



Large Storage Options for Personal System/2

Storage expansion for PS/2s

When you need additional storage for your servers and workstations, cost-effective IBM PS/2® storage options fill the bill. You can choose from a range of easy-to-add disk storage subsystems—like a superfast external disk subsystem expandable to 51.3GB, High Availability External Disk Arrays of up to 20.7GB, enclosures for multiple disks and other storage options—plus 4mm and 8mm tape drives. If you need more storage, IBM has a solution well-matched to your needs and budget.

Large storage options at work

Here are some of the ways you can put the range of Personal System/2® storage subsystems to work for you:

- Correctly match mission-critical applications to PS/2-class servers
- Eliminate disk storage bottlenecks in PC-based servers
- Access large databases in your departmental LANs
- Build high-performance, high-availability storage solutions for your network servers
- Support more applications, from CAD and financial modeling to advanced graphics and desktop publishing
- Back up your system and LAN server files quickly and easily to protect against data loss



IBM 3515 High Performance Disk Subsystem

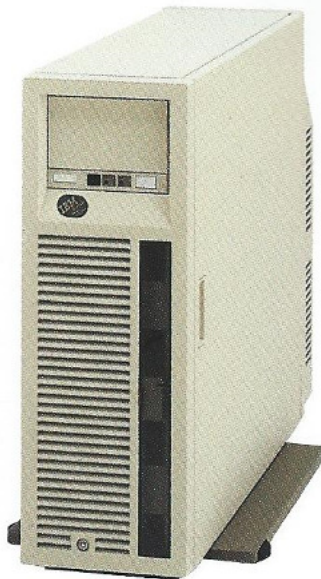
Consider the new 3515 High Performance Disk Subsystem: it brings key elements of IBM mainframe technology down to PS/2 affordability. Teamed with the new 40MB streaming data functions of the PS/2 95 50 MHz Server, the 3515 makes disk bottlenecks a thing of the past, even in the heaviest file server environments. And talk about scalability, each PS/2 3515 Micro Channel® Adapter can support up to four 3515 devices for a total of 17.1GB. Since you can install up to three of these adapters, you can attach up to 51.3GB of blazing-fast disk storage to your server.

What's more, the 3515 is flexible. If you need to protect your data and still maintain high levels of performance, the 3515 can be set up as a RAID-1 (mirroring) solution using NetWare® or IBM OS/2® and OS/2 LAN Server software.

Feature	Benefit
Up to 51.3GB capacity	<ul style="list-style-type: none"> • Adds major storage capacity in a LAN environment • Gives you flexibility with floorstanding or rack-mounted versions • Provides scalability and growth
Mainframe controller performance	<ul style="list-style-type: none"> • Permits simultaneous read/write, with 8MB/second data rate and data moved in both directions • Exploits 40MB data streaming on PS/2 95 XP 486 Server
Packetized serial link connections	<ul style="list-style-type: none"> • Mix data and commands in stream to allow multiple concurrent disk operations • Eliminate bus contention through point-to-point connection • Maintain high performance at high capacity
Nondisruptive service	<ul style="list-style-type: none"> • Allows changing of disks without powering down

3515 at a glance

Part number	3515-010, rack-mounted/110 volts 3515-510, floorstanding/110 volts 3515-520, floorstanding/220 volts
Standard features	Power supply unit, controller, 4 disk drives, and cover lock
Systems supported	PS/2 Model 95 XP 486 Server (0MX models)
Subsystem interface	Serial link, 8MB/second, full duplex packet-switched data and commands; 33-foot cable length
Controller design	10 MIP IBM RISC microcontroller; 1MB buffer; controls 4 disk drives; provides back-to-back writes, buffer read-ahead and split read/write capabilities
Adapter design	40MB/second data streaming busmaster Micro Channel adapter; 10 MIP IBM RISC microcontroller; multiplexes commands and data for up to 16 devices; supports up to 1,000 disk operations/second and can sustain up to 28MB/second continuous data transfer
Disk design	1.07GB, 11.0ms average seek time; 6.02 average latency; 3MB/second instantaneous data rate; nondisruptive disk exchange
Capacity	4.28GB per enclosure; 16 drives per Micro Channel adapter; 3 Micro Channel adapters supported per PS/2 system unit; up to 48 drives with 3 adapters; 51.3GB system maximum capacity
Operating systems	NetWare 3.11; OS/2 2.00; OS/2 LAN Server 3.0
Power supply	300 watts
Size	3515-010: 6.7"H x 17.4"W x 27.0"D (171mm x 443mm x 686mm) 3515-510 and 3515-520: 24.0"H x 8.3"W (10.6" with feet) x 30.7"D (610mm x 210mm [270mm with feet] x 780mm)
Weight	3515-010 with 4 disk drives: 108 lbs. (49 kg) 3515-510 or 3515-520 with 4 disk drives: 138 lbs. (63 kg)
FCC class	A
Warranty	One-year limited warranty



