IBM IntelliStation M Pro models produce high-powered graphics with Intel multi-core technology in an ultimate price-performance workstation now available with Windows Vista Business

At a glance

These highly responsive, LAN-ready, and easy-to-use advanced workstations combine the latest technologies to create a high level of graphical and computational productivity and creativity.

- Choice of Intel multi-core processors with 1066 MHz front-side bus (FSB) and Extended Memory 64 Technology (EM64T):
  - Intel Core 2 processor E6700 and Core 2 Quad processor Q6600
  - 4 or 8 MB L2 cache
- Graphics:
  - NVIDIA Quadro FX 1500 for advanced 3D
  - NVIDIA Quadro FX 3500 for high-advanced 3D
- Integrated SATA and SAS on select models
- Integrated Gigabit Ethernet
- Choice of standard HDDs configurations:
  - SATA 160 GB1 7200 rpm
  - 73 GB 15,000 rpm SAS
- DVD/CD-RW optical drive
- Minitower with four slots, six bays, and two fans
- 400-watt power supply
- Microsoft™ Windows™ Vista Business or Windows XP Professional (64-bit)
- System hardware warranty — Three years, parts and labor

For ordering, contact:
Your IBM representative, an IBM Business Partner, or the Americas Call Centers at

800-IBM-CALL Reference: SE001

Overview

Bold new IntelliStation® M Pro workstation models deliver high-powered processing speed with new Intel® processors. This dependable workstation can potentially reduce project turn-around times in engineering, business, media creation, and scientific applications.

Solid performance

- Intel Core 2 Duo E6700 or Core 2 Quad Q6600 microprocessors:
New models of the IntelliStation M Pro workstation offer leadership technology, advanced industrial design, and IBM quality, service, and support.

**General product attributes**

- Intel Core 2 microprocessors with 1066 MHz system bus, MMX™ technology, and EM64T
- 2.40 GHz\(^5\) Core 2 Quad with 8 MB L2 cache
- 2.66 GHz Core 2 Duo with 4 MB L2 cache
- Four DIMM sockets providing 8 GB of memory-addressing capability for PC2-5300 CL5 ECC DDR2 SDRAM DIMM memory
- PCI-Express x16, supporting the following PCI-Express adapters:
  - NVIDIA Quadro FX 1500 with 256 MB of GDDR3 SDRAM
  - NVIDIA Quadro FX 3500 with 256 MB of GDDR3 SDRAM
- Serial ATA interface
- IDE interface with DVD/CD-RW combination optical drive
- HDD support:
  - SATA
  - SAS
- Integrated Gigabit Ethernet with RJ-45 port
- 400-watt, voltage-sensing power supply
- Ports: Two 9-pin serial, one 25-pin parallel, eight USB (two front, six rear), one Gigabit Ethernet, and two IEEE 1394 (one front, one rear)
- HD audio, line in/out jacks, and microphone-in
- IBM USB keyboard and two-button USB optical wheel mouse
• Preloaded operating system
• Plug-and-play capability as supported by operating system

**Advanced industrial design**

**Expansion bays:** Six expansion bays:

• Two accessible 5.25-inch half-high bays (one with CD-ROM)
• One internal (toolless) 3.5-inch slim bay (with HDD)
• One internal 3.5-inch tray
• Two accessible 3.5-inch side trays

**Expansion slots:** Four expansion card slots

• Two PCI-Express X16, one occupied with graphics adapter
• One PCI-Express x4 with x8 connector
• One PCI 32-bit/33 MHz

**Fans:** Two fans:

• One fan with power supply
• One fan mounted in front

Refer to the Limitations section for slot availability and card length restrictions.

**System software**

Microsoft Windows Vista Business or Windows XP Professional.

The system is shipped with the following:

• Preload image on the HDD
• Device drivers CD that contains selected device drivers for Windows XP Professional, Windows Vista Business, or Red Hat Enterprise Linux™ WS 4
• Diskette copies and hardcopy publications available for an additional charge.

Refer to the Software information section for a full list of software shipped with the IntelliStation M Pro workstation.

**Compatibility, service, and support**

• Compatibility:
  – PCI
  – IDE/SATA/SAS
  – PCI-Express
  – USB
  – Serial and parallel ports

For the latest information on software and hardware compatibility testing and certifications, visit

http://www-03.ibm.com/servers/eserver/serverproven/compat/us/

• Manufactured to meet IBM's high quality standards
• Service and support: Three-year parts and labor; CRU or on-site repair
Product positioning

The latest IntelliStation M Pro workstation represents a new level of high-performance hardware with the architecture, design, and features that can help you achieve high levels of graphical and computational productivity and creativity. IntelliStation M Pro models provide a migration path for users who want the latest Intel Core 2 processors. Those who are currently using UNIX® will find that the IntelliStation M Pro workstation typically offers the ease of use, robustness, and configurability of their current environment.

The price/performance advantages and manageability of the IntelliStation platform encourage more clients to migrate from UNIX workstations to Intel-based workstations with Microsoft Windows XP Professional or Windows Vista Business operating systems.

The IntelliStation M Pro system is well-suited for graphic-intensive applications with a variety of graphics adapters from which to choose. From its elegant exterior design to its uncluttered interior, the system is designed for easy upgrade and power. A powerful 400-watt power supply provides power to spare for robust configurations. All models use slot 2 for a PCI-Express graphics adapter. Two DIMM slots are available for additional memory upgrades.

In addition to supporting Microsoft Windows Vista Business (64-bit) and Windows XP Professional (64-bit), on May 24, 2007, you will be able to order systems with Windows Vista Business (32-bit) with a planned availability date of June 14, 2007.

