

IBM System Storage DS5020 Midrange Disk System and IBM System Storage EXP520 Storage Expansion Unit offer new high-performance 8 Gbps midrange disk storage solution

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At a glance



The IBM® System Storage™ DS5020 disk system, IBM's newest midrange disk storage offering, is designed to deliver high performance, advanced function, high availability, and modular and scalable storage capacity.

- Supports RAID 0, 1, 3, 5, 6, and 10
- Provides SAN-attached 8 Gbps Fibre Channel (FC) host connectivity, as well as optional 1GbE iSCSI host connectivity
- Accommodates up to 16 disk drives installed within the DS5020 enclosure with attachment support for up to six EXP520 expansion units, providing modular and highly scalable storage solutions that range up to 112 TB physical storage capacity
- Supports intermix of SATA drives, FC drives, and encryption-capable FC drives within the DS5020 and EXP520 enclosures

For ordering, contact your IBM representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL (Reference: YE001).

Overview

The IBM System Storage DS5020 disk system is IBM's newest midrange disk offering, specifically designed to help address midrange or departmental storage requirements.

The DS5020 supports RAID levels 0, 1, 3, 5, 6, and 10, with scalable capacity of up to 112 TB physical storage capacity. The DS5020 has SAN-attached 8 Gbps FC host connectivity, as well as optional features to add 1GbE iSCSI host connections for

flexibility in host connectivity and encryption-capable Fibre Channel disk drives for applications that require additional data security.

The DS5020 disk system is designed to deliver up to a two-fold IOP performance increase over the current-generation DS4700 offerings and represents the eighth-generation architecture within the midrange disk family.

DS5020 Disk System members

- DS5020 Disk Controller (1814-20A)
- EXP520 Storage Expansion Unit (1814-52A)

The DS5020 controller comes packaged in a 3U rack-mountable enclosure with dual-active RAID controllers, accommodates up to 16 disk drives installed within the base 3U enclosure, and provides 8 Gbps FC host ports and optional 1GbE iSCSI host connectivity.

The EXP520 Expansion Unit is a high-capacity 16-drive bay unit packaged in a 3U rack-mountable enclosure. The DS5020 disk unit can attach up to six EXP520 expansion units, providing modular and highly scalable storage solutions that range up to 112 TB physical storage capacity.

Both the DS5020 and EXP520 accommodate SATA, FC, and encryption-capable FC disk drives. The intermix of these disk drives is supported and provides added versatility.

Key prerequisites

- Specific options for the DS5020 must be ordered during the initial plant order for the DS5020. Refer to the [Description](#) section for details.
- IBM Power® Systems, IBM BladeCenter®, or IBM System x® servers.
- Selected Sun and HP UNIX® servers and Intel-based servers running Windows® 2008, Windows Server 2003, or Linux®.

Planned availability date

September 4, 2009

Description

DS5020 midrange disk system

DS5020 disk controller

The DS5020 (1814-20A) disk controller is packaged in a 3U rack-mountable enclosure that houses 16 drive bays, redundant dual-active intelligent RAID controllers, and dual power supplies and cooling components. The DS5020 has an internal storage capacity of up to 16 TB physical storage using 1000 GB SATA Disk Drive Modules (DDMs) or up to 7.2 TB physical storage using 450 GB Fibre Channel (FC) DDMs or 450 GB encryption-capable FC DDMs.

The DS5020 is designed to provide high performance and high availability and comes with 2 GB cache memory (1 GB per internal RAID controller) as a base feature. A cache memory upgrade to the 4 GB cache memory (2 GB per RAID controller) feature (#2070) is available as an initial plant order feature. There are no cache memory upgrades available as field (MES) features for the DS5020.

The DS5020 gives you choices of either four or eight 8 Gbps FC host ports; or four 8 Gbps FC ports and four 1 Gbps iSCSI host ports for connectivity to the SAN-fabric or host servers.

The DS5020 comes equipped with four 8 Gbps FC host ports (two 8 Gbps FC ports per RAID controller) populated with shortwave 8 Gbps SFP transceivers included in the base.

If a customer desires, an additional four 8 Gbps FC host ports (two 8 Gbps FC ports per RAID controller) option is available by ordering the Two Dual 8 Gbps Host Ports card feature (#2080) during an initial plant order for the DS5020. This feature includes four shortwave 8 Gbps SFP transceivers to populate the ports.

Also available as an initial plant order option is a Two Dual 1 Gbps iSCSI Host Ports card feature (#2081). This feature provides four 1 Gbps iSCSI host ports (two 1 Gbps iSCSI host ports per RAID controller) with an RJ-45 connector for each port. Feature 2081, together with the base FC host ports, enables customers to have both FC and iSCSI host connectivity.

The iSCSI host ports feature (#2081) is mutually exclusive with the optional FC host ports feature (#2080). Decisions as to the number of host ports and host port options must be made during initial plant order of the DS5020. There are no host port options available as field (MES) features on the DS5020.

The DS5020 and EXP520 can accommodate FC disk drives, encryption-capable FC drives, and SATA disk drives. Intermix of these drive types within the DS5020 and EXP520 is also supported and adds versatility to these models.

Support for encryption-capable FC drives in the DS5020 and attached EXP520s is enabled by DS5020 Disk Encryption Activation feature (#7410). Feature 7410 must be installed on the DS5020 to support encryption-capable FC drives in the DS5020 or EXP520.

Encryption-capable FC disk drives are designed to encrypt data automatically as it enters the drive to be stored and automatically decrypt the same data as it moves out of the drive. The embedded encryption engine is designed to help prevent performance degradation compared with nonencrypting disk drives.

The DS5020 can attach up to six EXP520 Storage Expansion Units, supporting configurations up to 112 TB physical storage capacity. The DS5020 comes with a base authorization for use with up to 32 disk drives. This includes support for the DS5020's internal 16-drive capacity, plus attachment of one EXP520 Expansion Unit. Additional support for up to 112 disk drives and up to six EXP520 expansion units is available by use of the DS5020 33-64 Disk Drive Attachment feature (#7393) and DS5020 65-112 Disk Drive Attachment feature (#7394).

The DS5020 provides further investment protection with the ability to attach up to six EXP810 Expansion Units. In order to attach the EXP810 Expansion Unit to the DS5020, the Attach EXP810 to DS5020 Activation feature (#7414) must be installed on the DS5020. The DS5020 will not operate with EXP810 expansion units unless feature 7414 is installed.

