

IMM and IMM2 Support on Lenovo Servers

Reference Information

This document lists which Lenovo System x, NeXtScale, Flex System, and BladeCenter servers support the Integrated Management Module II (IMM2) service processor and the older Integrated Management Module (IMM) service processor.

The IMM and IMM2 consolidate service processor functionality previously provided by the combination of the Baseboard Management Controller (BMC) and the Remote Supervisor Adapter II in System x and BladeCenter products.

The IMM2 operates independently of the installed operating system.

Integrated Management Module II

Integrated Management Module II (IMM2) is the second-generation management module integrated on System x servers. IMM2 offers three levels of functionality: Basic, Standard, and Advanced.

Upgrading to Standard or Advanced will be performed using a software license key using Lenovo Features on Demand (FoD).

IMM2 Basic has the following features:

- Industry-standard interfaces and protocols
- Intelligent Platform Management Interface (IPMI) Version 2.0
- Common Information Model (CIM)
- Advanced Predictive Failure Analysis (PFA) support
- Continuous health monitoring
- Choice of a dedicated or shared Ethernet connection
- Supports secure SSH text console access with optional encryption capabilities using AES cyphers
- Domain Name System (DNS) server support
- Dynamic Host Configuration Protocol (DHCP) support
- Embedded Dynamic System Analysis (DSA)
- LAN over USB for in-band communications to the IMM
- Serial over LAN
- Server console serial redirection
- Remote firmware updating
- Remote configuration through Advanced Settings Utility (ASU)

Note: IMM2 Basic does not include web browser or remote presence capabilities.

IMM2 Standard (as standard in some servers or as enabled using the Features on Demand software license key in other servers) has the following features:

- Secure web server user interface
- Remote power control
- Access to server vital product data (VPD)
- Advanced Predictive Failure Analysis (PFA) support
- Power Management
- Automatic notification and alerts
- Continuous health monitoring and control
- Choice of a dedicated or shared Ethernet connection
- Domain Name System (DNS) server support
- Dynamic Host Configuration Protocol (DHCP) support
- E-mail alerts
- Syslog logging support
- Embedded Dynamic System Analysis (DSA)
- Enhanced user authority levels
- LAN over USB for in-band communications to the IMM

- Event logs that are time stamped, saved on the IMM, and that can be attached to e-mail alerts
- Support for Industry-standard interfaces and protocols: IPMI V2.0, CIM, and SNMP
- OS watchdogs
- Serial over LAN
- Server console serial redirection
- User authentication using a secure connection to a Lightweight Directory Access Protocol (LDAP) server

IMM2 Advanced (as enabled using the Features on Demand software license key) has the following features:

- Remote presence, including remote control of server via a Java or ActiveX client
- Supports up to four concurrent remote users
- Operating system failure screen capture and display through the web interface
- Video recorder and playback function
- Virtual media allowing the attachment of a diskette drive, CD/DVD drive, USB flash drive, or disk image to a server. For servers with an SD Media adapter installed, you can configure volumes on those SD Cards for use by the IMM.

Note: For servers where only IMM2 Basic is installed (for example, x3100 M4, x3250 M4, nx360 M4), the use of IMM2 Advanced requires IMM2 Standard also be purchased and enabled.

The following table lists the IMM2 upgrades.

Note: The IMM2 Advanced upgrade requires the IMM2 Standard upgrade.

Table 1. IMM2 upgrade options

Part number	Feature codes	Description
90Y3900	A1MK	Integrated Management Module Standard Upgrade
90Y3901	A1ML	Integrated Management Module Advanced Upgrade (requires Standard Upgrade, 90Y3900)

Integrated Management Module

In older System x servers, the Integrated Management Module (IMM) consolidates the service processor functionality, Super I/O, video controller, and remote presence capabilities in a single chip on the server system board. The IMM consolidates service processor functionality previously provided in the BMC and the Remote Supervisor Adapter II in System x and BladeCenter products.

Lenovo offers two levels of IMM, Standard and Premium. If the server has IMM Standard functionality, it can be upgraded to IMM Premium by purchasing and installing a Virtual Media Key (either part number 46C7526 or 46C7527, depending on the server) on the server system board. This key is a physical component (Figure 1). However, no new firmware is required. IMM Premium provides Remote Presence and Virtual Media capabilities. Figure 1 shows where the Virtual Media Key is installed in one of the supported servers (x3620 M3).