Reference information

1. GB equals 1,000,000,000 bytes when referring to HDD or memory capacity; actual capacity may be different.

2. Maximum memory may require replacement of standard memory with optional maximum memory modules.

3. You may be asked certain diagnostic questions before a technician is sent.

4. For information on the IBM Statement of Limited Warranty, call 800-IBM-SERV (426-7378) or contact your IBM representative or reseller. Copies are available upon request.

5. GHz only measures microprocessor internal clock speed, not application performance. Many factors affect application performance.

Note: The information in IBM announcement letters is subject to change without notice. Consult the IBM Sales Manual or your IBM representative or reseller for the most current information regarding IBM products.


Trademarks

IntelliStation is a registered trademark of International Business Machines Corporation in the United States or other countries or both.

MMX is a trademark of Intel Corporation.

Intel is a registered trademark of Intel Corporation.
Microsoft and Windows are trademarks of Microsoft Corporation.

UNIX is a registered trademark of the Open Company in the United States and other countries.

Linux is a trademark of Linus Torvalds in the United States, other countries or both.

Other company, product, and service names may be trademarks or service marks of others.

Additional product attributes

• Memory
  – These IntelliStation® M Pro systems are shipped with PC2-5300 CL5 ECC DDR2 SDRAM DIMM memory. Memory DIMMs must be installed in pairs. Each pair must be identical.
  – The IntelliStation M Pro supports up to 8 GB of PC2-5300 CL5 ECC DDR2 SDRAM DIMM memory.
  – To achieve maximum memory capacities, standard memory replacement may be required with the currently supported memory DIMMs available from IBM.

• HDDs are subject to bay usage limitations; refer to the Limitations section.

Minitower
  – A maximum of three internally mounted SAS or four SATA HDDs are supported with optional tray.
  – Maximum internal HDD capacities assume the replacement of any standard HDDs and the population of all HDD bays with the largest currently supported HDDs available from IBM.
  – The maximum internal HDD capacities are supported via the following configurations:
    -- 219 GB with three 73 GB 15,000 SAS HDDs
    -- 3 TB with four 750 GB 7,200 rpm SATA HDDs

  Note: Refer to the Limitations section.
  – Systems support one diskette drive (not standard).
  – The IDE and SATA HDD controllers come standard with the IntelliStation M Pro systems. On SAS models, an SAS mini-PCI card is included with the system. To add SAS HDDs to an SATA model, a mini-PCI card and cable are required.

• Graphics: The systems have PCI-Express slot, which supports only PCI-compliant graphics accelerators. Models of the IntelliStation M Pro are shipped with graphics3w. or NVIDIA Quadro FX 3500 PCI-Express compliant adapters.

• Operating system: Microsoft™ Windows™ Vista Business and Windows XP Professional

For additional details on Linux™ support, visit http://www.ibm.com

  Note: The preceding information represents IBM's current intentions, goals, and objectives and is subject to change or may be withdrawn without additional or prior notice.

• Power management:
  Advanced Configuration and Power Interface (ACPI) support depends on the installed operating system.

Advanced manageability and security

Advanced Power Management (APM): The IntelliStation M Pro system supports APM Specification, V1.2.

APM provides a cooperative environment in which applications, operating systems, and device drivers work together to help reduce power consumption. Features include:
• The APM standby feature: Places the system in stand-by mode after a user-defined time interval has elapsed with no activity. The system resumes operation when the keyboard or mouse is used.

• The scheduler feature: Used to start events such as resume or program initiation when the system is off.

• The Wake on LAN® feature: Allows a remote network administrator or server to communicate with the system even when it is powered off.

Note: Some software may differ from its retail version, if any, and may not include user manuals or all program function. Warranty service and support for non-IBM products are provided directly to you by third parties, not IBM. IBM makes no representation or warranties regarding non-IBM products. For non-IBM software, applicable third-party software licenses may apply.

IBM manageability tools

Desktop Management Interface (DMI) Service Provider: This tool can help administrators manage and control hardware and software products on desktop computers and servers. Each DMI-compliant component registers its configuration information in a management information format file that follows an industry-standard format. The IntelliStation is DMI specification 2.0-compliant. Support documentation is built into the help system.

• DMI BIOS Instrumentation:
  Retrieves information from the system BIOS, such as memory configuration, BIOS version and date, and microprocessor and cache information.

• PC System Monitor Instrumentation:
  Monitors system-board temperatures, system voltages, and fan speed, and detects removal of the computer cover. Data is reported to the DMI service layer. Systems management software, such as IBM Director Agent, can then be used to send an alert to the user or the system administrator if a problem occurs.

IBM Director Agent (Windows XP Professional (32-bit) only)

IBM Director Agent, a client management application for networked computers, centralizes control of your computer systems to potentially lower the total cost of ownership. View, monitor, and control your networked computers with IBM Director Agent.

With IBM Director Agent, you can:

• Learn detailed inventory information about your computers, including the operating system, memory, network cards, and hardware

• Track your computers proactively with features such as power management, event log, and system monitoring

• Upwardly integrate with Tivoli® Enterprise, Tivoli NetView®, Computer Associates Unicenter, HP OpenView, Microsoft SMS, BMC Patrol, and NetIQ AppManager

IBM Director Agent uses some of the latest systems management standards, including Common Information Model, Web-Based Enterprise Management, and XML, making it compatible with most of the enterprise management software you already have.

IBM Director Agent can also be used with the complete IBM Director product for more comprehensive workgroup management:

• Managing groups of systems

• Performing tasks on those groups

• Responding to alerts with automated action plans

The IntelliStation workstation, running Windows 32-bit, supports IBM Director. The software versions, features, and functions of IBM Director Agent may change as new releases become available or may be discontinued at any time. For a list of systems supported, visit http://www.ibm.com/eserver/xseries/systems_management/
Remote Deployment Manager™ (RDM) (Windows XP Professional (32-bit) only)

These systems can use RDM, which enables the configuration and deployment of the systems. This highly flexible and powerful tool enables you to deploy system images that include the operating system and configuration details from an IBM Director console on the network.

