Compaq AlphaServer GS60 and AlphaServer 8200 Tru64 UNIX and OpenVMS Systems V3.2—4 February 1999

Systems and Options Catalog

Product Description

Compaq AlphaServer GS60 systems offer 6/525 MHz 64-bit Alpha 21264 microprocessors with a large I/O capacity to tackle the most demanding business applications. The AlphaServer Global Solutions (GS) series features mainframe-like performance and capabilities, and high availability computing through clustering with exceptional scalability in every aspect of the system. Systems are packaged in top gun blue system cabinets and feature up to six independently powerful CPUs with their own data and address paths, 12 Gbytes of error correctable memory, PCI I/O of up to 132 slots, and system and I/O bandwidth normally associated with mainframe systems.

Tru64 AlphaServer 8200 systems offer Alpha 21164 5/625 MHz microprocessors that can be configured with up to six CPUs. With the enormous capacity of the Alpha 64-bit architecture systems support up to 12 GB of memory, and PCI I/O of up to 132 slots—these servers offer room for growth for the largest and most complex applications.

Small enterprises and large departments can have an office server with unprecedented performance, capacity, and reliability. Large databases, complex simulations, data warehousing, and decision support are examples of the kinds of applications the AlphaServer GS60 and AlphaServer 8200 support with ease. For technical and scientific users, the AlphaServer GS60 and AlphaServer 8200 provide supercomputer performance in the office. This office server can provide all the benefits that very large memory/very large database (VLM/VLDB) systems have provided in the past.

ServerWORKS Manager provides advanced server and network management capabilities and is supplied with all AlphaServer systems. Simple Network Management Protocol (SNMP) enables information to pass from the managed system to the console for Tru64 UNIX, Windows NT, and OpenVMS AlphaServers. Detailed server information is viewable, including system, network, storage, and environmental information. All AlphaServer systems are also supplied with management tools to complement ServerWORKS Manager. For more information, see the StorageWorks Software section of this catalog.

AlphaServer GS60 and AlphaServer 8200 run Tru64 UNIX or OpenVMS operating systems. Clusters, hot swap disks, RAID, redundant power, ECC memory and data paths, fault management, and Uninterruptable Power Supply (UPS) are all available.

Compaq AlphaServer GS60 and AlphaServer 8200 systems come standard with a one-year onsite warranty with guaranteed 4-hour response time. AlphaServer GS60 and AlphaServer 8200 systems require the mandatory selection of installation and/or start-up services.

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Step 1—AlphaServer GS60 and AlphaServer 8200 Systems

- AlphaServer GS60 6/525 Systems require minimum operating system support of:
  - Tru64 UNIX V4.0E
  - OpenVMS V7.1-2
- Operating systems supported on AlphaServer 8200 5/625 Systems include:
  - Tru64 UNIX V3.2G, V4.0B, or V4.0D or later
  - OpenVMS V6.2-1H3 or V7.1-1H1 or later
- Software media and documentation required for first system on site. See Step 14 for ordering information.
- Console terminal required to install system. (Unless terminal is available on site).
- Universal single-phase power supply provides the necessary power for system; (requires selection of power cord from Step 2).
- Redundant power supply (N+1) can be added if required.
- For recommended power protection see section after system specifications. Power Management software is included with all AlphaServers. Software communicates with recommended UPS.
- Refer to *Installation Notes* for Compaq AlphaServer GS60, AV-RFCCA-TE, for full installation details and current configuration restrictions.

AlphaServer GS60 and AlphaServer 8200 Expanded Base Servers include:

- AlphaServer GS60 includes: Processor module with two Alpha microprocessor 21264 6/525 MHz CPUs; each CPU includes 4 MB Backup cache.
- AlphaServer 8200 includes: Processor module with two Alpha microprocessor 21164 5/625 MHz[1] CPUs; each CPU includes 4 MB Backup cache.
- System I/O module with four I/O channels (KFTHA-AA).
- AlphaServer GS60 includes 4 GB of memory.
- AlphaServer 8200 includes 1 GB, 2 GB or 4 GB of memory.
- PCI Shelf Mount Box (DWLPB-CA).
- Fast Ethernet network interface card.
- BA656 Internal Storage Drawer.
- UltraSCSI one port Single-ended adapter (KZPBA-CA).
- UltraSCSI 16-bit StorageWorks shelf (DS-BA356-JG) with (DS-BA35X-HJ) 48V dc power supply and (BN38C-01) 1 meter SCSI cable VHDCI male to 68 HD male.
- 4.3 GB 3.5-inch SCSI disk drive.
- 600 MB CD-ROM drive located in BA656
  Note: 5.25-inch slot in BA656 is restricted to CD-ROM drive only on Expanded Base Servers.
- PCI Single-ended SCSI controller (KZPAA-AA) and BN21H-02 SCSI cable (connects to CD-ROM only).
- Universal single phase power.
- 48 V dc power supply.
- Shielded console cable included for connection to console terminal.
- Factory Installed Software (FIS).
- Operating system software
  - Tru64 UNIX base license,
    Unlimited User license, Server Extension license,
    Internet Access Software license, **or**
  - OpenVMS base license,
    DIGITAL Enterprise Integration Package V2.0
- One year hardware product warranty.
- 90 day software product warranty.
- System installation must be ordered separately with AlphaServer GS60 and AlphaServer 8200 systems.

1. AlphaServer 5/625 CPUs clocked at 612.8 MHz for AlphaServer 8200 applications.

AlphaServer GS60 6/525 Dual CPU Expanded Base Servers (Top Gun Blue Enclosures)

Order Number	Operating System	CPU	Memory	SCSI Disk
DA-383GG-A9	Tru64 UNIX	Two 6/525 MHz	4 GB	4.3 GB
DY-383GG-A9	OpenVMS	Two 6/525 MHz	4 GB	4.3 GB

AlphaServer 8200 5/625 Dual CPU Expanded Base Servers (Top Gun Blue Enclosures)

Order Number	Operating System	CPU	Memory	SCSI Disk
DA-382GG-A9	Tru64 UNIX	Two 5/625 MHz	4 GB	4.3 GB
DY-382GG-A9	OpenVMS	Two 5/625 MHz	4 GB	4.3 GB

Step 1—AlphaServer GS60 and AlphaServer 8200 Systems *(continued)*

AlphaServer 8200 5/625 Dual CPU Expanded Base Servers (Gray Enclosures)

Order Number	Operating System	CPU	Memory	SCSI Disk
DA-282GE-C9	Tru64 UNIX	Two 5/625 MHz	1 GB	4.3 GB
DA-282GF-C9	Tru64 UNIX	Two 5/625 MHz	2 GB	4.3 GB
DA-282GG-C9	Tru64 UNIX	Two 5/625 MHz	4 GB	4.3 GB
DY-282GE-C9	OpenVMS	Two 5/625 MHz	1 GB	4.3 GB
DY-282GF-C9	OpenVMS	Two 5/625 MHz	2 GB	4.3 GB
DY-282GG-C9	OpenVMS	Two 5/625 MHz	4 GB	4.3 GB

Step 2—Power Cord

Note: If redundant supply (H7266-AD/AE) is ordered from Step 13, power cord is included and does not have to be ordered separately.

BN23H-4E **60 Hz**—ac line cord for single phase power, one per cabinet (4.5 m in length)

BN20P-4E **50 Hz**—ac line cord for single phase power, one per cabinet (4.5 m in length)

Step 3—Additional CPU Modules (SMP Expansion Options)

- Up to two additional CPU modules can be added to Expanded Base Servers for system maximum of three CPU modules (2 to 6 CPUs).
- Combining 5/625 MHz and 6/525 MHz CPU modules in same system is not supported.
- For systems configured with more than two processor modules a minimum of two memory modules are recommended for optimal system performance.
- All SMP upgrades include processor module with Alpha microprocessor(s), SMP extension license, and end-user product warranty.

AlphaServer GS60 6/525	AlphaServer 8200 5/625	Operating System	CPU Module Type
762P2-AX	**758P2-AX**	Tru64 UNIX	Dual-CPU
762P1-AX	**758P1-AX**	OpenVMS	Dual-CPU

Step 4—Memory

- Maximum of 12 GB of memory supported on AlphaServer GS60 and AlphaServer 8200 systems.
- Maximum of three memory modules is reduced by one for each additional CPU module and each system I/O module added to configuration.
- Memory modules
  - 1 GB and 2 GB memory modules have built in two-way interleaving; additional interleaving is accomplished by adding more memory modules
  - 4 GB memory modules have built in four-way interleaving. Best performance is achieved when two 2 GB modules are paired with one 4 GB module or one 4 GB memory module is paired with another 4 GB memory module

MS7CC-EA 1 GB memory module

MS7CC-FA 2 GB memory module

MS7CC-GA 4 GB memory module

Step 4a—Prestoserve Non-Volatile Random Access Memory (NVRAM)

- Supported on Tru64 UNIX systems only.
- Maximum one Prestoserve I/O performance enhancement option supported per system.
- Includes Prestoserve license and documentation kit.

Note: 4 MB Prestoserve PCI option (DJ-ML300-BA) is **not** supported on AlphaServer GS60 systems.

DJ-ML200-CA 8 MB Prestoserve, PCI option—requires DWLPB-CA/CB
Note: Must be at minimum Revision Level E for use with AlphaServer GS60 systems. Option currently ships with Revision Level E.

Step 5—I/O Expansion Buses

AlphaServer GS60 and AlphaServer 8200 Expanded Base Servers include PCI shelf mount box. Configuration limits exist at I/O bus level and controller level. Verify maximum number of allowable controllers listed in Controller Configuration Table.

- Each DWLPB-CA/CB (PCI shelf mount box) includes 12 PCI slots and required cable for connection to KFTHA-AA I/O channel.
- AlphaServer GS60 systems currently support a maximum of one KFTHA system I/O module in Slot 8.
- AlphaServer 8200 systems support a maximum of eleven I/O channels with up to three KFTHAs.

Note: See Step 12a and Step 12b for restrictions.

