the primary Batch Server is in primary mode (P is displayed in the Windows Task bar) and the secondary Batch Server is in secondary mode (S displayed in the Windows Task bar). If the proper modes are not displayed, enable the Batch Service Group before proceeding.

To enable the Batch Service Group:

1. Open a Plant Explorer Workplace.
2. Select the **Service Structure**.
3. Select the Services\Batch Service, Service\batch_group_name, Service Group\Service Group Definition aspect.
4. Select the Configuration tab.
5. Select the provider that is currently the secondary Batch Server.
6. Select the **Enabled** check box and click **Apply**.
7. Select the provider that is currently the primary Batch Server.
8. Select the **Enabled** check box and click **Apply**.

Batch data can be reloaded to the batch database from wherever it was archived.



The Batch history archive and restore aspect has been removed in SV5.1.

Perform the following to view any Batch data archived from SV5.0 or previous versions of the Batch product:

1. Create a Virtual Machine (VM) node with the existing system version and its components.
2. Restore Batch data using the Batch Restore window onto this virtual machine.

Once the restored data is in the batch database, it can be viewed using the Batch History Overview window.

Do not restore directly from CDs or DVDs. Restore from hard disk drives which can be restored from CDs or DVDs using commercially available software.

Selecting the Alarm Server

To select the Alarm Server:

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Service Structure**.
3. Use the Object Browser to select:

```
Services > Event Collector, Service >  
Batch_AE_Service, Service Group
```
4. Select `Service Group Definition` in the Aspect List Area.
5. Select the **Special Configuration** tab in the Preview Area.
6. Select Produce IT Batch OPC AE Server in the Alarm Server field.
7. Click **Apply**.



Always perform the Toolbar configuration as described in *System 800xA Batch Management Configuration* and shutdown script procedure as described in the Batch Management section of *System 800xA Post Installation (3BUA000156*)*.

Basic History Service

Restore the Basic History Service data as follows. Perform this procedure on every node where the Basic History Service is running.

1. Stop the Basic History Server from the **Service Structure** by the following procedure:
 - a. Open a Plant Explorer Workplace.
 - b. Use the Structure Browser to open the **Service Structure**.
 - c. Select the **Basic History, Service > Basic, Service Group**.
 - d. Select the Service Group Definition aspect.
 - e. Click the **Configuration** tab.
 - f. Clear the **Enabled** check box and click **Apply**.
2. If it is necessary to keep historical data for the time since the upgraded system was started, copy the current Basic History log files in the following directory:

... \OperateITData\History\{provider ID}

to a temporary directory.

These files will be inserted by using the Archive Tool.

3. Delete all files under:

... \OperateITData\History\{provider ID}

4. Restore the files from the backup of Basic History Service Data to:

... \OperateITData\History\{provider ID}

5. Start the Basic History Service from the **Service Structure**.

6. If [Step 2](#) was performed:

- a. Open the AdvHtArchiveTool located by default in the following directory:

... \Program Files\ABB Industrial IT\Operate IT\Process Portal A \bin

- b. Use the File/Select/Open Archive command and browse to the directory containing the history log files.
- c. Open the Action/Insert Data into Logs command.
- d. Accept the default values in the Time Selection dialog box.
- e. Click **OK** to start the insertion of the saved data to the logs.

Information Management

Refer to [Information Management Post Upgrade Procedures](#) on page 458 in [Appendix , Information Management Upgrade](#) to perform the Information Management post upgrade procedures.

Calculations Service

Calculations that were disabled prior to the upgrade must be enabled by selecting the **Enabled** check box in the Calculations dialog box. Refer to the section on Calculations in *System 800xA Information Management Data Access and Reports (3BUF001094*)*.

To enable the Calculations Service:

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Service Structure**.
3. Select the Calculations Service Object.
4. Select the Service Definition aspect.
5. Click the **Configuration** tab.
6. Select the **Enabled** check box and click **Apply**.

Scheduling Service (Application Scheduler)

Schedules that were disabled prior to the upgrade must be enabled by selecting the **Enabled** check box in the Scheduling dialog box. Refer to the section on Scheduling in *System 800xA Information Management Data Access and Reports (3BUF001094*)*.

To enable the Scheduling Service:

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Service Structure**.
3. Select the Scheduling Service Object.
4. Select the Service Definition aspect.
5. Click the **Configuration** tab.
6. Select the **Enabled** check box and click **Apply**.

Process Engineering Tool Integration

Use the following procedure after updating Process Engineering Tool Integration:

Restore the backed up data directory (in preparation-step prior to upgrade) to the installed directory of Process Engineering Tool Integration. Restore the entire Xml directory contents to:

```
...\Program Files\ABB Industrial IT\Engineer  
IT\Engineering Studio\Process Engineering Tool  
Integration\Xml
```

Miscellaneous Procedures

Perform the following procedures:

- [Upgrade Control Builder M Projects.](#)
- [PC, Network and Software Monitoring.](#)
- [Add Autostart Shortcut.](#)

Upgrade Control Builder M Projects



After upgrading a configuration containing one Engineering and one Production system to 800xA 5.1 Feature Pack, the Control Builder M projects in the two systems should be made identical using the Import/Export tool, Engineering Repository, or by recreating the Engineering System using Backup/Restore before engineering work is restarted. Otherwise there will be a lot of false differences on the AC 800M aspects reported in the import difference report when moving solutions between the systems.

800xA 5.1 Feature Pack 4 has introduced a new (*major*) version. The 800xA 5.0 SP2 version of BasicHWlib (5.0-2) and the 800xA 5.1 version of BasicHWlib (5.1-0) can coexist with the new version (5.1-1) in the 800xA System, and must be used if any controllers are going to stay with the firmware from 800xA 5.0 SP2 and/or 800xA 5.1.

The Control Builder project upgrade will be started automatically the first time the project is opened. It can also be explicitly triggered by starting an empty Control Builder and selecting:

Tools > Maintenance > Upgrade Project

During the upgrade Control Builder asks if the user wants to use the new (5.1-1) or old (5.0-2 or 5.1-0) BasicHWLib version for the controllers in the project. If the intention is to upgrade controller firmware the new version should be selected. If the intention is to not upgrade controller firmware the old version must be selected.

PC, Network and Software Monitoring

1. Perform the following steps on the PC, Network and Software Monitoring Server node.
 - a. Use the Structure Selector to open the **Service Structure** in the Plant Explorer Workplace.

- b. Use the Object Browser to navigate to the:
Services > OpcDA_Connector, Service > SG_IT Server object. If there is no object to navigate to, skip to [Step 1](#) (letter 1, not number 1).
 - c. Open the OPCDA_Provider_<servername> object and double-click on the Service Provider Definition aspect.
 - d. On the **Configuration** tab, clear and select **Enabled** check box and click **Apply**. The **Current** field should change to *Service*.
 - e. Use the Structure Selector to open the **Control Structure**.
 - f. Use the Object Browser to navigate to the IT Server object.
 - g. Double-click OPC Data Source Definition in the Aspect List Area.
 - h. Click on the **Service Group** drop-down menu and select the SG_IT Server.
 - i. Click on the OPCDA_Provider_<servername> which was configured in [Step c](#).
 - j. Click **Apply**.
 - k. Skip to Migrate the IT Asset Monitors ([Step 2](#)).
 - l. Use the Structure Selector to open the **Control Structure**.
 - m. Use the Object Browser to navigate to the IT Server object.
 - n. Double-click OPC Data Source Definition in the Aspect List Area.
 - o. Select **New**.
 - p. Click **Add** and select the appropriate Service Provider from the list.
 - q. Click **OK** twice.
 - r. Click **Apply**.
2. Migrate the IT Asset Monitors. If Asset Optimization **and** PC, Network and Software Monitoring were installed on the 800xA 5.0 SP2 System, then the following must be done for any existing IT Assets that had IT Asset Monitors configured for them.

- a. Use the Find Tool in the Plant Explorer Workplace to locate all the IT Asset Monitor aspect instances in the **Control Structure**.
- b. Right-click on each of the found aspects and select **Goto Object**.
- c. Open the IT Device Manager aspect and click **Generate** to recreate the IT Asset Monitor.
- d. Repeat [Step c](#) for each object in the Find list.
- e. Use the Object Browser to navigate to:
Root, Domain > Asset Optimization, Asset Optimization > AO Server 1, AO Server
- f. Select Asset Optimization Server in the Aspect List Area.
- g. Select the **Enabled** check box in the **AO Server** tab and click **Apply**.
- h. Click **Load all AMs** in the **Asset Monitors** tab.



Basic Computer Monitoring will not upgrade properly from a previous version to the current version. Use the Basic Computer Monitoring Configuration Tool to recreate the configuration.

Add Autostart Shortcut

If it is desired to enable the autostart of the Operator Workplace on client nodes, perform the following:

1. Define a default workplace.
2. The shortcut must be created from the ABB Workplace login window.
3. The shortcut is located in:

```
...:\Users\Username\AppData\Roaming\Microsoft\Windows\
Start Menu\Programs\Startup
```

4. Right-click the shortcut and select **Properties** from the context menu.
5. Add the following to the shortcut target:

```
/WS
```

-or-

```
/WaitForSystem
```

6. Click **OK**.

System Backup

Make complete hard disk and 800xA System backups of the upgraded system.

Section 5 Upgrading 800xA 4.1 to 800xA 5.1 Offline



Upgrading the 800xA System from 800xA 4.1 to 800xA 5.1 requires the plant to be shut down. To guarantee the functionality of the upgraded system, follow the upgrade instructions for the installed products and perform them in the order presented.



Upgrading from 800xA 4.1 to 800xA 5.1 requires that ABB Industrial IT 800xA Core 4.0.0-1 SP1 Rollup 5d (December 2006) or later be installed. If ABB Industrial IT 800xA Core 4.0.0-1 SP1 Rollup 5d (December 2006) or later is not installed, the backup/restore functionality will fail.



Refer to the 800xA for Harmony section of *System 800xA Release Notes New Functions and Known Problems (2PAA106188*)* before upgrading an 800xA 4.1 System if 800xA for Harmony is installed on any node in the system.

Unless otherwise indicated, the person performing this upgrade must use the same user account that was used during the installation of the 800xA System software.

Functional Area Naming

Some 800xA Functional Area names have been changed since the 800xA 4.1 release. [Table 5](#) lists the Functional Area names before and after the upgrade.

Table 5. Functional Area Naming

Name in 800xA 4.1	Name in 800xA 5.1
800xA for Melody	800xA for AC 870P/Melody
Control IT for AC 800M	800xA for AC 800M

Table 5. Functional Area Naming (Continued)

Name in 800xA 4.1	Name in 800xA 5.1
FOUNDATION Fieldbus Device Integration	Device Management FOUNDATION Fieldbus
HART Device Integration	Device Management PROFIBUS & HART
PROFIBUS Device Integration	

Considerations

The following considerations must be taken into account before performing the upgrade.

- Unless otherwise indicated, the person performing this upgrade must use the same user account that was used during the installation of the 800xA System software.
- To guarantee the functionality of the upgraded system, follow these instructions carefully and perform them in a well defined order.
- It is recommended that a disk image be taken of all disks on each node before beginning and after completing the upgrade.
- Backing up the aspect directory (800xA System Backup), reports, history data, graphics, and other application data is required before performing the upgrade.
- Take an inventory of all software on all nodes in the 800xA System before performing the upgrade.

Control Builder M Compatibility Issues

Refer to the compatibility issues detailed in [Appendix B, Control Builder M Compatibility Issues](#) before beginning the upgrade.

Upgrade Flow

This section is organized so that the instructions are presented in the proper upgrade order. Do not skip any steps that pertain to 800xA software being used in the current

or upgraded system. Refer to [Planning for the Upgrade](#) on page 35 for additional information and ideas on how to streamline the upgrade process.

Central Licensing System



Order the licenses required for the current system version and revision. The 800xA 4.1 licenses will not work.

System Upgrade

Perform the following to upgrade the 800xA System.

1. Document all Windows settings including the domain, DNS, policies, users, etc.
2. Refer to the Diagnostics Collection Tool section in *System 800xA Tools (2PAA101888*)* and run the Software Analyzer from the Primary Aspect Server in the 800xA 5.0 SP2 System. This allows for an analysis of the software installed on the different nodes in the 800xA System with an opportunity to correct errors in the 800xA 5.0 SP2 System before upgrading. This is especially helpful when using the System Installer to generate setup packages based on the 800xA 5.0 SP2 System. If there is missing or incorrect software in that version, the System Installer will duplicate that installation in the 800xA 5.1 System.
3. If 800xA for MOD 300 is installed, check and delete the MOD Message Class object before performing the 800xA System backup.

Delete all MOD Message Class objects below the Message Classes object located in:

Library Structure > System Messages > Message Classes



A convenient way to delete the Message Class objects is to export the Message Classes object, delete it and its descendants, and then import the Message Classes object back again.

4. Refer to [Appendix D, Consistency Check](#) and perform the necessary consistency checks.



Perform a consistency check before performing the 800xA System backup. Failure to do so could result in problems when restoring the system after the upgrade.

5. The new support for version handling of aspect data will make all digital signatures in 800xA 4.1 invalid when upgrading to 800xA 5.1. To simplify the upgrade, two applications have been developed to support the re-signing of aspects in 800xA 5.1:
 - **AfwSignatureReport:** Used to create a report with information about signed aspects in 800xA 4.1.
 - **AfwSignatureManager:** Used in 800xA 5.1 to re-sign these aspects.

Perform the following before upgrading from 800xA 4.1 to 800xA 5.1.

- a. Insert 800xA System Installation DVD 1 (for 800xA 5.1) into the drive on a client in the 800xA 4.1 800xA System.
- b. Copy the AfwSignatureReport.exe from the following directory on 800xA System Installation DVD 1 to a directory on the client.

```
Engineering & Development\Accessories\Digital  
Signatures Upgrade Tools\SV4
```
- c. Open a Windows Command Prompt.
- d. Change to the directory where AfwSignatureReport.exe was copied.
- e. Run the following command:
- f. `AfwSignatureReport <filename>.xml`
- g. Save the signature report file <fileName>.xml on an external media during the upgrade.



The digital signature must be valid before saving to the report file.

6. Check that there is only one External Alarm Service Group and that their providers run on Aspect Servers only (not on any Connectivity Server). If not (i.e. there is more than one group and/or there are providers running on Connectivity Servers), keep only one External Alarm Service Group and move

all providers to that group. Also make sure the providers run on the Aspect Servers with a maximum of one provider per Aspect Server.

7. 800xA System backups containing undeployed user created process graphics will result in warning and error messages later in the upgrade process. To avoid these messages, refer to *Industrial IT, 800xA - Engineering, Graphics (3BSE030335*)* and use the Display Tool to deploy all user created process graphics before beginning the 800xA System backup.
8. Refer to [Appendix E, Recording the Number of Aspects and Objects](#) and record the number of aspects and objects in the system before performing the 800xA System Backup.
9. It is important to create backups of node hard disks and the 800xA System before starting the upgrade procedures. Valid backups insure that the system can be restored if necessary.
 - a. It is recommended that a third party backup/restore and/or disk imaging utility be used to save (and restore if necessary) all disks on each node before starting the upgrade procedures.
 - b. Perform the 800xA full backup from the **Maintenance Structure** (Aspect Directory backup type).



Ensure that the Post Installation Procedure for Engineering Studio 4.1.0/0 Rollup 4 (refer to *Release Notes 3BDS011656R4101*) has been performed. Refer also to *Technical Description - Industrial IT System 800xA SV 4.x System Software Versions (3BSE037782* (latest revision))*.

For background information refer to *Product Bulletin - 800xA Eng.Workplace Eng. Studio SV 3.1-SV 4.0, Aspect Types falsely reset (3BDS100999)*.



Avoid engineering or any other changes especially to the Aspect system during the 800xA Backup process.

The 800xA Backup/Restore function makes it possible to make an online backup of a node and perform an offline restore of the same node. A full backup stores all aspect objects and aspect data (application data) in the Aspect Directory.



Verify the Batch Management Servers are operating normally before and during 800xA System backups of systems containing Batch Management nodes. This will ensure the backup of all batch data.

All system extensions that are part of the system must be installed and loaded on the node where the backup will be taken (usually the primary Aspect Server node). No changes can be made (especially to the Aspect directory) during the 800xA Backup process.

When backing up a system with Environments, both the Production and Engineering Environments will be included in the backup. Only the current version of each aspect will be included in the backup. This means that all version history will be removed.



It is only possible to perform the 800xA System backup from the Production Environment.

- Open a Plant Explorer Workplace.
- Use the Structure Selector to open the Maintenance **Structure**.
- Create a Full Backup Definition object.
- Configure the **Scope** and **Storage** tabs.
- Check the disk space and path in the **Storage** tab. A large configuration could require a minimum of five gigabytes of free space.
- Start the backup process.
- Refer to the How to Make a Full Backup topic in *System 800xA Maintenance (3BSE046784*)* for more detailed information on performing the 800xA System Backup.



If EBService timeout issues occur while taking a backup of the 800xA 4.1 System, there is a probability that the DM/PM aspects may be corrupted in the backup files. Restoring the corrupted backup files to the 800xA 5.1 System results in the following error message:

```
Import/Export Error: RestoreFromStream failed.
```

10. Refer to [Pre-Upgrade Procedures](#) on page 236 and perform the pre-upgrade procedures that are applicable to the installed system.
11. Perform the following procedure to shut down the 800xA System:
 - a. Stop all external clients to the 800xA System (OPC DA, HDA, and AE clients that access the 800xA System) before a system shutdown.

- b. From the Configuration Wizard, select **System Administration** and click **Next**.
- c. Select the system to stop and click **Next**.
- d. Select **Systems** and click **Next**.
- e. From the Systems dialog box, select **Stop** and click **Next**.
- f. From the Apply Settings dialog box, click **Finish**.



The 800xA System will shut down within a couple of minutes. The time it takes to shut down may be more or less depending on the size of the 800xA System.

12. Reformat the hard drives of all 800xA System nodes.
13. Install the new operating system defined for the 800xA 5.1 System on all 800xA System nodes. Click **Advanced** when installing the Workstation Operating System or the Server Operating System. This is required to delete the existing partition and recreate a new one. Failure to perform this step will leave old data on the hard drive.
14. Refer to Section 2 - Prerequisites in:
 - Manual Upgrades - *System 800xA Manual Installation (3BSE034678*)*.
 - Automated Upgrades using System Installer - *System 800xA Automated Installation (3BSE034679*)*.and perform all procedures relating to operating system settings, Windows service packs, miscellaneous Windows components installation, other third party software, group policy, 800xA Service User privileges, and Windows updates and hot fixes.
15. Refer to *System 800xA Manual Installation (3BSE034678*)* and install the 800xA 5.1 Central Licensing System Server software and install the license file, as this will be the Primary Aspect Server in the 800xA 5.1 System. This step is not necessary if performing an automated upgrade using System Installer.
16. Refer to *System 800xA Manual Installation (3BSE034678*)* and install all 800xA 5.1 System software per the software inventory taken earlier. This step is not necessary if performing an automated upgrade using System Installer.

17. Refer to [Requirements for VB Graphics Extension Software](#) on page 256 to install Visual BASIC 6.0 with SP6 (if required) and the VB Graphics extensions.

Feature Pack Functionality

18. Perform the system update to the latest Feature Pack:
 - Use the System Feature Pack Update Tool (FUT) to perform the update. Refer to the *System 800xA 5.1 System Feature Pack Update Tool (2PAA107435*)* for user instructions.
-

19. Refer to [Post Upgrade Procedures](#) on page 259 of this instruction and perform all necessary steps.
20. Perform all of the procedures described in [Miscellaneous Procedures](#) on page 303.
21. Refer to *System 800xA Post Installation (3BUA000156*)* and configure Windows Services and Windows Firewall.
22. It is important to create backups of node hard disks and the 800xA System after completing the upgrade procedures. Valid backups insure that the system can be restored if necessary.
 - a. It is recommended that a third party backup/restore and/or disk imaging utility be used to save (and restore if necessary) all disks on each node before starting the upgrade procedures.
 - b. Perform the 800xA full backup from the **Maintenance Structure** (Aspect Directory backup type).

Pre-Upgrade Procedures

Some 800xA System software requires preparatory steps before shutting down 800xA System processes. Perform the applicable procedures in the order presented.

Control IT for AC 800M

Use the following procedure to prepare for the Control IT for AC 800M upgrade:

1. Control Builder stores its settings (systemsetup.sys) on disk in the following directory:

```
... \ABB Industrial IT Data \Engineer IT Data \Control  
Builder M Professional
```

Copy this file to a safe media.

2. Save OPC configurations by selecting:

File > Save Configuration

in the OPC Server Panel.

3. The OPC Server stores configuration files (*.cfg) and settings (systemsetup.sys) on disk. Copy these files to a safe media. The systemsetup.sys file is located in:

```
... \ABB Industrial IT Data \Control IT Data \OPC Server  
for AC 800M
```

The configuration files are stored in the Files folder in the same location.

4. If the system to be upgraded originates from System Baseline 2.1 and has been upgraded in steps through system versions, verify that the Control Builder projects do not use the old obsolete SB2 (System Baseline 2) libraries (libraries of version 1.0-0. For example: ControlStandardLib 1.0/0.

Device Management FOUNDATION Fieldbus

Perform the following to prepare for the Device Management FOUNDATION Fieldbus upgrade.

- [User-Made Modifications to Library Objects Representing FF Standard Blocks.](#)
- [Exporting Locally Stored Parameter Value Sets.](#)

User-Made Modifications to Library Objects Representing FF Standard Blocks

User-made modifications to library objects representing FF standard blocks (these are blocks supported by the Device Type Standard FBs as indicated in the **Block Info** tab of the block class parameter dialog box) will be overwritten during upgrade. If such changes have been made, they can be reconstructed manually. Refer to [Device Management and Fieldbuses](#) on page 265.

Exporting Locally Stored Parameter Value Sets

Export the locally stored parameter value sets as follows:

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Object Type Structure**.
3. Use the Object Browser to navigate to:
FF Libraries, Object Type Group
4. Select FF Management in the Aspect List Area.
5. Click **Open Project**.
6. Select the Function Block from FF Block Library > Function Blocks in the Library view.
7. Double-click on the Function Block to open the properties dialog box for the chosen Function Block.

- Right-click and select **Export** from the context menu (Figure 37).

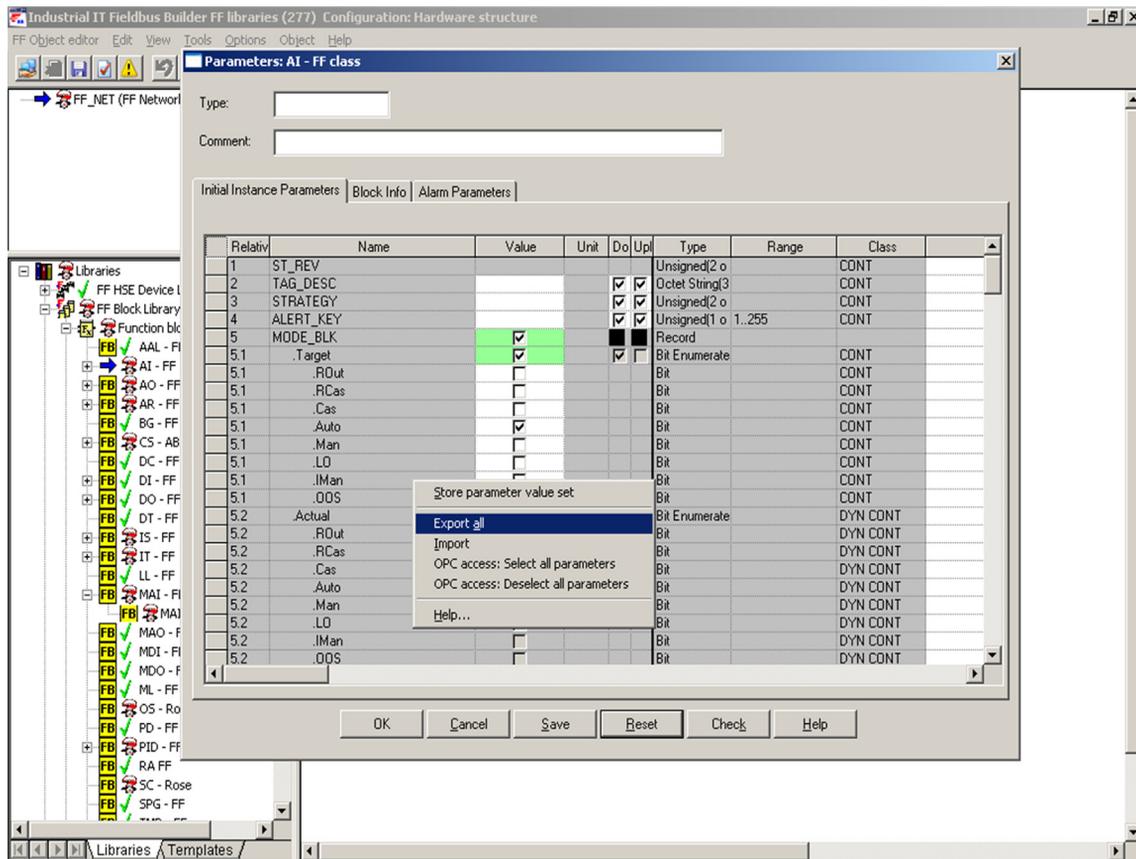


Figure 37. Exporting Locally Stored Parameter Value Sets

- Specify the name and location of the .csv file and Click **OK**.

Device Management PROFIBUS & HART

Historical data sets of Device Type Manager (DTM), exported via the Fieldbus Management aspect, along with device specific DTM files are stored as files on the Primary Aspect Server node. These files and the PROFIBUS/HART OPC Server

configuration are stored after successful 800xA System backup. The path to this folder can be found as follows:

1. Open the Plant Explorer Workplace on the Primary Aspect Server node.
2. Use the Structure Selector to select the **Control Structure**.
3. Use the Object Browser to select the Root Object type.
4. Select the FBB PH Settings aspect.
5. Record the path information for the Primary Aspect Server found in the FBB PH Settings aspect.
6. Use Windows Explorer to copy the folder (default: Fieldbus Builder PH) containing device specific configuration files (in the path recorded in [Step 5](#)) to the 800xA System backup folder, created as described in *System 800xA Maintenance (3BSE046784*)*.
7. If the folder name of the copied folder is not Fieldbus Builder PH, it must be renamed to the default folder name (Fieldbus Builder PH) in the 800xA System backup folder.

PROFIBUS Device Types

PROFIBUS Device Types in 800xA 5.0 and later are based on Hardware Libraries (HWLib). This is different from previous system versions, where these Device Types were based on Hardware Definitions (HWD). As a result, the PROFIBUS Device Types used in connection with the Device Integration software must be linked to new delivered Hardware Libraries to ensure system and upgrade compatibility.



Perform the following procedure only if the exact PROFIBUS Device Type described is used. Otherwise, this procedure can be skipped.

If the *ABB_TZIDC_110-220_SP_Short* module type is used in the Control Structure of the Plant Explorer, a special upgrade procedure must be performed to ensure upgrade compatibility in 800xA 5.0 and later. This module is delivered with the PROFIBUS Device Integration package and its system extensions and is supported by the *ABB_TZIDC_110-220_YP0_v1_0* PROFIBUS Device Type.



The following steps requires Bulk Data Manager (BDM) (Engineering Platform) to be installed. Perform the described steps on an Engineering system node.

1. Open the Engineering Workplace and select the **Control Structure**.
 2. Open the **Find Tool**.
 3. In the <**Add attribute**> selection box select **Structure**.
 4. In the <**Structure**> selection box select **Control Structure**.
 5. In the <**Add attribute**> selection box select **Object Type**. This displays all instances available in the **Control Structure**.
 6. Select the **ABB_TZIDC_110-210_SP_Short** module from the displayed list and click **Search**. If the module type is not available, this section can be skipped.
 7. Open Bulk Data Manager in the **Control Structure** (right-click on the Root node and select **Advanced > Bulk Data Manager**).
 8. Verify that the valid system is selected in the BDM sheet.
 9. Search for and select the **ABB_TZIDC_110-220_SP_Short** module in the **Control Structure**.
 10. Select **Control Properties** in the Aspect List Area and move it via the drag and drop function to the BDM sheet on cell A1 in the Preview Area.
 11. A new window will open in which all parameters will be selected. Confirm the **Complete** selection by clicking **OK**.
 12. Select cell A2 in the BDM sheet and enter the text **Filter:Control Structure**.
 13. Select the project containing the **ABB_TZIDC_110-210_SP_Short** module in the **Control Structure** and move it via the drag and drop function into the BDM sheet on cell A3.
-  If the module is used in different projects, the steps must be repeated for the other projects.
14. Select the **Auto filter** option in the Excel sheet (select **Data > Filter > AutoFilter** in the menu bar).
 15. Select in line A in the BDM sheet, the column named **Source Object** (normally cell C1) and click **Filter**.

16. Search for and select the **ABB_TZIDC_110-210_SP_Short** module. This will now be the only module shown.
17. Enter the text **delete** for each listed module in the column named **Command** (normally cell A1). The Optional selection function can be used.
18. Save the changes to the 800xA System by clicking **Save All Objects**. The modules will be deleted in the **Control Structure**.
19. Remove the text **delete** for each listed module in the column named **Command**.
20. The captions **Short** will be exchanged to **Long** for all listed modules in the column named **Source Object**. The name will now be **ABB_TZIDC_110-210_SP_Long** for all listed modules.
21. Save the changes to the 800xA System by clicking **Save All Objects**. The modules will be created in the **Control Structure**.

800xA for Advant Master and 800xA for Safeguard

Perform the following to prepare for the 800xA for Advant Master and 800xA for Safeguard upgrade.

- [Save the Advant Master Controller Licenses.txt.](#)
- [Save the Configuration Files.](#)
- [Save the DATHR Files.](#)
- [Document the RTA Board Control Aspect Settings.](#)

Save the Advant Master Controller Licenses.txt

Perform the following on the Primary Aspect server in the 800xA 5.0 SP2 System:

1. Save the following file to a safe location.
 - Advant Master Controller Licenses.txt

The default location for the file is:

```
...\Program Files\ABB Industrial IT\Operate IT\AC 400  
Connect\Licenses
```

Save the Configuration Files

The configuration files in the Connectivity Servers can contain special configuration settings for Alarm and Event or Data access. Refer to *800xA for Advant Master, Configuration (3BSE030340*)* for more information about these special configuration settings.

If such changes are available in the configuration files, perform the following on each 800xA for Advant Master and 800xA for Safeguard Connectivity Server node: Save the following files to a safe location:

- AdvDsMasterAdapter.csv
- AdvMbAeOPCServer.csv

The default location for the files is:

```
...\Program Files\ABB Industrial IT\Operate IT\AC 400  
Connect\Bin
```

Save the DATHR Files

Perform the following on each 800xA for Advant Master and 800xA for Safeguard Connectivity Server node:

1. Save the following files to a safe location:
 - DATHR1.CD
 - DATHR2.CD
 - DATHR3.CD

from the folder:

```
...\Program Files\ABB Industrial IT\Operate IT\AC 400  
Connect\AdvantBase\Data\RTA\Init\
```

and record which files belong to which node.

Document the RTA Board Control Aspect Settings

Perform the following on each 800xA for Advant Master and 800xA for Safeguard Connectivity Server node:

1. Document the following settings in the RTA Board Control aspect for reconfiguration after the upgrade.
 - MB300 node and network address.
 - Time synchronization registry key (REVERSED_SYNC_MODE):


```
HKEY_LOCAL_MACHINE\SOFTWARE\ABB\AFW\SystemModules\
AfwTimeServerAdaptor\1.0-0\Private
```

800xA for Harmony

Perform the following to prepare for the 800xA for Harmony upgrade.



When upgrading an existing 800xA 4.1 system to 800xA 5.1 using System Installer, verify that the Firewall is turned on and then execute the 800xA for Harmony 5.0 SP2 HarmonyVerifyHelper.exe file (accepting all defaults) on all Harmony Servers and Aspect Servers BEFORE using the System Planner tool or performing any other upgrade or update procedure. This file is located on 800xA System Installation DVD 1 in the following folder:

```
System Installer\Installation Tools\Upgrade\
HarmonyVerifyHelper
```

Save 800xA for Harmony Information

Use the following procedure to save 800xA for Harmony information:

1. Log in to the 800xA for Harmony local service account on the Configuration Server or Configuration Server with Connectivity Server node.
2. Create a backup of the Configuration Server database.

a. Select:

Start > All Programs > ABB Industrial IT 800xA > 800xA for OCS Systems > Harmony > Configuration > Backup Configuration

b. Click **Connect**.



Save the backup file to a safe media like a network share or removable disk. Otherwise, the file will be deleted once an upgrade occurs due to a reload of the node.

c. Click **Browse** to name the backup file and choose a location to save it.

- d. Click **Backup**.
- e. Click **Exit** when the backup is complete.

800xA for AC 870P/Melody



Disable the Melody AutoConfigurator service in **Plant Explorer > Service Structure** (the service must be disabled when the system maintenance backup is started).



Back up project specific changes (if applicable):

- DHCP Server Configuration.
- ETC Host files for Melody Connectivity Servers.
- Changes in the Default Object Types (e.g. manual changes for permissions in Control Connection Aspects).
- ConvDB changes only on Configuration Server (change to the directory ...\\Program Files\\ABB Industrial IT\\Configuration\\Melody Tag Importer\\.. and backup the files MELCONVERTER.BAT, ConvDB.mdb and ConvDB_<Hostname>.mdb.



ConfigServer node: Ensure that no Commissioning will be done from the Melody Composer during this upgrade.

Use the following procedure to save 800xA for AC 870P/Melody information:

1. Log in to the 800xA Service account on the Configuration Server node.
 - a. Create a backup of the Configuration Server database.
 - b. Select:
Start > All Programs > ABB Industrial IT 800xA > 800xA for Melody > Configuration > Backup Configuration
 - c. Click **Connect**.



Save the backup file to a safe media like a network share or removable disk. Otherwise, the file will be deleted once an upgrade occurs due to a reload of the node.

- d. Click **Backup**.
- e. Click **Exit** when the backup is complete.

800xA for MOD 300

Ensure that the configuration data noted in the **Customized Data for Backup** appendix in *800xA for MOD 300 Configuration (3BUR002417*)* has been recorded.

PLC Connect

1. If the PLC Connect IEC 60870 feature is installed and configured, the IEC configuration must be saved. Refer to the section on configuring the IEC 60870 driver in *System 800xA PLC Connect Configuration (3BSE035041*)* for more information.
2. If the PLC Connect Communication Server Pre Treatment function is being used in the application (refer to *System 800xA PLC Connect Configuration (3BSE035041*)* for more information), make a backup of the Pretreat dll (Pretreat3.dll or Pretreat4.dll, be sure to select the version used). The Pretreat dll is located in the following folder on the PLC Connect Connectivity Server:

```
...\ABB Industrial IT\Operate IT\PLC Connect\Bin
```



The path is the default location of the file. If it has been placed somewhere else, make a backup from that location.

3. Make a backup of the application project and source files for the Pretreat dll.

Engineering Studio IO Allocation

Deactivate the auto update mode in IO Allocation.

1. Start the Engineering Workplace.
2. Open the IO Allocation tool on any object by right-clicking on the object and selecting **Advanced > IO Allocation** from the context menu that appears.
3. Verify that no check mark symbol is visible in the **Options > Autoupdate CBM** menu item in the IO Allocation tool.

Asset Optimization

Preparing for the Asset Optimization upgrade requires recording the value of the OPC Group Update Rate and backing up data to a safe media.

Record the Value of the OPC Group Update Rate

Use the following procedure to record the value of the OPC Group Update Rate.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Control Structure**.
3. Use the Object Browser to navigate to:

```
Root > Asset Optimization
```
4. Select `Afw OPC-DA Asset Monitor Data Source` in the Aspect List Area.
5. Record the value of **OPC Group Update Rate (ms)** shown in the Preview Area. This value must be reconfigured after the upgrade.

Back Up Data to Safe Media

Use the following procedure to back up Asset Optimization information (perform only the steps applicable to the system):

1. Asset Monitoring:



Asset Monitoring directories will be found on every Asset Optimization Server node and any other node defined as an Asset Monitoring Server.

- a. If Runtime Asset Monitors are being used in the system, save the Runtime Asset Monitor data directory (`DeviceRunTimeMSLogicStore`) to a safe media. This directory stores the runtime information calculated by the Runtime Asset Monitors running in this node. This directory is located in:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset  
Optimization\AssetMonitorEnvironment\Bin
```

- b. If XY Profile Deviation Asset Monitors are being used in the system, save the XY Profile Deviation Asset Monitor data directory (`XY_Reference_Profiles`) to a safe media. This directory is located in:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset  
Optimization\AssetMonitorEnvironment\Bin
```

2. Maximo Integration:



If using Maximo Integration, the Maximo Integration information (Maximo Equipment ID and Maximo Credentials aspects) **must** be saved from all Asset Optimization Server nodes. Refer the **Service Structure** for the name of the Asset Optimization Server nodes.

- a. The MxDef files provide the mapping between the 800xA System environment and the Maximo system. If the MxDef files were customized per the instructions in *Industrial IT, 800xA - Asset Optimization, Configuration (3BUA000118*)*, back up the customized MxDef files to safe media.

- The customized MxDef Files for Maximo versions 4.1 and 4.1.1 are located in the following directory:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset Optimization\ABBAO\Services\MOM\MxDefs\
```

- The customized MxDef files for Maximo version 5.1 and 5.2 are located in the following directory:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset Optimization\ABBAO\Services\MOM\MxDefs\Maximo5\MxServer
```

- The customized MxDef files for Maximo version 6.2 are located in the following directory:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset Optimization\AOECSConnector\MaximoDef
```

- b. Back up the AOMaximoModel.xml file to a safe location. A backup of AOMaximoModel.xml is necessary because the ECS model for Maximo also needs to be modified if the MXDef files are customized.

The model file is available at the following location:

```
... \program files\ABB Industrial IT\Optimize IT\Asset Optimization\AOECSConnector\ECSDefinitions
```



The pending fault reports residing in the system are available in the following directory structure:

```
... \OperateITData\OptaoACDs
```

Backup the entire OptaoACDs folder.

3. SAP/PM Integration:



If using SAP/PM Integration, the SAP/PM Integration information (SAP Equipment ID and SAP Credentials aspects) **must** be saved from all Asset Optimization Server nodes. Reference the **Service Structure** for the name of the Asset Optimization Server nodes.

- a. Although the SAP/PM system is separate from the 800xA System, it is a good idea to back up the system in use. Follow SAP/PM standard practices for SAP/PM system backup.
- b. The SAPPMDf files provide the mapping between the 800xA System environment and the SAP/PM system. If the SAPDef files were customized per the instructions in *Industrial IT, 800xA - Asset Optimization, Configuration (3BUA000118*)*, back up the customized SAPDef files to safe media.

The customized SAPPMDf files for SAP version4.7 are located under:

```
...\Program Files\ABB Industrial IT\Optimize IT\  
Asset Optimization\AOECSConnector\SAPPMDf
```

- c. Back up the AOSAPModel.xml file to a safe location. A backup of AOSAPModel.xml is necessary because the ECS model for SAP also needs to be modified if the SAPPMDf files are customized.

The model file is available at the following location:

```
...\program files\ABB Industrial IT\Optimize IT\Asset  
Optimization\AOECSConnector\ECSDefinitions
```



The pending fault reports residing in the system are available in the following directory structure. Backup the entire OptaoACDs folder.

```
...\OperateITData\OptaoACDs
```

4. DMS Calibration Integration:



The DMS Calibration Integration approach is changed in 800xA 5.1. Upgrade of DMS Calibration Integration is not supported. Reconfigure the DMS Calibration Integration based on an engineered solution.

Contact ABB technical support for more information.

PC, Network and Software Monitoring

Use the following procedure to prepare for the PC, Network and Software Monitoring upgrade.

1. If there are user defined Script, Resource, and Assembly files they need to be backed up. The user files are located in:

```
...\Program Files\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Scripts\User
```

```
...\Program Files\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Assemblies\User
```

```
...\Program Files\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Resources\User directory
```

Copy the files in these directories to a safe location.

2. Shut down the PC, Network and Software Monitoring Server node.
 - a. Use the Structure Selector to open the **Service Structure** in the Plant Explorer Workplace.
 - b. Use the Object Browser to navigate to:

```
Services > OpcDA_Connector, Service > SG_IT Server,  
Service Group > OPCDA_Provider_Node Name, Service  
Provider
```

(where Node Name is the name of the PC, Network and Software Monitoring Server node).
 - c. Select `Service Provider Definition` in the Aspect List Area.
 - d. Click the **Configuration** tab to produce a view in the Preview Area.
 - e. If the **Enabled** check box is selected, clear it and click **Apply**.

PC, Network and Software Monitoring Device Library

Use the following procedure to prepare PC, Network and Software Monitoring Device Library upgrade:

1. Back up MOF files (if they exist) to a safe location. The MOF files are located in:

```
... \Program Files\ABB Industrial IT\Optimize IT\PC,
Network and Software Monitoring\MOFS
```

2. Back up Custom Asset Monitor dlls to a safe location if object types with Custom Asset Monitors are loaded. The dlls are located in:

```
... \Program Files\ABB Industrial IT\Optimize
IT\PC, Network and Software Monitoring\Asset
Monitoring\Bin
```

SMS and e-mail Messaging

Save all GSM Device hardware information. Record information for the GSM device on the SMS and e-mail Messaging GSM Hardware Setup Worksheet shown in [Table 6](#).

Table 6. SMS and e-mail Messaging GSM Hardware Setup Worksheet

Item	Setting/Value
Spooler Settings	
Activate Outbox Spooler	Checked (check and leave checked)
Activate Inbox Spooler	Checked (check and leave checked)
Interval for Checking for Incoming Messages	Value: ____ Seconds Minutes (circle 1)
Port Settings	
COM Port	Value: COM ____
Baud Rate	Value: ____
Data Bits	Value: ____
Parity	Value: ____
Stop Bits	Value: ____
PIN and Properties	

Table 6. SMS and e-mail Messaging GSM Hardware Setup Worksheet (Continued)

Item	Setting/Value
Query PIN	Checked or Unchecked (circle one)
PIN (only if Query PIN is checked)	Value: _____
Save PIN (only if Query PIN is checked)	Checked or Unchecked (circle one)
Own Number (telephone number of SIM card (including Country Code) in GSM hardware)	Value: _____
Initialization String for GSM Hardware	Value: _____ _____ _____ _____
General Service Properties	
Name (GSM service provider)	Value: _____
Port	Value: COM _____
SMSC	Value: _____
Default Country Code	Value: _____
Default Prefix	Value: _____
Number of Attempts	Value: _____
Splitting Service Properties	
Splitting	Checked or Unchecked (circle one)
Optimize Splitting	Checked or Unchecked (circle one)
Enumerate Splitting	Checked or Unchecked (circle one)
Narrowband Sockets	Checked or Unchecked (circle one)

Table 6. SMS and e-mail Messaging GSM Hardware Setup Worksheet (Continued)

Item	Setting/Value
Messaging Service Properties	
Add Before Message	Blank (verify and do not change)
Use for Delivery Notification Only	Unchecked (verify and do not change)
Default Option	0 (verify and do not change)
Message General Properties	
Replace CR LF for Incoming Messages	Checked or Unchecked (circle one)

Batch Management

1. Verify all scheduled batches are completed or terminated.
2. Disable the Batch Alarm & Event Service Group and Batch Service Group before proceeding. To disable the service groups:
 - a. Open a Plant Explorer Workplace.
 - b. Use the Structure Selector to open the **Service Structure**.
 - c. Use the Object Browser to select:

```
Services > Event Collector, Service >
batch_group_name, Service Group
```
 - d. Select Service Group Definition in the Aspect List Area.
 - e. Select the **Configuration** tab in the Preview Area.
 - f. Clear the **Enabled** check box and click **Apply**.
 - g. Determine the name of the nodes that are currently Primary and Secondary Batch Servers,
 - h. Use the Object Browser to select:

```
Services > Batch Service, Service > batch_group_name,
Service Group
```

- i. Select **Service Group Definition** in the Aspect List Area.
- j. Select the **Configuration** tab in the Preview Area.
- k. Select the provider that is currently the Secondary Batch Server.
- l. Clear the **Enabled** check box and click **Apply**.
- m. Select the provider that is currently the Primary Batch Server.
- n. Clear the **Enabled** check box and click **Apply**.

Information Management

Refer to [Information Management Pre-Upgrade Procedures](#) on page 453 in [Appendix , Information Management Upgrade](#) to perform the Information Management pre-upgrade procedures.

Scheduler Service (Application Scheduler)

Disable Schedules before stopping the servers and performing the upgrade. The Schedules will need to be manually enabled again following the upgrade.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Service Structure**.
3. Select the Scheduling Service Object.
4. Select the Service Definition aspect.
5. Click the **Configuration** tab.
6. Clear the **Enabled** check box and click **Apply**.

Calculations Service

Disable Calculations before stopping the servers and performing the upgrade.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Service Structure**.
3. Select the Calculations Service Object.
4. Select the Service Definition aspect.

5. Click the **Configuration** tab.
6. Clear the **Enabled** check box and click **Apply**.

Basic History Service Data



Back up the Basic History folder for each Basic History Service Provider in the **Service Structure**. Depending on the system, the Basic History Service data can be present on a number of different node types (Connectivity Servers, IM Servers, AO Servers, etc.). It is best to search for the directory described in this procedure on all nodes, and if there is data present, back up that data.

To save Basic History Service data:

1. Stop the Basic History Server from the **Service Structure**.
2. Use Windows Backup (not the 800xA Backup) to backup the files in the:
`... \OperateITData\History\{provider ID}`
directory.
3. Start the Basic History Server again from the **Service Structure**.

Process Engineering Tool Integration

Back up Process Engineering Tool Integration information. The project data is located in the following directory:

```
... \Program Files\ABB Industrial IT\Engineer  
IT\Engineering Studio\Process Engineering Tool  
Integration\Xml
```

Save the entire Xml data directory to a safe media such as a network share or removable disk. The directory contains the default mapping files (*.dmf) modified on the project, accelerator files (*.acc), and configuration files (*.pcf and *.fcf).

Requirements for VB Graphics Extension Software



These procedures are applicable to all 800xA Systems.



- [Installing Visual BASIC 6.0 with SP6](#) must be followed for all nodes that use Graphics Builder and the Primary Aspect Server node. This must be done before performing the [800xA System Restore](#).
- [Installing the VB Graphics Extension Software](#) must be followed for each VB Graphics extension software package on all nodes in the 800xA 5.1 System, if the base product was installed on the 800xA 4.1 System. This must be done before performing the [800xA System Restore](#).



To deploy VB Graphics, the user must belong to the Application Engineer IndustrialIT user group and Windows Local Administrators.



Refer to *System 800xA Engineering, Process Graphics Migration Tool* for information on migrating VB Graphics to Process Graphics 2.

Installing Visual BASIC 6.0 with SP6



Use of an Aero Theme with the Workstation Operating System will lead to screen latency issues in the VB Graphics Builder. This is because the Aero theme uses advanced rendering schemes. Turn off the Windows Aero theme and switch to either none or Windows Classic for use of VB Graphics. The behavior of VB IDE in the Workstation Operating System will then be the same as that in Windows XP.

All nodes that use the Graphics Builder and the Primary Aspect Server node need a Professional or Enterprise Edition of Visual BASIC 6.0 with SP6. The licensed copy used on the 800xA 4.1 System must be installed on the 800xA 5.1 System. Follow the installation procedure provided with Visual BASIC.

Installing the VB Graphics Extension Software

Perform the following procedure to install the VB Graphics extension software on all nodes in the 800xA 5.1 System, if the base product was installed on the 800xA 4.1 System.

1. Insert System Installation DVD 5 into the drive.
2. Wait for the Installation AUTORUN screen to appear.

3. Select:

Manual Installation > VB Graphics Extensions

as shown in [Figure 38](#).

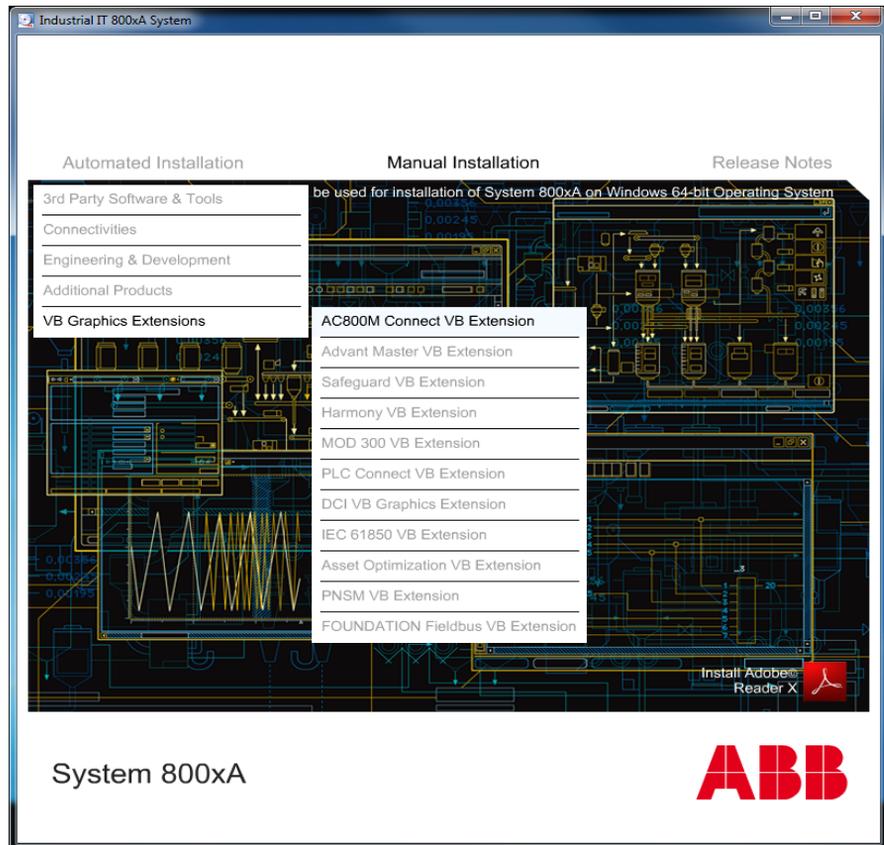


Figure 38. Installation AUTORUN Screen

4. Select a VB Graphics extension to install (the installation of the Batch Management VB Graphics extensions is described later in this procedure).
5. The Installation Wizard for the selected VB Graphics extension appears.

6. Follow the Installation Wizard to complete the installation. Choose **Typical** as the installation type.
7. Repeat the procedure for each required VB Graphics extension that appears in the Installation AUTORUN Screen.
8. This step only applies to the VB Graphics extensions for Batch Management when using System Installer to upgrade the 800xA System. If Batch Management was installed manually during the upgrade, the VB Graphics extensions for Batch Management were installed at that time.
 - a. Select:
Manual Installation > Batch Management
 - b. The Installation Wizard for Batch Management appears.
 - c. Select **Modify** when the dialog box appears that offers that choice.
 - d. Select to install the Batch Management VB Graphics extensions in the Installation Type dialog box.
 - e. Follow the Installation Wizard to complete the installation.

Post Upgrade Procedures

The remainder of this section describes how to:

- Perform the 800xA Restore procedure.
- Load the VB Graphics extensions on the Primary Aspect Server.
- Restore historical data.
- Restore the necessary data for each Functional Area.

800xA System Restore



Refer to [Requirements for VB Graphics Extension Software](#) on page 256 before performing the 800xA System Restore.



Perform this procedure only on the Primary Aspect Server.



The User Account that is used for 800xA System restore via the Configuration Wizard must be a member of the following groups:

- IndustrialITUser.
- IndustrialITAdmin.
- Local Administrators.



Click **Yes** if during restore a message box appears stating:

A required system extension is not installed Name :
System_Instruction

The backup/restore utility supports the restoring of 800xA system information. The following steps outline the 800xA system restore procedure.



Refer to *System 800xA Maintenance (3BSE046784*)* for more information on restoring the system.

1. Start the restore procedure.
 - a. Select:

Start > All Programs > ABB Industrial IT 800xA > System > Configuration Wizard

- b. The Select Type of Configuration dialog box appears. Select **Restore System** and click **Next**.



Restart the node when advised during the restore procedure.

2. Check for messages in the log file (select the **View Log** check box in the Configuration Wizard). Refer to [Appendix A, Warning and Error Messages](#) to resolve any received warning or error messages.
3. Check the CPU load in the node. The System Message service may generate a high load (>90%). If this continues for longer than approximately 10 minutes, restart the service.



If a message stating that a full deploy of the Generic Control Network is needed, click **OK**.

4. One node at a time, start up and connect all nodes to the 800xA System in the following order:
 - Aspect Server nodes.
 - 800xA for Harmony Configuration Server nodes.
 - Connectivity Server nodes.
 - Application Server nodes.
 - Client nodes.
- a. Use the following guidelines while connecting nodes, using the Configuration Wizard. This must be performed on the node that is going to be connected, not on the node on which the restore was performed.
- b. Select the Primary Aspect Server (the server on which the system will run) in the **Connect to another System on Node** drop down-list box, in the Connect to System dialog box.
- c. If the node is an IM Server, verify that the ABB Process Administration Service (PAS) is set to manual in the Services Control Panel (run Services.msc from the Run dialog box). Stop the service if it is running.
- d. Select **Connect Node** from the Select Type of Configuration dialog box.
- e. Set the current system as the default system when connecting nodes to the system.

- In some cases, problems may be encountered when connecting nodes to the system. Verify that the system software user settings are correct using the Configuration Wizard. Restarting the node again may also solve the problem.
- Wait until all services in the newly connected node are up and running before connecting the next node. Select the Node Administration Structure\connected_node_name\System Status Viewer aspect to monitor the status of services. If some services will not start up, restarting the node may help.



Do not include services that were stopped manually as part of the pre-upgrade procedures. These will be manually restarted later in the post upgrade procedures.

- f. Restart each node after it has been connected to the system.



Run the System Software User Settings until OK. Restart if it is not working and if the message:

```
Invalid User
```

appears.

5. Refer to [Appendix E, Recording the Number of Aspects and Objects](#) and record the number of aspects and objects in the system. Compare these values to those recorded when the system was backed up.
6. Verify the affinity settings to ensure best system performance. Refer to *System 800xA Post Installation (3BUA000156*)* for more information on how to configure affinity.

Consistency Check

Refer to [Appendix D, Consistency Check](#) and perform the necessary consistency checks.

Loading the VB Graphics Extensions

Perform the following procedure on the Primary Aspect Server to load the VB Graphics extensions:

1. Refer to [Table 7](#) for a list of VB Graphics extensions available to be loaded.
2. Start the Configuration Wizard from the primary Aspect Server node. Select:

Table 7. VB Graphics Extensions

Directory	Software
800xA Connectivities	AC 800M Connect VB Graphics Extension
	ABB 800xA for Advant Master VB Graphics Extension
	ABB 800xA for Harmony VB Graphics Extension
	ABB 800xA for IEC61850 VB Graphics Extension
	ABB 800xA for MOD 300 VB Graphics Extension
	ABB 800xA for Safeguard VB Graphics Extension
	ABB PLC Connect VB Graphics Extension
Asset Optimization	ABB Asset Optimization VB Graphics Extension
	ABB PC, Network and Software Monitoring VB Graphics Extension
Batch Management	Batch VB Graphics Extension
	Batch Advanced Templates VB Graphics Extension
Device Management & Fieldbuses	ABB Device Management FOUNDATION Fieldbus VB Graphics Extension

Start > All Programs > ABB Industrial IT 800xA > System > Configuration Wizard

3. Open the System Extension Load dialog box by going to:
System Administration > Select System > System Extension Load
4. A view appears with the available VB Graphics extensions listed in the left pane. Select the system extension to load in the list in the left pane and move it to the list in the right pane by clicking >. To move all the system extensions from the left pane to the right pane, click >>.
5. The red cross, green check mark, and warning icons indicate the status of the dependency evaluation.
 - The green check mark indicates that the system extension must be loaded first.

- The red cross icon indicates that the system extension can not be loaded until the one with the green check mark icon is loaded.
 - The warning icon indicates that the system extension can be loaded, but that there is additional information available in the Description frame in the lower part of the dialog box. The additional information can, for example, be that the system extension contains aspect types that are not environment aware.
6. If the list in the right pane contains more than one system extension, click **Press header to autosort** to sort the system extension load order with regard to dependencies.
 7. All system extensions in the right pane should be marked with the green check mark or the warning icon.
 8. Click **Next** and the Apply Settings dialog box appears.
 9. Click **Finish** to load all system extensions.
 10. A progress dialog box is shown during the load. Click **View Log** to view log messages during load.



The load is aborted if:

- The user clicks **Abort**.
- An error occurs; for example, if the Configuration Wizard fails to load a file into the system.

An aborted system extension load can be resumed from the System Extension Maintenance dialog box.

11. When the load operation is finished, click **Finished** and view the Configuration Wizard log to verify that no errors occurred during the load.
12. Close the Configuration Wizard.

800xA Documentation Maintenance



Previous versions of the 800xA System (800xA 5.0 SP1 and earlier) included a system extension for 800xA Documentation. This system extension is no longer included.

Delete all documentation aspects (denoted by an open book icon) with a category name of Application Manual, Operating Manual, Installation Manual, or Technical Reference Manual found in the **Product Type Structure**.



If any customer-specific documentation aspects have been added, it is necessary to browse through the **Product Type Structure** and delete the 800xA documentation aspects individually so that customer-specific documentation will not be accidentally deleted.



Use the Find Tool in the Plant Explorer Workplace to find the documentation aspects.

The System Instructions system extension must be removed (unregistered). To unregister the System Instructions system extension from the 800xA system:

1. Use Windows Explorer to navigate to:

```
...:\Program File\ABB Industrial IT\Operate IT\Process Portal A\bin
```

2. Double-click `AfwRemoveSystemInstructions.exe` to execute the program.

Composite Graphic Elements

There may be a problem accessing objects in composite graphic elements with `EnableInput` set to false after upgrading to 800xA 5.0 SP1 or later.

Refer to *Product Bulletin 3BSE052342* for more information.

Graphic Overlap Displays

After upgrading from 800xA 4.1 to 800xA 5.1, a graphic overlap display can be brought up one time, but not twice. Perform the following so that graphic overlap displays can be brought up more than one time.



Be extremely careful when making changes in the registry. Do not make any changes in the registry without first making a backup copy of the registry. Refer to the online help for the registry editor on how to create a backup.

Set the following:

- **ApartmentCacheSize = 0**

Registry Location:

HKEY_LOCAL_MACHINE\SOFTWARE\ABB\AFW\SystemModules\
WorkplaceApplication\1.0-0\private\WPApartment\ApartmentCacheSize

Reconfiguring Group Displays

New Group Display aspects that are created and configured in the **Object Type Structure** on the object types and instances will work correctly even if there is more than one aspect with the same name but each aspect has a different Aspect Category.

Configured Group Display aspects that already exist in the **Object Type Structure** and on the object types and instances should be reconfigured for the aspects to display correctly. (This is required for the reference to an aspect to be stored along with its Category ID.)

Device Management and Fieldbuses

After installation of 800xA 5.1 software all third party software for Device Type Objects used in the previous system version must be reinstalled. Additionally PROFIBUS Device Type Objects used in the Control Builder M project must be adapted to new delivered Hardware Libraries.

Restore Device Types



The procedures in the System Restore Wizard function in the Device Library Wizard must be performed for Fieldbus Device Types before restoring the Control Builder M project, otherwise the upgrade will fail. The Control Builder M upgrade can only be performed once.

The following steps for Fieldbus Device Types need to be carried out on every 800xA system node. Perform the System Restore Wizard procedure on the nodes in the following sequence:

- Aspect Servers (including redundant Aspect Servers).
- Connectivity Servers (including redundant Connectivity Servers).
- Application Servers.
- Clients.



Restore the Device Types on the Primary Aspect Server node before starting to install them on other system nodes. Do not run parallel installations of Device Types on other system nodes unless all Device Types are restored on the Primary Aspect Server node. Installation of Device Types on other system nodes can be done in parallel after they are restored on the Primary Aspect Server node.



If the system contains FOUNDATION Fieldbus Device Types, check the following before proceeding to the next step:

- Open a Plant Explorer Workplace.
- Use the Structure Selector to open the **Object Type Structure > FF Libraries**.
- Check to see if there is more than one entry of FF H1 Device Library, FF Object Type Group.
- If there is more than one entry, perform FF Upload once so there is only one instance of FF H1 Device Library, FF Object Type Group present. If there is only one entry, proceed to the next step using the Device Library Wizard.

1. Start the Device Library Wizard. Select:

Start > All Programs > ABB Industrial IT 800xA > Device Mgmt > Device Library Wizard

-or-

double-click the Device Library Wizard icon on the desktop.

2. Navigate to:

Device Type Administration > System Restore Wizard

and choose the first option in the System Restore Wizard as shown in [Figure 39](#) and click **Next**.

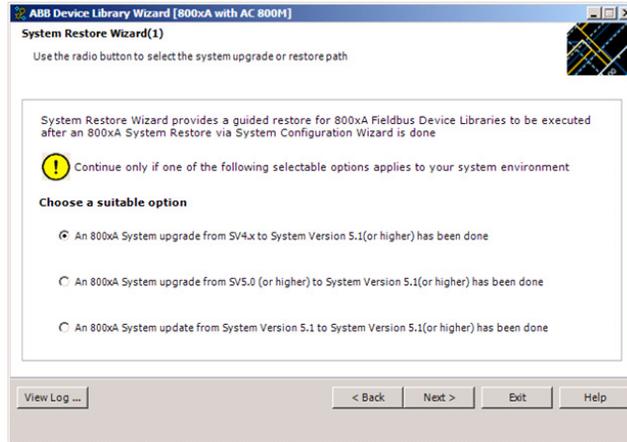


Figure 39. System Restore Wizard (1)

3. Choose whether or not this system node has been reformatted as shown in [Figure 40](#) and click **Next**.

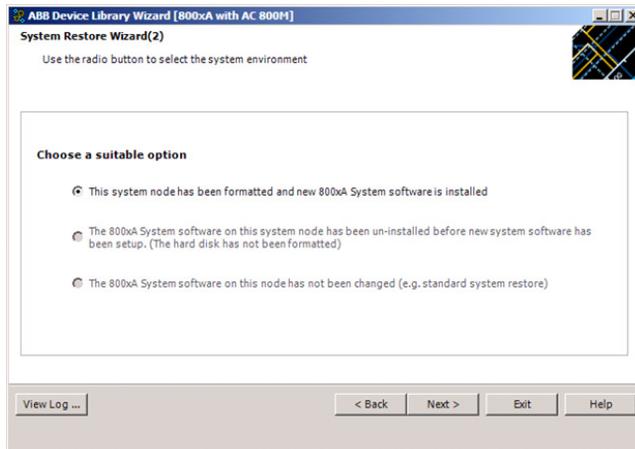


Figure 40. System Restore Wizard (2)

4. Depending on which fieldbus protocol is used in the previous system version environment, insert one of the delivered Device Library system DVDs in the DVD drive (e.g. Device Library HART – DVD).
5. Click **Browse** and navigate to the DVD drive.
6. When the drive has been selected in the Browse for folder dialog box, click **OK** in that dialog box and then **Next** in the ABB Device Library Wizard.
7. The Device Library Wizard scans the 800xA System for fieldbus device types that are already used and compares the results with the contents of the DVD. Device Types available in the 800xA System and the DVD are shown in the

Extract tab of the Device Library Wizard (Figure 41).

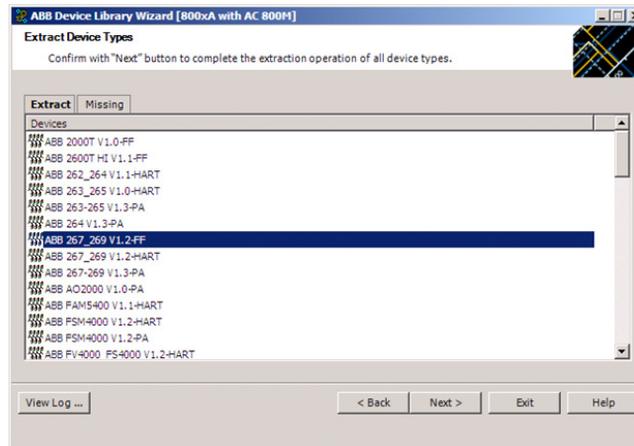


Figure 41. Extract Device Type Files

8. Click **Next** to start the extraction process.
9. Device Types available in the 800xA System but not on the DVD are displayed in the **Missing** tab. If there are any Device Types showing in the **Missing** tab, **Next** in the Device Library Wizard is disabled. Navigate to the Browse dialog box by clicking **Back** and inserting a new Device Library DVD in the DVD drive.
10. There may be some Object Types that are either customer created, or are the latest Device Types downloaded from ABB SolutionsBank. These will not be available on the DVDs. The Device Library Wizard will prepare a list for these

Device Types (Figure 42). Install these Device Types manually.

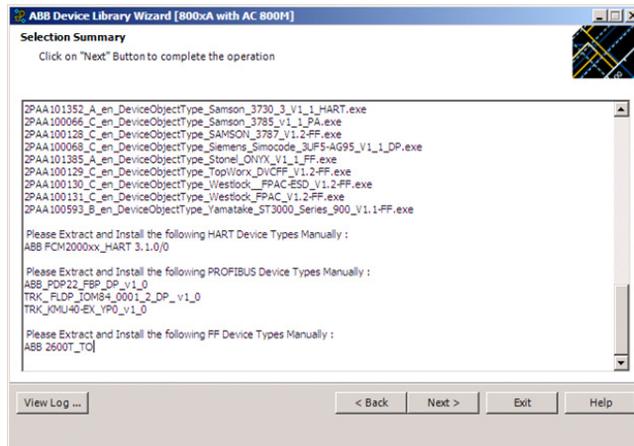


Figure 42. List of Files to be Manually Installed

11. Repeat this procedure until all Device Types are extracted to the 800xA System node and the **Missing** tab does not list any device types.
12. If the Device Library DVDs do not contain all Device Types used in the previous system version, the missing Device Types must be downloaded from ABB SolutionsBank.



It is only possible to complete the Wizard if all Device Types have been successfully extracted.

13. When the extraction process is completed successfully, the Device Types need to be re-installed on the 800xA System node. Click **Next** to launch the Re-

installation of Device Types dialog box shown in [Figure 43](#).

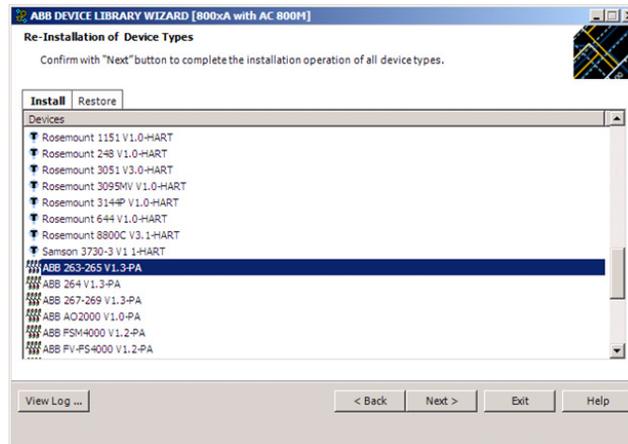


Figure 43. Re-install Device Types Dialog Box

14. Follow the Device Library Wizard procedure to complete the installation. If Control Builder M is installed on the node, the Device Library Wizard will open Control Builder M and decide which device instances are linked to Standard Hardware Libraries from Device Integration. If some Device Types are custom created or modified then these instances will be linked to custom Hardware Libraries at the time of the Control Builder M project upgrade

(Figure 44).

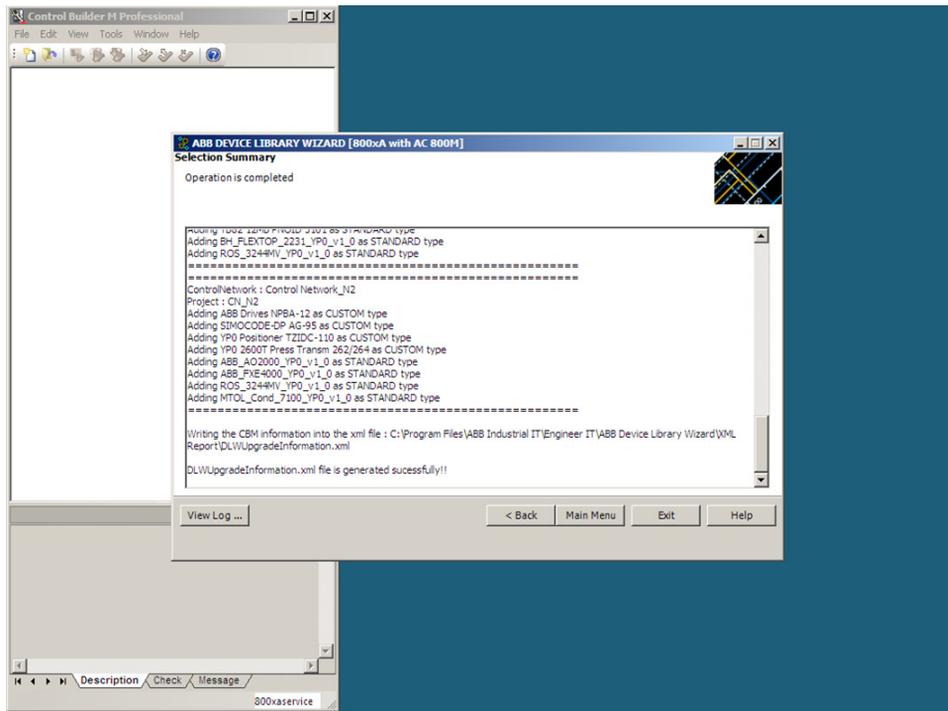


Figure 44. Linking to Custom Hardware Libraries



If Control Builder M is not installed on the node, the error message shown in will appear. Ignore the message and continue.



Figure 45. Error Message

15. The Device Library Wizard will automatically navigate to the main window after the process is completed.
16. Exit the Device Library Wizard and repeat the procedure on the other 800xA System nodes, if applicable.

Device Management PROFIBUS & HART

Perform the Configure OPC P/H Server on the Primary Aspect Server.

Device Management FOUNDATION Fieldbus

Perform the following to complete upgrading Device Management FOUNDATION Fieldbus.

1. **Update LD 800HSE Linking Devices:** Update all LD 800HSE linking devices to the latest firmware version released for this system environment following the update procedure described in the user instructions for the particular device.



Refer to *Field IT, Foundation Fieldbus Linking Device, LD 800HSE, Version Table (3BDS009910)* in ABB SolutionsBank for the latest linking device firmware released for this system environment.

From Downloads Explorer, navigate to:

Control Products and Systems/800xA/Device Management Foundation Fieldbus/Foundation Fieldbus Linking Device LD800HSE

2. Check, Save, and Upload FF Libraries:
 - a. Open a Plant Explorer Workplace.

- b. Use the Structure Selector to open the **Object Type Structure**.
 - c. Use the Object Browser to navigate to:
FF Libraries Object Type Group
 - d. Select FF Management in the Aspect List Area.
 - e. Click **Open Project**.
 - f. Check the libraries for plausibility.
 - g. Exit Fieldbus Builder FF and save changes if prompted to do so.
 - h. Return to the Plant Explorer Workplace and select FF Management in the Aspect List Area.
 - i. If the traffic light symbol shows red, click **Upload**.
 - j. The green traffic light symbol indicates that the FF libraries have been synchronized.
3. Optional: Reconstruct User-made Changes to Library Objects representing FF Standard Blocks:



This step is only required if changes were made to library objects representing FF standard blocks.

During upgrade, **user-made changes to library objects representing FF standard blocks have been overwritten**. Important substitutions have been logged.

- a. If such changes were made, display the substitutions as follows:
 - Open a Plant Explorer Workplace.
 - Use the Structure Selector to open the **Object Type Structure**.
 - Use the Object Browser to navigate to:
FF Libraries Object Type Group
 - Select FF Management in the Aspect List Area.
 - Select **Library Merge Logger** tab and read log.
- b. For reconstructing user-made changes, reapply the changes to the library objects manually.

4. Check, Save, Commission, and Upload the HSE Subnet.



Perform the following procedure for each HSE Subnet.

- a. Open a Plant Explorer Workplace.
- b. Use the Structure Selector to open the **Control Structure**.
- c. Use the Object Browser to navigate to:
HSE Subnet
- d. Select FF Management in the Aspect List Area.
- e. Click **Open Project**.
- f. Check to see if the configured HSE subnet ID is used for the OPC Server FF configuration in **FF Network > Properties** and modify it if required.
- g. **Check whole project** for plausibility.
- h. Perform device assignment for all linking devices LD 800HSE.
- i. Perform precommissioning/commissioning for all objects for which this is necessary (discernible from engineering status).



To assign all H1 devices in one step, use the **Assign all devices** function from the HSE Subnet context menu: **Object > Assign all devices...**



For downloading use the online dialog from the HSE Subnet context menu: **Object > Online Dialog...**

- j. Exit Fieldbus Builder FF and save changes if prompted to do so.
 - k. Return to the Plant Explorer Workplace and select FF Upload in the Aspect List Area.
 - l. If the traffic light symbol shows red, click **Upload HSE Subnet**.
 - m. The green traffic light symbol indicates that the HSE Subnet has been synchronized.
5. Import the locally stored parameter value sets as follows:
- a. Open a Plant Explorer Workplace.
 - b. Use the Structure Selector to open the **Object Type Structure**.

- c. Use the Object Browser to navigate to:
 FF Libraries, Object Type Group
- d. Select FF Management in the Aspect List Area.
- e. Click **Open Project** to open the FF Libraries project in Fieldbus Builder FF.
- f. Open the block properties dialog for the Function Block where the parameters were exported during the pre-upgrade procedure.
- g. Right-click on the dialog box and select **Import** from the context menu.
- h. Browse the .csv file and restore the value sets.



Ensure that the stored value sets are imported to the corresponding Function Blocks.

- i. Right-click and select **Store parameter value set** from the context menu.
- j. Specify an appropriate name for the new value set and click **OK**.
- k. Click **Cancel**. Do NOT overwrite the Initial Instance Parameters with the imported parameters, and then close the block properties dialog box.

800xA for AC 800M



After upgrading a configuration containing one Engineering and one Production system to 800xA 5.1, the Control Builder M projects in the two systems should be made identical using the Import/Export tool, Engineering Repository, or by recreating the Engineering System using Backup/Restore before engineering work is restarted. Otherwise there will be a lot of false differences on the AC 800M aspects reported in the import difference report when moving solutions between the systems.

There may be Control Builder M compatibility issues when upgrading from 800xA 4.1 to 800xA 5.1. Review the issues detailed in [800xA 4.1 to 800xA 5.1 Compatibility Issues](#) on page 414 before proceeding.

Use the following procedure to restore 800xA for AC 800M information:

1. Control Builder stores its settings (systemsetup.sys) on disk in the following directory:

```
... \ABB Industrial IT Data \Engineer IT Data \Control  
Builder M Professional
```

Copy the previously saved file from the safe media to this folder.

2. New handling for Hardware Types was introduced in 800xA 5.0. All hardware types are now packaged in libraries. Because of this all Control Builder projects must be upgraded according to the following steps.



If the application contains FOUNDATION Fieldbus, HART, or PROFIBUS specific configurations, perform post upgrade procedures for Device Types via the Device Library Wizard (refer to [Device Management and Fieldbuses](#) on page 265) before upgrading the project in Control Builder M.

- a. Start an empty Control Builder M.
- b. Select:

Tools > Maintenance > Upgrade Project

- c. Select the Control Builder project to upgrade. This step will take a while. All hardware objects in the **Control Structure** are redirected by Control Builder to use hardware types from libraries. If the project contained custom hardware definition files, libraries with corresponding hardware types are automatically created by Control Builder.
- d. Repeat [Step a](#) through [Step c](#) for all Control Builder projects.



During the project upgrade there may be information messages with the following text:

"Copy of aspect(s) of category 'Object Type Extension Definition' from the type xxxxxx to Hardware Libraries yyyyyy must be performed manually in PPA'.

Ignore these messages if the Device Types in use are provided by the ABB Device Integration Center and have not been modified by the user.

Otherwise copy the missing aspects manually if it is a user defined device type.



The following additional messages may appear:

```
Warning in input file at line XX. SubUnits,
LogicalNumbers and DiscreteNumbers are mutually
exclusive.
```

```
Warning in input file at line XX. The positions defined
must match SubUnits, Logical-, or DiscreteNumbers
```

Ignore these warning messages.

- e. When all Control Builder Projects are upgraded the old hardware types should be deleted from the **Object Type Structure**.

In the Plant Explorer Workplace, navigate to the **Object Type Structure** and browse to:

```
Object Types > Control System > AC800M/C Connect -
Controller Hardware
```

Right-click the Controller Hardware object and select **Delete**.

3. Modify the application program according to applicable issues in [800xA 4.1 to 800xA 5.1 Compatibility Issues](#) on page 414.
4. Load the controllers with their firmware and applications. Change Analysis Mismatches may be shown for objects in the Standard Libraries during the first download after the upgrade. Possible mismatches are:


```
Mismatch: Variable has changed data type.
Mismatch: Variable not found.
Mismatch: Control Module not found.
```

The mismatches reflect internal changes in the Standard Libraries. No Cold Retain Values will be lost. Click **Next Mismatch** to continue.

5. The OPC Server stores configuration files (*.cfg) and settings (systemsetup.sys) on disk. Add the files saved on the safe media to the system. The systemsetup.sys file is located in:

```
...\ABB Industrial IT Data\Control IT Data\OPC Server
for AC 800M
```

The configuration files are stored in the Files folder in the same location.

6. Restore OPC configurations by selecting **File > Load Configuration** in the OPC Server Panel.



Remember to enable autoloading of the configuration and provide the correct path to the file.

800xA for Advant Master and 800xA for Safeguard

Perform the following post upgrade procedures for 800xA for Advant Master and 800xA for Safeguard.

- [Copy the Advant Master Controller Licenses.txt.](#)
- [Update the Configuration Files.](#)
- [Copy the DATHR Files.](#)
- [Reconfigure RTA Board Control Aspect Settings.](#)

Copy the Advant Master Controller Licenses.txt

Perform the following on the Primary Aspect Server in the 800xA 5.1 System:

1. Copy the following updated file:
 - Advant Master Controller Licenses.txt

The default location to copy the file in the 800xA 5.1 system:

```
... \Program Files\ABB Industrial IT\Operate IT\AC 400  
Connect\Licenses
```

Update the Configuration Files

For each Connectivity Server, compare the following files saved in a safe location during the 800xA for Advant Master pre upgrade phase:

- AdvDsMasterAdapter.csv
- AdvMbAeOPCServer.csv

with the installed version of the files at the following location:

For 64-bit:

```
... \Program Files (x86)\ABB Industrial IT\Operate IT\AC 400  
Connect\Bin
```

For 32-bit:

...\Program Files\ABB Industrial IT\Operate IT\AC 400
Connect\Bin

If any customization was done to the old files, update the installed version of the files with the corresponding changes.

Copy the DATHR Files

Perform the following on each Connectivity Server node:

1. Copy the saved files:
 - DATHR1.CD
 - DATHR2.CD
 - DATHR3.CD

to the folder:

...\ProgramData\ABB\AC400Connect\AdvantBase\Data\
RTA\Init\

to the node where they belong.

Reconfigure RTA Board Control Aspect Settings

1. Open the MB 300 RTA Settings dialog box in Configuration Wizard and reconfigure:
 - MB 300 Node and Network Numbers.
 - Check **800xA as Clock Master (REVERSED_SYNC_MODE)** in case the time synchronization key REVERSED_SYNC_MODE was previously enabled.
2. Always Restart the RTA board.
3. The Audible property must be 0 for events and 1 for alarms 800xA for Advant Master version 4.1 SP1 RU6 and newer. Refer to *System 800xA Configuration (3BDS011222*)* for configuration of audible alarms.

Safeguard standard event 300 - 326 does not comply with this rule before 800xA for 800xA for Advant Master Version 5.0 SP2. The Event numbers where the Audible property should be changed from 1 to 0 are:

- EVENT302.
- EVENT305.
- EVENT310.
- EVENT312.
- EVENT320.
- EVENT321.
- EVENT322.
- EVENT325.

800xA for Harmony

Perform the following post upgrade procedures for 800xA for Harmony.

Restore 800xA for Harmony Information

Use the following procedure to restore 800xA for Harmony information:

1. Log in to the 800xA Installing User account (or a local Administrator account) on the Configuration Server or Configuration Server with Connectivity Server node.
2. Restore the 800xA for Harmony Configuration information that was saved during [800xA for Harmony](#) on page 244.
 - a. Select:
Start > All Programs > ABB Industrial IT 800xA > 800xA for OCS Systems > Harmony > Configuration > Restore Configuration
 - b. Click **Connect** in the Harmony Connect Configuration Backup/Restore window.
 - c. Enter the name of the Harmony Configuration Server database backup file in the Backup File field.
 - d. Click **Restore**.
 - e. If a prompt appears indicating that the system version does not match the backup version, click **Yes**.

- f. If the message Services must be stopped, REBOOT system now then restart this application! is displayed, restart the node and repeat [Step a](#) through [Step e](#).
- g. The Backup/Restore program compares the old configuration in the backup file to the current configuration of the newly installed system. If the hosts of the Primary and Redundant Connectivity Servers do not match, a dialog box will appear allowing the user to map the old Connectivity Server node names to the new Connectivity Server node names.
- h. Leave the **Create Missing Servers in Installed Configuration (Disaster Recovery)** check box disabled.
- i. Click **Exit** when the restore operation is complete.

Synchronize the Aspect Directory

Synchronize the Aspect directory with the Harmony Configuration Server using the Harmony Synchronizer Aspect, which is part of the Harmony OPC Server network. Refer to *800xA for Harmony Configuration (3BUA000157*)* for more detailed information on how to synchronize.

Check Consistency of Harmony OPC Network Objects

Inherited and copied aspects are inconsistent after upgrading from 800xA 4.1 to 800xA 5.1. Using the Consistency Check Tool on all Harmony OPC Server Network objects will correct this issue.

1. Open a Plant Explorer Workplace.
2. Click the **Consistency Check Tool** icon at the top of the Plant Explorer Workplace to launch the Consistency Check dialog box.
3. Click **Add Item** to launch the Select Item dialog box.
4. Browse to the root of the **Control Structure**.

5. Select all of the Harmony OPC Server Network objects (use Ctrl+Click or Shift+Click to select multiple objects).



The Consistency Check Tool can take a long period of time to run depending on the quantity of data contained within the Aspect System. It is recommended that the tool be run on a subset of data (a node (PCU) within the **Control Structure**) to evaluate the time needed prior to selecting the entire OPC Network.

6. Click **Add and Close**.
7. Click **Check**.

800xA for AC 870P/Melody



Restore existing backups for project specific changes (if available) for: (Refer also to [800xA for AC 870P/Melody](#) on page 245.)

- DHCP Server Configuration.
- ETC Host files for 800xA for AC 870P/Melody Connectivity Servers.
- Changes in the Default Object Types.
- ConvDB changes of the Configuration Server.

Perform the following post upgrade procedures for 800xA for AC 870P/Melody.

- [Restore 800xA for AC 870P/Melody Information](#).
- [Additional 800xA for AC 870P/Melody Configuration Steps](#).

Restore 800xA for AC 870P/Melody Information

Perform the following procedure to restore 800xA for AC 870P/Melody information:

1. Log in to the 800xA Installing User account (or a local Administrator account) on the Configuration Server node.
2. Restore the 800xA for AC 870P/Melody Configuration information that was saved during [800xA for AC 870P/Melody](#) on page 245.
 - a. Select:

Start > All Programs > ABB Industrial IT 800xA > 800xA for Melody > Configuration > Restore Configuration

- b. Click **Connect** in the Melody Connect Configuration Backup/Restore window.
- c. Enter the name of the Melody Configuration Server database backup file in the Backup File field.
- d. Click **Restore**.
- e. If a prompt appears indicating that the system version does not match the backup version, click **OK**.
- f. If the message *Services must be stopped, REBOOT system now then restart this application!* is displayed, restart the node and repeat [Step a](#) through [Step e](#).
- g. Click **Exit** when the restore operation is complete.



If there are specific faceplates in use (process industries or utilities), the faceplates must also be upgraded. Refer to the faceplate related documents for further instructions.

Additional 800xA for AC 870P/Melody Configuration Steps

Information on performing these additional configuration steps can be found in *800xA for AC 870P/Melody, Configuration (3BDD011741*)* and *System 800xA Post Installation (3BUA000156*)*.

Perform the following configuration steps after adding the 800xA for AC 870P/Melody Configuration Server to the 800xA System.

1. Melody Executive Service Provider.
2. Tag Importer.
3. Enable the Melody AutoConfigurator service in **Plant Explorer > Service Structure**.

Perform the following configuration steps after adding each 800xA for AC 870P/Melody Connectivity Server to the 800xA System.

1. Melody Executive Service Provider.
2. OPC Data Source Definition.
3. Alarm and Event Provider Setup.

800xA for MOD 300

1. Re-initialize PAS System Services on the Connectivity Server.



The PAS System Services will not start until the communications settings are initialized as described in the following steps.

2. Initialize the OMF settings to start system services. Use the Administrative Tools in Windows Control Panel to select:

PAS > Settings.

This displays the Communications Configuration Tool.



The message:

Would you like to revert back to saved settings?

is displayed if settings were previously saved. To restore the previous settings, perform [Step a](#) through [Step d](#).

- a. Select **Yes** at the message:

Would you like to revert back to saved settings?

This opens the Communication Settings display.

- b. Select **OK** on the Communication Settings display to save the settings and close the window.

- c. Select **OK** to the message:

Settings have been saved

- d. Select **OK** when the message appears that indicates the settings have been changed. A restart is always required if the Control Network Setting, OMF Memory, or TCP/IP enabled setting are changed.

3. Restart Windows at this time.
4. Reverse_Time synch will be disabled following the re-installation of PAS. If the Connectivity Server node sets the time on the Real-Time Accelerator Board (RTAB), Reverse_Time_Synch must be enabled. Refer to the **800xA for MOD 300** section in *System 800xA Post Installation (3BUA000156*)*.
5. If any objects were customized, those changes must be implemented again on objects delivered with 800xA for MOD 300 Version 5.1.

6. Update the registry settings previously recorded. Refer to *800xA for MOD 300 Configuration (3BUR002417*)*.

PLC Connect

Perform the following post upgrade procedures for PLC Connect.

Modify Installation for IEC 60870 or Basic Project Objects

If either the IEC 60870 or Basic Project Objects features were installed:

1. Use standard Windows procedures to access Programs and Features in Windows Control Panel.
2. Select ABB PLC Connect.
3. Select Change/Modify.
4. The InstallShield Wizard for PLC Connect appears. Refer to *System 800xA Manual Installation (3BSE034678*)* to select and install the desired features.
5. If the IEC60870 feature is installed refer to *System 800xA PLC Connect Configuration (3BSE035041*)* and reload the saved IEC configuration.

Restoring the Pretreat dll

To restore the Pretreat dll:

1. If the PLC Connect Communication Server Pre Treatment function is being used in the application, copy the Pretreat dll file (Pretreat3.dll or Pretreat4.dll) from the backup location to the same folder as it was backed up from on the PLC Connect Connectivity Server. If the default folder is used, that location is:

```
... \ABB Industrial IT \Operate IT \PLC Connect \Bin
```
2. Register the Pretreat dll file (refer to *System 800xA PLC Connect Configuration (3BSE035041*)* for more information).
3. Restart the PLC Connect Connectivity Server for the changes to take effect.
4. Restore the project and source files for the Pretreat dll.

Update the Sattbus Configuration

Perform the following if the Sattbus protocol is used for any of the controllers:

1. Select the PLC Controller Configuration aspect for the controller that uses Sattbus protocol and click **Edit Driver**.
2. Configure the Common System Settings and click **OK**.
3. Restart the Connectivity Server.

Redeploy the PLC Connect Configuration

To redeploy the PLC Connect configuration:

1. Use the Structure Selector to open the **Control Structure** in the Plant Explorer Workplace.
2. Use the Object Browser to navigate to the first Generic Control Network object.
3. Select **Deploy** in the Aspect List Area.
4. Press the **SHIFT** key and click **Deploy** in the Preview Area to ensure that a full deploy is done.
5. The deploy begins and the progress is displayed in the Preview Area. The deploy is completed when **Deploy ended** is displayed.
6. Repeat the procedure for any additional Generic Control Network objects.

Engineering Studio

Post upgrade procedures for Engineering Studio include those for IO Allocation, Engineering Templates, and Function Designer.

IO Allocation



Before working with the IO Allocation function in an upgraded system, check all Control Builder Name aspects of CBM_Signal instances to see if they contain a valid name.

All Control Builder Name aspects having an empty name or a name not introduced by synchronization from the Name aspect must be corrected accordingly. This can be performed using a Bulk Data Manager worksheet that reads out Name and Control Builder Name. The same worksheet can be used to write back the Name.



The following procedure is only required if HART devices and IO signals will be merged into one object.

800xA 5.1 supports merging of Hart devices and IO signals within one object. If Hart devices and IO signals will be merged into one object refer to *Industrial IT, 800xA - Engineering, Engineering Workplace, Basic Engineering Functions (3BDS011223*)*.



The following procedure is only required when working with IO Allocation and if properties of IO boards have been changed directly in Control Builder M.

IO Allocation has enabled new properties (e.g. *Inverted*) to be accessible for CBM_SignalParameter/CBM_PulseSignalParameter. These properties are initialized with a default value. If properties have been changed directly in the Hardware Editor of Control Builder M (as they were not supported by IO Allocation) these changes are not reflected in CBM_SignalParameter/CBM_PulseSignalParameter aspects after the upgrade. Therefore, when the menu **write Allocation into CBM** is performed, values may be overwritten with their default value. After upgrading, select controller by controller and perform the menu **Read Allocation from CBM**, which reads the property values from Control Builder M and updates the signal objects.

Engineering Templates for Bulk Data Manager (BDM)

Engineering Templates are typically used from scratch, meaning data is dropped into the templates. The result is used for information or documentation. In this case no upgrade is required, because the installation of Engineering Studio 5.1 exchanges the Engineering Templates in:

```
...\Documents and Settings\All Users\Desktop
```

However, if a worksheet containing data has been saved in the file system for writing back to the 800xA System after upgrade, either:

- Newly create the worksheet based on an Engineering Template delivered with Engineering Studio 5.1.

-or-

- Update the worksheet according to the description in:

```
... \Documents and Settings\All Users\Desktop\  
Engineering Templates\ Upgrade Description Engineering  
Templates.doc
```

Function Designer

Modified Aspects of Function Designer System Extension. The Function Designer system extensions:

- Signal Extension for AC800M Connect
- Function Designer for AC800M Connect
- Topology Designer for AC800M Connect
- CI Extension for AC800M Connect
- Signal Extension for TRIO Connect
- Topology Designer for AC800M High Integrity
- Function Designer for AC 800M Classic
- Topology Designer for AC800M Classic
- Function Designer for Fieldbus Builder Profibus/Hart
- AC 800M Signal Extension Classic

mainly consist of:

- Functional Planning Object Types, including a Function Settings aspect at the Settings Object Type Group.

- Extension Libraries that add Function Designer Aspects to Object Types (Control Modules, Function Blocks, ...) created by basic libraries (AC 800M Connect, AC 800M Classic, etc.).

After having loaded such a system extension in the 800xA 4.1 800xA System some of these aspects may have been modified; for example, to adapt Function Settings, or to change the color or layout of Function Blocks in Function Diagrams.

During the 800xA System upgrade to 800xA 5.1 the system extensions of the new system are loaded. To keep the information about modified aspects, all aspects that had been created by a Function Designer system extension, but later on modified are listed in the Configuration Wizard log, and are written to Afw files, e.g.:

```
...\Function Designer\bin\Upgrade\410To501\Function Designer.afw
```

```
...\Function Designer\bin\Upgrade\410To501\Function Designer for  
Ac800M Connect.afw
```

```
...\Function Designer\bin\Upgrade\410To501\Function Designer for FB  
P/H.afw
```

The only way to bring these modifications back into the 800xA 5.1 System is to manually merge the changes. Do not import the listed Afw files into the 800xA 5.1 System, because some additional properties/data might get lost. In the case of Function Settings, look for each settings property in the 800xA 4.1 System and do the modifications again in the 800xA 5.1 System. In the case of modified Function Aspects (e.g. Diagram Template, Component Template), check the modifications done in the 800xA 4.1 System and do the modifications again in the 800xA 5.1 System.

Upgrade Diagram References and Diagram Variables. In the 800xA 5.1 System (opposite to the 800xA 4.1 System) Diagram References and Diagram Variables are by default created as Symbol Objects. This is not true for Diagram References and Diagram Variables created during upgrade (restore) from 800xA 4.1 Systems. Convert them from Aspect Objects to Symbol Objects by use of the conversion function described in the following procedure.



Differences between Aspect Objects and Symbol Objects are described in *Industrial IT, 800xA -Engineering, Engineering Workplace, Function Designer (3BDS011224*)*.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Object Type Structure**.
3. Use the Object Browser to navigate to:
Object Types > Functional Planning > Settings
4. Select `Function Upgrade` in the Aspect List Area to open the Function Upgrade aspect in the Preview Area.
5. Select the **Convert Diagram References/Variables from Aspect Objects to Symbol Objects** check box and click **Apply**.
6. Click Run Upgrade to perform the upgrade.



This function is not suitable in the case of additional aspects on input/output references, e.g. Graphic Elements, for typical diagrams with input/output references that will get copied and connected via the Bulk Data Manager.

Check and Repair AES Variable Table (Applications, Controllers, Diagrams/SCMs, and Diagram (Cm) Types). This function can be used to:

- Correct possible inconsistent data used for display of online values and external cross references.
- Delete obsolete data and reduce aspect size.

Perform the following procedure to use this application.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Object Type Structure**.
3. Use the Object Browser to navigate to:
Object Types > Functional Planning > Settings
4. Select `Function Upgrade` in the Aspect List Area to open the Function Upgrade aspect in the Preview Area.
5. Select the **Check and Repair AES Variable Table (Applications, Controllers, Diagrams/SCMs, and Diagram (Cm) Types)** check box and click **Apply**.

6. Click **Run Upgrade** to perform this upgrade.



Execute Check and Repair AES Variable Table in order to make the environment support work for Function Designer.

Deleting Engineering Base Service from the Service Structure

When the 800xA System is running, delete the Engineering Base Service from the **Service Structure**.

1. Use Windows Explorer to navigate to the following directory:

```
... \Program Files\ABB Industrial IT\Engineer IT\  
Engineering Studio\DocumentParameterManager\  
bin\support
```

2. Double-click `EbServiceCleanUpUtil.exe` to delete the service.

Asset Optimization

Use the following procedure after upgrading Asset Optimization. Perform only the steps applicable to the system.

1. Asset Monitoring:



Asset Monitoring directories **must** be restored on every Asset Optimization Server node defined in the system.

- a. Reconfigure the value of the OPC Group Update Rate:

- Open a Plant Explorer Workplace.
- Use the Structure Selector to open the **Control Structure**.
- Use the Object Browser to navigate to:

```
Root > Asset Optimization
```

- Select `Afw OPC-DA Asset Monitor Data Source` in the Aspect List Area.
- Update the value of **OPC Group Update Rate (ms)** in the Preview Area with the value recorded under [Record the Value of the OPC Group Update Rate](#) on page 247 and click **Apply**.

- b. If Runtime Asset Monitors are being used in the system, restore the Runtime Asset Monitor data directory (DeviceRunTimeMSLogicStore) to the following directory:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset  
Optimization\AssetMonitorEnvironment\Bin
```



The saved data contains the Runtime Asset Monitor data present at the time of the save. Use the Runtime Asset Monitor faceplate to reset the Asset Monitors by adding the lost time to their accumulated run time or with some known values based on other records. Ignore any alarms occurring during the backup.