With RDM, you can:

- Load firmware or specific operating systems
- Store installation images on the RDM server
- Restore disk images locally with a keystroke
- Drag and drop to deploy images

Technology enablers

IBM technology enablers are the supporting hardware designed into IBM products to enable comprehensive systems management.

- Pre-boot eXecution Environment (PXE) is firmware located on the network interface card that allows a networked PC to find a configuration server on the network prior to loading any operating system.
- S.M.A.R.T. HDDs offer early warning of some failures so that critical data can be protected. S.M.A.R.T. HDDs are the industry-standard reliability indicator for SAS and SATA HDDs.
- Wake on LAN, a product of the IBM and Intel® Advanced Manageability Alliance, enables administrators to remotely power on a networked client system from a powered-off state.

Alert Standard Format (ASF): ASF enhances your ability to monitor PCs locally or remotely. ASF notifies you immediately of some system events, such as chassis intrusion, client disconnect from the network, or system startup errors, regardless of the power state of the system. ASF helps provide both systems management and asset protection. Systems management notifies you of configuration changes during power-on self-test (POST), system errors during POST, and operating system hangs or errors. Asset protection tracks the system presence via monitoring of an LAN connection and tracking intrusion, regardless of whether the system is fully powered on or the system is off but still plugged into the outlet. ASF also notifies you when certain environmental conditions, such as the temperature, are abnormal.

Hardware and software information

Hardware information

Monitors: IBM monitors supported by IntelliStation M Pro system will be reflected in the compatibility report to be made available to marketing and support channels when testing is complete.

Advanced 3D graphics

NVIDIA Quadro FX 1500 256 MB PCI-Express video adapter: This adapter includes:

- NVIDIA G71GL video chip
- Full 128-bit floating-point precision graphics pipeline
- HDTV output
- x16 PCI-Express support
- Optimized and certified, by third parties, for all leading workstation applications
- Hardware accelerated antialiased points and lines
- Hardware OpenGL overlay planes
• Hardware accelerated two-sided lighting
• High-performance OpenGL hardware accelerated pixel readback
• The NVIDIA driver provides full support for Shader Model 3.0/DirectX 9.1
• The NVIDIA driver provides comprehensive Microsoft DirectX 9.1 (and lower) and OpenGL 2.0 (and earlier) support
• Broad operating system support including Windows Vista Business, Windows XP 64- and 32-bit, Windows 2000, and Linux 64 and 32-bit
• Advanced multidisplay desktop and application management seamlessly integrated into Microsoft Windows

NVIDIA nView display technology allows a single PCI-Express adapter to independently support any two of the following displays:

• Analog CRT monitor
• Digital CRT monitor
• Analog flat panel
• Digital flat panel

Technical capabilities

• 256 MB of 256-bit GDDR3 SDRAM memory interface
• Dual 400 MHz RAMDACs supporting a primary display and a secondary analog display resolution up to 2048 x 1536 at 85 MHz per display
• Eight pixels per clock rendering engine
• Sixteen textures per pixel
• 16x full-scene antialiasing (FSAA)
• 12-bit subpixel precision

Display modes: The NVIDIA Quadro FX 1500 supports the following screen resolutions and refresh rates:

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Color bits</th>
<th>Refresh rate (Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>320 x 200</td>
<td>8, 16, 32</td>
<td>60, 70, 75</td>
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<tr>
<td>320 x 240</td>
<td>8, 16, 32</td>
<td>60, 70, 75</td>
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<tr>
<td>400 x 300</td>
<td>8, 16, 32</td>
<td>60, 70, 75</td>
</tr>
<tr>
<td>480 x 360</td>
<td>8, 16, 32</td>
<td>60, 70, 75</td>
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<tr>
<td>512 x 384</td>
<td>8, 16, 32</td>
<td>60, 70, 75</td>
</tr>
<tr>
<td>640 x 400</td>
<td>8, 16, 32</td>
<td>60, 70, 72, 75, 85, 100, 120</td>
</tr>
<tr>
<td>640 x 480</td>
<td>8, 16, 32</td>
<td>60, 70, 75, 85, 100, 120</td>
</tr>
<tr>
<td>800 x 600</td>
<td>8, 16, 32</td>
<td>60, 70, 72, 75, 85, 100, 120</td>
</tr>
<tr>
<td>1024 x 768</td>
<td>8, 16, 32</td>
<td>60, 70, 72, 75, 85, 100, 120</td>
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<tr>
<td>1152 x 864</td>
<td>8, 16, 32</td>
<td>60, 70, 72, 75, 85, 100, 120</td>
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<tr>
<td>1280 x 720</td>
<td>8, 16, 32</td>
<td>60, 70, 72, 75, 85, 100, 120</td>
</tr>
<tr>
<td>1280 x 960</td>
<td>8, 16, 32</td>
<td>60, 70, 75, 85, 100, 120</td>
</tr>
<tr>
<td>1280 x 1024</td>
<td>8, 16, 32</td>
<td>60, 70, 72, 75, 85, 100, 120</td>
</tr>
<tr>
<td>1600 x 900</td>
<td>8, 16, 32</td>
<td>60, 70, 75</td>
</tr>
<tr>
<td>1600 x 1200</td>
<td>8, 16, 32</td>
<td>60</td>
</tr>
<tr>
<td>1792 x 1344</td>
<td>8, 16, 32</td>
<td>60</td>
</tr>
<tr>
<td>1856 x 1392</td>
<td>8, 16, 32</td>
<td>60</td>
</tr>
<tr>
<td>1920 x 1080</td>
<td>8, 16, 32</td>
<td>60</td>
</tr>
<tr>
<td>1920 x 1200</td>
<td>8, 16, 32</td>
<td>60</td>
</tr>
<tr>
<td>1920 x 1440</td>
<td>8, 16, 32</td>
<td>60</td>
</tr>
<tr>
<td>2048 x 1536</td>
<td>8, 16, 32</td>
<td>60</td>
</tr>
<tr>
<td>2560 x 1600</td>
<td>8, 16, 32</td>
<td>60</td>
</tr>
</tbody>
</table>