DWLPB-CA **PCI shelf mount box for AlphaServer GS60 and AlphaServer 8200 system cabinet only**—maximum three per cabinet

DWLPB-CB **PCI shelf mount box for AlphaServer GS60 and AlphaServer 8200 expansion cabinet only**—maximum four per cabinet

KFE70-BA[1] **EISA Bridge option** PCI to EISA bridge module set—must reside in first DWLPB-CA in system cabinet only. Converts 12-slot PCI bus to 2 EISA, 6 PCI/EISA, and 2 PCI slots. Includes RX26 diskette drive, mounting hardware, and cables to mount RX26 in processor system unit. Maximum of one EISA Bridge option supported. Option is required to support KZPAC-AA/CA RAID controllers. Includes diskette drive required to run the RAID Configuration Utility (RCU).

1. KFE70-BA and KFE72-FA are not supported concurrently on the same system, however, either option can be used to run RAID Configuration Utility (RCU).

Step 6—System I/O Modules

- KFTHA-AA system I/O module included with Expanded Base Servers.
- AlphaServer GS60 systems currently support a maximum of one KFTHA system I/O module.
- AlphaServer 8200 systems support two additional KFTHA system I/O modules for a system total of three.
- Maximum of eleven I/O channels available on AlphaServer 8200 with three KFTHA-AA modules installed.

KFTHA-AA **System I/O module with four I/O channels** for DWLPB-CA/CB shelf mount boxes.

Step 7—Storage Controllers

- Tru64 UNIX V4.0B without VGA support, or V4.0D or later with VGA, supports 8 SCSI controllers per PCI, maximum 64 per system.
- OpenVMS V6.2-1H3 or later supports 8 SCSI controllers per PCI, maximum 26 per system.
- For maximum controllers per PCI, the required System Console Firmware Revision is: 5.2-7 or later for AlphaServer 8200, or 5.3-12 or later for GS60.
- KFTHA-AA I/O module included with Expanded Base Servers.
- Tape and optical devices are not supported on KZPAC SCSI RAID controllers.
- For cluster configurations, use Y cable BN39A-0G.

Step 7—Storage Controllers

PCI-based UltraSCSI Controllers

KZPBA-CA	**PCI-based one port UltraSCSI Single-ended host adapter—**Uses one PCI slot.
KZPBA-CB[1]	**PCI-based one port UltraSCSI Differential host adapter—**Uses one PCI slot.
BN38C-01[2]	1 m VHDCI male to 68-pin HD male UltraSCSI cable, connects KZPBA to front mounted DS-BA356-xx.
BN38C-02[2]	2 m VHDCI male to 68-pin HD male UltraSCSI cable, connects KZPBA to rear mounted DS-BA356-xx.
BN38C-03/05[2]	3/5 m VHDCI male to 68-pin HD male UltraSCSI cable, connects KZPBA to H9B10-xx I/O expansion cabinet.
KZPAC-AA[3]	**PCI-based one port RAID (FWSE) Controller (UltraSCSI ready) with 4 MB cache memory—** Uses one PCI slot**.** Allows RAID levels 0, 1 and 5**.** Includes RAID Array 230/plus subsystem software and documentation kit. KFE70-BA EISA Bridge option required. Tape and optical drives not supported. OpenVMS V6.2-1H3 or V7.1 or later and Tru64 UNIX V3.2G or V4.0B or later support 4 per PCI, maximum of 4 per system
KZPAC-CA[3]	**PCI-based three port RAID (FWSE) Controller (Ultra SCSI ready) with 4MB cache memory—** Uses two PCI slots. Allows RAID levels 0, 1 and 5. Includes RAID/Array 230/plus subsystem software and documentation kit. KFE70-BA EISA Bridge option required. Tape and optical drives not supported. OpenVMS V6.2-1H3 or V7.1 or later and Tru64 UNIX V3.2G or V4.0B or later, support 4 per PCI, maximum 4 per system if third port is not used (otherwise maximum of 3 per PCI, 3 per system). Requires BN31K-0E or KZPAC-SB for third port connection.
KZPAC-CB[3]	**PCI-based three port RAID (FWSE) Controller (Ultra SCSI ready) with 8MB cache memory—** Uses two PCI slots. Allows RAID levels 0, 1 and 5. Includes RAID/Array 230/plus subsystem software and documentation kit. KFE70-BA EISA Bridge option required. Tape and optical drives not supported. OpenVMS V6.2-1H3 or V7.1 or later and Tru64 UNIX V3.2G or V4.0B or later supports, 4 per PCI, maximum of 4 per system if third port is not used (otherwise maximum of 3 per PCI, 3 per system). Requires BN31K-0E or KZPAC-SB for third port connection.
KZPAC-SB[4]	SCSI cable/bulkhead assembly kit with two ports for KZPAC-CA/CB, allows connection of two third port outputs using one PCI bulkhead slot.
BN31K-0E[4]	SCSI cable/bulkhead assembly kit with one port for KZPAC-CA/CB, allows connection of one third port output using one PCI bulkhead slot.
BN37A-01[2]	1.0 m VHDCI male to VHDCI male UltraSCSI cable, connects KZPAC to front mounted DS-BA356-xx.
BN37A-02[2]	2.0 m VHDCI male to VHDCI male UltraSCSI cable, connects KZPAC to rear mounted DS-BA356-xx.
KZPSC-UB[5]	Battery back up for cache memory option for KZPAC controller.
MS100-BB	8 MB cache memory option; upgrades KZPAC-CA to KZPAC-CB, field installable only.

1. OpenVMS V6.2-1H3 support is for direct attach only. OpenVMS V7.1-1H1 or later supports multi-host SCSI clusters.
2. Manufacturing may substitute correct cable length depending on configuration.
3. KZPAC options for OpenVMS systems with greater than 1 GB of memory require the following TIMA patch kits: V6.2 kit - ALPDRIV04_062; V7.1 kit - ALPDRIV01_071.
4. SCSI cable/bulkhead assembly kit is required for third port connection. Order BN31K-0E for single KZPAC-CA/CB configuration. Order KZPAC-SB for two KZPAC-CA/CB configurations.
5. KZPSC-UB is recommended for KZPAC controllers.

DSSI and CI Adapters

KFPSA-AA	**PCI-based DSSI Adapter (OpenVMS only)—**Requires OpenVMS V6.2-1H2 or later and minimum System Console Firmware Revision 3.09. OpenVMS V6.2-1H3. (End node only) supports 12 per PCI, maximum 24 per system. **Note**: KFPSA, KFMSB are not supported on same DSSI bus.
BC29S-xx	External shielded cable (MR/MR connectors) Select required length—09, 16, 25 feet.
BC29R-xx	External shielded cable (MR/PS connectors) Select required length—06, 09, 16, 30 feet.

Step 7—Storage Controllers *(continued)*

CIPCA-AA	**PCI-based CI Adapter (OpenVMS only)—**Requires OpenVMS V6.2-1H3, V7.1, or later. OpenVMS V6.2-1H3 supports 4 per PCI, maximum 10 per system. OpenVMS V7.1 supports 4 per PCI, maximum 26 per system. Requires one PCI slot for adapter and one EISA slot for power only. **Note**: KFE70 option is not required.
CIPCA-BA	Same as CIPCA-AA except uses two PCI slots.
BNCIA-xx	Computer interconnect cable sets—Connects CIPCA to Star Coupler. Select required length—10, 20, or 45 m (10 m = 32.8 ft., 20 m = 65.6 ft., 45 m = 147.6 ft.)

PCI-based Fast10 SCSI

KZPSA-BB	**PCI-based one port Fast Wide Differential SCSI Adapter—**Uses one PCI slot**.** KZPSA supports DECsafe Available Server and Tru64 UNIX TruCluster.
BN21K-xx	Fast Wide Differential SCSI cables—68-pin male straight to 68-pin male right-angle. Connects KZPSA-BB Fast Wide Differential SCSI port to DWZZA-VA or DWZZB-VW.
BN21K-01[1]	Connects from KZPSA to DWZZB-VW in BA356-xx in system cabinet (front)
BN21K-02[1]	Connects from KZPSA to DWZZB-VW in BA356-xx in system cabinet (rear)
BN21K-03[1]	Connects from KZPSA to DWZZB-VW in BA356-xx in expansion cabinet (front or rear)
BN21K-05/10	Connects from KZPSA to DWZZB-VW in BA356-xx in SW500 and SW800 cabinets

1. Manufacturing may substitute correct cable length depending on configuration.

Step 7a—External Storage Controllers

- HSZ70 UltraSCSI RAID Array controllers are supported under Tru64 UNIX V3.2G, V4.0B or later and OpenVMS V6.2-1H3 for direct attachments or OpenVMS V7.1-1H1 or later for cluster support. See Step 8c for configuration information.
- HSZ50 family of SCSI Storage Array Controllers are supported under Tru64 UNIX V3.2G, V4.0A or later and OpenVMS V6.2-1H3 or later. Tru64 UNIX requires patch OSF405-034 for dual failover.
- HSJ50 family of CI Storage Array Controllers are supported under OpenVMS V6.2-1H3 or later with CIPCA-AA/BA or CIXCD-AC CI controllers. QB-5C4AA-SA software kits are required for each external cache (1 for HSJ50, 2 for HSJ52, 4 for HSJ54).
- HSD50 family of DSSI Storage Array Controllers are supported under OpenVMS V6.2-1H3 or later with KFPSA PCI DSSI adapters and minimum SRM console V4.1-6.
- Controllers require KZPSA, KZPBA, KFPSA, or CIPCA SCSI adapters or controllers, as appropriate.
- HSZ70 requires QB-5SBAB-SA/SB for Tru64 UNIX, or QB-5SBAC-SA/SB for OpenVMS.
- HSZ50-Ax requires one QB-5CJAA-SA kit
- HSZ52-Ax requires two QB-5CJAA-SA kits
- HSZ54-AJ requires four QB-5CJAA-SA kits
- HSD50-Ax requires one QB-5C5AA-SA kit
- HSD52-Ax requires two QB-5C5AA-SA kits
- HSJ50-Ax requires one QB-5C4AA-SA kit
- HSJ52-Ax requires two QB-5C4AA-SA kits

DS-HSZ70-AH	**StorageWorks UltraSCSI RAID Array controller** includes 64 MB cache, expandable to 128 MB. Requires DS-HS35X-BC external cache battery and HSZ70 Solution Software kit, order separately.
HSZ50-AF	**StorageWorks RAID Array 450/HSZ50 32 MB SCSI controller** includes 6 SCSI channels, 36 SCSI device connections in redundant configurations (42 when non-redundant), 32 LUN maximum, 32 MB cache module, single external cache battery system building block.
HSZ50-AH	**StorageWorks RAID Array 450/HSZ50 64 MB SCSI controller** includes 6 SCSI channels, 36 SCSI device connections in redundant configurations (42 when non-redundant), 32 LUN maximum, 64 MB cache module, single external cache battery system building block.
HSZ50-AJ	**StorageWorks RAID Array 450/HSZ50 128 MB SCSI controller** includes 6 SCSI channels, 36 dual, 42 single SCSI device connections, 32 LUN maximum, 128 MB cache module, single external cache battery system building block.
HSZ52-AF	**StorageWorks RAID Array 450/HSZ50 64 MB dual SCSI controller** includes 12 SCSI channels, 36 SCSI device connections, 32 LUN maximum, two cache modules, one dual external cache battery system building block, two external cache batteries, two 2 meter cables.
HSZ52-AH	**StorageWorks RAID Array 450/HSZ50 128 MB dual SCSI controller** includes 12 SCSI channels, 36 SCSI device connections, 32 LUN maximum, two cache modules, one dual external cache battery system building block, two external cache batteries, two 2 meter cables.