The Runtime Properties aspect on the Runtime Asset Monitor object type has been replaced with Runtime Asset Monitor Faceplate Inputs. If any configuration changes were made to the Runtime Properties aspect on instances of the object prior to taking the 800xA System Backup, the aspect will not be automatically deleted. In this case, the Runtime Asset Monitor will fail to load with an *Add Item* error for the Reset Signal. In order to complete the upgrade, search for all instances of the Runtime Properties aspect on the Runtime Asset Monitor objects and apply any configuration changes made to the new Runtime Asset Monitor Faceplate inputs, and then delete the Runtime Properties aspect.

- c. If XY Profile Deviation Asset Monitors are being used in the system, restore the XY Profile Deviation Asset Monitor data directory (XY_Reference_Profiles) to the following directory:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset  
Optimization\AssetMonitorEnvironment\Bin
```

2. Maximo Integration:



cpmPlus Enterprise Connectivity Version 4.0 (ECS 4.0) must be installed in order to access Maximo Server Version 6.2.



The Maximo Integration information (Maximo Equipment ID and Maximo Credentials aspects) **must** be restored on all Asset Optimization Server nodes. Reference the **Service Structure** for the Asset Optimization Server.

- a. Refer to *System 800xA Asset Optimization Configuration (3BUA000118*)* to configure ECS.
- b. If the MxDef files were customized, restore the MxDef files to the following directory:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset
Optimization\AOECSCConnector\MxDef\
```

Refer to *System 800xA Asset Optimization Configuration (3BUA000118*)* for more information on MxDef files.

- c. Restore the AOMaximoModel file to the following location if the ECS model was customized:

```
... \program files\ABB Industrial IT\Optimize IT\Asset
Optimization\AOECSCConnector\ECSDefinitions
```

- d. Ensure that the ABB Maximo Connectivity system extension is loaded.



The pending fault reports residing in the system can be restored to the following directory structure:

```
... \OperateITData\OptaoACDs
```

Restore the entire OptaoACDs folder.

3. SAP/PM Integration:



cpmPlus Enterprise Connectivity Version 4.0 (ECS 4.0) must be installed in order to access SAP Server Version 4.7.



The SAP/PM Integration information (SAP Equipment ID and SAP Credentials aspects) **must** be restored on all Asset Optimization Server nodes. Reference the **Service Structure** for the Asset Optimization Server.

- a. Refer to *System 800xA Asset Optimization Configuration (3BUA000118*)* to configure ECS.
- b. If the SAPDef files were customized, restore the SAPDef files to the following directory:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset
Optimization\AOECSCConnector\SAPPMDef
```

- c. Restore the AOSAPModel file to the following location if the ECS model was customized:

```
... \program files\ABB Industrial IT\Optimize IT\Asset
Optimization\AOECSCConnector\ECSDefinitions
```

Refer to *Industrial IT, 800xA - Asset Optimization, Configuration (3BUA000118*)* for more information on SAPDef files.

- d. Ensure that the ABB SAP Connect system extension is loaded.



The pending fault reports residing in the system can be restored to the following directory structure:

```
... \OperateITData \OptaoACDs
```

Restore the entire OptaoACDs folder.

4. DMS Calibration Integration.



The DMS Calibration Integration approach is changed in 800xA 5.1. Upgrade of DMS Calibration Integration is not supported. Reconfigure the DMS Calibration Integration based on an engineered solution.

Contact ABB technical support for more information.

5. Asset Monitors that are assigned (via the Configure option drop-down list box on the Asset Monitor Instance on an Object) to a particular AO Server object and Asset Optimization Server aspect (by Object name:Aspect name pair), will not be correctly configured after the upgrade. The AO Server property will be unconfigured and the following error message will appear:

```
Unable to resolve AO Server for this Asset Monitor  
configuration
```

This must be resolved before the Asset Monitor Logic can be loaded into an AO Server:Asset Optimization Server for execution. Refer to the **Object Type Structure** for Asset Optimization, Object Type Group:AO Server, Object Type.

6. After a restore of a 800xA 5.0 SP2 system, the Asset Optimization Server (Monitor Server/Engine) is running. The **AO Server** tab of the Asset Monitoring Server aspect will show a status of `good: AM Engine running`.
 - a. Clicking the **Asset Monitors** tab and selecting **AMs assigned to this AO Server** will show that the values in the Status column are `NOT Loaded, enabled`.
 - b. Click **Load all AMs** to reload all enabled Asset Monitors assigned to this AO Server.



:The **Enable Write Access** check box must be selected in the Asset Monitor Data Source aspect before loading Runtime Asset Monitors into the AO Server. Refer to *System 800xA Asset Optimization Configuration (3BUA000118*)* for more information.

PC, Network and Software Monitoring

In the 800xA 5.1 and later releases, a set of IT Asset type objects are deprecated. The new enhancements, Process Graphics 2 and Native Language Support (NLS), are not applied to deprecated IT Asset type objects. Replacements of deprecated IT Asset type objects are delivered in PNSM Device Library. It is recommended to migrate deprecated IT Asset type objects to PNSM Device Library in case the system being upgraded has all Process Graphics 2 graphics and no VB graphics. Refer to [Appendix H, Mapping of Deprecated IT Asset Object Types](#).



Migration from deprecated IT Asset type objects to the PC, Network and Software Monitoring Device Library is not mandatory in case the system being upgraded already has VB graphics.

The following steps describe the migration procedure.

1. Download IT Asset type objects in PNSM Device Library that replaces the deprecated IT Asset type objects which are used in the current configuration. The download link is <http://www.abb.com/controlsystems>.
2. Migrate each deprecated IT Asset type object to its replacement IT Asset type object in PNSM Device Library
 - a. Instantiate and configure PNSM Device Library objects.
 - b. Delete deprecated IT Asset type objects.



Reconfigure all applications referring to deprecated IT Asset type objects. For example, Logging of OPC data into history archive.

3. To upgrade to a newer version of the Light Generic Computer Process object type, it is required to delete all old instances and replace them with the newer version of the Light Generic Computer Process object type. Refer to the Process Monitoring section of *System 800xA PC, Network and Software Monitoring Configuration*.

Perform the following post upgrade procedure for PC, Network and Software Monitoring.

1. If user defined Script, Resource, and Assembly files were backed up, copy the saved files from the safe media to the following directories:

```
... \Program Files\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Scripts\User
```

```
... \Program Files\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Assemblies\User
```

```
... \Program Files\ABB Industrial IT\Optimize IT\  
PC, Network and Software Monitoring\bin\Configuration\  
Resources\User
```

PNSM Device Library Restore Procedure

Perform the following post upgrade procedure for PNSM Device Library:

1. Copy the files from the safe location to the directory if MOF files were backed up:

```
... \Program Files\ABB Industrial IT\Optimize IT\PC,  
Network and Software Monitoring\MOFS
```

2. Copy the Custom Asset Monitor dlls from the safe location to the following location for object types with Custom Asset Monitors:

```
... \Program Files\ABB Industrial IT\Optimize  
IT\PC, Network and Software Monitoring\Asset  
Monitoring\Bin
```

Use the Register.dll bat file present in the Object Type to register this dll automatically.

3. Copy the Windows Management Instrumentation (WMI) repository to the directory if the files were backed up. Perform the following steps to back up and restore the the WMI repository.
 - a. Right-click **Computer** and select **Manage**. **Computer Management** is displayed.
 - b. Expand **Configuration** on the left panel. Select **WMI Control**.
 - c. Right-click WMI Control and select **Properties**. The Properties dialog box is displayed.
 - d. Click **Backup/Restore** Tab.

- e. Click **Back Up Now...**, Specify a name for your backup file window is displayed.
- f. Enter the name of the backup file and click **Save**.

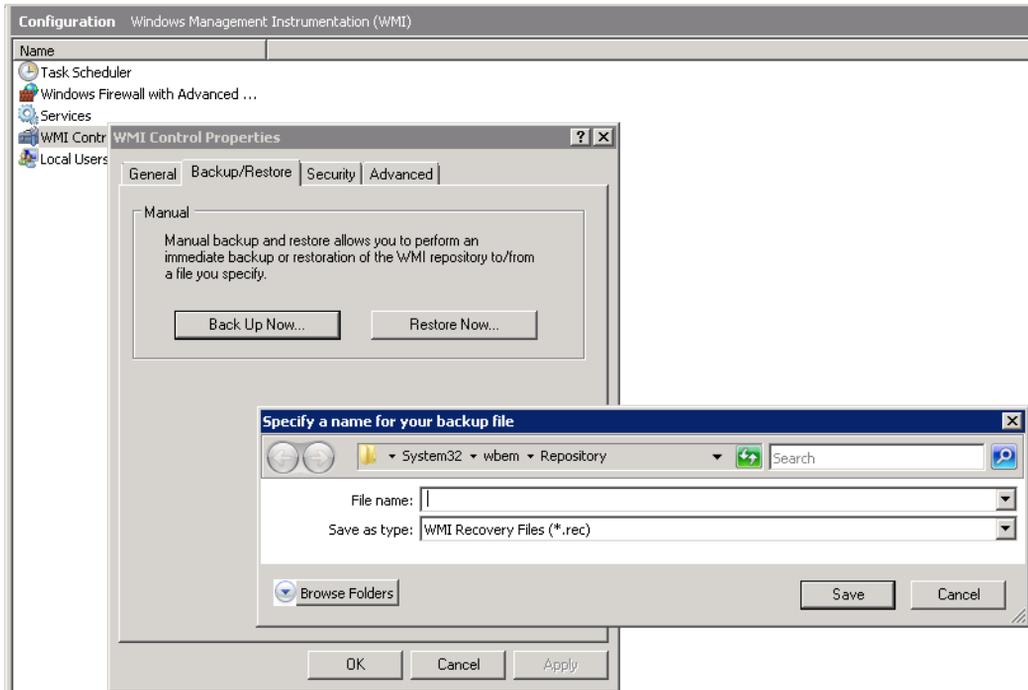


Figure 46. WMI Backup File

- g. Click **Restore Now...**, Specify a backup file to restore window is displayed.
- h. Select the file and click **Open** to restore the backed up file.

SMS and e-mail Messaging

Reconfigure the GSM Device hardware information recorded in the save operation (refer to [SMS and e-mail Messaging](#) on page 251).



It may be necessary to stop and start the Messenger Server Service in the **Service Structure** after the SMS and e-mail Messaging restore operation.



During the upgrade, a second Messenger Service Group and Messenger Service Provider will be created in the **Service Structure**. For instance:

Messenger SG_1, Service Group
Messenger SP_1, Service Provider

If there is already a Messenger Service Group and Messenger Service Provider configured, the new one may be deleted.

Batch Management

Verify that the primary Batch Server is in primary mode (P is displayed in the Windows Task bar) and the secondary Batch Server is in secondary mode (S displayed in the Windows Task bar). If the proper modes are not displayed, enable the Batch Service Group before proceeding.

To enable the Batch Service Group:

1. Open a Plant Explorer Workplace.
2. Select the **Service Structure**.
3. Select the Services\Batch Service, Service\batch_group_name, Service Group\Service Group Definition aspect.
4. Select the Configuration tab.
5. Select the provider that is currently the secondary Batch Server.
6. Select the **Enabled** check box and click **Apply**.
7. Select the provider that is currently the primary Batch Server.
8. Select the **Enabled** check box and click **Apply**.

Batch data can be reloaded to the batch database from wherever it was archived.



The Batch history archive and restore aspect has been removed in SV5.1.

Perform the following to view any Batch data archived from SV5.0 or previous versions of the Batch product:

1. Create a Virtual Machine (VM) node with the existing system version and its components.
2. Restore Batch data using the Batch Restore window onto this virtual machine.

Once the restored data is in the batch database, it can be viewed using the Batch History Overview window.

Do not restore directly from CDs or DVDs. Restore from hard disk drives which can be restored from CDs or DVDs using commercially available software.

Selecting the Alarm Server

To select the Alarm Server:

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Service Structure**.
3. Use the Object Browser to select:

```
Services > Event Collector, Service >  
Batch_AE_Service, Service Group
```
4. Select `Service Group Definition` in the Aspect List Area.
5. Select the **Special Configuration** tab in the Preview Area.
6. Select Produce IT Batch OPC AE Server in the Alarm Server field.
7. Click **Apply**.



Always perform the Toolbar configuration as described in *System 800xA Batch Management Configuration* and shutdown script procedure as described in the Batch Management section of *System 800xA Post Installation (3BUA000156*)*.

Basic History Service

Restore the Basic History Service data as follows. Perform this procedure on every node where the Basic History Service is running.

1. Stop the Basic History Server from the **Service Structure** by the following procedure:

- a. Open a Plant Explorer Workplace.
 - b. Use the Structure Browser to open the **Service Structure**.
 - c. Select the **Basic History, Service > Basic, Service Group**.
 - d. Select the Service Group Definition aspect.
 - e. Click the **Configuration** tab.
 - f. Clear the **Enabled** check box and click **Apply**.
2. If it is necessary to keep historical data for the time since the upgraded system was started, copy the current Basic History log files in the following directory:
- ```
... \OperateITData \History \{provider ID}
```
- to a temporary directory.
- These files will be inserted by using the Archive Tool.
3. Delete all files under:
- ```
... \OperateITData \History \{provider ID}
```
4. Restore the files from the backup of Basic History Service Data to:
- ```
... \OperateITData \History \{provider ID}
```
5. Start the Basic History Service from the **Service Structure**.
6. If [Step 2](#) was performed:
- a. Open the AdvHtArchiveTool located by default in the following directory:  

```
... \Program Files \ABB Industrial IT \Operate IT \Process Portal A \bin
```
  - b. Use the File/Select/Open Archive command and browse to the directory containing the history log files.
  - c. Open the Action/Insert Data into Logs command.
  - d. Accept the default values in the Time Selection dialog box.
  - e. Click **OK** to start the insertion of the saved data to the logs.

## Information Management

Refer to [Information Management Post Upgrade Procedures](#) on page 458 in [Appendix , Information Management Upgrade](#) to perform the Information Management post upgrade procedures.

## Calculations Service

Calculations that were disabled prior to the upgrade must be enabled by selecting the **Enabled** check box in the Calculations dialog box. Refer to the section on Calculations in *Industrial IT, 800xA - Information Management, Operation (3BUF001094\*)*.

To enable the Calculations Service:

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Service Structure**.
3. Select the Calculations Service Object.
4. Select the Service Definition aspect.
5. Click the **Configuration** tab.
6. Select the **Enabled** check box and click **Apply**.

## Scheduling Service (Application Scheduler)

Schedules that were disabled prior to the upgrade must be enabled by selecting the **Enabled** check box in the Scheduling dialog box. Refer to the section on Scheduling in *Industrial IT, 800xA - Information Management, Operation (3BUF001094\*)*.

To enable the Scheduling Service:

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Service Structure**.
3. Select the Scheduling Service Object.
4. Select the Service Definition aspect.
5. Click the **Configuration** tab.

6. Select the **Enabled** check box and click **Apply**.

## Process Engineering Tool Integration

Use the following procedure after upgrading Process Engineering Tool Integration:

Restore the backed up data directory (in preparation-step prior to upgrade) to the installed directory of Process Engineering Tool Integration. Restore the entire Xml directory contents to:

```
... \Program Files\ABB Industrial IT\Engineer
IT\Engineering Studio\Process Engineering Tool
Integration\Xml
```

## Update VB Graphics with Newer Dependencies

Use the Display Tool to search for VB graphics with newer dependencies. Use the following selections when searching:

- Search in all structures.
- Deploy needed.

Perform a deploy with the **auto resolve** action on all VB graphics with newer dependencies.

## Miscellaneous Procedures

Perform the following procedures:

- [Resigning Digital Signatures in 800xA 5.1.](#)
- [Restart the System.](#)
- [Reconfigure Event Collectors.](#)
- [Reconfigure Alarm and Event List Configurations.](#)
- [Add Autostart Shortcut.](#)

## Resigning Digital Signatures in 800xA 5.1

To resign digital signatures in 800xA 5.1:

1. Use Windows Explorer to locate `AfwSignatureManager.exe` in the following directory:

```
...\<<Base System install directory>/bin
```

2. Double-click `AfwSignatureManager.exe` to launch the Signature Manager.
  3. Use the **File** menu to open the Signature Report file saved before the upgrade.
  4. When a signer is selected in the **Signer** column, the **Aspects Signed** table will show all aspects signed by this signer and information indicating whether the signature was valid in the 800xA 4.1 System or not.
  5. Select the aspects to re-sign and click **Sign**.
  6. A Signature dialog box will appear in which to validate the signature.
-  Use Ctrl+Shift+Click to select multiple aspects to sign in one operation.

## Restart the System

Restart the system after performing all post upgrade procedures.

## Reconfigure Event Collectors

When upgrading from 800xA 4.1 to 800xA 5.1, the Event Collectors that were configured to use a special Collection Definition object are obsolete. Reconfigure the Event Collectors to use the Collection Definitions objects with the 800xA 5.1 System.

The Configuration Wizard log shows which Event Collectors need to be reconfigured with a message such as:

```
Objects “(SV4) ABB Hs OPC Alarm Event Server” and “ABB
Hs OPC Alarm Event Server” represent the same A&E
Server. Please configure the EventCollector to use the
new definition.
```

All Collection Definition objects that come from the backup system have the prefix (SV4). These objects are located in:

```
Library Structure > Alarm & Event > Alarm Collection
Definitions
```

## Reconfigure Alarm and Event List Configurations

In 800xA 5.1, in most cases, the SourceName column contains GUIDs. The recommendation in 800xA 5.1 is to reconfigure the Alarm and Event List configurations to use the ObjectName column instead of the SourceName column.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Library Structure**.
3. Use the Object browser to navigate to and select an Alarm and Event List Configuration aspect.
4. Select Alarm and Event List Configuration in the Aspect List Area.
5. Select the **Columns** tab in the Preview Area.
6. Clear the **SourceName** check box and select the **ObjectName** check box.
7. Click **Apply**.
8. Repeat the procedure for all Alarm and Event List Configuration aspects.

## Add Autostart Shortcut

If it is desired to enable the autostart of the Operator Workplace on client nodes, perform the following:

1. Define a default workplace.
2. The shortcut must be created from the ABB Workplace login window.
3. The shortcut is located in:

```
...:\Documents and Settings\UserName\Start
Menu\Programs\Startup
```

4. Right-click the shortcut and select **Properties** from the context menu.
5. Add the following to the shortcut target:

```
/WS
```

-or-

```
/WaitForSystem
```

6. Click **OK**.

## System Backup

Make complete hard disk and 800xA System backups of the upgraded system.

---

## Section 6 Upgrading 800xA 3.1 SP3 to 800xA 5.0 SP2



Upgrading the 800xA System requires the plant to be shut down. To guarantee the functionality of the upgraded system, follow these upgrade instructions carefully and perform them in the order presented.



Upgrading directly from 800xA 3.1 SP3 to 800xA 5.1 is a two-step process. It is necessary to upgrade to 800xA 5.0 SP 2 before upgrading to 800xA 5.1. When the procedures in this section are complete, refer to [Section 3, Upgrading 800xA 5.0 SP2 to 800xA 5.1 Online](#) or [Section 4, Upgrading 800xA 5.0 SP2 to 800xA 5.1 Offline](#) in this instruction to upgrade from 800xA 5.0 SP2 to 800xA 5.1.



Upgrading an 800xA 3.1 System with 800xA for Harmony installed on any node in the system is a two-step process. Refer to *800xA for Harmony Release Notes (3BUA000112\*)* for detailed information.

The person performing this upgrade must use the same user account that was used during the installation of the 800xA System software, unless otherwise indicated in these instructions.

### Functional Area Naming

Some 800xA Functional Area names have been changed since the 800xA 3.1 SP3 release. [Table 8](#) lists the Functional Area names before and after the upgrade. The 800xA 3.1 SP3 Functional Area names will be used in this section up to, but not including [System Upgrade \(Upgrade Flow B\)](#) on page 334. The 800xA 5.0 SP2

Functional Areas names will be used from that point through the remainder of the section.

*Table 8. Functional Area Naming*

| <b>Name in 800xA 3.1 SP3</b>           | <b>Name in 800xA 5.0 SP2</b>          |
|----------------------------------------|---------------------------------------|
| Control IT for AC 800M                 | 800xA for AC 800M                     |
| FOUNDATION Fieldbus Device Integration | Device Management FOUNDATION Fieldbus |
| HART Device Integration                | Device Management PROFIBUS & HART     |
| PROFIBUS Device Integration            |                                       |
| AC 400 Connect                         | 800xA for Advant Master               |
| Safeguard Connect                      | 800xA for Safeguard                   |

## Control Builder M Compatibility Issues

Refer to the compatibility issues detailed in [Appendix B, Control Builder M Compatibility Issues](#) before beginning the upgrade.

## Upgrade Flow

This section is organized so that the instructions are presented in the proper upgrade order. Do not skip any steps that pertain to 800xA software being used in the current or upgraded system. Refer to [Planning for the Upgrade](#) on page 35 for additional information and ideas on how to streamline the upgrade process.

[Figure 47](#) shows a high level flow of the upgrade paths.

The upgrade process is broken down into three processes:

- Preparation ([Figure 48](#)).
- Operating system and third party software upgrade ([Figure 49](#)).
- 800xA System software and configuration data upgrade ([Figure 50](#)).

Each flow chart has active links, indicated by blue text, to help navigate through the document (if viewing it online). Clicking in a flow element with blue text will advance the document to the related procedure.

All paths require, after backup and before restore, installing the 800xA System software and creating the system as if it were a new installation.

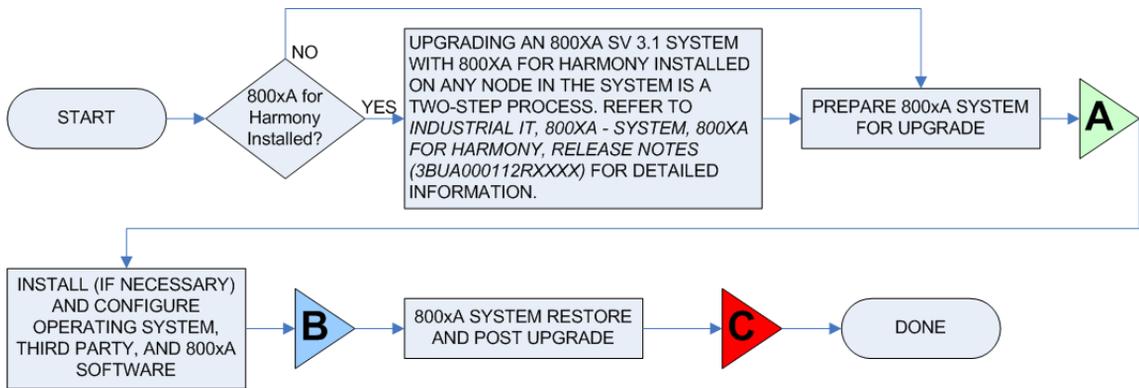


Figure 47. High Level Upgrade Flow

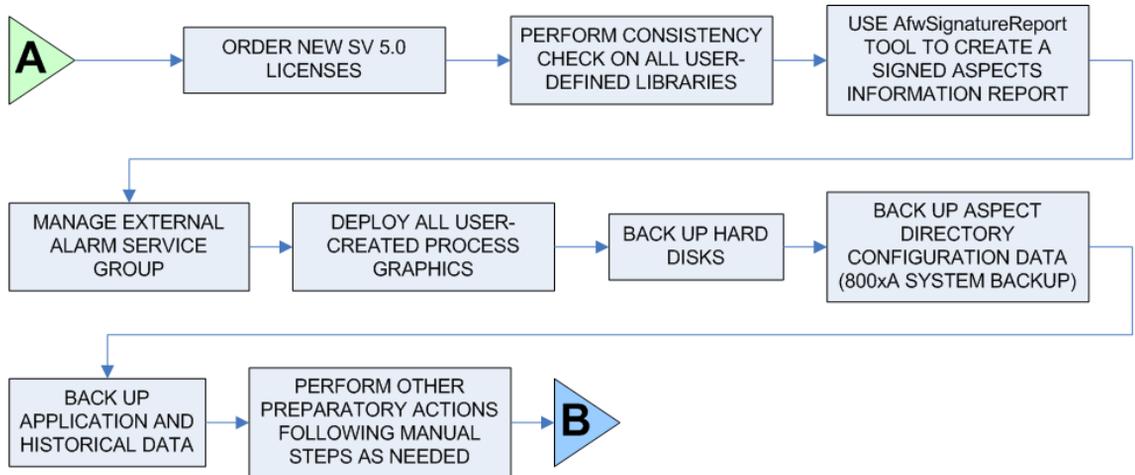


Figure 48. Upgrade Preparation Flow



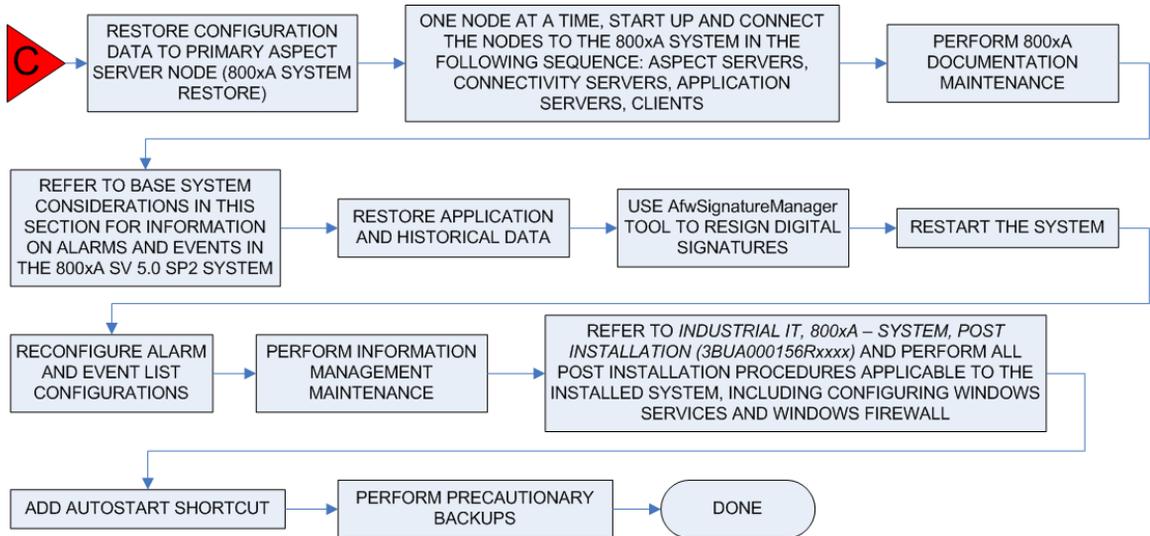


Figure 50. System Restore and Post Upgrade Flow

## Central Licensing System (Upgrade Flow A)



Order new licenses for 800xA 5.0 SP2. The 800xA 3.1 SP3 licenses will not work.

## Consistency Check

Refer to [Appendix D, Consistency Check](#) and perform the necessary consistency checks.



Perform a consistency check before performing the 800xA System backup. Failure to do so could result in problems when restoring the system after the upgrade.

## Save Digital Signatures

The new support for version handling of aspect data will make all digital signatures in 800xA 3.1 SP3 invalid when upgrading to 800xA 5.0 SP2. To simplify the upgrade, two applications have been developed to support the re-signing of aspects in 800xA 5.0 SP2:

- **AfwSignatureReport:** Used to create a report with information about signed aspects in 800xA 3.1 SP3.
- **AfwSignatureManager:** Used in 800xA 5.0 SP2 to re-sign these aspects.

Perform the following before upgrading from 800xA 3.1 SP3 to 800xA 5.0 SP2.

1. Insert 800xA System Installation DVD 1 into the drive on a client in the 800xA 3.1 SP3 800xA System.
2. Copy the AfwSignatureReport.exe from the following directory on 800xA System Installation DVD 1 to a directory on the client.

```
Engineering & Development\Accessories\Digital
Signatures Upgrade Tools\SV3
```

3. Open a Windows Command Prompt.
4. Change to the directory where AfwSignatureReport.exe was copied.
5. Run the following command:

```
AfwSignatureReport <filename>.xml
```
6. Save the signature report file <fileName>.xml on an external media during the upgrade.



The digital signature must be valid before saving to the report file.

## External Alarm Service Group

Keep only one External Alarm Service Group and move the provider or providers to the Aspect Servers.

## Deploy all User Created Process Graphics

800xA System backups containing undeployed user created process graphics will result in warning and error messages later in the upgrade process. To avoid these messages, refer to *Industrial IT, 800xA - Engineering, Graphics (3BSE030335\*)* and use the Display Tool to deploy all user created process graphics before beginning the 800xA System backup.

## Backups

It is important to create backups of node hard disks and the 800xA System before starting the upgrade procedures. Valid backups insure that the system can be restored if necessary.

### Hard Disk Backup

It is recommended that a third party backup/restore and/or disk imaging utility be used to save (and restore if necessary) hard disks before starting the upgrade procedures.

### 800xA System Backup



Refer to [Appendix D, Consistency Check](#) and perform a consistency check before performing the 800xA System backup. Failure to do so could result in problems when restoring the system after the upgrade.



Avoid engineering or any other changes especially to the Aspect system during the 800xA Backup process.

The Backup/Restore function makes it possible to make an online backup of a node and perform an offline restore of the same node. A full backup stores all aspect objects and aspect data (application data) in the Aspect Directory.



Verify the Batch Management Servers are operating normally before and during 800xA System backups (or usage of the Import/Export tool) of systems containing Batch Management nodes. This will ensure the backup of all batch data.

All system extensions that are part of the system must be installed and added on the node where the backup will be taken (usually the primary Aspect Server node). No

changes can be made (especially to the Aspect directory) during the online backup process.

The following steps outline the 800xA system backup procedure. Refer to *System 800xA Maintenance (3BSE046784\*)* for more detailed information.



Ensure that the Post Installation Procedure for Engineering Studio 3.1.0/2 Rollup 2 (refer to *Release Notes 3BDS011626R3101*) has been performed. Refer also to *Technical Description - Industrial IT System 800xA SV 3.x System Software Versions (3BSE037782\* (latest revision))*.

For background information, refer to *Product Bulletin 800xA Eng.Workplace Eng.Studio SV3.1-SV4.0, Aspect Types falsely reset (3BDS100999)*.

1. Create a Full Backup Definition object in the **Maintenance Structure**.
2. Configure the **Scope** and the **Storage** tabs. Disable the **History** and **System Messages** check boxes in the **Scope** tab.
3. Check the disk space and path in the **Storage** tab of the Backup Definition aspect. A large configuration could require a minimum of five gigabytes of free space.
4. Start the backup process.
5. In case of any warning or error messages (refer to [Appendix A, Warning and Error Messages](#)), take the appropriate measure and create a new backup.
6. Record the number of aspects and objects in the system.
  - a. Select the Admin Structure\Administrative Objects\Domains\system\_name, Domain\Domain Definition aspect.
  - b. Record the number of objects and aspects listed in the System Size Information area of the window.
  - c. Right-click the Control Structure\control\_network\_name, Control Network\Control Structure aspect of one of the control networks contained in the system.
  - d. Select **Properties** from the context menu.
  - e. Select the **Statistics** tab.
  - f. Record the number of objects listed.

- g. Right-click the **Control Structure** aspect within a controller project of the control network selected in [Step c](#).
- h. Select **Properties** from the context menu.
- i. Record the number of objects listed.
- j. Repeat [Step g](#) through [Step i](#) for all the controller projects within the control network.
- k. Repeat [Step c](#) through [Step j](#) for every control network in the system.
- l. Right-click the Control Structure\HSE\_Subnet name, HSE Subnet\Control Structure aspect of one of the HSE Subnets contained in the system.
- m. Select **Properties** from the context menu.
- n. Select the **Statistics** tab.
- o. Record the number of objects listed.
- p. Repeat [Step l](#) through [Step o](#) for every HSE Subnet in the system.
- q. Right-click the Control Structure\MB300\_name, MB300 Network\Control Structure aspect of one of the MB300 Networks contained in the system.
- r. Select **Properties** from the context menu.
- s. Select the **Statistics** tab.
- t. Record the number of objects listed.
- u. Repeat [Step q](#) through [Step t](#) for every MB300 network in the system.



Do not manually import or edit any information in backup files.

## Pre-Upgrade Procedures

Some 800xA System software requires preparatory steps before shutting down 800xA System processes. Perform the applicable procedures in the order presented.

## Control IT for AC 800M

Use the following procedure to prepare for the Control IT for AC 800M upgrade:

1. Record the memory setting for OPC Server and Control Builder found in the Setup Wizard for each product.
2. Control Builder stores its settings (systemsetup.sys) on disk in the following directory:

```
... \ABB Industrial IT Data \Engineer IT Data \Control
Builder M Professional
```

Copy this file to a safe media.

3. Save OPC configurations by selecting:

**File > Save Configuration**

in the OPC Server Panel.

4. The OPC Server stores configuration files (\*.cfg) and settings (systemsetup.sys) on disk. Copy these files to a safe media. The systemsetup.sys file is located in:

```
... \ABB Industrial IT Data \Control IT Data \OPC Server
for AC 800M
```

The configuration files are stored in the Files folder in the same location.

## Device Management and Fieldbuses

### Device Management FOUNDATION Fieldbus



Verify that the FOUNDATION Fieldbus Device Integration Version 3.1.0/2 Rollup 1 and Rollup 2 have been installed before starting to save information. In this special case, Rollup 2 does not contain the contents of Rollup 1, so make sure that Rollup 1 has been installed before installing Rollup 2. If necessary, download the rollups from ABB SolutionsBank (document numbers: 3BDS009928 and 3BDS009947).

User-made modifications to library objects representing FF standard blocks (these are blocks supported by the Device Type Standard FBs as indicated in the **Block Info** tab of the block class parameter dialog box) will be overwritten during

upgrade. If such changes have been made, they can be reconstructed manually. Refer to [Device Management FOUNDATION Fieldbus](#) on page 368.

### **Device Management PROFIBUS & HART**

Historical data sets of Device Type Manager (DTM), exported via the Fieldbus Management aspect, along with device specific DTM files are stored as files on the Primary Aspect Server node. These files and the PROFIBUS/HART OPC Server configuration are stored after a successful 800xA System backup. The path to this folder can be found as follows:

1. Open the Plant Explorer Workplace on the Primary Aspect Server node.
2. Use the Structure Selector to select the **Control Structure**.
3. Use the Object Browser to select the Root Object type.
4. Select the FBB PH Settings aspect.
5. Record the path information for the Primary Aspect Server found in the FBB PH Settings aspect.
6. Use Windows Explorer to copy the folder (default: Fieldbus Builder PH) containing device specific configuration files (in the path recorded in [Step 5](#)) to the 800xA System backup folder, created as described in [800xA System Backup](#) on page 313.
7. If the folder name of the copied folder is not Fieldbus Builder PH, it must be renamed to the default folder name (Fieldbus Builder PH) in the 800xA System backup folder.

### **PROFIBUS Device Types**

PROFIBUS Device Types in 800xA 5.0 and later are based on Hardware Libraries (HWLib). This is different from previous system versions, where these Device Types were based on Hardware Definitions (HWD). As a result, the PROFIBUS Device Types used in connection with the Device Integration software must be

linked to new delivered Hardware Libraries to ensure system and upgrade compatibility.



Perform the following procedure only if the exact PROFIBUS Device Type described is used. Otherwise, this procedure can be skipped.

If the *ABB\_TZIDC\_110-220\_SP\_Short* module type is used in the Control Structure of the Plant Explorer, a special upgrade procedure must be performed to ensure upgrade compatibility in 800xA 5.0 and later. This module is delivered with the PROFIBUS Device Integration package and its system extensions and is supported by the *ABB\_TZIDC\_110-220\_YPO\_v1\_0* PROFIBUS Device Type.



The following steps requires Bulk Data Manager (BDM) (Engineering Platform) to be installed. Perform the described steps on an Engineering system node.

1. Open the Engineering Workplace and select the **Control Structure**.
2. Open the **Find Tool**.
3. In the **<Add attribute>** selection box select **Structure**.
4. In the **<Structure>** selection box select **Control Structure**.
5. In the **<Add attribute>** selection box select **Object Type**. This displays all instances available in the **Control Structure**.
6. Select the **ABB\_TZIDC\_110-210\_SP\_Short** module from the displayed list and click **Search**. If the module type is not available, this section can be skipped.
7. Open Bulk Data Manager in the **Control Structure** (right-click on the Root node and select **Advanced > Bulk Data Manager**).
8. Verify that the valid system is selected in the BDM sheet.
9. Search for and select the **ABB\_TZIDC\_110-220\_SP\_Short** module in the **Control Structure**.
10. Select **Control Properties** in the Aspect List Area and move it via the drag and drop function to the BDM sheet on cell A1 in the Preview Area.
11. A new window will open in which all parameters will be selected. Confirm the **Complete** selection by clicking **OK**.

12. Select cell A2 in the BDM sheet and enter the text **Filter:Control Structure**.
13. Select the project containing the **ABB\_TZIDC\_110-210\_SP\_Short** module in the **Control Structure** and move it via the drag and drop function into the BDM sheet on cell A3.



If the module is used in different projects, the steps must be repeated for the other projects.

14. Select the **Auto filter** option in the Excel sheet (select **Data > Filter > AutoFilter** in the menu bar).
15. Select in line A in the BDM sheet, the column named **Source Object** (normally cell C1) and click **Filter**.
16. Search for and select the **ABB\_TZIDC\_110-210\_SP\_Short** module. This will now be the only module shown.
17. Enter the text **delete** for each listed module in the column named **Command** (normally cell A1). The Optional selection function can be used.
18. Save the changes to the 800xA System by clicking **Save All Objects**. The modules will be deleted in the **Control Structure**.
19. Remove the text **delete** for each listed module in the column named **Command**.
20. The captions **Short** will be exchanged to **Long** for all listed modules in the column named **Source Object**. The name will now be **ABB\_TZIDC\_110-210\_SP\_Long** for all listed modules.
21. Save the changes to the 800xA System by clicking **Save All Objects**. The modules will be created in the **Control Structure**.

## AC 400 Connect and Safeguard Connect

Perform the following on each Connectivity Server node.

1. Make an RTA Board backup. Save the files:
  - DATHR1.CD
  - DATHR2.CD

- DATHR3.CD

from the folder:

```
... \Program Files\ABB Industrial IT\OperateIT\AC 400
Connect\AdvantBase\Data\RTA\Init\
```

and record which files belong to which node.

## 2. Save the Configuration Files

The configuration files in the Connectivity Servers can contain special configuration settings for Alarm and Event or Data access. Refer to *800xA for Advant Master, Configuration (3BSE030340\*)* for more information about these special configuration settings.

If such changes are available in the configuration files, perform the following on each 800xA for Advant Master and 800xA for Safeguard Connectivity Server node: Save the following files to a safe location:

- AdvDsMasterAdapter.csv
- AdvMbAeOPCServer.csv

The default location for the files is:

```
... \Program Files\ABB Industrial IT\Operate IT\AC 400
Connect\Bin
```

## 3. The following settings must be documented for reconfiguration.

- Time synchronization registry key (REVERSED\_SYNC\_MODE):  
HKEY\_LOCAL\_MACHINE\SOFTWARE\ABB\AFW\SystemModules\  
AfwTimeServerAdaptor\1.0-0\Private
- MB300 node and network address for RTA board in RTA board Configuration aspect.

## PLC Connect

1. If the PLC Connect IEC 60870 feature is installed and configured, the IEC configuration must be saved. Refer to the section on configuring the IEC 60870 driver in *System 800xA PLC Connect Configuration (3BSE035041\*)* for more information.

2. If the PLC Connect Communication Server Pre Treatment function is being used in the application (refer to *System 800xA PLC Connect Configuration (3BSE035041\*)* for more information), make a backup of PreTreat2.dll. Pretreat2.dll is located in the following folder on the PLC Connect Connectivity Server:

```
... \ABB Industrial IT \Operate IT \PLC Connect \Bin
```



The path is the default location of the file. If it has been placed somewhere else, make a backup from that location.

3. Make a backup of the VB application projects for PreTreat2.dll.
4. If the Event Server Pre Treatment function is being used in the application (refer to *System 800xA PLC Connect Configuration (3BSE035041\*)* for more information), make a backup of PreEvent.dll. PreEvent.dll is located in the following folder on the PLC Connect Connectivity Server:

```
... \ABB Industrial IT \Operate IT \PLC Connect \Bin
```



The path is the default location of the file. If it has been placed somewhere else, make a backup from that location.

5. Make a backup of the VB application projects for PreEvent.dll.

## Engineering Studio IO Allocation

Deactivate the auto update mode in IO Allocation.

1. Start the Engineering Workplace.
2. Open the IO Allocation tool on any object by right-clicking on the object and selecting **Advanced > IO Allocation** from the context menu that appears.
3. Verify that no check mark symbol is visible in the **Options > Automatic Write Allocation to CBM** menu item in the IO Allocation tool.

## Asset Optimization

Preparing for the Asset Optimization upgrade requires recording some values for post upgrade and backing up data to a safe media.

### Record Values for Post Upgrade

1. Use the following procedure to record the value of the OPC Group Update Rate.
  - a. Open a Plant Explorer Workplace.
  - b. Use the Structure Selector to open the **Control Structure**.
  - c. Use the Object Browser to navigate to:  
Root > Asset Optimization
  - d. Select Afw OPC-DA Asset Monitor Data Source in the Aspect List Area.
  - e. Record the value of **OPC Group Update Rate (ms)** shown in the Preview Area. This value must be reconfigured after the upgrade.
2. If using Maximo Integration, it is necessary to record the values of the Maximo Equipment ID Provider Properties, as these values will not be upgraded. Refer to **Maximo Server Connection Properties** in the System Setup section of *Industrial IT, 800xA - Asset Optimization, Configuration (3BUA000118\*)* to access these values.

### Back Up Data to Safe Media

Use the following procedure to back up Asset Optimization information (perform only the steps applicable to the system):

1. Asset Monitoring:



Asset Monitoring directories will be found on the Asset Optimization Server node.

- a. If Runtime Asset Monitors are being used in the system, save the Runtime Asset Monitor data directory (DeviceRunTimeMSLogicStore) to a safe media. The Runtime Asset Monitor data directory is located in:  
... \Program Files\ABB Industrial IT\Optimize IT\Asset Optimization\AssetMonitorEnvironment\Bin
- b. If XY Profile Deviation Asset Monitors are being used in the system, save the XY Profile Deviation Asset Monitor data directory

(XY\_Reference\_Profiles) to a safe media. The XY\_Reference\_Profiles directory is located in:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset Optimization\AssetMonitorEnvironment\Bin
```

## 2. Save Maximo Integration:



If using Maximo Integration, the Maximo Integration information *must* be saved from all Asset Optimization Server nodes. Reference the **Service Structure** for the name of the Asset Optimization Server nodes.

- a. Although the Maximo system is separate from the 800xA System, it is a good idea to back up the system in use. Follow Maximo standard practices for Maximo system backup.
- b. If the MxDef files were customized per the instructions in *Industrial IT, 800xA - Asset Optimization, Configuration (3BUA000118\*)*, back up the customized MxDef files to safe media.

