ABB Ability™ System 800xA
System Guide
Technical Data (extract)

2.15.2 Supported Operating Systems

System 800xA version 6.1 runs on operating systems listed in the tables below. Users can select at update from earlier version 6 installations to keep the operating systems, or to update the operating system to the latest one.

System 800xA 6.1 is a so called 'Continuous release' version. Support for older versions of operating systems will be cancelled in forthcoming 800xA versions, prior to their respective End of Support dates, keeping only the most recent one, i.e. Windows 10 Enterprise IoT 2016 LTSB, Windows 10 Enterprise 2016 LTSB, and Windows Server 2016.

Table 2.19: Server Operating Systems[1]

System Version	Operating System version	Required Hotfixes and additional Comments
6.1	Windows Server 2016 LTSB Standard/Datacenter	Server with Desktop Experience. Install the latest qualified update as per Third Party Security Updates Validation Status for System 800xA, 3BSE041902.
	Windows Server 2012 R2 Standard/Datacenter Update	

1. 64-bit Versions to be used

Table 2.20: Client Operating Systems[1]

System Version	Operating System version	Required Hotfixes and additional Comments
6.1	Windows 10 Enterprise 2016 LTSB	Install the latest qualified update as per Third Party Security Updates Validation Status for System 800xA, 3BSE041902
	Windows 10 IoT Enterprise 2016 LTSB	
	Windows 10 Enterprise 2015 LTSB	
	Windows 10 IoT Enterprise 2015 LTSB	
	Windows 8.1 Update Professional/Enterprise	

1. 64-bit Versions to be used

It is possible to run a mixed environment, for example some workstation nodes on Windows 8.1, and some on Windows 10. This makes it possible to extend the plant using the latest operating system while existing nodes are untouched, and/or to make selective update of the operating systems based on user convenience. However, a redundant pair should always run on the same operating system except during an update phase. Support for older operating systems may be taken away prior to their technical end of life. See ref [7] for details about support for 3rd party software.

With Windows 10 Microsoft introduced different branches of the operating system. These branches have different update strategies. For production systems the Long Term Service Branch (LTSB) is required. LTSB versions are established at regular intervals, base lining the functionality current at that time, and from there they are supported with security updates and corrections for 10 years. LTSB is supported only in Windows 10 Enterprise edition of Windows 10.

Standard OEM workstations are supplied with Windows 10 Professional, based on the Semi Annual Channel (formerly Current Branch for Business, CBB) versions. Windows 10 Professional shall not be used for production systems. The reason for this is that there are functional changes in the Semi Annual versions, and the impact of the updates may become bigger than those on the LTSB. Bigger changes to 800xA software may have to be made. This may take longer time, during which a system running a Semi Annual operating system version cannot be updated and will hence not be supported by Microsoft, and may potentially become unsecure. However, single-node engineering systems can be run with Windows 10 Professional given that the update strategy can be accepted.

For System 800xA only 64-bit (x64) operating systems are used to allow for memory expansions.

More details about the supported operating systems including their updates are listed, refer to [7] in Table 1.1. This document can be found in myABB/My Control System.

The US English version of the operating system is required even if an NLS package for translation of 800xA functions into another language is used.

The Server Operating System licenses use the core and CAL, Client Access License, model.

One server license is required for each node in System 800xA running Server Operating System. Note that additional server licenses are required if using more than 2 CPU's.

In addition a number of Client Access Licenses (CALs) are required. CAL's comes in two flavors, Per Device or Per User.

The Per Device model means all physical devices, in System 800xA terms all workstation nodes and all server nodes, each represent one CAL. This model is advantageous when multiple operators share the same operator client (shift operators). The number of CALs required equals the sum of all PC nodes in the system.

The Per User model means each named user accessing the server software represents one CAL. This model may be advantageous if a relatively small number of operators operate the plant from a large number of different clients throughout the plant. A larger number of operator client nodes can be installed without purchasing CALs for each and every one of them. The number of CALs required equals the sum of all named users accessing servers in the system.

In the per user mode it is not possible to have one single operator account and let all operators use it. This would break the terms of the Microsoft license agreement.

In most installations of System 800xA the Per Device Model is to prefer as the devices are known at an early stage.