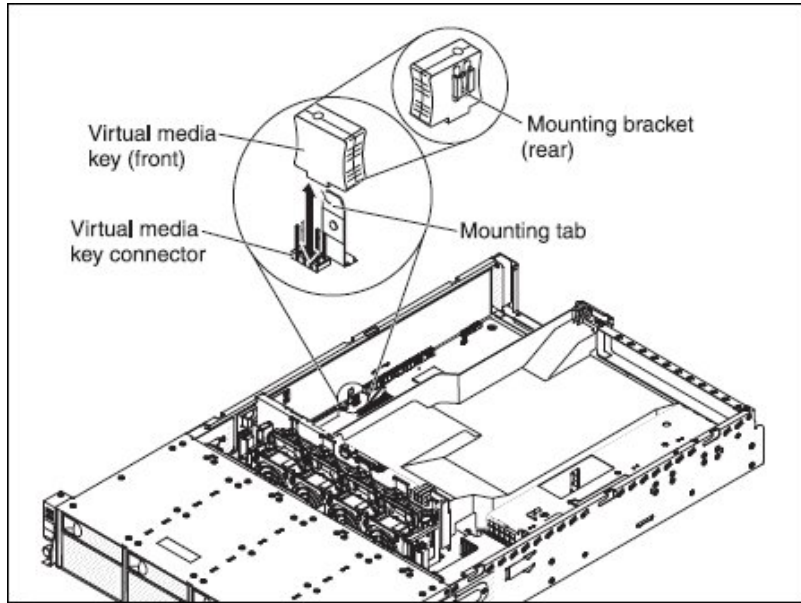


Figure 1. Installing the Virtual Media Key in the System x3620 M3

IMM Standard has the following features:

- Access to server vital product data (VPD)
- Advanced Predictive Failure Analysis (PFA) support
- Automatic notification and alerts
- Continuous health monitoring and control
- Choice of a dedicated or shared Ethernet connection
- Domain Name System (DNS) server support
- Dynamic Host Configuration Protocol (DHCP) support
- E-mail alerts
- Embedded Dynamic System Analysis (DSA)
- Enhanced user authority levels
- LAN over USB for in-band communications to the IMM
- Event logs that are time stamped, saved on the IMM, and that can be attached to e-mail alerts
- Support for Industry-standard interfaces and protocols: IPMI V2.0, CIM, and SNMP
- OS watchdogs
- Remote configuration through Advanced Settings Utility (ASU)
- Remote firmware updating
- Remote power control
- Secure web server user interface
- Serial over LAN
- Server console serial redirection
- User authentication using a secure connection to a Lightweight Directory Access Protocol (LDAP) server

IMM Premium (as enabled using the Virtual Media Key) adds the following features in addition to the features of IMM Standard:

- Remote presence, including remote control of server
- Operating system failure screen capture and display through the web interface
- Virtual media allowing the attachment of a diskette drive, CD/DVD drive, USB flash drive, or disk image to a server

The following table lists the available Virtual Media Keys and their part numbers. Table 3 lists the key used in each System x server. Note that three different part numbers exist. The parts are keyed to prevent insertion into the wrong system.

Withdrawn: All three part numbers in the table are withdrawn from marketing.

Table 2. Virtual Media Key part numbers

Part number	Description
46C7526	Virtual Media Key
46C7527	Virtual Media Key for Entry Systems
49Y7290	Virtual Media Key for x3100 M3

System x server support

System x servers include either the Integrated Management Module II (newer systems) or the Integrated Management Module (older systems).

Integrated Management Module II support

The following table lists the IMM2 service processors that are standard and optional for each System x server. The values in the table have the following meanings:

- Standard: This level of functionality of IMM2 comes standard with the server.
- Upgrade: This level of functionality of IMM2 can be purchased as an option and enabled via Features on Demand using the indicated part number.
- No: The server does not support this level of the IMM2 service processor.

