DIGITAL Storage Adapters
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DIGITAL Systems and Options Catalog

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DIGITAL StorageWorks CIPCA PCI to CI Storage Host Adapter for OpenVMS

The CIPCA is a PCI-to-CI storage host bus adapter which allows users to connect their existing CI-based storage to high-performance PCI-based AlphaServer systems. The CIPCA allows users to include the latest Alpha-based servers within an existing OpenVMS Cluster, thereby taking advantage of servers offering the best price performance while maintaining previous investments in storage subsystems. The CIPCA is the only product available on the market that allows PCI to CI connectivity and increases the performance of the CI with support for 4 KB packet.

Features

CIPCA is supported using the current OpenVMS Cluster Software configuration rules. The standard CI node count restrictions that apply to the CIPCA are as follows:

- Up to and including 16 CI host systems
- Up to and including 16 CI Hierarchical Storage Controllers
- Up to and including 32 CI products/Star Coupler (16 without CISCE)
- Up to and including 96 OpenVMS Cluster member systems

Supported CIPCA host systems

AlphaServer Systems 8400, 8200, 4100, 4000, 2100A, 2100, and 2000 running OpenVMS V6.2-1H3 or OpenVMS V7.1.

Supported CI connected hosts

- Any OpenVMS VAX host using CIXCD or CIBCA-B or OpenVMS Alpha server using CIPCA-AA or CIPCA-BA

CI hierarchical storage controllers supported

- HSJ30/40 with StorageWorks HSOF V2.5 or higher
- All HSC devices except HSC50

CI host adapters supported

- CIXCD, CIBCA-B, and CISCE (CISCE is no longer available; however existing installations are supported)

OpenVMS VAX and Alpha versions

Standard “warranted” and “migration” pairings for mixed architecture/version clusters apply. Refer to OpenVMS Cluster Software Product Description (SPD 29.78) for full details.

CIPCA is supported only on Open VMS, not on DIGITAL UNIX or Windows NT.

The CIPCA requires one of the following additional configuration dependent CI cables:

- BNCIA-10 CI cable 10 M Length
- BNCIA-20 CI cable 20 M Length
- BNCIA-45 CI cable 45 M Length

Configuration Rules

Refer to system specific portion of the *Systems and Options Catalog* for additional configuration information.

- Both the CIPCA-AA and CIPCA-BA are designed as two board options. The CIPCA-AA requires one PCI backplane slot and one EISA backplane slot. The CIPCA-BA requires two PCI slots. The CIPCA-BA is intended for newer servers that have a limited number of EISA slots. Older systems that have a limited number of PCI slots should generally continue to utilize the CIPCA-AA.
- The maximum number of CIPCAs that can be configured within a system is dependent upon the system, the available number of EISA and PCI slots, the combination of model(s) of CIPCA selected, as well as other system options.

DIGITAL StorageWorks CIPCA PCI to CI Storage Host Adapter for OpenVMS

Maximum Number of CIPCAs supported per System

System	Open VMS V6.2-1H3	Open VMS V7.1	Notes
AlphaServer 2000	2	2	only one may be a CIPCA-BA
Alpha Server 2100	2	2	only one may be a CIPCA-BA
Alpha Server 2100A	3	3	
Alpha Server 4000/4100	3	3	with three, one must be a CIPCA-AA and two must be CIPCA-BA
Alpha Server 4000 with I/O expansion module	6	6	only three may be CIPCA-AA
Alpha Server 8200/8400	10	26	

Ordering Information

CIPCA-AA	PCI to-CI-Storage Host Bus Adapter requiring one EISA and one PCI slot
CIPCA-BA	PCI to-CI Storage Host Bus Adapter requiring two PCI slots

DIGITAL StorageWorks KZPBA-CB UltraSCSI Wide Differential Adapter

The DIGITAL KZPBA-CB PCI-based UltraSCSI 16-bit wide differential adapter delivers significantly improved throughput by doubling the SCSI I/O transfer rate to 40 Mbytes per second. This high performance adapter supports cable lengths of up to 25 meters in UltraSCSI configurations. It is supported on DIGITAL RAID Array 450, RAID Array 7000, and ESA10000 subsystems. DIGITAL UNIX and OpenVMS operating systems currently support the KZPBA-CB adapter via direct attachment in existing environments; both operating systems will support multi-host, as well as SCSI-cluster configurations in the future.

