

giving you a
performance
advantage

hp StorageWorks
corporate infrastructure
fabric products





dedicated to improving operational efficiency

Businesses today have an immense need for capacity, speed and reliability in storing and accessing data. And although the move to Storage Area Network (SAN) technology is initially a significant investment decision, the long-term cost-savings you gain through decreased labor costs associated with storage maintenance, management, and expansion make SAN deployment a sound business decision. And, because every business is concerned with containing long-term storage management costs, while still maintaining reliability, a SAN's infrastructure devices must meet stringent requirements for improved operational efficiency, connectivity and accessibility.

switch to performance — connect to capability

As the industry leader in storage architecture, HP recognizes that conventional storage architectures can no longer satisfy performance and budget requirements. Responding to this need, we have adopted SAN technologies

that incorporate the best practices available in the industry. We meet the demand for improved operational efficiency and deliver comprehensive end-to-end SAN solutions that give you a performance advantage.

bringing the power of your infrastructure together

HP leading-edge selections of switch technologies are a central component in overall SAN configuration. Our 2 Gb Fibre Channel switches meet traditional business needs for storage capacity and seamless data access to execute applications, accommodate customer and manufacturing data growth, support business consolidation, and enable worldwide commerce. They are also the ideal solution for e-commerce where the demands for high capacity, speed and reliability in data access are vital. And for businesses where imaging and graphic applications require intense storage, speed and reliability, our Corporate Infrastructure Core and SAN Switches are unmatched.

maximizing performance throughout your infrastructure

performance

- common 2 Gb Fibre Channel ASIC
- common Advanced Fabric Services
- common Open Management
- compatible with entire SAN Switch family
- software PowerPak options on all switches (except embedded blade)

MSA SAN Switch 2/8
(embedded in msa1000 only)

SAN Switch 2/8-EL
SAN Switch 2/8 PowerPak

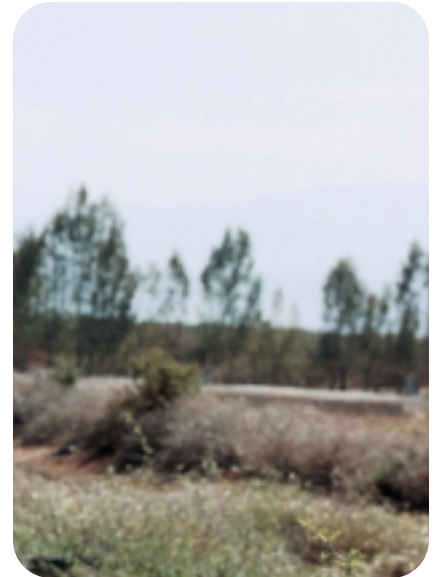
SAN Switch 2/16-EL
SAN Switch 2/16
SAN Switch 2/16 PowerPak

SAN Switch 2/32
SAN Switch 2/32 PowerPak

Core Switch 2/64
Core Switch 2/64 PowerPak

capacity

flexible



end-to-end performance

The trend toward increased storage consumption and management costs coupled with fixed or reduced IT budgets heighten the need for improved productivity, simplified storage management, and protection of existing network storage investments. HP StorageWorks Corporate Infrastructure Core and SAN Switches deliver on this necessity providing maximum configuration flexibility, manageability, scalability and investment protection at lower price per-port basis.

empower your business

HP empowers businesses with the ability to take charge of their infrastructure. Our comprehensive set of precision-engineered software management tools and PowerPak management tools optimize SAN performance and proactively monitor the health of the network supporting your infrastructure and putting you in charge.

hp StorageWorks PowerPak management tools include:

- Advanced Performance Monitoring
- Extended Fabrics
- Fabric Watch
- ISL Trunking
- Remote Switch

expansive capabilities

HP is committed to offering you the most flexible and comprehensive portfolio of switch technologies available. Whether the focus is at the core of the fabric or on incorporating remote elements of the network, this portfolio provides a broad range of switches and advanced fabric services to help businesses improve operational efficiency. All HP StorageWorks Corporate Infrastructure Core and SAN Switches offer:

- common 2 Gb Fibre Channel ASIC — high speed, long connection distances
- common advanced fabric services — extreme performance with ISL Trunking and frame filtering
- common open management — superior functionality
- compatible with other Corporate Infrastructure SAN Switches — expansive
- software PowerPak options on all switches — scale and manage with ease*

** except embedded blade*



high
availability

hp StorageWorks SAN Switch 2/8-EL and SAN Switch 2/8 PowerPak



The HP StorageWorks SAN Switch 2/8-EL and 2/8 PowerPak offer 2 Gb connectivity for an entry-level storage area network (SAN), and the ability to grow to a core-to-edge infrastructure. Both are fully compatible with the current HP StorageWorks SAN Switch family and provide investment protection for presently installed switches.

