# QUICKSPECS

## *Compaq AlphaServer* GS60E

## *Overview*

### AT A GLANCE

- GS60E systems offer superior business and technical application performance with large I/O capacity to tackle the most demanding enterprise applications
- Processor module with two Alpha 21264 6/525-MHz CPUs; each with 4-MB L2 cache
- System I/O module with four I/O channels
- 1-GB or 4-GB memory
- PCI Shelf Mount Box
- 10/100 Mb Fast Ethernet network interface card
- UltraSCSI 1-port Single-ended adapter
- UltraSCSI 16-bit StorageWorks shelf with power supply and 1-m SCSI cable
- 9.1-GB UltraSCSI disk drive
- 600-MB CD-ROM drive
- PCI SCSI controller and 2-m SCSI cable for connection to CD-ROM
- 3-phase power system with power cord
- Redundant 48 VDC hot swappable power supplies to power CPU, memory, I/O, and PCI shelves
- 120 VAC power for StorageWorks shelves
- Shielded console cable for connection to console terminal
- Tru64™ UNIX or OpenVMS Factory Installed Software
- 90-day software product warranty
- Protected by Compaq Services, including one-year, on-site, four-hour response warranty; system installation must be ordered separately
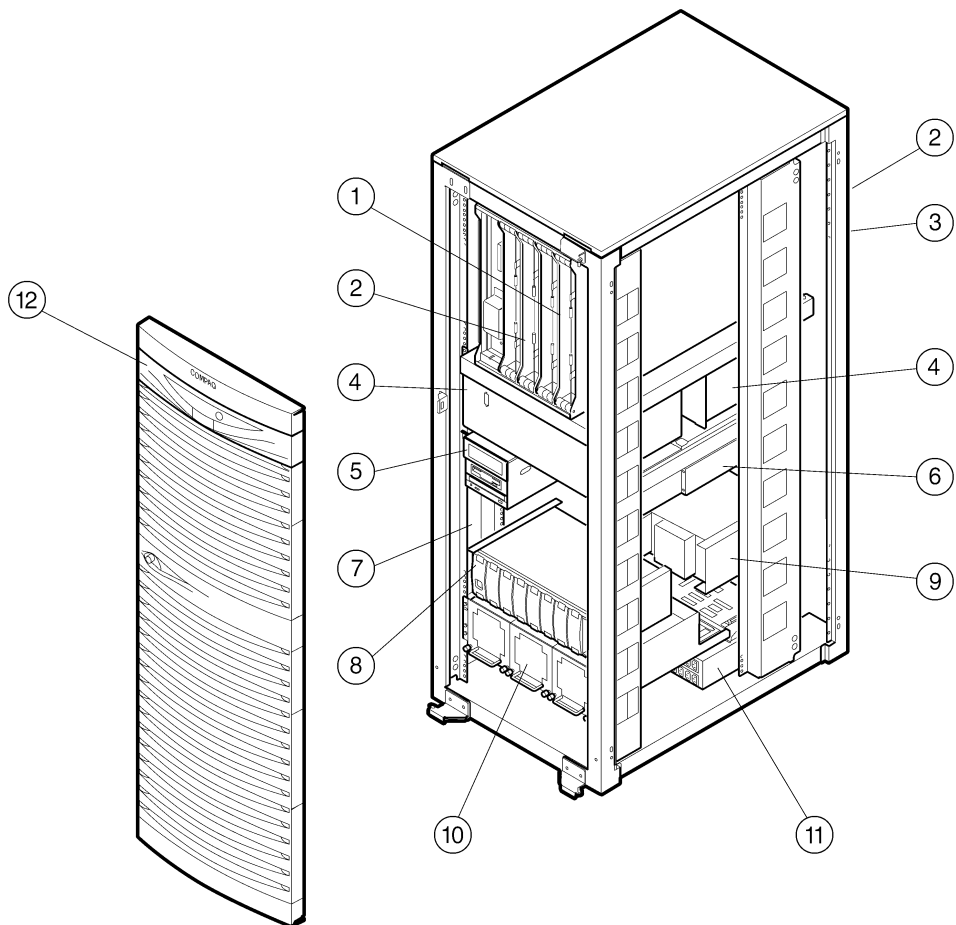
1. CPU module (front)
2. Memory module (front/rear)
3. I/O module (rear)
4. Blowers
5. CD-ROM and optional diskette drive
6. PCI box (rear mount)
7. Space for second PCI box
8. StorageWorks shelf
9. Space for second StorageWorks shelf
10. 48 VDC power regulator (3)
11. AC distribution panel
12. Door and operator control panel (OCP)

COMPAQ
"Your partner through time"
2000 Ready

*Standard Features*

## MODELS

**GS60E Tru64 UNIX Expanded Base Servers**
Two 6/525-MHz CPUs
9.1-GB UltraSCSI Hard Drive

*DA-483GG-AA/AB*
(4-GB memory)

*DA-483GE-AA/AB*
(1-GB memory)

**GS60E OpenVMS Expanded Base Servers**
Two 6/525 MHz CPUs
9.1-GB UltraSCSI Hard Drive

*DY-483GG-AA/AB*
(4-GB memory)

*DY-483GE-AA/AB*
(1-GB memory)

-AA=120/208V US/Canada; 202V Japan
-AB=380-415V Europe, 50/60 Hz

## EXPANDED BASE SERVERS

### Processor

Two Alpha 21264 6/525 MHz processors (2 CPUs per module)

### Cache Memory

4-MB ECC L2 onboard cache per CPU

### Architecture

64-bit bus-based system architecture with seven system bus slots for CPU, memory, and I/O modules (1.87-GB/sec sustained system bandwidth; 2.1-GB/sec peak bandwidth)

### Upgradability

Supports additional processors, additional memory, additional I/O port modules, as well as storage and PCI I/O module options; in-cabinet upgrade available to next generation Alpha 21264 microprocessors

| | |
|---|---|
| Standard | 2 CPUs on one CPU module |
| Maximum | 6 CPUs on three CPU modules |