Step 7a—External Storage Controllers *(continued)*

HSZ52-AJ	**StorageWorks RAID Array 450/HSZ50 256 MB dual SCSI controller** includes 12 SCSI channels, 36 SCSI device connections, 32 LUN maximum, two cache modules, one dual external cache battery system building block, two external cache batteries, two 2 meter cables.
HSZ54-AJ	**StorageWorks RAID Array 450/HSZ50 512 MB quad SCSI controller** includes 12 SCSI channels, 72 SCSI device connections, 64 LUN maximum, four cache modules, two dual external cache battery system building blocks, four external cache batteries, four 2 meter cables.
HSJ50-AF	32 MB cache 6 channel CI array controller with cache battery
HSJ50-AJ	128 MB cache 6 channel CI array controller with cache battery
HSJ52-AF	Dual 64 MB cache CI array controller with cache batteries
HSJ52-AH	Dual 128 MB cache CI array controller with cache batteries
HSJ52-AJ	Dual 256 MB cache CI array controller with cache batteries
HSJ54-AJ	Quad 512 MB cache CI array controller with cache batteries
HSD50-AF	**DSSI controller**, 6 channel, 64MB cache and external cache battery
HSD50-AH	**DSSI controller**, 6 channel, 32MB cache and external cache battery
HSD50-AJ	**DSSI controller**, 6 channel, 128MB cache and external cache battery
HSD52-AF	**Two DSSI controllers** with 32 MB cache with battery
HSD52-AH	**Two DSSI controllers** with 64 MB cache with battery
HSD52-AJ	**Two DSSI controllers** with 128 MB cache with battery

Step 8—Storage

When multiple storage devices are configured with the system, specify which devices should be installed inside the system cabinet, inside the system expansion cabinet, or installed in the external StorageWorks cabinet. Line item sequencing will allow Manufacturing to configure storage options in the appropriate cabinet.

- List storage options to be integrated in system cabinet immediately following system part number.
- List storage options to be integrated in StorageWorks cabinet immediately following StorageWorks cabinet part number.

Step 8a—Internal Storage—System Cabinet

System cabinet includes one DS-BA356-JG UltraSCSI StorageWorks shelf and one DWLPB-CA PCI shelf. UltraSCSI devices are supported in DS-BA356-JG (single channel) and DS-BA356-JH (dual channel) UltraSCSI StorageWorks shelves inside AlphaServer GS60 or AlphaServer 8200 System cabinet. They are also supported in external StorageWorks cabinets in BA356-SD Rackmount shelves in SW500 and SW800 cabinets. DS-BA356-JG/JH includes BA35X-HG 48V/150 W dc power supply and BA35X-RD metric mounting hardware.

- UltraSCSI configurations require UltraSCSI components (controllers, adapters, shelves, disks, and cables).
- UltraSCSI adapters and RAID controllers support UltraSCSI disks at UltraSCSI speeds in UltraSCSI Top Gun Blue shelves (DS-BA356-xx).
- System cabinet provides space for up to six DS-BA356 StorageWorks shelves; each shelf holds a maximum of two 5.25” devices and one 3.5” device or seven 3.5” devices.
- BA656 Internal Storage Drawer included in system cabinet supports CD-ROM drive only.
- UltraSCSI and Fast10 drives can be mixed in DS-BA356 Top Gun Blue UltraSCSI shelf. Drives negotiate maximum transfer speeds with UltraSCSI adapter/controller.

UltraSCSI Options

Each UltraSCSI StorageWorks shelf requires a SCSI controller and SCSI cable to connect controller to shelf. Refer to the UltraSCSI Configuration Guidelines in EK-ULTRA-CG.C01.

Note: See Step 12a and Step 12b for configuration details.

DS-BA356-JG	**UltraSCSI Single Channel StorageWorks Shelf**—includes 16-bit I/O personality module (DS-BA35X-FA), 48V/150 W dc power supply, dc fans, and rackmounting hardware. Supports 16-bit UltraSCSI devices and some 8-bit narrow SCSI devices depending on compliance with minimum revision levels.

Step 8a—Internal Storage—System Cabinet *(continued)*

DS-BA356-JH **UltraSCSI Dual Channel StorageWorks Shelf**—includes 16-bit I/O personality module (DS-BA35X-FB), 48V/150 W dc power supply, dc fans, and rackmounting hardware. Supports 16-bit Ultra SCSI devices and some 8-bit narrow SCSI devices depending on compliance with minimum revision levels.

Power Option for DS-BA356 StorageWorks Shelves

- An additional power supply provides N+1 power for DS-BA356-xx StorageWorks shelves.
- Power supply uses 3.5” slot in StorageWorks shelf, reducing total number of devices supported by one.

DS-BA35X-HJ Enhanced 48 V dc 150 W Redundant Power Supply for StorageWorks shelf; includes 48 V dc jumper cable for connecting to first power supply in StorageWorks shelf.

SCSI Signal Converter

DS-BA35X-DA **UltraSCSI StorageWorks DOC Signal Converter**—required to convert FWD signals from KZPSA-BB or KZPBA-CB to Singe-ended for connection to DS-BA356-JG/JH StorageWorks shelves, field installed only.

DS-BA35X-FA Fast20 Personality Module for BA356 Single Ended to Single Ended one-Channel, field installed only.

DS-BA35X-FB Fast20 Personality Module for BA356 Single Ended to Single Ended two-Channel, field installed only.

BN38C-02 Cable for above.

UltraSCSI Hubs

UltraSCSI hubs are supported with KZPBA-CB or KZPSA-BB PCI-based differential SCSI adapters.

DS-DWZZH-03 UltraSCSI Hub with three differential ports, no single-ended ports, in a 3.5” SBB, UltraSCSI cables not included. Requires OpenVMS V7.1-1H1 or Tru64 UNIX V4.0D, or later, configuration dependent, and Minimum System Console V5.2-7

DS-DWZZH-05 UltraSCSI Hub with five differential ports, no single ended ports, consisting of four host ports and one storage port, in a 5.25” SBB, UltraSCSI cables not included. Requires OpenVMS V7.1-1H1 or Tru64 UNIX V4.0D, or later, configuration dependent, and Minimum System Console V5.2-7.

DS-DWZZH-21 UltraSCSI Hub with two single-ended ports, and one differential port, in 3.5” SBB, UltraSCSI cables not included. Requires OpenVMS V7.1-1H1 or Tru64 UNIX V4.0D, or later, configuration dependent, and Minimum System Console V5.2-7.

16-bit Wide Drives

DS-RZ1CF-VW 4.3 GB 7200 RPM 16-bit UltraSCSI disk drive—SBB

DS-RZ1DF-VW 9.1 GB 7200 RPM 16-bit UltraSCSI disk drive—SBB

DS-RZ1EF-VW 18.2 GB 7200 RPM 16-bit UltraSCSI disk drive—SBB, not supported on KZPAC controller

DS-RZ1DD-VW 9.1 GB 10000 RPM 16-bit UltraSCSI disk drive—SBB

DS-RZ1ED-VW 18.2 GB 10000 RPM 16-bit UltraSCSI disk drive—SBB, not supported on KZPAC controller

8-bit Disk Drives

DS-RZ1CF-VA 4.3 GB 7200 RPM 8-bit narrow SCSI disk drive—SBB

DS-RZ1DF-VA 9.1 GB 7200 RPM 8-bit narrow SCSI disk drive—SBB

DS-RZ1EF-VA 18.2 GB 7200 RPM 8-bit narrow SCSI disk drive—SBB, not supported on KZPAC controller

Note: UltraSCSI disk drives run in Fast20 SCSI mode when installed in DS-BA356-xx UltraSCSI StorageWorks shelves connected to UltraSCSI adapters and RAID controllers.
UltraSCSI disk drives run in Fast10 SCSI mode when connected to Fast10 SCSI adapters and controllers.
See Storage Devices—StorageWorks Supported Devices for 8-bit and 16-bit Expansion Table for minimum hardware revision levels.
UltraSCSI disk drives connected to UltraSCSI controllers (KZPAC-xx in Fast20 mode and DS-HSZ70-AH) are not supported in Fast10 (gray) BA356 shelves.

Step 8a—Internal Storage—System Cabinet *(continued)*

Tape Devices

Tape drives are not supported on KZPAC RAID Array controller.

TLZ09-VA	8.0 GB DAT 3.5” SCSI tape drive in StorageWorks carrier. Requires OpenVMS V6.2-1H3 or later or Tru64 UNIX V3.2C or later and System Console Firmware Revision 3.0-9.
TLZ9L-VA	32/64 GB DAT tape loader in StorageWorks carrier
DS-TLZ10-VA	12/24 GB 4mm DAT SCSI tape drive in 5.25” StorageWorks carrier
TZ88N-VA	20/40 GB DLT SCSI tape drive in 5.25” StorageWorks carrier
DS-TZ89N-VW	35/70 GB DLT SCSI tape drive in 5.25” StorageWorks carrier
DS-TL895-H2	96 Slot Library with two TZ89 Drives. Includes 120 V U.S. power cord. Order country-specific power cords for non U.S. use.
DS-TL895-BA	96 Slot Library with five TZ89 DLT drives. Includes 120 V U.S. power cord. Order country-specific power cords for non U.S. use.
DS-TL895-MA	96 Slot Library with five TZ89 Drives. Includes 56 pieces of DLT IV media, cleaning cartridge and documentation. Includes 120 V U.S. power cord. Order country-specific power cords for non U.S. use.
DS-TL89X-UA	Add-on TZ89 Drive for TL895

Solid State Disks

- Supported with KZPBA and KZPSA.
- Solid State Disks cannot be combined with RZxx disks/tapes on same SCSI bus.
- 3.5” and 5.25” Solid State Disks are not supported on the same SCSI bus.