EXP520 storage expansion unit

The EXP520 (1814-52A) expansion unit is packaged in a 3U rack-mountable enclosure, contains 16 drive bays, dual-switched 4 Gbps ESMS, and dual power supplies and cooling components. The EXP520 expansion unit has a physical storage capacity of up to 16 TB per enclosure using 1000 GB SATA DDMs, and up to 7.2 TB per enclosure using 450 GB FC DDMs.

EXP520s connect to the DS5020 controller via high-speed 4 Gbps FC disk expansion ports. The EXP520 has four FC disk expansion ports, and dependent upon your storage configuration, either two ports or all four disk expansion ports will be used.

To make use of the disk expansion ports, they must first be populated with shortwave 4 Gbps SFP transceivers. The first set of two expansion ports are populated with 4 Gbps SFP transceivers and is used to connect an expansion unit to the controller or to the last expansion unit in the chain of expansion units. The second set of two disk expansion ports are populated with 4 Gbps SFP transceivers using feature 2410, which supplies two 4 Gbps short wave SFP transceivers. The

second set of two disk expansion ports are used on the last expansion unit in the chain, when attaching an additional expansion unit. The newly added expansion unit then becomes the last expansion unit in the chain of expansion units.

As previously stated elsewhere in this section, up to six EXP520 expansion units can be attached to a DS5020 to provide storage configurations that range up to 112 disk drives with a physical storage capacity of up to 112 TB using 1000 GB SATA DDMs.

DS5020 storage partitions

The DS5020 has advanced storage management and capacity allocation options. The DS5020 is designed to enable from two up to 128 storage partitions, to allocate storage capacity, maximize storage space, and reduce hardware and storage management costs. Customers must select either 2 (feature #8700), 4 (feature #8701), 8 (feature #8702), 16 (feature #8703), 32 (feature #8704), 64 (feature #8705), or 128 (feature #8706) storage partitions during an initial plant order of the DS5020. At a later date, if desired, you can chose to field upgrade to add more storage partitions, up to a maximum of 128 using DS5020 storage partition field upgrade features (#8801 - #8812).

DS5020 advanced copy service functions

Advanced copy service options and optional advanced disaster recovery functions are available for the DS5020 disk system, including DS Storage Manager, FlashCopy® (#7401), FlashCopy - 4-8 FlashCopies Upgrade (#7402), VolumeCopy (#7403), VolumeCopy/FlashCopy (#7404), Enhanced Remote Mirroring (#7405), and Enhanced Remote Mirror - 32-64 Mirrors Upgrade (#7406).

The DS Storage Manager enables management of DS5020 advanced copy services features such as FlashCopy to instantaneously create capacity-efficient, point-in-time volume images, providing a logical volume for such uses as file restoration and backup. In contrast, VolumeCopy creates a complete physical copy -- or clone -- of a volume within a storage system. This unique entity can be assigned to any host and used for application testing or development, information analysis, or data mining.

The Enhanced Remote Mirroring feature consists of Global Mirror with Asynchronous Write-order Consistency (critical for mirroring multi-LUN applications), Global Copy with Asynchronous, and Metro Mirror with Synchronous (up to 64 mirror pairs with the optional DS5020 Enhanced Remote Mirror - 32-64 Mirror Upgrade).

DS5020 host kits

For attachment to host servers, at least one of the following optional host kit features must be ordered during initial order of the DS5020 disk system. The host kits for the DS5020 contain DS Storage Manager and, depending upon the host kit selected, includes licensed IBM Machine Code to support attachment to host servers running Microsoft® Windows, System p® running AIX®, or System p running Linux, Sun/Solaris, HP/HP-UX, and other Intel-based servers.

	Feature number
DS5020 WINDOWS HOST KIT	7801
DS5020 LINUX/INTEL HOST KIT	7802
DS5020 VMWARE ESX HOST KIT	7804
DS5020 AIX / VIOS HOST KIT	7805
DS5020 SUN HOST KIT	7806
DS5020 HP-UX HOST KIT	7807
DS5020 LINUX ON POWER® HOST KIT	7808

DS5020 storage controller packaging and requirements for initial plant order options

The DS5020 controller base model includes a 3U rack-mount enclosure containing 16 drive bays; dual RAID controllers; support for RAID 0, 1, 3, 5, 6, and 10; dual power supplies; redundant cooling; rack mounting rails; version 07.60 firmware

(preloaded on controller); hardcopy documentation; and two rack PDU power cords (36L8886). Any country-specific wall outlet power cord is obtained via feature number 98xx.

DS5020 initial plant orders must include the minimum number of DS5020 plant order options or may include up to the maximum supported number of plant order options, shown in the table below.

DS5020 required initial plant order options	Minimum number of required plant order options	Maximum supported number of plant order options
- Host Kit options (#7801 thru #7808)	1	7
- Storage Partition IPO options - (#8700 thru #8706)	1	1

EXP520 storage expansion unit packaging

The EXP520 expansion unit includes a 3U, rack-mount 16-bay disk enclosure, two 4 Gbps SW SFP transceivers, dual power supplies and cooling components, rack mounting rails, softcopy documentation, and two rack PDU power cords (36L8886). Any country-specific wall outlet power cord is obtained via feature number 98xx.

Accessibility by people with disabilities

A U.S. Section 508 Voluntary Product Accessibility Template (VPAT) containing details on the product's accessibility compliance can be requested at

http://www-03.ibm.com/able/product_accessibility/index.html

Section 508 of the U.S. Rehabilitation Act

The System Storage DS5000 series is capable as of September 4, 2009, when used in accordance with IBM's associated documentation, of satisfying the applicable requirements of Section 508 of the Rehabilitation Act, provided that any assistive technology used with the product properly interoperates with it.