The KZPBA-CB adapter easily integrates into existing Fast10 environments and will coexist with the KZPAA, KZPDA, KFTIA and KZPSA adapters. It has similar plug-and-play packaging as the KZPSA adapter and will offer significant performance improvements when used with Digital's popular RAID Arrays 450. In addition, it is an integral part of the RA7000 and ESA10000 RAID solutions, which offer full UltraSCSI functionality and performance.

Features

- High performance PCI-based UltraSCSI adapter
- Single channel, 16-bit wide differential
- SCSI I/O transfer rate up to 40 Mbytes per second
- Sustained data transfers up to 5,000 I/Os per second
- Supports both UltraSCSI and non-UltraSCSI environments
- Supported on midrange and high-end DIGITAL AlphaServer systems
- Supports both 8-bit and 16-bit devices for maximum flexibility
- Supports up to 15 devices (operating system dependent)
- External 68-pin, high-density SCSI connector

Minimum Operating System Support

- DIGITAL UNIX[1] 3.2G, 4.0B, and 4.0D
- OpenVMS[2] 7.1-1H1
- Windows NT 3.51 (with Service Pack 5) and 4.0 (with Service Pack 3)
- Microsoft Cluster Server software (MSCS) V1.0 under Windows NT 4.0
- DIGITAL Clusters for Windows NT, V1.1, Service Pack 1, under Windows NT 4.0

1. Minimum DIGITAL UNIX versions V3.2G and V4.0B are supported in direct attached and standalone RA450, RA7000, and ESA10000 configurations. Patch kit 3 and Patch 6 kit are required for V3.2G and V4.0B operating system versions respectively. These files are available on the World Wide Web at: http://www.service.digital.com/ If access to the World Wide Web is not available, users can request direct delivery on the media of their choice by calling DIGITAL Customer Service Center (CSC) at (800) 354-9000. DIGITAL UNIX V4.0D does **not** require any patches to operate with the KZPBA-CB. Cluster configurations using KZPBA-CB adapters are **not** supported under DIGITAL UNIX at this time.
2. Minimum OpenVMS version V7.1-1H1 only supports direct attached and standalone RA450, RA7000, and ESA10000 configurations. Multi-host shared SCSI bus configurations using the KZPBA-CB adapter are **not** supported under OpenVMS at this time.

Systems Supported

KZPBA-CB adapter is currently supported on DIGITAL AlphaServer 1200, 4000, 4100, 8200, and 8400 systems as well as the DIGITAL Ultimate Workstation 533a²/533au² . See individual system configuration menus for maximum number(s) supported per system.

16-bit Single-Ended UltraSCSI Devices Supported

- DS-RZ1BB-VW, DS-RZ1CB-VW, DS-RZ1DB-VW, DS-RZ1CD-VW

16-bit Single-Ended F10 Devices Supported

- RZ26N-VW, DS-RZ26N-VZ, RZ28D-VW, RZ28M-VW, DS-RZ28M-VZ, RZ29B-VW, EZ31-VW, EZ32-VW, DS-TZS20-VW/DB, DS-TZ89N-VW/TA

8-bit Single-Ended F10 Devices Supported

- RZ26N-VA, DS-RZ28L-VA, RZ28D-VA, RZ28M-VA, DS-RZ29L-VA, RZ29B-VA, DS-RZ40-VA, TLZ09-VA/DA, TLZ9L-VA/DB, DS-TLZ10-VA/DB, TZ88N-VA/TA, TZ887-NE/NT, TZ885-NE/NT, DS-RRD46-VA, RRD45-VA

DIGITAL StorageWorks KZPBA-CB UltraSCSI Wide Differential Adapter

16-bit Differential Devices and RAID controllers

HSZ50 controllers are used in RAID Array 450 and ESA storage systems. HSZ70 controllers are used in RAID Array 7000 and ESA10000 storage systems.

- HSZ70 UltraSCSI RAID Array Controller
- HSZ50[1] Fast10 SCSI RAID Array Controller
- DWZZB-VW SCSI Signal Convertor 16-bit SBB
- DS-DWZZH-03 SCSI Hub with three differential ports, no single ended ports, in a 3.5" SBB
- DS-TL890-NE 16 slot Expansion Cab without drives
- DS-TL891-NE/NT[2] 10-slot 1 TZ89 DLT Mini-Library Rackmount/Tabletop
- DS-TL892-NE/NT[2] 10-slot 2 TZ89 DLT Mini-Library Rackmount/Tabletop
- DS-TL893-*[2] 264 Slot Tape Library with 3-TZ89 Drives
- DS-TL894-*[2] 52 Slot Tape Library with 4-TZ89 Drives
- DS-TL896-*[2] 176 Slot Tape Library with 6-TZ89 Drives

1. HSZ50 is not currently supported under Windows NT 3.51 and 4.0 on the KZPBA-CB.
2. DS-TL89* tape libraries are not supported under Windows NT 3.51 on the KZPBA-CB.

