IMM and IMM2 Support on IBM System x and BladeCenter Servers

This document lists which IBM® System x® and BladeCenter® servers support the Integrated Management Module (IMM) and Integrated Management Module II (IMM2) service processors. 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 IBM System x and BladeCenter products.

System x servers

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

Integrated Management Module II support

Integrated Management Module II (IMM2) is the second-generation management module integrated on System x servers. IMM2 will offer three levels of functionality: Basic, Standard, and Premium. Starting with IMM2, the Virtual Media Key will no longer be used. Upgrading to Standard or Advanced will be performed using a software license key using a procedure named IBM Feature 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
- 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

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

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

- Secure web server user interface
- Remote firmware updating
- Remote power control
- 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
- 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
- Remote configuration through Advanced Settings Utility (ASU)
- 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 Feature on Demand software license key) has the following features:

- Remote presence, including remote control of server via a Java or Active x client
- 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

Note: For servers such as the x3100 M4 and x3250 M4, IMM2 Advanced requires IMM2 Standard to be purchased and enabled.

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 IBM Feature on Demand using the indicated part number.

- No: The server does not support this level of the IMM2 service processor.

Table 1. 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 x3250 M4	Standard	Upgrade, using 90Y3900	Upgrade, using 90Y3901*
System x3500 M4	Standard	Standard	Upgrade, using 90Y3901
System x3530 M4	Standard	Standard	Upgrade, using 90Y3901
System x3550 M4	Standard	Standard	Upgrade, using 90Y3901
System x3630 M4	Standard	Standard	Upgrade, using 90Y3901
System x3650 M4	Standard	Standard	Upgrade, using 90Y3901
System x3750 M4	Standard	Standard	Standard
iDataPlex dx360 M4	Standard	Standard	Upgrade, using 90Y3901

Integrated Management Module support

In IBM 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 IBM System x and BladeCenter products.

IBM 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).
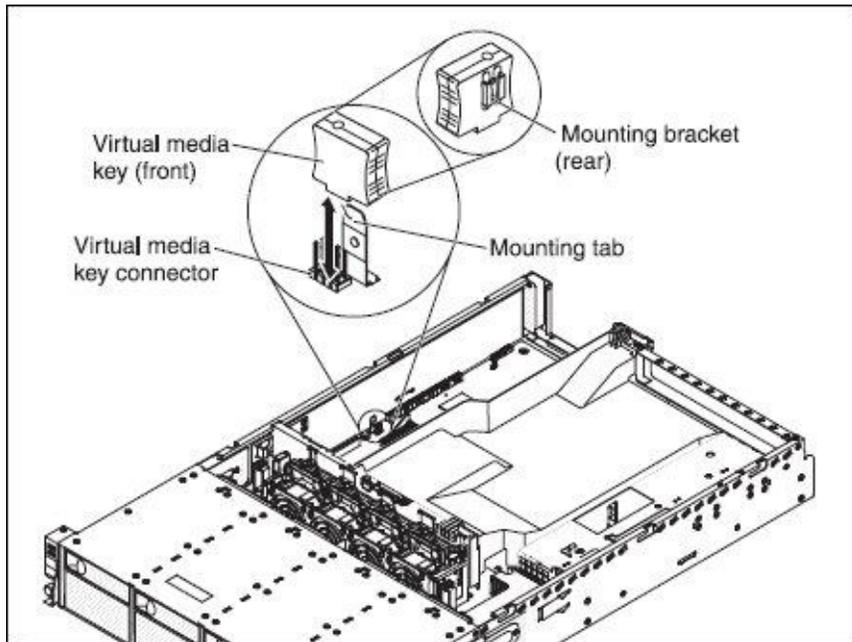

Figure 1. Installing the Virtual Media Key in the IBM System x3620 M3

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 IBM System x server. Note that three different part numbers exist. The parts are keyed to prevent insertion into the wrong system.

Table 2. Virtual Media Key part numbers

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

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 3. 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 IBM servers and includes the IMM Premium feature set.

BladeCenter servers

The IBM BladeCenter Management Module (MM) and Advanced Management Module (AMM) are the central points of management for the IBM 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 IBM 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 IBM BladeCenter chassis.

Table 4. 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 IBM Redbooks® web doc "Service Processors Supported in IBM System x Servers," available from http://www.redbooks.ibm.com/abstracts/tips0146.html.

Table 4. 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 addition information about the service processors in System x and BladeCenter servers:

- ServerProven
  http://ibm.com/systems/info/x86servers/serverproven/compat/us/xseries/upgrades/smmatrix.html

- IMM User's Guide
  http://ibm.com/support/entry/portal/docdisplay?Indocid=MIGR-5079770

- IMM2 User's Guide
  http://ibm.com/support/entry/portal/docdisplay?Indocid=MIGR-5086346

- 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

- IBM Redbooks web doc "Service Processors Supported in IBM Netfinity and IBM eServer xSeries Servers" covering Netfinity and xSeries as well as the first generation of IBM System x servers
  http://www.redbooks.ibm.com/abstracts/tips0146.html?Open

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