Maximum analog resolution: 1600 x 1200 (60 Hz)
Maximum digital resolution: 2560 x 1600 (60 Hz)
High advanced 3D graphics

**NVIDIA Quadro FX 3500 256 MB PCI-Express video adapter:** This adapter includes:

- NVIDIA G71GL video chip
- Full 128-bit floating-point precision graphics pipeline
- OpenGL quad-buffered stereo (three-pin sync connector)
- x16 PCI-Express support
- Optimized and certified, by third parties, for leading workstation applications
- Hardware accelerated antialiased points and lines
- Hardware OpenGL overlay planes
- Hardware accelerated two-sided lighting
- High-performance OpenGL hardware accelerated pixel readback
- Full support for shader model 3.0/DirectX 9.1
- Comprehensive Microsoft DirectX 9.1 (and lower) and OpenGL 2.0 (and earlier) support
- Broad operating system support including Windows Vista Business, Windows XP 64- and 32-bit, Windows 2000, and Linux 64- and 32-bit
- Advanced multidisplay desktop and application management seamlessly integrated into Microsoft Windows

NVIDIA nView display technology allows a single PCI-Express adapter to independently support any two of the following displays:

- Analog CRT monitor
- Digital CRT monitor
- Analog flat panel
- Digital flat panel

**Technical capabilities**

- 256 MB of 256-bit, GDDR3 SDRAM memory interface
- Dual 400 MHz RAMDACs supporting a primary display and a secondary analog display resolution up to 2048 x 1536 at 85 MHz per display
- Eight pixels per clock rendering engine
- Sixteen textures per pixel
- 16x full-scene antialiasing (FSAA)
- 12-bit subpixel precision

**Display modes:** The NVIDIA Quadro FX 3500 PCIe supports the following screen resolutions and refresh rates:

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Software information

The new IntelliStation M Pro models were tested for compatibility with Microsoft Windows Vista Business, Windows XP Professional 32- and 64-bit Editions and Red Hat Enterprise Linux WS 4. A documented compatibility report will be made available to marketing and support channels.

The following types of software are included with the system.

- Operating system preloaded
- Selected device drivers on CD-ROM or diskette
- Software license for specific licensed software available from IBM

Microcode: Flash BIOS supports the following features:

- PCI BIOS Specification V2.1
- Plug-and-play BIOS Specification V1.0A
- DMI BIOS Specification V2.0

Flash ROM supports Compatibility BIOS (CBIOS) and POST.

Preload image recovery: Selected models are preloaded with Windows Vista Business or Windows XP Professional. Preload image recovery is enabled through disk-to-disk recovery or the product recovery CD.

Disk-to-disk product recovery: The new IntelliStation M Pro systems preinstalled with Windows XP Professional have a unique partition on the HDD for product recovery. If the preload image is corrupted, the original image can be retrieved from the recovery partition.

Product recovery CD: Product recovery CDs are available as field-replaceable units (FRUs) for systems preloaded with Windows XP Professional. They offer the option to fully recover and restore the original preload image of the operating system, including most original device drivers and applications after formatting the HDD.

Note: Recovery CD will support hostraid function only for the LSI paddle card not for onboard hostraid.
Windows XP Professional
Windows Vista

Online Books
User's Guide

Utilities
Set up your Network icon
IBM Director Agent (Win 32-bit only)
IBM Record Now (CD-RW only)
IBM Drive Letter Access (CD-RW only)

Applications
Acrobat Reader
Diagnostic
Norton Antivirus

Device drivers*
Analog Devices HD Audio
Broadcom Ethernet
Intel INF file
NVIDIA Quadro FX 1500
NVIDIA Quadro FX 3500

* Applications and device drivers may vary from the retail version and may not include all functions and documentation. Not all applications are available separately; titles are subject to change.

Application descriptions

Acrobat Reader: This product enables viewing of PDF files, a common format for text and Web documentation.

Norton AntiVirus for IBM (OEM version): This comprehensive antivirus product can detect and remove viruses from your computer.

IBM Record Now (CD-RW/combo models only): This program allows creation of a CD or CD image from a selected set of files.

IBM Driver Letter Access (CD-RW/combo models only): This program allows files to be copied to and from a writable CD through Windows Explorer.

Plug-and-play support: Plug-and-play specifications make it easier for users to install, upgrade, and make changes to their PCs. Systems that use plug-and-play adapter cards are self-configuring.

Education support

No self-study or classroom courses are available specifically for the IBM IntelliStation M Pro system.

Call IBM Global Services IT Education Services at 800-IBM-TEACH (426-8322) for education catalogs, schedules, and enrollments.

Publications

The following publications are shipped with the IntelliStation M Pro workstations.

<table>
<thead>
<tr>
<th>Title</th>
<th>Part number</th>
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</thead>
<tbody>
<tr>
<td>IntelliStation Installation Guide</td>
<td>40K2288</td>
</tr>
<tr>
<td>IntelliStation Documentation CD</td>
<td>40K2290</td>
</tr>
<tr>
<td>IntelliStation Device Driver</td>
<td>40K2289</td>
</tr>
</tbody>
</table>
The IntelliStation User’s Guide and Hardware Maintenance Manual, in U.S. English versions, are available from


Select Publications, then IntelliStation and then Type and click continue.

Services

Global Technology Services

IBM Services include business consulting, outsourcing, hosting services, applications, and other technology management.

