System 800xA Virtualization
Optimizing server hardware and maintenance

System 800xA can now be virtualized using world-leading VMware vSphere ESXi technology
Virtualization brings many cost and operational benefits by simplifying how servers are managed and maintained. It reduces server hardware numbers, life cycle cost, and it increases availability. Software upgrades are easier to install, which promotes wider use of improved control technologies and functionality. By helping raise the level of plant automation, virtualization increases productivity and optimizes energy use.

What is virtualization?
Virtualization is when software is used to simulate hardware. In this way, a single physical PC can behave like a set of physical machines, i.e. provide multiple virtual machines. Each virtual machine is provided with a CPU, RAM, hard-disks and network adapters. Virtual switches provide the connections between the virtual machines and the physical network.

Clients still use regular workstations and the normal physical controllers and client-/server networks are unchanged.

In contrast to other DCSs verified for server node consolidation in a virtual environment, ABB’s System 800xA was the first on the market for use in production.

Features and Benefits
- **Full support for virtualization**
  All 800xA nodes are supported for virtualization.
- **Maintenance benefits**
  Hardware independence reduces problems moving to new hardware.
- **Management benefits**
  Servers are centrally controlled and monitored through the vSphere Client.
- **Upgrade benefits**
  Run and review upgraded systems offline before placing online.
- **Total cost of ownership (TCO) benefits**
  Consolidate aging hardware and reduce energy requirements.
- **Increased flexibility**
  Adding additional nodes no longer requires long time and high costs.
ABB solution based on world-leading enterprise virtualization technology

Virtualization has a solid footing in the IT-world, where it has helped reduce the footprint and cost of ownership of large server parks. Now, virtualization technologies are making their mark in the world of process automation, and increase availability.

The technology used by ABB is VMware vSphere ESXi. This is the IT trusted production ready environment for virtualization. VMware is the market leader in virtualization and is used in most of the world’s virtualized computer systems.

Management and maintenance benefits

Virtualization greatly simplifies server management. Maintaining all the spare parts needed is a major task in itself. Virtualization cuts this dramatically.

Less hardware variations and configurations result in easier manageability. Virtualization presents one standard hardware type to all of the virtualized servers. One software tool manages all relevant parts, including network devices and connections. Everything is in the same place in the computer. You can easily add additional servers and migrate to new hardware without reinstalling.

This simplified server administration gives a far better overview and control of the computing environment. Issues that could affect production can be identified quicker and remedied faster.

With virtualization, the IT and Production departments can utilize the same type of computing environment and benefit from shared skills and resources. This makes more harmonized use of in-house computing skills.

800xA – It’s all about control

![Diagram showing 800xA system components including Panel 800, System Workplaces, Wireless Mesh Network, Extended Operator Workplace, Collaboration Table, Field Networks, AC 800M Controller, System Networks, WirelessHART Gateway, S800 I/O, AC 800M High Integrity Controller, ABB and 3rd party PLC & DCS, DMZ MI Servers, CMMS ERP DMS CAD Video, Power Automation, Process Electrification, Process Instrumentation, Safety, PLC & DCS, Business Systems.](image)
You can enjoy all of these management benefits with the same high-level performance as before. Moreover, virtualization makes it easier to introduce new server technologies, thus providing a further boost to system performance. System security is also handled in the conventional way, but once again virtualization offers improvement opportunities. For example, VMware vSphere ESXi provides additional security permission controls that reduce the potential interference of the virtual machines.

**Smoother installation and upgrades**
The simplicity and flexibility of a virtualized computer system brings further benefits when installing and configuring new software. Upgrading becomes more efficient. The complete upgraded system can be set-up, tested and started in parallel with the running version, which reduces upgrade costs and shortens production downtime. With virtualization in place, 800xA can take advantage of new features and improvements easier than before.

Virtual machines also make it easy to copy a server for training. Training on a copy of the production system improves safety and helps raise competence levels. It is also an excellent way of verifying that you have a complete back-up of the running system should the need arise.

**Recovery made easy**
Failure of a server is never welcomed but with virtualization, this is no longer a major issue. Previously, the same hardware type was required to restore backup images. If not, you could face a very costly, step-by-step installation to start it up again. With the hardware independence that virtualization provides, the virtual machine backups can be started on an available ESXi server. Once more, a virtualized server environment makes maintaining your system trouble free.