Providing high performance and availability for data-intensive environments

IBM

SSA RAID Adapter for PC Servers

Highlights

Enables attachment of high-performance SSA storage sub-systems to PC Servers that have a PCI bus

Connects up to 96 SSA drives in two SSA loops

Provides flexible attachment of up to 32 RAID arrays at distances as great as 25 meters (82 feet)

Supports RAID 0, 1, 5, and non-RAID storage options

Offers Global Hot Spare disk support across all arrays

Supports attachment of all IBM SSA storage subsystems

Works with Windows NT™, OS/2, or Novell NetWare operating systems

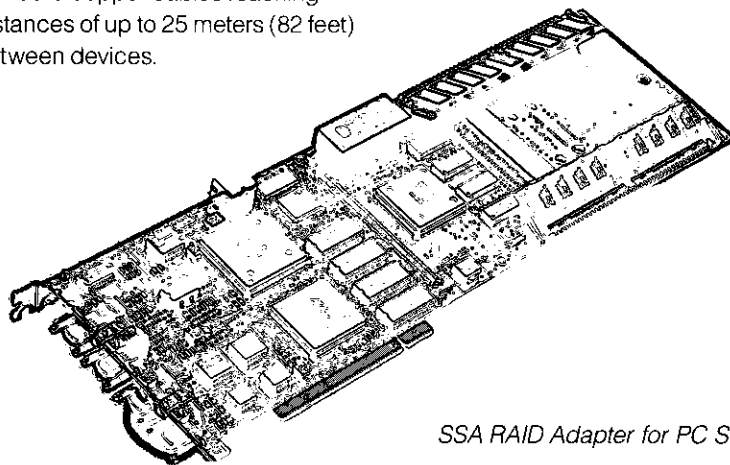## High performance, low cost data protection for demanding storage requirements

Businesses with large or rapidly expanding storage requirements often need storage solutions that provide high performance, scalability, and enhanced availability. The SSA RAID Adapter for PC Servers delivers that exceptional performance, scalable storage capacity, and cost-effective data protection for large application or database servers by allowing users to attach a variety of IBM SSA storage subsystems.

The SSA RAID Adapter for PC Servers conforms to the Serial Storage Architecture (SSA), enabling users to connect up to 96 SSA disk drives in two loops over a server's PCI bus. The drives can be configured in as many as 32 arrays (RAID 0 or 5), each with from 3 to 16 disk drives. The adapter can also support any number of RAID 1 mirrored pairs or non-RAID drives, up to the 96 limit. Each high-performance SSA loop has a maximum bandwidth of 80 MB per second over standard copper cables reaching distances of up to 25 meters (82 feet) between devices.

The RAID adapter works with the following IBM PC Server families: PC320, PC325, PC330, PC520, PC704, and PC720. This provides network managers the freedom of choice to design RAID solutions tailored to their data environments. The adapter kit includes diskettes with device drivers for attachment to servers running under Windows NT 3.51 or 4.0, Novell NetWare 4.1 or 4.1 SMP, OS/2 Warp Server or Warp Server SMP, and OS/2 2.11 SMP—ensuring broad compatibility with existing business applications.

SSA performance advantages

The SSA RAID Adapter for PC Servers takes advantage of independent SSA links to achieve outstanding performance. Each adapter can support up to 200 concurrent, overlapping I/O requests. Under a database workload consisting of 4 KB transfers, the adapter can execute up to 1,000 I/O operations per second in a RAID 5 array, or up to 3,000 I/O operations per second in a non-RAID environment.

SSA RAID Adapter for PC Servers

Specifications

Transfer Rate	
SSA Interface	80 MB/second drive interface bandwidth
Device Support	Up to 48 SSA disks per loop (96 total)
Physical Dimensions	127 mm (5 in.) H x 21.59 mm (.85 in.) W x 340.74 mm (13.4 in.) D
Operating Temperature	10° C (50° F) to 40° C (104° F)
Relative Humidity	8% to 80% non-condensing
Power	16W
Agency Approvals	USA: FCC Class A Japan: VCCI-1 Europe: CISPR 22 Class A, CE MARK A

IBM®

The SSA RAID Adapter for PC Servers features sustained data rates of up to 35 MB per second on 128 KB reads and 7 MB per second on writes for RAID 5 arrays. In non-RAID operation, data throughput increases to 60 MB per second on reads and 40 MB per second on writes. This makes the adapter ideal for data-intensive applications. The specific performance of a system is affected by a number of factors, including the file server and operating system used, and the actual database workload.

High availability from SSA technology

SSA's bi-directional loop architecture also provides data protection for critical applications by ensuring that a single cable failure will not prevent access to data. Should an SSA loop be broken, the RAID adapter continues to access all devices on the loop segments. Once the path has been restored, the adapter automatically reconfigures the system to return to normal operation.

IBM's Global Hot Spare feature lets storage administrators designate drives on either loop of the adapter to be used by an array should a failure occur. This reduces the number of hot spares required to protect the arrays. Should a disk fail, the hot-swappable capability allows the disk to be removed without disrupting access to data on the rest of the loop. Online rebuild, which can take place in the foreground or background, provides for quick recovery once a disk has been replaced.

Other important advantages

PC Server Models 320, 325, 330, and 520 will accept one SSA RAID Adapter, attaching up to 96 disk drives. For larger workloads, PC Server Models 704 and 720 can accommodate two adapters connecting as many as 192 SSA disks. Because SSA networks are self-configuring and require no termination, installation is fast and easy. Maximum distances of up to 25 meters (82 feet) between SSA nodes provide added flexibility.

What's more, SSA provides an easy way for IT professionals to buy and grow for the future. The adapter offers simple reconfiguration and efficient extendibility to accommodate server upgrades or integrate clustering or other new technologies as business requirements change over time.

Let us tell you more

For more information about the SSA RAID Adapter for PC Servers, contact an IBM representative or IBM Business Partner. Users can also visit the IBM PC Company home page on the Worldwide Web at http://www.pc.ibm.com. Or call 1-800-772-2227 in the United States or 1-800-465-7999 in Canada.

G225-6706-00