



# IBM System Storage DS4000 EXP810 offers a new 4 Gbps capable high performance, 16 drive-bay Storage Expansion Unit for the DS4000 series

## Overview

IBM expands its DS4000 series midrange disk storage offerings of high performance, high availability, business-critical storage solutions, with the introduction of the 4 gigabit per second (Gbps) capable IBM System Storage™ DS4000 EXP810 Storage Expansion Unit and 2 Gbps Fibre Channel Enhanced Disk Drive Modules (E-DDMs) features. A 4 Gbps capable controller system is required to achieve 4 Gbps drive channel operation.

The 4 Gbps capable IBM System Storage EXP810 Storage Expansion Unit (1812-81A) offers a new 16-bay disk enclosure for attachment to selected DS4000 Midrange Disk Systems, with up to 4.8 terabytes (TB) physical capacity per expansion unit on initial introduction. The EXP810 Storage Expansion Unit is designed to accommodate the new 2 Gbps Fibre Channel E-DDMs, as well as future 4 Gbps Fibre Channel E-DDMs and Serial ATA (SATA) E-DDMs.

## Key prerequisites

The EXP810 Storage Expansion Unit at initial introduction requires attachment to the DS4800 Midrange Disk Systems (1815-82A, 1815-84A, and 1815-88A) supporting:

- IBM *@server*® pSeries® and selected RS/6000® servers
- IBM *@server*® xSeries® and selected Netfinity® servers
- Selected Sun and HP UNIX® servers and Intel® -based servers running Windows™ 2000, Windows Server 2003, Linux™, Novell NetWare, or VMware

For availability dates, configuration options, supported server models, supported operating system levels, supported system levels, and attachment capabilities, visit

<http://www-1.ibm.com/servers/storage/disk/ds4000/interop-matrix.html>

## Planned availability date

March 7, 2006

## At a glance

IBM System Storage EXP810 Storage Expansion Unit (1812-81A) expands sixth-generation architecture of the DS4000 series disk storage systems with built-in capability for 4 Gbps Fibre Channel (FC) operation and has the following attributes:

- Compact, 3U rack-mount disk expansion enclosure accommodates 16 Enhanced Disk Drive Modules (E-DDMs), offering up to 4.8 TB physical capacity per expansion unit
- Proven DS4000 reliability, scalability, and utilizes internal switching technology to attach each individual disk drive module
- Redundant, hot-swappable, power supply and cooling components

## For ordering, contact:

Your IBM representative, an IBM Business Partner, or the Americas Call Centers at

**800-IBM-CALL**

Reference: YE001

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## Description

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### ***IBM System Storage DS4000 EXP810 Storage Expansion Unit***

The 4 Gbps capable IBM System Storage EXP810 Storage Expansion Unit (1812-81A) offers a new 16-bay disk enclosure for attachment to selected DS4000 Midrange Disk Systems, with up to 4.8 terabytes (TB) physical capacity per expansion unit at initial introduction. A 4 Gbps capable controller system is required to achieve 4 Gbps drive channel operation.

The EXP810 Storage Expansion Unit is designed to accommodate the new 2 Gbps Fibre Channel Enhanced Disk Drive Modules (E-DDMs), as well as future 4 Gbps Fibre Channel E-DDMs and Serial ATA (SATA) E-DDMs.

The EXP810 Storage Expansion Unit is rack mountable, occupies 3U rack space, and comes standard with two 4 Gbps shortwave Small Form Factor Pluggable (SFP) fiber optic transceivers for connection to selected DS4000 midrange disk systems. At initial introduction, the EXP810 attaches only to the DS4800 midrange disk systems (1815-82A, 1815-84A, and 1815-88A). Additional SFP transceivers can be added to the EXP810 by use of Shortwave Transceiver feature (#2410) that populates two additional drive ports for connection of configurations consisting of multiple expansion units connected to a midrange disk system. The EXP810 has built-in redundant power supplies and cooling components to help improve reliability and availability. The EXP810 also comes with rack mounting rails and two rack Power Distribution Unit (PDU) power cords. Country-specific wall outlet convenience power cords can be ordered by selecting the appropriate optional feature (98xx). Two power cords are included with each country-specific power cord feature. Only one power cord feature may be ordered.

Refer to the **Limitations** section for details on EXP810 attachment to selected DS4000 midrange disk systems and compatibility with existing DS4000 Expansion Units.