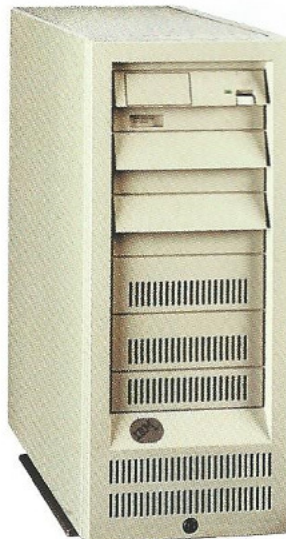
IBM 3511 External Enclosure for SCSI Devices

The IBM 3511 External Enclosure for SCSI Devices has a capacity of up to 3.12GB of high-speed disk storage—and the flexibility to contain various SCSI options.

Feature	Benefit
Seven storage bays	<ul style="list-style-type: none"> • Give you flexibility to support seven SCSI devices • Support up to 3.12GB of hard disk data storage • Support up to five SCSI hard disks and a 2.3GB SCSI Tape Drive for backup • Allow various combinations of SCSI devices to enhance expandability and configuration flexibility for all Micro Channel systems
Standard 320MB SCSI hard disk	<ul style="list-style-type: none"> • Provides fast 12.5ms average seek time

3511 at a glance

Part number	3511003	
SCSI devices supported	Up to six additional SCSI fixed disk drives (80MB, 160MB, 212MB, 320MB, 400MB); up to two additional 1GB SCSI fixed disk drives; maximum storage capacity of 3.12GB; up to two PS/2 CD-ROM II drives; ¹ one PS/2 2.3GB Full-High SCSI Tape Drive; ¹ 2.0GB 4mm Tape Drive Option for PS/2; ¹ PS/2 3.5" Rewritable Optical Drive ¹	
SCSI device interface	ANSI X3.131-1986 SCSI standard; attached to PS/2 SCSI port via PS/2 Card to Option Cable (6451139)	
Standard features	320MB SCSI hard disk; cover keylock	
Systems supported	PS/2 Models 50 and higher with a SCSI adapter or built-in SCSI interface	
Power supply	329-watt	
Nominal operating current²	+5V line	+12V line
Maximum available	4.60A	7.5A
Required for standard 320MB drive	0.66A	1.0A
Available for other devices	3.94A	6.5A
Size	19.75"H x 8"W x 20"D (486.6mm x 203.2mm x 508mm)	
Weight	48 lbs. (21.8 kg)	
FCC class	A	
Warranty	One-year limited warranty	



IBM 2.3GB SCSI Tape Drive and External SCSI Tape Drive (8mm)

Back up your critical data quickly and easily with the 8mm tape cartridge-based PS/2 2.3GB SCSI Tape Drive or External SCSI Tape Drive.

Feature	Benefit
SCSI device	<ul style="list-style-type: none"> Attaches via a standard SCSI interface Doesn't require its own unique adapter
2.3GB capacity	<ul style="list-style-type: none"> Allows you to store large amounts of data on a single cartridge Holds the equivalent of five 400MB hard files on a single cartridge
245KB/sec. data transfer rate	<ul style="list-style-type: none"> Lets you back up an entire 400MB file in less than half an hour
Error Correction Code (ECC)	<ul style="list-style-type: none"> Enhances reliability and data integrity

2.3GB Tape Drives at a glance

Part number	6451121	3532023
Feature code	1120	
Systems supported	PS/2 95 XP 486 (installed in 5.25" full-high bay or the 3511 External Enclosure for SCSI devices)	PS/2 Models 50 and higher attached via SCSI cable to a SCSI adapter or SCSI port
Transfer rate	245KB/second	245KB/second
Data cartridge	8mm data cartridge (21F8595)	8mm data cartridge (21F8595)
Cleaning cartridge	8mm cleaning cartridge (21F8593)	8mm cleaning cartridge (21F8593)
Capacity	2.3GB	2.3GB
SCSI cable required	N/A (included in system unit or enclosure)	IBM SCSI Controller cable (31F4187) for attachment to PS/2 system port. SCSI Device-to-Device cable (31F4186) for attachment to another external SCSI device in a daisy-chain fashion
Dimensions	5.25" full-high device	4.8" H x 11" W x 11.2" D (123mm x 280mm x 285mm) 13.3 lbs. (6.0 kg)
Power supply	N/A	75 watts
Nominal operating current	+5v line: 2.0A +12v line: 0.4A	N/A N/A
Software support	SYTOS PLUS®/IBM OS/2 File Backup Utility with OS/2 Standard Edition and Extended Edition 1.3 or higher; OS/2 LAN Server 1.3 or higher; SYTOS PLUS/IBM DOS File Backup Utility with DOS 3.3 or higher; IBM PC LAN program 1.3	
Warranty	One-year limited warranty	One-year limited warranty



IBM 3514 High Availability External Disk Array

If your LAN server applications call for high availability and data guarding, the IBM 3514 High Availability External Disk Array is the ticket. Attach the 3514 to your PS/2 85, 90 or 95 through its Micro Channel Array Adapter and put your mind at ease because your critical data is now protected with sophisticated RAID-5 data guarding technology. And what about lost productivity in the event of disk or power-supply failure? The 3514 can be repaired without system downtime—and will continue to service your clients without missing a beat.

