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SUMMARY

This document describes the process for an independent verification and certification of ABB and 3rd party hardware that 1) is used as a base for System 800xA (infrastructure equipment), 2) is requested to be approved for particular cases (infrastructure equipment), 3) interoperates with System 800xA, specifically fieldbus devices and other intelligent hardware. Third party infrastructure equipment used by 800xA is mainly PC machines, communication equipment such as switches and routers, and network interface cards (NICs), but can be also printers, modems and graphics cards, etc. Fieldbus devices include those that communicate via one of the standard fieldbus protocols such as Profibus, Foundation Fieldbus and HART. Other intelligent devices include PLC’s, DCS’s, robot systems and controller based products.

The list of approved third party infrastructure equipment will be published through ABB Library and Solutions Bank. The list will have two parts, one listing hardware that will be regression tested towards coming versions of System 800xA, the generally supported hardware, and one part listing the special cases, approved for one particular system version only.

All other certified hardware will be issued Industrial IT enabled certificates that will be published through ABB library, Solutions Bank and the Industrial IT Portal. Certified hardware will be regression tested towards each version of System 800xA, with the currently certified version(s) identified on the certificate.
1. INTRODUCTION

1.1 Purpose and scope

This document describes the process for an independent verification and certification of ABB and 3rd party hardware that 1) is used as a base for System 800xA (infrastructure equipment), 2) is requested to be approved for particular cases (infrastructure equipment), 3) interoperates with System 800xA, specifically fieldbus devices and other intelligent hardware. Third party infrastructure equipment used by 800xA is mainly PC machines, communication equipment such as switches and routers, and network interface cards (NICs), but can be also printers, modems and graphics cards, etc. Fieldbus devices include those that communicate via one of the standard fieldbus protocols such as Profibus, Foundation Fieldbus and HART. Other intelligent devices include PLC’s, DCS’s, robot systems and controller based products.

Third party hardware shall be verified with System 800xA, including the OCS connectivity options and their possible communication boards as defined by the system architecture.

An independent testing and approval procedure is to ensure processing of new versions and new equipment asynchronous to system releases. PC vendors will release their products with a cycle different from the one applied by System 800xA. PCs will go end of life fairly quick after a successor variant is released. Hence, we cannot wait to verify the PC until we have the next release, not even until we have the next service pack.

Certification of intelligent and controller based hardware must also happen asynchronously to the system releases. Testing will be completed in an STT environment that is identical to the System 800xA STT setup.

The list of approved third party infrastructure equipment will be published through ABB Library and Solutions Bank. The list will have two parts, one listing hardware that will be regression tested towards coming versions of System 800xA, the generally supported hardware, and one part listing the special cases, approved for one particular system version only.

All other certified hardware will be issued Industrial IT enabled certificates that will be published through ABB library, Solutions Bank and the Industrial IT Portal. Certified hardware will be regression tested towards each version of System 800xA, with the currently certified version(s) identified on the certificate.

1.2 Target group

This document is intended for people carrying out this particular approval, but also for others mainly within the ATPA organizations that need to understand the process.

1.3 References

<table>
<thead>
<tr>
<th>Ref. No</th>
<th>Document Id no</th>
<th>Title</th>
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<tbody>
<tr>
<td>[1]</td>
<td>3BSE039173</td>
<td>Third Party Hardware Test Procedure</td>
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<td>[2]</td>
<td>3BSE037356</td>
<td>Industrial IT Certification Overview Document</td>
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<tr>
<td>[3]</td>
<td>3BSE022283</td>
<td>Industrial IT Architecture Overview</td>
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1.4 Terminology

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<tr>
<th>Term</th>
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<tr>
<td>CT</td>
<td>Commodity Team</td>
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<tr>
<td>IIT</td>
<td>Industrial IT</td>
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<tr>
<td>PLM</td>
<td>Product Line Management</td>
</tr>
<tr>
<td>SFT</td>
<td>System Focus Team</td>
</tr>
<tr>
<td>STT</td>
<td>System Type Test</td>
</tr>
<tr>
<td>THM</td>
<td>Third party Hardware Manager</td>
</tr>
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</table>

2. ORGANIZATION

The Certification process will be designed and implemented by a team of people including Industrial IT Marketing, R&D/SFT and Certification Managers. The basic structure of the organization is as follows:

The roles and responsibilities of this team are as follows:
2.1 Industrial IT Certification Managers