These services help you learn about, plan, install, manage, or optimize your IT infrastructure to be an On Demand Business. They can help you integrate your high-speed networks, storage systems, application servers, wireless protocols, and an array of platforms, middleware, and communications software for IBM and many non-IBM offerings. IBM is your one-stop shop for IT support needs.

For details on available services, contact your IBM representative or visit

http://www.ibm.com/services/

For details on available IBM Business Continuity and Recovery Services, contact your IBM representative or visit

http://www.ibm.com/services/continuity

For details on education offerings related to specific products, visit


Select your country, and then select the product as the category.

Technical information

Specified operating environment

Physical specifications

SATA 160 GB HDD characteristics

• Formatted capacity: 160,064 million bytes
• Average read seek time: <8.9
• Burst transfer rate (maximum): 3.0 Gpbs
• Average latency: 4.2 ms
• Drive rotation speed (rpm): 7200 rpm
• Sustained data transfer rate: 29.6 to 61.1 MB/s
• PFA/S.M.A.R.T enabled: Yes
• Interface: Serial-ATA

SAS 73 GB HDD specifications

• Formatted capacity: 73,400 million bytes
• Average read seek time: <3.5
• Burst transfer rate (maximum): 3.0 Gpbs
• Average latency: 2.0 ms
• Drive rotation speed (rpm): 15,000 rpm
• PFA/S.M.A.R.T enabled: Yes
• Interface: SAS

CD-ROM specifications

48x-32x-48x-16x Max CD-RW/DVD-ROM combination drive specifications

• Write speed:
  – CD-R media — 48X max — 3.0 to 7.2 MB/s CAV
  – CD-RW media
    -- Multispeed — 4X — 0.6 MB/s CLV
    -- High-speed — 10X — 1.5 MB/s CLV
    -- Ultraspeed — 24X max — 1.5 to 3.6 MB/s CAV
    -- Ultraspeed Plus — 32X max — 2.0 to 4.8 or 3.0 to 4.8 MB/s PCAV

Read speed:

• Sustained data transfer rates:
  – DVD-ROM (6.5x-16x CAV, 4.7 GB DVD-ROM read): 8.7 to 21.6 MB/s
  – DVD-ROM (3.3x-8x CAV, 8.5 GB dual-layer read): 4.4 to 10.8 MB/s
  – DVD-R (3.3x-8x CAV, 4.7 GB): 4.4 to 10.8 MB/s
  – DVD+R (3.3x-8x CAV, 4.7 GB single-layer read): 4.4 to 10.8 MB/s
  – DVD-R/DL (3.3x-8x CAV, 8.5 GB dual-layer read): 4.4 to 10.8 MB/s
  – DVD-RAM (1.6-4x CLV, 4.7 GB DVD-RAM read): 2.2 to 5.4 MB/s
  – DVD-RW (3.3x-8x CAV, 4.7 GB: 4.4 to 10.8 MB/s
  – DVD+RW (3.3x-8x CAV, 4.7 GB: 4.4 to 10.8 MB/s
  – CD-ROM (20x-48x CAV, CD-ROM read): 3.0 to 7.2 MB/s
  – CD-R (18x-40x CAV, CD-R read): 2.7 to 6.0 MB/s
  – CD-RW (18x-40x CAV, CD-RW read): 2.7 to 6.0 MB/s
• Max burst data transfer rate: Ultra DMA Mode 2: 33 MB/s

• Average access times:
  – DVD-ROM including latency, single layer: 130 ms typical
  – CD-ROM including latency: 100 ms typical
  – CD-RW including latency: 120 ms typical
  – 2 MB data buffer

Note: Variable read rate. Actual playback speed will vary and is often less than the maximum possible.

Mechanical specifications: Dimensions/weights

• Width: 178 mm (7.0 in)
• Depth: 445 mm (17.5 in)
• Height: 430 mm (16.9 in)
• Weight:
– 12.5 kg (27.8 lb) (minimum configuration)
– 15.5 kg (34.4 lb) (maximum configuration)

**Electrical power specifications**

- 400-watt power supply continuous
- 110 V ac or 220 V ac operation
- Built-in overload and surge protection
- 100 to 127 (nominal) V ac; 50 or 60 Hz; 8.0 A (maximum)
- 200 to 240 (nominal) V ac; 50 or 60 Hz; 4.0 A (maximum)

**Ambient air temperature specifications**

- System on: 10° to 35°C (50° to 95°F) at 0 to 2,134 m (0 to 7,000 ft)
- System off: -40° to 60°C (-40° to 140°F) at 0 to 2,134 m (0 to 7,000 ft)

**Shipping specifications**

Approximate shipping dimensions and weight:

- Single pack dimensions: 607.9 x 326.9 x 564.7 mm (23.93 x 12.87 x 22.23 in)
- Single pack weight: 15.0 kg (33.04 lb)
- Quantity per pallet: 12
- Estimated safe stacking: 3

**APM:** Power consumption depends on many variables, including system memory, graphics memory, and number and type of HDDs and adapter cards only with the SCSI installed. The IntelliStation M Pro systems has processor power management and full support for the Advanced Configuration and Power Interface (ACPI) specification.

**Noise level specifications:** Declared Acoustical Noise Emissions:

- SATA models
  - LWAd = 4.0 bels (idle mode)
  - LWAd = 4.3 bels (operating)
- SAS models
  - LWAd = 4.5 bels (idle mode)
  - LWAd = 5.3 bels (operating)

**Note:** The noise emission level stated is the declared (upper limit) A-weighted sound power level, in bels, for a random sample of machines, typically configured and operating in idle mode (powered on, but no DASD read/write or other I/O activity). All measurements have been made in accordance with ANSI S12.10 and reported in conformance with ISO 9296.