#### ***Optional E-DDMs for the EXP810***

At initial introduction, the DS4000 EXP810 Storage Expansion Unit will support the following optional 2 Gbps Fibre Channel Enhanced Disk Drive Modules:

- 2 Gbps FC, 73.4 GB 10K rpm E-DDM feature (#5221)
- 2 Gbps FC, 146.8 GB 10K rpm E-DDM feature (#5222)
- 2 Gbps FC, 300 GB 10K rpm E-DDM feature (#5223)
- 2 Gbps FC, 36.4 GB 15K rpm E-DDM feature (#5231)
- 2 Gbps FC, 73.4 GB 15K rpm E-DDM feature (#5232)
- 2 Gbps FC, 146.8 GB 15K rpm E-DDM feature (#5233)

#### ***Section 508 of the U.S. Rehabilitation Act***

The IBM System Storage DS4000 EXP810 Storage Expansion Unit is capable as of March 7, 2006, 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.

#### ***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=106-200>

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# IBM United States Announcement Supplemental Information

February 28, 2006

## Publications

A CD-ROM that contains a softcopy (PDF format) of the product documentation is shipped with the hardware product.

## Services

### *IBM Integrated 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™ DS4000 EXP810 Storage Expansion Unit (1812-81A)**

- Width: 48.26 cm (19.00 in)
- Depth: 55.88 cm (22.00 in)
- Height: 13.21 cm (5.20 in)
- Weight:
  - Drive-ready (without drive modules installed): 69 lb
  - Fully configured (with 16 drive modules): 85 lb

### *Operating environment*

#### **IBM System Storage DS4000 EXP810 Storage Expansion Unit (1812-81A)**

- Temperature (operating):
  - 10° to 35°C (50° to 95°F) at 0-914 m (0-3,000 ft)
  - 10° to 32°C (50° to 90°F) at 914 — 2,133 m (3,000-7,000 ft)
- Relative humidity (operating): 8% to 80%
- Electrical power (per power supply):
  - Voltage range — nominal (100 — 240 V ac)
  - Operating current (1.95 amperes with 115 V ac input)
  - Power (448.5 watts)
  - Frequency (50/60 Hz)
- Heat dissipation: 1569.94 BTU per hour (fully configured)
- Noise level (normal operation): 6.8 bels

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

<http://www-1.ibm.com/servers/storage/disk/ds4000/index.html>

**Software requirements:** For a list of software requirements, cross-product requirements, prerequisites, product dependencies, the DS4000 Product Interoperability Matrix, and other documentation, visit

<http://www-1.ibm.com/servers/storage/disk/ds4000/index.html>

<http://www-1.ibm.com/servers/storage/disk/ds4000/interop-matrix.html>

**Compatibility:** The DS4000 EXP810 Storage Expansion Unit is compatible and attachable to the following DS4000 Disk System family products: DS4800 Disk System (1815-82A, 1815-84A, and 1815-88A)

**Limitations:** Before powering up the EXP810 Storage Expansion Unit, follow the installation and setup instructions provided with the unit. The EXP810 requires a minimum number of Disk Drive Modules be installed in the unit before powering up. Refer to the EXP810 Storage Expansion Unit installation and setup instructions shipped with the machine for details.

The EXP810 at initial introduction requires attachment to the DS4800 Midrange Disk System (Machine type/Models 1815-82A, 1815-84A, and 1815-88A).

A 4 Gbps capable controller system is required to achieve 4 Gbps drive channel operation.

*This announcement is provided for your information only. For additional information, contact your IBM representative, call 800-IBM-4YOU, or visit the IBM home page at: <http://www.ibm.com>.*

## Attachment of Disk Drive Storage Expansion Units to the DS4800 Disk System

When attaching Disk Drive Expansion Units to the DS4800, the installation must follow enclosure limits and combination guides documented on the following Web site

<http://www-1.ibm.com/servers/storage/disk/ds4000/interop-matrix.html>

For further details, refer also to the following Web site

<http://www-1.ibm.com/servers/storage/disk/ds4000/index.html>

### Planning information

**SFP transceiver orders:** The DS4000 EXP810 Storage Expansion Unit comes with two shortwave SFP transceivers feature number 2410, included in the ship group for connections to DS4000 Midrange Disk systems and to other DS4000 Storage Expansion Units. Depending upon the specific configuration and placement of the EXP810 with the supported DS4000 system, the actual number of transceivers required can vary from two to four. One feature number 2410 can be ordered to provide the additional two SFP transceivers if required by your configuration.

### Cable orders

**Fiber optic cables:** Fiber optic cables can be ordered with the DS4000 EXP810 Storage Expansion Unit or supplied by the customer. The EXP810 requires two fiber optic cables for attachment to DS4000 Disk Systems or to other DS4000 Expansion Units. The fiber optic cables must be multimode (short wave) 50.0/125 micrometers for distances up to 150 meters at 4 Gbps performance for drive port attachment with the shortwave SFP transceivers (#2410).