Table 3. System x servers with IMM2

System x server	IMM2 Basic	IMM2 Standard	IMM2 Advanced
System x3100 M4	Standard	Upgrade, using 90Y3900	Upgrade, using 90Y3901*
System x3100 M5	Standard	Standard	Upgrade, using 90Y3901
System x3250 M4	Standard	Upgrade, using 90Y3900	Upgrade, using 90Y3901*
System x3250 M5	Standard	Standard	Upgrade, using 90Y3901
System x3250 M6	Standard	Standard	Upgrade, using 90Y3901
System x3300 M4	Standard	Standard	Upgrade, using 90Y3901
System x3500 M4	Standard	Standard	Upgrade, using 90Y3901
System x3500 M5	Standard	Standard	Upgrade, using 90Y3901
System x3530 M4	Standard	Standard	Upgrade, using 90Y3901
System x3550 M4	Standard	Standard	Upgrade, using 90Y3901
System x3550 M5	Standard	Standard	Upgrade, using 90Y3901
System x3630 M4	Standard	Standard	Upgrade, using 90Y3901
System x3650 M4	Standard	Standard	Upgrade, using 90Y3901
System x3650 M4 BD	Standard	Standard	Upgrade, using 90Y3901
System x3650 M4 HD	Standard	Standard	Upgrade, using 90Y3901
System x3650 M5	Standard	Standard	Upgrade, using 90Y3901
System x3750 M4	Standard	Standard	Standard
System x3850 X6	Standard	Standard	Standard
System x3950 X6	Standard	Standard	Standard
iDataPlex dx360 M4	Standard	Standard	Upgrade, using 90Y3901
NeXtScale nx360 M4	Standard	Upgrade, using 90Y3900	Upgrade, using 90Y3901*
NeXtScale nx360 M5	Standard	Upgrade, using 90Y3900	Upgrade, using 90Y3901*

* For systems with only IMM2 Basic standard, the IMM2 Advanced upgrade requires IMM2 Standard (90Y3900) also be purchased and enabled.

Integrated Management Module support

The following table lists the IMM offerings that are standard and optional for each System x server. The values in the table have the following meanings:

- Standard: This IMM comes standard with the server.
- Upgrade: This IMM functionality can be purchased as an option via the Virtual Media Key (VMK) explained using the indicated part number.
- No: The server does not support this version of the IMM service processor.

Table 4. System x servers with IMM

System x server	IMM Standard	IMM Premium (VMK)	BMC
System x3100 M3	Standard	Upgrade, using 49Y7290	No
System x3200 M3	Standard	Upgrade, using 46C7527	No
System x3250 M3	Standard	Upgrade, using 46C7527	No
System x3400 M2, M3	Standard	Upgrade, using 46C7527	No
System x3500 M2, M3	Standard	Standard	No
System x3550 M2, M3	Standard	Upgrade, using 46C7526	No
System x3620 M3	Standard	Upgrade, using 46C7527	No
System x3630 M3	Standard	Upgrade, using 46C7527	No
System x3650 M2, M3	Standard	Upgrade, using 46C7526	No
System x3690 X5	Standard	Standard	No
System x3755 M3	No	No	Standard*
System x3850 X5	Standard	Standard	No
System x3950 X5	Standard	Standard	No
iDataPlex dx360 M2	Standard	Upgrade, using 46C7527	No
iDataPlex dx360 M3	Standard	Upgrade, using 46C7527	No

* The x3755 M3 includes an Aspeed AST-2050 Baseboard Management Controller (BMC). This BMC is different from the BMCs in earlier servers and includes the IMM Premium feature set.

Flex System compute node support

Flex System compute nodes include the Integrated Management Module II and all have IMM2 Advanced enabled.

Table 5. Flex System compute nodes with IMM2

Compute node	IMM2 Basic	IMM2 Standard	IMM2 Advanced
Flex System x220 (7906)	Standard	Standard	Standard
Flex System x222 (7916)	Standard	Standard	Standard
Flex System x240 (8737)	Standard	Standard	Standard
Flex System x240 (7162)	Standard	Standard	Standard
Flex System x240 M5 (9532)	Standard	Standard	Standard
Flex System x440 (7917)	Standard	Standard	Standard
Flex System x440 (7167)	Standard	Standard	Standard
Flex System X6 (7903)	Standard	Standard	Standard
Flex System X6 (7196)	Standard	Standard	Standard

BladeCenter server support

The BladeCenter Management Module (MM) and Advanced Management Module (AMM) are the central points of management for the BladeCenter chassis. As such, when the AMM is not responsive, the ability to perform normal management on the chassis is significantly compromised. The AMM is Version 2 of the MM. The main differences are that the AMM is USB based (instead of PS/2) and also has a feature to save service data. The service data collects most of the useful information that is required to support the AMM.