### System I/O Module and System I/O Expansion

System I/O module with four I/O channels (KFTHA-AA)

| | |
|---|---|
| Standard | 1 |
| Maximum | 3 |

RETMA PCI shelf mount box (DWLPB-DA)

| | |
|---|---|
| Standard | 1 |
| Maximum | 11 (with I/O Expansion Cabinets) |

### Memory

| | |
|---|---|
| Standard | 1 GB or 4 GB on one memory module |
| Maximum | 12 GB |

### Network Controller

PCI 10/100 Mb Fast Ethernet adapter UTP

### Expansion

| | |
|---|---|
| Internal Drive Bays | Seven to 28 available internal to system cabinet; up to 84 drive bays with I/O expansion cabinet |
| Total PCI I/O Slots | Up to 132 PCI I/O slots total with System and I/O Expansion Cabinets available and no |
| | internal storage (120 PCI I/O slots with internal storage and 10 DWLPB-DA PCI I/O buses) |
| PCI | 12-24 internal to System Cabinet |

### Storage

| | |
|---|---|
| CD-ROM | 5.25″ half height CD-ROM drive |
| Hard Drives | 9.1-GB UltraSCSI disk drive (included) |
| | 18.2-GB, 36.4 GB UltraSCSI disk drives available |
| Diskette Drive | Optional with Graphics Console Subsystem (3X-KFE72-LA) |
| Maximum Internal Storage | 1019.2 GB (36.4-GB disk drives) |

### Storage Controller/Shelf

UltraSCSI 1-port Single-ended adapter (KZPBA-CA)
UltraSCSI 16-bit StorageWorks shelf (BA36R-RC) and 1-m SCSI cable, VHDCI male-to-68 HD male (BN38C-01)

### Power Supplies

Redundant 48 VDC hot-swappable power supplies

## Standard Features

### EXPANDED BASE SERVERS *(continued)*

**Intelligent Manageability**

Software features for advanced server and network management, including

ServerWORKS™ Manager

ServerWORKS workgroup administrator

ServerWORKS Manager application

SNMP agents to manage Microsoft Windows NT, SCO UNIX, Novell NetWare, and IBM OS/2

Intelligent Server Management

**Security**

Chassis on/off key lock

Multi-boot for choice of boot device

**OS Support**

Tru64 UNIX systems include pre-installed software, base license, unlimited user license, server extension license, Open Source Internet Solutions Software license, and Netscape Enterprise Server 3.0.

OpenVMS systems include pre-installed software, base license, and Enterprise Integration Server License Package V3.0A.

Support for up to two instances of either Tru64 UNIX or OpenVMS on a single hardware platform

**Service and Support**

Protected by Compaq Services, including a one-year, on-site hardware warranty with four-hour response. Software warranty is a 90-day telephone advisory. Training, consulting, network integration, software support, comprehensive system maintenance and guaranteed uptime services are also available for customers requiring higher levels of service and support.

## *Options*

### System requirements:

- GS60E requires Tru64 UNIX V4.0E or V4.0F or OpenVMS V7.1-2 or V7.2-1.
- Software media and documentation for first system on-site
- Serial console terminal
- Installation and/or startup services

**Note**: For system integration of any options with 6-3 part numbers, contact *Custom*Systems.

### Processors (SMP Expansion)

Maximum two additional CPU modules per system for a system total of three

All CPU modules must be at same speed on same bus.

For systems with more than two processor modules, a minimum of two memory modules is recommended

Upgrades include processor module with Alpha microprocessors, SMP extension license, and end-user product warranty.

| | |
|---|---|
| Dual-CPU module (Tru64 UNIX) | 762P2-AX |
| Dual-CPU module (OpenVMS) | 762P1-AX |

### Memory

Maximum 12-GB memory

1-GB and 2-GB memory modules have built in 2-way interleaving; additional interleaving is accomplished with the addition of more memory modules.

4-GB memory modules have built in 4-way interleaving; optimal performance is achieved when two 2-GB modules are paired with one 4-GB module or one 4-GB module is paired with another 4-GB module.

| | |
|---|---|
| 4-GB memory module | MS7CC-GA |
| 2-GB memory module | MS7CC-FA |
| 1-GB memory module | MS7CC-EA |

### I/O Expansion Buses

| | |
|---|---|
| RETMA PCI shelf mount box for system and I/O expansion cabinets (included) with 12 PCI slots and required cable for connection to KFTHA-AA I/O channel; maximum of two per System Cabinet with one StorageWorks shelf standard; see "Expansion–System Cabinet and I/O Expansion Cabinet" for more details | DWLPB-DA |
| Graphics console subsystem and diskette, includes two asynchronous serial ports, parallel port, keyboard and mouse ports, diskette drive, extension cables for video, keyboard, and mouse. **Note**: Option required to support KZPAC-AA/CA RAID controllers–diskette drive is required to run the RAID Configuration Utility and to support hardware partitioning. | 3X-KFE72-LA |

### System I/O Modules

Systems support a maximum of 11 I/O channels with three KFTHA-AA modules installed and no internal storage, and 10 I/O channels with internal storage.

| | |
|---|---|
| System I/O module (included) with four I/O channels for DWLPB-DA shelf mount boxes, maximum three per system | KFTHA-AA |

### Storage Controllers

#### *PCI UltraSCSI Controllers*

Tru64 UNIX V4.0E or later supports eight KZPBA-Cx SCSI controllers per PCI, maximum of 64 per system.

OpenVMS V7.1.2 or later supports eight KZPBA-Cx SCSI controllers per PCI, maximum of 26 per system.

Tape and optical devices are not supported with KZPAC SCSI RAID controllers.

For cluster configurations, use Y cable (BN39A-0G) or SCSI Hub (BA35X-03/05).