These switches deliver eight high performance Auto Sensing 1 and 2 Gb Fibre Channel ports and are self-configuring. Plus, the SAN Switch 2/8-EL and 2/8 PowerPak are fully non-blocking and provide 16 Gb switching capacity for uncongested sustained, 2 Gb full duplex throughput. The SAN Switch 2/8-EL scales to a maximum fabric configuration of four switches, and can be upgraded to a SAN Switch 2/8 to scale to full SAN configurations. Removable, industry-standard small-form-factor-pluggable

optical transceivers (SFPs) must be ordered separately. This switch meets high availability requirements with redundant, hot-pluggable components and automatic port rerouting.

PowerPak software features are available pre-configured on the SAN Switch 2/8 PowerPak or as an upgrade to the SAN Switch 2/8-EL and existing 2 Gb switches.

key features and benefits

manageable

- maximizes the efficiency of system administrator with centralized management tools

efficient

- utilizes the same firmware as other HP StorageWorks Corporate Infrastructure SAN Switches

high performance

- supports 2 Gb transfer with non blocking for highest performance

resilient

- PowerPak software tools provide the capability to monitor for hot spots and proactively address potential issues

hp StorageWorks SAN Switch 2/16-EL, SAN Switch 2/16 and SAN Switch 2/16 PowerPak



The HP StorageWorks SAN Switch 2/16-EL, SAN Switch 2/16 and SAN Switch 2/16 PowerPak feature 2 Gb transfer speed and the optional ability to trunk or aggregate the throughput of up to four Inter Switch ports. With sixteen ports users can create up to four 8 Gb Trunked ISLs between two or more similar 2Gb switches. Plus, the SAN Switch 2/16 is fully non-blocking and provides 32 Gb switching capacity for uncongested sustained, 2 Gb full duplex throughput. The SAN Switch 2/16-EL scales to a maximum fabric configuration of four switches, and can be upgraded to a SAN Switch 2/16 to scale to full SAN configurations. Its storage networking features, which include redundant power

supplies and cooling, make it ideal for supporting corporate infrastructure implementations.

The switch features highly networked capabilities that can be incorporated into powerful, flexible SANs. It also features optional industry-standard SFP (small form-factor-pluggable) connectors that allow for higher port density than was available using GBICs. The higher speed coupled with the optional Trunking feature allows users to install these switches in pairs for use as high speed backbone devices for joining SAN islands with little to no performance degradation.

The increased performance of these switches is also appropriate where high throughput needs exist such as video streaming, intensive on-line transaction processing (OLTP), and medical imaging. The PowerPak is available pre-configured on the SAN Switch 2/16 PowerPak or as an upgrade to the SAN Switch 2/16-EL,

SAN Switch 2/16 base unit and existing 2 Gb switches.

key features and benefits

available

- incorporates hot-plug, redundant power supplies and fans, and hot-plug optics

manageable

- maximizes the efficiency of system administrator with centralized management tools

efficient

- utilizes the same firmware as other HP StorageWorks Corporate Infrastructure SAN Switches

high performance

- supports 2 Gb transfer with non blocking for highest performance

resilient

- software tools provide the capability to monitor for hot spots and proactively address potential issues

hp StorageWorks SAN Switch 2/32 and SAN Switch 2/32 PowerPak



The HP StorageWorks SAN Switch 2/32 provides configuration flexibility, manageability, scalability, and performance needed by corporate storage network infrastructures in a single package. Whether incorporated into an expansive core fabric or tactically placed at the edge, the SAN Switch 2/32 delivers the performance of 2 Gb technologies and the ability to support very large fabric implementations. The SAN Switch 2/32 offers storage networking features not found in any other switch, making it ideal for supporting medium to large corporate infrastructure implementations.

