



Shared Storage for OpenVMS Using UltraSCSI Hubs



Application Note

EK-SMA19-AN. A01

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DIGITAL is continually making additions to our storage solution product line. For example, new UltraSCSI hubs with additional ports are currently being developed. Please check our website for more information on our UltraSCSI product line as well as the latest drivers, technical tips, and documentation. We can be found in the technical area of our web page:

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

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OpenVMS Shared Storage Configuration Components

NOTE

Please review the Shared Storage Solutions Using UltraSCSI Hubs Application Note before referencing this document.

The shared storage configuration consists of:

- DIGITAL AlphaServer system running:
 - OpenVMS V7.1-1H1
 - HSZ70 Solution Software Kit for OpenVMS
- RAID Array (RA) 7000 or Enterprise Storage Array (ESA) 10000 with a single or dual-redundant HSZ70 controller using HSOF V7.0 or newer software

NOTE

The StorageWorks 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.

- UltraSCSI Hub, DWZZH-03, with 3 differential ports

NOTE

The DWZZH-21 UltraSCSI hub, with 2 single-ended ports and 1 differential port, is for special OEM applications only. It is not supported in shared storage configurations.

Configuration Setup Procedures

NOTE

Please refer to the *DWZZH 16-Bit SCSI Bus Hub User's Guide* before proceeding with the following reference guidelines.

Before connecting the host systems to the storage subsystem via the Hub, complete the following:

Host Adapters:

1. Verify the host adapters are internally terminated:
 - For host adapters with removable terminators, verify that the host terminators are securely installed on the host adapter board
- OR**
- For host adapters with termination configurable by a setup utility, verify that the termination setting is listed as "Enabled"
2. Set each host bus adapter to a unique SCSI ID.
3. Set the SCSI bus transfer speed to either *Fast* or *Enable UltraSCSI*.
4. Disable SCSI Bus Reset. This prohibits Bus Reset commands generated by one host affecting the operation of other hosts within the configuration.

NOTE

Please refer to the specific host adapter's configuration guide for detailed information on setting the SCSI bus parameters.

HSZ70 Controller:

NOTE

The following controller function settings are modified using either StorageWorks Command Console (SWCC) or Command Line Interface (CLI).

1. Set the HOST-FUNCTION mode to "A" for all controller target IDs (storage sets) that will be used by the OpenVMS host system. For example, if you are using the HSZ70 Command Line Interface, enter:

SET THIS_CONTROLLER HOST_FUNCTION=(2,A)

This sets the HSZ70 controller SCSI target ID 2 to HOST_FUNCTION mode A.

2. Restrict the access to the storage units used by the OpenVMS server. The access to the storage unit is made exclusive to a specific host initiator SCSI ID. For example, if you are using the HSZ70 Command Line Interface, enter:

SET D200 ACCESS_ID=6

This restricts access to storage unit D200 to the host with SCSI ID 6.

NOTE

Refer to the *HSZ70 Array Controller HSOF Version 7.0 Configuration Manual* for further instructions on setting up the controllers.

NOTE

Exclusive storage unit access is **not** supported with the RAID Array 450 subsystem (HSZ50 controller).

UltraSCSI Hub:

1. Place the UltraSCSI hub in either a StorageWorks BA356 storage shelf or pedestal or in the lower right-hand device slot of the BA370 shelf within the RA7000 or ESA10000.

CAUTION

Do not exceed 25 meters maximum length per bus segment when installing the UltraSCSI hub.

2. Cable the host connector of the HSZ70 controller to one controller port of the UltraSCSI hub.
3. Cable the host adapters to the other ports of the UltraSCSI hub.

NOTE

Some host adapters may require the use of a BN38E-0B Technology Adapter Cable in order to connect the UltraSCSI cable to the host adapter's connector.

Clustering:

Clustering is only supported in a homogeneous (i.e., "same operating system") host configuration using OpenVMS V7.1-1H1.

NOTE

See your host server's "Supported Options List" for more information concerning cluster supported adapters.