Product number

Description	Machine type	Model	Feature number
DS5020 Midrange Disk (Dual controllers)	1814	20A	
EXP520 Expansion Unit	1814	52A	
Add 2 GB to Cache Memory	1814	20A	2070
2-Dual 8Gbps Host Pt Cards	1814	20A	2080
2-Dual 1Gbps ISCSI Host Pts	1814	20A	2081
SW 4Gbps SFP transcvr pair	1814	52A	2410
DS5020 750GB/7.2K SATA DDM	1814	20A, 52A	4000
DS5020 1000GB/7.2K SATA DDM	1814	20A, 52A	4001
DS5020 146.8GB/15K 4Gb FC DDM	1814	20A, 52A	4200
DS5020 300GB/15K 4Gbps FC DDM	1814	20A, 52A	4201

DS5020 450GB/15K 4Gbps FC DDM	1814	20A,52A	4202
16Pk 146.8GB/15K 4Gbps FC DDM	1814	52A	4210
16Pk 300GB/15K 4Gbps FC DDM	1814	52A	4211
16Pk 450GB/15K 4Gbps FC DDM	1814	52A	4212
Encryptible DDM 4Gbps 146.8GB FC 15K Disk Drive Module (DDM)	1814	20A,52A	4400
Encryptible DDM 4Gbps 300GB FC 15K Disk Drive Module (DDM)	1814	20A,52A	4401
Encryptible DDM 4Gbps 450GB FC 15K Disk Drive Module (DDM)	1814	20A,52A	4402
16Pk Encr DDM 4Gbps 146.8GB FC 15K Disk Drive Module (DDM)	1814	52A	4410
16Pk Encr DDM 4Gbps 300GB FC 15K Disk Drive Module (DDM)	1814	52A	4411
16Pk Encr DDM 4Gbps 450GB FC 15K Disk Drive Module (DDM)	1814	52A	4412
Bulk Ordering Feature Ind.	1814	20A,52A	5555
1m Fiber Optic Cable LC-LC	1814	20A,52A	5601
5m Fiber Optic Cable LC-LC	1814	20A,52A	5605
25m Fiber Optic Cable LC-LC	1814	20A,52A	5625
OM3 Fiber Opt. Cbl LC-LC 10m	1814	20A	5810
4Pk OM3 Fiber Cbl LC-LC 10m	1814	20A	5818
DS5020 33-64 Disk Drive Att	1814	20A	7393
DS5020 65-112 Disk Drive Att	1814	20A	7394
DS5020 FlashCopy	1814	20A	7401
DS5020 FlashCpy 4-8 FC Upg	1814	20A	7402
DS5020 VolumeCopy	1814	20A	7403
DS5020 Flash/VolumeCopy	1814	20A	7404
DS5020 Enh. Remote Mirror	1814	20A	7405
DS5020 E.RMr 32-64 Mr Upg	1814	20A	7406
DS5020 Disk Encryption Act	1814	20A	7410
EXP810 to DS5020 Attach Act	1814	20A	7414
DS5020 Windows Host Kit	1814	20A	7801
DS5020 Linux/Intel Host Kit	1814	20A	7802
DS5020 VMware ESX Host Kit	1814	20A	7804
DS5020 AIX/VIOS Host Kit	1814	20A	7805
DS5020 SUN Solaris Host Kit	1814	20A	7806
DS5020 HPUX Host Kit	1814	20A	7807
DS5020 Linux for Power Host	1814	20A	7808
DS5020 2 Stg Partit. IPO	1814	20A	8700
DS5020 4 Stg Partit. IPO	1814	20A	8701
DS5020 8 Stg Partit. IPO	1814	20A	8702
DS5020 16 Stg Partit. IPO	1814	20A	8703
DS5020 32 Stg Partit. IPO	1814	20A	8704
DS5020 64 Stg Partit. IPO	1814	20A	8705
DS5020 128 Stg Partit. IPO	1814	20A	8706
DS5020 2-4 Stg Part. MES	1814	20A	8801
DS5020 2-8 Stg Part. MES	1814	20A	8802
DS5020 4-8 Stg Part. MES	1814	20A	8803
DS5020 4-16 Stg Part. MES	1814	20A	8804

DS5020 8-16 Stg Part. MES	1814	20A	8805
DS5020 8-32 Stg Part. MES	1814	20A	8806
DS5020 8-64 Stg Part. MES	1814	20A	8807
DS5020 16-32 Stg Part. MES	1814	20A	8808
DS5020 16-64 Stg Part. MES	1814	20A	8809
DS5020 32-64 Stg Part. MES	1814	20A	8810
DS5020 32-128 Stg Part. MES	1814	20A	8811
DS5020 64-128 Stg Part. MES	1814	20A	8812
Attach to DS5020	1814	52A	9021
Plant Integrate in 2101-200	1814	20A, 52A	9201
Field Integrate	1814	20A, 52A	9202
Power Cord, Group #1	1814	20A, 52A	9800
Power Cord, Group #2	1814	20A, 52A	9820
Power Cord, Denmark	1814	20A, 52A	9821
Power Cord, Group #3	1814	20A, 52A	9825
Power Cord, Israel	1814	20A, 52A	9827
Power Cord, Switzerland	1814	20A, 52A	9828
Power Cord, Group #4	1814	20A, 52A	9829
Power Cord, Group #5	1814	20A, 52A	9830
Power Cord, Australia, NZ	1814	20A, 52A	9831
Power Cord, Uruguay	1814	20A, 52A	9834
Power Cord, Pr China	1814	20A, 52A	9840
Power Cord, Taiwan	1814	20A, 52A	9841
Power Cord, Brazil	1814	20A, 52A	9842
Power Cord, India	1814	20A, 52A	9843
Power Cord, Japan	1814	20A, 52A	9844
Power Cord, Korea	1814	20A, 52A	9845
Power Cord, U.S./Chicago	1814	20A, 52A	9986

Business Partner information

If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to Business Partner information for this announcement. A PartnerWorld® ID and password are required (use IBM ID).

<https://www.ibm.com/partnerworld/mem/sla.jsp?num=109-537>

Publications

A CD-ROM that contains the product documentation in PDF format and a printed Quick Start Guide are shipped with the hardware product.

In addition, the most up-to-date product documentation is available and downloadable from the following IBM support site

<http://www.ibm.com/systems/support/storage/>

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

<http://www.ibm.com/services/learning/index.html>

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

Technical information

Specified operating environment

Physical specifications

IBM System Storage DS5020 Disk System (1814-20A)

- Height: 129.5 mm (5.1 in)
- Width: 482.6 mm (19.0 in)
- Depth: 571.5 mm (22.5 in)
- Weight:
 - Drive-ready (without drive modules installed): 27.67 kg (61 lb)
 - Fully configured (16 drive modules installed): 39.92 kg (88 lb)

IBM System Storage EXP520 Expansion Unit (1814-52A)

- Height: 129.5 mm (5.1 in)
- Width: 482.6 mm (19.0 in)
- Depth: 571.5 mm (22.5 in)
- Weight:
 - Drive-ready (without drive modules installed): 26.31 kg (58 lb)
 - Fully configured (16 drive modules installed): 38.56 kg (84 lb)

