Software Product Description

PRODUCT NAME: **HS1CP Device Channel Processor Optional Operating Firmware, Version 2.5, 64.20.01**

DESCRIPTION

The HS1CP Device Channel Processor Optional Operating Firmware is a set of firmware products that execute within the device channel processor and provide additional capabilities beyond the device channel processor's basic operating firmware. The HS1CP Operating Firmware currently includes the following separately licensed capabilities:

- RAID capability that provides high data availability (tolerance of disk failures) at a lower cost than disk mirroring

- Disk Mirroring capability that provides maximum data protection at improved performance over RAID.

RAID Capability

The RAID capability provides the following functions:

- Manages up to 14 sets of between 3 and 14 disks as RAIDsets (limited by device channel processor configuration restrictions). A RAIDset is viewed by the host as a single disk. RAIDsets can tolerate the failure of a single member disk without loss of ability to deliver data to hosts.

- Dynamically adjusts between RAID Level 3 and RAID Level 5-like data protection algorithms depending on instantaneous workload.

- Maintains consistency of data and parity across all member disks in a RAIDset. This includes recovery from media errors.

- Detects failure of a single RAIDset member disk and invokes data regeneration algorithms to provide continued data availability to hosts.

- Captures a designated spare (if one exists) in the event of a member disk failure, and reconstructs the data and parity of the failed member disk onto it.

- Allows the user a choice between high-performance RAID (data availability comparable to that of a single disk with performance comparable to a stripeset) and high-reliability RAID (data availability comparable to

that of a conventional parity protected RAID array with conventional RAID write performance).

Disk Mirroring Capability

The Disk Mirroring capability provides the following functions:

- Real-time maintenance of up to six identical copies of data on mirrorsets of separate disks attached to a single device channel processor

- Protects data against disk failure by replicating all data on each member of the mirrorset offering extremely high data reliability

- Striping of mirrorsets, for high-performance access to large amounts of highly available data

- Captures a designated spare (if one exists) in the event of a mirrorset member disk failure and reconstructs the data of the failed member disk onto it

- Ability to increase or decrease the number of members in a mirrorset as requirements change

- Flexible policy options for determining both how read requests are satisfied and the speed of copying when a new member is being added.

Both the RAID and Disk Mirroring capability can be controlled through the HS1CP Device Channel Processor command line interpreter (CLI), and can be restricted to only operate on certain disks.

HARDWARE REQUIREMENTS

HS1CP Device Channel Processor RAID and Disk Mirroring operating firmware execute on the HS1CP and are distributed on the same PCMCIA card that contains the basic HS1CP operating firmware, QA-4D5AA-HS. The HS1CP device channel processor is qualified to operate only in a StorageWorks FDDI Storage Server.

OPTIONAL HARDWARE

None

SOFTWARE REQUIREMENTS

The HS1CP optional firmware products require V2.5 or later for RAID and Disk Mirroring features.

OPTIONAL SOFTWARE

None.

DISTRIBUTION MEDIA

HS1CP Operating Firmware is shipped on the PCMCIA program card. No separate media or documentation is available.

ORDERING INFORMATION

The RAID and Disk Mirroring options are separately orderable and require separate licenses. If the options are ordered at time of original StorageWorks FDDI Server order, the license key(s) will be pre-installed at the factory. The following are license order numbers for RAID and Disk Mirroring options:

• QL-4D7A9-AA HS1CP RAID TRAD License

• QL-4D7A9-RA HS1CP RAID TRAD UPD License

• QL-4E3A9-AA HS1CP Disk Mirror TRAD License

• QL-4E3A9-RA HS1CP Disk Mirror TRAD UPD License

For additional information on available licenses, services, and media, refer to the appropriate price book or your Digital representative.

SOFTWARE LICENSING

An HS1CP Optional Firmware License (key and letter) for the corresponding option is the license deliverable. If the options are ordered at time of original Storage-Works FDDI Server order, the license key(s) will be pre-installed at the factory. If the options are ordered subsequent to the factory shipment, they can be installed at a later date using the HS1CP utility called the Firmware Licensing System (FLS).

SOFTWARE PRODUCT SERVICES

A variety of service options are available from Digital. For more information, contact your local Digital office.

Software Service for the HS1CP Operating Firmware options are covered under the terms and conditions of the Integrated Hardware and Software Customer Service Contracts.

SOFTWARE WARRANTY

Digital's StorageWorks HS1CP Device Channel Processor provides a one year firmware warranty. The HS1CP warranty card is enclosed in the hardware package and **one** must be returned per device channel processor to ensure the appropriate number of warranty updates.