The Industrial IT Certification Managers report to ATPA/SE Sales Support Manager for line management. They will receive input and guidance from IIT Marketing ATPA/PLM/SFT and ATPA / STT. The exact responsibilities for these groups will be detailed below. The responsibilities for the IIT Certification Managers are as follows:

- Drive the Infrastructure Equipment testing program
  - Create test plans and test all network equipment
  - Create test plans for PCs
  - Test PC requests
  - Perform 3rd party hardware manager function (THM, a PLM function)
- Interface with India on PC testing where necessary
- Certification program process functions
  - Create necessary requirements documentation (AJB – where should this be posted???)
  - Issue IIT Certificates
  - Update IIT Portal with Certification test results

2.2 Industrial IT Marketing Team

The Industrial IT Marketing team will provide input to the Certification Managers on the Certification Program as follows:

- Special requests (infrastructure equipment)
- Pipeline of hardware products for testing / certification
- Interface to vendors (Relationship Managers) for hardware (not including infrastructure equipment)

The specific responsibilities of the IIT Marketing team with respect to Certification are as follows:

- Hardware / software partner selection
- Value proposition development (for each certified product)
- Marketing communications for program and certified products
- Websites (inside.abb and abb.com)

Monthly status updates with the Certification Managers will be conducted to review current status of the certification pipeline, address issues and roadblocks, and to review the upcoming product testing activities.
2.3 ATPA / System Type Test

The STT Manager will provide direction to the Certification Managers on topics concerning the Certification test environment. Specific responsibilities include:

- Framework for testing
- Approval of test configuration (Certification STT)

2.4 ATPA / Product Line Management / System Focus Team

PLM and the SFT will provide input to the Certification Managers mainly concerning the Infrastructure equipment that will be tested for inclusion on the 800xA Supported List. In this capacity, one of the Certification Managers will perform the 3rd party hardware manager (THM) function for PLM.

The specific responsibility of the PLM with respect to Infrastructure equipment includes:

- Vendor / product selection for supported list
- Participate in business decision process for special requests
- Provide infrastructure equipment testing prioritization
- Establish the infrastructure equipment testing and evaluation process

The specific responsibility of the SFT with respect to Infrastructure equipment includes:

- Technical approval of vendor / product selection for supported list
- Technical input into product requirements for vendor evaluation

2.5 Line Management

The Certification Managers will continue to report to ATPA/SE Sales Support Manager for their line management. The specific responsibility of the line manager is as follows:

- Issue resolution
- Activity prioritization
- Line management functions

2.6 Third Party Hardware Manager (THM)

The Third Party Hardware Manager function will be performed by the Certification Manager with dotted line reporting to PLM. The specific responsibility of the THM is as follows:

- Main contact for infrastructure equipment certification requests
- Coordination with the “expert group” for infrastructure equipment vendor and product selection. This “expert group” is an informal group of resources that can be consulted for technical expertise and product experience.
• Leads business case analysis and reports results to SFT
• Scheduling of the certification testing
• Interface with vendors and requestors
3. CERTIFICATION

3.1 Overview

The certification process applies to those products and solutions that are interoperable with 800xA and provide the “plug and produce” functionality that helps customers achieve lower total cost of ownership, improved plant output and reduced risk / improved safety. Once product or “connector” has been developed and tested by the respective product owner, the certification process is used to verify the interoperability of the product with respect to 800xA.

There are four types of products that can be “certified” as Industrial IT Enabled. Each type of product must pass a verification test in ABB’s System Type Test (STT) environment. The four types are Infrastructure Equipment, Fieldbus Devices, Intelligent Hardware and Software Products. Certification requirements for the four types will vary slightly and are described in detail in other documents (see section 3.2). Details of the certification process for the infrastructure equipment, fieldbus devices and intelligent hardware are described in sections 4 and 5 of this document. The process for software certification will be covered in a separate document.