**Equipment approvals**

- FCC — Certified to comply with Part 15 FCC Rules, Class B limits
- ICES-003 — Canada
- NMB-003 — du Canada
- UL — UL 60950-1 First Edition
- IEC CAN/CSA-C22.2 No. 60950-1 First Edition
- CUL — 60950-1 First Edition
• NOM — (Mexico — legal requirement)

Operating environment

• Temperature
  – System on: 10° to 35°C (50° to 95°F)
  – System off: -40° to 60°C (-40° to 140°F)
• Relative humidity: 8% to 80%
• Heat output: 1239 Btu/hr (maximum configuration)
• Electrical power
  – 100 to 127 V ac, .37 kVA maximum
  – 200 to 240 V ac, .19 kVA maximum
• Capacity of exhaust: 40 cfm (1.13 cmm)
• Noise level: 4.3 bels with SATA hardfile seeking
• Noise level: 5.3 bels with SAS hardfile seeking
• Maximum altitude: 2,133 m (7,000 ft)

Hardware requirements

Monitors: IBM monitors supported by the IntelliStation M Pro workstations will be reflected in the compatibility report to be made available to marketing and support channels when testing is complete.

Software requirements

Operating system software: The new IntelliStation M Pro models were tested for compatibility with the Windows Vista Business, Windows XP Professional, and Red Hat Enterprise Linux WS 4 operating systems.

Compatibility

Systems compatibility report: The IntelliStation M Pro workstations were tested for compatibility with numerous devices.

To view IntelliStation compatibility reports, visit

http://www-03.ibm.com/servers/eserver/serverproven/compat/us/

For software not included in the compatibility test report, contact the manufacturer or place of purchase to validate compatibility.

Limitations

• Memory:
  – All memory installed in a system must be PC2-5300 CL5 ECC DDR2 SDRAM DIMM memory.
  – Memory must be installed in pairs.
    Note: Maximum memory may require replacement of standard memory with optional maximum memory modules.
• Graphics:
  – The NVIDIA Quadro FX 3500 requires the external PCI-Express power direct from the power supply.
• HDD:
  – 5.25-inch bays support an additional HDD with 5.25-inch to 3.5-inch conversion kit.
– A maximum of three HDDs for SAS models or four SATA HDDs in SATA models are supported.

– Mixed SATA and SAS configuration are not supported.

• Full RDM support will not be available until first quarter 2006 at

Minitower

<table>
<thead>
<tr>
<th>Slot</th>
<th>Adapter Type</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>32-bit PCI adapter</td>
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<tr>
<td>2</td>
<td>PCI-Express x16</td>
<td>Occupied with PCI-Express graphics adapter</td>
</tr>
<tr>
<td>3</td>
<td>PCI-Express x8</td>
<td>Open slot</td>
</tr>
<tr>
<td>4</td>
<td>PCI-Express x16</td>
<td>Open slot</td>
</tr>
</tbody>
</table>

Planning information

Customer responsibilities: The IntelliStation M Pro workstation is designated as customer setup (CSU). CSU allowance is one day.

Cable orders: Except for system power, keyboard, and mouse connections, there are no cabling requirements. All cables are provided with the system unit, and the instructions are provided as part of initial setup.

Installability: The IntelliStation system is designed to function in a vertical position.

Following the setup instructions, attach the keyboard and peripherals. Turn on the power. Setup is run after the computer has successfully completed its initial self-tests.

The setup utility resides in ROM. In some instances, you will be prompted to run this utility, or you can invoke it by pressing the F1 key during memory POST.

The IntelliStation M Pro models have a universal power supply that operates with either 115 V ac or 230 V ac. The power supply has an auto-sensing design that automatically determines the correct operating voltage. All power supplies have built-in overload protection and surge protection.

Packaging

Product Packaging

IntelliStation M Pro

System unit carton

- Hardware assembly package:
  - Power cord (U.S. and Canada - 110 V ac)
  - Keyboard, mouse
  - Hardware publications package
  - Software support publications package

- Operating system package:
  - Operating system

Security, auditability, and control

Improved asset protection: The IntelliStation M Pro systems have two key focus areas: Better system security and better data protection. The IntelliStation M Pro systems are equipped with a range of features that help address both of these focus areas.

System security includes theft deterrence and detection of system tampering. The IntelliStation M Pro systems have the following security attributes:

• ASF
• Asset control and monitoring:
IBM Director Agent and the chassis intrusion switch help notify network administrators when an
IntelliStation M Pro system is opened without authorization. The administrator can then take
appropriate action to prevent system tampering or theft.

The IntelliStation M Pro systems have the following data protection attributes:

- **S.M.A.R.T. analysis:**
  All models have S.M.A.R.T. HDDs to warn users and network administrators when certain
  HDD failures may be imminent by measuring parameters such as rotation speed and head
  wear. In the case of predictable failures, you can alleviate costly data loss by backing up data
  and replacing the HDD.

- **Environmental control and monitoring:**
  The manageability chip constantly monitors system voltage and processor temperature and
  alerts the network administrator when some potential system failures may occur. You can then
  perform a preventative system backup.

- **Virus protection:**
  Each IntelliStation M Pro system preloaded with Windows XP Professional (32-bit) is shipped
  with Norton AntiVirus for IBM (OEM Version) software.

The IntelliStation M Pro models support the following security features:

- Cover tamper detect switch
- U-bolt anchoring feature (U-bolt is optional; supports optional padlock)
- Secure fixed DASD
- Power-on password
- Setup utility password (administrator password)
- Keyboard/mouse password
- Boot sequence control
- Boot without keyboard or mouse
- Diskette boot inhibit
- Disable mouse
- Diskette I/O control
- HDD I/O control
- Serial port I/O control
- Parallel port I/O control
- Secure access openings (vents, louvers)
- Vital product data stored in on-board flash ROM

To assist in security, systems management, and asset management, the following system
identifiers (vital product data) are provided:

- Machine type and model
- System serial number
- Manufacturing identifier

The customer is responsible for evaluation, selection, and implementation of security features,
administrative procedures, and appropriate controls in application systems and communications
facilities.
IBM credit corporation financing: Yes

To obtain copies of the IBM Statement of Limited Warranty, contact your reseller or IBM.

