

Compaq SANworks

Product Description

SANworks Secure Path Version 3.1, for Microsoft Windows A High-Availability Software Solution for Intel Platforms

This document provides a brief functional description of SANworks Secure Path, Version 3.1, for Microsoft Windows, a High-Availability software solution for Intel Platforms. It includes significant features, minimum system requirements for implementing the Solution, and an introduction to the Solution software modules.

Description

Compaq SANworks Secure Path for Microsoft Windows is a high-availability software product that manages and maintains continuous data access to the following Compaq StorageWorks storage systems

- StorageWorks Ultra SCSI RAID Array 7000 / Enterprise Storage Array 10000 (Windows NT 4.0 only)
- StorageWorks Fibre Channel RAID Array 8000 / Enterprise Storage Array 12000 (Windows NT 4.0 or Windows 2000)

You can use this software with StorageWorks RAID Arrays configured to operate on Intel-based platforms running Windows NT 4.0 or Windows 2000 operating systems in single host server, Microsoft Cluster Server (MSCS), and Oracle Parallel Server (OPS) high-availability environments.

Secure Path eliminates the disk drive, RAID controller, host bus adapter (HBA), and interconnect hardware (cables, hubs or switches, and connectivity devices) as single points of failure in the storage system.

Through the deployment of redundant hardware and advanced RAID technology, Secure Path enhances fault tolerance and storage system availability by providing automated failover capability.

Redundant physical connections define separate physical “paths” in a Secure Path hardware configuration. Each path originates at a unique HBA port on the server, and ends at a unique RAID controller port in the storage system.

Features

Secure Path provides the following major features:

- Allows StorageWorks dual-controller RAID systems and host servers equipped with multiple HBAs redundant physical connectivity along independent SCSI, Fibre Channel Arbitrated Loop (FC-AL) or Fibre Channel switched fabric paths.
- Monitors each path and automatically re-routes I/O to a functioning alternate path if an HBA, cable, hub, switch or controller failure occur.
- Determines the “health” of available storage units and physical paths through the implementation of path verification diagnostics.
- Monitors and identifies failed paths and failed-over storage units.
- Facilitates static load balancing, which allows manual movement of devices between paths.
- Automatically restores failed-over storage units to repaired paths with auto-failback capability enabled
- Implements anti-thrash filters to prevent failover/failback effects caused by marginal or intermittent conditions.
- Exploits the potential for improved data throughput and increased bandwidth using dual RAID controllers configured in multiple-bus mode operation with load distribution capability enabled.
- Detects failures reliably without inducing false or unnecessary failovers.
- Implements failover/failback actions transparently without disrupting applications.
- Provides Client/Server remote management capability, and multiple storage system support.

Program Modules

The Secure Path Software Kit for Windows includes the following software components:

- **HszDisk.sys** is a Windows NT class driver that provides unique error handling features and performance enhancements unavailable in the native Windows NT disk class driver. It works with StorageWorks RAID Array controllers to enhance on-line storage availability and fault-tolerance. HszDisk works in single-host and cluster environments to maintain optimum subsystem performance during controller and storageset recovery operations.
- **RaiDisk.sys** is a Windows filter driver that provides the primary failover capability in the Secure Path product. RaiDisk supports StorageWorks RAID Array multiple-bus mode, multiple path access, and provides all functions required for monitoring I/O and detecting path failures. In Windows 2000 applications, RaiDisk also transparently integrates the functionality that HszDisk does for Windows NT.
- **Secure Path Manager** is the client/server application used to manage multiple path StorageWorks RAID Array configurations. It displays a graphical representation of multiple path environments, indicating status of all configured storage units and paths. It runs locally at the managed servers, or remotely at a management workstation.

To facilitate static load balancing, Secure Path Manager provides the capability to move storagesets between paths. It indicates which path is currently servicing each configured storage unit, and displays the mode and state information for all available paths.

- **Secure Path Agent** is a Windows service that communicates with the RaiDisk filter driver on the host server, and Secure Path Manager on the client side, using the TCP/IP protocol and WinSock API. It installs on the host server along with the RaiDisk driver.

To minimize network traffic, display information is relayed from the Secure Path Agent to the Secure Path Manager only when the RaiDisk driver detects changes in the configuration. The Secure Path Agent also notifies StorageWorks Command Console (SWCC) clients when RaiDisk performs path failover or auto-failback operations.

- **Secure Path Setup** supports driver and application installation and de-installation with Windows NT 4.0 and Windows 2000.

Each software component of Secure Path makes use of the Windows Event Log to post error and informational messages as required.

Minimum System Requirements

The following are the minimum system requirements for SANworks Secure Path v3.1 for Microsoft Windows:

Architecture	Intel
Operating System	Microsoft Windows NT Enterprise Edition, Version 4.0 Microsoft Windows 2000 Advanced Server (Fibre Channel only)
Disk Space	All Drivers and Files < 1.5 MB
File System	Single Host NTFS or FAT partitions Microsoft Cluster Server requires NTFS partitions
Number of Access Paths	Up to 8
Monitor	VGA
Input Devices	Keyboard and mouse
Host Bus Adapters	Ultra SCSI - Adaptec 2944UW Fibre Channel - StorageWorks KGPSA
Serial Port	Required for CLI direct serial connection
Controller Compatibility	Dual-controller RA7000/ESA10000 using HSOF version 7.3 Dual-controller RA8000/ESA12000 using ACS version 8.5