3.2 Requirements

The requirements for Industrial IT Certification are defined by a number of documents and procedures and are based on equipment type and function. The requirement guidelines can be found in the following requirements definition documents (by product type):

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Requirement</th>
<th>Document</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic Documentation</td>
<td>Base Requirement (Note 1)</td>
<td>• 9AKK100809_H</td>
</tr>
<tr>
<td>Infrastructure Equipment</td>
<td>Verification in STT</td>
<td>• 3BSE032199 Revision</td>
</tr>
<tr>
<td>Network Equipment</td>
<td>Verification in STT</td>
<td>• PC/Server Test Doc</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 3BSE032199 Revision</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Switch test spec 1.doc</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• New document</td>
</tr>
<tr>
<td>Hardware Connectivity Packages</td>
<td>PTT and Verification in STT</td>
<td>• New document from DIC</td>
</tr>
<tr>
<td>Device Integration Packages</td>
<td>PTT and Verification in STT</td>
<td>• IRS Doc. (custom)</td>
</tr>
<tr>
<td>Software</td>
<td>Interface Requirement Specification</td>
<td>• 3BSE037356</td>
</tr>
</tbody>
</table>

Note 1: Electronic documentation alone is not enough to be Industrial IT Certified, but is still required for Certification.
4. INFRASTRUCTURE EQUIPMENT

4.1 Overview

The following evaluation and testing process will apply for PCs and network equipment including servers, routers, switches and other equipment that makes up the infrastructure of an 800xA system.

The quantity and vendors of certified infrastructure equipment are determined by the 800xA SFT. These will be kept to a minimum to ensure manageability of the test processes. Network equipment identified as part of the 800xA infrastructure (by placement on the “Supported List”) will be regression tested with each new version.

Special requests for certification of infrastructure equipment can be made for cases including export, environmental conditions, technical solutions etc. These products will not be included on the “Supported List”, but can be renewed each release upon request. See Section 4.3 for associated costs.

4.2 Certification / Approval Process

The process consists of four steps.

Business decision:
A request to evaluate a new network product is submitted to PLM. The requests can come from the Commodity Team, direct from vendors, channels, ABB internally, or Industrial IT Marketing. A team within PLM will evaluate each request to determine if a product will be suitable to be included on the Supported List, if a Special Request / Test is appropriate or if the request will be denied.

Verification:
Once a decision has been made to proceed, the product will be verified in the certification test system in Vasteras, Sweden for PCs and all network equipment. Regression testing may be performed in the STT in Bangalore, India for Supported List equipment.

Approval:
The test result is analyzed and the final approval for use with System 800xA is made by the SFT. Once approved, the requestor will be advised by the assigned Certification Manager.

Publishing:
For a Supported List product, it will then be added to the list and an Industrial IT Enabled Certificate will be issued. IIT Marketing will add the new product to all applicable websites etc.

4.2.1 Business Decision

The decision to support a new model of hardware is made by Product Line Management (PLM) based on business related. This information may be vendor specific, for example a PC model is going “end of life” (i.e. being replaced by a new model), or the information can be the business case why a special PC or communication switch is required for a certain customer.

PLM has appointed a Third party hardware manager (THM) who is the interface for requests for approval.

The Third party hardware manager has an expert group at his disposition. This group has people assigned who know the product areas functionally and business wise, as well as having contacts with the vendors as applicable. This group administrates the requests and drives the decision process.

A global coordination team for PC usage exists within ABB, the Commodity Team (CT). Requests for approval of new PC models normally come through the Commodity Team. Special requests normally come directly to the Third party hardware manager, but there are cases where the generally used hardware is also handled directly by the THM.

Work flow:

- A request is received from any of the vendors, from the commodity team, or from the ABB sales organization as a special request. In case of a special request it shall be accompanied by a defined set of information according to this document.

- The THM, together with the expert group and if applicable other PLMs, analyzes the business case behind the request, and presents a proposed decision to the System Focus Team, including whether the test object will be part of the generally supported hardware or if it is a special request.

  A preliminary technical feasibility analysis is also made to make sure the test object can be approved to work together with System 800xA. This shall be done to avoid unnecessary effort for testing and other activities, if it can be determined already at an early point that the object lacks capabilities which prevents it from successful approval.

  This request is brought up at the weekly SFT-meetings through the PLM report.

- SFT approves (or rejects) the request. If approved, the THM expert group requests verification at the test center.

  If rejected, the THM feeds back to the requestor (applicable for the special cases only).