The customized MxDef files are located in the following directory:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset Optimization\ABB AO\Services\MOM\MxDefs\server_name\ app_server
```

Where:

<server\_name>\<app\_server> is the combination of the **MRO Server Name** and the **MRO Application Server Name** fields from the Maximo Equipment ID aspect. These fields are configured in the **Aspect System Structure** in the Maximo Equipment ID aspect. These fields allow for customization of MxDef files on the Maximo Server level as well as on the Maximo Application Server level. Refer to the Maximo documentation for an explanation of Maximo Application Servers.

For example, the resultant path to the customized MxDef files will look like:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset Optimization\ABB AO\Services\MOM\MxDefs\Maximo5\MxServer
```

## 3. DMS Calibration Integration. If DMS Calibration Integration is used:

Restore DMS Calibration Integration information. Refer to the *Meriam Process Technologies Device Management System User's Guide* for information about restoring DMS Server data.



Asset Optimization DMS Calibration Integration 800xA 5.0 SP2 functions with DMS software Version 2.6.

## PC, Network and Software Monitoring

Use the following procedure to prepare for the PC, Network and Software Monitoring upgrade.

1. If there are user defined Script, Resource, and Assembly files they need to be backed up. The user files are located in:

```
...\Program Files\ABB Industrial IT\Optimize IT\
PC, Network and Software Monitoring\bin\Configuration\
Scripts\User
```

```
...\Program Files\ABB Industrial IT\Optimize IT\
PC, Network and Software Monitoring\bin\Configuration\
Assemblies\User
```

```
...\Program Files\ABB Industrial IT\Optimize IT\
PC, Network and Software Monitoring\bin\Configuration\
Resources\User directory
```

Copy the files in these directories to a safe location.

2. Shut down the PC, Network and Software Monitoring Server node.
  - a. Use the Structure Selector to open the **Service Structure** in the Plant Explorer Workplace.
  - b. Use the Object Browser to navigate to:  
**Services > OpcDA\_Connector, Service > SG\_IT Server, Service Group > OPCDA\_Provider\_Node Name, Service Provider**  
(where Node Name is the name of the PC, Network and Software Monitoring Server node).
  - c. Select Service Provider Definition in the Aspect List Area.
  - d. Click the **Configuration** tab to produce a view in the Preview Area.

- e. If the **Enabled** check box is selected, disable it and click **Apply**.

## SMS and e-mail Messaging

Save all GSM Device hardware information. Record information for the GSM device on the SMS and e-mail Messaging GSM Hardware Setup Worksheet shown in [Table 9](#).

*Table 9. SMS and e-mail Messaging GSM Hardware Setup Worksheet*

| Item                                                                               | Setting/Value                           |
|------------------------------------------------------------------------------------|-----------------------------------------|
| <b>Spooler Settings</b>                                                            |                                         |
| Activate Outbox Spooler                                                            | Checked (check and leave checked)       |
| Activate Inbox Spooler                                                             | Checked (check and leave checked)       |
| Interval for Checking for Incoming Messages                                        | Value: _____ Seconds Minutes (circle 1) |
| <b>Port Settings</b>                                                               |                                         |
| COM Port                                                                           | Value: COM _____                        |
| Baud Rate                                                                          | Value: _____                            |
| Data Bits                                                                          | Value: _____                            |
| Parity                                                                             | Value: _____                            |
| Stop Bits                                                                          | Value: _____                            |
| <b>PIN and Properties</b>                                                          |                                         |
| Query PIN                                                                          | Checked or Unchecked (circle one)       |
| PIN (only if Query PIN is checked)                                                 | Value: _____                            |
| Save PIN (only if Query PIN is checked)                                            | Checked or Unchecked (circle one)       |
| Own Number (telephone number of SIM card (including Country Code) in GSM hardware) | Value: _____                            |

Table 9. SMS and e-mail Messaging GSM Hardware Setup Worksheet (Continued)

| Item                                          | Setting/Value                              |
|-----------------------------------------------|--------------------------------------------|
| <b>Initialization String for GSM Hardware</b> | Value:<br>_____<br>_____<br>_____<br>_____ |
| <b>General Service Properties</b>             |                                            |
| Name (GSM service provider)                   | Value: _____                               |
| Port                                          | Value: COM _____                           |
| SMSC                                          | Value: _____                               |
| Default Country Code                          | Value: _____                               |
| Default Prefix                                | Value: _____                               |
| Number of Attempts                            | Value: _____                               |
| <b>Splitting Service Properties</b>           |                                            |
| Splitting                                     | Checked or Unchecked (circle one)          |
| Optimize Splitting                            | Checked or Unchecked (circle one)          |
| Enumerate Splitting                           | Checked or Unchecked (circle one)          |
| Narrowband Sockets                            | Checked or Unchecked (circle one)          |
| <b>Messaging Service Properties</b>           |                                            |
| Add Before Message                            | Blank (verify and do not change)           |
| Use for Delivery Notification Only            | Unchecked (verify and do not change)       |
| Default Option                                | 0 (verify and do not change)               |
| <b>Message General Properties</b>             |                                            |
| Replace CR LF for Incoming Messages           | Checked or Unchecked (circle one)          |

## Batch Management

1. Verify all scheduled batches are completed or terminated.
2. To archive batch history, select the batch history archive aspect. By default a Batch History Archive aspect is located in:

Library Structure > Batch Management, Overviews

The Batch History Archive window contains the **Batch Selection** and **Archive Destination** tabs. However, this aspect can be added to any 800xA system object.

During the course of each batch process run, data that documents details about that specific batch is gathered and stored by the system in the batch database until manually removed. Data that has been archived can still be retained in the batch database. However, once data associated with a batch has been archived and placed in a safe place, the data for that batch should be removed from the batch database.

Archiving batch data has no effect on the uniqueness of the batch ID. Even after data associated with a batch ID has been removed from the system, a record of the batch ID will be retained on the system. The batch ID can never be reused.

Do not archive directly to or restore directly from CDs or DVDs. Archive to or restore from hard disk drives which can be backed up to CDs or DVDs using commercially available software.

3. Use the Batch Management backup/restore utility to back up and PFC color configuration information and batch IDs. Access this utility by selecting:

**Start > Programs > ABB Industrial IT > 800xA System > Batch Management > Backup Restore**

Selecting any of the options listed in the backup/restore utility enables the **Backup** and **Restore** buttons.

The options are:

- PFC color configuration.
- Batch IDs.

When **Backup** is selected, a standard Open File window that allows browsing to any desired folder is presented. A confirmation window provides the chance to cancel before the backup file is written.

4. Disable the Batch Alarm & Event Service Group and Batch Service Group before proceeding. To disable the service groups:
  - a. Open a Plant Explorer Workplace.
  - b. Use the Structure Selector to open the **Service Structure**.
  - c. Use the Object Browser to select:  
`Services\Alarm & Event, Service\batch_group_name, Service Group`
  - d. Select `Service Group Definition` in the Aspect List Area.
  - e. Select the **Configuration** tab in the Preview Area.
  - f. Clear the **Enabled** check box and click **Apply**.
  - g. Determine the name of the nodes that are currently Primary and Secondary Batch Servers,
  - h. Use the Object Browser to select:  
`Services\Batch Service, Service\batch_group_name, Service Group`
  - i. Select `Service Group Definition` in the Aspect List Area.
  - j. Select the **Configuration** tab in the Preview Area.
  - k. Select the provider that is currently the Secondary Batch Server.
  - l. Clear the **Enabled** check box and click **Apply**.
  - m. Select the provider that is currently the Primary Batch Server.
  - n. Clear the **Enabled** check box and click **Apply**.

## Information Management

Perform the following procedures to prepare for the Information Management upgrade.

### **End Microsoft Excel Process via Windows Task Manager**

Use Windows Task Manager to manually end the EXCEL.EXE process.

### **Recording Archive Group Associations**

Archive Groups are associated with Profile, Message, and Report logs.

1. Record these associations so that after the upgrade, these logs can be reassociated with their respective Archive Groups. Refer to the **Reading and Managing Archive Data** section in *Industrial IT, 800xA - Information Management, Data Access and Reports (3BUF001094\*)* to access the Archive Groups and record the information.
2. Back up the path to Archive Group Numeric Log Entry and IM Objects Entry.

### **ABB Process Administration Server (PAS)**

Perform the following procedure to run the PAS utility.

1. Run the Process Administration Service (PAS) utility on the Information Management Application Server node. From the Windows Taskbar select:

**Start > Settings > Control Panel > Administrative Tools > PAS > Process Administration**

This opens the Process Administration Service dialog box.

2. Click **Stop All** to stop all processes under PAS supervision.
3. Click **Close** when the dialog box indicates that all processes are stopped.
4. Use standard Windows procedures, via the Services selection from Administrative Tools in Windows Control Panel, to place the ABB Process Administration Service into manual and insure that it is stopped.

### **Information Management Backup and Restore Utility**

Use the Information Management History Backup/Restore utility, via:

**Start > Programs > ABB Industrial IT 800xA > Information Mgmt > History > Backup and Restore**

to create all the backup files that are required to completely back up the Information Management History database. This includes all configuration data, log data from both file-based and ORACLE-based logs, and the Aspect System definition file.

During a backup operation, all data in the Oracle database owned by the Oracle History user is exported to the specified destination and compressed into a zipped archive, along with any files that have been created to store file-based property log entries (called flat files).

The History database can be backed up to any drive, including any mapped network drives. The disk type should be NTFS for the backups.

To avoid any ambiguity, the backup operation produces a zipped archive of compressed History database files for each drive that contains at least some portion of the database, where each archive contains only the database files that are stored on the corresponding drive. The backup utility uses the naming convention *name-drive.zip* for the zipped archives that it produces. For example, if the History database is located entirely on the C:\ drive and you wish to back up the database to a zipped archive called hist, the backup operation will compress the database files into a zipped archive named `histDB-C.zip`.

If the data files exceed two gigabytes, or if there are more than 25,000 files, then multiple zip files will be created using the following naming convention:

- First File *name-drive.zip*
- Next File *name-drive0001.zip*
- Next File *name-drive0002.zip*

When backing up the History database, make sure the disk is ready and available on the workstation on which the procedure is to occur. The log file should be checked after the backup operation to make sure that the backup operation completed successfully.



It is recommended that the history database be cleaned before making the backup. Open a Windows Command Prompt window and enter **hsDBMaint -clean**.

Make sure the system Archive is not getting full. Temp space is required to make the backup. If the log file indicates that the Oracle export failed, use the option to export to a disk with more space.

To make a backup:

1. Select:

**Start > Programs > ABB Industrial IT 800xA > Information Mgmt > History > Backup and Restore**

2. Verify the **Create Backup Files of Current Configuration** option is enabled in the IM Historian Backup/Restore Utility window.
3. Click **Next**. A window for setting up the backup operation is displayed.
4. Specify the location where the backup files are to be created in the New Directory Path for the Backup field. This path must already exist and the directory must be empty. If necessary, click **Browse** to create a new directory. Add a D:\HSDATA\History as an additional option.



The backup of the History data must be in a directory of its own, not the D:\HSDATA\History directory. If the data is put into the D:\HSDATA\History directory, it will get lost.

5. Verify the Only Generate Aspect Definition File option is disabled.
6. Click **Next**. The HsBAR Output Window is displayed.
7. Select the Automatically Close Upon Completion option.
8. After the HsBAR Output Window closes, monitor the progress in the Progress Status area of the IM Historian Backup/Restore Utility window and click **Finish** when the backup is complete.



If a message appears stating that there are inconsistencies between the log configurations in the Aspect System and the log configurations in Oracle, it may be because the database was not cleaned before running the backup. Use the hsDBMaint -Clean function to clean the database and then rerun the backup. If this does not fix the problem, contact ABB Technical Support for further assistance.

### **Saving Other Information Management Related Files**

There are several other files related to Information Management to be saved as part of a total system backup.

- **History Archive Data:** For each archive device, go to the location specified by the Device Filename and copy the folders under that directory to a safe location. Do this even if automatic backup is configured.

- **History Archive State Information:** The folder that holds the last archive time and other archive state information must be copied to a safe location. The folder name is `Archive` and it is located in:

```
...\\Documents and Settings\\All Users\\
Application Data\\ABB\\IM\\Archive
```

Copy the entire folder.

- **Reports:** Save any report template files created in Microsoft Excel, DataDirect, and/or Crystal Reports®. Also save report output files created as a result of running these reports via the Scheduling Services.

- **Desktop Trends:** Back up trend display, ticker display, and tag explorer files.

- Ticker files are located in:

```
...\\My Documents\\ABB Industrial IT\\Inform IT\\Desktop
Trends\\Ticker Files
```

- Trend Files are located in:

```
...\\My Documents\\ABB Industrial IT\\Inform IT\\Desktop
Trends\\HTML
```

- Tag Explorer files are located in:

```
...\\Documents and Settings\\~username\\Application
Data\\ABB Industrial IT\\Inform IT\\Desktop Trends
```

- **Display Services:** Back up the directories for custom users, as well as display and user element definitions. The files are located in:

```
...\\Program Files\\ABB Industrial IT\\Inform IT\\Display
Services\\Server\\Data
```

Save the user-built `svg` and `vet` files.

- **DataDirect:** Back up custom text files for object, object type, and attribute menus used on the DataDirect windows. The files are located in:

```
...\\Program Files\\ABB Industrial IT\\Inform IT\\Data
Direct\\etc.
```

Save the user-built text files.

## Scheduler Service (Application Scheduler)

Disable Schedules before stopping the servers and performing the upgrade. The Schedules will need to be manually enabled again following the upgrade.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Service Structure**.
3. Select the Scheduling Service Object.
4. Select the Service Definition aspect.
5. Click the **Configuration** tab.
6. Clear the **Enabled** check box and click **Apply**.

## Calculations Service

Disable Calculations before stopping the servers and performing the upgrade.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Service Structure**.
3. Select the Calculations Service Object.
4. Select the Service Definition aspect.
5. Click the **Configuration** tab.
6. Clear the **Enabled** check box and click **Apply**.

## Basic History Service Data



Back up the Basic History folder for each Basic History Service Provider in the **Service Structure**. Depending on the system, the Basic History Service data can be present on a number of different node types (Connectivity Servers, IM Servers, AO Servers, etc.). It is best to search for the directory described in this procedure on all nodes, and if there is data present, back up that data.

To save Basic History Service data:

1. Stop the Basic History Server from the **Service Structure**.
2. Use Windows Backup (not the 800xA Backup) to backup the files in the following directory:

```
... \OperateITData\History\{provider ID}
```

3. Start the Basic History Server again from the **Service Structure**.

## Alarm and Event List Configurations

Alarm and Event handling has changed significantly from 800xA 3.1 SP3 to 800xA 5.0 SP2 (refer to [Alarm and Event List Configurations](#) on page 334). Document list configurations in the 800xA 3.1 SP3 system, so they can be checked against the list configurations in the 800xA 5.0 SP2 system.

## System Upgrade (Upgrade Flow B)

The upgrade procedures differ if upgrading a Domain Controller node or if upgrading any other type of 800xA System node.

### Domain Controller Nodes

The Microsoft Windows Operating Systems supported for Domain Controller nodes in 800xA 5.0 SP2 are:

- Windows Server 2003 R1 with SP2.
- Windows Server 2003 R2 with SP2.



If using Windows Server 2003 R2 with SP2, unless otherwise specified, do not enable any Windows components that are not enabled in the default installation.

The following procedures detail how to manually upgrade a Domain Controller node. There are three different scenarios:

- [Upgrading Domain Controller Node and OS without Formatting Hard Disk.](#)
- [Upgrading Domain Controller Node with Compatible OS.](#)
- [Upgrading Domain Controller Node by Formatting Hard Disk.](#)

### Upgrading Domain Controller Node and OS without Formatting Hard Disk

To upgrade a Domain Controller node and its operating system from Windows 2000 Server to Windows Server 2003 without disturbing the Active Directory, follow the instructions in the following Microsoft KB Article:

<http://support.microsoft.com/kb/325379>

After upgrading the operating system, perform the following procedure on the Domain Controller node:

1. Use Add/Remove Programs via Windows Control panel to uninstall 800xA System software.



800xA System software can be identified by items that mention ABB or 800xA in Add/Remove Programs.

2. Install Windows Server 2003 SP2 on Windows Server 2003 nodes. Follow the procedures provided by Microsoft to install the Windows Operating System service packs.
3. Install Internet Explorer. Follow the procedures provided by Microsoft to install Internet Explorer.
4. Disable Internet Explorer Enhanced Security on Windows Server 2003 nodes (including the Domain Controller nodes) that are using Internet Explorer 7.0 (refer to [Disable Internet Explorer Enhanced Security](#) on page 346).
5. Disable Windows Firewall.
6. Refer to *Third Party Software System 800xA (3BUA000500\*)* and install additional third party software, updates, and service packs for this release approved by ABB. This document is accessible from ABB SolutionsBank.



The System Checker Tool is a standalone tool delivered with the 800xA System. It is designed for the purpose of checking, verifying, documenting, and troubleshooting an 800xA System, including third party software. The installation and use of the System Checker is described in *System 800xA Tools (2PAA101888R5021)*. The installation program is accessible from the Manual Installation AUTORUN screen via **Base Functionalities > Diagnostic Tools > System Checker Tool**.

7. Refer to [Group Policy Management for Upgrades](#) on page 346 and configure the Group Policy Object.
8. Refer to *Third Party Software System 800xA (3BUA000500\*)* and apply updates and hot fixes approved by ABB to the existing operating system. This document is accessible from ABB SolutionsBank.
9. Refer to *System 800xA Manual Installation (3BSE034678\*)* and install all required 800xA System software.
  - ABB RNRP.
  - ABB Diagnostic Collection Tools.

- ABB System Checker Tool.
10. Refer to *System 800xA Post Installation (3BUA000156\*)* and configure Windows Firewall.

### Upgrading Domain Controller Node with Compatible OS

Perform the following procedure when upgrading a Domain Controller node with a compatible operating system (Windows 2003 Server):

1. Disjoin all 800xA System nodes from the Domain Controller by joining them to a Windows Workgroup.
2. Use Add/Remove Programs via Windows Control panel to uninstall 800xA System software.



800xA System software can be identified by items that mention ABB or 800xA in Add/Remove Programs.

3. Install Windows Server 2003 SP2 on Windows Server 2003 nodes. Follow the procedures provided by Microsoft to install the Windows Operating System service packs.
4. Install Internet Explorer. Follow the procedures provided by Microsoft to install Internet Explorer.
5. Disable Internet Explorer Enhanced Security on Windows Server 2003 nodes (including the Domain Controller nodes) that are using Internet Explorer 7.0 (refer to [Disable Internet Explorer Enhanced Security](#) on page 346).
6. Disable Windows Firewall.
7. Refer to *Third Party Software System 800xA (3BUA000500\*)* and install additional third party software, updates, and service packs for this release approved by ABB. This document is accessible from ABB SolutionsBank.



The System Checker Tool is a standalone tool delivered with the 800xA System. It is designed for the purpose of checking, verifying, documenting, and troubleshooting an 800xA System, including third party software. The installation and use of the System Checker is described in *System 800xA Tools (2PAAI01888R5021)*. The installation program is accessible from the Manual Installation AUTORUN screen via **Base Functionalities > Diagnostic Tools > System Checker Tool**.

8. Refer to [Group Policy Management for Upgrades](#) on page 346 and configure the Group Policy Object.
9. Refer to *Third Party Software System 800xA (3BUA000500\*)* and apply updates and hot fixes approved by ABB to the existing operating system. This document is accessible from ABB SolutionsBank.
10. Refer to *System 800xA Manual Installation (3BSE034678\*)* and install all required 800xA System software.
  - ABB RNRP.
  - ABB Diagnostic Collection Tools.
  - ABB System Checker Tool.
11. Refer to *System 800xA Post Installation (3BUA000156\*)* and configure Windows Firewall.

### Upgrading Domain Controller Node by Formatting Hard Disk

Perform the following procedure when upgrading a Domain Controller node by formatting the hard disk:



Perform the procedures detailed under the following topics in **Section 2 - Prerequisites** of *System 800xA Manual Installation (3BSE034678\*)* to create the Active Directory:

- Domain Controller and DNS Server.
- Users and Groups.
- Adding Nodes to a Domain.
- Adding 800xA Domain Users to the Local Administrator Group.

Precautions:

- Disjoin all 800xA System nodes from the Domain Controller by joining them to a Windows Workgroup.
- The IP address of the original domain must be used when configuring the new Domain Controller.
- The Domain Name of the original domain must be used when configuring the new Domain Controller.
- The User and Group names of the original domain must be used when configuring the New Domain controller.

Perform the following procedure after creating the active directory:

1. Install Windows Server 2003 SP2 on Windows Server 2003 nodes. Follow the procedures provided by Microsoft to install the Windows Operating System service packs.
2. Install Internet Explorer. Follow the procedures provided by Microsoft to install Internet Explorer.
3. Disable Internet Explorer Enhanced Security on Windows Server 2003 nodes (including the Domain Controller nodes) that are using Internet Explorer 7.0 (refer to [Disable Internet Explorer Enhanced Security](#) on page 346).
4. Disable Windows Firewall.
5. Refer to *Third Party Software System 800xA (3BUA000500\*)* and install additional third party software, updates, and service packs for this release approved by ABB. This document is accessible from ABB SolutionsBank.



The System Checker Tool is a standalone tool delivered with the 800xA System. It is designed for the purpose of checking, verifying, documenting, and troubleshooting an 800xA System, including third party software. The installation and use of the System Checker is described in *System 800xA Tools (2PAAI01888R5021)*. The installation program is accessible from the Manual Installation AUTORUN screen via **Base Functionalities > Diagnostic Tools > System Checker Tool**.

6. Refer to [Group Policy Management for Upgrades](#) on page 346 and configure the Group Policy Object.
7. Refer to *Third Party Software System 800xA (3BUA000500\*)* and apply updates and hot fixes approved by ABB to the existing operating system. This document is accessible from ABB SolutionsBank.
8. Refer to *System 800xA Manual Installation (3BSE034678\*)* and install all required 800xA System software.
  - ABB RNRP.
  - ABB Diagnostic Collection Tools.
  - ABB System Checker Tool.

Refer to *System 800xA Post Installation (3BUA000156\*)* and configure Windows Firewall.

## 800xA System Nodes

The Microsoft Windows Operating Systems supported in 800xA 5.0 SP2 are:



Refer to *System 800xA System Guide Technical Data and Configuration (3BSE041434\*)* for specific information on what node types can be installed on each operating system.

- Windows XP Professional with SP2.
- Windows Server 2003 R1 with SP2.
- Windows Server 2003 R2 with SP2.



If using Windows Server 2003 R2 with SP2, unless otherwise specified, do not enable any Windows components that are not enabled in the default installation.

The following rules apply:

- Any existing nodes that do not have one of these operating systems must be reformatted and the compatible operating system must be installed.
- All IM (Information Management) and 800xA for AC 870P/Melody Server nodes being upgraded must be reformatted and the operating system installed, even if the existing operating system is compatible.
- All nodes being upgraded, that are not IM or 800xA for AC 870P/Melody Server nodes, with a compatible operating system require that the existing operating system be updated.
- If PROFIBUS/HART Device Integration functionality is installed in the 800xA System, all nodes being upgraded must be reformatted and the operating system installed.

Refer to [Upgrade Flow](#) on page 308 for more information.

### Existing Operating System



The installation will fail unless all Information Management Server, and 800xA for AC 870P/Melody Connectivity and Configuration Server nodes being upgraded are reformatted and the operating system installed. This is true even if the existing operating system is compatible. Refer to [New Operating System](#) on page 344.

If upgrading using an existing operating system:

1. Close all open Windows.
2. Use Configuration Wizard to disconnect each client from the 800xA System. This task is only visible in the Configuration Wizard on a client node when the client node is connected to the 800xA System.
  - a. Launch the Configuration Wizard.
  - b. Select **Disconnect Client** and click **Next**.
  - c. Choose the 800xA System from which to disconnect the client node and click **Next**.
  - d. Click **Finish**. The client node is now disconnected from the 800xA System.
3. Use Configuration Wizard from one of the server nodes to stop the 800xA System.
  - a. Launch the Configuration Wizard.
  - b. Select **System Administration** and click **Next**.
  - c. Select the 800xA System to stop and click **Next**.
  - d. Select **Systems** and click **Next**.
  - e. Select **Stop** in the Systems dialog box and click **Next**.
  - f. Click **Finish** in the Apply Settings dialog box.
4. Exit the Batch Redundancy Status by right-clicking the Batch Redundancy Status icon in the Windows tray (P, S, or C) and choosing **Exit** from the context menu ([Figure 51](#)).



*Figure 51. Stopping the Batch Redundancy Status*

5. Delete the system on each node.
  - a. Launch the Configuration Wizard.

- b. Select **System Administration** and click **Next**.
  - c. Select the 800xA System to delete and click **Next**.
  - d. Select **Systems** and click **Next**.
  - e. Select **Delete** in the Systems dialog box and click **Next**.
  - f. Click **Finish** in the Apply Settings dialog box.
  - g. Wait a few minutes. When the Configuration Wizard appears with the Systems dialog box the deletion of the system is complete.
  - h. Click **Exit**.
6. The System Services listed must be stopped at each individual 800xA System node. Stop these services in a controlled manner in the following sequence:
- 800xA System Clients.
  - 800xA System Connectivity Servers.
  - 800xA System Aspect Servers.
- a. Use standard Windows procedures, via the Services selection from Administrative Tools in Windows Control Panel, to place the following services into manual and insure that they are stopped.
    - ABB Application logger.
    - ABB Client License Provider.
    - ABB MMS Server for AC 800M.
    - ABB OPC Server for AC 800M.
    - ABB ServiceManager.
    - ABB System Notification Icon.
    - ABB Tool Routing Service for AC 800M.
  - b. Use the afwkill utility ([Figure 52](#)) to make sure all processes related to the 800xA System are stopped. From the Windows Taskbar select:

### Start > Programs > Accessories > Command Prompt

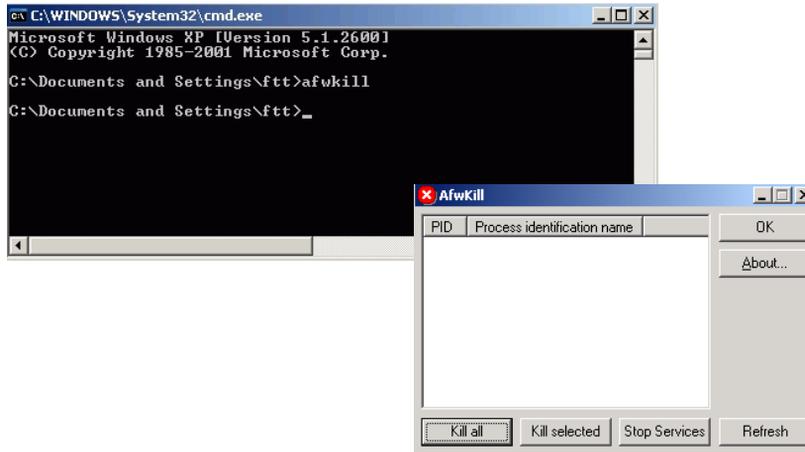


Figure 52. Running the afwkill Utility

- c. In the Command Prompt window enter **afwkill**.
  - d. The afwkill window should be empty, indicating that all processes are stopped. In this case click **OK** to close.
 

If processes are listed in this window, click **kill all**, then click **OK** when the window indicates all processes are stopped (empty window).
7. Use Add/Remove Programs via Windows Control panel to uninstall 800xA System and Functional Area software. Remove the application software before the base system software.



There may be some 800xA software on nodes (such as 800xA RNRP on the Domain Controller node) that does not include Process Portal software. The 800xA software on these nodes also requires upgrading.



800xA System and Functional Area software can be identified by items that mention ABB or 800xA in Add/Remove Programs.

8. Manually delete the following folder:

```
...:\Documents and Settings\All Users\Start Menu\
Programs\ABB Industrial IT 800xA\System\Network
```

9. Reboot the workstation after all 800xA System and Functional Area software has been removed.
10. Install Windows Server 2003 SP2 on Windows Server 2003 nodes. Follow the procedures provided by Microsoft to install the Windows Operating System service packs.
11. Install Internet Explorer. Follow the procedures provided by Microsoft to install Internet Explorer.
12. Disable Internet Explorer Enhanced Security on Windows Server 2003 nodes (including the Domain Controller nodes) that are using Internet Explorer 7.0 (refer to [Disable Internet Explorer Enhanced Security](#) on page 346).
13. Disable Windows Firewall on every node in the 800xA System.
14. Refer to *Third Party Software System 800xA (3BUA000500\*)* and install additional third party software, updates, and service packs for this release approved by ABB. This document is accessible from ABB SolutionsBank.



The System Checker Tool is a standalone tool delivered with the 800xA System. It is designed for the purpose of checking, verifying, documenting, and troubleshooting an 800xA System, including third party software. The installation and use of the System Checker is described in *System 800xA Tools (2PAA101888R5021)*. The installation program is accessible from the Manual Installation AUTORUN screen via **Base Functionalities > Diagnostic Tools > System Checker Tool**.

15. Refer to [Group Policy Management for Upgrades](#) on page 346.
16. Refer to [Adding Privileges to the 800xA Service User](#) on page 352.
17. Refer to *Third Party Software System 800xA (3BUA000500\*)* and apply updates and hot fixes approved by ABB to the existing operating system. This document is accessible from ABB SolutionsBank.
18. Refer to *System 800xA Manual Installation (3BSE034678\*)* and install the License Server on the primary Aspect Server node and install the license file.

19. Refer to *System 800xA Manual Installation (3BSE034678\*)* and install all required 800xA System software.



If Production Management - Batch Management software is being installed, initialize the Batch database during installation of the Production Management - Batch Management software.

20. Refer to [Setting the PAS and IM Service Account and Password](#) on page 353 and perform that procedure before performing the 800xA System restore.
21. Refer to [800xA System Restore \(Upgrade Flow C\)](#) on page 353 of this instruction and perform all necessary steps.
22. Perform all steps that pertain to the installed applications from [800xA Documentation Maintenance](#) on page 358 through the remainder of this section in the order presented.
23. Refer to *System 800xA Post Installation (3BUA000156\*)* and configure Windows Services and Windows Firewall.
24. Refer to [Backups](#) on page 313 and perform precautionary backups.

### New Operating System

If upgrading using a new operating system:



If formatting the Domain Controller node, disconnect all 800xA System nodes from the Domain by joining them to a Windows workgroup before formatting the Domain Controller node.



There may be some 800xA software on nodes (such as 800xA RNRP on the Domain Controller node) that does not include Process Portal software. The operating system and 800xA software on these nodes also requires upgrading.

1. Reformat the drive.
2. Refer to *System 800xA Manual Installation (3BSE034678\*)* and install the new operating system.
3. Install Windows Server 2003 SP2 on Windows Server 2003 nodes. Follow the procedures provided by Microsoft to install the Windows Operating System service packs.
4. Install Internet Explorer. Follow the procedures provided by Microsoft to install Internet Explorer.

5. Disable Internet Explorer Enhanced Security on Windows Server 2003 nodes (including the Domain Controller nodes) that are using Internet Explorer 7.0 (refer to [Disable Internet Explorer Enhanced Security](#) on page 346).
6. Disable Windows Firewall on every node in the 800xA System.
7. Refer to *Third Party Software System 800xA (3BUA000500\*)* and install additional third party software, updates, and service packs for this release approved by ABB. This document is accessible from ABB SolutionsBank.



The System Checker Tool is a standalone tool delivered with the 800xA System. It is designed for the purpose of checking, verifying, documenting, and troubleshooting an 800xA System, including third party software. The installation and use of the System Checker is described in *System 800xA Tools (2PAA101888R5021)*. The installation program is accessible from the Manual Installation AUTORUN screen via **Base Functionalities > Diagnostic Tools > System Checker Tool**.

8. Refer to [Group Policy Management for Upgrades](#) on page 346.
9. Refer to [Adding Privileges to the 800xA Service User](#) on page 352.
10. Refer to *Third Party Software System 800xA (3BUA000500\*)* and apply updates and hot fixes approved by ABB to the existing operating system. This document is accessible from ABB SolutionsBank.
11. Refer to *System 800xA Manual Installation (3BSE034678\*)* and install the License Server on the primary Aspect Server node and install the license file.
12. Refer to *System 800xA Manual Installation (3BSE034678\*)* and install all required 800xA System software.
13. Refer to [Setting the PAS and IM Service Account and Password](#) on page 353 and perform that procedure before performing the 800xA System restore.
14. Refer to [800xA System Restore \(Upgrade Flow C\)](#) on page 353 of this instruction and perform all necessary steps.
15. Perform all steps that pertain to the installed applications from [800xA Documentation Maintenance](#) on page 358 through the remainder of this section in the order presented.
16. Refer to *System 800xA Post Installation (3BUA000156\*)* and configure Windows Services and Windows Firewall.

17. Refer to [Backups](#) on page 313 and perform precautionary backups.

## Disable Internet Explorer Enhanced Security



This procedure only applies to Windows Server 2003 installations using Internet Explorer 7.0.



Windows Server 2003 with SP2 and Internet Explorer 7.0 must be installed prior to performing the following procedure.

The Internet Explorer Enhanced Security component must be disabled on all Windows Server 2003 with SP2 nodes in the 800xA System that are using Internet Explorer 7.0.

1. Select:  
**Start > Control Panel**
2. Double-click **Add/Remove Programs** to launch the Add or Remove Programs utility.
3. Click **Add/Remove Windows Components** to open the Windows Components Wizard.
4. In the Components list, disable the **Internet Explorer Enhanced Security Configuration** check box.
5. Click **Next** and then **Finish**.

## Group Policy Management for Upgrades

The procedures differ depending on the environment (domain or Windows Workgroup).

### Domain Environment



Perform this procedure before installing 800xA System and Functional Area software.

When upgrading from 800xA 3.1 SP3 to 800xA 5.0 SP2, it is necessary to add the 800xA 5.0 SP2 Group Policy on the Domain Controller node. It is also necessary to

run a command on every other 800xA System node to force the new Group Policy Object from the Domain Controller down to each node.

### Domain Controller Node

1. Insert 800xA System Installation DVD 1 into the drive.
2. Use Windows Explorer to locate `gpmc.msi` in the following directory:  
`3rd_Party_SW\Microsoft`
3. Double-click `gpmc.msi` to install the Group Policy Management Console with SP2. Follow the instructions in the Installation Wizard to complete the installation.
4. When the Group Management Console with SP 1 installation is complete, from the Windows Taskbar, select:

#### Start > Run

5. Enter `dsa.msc` in the Run dialog box and click **OK** to open the Active Directory Users and Computers dialog box.
6. In the left pane of the Active Directory Users and Computers dialog box, right-click the domain name and select **Properties** from the context menu to open the Domain Properties dialog box.
7. Select the **Group Policy** tab in the Domain Properties dialog box.
8. Click **Open** to open the Group Policy Management Console.



**Do not** modify the default Group Policy Object itself. Create, link and modify a new Group Policy Object.

9. In the left pane of the Group Policy Management Console, right-click the domain name and select **Create and Link a GPO Here...** from the context menu to open the New GPO dialog box.
10. Type in a name for the new Group Policy Object in the New GPO dialog box; for example, `IntranetName` and click **OK** to return to the Group Policy Management Console.
11. In the right pane of the Group Policy Management Console, right-click on the new Group Policy Object and select **Edit** from the context menu to open the Group Policy Object Editor.

12. In the left pane of the Group Policy Object Editor, navigate to:  
**User Configuration > Windows Settings > Internet Explorer Maintenance > Security**
13. In the right pane of the Group Policy Object Editor, double-click:  
Security Zones and Content Ratings  
to open the Security Zones and Content Ratings dialog box (Figure 53).

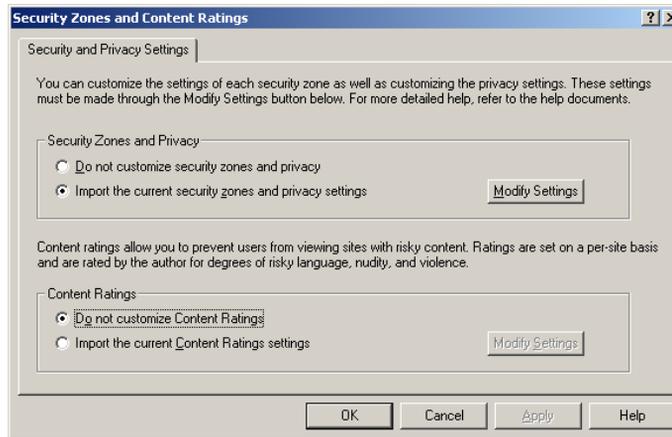
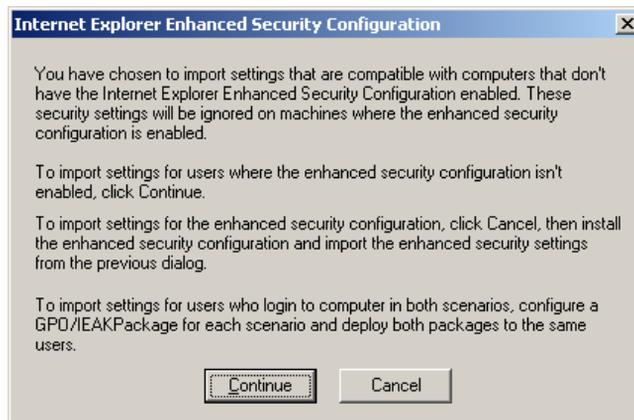


Figure 53. Security Zones and Content Ratings Dialog Box

14. Select **Import the current security zones and privacy settings** in the Security Zones and Privacy frame. Since Internet Explorer Enhanced Security was disabled under [Disable Internet Explorer Enhanced Security](#) on page 346,

making this selection will open the Internet Explorer Enhanced Security Configuration dialog box shown in [Figure 54](#).



*Figure 54. Internet Explorer Enhanced Security Configuration Dialog Box*

15. Click **Continue** in the Internet Explorer Enhanced Security Configuration dialog box to close the dialog box and return to the Security Zones and Content Ratings dialog box ([Figure 53](#)).
16. Click **Modify Settings** in the Security Zones and Content Ratings dialog box to open the Internet Properties dialog box.
17. Click the **Security** tab.
18. Select the Local Intranet icon.

19. Click **Sites** to open the Local Intranet dialog box (Figure 55).

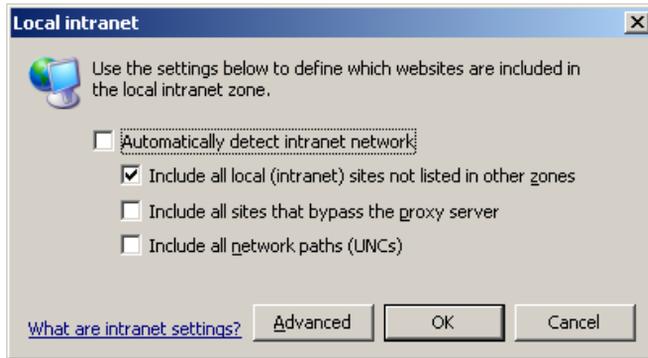


Figure 55. Local Intranet Dialog Box

20. Disable the **Automatically detect intranet network** check box.
21. Select the **Include all local (intranet) sites not listed in other zones** check box.
22. Verify that all other check boxes are disabled.
23. Click OK three times to close all open dialog boxes.
24. Close the Group Policy Object Editor.
25. Reboot the node.
26. Return to [Adding Privileges to the 800xA Service User](#) on page 352.

### All Other 800xA System Nodes

1. From the Windows Taskbar, select:  
**Start > Run**
2. Enter **gpupdate /force** in the Run dialog box and click **OK**. This forces the new Group Policy Object from the Domain Controller down to this node.

3. Return to [Adding Privileges to the 800xA Service User](#) on page 352.



If the system is expanded at a later time, this procedure must be performed on each node added during the expansion.

## Windows Workgroup Environment



Perform this procedure before installing 800xA System and Functional Area software.

This procedure must be performed on every node in the Windows Workgroup. If the system is expanded at a later time, this procedure must be performed on each node added during the expansion.

1. From the Windows Taskbar, select:

**Start > Run**

2. Enter **gpedit.msc** in the Run dialog box and click **OK** to open the Group Policy Object Editor.
3. In the left pane of the Group Policy Object Editor, navigate to:  
**User Configuration > Windows Settings > Internet Explorer Maintenance > Security**
4. In the right pane of the Group Policy Object Editor, double-click:  
`Security Zones and Content Ratings`  
to open the Security Zones and Content Ratings dialog box ([Figure 53](#)).
5. Select **Import the current security zones and privacy settings** in the Security Zones and Privacy frame. Since Internet Explorer Enhanced Security was disabled under [Disable Internet Explorer Enhanced Security](#) on page 346, making this selection will open the Internet Explorer Enhanced Security Configuration dialog box shown in [Figure 54](#).
6. Click **Continue** in the Internet Explorer Enhanced Security Configuration dialog box to close the dialog box and return to the Security Zones and Content Ratings dialog box ([Figure 53](#)).
7. Click **Modify Settings** in the Security Zones and Content Ratings dialog box to open the Internet Properties dialog box.

8. Click the **Security** tab.
9. Select the Local Intranet icon.
10. Click **Sites** to open the Local Intranet dialog box ([Figure 55](#)).
11. Disable the **Automatically detect intranet network** check box.
12. Select the **Include all local (intranet) sites not listed in other zones** check box.
13. Verify that all other check boxes are disabled.
14. Click OK three times to close all open dialog boxes.
15. Close the Group Policy Object Editor.
16. Reboot the node.
17. Return to [Adding Privileges to the 800xA Service User](#) on page 352.

## Adding Privileges to the 800xA Service User

This procedure only applies to the following node types. If these node types are not present in the system this procedure can be skipped.

- 800xA for AC 870P/Melody Configuration Server nodes.
- 800xA for AC 870P/Melody Connectivity Server nodes.
- AO Server nodes for Asset Optimization.

There are some services that run under the 800xA Service User account for the listed node types. Perform the following procedure to add the proper privileges to the 800xA Service User account.

1. Log off the 800xA Installing User account.
2. Log on the 800xA Service User account.
3. Log off the 800xA Service User account.
4. Log on the 800xA Installing User account.

## Setting the PAS and IM Service Account and Password

This procedure is only necessary if Information Management is installed in the 800xA System.

The PAS and Information Management (IM) service account and password must be set, via the Information Management Configuration Assistant, before performing the 800xA System restore.

1. To launch the configuration assistant, select:

**Start > All Programs > ABB Industrial IT 800xA > Information Mgmt > Configuration Assistant**

2. Select the first row, Item 1.0 Set PAS and IM Service Account and Password and click **Run Selected Configuration Tool**.
3. Perform the indicated actions and click **Close** in the Information Management Configuration Assistant.



Close the Information Management Configuration Assistant after performing Item 1.0 Set PAS and IM Service Account and Password. The rest of the configuration steps will be performed during post installation procedures after completing the software upgrade.

## 800xA System Restore (Upgrade Flow C)



The User Account that is used for 800xA System restore via the Configuration Wizard must be a member of the following groups:

- IndustrialITUser.
- IndustrialTAdmin.
- Local Administrators.



Click **Yes** if during restore a message box appears stating:

A required system extension is not installed Name :  
System\_Instruction

The backup/restore utility supports the restoring of 800xA system information. The following steps outline the 800xA system restore procedure.



Refer to *System 800xA Maintenance (3BSE046784\*)* for more information on restoring the system.

## 800xA System Restore Procedure

Perform the following procedure to use the 800xA System Restore function on the Primary Aspect Server node.

1. Start the restore procedure.
  - a. Select:  
**Start > All Programs > ABB Industrial IT 800xA > System > Configuration Wizard**
  - b. The Select Type of Configuration dialog box appears. Select **Restore System** and click **Next**.



Restart the node when advised during the restore procedure.

2. Check for messages in the log file (select the **View Log** check box in the Configuration Wizard). Refer to [Appendix A, Warning and Error Messages](#) to resolve any received warning or error messages.
3. Check the CPU load in the workstation. The System Message service may generate a high load (>90%). If this continues for longer than approximately 10 minutes, restart the service.



If a message stating that a full deploy of the Generic Control Network is needed, click **OK**.

4. One node at a time, start up all nodes again and connect them to the 800xA system in the following order:
  - Aspect Server nodes.
  - Connectivity Server nodes.
  - Application Server nodes.
  - Client nodes.
  - a. Use the following guidelines while connecting nodes, using the Configuration Wizard. This must be performed on the node that is going to be connected, not on the node on which the restore was performed.
  - b. If the node is an IM Server, verify that the ABB Process Administration Service (PAS) is set to manual in the Services Control Panel (run Services.msc from the Run dialog box). Stop the service if it is running.

- c. Select **Connect Node** from the Select Type of Configuration dialog box.
- d. Select the Primary Aspect Server (the server on which the system will run) in the **Connect to another System on Node** drop down-list box, in the Connect to System dialog box.
- e. Set the current system as the default system when connecting nodes to the system.
  - In some cases, problems may be encountered when connecting nodes to the system. Verify that the system software user settings are correct using the Configuration Wizard. Restarting the node again may also solve the problem.
  - Wait until all services in the newly connected node are up and running before connecting the next node. Select the Node Administration Structure\`connected_node_name`\System Status Viewer aspect to monitor the status of services. If some services will not start up, restarting the node may help.



Do not include services that were stopped manually as part of the pre-upgrade procedures. These will be manually restarted later in the post upgrade procedures.

- f. Restart each node after it has been connected to the system.



Run the System Software User Settings until OK. Restart if it is not working and if the message:

```
Invalid User
```

appears.

5. Record the number of aspects and objects in the system and compare these values to those recorded when the system was backed up.
  - a. Select the Admin Structure\Administrative Objects\Domains\`system_name`, Domain\Domain Definition aspect.
  - b. Record the number of objects and aspects listed in the System Size Information area of the window.
  - c. Right-click the Control Structure\`control_network_name`, Control Network\Control Structure aspect of one of the control networks contained in the system.

- d. Select **Properties** on the context menu.
- e. Select the **Statistics** tab.
- f. Record the number of objects listed.
- g. Right-click the **Control Structure** aspect within a controller project of the control network selected in [Step c](#).
- h. Select **Properties** on the context menu.
- i. Record the number of objects listed.
- j. Repeat [Step g](#) through [Step i](#) for all the controller projects within the control network.
- k. Repeat [Step c](#) through [Step j](#) for every control network in the system.



The number of aspects and objects after system restoration should be in the same range as those recorded during system backup, although there will likely be more.