Comments to Cloning of PCs at Installation Time

It is strictly recommended to perform the 800xA software installation on all nodes using the System Installer.

In a system, there are usually many nodes that will have the same installation, such as all clients, or certain server groups. In these cases, efficiency may increase if PCs can be cloned instead of installing them one by one. Hardware independent disk imaging tools may solve this problem by backing up an installed PC and transferring the image to another PC. Pure disk imaging tools allow making an image backup of a PC. However, if this image is installed on another PC, any small differences (such as different vendors for the hard disk or different BIOS versions) may not be correctly detected by the operating system and could jeopardize the result. In some cases, no issues will be identified during the initial startup and operation, but will show up later during regular operation. No third party packages are formally verified with System 800xA and therefore proper function cannot be guaranteed. Any usage must be based on knowledge about the limitations and risks presented by these tools.

Regardless of how this procedure is performed, the end user is responsible to ensure that third party software license agreements are not violated.

2.15.3 Workstation vs Server Class Version of Windows

A workstation version of Windows is used for all client nodes.

For server nodes (and combined client/server nodes) either a workstation or a server version of Windows can be used. The following rules apply:

- When a workstation version of Windows is used for a server node, the system size is limited. For more information, refer Table 2.2.
- Certain features always require a server version of Windows. These are:
  - Domain Controller
  - Batch Server (except in single node engineering system)
  - 800xA History Archive
  - IM Server
  - Asset Optimization (in all configurations except single node system)
  - Harmony connect services
  - Melody connect services and/or and Melody Connect Configuration Server
  - MOD 300 connect services
  - DCI connect services

Note that all servers in a redundant group must use the same operating system.

2.15.4 Hardware Infrastructure

Server and Workstation Hardware

System 800xA is developed to run on generic hardware running Windows operating systems. At 800xA version 6.0.3 the System 800xA Workstation was introduced. The System 800xA Workstation is based on defined workstation hardware from major vendors, and it has Windows 10 Enterprise IoT installed which supports the long term service branch. The System 800xA Workstation is available from the following portal.

- https://link.arrow.com/abb/customer/account/login/

It is recommended to use the System 800xA Workstation as well as the Server hardware, which is validated with 800xA software and available through the portal. Optionally an OEM workstation can be upgraded using a Windows 10 Enterprise license still assuing the same hardware is used. The picture below describes the options available to provide hardware and operating systems for an installation.

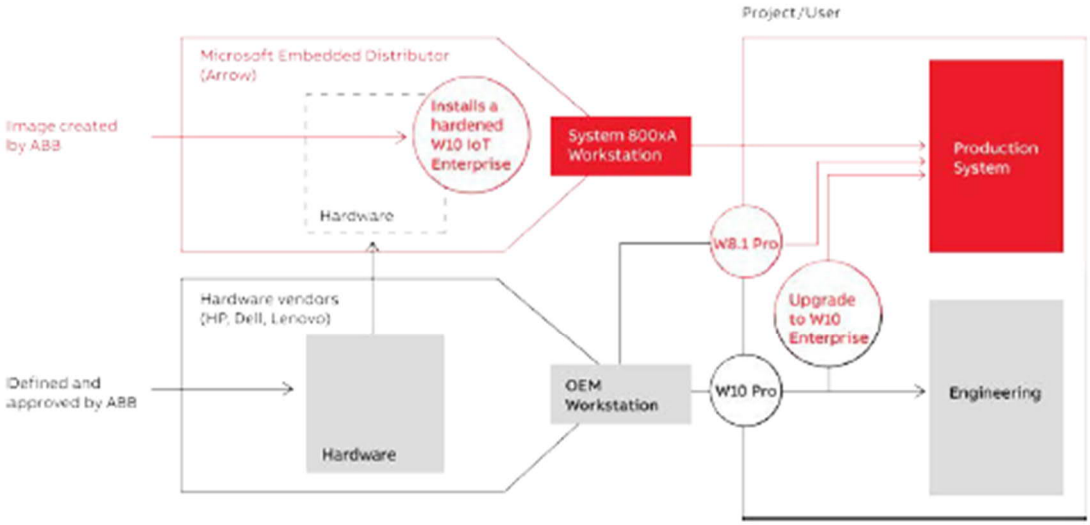

Figure 2.16: Hardware and Operating Systems delivery chain

A Server is referred to as a computer running Windows server operating system on hardware intended for server use. A Workstation is referred to as a computer running Windows client operating system on hardware intended for client use.

