



Shared Storage Solutions Using UltraSCSI Hubs



Application Note EK-SMA21-AN.A01

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<http://www.storage.digital.com/>

and

<http://www.service.digital.com/>

Introduction

This application note describes StorageWorks UltraSCSI shared storage configurations using UltraSCSI hubs. The shared storage configurations outlined here consist of a StorageWorks UltraSCSI hub connected to two host systems. These hosts can be either homogeneous (same operating system) or heterogeneous (different operating system). These configurations can be set up in a clustered or non-clustered environment utilizing StorageWorks RAID Array (RA) 7000 or StorageWorks Enterprise Storage Array (ESA) 10000 subsystems. They can also be set up in a clustered environment utilizing a StorageWorks RAID Array 450 subsystem.

At this release, Windows NT, OpenVMS and DIGITAL UNIX are the supported operating systems using UltraSCSI hubs in a shared storage configuration.

Shared Storage Concepts

In a multiple-host environment where each host requires exclusive access to its own data, a separate data storage system is typically employed. In this scenario, each storage subsystem must be individually configured and maintained, each has its own set of hardware components and each requires its own physical location.

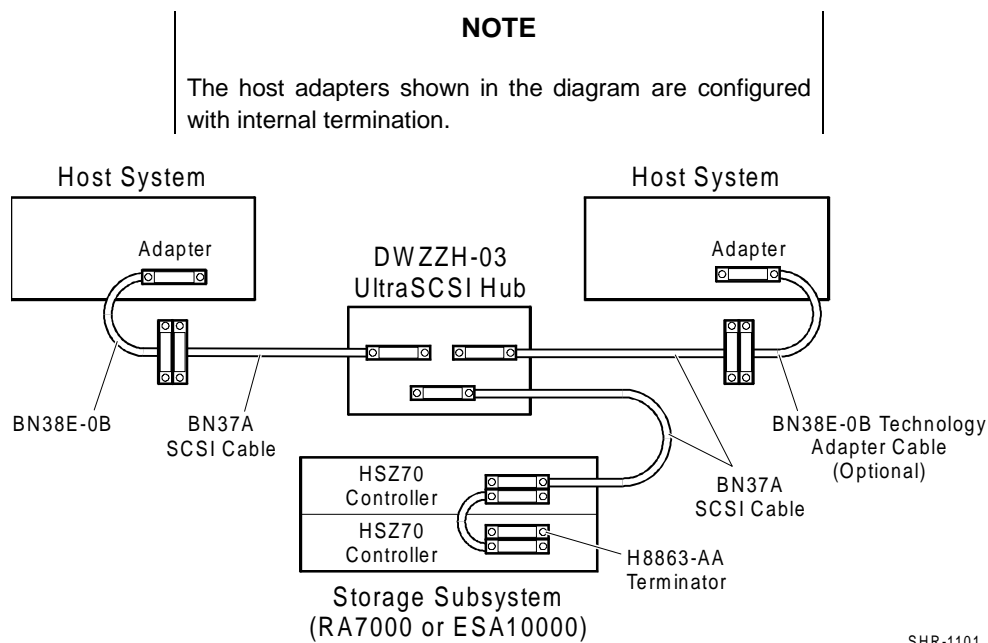
Shared storage, however, provides a better alternative to the complex storage demands of a multiple-host environment. With shared storage, multiple host storage needs may be consolidated into a single storage subsystem. Each host maintains exclusive access to its own data. Only one storage subsystem needs to be configured and maintained, i.e., there is only one set of hardware components and just one physical location is required.

The immediate benefits of using an UltraSCSI hub in a shared storage configuration include:

- Hub-radiant topology and greater total bus length
 - Hubs are a central connectivity point for the SCSI bus; the bus segments radiate from the hub. This provides a more direct and simplified cabling topology.
 - Hubs act as bus extenders, allowing each bus segment to be up to 25 meters; 50-meter total bus length end to end.
- Higher signal reliability
 - Each bus segment is electrically isolated. A bus segment is immediately disabled should it become invalid; e.g., a cable is accidentally disconnected from a host. The remainder of the bus continues to function.
 - Bus signals are captured and the timing is resynchronized before being transmitted on the next bus segment.
- Greater physical reliability and fewer physical constraints
 - Extra cables and bus terminators are eliminated, providing cleaner host connections and better access to host port locations.
 - There are fewer pieces that could fail or accidentally be disconnected. Less weight is placed as a strain on the connectors.