Ordering Information

KZPBA-CB	PCI-based UltraSCSI Wide Differential Adapter
BN38C-xx	VHDCI male to HD68-pin male. Required for connection to HSZ70 (DS-BA370-AA). xx = cable length in meters.
BN21W-0B	0.15 meter 'Y' cable one HD68-pin male to two HD 68-pin female
BN21K-xx	HD68-pin straight male to HD68-pin right angle male SCSI cable. Used to connect from 'Y' cable to another host, -xx = cable length in meters.
H879-AA	HD68-pin male differential SCSI terminator

DIGITAL StorageWorks KZPBA-CA UltraSCSI Wide Single-Ended Adapter

KZPBA-CA is a PCI-to-UltraSCSI 16-bit wide single-ended adapter which offers improved throughput by doubling the SCSI I/O transfer rate to 40 MB/sec. This single-ended adapter will support cable lengths up to 20 meters in UltraSCSI configurations. The KZPBA-CA is support on all AlphaServers under OpenVMS, DIGITAL UNIX and Windows NT. The KZPBA-CA is not supported in clusters.

Features

- SCSI I/O transfer rate up to 40 MB/sec
- Compatible with Fast10 SCSI and UltraSCSI peripherals
- Supports both 8-bit and 16-bit devices
- UltraSCSI bus can be configured up to 20 meters.
- Supports up to 15 devices (operating system dependent)
- 32-bit bus master data transfers up to 35 MB/sec
- Sustained data transfers up to 5000 I/Os per second
- Flash ROM BIOS for easy field upgrades
- Internal 68-pin and 50-pin SCSI connectors
- External 68-pin, high density SCSI Connector

Minimum Operating System requirements

- Digital UNIX V3.2G and V4.0B
- OpenVMS 7.1-1H1
- Windows NT for Alpha 3.51(with service pack 5) and 4.0(with service pack 3)
- Windows NT for Intel 3.51 and 4.0

16-bit Single-Ended UltraSCSI Devices Supported

- DS-RZ1BB-VW, DS-RZ1CB-VW, DS-RZ1DB-VW, DS-RZ1CD-VW

16-bit Single-Ended F10 Devices Supported

- RZ26N-VW, DS-RZ26N-VZ, RZ28D-VW, RZ28M-VW, DS-RZ28M-VZ, RZ29B-VW, DS-TZS20-VW/DB, DS-TZ89N-VW/TA, EZ31-VW, EZ32-VW, DS-DWZZH-21

8-bit Single-Ended F10 Devices Supported

- RZ26N-VA, DS-RZ28L-VA, RZ28D-VA, RZ28M-VA, DS-RZ29L-VA, RZ29B-VA, DS-RZ40-VA, TLZ09-VA/DA, TLZ9L-VA/DB, DS-TLZ10-VA/DB, TZ88N-VA/TA, TZ887-NE/NT, TZ885-NE/NT, DS-RRD46-VA, RRD45-VA

Ordering Information

KZPBA-CA	PCI-based UltraSCSI Wide Single-Ended Adapter
BN38C-xx	VHDCI male to HD68-pin male. Required for connection to DS-BA356-*; xx = cable length in meters.
BN21W-0B	0.15 meter ‘Y’ cable one HD68-pin male to two HD 68-pin female
H8861-AA	Tri-link adapter, used to attach single host to two storage shelves.

DIGITAL StorageWorks KZPSA Fast Wide Differential SCSI Adapter

KZPSA is a high performance, intelligent, PCI-based Fast Wide Differential SCSI storage adapter which provides a solution for the most demanding AlphaServer with heavy PCI I/O requirements. KZPSA maximizes I/O and data processing performance on AlphaServers.

Support of HSZ40 and HSZ50 Storage Works controllers with the KZPSA provides a winning storage solution for high availability and high performance to take advantage of the fast access to SCSI-2 storage subsystems. This availability is delivered through support of such features as RAID 0,3,5 and warm disk swap.