Note that older models need to be regression tested since upgrade cannot assume previous PC models or switches are swapped out. A PC will be taken out of the supported list, i.e. it will not be tested for an actual system version, when it will no longer be able to support the technical requirements. PLM THM makes this decision, together with the experts group and applicable technical experts.
A new PC model on the general supported list is verified against older system versions in order to provide spare parts for the installed base. The level of test required shall be considered by the experts group, and by the certification test center. (Reference Section 1.3 of the System 800xA Life Cycle Policy, Document # 3BSE042159). [4]

Once a PC or other infrastructure hardware is on the Supported List, if it needs to be removed then this should be included in the Release Notes of the system version as a Removed Feature in order to alert people about to perform Software Upgrade. In order to ensure addition in Release Note, THM should write a PRC in System Tracker database.

4.2.1.1 Commodity Team

A global coordination team for PC usage exists within ABB, the Commodity Team (CT). The CT is lead by the Commodity Team Leader. The CT has a review team, which has members from the different industry BAs, including members from PLM and the experts group. The purpose of the team is to coordinate the PC usage within ABB.

Note that the Commodity Team will maintain a list of ABB wide PC models supported by various products within ABB, but which are not all supported by System 800xA.

4.2.1.2 Special Requests

There will also be requests for approval of hardware for specific cases, such as cases where:

- Export restrictions apply
- A special communication switch is need
- The customer’s IS-department has a very explicit requirement
- etc.

Certain information has to be provided together with a special request in order for the PLM THM to make the right decision. See section template below.

A special request will be approved only if there is a supporting customer business case or where there is no reasonable fallback, i.e. it is not possible to use an already approved hardware model. Cost saving will generally not be accepted as motivation for a special request.

Special cases are approved per system version of 800xA software. A new request has to be made, and a new verification, if the object shall be approved for another (newer) system version.

Special requests need to be paid by the requestor. A fixed price will be set, excluding possible shipping costs.

The hardware vendor should pay for approval of general hardware as part of the Industrial IT Certification.
4.2.1.3 Template

The following information needs to be provided with a request for approval. This is required for the special requests, in which case the requestor need to provide this information. In the cases of successor replacement models from the PC vendors, this information is filled in as applicable by the THM and/or the expert group to support the internal handling of the case.

This information shall be provided on applicable template and stored in EDMS. The decision status is appended to the file as the process is progressing.

- What is the object, model number and other identification
  Type of equipment (PC, switch, NIC, graphics card, ….)
- Are system requirements fulfilled (RAM size, processor speed, etc)
  Ref system guide.
- Any concerns from the preliminary technical feasibility analysis.
- Motivation
  - Next generation model (successor model to an already approved item)
  - Business case, ROI.
  - Fallback investigation – why can’t an existing model be used?

Internally, the following will be documented:

- PLM THM + expert team comments, date
- SFT decision to approve/reject the request, date
- Reference to test record, including possible comments
- Formal decision/approval, date

4.2.2 Verification

The verification is performed at the certification test center in Vasteras, Sweden. Regression testing may also be performed at the test center in Bangalore, India. System configurations used are similar to the ones used at the different STT centers.

Test descriptions are developed per type of equipment to be tested. The test description is designed for the general test cases for a particular type of equipment. It may occur that additional tests need to be made. This has to be identified by the PLM THM and the expert group, and will be discussed specifically between PLM and the certification test center. The test description, and if required the test configuration, will be adapted for the special case.

General test configurations as well as test descriptions shall be approved by STT, PLM and SFT. Test descriptions are generally maintained by the certification test center where the testing is performed.

Normally, general hardware, i.e. the hardware that will be regression tested at coming releases, will stay at the certification test center once tested and approved. This concerns the PC vendors, and the major vendors of communication equipment. The vendor will be asked to support transportation and other logistical services.
For special requests the testing will be performed at the certification test center in Vasteras. Transportation of the equipment to/from India creates timing and logistics problems that may be difficult to overcome in the short term.

4.2.3 Approval

The System Focus Team makes the final approval or disapproval of the test object.

Work flow:
- The PLM THM requests approval by SFT, or proposes rejection due to issues found at the test. This request is brought up at the weekly SFT-meetings through the PLM report.
- SFT approves or rejects. Decision goes back to the PLM THM.

4.2.4 Publishing & Response to Requestor

Publication of what hardware is approved for use with System 800xA is made by the THM after approved decisions. The third party support list is a Product Bulletin (Status Report), listing hardware models and which system versions they can be used with. It is distributed through the same channels as regular status reports, i.e. it is published in ABB Library, with the publishing code “external subscription”, which means it is available to customers who subscribe to Solutions Bank.

The third party support list is split in two sections with respect to the support status.