Manufacturing may substitute correct cable lengths depending on configuration.

| | |
|---|---|
| PCI Fibre Channel adapter (KGPSA-BC) (uses one PCI slot); Tru64 V4.0F supports eight per PCI, maximum eight per system, OpenVMS V7.2-1 supports four per PCI, maximum four per system; requires Fibre Channel cable | 380574-001 |
| Fibre Channel cable (BNGBX-xx) xx=02, 05, 15, 30, 50 meters x=1, 2, 3, 4, 5 | 234457-B2x |
| PCI 1-port UltraSCSI Single-ended host adapter (uses one PCI slot)–included | KZPBA-CA |
| PCI 1-port UltraSCSI Differential host adapter (uses one PCI slot); OpenVMS V7.1-1H1 or later supports multi-host SCSI clusters, requires BN38C-xx cable | KZPBA-CB |
| 1-m VHDCI male-to-68-pin HD male UltraSCSI cable x=01, 02, 03, 05 meters | BN38C-xx |
| PCI 1-port RAID (FWSE) controller (UltraSCSI ready) with 4-MB cache memory (uses one PCI slot) allows RAID levels 0, 0+1, 1, and 5; includes RAID Array 230/plus subsystem software and documentation kit; 3X-KFE72-LA option required to run RCU; tape and optical drives not supported; four per PCI, maximum of four per system | KZPAC-AA |

## *Options*

| Storage Controllers *(continued)* | |
|---|---|
| ***PCI UltraSCSI Controllers*** *(continued)* | |
| PCI 3-port RAID (FWSE) controller (UltraSCSI-ready) with 4-MB cache memory (uses 2 PCI slots) allows RAID levels 0, 0+1, 1, and 5; includes RAID Array 230/plus subsystem software and documentation kit; 3X-KFE72-LA option required to run RCU; tape and optical drives not supported; four per PCI, maximum of four per system; requires BN31K-0E or KZPAC-SB for third port connection | KZPAC-CA |
| PCI 3-port RAID (FWSE) controller (UltraSCSI-ready) with 8-MB cache memory (uses two slots) allows RAID levels 0, 0+1, 1, and 5; includes RAID Array 230/plus subsystem software and documentation kit; 3X-KFE72-LA option required to run RCU; tape and optical drives not supported; four per PCI, maximum four per system; requires BN31K-0E or KZPAC-SB for third port connection | KZPAC-CB |
| SCSI cable/bulkhead assembly kit with two ports for KZPAC-CA/CB; allows connection of one third port outputs using one PCI bulkhead slot | KZPAC-SB |
| SCSI cable/bulkhead assembly kit with one port for KZPAC-CA/CB, allows connection of one third port output using one PCI bulkhead slot | BN31K-0E |
| 1-m VHDCI male-to-VHDCI male UltraSCSI cable, connects KZPAC to front-mounted StorageWorks shelf. | BN37A-01 |
| 2-m VHDCI male-to-VHDCI male UltraSCSI cable, connects KZPAC to rear-mounted StorageWorks shelf. | BN37A-02 |
| Battery backup for cache memory option for KZPAC controller, recommended for all KZPAC controllers | KZPSC-UB |
| 8-MB cache memory option | MS100-BB |
| ***DSSI and CI Adapters*** *(OpenVMS only)* | |
| PCI DSSI adapter, 12 per PCI, maximum of 24 per system (KFPSA, KFMSB not supported on same DSSI bus) | KFPSA-AA |
| External shielded cable (MR/MR connectors); select length—09, 16, 25 feet | BC29S-xx |
| External shielded cable (MR/PS connectors); select length—06, 09, 16, 30 feet | BC29R-xx |
| PCI CI adapter, four per PCI, maximum of 26 per system; requires two PCI slots for adapter and power | CIPCA-AA |

| Storage Controllers *(continued)* | |
|---|---|
| ***DSSI and CI Adapters*** *(OpenVMS only)* *(continued)* | |
| Same as CIPCA-AA except uses two PCI slots for adapter | CIPCA-BA |
| Computer interconnect cable sets; connects CIPCA to Star Coupler; select length—10, 20, 45 m | BNCIA-xx |

### 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. | |
| HSJ50 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 (one for HSJ50, two for HSJ52, four for HSJ54). | |
| 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. | |
| Fibre Channel controller (HSG80), includes 2-MB cache expandable to 128 MB; requires 128697-B21 HSG80 ACS V8.4F software kit or 128698-B21 V8.4P software kit for each HSG80 ordered. | 380672-B21 |
| UltraSCSI controller (HSZ80), includes 2-MB cache expandable to 32 MB; requires 400569-001 for Tru64 UNIX or 400571-001 for OpenVMS | 400564-B21 |
| UltraSCSI controller (HSZ80), includes 2-MB cache expandable to 128 MB; requires 400569-001 for Tru64 UNIX or 400571-001 for OpenVMS. | 400565-B21 |
| StorageWorks UltraSCSI RAID Array controller, includes 64-MB cache expandable to 128 MB; requires DS-HS35X-BC external cache battery and HSZ70 kit . | DS-HSZ70-AH |
| 32-MB cache 6-channel CI array controller with cache battery | HSJ50-AF |
| 128-MB cache 6-channel CI array controller with cache battery | HSJ50-AJ |
| Dual 64-MB cache CI array controller with cache batteries | HSJ52-AF |
| Dual 128-MB cache CI array controller with cache batteries | HSJ52-AH |
| Dual 256-MB cache CI array controller with cache batteries | HSJ52-AJ |
| Quad 512-MB cache CI array controller with cache batteries | HSJ54-AJ |

## Options

### Storage Devices

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 allows 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.

### Internal Storage

System cabinet provides space for up to four BA36R-RC/RD StorageWorks shelves; each shelf holds a maximum of two 5.25″ devices and one 3.5″ device or seven 3.5″ devices.

System cabinet includes one UltraSCSI StorageWorks shelf (BA36R-RC) and one PCI shelf (DWLPB-DA).