In the United States, call 800-IBM-SERV (426-7378), or write to:

Warranty Information
P.O. Box 12195
Research Triangle Park, NC 27709
Attn: Dept. JDJA/B203

Warranty period

• Three years
• Optional features — One year

Optional IBM features initially installed in an IBM machine carry the same warranty period as the machine. If installed after the initial machine installation, they carry the balance of the machine warranty or the optional feature warranty, whichever is greater.

Warranty service: If required, IBM provides repair or exchange service depending on the type of warranty service specified below for the machine. IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM Web site. You must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend upon the time of your call and is subject to parts availability. Service levels are response time objectives and are not guaranteed. The specified level of warranty service may not be available in all worldwide locations; additional charges may apply outside IBM's normal service area, contact your local IBM representative or your reseller for country and location specific information.

Customer Replaceable Unit (CRU) (for example, keyboard, mouse, speaker, memory, hard disk drive) service and on-site service.

CRU service: IBM provides a replacement CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM at any time on your request. A CRU is designated as being either a Tier 1 or a Tier 2 CRU. Installation of a Tier 1 CRU is your responsibility. If IBM installs a Tier 1 CRU, at your request, you will be charged for the installation. You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service specified below, on-site service.

Based upon availability, a CRU will be shipped for next business day (NBD) delivery. IBM specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to IBM. When return is required, return instructions and a container are shipped with the replacement CRU, and you may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

The following have been designated as a Tier 1 CRU:

• Battery
• Blank filler
• Cable-management arm
• Hard disk drive
• Hot-swap fan
• Hot-swap power supply
• Lift handle kit
• Memory DIMM
• Memory expansion card
• Optical drive
• PCI adapter
• PCI divider
• Power cord
• Service label
• Service processor
• System label
• Top cover
• Voltage regulator module

On-site service: On-site repair, 9 hours per day, Monday through Friday excluding holidays, NBD response. IBM or your reseller will repair the failing machine at your location and verify its operation. You must provide suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose. On-site service is not available in all countries, and some countries have kilometer or mileage limitations from an IBM service center. In those locations where on-site service is not available, the normal in-county service delivery is used.

Call IBM at 800-IBM-SERV (426-7378), to assist with problem isolation for hardware to determine if warranty service is required. Telephone support may be subject to additional charges, even during the limited warranty period.

International Warranty Service: International Warranty Service (IWS) is available in selected countries or regions.

The warranty service type, for example, on-site repair and customer replaceable unit, and service level, 9x5 NBD and 24x7, provided in the servicing country may be different from that provided in the country in which the machine was purchased.

Under IWS, warranty service will be provided with the prevailing warranty service type and service level available for the IWS-eligible machine type in the servicing country and the warranty period observed will be that of the country in which the machine was purchased.

To determine the eligibility of your machine and to view a list of countries where service is available, visit


For more information on IWS, refer to Services Announcement 601-034, dated September 25, 2001.

Licensing: Programs included with this product are licensed under the terms and conditions of the License Agreements that are shipped with the system.

Maintenance services

ServicePac®, ServiceSuite™, ServiceElect, and ServiceElite: ServicePac, ServiceSuite, ServiceElect, and ServiceElite provide hardware warranty service upgrades, maintenance, and selected support services in one agreement.

Warranty service upgrade: During the warranty period, a warranty service upgrade provides an enhanced level of on-site service for an additional charge. A warranty service upgrade must be purchased during the warranty period and is for a fixed term (duration). It is not refundable or transferable and may not be prorated. If required, IBM will provide the warranty service upgrade enhanced level of on-site service acquired by the customer. Service levels are response time objectives and are not guaranteed.

IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM Web site. You must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend upon the time of your call and is subject to parts availability.
CRUs will be provided as part of the machine’s standard warranty CRU service except that you may install a Tier 1 CRU yourself or request IBM installation, at no additional charge, under one of the on-site service levels specified below.

IBM will repair the failing machine at your location and verify its operation. You must provide suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose.

Refer to Prices section for specific offerings.

**Maintenance service:** If required, IBM provides repair or exchange service depending on the type of maintenance service specified below for the machine. IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM Web site. You must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend upon the time of your call and is subject to parts availability. Service levels are response time objectives and are not guaranteed.

**CRU service:** If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, hard disk drive), IBM will ship the CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM at any time on your request.

IBM specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to IBM. When return is required, return instructions and a container are shipped with the replacement CRU, and you may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

**On-site service:** IBM will repair the failing machine at your location and verify its operation. You must provide suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose.

Refer to Prices section

**Maintenance service (ICA)**

Maintenance services are available for ICA legacy contracts.

**Alternative service (warranty service upgrades):** During the warranty period, warranty service upgrade provides an enhanced level of on-site service for an additional charge. A warranty service upgrade must be purchased during the warranty period and is for a fixed term (duration). It is not refundable or transferable and may not be prorated. If required, IBM will provide the warranty service upgrade enhanced level of on-site service acquired by the customer. Service levels are response time objectives and are not guaranteed.

IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM Web site. You must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend upon the time of your call and is subject to parts availability.

A CRU will be provided as part of the machine’s standard warranty CRU service except that you may install a Tier 1 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service specified below, on-site service.

IBM will repair the failing machine at your location and verify its operation. You must provide suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose.

Refer to Prices section for specific offerings.

**Maintenance service:** If required, IBM provides repair or exchange service depending on the type of maintenance service specified below for the machine. IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM Web site. You must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend upon the time of your call and is subject to parts availability. Service levels are response time objectives and are not guaranteed.