In a clustered environment, set up the HSZ70 controllers as described above, but do **not** restrict access to the storage units. If access has been restricted reset the storage units for access by all hosts. For example, if you are using the HSZ70 Command Line Interface, enter:

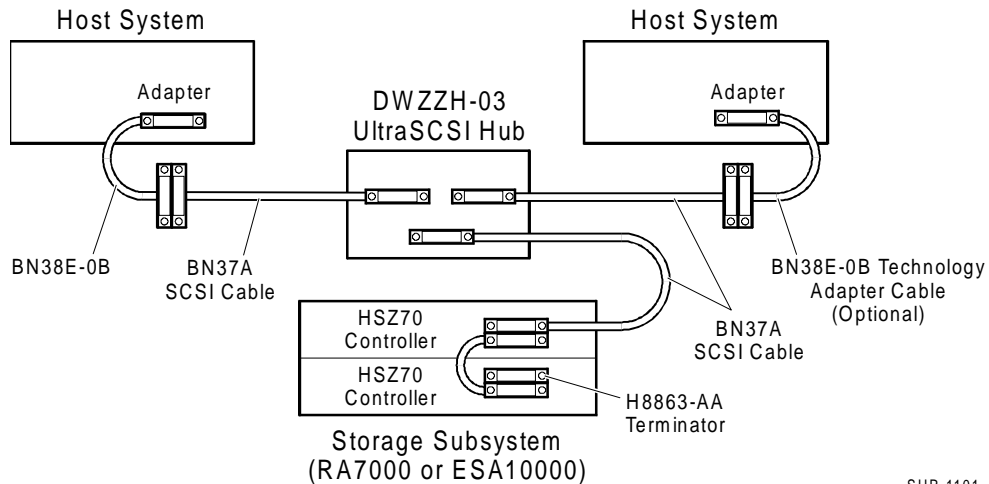
SET D200 ACCESS_ID=ALL

This allows access to storage unit D200 by all hosts, as required in a cluster environment.

NOTE

Clustering is also supported utilizing a StorageWorks RAID Array 450 (HSZ50 controller) substituted for the RA7000 and ESA10000. See the *Configuring Your StorageWorks Subsystem HSZ50 Array Controllers, HSOF Version 5.0 Configuration Guide* for more information on RAID Array 450 configuration.

Configuration Parts List:



SHR-1101

(1) RA7000 or ESA10000 includes the following (minimum) components:

- (1) HSZ70 Controller, HSOF V7.0
- (1) VHDCI UltraSCSI Tri-Link, H8863-AA
- (1) VHDCI UltraSCSI Terminator, H8863-AA
- (1) VHDCI UltraSCSI Cable, BN37A (5 m for RA7000, 10 m for ESA10000)
- (1) Technology Adapter Cable, HD68 to VHDCI, BN38E-0B

(2) Host Adapter, Wide Differential:

- KZPBA-CB, VHDCI UltraSCSI, firmware version 5.53 or newer
- KZPSA-BB, HD68 SCSI, firmware version A11 or newer (requires using a BN38E-0B Technology Adapter Cable)

(1) UltraSCSI Hub, DWZZH-03, 3 Differential Ports

(2) BN37A, VHDCI UltraSCSI cable (available in lengths from 0.3m to 25m)

(1) StorageWorks DS-BA356-xx shelf with dual power supplies for the UltraSCSI hub (optional)

Configuration References

The following documents provide further information for the configuration of the components utilized in shared storage configurations:

Topic	Document Title	Order Number
<i>OpenVMS</i>	<i>Getting Started, HSZ70 Solution Software V7.0B for OpenVMS, Installation Guide</i>	<i>AA-R8A7B-TE</i>
<i>OpenVMS</i>	<i>Release Notes RAID Array 7000/Enterprise Storage Array 10000 V7.0B for OpenVMS</i>	<i>AA-R8A8B-TE</i>
<i>RA7000 / ESA10000</i>	<i>RA7000 and ESA10000 Storage Subsystems User's Guide</i>	<i>EK-SMCP-UG</i>
<i>HSZ70 Controller</i>	<i>HSZ70 Array Controller HSOV Version 7.0 Configuration Manual</i>	<i>EK-HSZ70-CG</i>
<i>RAID Array 450 (HSZ50 Controller)</i>	<i>Configuring Your StorageWorks Subsystem HSZ50 Array Controllers, HSOV Version 5.0, Configuration Guide</i>	<i>EK-HSZ50-CG</i>
<i>StorageWorks Command Console</i>	<i>Command Console (Version 1.1) User's Guide (for RAID Array 450)</i>	<i>AA-R24LA-TE</i>
<i>StorageWorks Command Console</i>	<i>Command Console (Version 2.0) User's Guide (for use with RA7000 / ESA10000)</i>	<i>AA-R60EA-TE</i>
<i>UltraSCSI</i>	<i>UltraSCSI Configuration Guidelines</i>	<i>EK-ULTRA-CG</i>
<i>UltraSCSI Hub</i>	<i>DWZZH 16-Bit SCSI Bus Hub User's Guide</i>	<i>EK-DWZZH-UG</i>
<i>Shared Storage</i>	<i>Shared Storage Solutions Using UltraSCSI Hubs</i>	<i>EK-SMA21-AN</i>