#### UltraSCSI Options

Each UltraSCSI StorageWorks shelf requires SCSI controller and SCSI cable to connect controller to shelf; refer to UltraSCSI Configuration Guidelines (EK-ULTRA-CG.C01).

| | |
|---|---|
| UltraSCSI single-channel StorageWorks shelf (included) with 16-bit I/O personality module (DS-BA35X-FA), 180W AC power supply, DC fans, RETMA rackmounting hardware; supports 16-bit UltraSCSI devices and some 8-bit narrow SCSI devices depending on compliance with minimum revision levels | BA36R-RC |
| UltraSCSI dual-channel StorageWorks shelf, includes 16-bit I/O personality module (DS-BA35X-FB), 180 W AC power supply, DC fans, RETMA rack-mounting hardware; supports 16-bit UltraSCSI devices and some 8-bit narrow SCSI devices, depending on compliance with minimum revision levels. | BA36R-RD |

#### Power Option for BA36R Shelves

An additional power supply provides N+1 power for StorageWorks shelves; power supply uses 3.5″ slot in StorageWorks shelf, reducing total number of devices supported by one.

| | |
|---|---|
| 180W 120 VAC Redundant Power Supply for StorageWorks shelf | CK-BA35X-HH |

#### SCSI Signal Converter

| | |
|---|---|
| UltraSCSI StorageWorks DOC Signal Converter, required to convert FWD signals from KZPBA-CB to single-ended for connection to DS-BA35X-FA personality module in Storage-Works shelf, field installed only | DS-BA35X-DA |

### Internal Storage *(continued)*

#### SCSI Signal Converter *(continued)*

| | |
|---|---|
| Fast20 Personality Module for BA356 single-ended-to-single-ended 1-channel, field installed only | DS-BA35X-FA |
| Fast20 Personality Module for BA356 single-ended-to-single-ended 2-channel, field installed only | DS-BA35X-FB |
| Cable for above | BN38C-02 |

#### UltraSCSI Hubs

UltraSCSI hubs are supported with KZPBA-CB PCI differential SCSI adapters.

| | |
|---|---|
| UltraSCSI Hub with three differential ports (two host ports and one storage port), no single-ended ports, in 3.5″ SBB, UltraSCSI cables not included | DS-DWZZH-03 |
| UltraSCSI Hub with five differential ports, no single ended ports, consists of four host ports and one storage port in 5.25″ SBB, UltraSCSI cables not included | DS-DWZZH-05 |
| UltraSCSI Hub with one differential port and two single-ended ports in 3.5″ SBB, UltraSCSI cables not included | DS-DWZZH-21 |

#### 16-bit Wide Drives

| | |
|---|---|
| 36.4-GB 10,000 rpm 16-bit UltraSCSI disk drive SBB (not supported on KZPAC controllers) | DS-RZ1FB-VW |
| 18.2-GB 10,000 rpm 16-bit UltraSCSI disk drive SBB (not supported on KZPAC controllers) | DS-RZ1ED-VW |
| 18.2-GB 7200 rpm 16-bit UltraSCSI disk drive SBB (not supported on KZPAC controllers) | DS-RZ1EA-VW |
| 9.1-GB 10,000 rpm 16-bit UltraSCSI disk drive SBB | DS-RZ1DD-VW |
| 9.1-GB 7200 rpm 16-bit UltraSCSI disk drive SBB | DS-RZ1DA-VW |

#### Tape Devices

Tape drives not supported with KZPAC RAID controller

| | |
|---|---|
| 8-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 | TLZ09-VA |
| 32/64-GB DAT tape loader in StorageWorks carrier | TLZ9L-VA |
| 12/24-GB 4mm DAT SCSI tape drive in StorageWorks carrier | DS-TLZ10-VA |
| 20/40-GB DLT SCSI tape drive in 5.25″ StorageWorks carrier | TZ88N-VA |
| 35/70-GB DLT SCSI tape drive in 5.25″ StorageWorks carrier | DS-TZ89N-VW |

#### Solid State Disks

Supported with KZPBA controller

## *Options*

### Internal Storage *(continued)*

#### *Solid State Disks* *(continued)*

Solid state disks cannot be combined with RZxx disks/tapes on same SCSI bus.

3.5″ and 5.25″ solid state disks not supported on same SCSI bus

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

### RAID Storage Systems

ESA 12000 Storage Arrays and RAID Array 8000 (HSG80/HSZ80) product sets are supported on Tru64 UNIX and OpenVMS systems.

ESA 10000 Storage Arrays and RAID Array 7000 (HSZ70 Product Set) are supported on Tru64 UNIX and OpenVMS systems.

Ordering and configuring information is available at www.compaq.com/products/storageworks/.

### External Storage Devices

The following devices can be added as required:

#### *SW5XX, SW6XX, SW8XX Storage Cabinets*

#### *SCSI Disk Drives*

#### *Tape Drives*

TZ87, TZ857 (loader support for Tru64 UNIX available via DECnsr), 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, DS-TL895-xx

### Networks and Communications

Connection of system to Ethernet requires twisted-pair cable, except when using DE500-FA.

#### *PCI LAN Communications Controllers*

Requires DWLPB-DA PCI shelf mount box (one included)

Maximum of six DEFPA-AB/DB/UB/MB FDDIcontrollers (100 Mb/sec) per system

Each adapter/controller uses one PCI slot

| | |
|---|---|
| PCI Ethernet 1-port adapter with three connector types, OpenVMS and Tru64 UNIX support eight per PCI, maximum of eight per system | DE450-CA |
| PCI Fast Ethernet (10/100 32 bit) fibre adapter, OpenVMS and Tru64 UNIX support eight per PCI, maximum of eight per system | DE500-FA |