Operating environment

IBM System Storage DS5020 (1814-20A) Disk System

Temperature (operating):

- 10 to 35° C (50 to 95° F) at 0 to 914 m (0-3,000 ft)
- 10 to 32° C (50 to 90° F) at 914 to 2,133 m (3,000-7,000 ft)

Relative humidity (operating):

- 8% to 80%

Relative humidity (storage):

- 5% to 80%

Electrical power (per power supply, system rating):

- Voltage range: 100-240 V ac
- Operating current: 6.0 - 2.5 amperes
- Power: 600 watts
- Frequency: 50/60 Hz

Heat dissipation: 1529 BTU per hour

Noise level (normal operation): 6.4 bels

IBM System Storage EXP520 (1814-52A) Expansion Unit

Temperature (operating):

- 10 to 35° C (50 to 95° F) at 0 to 914 m (0-3,000 ft)
- 10 to 32° C (50 to 90° F) at 914 to 2,133 m (3,000-7,000 ft)

Relative humidity (operating):

- 8% to 80%

Relative humidity (storage):

- 5% to 80%

Electrical power (per power supply, system rating):

- Voltage range: 100-240 V ac
- Operating current: 6.0 - 2.5 amperes
- Power: 600 watts
- Frequency: 50/60 Hz

Heat dissipation: 1516 BTU per hour (fully configured)

Noise level (normal operation): 6.5 bels

Hardware requirements

For a list of hardware requirements, refer to product documentation or visit

<http://www.ibm.com/systems/support/storage/>

Software requirements

For a list of software requirements, refer to product documentation or visit

<http://www.ibm.com/systems/support/storage/>

Compatibility

For compatibility information, refer to product documentation or visit

<http://www.ibm.com/systems/support/storage/>

Limitations

Before powering up the EXP520 Storage Expansion Unit, follow the installation and setup instructions provided with the unit. The EXP520 requires a minimum number of disk drive modules be installed in the unit before powering up. Refer to the EXP520 Storage Expansion Unit installation and setup instructions shipped with the machine for details.

Fiber optic cable options 5601, 5605, and 5625 provide 50 micron fiber optic cables with "length - bandwidth product" rating of 500km *MHz, which translates to 250 meters for 2 Gbps Fibre Channel, 125 meters for 4 Gbps Fibre Channel, and 62.5 meters for 8 Gbps Fibre Channel. These distances reflect the rating for the cable only, within a cable installation design.

Fiber optic cable options 5810 and 5818 provide high-bandwidth 50 micron fiber cable with "length - bandwidth product" rating of 2000km *MHz, which translates to 500 meters for 4 Gbps Fibre Channel, and 250 meters for 8 Gbps Fibre Channel.

These distances reflect the rating for the cable only, within a cable installation design.

Note that fiber optic cables are provided as an accommodation to customers to help connect the storage array to the nearest patch panel or SAN switch. Customers are responsible to ensure that the overall end-to-end fiber optic cable infrastructure is suitable for the corresponding industry standard communication protocols and link speeds.

The following cache memory and host port options are plant order only; there are no MES cache memory and host port upgrade options; therefore, these cache memory and host port options must be selected during the initial plant order: DS5020 Additional 2 GB Cache Memory (#2070), DS5020 Two Dual 8 Gbps FC Host Port Cards (#2080), and DS5020 Two Dual 1 Gbps iSCSI Host Port Cards (#2081).

In order to integrate and use encryption-capable FC drives within the DS5020 disk system, the DS5020 Disk Encryption Activation feature (#7410) must be installed on the DS5020. The DS5020 will not operate with encryption-capable FC drives unless feature 7410 is installed.

In order to attach the EXP810 Expansion Unit to the DS5020, the Attach EXP810 to DS5020 Activation feature (#7414) must be installed on the DS5020. The DS5020 will not operate with EXP810 expansion units unless feature 7414 is installed.

Planning information

You are responsible for downloading or obtaining from IBM, and installing designated Machine Code (microcode, basic input/output system code (called *BIOS*), utility programs, device drivers, and diagnostics delivered with an IBM machine) and other software updates in a timely manner from an IBM Internet Web site or from other electronic media, and following the instructions that IBM provides. You may request IBM to install Machine Code changes; however, you may be charged for that service.

Cable orders

Cables: The DS5020 Disk System attaches to SAN switches and host servers via its 8 Gbps FC and optional 1 Gbps iSCSI host ports.

The 4 Gbps Fibre Channel disk expansion ports on the DS5020 are used to connect the DS5020 to the EXP520 expansion units.

Fiber optic cables for use with the FC host ports or disk expansion ports can be supplied by the customer or ordered with the DS5020 in the lengths available.

Fiber optic cable options 5601, 5605, and 5625 provide 50 micron fiber optic cables with "length - bandwidth product" rating of 500km *MHz, which translates to 250 meters for 2 Gbps Fibre Channel, 125 meters for 4 Gbps Fibre Channel, and 62.5 meters for 8 Gbps Fibre Channel. These distances reflect the rating for the cable only, within a cable installation design.

Fiber optic cable options 5810 and 5818 provide high-bandwidth 50 micron fiber cable with "length - bandwidth product" rating of 2000km *MHz, which translates to 500 meters for 4 Gbps Fibre Channel, and 250 meters for 8 Gbps Fibre Channel. These distances reflect the rating for the cable only, within a cable installation design.

Note that fiber optic cables are provided as an accommodation to customers to help connect the storage array to the nearest patch panel or SAN switch. Customers are responsible to ensure that the overall end-to-end fiber optic cable infrastructure is suitable for the corresponding industry standard communication protocols and link speeds.

The connection is a duplex LC connector type for these fiber optic cables. Following are fiber cables that can be ordered with the DS5020 Disk System:

Description	Feature number
Fiber Optic Cable 1m LC/LC	5601
Fiber Optic Cable 5m LC/LC	5605
Fiber Optic Cable 25m LC/LC	5625
OM3 Fiber optic Cable LC/LC 10m	5810
OM3 Fiber optic Cable LC/LC 10m - 4 Pack	5818

In many situations, the required lengths and installation of fiber optic cables will be unique to each customer's configuration and facility specifications. IBM Network Integration and Deployment Services, offered by IBM Global Services, can provide assistance for these unique cabling and installation requirements. The above cable features are available to accommodate simple installations where the Fibre Channel components and attaching subsystems are within the distances available.