The PowerPak is available pre-configured on the SAN Switch 2/32 PowerPak or as an upgrade to the SAN Switch 2/32 base unit and existing 2 Gb switches.

key features and benefits

available

- incorporates hot-plug, redundant power supplies and fans and hot-plug optics

manageable

- maximizes system administrator resources with centralized management tools

efficient

- utilizes the same firmware as the HP StorageWorks Core Switch 2/64

scalable

- offers up to 32-port scalability

high performance

- supports 2 Gb transfer with no head-of-line blocking for highest performance

cost-effective

- features Advanced Fabric services which reduce initial investment, simplify management, and increase ROI

seamless

hp StorageWorks Core Switch 2/64 and Core Switch 2/64 PowerPak



The HP StorageWorks Core Switch 2/64 is a 2 Gb Fibre Channel core fabric switch that delivers high availability in a modular 14U enclosure. It provides a foundation for an enterprise SAN that integrates seamlessly into an always-on Internet infrastructure. With scaling from 32-ports to 128-ports, the dual 64-port Core Switch 2/64 introduces new functionality via third-generation ASIC. This enables deployment of advanced fabric services via the Fabric OS. The Core Switch 2/64 offers complete hardware redundancy with hot-swap components and provides a platform for multi-protocol and partner applications. It comes with Advanced Zoning, Web Tools, and Fabric Manager OS. The Core Switch 2/64 seamlessly connects on a port-by-port basis to either 1 Gb or 2 Gb SAN devices by auto-sensing and speed matching the Fibre Channel devices.

The PowerPak is available pre-configured on the Core Switch 2/64 PowerPak or as an upgrade to the Core Switch 2/64 base unit and existing 2 Gb switches.

key features and benefits

dependable

- PowerPak includes ISL Trunking and Advanced Performance Monitoring to prevent fabric bottlenecks

efficient

- provides up to 128 1 Gb and 2 Gb universal auto-sensing ports in a 14U rack mount enclosure

manageable

- offers multi-switch fabric tools for easy configuration and monitoring

flexible

- allows logical partitioning of physical devices attached to a SAN

compatible

- integrates seamlessly into 1 Gb and 2 Gb fabrics

- provides standards-based interoperability with existing Corporate Infrastructure Fibre Channel switches

well-connected

- connects remote fabrics over virtually limitless distances

available

- incorporates hot-swappable redundant cards, power supplies, fans, and SFP optics

secure

- offers new multi-protocol and LUN-level Zoning features

adaptable

- integrates fully with HP OpenView Storage Area Manager software suite



hp StorageWorks MSA SAN Switch 2/8

(embedded in msa1000 only)



The HP StorageWorks MSA SAN Switch 2/8 is a low-cost, high performance embedded SAN switch only available with the HP StorageWorks Modular SAN Array 1000 (msa1000). It delivers 2 Gb port connectivity while taking zero rack space, even in a redundant configuration. In addition, this switch is fully compatible with the current HP StorageWorks SAN Switch family. The MSA SAN Switch 2/8 is a second-generation integrated switch that offers customers more ports than our previous offering, while assuring interoperability with the smallest to the largest SAN configuration.

The MSA SAN Switch 2/8 switch delivers eight high performance 2 Gb ports with one to the controller and seven user accessible, and it has four small form-factor pluggable (SFPs) devices installed. Plus, the SAN Switch 2/8 is fully non-blocking and provides 2 Gb switching capacity for uncongested sustained, 2 Gb full duplex throughput. Equipped with industry-standard small-form-factor-pluggable optical transceivers (SFPs), this switch meets high availability requirements with redundant, hot-pluggable components and automatic port rerouting.

Please note: PowerPak software features are not available preconfigured on the MSA SAN Switch 2/8. However, PowerPak Software Bundle is available as an upgrade to the MSA SAN Switch 2/8 and existing 2 Gb switches.

key features and benefits

manageable

- maximizes the efficiency of system administrator with centralized management tools

efficient

- utilizes the same firmware as other HP StorageWorks Corporate Infrastructure SAN Switches

high performance

- supports 2 Gb transfer with non blocking for highest performance

hp StorageWorks advanced fabric services base configuration

QuickLoop

QuickLoop connects private loop hosts to the SAN fabric. This results in better performance and fault management, while protecting investment in legacy devices. QuickLoop is available only for eight and sixteen-port SAN switches.

Web Tools

Web Tools enables organizations to monitor and manage single Fibre Channel switches and small SAN fabrics. This browser-based application for element/device set-up and management performs tasks, from any location within the enterprise, by using a Java-capable web browser from standard laptops, desktop PCs or workstations. Giving administrators the capability of configuring, monitoring, and managing switch and fabric parameters from a single access point allows for enhanced operational efficiency and simplified management. This application also

displays Fabric Watch health and Advanced Performance information collected across the entire fabric. Web Tools is included in all base and PowerPak switch offerings.