### Networks and Communications *(continued)*

#### *PCI LAN Communications Controllers* *(continued)*

| | |
|---|---|
| PCI Fast Ethernet (10/100 Mb) Adapter, OpenVMS and Tru64 UNIX support eight per PCI, maximum eight per system–included | DE500-BA |
| Category 5 cross-over cable for point-to-point, unshielded | BN24Q-xx |
| Category 5 cross-over cable for point-to-point, shielded | BN28Q-03 |
| Category 5 straight through for system to repeater or hub, unshielded | BN25G-xx |
| Twisted pair, shielded (-03, -04, -07 available lengths) | BN26M-xx |
| PCI FDDIcontroller Fibre—Single attachment station MultiMode Fibre, OpenVMS and Tru64 UNIX support six per DWLPB, maximum of six per system; requires BN34x SC type connecting cable. | DEFPA-AB |
| PCI FDDIcontroller Fibre—Dual attachment station MultiMode Fibre, OpenVMS and Tru64 UNIX support six per DWLPB, maximum of six per system. Requires BN34x SC type connecting cable | DEFPA-DB |
| MultiMode Fibre Optic Duplex cable, SC connector-to-ST connector | BN34A-xx |
| MultiMode Fibre Optic Duplex cable, SC connector-to-SC connector | BN34B-xx |
| MultiMode Fibre Optic Duplex cable, SC connector-to-MIC connector | BN34D-xx |
| PCI FDDIcontroller Copper, Dual attachment station UTP, OpenVMS and Tru64 UNIX support six per DWLPB, maximum six per system; requires BN26x or BN25H connecting cables | DEFPA-MB |
| PCI FDDIcontroller Copper, Single attachment station UTP, OpenVMS and Tru64 UNIX support six per DWLPB, maximum six per system; requires BN26x or BN25H connecting cables | DEFPA-UB |
| 8-pin MP-to-8-pin MP, screened, EIA/TIA category 5 cable | BN26M-xx |
| 8-pin MP-to-8-pin MP, screened, crossover, EIA/TIA category 5 cable | BN26S-xx |
| 3-m unshielded twisted pair RJ-45 connectors | BN25H-03 |
| PCI Gigabit Ethernet adapter, one per DWLPB, maximum of four per system; does not support network boot | DEGPA-SA |

# QUICKSPECS

## *Options*

### Networks and Communications *(continued)*

#### PCI LAN Communications Controllers *(continued)*

| | |
|---|---|
| PCI ATMworks 351 bus adapter (uses one PCI slot); Tru64 UNIX supports two per PCI, maximum of two per system; DGLPA-FA/UA are not supported on the same system as DGLPB-AB. | DGLPA-FA/UA |
| PCI-to-ATMworks 155 Mb Adapter – Fibre; Tru64 UNIX and appropriate patch kits (patch kit 1 for V4.0F; patch kit 2 for V4.0E) support a maximum of six per system; refer to http://www.service.digital.com for patch kit availability–SN-PBXNP-AC PCI Token Ring Adapter is not supported in same system with ATM 155 (DAPBA) adapter; if ATMworks 351 (DGLPA) NIC card is installed, follow that adapter's configuration rules; only one ATM adapter can be installed on same bus as ATMworks 351 network interface card | 3X-DAPBA-FA |
| PCI-to-ATMworks 622 Mb Adapter – Fibre; Tru64 UNIX and appropriate patch kits (patch kit 1 for V4.0F; patch kit 2 for V4.0E) support a maximum of two per system. Refer to http://www.service.digital.com for patch kit availability–SN-PBXNP-AC PCI Token Ring Adapter is not supported in the same system with the ATM 622 (DAPCA) adapter; if ATMworks 351 (DGLPA) NIC card is installed, follow that adapter's configuration rules; only one ATM adapter can be installed on same bus as ATMworks 351 network interface card | 3X-DAPCA-FA |
| Same as above except UTP | 3X-DAPBA-UA |
| PCI Token Ring Adapter, Tru64 UNIX and OpenVMS support four per PCI, maximum of four per system; minimum system console support required V4.0 AXP CD release; requires BC26M cable | SN-PBXNP-AC |
| PCI Asynchronous 4-port adapter, Tru64 UNIX and OpenVMS support two per PCI, maximum of two PBXDA-xx per system | PBXDA-AA |
| PCI Asynchronous 8-port adapter, Tru64 UNIX and OpenVMS support two per PCI, maximum of two PBXDA-xx per system. | PBXDA-AB |
| PCI Asynchronous 16-port adapter, Tru64 UNIX and OpenVMS support 2 per PCI, maximum 2 PBXDA-xx per system | PBXDA-AC |

### Networks and Communications *(continued)*

#### PCI LAN Communications Controllers *(continued)*

| | |
|---|---|
| PCI Synchronous 2-port controller, Tru64 UNIX and OpenVMS support two PBXDP-xx per system. | PBXDP-AA |
| PCI Synchronous 4-port controller, Tru64 UNIX and OpenVMS support two PBXDP-xx per system. | PBXDP-AB |
| PCI Synchronous 8-port controller, Tru64 UNIX and OpenVMS support two PBXDP-xx per system. | PBXDP-AC |

#### *Local and Wide Area Communications Servers/Network Connectivity Products*

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.*

### MEMORY CHANNEL

Up to two PCI System Area Network controllers are supported on GS60E with Console Firmware V5.5-x or later.

#### *Tru64 UNIX Systems*

Requires Tru64 UNIX V4.0F with TruCluster V1.6 or later

Each system node in a MEMORY CHANNEL cluster requires a TruCuster Production Server (QB-3RLAG-KA) or TruCluster MEMORY CHANNEL (QB-4ZCAG-AA) software license.

TruCluster MEMORY CHANNEL license (QB-4ZCAG-AA), normally used for high-performance technical computing applications, is not required if systems include a TruCluster Production Server license (QB-3RLAG-KA).

The following options are currently not supported with MEMORY CHANNEL: DJ-ML200, CIPCA.

#### *OpenVMS Systems*

Requires OpenVMS V7.1-2 or later and OpenVMS Cluster license (QL-MUZAG-AA)

2-node clusters can be configured by ordering a CCMAB-AA for each system and one BN29B-04 or BN29B-10 cable; cable connects directly to CCMAB-AA in each system.

For three or four system clusters, order one CCMAB-AA adapter and one BN29B-04 or BN29B-10 cable for each system and one CCMHB-AA hub for the cluster.

CCMHB-AA includes four CCMLB-AA line cards and supports up to four nodes; expansion up to eight system nodes can be achieved by adding up to four additional CCMLB-AA line cards

If two or more CCMAB-AA controllers are configured in each system, a second CCMHB-AA hub is required for clusters with more than two nodes; in 2-node clusters the CCMAB-AA may be directly connected.