The optional 1 Gbps iSCSI host ports on the DS5020 are connected to host servers using Category 5E or Category 6 Ethernet cable. This cable must be supplied by the user.

Direct customer support

Direct customer support for DS5020 Disk System is provided by IBM Operational Support Services -- Support Line. This fee service provides voice and electronic access into the IBM support organization. IBM Operational Support Services -- Support Line helps answer questions pertaining to product and feature usage ("how to"), configuration, and product compatibility for eligible products. For a list of the products supported via Support Line, visit

<http://www.ibm.com/services/sl/products/>

For more information on services, call 800-IBM-4YOU (426-4968).

Security, auditability, and control

This product uses the security and auditability features of the host hardware, software, and application software.

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communications facilities.

IBM Electronic Services

IBM has transformed its delivery of hardware and software support services to help you achieve higher system availability. Electronic Services is a Web-enabled solution that offers an exclusive, no-additional-charge enhancement to the service and support available for IBM servers. These services are designed to provide the opportunity for greater system availability with faster problem resolution and preemptive monitoring. Electronic Services comprises two separate, but complementary, elements: Electronic Services news page and Electronic Services Agent.

The Electronic Services news page is a single Internet entry point that replaces the multiple entry points traditionally used to access IBM Internet services and support. The news page enables you to gain easier access to IBM resources for assistance in resolving technical problems.

The Electronic Service Agent™ is no-additional-charge software that resides on your server. It monitors events and transmits system inventory information to IBM on a periodic, client-defined timetable. The Electronic Service Agent automatically reports hardware problems to IBM. Early knowledge about potential problems enables IBM to deliver proactive service that may result in higher system availability and performance. In addition, information collected through the Service Agent is

made available to IBM service support representatives when they help answer your questions or diagnose problems. Installation and use of IBM Electronic Service Agent for problem reporting enables IBM to provide better support and service for your IBM server.

To learn how Electronic Services can work for you, visit

<http://www.ibm.com/support/electronic>

Terms and conditions

Volume orders: Contact your IBM representative.

IBM Global Financing

Yes

Warranty period

Three years

Warranty services

If required, IBM provides repair or exchange service, depending on the types of warranty service specified for the machine. IBM will attempt to resolve your problem over the telephone or electronically via 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. If applicable to your product, parts considered Customer Replaceable Units (CRUs) will be provided as part of the machine's standard warranty service.

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. The products in this announcement are covered by the following types of service.

Customer Replaceable Unit Service and On-Site for other selected parts

IBM provides replacement CRUs to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM upon your request. CRUs are designated as being either a Tier 1 or a Tier 2 CRU.

Tier 1 CRU

Installation of Tier 1 CRUs is your responsibility. If IBM installs a Tier 1 CRU at your request, you will be charged for the installation.

Tier 2 CRU

You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge.

Based upon availability, CRUs 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. 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 optional Disk Drive Modules (DDMs) are classified as Tier 1 CRUs on the DS5020 controller (1814-20A) and EXP520 storage expansion unit (1814-52A):

- DS5020 750 GB/7.2K SATA DDM feature (#4000)
- DS5020 1000 GB/7.2K SATA DDM feature (#4001)
- DS5020 146.8 GB/15K 4 Gbps FC DDM feature (#4200)
- DS5020 300 GB/15K 4 Gbps FC DDM feature (#4201)
- DS5020 450 GB/15K 4 Gbps FC DDM feature (#4202)
- Encryption Capable 146.8 GB/15K 4 Gbps FC DDM feature (#4400)
- Encryption Capable 300 GB/15K 4 Gbps FC DDM feature (#4401)
- Encryption Capable 450 GB/15K 4 Gbps FC DDM feature (#4402)

On-site Service

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

The DS5020 controller and EXP520 expansion unit have the following warranty service: 9 hours per day, Monday through Friday, excluding holidays, next-business-day response, IBM On-site Repair.

Warranty service upgrades

During the warranty period, warranty service upgrades provide an enhanced level of On-site Service for an additional charge. Service levels are response-time objectives and are not guaranteed. See the [Warranty services](#) section for additional details.

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.

On-site Service

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose. The following on-site response-time objectives are available as warranty service upgrades for your machine.

Available offerings for the DS5020 controller and EXP520 expansion unit are:

- 9 hours per day, Monday through Friday, excluding holidays, 4-hour average, same-business-day response
- 24 hours per day, 7 days a week, 4-hour average response
- 24 hours per day, 7 days a week, 2-hour average response

Customer Replaceable Units (CRUs) may be provided as part of the machine's standard warranty CRU Service except that you may install a CRU yourself or request IBM installation, at no additional charge, under one of the On-site Service levels specified above. For additional information on the CRU Service, see the warranty information.

Maintenance services

If required, IBM provides repair or exchange service, depending on the types of maintenance service specified for the machine. IBM will attempt to resolve your problem over the telephone or electronically, via 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 maintenance 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. The following service selections are available as maintenance options for your machine type.

On-site Service

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

Available DS5020 controller and EXP520 expansion unit maintenance options are:

- 9 hours per day, Monday through Friday, excluding holidays, next-business-day response
- 9 hours per day, Monday through Friday, excluding holidays, 4-hour average response
- 24 hours per day, 7 days a week, 4-hour average response
- 24 hours per day, 7 days a week, 2-hour average response

Customer Replaceable Unit (CRU) Service

If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, or hard disk drive), and depending upon the maintenance service offerings in your geography, 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 upon your request.

Based upon availability, CRUs will be shipped for next-business-day 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.

CRUs may be provided as part of the machine's standard maintenance service except that you may install a CRU yourself or request IBM installation, at no additional charge, under any of the On-site Service levels specified above.

Usage plan machine

No

IBM hourly service rate classification

One

When a type of service involves the exchange of a machine part, the replacement may not be new, but will be in good working order.

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

Licensed machine code

IBM Machine Code is licensed for use by a customer on the IBM machine for which it was provided by IBM under the terms and conditions of the IBM License Agreement for Machine Code, to enable the machine to function in accordance with its specifications, and only for the capacity authorized by IBM and acquired by the customer. You can obtain the agreement at

http://www.ibm.com/servers/eserver/support/machine_warranties/machine_code.html

IBM may release changes to the Machine Code. IBM plans to make the Machine Code changes available for download from the IBM System Storage technical support Web site

<http://www-304.ibm.com/systems/support/supportsite.wss/allproducts?brandind=5000028&taskind=1&ui=gc>

You may also obtain updated code by contacting your IBM representative.