Advanced Zoning

In the 2 Gb generation of switches, WWN Zoning and Access Control are achieved by hardware furnishing the same simple administration tasks previously enforced only through software. Now administrators can organize a physical fabric into logical groups and prevent unauthorized devices access. When you increase SAN fabric security through hardware-enforced access control, you gain the ability to automatically and dynamically arrange devices into logical groups (zones), this results in ultimately lowering your total cost of ownership by maximizing utilization of shared resources. Advanced Zoning is included in all base and PowerPak switch offerings.

additional options

Fabric Manager¹

Fabric Manager is a highly scalable, Java-based application that manages multiple fabrics and switches in real time. In particular, Fabric Manager provides the essential functions for efficiently configuring, monitoring, dynamically provisioning and managing SAN fabrics on a daily basis.

key functionality for Fabric Manager includes:

- management of multiple switches, multiple fabrics and large fabrics
- ability to monitor the SAN through a Single Console
- rapid SAN provisioning: Grouping, Cloning and Deploying Switch Profiles
- simplification of Core Management Tasks

¹ Included with Core Switch 2/64.



hp StorageWorks advanced fabric services PowerPak

The HP StorageWorks PowerPak option provides the SAN administrator with the necessary tools to monitor the health and performance of the network, while also ensuring the highest levels of security, scalability and manageability. PowerPak software features are available pre-configured on the switch or as an upgrade to existing 2 Gb switches. Components of the PowerPak may also be purchased separately. PowerPak is the foundation for integration into HP OpenView Storage Area Manager, providing a SAN administrator the capability to manage their entire environment through a single-pane-of-glass. Whether for small/medium business or enterprise SAN customers, PowerPak gives you the functionality to create the most adaptive storage infrastructure possible.

for more information

For more information on HP StorageWorks Corporate Infrastructure product line, contact any of our worldwide sales offices or visit our web site at:
www.hp.com/go/san

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Advanced Performance Monitoring

Advanced Performance Monitoring allows for end-to-end performance monitoring of traffic between a server and a storage device, assessing resource utilization on a fabric-wide basis. This enabling technology provides the ability to monitor and watch specific fabric metrics from a SID (Source ID) to a DID (Destination ID), creating a method to be able to fine-tune and scale your fabric more efficiently. Performance Monitoring also allows the ability to have an early warning detection of hot spots within the fabric providing a powerful tool for maintaining overall balanced performance. This results in improved performance tuning that maximizes fabric resource optimization and simplifies SAN capacity planning.

Extended Fabrics

Extended Fabrics delivers all of the scalability, reliability and performance benefits of Fibre Channel SANs beyond the native 10 km distance specified by the Fibre Channel standard. With Extended Fabrics, SAN fabric coverage can be increased to 100 kilometers at full bandwidth to campuses, Metropolitan Area Networks, and backup sites. It also increases high availability by providing long-distance backup support to ensure business continuance and disaster recovery. This component is required with the use of Very Long Distance SFPs and/or wavelength division multiplexing (WDM or DWDM).

Fabric Watch

Fabric Watch is a real-time health monitoring service that proactively monitors the health of the switches and fabric and performance settings. Fabric Watch enables each switch to monitor the SAN for potential faults and automatically alert network managers to problems before they become failures. Fabric Watch tracks a variety of SAN fabric elements, events and counters. Monitoring fabric-wide events, ports, SFPs and environmental parameters permits early fault detection and isolation as well as performance measurement. Benefits include improved high availability from proactive notification, detailed information that can be used to conduct root cause analysis and reduced troubleshooting time. Each switch in the SAN needs its own Fabric Watch license.

ISL Trunking

ISL Trunking delivers high performance enhanced trunking capabilities by aggregating up to four ISLs into a single logical 8 Gb Fibre Channel link. This license logically groups up to four e-ports to provide a high bandwidth Trunk between two switches. The switch operating system views the Trunk as a single, high bandwidth resource (up to 8 Gb) when routing connections between switches. Connections are load-balanced across the individual links, which comprise the logical trunk group. Each 16-port switch can have four separate 4-port Trunk groups. Each 2 Gb switch needs its own license. The result is improved performance, increased high availability, and simplified network design and management.

Remote Switch

Remote Switch is used for the interconnection of SAN Switches over bridging technologies such as OC3 ATM or IP networks. It also allows for the extension of SAN topologies over greater distance than "Dark Fiber" or over bridge protocols where "Dark Fiber" doesn't exist. Remote switch allows a maximum of two switches (one per location) to be connected over two WANs.