- Generally supported: This means the object will be verified (regression tested) with the coming system versions, as long as the object has a technical life time (see further below).
- Verified specifically for a system version: This part of the list contains all special requests and for which system version they are verified. No automatic regression test to coming version will be supported. New requests are required to verify an object for a new system version.

An important part of publishing the decision is to feed back the response to the requestor of a special request. This is done by the PLM THM, once the updated status reports are available.

All approved infrastructure equipment will be considered Industrial IT Enabled with respect to ABB’s Industrial IT programs. Once approved, the certified equipment will be issued an IIT Enabled Certificate and appropriate vendor and product information added to the Industrial IT websites.

4.2.5 Certificates

An official certificate shall be issued proving the approval of the object. This certificate shall contain the following:

- Definition of the tested product, including version
- Definition of the certification reference, i.e. STT configuration

The IIT Enabled certificate is issued by the Certification Manager.
4.3 Cost coverage

The purpose of selecting and verifying a fixed set of equipment for use within System 800xA is to keep the cost of regression testing at new system versions under control.

Special request testing will be charged to the requestor / vendor per individual test agreements. In addition, the vendor will supply equipment for testing that will be returned upon completion of the certification test. The invoice will be sent with the certificate to the requestor once the approval is complete.

4.4 Regression Testing

When a new system version is released it has to support also older models since upgrade cannot assume previous PC models or switches are swapped out. This regression test is done in the normal STT configurations as part of the STT for a new system version.

When preparing the verification of a new system version, STT needs to look over the configurations with respect to how PCs and communication equipment are used in the different configurations. New machines may be purchased to keep the configurations up to date. With careful planning, new and older models can be kept side by side in order to verify that the software (still) runs on all specified models.

At service packs (revisions) and rollups, the same hardware set-up is assumed as when the actual system version was released. However, since new models may have been approved, but not yet installed in STT, there is a small risk changes in a service pack may cause issues with any of the new PCs. The expert group together with STT should analyze this, and if it can be assumed problems can occur either the PC in question is installed in appropriate STT configuration, or the test center in India is asked to verify against the actual machine with the new service pack.

In order to provide spare parts for installations made on earlier system versions, and for which the PCs that were installed at that time are end of life and not available for purchase on the market, newer PCs are verified also with older system versions. This regression testing is done in India <we need to set up these procedures – not done yet !!>

If a new PC model is based on the same chip set, or otherwise is very similar to an already approved model, its approval for new and older system versions or revisions can be made by the PLM THM without specific testing. (Reference Section 1.3 of the System 800xA Life Cycle Policy, Document # 3BSE042159). [4]

4.5 Process Calendar Time Overview

The maximum calendar time allowed from request to approved equipment is 8 weeks. This time is spent as follows.

- Business decision: 1 week
- Transportation/logistics: 1-2 weeks
- Verification: 4-5 weeks
- Approval & publishing: 1 week
For PCs, assuming ABB can get early information about the release of a new model one month before the model is released to the market, approval for use with System 800xA can be issued about one month after the model becomes available on the market.
5. INTELLIGENT DEVICES

5.1 Overview

Intelligent devices include those that are able to communicate with a control system via one of the fieldbus protocols including; HART, Foundation Fieldbus or Profibus. These devices have smart capability built into the device that includes things such as:

- Diagnostic data
- Process data
- Time stamping
- Calibration settings
- Etc.

5.2 Certification Process

The certification process for intelligent devices is as follows:

Business Decision: The decision to integrate a new intelligent device is made by the System BU’s, Industrial IT Marketing and the Device Integration Center (DIC) based on business related information.

Integration: The appropriate object type (including DTM, diagnostics, asset monitor, CMMS connectivity, documentation etc.) is developed by the Device Integration Center (DIC), Consult IT (for urgent requests) or third parties (strategic) based on the Device Integration Requirements Document.

Verification: The resulting object type is tested in the context of the 800xA system (STT). Object types are tested offline as well as with the real device connected to the system.

Publishing: The result of verifying a new device integration package (DIP) is published in the 800xA Device Integration Library and an Industrial IT Enabled certificate is issued.

5.2.1 Business Decision

The business decision to create device integration packages for ABB or external fieldbus devices is based upon input from marketing and the business units. New requests will be prioritized based on business drivers such as number of requests, potential business etc. All requests will be added to the device integration center queue and processed according to the
prioritization. Project based requests will be considered, but it is typically not practical to develop device integration packages on a project schedule.