Available in two models, each 3514 is expandable to meet your disk storage needs as they grow. Do you need moderate storage of 796MB to 2.79GB, or something more: 1.97GB expandable to 6.9GB? And if you err on the low side there's no cause for alarm. Up to three 3514 disk arrays can be attached to your PS/2 server for a total of 20.7GB of protected data storage.

Feature	Benefit
Eight storage bays	<ul style="list-style-type: none">• Support 3 to 8 hard files• Expand to 6.9GB protected data storage
Up to 20.7GB capacity	<ul style="list-style-type: none">• Provides modular upgrade options as storage requirements increase; upgrades of 398MB for 3514-001 or 986MB for 3514-004 provide 2,790MB or 6,906MB, respectively. Three 3514s can provide up to 20.7GB per system
High-speed data interface	<ul style="list-style-type: none">• Permits rapid transfer of data to and from 3514 at up to 10MB/second
Redundant power supply	<ul style="list-style-type: none">• Allows 3514 to stay available for use in event of a power-supply failure
RAID-5 technology	<ul style="list-style-type: none">• Reduces or eliminates data loss and system downtime• Permits automatic data recovery and data reconstruction if necessary
Built-in disk controller	<ul style="list-style-type: none">• Optimizes use of individual drives• Presents 3514 as one large physical drive to host PS/2 system
Concurrent maintenance	<ul style="list-style-type: none">• Allows replacement of failed hard disk or power supply while the 3514 continues to operate

3514 at a glance

Part number	3514-001/3514-004
Systems supported	PS/2 Model 90 XP 486 PS/2 Model 95 XP 486 PS/2 Server 85
Controller design	10MB/second transfer rate; SCSI-II
Capacity	8 hard-file bays, 5 available for expansion; 800MB data capacity; expansion capability up to 2.8GB; 3 3514s can be supported per PS/2 system, giving maximum capacity of 8.4GB to 20.7GB, depending on model
Operating systems	OS/2 1.30.2 and 2.0 (refresh XR 06050) and OS/2 related extensions; NetWare 3.11
Power supply	300 watts typical
Size	24"H x 13.6"W x 31.5"D (610mm x 345mm x 800mm)
Weight	140 lbs. (64 kg)
FCC class	A
Warranty	Two-year limited warranty



IBM 2.0GB 4mm Tape Drive Option for PS/2

If you prefer a 4mm tape cartridge solution for backup, choose the 2.0GB 4mm Tape Drive Option for PS/2.

Feature	Benefit
SCSI device	<ul style="list-style-type: none">• Attaches via a standard SCSI interface• Doesn't require its own unique adapter
2.0GB capacity	<ul style="list-style-type: none">• Gives you up to 2.0GB of data per cartridge (4 to 8GB with data compression)• Provides reliable, cost-effective backup for a wide variety of PS/2 applications• Allows fast data streaming that backs up even large files quickly• Permits nondata-grade media rejection for write operations (will not write audio-grade media)• Includes diagnostic tape cartridge for standalone diagnostic tests

2.0GB Tape Drive at a glance

Part number	55F9464
Feature code	2867
Systems supported	PS/2 Models 50 and higher with a SCSI adapter or built-in SCSI interface;* external enclosure via 3510 or 3511
Data cartridge	4mm DDSIII (21F8758)
Cleaning cartridge	4mm cleaning cartridge (21F8763)
Transfer rate	183KB/second, 366 to 732KB/second (typically 457KB/second)
Capacity	2GB, 4 to 8GB with data compression (5GB typical)
SCSI cable requirements	N/A (included in system or enclosure)
Dimensions	5.25" form factor-3.5" base drive
Power supply	N/A
Nominal operating current	+5v line: 1A +12v line: 0.75A
Software support	SYTOS PLUS/IBM OS/2 File Backup Utility with OS/2 Standard Edition and Extended Edition 1.3 or higher; OS/2 LAN Server 1.3 or higher; SYTOS PLUS/IBM DOS File Backup Utility with DOS 3.3 or higher; IBM PC LAN program 1.3; support in the Novell environment is provided by Cheyenne Software, Inc., with their ARCserv® program
Warranty	One-year limited warranty

*May require other features or devices for the desired function or for installation.



For information on SCSI adapters and hard disks, CD-ROM, optical drive and diskette drives, please see Storage Options for Personal System/2 (G221-3476-00).



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¹ Installation of these devices reduces the number of SCSI hard disk drives that can be installed.

² Total nominal operating current of internal devices cannot exceed the available current of the power supply in the enclosure.



G221-3475-00