- l. Right-click the Control Structure\HSE\_Subnet name, HSE Subnet\Control Structure aspect of one of the HSE Subnets contained in the system.
- m. Select **Properties** from the context menu.
- n. Select the **Statistics** tab.
- o. Record the number of objects listed.
- p. Repeat [Step l](#) through [Step o](#) for every HSE Subnet in the system.
- q. Right-click the Control Structure\MB300\_name, MB300 Network\Control Structure aspect of one of the MB300 Networks contained in the system.
- r. Select **Properties** from the context menu.
- s. Select the **Statistics** tab.
- t. Record the number of objects listed.
- u. Repeat [Step q](#) through [Step t](#) for every MB300 network in the system.



The number of aspects and objects after system restoration should be in the same range as those recorded during system backup, although there will likely be more.

## IT Control Connection Items in Log Configuration Aspects

The Process Portal log will display the following error message after completing the 800xA System Restore if there are IT Control Connection items in the Log Configuration aspect.

```
E_ADV_HT_NO_LOG (0x8abb1c19) No Log
```

This error occurs because the IT Control Connection aspects are recreated during the 800xA System Restore process.

Perform the following procedure to resolve the error:

1. Navigate to and locate `AfwConsistencyCheck.exe` in the following directory on the installation drive:

```
\Program Files\ABB Industrial IT\Operate IT\Process
Portal A\bin
```

2. Double-click `AfwConsistencyCheck.exe` to launch the Consistency Check Tool.
3. Click **Add Item** to open the Select Item dialog box.
4. Select the Log Configuration aspects with the error message.
5. Click **Add** and then **Close**.
6. Click **Check** in the Consistency Check dialog box to perform the consistency check.
7. Select the row or rows with Repairable error messages (look in the `Repairable` column).
8. Right-click and select **Repair Aspect** from the context menu.
9. Click **Yes** in the Repair dialog box. The consistency check will repair the problem and update the Consistency Report.
10. Click the Check button again to perform a new consistency check.
11. Verify the Log Configuration aspect in the Plant Explorer Workplace.



Other warnings may appear during system upgrade. These warnings can be ignored.

## Consistency Check

Refer to [Appendix D, Consistency Check](#) and perform the necessary consistency checks.

## 800xA Documentation Maintenance

Delete all documentation aspects (denoted by an open book icon) with a category name of Application Manual, Operating Manual, Installation Manual, or Technical Reference Manual found in the **Product Type Structure**.



If any customer-specific documentation aspects have been added, it is necessary to browse through the **Product Type Structure** and delete the 800xA documentation aspects individually so that customer-specific documentation will not be accidentally deleted.



Use the Find Tool in the Plant Explorer Workplace to find the documentation aspects.

The System Instructions system extension must be removed (unregistered). To unregister the System Instructions system extension from the 800xA system:

1. Use Windows Explorer to navigate to:

```
...:\Program File\ABB Industrial IT\Operate IT\Process
Portal A\bin
```

2. Double-click `AfwRemoveSystemInstructions.exe` to execute the program.

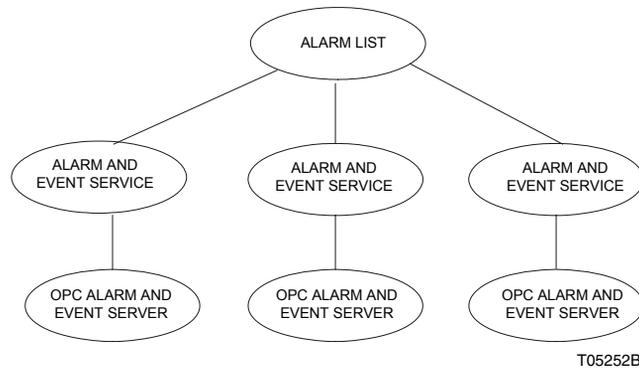
## Base System Considerations

There are considerations that must be taken into account with respect to alarms and events when working with the 800xA 5.0 SP2 System. It is important to read and understand the information about Alarm Categories in *System 800xA Administration and Security (3BSE037410\*)*.

## Connections between Alarm List and Alarm and Event OPC Server

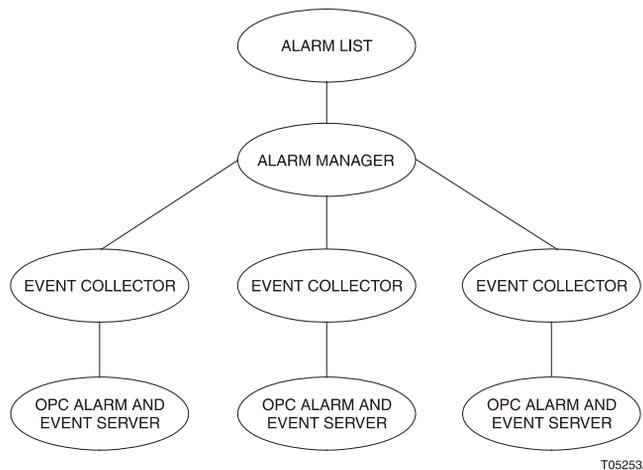
This connection is valid only for upgrading of Alarms and Events.

800xA 3.1 SP3 has one layer between the clients (e.g. an alarm list) and the OPC Alarm and Event Server that provides the alarms. This layer is realized by the Alarm and Event Service, as shown in [Figure 56](#).



*Figure 56. Alarm and Event Service Layer for 800xA 3.1 SP3*

800xA 5.0 SP2 has two layers, realized by the Alarm Manager which is on top of the Event Collector as shown in [Figure 57](#).



*Figure 57. Alarm Manager and Event Collector Layers for 800xA 5.0 SP2*

## Automatic Configuration

The object tree below the Alarm and Event Service is recreated below the Event Collector Service. The required library objects are also created.

The Alarm Manager Service is automatically configured. Some manual configuration is also required.

## Manual Configuration

Manual configuration consists of several actions.

### Configure the Event Collector Service

Manual configuration is required for Event Collectors connected to Connectivity Servers (such as, but not limited to, AC 800M).

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Service Structure**.
3. Use the Object Browser to navigate to:  
`Services > Event Collector, Service Group`  
and expand the tree.
4. Select a Service Group for a Connectivity Server.
5. Select `Service Group Definition` in the Aspect List Area.
6. Select the **Special Configuration** tab in the Preview Area.
7. Check to see if the item in the **Collection Definition** drop-down list box is the the new one that is to be used with 800xA 5.0 SP2. (The name should not end with (SV3)).
8. If the Collection Definition is not the new one that is to be used with 800xA 5.0 SP2, change the value so that it is and click **Apply**.
9. Select the **Configuration** tab.
10. Clear the **Enabled** check box and click **Apply**.
11. Select the **Enabled** check box and click **Apply**. This will restart the Service Group.

12. Repeat this procedure for all Connectivity Server Service Groups.

### **Organize the Library Objects**

The upgrade code creates one library object per Alarm and Event Service Group that was found in the backup. The library objects are located below the Alarm Collection Definitions object in **Library Structure**. The intention, however, is that there should be one library object per OPC Alarm and Event Server type that exists in the system, because the library object describes the capabilities of an OPC Alarm and Event Server. All groups working towards a specific OPC Alarm and Event Server type can share one library object.

After an upgrade, the structure should be organized so that it complies with this intention. Do not forget to update the settings that refer to the library object in the Event Collector Service Groups, in the **Special Configuration** tab of the Service Group Definition aspect.

### **Check the Alarm Manager Service Configuration**

In 800xA 3.1 SP3, it is possible to have a number of Alarm and Event Service groups, all with individual configurations. In 800xA 5.0 SP2, these groups are replaced with one group. Consequently, the individual configurations are replaced with one configuration. This common configuration is automatically generated from the individual configurations and should be checked, because:

- There are one or more new parameters that should be configured.
- Backed up data may be ambiguous. One Alarm and Event Service group might have another configuration than another group in the backed up system.
- Modifications might need to be made.

The configuration is found in the **Special Configuration** tab of the Service Group Definition aspect of the Alarm Manager Service group (Figure 58).

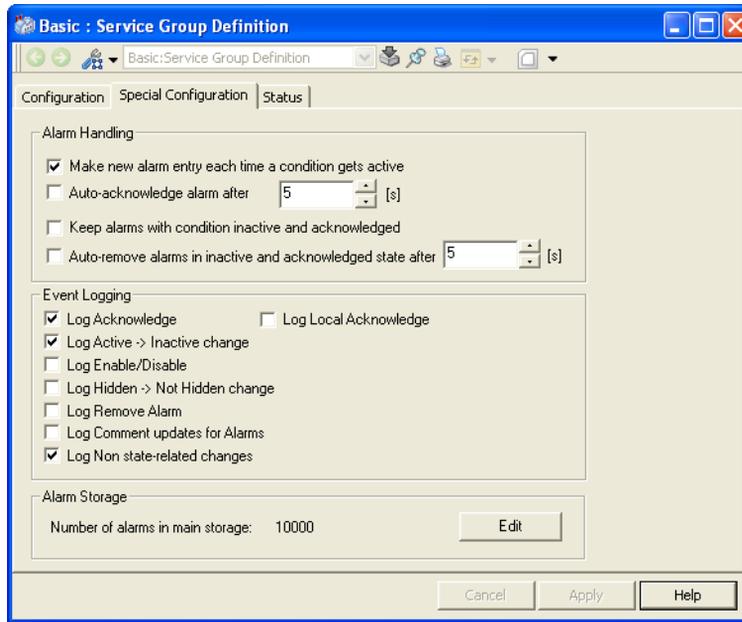


Figure 58. Service Group Definition Aspect (Special Configuration Tab)

### Add Redundancy For Alarm Manager

The upgrade creates one service provider for the Alarm Manager, configured to execute in the node in which the upgrade takes place. If the backed up system had redundant Aspect Servers, it is recommended to add service providers for the Alarm Manager according to the same configuration as for other services that execute in Aspect Servers. However, this should be done after the server nodes have been connected to the system.

## Restoring Application and Historical Data

The remainder of this section describes how to restore historical data and the necessary data for each Functional Area.

### Device Management and Fieldbuses



If the system contains Fieldbus devices, the Restore Device Types procedures must be performed before restoring the Control Builder M project or the upgrade will fail. The Control Builder M upgrade can be done only once.

After installation of 800xA 5.0 SP2 software all third party software for Device Type Objects used in the previous system version must be reinstalled. Additionally PROFIBUS Device Type Objects used in the Control Builder M project must be adapted to new delivered Hardware Libraries. Check that all licenses are valid for the restore, even for third party devices.

#### Restore Fieldbus Device Types



Restore the Device Types on the Primary Aspect Server node before starting to install them on other system nodes. Do not run parallel installations of Device Types on other system nodes unless all Device Types are restored on the Primary Aspect Server node. Installation of Device Types on other system nodes can be done in parallel after they are restored on the Primary Aspect Server node.



The procedures in the System Restore Wizard function in the Device Library Wizard must be performed for Fieldbus Device Types before restoring the Control Builder M project, otherwise the upgrade will fail. The Control Builder M upgrade can only be performed once.

The following steps for Fieldbus Device Types need to be carried out on every 800xA system node. Perform the System Restore Wizard procedure on the nodes in the following sequence:

- Aspect Servers (including redundant Aspect Servers).
  - Connectivity Servers (including redundant Connectivity Servers).
  - Application Servers.
  - Clients.
1. Start the Device Library Wizard. Select:

Start > All Programs > ABB Industrial IT 800xA > Device Mgmt > Device Library Wizard

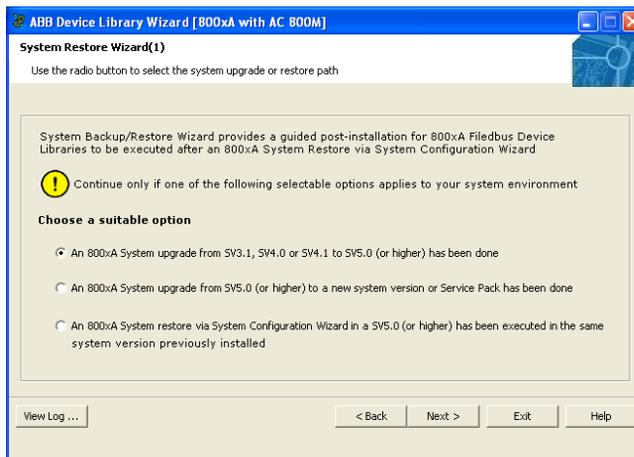
**-or-**

double-click the Device Library Wizard icon on the desktop.

2. Navigate to:

**Device Type Administration > System Restore Wizard**

and choose the first option in the System Restore Wizard as shown in [Figure 59](#) and click **Next**.



*Figure 59. System Restore Wizard (1)*

3. Choose whether or not this system node has been reformatted as shown in [Figure 60](#) and click **Next**.

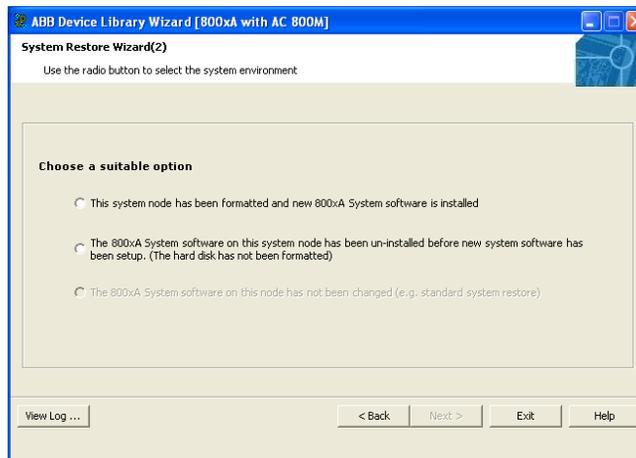


Figure 60. System Restore Wizard (2)



- If the system node has not been reformatted (second option), the following steps are not necessary when PROFIBUS Device Types are not present in the system node. In this case, the Device Library Wizard will perform an update of Fieldbus Device Types (refer to [Update Fieldbus Device Types](#) on page 367).
4. Depending on which fieldbus protocol is used in the previous system version environment, insert one of the delivered Device Library system DVDs in the DVD drive (e.g. Device Library HART – DVD).
  5. Click **Browse** and navigate to the DVD drive.
  6. When the drive has been selected in the Browse for folder dialog box, click **OK** in that dialog box and then **Next** in the ABB Device Library Wizard.
  7. The Device Library Wizard scans the 800xA System for fieldbus device types that are already used and compares the results with the contents of the DVD.

Device Types available in the 800xA System and the DVD are shown in the **Extract** tab of the Device Library Wizard (Figure 61).

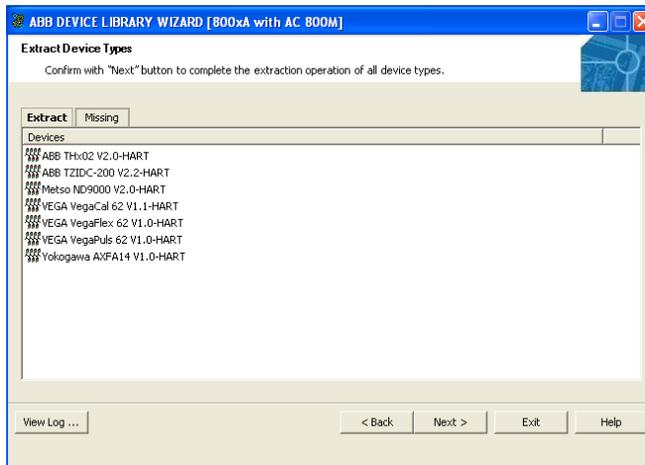


Figure 61. Extract Device Type Files

8. Click **Next** to start the extraction process.
9. Device Types available in the 800xA System but not on the DVD are displayed in the **Missing** tab. If there are any Device Types showing in the **Missing** tab, **Next** in the Device Library Wizard is disabled. Navigate to the Browse dialog box by clicking **Back** and inserting a new Device Library DVD in the DVD drive.
10. Repeat this procedure until all Device Types are extracted to the 800xA System node and the **Missing** tab does not list any device types.
11. If the Device Library DVDs do not contain all Device Types used in the previous system version, the missing Device Types must be downloaded from ABB SolutionsBank.



It is only possible to complete the Wizard if all Device Types have been successfully extracted.

- When the extraction process is completed successfully, the Device Types need to be re-installed on the 800xA System node. Click **Next** to launch the Re-installation of Device Types dialog box shown in [Figure 62](#).

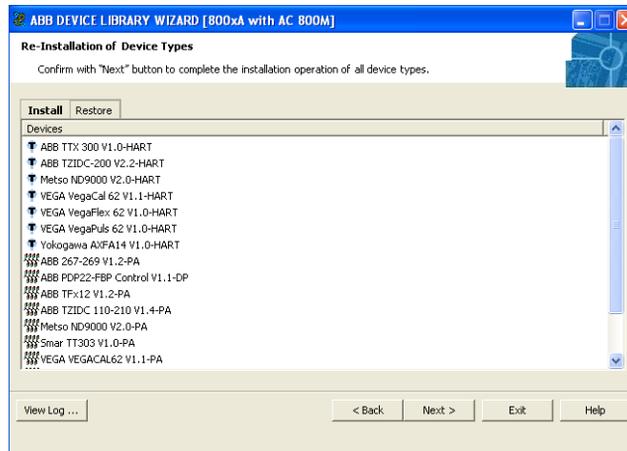
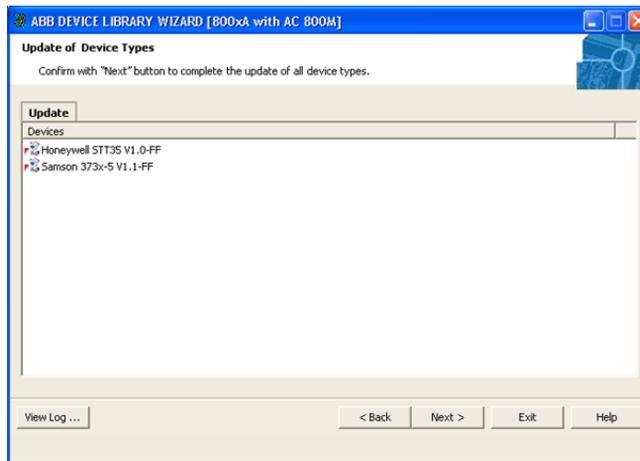


Figure 62. Re-install Device Types Dialog Box

- Follow the Device Library Wizard procedure to complete the installation. The Device Library Wizard will automatically navigate to the main window after the process is completed.
- Exit the Device Library Wizard and repeat the procedure on the other 800xA System nodes, if applicable.

### Update Fieldbus Device Types

If the system node has not been reformatted (second option in [Figure 60](#)), all Device Types that exist in the 800xA System node and need updated are displayed in the **Update** tab ([Figure 63](#)).



*Figure 63. Update of Device Types Dialog Box*

1. Click **Next** to launch the update.
2. The Selection Summary dialog box will appear showing the Device Types to be updated. Click **Next** to continue.
3. Follow the Device Library Wizard procedure to complete the installation. The Device Library Wizard will automatically navigate to the main window after the process is completed.

### Device Management FOUNDATION Fieldbus

Perform the following to complete upgrading Device Management FOUNDATION Fieldbus.

1. Return to the Plant Explorer Workplace and select **FF Upload** in the Aspect List Area.

2. Check, Save, and Upload FF Libraries:
  - a. Open a Plant Explorer Workplace.
  - b. Use the Structure Selector to open the **Object Type Structure**.
  - c. Use the Object Browser to navigate to:  
FF Libraries Object Type Group
  - d. Select FF Upload in the Aspect List Area.
  - e. Click **Open Library in Fieldbus Builder FF**.
  - f. Right-click **FF H1 Device Library** in the Libraries dialog box of the Fieldbus Builder FF.
  - g. In the Parameter dialog box, click **Reload Standard Dictionary** and browse to the following directory:
  - h. ... \Fieldbus Builder FF\ff
  - i. Select **STANDARD.DCT** and click **Open** and then **OK**.
  - j. Check the libraries for plausibility and store them in Fieldbus Builder FF.
  - k. Exit Fieldbus Builder FF.
  - l. Return to the Plant Explorer Workplace and select FF Management in the Aspect List Area.
  - m. Click **Upload**.
  - n. After a successful upload, the green traffic light symbol indicates that the FF libraries have been synchronized.
3. Optional: Reconstruct User-made Changes to Library Objects representing FF Standard Blocks:



This step is only required if changes were made to library objects representing FF standard blocks.

During upgrade, **user-made changes to library objects representing FF standard blocks have been overwritten**. Important substitutions have been logged.

- a. If such changes were made, display the substitutions as follows:
  - Open a Plant Explorer Workplace.
  - Use the Structure Selector to open the **Object Type Structure**.

- Use the Object Browser to navigate to:  
FF Libraries Object Type Group
  - Select FF Management in the Aspect List Area.
  - Select **Library Merge Logger** tab and read log.
- b. For reconstructing user-made changes, reapply the changes to the library objects manually.
4. Check, Save, Commission, and Upload the HSE Subnet.



Perform the following procedure for each HSE Subnet.

- a. Open a Plant Explorer Workplace.
- b. Use the Structure Selector to open the **Control Structure**.
- c. Use the Object Browser to navigate to:  
HSE Subnet
- d. Select FF Management in the Aspect List Area.
- e. Click **Open Subnet in Fieldbus Builder FF**.
- f. Check to see if the configured HSE subnet ID is used for the OPC Server FF configuration in **FF Network > Properties** and modify it if required.
- g. **Check whole project** for plausibility and save the configuration in Fieldbus Builder FF.
- h. Perform device assignment for all linking devices LD 800HSE.
- i. Perform precommissioning/commissioning for all objects for which this is necessary (discernible from engineering status).



To assign all H1 devices in one step, use the **Assign all devices** function from the HSE Subnet context menu: **Object > Assign all devices...**



For downloading use the online dialog from the HSE Subnet context menu: **Object > Online Dialog...**

- j. Exit Fieldbus Builder FF and save changes if prompted to do so.
- k. Return to the Plant Explorer Workplace and select FF Upload in the Aspect List Area.

1. The green traffic light symbol indicates that the HSE Subnet has been synchronized.

## 800xA for AC 800M



After upgrading a configuration containing one Engineering and one Production system to 800xA 5.0 SP2, the Control Builder M projects in the two systems should be made identical using the Import/Export tool, Engineering Repository, or by recreating the Engineering System using Backup/Restore before engineering work is restarted. Otherwise there will be a lot of false differences on the AC 800M aspects reported in the import difference report when moving solutions between the systems.

There may be Control Builder M compatibility issues when upgrading from 800xA 3.1 SP3 to 800xA 5.0 SP2. Review the issues detailed in [800xA 3.1 SP3 to 800xA 5.0 SP2 Compatibility Issues](#) on page 425 before proceeding

Use the following procedure to restore 800xA for AC 800M information:

1. Configure the memory setting for OPC Server and Control Builder (found in the Setup Wizard for each product) to the saved and recorded values.
2. Control Builder stores its settings (systemsetup.sys) on disk in the following directory:

```
... \ABB Industrial IT Data \Engineer IT Data \Control
Builder M Professional
```

Copy the previously saved file from the safe media to this folder.

3. New handling for Hardware Types was introduced in 800xA 5.0. All hardware types are now packaged in libraries. Because of this all Control Builder projects must be upgraded according to the following steps.



If the application contains FOUNDATION Fieldbus, HART, or PROFIBUS specific configurations, perform post upgrade procedures for Device Types via the Device Library Wizard (refer to [Device Management and Fieldbuses](#) on page 363) before upgrading the project in Control Builder M.

- a. Start an empty Control Builder M .
- b. Select:

**Tools > Maintenance > Upgrade Project > from Control Builder Professional 3.4 or later**

- c. Select the Control Builder project to upgrade. This step will take a while. All hardware objects in the **Control Structure** are redirected by Control Builder to use hardware types from libraries. If the project contained custom hardware definition files, libraries with corresponding hardware types are automatically created by Control Builder.
- d. Repeat [Step a](#) through [Step c](#) for all Control Builder projects in the system.
- e. When all Control Builder Projects are upgraded the old hardware types should be deleted from the **Object Type Structure**.

In the Plant Explorer Workplace, navigate to the **Object Type Structure** and browse to:

**Object Types > Control System > AC800M/C Connect - Controller Hardware**

Right-click the `Controller Hardware` object and select **Delete**.

4. Modify the application program according to applicable issues in [800xA 3.1 SP3 to 800xA 5.0 SP2 Compatibility Issues](#) on page 425.
5. Load the controllers with their firmware and applications. Change Analysis Mismatches may be shown for objects in the Standard Libraries during the first download after the upgrade. Possible mismatches are:

Mismatch: Variable has changed data type.  
Mismatch: Variable not found.  
Mismatch: Control Module not found.

The mismatches reflect internal changes in the Standard Libraries. No Cold Retain Values will be lost. Click **Next Mismatch** to continue.

6. The OPC Server stores configuration files (\*.cfg) and settings (systemsetup.sys) on disk. Add the files saved on the safe media to the system. The systemsetup.sys file is located in:

```
...\ABB Industrial IT Data\Control IT Data\OPC Server
for AC 800M
```

The configuration files are stored in the Files folder in the same location.

7. Restore OPC configurations by selecting **File > Load Configuration** in the OPC Server Panel.



Remember to enable autoloading of the configuration and provide the correct path to the file.

## 800xA for Advant Master and 800xA for Safeguard

Perform the following on each Connectivity Server node:

1. Copy the saved files:

- DATHR1.CD
- DATHR2.CD
- DATHR3.CD

to the folder:

```
... \Program Files\ABB Industrial IT\OperateIT\AC 400
Connect\AdvantBase\Data\RTA\Init\
```

to the node where they belong.

2. Update the Configuration Files.

For each Connectivity Server, compare the following files saved in a safe location during the 800xA for Advant Master pre upgrade phase:

- AdvDsMasterAdapter.csv
- AdvMbAeOPCServer.csv

with the installed version of the files at the following location:

**For 64-bit:**

```
... \Program Files (x86)\ABB Industrial IT\Operate IT\AC
400 Connect\Bin
```

**For 32-bit:**

```
... \Program Files\ABB Industrial IT\Operate IT\AC 400
Connect\Bin
```

If any customization was done to the old files, update the installed version of the files with the corresponding changes.

3. Open the MB 300 RTA Settings dialog box in Configuration Wizard and reconfigure:
  - MB 300 Node and Network Numbers.
  - Check 800xA as Clock Master in case the time synchronization key REVERSED\_SYNC\_MODE was enabled before.
4. Always Restart the RTA board.
5. The Audible property must be 0 for events and 1 for alarms 800xA for Advant Master version 4.1 SP1 RU6 and newer. Refer to *System 800xA Configuration (3BDS011222\*)* for configuration of audible alarms.

Safeguard standardevent 300 - 326 does not comply with this rule before 800xA for 800xA for Advant Master Version 5.0 SP2. The Event numbers where the Audible property should be changed from 1 to 0 are:

- EVENT302.
- EVENT305.
- EVENT310.
- EVENT312.
- EVENT320.
- EVENT321.
- EVENT322.
- EVENT325.

## PLC Connect

Perform the following post upgrade procedures for PLC Connect.

### **Modify Installation for IEC60870 or Basic Project Objects**

If either the IEC60870 or Basic Project Objects features were installed:

1. Use standard Windows procedures to access Add/Remove Programs in Windows Control Panel.
2. Select ABB PLC Connect.
3. Select Change/Modify.
4. The InstallShield Wizard for PLC Connect appears. Refer to *System 800xA Manual Installation (3BSE034678\*)* to select and install the desired features.

5. If the IEC60870 feature is installed refer to *System 800xA PLC Connect Configuration (3BSE035041\*)* and reload the saved IEC configuration.

### Restoring PreTreat2.dll

To restore PreTreat2.dll:

1. If the PLC Connect Communication Server Pre Treatment function is being used in the application, copy `PreTreat2.dll` from the backup location to the same folder as it was backed up from on the PLC Connect Connectivity Server. If the default folder is used, that location is:

```
... \ABB Industrial IT \Operate IT \PLC Connect \Bin
```

2. Register the `PreTreat2.dll` file (refer to *System 800xA PLC Connect Configuration (3BSE035041\*)* for more information).
3. Restart the PLC Connect Connectivity Server for the changes to take effect.
4. Restore the VB project for PreTreat2.dll.

### Restoring PreEvent.dll

To restore PreEvent.dll:

1. If the PLC Connect Event Server Pre Treatment function is being used in the application, copy `PreEvent.dll` from the backup location to the same folder as it was backed up from on the PLC Connect Connectivity Server. If the default folder is used, that location is:

```
... \ABB Industrial IT \Operate IT \PLC Connect \Bin
```

2. Register the `PreEvent.dll` file (refer to *System 800xA PLC Connect Configuration (3BSE035041\*)* for more information).
3. Restart the PLC Connect Connectivity Server for the changes to take effect.
4. Restore the VB application project for PreEvent.dll.

### Redeploy the PLC Connect Configuration

To redeploy the PLC Connect configuration:

1. Use the Structure Selector to open the **Control Structure** in the Plant Explorer Workplace.

2. Use the Object Browser to navigate to the first Generic Control Network object.
3. Select `Deploy` in the Aspect List Area.
4. Press the **SHIFT** key and click **Deploy** in the Preview Area to ensure that a full deploy is done.
5. The deploy begins and the progress is displayed in the Preview Area. The deploy is completed when `Deploy ended` is displayed.
6. Repeat the procedure for any additional Generic Control Network objects.

## Engineering Studio

Post upgrade procedures for Engineering Studio include those for IO Allocation, Engineering Templates, and Function Designer.

### IO Allocation



Before working with the IO Allocation function in an upgraded system, check all Control Builder Name aspects of `CBM_Signal` instances to see if they contain a valid name.

All Control Builder Name aspects having an empty name or a name not introduced by synchronization from the Name aspect must be corrected accordingly. This can be performed using a Bulk Data Manager worksheet that reads out Name and Control Builder Name. The same worksheet can be used to write back the Name.



The following procedure is only required if HART devices and IO signals will be merged into one object.

800xA 5.0 SP2 supports merging of Hart devices and IO signals within one object. If Hart devices and IO signals will be merged into one object refer to *Industrial IT, 800xA - Engineering, Engineering Workplace, Basic Engineering Functions (3BDS011223\*)*.



The following procedure is only required when working with IO Allocation and if properties of IO boards have been changed directly in Control Builder M.

IO Allocation has enabled new properties (e.g. *Inverted*) to be accessible for `CBM_SignalParameter/CBM_PulseSignalParameter`. These properties are

initialized with a default value. If properties have been changed directly in the Hardware Editor of Control Builder M (as they were not supported by IO Allocation) these changes are not reflected in CBM\_SignalParameter/CBM\_PulseSignalParameter aspects after the upgrade. Therefore, when the menu **write Allocation into CBM** is performed, values may be overwritten with their default value. After upgrading, select controller by controller and perform the menu **Read Allocation from CBM**, which reads the property values from Control Builder M and updates the signal objects.

### Engineering Templates for Bulk Data Manager (BDM)

Engineering Templates are typically used from scratch, meaning data is dropped into the templates. The result is used for information or documentation. In this case no upgrade is required, because the installation of Engineering Studio 5.0 SP2 exchanges the Engineering Templates in:

```
... \Documents and Settings\All Users\Desktop
```

However, if a worksheet containing data has been saved in the file system for writing back to the 800xA System after upgrade, either:

- Newly create the worksheet based on an Engineering Template delivered with Engineering Studio 5.0 SP2.

*-or-*

- Update the worksheet according to the description in:

```
... \Documents and Settings\All Users\Desktop\
Engineering Templates\ Upgrade Description Engineering
Templates.doc
```

### Function Designer

**Modified Aspects of Function Designer System Extension.** The Function Designer system extensions:

The Function Designer system extensions:

- Function Designer.
- Function Designer for AC800M Connect.
- Function Designer for AC 800M SB2 Libraries.

- Function Designer for Fieldbus Builder PROFIBUS/HART.

mainly consist of:

- Functional Planning Object Types, including a Function Settings aspect at the Settings Object Type Group.
- Extension Libraries that add Function Designer Aspects to Object Types (Control Modules, Function Blocks, ...) created by basic libraries (AC 800M Connect, AC 800M SB2 Libraries, etc.).

After having loaded such a system extension in the 800xA 4.1 800xA System some of these aspects may have been modified; for example, to adapt Function Settings, or to change the color or layout of Function Blocks in Function Diagrams.

During the 800xA System upgrade to 800xA 5.0 SP2 the system extensions of the new system are loaded. To keep the information about modified aspects, all aspects that had been created by a Function Designer system extension, but later on modified are listed in the Configuration Wizard log, and are written to Afw files, e.g.:

...\Function Designer\bin\Upgrade\313To501\Function Designer.afw

...\Function Designer\bin\Upgrade\313To501\Function Designer for Ac800M Connect.afw

...\Function Designer\bin\Upgrade\313To501\Function Designer for Ac800M SB2Libs.afw

...\Function Designer\bin\Upgrade\313To501\Function Designer for FB P/H.afw

The only way to bring these modifications back into the 800xA 5.0 SP2 System is to manually merge the changes. Do not import the Afw files above into the 800xA 5.0 SP2 System, because some additional properties/data might get lost. In the case of Function Settings, look for each settings property in the 800xA 4.1 System and do the modifications again in the 800xA 5.0 SP2 System. In the case of modified Function Aspects (e.g. Diagram Template, Component Template), check the modifications done in the 800xA 4.1 System and do the modifications again in the 800xA 5.0 SP2 System.

**Upgrade Diagram References and Diagram Variables.** In the 800xA 5.0 SP2 System (opposite to the 800xA 3.1 SP3 800xA System) Diagram References and Diagram Variables are by default created as Symbol Objects. This is not true for

Diagram References and Diagram Variables created during upgrade (restore) from 800xA 3.1 SP3 800xA Systems. Convert them from Aspect Objects to Symbol Objects by use of the conversion function described in the following procedure.



Differences between Aspect Objects and Symbol Objects are described in *Industrial IT, 800xA -Engineering, Engineering Workplace, Function Designer (3BDS011224\*)*.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Object Type Structure**.
3. Use the Object Browser to navigate to:  
**Object Types > Functional Planning > Settings**
4. Select `Function Upgrade` in the Aspect List Area to open the Function Upgrade aspect in the Preview Area.
5. Select the **Convert Diagram References/Variables from Aspect Objects to Symbol Objects** check box and click **Apply**.
6. Click Run Upgrade to perform the upgrade.



This function is not suitable in the case of additional aspects on input/output references, e.g. Graphic Elements, for typical diagrams with input/output references that will get copied and connected via the Bulk Data Manager.

**Check and Repair AES Variable Table (Applications, Controllers Diagrams/SCMs, and Diagram (Cm) Types).** This function can be used to:

- Correct possible inconsistent data used for display of online values and external cross references.
- Delete obsolete data and reduce aspect size.

Perform the following procedure to use this application.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Object Type Structure**.
3. Use the Object Browser to navigate to:  
**Object Types > Functional Planning > Settings**
4. Select `Function Upgrade` in the Aspect List Area to open the Function Upgrade aspect in the Preview Area.

5. Select the **Check and Repair AES Variable Table (Applications, Controllers, Diagrams/SCMs, and Diagram (Cm) Types)** check box and click **Apply**.
6. Click **Run Upgrade** to perform this upgrade.



Execute Check and Repair AES Variable Table in order to make the environment support work for Function Designer.

## Asset Optimization

Use the following procedure after upgrading Asset Optimization. Perform the steps applicable to the system.

1. Asset Monitoring:



Asset Monitoring directories **must** be restored on the Asset Optimization Server node.

- a. Reconfigure the value of the OPC Group Update Rate:
  - Open a Plant Explorer Workplace.
  - Use the Structure Selector to open the **Control Structure**.
  - Use the Object Browser to navigate to:  
Root > Asset Optimization
  - Select AFW OPC-DA Asset Monitor Data Source in the Aspect List Area.
  - Update the value of **OPC Group Update Rate (ms)** in the Preview Area with the value recorded under [Record Values for Post Upgrade](#) on page 322 and click **Apply**.
- b. If Runtime Asset Monitors are being used in the system, restore the Runtime Asset Monitor data directory (DeviceRunTimeMSLogicStore). The Runtime Asset Monitor data directory is located in:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset
Optimization\AssetMonitorEnvironment\Bin
```



The saved data contains the Runtime Asset Monitor data present at the time of the save. Use the Runtime Asset Monitor faceplate to reset the asset monitors by adding the lost time to their accumulated run time or with some known values based on other records. Any alarms that were occurring during the backup should be ignored.



The Runtime Properties aspect on the Runtime Asset Monitor object type has been replaced with Runtime Asset Monitor Faceplate Inputs. If any configuration changes were made to the Runtime Properties aspect on instances of the object prior to taking the 800xA System Backup, the aspect will not be automatically deleted. In this case, the Runtime Asset Monitor will fail to load with an *Add Item* error for the Reset Signal. In order to complete the upgrade, search for all instances of the Runtime Properties aspect on the Runtime Asset Monitor objects and apply any configuration changes made to the new Runtime Asset Monitor Faceplate inputs, and then delete the Runtime Properties aspect.

- a. If XY Profile Deviation Asset Monitors are being used in the system, restore the XY Profile Deviation Asset Monitor data directory (XY\_Reference\_Profiles). The XY\_Reference\_Profiles directory is located in:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset
Optimization\AssetMonitorEnvironment\Bin
```

## 2. Maximo Integration:



If using Maximo Integration, the Maximo Integration information *must* be restored on all Asset Optimization Server nodes. Reference the **Service Structure** for the Asset Optimization Server.

- a. If the MxDef files were customized, restore the MxDef files to the following directory:

```
... \Program Files\ABB Industrial IT\Optimize IT\Asset
Optimization\ABB AO\Services\ MOM\MxDefs\
server_name\app_server
```

Where:

**<server\_name>\<app\_server>** is the combination of the **MRO Server Name** and the **MRO Application Server Name** fields from the

Maximo Equipment ID aspect. These fields are configured in the **Aspect System Structure** in the Maximo Equipment ID aspect. These fields allow for customization of MxDef files on the Maximo Server level as well as on the Maximo Application Server level. Refer to Maximo documentation for an explanation of Maximo Application Servers.

For example, the resultant path to the customized MxDef files will look like:

```
...\Program Files\ABB Industrial IT\Optimize IT\Asset
Optimization\ABBAO\Services\MOM\MxDefs\Maximo5\
MxServer
```

Refer to *Industrial IT, 800xA - Asset Optimization, Configuration (3BUA000118\*)* for more information on MxDef files.

- b. It is necessary to configure the values of the Maximo Equipment ID Provider Properties, as these values are not upgraded. These values should have been recorded in [Step 2](#) under [Record Values for Post Upgrade](#) on page 322. Refer to **Maximo Server Connection Properties** in the **System Setup** section of *Industrial IT, 800xA - Asset Optimization, Configuration (3BUA000118\*)* to configure these values.

3. DMS Calibration Integration. If using DMS Calibration Integration:



Asset Optimization DMS Calibration Integration 800xA 5.0 SP2 functions with DMS software Version 2.6.

- a. Restore DMS Calibration Integration information. Refer to the *Meriam Process Technologies Device Management System User's Guide* for information about restoring DMS Server data.
  - b. Perform an 800xA > DMS synchronization to insure that the 800xA objects correctly map to the Devices within DMS.
4. Asset Monitors that are assigned (via the Configure option drop-down list box on the Asset Monitor Instance on an Object) to a particular AO Server object and Asset Optimization Server aspect (by Object name:Aspect name pair), will not be correctly configured after the upgrade. The AOServer property will be unconfigured and the following error message will appear:

```
Unable to resolve AO Server for this Asset Monitor
configuration
```

This must be resolved before the Asset Monitor Logic can be loaded into an AO Server:Asset Optimization Server for execution. Refer to the **Object Type Structure** for Asset Optimization, Object Type Group:AO Server, Object Type.

5. In the **Control Structure**, open the AOServer1, AOServer object, Asset Optimization Server aspect.
  - a. Service Hostname **MUST** be configured. It may be necessary to navigate into the **Service Structure** to the AssetMonitoring Service Provider to set the Node and enable the service. There is a navigation button for convenience.
  - b. Target State should be Service, i.e. Engine is running.
  - c. On all objects that have Asset Monitor aspects, check the **Asset Monitor** tab in the Config View of the aspect for the Server Assignment and Assigned to. These fields may upgrade as blank or unassigned.
6. After a restore of a 800xA 5.0 SP2 system, the Asset Optimization Server (Monitor Server/Engine) is running. The **AO Server** tab of the Asset Monitoring Server aspect will show a status of `good: AM Engine running`.
  - a. Clicking the **Asset Monitors** tab and selecting **AMs assigned to this AO Server** will show that the values in the Status column are `NOT Loaded, enabled`.
  - b. Click **Load all AMs** to reload all enabled Asset Monitors assigned to this AO Server.
7. In earlier versions of Asset Optimization, all Asset Optimization alarms were written as alarm category soft alarm. Starting with Asset Optimization 800xA 5.0, these soft alarms are replaced with two new categories: Asset Condition Alarm and Asset Monitoring Status Alarm. Therefore, any existing Alarm and Event Lists that filtered on soft alarms for the purpose of viewing Asset Optimization alarms, must have their filters changed.
8. Starting with Asset Optimization 800xA 5.0, Object Type Inheritance is supported. That is, an Asset Monitor on the Object Instance will inherit its configuration from the Asset Monitor in the Object Type if it was created via the Copy to all instances property check in the Type Definition aspect. When

importing an 800xA 3.1 SP3 configuration, the configuration inheritance changes shown in [Table 10](#) will be made:

*Table 10. Configuration Inheritance Changes*

| Type                                                                                                                                                                                                                                           | Change                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Asset Monitor is on the Object Type.                                                                                                                                                                                                           | This Asset Monitor will be set to inherit from the Asset Monitor category.<br>For each of the 4 configuration tabs ( <b>Asset Monitor</b> , <b>Conditions</b> , <b>Asset Parameters</b> , and <b>Input Records</b> ) the configuration inheritance values will be set to their pre 800xA 5.0 SP2 values.                                             |
| Asset Monitor is on the instance of the generic object.                                                                                                                                                                                        | This Asset Monitor will be set to inherit from the Asset Monitor category.                                                                                                                                                                                                                                                                           |
| Asset Monitor in the instance that has Object Type.<br>Corresponding Asset Monitor does not exist in the Object Type.                                                                                                                          | For each of the 4 configuration tabs ( <b>Asset Monitor</b> , <b>Conditions</b> , <b>Asset Parameters</b> , and <b>Input Records</b> ) the configuration inheritance values will be set to their pre 800xA 5.0 SP2 values.                                                                                                                           |
| Asset Monitor in the instance that has Object Type.<br>Corresponding Asset Monitor exists in the object type and the <b>Copy to all instances</b> check box is disabled in the <b>Aspect Control</b> tab of the Object Type Definition aspect. |                                                                                                                                                                                                                                                                                                                                                      |
| Asset Monitor in the instance that has Object Type.<br>Corresponding Asset Monitor exists in the object type and the <b>Copy to all instances</b> check box is selected in the <b>Aspect Control</b> tab of the Object Type Definition aspect. | This Asset Monitor will be set to inherit from the Asset Monitor of the Object Type.<br>For each of the 4 configuration tabs ( <b>Asset Monitor</b> , <b>Conditions</b> , <b>Asset Parameters</b> , and <b>Input Records</b> ) if the configuration matches the configuration in Object Type, inheritance values will be set to TRUE, else to FALSE. |

- 800xA 3.1 SP3 supported assigning Asset Monitors on the same object to the different Asset Monitoring Servers. 800xA 5.0 SP2 requires that all Asset Monitors on the object be assigned to the same AO Server. When upgrading

from 800xA 3.1 SP3 to 800xA 5.0 SP2, the AO Server for all Asset Monitors will be set to **Default**. All Asset Monitors that were assigned to **None** in 800xA 3.1 SP3 will be marked as disabled in 800xA 5.0 SP2. If the user needs to load balance Asset Monitors between two different AO Servers, this should be done via the **Assign Asset Monitors to this AO Srv** context menu item in the AO Server aspect. Refer to *Industrial IT, 800xA - Asset Optimization, Configuration (3BUA000118\*)* for more information.

## PC, Network and Software Monitoring



Warnings may appear during system upgrade. These warnings can be ignored.

1. If user defined Script, Resource, and Assembly files were backed up, copy the saved files from the safe media to the following directories:

```
...\Program Files\ABB Industrial IT\Optimize IT\
PC, Network and Software Monitoring\bin\Configuration\
Scripts\User
```

```
...\Program Files\ABB Industrial IT\Optimize IT\
PC, Network and Software Monitoring\bin\Configuration\
Assemblies\User
```

```
...\Program Files\ABB Industrial IT\Optimize IT\
PC, Network and Software Monitoring\bin\Configuration\
Resources\User
```

2. Perform the following steps on the PC, Network and Software Monitoring Server node.



The following steps assume that the required system extensions were loaded on the primary Aspect Server node.

- a. Use the Structure Selector to open the **Service Structure** in the Plant Explorer Workplace.
- b. Use the Object Browser to navigate to the:

**Services > OpcDA\_Connector, Service > SG\_IT Server**

object. If there is no object to navigate to, skip to [Step 1](#) (letter I, not number 1).

- c. Open the OPCDA\_Provider\_<servername> object and double-click on the Service Provider Definition aspect.
  - d. On the **Configuration** tab, clear and select the **Enabled** check box and click **Apply**. The **Current** field should change to *Service*.
  - e. Use the Structure Selector to open the **Control Structure**.
  - f. Use the Object Browser to navigate to the IT Server object.
  - g. Double-click OPC Data Source Definition in the Aspect List Area.
  - h. Click on the **Service Group** drop-down menu and select the SG\_IT Server.
  - i. Click on the OPCDA\_Provider\_<servername> which was configured in step [Step c](#).
  - j. Click **Apply**.
  - k. Skip to [Step 3](#).
  - l. Use the Structure Selector to open the **Control Structure**.
  - m. Use the Object Browser to navigate to the IT Server object.
  - n. Double-click OPC Data Source Definition in the Aspect List Area.
  - o. Select **New**.
  - p. Click **Add** and select the appropriate Service Provider from the list.
  - q. Click **OK** twice.
  - r. Click **Apply**.
3. The IT General Setup aspect is used to point the IT OPC Server Network Object to the Asset Optimization Server for Asset Optimization, and the Asset Monitor Data Source. If Asset Optimization software is installed and loaded, then the following configuration is required:
- a. Use the Structure Selector to open the **Control Structure**.
  - b. Use the Object Browser to navigate to:  
IT Server, IT OPC Server Network
  - c. Select IT General Setup in the Aspect List Area.