Work flow:

- A request is received via the device integration center (DIC) e-mail address (dic@de.abb.com) or through IIT Marketing or the BUs.
- The request is analyzed and compared to the existing prioritized list. The DIC team also reviews the business case for integration of the device.
- The request is inserted into the queue based on the business case and the requestor advised by the DIC of the approximate delivery time.

5.2.2 Integration

Creation of the device integration package (DIP) can be done by the Device Integration Center in Bangalore, Consult IT (Germany) or an approved ABB Solution Provider. The following information is required from the requestor prior to developing the DIP:

- Device
- DTM (if applicable)
- DD/CFF for FF devices
- GSD for Profibus devices
- Documentation
- Description for asset monitor

The resulting device integration package will include the following properties:

- Configuration tool (FBB, DTM, CBM etc.)
- Diagnostic display
- Asset monitor
- ACT reporter / viewer
- Calibration management (DMS)
- OPC connectivity
- CMMS messenger
- Faceplates
- I/O mapping into controller

The integration is done according to a standard procedure with the goal of providing a consistent device integration package for each device. This procedure is managed by the Device Integration Center and is outlined in document number 3BSExxxxxx (need input from Stefan Bollmeyer).

The final product of the device integration activity is an object type consisting of the elements listed above.
5.2.3 Verification

Once the device integration package is created, it is tested in the System 800xA test system (STT) for both ABB and 3rd party devices. The interoperability of these devices with System 800xA is verified with a series of tests that covers the devices behavior in the system from a user’s point of view. These tests include upload, download, access rights, parameterization, forcing, observation and engineering workflow. These tests are performed offline and well as online with the real device connected to the system.

Once testing is completed the new device integration package will be added to the device library and released.

Work flow:

- Upon completion of the device integration package, it is installed into the STT
- Verification is conducted.
- A test record is produced. The test center is responsible for the formalities around the records as such (templates, approval procedure, etc.).
- The Industrial IT Certificate is produced.

5.2.4 Publication

The device library and individual device integration packages are available in the ABB Library and ABB Solutions Bank. A list of the current available device types can be found at www.abb.com/controlsystems (select System 800xA, Device Management, and then Device Integration Center from the Control Systems home page).

5.3 Certificates

The Industrial IT Enabled certificates will be issued following the release of each device integration package. The certificates consist of a formal “certificate”, integration data sheet and System 800xA value proposition. This three part certificate can be found on the Industrial IT Portal on inside.abb.

ABB and 3rd party devices that have been certified may use the Industrial IT symbol on product packaging and marketing materials per the IIT Enabled Symbol Policy (3BSE027626).

5.4 Regression Testing

Each device integration package (DIP) will be regression tested with each new release of System 800xA. In the event that the vendor has modified the device, a new device must be provided for testing.
6. CONNECTIVITY PACKAGES

6.1 Overview

Equipment in the Hardware category can include intelligent non-fieldbus devices, process controllers, power equipment and other. Generally, most hardware will be integrated as an intelligent device or using a “connectivity” package.

Connectivity packages refer to the method of connecting controllers to System 800xA. This integration is typically achieved by developing a package that includes the following types of elements:

- OPC Server (including OPC DA and AE)
- Faceplates
- Graphical elements
- Template control code
- Etc.

There will normally be desktop tools associated with a connect package (such as configuration or engineering tools, control algorithms, reports etc.). These may be integrated if the business case permits and will follow the requirements and process outlined in the Software Certification Process document. They may also be loosely integrated in an initial phase by configuring web or file aspects in System 800xA.

6.2 Certification Process

The certification process for hardware connectivity packages is as follows:
Product Identified: Product candidates for connectivity packages can be identified by IIT Marketing, BAU/BU’s, project teams or sales. This will normally be a specific product / vendor and will not require market study to determine best vendor choice (because connectivity packages are chosen based on customer request or competitive requirement).

Business Case / Customer Project: The requestor must develop the business case and identify customer project prior to the development and certification of a new connectivity package. The business case must account for on-going maintenance and support costs for the entire product lifecycle, including regression testing of each new 800xA system version (i.e. major, minor, service pack, rollup) and potential development changes to remain compatible with 800xA as it evolves with newer technologies. Also a technical expert for the 3rd party software should be identified and assigned to support the development project and ongoing maintenance and support in order to reduce risk. The business case should normally be reviewed by the requestor with the Certification Manager and Industrial IT Marketing Manager prior to beginning development.