## *Options*

### MEMORY CHANNEL *(continued)*

#### *OpenVMS Systems* *(continued)*

In cases where nodes must be separated by a longer distance than standard copper cables allow, the CCMFB option converts the output of the standard CCMAB controller or CCMLB line card to single-mode fiber optic cable. The fiber optic connection may be up to 2,000 meters long between two CCMAB controllers connected in virtual hub mode, or 3,000 meters between a CCMAB controller and a CCMHB hub. (The connection from the CCMHB hub to a second system may also be 3,000 meters). The CCMFB option requires a second PCI slot in the system from which it draws power only. It is normally connected to the corresponding CCMAB controller with the short BN39B-01 cable. The CCMFB is also used in the CCMHB hub where it occupies a slot normally used by the CCMLB line card, limiting expansion to four radial fiber optic connections.

The CCMHB-BA hub expansion box provides additional slots for up to eight fiber optic connections. Two standard length, single-mode fiber optic cables are available (BN34R-10 and BN34R-31); however, users normally provide this connection. Customers should reference the TIA/EIA 568-A Commercial Building Telecommunications Cabling Standard, Section 12.3.4. Fiber optic connectivity is completely transparent to the systems using it and has no performance impact.

#### *MEMORY CHANNEL Controller*

| | |
|---|---|
| PCI System Area Network controller, maximum of two | CCMAB-AA |
| System Area Network hub with four line cards; includes BN19P-2E power cord for Canada, Japan, and U.S. operations; country-specific power cord for other regions is required. | CCMHB-AA |
| MEMORY CHANNEL hub expansion box with no line cards | CCMHB-BA |
| Expansion line card for CCMHB hub | CCMLB-AA |
| 1-m cable for CCMAB and CCMHB | BN39B-01 |
| 4-m cable for CCMAB and CCMHB | BN39B-04 |
| 10-m cable for CCMAB and CCMHB | BN39B-10 |
| Copper-to-single mode fiber optic converter | CCMFB-AA |
| TruCluster Production Server Software for Tru64 UNIX | QB-3RLAG-AA |
| Tru64 UNIX Driver for MEMORY CHANNEL license | QB-4ZCAG-AA |
| OpenVMS Cluster license for Alpha systems | QL-MUZAG-AA |

### MEMORY CHANNEL *(continued)*

#### *MEMORY CHANNEL Power Cords*

| | |
|---|---|
| Ireland, United Kingdom | BN19A-2E |
| Egypt, India | BN19S-2E |
| Central Europe | BN19C-2E |
| Israel | BN18L-2E |
| Switzerland | BN19E-2E |
| Italy | BN19M-2E |
| Denmark | BN19K-2E |
| Australia, New Zealand | BN19H-2E |

### Console Terminal

VT console terminal with EIA-232 25-pin DSUB connector is required, (even with KFE72 installed) for system power-up, diagnostics and console display, order unless otherwise available.

Shielded console cable included for connection to console terminal.

| | |
|---|---|
| VT510 terminal | VT510-xx |

### Graphics Support for Tru64 UNIX

Graphics support for GS60E running Tru64 UNIX V4.0E or later can be provided through combined use of 3X-KFE72-LA port option and SN-PBXGB-AA graphics adapter.

SN-PBXGB-AA requires 17″ or 21″ Professional Series monitor and keyboard for graphics support, unless available on-site

Selection of video extension cable and country-specific power cord is required for all monitor variants.

| | |
|---|---|
| Graphics console subsystem for Tru64 UNIX systems, includes diskette drive and mouse. | 3X-KFE72-LA |
| PowerStorm 3D30 2D/3D graphics adapter | SN-PBXGB-AA |

### Monitors

| | |
|---|---|
| 17″ (16″ 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 video extension cable and country-specific power cord; Northern Hemisphere without power cord | SN-VRQP7-24 |
| Same as above except Southern Hemisphere without power cord | SN-VRQP7-23 |

## *Options*

### Monitors *(continued)*

| | |
|---|---|
| 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 1.8-m video cable; requires video extension cable and country-specific power cord; Northern Hemisphere without power cord | SN-VRQP1-24 |
| Same as above except Southern Hemisphere without power cord | SN-VRQP1-23 |

#### *Video Extension Cable*

| | |
|---|---|
| 1.8-m video extension cable | BN39C-02 |

#### *Monitor Power Cords*

| | |
|---|---|
| North America, Japan | BN26J-1K |
| UK/Ireland/Hong Kong | BN19A-2E |
| Central Europe | BN19C-2E |
| Switzerland | BN19E-2E |
| Australia/New Zealand | BN19H-2E |
| Denmark | BN19K-2E |
| Israel | BN18L-2E |
| Italy | BN19M-2E |
| India/South Africa | BN19S-2E |
| Japan | 3X-BN46F-02 |

### Keyboards

Systems ordered in North America include U.S. English keyboard; selection of country-specific keyboard is mandatory for all non-North American orders.

| | |
|---|---|
| Tru64 UNIX U.S./English keyboard | SN-LKQ47-AA |
| Tru64 UNIX Belgian keyboard | SN-LKQ47-AB |
| Tru64 UNIX Canadian/French keyboard | SN-LKQ47-AC |
| Tru64 UNIX Danish keyboard | SN-LKQ47-AD |
| Tru64 UNIX UK keyboard | SN-LKQ47-AE |
| Tru64 UNIX Finnish keyboard | SN-LKQ47-AF |
| Tru64 UNIX German keyboard | SN-LKQ47-AG |
| Tru64 UNIX Dutch keyboard | SN-LKQ47-AH |
| Tru64 UNIX Italian keyboard | SN-LKQ47-AI |
| Tru64 UNIX Swiss/French keyboard | SN-LKQ47-AK |
| Tru64 UNIX Swedish keyboard | SN-LKQ47-AM |
| Tru64 UNIX Norwegian keyboard | SN-LKQ47-AN |
| Tru64 UNIX French keyboard | SN-LKQ47-AP |
| Tru64 UNIX Latin-American keyboard | SN-LKQ47-AR |
| Tru64 UNIX Spanish keyboard | SN-LKQ47-AS |
| Tru64 UNIX Hebrew keyboard | SN-LKQ47-AT |
| Tru64 UNIX Portuguese keyboard | SN-LKQ47-AV |
| Tru64 UNIX BHCSY keyboard | SN-LKQ47-AX |