DS-EZ41-VW	134 MB Fast20 3.5” Ultra solid state disk
DS-EZ42-VW	268 MB Fast20 3.5” Ultra solid state disk
DS-EZ705-VW	536 MB Fast20 5.25” Ultra solid state disk
DS-EZ711-VW	1.1 GB Fast20 5.25”Ultra solid state disk
DS-EZ716-VW	1.6 GB Fast20 5.25”Ultra solid state disk

Step 8b—UltraSCSI RAID Array Controller and UltraSCSI RAID Packaged Solutions

UltraSCSI RAID Array Controller

DS-HSZ70-AH	**StorageWorks UltraSCSI RAID Array controller** includes 64 MB cache, 6 UltraSCSI Single-ended channels, CLI cable kit, controller to controller jumper cable, and two ECB cables. Requires HSZ70 Solutions Software Kit and external cache battery.

ESA 10000 Storage Arrays and RAID Array 7000 (RA7000) Options

- ESA 10000 Storage Arrays and RAID Array 7000 (HSZ70 Product Set) are supported on AlphaServer GS60 and AlphaServer 8200 systems running Tru64 UNIX V4.0B and OpenVMS V6.2-1H3 or later.
- Currently the HSZ70 is supported on KZPSA-BB Fast Wide Differential and KZPBA-CB UltraSCSI Differential controllers.

See StorageWorks Packaged Solutions in StorageWorks Chapter of *Systems and Options Catalog*, or on the WEB at http://www.digital.com/info/SOHOME/ for additional configuration information on HSZ70 controllers in ESA 10000 and RA7000.

Step 8b—UltraSCSI RAID Array Controller and UltraSCSI RAID Packaged Solutions *(continued)*

DS-SWXES-AA/AB ESA 10000 high capacity/general business base unit

Includes**:** Data Center 600 mm enclosure
2 BA370-AA Rackmounted shelves with 5 shelf power supplies each, expandable to 8
2 HSZ70 six port controllers 64 MB mirrored write back cache each, expandable to 128 MB each
6 Ultra SCSI expansion cables
1 10 meter host to controller cable (BN37A-10)
Serial line assembly with adapters (9 pin and 25 pin)
Power cord and documentation
Supports up to 48 drives

Requires: HSZ70 Solutions Software kit for platform, host adapter, and disks to be ordered separately
Options: 64 MB cache upgrade and fully redundant power

DS-SWXES-BA/BB ESA 10000 high bandwidth base unit

Includes: Data Center 600 mm enclosure
2 BA370-AA Rackmounted shelves with 5 shelf power supplies each, expandable to 8
4 HSZ70 six port controllers 64 MB mirrored write back cache each, expandable to 128 MB each
2 10 meter host to controller cables (BN37A-10)
Serial line assembly with adapters (9 pin and 25 pin)
Power cord and documentation
Supports up to 48 drives

Requires: HSZ70 Solutions Software kit for platform, host adapter, and disks to be ordered separately
Options: 64 MB cache upgrade and fully redundant power

DS-SWXES-CA/CB ESA 10000 dual expansion base unit

Includes: Data Center 600 mm enclosure
2 BA370-AA Rackmounted shelves with 5 shelf power supplies each, expandable to 8
12 Ultra SCSI expansion cables
SW600 cabinet joiner kit
Power cord and documentation; Supports up to 48 drives

Requires: HSZ70 Solutions Software kit for platform, host adapter, and disks to be ordered separately
Options: Fully redundant power

RAID Array 7000 (RA7000)

DS-SWXES-DA/DB ESA 10000 single expansion w/ dual controllers base unit

Includes: Data Center 600 mm enclosure
1 BA370-AA Rackmounted shelf with 5 shelf power supplies, expandable to 8
2 HSZ70 six port controllers 64 MB mirrored write back cache each, expandable to 128 MB each
1 10 meter host to controller cable (BN37A-10)
Serial line assembly with adapters (9 pin and 25 pin)
Power cord and documentation
Supports 24 drives, expandable to 48 with BA370 rackmount upgrade.

Requires: HSZ70 Solutions Software kit for platform, host adapter, and disks to be ordered separately
Options: 64 MB cache upgrade, fully redundant power, and BA370 rackmount upgrade.

DS-SWXRA-HA RAID Array 7000 with Dual controllers

Includes: 24 SBB Departmental Cabinet
2 HSZ70 6 port controllers with 64 MB mirrored write-back cache each, expandable to 128 MB each
I/O expansion module
Dual cache battery in SBB with cable
Five 180 watt power supplies, expandable to eight
Fully redundant cooling
Environmental Monitor Unit (EMU)
5 meter host to controller cable BN37A-05 with BN38E-0B VHDCI to 68 HD conversion cable,
Serial line kit, controller to controller jumper cable for redundant controllers, and U.S. power cord.

Requires: HSZ70 Solutions Software Kit for platform, host adapter, and disks to be ordered separately
Options: 64 MB cache upgrade, Up to two RA7000 Expansion cabinets. Optional power supplies.

Step 8b—UltraSCSI RAID Array Controller and UltraSCSI RAID Packaged Solutions *(continued)*

DS-SWXRA-HC RAID Array 7000 with Single controller

Includes: 24 SBB Storage Cabinet
1 HSZ70 6 port controller with 64 MB mirrored write-back cache, expandable to 128MB
I/O expansion module
Single cache battery in SBB with cable
Five 180 watt power supplies expandable to eight
Fully redundant cooling
Environmental Monitor Unit (EMU)
5 meter host to controller cable BN37A-05 with BN38E-0B VHDCI to 68 HD conversion cable,
Serial line kit, controller to controller jumper cable for redundant controllers, and U.S. power cord.

Requires: HSZ70 Solutions Software Kit for platform, host adapter, and disks to be ordered separately

Options: Second HSZ70 controller and cache battery; 64 MB cache upgrade; Up to two RA7000 Expansion cabinets. Optional power supplies.

Adapters and Platform Specific Solutions Software

- Each HSZ70 requires an HSZ70 Solutions Software Kit (HSOF).
- HSZ70 Solutions Software Kits with -SA variants included documentation.
  HSZ70 Solutions Software Kits with -SB variants do not include documentation, select for each additional adapter ordered if documentation is available on-site.

HSZ70 Solutions Software Kits include:

- PCMCIA card containing software for storage controller.
- StorageWorks Command Console (SWCC) software, and software licenses.
- HSZ70 and SWCC supporting documentation.

Select Adapter and HSZ70 Solutions Software Kit for appropriate platform

Supported Adapters	HSZ70 Solutions Software Kit	Host Platform
KZPSA-BB	**QB-5SBAB-SA/SB**	Tru64 UNIX
KZPBA-CB	**QB-5SBAC-SA/SB**	OpenVMS

Cache Upgrade

Select cache upgrade for HSZ70 controllers. Redundant controllers require equal amounts of cache

DS-HSSIM-AB 64 MB cache upgrade for HSZ70

Disk Expansion Cabinet

Note: Order Expansion Cable Kit for each Disk Expansion Cabinet selected.

DS-SWXRA-HB Disk Expansion Cabinet, includes 24 disk slots, 5 power supplies, redundant cooling, EMU and PVA, power cable

DS-BNK37-1E Expansion Cable Kit, required for each Disk Expansion Cabinet DS-SWXRA-HB

DS-BA35X-HH 180 Watt Power Supply. Fully redundant power requires three additional power supplies, one additional DS-BA35X-HE power control unit, and one additional DS-SW6XP-AA/AB power distribution unit.

DS-BA35X-HE AC Power Control Unit, required when more than five 180 Watt power supplies are installed. Note: Power cord (BN27S-03) required.

DS-SW6XP-AA/AB SW600 Power Distribution Unit, quantity of 1 required for each SW600 for full power redundancy.

Step 8b—UltraSCSI RAID Array Controller and UltraSCSI RAID Packaged Solutions *(continued)*

Additional Options

DS-HS35X-BC	Single replacement external cache battery, one battery in a single Blue SBB
DS-HS35X-BD	Dual replacement external cache battery, two batteries in a single Blue SBB, supports cache of dual redundant controllers. Requires one Power Verification and Addressing (PVA) DS-BA35X-EC
DS-BA35X-BA	Battery shelf for SW600 cabinet
DS-BA35X-MK	Dual speed fan kit
DS-BA35X-MN	Single-ended I/O module
DS-BA35X-EB	Environmental Monitor Unit (EMU)
DS-BA35X-EC	Power Verification and Addressing (PVA)
BN37A-xx	VHDCI male to VHDCI male UltraSCSI cable
BN38E-0B	68-pin HD to VHDCI UltraSCSI conversion cable
H9C10-JC	H9A10 Cabinet Joiner Kit for SW600
H8865-AA	UltraSCSI Single-ended external terminator
H8863-AA	UltraSCSI Differential external terminator
DS-BA370-AA	Rackmountable BA370 shelf includes five 180 W power supplies, eight high power blowers, RETMA and Metric mounting kit.
DS-SW600-AA	60 Hz 600 mm Storage Cabinet includes single phase power distribution unit DS-SW6XP-AA
DS-SW600-AB	50 Hz 600 mm Storage Cabinet includes single phase power distribution unit DS-SW6XP-AA

Step 8c—External Storage Devices

The following list describes available storage devices and capacities. These supported options can be added as required.