Features

- Maximum off-loading of host CPU requirements offered by any adapter
- Supports HSZ40, HSZ50 & HSZ70(High performance, high availability RAID Array StorageWorks controller)
- Interconnect for up to 25 meter connections allowing greater configuration flexibility
- Up to 20 MB per second throughput. Greater than 2000 I/Os per second
- Single slot 4.2" x 12.3" PCI Module
- Target Mode Support
- Tagged Command Queue Support
- On board EEROM can be customized using the configuration utility
- 68-pin high density external connector
- Supports both 8-bit and 16-bit devices
- Supports up to 15 SCSI devices (operating system dependent)
- Supports single-ended storage devices via the DWZZA and DWZZB

Minimum Operating System Support

- DIGITAL UNIX V3.2
- Windows NT Alpha V3.5
- OpenVMS V6.2. and OpenVMS SCSI clusters with OpenVMS V6.2-1H1
- DECsafe V1.2 with DIGITAL UNIX V3.2.
- TruClusters V1.0 with DIGITAL UNIX V3.2g
- DIGITAL Clusters for Windows NT V1.1 with NT 4.0
- DIGITAL Clusters for Windows NT V1.0a with NT 3.51

SCSI Devices Supported

Disks

- RZ25, RZ25L, RZ26, RZ26L, RZ26N, RZ28, RZ28B, RZ28M, RZ28D, RZ28L, RZ29B, RZ29L, RZ40,DS-RZ1BB-VW, DS-RZ1CB-VW, DS-RZ1DB-VW, DS-RZ1CD-VW, RZ73, RZ74, EZ31, EZ32, EZ64, EZ69

Tapes

- TLZ06, TLZ07, TLZ08, TLZ09, TLZ6L, TLZ7L, TLZ9L, TZK10, TZK11, TKZ15, TZK20, TZ86, TZ87, TZ88, TZ89N, TZ867, TZ877/TZ875, TZ887/TZ885, TSZ07, TL812, TL820, TL822, TL826, DS-TLZ10-DB/VA, DS-TZS20-VW/DB, DS-TL890/891/892-*, DS-TL893/894/896-*, TKZ60, TKZ61, TKZ62, TKZ63, 2T-TKZ64, TKZ9E, TKZ9F

Other

- RRD42, RRD43, RRD44, RRD45, RRD46, DWZZA, DWZZB, DS-DWZZH-03, HSZ40, HSZ50, HSZ70

Ordering Information /StorageWorks Environment Supported

Hardware installation items must be ordered separately, if required.

KZPSA-BB	PCI to SCSI Fast Wide Differential Adapter
BN31G-xx	68-pin straight SCSI cable, -xx denotes length of cable
BN21K-xx	HD68-pin straight male to HD68-pin right angle male SCSI cable, -xx = cable length in meters.
BN21W-0B	0.15 meter ‘Y’ cable, HD68-pin male to two HD 68-pin female
H879-AA	HD68-pin male differential SCSI terminator
H885-AA	Tri-Link Connector
BA35X-MG	8-bit I/O Module for BA356
BA35X-MH	16-bit I/O Module for BA356
DWZZA-xx	SCSI Bus Converter 16-bit differential to 8-bit single-ended
DWZZB-xx	SCSI Bus Converter 16-bit differential to 16-bit single-ended

DIGITAL StorageWorks KZPAA FNSE SCSI Adapter

KZPAA is a PCI-based Fast SCSI-2 8-bit narrow single-ended adapter which supports up to seven SCSI devices. The KZPAA is a highly integrated PCI to SCSI adapter which provides the lowest cost connection for internal or external devices.

Features

- Full 32-bit DMA (Direct Memory Access) capability transfers data to memory without CPU overhead
- Supports internal and external devices
- Supports the HSZ40 and HSZ50 StorageWorks Controllers
- Active SCSI bus termination with disable option for configuration flexibility
- 5.0 x 3.25-inch PCI module uses single slot
- Supports all AlphaServers and AlphaStations

Minimum Operating System Support

- DIGITAL UNIX V3.0
- Windows NT Alpha V3.5
- OpenVMS V6.1 and OpenVMS SCSI clusters with OpenVMS V6.2

SCSI Devices Supported

Disks

- RZ25, RZ25L, RZ26, RZ26L, RZ26N, RZ28, RZ28B, RZ28M, RZ28D, RZ28L, RZ29B, RZ29L, RZ40, DS-RZ1BB-VW, DS-RZ1CB-VW, DS-RZ1DB-VW, DS-RZ1CD-VW, RZ73, RZ74

Tapes

- TLZ04, TLZ06, TLZ07, TLZ08, TLZ09, TLZ6L, TLZ7L, TLZ9L, TZK10, TZK11, TKZ15, TZK20, TZ85, TZ86, TZ87, TZ88, TZ89N, TZ867, TZ87, TZ877, TZ887, TZ875, TSZ07, TL812, TL820, TL822, TL826, DS-TLZ10-DB/VA, DS-TZS20-DB/VW, TKZ60, TKZ61, TKZ62, TKZ63, 2T-TKZ64, TKZ9E, TKZ9F

Other

- RRD42, RRD43, RRD44, RRD45, RRD46, DWZZA, DWZZB

StorageWorks Environment Supported

Hardware installation items must be ordered separately, if required.