### Keyboards *(continued)*

| | |
|---|---|
| Tru64 UNIX International keyboard | SN-LKQ47-BA |
| Tru64 UNIX Greek keyboard | SN-LKQ47-BH |
| Tru64 UNIX Taiwanese keyboard | SN-LKQ47-BI |
| Tru64 UNIX Korean keyboard | SN-LKQ47-BK |
| Tru64 UNIX Polish keyboard | SN-LKQ47-BP |
| Tru64 UNIX Hungarian keyboard | SN-LKQ47-BQ |
| Tru64 UNIX Arabic keyboard | SN-LKQ47-BR |
| Tru64 UNIX Cyrillic keyboard | SN-LKQ47-BT |
| Tru64 UNIX Turkish keyboard | SN-LKQ47-BU |
| Tru64 UNIX Czech keyboard | SN-LKQ47-BV |
| Tru64 UNIX Thai keyboard | SN-LKQ47-CB |
| Tru64 UNIX S. Chinese keyboard | SN-LKQ47-CV |
| Tru64 UNIX Slovak keyboard | SN-LKQ47-CZ |
| OpenVMS U.S./English keyboard | LK461-A2 |
| OpenVMS Belgian keyboard | LK461-AB |
| OpenVMS Canadian/French keyboard | LK461-AC |
| OpenVMS Danish keyboard | LK461-AD |
| OpenVMS Finnish keyboard | LK461-AF |
| OpenVMS German keyboard | LK461-AG |
| OpenVMS Dutch keyboard | LK461-AH |
| OpenVMS Italian keyboard | LK461-AI |
| OpenVMS Swiss/French keyboard | LK461-AK |
| OpenVMS Swiss/German keyboard | LK461-AL |
| OpenVMS Swedish keyboard | LK461-AM |
| OpenVMS Norwegian keyboard | LK461-AN |
| OpenVMS French keyboard | LK461-AP |
| OpenVMS Canadian/English keyboard | LK461-AQ |
| OpenVMS Spanish keyboard | LK461-AS |
| OpenVMS Hebrew keyboard | LK461-AT |
| OpenVMS Portuguese keyboard | LK461-AV |
| OpenVMS Greek keyboard | LK461-BH |
| OpenVMS Romanian keyboard | LK461-BL |
| OpenVMS Polish keyboard | LK461-BP |
| OpenVMS Hungarian keyboard | LK461-BQ |
| OpenVMS Cyrillic keyboard | LK461-BT |
| OpenVMS Turkish keyboard | LK461-BU |
| OpenVMS Czech keyboard | LK461-BV |
| OpenVMS Turkish-French keyboard | LK461-BW |
| OpenVMS Yugoslavian keyboard | LK461-BY |
| OpenVMS Slovak keyboard | LK461-CZ |

## *Options*

### Tru64 UNIX and OpenVMS Partitions

A single GS60E can be divided into a maximum of two partitions. Each partition is allocated its own set of hardware resources– CPU, memory, and I/O module. Partitioning support requiresTru64 UNIX V4.0F or later, or OpenVMS V7.2 or later operating system and partitioning licenses.

System Console Firmware Revision 5.5x is required.

Each partition requires a minimum of one CPU module, one memory module, one I/O module, and one DWLPB (PCI and PIU shelf) per partition.

Each partition has its own instance of the operating system, independent system console, and error log.

Each partition must have a dedicated console terminal. The first partition will obtain this support in a standard manner via the server console panel. The second partition requires a 3X-KFE72-LA to obtain this console support. H8571-J adapter is required to connect 3X-KFE72-LA to the console terminal; 3X-KFE72-LA includes a diskette drive, which is required to support RAID Configuration Utility (RCU).

For more information regarding Tru64 UNIX V4.0F partitioning configuration hardware guidelines and console partition commands, see Tru64 UNIX V4.0F SPD 41.61.22 and Tru64 UNIX V4.0F System Administration Guide, Appendix E.4.

For more information regarding OpenVMS Galaxy partitioning guidelines and support, see http://www.openvms.digital.com/availability/GALAXY.HTML.

#### *Minimum Hardware Required per GS60E Partition*

Dual Alpha 21264 6/525-MHz CPU module (at least one Rev. D01 CPU Alpha 21264 module per system).

MS7CC-EA/FA/GA memory module (1 GB, 2 GB, 4 GB)

KFTHA-AA I/O module

DWLPB-DA shelf mount box

3X-KFE72-LA graphics console subsystem

3X-RRDRX-AA CD-ROM drive or network adapter; additional SCSI CD-ROM's can be configured in StorageWorks shelf using supported I/O adapters

Console terminal with shielded console cable

Tru64 UNIX Hardware Partition license per partition for second partition support (QM-MT4AA-AA)

OpenVMS software partition license is required for each CPU in a partition (QL-66XAA-3B/3C/3D/3F)

#### *Unsupported Options for GS60E Partitions*

MEMORY CHANNEL; clustering of a partitioned GS60E is not supported

NVRAM (Prestoserve Non-Volatile Random Access Memory)

EISA devices

Supported Options List (SOL) restriction rules still apply for maximum configurations of GS60E systems.