Storage Cabinets	**Maximum Capacity**
SW5XX, SW6XX, SW8XX	1 TB – 2.9 TB
SCSI Disk Drives—See Step 8a	
Tape Drives—See *Storage Devices* for ordering information	
TZ87, TZ857[1], TZ877, TZ88, TZ885, TZ887, TSZ07, TLZ09, TKZ9E , TKZ9F, TLZ9L, TKZ6x, TL810, TL812, TL820, TL822, TL826, DS-TL893-BA, DS-TL894-BA, DS-TL896-BA, DS-TLZ10-VA	
1. Loader support for Tru64 UNIX is available via DECnsr.	
Optical Libraries (Optical devices are not supported on KZPAC RAID Array controller.)	
RW546-ZA	36 GB Optical Library, 2 drives
RW551-ZC	73 GB Optical Library, 2 drives
RW552-ZF	147 GB Optical Library, 4 drives
RW555-ZF	294 GB Optical Library, 4 drives
RW557-ZF	547 GB Optical Library, 6 drives

Step 9—Networks and Communications

DE500 network interface card included with Expanded Base Server. **Note**: Connection of system to Ethernet requires twisted-pair cable.

LAN Communications Controllers—PCI based

- Requires DWLPB-CA/CB, PCI shelf mount box.
- System maximum of six DEFPA-AB/DB/UB/MB FDDIcontrollers (100 Mbit/sec).
- Each adapter/controllers uses one PCI slot.

DE450-CA	**PCI-based Ethernet 3 port Adapter**. OpenVMS V6.2 and Tru64 UNIX V3.2G or later, supports 8 per PCI, maximum 8 per system. Two patch kits required to support DE450 with OpenVMS V6.2.
DE500-AA	**PCI-based Fast Ethernet (100 Mbit) Adapter**. OpenVMS V6.2 and V7.1, and Tru64 UNIX V3.2G or later, supports 8 per PCI, maximum 8 per system.
DE500-FA	**PCI-based Fast Ethernet (10/100-32 bit) Adapter**. OpenVMS V7.1-1H1 and Tru64 UNIX V4.0D or later, supports 8 per PCI, maximum 8 per system.
DE500-BA	**PCI-based Fast Ethernet (10/100 Mbit) Adapter**. OpenVMS V7.1-1h and Tru64 UNIX V4.0D or later. supports 8 per PCI, maximum 8 per system.
BN24Q-xx	Category 5 Cross-over Cable for point-to-point, unshielded.
BN28Q-03	Category 5 Cross-over Cable for point-to-point, shielded.
BN25G-xx	Category 5 Straight through for system to repeater or hub, unshielded.
BN26M-xx	Twisted pair, shielded (-03, -04, -07 are the available lengths).
DEFPA-AB	**PCI-based FDDIcontroller Fiber—Single attachment station MultiMode Fiber**. OpenVMS V6.2-1H3 and Tru64 UNIX V3.2G or later, supports 6 per DWLPB, maximum 6 per system. Requires BN34x SC type connecting cable.
DEFPA-DB	**PCI-based FDDIcontroller Fiber—Dual attachment station MultiMode Fiber**. OpenVMS V6.2-1H3 and Tru64 UNIX V3.2G or later, supports 6 per DWLPB, maximum 6 per system. Requires BN34x SC type connecting cable.
BN34A-xx	MultiMode Fiber Optic Duplex cable—SC connector to ST connector
BN34B-xx	MultiMode Fiber Optic Duplex cable—SC connector to SC connector
BN34D-xx	MultiMode Fiber Optic Duplex cable—SC connector to MIC connector
DEFPA-MB	**PCI-based FDDIcontroller Copper—Dual attachment station UTP**. OpenVMS V6.2-1H3 and Tru64 UNIX V3.2G or later, supports 6 per DWLPB, maximum 6 per system. Requires BN26x or BN25H connecting cables.
DEFPA-UB	**PCI-based FDDIcontroller Copper—Single attachment station UTP**. OpenVMS V6.2-1H3 and Tru64 UNIX V3.2G or later, supports 6 per DWLPB, maximum 6 per system. Requires BN26x or BN25H connecting cables.
BN26M-xx	8-pin MP to 8-pin MP, screened, EIA/TIA Category 5 cable.
BN26S-xx	8-pin MP to 8-pin MP, screened, crossover, EIA/TIA Category 5 cable.
BN25H-03	3 m Unshielded twisted pair RJ45 connectors.
DEGPA-SA	**PCI-based Gigabit Ethernet Adapter—**supported on AlphaServer 8200 systems and Tru64 UNIX V4.0D with BL11 patch kit 3. One per DWLPB, maximum 4 per system. Does not support network boot.
DGLPA-FA/UA	**PCI-based ATMworks 351 bus adapter**—Uses one PCI slot. Tru64 UNIX V4.0B or later, supports 2 per PCI, maximum 2 per system. DGLPA-FA/UA not supported on the same system as DGLPB-AB (ATMworks 351).
SN-PBXNP-AC	**PCI-based Token Ring Adapter**—Tru64 UNIX V3.2G or V4.0B or later, supports 2 per PCI, maximum 2 per system. Minimum system console support required V4.0 AXP CD release. Requires BC26M cable.
PBXDA-AA	**PCI-based Asynchronous 4 port Communication Adapter**—Tru64 UNIX V3.2G and OpenVMS V6.2-1H3 or later, supports 2 per PCI, maximum 2 PBXDA-xx per system.
PBXDA-AB	**PCI-based Asynchronous 8 port Communication Adapter**—Tru64 UNIX V3.2G and OpenVMS V6.2-1H3 or later, supports 2 per PCI, maximum 2 PBXDA-xx per system.
PBXDA-AC	**PCI-based Asynchronous 16 port Communication Adapter**—Tru64 UNIX V3.2G and OpenVMS V6.2-1H3 or later, supports 2 per PCI, maximum 2 PBXDA-xx per system.

Step 9—Networks and Communications *(continued)*

PBXDP-AA	**PCI-based Synchronous 2 port Communications Controller**—Tru64 UNIX V3.2G and OpenVMS V6.2-1H3 and Tru64 UNIX V4.0B or later, supports 2 PBXDP-xx per system.
PBXDP-AB	**PCI-based Synchronous 4 port Communications Controller**—Tru64 UNIX V3.2G and OpenVMS V6.2-1H3 and Tru64 UNIX V4.0B or later, supports 2 PBXDP-xx per system.
PBXDP-AC	**PCI-based Synchronous 8 port Communications Controller**—Tru64 UNIX V3.2G and OpenVMS V6.2-1H3 or later, supports 2 PBXDP-xx per system.

LAN Communications Controllers—EISA based

- Requires DWLPB-CA and KFE70-BA, EISA bridge module set.
- See EISA Bus IRQ Address Table.

CXI01-AA	**Digiboard Asynchronous Xem/ISA Multiport Serial Card with 16 RJ45 PORTS/Xem Port** (uses one EISA slot) one per EISA supported, maximum one CXI01-AA per system. Supported on Tru64 UNIX systems only.
CXI01-AB	**Digiboard PORTS/Xem, 16 RJ45 Port Concentrator** mounts separately from PCI bus. Maximum of three CXI01-AB can be attached to CXI01-AA; provides up to 48 additional ports. Supported on Tru64 UNIX systems only.
CXI01-AC	Digiboard RJ45 to DB25 male converter
CXI01-AF	Digiboard RJ45 to DECMJ11 adapter—8 per package

Local and Wide Area Communications Servers

Each communications server requires 802.3/Ethernet connection. Depending on server selected, either ThinWire BNC type connection (e.g., BC16M cable) or thick wire 15-pin AUI transceiver cable (e.g., BNE3x) is required. Additional items also required—see the *Network Products Guide*.

Network Connectivity Products

See *Network Products Guide* for details.

Step 9a—MEMORY CHANNEL Controller

- MEMORY CHANNEL options are supported on AlphaServer GS60 with Console Firmware V5.3-12 or later.
- Console Firmware V5.3-12 is available on CD-ROM (AG-RFCBB-BE), and on the Web at: http://ftp.digital.com/pub/Digital/Alpha/firmware/interim/gs60gs140

Tru64 UNIX Systems

- AlphaServer 8200 requires minimum of Tru64 UNIX V3.2E (Tru64 UNIX V3.2D plus TruCluster software, or MEMORY CHANNEL Driver software).
- Each system node in a MEMORY CHANNEL cluster requires a software license.
- Servers in a compute-server array require a Tru64 UNIX Driver for MEMORY CHANNEL License.
- Servers in a TruCluster high-availability environment require a TruCluster license for Tru64 UNIX.
- The following options are not currently supported with MEMORY CHANNEL: DJ-ML200, CIPCA.

OpenVMS Systems

- Requires OpenVMS V7.1 or later and OpenVMS Cluster license.
- On systems with DWLPA-CA/CB and no other PCI option(s) and/or KFE70-BA, a maximum of two CCMAA-BA modules are supported.
- On systems with DWLPA-CA/CB and any PCI option(s) and/or KFE70-BA, a maximum of **one** CCMAA-BA module are supported.
- DWLPB-CA/CB option does not have the restrictions of the DWLPA-CA/CB.

Step 9a—MEMORY CHANNEL Controller *(continued)*

MEMORY CHANNEL requirements for currently installed AlphaServer 8200 systems:

- Console firmware at revision V2.3 or higher.
- CCMAA-BA Adapter must be installed in slots 0-7 of a DWLPA-CA PCI; no restriction for DWLPB-CA PCI bus.
- For two system nodes, order one CCMAA-BA per system and one BC12N-10 cable to connect them.
- For three or more system nodes, order CCMHA-AA (MEMORY CHANNEL Hub) one CCMAA-BA and one BC12N-10 cable per system node.
- CCMHA-AA (MEMORY CHANNEL Hub) is configured with four CCMLA-AA Line Cards and supports up to four nodes. Expansion up to eight system nodes can be achieved by adding up to four additional CCMLA-AA Line Cards, except TruCluster production server configurations.

CCMAA-BA	PCI to MEMORY CHANNEL controller —maximum two supported
CCMHA-AA	MEMORY CHANNEL Hub with four line cards
CCMLA-AA	MEMORY CHANNEL Line Card for use with MEMORY CHANNEL Hub (CCMHA-AA)
BC12N-10	MEMORY CHANNEL Cable
QB-3RLAQ-AA	TruCluster Production Server Software for Tru64 UNIX
QB-4ZCAQ-AA	Tru64 UNIX Driver for MEMORY CHANNEL license
QL-MUZAQ-AA	OpenVMS Cluster license for Alpha systems

CCMHA-AA, MEMORY CHANNEL Hub, includes BN19P-2E line cord for Canada, Japan, US operation.
For other regions, order one of the following:

BN19A-2E	Ireland, United Kingdom
BN19S-2E	Egypt, India
BN19C-2E	Central Europe
BN18L-2E	Israel
BN19E-2E	Switzerland
BN24X-2E	Italy
BN19K-2E	Denmark
BN19H-2E	Australia, New Zealand

Step 10— Console Terminal

- VT console terminal with EIA-232 25-pin DSUB connector and printer **required, (**even with KFE72 installed) for system power-up, diagnostics and console display, unless otherwise available.
- Shielded console cable is included for connection to the console terminal.