**CRU service:** If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, hard disk drive), IBM will ship the CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM at any time on your request.

IBM specifies in the materials shipped with a replacement CRU whether a defective CRU must...
be returned to IBM. When return is required, return instructions and a container are shipped with the replacement CRU, and you may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

**On-site service:** IBM will repair the failing machine at your location and verify its operation. You must provide suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose.

Refer to Prices section for specific offerings.

### Non-IBM Parts Support

**Warranty service:** IBM is now shipping machines with selected non-IBM parts that contain an IBM field replaceable unit (FRU) part number label. These parts are to be serviced during the IBM machine warranty period. IBM is covering the service on these selected non-IBM parts as an accommodation to their customers, and normal warranty service procedures for the IBM machine apply.

**Warranty service upgrades and maintenance services:** Under certain conditions, IBM Integrated Technology Services repairs selected non-IBM parts, at no additional charge, for machines that are covered under warranty service upgrades or maintenance services.

IBM Service provides hardware problem determination on non-IBM parts (for example, adapter cards, PCMCIA cards, disk drives, memory) installed within IBM machines covered under warranty service upgrades or maintenance services and provides the labor to replace the failing parts at no additional charge.

If IBM has a Technical Service Agreement with the manufacturer of the failing part, or if the failing part is an accommodations part (a part with an IBM FRU label), IBM may also source and replace the failing part at no additional charge. For all other non-IBM parts, customers are responsible for sourcing the parts. Installation labor is provided at no additional charge, if the machine is covered under a warranty service upgrade or a maintenance service.

**IBM hourly service rate classification:** One

**Field-installable features:** Yes

**Model conversions:** No

**Machine installation:** Customer setup. Customers are responsible for installation according to the instructions IBM provides with the machine.

**Graduated program license charges apply:** No. This product does not contain Licensed Internal Code or Licensed Machine Code.

**Educational allowance:** None

### Prices

The following are newly announced features on the specified models of the IBM Intellistation M pro 9229 machine type.

<table>
<thead>
<tr>
<th>Description</th>
<th>Feature Model</th>
<th>Purchase Price</th>
<th>Initial / MES/ Both/ Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refresh Planar</td>
<td>AC1 1124 NC</td>
<td>Initial</td>
<td></td>
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<tr>
<td>Intel Core 2 Quad Processor Intel Q6600 (2.40GHz, 1066 MHz, 8M L2)</td>
<td>AC1 2813 $1,749</td>
<td>Initial</td>
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<tr>
<td>IBM 750GB SATA HDD</td>
<td>AC1 5541 825</td>
<td>Initial</td>
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System Documentation and AC1 8187 NC Initial
Software, English
MC1 Initial

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<tr>
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<th>Purchase price</th>
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<th>CSU</th>
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<tbody>
<tr>
<td>IntelliStation M Pro 2.66 GHz E6700 4 MB 1066 MHz, 2x1 GB DDR2-667, 73 GB 15K SAS, DVD/CD-RW ENET, 1394, Vista Business NVIDIA Quadro FX 3500</td>
<td>922976U</td>
<td>$3,009</td>
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<thead>
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<th>Description</th>
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<th>Purchase price</th>
<th>Both/Support</th>
<th>CSU</th>
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<tr>
<td>IntelliStation M Pro 2.66 GHz E6700 4 MB 1066 MHz, 2x1 GB DDR2-667, 160 GB 7.2K SATA, DVD/CD-RW ENET, 1394, Vista Business NVIDIA Quadro FX 1500</td>
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<th>CSU</th>
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<tbody>
<tr>
<td>IntelliStation M Pro 2.40 GHz Q6600 8 MB 1066 MHz, 4x1 GB DDR2-667, 73 GB 15K SAS, DVD/CD-RW ENET, 1394, WnxP64 NVIDIA Quadro FX 3500</td>
<td>922992U</td>
<td>3,809</td>
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Option SEOs: None
Pricing entries for MT 3331: None

ServicePac for warranty and maintenance (Ivory Letter)

The offerings below apply to all models of machine type 9229.

<table>
<thead>
<tr>
<th>Description</th>
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<tr>
<td>3-year IOR 9 x 5 4-hour average response</td>
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<tr>
<td>3-year IOR 24 x 7 4-hour average response</td>
<td>41L2741</td>
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<tr>
<td>4-year IOR 9 x 5 NBD 4-hour average response</td>
<td>69P9164</td>
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<tr>
<td>4-year IOR 9 x 5 4-hour average response</td>
<td>69P9165</td>
</tr>
<tr>
<td>4-year IOR 24x7 4-hour average response</td>
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</table>

MA ServicePac for post warranty

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<tr>
<th>Description</th>
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<td>1-year IOR 9 x 5 NBD</td>
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<tr>
<td>1-year IOR 9 x 5 x 4</td>
<td>69P9354</td>
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<tr>
<td>1-year IOR 24 x 7</td>
<td>69P9355</td>
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<tr>
<td>2-year IOR 9 x 5 NBD</td>
<td>96P2135</td>
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<tr>
<td>2-year IOR 9 x 5 x 4</td>
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ServicePac for installation services (Ivory Letter)

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<tr>
<th>Description</th>
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<tr>
<td>Basic Install 1-25 Units</td>
<td>21P2001</td>
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</table>

For ServiceElect (ESA) maintenance service charges, contact IBM Global Services at 888-IBM-4343 (426-4343).

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Order now

To order, contact the Americas Call Centers, your local IBM representative, or your IBM Business Partner.

To identify your local IBM representative or IBM Business Partner, call 800-IBM-4YOU (426-4968).

Reference: SE001

The Americas Call Centers, our national direct marketing organization, can add your name to the mailing list for catalogs of IBM products.

Note: Shipments will begin after the planned availability date.

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