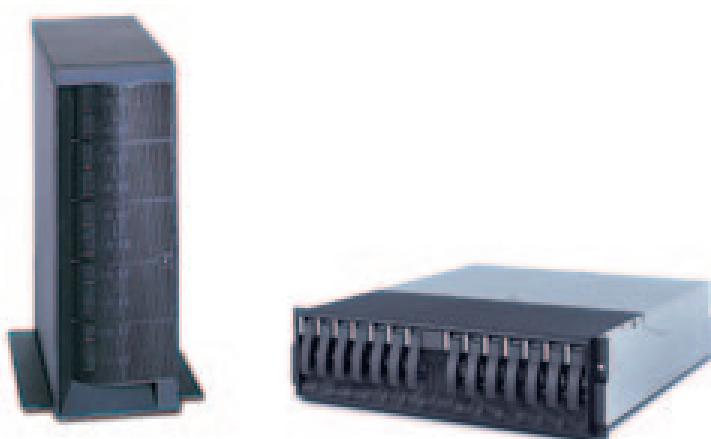


Compact, low-cost Ultra320 SCSI disk storage for
IBM @server pSeries servers and IBM RS/6000 servers



IBM TotalStorage Expandable Storage Plus 320 Models DS4 and TS4



IBM TotalStorage 2104 Expandable Storage Plus 320

IBM® TotalStorage® 2104 Expandable Storage Plus 320 Models DS4 and TS4

The IBM TotalStorage 2104 Expandable Storage Plus (EXP Plus) 320 is designed to provide flexible, scalable and low-cost disk storage for IBM @server pSeries and IBM RS/6000 servers in a compact package. This new disk enclosure is ideal for enterprises that need high-performance external disk storage in a small footprint. Industry-standard Ultra320 SCSI interfaces combine with Ultra320 SCSI adapters to provide exceptional throughput performance up to 320MB/sec. In addition, RAID support is possible with IBM Ultra320 and SCSI RAID adapters. With all of these capabilities, the EXP Plus 320 is designed to provide a cost-effective and leading-edge disk storage solution.

High availability

To help ensure that information is accessible, the EXP Plus 320 is designed for high availability. It

Highlights

- **Provides an excellent package for Internet service providers when combined with an IBM @server® pSeries™ or IBM RS/6000® server**
- **Features up to fourteen 10,000 RPM (36.4GB, 73.4GB 146.8GB) or 15,000 RPM (36.4GB, 73.4GB) physical disk drives**
- **Incorporates high-performance Ultra320 SCSI disk storage with 320MB/sec throughput**
- **Scales from up to 2TB of capacity per drawer or tower to 28TB per rack**
- **Designed to provide enhanced storage protection with RAID 0, 1, 1E, 5 and 5E options when used with IBM Ultra320 SCSI RAID adapters for pSeries servers**

features hot-swappable, auto-docking disk drives, as well as an optional redundant power supply and cooling unit, all designed to help minimize downtime.

Availability is enhanced with the use of RAID options or UNIX® software mirroring. IBM Ultra320 and SCSI RAID adapters provide RAID 0, 1, 1E, 5 and 5E functions and can be used to attach the EXP Plus 320 to IBM @server pSeries and RS/6000 servers to promote increased data protection. To further facilitate availability, SCSI enclosure services can help monitor and report problems to the server.

The EXP Plus can be configured to meet a variety of configuration requirements. In single server configurations, up to fourteen drives can be installed on a single SCSI bus. Alternatively, the bus can be split into two separate SCSI busses with up to seven drives each. The second host port option provides Ultra320 connectivity to either the same server or a second server.

A single bus configuration with a second host port supports up to twelve disks and allows connectivity to two hosts for disk affinity in non-RAID environments. HACMP can then be used to provide server failover for high availability in non-concurrent mode using the EXP Plus 320 with non-RAID SCSI host bus adapters.

Flexible and scalable storage

The EXP Plus 320 helps address the needs of many different types of environments. Two models are available to fit the need for stand-alone storage in one- or two-server environments, or for rack-mounted storage used by several servers.

The rack-mounted Model DS4 drawer can reside in a variety of 19-inch racks, including the IBM 7014-T00 and the 7014-T42. The largest rack (7014-T42) can hold up to fourteen EXP Plus DS4 drawers for a total physical capacity of 28TB.

The stand-alone tower Model TS4 is suitable for one- or two-server environments, providing up to 2TB of physical capacity in a small desk-side tower unit.

Both the rack-mounted DS4 and the desk-side tower TS4 can be populated with up to fourteen disk drives. Available options include 10,000 RPM (36.4GB, 73.4GB, 146.8GB) and 15,000 RPM (36.4GB, 73.4GB) disk drives. Drive capacities can be inter-mixed and drives can be added in increments as few as one or as many as thirteen. Housing multiple drawers in a rack helps provide the flexibility to build storage capacity from gigabytes to terabytes.

The EXP Plus 320 can attach IBM @server pSeries and RS/6000 servers by using a variety of SCSI adapters: dual-channel Ultra 320 SCSI, Ultra3 SCSI and Ultra2 SCSI. For high performance and availability, the enclosures can be combined with the IBM PCI-X dual-channel Ultra320 SCSI RAID Adapter (FC5703, FC5711), allowing excellent Ultra320 SCSI throughput performance of up to 320MB/sec and multiple RAID options. Distances up to 20 meters are supported between disk enclosures and pSeries or RS/6000 servers using Ultra320 SCSI adapters.

IBM 2104 Expandable Storage Plus 320 Models DS4 and TS4 at a glance

Physical characteristics—DS4

Width	445 mm/18 in
Depth	552 mm/22 in
Height	128 mm/5.0 in (3U)
Weight	37.4 Kg/83 lbs (maximum)

Physical characteristics—TS4

Width (tower top)	189 mm/7.5 in
Width (tower base)	281 mm/11.0 in
Depth	594 mm/23.5 in
Height	529 mm/21 in
Weight	54.7 Kg/121 lbs

Operating environment

Temperature	10°-40° C/50°-104° F
Relative humidity	8% to 80%
Maximum wet bulb	27° C/81° F
Electrical power	.43 kVA (typical)
Capacity of exhaust	1.55 cubic meter/min

Power requirements

	90 to 260 V Single Phase 50/60Hz
Power consumption	330 Watts

Supported adapters¹

FC 2498—PCI 4-Channel Ultra3 SCSI RAID
FC 5712/5710—PCI-X Dual Channel Ultra320 SCSI Adapter
FC 5703/5711—PCI-X Dual Channel Ultra320 SCSI RAID Adapter
FC 6203—PCI Dual Channel Ultra3 SCSI
FC 6205—PCI Dual Channel Ultra2 SCSI

For more information

For more information, contact your IBM representative or IBM Business Partner. Or visit **ibm.com/totalstorage/expplus**



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GB equals one billion bytes when referring to hard drive capacity; accessible capacity may be less.

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¹ For more information about supported servers and adapters, visit **ibm.com/storage/expplus**.