Requirement Specification Review: Once the connectivity package business case has been reviewed, the Certification Manager will review the connectivity package Requirements Specification with the developer and requestor. A common specification has been developed to ensure that the connectivity packages are developed in a consistent way and contain similar features and functionality.

Implementation Estimate: Based on the specifics of the connectivity package, the Certification Manager or the solution provider may provide an estimate of the time required for development of a compliant connectivity package.

Development / Product Testing: The connectivity package product will be developed (by a vendor, ABB development group, or outside consultant) according to the connectivity package Requirement Specification and will take into account all use cases described in the Business Case. Prior to Certification / Integration testing, the connectivity package must be tested by the developer in an 800xA system (product type test). This test will verify proper operation of the product with respect to the Requirements Specification.

Certification Test Plan / Testing: The Certification test plan will be developed by the Certification Manager based on the standard connectivity package certification test plan and incorporating any specific features of the individual connectivity package product. Once the connectivity package has passed its product type test, it will be installed in the Certification STT to verify proper operation of the interface points as well as to confirm non-interference with the rest of the 800xA system.

6.2.1 Business Decision

The decision to proceed with the connectivity package will reside with the sponsoring business unit based on customer, project or competitive market need. A market study will not normally be required as this type of integration is driven by customer request or market need (i.e. need a TDC3000 connector to increase market share in pulp and paper) funded by sponsoring business unit.

The eventual product owner should be identified during this stage of the process. If ABB will own the connectivity package, a product line manager and development manager must be assigned prior to beginning implementation.

Work flow:
A request is received from a customer, ABB BU, Industrial IT or 800xA marketing. A business case must be prepared by the requestor or sponsoring BU outlining the market need, value proposition and return on investment.

The sponsoring BU and Industrial IT team will analyze the business case. Once a decision has been made, the proposed decision will be presented to PLC and then to the System Focus Team (SFT) including recommendation about product ownership. The SFT will have the option of including the product inside System 800xA as part of the product and formal release process.

Preliminary investigation will be done to ensure the technical feasibility of the proposed hardware connectivity package. This shall be done to avoid unnecessary effort and expense of creating a connectivity package that cannot be certified.

A customer project must be identified, and customer cooperation committed, prior to beginning integration. Actual process, alarm and event data will be required during development, followed by testing with an actual system during final testing.

The request will be brought to SFT through the weekly meeting and PLM report.

The final decision will be fed back to the requestor. The IIT Certification Manager will be advised and the connectivity package entered into the queue for eventual verification testing.

6.2.2 Integration

The connectivity package can be developed by a partner vendor, ABB development group or outside consultant. In all cases, it should be designed in accordance with the standard connectivity package requirements and test specification. The requestor and developer must review the proposed design with System 800xA SFT to verify scope, functionality and methodology.

Where possible, connectivity packages should maintain a consistent design and should deliver similar data access, alarm and event collection and object type content. Standard commercially available interfaces and/or OPC server should be used in the development where possible. Excessive dependencies on the target controller tools/configuration/setup should be avoided.

The final product must complete product type testing (PTT) prior to test in the 800xA STT for installation, verification of operation and final certification. Prior to final certification, testing of the connectivity package in a system containing 800xA and the target controller/hardware must be completed (normally performed on a customer site).

6.2.3 Verification

Verification of performance with respect to System 800xA is performed at the test center in Vasteras, Sweden or Wickliffe, Ohio, USA. Certification test system configuration is similar to the ones used at the various STT centers.

A standard test description has been developed for connectivity packages. Additional tests may be required and those will be defined by the Certification manager in conjunction with the product owner and will incorporate any unique features of the product.
In cases where it is not feasible to bring the “connected” hardware to the test center, testing will be performed at a customer site or using real data files obtained from an actual system. The Certification Manager will determine the appropriate test conditions and location.

**Work Flow:**

- Upon receipt of a certification request for a connectivity package, the Certification manager will provide a checklist for completion. Once the requestor has provided the completed checklist and product documentation, the Certification manager will advise a proposed test date, together with any applicable comments about the test logistics.

- Product type testing must be performed in a test environment that includes the “connected” hardware. At a minimum real data files are required for the final verification test in STT.

- Verification is conducted in an appropriate STT test environment

- A test report is produced.