UltraSCSI Hub Configuration

An example of an UltraSCSI hub configuration is shown below:



Shared Storage Prerequisites

The implementation of a shared storage configuration with an ESA10000 or RA7000 requires the following:

- The RA7000 or ES10000 has either dual-redundant HSZ70 controllers or a single HSZ70 controller using HSOF V7.0 or newer software.
- The RA7000 or ESA10000 controllers, when used in a dual-redundant configuration, will usually be set in transparent controller failover mode.

NOTE

For more information regarding RA7000 or ESA10000 configuration requirements, please consult the *HSZ70 Array Controller HSOF Version 7.0 Configuration Manual* and other documentation supplied with your RAID array.

- Each host system must have installed the *HSZ70 Solution Software Kit* for its particular operating system.

NOTE

The RAID Array 450 subsystem (HSZ50 controller) can also be substituted in place of the RA7000 or ESA10000, but only in clustered configurations that support this subsystem. See the *Configuring Your StorageWorks Subsystem HSZ50 Array Controllers, HSOF Version 5.0 Configuration Guide* for more information on RAID Array 450 configuration.

- UltraSCSI hubs must be installed in a StorageWorks DS-BA356-xx shelf equipped with at least one 180-watt power supply or in the BA370 shelf of the RA7000 or ESA10000.

NOTE

It is highly recommended that two power supplies be employed in a BA356 shelf for redundancy.

- The StorageWorks Command Console (SWCC) is recommended to set up and manage these storage configurations. SWCC is a centralized graphical storage management console that allows real-time configuration of the storage environment and delivers reliable, real-time monitoring and notification of storage events.

NOTE

In a multi-host environment, only one SWCC agent should be installed. A single SWCC agent gives the Command Console client complete ability to monitor and control the RAID subsystem. For more information about SWCC, please consult the *Command Console Version 2.0 User's Guide*.

Shared Storage Document Reference

NOTE

For information specific to your host operating system, refer to your operating system's *Shared Storage Application Notes*.

The following table provides a list of current *Shared Storage Application Notes* as well as other documents pertinent to each of the operating systems:

Topic	Document Title	Order Number
Windows NT	<i>Shared Storage for Windows NT Using UltraSCSI Hubs</i>	EK-SMA17-AN
OpenVMS	<i>Shared Storage for OpenVMS Using UltraSCSI Hubs</i>	EK-SMA19-AN
DIGITAL UNIX	<i>Shared Storage for DIGITAL UNIX Using UltraSCSI Hubs</i>	EK-SMA20-AN
Sun Solaris	<i>Shared Storage for Sun Solaris Using UltraSCSI Hubs</i>	EK-SMA18-AN
RA7000 / ESA10000	<i>RA7000 and ESA10000 Storage Subsystems User's Guide</i>	EK-SMCP-UG
HSZ70 Controller	<i>HSZ70 Array Controller HSOV Version 7.0 Configuration Manual</i>	EK-HSZ70-CG
RAID Array 450 (HSZ50 Controller)	<i>Configuring Your StorageWorks Subsystem HSZ50 Array Controllers, HSOV Version 5.0, Configuration Guide</i>	EK-HSZ50-CG
StorageWorks Command Console	<i>Command Console (Version 1.1) User's Guide (for RAID Array 450)</i>	AA-R24LA-TE
StorageWorks Command Console	<i>Command Console (Version 2.0) User's Guide (for RA7000 / ESA10000)</i>	AA-R60EA-TE
UltraSCSI	<i>UltraSCSI Configuration Guidelines</i>	EK-ULTRA-CG
UltraSCSI Hub	<i>DWZZH 16-Bit SCSI Bus Hub Users' Guide</i>	EK-DWZZH-UG

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