- d. Refer to the **IT General Setup Aspect** topic in *Industrial IT, Asset Optimization - PC, Network and Software Monitoring - Configuration (3BUA000447\*)* and configure the Asset Optimization Server and Asset Optimization Data Source.
  - e. Click **Apply**.
4. Migrate the IT Asset Monitors. If Asset Optimization **and** PC, Network and Software Monitoring were installed on the 800xA 3.1 SP3 System, then the following must be done for any existing IT Assets that had IT Asset Monitors configured for them.
- a. Use the Find Tool in the Plant Explorer Workplace to locate all the IT Asset Monitor aspect instances in the **Control Structure**.
  - b. Right-click on each of the found aspects and select **Goto Object**.
  - c. Delete the IT Asset Monitor aspect.
  - d. Open the IT Device Manager aspect and click **Generate** to recreate the IT Asset Monitor.
  - e. Repeat [Step c](#) and [Step d](#) for each object in the Find list.
  - f. Use the Object Browser to navigate to:  
`Root, Domain > Asset Optimization, Asset Optimization > AO Server 1, AO Server`
  - g. Select `Asset Optimization Server` in the Aspect List Area.
  - h. Enable the **Enabled** check box in the **AO Server** tab and click **Apply**.
  - i. Click **Load all AMs** in the **Asset Monitors** tab.

## SMS and e-mail Messaging

Reconfigure the GSM Device hardware information recorded in the save operation (refer to [SMS and e-mail Messaging](#) on page 325).



It may be necessary to stop and start the Messenger Server Service in the **Service Structure** after the SMS and e-mail Messaging restore operation.



During the upgrade, a second Messenger Service Group and Messenger Service Provider will be created in the **Service Structure**. For instance:

Messenger SG\_1, Service Group  
Messenger SP\_1, Service Provider

If there is already a Messenger Service Group and Messenger Service Provider configured, the new one may be deleted.

## Batch Management

Verify that the primary Batch Server is in primary mode (P is displayed in the Windows Taskbar) and the secondary Batch Server is in secondary mode (S displayed in the Windows Taskbar). If the proper modes are not displayed, enable the Batch Service Group before proceeding.

To enable the Batch Service Group:

1. Open a Plant Explorer Workplace.
2. Select the **Service Structure**.
3. Select the Services\Batch Service, Service\batch\_group\_name, Service Group\Service Group Definition aspect.
4. Select the Configuration tab.
5. Select the provider that is currently the secondary Batch Server.
6. Select the **Enabled** check box and click **Apply**.
7. Select the provider that is currently the primary Batch Server.
8. Select the **Enabled** check box and click **Apply**.

Batch data can be reloaded to the batch database from wherever it was archived.



The Batch history archive and restore aspect has been removed in SV5.1.

Perform the following to view any Batch data archived from SV5.0 or previous versions of the Batch product:

1. Create a Virtual Machine (VM) node with the existing system version and its components.
2. Restore Batch data using the Batch Restore window onto this virtual machine.

Once the restored data is in the batch database, it can be viewed using the Batch History Overview window.

Do not restore directly from CDs or DVDs. Restore from hard disk drives which can be restored from CDs or DVDs using commercially available software.

### Restoring Batches

To restore batch history, select the batch history restore aspect. By default a Batch History Restore aspect is located in Library Structure\Batch Management\Overviews. However, this aspect can be added to any 800xA System object. The Batch History Restore window is displayed.

To restore batches:

1. Click **Pick Files**.
2. Select the batch files to be restored in the standard Windows Open window.
3. Click **OK**.
4. Repeat [Step 1](#) through [Step 3](#) until all the desired batch files are selected.
5. Click **Restore**.

Use the **Remove from List** and **Clear All** buttons to delete the selected batch or all the batches from the list.

Click **View Log** to view a record of the actions taken during the last restore operation.

Use the Batch Management backup restore utility to restore PFC color configuration information and batch IDs. Access this utility by selecting:

**Start > All Programs > ABB Industrial IT 800xA >  
Production Mgmt - Batch > Restore Utility**

Selecting any of the check boxes listed in the Restore Utility enables **Restore**.

The labeled check boxes are:

- PFC color configuration.
- Batch IDs.

When **Restore** is clicked, a warning is presented that states that the restore operation will overwrite the selected parts of the configuration database. The parts of the database that are overwritten are dependent on the option selections. A standard Windows open file window that allows browsing to any desired folder is presented. A configuration window provides the chance to cancel before the file is restored.

### Selecting the Alarm Server

To select the Alarm Server:

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Service Structure**.
3. Use the Object Browser to select:  

```
Services > Event Collector, Service >
Batch_AE_Service, Service Group
```
4. Select `Service Group Definition` in the Aspect List Area.
5. Select the **Special Configuration** tab in the Preview Area.
6. Select Produce IT Batch OPC AE Server in the Alarm Server field.
7. Click **Apply**.



Always perform the Toolbar configuration as described in *System 800xA Batch Management Configuration* and shutdown script procedure as described in the Batch Management section of *System 800xA Post Installation (3BUA000156\*)*.

## Basic History Service

Restore the Basic History Service data as follows. Perform this procedure on every node where the Basic History Service is running.

1. Stop the Basic History Server from the **Service Structure**.
2. Read {Provider ID} from the properties of the Basic History Server. This information may be needed when matching servers.
3. If it is necessary to keep historical data for the time since the system was started after the upgrade, move the Basic History log files in the following directory to a temporary directory:

```
... \OperateITData\History\{provider ID}
```

These files will be inserted by using the Archive Tool as described in [Step 7](#).

4. Delete all files under:

```
... \OperateITData\History\{provider ID}
```

5. Restore the files from the backup of Basic History Service Data to:

```
... \OperateITData\History\{provider ID}
```

6. Start the Basic History Service from the **Service Structure**.

7. If [Step 3](#) was performed:

- a. Open the AdvHtArchiveTool located by default in the following directory:

```
... \Program Files\ABB Industrial IT\Operate IT\Process
Portal A \bin
```

- b. Use the File/Select/Open Archive command and browse to the directory containing the history log files.

## Information Management

Perform the following post upgrade procedures for Information Management.



When creating the Oracle instance, select **I am upgrading from SV3.x or SV4.x** in the Configuration File Options dialog box to prevent the wizard from creating a history database. This will prevent History from starting until after the History Database is restored.

### Reconfiguring the IM Log Configuration

After restoring a system containing IM logs, the Service Group for the IM log template configuration might be missing. The IM log templates must be checked, and if the Service Group is missing, a new Service Group must be selected and saved.



When the correct procedures are followed, no Log Templates should need to be modified, this is only a verification step.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Library Structure**.

3. Use the Object Browser to navigate to:
  - History Log Templates, History Log Template Library >
  - Default Log Templates, History Log Template Library
4. Select a log template.
5. Select Log Template in the Aspect List Area.
6. Select the **Log Definition** tab in the Preview Area.
7. If the Service Group in the Service Group drop-down list box is missing, it must be reconfigured. The Service Group drop-down list box contains all History servers defined in the system. Use this list to specify the server where this log will reside.
8. Repeat this procedure for all of the log templates.

### Information Management History Backup/Restore Utility

Use the Information Management History Backup/Restore utility, via:

**Start > ABB Industrial IT 800xA > Information Mgmt > History > Backup and Restore**

to restore the Information Management History database and synchronize the Aspect Directory contents with the current Information Management History database configuration.

During the restore, the existing database is dropped, and a new one is created. Mount points and additional table spaces are created based on the database being restored. Oracle data is imported, and the file-based property logs are copied back into the system. Unless a different mount point is specified, the History database will be restored to its original location (its location prior to being backed up).

The History database can be restored from any drive on the workstation, including any mapped network drives. The restore utility will first search a specified location for zipped archives matching a specific name and fitting the form *name-drive.zip* (such as *histDB-C.zip*, *histDB-A.zip*, and *histDB-D.zip*), and will then restore the compressed database files contained within the archives to their respective original locations (their locations prior to being backed up).

**Considerations.** When restoring the History database, make sure the disk is ready and available on the node on which the procedure is to occur. Also, ensure that no applications are accessing the Oracle database. The log file should be checked after the restore operation to make sure that the restore operation completed successfully.

### Running the Information Management History Backup/Restore Utility

To restore a backed up History database:



The path to PAS now changed to **Control Panel > Administrative Tools**.



This procedure can also be performed by using the pasgui command in the Run dialog box (**Start > Run**).

1. Verify that the ABB Process Administration Service (PAS) is set to manual in the Services Control Panel (run Services.msc from the Run dialog box). Stop the service if it is running.



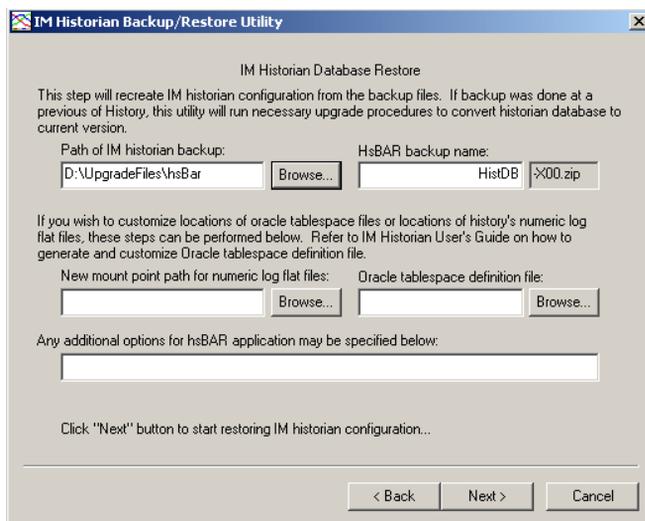
If it is suspected that the Inform IT History Service Provider has not stopped, it can be stopped now by selecting the Inform IT History Service Provider for this node in the **Service Structure**, selecting the **Configuration** tab on the Service Provider Definition aspect, disabling **Enabled**, and clicking **Apply**.

2. Ensure that no third party applications access the Oracle database during the restore operation.
3. Select:

**Start > All Programs > ABB Industrial IT 800xA > Information Mgmt > History > Backup and Restore.**

4. Verify **Restore configuration from a backup file(s)** is enabled in the Welcome to IM Historian Backup and Restore Utility dialog box.

5. Click **Next**. IM Historian Database Restore dialog box appears as shown in [Figure 64](#).



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*Figure 64. IM Historian Database Restore Dialog Box*

6. Specify the location of the backup files in the **Path of IM historian backup:** field ([Figure 64](#)).



If new mount points need to be specified for file-based logs and/or a new Oracle tablespace definition file, click **Browse**.

7. Click **Next**. The HsBAR Output Window appears.
8. Select the **Automatically close upon completion** check box.
9. Monitor the progress in the Progress Status area of the IM Historian Backup/Restore Utility window. Ignore the error messages indicating errors deleting aspect.

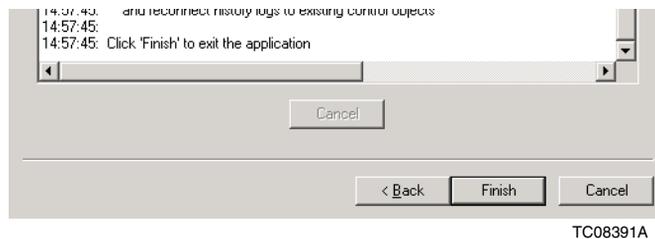
Shortly after the message indicating the import is complete, the database conversion tool will run automatically. Feedback will be provided in the HsBAR window.

Shortly after the message indicating the database conversion is complete, the history synchronization tool will run automatically. Again, feedback will be provided in the HsBAR window.



The restore of the system requires an instance that matches the size of the database being restored. When creating the instance, be sure to select **Small**, **Medium**, or **Large** based on the size of the message log in the backup being restored. Select **Large** if the size is not known. If the wrong size is selected, the restore operation may fail with the Oracle Error Message 1652 - Unable to extend tmp segment in tablespace temp. Repeat the restore with the correct instance settings if the error occurs.

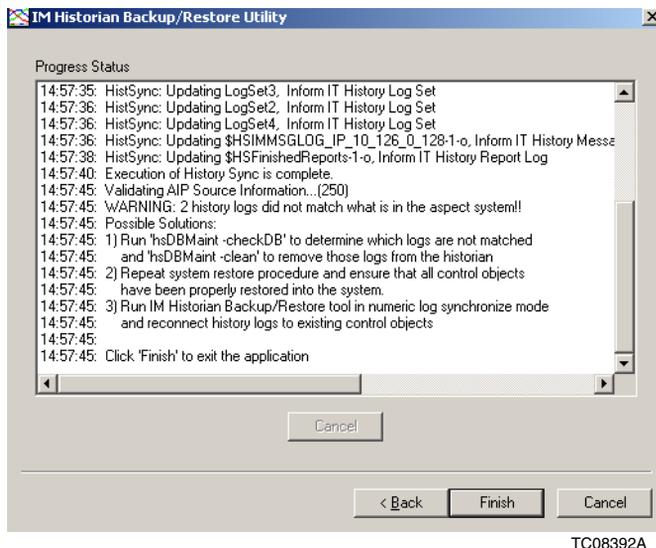
10. Click **Finish** when a message stating the execution is complete is displayed as shown in [Figure 65](#).



*Figure 65. Execution is Complete Message*

If the Progress Status dialog box has warning messages with possible solutions as indicated in [Figure 66](#), read the possible solutions carefully, then click **Finish** and

proceed with the solution that best fits your problem. Refer to the Information Management Release Notes for further guidelines.



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Figure 66. Progress Status Dialog Box

## Restoring Other Information Management Related Files

There are several other files related to Information Management that need to be restored as part of total system restore.

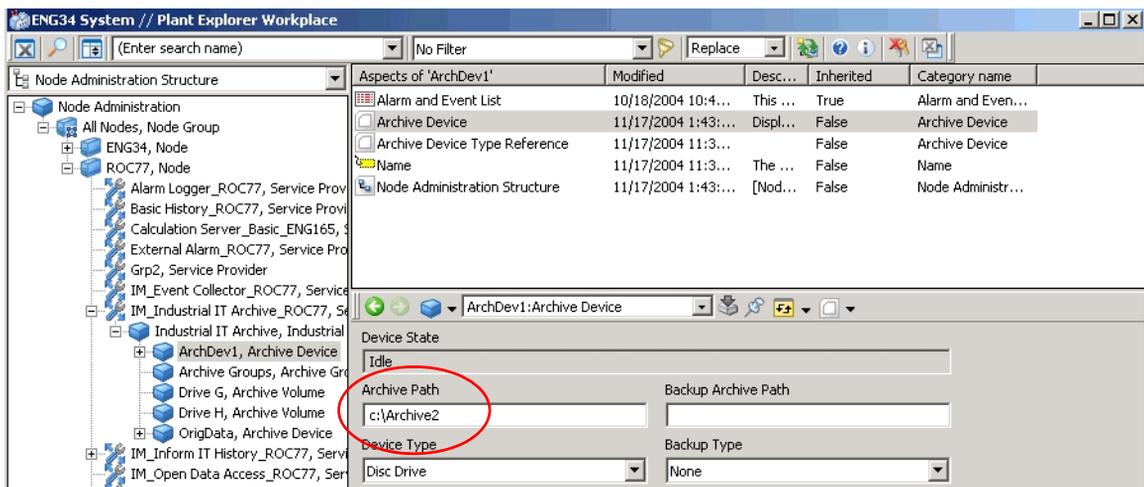


Refer to [Saving Other Information Management Related Files](#) on page 331 for Desktop Trends, Display Services, and DataDirect file locations.

- **History Archive Data:** For each archive device, copy the appropriate folders from the safe media to the location specified by the Device Filename.
- **History Archive State Information:** Stop the Industrial IT Archive service in the **Service Structure**. Copy the folder that holds the last archive time and other archive state information from the safe media to:

```
... \Documents and Settings \All Users \Application
Data \ABB \IM \Archive
```

- **Reports:** Restore any report template files created in Microsoft Excel, DataDirect, and/or Crystal Reports. Also restore report output files created as a result of running these reports via the Scheduling Services.
- **Desktop Trends:** Restore trend display, ticker display, and tag explorer files.
- **Display Services:** Restore the directories for custom users, as well as display and user element definitions.
- **DataDirect:** Restore custom text files for object, object type, and attribute menus used on the DataDirect windows.
- **Check Archive Path Specifications:** If the disk configuration has changed from the previous system to the new system (i.e. letter designations for disks have changed: C, D, E, etc.), check the archive device configurations to make sure the Archive Path specification points to the correct disk drive and directory, as shown in [Figure 67](#).



TC08388A

Figure 67. Checking the Archive Path Specification

### Complete the Information Management Post Install

1. Start all processes under PAS supervision. This will start the Inform IT History Service Provider.



If it is suspected that the Inform IT History Service Provider has not started, it can be started now by selecting the Inform IT History Service Provider for this node in the **Service Structure**, selecting the **Configuration** tab on the Service Provider Definition aspect, selecting **Enabled**, and clicking **Apply**.

2. Restart the Basic History Service Provider for this node:
  - a. Select the Basic History Service Provider object for the Information Management node in the **Service Structure** in the Plant Explorer.
  - b. Select the Service Provider Definition aspect.
  - c. Select the **Configuration** tab.
  - d. Clear the **Enabled** option.
  - e. Click **Apply**.
  - f. Select the **Enabled** option.
  - g. Click **Apply**.
  - h. Open the Services Control Panel (run Services.msc from the Run dialog box), set the ABB Process Administration Service (PAS) to Automatic and start it.
  - i. Open the Information Management Configuration Assistant (**Start > Programs > ABB Industrial IT > Information Mgmt > Configuration Assistant**) and perform any incomplete steps.

Verify that all Information Management services are running.

### Restoring Archive Group Associations

Profile, Message, and Report logs must be reassociated with their respective Archive Groups. This information was recorded before beginning the upgrade. Refer to *Industrial IT, 800xA - Information Management, Configuration*

(3BUF001092\*) to access the Archive Groups and restore the Archive Group associations.

## Calculations Service

The Const keyword is no longer allowed within the VBScript source code of the calculation; therefore, edit Calculations that use the Const Statement.

Calculations that were disabled prior to the upgrade must be enabled by selecting the **Enabled** check box in the Calculations dialog box. Refer to the section on Calculations in *Industrial IT, 800xA - Information Management, Operation (3BUF001094\*)*.

To enable the Calculations Service:

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Service Structure**.
3. Select the Calculations Service Object.
4. Select the Service Definition aspect.
5. Click the **Configuration** tab.
6. Select the **Enabled** check box and click **Apply**.

## Scheduling Service (Application Scheduler)

Schedules that were disabled prior to the upgrade must be enabled by selecting the **Enabled** check box in the Scheduling dialog box. Refer to the section on Scheduling in *Industrial IT, 800xA - Information Management, Operation (3BUF001094\*)*.

To enable the Scheduling Service:

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Service Structure**.
3. Select the Scheduling Service Object.
4. Select the Service Definition aspect.
5. Click the **Configuration** tab.

6. Select the **Enabled** check box and click **Apply**.

## Resigning Digital Signatures in 800xA 5.0 SP2

To resign digital signatures in 800xA 5.0 SP2:

1. Use Windows Explorer to locate `AfwSignatureManager.exe` in the following directory:  

```
...\<<Base System install directory>/bin
```
2. Double-click `AfwSignatureManager.exe` to launch the Signature Manager.
3. Use the **File** menu to open the Signature Report file saved before the upgrade.
4. When a signer is selected in the **Signer** column, the **Aspects Signed** table will show all aspects signed by this signer and information indicating whether the signature was valid in the 800xA 3.1 SP3 System or not.
5. Select the aspects to re-sign and click **Sign**.
6. A Signature dialog box will appear in which to validate the signature.  
 Use Ctrl+Shift+Click to select multiple aspects to sign in one operation.

## Restart the System

Restart the system after performing all post upgrade procedures.

## Reconfigure Alarm and Event List Configurations

In 800xA 5.0 SP2, in most cases, the `SourceName` column contains GUIDs. The recommendation in 800xA 5.0 SP2 is to reconfigure the Alarm and Event List configurations to use the `ObjectName` column instead of the `SourceName` column.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Library Structure**.
3. Use the Object browser to navigate to and select an Alarm and Event List Configuration aspect.

4. Select Alarm and Event List Configuration in the Aspect List.
5. Select the **Columns** tab in the Preview Area.
6. Clear the **SourceName** check box and select the **ObjectName** check box.
7. Click **Apply**.

Alarm and Event handling has changed significantly from 800xA 3.1 SP3 to 800xA 5.0 SP2 (refer to [Alarm and Event List Configurations](#) on page 334). Check the list configurations in the 800xA 5.0 SP2 system against those recorded for the 800xA 3.1 SP3 system under [Alarm and Event List Configurations](#) on page 334.

## Information Management Maintenance

Perform this procedure on all Information Management Server nodes.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Node Administration Structure**.
3. Use the Object Browser to navigate to:  

```
All Nodes, Node Group > IM Node > Inform IT History_IM
Node, Service Provider > Inform IT History Object,
Inform IT History Object
```
4. Select Inform IT History Control in the Aspect List Area.

5. Expand the Maintenance tree in the Preview Area and select Synchronization. The Inform IT History Manager shown in [Figure 68](#) appears in the Preview Area.

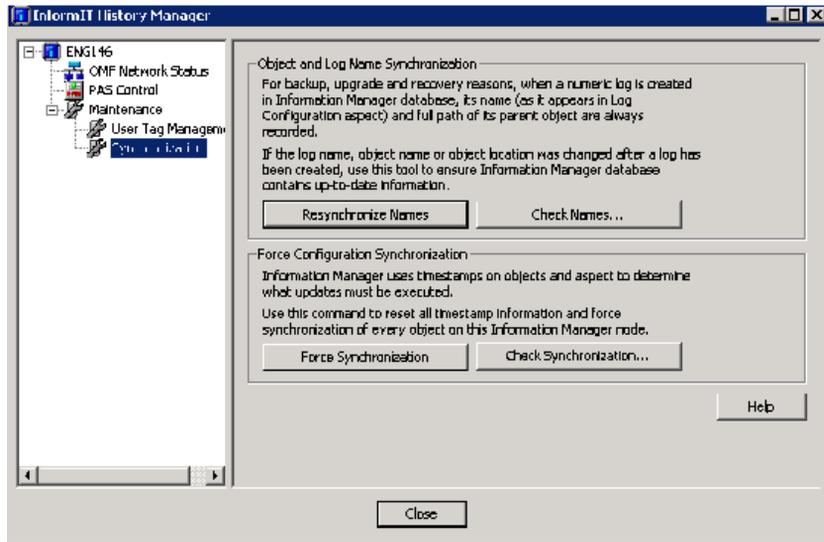


Figure 68. Inform IT History Manager

6. Click **Check Names**.
7. A blank dialog box should appear. If it does, click **OK**. If it does not click **Resynchronize Names**.
8. Click **Check Synchronization**.
9. A blank dialog box should appear. If it does, click **OK**. If it does not click **Force Synchronization**.

## Configure Windows Services and Windows Firewall

Perform all applicable post installation steps in *System 800xA Post Installation (3BUA000156\*)*, including configuring Windows Services and Windows Firewall.

## Add Autostart Shortcut

If it is desired to enable the autostart of the Operator Workplace on client nodes, perform the following:

1. Define a default workplace.
2. The shortcut must be created from the ABB Workplace login window.
3. The shortcut is located in:

```
...:\Documents and Settings\UserName\Start
Menu\Programs\Startup
```

4. Right-click the shortcut and select **Properties** from the context menu.
5. Add the following to the shortcut target:

```
/WS
```

-or-

```
/WaitForSystem
```

6. Click **OK**.

## System Backup

Make a complete backup of the upgraded system as described in [Backups](#) on page 313.



---

# Appendix A Warning and Error Messages

The warning and error messages that can be generated by the 800xA backup/restore function are described in the following topics. Suggested solutions are also provided.

## Failed to Serialize Aspect

### Example

Tue Jul 01 08:41:03 2003 [Error]: Failed to serialize aspect 'Operator Messages Link Display' on object 'Web System Workplace'

### Reason

It is not possible for the Backup function to save the aspect data.

### Solution

Check in the system for the behavior of this aspect.

## ASO Object Class xxxx

did not Implement IAfwAspectSystemObject. Failed to Create ASO. Forgot to Register dll?

### Example

Tue Jun 10 19:02:17 2003 [Error]: ASO object class {7B7A13B3-8BB4-42A3-8289-987C579797C2} did not implement IAfwAspectSystemObject Failed to create ASO. Forgot to register dll?

**Reason**

This often occurs when a system extension is used, but not installed on the node from where the backup is taken. It can also happen if an update of a system extension has been installed, but not added to the system.

**Solution**

Install all system extensions on the node from where the backup is taken. Make sure that the correct version of the system extension is installed.

## UnplacedObjects.afw

**Example**

[Warning] c:\PPABackup\MyBackup\UnplacedObjects.afw created

**Reason**

During backup process, the backup tool goes through all structures, if there is an object that doesn't exist in any structure, it will be placed in UnplacedObjects.afw and write a warning in the backup log, therefore, UnplacedObjects.afw is used for all objects which miss the structure.

**Solution**

Check if there is any important object in UnplacedObjects.afw. If there is an important object in UnplacedObjects.afw, your backup is considered to be not complete. In such case, investigate what kind of object it is, and try to repair the system. One solution could be to add the object into the structure it should belong to. Take another backup.

## The System Cannot Find the Path Specified

**Example**

Error detected for aspect 'Empty A3P' of object 'Document Manager Templates/Document Manager File Templates/Drawings'

Tue Jun 08 00:43:30 2004 The system cannot find the path specified.

EbServiceHandler: Object Id = {9AFACBA5-6B6A-462A-9EDF-78765740CD52},  
Aspect Id = {89F8A8C4-10F7-4874-B77D-A8E6445D5C93}

EbServiceHandler: Failed to load document into stream!

### **Reason**

When the backup was taken, the FSD cache was set too low. All data has NOT been backed up. There should be warnings in the System Event list about overflow in the Fsd cache.

### **Solution**

Increase the Fsd Cache size (for all nodes).

## **System Extension 'xxxx' with ID 'Guid' is not Installed on this Node**

### **Example**

System extension 'Engineering Base' with id {B775BEA4-7859-4649-AE16-901790822886} is not installed on this node.

System extension 'AC800M Con 31SP1' with id {6F388AEC-E4FF-4614-AF80-1D37EC3B141F} is not installed on this node.

### **Reason**

There is a system extension, which is not available in the node where the backup is taken, or which is not properly removed. The latter can be the case if AC800 Connect has been upgraded and the old version is still registered in Industrial IT 800xA.

### **Solution**

Use a backup node where all system extensions are installed.

## **Timeout by External Service**

### **Example**

Thu Mar 04 02:34:55 2004 #1: Receiving files

Thu Mar 04 02:34:56 2004 #1: Receiving files  
Thu Mar 04 02:34:57 2004 #1: Receiving files  
Thu Mar 04 02:34:57 2004 #1: Finishing  
Thu Mar 04 02:34:58 2004  
Thu Mar 04 02:35:08 2004 TimeOut by External Service

**Reason**

History or System Message data was backed up using the backup/restore function. This functionality is not yet supported.

**Solution**

History and System Message data has to be saved manually, as described in reference [2] Release Notes. Create a new backup, without including History or System Message data.

## Graphic Aspect = xxx Cannot be Imported.

**Example**

Mon Mar 29 19:52:32 2004 [Error]: Object = WI Mezzanine Deck, graphic aspect = Page Prev cannot be imported. Source directory = d:\OperateITData\Temp\ActiveGraphics\{800BA917-3D7F-44B6-B647-90C4B06A98FA}.restore.2.

**Reason**

Could be different reasons.

**Solution**

Check the source directory specified in the error message. The log file in this directory should give some hints of what caused the problem.

## Too Many Aspects of Category

**Example**

Sat Jun 05 17:04:33 2004: Too many aspects of category 'Name' on object '{82416BDF-5464-4422-A443-35E08E1065BE}'

Sat Jun 05 17:04:34 2004: Import/Export Error: Object {82416BDF-5464-4422-A443-35E08E1065BE} ({82416BDF-5464-4422-A443-35E08E1065BE}) - E\_AFW\_AD\_TOO\_MANY\_ASPECTS (0x8abb081b) To many aspect of a specific type.

Sat Jun 05 17:04:34 2004: Failed to restore file C:\BWSC\BWSC Full Backup; 2004-06-03; 03-00\Control Structure28.afw. The importer returned hr = 0x8abb081b

### **Reason**

The system was inconsistent at backup time (there were more than one aspect of category 'Name' on an object). The backup does not react on this, but restore will fail. The restore part will be fixed in a later release (it will be possible to import such an object, but a warning will be granted).

### **Solution**

Open the file (in this case Control Structure28.afw) with the old import/export utility (<Install path>\bin\AfwImportExport\_obsolete.exe), search for the aspect category and manually remove one of the two aspect categories.

## **Aspect Category is Missing**

### **Example**

Sat Jun 05 16:41:27 2004: Aspect '{506D9D24-E22A-4EDB-AFB0-0753B6DB6990}' on object 'SoftPoint Object Types' cannot be restored because the aspect category is missing

Sat Jun 05 16:41:27 2004: ObjectId: {9574CC3B-0E5E-4B14-A83E-F483CCDE6E44}

Sat Jun 05 16:41:27 2004: AspectId: {506D9D24-E22A-4EDB-AFB0-0753B6DB6990}

### **Reason**

One or more aspect categories have been removed, while there are aspects of that category still in the system. This inconsistency was present in the system when the backup was taken.

**Solution**

If the aspect category has been removed then these aspects may not be of interest any more. Check if the aspects are needed. If not, ignore this message.

## Unknown Transaction Error

**Example 1**

Mon Apr 19 13:39:40 2004: Unknown transaction error

**Reason**

If this is the only error message, there is probably a problem with some windows resources.

**Solution**

Check your windows resources.

**Example 2**

Mon Jun 28 08:37:08 2004: Loading C:\BACKUP\Full Backup; 2004-06-23; 10-39\Aspect System Structure0.afw ...

Mon Jun 28 08:37:09 2004: Aspect 'Batch Management Operation' on object 'Batch Management Documents' failed to unserialize itself.

Mon Jun 28 08:37:09 2004: ObjectId: {814786F8-E6CC-44B0-9A2A-1787FADDFE6F}

Mon Jun 28 08:37:09 2004: AspectId: {2CE41978-DE94-44AC-9D38-B216FBA93C3A}

**Reason**

It is not possible for the Restore function to restore the aspect data.

**Solution**

No solution available.

---

# Appendix B Control Builder M Compatibility Issues

This appendix lists the compatibility issues when upgrading from the various system versions to 800xA 5.1.



There are no compatible issues when upgrading from 800xA 5.1 and Feature Packs (FP1 through FP3).

## 800xA 5.0 SP2 to 800xA 5.1 Compatibility Issues

[Table 11](#) lists and describes Control Builder M compatibility issues, including solutions to the issues, when upgrading from 800xA 5.0 SP2 to 800xA 5.1.

*Table 11. 800xA 5.0 SP2 to 800xA 5.1 Control Builder M Compatibility Issues*

| Application                                          | Issue                                                                                                                                                              | Solution                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Upgrading from 800xA 5.0 SP2 to 800xA 5.1 and later. | Loosing all the parameter or pin properties for the Fuction Block instances in Single Control Modules might not show the expected values in the BU specific tools. | After upgrading the Control Builder M project, Single Control Modules created using Function Diagram would loose all the parameter or pin properties for the Function Block instances. As a result of this, some of the BU Specific tools (for example Interlock Viewer) might not show values as expected. Perform configuration data generation to enable the properties. |

Table 11. 800xA 5.0 SP2 to 800xA 5.1 Control Builder M Compatibility Issues (Continued)

| Application                                                                     | Issue                                                                                                                                                                                                                                                                                                                                                                                                                             | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Upgrading from 800xA 5.0 SP2 to 800xA 5.1 and later.                            | The signal configuration for CI860 must be checked and changed when UnitStatus is accessed by the application.                                                                                                                                                                                                                                                                                                                    | After upgrading the Hardware libraries for CI860 the UnitStatus signals must be moved from IW10.6510 to IW10.6518. Otherwise the application will not display the correct values or in addition a succeeding download will be stopped with an error or OLU (Online Upgrade) will fail in Step 7 (Refer <a href="#">Appendix C, Online Upgrade Controller Level</a> ). The change must be done before first download, after normal firmware upgrade or before starting OLU. |
| Mixing formal and informal parameter passing in a function call is not allowed. | <p>Prior to 800xA 5.1 it was allowed to mix formal and informal parameter passing in a function call. The Control Builder compiler in 800xA 5.1 gives a compile error for mixed parameter passing.</p> <p><b>Allowed:</b></p> <pre>AddSuffix( String := StrVar, Suffix := StrSuffix );</pre> <p>or</p> <pre>AddSuffix( StrVar, StrSuffix );</pre> <p><b>Not allowed:</b></p> <pre>AddSuffix( String := StrVar, StrSuffix );</pre> | Correct the code to use either formal or informal parameter passing for all parameters in the function call.                                                                                                                                                                                                                                                                                                                                                               |

Table 11. 800xA 5.0 SP2 to 800xA 5.1 Control Builder M Compatibility Issues (Continued)

| Application                                                                                                                    | Issue                                                                                                                                                                                                                                               | Solution                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Writing to components of a structured function block parameter with direction [in] via control module parameter is prohibited. | If a function block has a parameter p1 with direction [in] of a structured data type, it was possible to write to its components by connecting it to a control module that writes to the parameter. This is prohibited in 800xA 5.1                 | Correct the code to not use this illegal construction.                                                                                                                                                                                                                                                                                                                   |
| New attributes for function block, control module, and data types have been introduced.                                        | Some new attributes have been introduced in 800xA 5.1 that affect function block, control module, and data types.<br><br>For example:<br>- Direction attribute on control module parameters.<br>- Reverse and ISP attribute on datatype components. | For detailed information on the new attributes and their consequences refer to <i>System 800xA Control AC 800M Configuration</i> .                                                                                                                                                                                                                                       |
| Upgrade of 800xA 5.0 SP2 projects containing CI851 and CI852 units.                                                            | The hardware libraries for CI851 and CI852 do not work together with 800xA 5.1 controller firmware.                                                                                                                                                 | When Upgrade Project is performed in Control Builder the user must select to not upgrade to 800xA 5.1 firmware in the controllers. This is not compatible with the hardware libraries for CI851 and CI852.<br><br>After Upgrade Project is performed, verify that the controller is using BasicHWLib 5.0-2 and the hardware libraries for CI851 and CI852 as applicable. |

## 800xA 4.1 to 800xA 5.1 Compatibility Issues

Table 12 lists and describes Control Builder M compatibility issues, including solutions to the issues, when upgrading from 800xA 4.1 to 800xA 5.1.

Table 12. 800xA 4.1 to 800xA 5.1 Control Builder M Compatibility Issues

| Application                                                                     | Issue                                                                                                                                                                                                                                                                                                                                                                                                                             | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Upgrading from 800xA 4.1 to 800xA 5.1 and later.                                | The signal configuration for CI860 must be checked and changed when UnitStatus is accessed by the application.                                                                                                                                                                                                                                                                                                                    | After upgrading the Hardware libraries for CI860 the UnitStatus signals must be moved from IW10.6510 to IW10.6518. Otherwise the application will not display the correct values or in addition a succeeding download will be stopped with an error or OLU (Online Upgrade) will fail in Step 7 (Refer <a href="#">Appendix C, Online Upgrade Controller Level</a> ). The change must be done before first download, after normal firmware upgrade or before starting OLU. |
| Mixing formal and informal parameter passing in a function call is not allowed. | <p>Prior to 800xA 5.1 it was allowed to mix formal and informal parameter passing in a function call. The Control Builder compiler in 800xA 5.1 gives a compile error for mixed parameter passing.</p> <p><b>Allowed:</b></p> <pre>AddSuffix( String := StrVar, Suffix := StrSuffix );</pre> <p>or</p> <pre>AddSuffix( StrVar, StrSuffix );</pre> <p><b>Not allowed:</b></p> <pre>AddSuffix( String := StrVar, StrSuffix );</pre> | Correct the code to use either formal or informal parameter passing for all parameters in the function call.                                                                                                                                                                                                                                                                                                                                                               |

Table 12. 800xA 4.1 to 800xA 5.1 Control Builder M Compatibility Issues (Continued)

| Application                                                                                                                           | Issue                                                                                                                                                                                                                                                                                                           | Solution                                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Writing to components of a structured function block parameter with direction [in] via control module parameter is prohibited.</p> | <p>If a function block has a parameter p1 with direction [in] of a structured data type, it was possible to write to its components by connecting it to a control module that writes to the parameter. This is prohibited in 800xA 5.1</p>                                                                      | <p>Correct the code to not use this illegal construction.</p>                                                                            |
| <p>New attributes for function block, control module, and data types have been introduced.</p>                                        | <p>Some new attributes have been introduced in 800xA 5.1 that affect function block, control module, and data types.</p> <p>For example:</p> <ul style="list-style-type: none"> <li>- Direction attribute on control module parameters.</li> <li>- Reverse and ISP attribute on datatype components.</li> </ul> | <p>For detailed information on the new attributes and their consequences refer to <i>System 800xA Control AC 800M Configuration</i>.</p> |

Table 12. 800xA 4.1 to 800xA 5.1 Control Builder M Compatibility Issues (Continued)

| Application                                                     | Issue                                                                                                                                                                                                                                                                                                                                   | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Upgrade of 800xA 4.1 projects containing CI851 and CI852 units. | The hardware libraries for CI851 and CI852 are not part of AC 800M Connect in 800xA 5.1 and does not work together with 800xA 5.1 controller firmware.                                                                                                                                                                                  | <p>To upgrade a Control Builder Project from 800xA 4.1 that has controllers containing CI851 or CI852 units, the following system extensions must be installed and loaded after the restore to the 800xA 5.1 System is performed, but before Upgrade Project is performed in Control Builder:</p> <ul style="list-style-type: none"> <li>- AC800M Classic system extension (contains the hardware libraries for CI851 and CI852).</li> <li>-AC800 SV5.0 SP2 Coexistencesystem extension (contains BasicHWLib 5.0-2).</li> </ul> <p>After Upgrade Project is performed, verify that the controller is using BasicHWLib 5.0-2 and the hardware libraries for CI851 and CI852 as applicable.</p> |
| Force I/O from SIL2 applications prohibited                     | In order to better enforce the counting of maximum number of forces in High Integrity Controllers, the possibility to force I/O signals directly from code has been removed. This means that no writing will be allowed to the .Forced component of an IO data type in a SIL1-2 or SIL3 application. It will result in a compile error. | The only possibility to force I/O in a SIL application will be via the Safe Online Write function (confirmed write) from operator graphics. This restriction will also improve the response time when resetting forces in the controller. The reset of individual forced signals from code will still be possible by using the new firmware function ResetForcedValue(), which is introduced in 800xA 5.0 SP2. This implies that constructions where variables of IO data type (i.e. BoolIO, RealIO, DWordIO, or DintIO) are copied or connected via out parameters in function blocks, will no longer work. However, parameter passing via in or in_out parameters is not affected.          |

Table 12. 800xA 4.1 to 800xA 5.1 Control Builder M Compatibility Issues (Continued)

| Application                                                         | Issue                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Solution                                                                                                                                                              |
|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Discontinued functions for Safe MMS communication (function blocks) | <p>Due to the restriction described in Force I/O from SIL2 applications prohibited, the SIL2 marking of function blocks writing to IO data types has been removed. The affected function blocks are:</p> <ul style="list-style-type: none"> <li>• MMSRead4BoolIO.</li> <li>• MMSRead4DintIO.</li> <li>• MMSRead4RealIO.</li> </ul> <p>Consequently, these function blocks can not be used in SIL applications but will still be available for use in non-SIL applications.</p> <p>The corresponding definition function blocks (MMSdef4xxxxIO) will still be available from SIL applications and consequently reading IO from SIL to non-SIL applications will still be possible.</p> | In SIL applications it is recommended to replace the MMSRead4xxxxIO with the MMSRead4xxxx function blocks and only transfer the .Value component of the IO data type. |
| Safety Operator User Group                                          | An operator must be a member of the Safety Operator User Group to be able to write data to objects running in a SIL application in the controller.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Make the operator a member of the Safety Operator User Group.                                                                                                         |

Table 12. 800xA 4.1 to 800xA 5.1 Control Builder M Compatibility Issues (Continued)

| Application                                   | Issue                                                                                                                                                                                                                                                                                                 | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No Time Sync warning in controller            | Some controllers might get a <code>No time sync</code> warning in the controller log after upgrade to 800xA 5.0 SP2.                                                                                                                                                                                  | Set the CS Protocol Type for controllers that are not intended to be synchronized <b>No Synch</b> in order to avoid the warning.                                                                                                                                                                                                                                                                                                                                                     |
| Accessing Local Variables in Function Blocks. | It has been possible to access local variables in Function Blocks from surrounding code.<br>According to the IEC 61131-3 standard, local variables shall only be accessible within the containing software element.<br>A compilation error is given if local variables are accessed from the outside. | Correct any such warnings before performing the download. Local variables used in this fashion need to be changed to parameters instead.                                                                                                                                                                                                                                                                                                                                             |
| Code sorting loops treated as errors.         | Code sorting loops in applications are by default considered as errors in 800xA 5.0 SP2.<br>It is not possible to compile and download an application if it contains code sorting loops.                                                                                                              | First, try to correct the sorting loops. Refer to <i>Interpret and Correct Code Loop Errors in Industrial IT, 800xA - Control and I/O, Application Programming, Introduction and Design (3BSE043723*)</i> .<br>Another alternative is to change the compiler switch for Code Sorting Loops:<br>1. Mark the project in Project Explorer.<br>2. Right-click and select <b>Settings &gt; Compiler Switch</b> .<br>3. Set the global Loops in Control Modules switch to <b>Warning</b> . |

Table 12. 800xA 4.1 to 800xA 5.1 Control Builder M Compatibility Issues (Continued)

| <b>Application</b>                                                             | <b>Issue</b>                                                                                                                                                                                                                                                                                                                                | <b>Solution</b>                                                                           |
|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| <p>Applications having integer literal values too large as initial values.</p> | <p>Compile error 1040 might appear in Control Builder projects that previously did not contain any compile errors.</p> <p>Control Builder now makes more stringent compiler checks on initial values for variables. It previously allowed illegal (too large) integer literal values as initial values. The actual used value was zero.</p> | <p>Correct the compile error. e.g. by entering a smaller, legal value on the literal.</p> |

Table 12. 800xA 4.1 to 800xA 5.1 Control Builder M Compatibility Issues (Continued)

| Application                                                               | Issue                                                                                                                         | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Self defined serial communication using the Serial Communication Library. | The Serial Communication Library has undergone a major internal redesign that in some cases may lead to compatibility issues. | <p><b>Use of firmware functions:</b></p> <p>Firmware functions used for serial communication handling are no longer supported.</p> <p>This means that user-built libraries where these firmware functions have been used, can no longer be used.</p> <p>The no longer supported firmware functions are:</p> <ul style="list-style-type: none"> <li>• OpenDevice</li> <li>• UpdateDeviceSetup,</li> <li>• SetDeviceClearRead</li> <li>• CloseDevice.</li> <li>• ReadStringDevice</li> <li>• ReadLineDevice</li> <li>• WriteStringDevice</li> </ul> <p><b>Improvement were made in the following areas:</b></p> <ul style="list-style-type: none"> <li>• Clear buffer when entering the listen operation of the <i>SerialListen</i> function block.</li> <li>• If the <i>SerialWriteWait</i> function block is triggered when the timeout has elapsed, the read/listen buffer is cleared in between the retry operations in connection to the write operation.</li> <li>• <b>Behavior of the SerialWriteWait function block in previous versions:</b> If the function block is triggered after the application stopping phase is entered, the function block propagates the status code -15 via the Status -parameter.</li> </ul> |

Table 12. 800xA 4.1 to 800xA 5.1 Control Builder M Compatibility Issues (Continued)

| Application                                                                              | Issue                                                                                                                                        | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Self defined serial communication using the Serial Communication Library.<br>(continued) | The Serial Communication Library has undergone a major internal redesign that in some cases may lead to compatibility issues.<br>(continued) | If the power fails, and a function block was in a pending state, the Status -5331 is derived from it after the controller is powered up again. <ul style="list-style-type: none"> <li> <b>Behavior of the <i>SerialWriteWait</i> function block in previous versions:</b> If the function block was triggered after the application stopping phase was entered, the function block should normally propagate status code -15. But this was masked, and instead, after the finished application change, the function block automatically retriggered the write operation.                     </li> </ul> |

Table 12. 800xA 4.1 to 800xA 5.1 Control Builder M Compatibility Issues (Continued)

| Application                                                                              | Issue                                                                                                                                        | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Self defined serial communication using the Serial Communication Library.<br>(continued) | The Serial Communication Library has undergone a major internal redesign that in some cases may lead to compatibility issues.<br>(continued) | <p><b>Printing a string longer than 140 characters:</b></p> <p>The behavior of the <i>SerialWrite</i> operation is no longer synchronous. Therefore, the possibility to call one and the same function block time after time to print a longer string than 140 characters is no longer supported. Instead, do like the following:</p> <p>To be able to print a string longer than the maximum length of 140 characters, call subsequent function blocks in order:</p> <pre> Write1( Req := TRUE,         Id := Id,         EndChar := EndChar_Write1,         Done =&gt; Done_Write1,         Error =&gt; Error_Write1,         Status =&gt; Status_Write1,         Sd := Sd_Write1 ); Write2( Req := TRUE,         Id := Id,         EndChar := EndChar_Write2,         Done =&gt; Done_Write2,         Error =&gt; Error_Write2,         Status =&gt; Status_Write2,         Sd := Sd_Write2 ); </pre> <p>Printing the two strings Sd_Write1 + Sd_Write2 by calling the two function blocks will be queued up, and it will be printed in a series.</p> |

Table 12. 800xA 4.1 to 800xA 5.1 Control Builder M Compatibility Issues (Continued)

| Application                                                            | Issue                                                                                                                                                                                                                                                     | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--|--------|-------|--------------|----------------|-----------|-------------|--------------|----------------|---------------|-----------------|------------|--------------|--------------|----------------|------------|--|--------|-------|--------------------|--|----------------------|--|
| <p>Compiler warnings occur if there is a risk for task collisions.</p> | <p>If there is a risk that tasks can collide in the controller, a warning will be displayed during compilation. The compilation warning will look like:</p> <pre>Warning 9155: Controller_1:HW Task Normal and Fast may have colliding start times</pre>  | <p>Apply proper task offsets so that the tasks can no longer collide.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| <p>Applications using SattBus on TCP/IP.</p>                           | <p>SattBus on TCP/IP will not work after the upgrade. The COMLI communication function blocks have been used also for SattBus on TCP/IP, but this is no longer the case. A new library including a set of new function blocks should be used instead.</p> | <p>Change the application to use function blocks and data types from SattBusCommLib as follows:</p> <table border="0"> <tr> <td colspan="2">Function Blocks</td> </tr> <tr> <td>Before</td> <td>After</td> </tr> <tr> <td>COMLIConnect</td> <td>ComliSBConnect</td> </tr> <tr> <td>COMLIRead</td> <td>ComliSBRead</td> </tr> <tr> <td>COMLIReadCyc</td> <td>ComliSBReadCyc</td> </tr> <tr> <td>COMLIReadPhys</td> <td>ComliSBReadPhys</td> </tr> <tr> <td>COMLIWrite</td> <td>ComliSBWrite</td> </tr> <tr> <td>COMLIWriteDT</td> <td>ComliSBWriteDT</td> </tr> <tr> <td colspan="2">Data Types</td> </tr> <tr> <td>Before</td> <td>After</td> </tr> <tr> <td>Comm_Channel_COMLI</td> <td></td> </tr> <tr> <td>Comm_Channel_ComliSB</td> <td></td> </tr> </table> | Function Blocks |  | Before | After | COMLIConnect | ComliSBConnect | COMLIRead | ComliSBRead | COMLIReadCyc | ComliSBReadCyc | COMLIReadPhys | ComliSBReadPhys | COMLIWrite | ComliSBWrite | COMLIWriteDT | ComliSBWriteDT | Data Types |  | Before | After | Comm_Channel_COMLI |  | Comm_Channel_ComliSB |  |
| Function Blocks                                                        |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| Before                                                                 | After                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| COMLIConnect                                                           | ComliSBConnect                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| COMLIRead                                                              | ComliSBRead                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| COMLIReadCyc                                                           | ComliSBReadCyc                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| COMLIReadPhys                                                          | ComliSBReadPhys                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| COMLIWrite                                                             | ComliSBWrite                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| COMLIWriteDT                                                           | ComliSBWriteDT                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| Data Types                                                             |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| Before                                                                 | After                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| Comm_Channel_COMLI                                                     |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| Comm_Channel_ComliSB                                                   |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |

Table 12. 800xA 4.1 to 800xA 5.1 Control Builder M Compatibility Issues (Continued)

| Application                                                                                                                                                                                                                                          | Issue                                                                                                                                                                                                                                                                                                                                                                                                            | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Some project constants have been removed from SupervisionBasicLib (cSinit.*), BasicLib (cEnable.*), and SupervisionLib (cInit.*). Refer to <a href="#">Removed Project Constants</a> on page 436 for a list of the removed project constants.</p> | <ol style="list-style-type: none"> <li>1. If these project constants have been used in code there will be compile errors after upgrading the project.</li> <li>2. If the value of the project constants was changed in the project in 800xA 5.0 SP1a, it will lead to changed behavior of the code after the upgrade, because these project constants have been used as default values on parameters.</li> </ol> | <ol style="list-style-type: none"> <li>1. Change to the correct literal value in the places where the project constants are used.</li> <li>2. Check if the value of the removed project constant was changed in the project in 800xA 5.0 SP1a. This can be done by opening the Project Constants dialog box after the upgrade and seeing if the project constants are listed. In that case the parameters previously using the project constant as a default value must be manually connected to a literal with the corresponding value.</li> </ol> |

## 800xA 3.1 SP3 to 800xA 5.0 SP2 Compatibility Issues

Table 13 lists and describes Control Builder M compatibility issues, including solutions to the issues, when upgrading from 800xA 3.1 SP3 to 800xA 5.0 SP2.