Server hardware is of higher quality and is generally less error prone.

Workstation hardware most often contain graphical capabilities lacking in the server hardware.

800xA is preferably, for best performance and reliability, deployed as a client-server system with servers running the server functions and workstations used for clients.

For smaller systems it is possible to build it entirely on workstations as described in Node Function Deployment.

CPU, Memory, and Disk Requirements. The maximum per node numbers in Table 2.3 assume 800xA certified hardware. Memory requirements are:

- For up to 4 function allocations: minimum 8 GB.
- For up to 8 function allocations: minimum 16 GB.

Add memory to those figures for the cases below:

- Nodes that combine client and server roles require an additional 8 GB.
- Nodes that host the Aspect Services function require an additional 8 GB.
- Nodes that host the Batch Management function require an additional 8 GB.
- Nodes that host the History functions require an additional 8 GB. In some cases, additional memory can be purchased to increase performance. For Information Management History, the extra memory can be used for the oracle database. For 800x History, the memory can be used for RTDB. See product specific documentation for specific recommendations
- Systems running Configure-deploy / Load-Evaluate-Go require an additional 8 GB in all nodes running Engineering workplace or Aspect Services function.

The hardware available in the portal, used for the 800xA workstations and servers, is validated and approved for use with 800xA. Using other hardware should be avoided. If for any reason alternate hardware is used, the user (delivery project, channel) is responsible to ensure proper operation. Support for such configurations may have limitations and may also be subject to cost. ABB may validate additional hardware that can be applied for special use cases, but which is available through other channels than the portal. Such cases could be different environmental specification for example.

Acquiring validated hardware will give you some options in terms of CPU, memory and hard disks. Table 2.21 are the recommended minimum requirements.

Table 2.21: Minimum Requirements

Hardware	Requirement
Server CPU	Intel 4 cores with hyper threading 2GHz
Client CPU (some server functions)	Intel 4 cores with hyper threading 2GHz
Client CPU (no server functions)	Intel 2 cores with hyper threading 2GHz
Memory in server	8 GB min, 16 GB recommended (depending on number and type of function allocations as per above)
Memory in client (some server functions)	16 GB min, 16 GB recommended

Table 2.21: Minimum Requirements
(Continued)

Hardware	Requirement
Memory in client (no server functions)	8 GB min, 8 GB recommended
Server disk (excluding data storage)	80 GB min, 2 disks and RAID 1 recommended
Client disk	80 GB min

For optimal graphical performance the video card selected should have 512MB/display. That means that a 4-screen solution preferable should have a video card with 2GB.

For more normal graphical performance expectations 256MB/display might be sufficient. Going below that will have a negative performance impact.

Additional disks are required to run application servers storing historical data (IM, 800xA History). Please refer to those calculations in [9] and [19] in Table 1.1. Generally but depending on system size performance will improve by installing separate disks for the following node functions:

- Information manager
- 800xA History, and its DCN node function
- Batch
- Aspect Directory
- Basic History (connectivity servers)

For virtual servers please see [3] in Table 1.1.

Hardware recommendations to be used with virtualized installations is essentially the same, but selected such that special provisions for disk arrangements, multiple CPU cores, and so on can be fulfilled. For best performance and capacity in virtual environments these recommendations should be followed. Note that for some node functions there are limitations in capacity if virtualization is used (e.g History, Batch). Please consider applicable sections of this document.

Refer also to the computer manufacturer's home page for their computers support of different virtualization software.

Environmental Specifications. The environmental specification provided for the respective PCs by the PC vendor applies. Normally this means workstations and servers

need to be installed in the control room or the electrical room. Installation in the production area or in the field normally requires special measures. Installation in harsh environments like ships and vehicles may require additional mechanical measures.

Network Appliances

System 800xA is developed to run on a generic TCP/IP infrastructure. As a quality assurance Industrial IT certification is performed on suitable high quality network appliances from major brands.