VT510-xx	VT510 terminal
LA30N-xx	LA30 printer
LK461-xx	OpenVMS keyboard
SN-LKQ47-xx	Tru64 UNIX keyboard

Step 11—Graphics Support for Tru64 UNIX

- Graphics support for AlphaServer GS60 and AlphaServer 8200 running Tru64 UNIX V4.0D or later can be provided through the combined use of KFE72-FA port option and SN-PBXGB-AA graphics adapter.
- SN-PBXGB-AA requires 17” or 21” Professional Series monitor (Step 11a) and keyboard (Step 11d) for graphics support unless available on site.
- Selection of a video extension cable (Step 11b) and a country-specific power cord (Step 11c) is **mandatory** for all monitor variants.
- No EISA or ISA options are supported on KFE72-FA.

KFE72-FA[1]	Graphics port for AlphaServer GS60 and AlphaServer 8200 Tru64 UNIX system, includes mouse
SN-PBXGB-AA	PowerStorm 3D30 2D/3D graphics adapter

1. KFE70-BA and KFE72-FA are not supported concurrently on the same system, however, either option can be used to run RAID Configuration Utility (RCU).

Step 11a—Monitors

SN-VRQP7-24/23	17” (16.0” viewable image size) professional series auto-scanning color monitor, Trinitron CRT, 0.25 mm aperture grill pitch, VGA to 1280 x 1024 at 75 Hz, TCO 95, MPR-II, Energy Star, attached 1.8 m video cable. Requires mandatory selection of video extension cable and country-specific power cord for all variants. –24 = Northern Hemisphere without power cord. –23 = Southern Hemisphere without power cord..
SN-VRQP1-24/23	21" (19.6" viewable image size) auto-scanning color monitor, Trinitron CRT, 0.25 mm aperture grill pitch, VGA to 1600 x 1200 at 75 Hz NI, TCO 95, Energy Star, includes a 1.8 m video cable. Requires mandatory selection of video extension cable and country-specific power cord for all variants. –24 = Northern Hemisphere without power cord. –23 = Southern Hemisphere without power cord.

Step 11b—Video Extension Cable

BN39C-02	1.8 m video extension cable—mandatory for each monitor ordered

Step 11c—Monitor Power Cords

BN26J-1K	North America, Japan
BN19A-2E	UK/Ireland/Hong Kong
BN19C-2E	Central Europe
BN19E-2E	Switzerland
BN19H-2E	Australia/New Zealand
BN19K-2E	Denmark
BN18L-2E	Israel
BN19Z-2E	Italy
BN19S-2E	India/South Africa

Step 11d— Graphics Keyboards

SN-LKQ47-xx	Tru64 UNIX keyboard

Step 12—Expansion—System Cabinet and I/O Expansion Cabinet

Step 12a—System Cabinet

- System Cabinet includes one single-phase power supply. Provides space for additional redundant (N+1) power supply.
- BA656 Internal Storage Drawer supports CD-ROM drive only.
- Provides space for six DS-BA356-xx SCSI StorageWorks Shelves, three DWLPB-CA (PCI shelf mount boxes) or combination of StorageWorks and PCI shelves.
  - For each DWLPB-CA placed in system cabinet, subtract two DS-BA356-JG/JH shelves from maximum available. Example: One DWLPB-CA in system cabinet allows for a maximum of four DS-BA356-JG/JH shelves.

Shelf Mount Boxes	Quantity
StorageWorks shelves (DS-BA356-JG/JH)	6 maximum *(*see limits above)
PCI shelf mount box (DWLPB-CA)	3 maximum

Step 12b—I/O Expansion Cabinet

- I/O Expansion Cabinet includes one single-phase power supply. Provides space for additional redundant (N+1) power supply.
- Maximum two I/O expansion cabinets supported per system.
- Maximum four I/O channels supported in each I/O expansion cabinet.
- Space for 16 DS-BA356-JG/JH SCSI StorageWorks Shelves, four DWLPB-CB (PCI Rack mount boxes) or combination StorageWorks and PCI shelves.
  - For each DWLPB-CB placed in expansion cabinet, subtract two DS-BA356-JG/JH shelves from maximum available. Example: Three DWLPB-CB in expansion cabinet allows for a maximum of ten DS-BA356-JG/JH shelves.

Shelf Mount Boxes	Quantity
StorageWorks shelf (DS-BA356-JG/JH)	16 maximum *(*see limits above)
PCI shelf mount box (DWLPB-CB)	4 maximum

H9B10-JA **I/O Expansion Cabinet (top gun blue)**—Single Phase power, maximum two per system

H9B10-EA **I/O Expansion Cabinet (gray)**—Single Phase power, maximum two per system

Note: See Step 2 for selection of appropriate power cord—one per I/O expansion cabinet. If redundant supply (H7266-AD/AE) is ordered, power cord is not required.

Step 13—Power Options

- System Cabinets and Expansion Cabinets include one power supply (H7266-AA)—200-240 V AC input voltage, 48 V dc, 2400 watt, output supply.
- An additional power supply provides N+1 power and supports battery backup capability.
- If redundant power supply is ordered, power cord from Step 2 is no longer required.

H7266-AD Single phase 48 V dc redundant power supply—60 Hz power connector, maximum one per cabinet

H7266-AE Single phase 48 V dc redundant power supply—50 Hz power connector, maximum one per cabinet

Note: See Specifications for information on appropriate power supply to order.

Step 13a—Battery Backup Options

- Optional battery backup requires H7267-AA for each power supply in System Cabinet and Expansion Cabinet.
- Battery backup provides up to **five minutes** of capacity to power contents of System Cabinet and Expansion Cabinet.

H7267-AA Battery backup option kit—Includes batteries, charger board, installation manual for adding battery backup operation to one power supply (H7266-AA, H7266-AD, H7266-AE). Can be field installed.

Step 14—Software

See Step 1 for minimum operating system support required for AlphaServer GS60 and AlphaServer 8200 systems. Select user licenses and additional software as required. Note: Media and documentation required for first system on site.

Software Processor Code = Q

Tru64 UNIX Concurrent Use Licenses

Tru64 UNIX Concurrent Use licenses are not specific to a single system and can be moved from one system to another at user discretion.

Note: Tru64 UNIX AlphaServer GS60 and AlphaServer 8200 Expanded Base Servers include Traditional unlimited user license.

QL-MT7AM-3B Tru64 UNIX Concurrent Use 1-user license

QL-MT7AM-3C Tru64 UNIX Concurrent Use 2-user license

QL-MT7AM-3D Tru64 UNIX Concurrent Use 4-user license

QL-MT7AM-3E Tru64 UNIX Concurrent Use 8-user license

QL-MT7AM-3F Tru64 UNIX Concurrent Use 16-user license

Step 14—Software *(continued)*

QL-MT7AM-3G	Tru64 UNIX Concurrent Use 32-user license
QL-MT7AM-3H	Tru64 UNIX Concurrent Use 64-user license
QL-MT7AQ-AA[1]	Tru64 UNIX Traditional unlimited user license
QL-MT5AQ-AA	Tru64 UNIX developer's extension license
QL-MT6AQ-AA[1]	Tru64 UNIX server extension license
QL-MTJAQ-AA	DECnet/OSI end-system license
QL-MTKAQ-AA	DECnet/OSI extended function license
QB-05SAQ-AA	DECsafe Available Server license and documentation (Tru64 UNIX only). Media available on layered product CD-ROM. KZMSA or KZPSA adapter required.

1. Included with AlphaServer GS60 and AlphaServer 8200 Tru64 UNIX Expanded Base Servers.

Tru64 UNIX Media and Documentation

QA-MT4AA-H8	Tru64 UNIX media and on-line documentation (base system, complementary products) on CD-ROM
QA-MT4AA-GZ	Tru64 UNIX full hardcopy documentation
QA-MT4AB-GZ	Tru64 UNIX end user hardcopy documentation subkit
QA-MT5AA-GZ	Tru64 UNIX developer’s extension hardcopy documentation subkit
QA-MT6AA-GZ	Tru64 UNIX server extension hardcopy documentation subkit

Tru64 UNIX Layered Products CD-ROM

QA-054AA-H8	Layered products media and documentation for Tru64 UNIX

OpenVMS Concurrent Use Licenses

OpenVMS Concurrent Use license provide the right to interactively use the operating system by the specified number of concurrent users on a designated OpenVMS system. OpenVMS Concurrent Use licenses can be moved from one system to another at user discretion and can be shared in a mixed OpenVMS VAX and OpenVMS Alpha cluster.

QL-MT3AA-3B	OpenVMS Concurrent Use 1-user license
QL-MT3AA-3C	OpenVMS Concurrent Use 2-user license
QL-MT3AA-3D	OpenVMS Concurrent Use 4-user license
QL-MT3AA-3E	OpenVMS Concurrent Use 8-user license
QL-MT3AA-3F	OpenVMS Concurrent Use 16-user license
QL-MT3AA-3G	OpenVMS Concurrent Use 32-user license
QL-MT3AA-3H	OpenVMS Concurrent Use 64-user license
QL-MT3AA-3J	OpenVMS Concurrent Use 128-user license
QL-MT3AA-3K	OpenVMS Concurrent Use 256-user license
QL-MT2AQ-AA	OpenVMS Traditional unlimited user license
QL-MTFAQ-AA	DECnet/OSI end-system license
QL-MTHAQ-AA	DECnet/OSI extended function license

OpenVMS Media and Documentation

QA-MT1AA-H8	OpenVMS media and documentation on CD-ROM
QA-09SAA-GZ	OpenVMS base hardcopy documentation
QA-001AA-GZ	OpenVMS full hardcopy documentation

Step 14—Software *(continued)*

OpenVMS Layered Products CD-ROM

QA-054AA-H8 Layered products media and documentation for Tru64 UNIX

QA-03XAA-H8[1] Layered products media and documentation for OpenVMS

1. Includes DIGITAL Enterprise Integration Server for OpenVMS media and documentation.

DIGITAL Enterprise Integration Package—included with AlphaServer GS60 and AlphaServer 8200 OpenVMS Expanded Base Servers

QA-5LVAA-H8 DIGITAL Enterprise Integration Server V1.0 for OpenVMS media and documentation

QP-5LVAQ-AC DIGITAL Enterprise Integration Server V2.0 for OpenVMS media and documentation. Included in expanded base servers.