The EXP810 Storage Expansion Unit utilizes the small form factor duplex LC-type connector. This connector is required on the end of all fiber optic cables that plug into the EXP810 drive ports. The following short wave fiber optic cables with duplex LC-type connectors on each end (LC-LC type) can be ordered with the EXP810 or with other DS4000 family products.

- One meter cable, feature number 5601
- Five meter cable, feature number 5605
- Twenty-five meter cable, feature number 5625

**Installability:** Approximately one hour of installation time

**Direct customer support:** Direct customer support for DS4000 Disk Systems 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.

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## IBM Electronic Services

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IBM Global Services has transformed its delivery of hardware and software support services to put you on the road to higher systems availability. IBM Electronic Services is a Web-enabled solution that provides you with an exclusive, no-additional-charge enhancement to the service and support on the IBM @server®. You should benefit from greater system availability due to faster problem resolution and preemptive monitoring. IBM Electronic Services is comprised of two separate, but complementary, elements: IBM Electronic Services news page and IBM Electronic Service Agent™.

IBM Electronic Services news page provides you with a single Internet entry point that replaces the multiple entry points traditionally used by customers 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 IBM Electronic Service Agent is a no-additional-charge software that resides on your IBM @server® system. It is designed to proactively monitor events and transmit system inventory information to IBM on a periodic, customer-defined timetable. The IBM Electronic Service Agent tracks system inventory, hardware error logs, and performance information. If the server is under a current IBM maintenance service agreement or within the IBM warranty period, the Service Agent automatically reports hardware problems to IBM. Early knowledge about potential problems enables IBM to provide proactive service that maintains higher system availability and performance. In addition, information collected through the Service Agent will be made available to IBM service support representatives when they are helping answer your questions or diagnosing problems.

To learn how IBM Electronic Services can work for you, visit

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

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## Terms and conditions

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**Volume orders:** Contact your IBM representative.

**IBM Global Financing:** Yes

**Warranty period:** Three years

**Warranty service:** 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.

#### **CRU service and on-site for other selected parts**

**CRU service:** 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.

For machines with on-site, same-day response service, IBM will replace a Tier 1 CRU part at your request, at no additional charge.

**The following optional Enhanced Disk Drive Modules (E-DDMs) are classified as Tier 1 CRUs on the EXP810 Expansion Unit:**

- 2 Gbps FC, 73.4 GB 10K rpm E-DDM feature (#5221)
- 2 Gbps FC, 146.8 GB 10K rpm E-DDM feature (#5222)
- 2 Gbps FC, 300 GB 10K rpm E-DDM feature (#5223)
- 2 Gbps FC, 36.4 GB 15K rpm E-DDM feature (#5231)
- 2 Gbps FC, 73.4 GB 15K rpm E-DDM feature (#5232)
- 2 Gbps FC, 146.8 GB 15K rpm E-DDM feature (#5233)

**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 delivery. IBM specifies, in the materials shipped with a replacement CRU, whether a defective CRU must be returned to IBM. When return is required, (1) return instructions and a container is shipped with the replacement CRU and (2) you may be charged for the replacement CRU if IBM does not receive the defective CRU within 30 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 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 DS4000 EXP810 Storage Expansion Unit (1812-81A) has the following warranty service:** 9 hours per day, Monday through Friday, excluding holidays, next-business-day response, IBM On-site Limited Repair (IOL)

**Warranty service upgrades and maintenance service options:** During the warranty period, warranty service upgrades provide 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.

**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 service selections are available as warranty upgrades for your machine type.

- 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

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, refer to 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.

- 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

**CRUs:** 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, (1) return instructions and a container is shipped with the replacement CRU and (2) you may be charged for the replacement CRU if IBM does not receive the defective CRU within 30 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 (LMC):** 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 for which the customer has acquired. You can obtain the agreement at

[http://www-1.ibm.com/servers/support/machine\\_warranties/machine\\_code.html](http://www-1.ibm.com/servers/support/machine_warranties/machine_code.html)

or by contacting your IBM representative.

The following machine in this announcement has LMC: DS4000 EXP810 Storage Expansion Unit (1812-81A)

IBM may release changes to the machine code. IBM plans to make the machine code changes available for download from the IBM TotalStorage® technical support Web site

<http://www-03.ibm.com/servers/storage/support/allproducts/downloading.html>

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.

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## Prices

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Contact your IBM representative for prices information for this announcement.

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Reference: YE001

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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