If the machine does not function as warranted and your problem can be resolved through your application of downloadable Machine Code, you are responsible for downloading and installing these designated Machine Code changes as IBM specifies. If you would prefer, you may request IBM to install downloadable Machine Code changes; however, you may be charged for that service.

Educational allowance

A reduced charge is available to qualified education customers. The educational allowance may not be added to any other discount or allowance.

The educational allowance is 15% for the products in this announcement.

Prices

Description	Machine type	Model	Feature number
DS5020 Midrange Disk (Dual controllers)	1814	20A	
EXP520 Expansion Unit	1814	52A	
Add 2 GB to Cache Memory	1814	20A	2070
2-Dual 8Gbps Host Pt Cards	1814	20A	2080
2-Dual 1Gbps iSCSI Host Pts	1814	20A	2081
SW 4 Gbps SFP transcvr pair	1814	52A	2410
DS5020 750GB/7.2K SATA DDM	1814	20A, 52A	4000
DS5020 1000GB/7.2K SATA DDM	1814	20A, 52A	4001
DS5020 146.8GB/15K 4GB FC DDM	1814	20A, 52A	4200
DS5020 300GB/15K 4Gbps FC DDM	1814	20A, 52A	4201
DS5020 450GB/15K 4Gbps FC DDM	1814	20A, 52A	4202
16Pk 146.8GB/15K 4Gbps FC DDM	1814	52A	4210
16Pk 300GB/15K 4Gbps FC DDM	1814	52A	4211
16Pk 450GB/15K 4Gbps FC DDM	1814	52A	4212

Encryptible DDM 4Gbps 146.8GB FC 15K Disk Drive Module (DDM)	1814	20A,52A	4400
Encryptible DDM 4Gbps 300GB FC 15K Disk Drive Module (DDM)	1814	20A,52A	4401
Encryptible DDM 4Gbps 450GB FC 15K Disk Drive Module (DDM)	1814	20A,52A	4402
16Pk Encr DDM 4Gbps 146.8GB FC 15K Disk Drive Module (DDM)	1814	52A	4410
16Pk Encr DDM 4Gbps 300GB FC 15K Disk Drive Module (DDM)	1814	52A	4411
16Pk Encr DDM 4Gbps 450GB FC 15K Disk Drive Module (DDM)	1814	52A	4412
Bulk Ordering Feature Ind.	1814	20A,52A	5555
1m Fiber Optic Cable LC-LC	1814	20A,52A	5601
5m Fiber Optic Cable LC-LC	1814	20A,52A	5605
25m Fiber Optic Cable LC-LC	1814	20A,52A	5625
OM3 Fiber Opt. Cbl LC-LC 10m	1814	20A	5810
4Pk OM3 Fiber Cbl LC-LC 10m	1814	20A	5818
DS5020 33-64 Disk Drive Att	1814	20A	7393
DS5020 65-112 Disk Drive Att	1814	20A	7394
DS5020 FlashCopy	1814	20A	7401
DS5020 FlashCpy 4-8 FC Upg	1814	20A	7402
DS5020 VolumeCopy	1814	20A	7403
DS5020 Flash/VolumeCopy	1814	20A	7404
DS5020 Enh. Remote Mirror	1814	20A	7405
DS5020 E.RMr 32-64 Mr Upg	1814	20A	7406
DS5020 Disk Encryption Act	1814	20A	7410
EXP810 to DS5020 Attach Act	1814	20A	7414
DS5020 Windows Host Kit	1814	20A	7801
DS5020 Linux/Intel Host Kit	1814	20A	7802
DS5020 VMware ESX Host Kit	1814	20A	7804
DS5020 AIX/VIOS Host Kit	1814	20A	7805
DS5020 SUN Solaris Host Kit	1814	20A	7806
DS5020 HPUX Host Kit	1814	20A	7807
DS5020 Linux for Power Host	1814	20A	7808
DS5020 2 Stg Partit. IPO	1814	20A	8700
DS5020 4 Stg Partit. IPO	1814	20A	8701
DS5020 8 Stg Partit. IPO	1814	20A	8702
DS5020 16 Stg Partit. IPO	1814	20A	8703
DS5020 32 Stg Partit. IPO	1814	20A	8704
DS5020 64 Stg Partit. IPO	1814	20A	8705
DS5020 128 Stg Partit. IPO	1814	20A	8706
DS5020 2-4 Stg Part. MES	1814	20A	8801
DS5020 2-8 Stg Part. MES	1814	20A	8802
DS5020 4-8 Stg Part. MES	1814	20A	8803
DS5020 4-16 Stg Part. MES	1814	20A	8804
DS5020 8-16 Stg Part. MES	1814	20A	8805

DS5020 8-32 Stg Part. MES	1814	20A	8806
DS5020 8-64 Stg Part. MES	1814	20A	8807
DS5020 16-32 Stg Part. MES	1814	20A	8808
DS5020 16-64 Stg Part. MES	1814	20A	8809
DS5020 32-64 Stg Part. MES	1814	20A	8810
DS5020 32-128 Stg Part. MES	1814	20A	8811
DS5020 64-128 Stg Part. MES	1814	20A	8812
Attach to DS5020	1814	52A	9021
Plant Integrate in 2101-200	1814	20A,52A	9201
Field Integrate	1814	20A,52A	9202
Power Cord, Group #1	1814	20A,52A	9800
Power Cord, Group #2	1814	20A,52A	9820
Power Cord, Denmark	1814	20A,52A	9821
Power Cord, Group #3	1814	20A,52A	9825
Power Cord, Israel	1814	20A,52A	9827
Power Cord, Switzerland	1814	20A,52A	9828
Power Cord, Group #4	1814	20A,52A	9829
Power Cord, Group #5	1814	20A,52A	9830
Power Cord, Australia, NZ	1814	20A,52A	9831
Power Cord, Uruguay	1814	20A,52A	9834
Power Cord, Pr China	1814	20A,52A	9840
Power Cord, Taiwan	1814	20A,52A	9841
Power Cord, Brazil	1814	20A,52A	9842
Power Cord, India	1814	20A,52A	9843
Power Cord, Japan	1814	20A,52A	9844
Power Cord, Korea	1814	20A,52A	9845
Power Cord, U.S./Chicago	1814	20A,52A	9986