Step 15—Hardware and Software Supplemental Support Services

Installation Services—AlphaServer GS60 and AlphaServer 8200 Systems

- Installation or Installation and Startup is mandatory for all AlphaServer GS60 and AlphaServer 8200 systems.
- Consult your Compaq Customer Service Account Representative for assistance in choosing the support plan that is most appropriate.
- For more information on Compaq Services see: http://www.digital.com/services

FP-8INST-xx Installation Service Package

FP-8STAR-xx Installation Service and Startup Package

System Maintenance Services—AlphaServer GS60 and AlphaServer 8200 Systems

1-Year	3-Year	System Maintenance Service Packages
FP-801-12**	**FP-801**-36**	Priority
FP-811-12**	**FP-811**-36**	Priority NODE
FP-802-12**	**FP-802**-36**	Priority 24
FP-812-12**	**FP-812**-36**	Priority 24 NODE
FP-803-12**	**FP-803**-36**	Priority Plus
FP-813-12**	**FP-813**-36**	Priority Plus NODE
FP-805-12**	**FP-805**-36**	Priority Premier

Hardware—Americas and Asia Pacific only

- Systems include one-year hardware warranty, on-site, same day, 4-hour response time.
- Select optional Hardware Supplemental Support Services if required.

AlphaServer GS60 and AlphaServer 8200 Systems with Two CPUs

With less than 2 GB memory	with 2 GB memory	with 4 GB memory	
FM-8D4HR-36	**FM-8G4HR-36**	**FM-8V4HR-36**	Years 1-3, 5 x 9, 4-hour response time
FM-8D512-36	**FM-8G512-36**	**FM-8V512-36**	Years 1-3, 5 x 12, 4-hour response time
FM-8D616-36	**FM-8G616-36**	**FM-8V616-36**	Years 1-3, 6 x 16, 4-hour response time
FM-8D724-36	**FM-8G724-36**	**FM-8V724-36**	Years 1-3, 7 x 24, 4-hour response time
FM-8D4HR-60	**FM-8G4HR-60**	**FM-8V4HR-60**	Years 1-5, 5 x 9, 4-hour response time
FM-8D512-60	**FM-8G512-60**	**FM-8V512-60**	Years 1-5, 5 x 12, 4-hour response time
FM-8D616-60	**FM-8G616-60**	**FM-8V616-60**	Years 1-5, 6 x 16, 4-hour response time
FM-8D724-60	**FM-8G724-60**	**FM-8V724-60**	Years 1-5, 7 x 24, 4-hour response time

Step 15—Hardware and Software Supplemental Support Services *(continued)*

Software—Americas and Asia Pacific only

- Systems include 90-day Conformance to SPD and Telephone Advisory Support. Select optional Software Supplemental Support Services, if required.
- Software service upgrades for Tru64 UNIX include advisory and remedial software support with new version license rights for Tru64 UNIX Base, unlimited users and Server Extensions.
- Software service upgrades for OpenVMS include advisory and remedial software support with new version license rights for OpenVMS Base and Enterprise Integration Package.

AlphaServer GS60 and AlphaServer 8200 Two CPU Systems (Tru64 UNIX)

FM-D82U9-12	12-month 5x9 Bronze Software Supplemental Support for Tru64 UNIX two CPU systems
FM-D82U9-36	36-month 5x9 Bronze Software Supplemental Support for Tru64 UNIX two CPU systems
FM-D82U9-60	60-month 5x9 Bronze Software Supplemental Support for Tru64 UNIX two CPU systems
FM-D82US-12	12-month 7x24 Bronze Software Supplemental Support for Tru64 UNIX two CPU systems
FM-D82US-36	36-month 7x24 Bronze Software Supplemental Support for Tru64 UNIX two CPU systems
FM-D82US-60	60-month 7x24 Bronze Software Supplemental Support for Tru64 UNIX two CPU systems
FM-D82UN-12	12-month Bronze Node Software Supplemental Support for Tru64 UNIX two CPU systems
FM-D82UN-36	36-month Bronze Node Software Supplemental Support for Tru64 UNIX two CPU systems
FM-D82UN-60	60-month Bronze Node Software Supplemental Support for Tru64 UNIX two CPU systems

AlphaServer GS60 and AlphaServer 8200 Two CPU Systems (OpenVMS)

FM-D82V9-12	12-month 5x9 Bronze Software Supplemental Support for OpenVMS two CPU systems
FM-D82V9-36	36-month 5x9 Bronze Software Supplemental Support for OpenVMS two CPU systems
FM-D82V9-60	60-month 5x9 Bronze Software Supplemental Support for OpenVMS two CPU systems
FM-D82VS-12	12-month 7x24 Bronze Software Supplemental Support for OpenVMS two CPU systems
FM-D82VS-36	36-month 7x24 Bronze Software Supplemental Support for OpenVMS two CPU systems
FM-D82VS-60	60-month 7x24 Bronze Software Supplemental Support for OpenVMS two CPU systems
FM-D82VN-12	12-month Bronze Node Software Supplemental Support for OpenVMS two CPU systems
FM-D82VN-36	36-month Bronze Node Software Supplemental Support for OpenVMS two CPU systems
FM-D82VN-60	60-month Bronze Node Software Supplemental Support for OpenVMS two CPU systems

Step 15a—Hardware and Software Supplemental Support Services (Europe only)

Europe does not have specific part numbers for Hardware and Software Supplemental Support Services. Prices can be quoted using the Excelerator tool; contact Customer Services Sales in your country for information on Hardware and Software Supplemental Support Services.

Optional Controller Configuration Table

With multiple adapters that provide the same interface available on different I/O buses it is possible to exceed operating system limit on the number of ports supported for that interface. Follow these guidelines for maximum number of ports supported by each operating system. Fill in this table under the relevant area, add up number of controllers/ports available, and verify that operating system limits will not be exceeded. **Do not exceed these values**.

Option Name	A Number of Ports/Buses	B Number of Options	C Total Ports (A * B)	Tru64 UNIX Limit	OpenVMS Limit
SCSI Options					
Included **KFTIA-AA** I/O module, one single-ended and three FWD SCSI ports[1]	4	1	4		
Additional **KFTIA-AA** I/O module, one single-ended and three FWD SCSI ports	4				
KZPSA-BB or **KZPBA** PCI fast wide differential SCSI adapter	1				
Add column "C"—must be less than or equal to value listed under operating system to be used**.**				**64**	**26**
802.3/Ethernet Options					
Included **KFTIA-AA** I/O module, two 802.3/Ethernet ports[1]	2	1	2		
Additional **KFTIA-AA** I/O module, two 802.3/Ethernet ports	2				
DE435-AA PCI 802.3/Ethernet controller, DE450 and DE500	1				
Add column "C"—must be less than or equal to value listed under operating system to be used.				**8**	**8**
FDDI Options					
Included **KFTIA-AA** I/O module, optional FDDI daughter card installed (**DEFPZ-AA/UA**) [1]	1				
Additional **KFTIA-AA** I/O module, optional FDDI daughter card installed (**DEFPZ-AA/UA**)	1				
DEFPA-AB/DB/UB/MB PCI FDDIcontroller, one port each	1				
Add column "C"—must be less than or equal to value listed under operating system to be used.				**8**	**8**

1. Applies to Base Servers only.

EISA Bus IRQ Address Table

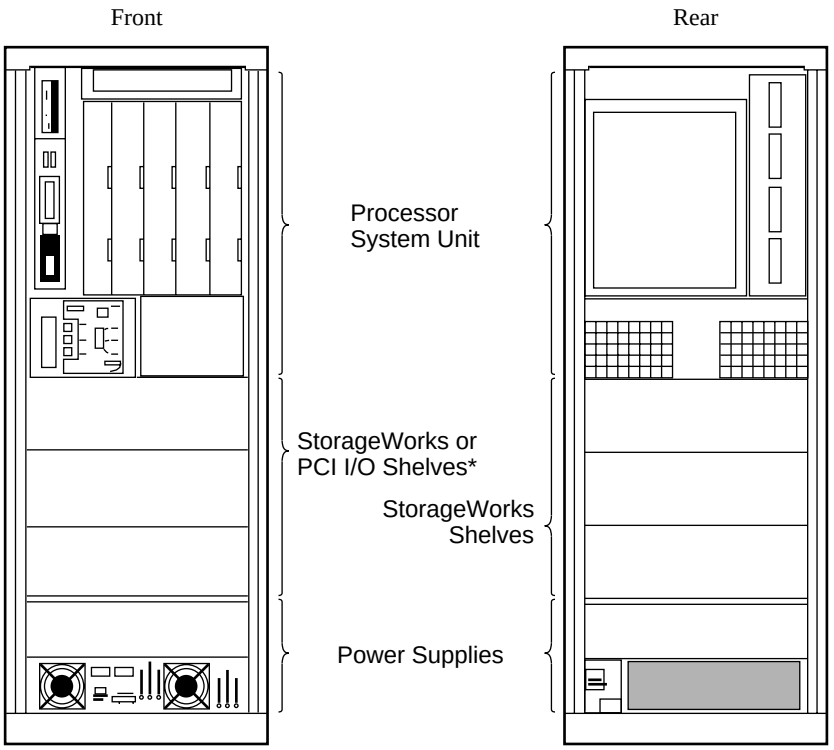
Configuration Rules and Information

- EISA Bus IRQ address assignments are for Tru64 UNIX and OpenVMS systems only.
- In some cases, the maximum number of each supported device is less than number of EISA bus addresses available; this is due to other limitations.
- Only one device can occupy any given IRQ address; if multiples of a device are configured, each device occupies a separate address.
- Match each device to one available address. (Note: With the table as a worksheet, fill in "0" for each device; fill in only one "0" per column).
- Actual IRQ address assignment will be made by EISA Configuration Utility (ECU), which is run during system manufacture, or in the installed system if EISA bus is reconfigured.