Table 13. 800xA 3.1 SP3 to 800xA 5.0 SP2 Control Builder M Compatibility Issues

| Application                                                                                                                                     | Issue                                                                                                                           | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No Time Sync warning in controller                                                                                                              | Some controllers might get a <code>No time sync</code> warning in the controller log after upgrade to 800xA 5.0 SP2.            | Set the CS Protocol Type for controllers that are not intended to be synchronized <b>No Synch</b> in order to avoid the warning.                                                                                                                                                                                                                                                                                                                                                                                 |
| Valid for users that have copied a template object from, for example, a Process Object Library, and are using its Display Element Reduced Icon. | The Visual BASIC <sup>®</sup> resize code of the Display Element Reduced Icon becomes corrupt after deploy in Graphics Builder. | Remove the source comments around the <code>UserControl_Resize</code> method before deploying the Display Element Reduced Icon.<br>Edit the Display Element Reduced Icon, removing the comments, and then deploy the Display Element Reduced Icon.<br>The source comments are:<br><pre> '     \$\$ABB_BEGIN_USERCONTROL_RESIZE     E     ---     '\$\$ABB_END_USERCONTROL_RESIZE                     </pre> <b>NOTE:</b> Delete only the comment lines. Do not delete the source code between the comment lines. |
| Internal MMS Communication between applications residing in the same controller.                                                                | The behavior of internal communication between two applications in the same controller has changed.                             | This kind of communication is now asynchronous; all data may no longer always be received in the same scan.                                                                                                                                                                                                                                                                                                                                                                                                      |

Table 13. 800xA 3.1 SP3 to 800xA 5.0 SP2 Control Builder M Compatibility Issues (Continued)

| Application                                                                                                                                            | Issue                                                                                                                                                                                                                                                                                                         | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>User-Defined Hardware Definition Files when 1131-application variables of type dInt and dWord are written from the application to I/O-channels.</p> | <p>The behavior has been undefined when the 1131-variable has a very large value (larger than the maximum value possible to write on a specific hardware unit). The very large value has really been truncated, a hardware unit receiving 8-bit data has received the 8 lowest bits in the dInt or dWord.</p> | <p>The behavior is redefined as follows:</p> <ul style="list-style-type: none"> <li>• The hardware unit will be written with the largest, which is different depending on hardware, possible value if 1131-variable has a very large positive value.</li> <li>• The hardware unit will be written with the largest, which is different depending on hardware, negative value if 1131-variable has a very large negative value.</li> </ul>                                     |
| <p>FF HSE input I/O channels.</p>                                                                                                                      | <p>The mapping of FF-status in input I/O channels (BoolIO, RealIO, etc.) connected to CI860 channels has been changed.</p>                                                                                                                                                                                    | <p>Previously, the FF-status of in-channels has been mapped into both the MSB and the LSB of the status word. This has changed so that the LSB now is remapped into OPC-status (since this byte now is sent to the OPC-server).</p> <p><b>Example:</b></p> <p>The FF status 16#80 was previously mapped as 16#80000080 into the status word in the I/O data type. It is from now mapped as 16#800000C0. The result is that the OPC Server sends 16#C0 to its OPC clients.</p> |

Table 13. 800xA 3.1 SP3 to 800xA 5.0 SP2 Control Builder M Compatibility Issues (Continued)

| <b>Application</b>                                   | <b>Issue</b>                                                                                                                                                                                                                                                                                                         | <b>Solution</b>                                                                                                                                 |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Accessing Local Variables in Function Blocks.</p> | <p>It has been possible to access local variables in Function Blocks from surrounding code.</p> <p>According to the IEC 61131-3 standard, local variables shall only be accessible within the containing software element.</p> <p>A compilation error is given if local variables are accessed from the outside.</p> | <p>Correct any such warnings before performing the download. Local variables used in this fashion need to be changed to parameters instead.</p> |

Table 13. 800xA 3.1 SP3 to 800xA 5.0 SP2 Control Builder M Compatibility Issues (Continued)

| Application                                                                                                                                                                                                                          | Issue                                                                                                                                                                                                                                                                                                                             | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Standard libraries included in AC 800M Connect.</p> <p><b>NOTE:</b> These issues are only valid for users that have used either <b>SupervisionLib</b> or <b>FireGasLib</b>. Other users will not be affected by these issues.</p> | <p>800xA 5.0 SP2 includes the new library versions as well as the old library versions in order to handle the upgrade for those who have used them. The use of the old versions is, however, not supported. Users must reconnect to the new library versions and modify applications before they go into supported operation.</p> | <p><b>SupervisionLib</b></p> <ol style="list-style-type: none"> <li>1. Parameters for the <i>Inhibit</i> function in the detector modules are modified. Parameter names are changed; e.g. from <i>GTHAndNotInhibited</i> to <i>GTHAct</i>. Parameters are modified to comply with connected <i>SignalLib</i> library. The <i>Inhibit</i> logic is now placed inside the Function Blocks defined in <i>SignalLib</i>.</li> <li>2. Parameters are added for the <i>enable</i> function; e.g. <i>EnableH</i>, <i>GTHStat</i>, and <i>HEnabled</i>. Parameters are added to comply with the connected <i>SignalLib</i> library. The <i>Enable</i> function was earlier limited to alarm/event, but is now controlling the activation signals (<i>GTHStat</i> and <i>GTHAct</i>) as well.</li> <li>3. In <i>Detector1Real</i> and <i>DetectorRemote</i>, <i>LevelH</i> is used instead of <i>LevelHHH</i>. In <i>Detector2Real</i>, <i>LevelH</i> and <i>LevelHH</i> are used instead of <i>LevelHH</i> and <i>LevelHHH</i>. All affected parameter names are thus altered.</li> <li>4. The <i>CommonOutput</i> control module is removed from the <i>SupervisionLib</i> library. The handling of common outputs is simplified and improved. The module <i>OutputOrder</i> shall be used instead of <i>CommonOutput</i>, for both common outputs and area outputs. This enables feedback supervision for both types of outputs.</li> <li>5. One parameter is added on the <i>OutputOrder</i> control module; <i>OrderIn</i>. The <i>OrderIn</i> parameter enables connection to <i>OrderOr</i> modules, for common outputs activation logic.</li> <li>6. On the <i>OutputOrder</i> module, parameters for activation due to connected protection systems are removed.</li> </ol> |

Table 13. 800xA 3.1 SP3 to 800xA 5.0 SP2 Control Builder M Compatibility Issues (Continued)

| Application                                                                                                                                                                                                                                      | Issue                                                                                                                                                                                                                                                                                                                                         | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Standard libraries included in AC 800M Connect.</p> <p><b>NOTE:</b> These issues are only valid for users that have used either <b>SupervisionLib</b> or <b>FireGasLib</b>. Other users will not be affected by these issues. (continued)</p> | <p>800xA 5.0 SP2 includes the new library versions as well as the old library versions in order to handle the upgrade for those who have used them. The use of the old versions is, however, not supported. Users must reconnect to the new library versions and modify applications before they go into supported operation. (continued)</p> | <p>7. The control modules <i>DetectionSite</i>, <i>DetectionAreaGroup</i>, <i>DetectionArea</i> are removed from the <i>SupervisionLib</i> library. These 'example modules' gave a misleading guideline and was difficult to use because they had to be copied (instead of instantiated like other control module types).<br/>An example project is delivered with Control Builder (instead of the removed modules), similar to other standard libraries.</p>                                                                                                                                                                                                                                       |
|                                                                                                                                                                                                                                                  | <p>800xA 5.0 SP2 includes the new library versions as well as the old library versions in order to handle the upgrade for those who have used them. The use of the old versions is, however, not supported. Users must reconnect to the new library versions and modify applications before they go into supported operation.</p>             | <p><b>FireGasLib</b></p> <ol style="list-style-type: none"> <li>1. A new control module type, <i>FGOutputOrder</i>, is added in <i>FireGasLib</i>. This is similar to the <i>OutputOrder</i> module in <i>SupervisionLib</i>, but with the parameters for activation due to connected protection systems (i.e. connected <i>Co2</i>, <i>Deluge</i>, <i>Sprinkler</i> modules).</li> <li>2. The control modules <i>FGSite</i>, <i>FireAreaGroup</i>, <i>FireArea</i> are removed from the <i>FireGasLib</i> library. These example modules gave a misleading guideline and were difficult to use because they had to be copied (instead of instantiated like other control module types).</li> </ol> |

Table 13. 800xA 3.1 SP3 to 800xA 5.0 SP2 Control Builder M Compatibility Issues (Continued)

| Application                                                             | Issue                                                                                                                                                                                                                                                                                                                            | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Code sorting loops treated as errors.                                   | Code sorting loops in applications are by default considered as errors in 800xA 5.0 SP2.<br>It is not possible to compile and download an application if it contains code sorting loops.                                                                                                                                         | First, try to correct the sorting loops. Refer to Interpret and Correct Code Loop Errors in <i>Industrial IT, 800xA - Control and I/O, Application Programming, Introduction and Design (3BSE043723*)</i> .<br>Another alternative is to change the compiler switch for Code Sorting Loops:<br>1. Mark the project in Project Explorer.<br>2. Right-click and select <b>Settings &gt; Compiler Switch</b> .<br>3. Set the global Loops in Control Modules switch to <b>Warning</b> . |
| Applications having integer literal values too large as initial values. | Compile error 1040 might appear in Control Builder projects that previously did not contain any compile errors.<br>Control Builder now makes more stringent compiler checks on initial values for variables. It previously allowed illegal (too large) integer literal values as initial values. The actual used value was zero. | Correct the compile error.<br>e.g. by entering a smaller, legal value on the literal.                                                                                                                                                                                                                                                                                                                                                                                                |

Table 13. 800xA 3.1 SP3 to 800xA 5.0 SP2 Control Builder M Compatibility Issues (Continued)

| Application                                                            | Issue                                                                                                                                                                                                                                                     | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--|--------|-------|--------------|----------------|-----------|-------------|--------------|----------------|---------------|-----------------|------------|--------------|--------------|----------------|------------|--|--------|-------|--------------------|--|----------------------|--|
| <p>Applications using SattBus on TCP/IP.</p>                           | <p>SattBus on TCP/IP will not work after the upgrade. The COMLI communication function blocks have been used also for SattBus on TCP/IP, but this is no longer the case. A new library including a set of new function blocks should be used instead.</p> | <p>Change the application to use function blocks and data types from SattBusCommLib as follows:</p> <table border="0"> <tr> <td colspan="2">Function Blocks</td> </tr> <tr> <td>Before</td> <td>After</td> </tr> <tr> <td>COMLIConnect</td> <td>ComliSBConnect</td> </tr> <tr> <td>COMLIRead</td> <td>ComliSBRead</td> </tr> <tr> <td>COMLIReadCyc</td> <td>ComliSBReadCyc</td> </tr> <tr> <td>COMLIReadPhys</td> <td>ComliSBReadPhys</td> </tr> <tr> <td>COMLIWrite</td> <td>ComliSBWrite</td> </tr> <tr> <td>COMLIWriteDT</td> <td>ComliSBWriteDT</td> </tr> <tr> <td colspan="2">Data Types</td> </tr> <tr> <td>Before</td> <td>After</td> </tr> <tr> <td>Comm_Channel_COMLI</td> <td></td> </tr> <tr> <td>Comm_Channel_ComliSB</td> <td></td> </tr> </table> | Function Blocks |  | Before | After | COMLIConnect | ComliSBConnect | COMLIRead | ComliSBRead | COMLIReadCyc | ComliSBReadCyc | COMLIReadPhys | ComliSBReadPhys | COMLIWrite | ComliSBWrite | COMLIWriteDT | ComliSBWriteDT | Data Types |  | Before | After | Comm_Channel_COMLI |  | Comm_Channel_ComliSB |  |
| Function Blocks                                                        |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| Before                                                                 | After                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| COMLIConnect                                                           | ComliSBConnect                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| COMLIRead                                                              | ComliSBRead                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| COMLIReadCyc                                                           | ComliSBReadCyc                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| COMLIReadPhys                                                          | ComliSBReadPhys                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| COMLIWrite                                                             | ComliSBWrite                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| COMLIWriteDT                                                           | ComliSBWriteDT                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| Data Types                                                             |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| Before                                                                 | After                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| Comm_Channel_COMLI                                                     |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| Comm_Channel_ComliSB                                                   |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |
| <p>Compiler warnings occur if there is a risk for task collisions.</p> | <p>If there is a risk that tasks can collide in the controller, a warning will be displayed during compilation. The compilation warning will look like:</p> <pre>Warning 9155: Controller_1:HW Task Normal and Fast may have colliding start times</pre>  | <p>Apply proper task offsets so that the tasks can no longer collide.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                 |  |        |       |              |                |           |             |              |                |               |                 |            |              |              |                |            |  |        |       |                    |  |                      |  |

Table 13. 800xA 3.1 SP3 to 800xA 5.0 SP2 Control Builder M Compatibility Issues (Continued)

| Application                                                                      | Issue                                                                                                                                | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Self defined serial communication using the Serial Communication Library.</p> | <p>The Serial Communication Library has undergone a major internal redesign that in some cases may lead to compatibility issues.</p> | <p><b>Use of firmware functions:</b><br/>                     Firmware functions used for serial communication handling are no longer supported.<br/>                     This means that user-built libraries where these firmware functions have been used, can no longer be used.<br/>                     The no longer supported firmware functions are:</p> <ul style="list-style-type: none"> <li>• OpenDevice</li> <li>• UpdateDeviceSetup,</li> <li>• SetDeviceClearRead</li> <li>• CloseDevice.</li> <li>• ReadStringDevice</li> <li>• ReadLineDevice</li> <li>• WriteStringDevice</li> </ul> <p><b>Improvement were made in the following areas:</b></p> <ul style="list-style-type: none"> <li>• Clear buffer when entering the listen operation of the <i>SerialListen</i> function block.</li> <li>• If the <i>SerialWriteWait</i> function block is triggered when the timeout has elapsed, the read/listen buffer is cleared in between the retry operations in connection to the write operation.</li> </ul> |

Table 13. 800xA 3.1 SP3 to 800xA 5.0 SP2 Control Builder M Compatibility Issues (Continued)

| Application                                                                              | Issue                                                                                                                                        | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Self defined serial communication using the Serial Communication Library.<br>(continued) | The Serial Communication Library has undergone a major internal redesign that in some cases may lead to compatibility issues.<br>(continued) | <ul style="list-style-type: none"> <li>• <b>Behavior of the <i>SerialWriteWait</i> function block in previous versions:</b> If the function block was triggered after the application stopping phase was entered, the function block should normally propagate status code -15. But this was masked, and instead, after the finished application change, the function block automatically retriggered the write operation.</li> <li>• <b>Behavior of the <i>SerialWriteWait</i> function block in previous versions:</b> If the function block is triggered after the application stopping phase is entered, the function block propagates the status code -15 via the Status -parameter.</li> </ul> If the power fails, and a function block was in a pending state, the Status -5331 is derived from it after the controller is powered up again. |

Table 13. 800xA 3.1 SP3 to 800xA 5.0 SP2 Control Builder M Compatibility Issues (Continued)

| Application                                                                              | Issue                                                                                                                                        | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Self defined serial communication using the Serial Communication Library.<br>(continued) | The Serial Communication Library has undergone a major internal redesign that in some cases may lead to compatibility issues.<br>(continued) | <p><b>Printing a string longer than 140 characters:</b></p> <p>The behavior of the <i>SerialWrite</i> operation is no longer synchronous. Therefore, the possibility to call one and the same function block time after time to print a longer string than 140 characters is no longer supported. Instead, do like the following:</p> <p>To be able to print a string longer than the maximum length of 140 characters, call subsequent function blocks in order:</p> <pre> Write1( Req := TRUE,         Id := Id,         EndChar := EndChar_Write1,         Done =&gt; Done_Write1,         Error =&gt; Error_Write1,         Status =&gt; Status_Write1,         Sd := Sd_Write1 );  Write2( Req := TRUE,         Id := Id,         EndChar := EndChar_Write2,         Done =&gt; Done_Write2,         Error =&gt; Error_Write2,         Status =&gt; Status_Write2,         Sd := Sd_Write2 );                     </pre> <p>Printing the two strings Sd_Write1 + Sd_Write2 by calling the two function blocks will be queued up, and it will be printed in a series.</p> |

Table 13. 800xA 3.1 SP3 to 800xA 5.0 SP2 Control Builder M Compatibility Issues (Continued)

| Application                                                                                                                                                                                                                                          | Issue                                                                                                                                                                                                                                                                                                                                                                                                            | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>ProcessObjectAE Function block parameter name change</p>                                                                                                                                                                                          | <p>The <b>Name</b> parameter on the ProcessObjectAE Function Block in AlarmEventLib has a changed name. The parameter is now called CondNameObjErr.</p> <p>This means that applications using the ProcessObjectAE will not be able to be downloaded after the upgrade. There will be compilation errors for unknown parameter names.</p>                                                                         | <p>Applications using this Function Block need to be changed to use the CondNameObjErr parameter instead.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p>Some project constants have been removed from SupervisionBasicLib (cSinit.*), BasicLib (cEnable.*), and SupervisionLib (cInit.*). Refer to <a href="#">Removed Project Constants</a> on page 436 for a list of the removed project constants.</p> | <ol style="list-style-type: none"> <li>1. If these project constants have been used in code there will be compile errors after upgrading the project.</li> <li>2. If the value of the project constants was changed in the project in 800xA 5.0 SP1a, it will lead to changed behavior of the code after the upgrade, because these project constants have been used as default values on parameters.</li> </ol> | <ol style="list-style-type: none"> <li>1. Change to the correct literal value in the places where the project constants are used.</li> <li>2. Check if the value of the removed project constant was changed in the project in 800xA 5.0 SP1a. This can be done by opening the Project Constants dialog box after the upgrade and seeing if the project constants are listed.</li> </ol> <p>In that case the parameters previously using the project constant as a default value must be manually connected to a literal with the corresponding value.</p> |

## Removed Project Constants

Some project constants have been removed from SupervisionBasicLib (cSinit.\*), BasicLib (cEnable.\*), and SupervisionLib (cInit.\*).

### SupervisionBasicLib (cSinit.\*)

- cSinit.Latch shall be replaced by 'true'.
- cSinit.LevelHH shall be replaced by '80.0'.
- cSinit.LevelH shall be replaced by '60.0'.
- cSinit.LevelL shall be replaced by '40.0'.
- cSinit.LevelLL shall be replaced by '20.0'.

### BasicLib (cEnable.\*)

Table 14. BasicLib (cEnable)

|                              |  |      |                                                           |
|------------------------------|--|------|-----------------------------------------------------------|
| cEnable.InputOverUnderRange  |  | bool | Default value in library BasicLib 1.4-11 (bool):<br>false |
| cEnable.OutputOverUnderRange |  | bool | Default value in library BasicLib 1.4-11 (bool):<br>false |

### SupervisionLib (cInit.\*)

Table 15. SupervisionLib (cInit.\*)

|                     |  |      |                                                                |
|---------------------|--|------|----------------------------------------------------------------|
| cInit.AckreqAtErr   |  | bool | Default value in library SupervisionLib 2.3-7 (bool):<br>false |
| cInit.AckReqToReset |  | bool | Default value in library SupervisionLib 2.3-7 (bool):<br>false |
| cInit.ActOnError    |  | bool | Default value in library SupervisionLib 2.3-7 (bool):<br>false |
| cInit.AEClass       |  | dint | Default value in library SupervisionLib 2.3-7 (dint):<br>1     |

Table 15. SupervisionLib (cInit. \*) (Continued)

|                             |  |      |                                                              |
|-----------------------------|--|------|--------------------------------------------------------------|
| cInit.AEConfigCableBreak    |  | dint | Default value in library SupervisionLib 2.3-7 (dint):<br>0   |
| cInit.AEConfigDetectorFault |  | dint | Default value in library SupervisionLib 2.3-7 (dint):<br>0   |
| cInit.AEConfigDiffInput     |  | dint | Default value in library SupervisionLib 2.3-7 (dint):<br>1   |
| cInit.AEConfigDiffOutput    |  | dint | Default value in library SupervisionLib 2.3-7 (dint):<br>3   |
| cInit.AEConfigErr           |  | dint | Default value in library SupervisionLib 2.3-7 (dint):<br>1   |
| cInit.AEConfigH             |  | dint | Default value in library SupervisionLib 2.3-7 (dint):<br>1   |
| cInit.AEConfigHH            |  | dint | Default value in library SupervisionLib 2.3-7 (dint):<br>1   |
| cInit.AEConfigL             |  | dint | Default value in library SupervisionLib 2.3-7 (dint):<br>0   |
| cInit.AEConfigLoopFault     |  | dint | Default value in library SupervisionLib 2.3-7 (dint):<br>0   |
| cInit.AEConfigMaintenance   |  | dint | Default value in library SupervisionLib 2.3-7 (dint):<br>0   |
| cInit.AEConfigPrewarn       |  | dint | Default value in library SupervisionLib 2.3-7 (dint):<br>1   |
| cInit.AEConfigShortCircuit  |  | dint | Default value in library SupervisionLib 2.3-7 (dint):<br>0   |
| cInit.AESevCableBreak       |  | dint | Default value in library SupervisionLib 2.3-7 (dint):<br>800 |
| cInit.AESevDetectorFault    |  | dint | Default value in library SupervisionLib 2.3-7 (dint):<br>800 |

Table 15. SupervisionLib (cInit.\*) (Continued)

|                         |  |      |                                                            |
|-------------------------|--|------|------------------------------------------------------------|
| cInit.AESevDiffInput    |  | dint | Default value in library SupervisionLib 2.3-7 (dint): 800  |
| cInit.AESevDiffOutput   |  | dint | Default value in library SupervisionLib 2.3-7 (dint): 300  |
| cInit.AESevErr          |  | dint | Default value in library SupervisionLib 2.3-7 (dint): 800  |
| cInit.AESevFeedback     |  | dint | Default value in library SupervisionLib 2.3-7 (dint): 300  |
| cInit.AESevH            |  | dint | Default value in library SupervisionLib 2.3-7 (dint): 800  |
| cInit.AESevHH           |  | dint | Default value in library SupervisionLib 2.3-7 (dint): 800  |
| cInit.AESevL            |  | dint | Default value in library SupervisionLib 2.3-7 (dint): 800  |
| cInit.AESevLoopFault    |  | dint | Default value in library SupervisionLib 2.3-7 (dint): 800  |
| cInit.AESevMaintenance  |  | dint | Default value in library SupervisionLib 2.3-7 (dint): 800  |
| cInit.AESevPrewarn      |  | dint | Default value in library SupervisionLib 2.3-7 (dint): 800  |
| cInit.AESevReleased     |  | dint | Default value in library SupervisionLib 2.3-7 (dint): 300  |
| cInit.AESevShortCircuit |  | dint | Default value in library SupervisionLib 2.3-7 (dint): 800  |
| cInit.AlarmLimit        |  | real | Default value in library SupervisionLib 2.3-7 (real): 40.0 |
| cInit.ConfirmedLimitH   |  | dint | Default value in library SupervisionLib 2.3-7 (dint): 2    |

Table 15. SupervisionLib (cInit. \*) (Continued)

|                             |  |      |                                                                   |
|-----------------------------|--|------|-------------------------------------------------------------------|
| cInit.ConfirmedLimitHH      |  | dint | Default value in library SupervisionLib 2.3-7 (dint):<br>0        |
| cInit.ConfirmedLimitOr      |  | bool | Default value in library SupervisionLib 2.3-7 (bool):<br>true     |
| cInit.DelayTime             |  | time | Default value in library SupervisionLib 2.3-7 (time):<br>TIME#10s |
| cInit.EnableCommonReset     |  | bool | Default value in library SupervisionLib 2.3-7 (bool):<br>true     |
| cInit.EnableRangeConversion |  | bool | Default value in library SupervisionLib 2.3-7 (bool):<br>false    |
| cInit.Latch                 |  | bool | Default value in library SupervisionLib 2.3-7 (bool):<br>true     |
| cInit.LevelCableBreak       |  | real | Default value in library SupervisionLib 2.3-7 (real):<br>1.0      |
| cInit.LevelDetectorFault    |  | real | Default value in library SupervisionLib 2.3-7 (real):<br>3.0      |
| cInit.LevelDiff             |  | real | Default value in library SupervisionLib 2.3-7 (real):<br>10.0     |
| cInit.LevelLoopFault        |  | real | Default value in library SupervisionLib 2.3-7 (real):<br>3.5      |
| cInit.LevelMaintenance      |  | real | Default value in library SupervisionLib 2.3-7 (real):<br>2.5      |
| cInit.LevelShortCircuit     |  | real | Default value in library SupervisionLib 2.3-7 (real):<br>19.0     |
| cInit.OneLevelH             |  | real | Default value in library SupervisionLib 2.3-7 (real):<br>10.0     |
| cInit.OneLevelL             |  | real | Default value in library SupervisionLib 2.3-7 (real):<br>5.0      |

Table 15. SupervisionLib (cInit.\*) (Continued)

|                        |  |        |                                                                  |
|------------------------|--|--------|------------------------------------------------------------------|
| cInit.OutputResetDelay |  | time   | Default value in library SupervisionLib 2.3-7 (time):<br>TIME#1s |
| cInit.PrewarningLimit  |  | real   | Default value in library SupervisionLib 2.3-7 (real):<br>5.0     |
| cInit.RedIncDecLim     |  | real   | Default value in library SupervisionLib 2.3-7 (real):<br>10.0    |
| cInit.ResetTime        |  | time   | Default value in library SupervisionLib 2.3-7 (time):<br>TIME#5s |
| cInit.ResponseTime     |  | time   | Default value in library SupervisionLib 2.3-7 (time):<br>TIME#5s |
| cInit.RText            |  | string | Default value in library SupervisionLib 2.3-7<br>(string): 'R'   |
| cInit.TwoLevelH        |  | real   | Default value in library SupervisionLib 2.3-7 (real):<br>20.0    |
| cInit.TwoLevelHH       |  | real   | Default value in library SupervisionLib 2.3-7 (real):<br>60.0    |
| cInit.UseLevelPar      |  | bool   | Default value in library SupervisionLib 2.3-7 (bool):<br>True    |

---

# Appendix C Online Upgrade Controller Level

The information in this appendix is intended only as a high level introduction to the online upgrade of the controller level. Detailed information appears in the controller and control software instructions.

## Online Upgrade Controller Level

Redundant AC 800M controllers can be upgraded with new firmware versions online. Online upgrade is initiated from Control Builder by a nine-step wizard. Refer to the Maintenance and Troubleshooting section in *800xA - Control and I/O, Basic Control Software, Introduction and Configuration (3BSE035980R\*)* for more information.

In order to use online upgrade for the controller level:

- Refer to the Control and I/O, Control Software for AC 800M section of *System 800xA Release Notes New Functions and Known Problems (2PAA106188\*)* for the controller versions that support online upgrade.
- AC 800M Controllers require the client and server level to be of the same or higher 800xA System version/revision.
- AC 800M Controllers must be redundant. A redundant controller consists of two redundant processing units connected to I/O modules or CI modules.
- AC 800M Controller firmware and its CI modules can be upgraded independently.
  - AC 800M controller firmware and the SM810 (safety) CI module must be upgraded simultaneously.
- Different AC 800M Controllers with different 800xA System versions/revisions can coexist. This allows for extensions of an 800xA System

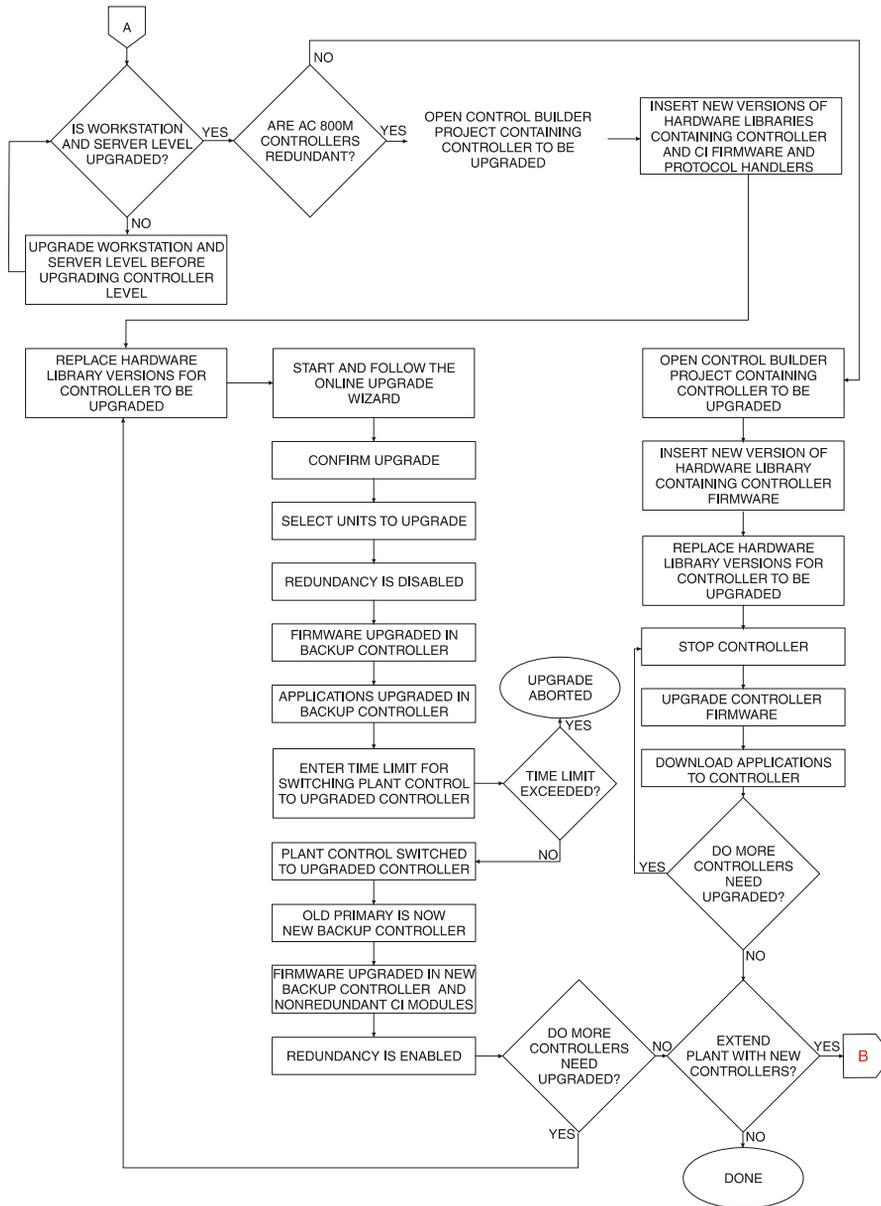
with new AC 800M Controllers or other new 800xA System functionality without having to upgrade all existing controllers.

- Starting from 800xA 5.0, upgrading to newer versions of Control Builder and/or OPC Server does not require a controller upgrade. Controllers with different firmware versions can coexist in the same network, and newer versions of Control Builder and OPC Server can connect to controllers of older versions (not older than 800xA 5.0). Refer to the Control and I/O, Control Software for AC 800M section of *System 800xA Release Notes New Functions and Known Problems (2PAA106188\*)* for the controller versions that support coexistence.
- Hardware types can coexist in different 800xA System versions/revisions in the same 800xA System.
- Controllers that need to take advantage of new functionality are the only ones that have to be upgraded. Other controllers can remain untouched. This backwards compatibility is typically kept for two previous system versions.
- Upgrading nonredundant AC 800M Controllers is accomplished with minimized plant disturbance by stopping and upgrading one controller at a time. The client and server level can still be upgraded online, as long as the conditions are met for performing an online upgrade on the client and server level.

Hot swap is the method to be used for a nonredundant AC 800M controller with redundant CI modules and unchanged controller firmware.

## Flowchart for Upgrading Controller Level

Figure 69 shows the upgrade flow for the controller level.

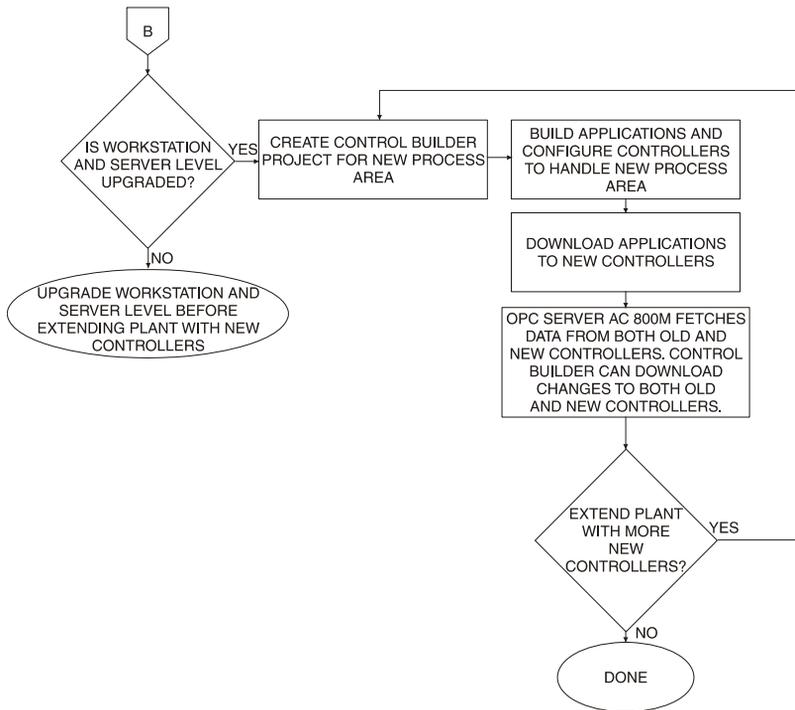


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Figure 69. Online Upgrade Flowchart for Controller Level

## Flowchart for Extending Controller Level

Figure 70 shows the flow for extending the controller level to add new AC 800M Controllers with the latest 800xA System version/revision to an existing plant with or without upgrading the existing AC 800M Controllers.



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Figure 70. Flowchart for Extending Plant with New Controllers

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## Appendix D Consistency Check

This Appendix describes the consistency check performed on the 800xA System.

The following is an overview of the consistency check functionality in the 800xA System.

- Perform consistency checks both before and after the upgrade.
- The consistency check is continuously improved between releases. If a consistency error is detected after the upgrade, it does not necessarily mean that the error was introduced by the upgrade process. It might have been there from the beginning, but went undetected.
- Try to correct all consistency errors before the upgrade. This will make the upgrade process easier. Consistency errors may cause the upgrade to either fail, or continue, but without having done exactly what was intended. Since it is very difficult to know where the upgrade handling will do changes, it is desirable to make the system as consistent as possible before the upgrade. It is also good to keep a system with the old version running so it is possible to go back and do more corrections in the old system if problems occur during the upgrade.
  - However, the upgrade will often work even though there are some remaining consistency errors. In some cases it is easiest to correct the errors after the upgrade (because the repair functionality has been improved in the new release), so it may be worth an attempt at continuing

with the upgrade. It is recommended to keep a list of the detected consistency errors for future reference.



During the consistency check the following error messages might come from PROFIBUS Hardware Libraries in system version 5.0 and later:

```
[Error] Library key must not be used on
'ABB_TFx12_PA 1.2-0:Aspect Category
Definition'. ... : Library Version Definition
[Error] Aspect 'ABB_TFx12_PA 1.2-
0:Hardware Library' contains multiple library
keys. ... : Library Version Definition
[Error] Library key must not be used on
'ABB_TFx12_PA 1.2-0:Object Type
Structure'. ... : Library Version Definition
3 error(s) reported by 1 aspect(s).
1 aspect(s) can be repaired
```

This will have no impact on system upgrade.

- In 800xA 5.0 and later, perform the consistency check with the Consistency Check tool (started by clicking the question mark icon in top right corner of Plant Explorer Workplace). In 800xA 4.1 the Consistency Checker aspect must be used.
- Perform consistency checks on the user-defined libraries in the **Object Type Structure** or **Library Structure**, the Control Project in **Control Structure**, and the **Functional Structure**.
- The general part of the upgrade process consists of importing new versions of standard libraries, and propagating object type changes to user libraries and user applications. It is only necessary to correct consistency errors regarding object type, object type references, and similar configurations for the general part of the upgrade process to work. Other inconsistencies such as unresolved references should normally not lead to problems.
  - However, special upgrade handling designed by the Functional Areas may also update the references of aspects, so it is best to correct also broken references before the upgrade.
  - In the Library structure, navigate to Library Version Definition aspect present in the user defined libraries. Select the **Consistency** tab and click

**Check Consistency.** Correct any errors that may appear during the consistency check (This is valid for 800xA 4.1 and 800xA 5.0 systems).

## Performing the Consistency Check

In 800xA 5.0 and later, perform the consistency check with the Consistency Check tool (started by clicking the question mark icon in top right corner of Plant Explorer Workplace). In 800xA 4.1 the Consistency Checker aspect must be used. This instruction only includes the 800xA 5.0 and later procedure. Refer to *System 800xA Tools (2PAA101088\*)* for more detailed information on running the 800xA 5.1 consistency check. The 800xA 4.1 procedure can be found in 800xA 4.1 specific documentation.



Perform a consistency check before performing the 800xA System backup. Failure to do so could result in problems when restoring the system after the upgrade.



If using Asset Optimization, be sure to run the Consistency Check tool and delete any inconsistent Asset Monitor Control Connection Properties aspects.

Perform the following to perform a consistency check:

1. Open a Plant Explorer Workplace.
2. Click the **Consistency Check Tool** icon at the top of the Plant Explorer Workplace to launch the Consistency Check Tool.



Rather than performing [Step 3](#) through [Step 6](#) it is also possible to drag the desired items to the Consistency Check Tool.

3. Click **Add Item** to launch the Select Item dialog box.
4. Browse to the desired location.
5. Select the desired items (use Ctrl+Click or Shift+Click to select multiple items). If a subtree is selected, all objects and aspects in the subtree will be selected. If a library or application is selected, everything in this entity will be selected.
6. Click **Add and Close**.
7. Click **Check**.
8. If errors are found, and they are marked `Repairable`, perform an automatic repair by selecting **Repair Aspect** in the context menu.

9. If errors are found that are not automatically repairable, try to manually reconfigure the aspects to repair the consistency errors.

## Returning to the Pre-Upgrade Procedures

These links are designed for online viewing. If using a hard copy, go back to the point in the procedure that referred to this appendix.

[Click here to return to 800xA 5.0 SP2 to 800xA 5.1 Online Upgrade.](#)

[Click here to return to 800xA 5.0 SP2 to 800xA 5.1 Offline Upgrade.](#)

[Click here to return to 800xA 4.1 to 800xA 5.1 Offline Upgrade.](#)

[Click here to return to 800xA 3.1 SP3 to 800xA 5.0 SP2 Upgrade.](#)

## Returning to the Post Upgrade Procedures

These links are designed for online viewing. If using a hard copy, go back to the point in the procedure that referred to this appendix.

[Click here to return to 800xA 5.0 SP2 to 800xA 5.1 Online Upgrade.](#)

[Click here to return to 800xA 5.0 SP2 to 800xA 5.1 Offline Upgrade.](#)

[Click here to return to 800xA 4.1 to 800xA 5.1 Offline Upgrade.](#)

[Click here to return to 800xA 3.1 SP3 to 800xA 5.0 SP2 Upgrade.](#)

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# Appendix E Recording the Number of Aspects and Objects

This Appendix records the number of aspects and objects in the system in order to compare the number before the 800xA System Backup and after the 800xA System Restore.

## Recording the Number of Aspects and Objects in the System

Perform the following procedure to record the number of aspect and objects in the system.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Admin Structure**.
3. Use the Object Browser to navigate to:  
`Administrative Objects\Domains\system_name, Domain`
4. Select `Domain Definition` in the Aspect List Area.
5. Record the number of objects and aspects listed in the System Size Information frame in the Preview Area.
6. Use the Structure Selector to open the **Control Structure**.
7. Use the Object Browser to navigate to:  
`control_network_name, Control Network`  
of one of the control networks contained in the system.
8. Right-click the Control Structure aspect and select **Details** from the context menu.

9. Select the **Statistics** tab.
10. Record the number of objects listed.



[Step 11](#) through [Step 15](#) are not applicable to systems with only 800xA for Harmony.

11. Right-click the **Control Structure** aspect within a controller project of the control network selected in [Step 7](#).
12. Select **Details** from the context menu.
13. Record the number of objects listed.
14. Repeat [Step 11](#) through [Step 14](#) for all the controller projects within the control network.
15. Repeat [Step 7](#) through [Step 14](#) for every control network in the system.



The number of aspects and objects after system restoration should be in the same range as those recorded during system backup, although there will likely be more.

16. Use the Object Browser to navigate to:

HSE\_Subnet name, HSE Subnet

of one of the HSE Subnets contained in the system.

17. Right-click the Control Structure aspect and select **Details** from the context menu.
18. Select the **Statistics** tab.
19. Record the number of objects listed.
20. Repeat [Step 16](#) through [Step 19](#) for every HSE Subnet in the system.

21. Use the Object Browser to navigate to:

MB300 name, MB300 Network

of one of the MB 300 Networks contained in the system.

22. Right-click the Control Structure aspect and select **Details** from the context menu.
23. Select the **Statistics** tab.
24. Record the number of objects listed.

25. Repeat [Step 21](#) through [Step 24](#) for every MB300 network in the system.



The number of aspects and objects after system restoration should be in the same range as those recorded during system backup, although there will likely be more.

## Returning to the Pre-Upgrade Procedures

These links are designed for online viewing. If using a hard copy, go back to the point in the procedure that referred to this appendix.

[Click here to return to 800xA 5.0 SP2 to 800xA 5.1 Online Upgrade.](#)

[Click here to return to 800xA 5.0 SP2 to 800xA 5.1 Offline Upgrade.](#)

[Click here to return to 800xA 4.1 to 800xA 5.1 Offline Upgrade.](#)

## Returning to the Post Upgrade Procedures

These links are designed for online viewing. If using a hard copy, go back to the point in the procedure that referred to this appendix.

[Click here to return to 800xA 5.0 SP2 to 800xA 5.1 Online Upgrade.](#)

[Click here to return to 800xA 5.0 SP2 to 800xA 5.1 Offline Upgrade.](#)

[Click here to return to 800xA 4.1 to 800xA 5.1 Offline Upgrade.](#)



---

# Appendix F Information Management Upgrade

This Appendix describes the Information Management upgrade procedures.