Machine type	Model	Feature number	One-time charge
1814	20A		\$ 22,500
1814	52A		\$ 6,000
1814	20A	2070	\$ 4,000
1814	20A	2080	\$ 8,000
1814	20A	2081	\$ 5,000
1814	52A	2410	\$ 998
1814	20A	2414	\$ 500
1814	20A,52A	4000	\$ 1,728
1814	20A,52A	4001	\$ 1,843
1814	20A,52A	4200	\$ 1,605
1814	20A,52A	4201	\$ 2,627
1814	20A,52A	4202	\$ 3,152
1814	20A,52A	4203	\$ 4,202
1814	52A	4210	\$ 20,290
1814	52A	4211	\$ 36,633
1814	52A	4212	\$ 45,043
1814	52A	4213	\$ 61,232
1814	20A,52A	4400	\$ 2,325
1814	20A,52A	4401	\$ 3,460
1814	20A,52A	4402	\$ 4,190
1814	20A,52A	4403	\$ 5,587

1814	52A	4410	\$ 31,200
1814	52A	4411	\$ 49,360
1814	52A	4412	\$ 61,040
1814	52A	4413	\$ 83,392
1814	20A,52A	5555	\$ -
1814	20A,52A	5601	\$ 79
1814	20A,52A	5605	\$ 129
1814	20A,52A	5625	\$ 189
1814	20A	5810	\$ 120
1814	20A	5818	\$ 480
1814	20A	7393	\$ 4,000
1814	20A	7394	\$ 9,900
1814	20A	7401	\$ 10,499
1814	20A	7402	\$ 11,900
1814	20A	7403	\$ 7,499
1814	20A	7404	\$ 14,999
1814	20A	7405	\$ 22,500
1814	20A	7406	\$ 20,000
1814	20A	7410	\$ 25,000
1814	20A	7414	\$ 6,000
1814	20A	7801	\$ 1,250
1814	20A	7802	\$ 1,250
1814	20A	7804	\$ 1,250
1814	20A	7805	\$ 7,000
1814	20A	7806	\$ 7,000
1814	20A	7807	\$ 7,000
1814	20A	7808	\$ 1,250
1814	20A	8700	\$ 1,500
1814	20A	8701	\$ 3,000
1814	20A	8702	\$ 9,000
1814	20A	8703	\$ 16,200
1814	20A	8704	\$ 24,000
1814	20A	8705	\$ 31,500
1814	20A	8706	\$ 39,900
1814	20A	8801	\$ 1,500
1814	20A	8802	\$ 7,500
1814	20A	8803	\$ 6,000
1814	20A	8804	\$ 13,200
1814	20A	8805	\$ 7,200
1814	20A	8806	\$ 15,000
1814	20A	8807	\$ 22,500
1814	20A	8808	\$ 7,800
1814	20A	8809	\$ 15,300
1814	20A	8810	\$ 7,500
1814	20A	8811	\$ 15,900
1814	20A	8812	\$ 8,400
1814	52A	9021	NC
1814	20A,52A	9201	NC
1814	20A,52A	9202	NC
1814	20A,52A	9800	NC
1814	20A,52A	9820	NC
1814	20A,52A	9821	NC
1814	20A,52A	9825	NC
1814	20A,52A	9827	NC
1814	20A,52A	9828	NC
1814	20A,52A	9829	NC
1814	20A,52A	9830	NC
1814	20A,52A	9831	NC
1814	20A,52A	9834	NC
1814	20A,52A	9840	NC
1814	20A,52A	9841	NC

1814	20A,52A	9842	NC
1814	20A,52A	9843	NC
1814	20A,52A	9844	NC
1814	20A,52A	9845	NC
1814	20A,52A	9890	NC
1814	20A,52A	9986	NC

Description	Mach type	Mod	Feat. number	Field install only	Plant install only	Cables required
Add 2 GB Cache Memory	1814	20A	2070	N	Y	N
2-Dual 8Gbps Host Pts	1814	20A	2080	N	Y	N
2-Dual 1Gbps iSCSI Pts	1814	20A	2081	N	Y	N
SW 4Gbps SFP trans. pr	1814	52A	2410	N	N	N
DS5020 750GB/7.2K SATA	1814	20A,52A	4000	N	N	N
DS5020 1000GB/7.2K SATA	1814	20A,52A	4001	N	N	N
DS5020 146.8GB/15K FC	1814	20A,52A	4200	N	N	N
DS5020 300GB/15K FC	1814	20A,52A	4201	N	N	N
DS5020 450GB/15K FC	1814	20A,52A	4202	N	N	N
16Pk 146.8GB/15K FC	1814	52A	4210	N	Y	N
16Pk 300GB/15K FC	1814	52A	4211	N	Y	N
16Pk 450GB/15K FC	1814	52A	4212	N	Y	N
Encr 146.8GB FC DDM	1814	20A,52A	4400	N	N	N
Encr 300GB FC DDM	1814	20A,52A	4401	N	N	N
Encr 450GB FC DDM	1814	20A,52A	4402	N	N	N
16Pk Encr 146.8GB FC	1814	52A	4410	N	Y	N
16Pk Encr 300GB FC	1814	52A	4411	N	Y	N
16Pk Encr 450GB FC	1814	52A	4412	N	Y	N
Bulk Ordering Ind.	1814	20A,52A	5555	Y	N	N
1m Fiber Cable	1814	20A,52A	5601	N	N	N
5m Fiber Cable	1814	20A,52A	5605	N	N	N
25m Fiber Cable	1814	20A,52A	5625	N	N	N
OM3 Fiber Cable 10m	1814	20A	5810	N	N	N
4Pk OM3 Fiber Cable	1814	20A	5818	N	N	N
DS5020 33-64 Disk Att	1814	20A	7393	N	N	N
DS5020 65-112 Disk Att	1814	20A	7394	N	N	N
DS5020 FlashCopy	1814	20A	7401	N	N	N
DS5020 FlshCpy 4-8 FC	1814	20A	7402	N	N	N
DS5020 VolumeCopy	1814	20A	7403	Y	N	N
DS5020 Flash/VolCpy	1814	20A	7404	N	N	N
DS5020 Enh Rem Mirr	1814	20A	7405	N	N	N
DS5020 RMir 32-64 Upg	1814	20A	7406	N	N	N
DS5020 Disk Encr Act	1814	20A	7410	N	N	N
EXP810 to DS5020 Att	1814	20A	7414	N	N	N
DS5020 Windows Host	1814	20A	7801	N	N	N
DS5020 Linux/Intel	1814	20A	7802	N	N	N
DS5020 VMware ESX	1814	20A	7804	N	N	N
DS5020 AIX/VIOS Host	1814	20A	7805	N	N	N
DS5020 Sun Host Kit	1814	20A	7806	N	N	N
DS5020 HP-UX Host	1814	20A	7807	N	N	N
DS5020 Linux on Pwr	1814	20A	7808	N	N	N
DS5020 2 Stg-IPO	1814	20A	8700	N	Y	N