BN21H-02	2 meter 50-pin straight SCSI cable -; External cables must be ordered in all cases
17-03948-01	Internal system cable; Adapter ordered separately for use in a system with embedded storage
BA35X-MG	8-bit I/O Module for BA356
DWZZA-xx	SCSI Bus Converter 16-bit FWD to 8-bit FNSE

Ordering Information

KZPAA-AA	PCI to SCSI Adapter, Fast narrow single-ended

DIGITAL StorageWorks KZQSA Q-bus Storage Adapter

KZQSA adapter provides the capability to connect TLZ06, RRD42, and TSZ07 devices to Q-bus MicroVAX and VAX 4000 systems (only one TSZ07 per KZQSA is supported). The KZQSA is a quad-height module with an integral handle that has two standard connectors. There is no termination on the module.

Ordering Information

KZQSA-SA/SF For use with BA2xx, BA4xx, and B400X enclosures; factory/ field installed.

Configuring Information

- Q-bus MicroVAX and VAX 4000 systems support two KZQSA adapters per system; each KZQSA supports two devices. Each adapter requires one Q-bus slot.

Option	Q-bus Slots	dc Amps Drawn @	Watts Drawn	BusLoads Drawn
KZQSA	**1**	**5 V /12V**		**ac / dc**
		5.4 / 0.0	**27.0**	**4.4 / 0.5**

DIGITAL StorageWorks KFMSA XMI to Dual Channel DSSI Adapter

The KFMSA disk and tape Integrated Storage Element (ISE) adapter is an XMI- based adapter that offers full compliance with the DIGITAL Storage Architecture (DSA). It is available for VAX 6000/7000/9000/10000 systems. The KFMSA incorporates two 7-MIP I/O processors and a 45,000-gate array to create a very powerful storage adapter. It provides two 4 MB packet multi-plexing paths to storage elements with full error detection and retry. The KFMSA adapter's bandwidth and extremely low latency permit unconstrained performance of all attached storage elements.

Features

- Two DSSI buses supported
- Supports up to 14 DSSI Integrated Storage Elements (ISEs)
- Latency less than 1.5 ms on each DSSI bus
- Data rate: 8.0 MB/second peak, 5.5 MB/second sustained aggregate of both buses
- Request rate: capable of over 1600–1800 I/O requests per second
- Built-in automatic self-diagnosis
- VAXsimPLUS support

Ordering Information

KFMSA-BA XMI-to-DSSI adapter for VAX 6000/7000/9000/10000 DSSI OpenVMS Cluster and storage-sharing applications. Required for VAX 6000 systems in DSSI OpenVMS Cluster configurations. Includes installation and user documentation. Requires one XMI slot.

CK-KFMSA-LJ Cable kit, two 1.2-meter (4-foot) internal cabinet DSSI cables. Connects XMI backplane (adapter) to VAX 6000 host computer I/O bulkhead. Also includes I/O bulkhead adapter plate (occupies two I/O panel units) and two DSSI bus terminators. Does not support KFMSA warm-swap and, within a DSSI OpenVMS Cluster configuration, can only be used on end-node VAX 6000 systems.

CK-KFMSA-LN Cable/bulkhead kit includes two 2.4-meter (8-foot) internal cabinet DSSI cables. Connects host system I/O bulkhead to XMI backplane (adapter) and then connects the XMI backplane back to the I/O bulkhead. Required for KFMSA-BA warm-swap and KFMSA-BAs in the middle-node position of a DSSI OpenVMS Cluster configuration. Also includes I/O bulkhead adapter plate (occupies two I/O panel units) and two DSSI bus terminators.

Note: The KFMSA and CIBCA-A are not supported on the same system. The CIBCA-AA must be upgraded to the CIBCA-BA or CIXCD.

		dc Amps Drawn @					
Option	**Mounting Requirements**	**5 V**	**12 Vc**	**-12 V**	**-5.2 V**	**-2 v**	**I/O Panel Units**
KFMSA	1 XMI slot	6.0	0.00	0.00	0.00	0.00	2