Each BladeCenter chassis, with the exception of the BladeCenter S, supports a redundant pair of management modules. The two management modules used in a chassis must be identical.

The MM/AMM is used to monitor, manage, configure, report logs, and update firmware from BladeCenter chassis blades and I/O modules. Although the IMM is now included in some blade servers, the AMM remains the management module for systems-management functions for BladeCenter and blade servers. There is no external network access to the IMM on blade servers. The AMM must be used for remote management of blade servers. The IMM replaces the functionality of the BMC and the Concurrent Keyboard, Video, and Mouse (cKVM) option card in past blade server products:

- The Advanced Management Module for BladeCenter S, BladeCenter E, BladeCenter H, and BladeCenter HT is part # 25R5778.
- The Advanced Management Module for BladeCenter T is part # 32R0835.
- The original MMs have been withdrawn but were only supported in BladeCenter E (BC-E, part # 48P7055) and BladeCenter T (BC-T, part # 90P3741).

All BladeCenter chassis models with the original MM installed can be upgraded to an AMM. In fact, most current servers require that the chassis have AMMs installed.

The following table lists the service processors that are standard and optional in each BladeCenter chassis.

Table 6. Management models standard in each BladeCenter chassis

BladeCenter chassis	Management Module (MM)	Advanced Management Module (AMM)
BladeCenter E, machine types 8667, 1881, 7967, 8760	Some models have the MM standard. Some models have the AMM standard.	
BladeCenter T, machine types 8267, 8720, 8730	Some models have the MM standard. Some models have the AMM standard.	
BladeCenter H, machine types 8852, 1886, 7989	No	Standard
BladeCenter HT, machine types 8740, 8750	No	Standard
BladeCenter S, machine types 8886, 1948, 7779	No	Standard

The following table lists the service processors that are standard for each of the currently available BladeCenter servers. For older servers, see the Lenovo Press document, *Service Processors Supported in System x Servers*, available from: <http://lenovopress.com/tips0146>

Table 7. Service processors in BladeCenter servers

Blade Server	IMM Standard	IMM Premium	IMM2 Advanced	BMC
HS22	Standard	No	No	No
HS22V	Standard	No	No	No
HS23E	No	No	Standard	No
HS23	No	No	Standard	No
HX5	Standard	No	No	No
LS22	No	No	No	Standard
LS42	No	No	No	Standard

Useful links

These web pages provide additional information about the service processors in System x and BladeCenter servers:

- Lenovo Press paper *Using System x Features on Demand*
<http://lenovopress.com/redp4895>
- IBM Features on Demand web site
<https://fod.lenovo.com/lkms>
- ServerProven
<http://www.lenovo.com/us/en/serverproven/xseries/upgrades/smmatrix.shtml>
- IMM2 User's Guide
http://publib.boulder.ibm.com/infocenter/systemx/documentation/topic/com.lenovo.sysx.imm2.doc/printable_doc.html
- IMM User's Guide
<http://ibm.com/support/entry/portal/docdisplay?Indocid=MIGR-5079770>
- MM and AMM User's Guide
<http://ibm.com/support/entry/portal/docdisplay?Indocid=MIGR-5073887>
- MM and AMM Command Line Reference Guide
<http://ibm.com/support/entry/portal/docdisplay?Indocid=MIGR-54667>
- Lenovo Press document *Service Processors Supported in System x Servers*, covering Netfinity and xSeries as well as the first generation of System x servers
<http://lenovopress.com/tips0146>

Related product families

Product families related to this document are the following:

- [1-Socket Rack Servers](#)
- [1-Socket Tower Servers](#)
- [2-Socket Rack Servers](#)
- [2-Socket Tower Servers](#)
- [4-Socket Rack Servers](#)
- [8-Socket Rack Servers](#)
- [Blade Servers](#)
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