DS5020 4 Stg-IPO	1814	20A	8701	N	Y	N
DS5020 8 Stg-IPO	1814	20A	8702	N	Y	N
DS5020 16 Stg-IPO	1814	20A	8703	N	Y	N
DS5020 32 Stg-IPO	1814	20A	8704	N	Y	N
DS5020 64 Stg-IPO	1814	20A	8705	N	Y	N
DS5020 128 Stg-IPO	1814	20A	8706	N	Y	N
DS5020 2-4 Stg-MES	1814	20A	8801	Y	N	N
DS5020 2-8 Stg-MES	1814	20A	8802	Y	N	N
DS5020 4-8 Stg-MES	1814	20A	8803	Y	N	N
DS5020 4-16 Stg-MES	1814	20A	8804	Y	N	N
DS5020 8-16 Stg-MES	1814	20A	8805	Y	N	N
DS5020 8-32 Stg-MES	1814	20A	8806	Y	N	N
DS5020 8-64 Stg-MES	1814	20A	8807	Y	N	N
DS5020 16-32 Stg-MES	1814	20A	8808	Y	N	N
DS5020 16-64 Stg-MES	1814	20A	8809	Y	N	N
DS5020 32-64 Stg-MES	1814	20A	8810	Y	N	N
DS5020 32-128 Stg-MES	1814	20A	8811	Y	N	N
DS5020 64-128 Stg-MES	1814	20A	8812	Y	N	N
Attach to DS5020	1814	52A	9021	N	Y	N
Plant Int. in 2101-200	1814	20A,52A	9201	N	Y	N
Field Integrate	1814	20A,52A	9202	N	Y	N
Power Cord, Group #1	1814	20A,52A	9800	N	N	N
Power Cord, Group #2	1814	20A,52A	9820	N	N	N
Power Cord, Denmark	1814	20A,52A	9821	N	N	N
Power Cord, Group #3	1814	20A,52A	9825	N	N	N
Power Cord, Israel	1814	20A,52A	9827	N	N	N
Power Cord, Switzer.	1814	20A,52A	9828	N	N	N
Power Cord, Group #4	1814	20A,52A	9829	N	N	N
Power Cord, Group #5	1814	20A,52A	9830	N	N	N
Power Cord, Aust.,NZ	1814	20A,52A	9831	N	N	N
Power Cord, Uruguay	1814	20A,52A	9834	N	N	N
Power Cord, Pr China	1814	20A,52A	9840	N	N	N
Power Cord, Taiwan	1814	20A,52A	9841	N	N	N
Power Cord, Brazil	1814	20A,52A	9842	N	N	N
Power Cord, India	1814	20A,52A	9843	N	N	N
Power Cord, Japan	1814	20A,52A	9844	N	N	N
Power Cord, Korea	1814	20A,52A	9845	N	N	N
Power Cord, U.S./Chic.	1814	20A,52A	9986	N	N	N

Y = Yes
N = No

Alternative service

Alternative Service (warranty upgrades)

IWR
IBM
On-site Repair
(IOR, 24 x 7)

Machine type-model

1814-20A
1814-52A

Annual minimum maintenance charges

	IO8 IBM	IOR IBM
Machine	On-site Repair	On-site Repair

type/model (IOR, 9 x 5, NBD) (IOR, 24 x 7, 4 hr)

1814-20A
1814-52A

ServiceSuite™ and ServiceElect (formerly ESA) Maintenance and Warranty Service Upgrade

Warranty Service Upgrade

	W4H IBM	W24 IBM
Machine type/model	On-site Repair (IOR, 24 x 7, 2 hr)	On-site Repair (IOR, 24 x 7, 4 hr)
1814-20A 1818-52A		

	W2H IBM
Machine type/model	On-site Repair (IOR, 24 x 7, 2 hr)
1814-20A 1814-52A	

Maintenance Service

	E95 IBM	E4H IBM
Machine type/model	On-site Repair (IOR, 9 x 5, NBD)	On-site Repair (IOR, 9 x 5, 4 hr)
1814-20A 1818-52A		

	E24 IBM	E2H IBM
Machine type/model	On-site Repair (IOR, 24 x 7, 4 hr)	On-site Repair (IOR, 24 x 7, 2 hr)
1814-20A 1814-52A		

Description	Machine type	Model	Annual Min Maint IOR 24x7	Annual Min Maint IOR 8-5/M-F
DS5020 Midrange Disk	1814	20A	\$4,847	\$3,467
EXP520 Expansion Unit	1814	52A	\$2,316	\$1,680

Description	Machine type	Model	From	To	Warranty Upgrade charge
DS5020 Midrange Disk	1814	20A	IR5	IOR	24x7 \$3,000
EXP520 Expansion Unit	1814	52A	IR5	IOR	24x7 \$1,368
Description	Machine type	Model	On-Site 24x7 2 Hour	On-Site 24x7 Same Day	

DS5020 Midrange Disk	1814	20A		\$4,500	\$3,000
EXP520 Expansion Unit	1814	52A		\$2,058	\$1,372
Description	Machine type	Model	Part number	On-Site + 9x5 4 HOUR	
DS5020 Midrange Disk	1814	20A		\$2,100	
EXP520 Expansion Unit	1814	52A		\$960	

Descr	Machine type	Model	SLCC	Period	On- Site 24x7 2 Hour	On- Site 24x7	On- Site 9x5 4 Hour	On- Site 9x5
DS5020 Midrange Disk	1814	20A	1828	Annual	\$6,300	\$4,200	\$3,780	\$3,003
EXP520 Expansion Unit	1814	52A	1828	Annual	\$3,000	\$2,000	\$1,800	\$1,440

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

IBM Global Financing

IBM Global Financing offers competitive financing to credit-qualified customers to assist them in acquiring IT solutions. Offerings include financing for IT acquisition, including hardware, software, and services, from both IBM and other manufacturers or vendors. Offerings (for all customer segments: small, medium, and large enterprise), rates, terms, and availability can vary by country. Contact your local IBM Global Financing organization or visit

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Order now

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

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