	EISA Bus IRQ Addresses									Maximum of Each Supported	
Option	5	7	8	9	10	11	12	14	15	OpenVMS	Tru64 UNIX
DW300-AA	0	–	–	0	0	0	–	–	0	1	1
CXI01-AA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	1
CXI01-AD	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	1

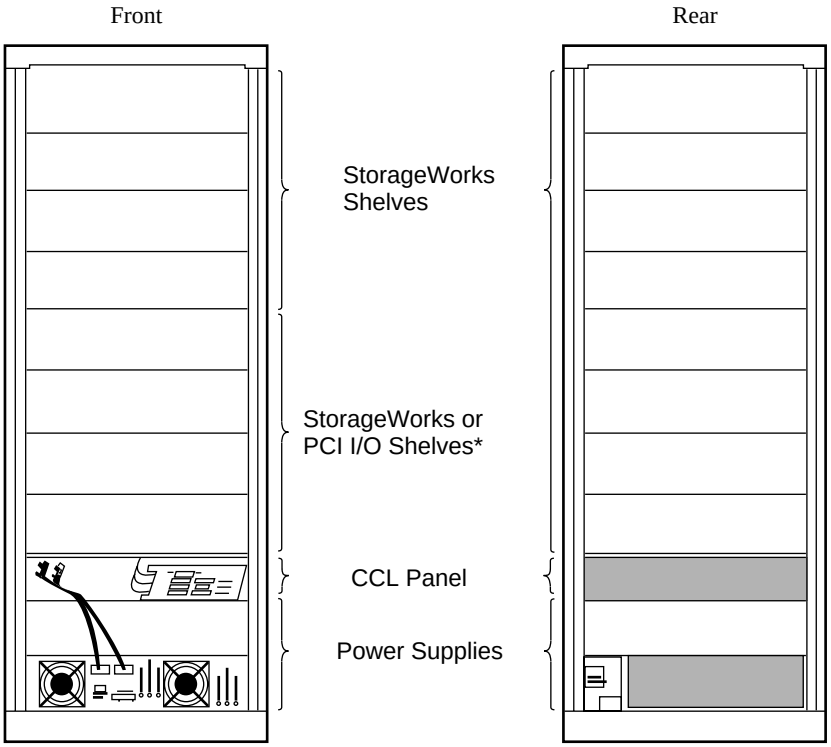
Table Codes:
0 = address is available for device
– = address not available for device
NA = Not Applicable

System Cabinet



BU-3480

Expansion Cabinet



* A PCI I/O shelf extends into the rear of the cabinet.
A StorageWorks shelf cannot be located behind a PCI shelf.

BU-3481

Specifications

Physical Characteristics	Operating	Shipping
Height	170.0 cm (67.0 in)	194.0 cm (76.25 in)
Width	60.0 cm (23.6 in)	91.5 cm (36.0 in)
Depth	92.5 cm (36.4 in)	121.5 cm (47.9 in)
Weight		
Minimum configuration	318 kg (700 lb)	363 kg (800 lb)
Maximum configuration	591 kg ((1300 lb)	636 kg (1400 lb)
Clearances	**Operating**	**Service**
Front	1.0 m (40 in)	1.5 m (59 in)
Rear	.75 m (29.5 in)	1.0 m (40 in)
Sides	0	0
Environmental	**Operating**	**Non-Operating**
Temperature	10°C to 35°C (50°F to 95°F)	–40°C to 66°C (–40°F to 151°F)
Humidity	10% to 90%	10% to 95%
Altitude	0–2.4 km (0–8200 ft)	9,100 m (30,000 ft)
Vibration	2–22 Hz @ 0.01"da minimum	22–500 Hz @ 0.25g maximum.
Heat dissipation[1]	**Minimally configured system**[1] (system cabinet) 3200 Btu/hr, 930 W **Fully configured system**[2] (system cabinet) 9100 Btu/hr, 2647 W **Fully configured system**[3] (system cabinet with two I/O expansion cabinets) 21,300 Btu/hr, 6234 W	
Regulatory		
Agency approvals	UL Listed to UL1950 CSA Certified to CAN/C22.2 No. 950-M89 FCC Part 15 (Class A) CE Declaration #1259	
Reviewed to	EN 60950/A1, Jan. 1993, European Norm AS/NZS 3260:1993, Australian/New Zealand Standard EMKO-TSE{74-SEC}Summary of Nordic Deviations IEC950, 2nd Ed., 2nd Amend.	
Power Requirements[4]	US/Canada/Japan	Europe/AP
Nominal AC input line voltage	202-240 (208) V Japan (202) V	202-240 (240) V
Frequency range	50 Hz–60 Hz	50 Hz–60 Hz
Phases	Single-phase line-to-line or line-to-neutral	Single-phase line-to-line or line-to-neutral
Maximum input current	16 A rms	16 A rms
Surge current	80 A peak	80 A peak
Rating	16 A	16 A
Power cord part number	BN23H-4E	BN20P-4E
Power cord length	4.5 m (15 ft)	4.5 m (15 ft)
Power cap (system)	DEC 12-16886-00 NEMA L6-30P	DEC 12-30333-03
Receptacle	NEMA L6-30R	IEC 309 (32 A)[5] 2 Pole/3-Wire (220-240 V)
PCS/PDS/PDU/UPS cable	BC26E	

1. Minimally configured system contains one power supply, dual CPU, one memory, one System I/O module, one CD-ROM, and one disk drive.
2. Fully configured system contains two power supplies, one CPU module, two memory modules, two System I/O modules, one CD-ROM, 16 disk drives, two PCI shelves, and two StorageWorks shelves.
3. Fully configured system and two expansion cabinets consists of the above “fully configured system” and two expansion cabinets which each contain one PCI shelf , 14 StorageWorks shelves, and 84 RZ28 disk drives.
4. Power system provides unity power factor which allows full utilization of the input line current (Watts = VA).
5. Receptacle type is Hubbell 332R6 or equivalent.

Recommended On-Line Power Protection/UPS Solutions for AlphaServer GS60 and 8200 systems

For complete protection, UPS products should be used with data line surge protectors.

4N-GA249-AB	2 wire modem	wall plug in (additional plug in data modules available RN-GA240-xx)
4N-GA249-CA	10BaseT	wall plug in (additional plug in data modules available RN-GA240-xx)
4N-GA510-BF	ThinWire	device port
4N-GA245-xx	Din rail and modules	up to 32 ports

	Receptacle Module for Plug-in Connection			
UPS Model	**60 HZ**	**50 HZ**	**Power Supply**	**External Storage**
4N-AEAAJ-CL (60 Hz) **4N-AEAAJ-CU (50 Hz)**	Included	Hardwired	Single phase	None
4N-AEAAN-BA (60 Hz) **4N-AEAAN-BE (50 Hz)**	**4N-AEACM-BN**	Hardwired		SW800

UPS Models

4N-AEAAJ-CL	Prestige 6kVA (4kW), single phase, 60 Hz, 208V-120/208V, 6 ft. cord with L6-30P and (2) L6-30R, (8) 5-15R receptacles. Modular hot-swap design with 7 minutes battery at full load, extendible plug and play batteries and receptacle provisions. Unit includes 3 year hot swap warranty. Substitute -CT for 240V-240/120V operation.
4N-AEAAJ-CU	Prestige 6kVA (4kW) 50 Hz package, single phase, 50/60 Hz, 200-240V in and out, selectable; hardwired input/output.
4N-AEAAL-BA	PUPS plus 10kVA (7kW), single-phase, 50/60Hz, 176-276V in, 200-240V out, 9 minutes battery at full load; hardwired with optional plug-in output receptacle modules.
4N-AEAAN-BA	PUPS plus 15kVA (10kW), three-phase, 50/60Hz, 176-256V in, 200-240V out, 10 minutes battery at full load; hardwired with optional plug-in output receptacle modules.
4N-AEAAN-BE	PUPS plus 15kVA (10kW), three-phase, 50/60Hz, International model rated 380/415V in, 380/415/220V out; hardwired input/output.

Hardware Options

4N-AEACK-BN	PUPS plus 15kVA receptacle module (3) L6-30R, (3) 5-20R, (2) L5-20R
4N-AEACM-BN	PUPS plus 15kVA receptacle module (2) L21-30R, (1) 5-20R2, (2) L6-30R
4N-AEACH-HD	Mobile module stacker for Prestige 6kVA models (includes seismic supports)

UPS Monitoring and Unattended Shutdown Software (for above UPS systems only)

Note: Power Management software is included in ServerWORKS Manager kits shipping with all AlphaServers. Cable kit required, select UPS Communications Cable Kit.

Tru64 UNIX	OpenVMS	UPS System
4N-AEAES-AK	**4N-AEAES-EM**	Prestige UPS
4N-AEAES-AK	**4N-AEAES-FM**	PUPS plus UPS
4N-AEAES-BK	**Call for information**	Network Management or multi shutdown[1]

1. Requires Connect-UPS Network Adapter (SNMP compatible) for Tru64 UNIX platform.

Tru64 UNIX	OpenVMS	
4N-ONLIN-NT[1]	**4N-ONLIS-FE**	UPS Communications Cable Kit
4N-AEAEO-D*	**4N-JMIU4-AB**[3] 4 port	Option for multi-systems on one UPS
4N-AEAEO-D*[2]	**4N-AEAEO-D***[2]	Option for SNMP/ServerWORKS Manager interface

1. Requires Connect-UPS Network Adapter, required for Tru64 UNIX Platform.
2. Suffix * denotes Twisted pair / ThinWire = DA/DC (60Hz); DB/DD (50Hz).
3. Four port multi-interface kit with splitter cable to interface with network adapter and local shutdown signal from UPS. Kits may be daisychained, kits include software.

A La Carte Software kits available for existing installations

Tru64 UNIX[1]	OpenVMS	
4N-AEAES-AK	**4N-AEAES-EM**	Prestige (single system)
4N-AEAES-AK	**4N-AEAES-FM**	PUPS Plus (single system)
4N-AEAES-BK	**See options above**	Multi-systems on one UPS or Network Management