- The Industrial IT Certificate is produced.

- Both documents are delivered to the requestor and posted on the Industrial IT Portal on inside.abb.

**6.2.4 Publication**

Once the connectivity package has passed the final Certification / Verification testing, an Industrial IT Enabled Certificate will be issued. The Certificate will then be published on the Industrial IT internal and external websites. Detailed information about the connectivity package and its use cases will also be included on the website. Marketing activities will begin at this point (including things like press announcements, webcasts, etc.).

**6.3 Cost Coverage**

Testing will be charged to the requestor per individual test agreement. In addition, the requestor must arrange for proper test equipment to be available for the product type test and certification test. The invoice will be sent with the certificate to the requestor once the approval is complete.

**6.4 Regression Testing**

Certification testing of connectivity packages is specific for a release of 800xA and the connected hardware. The certificate will state the details of the testing, versions, usage, value propositions etc. Regression testing of the connectivity package will be required for each new version of 800xA or as required by a customer.
7. Certification FAQ’s

**Question**: How, where and by whom will certification be done?

**Answer**: The certification process includes integration testing and verification of the aspect system in an 800xA test environment (under the supervision of ABB’s 800xA system focus team). These two tests will be done by ABB test engineers in Vasteras, Wickliffe or Minden. The product developer may participate in the integration testing. Once verification of proper operation has been completed and the aspect system approved by SFT, an Industrial IT Enabled certificate will be issued by the Industrial IT Marketing Team.

Certification of some Infrastructure Equipment (PC’s, servers, routers, switches etc.) may be done by the STT in Bangalore, India based on standard test configurations and procedures developed by the SFT. All other infrastructure equipment testing will be done in Vasteras, Sweden.

**Question**: Provide a briefing of how ABB looks at products, product families and their relations.

**Answer**: ABB’s process automation business area has created the Industrial IT 800xA extended automation system to address the business needs of our power and automation customers. The 800xA system includes the core technology that empowers our aspect object information model. It is this technology that enables us to efficiently integrate products from ABB and our partners into 800xA to provide even greater functionality and value to our customers.

The Industrial IT family of products, those certified for interoperability with 800xA, provide a complete portfolio of products / solutions to address customer problems in each industry. These products include hardware such as transmitters, motors and controllers and software such as CMMS systems, engineering tools and asset management applications. These integrated products behave in a standard way and enable our customers to save time and money through simplified installation, one time data entry and single visualization environment (to name just a few).

**Question**: What is the first step in getting my product Industrial IT enabled (certified).

**Answer**: For Network Equipment products, requests from HP or Dell are submitted directly to the Global Commodity Supply Team. All other requests can be directly either to Industrial IT Marketing or PLM for 800xA. PLM will advise whether a product will be tested for the Supported List, a Special Case or Disapproved.

For all other products, requests should be submitted to Industrial IT Marketing. A primary contact will be designated in the United States, Sweden and Germany. Once a request has been made, the market need and business case will be evaluated by an internal evaluation team made up of marketing, business development, sales and SFT.

Upon approval, the requestor will enter the Industrial IT Technical Integration Program. This program consists of both technical and marketing requirements (see program document for details).
**Question:** What kind of products will be certified.

**Answer:** ABB will look for product partners with software, hardware or applications that compliment the ABB industry portfolios. Only products that are interoperable with 800xA will be certified. “Connectivity packages” may be developed and certified that enable close integration of 800xA with various third party controllers.

**Question:** Can I use the Industrial IT Enabled symbol before my testing is complete?

**Answer:** No, before the Industrial IT Enabled symbol can be used by anyone (inside or outside of ABB), the product must pass the integration and verification tests. The guidelines for symbol usage can be found in Document No. 3BSE027626.

**Question:** Our product was certified against AIP2.1. Is a new certification needed and when?

**Answer:** All certified products must be verified after each new 800xA release (regression testing). Any products previously certified against AIP or PPA 2.0 must be recertified towards System 800xA Version 4.0 (and higher).

**Question:** What are the plans for new releases and what impact will these have for integration / certification?

**Answer:** ABB intends to have one major system version (SV) release of 800xA each year (normally in the 4th quarter). One or two “service pack” releases (SP) could occur during the second quarter of each year. All certified products will be required to have regression testing done after each major (SV) release. This verification will be done during the first quarter of each year. ABB’s goal is for SV release impact on certified products to be minimal.
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