## Information Management Pre-Upgrade Procedures

Perform the following procedures to prepare for the Information Management upgrade.



This appendix is not applicable to the 800xA 3.1 SP3 to 800xA 5.0 SP2 upgrade path. Refer to [Section 6, Upgrading 800xA 3.1 SP3 to 800xA 5.0 SP2](#) for more information.

## End Microsoft Excel Process via Windows Task Manager

Use Windows Task Manager to manually end the EXCEL.EXE process.

## Recording Archive Group Associations



Recording archive group associations only applies to 800xA 4.1 to 800xA 5.1 upgrades.

Archive Groups are associated with Profile, Message, and Report logs.

1. Record these associations so that after the upgrade, these logs can be reassociated with their respective Archive Groups. Refer to the **Reading and Managing Archive Data** section in *Industrial IT, 800xA - Information Management, Data Access and Reports (3BUF001094\*)* to access the Archive Groups and record the information.
2. Back up the path to Archive Group Numeric Log Entry and IM Objects Entry.

## ABB Process Administration Service (PAS)

Perform the following procedure to run the PAS utility.

1. Run the Process Administration Service (PAS) utility on the Information Management Application Server node. From the Windows Taskbar select:

**Start > Administrative Tools > PAS > Process Administration**

This opens the Process Administration Service dialog box.

2. Click **Stop All** to stop all processes under PAS supervision.
3. Click **Close** when the dialog box indicates that all processes are stopped.
4. Use standard Windows procedures, via the Services selection from Administrative Tools in Windows Control Panel, to place the ABB Process Administration Service into manual and insure that it is stopped.

## Cleaning the History Database

It is recommended that the history database be cleaned before making the backup.

1. Open a Windows Command Prompt and enter **hsDBMaint -checkDB**.
2. If any problems are found, enter **hsDBMaint -clean** to fix them.

## Information Management History Backup and Restore Utility



The IM Server must be connected to an active aspect system at this time. The following steps require access to the aspect directory.

Use the Information Management History Backup/Restore utility to create all the backup files that are required to completely back up the Information Management History database. This includes all configuration data, log data from both file-based and ORACLE-based logs, and the Aspect System definition file.

During a backup operation, all data in the Oracle database owned by the Oracle History user is exported to the specified destination and compressed into a zipped archive, along with any files that have been created to store file-based property log entries (called flat files).

The History database can be backed up to any drive, including any mapped network drives. The disk type should be NTFS for the backups.

To avoid any ambiguity, the backup operation produces a zipped archive of compressed History database files for each drive that contains at least some portion of the database, where each archive contains only the database files that are stored on the corresponding drive. The backup utility uses the naming convention *name-drive.zip* for the zipped archives that it produces. For example, if the History database is located entirely on the C:\ drive and you wish to back up the database to a zipped archive called hist, the backup operation will compress the database files into a zipped archive named `histDB-C.zip`.

If the data files exceed two gigabytes, or if there are more than 25,000 files, then multiple zip files will be created using the following naming convention:

- First File *name-drive.zip*
- Next File *name-drive0001.zip*
- Next File *name-drive0002.zip*

When backing up the History database, make sure the disk is ready and available on the node on which the procedure is to occur. The log file should be checked after the backup operation to make sure that the backup operation completed successfully.

Make sure the system drive is not getting full. Temp space is required to make the backup. If the log file indicates that the Oracle export failed, additional options can be passed to hsBAR to use another disk for the Oracle export.

To make a backup:

1. Select:

**Start > All Programs > ABB Industrial IT 800xA > Information  
Mgmt > History > Backup and Restore**

2. Verify the **Create Backup Files of Current Configuration** option is enabled in the IM Historian Backup/Restore Utility window.
3. Click **Next**. A window for setting up the backup operation is displayed.
4. Specify the location where the backup files are to be created in the New Directory Path for the Backup field. Create a new directory such as `E:\IMbackupSV5SP2`.



The backup of the History data must be in a directory of its own, not the `D:\HSDATA\History` directory. If the data is put into the `D:\HSDATA\History` directory, it will get lost.

- a. Specify additional hsBAR options if needed. When the system drive is low on space, it is typical to specify:  

```
-a D:\Export
```

The `-a` option enables an alternate location for temporary and Oracle DB export files during the backup process. The folder should be created ahead of time and the files system must be NTFS. Use this option to specify a different folder for the oracle export file.
5. Verify the **Only Generate Aspect Definition File** option is disabled.
6. Click **Next**. The HsBAR Output Window is displayed.
7. Select the **Automatically Close Upon Completion** option.
8. After the HsBAR Output Window closes, monitor the progress in the Progress Status area of the IM Historian Backup/Restore Utility window and click **Finish** when the backup is complete.



If a message appears stating that there are inconsistencies between the log configurations in the Aspect System and the log configurations in Oracle, it may be because the database was not cleaned before running the backup. Use the `hsDBMaint -clean` function to clean the database and then rerun the backup. If this does not fix the problem, contact ABB Technical Support for further assistance.

## Saving Other Information Management Related Files

There are several other files related to Information Management to be saved as part of a total system backup.

- **History Archive Data:** For each archive device, go to the location specified by the Device Filename and copy the folders under that directory to a safe location. Do this even if automatic backup is configured. If the automatic backups are on local disks, locate these folders and back them up to a safe location.
- **History Archive State Information:** The folder that holds the last archive time and other archive state information must be copied to a safe location. The folder name is `Archive` and it is located in:

```
...\Documents and Settings\All Users\
Application Data\ABB\IM\Archive
```

Copy the entire folder.

- **Reports:** Save any report template files created in Microsoft Excel, DataDirect, and/or Crystal Reports®. Also save report output files created as a result of running these reports via the Scheduling Services.
- **Desktop Trends:** Back up trend display, ticker display, and tag explorer files.

- Ticker files are located in:

```
... \Documents and Settings\~username\My Documents\ABB
Industrial IT\Inform IT\Desktop Trends\Ticker Files
```

- Trend Files are located in:

```
... \Documents and Settings\~username\My Documents\ABB
Industrial IT\Inform IT\Desktop Trends\HTML
```

- Tag Explorer files are located in:

```
... \Documents and Settings\~username\Application
Data\ABB Industrial IT\Inform IT\Desktop Trends
```

- **Display Services:** Back up the directories for custom users, as well as display and user element definitions. The files are located in:

```
... \Program Files\ABB Industrial IT\Inform IT\Display
Services\Server\Data
```

Save the user-built svg and uet files.

- **DataDirect:** Back up custom text files for object, object type, and attribute menus used on the DataDirect windows. The files are located in:

```
... \Program Files\ABB Industrial IT\Inform IT\Data
Direct\etc.
```

Save the user-built text files.

## Returning to the Pre-Upgrade Procedures

These links are designed for online viewing. If using a hard copy, go back to the point in the procedure that referred to this appendix.

[Click here to return to 800xA 5.0 SP2 to 800xA 5.1 Online Upgrade.](#)

[Click here to return to 800xA 5.0 SP2 to 800xA 5.1 Offline Upgrade.](#)

[Click here to return to 800xA 4.1 to 800xA 5.1 Offline Upgrade.](#)

## Information Management Post Upgrade Procedures

Perform the following post upgrade procedures for Information Management. Files only have to be restored when a new node is being loaded from backups. The Oracle upgrade and database conversion procedure will upgrade existing or restored files.



When creating the Oracle instance, select **I am upgrading from SV3.x or SV4.x or newer system** in the Configuration File Options dialog box to prevent the wizard from creating a history database. This will prevent History from starting until after the History Database is restored.



The procedures presented here are different than those in *System 800xA Post Installation (3BUA000156\*)*. Unless otherwise noted, perform the procedures presented here.



When creating the database, it is possible to select small, medium, or large for the database size. If it is not known what the size of the database will be, select large.



PAS is not initialized at this point in the process, and it should not be.

### Reconfiguring the IM Log Configuration



When the procedure is followed, the IM service group is preserved and all Log Configurations should have a valid setting. If there is not a valid setting, a previous step was not followed and this procedure will correct the problem.

After restoring a system containing IM logs, the Service Group for the IM log template configuration might be missing. The IM log templates must be checked, and if the Service Group is missing, a new Service Group must be configured.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Library Structure**.
3. Use the Object Browser to navigate to:

History Log Templates, History Log Template Library >  
Default Log Templates, History Log Template Library

4. Select a log template.
5. Select Log Template in the Aspect List Area.
6. Select the **Log Definition** tab in the Preview Area.
7. If the Service Group in the Service Group drop-down list box is missing, it must be reconfigured. The Service Group drop-down list box contains all History servers defined in the system. Use this list to specify the server where this log will reside.
8. Repeat this procedure for all of the log templates.

## Information Management History Backup/Restore Utility

Use the Information Management History Backup/Restore utility, via:

**Start > ABB Industrial IT 800xA > Information Mgmt > History > Backup and Restore**

to restore the Information Management History database and synchronize the Aspect Directory contents with the current Information Management History database configuration.

During the restore, the existing database is dropped, and a new one is created. Mount points and additional table spaces are created based on the database being restored. Oracle data is imported, and the file-based property logs are copied back into the system. Unless a different mount point is specified, the History database will be restored to its original location (its location prior to being backed up).

The History database can be restored from any drive, including any mapped network drives. The restore utility will first search a specified location for zipped archives matching a specific name and fitting the form *name-drive.zip* (such as histDB-C.zip, histDB-A.zip, and histDB-D.zip), and will then restore the compressed database files contained within the archives to their respective original locations (their locations prior to being backed up).

## Considerations

When restoring the History database, make sure the disk is ready and available on the node on which the procedure is to occur. Also, ensure that no applications are accessing the Oracle database. The log file should be checked after the restore operation to make sure that the restore operation completed successfully.

## Running the Information Management History Backup/Restore Utility

To restore a backed up History database:



This procedure can also be performed by using the pasgui command in the Run dialog box (**Start > Run**).

1. Verify that the ABB Process Administration Service (PAS) is set to manual in the Services Control Panel (run Services.msc from the Run dialog box). Stop the service if it is running.



If PAS is not in the manual mode, it is possible the log configuration has been modified and will not match the IM backup. If this is the case, the 800xA System Restore may have to be repeated to correct the problem.

2. If it is suspected that the Inform IT History Service Provider has not stopped, it can be stopped now by selecting the Inform IT History Service Provider for this node in the Service Structure, selecting the Configuration tab on the Service Provider Definition aspect, disabling Enabled, and clicking Apply.
3. Ensure that no third party applications access the Oracle database during the restore operation.
4. Before restoring the database, it is necessary to create an Oracle database to restore the backup.
  - a. Start the Oracle Instance wizard using:  
**Start > All Programs > ABB Industrial IT 800xA > Information Mgmt > History > Oracle Instance Wizard**
  - b. Create a database to restore an 800xA 3.x, 800xA 4.1 or 800xA 5.x system. Be sure to select the correct size for the database. If the previous system had more than four million entry message logs, select large, for

one to four million select medium, and for less than one million select small.



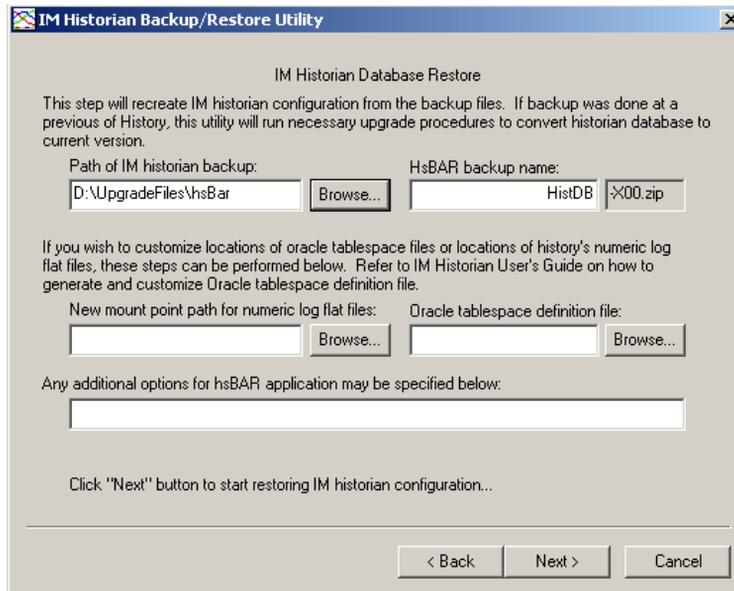
If a database previously existed, drop it and create the correctly sized database.

5. Restore the database. Select:

**Start > All Programs > ABB Industrial IT 800xA > Information Mgmt > History > Backup and Restore.**

6. Verify **Restore configuration from a backup file(s)** is enabled in the Welcome to IM Historian Backup and Restore Utility dialog box.

7. Click **Next**. IM Historian Database Restore dialog box appears (Figure 71).



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Figure 71. IM Historian Database Restore Dialog Box

- Specify the location of the backup files in the **Path of IM historian backup:** field (Figure 71).



If new mount points need to be specified for file-based logs and/or a new Oracle tablespace definition file, click **Browse**. This will be required if the partition letters where the IM data is stored have changed.

- Click **Next**. The HsBAR Output Window appears.
- Select the **Automatically close upon completion** check box.
- Monitor the progress in the Progress Status area of the IM Historian Backup/Restore Utility window. Ignore the error messages indicating errors deleting aspect.

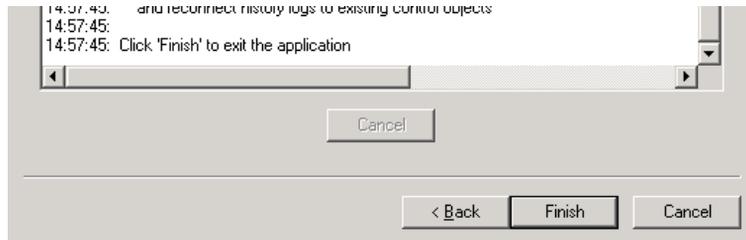
Shortly after the message indicating the import is complete, the database conversion tool will run automatically. Feedback will be provided in the HsBAR window.

Shortly after the message indicating the database conversion is complete, the history synchronization tool will run automatically. Again, feedback will be provided in the HsBAR window.



The restore of the system requires an instance that matches the size of the database being restored. When creating the instance, be sure to select **Small**, **Medium**, or **Large** based on the size of the message log in the backup being restored. Select **Large** if the size is not known. If the wrong size is selected, the restore operation may fail with the Oracle Error Message 1652 - Unable to extend tmp segment in tablespace temp. Repeat the restore with the correct instance settings if the error occurs. This will not happen if the correct database for upgrade is selected. For example, if the database is using a 12 million entry OPC message log, the large option should be selected. This will insure that enough TEMP and rollback are created.

12. Click **Finish** when a message stating the execution is complete is displayed as shown in [Figure 72](#).

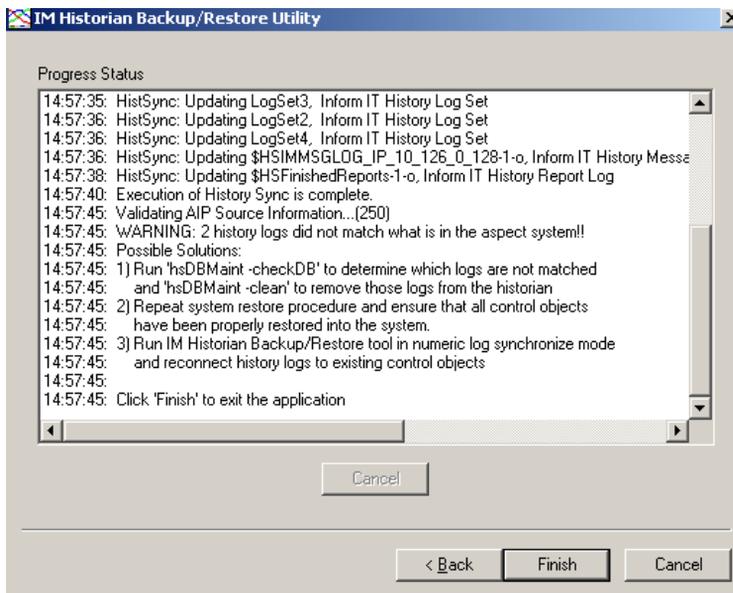


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*Figure 72. Execution is Complete Message*

If the Progress Status dialog box has warning messages with possible solutions as indicated in [Figure 73](#), read the possible solutions carefully, then click **Finish** and

proceed with the solution that best fits your problem. Refer to the Information Management Release Notes for further guidelines.



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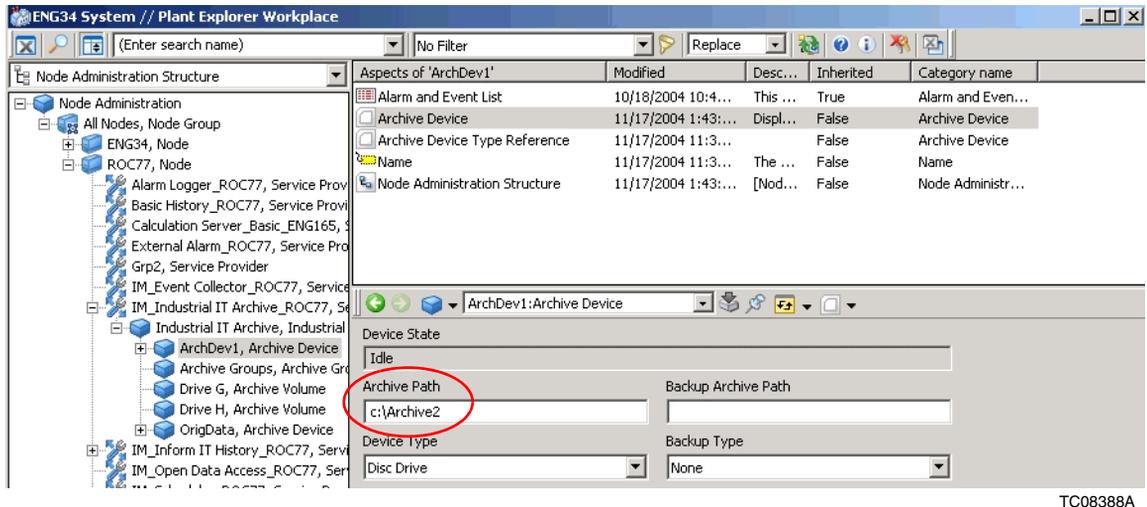
Figure 73. Progress Status Dialog Box

## Restoring Other Information Management Related Files

There are several other files related to Information Management that need to be restored as part of total system restore.

- **History Archive Data:** For each archive device, copy the appropriate folders from the safe media to the location specified by the Device Filename. If the disk configuration has changed from the previous system to the new system (i.e. letter designations for disks have changed: C, D, E, etc.), check the archive device configurations to make sure the Archive Path specification points to the

correct disk drive and directory, as shown in Figure 74. Repeat for the backup archive path if configured.



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Figure 74. Checking the Archive Path Specification

- History Archive State Information:** Stop the Industrial IT Archive service in the **Service Structure**. Copy the folder that holds the last archive time and other archive state information from the safe media to:
  - c:\programData\ABB\IM\Archive
- Reports:** Restore any report template files created in Microsoft Excel, DataDirect, and/or Crystal Reports. Also restore report output files created as a result of running these reports via the Scheduling Services.
- Desktop Trends:** Restore trend display, ticker display, and tag explorer files to the following path:

C:\Users\800xaservice\AppData\Roaming\ABB Industrial IT\Inform IT\Desktop Trends

- **Display Services:** Restore the directories for custom users, as well as display and user element definitions to the following path:

```
... \Program Files(x86)\ABB Industrial IT\Inform
IT\Display Services\Server\Data
```

- **DataDirect:** Restore custom text files for object, object type, and attribute menus used on the DataDirect windows to the following path:

```
C:\ProgramData\ABB\IM\DataDirect\etc
```

## Starting PAS

1. Open the Services Control Panel (run Services.msc from the Run dialog box), set the ABB Process Administration Service (PAS) to Automatic and start it.
2. Open the Information Management Configuration Assistant (**Start > All Programs > ABB Industrial IT 800xA > Information Mgmt > Configuration Assistant**) and perform any incomplete steps.
3. Select the Basic History Service Provider object for the Information Management node in the **Service Structure** in the Plant Explorer.
4. Select the Service Provider Definition aspect.
5. Select the **Configuration** tab.
6. Clear the **Enabled** option.
7. Click **Apply**.
8. Select the **Enabled** option.
9. Click **Apply**.

## Restoring Archive Group Associations



Restoring archive group associations only applies to 800xA 4.1 to 800xA 5.1 upgrades.

Profile, Message, and Report logs must be reassociated with their respective Archive Groups. This information was recorded before beginning the upgrade. Refer to *Industrial IT, 800xA - Information Management, Configuration (3BUF001092\*)* to access the Archive Groups and restore the Archive Group associations.

## Instance\_config.txt File Creation

The instance\_config.txt file needs to be recreated (using the following procedure) if both of the following conditions are met:

- An existing database has not been restored.
- The node is using the Windows 2008 Server Operating System.

To create the instance\_config.txt file:

1. Select:

**Start > All Programs > ABB Industrial IT 800xA > Information Mgmt > History > Oracle Instance Wizard**

2. Click **Apply**. The instance\_config.txt file will be created in the following directory:

`c:\programData\ABB\IM\History`

This folder is defined as %HS\_DATA% environment variable.

## Updating Archive Logs

Absolute names are now included as part of the archive storage. Archive links now use an absolute reference that is independent of the name of the log. Run the archive maintenance to update the \_RST log references to use the absolute log reference.



This procedure is not necessary if archives are not being used.



This procedure only needs to be performed one time no matter how many Information Management nodes are in the system.

1. Open a Plant Explorer Workplace.
2. Use the Object Browser to navigate to:  
`IM Node > Archive Service Provider`
3. Click `Archive Service Aspect` in the Aspect List Area.
4. Click **Maintenance** in the Preview Area to launch the Maintain Archive References dialog box.
5. Click **Validate Archive Logs**.

6. Run a consistency check on all log configurations.

## Information Management Maintenance

Perform this procedure on all Information Management Server nodes.

1. Open a Plant Explorer Workplace.
2. Use the Structure Selector to open the **Node Administration Structure**.
3. Use the Object Browser to navigate to:  
All Nodes, Node Group > *IM Node* > Inform IT History\_*IM Node*, Service Provider > Inform IT History Object,  
Inform IT History Object
4. Select Inform IT History Control in the Aspect List Area.
5. Expand the Maintenance tree in the Preview Area and select Synchronization. The Inform IT History Manager shown in [Figure 75](#) appears in the Preview Area.

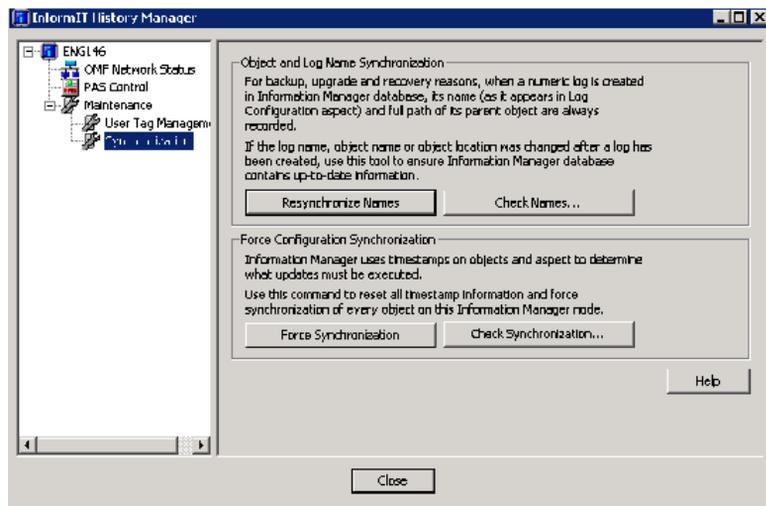


Figure 75. Inform IT History Manager

6. Click **Check Names**.

7. A blank dialog box should appear. If it does, click **OK**. If it does not click **Resynchronize Names**.
8. Click **Check Synchronization**.
9. A blank dialog box should appear. If it does, click **OK**. If it does not click **Force Synchronization**.

## Running hsDBMaint -stagger

It is recommended to run hsDBMaint -stagger for all IM configurations. The defaults are adequate for most configurations. If the average request rate is near or over 1,000 per minute, refer to *System 800xA Information Management Configuration (3BUF001092)* for hsDBMaint -stagger recommendations.

1. Open a Windows Command Prompt and enter **hsDBMaint -stagger**.
2. When the operation is complete run the Process Administration Service (PAS) utility on the Information Management Application Server node. From the Windows Taskbar select:

**Start > Administrative Tools > PAS > Process Administration**

This opens the Process Administration Service dialog box.

3. Click **Restart All** to restart all processes under PAS supervision.
4. Click **Close** when the dialog box indicates that all processes are restarted.

## Returning to the Post Upgrade Procedures

These links are designed for online viewing. If using a hard copy, go back to the point in the procedure that referred to this appendix.

[Click here to return to 800xA 5.0 SP2 to 800xA 5.1 Online Upgrade.](#)

[Click here to return to 800xA 5.0 SP2 to 800xA 5.1 Offline Upgrade.](#)

[Click here to return to 800xA 4.1 to 800xA 5.1 Offline Upgrade.](#)



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## Appendix G 800xA for Harmony Upgrade

This Appendix describes the 800xA for Harmony upgrade procedures.

Special considerations must be given when upgrading 800xA for Harmony from the following:

- 800xA 5.0 SP2 to 800xA 5.1
- 800xA 4.1 to 800xA 5.1
- 800xA 3.1 SP2 to 800xA 5.1



The term upgrade refers to moving from one 800xA release to a later 800xA release, whether it is a major or minor release.

The term update refers to adding service packs, patches, hot fixes, or rollups to an existing 800xA System.



Execute the 800xA for Harmony System **VerifyHelper.exe** file (accepting all defaults) on all Harmony Servers and Aspect Servers **BEFORE** using the System Planner tool or performing any other upgrade or update procedure.

This file is located on 800xA System Installation DVD 1 in the

System installer\Installation  
Tools\Upgrade\HarmonyVerifyHelper

This is applicable only when upgrading from 800xA 4.1 to 800xA 5.1.



Refer to [Section 3, Upgrading 800xA 5.0 SP2 to 800xA 5.1 Online](#) to upgrade an existing 800xA 5.0 SP2 to 800xA 5.1 and [Section 5, Upgrading 800xA 4.1 to 800xA 5.1 Offline](#) to upgrade 800xA 4.1 to 800xA 5.1.

## Prerequisites



Two additional network switches are required for network isolation when performing an online upgrade.

When an online upgrade of an 800xA 5.0 SP2 system is performed on a system that includes 800xA for Harmony, the 800xA 5.0 SP2 and 800xA 5.1 systems must be kept on separate network(s) until the 800xA 5.0 SP2 system is no longer required. For more information, refer to the Online Upgrade procedure provided in [Section 3, Upgrading 800xA 5.0 SP2 to 800xA 5.1 Online](#). An online upgrade requires redundant Aspect Servers, Harmony Connectivity Servers and Domain Controllers in the case of a domain.



Do not make any configuration changes on the 800xA system running the older version during the online upgrade.

During an online upgrade the second domain controller must be promoted to a primary domain controller, upgraded to Server Operating System, the domain roles transferred to the node and finally moved to the isolated 800xA 5.1 network(s). In the case of a standalone Configuration Server node, the Configuration Server node must be upgraded before the primary Connectivity Server node. In the case of a combined 800xA for Harmony Configuration Server and Connectivity Server node, upgrade the combined server to 800xA 5.1 before the redundant Connectivity Server.

## Node Order



This node order is different than what is described in [Section 1, Introduction](#) and *System 800xA Automated Installation (3BSE034679\*)* user manual.

The upgrade is a node-by-node procedure that must be performed in the following node order:

### Online Upgrade Node Order

- Redundant Domain Controller.
- Redundant Aspect Server(s).
- Configuration Server or 800xA for Harmony Configuration Server with Connectivity Server node.
- Primary Connectivity Server if not combined with Configuration Server.
- Application Server(s).

- Client(s).
- Redundant Connectivity Server(s).
- Primary Connectivity Server.
- Primary Aspect Server.
- Primary Domain Controller.

### **Offline Upgrade Node Order**

Upgrade redundant servers before primary servers.

- Domain Controller(s).
- Aspect Server(s).
- Configuration Server(s).
- Combined Configuration and Connectivity Server(s).
- Connectivity Server(s).
- Application Server(s).
- Client(s).

## **800xA for Harmony Upgrade Procedure**

Perform the procedure as follows:

1. Create a backup of the 800xA System from the Maintenance structure. Refer to *System 800xA Maintenance (3BSE046784\*)* user manual.
2. For an online upgrade in a domain environment, prepare the node to move to the isolated network(s) by performing the following steps:
  - a. Disable Firewall on Primary Domain Controller 2003 before performing the upgrade of Redundant Domain Controllers.
  - b. Stop following the manual upgrade at the step [Removing the Redundant Domain Controller](#) on page 46.
  - c. Move Redundant Domain Controller to isolated 800xA 5.1 network(s).
  - d. Upgrade 800xA software on Domain Controller once the machine is on the isolated 800xA 5.1 network(s).
3. Transfer the node setup package to each node.
4. Some 800xA System software requires preparatory steps before shutting down 800xA System processes. Perform the applicable pre-upgrade procedures from [Section 3, Upgrading 800xA 5.0 SP2 to 800xA 5.1 Online](#) for 5.0 SP2 to 5.1

- upgrade and [Section 5, Upgrading 800xA 4.1 to 800xA 5.1 Offline](#) for 4.1 to 5.1 upgrade.
5. In a domain environment remove the next node to be upgraded from the domain.
  6. For an online upgrade move the node to the isolated network(s).
  7. Reformat the hard drive.
  8. Complete the installation following the procedures outlined in the *System 800xA Automated Installation (3BSE034679\*)* user manual or complete the procedures in [Section 4, Upgrading 800xA 5.0 SP2 to 800xA 5.1 Offline](#).
  9. Reboot the node.
  10. Install the Harmony VB graphics extension on the node being upgraded.
  11. Perform an 800xA System Restore. Refer to the post upgrade procedure from [Section 4, Upgrading 800xA 5.0 SP2 to 800xA 5.1 Offline](#).
  12. Load the Harmony VB graphics system extension by performing the procedures from [Loading the VB Graphics Extensions](#) on page 182.
  13. Perform any post installation steps that are required including the 800xA 4.1 Configuration Server backup and synchronization of the aspect system. Refer to the *System 800xA Post Installation (3BUA000156\*)* instruction.
  14. Repeat [Step 4](#) through [Step 9](#) as applicable for all nodes in the system.
  15. If in a domain environment and all the nodes are in the new system except the primary Domain Controller, load the operating system of the remaining Domain Controllers with the Server Operating System and then move the node to the new network(s). Once on the new network(s), promote to a domain controller.
    - a. Load the operating system of the remaining Domain Controllers installing an additional Server Operating System Domain Controller to Server Operating System outlined in [Section 2, Upgrading Redundant Domain Controllers](#). Make sure the hard drive is reformatted during the operating system load.
    - b. Move remaining Domain Controllers to isolated 800xA 5.1 network(s).

- c. Upgrade 800xA on remaining Domain Controllers once it is on the isolated 800xA 5.1 network(s).



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## Appendix H Mapping of Deprecated IT Asset Object Types

This Appendix describes the mapping of deprecated IT Asset Object types.

### Mapping

This section describes the mapping of deprecated IT Asset object types with their replacements available in the PNSM device library. The supported PNSM device library object types are listed in [Table 16](#).

*Table 16. Mapping Deprecated IT Asset object types with replacements in PNSM Device Library*

| <b>Deprecated IT Asset Object Types</b>                                                                                                           | <b>Replacement in PNSM Device Library</b> |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| Cisco 12-port Switch<br>Cisco 24-port Switch<br>Cisco 48-port Switch                                                                              | Cisco 12_24_48_Port Switch_v1_0           |
| Batch Nodes<br>Batch Client<br>Batch Primary Server with Client<br>Batch Secondary Server with Client<br>Generic Computer Node<br>Inform IT Nodes | Generic_Computer_Node_v1_1                |

Table 16. Mapping Deprecated IT Asset object types with replacements in PNSM Device Library

| Deprecated IT Asset Object Types                                                                                                                                                                                                                             | Replacement in PNSM Device Library                                                                                                                                                                                                                                                                                                                                                |  |                          |  |                               |  |                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------|--|-------------------------------|--|------------------------------|
| PPA Nodes<br>800xA AS (Tertiary)<br>800xA AS<br>800xA Client<br>800xA Combined AS-CS<br>800xA CS<br>PPB Nodes<br>PPB Client<br>PPB Config Server<br>PPB Harmony RTDS with Client<br>PPB Historian<br>PPB Melody RTDS with Client<br>PPB OPC RTDS with Client |                                                                                                                                                                                                                                                                                                                                                                                   |  |                          |  |                               |  |                              |
| Hirschmann RS2 Switch                                                                                                                                                                                                                                        | Hirschmann_RS2_v1_0                                                                                                                                                                                                                                                                                                                                                               |  |                          |  |                               |  |                              |
| Hirschmann Mach 3000 Switch <sup>(1)</sup>                                                                                                                                                                                                                   | 1.Hirschmann_RS20_RS30_v1_2<br>2.Hirschmann_RS40_v1_2<br>3.Hirschmann_MS20_MS30_v1_2<br>4.Hirschmann_MS4128_v1_2<br>5.Hirschmann_MACH_4000_v1_2<br>6.Hirschmann_MACH_1000_v1_1<br>7.Hirschmann_RSR20_RSR30_v1_1                                                                                                                                                                   |  |                          |  |                               |  |                              |
| Generic Network Interface                                                                                                                                                                                                                                    | Generic_Network_Interface_v1_0                                                                                                                                                                                                                                                                                                                                                    |  |                          |  |                               |  |                              |
| Generic Printer Node                                                                                                                                                                                                                                         | Printer_v1_0                                                                                                                                                                                                                                                                                                                                                                      |  |                          |  |                               |  |                              |
| Network Monitoring <ul style="list-style-type: none"> <li>• Network Utilization</li> <li>• Node to Node Utilization</li> <li>• Single Node Utilization</li> </ul>                                                                                            | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;">Network_Utilization_v1_0</td> </tr> <tr> <td style="width: 50%;"></td> <td style="width: 50%;">Node_to_Node_Utilization_v1_0</td> </tr> <tr> <td style="width: 50%;"></td> <td style="width: 50%;">Single_Node_Utilization_v1_0</td> </tr> </table> |  | Network_Utilization_v1_0 |  | Node_to_Node_Utilization_v1_0 |  | Single_Node_Utilization_v1_0 |
|                                                                                                                                                                                                                                                              | Network_Utilization_v1_0                                                                                                                                                                                                                                                                                                                                                          |  |                          |  |                               |  |                              |
|                                                                                                                                                                                                                                                              | Node_to_Node_Utilization_v1_0                                                                                                                                                                                                                                                                                                                                                     |  |                          |  |                               |  |                              |
|                                                                                                                                                                                                                                                              | Single_Node_Utilization_v1_0                                                                                                                                                                                                                                                                                                                                                      |  |                          |  |                               |  |                              |

Table 16. Mapping Deprecated IT Asset object types with replacements in PNSM Device Library

| Deprecated IT Asset Object Types                                                                                                                                                                                                                                                                                                                                                                                                                                  | Replacement in PNSM Device Library |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| IM Performance Assets<br>hsMsgServer Messages In per Minute<br>hsMsgServer Messages in Queue<br>hsMsgServer Messages Out per Minute<br>PDL Messages In per Minute<br>PDL Messages in Queue<br>PDL Messages Out per Minute<br>Disk Free<br>Failures<br>DA Collection<br>HDA Collection<br>Storages<br>Inform IT Calculations<br>Inform IT Complete<br>Inform IT Display<br>Inform IT History<br>Inform IT ODA<br>Inform IT Scheduler<br>Inform IT SoftPoint Server | Not supported                      |
| Symmetricom XLi Clock                                                                                                                                                                                                                                                                                                                                                                                                                                             | Not supported                      |

- (1) Hirschmann Mach 3000 switch is obsolete. The replacement object type in PNSM is not available.



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## Revision History

This section provides information on the revision history of this User Manual.



The revision index of this User Manual is not related to the 800xA 5.1 System Revision.

The following table lists the revision history of this User Manual.

| <b>Revision Index</b> | <b>Description</b>                                          | <b>Date</b>   |
|-----------------------|-------------------------------------------------------------|---------------|
| -                     | First version published for 800xA 5.1 64-bit FP1            | December 2011 |
| A                     | Updated for 800xA 5.1 Rev B Release                         | June 2012     |
| B                     | Updated for 800xA 5.1 Feature Pack 3 release                | August 2012   |
| C                     | Updated for 800xA 5.1 Rev C Release                         | November 2012 |
| D                     | Updated for 800xA 5.1 Feature Pack 4 release                | February 2013 |
| E                     | Updated for 800xA 5.1 Feature Pack 4 - Intermediate release | April 2013    |
| F                     | Updated for 800xA 5.1 Rev D and FP4 releases                | December 2013 |
| G                     | Updated for 800xA 5.1 Rev E and FP4 Rev E release.          | July 2015     |

## Updates in Revision Index A

The following table shows the updates made in this User Manual for 800xA 5.1 Rev B.

| Updated Section/Subsection                              | Description of Update                                                                                                                                                                                           |
|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| About the User Manual                                   | Changes made to subsection Version Described in this Document.<br>Minor changes are done in the different sections.                                                                                             |
| Section 3. Upgrading 800xA 5.0 SP2 to 800xA 5.1 Online  | Changes made in the subsection Redundant Aspect Server.<br>Renamed System 800xA Installation to System 800xA Manual Installation.<br>800xA for Harmony/Melody Connectivity Server Node Update subsection added. |
| Section 4. Upgrading 800xA 5.0 SP2 to 800xA 5.1 Offline | Changes made in the subsection System Upgrade.<br>Renamed System 800xA Installation to System 800xA Manual Installation.<br>800xA for Harmony/Melody Connectivity Server Node Update subsection is added.       |
| Section 5. Upgrading 800xA 4.1 to 800xA 5.1 Offline     | Changes made in the subsection System Upgrade.<br>Renamed System 800xA Installation to System 800xA Manual Installation.                                                                                        |
| Section 6. Upgrading 800xA 3.1 SP3 to 800xA 5.0 SP2     | Renamed System 800xA Installation to System 800xA Manual Installation.                                                                                                                                          |
| Appendix B. Control Builder M Compatibility Issues      | Updated the issue in the 800xA 5.0 SP2 to 800xA 5.1 Compatibility Issues subsection.                                                                                                                            |
| Appendix G. 800xA for Harmony Upgrade                   | This is newly added Appendix.                                                                                                                                                                                   |

## Updates in Revision Index B

The following table shows the updates made in this User Manual for 800xA 5.1 Feature Pack 3 release.

| Updated Section/Subsection                              | Description of Update                                                                                               |
|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| About the User Manual                                   | Changes made to subsection Version Described in this Document.<br>Minor changes are done in the different sections. |
| Section 3. Upgrading 800xA 5.0 SP2 to 800xA 5.1 Online  | Changes made in the Redundant Aspect Server subsection.                                                             |
| Section 4. Upgrading 800xA 5.0 SP2 to 800xA 5.1 Offline | Changes made in the System Upgrade subsection.                                                                      |
| Section 5. Upgrading 800xA 4.1 to 800xA 5.1 Offline     | Changes made in the System Upgrade subsection.                                                                      |

## Updates in Revision Index C

The following table shows the updates made in this User Manual for 800xA 5.1 Rev C.

| Updated Section/Subsection                             | Description of Update                                                                                                                                     |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Front Cover                                            | Minor changes are updated on the Front cover.                                                                                                             |
| About the User Manual                                  | Changes made to subsection Version Described in this Document.<br>Minor changes are done in the different sections.                                       |
| Section 3. Upgrading 800xA 5.0 SP2 to 800xA 5.1 Online | Changes made in the subsection Redundant Aspect Server.<br>Changes made in the Device Management FOUNDATION Fieldbus subsection on page 111 and page 112. |

| Updated Section/Subsection                              | Description of Update                                                                                                                            |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Section 4. Upgrading 800xA 5.0 SP2 to 800xA 5.1 Offline | Changes made in the subsection System Upgrade.<br>Changes made in the Device Management FOUNDATION Fieldbus subsection on page 182 and page 183. |
| Section 5. Upgrading 800xA 4.1 to 800xA 5.1 Offline     | Changes made in the subsection System Upgrade.<br>Changes made in the Device Management FOUNDATION Fieldbus subsection on page 254 and page 255. |
| Section 6. Upgrading 800xA 3.1 SP3 to 800xA 5.0 SP2     | Changes made in the Device Management FOUNDATION Fieldbus subsection on page 349 and page 350.                                                   |

## Updates in Revision Index D

The following table shows the updates made in this User Manual for 800xA 5.1 Feature Pack 4 release.

| Updated Section/Subsection                              | Description of Update                                                                                               |
|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| About the User Manual                                   | Changes made to subsection Version Described in this Document.<br>Minor changes are done in the different sections. |
| Section 3. Upgrading 800xA 5.0 SP2 to 800xA 5.1 Online  | Changes made in the Redundant Aspect Server subsection.<br>Updated Upgrade Control Builder M Projects subsection.   |
| Section 4. Upgrading 800xA 5.0 SP2 to 800xA 5.1 Offline | Changes made in the System Upgrade subsection.<br>Updated Upgrade Control Builder M Projects subsection.            |
| Section 5. Upgrading 800xA 4.1 to 800xA 5.1 Offline     | Changes made in the System Upgrade subsection.                                                                      |

| Updated Section/Subsection                        | Description of Update                       |
|---------------------------------------------------|---------------------------------------------|
| Section 1 Introduction                            | Updated Supported Upgrade Paths subsection. |
| Appendix B Control Builder M Compatibility Issues | Updated the section.                        |

## Updates in Revision Index E

The following table shows the updates made in this User Manual for 800xA 5.1 Feature Pack 4 intermediate release.

| Updated Section/Subsection                              | Description of Update                                                                                                                                        |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Section 2. Upgrading Redundant Domain Controllers       | Changes made in the following subsections. <ul style="list-style-type: none"> <li>Preparation</li> <li>Preparing a Domain for Windows Server 2008</li> </ul> |
| Appendix G. 800xA for Harmony Upgrade                   | Changes made in the 800xA for Harmony Upgrade Procedure subsection.                                                                                          |
| Section 3. Upgrading 800xA 5.0 SP2 to 800xA 5.1 Online  | Changes are updated both in Pre-Upgrade and Post Upgrade sections of 800xA for Advant Master and 800xA for Safeguard, Device Management PROFIBUS & HART.     |
| Section 4. Upgrading 800xA 5.0 SP2 to 800xA 5.1 Offline | Changes are updated both in Pre-Upgrade and Post Upgrade sections of 800xA for Advant Master and 800xA for Safeguard, Device Management PROFIBUS & HART.     |
| Section 5. Upgrading 800xA 4.1 to 800xA 5.1 Offline     | Changes are updated both in Pre-Upgrade and Post Upgrade sections of 800xA for Advant Master and 800xA for Safeguard.                                        |
| Section 6. Upgrading 800xA 3.1 SP3 to 800xA 5.0 SP2     | Changes are updated both in Pre-Upgrade and Post Upgrade sections of 800xA for Advant Master and 800xA for Safeguard.                                        |

## Updates in Revision Index F

The following table shows the updates made in this User Manual for 800xA 5.1 Rev D and Feature Pack 4 releases.

| Updated Section/Subsection                              | Description of Update                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Section 3. Upgrading 800xA 5.0 SP2 to 800xA 5.1 Online  | Changes made in the following subsections. <ul style="list-style-type: none"> <li>• Engineering Studio Function Designer System Extensions</li> <li>• Online Upgrade</li> <li>• Device Management PROFIBUS &amp; HART</li> <li>• IEC 61850 Connect</li> <li>• Advant Master</li> <li>• Melody</li> </ul>                      |
| Section 4. Upgrading 800xA 5.0 SP2 to 800xA 5.1 Offline | Changes made in the following subsections. <ul style="list-style-type: none"> <li>• Engineering Studio</li> <li>• System Upgrade</li> <li>• Device Management PROFIBUS &amp; HART</li> <li>• Exporting Locally Stored Parameter Value Sets</li> <li>• IEC 61850 Connect</li> <li>• Advant Master</li> <li>• Melody</li> </ul> |
| Section 1. Introduction                                 | Changes updated in the Supported Operating Systems subsection.                                                                                                                                                                                                                                                                |
| Section 6. Upgrading 800xA 3.1 SP3 to 800xA 5.0 SP2     | Changes are updated in the Device Management FOUNDATION Fieldbus subsection.                                                                                                                                                                                                                                                  |
| Appendix F Information Management Upgrade               | Changes updated in Starting PAS section.                                                                                                                                                                                                                                                                                      |

## Updates in Revision Index G

The following table shows the updates made in this User Manual for 800xA 5.1 Rev E and Feature Pack 4 releases.

| Updated Section/Subsection                              | Description of Update                                                                                                                                                                                                                                                               |
|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Section 3. Upgrading 800xA 5.0 SP2 to 800xA 5.1 Online  | Changes made in the following subsections. <ul style="list-style-type: none"> <li>• Engineering Studio Function Designer System Extensions</li> <li>• Device Management PROFIBUS &amp; HART</li> <li>• 800xA for Advant Master and Safeguard</li> </ul>                             |
| Section 4. Upgrading 800xA 5.0 SP2 to 800xA 5.1 Offline | Changes made in the following subsections. <ul style="list-style-type: none"> <li>• Engineering Studio</li> <li>• Device Management PROFIBUS &amp; HART</li> <li>• 800xA for Advant Master and Safeguard</li> </ul>                                                                 |
| Section 5. Upgrading 800xA 4.1 to 800xA 5.0 SP2         | Changes made in the 800xA for Advant Master and Safeguard subsection.                                                                                                                                                                                                               |
| Section 6. Upgrading 800xA 3.1 SP3 to 800xA 5.0 SP2     | Changes made in the 800xA for Advant Master and Safeguard subsection.                                                                                                                                                                                                               |
| Appendix F Information Management Upgrade               | Changes are done in the following sections: <ul style="list-style-type: none"> <li>• ABB Process Administration Service (PAS)</li> <li>• Running the Information Management History Backup/Restore Utility</li> <li>• Starting PAS</li> <li>• Running hsDBMaint -stagger</li> </ul> |





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