### Expansion—System Cabinet and I/O Expansion Cabinet

#### *System Cabinet*

System Cabinet includes PCI I/O shelf and StorageWorks shelf, and three 1600W 48 VDC power regulators for redundant hot-swappable power support

Provides space for four BA36R-RC/RD UltraSCSI StorageWorks Shelves, one DWLPB-DA (PCI shelf mount boxes), or two BA36R-RC/RD StorageWorks shelves and two PCI shelves

#### *I/O Expansion Cabinet*

Includes two 1600W 48 VDC power regulators providing N+1 hot swappable power redundancy; third space available for additional power supply for added power protection

Maximum of two I/O Expansion Cabinets per system

PCI I/O shelf included in I/O Expansion Cabinet

Maximum of four PCI I/O shelves and three StorageWorks shelves or four StorageWorks shelves and three PCI I/O shelves supported in each I/O Expansion Cabinet

StorageWorks shelves mount from top of cabinet downward, front mount only.

PCI I/O shelves mount from bottom of cabinet upward, rear mount only.

| | |
|---|---|
| I/O Expansion Cabinet (top gun blue) 3-phase power RETMA mounting, maximum of two per system; 120/208V US/Canada, 202V Japan 50-60 Hz | 3X-H9A22-BA |
| Same as above except 380-415V Europe 50-60 Hz | 3X-H9A22-BB |

### Cabinet Power Options

System Cabinet with three power supplies and I/O Expansion Cabinet with two power supplies include necessary power and power redundancy required for all internal system components.

| | |
|---|---|
| 1600W power converter, 48V output, maximum of three per cabinet; option can be used to replace an existing power regulator in the System Cabinet and I/O Expansion Cabinet or provide additional power redundancy in the I/O Expansion Cabinet | H7506-AA |

### Software

#### *Tru64 UNIX*

Tru64 UNIX systems include Traditional Unlimited User License, Server Extension, and Open Source Internet Solutions Software Kit.

Media and documentation are required for first system on-site.

Software Processor Code = G

| | |
|---|---|
| Tru64 UNIX media and online documentation on CD-ROM | QA-MT4AA-H8 |

## *Options*

### Software *(continued)*

#### *Tru64 UNIX (continued)*

| | |
|---|---|
| Tru64 UNIX full hard copy documentation | QA-MT4AA-GZ |
| StorageWorks Software Package with licenses for Logical Storage Manager and AdvFS Utilities | QB-5RXAG-AA |
| TruCluster Available Server license and documentation | QB-05SAG-AA |
| TruCluster Available Server license | QL-05SAG-AA |
| Advanced Server for Tru64 UNIX, 25 Client Concurrent License | QL-5U29M-3D |
| Advanced Server for Tru64 UNIX, 50 Client Concurrent License | QL-5U29M-3E |
| Advanced Server for Tru64 UNIX, 100 Client Concurrent License | QL-5U29M-3F |
| Advanced Server for Tru64 UNIX, 250 Client Concurrent License | QL-5U29M-3G |
| Advanced Server for Tru64 UNIX, 500 Client Concurrent License | QL-5U29M-3H |
| Layered products media and documentation for Tru64 UNIX on CD-ROM | QA-054AA-H8 |
| DECnet/OSI end-system license | QL-MTJAG-AA |
| DECnet/OSI extended function license | QL-MTKAG-AA |

#### *OpenVMS*

OpenVMS systems include OpenVMS base license with system manager license and Compaq Enterprise Integration Server License Package for OpenVMS Revision V3.0A.

Compaq Enterprise Integration Package includes licenses for TCP/IP Services for OpenVMS, DECwindows Motif for OpenVMS Alpha, DECprint Supervisor for OpenVMS Alpha Plus, DECprint Supervisor for OpenVMS Open, DECnet-Plus for OpenVMS Alpha End System, Archive/Backup System for OpenVMS Management Tools, Archive/Backup Agent for Windows NT, OpenVMS Disk Services for Windows NT, Office Server for OpenVMS, PATHWORKS 32, PATHWORKS V6 for OpenVMS – Advanced Server, and DIGITAL Office Server Client Access License.

OpenVMS Concurrent Use licenses 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.

OpenVMS Traditional Unlimited Use license is system specific and can only be used on one single system at a time. It cannot be shared between systems or in an OpenVMS VAX or OpenVMS Alpha Cluster.

### Software *(continued)*

#### *OpenVMS (continued)*

| | |
|---|---|
| Concurrent Use 1-user license | QL-MT3AA-3B |
| Concurrent Use 2-user license | QL-MT3AA-3C |
| Concurrent Use 4-user license | QL-MT3AA-3D |
| Concurrent Use 8-user license | QL-MT3AA-3E |
| Concurrent Use 16-user license | QL-MT3AA-3F |
| Concurrent Use 32-user license | QL-MT3AA-3G |
| Concurrent Use 64-user license | QL-MT3AA-3H |
| Concurrent Use 128-user license | QL-MT3AA-3J |
| Concurrent Use 256-user license | QL-MT3AA-3K |
| Traditional unlimited user license | QL-MT2AG-AA |
| OpenVMS V7.1-2 media and online documentation on CD-ROM | QA-MT1AR-H8 |
| OpenVMS V7.2-1 media and online documentation on CD-ROM | QA-MT1AT-H8 |
| OpenVMS media and documentation on CD-ROM | QA-MT1AA-H8 |
| OpenVMS base hard copy documentation | QA-09SAA-GZ |
| Layered products media and documentation for OpenVMS on CD-ROM; includes Compaq Enterprise Integration Server for OpenVMS media and documentation | QA-03XAA-H8 |
| DECnet/OSI end-system license | QL-MTFAG-AA |
| DECnet/OSI extended function license | QL-MTHAG-AA |
| Cluster License for OpenVMS Alpha | QL-MUZAG-AA |

### Hardware and Software Supplemental Support Services

Installation or Installation and Startup is required for all AlphaServer GS60E systems. Consult a Compaq Customer Service Account Representative for assistance in selecting the support plan that is most appropriate. For more information on Compaq Services, see http://www.compaq.com/services.

#### *Installation Services*

| | |
|---|---|
| Installation Service Package | FM-ALP82-IN |

#### *Hardware Supplemental Support— 4-GB memory 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.

| | |
|---|---|
| Years 1-3, 5 x 9, 4-hour response time | FM-8V4HR-36 |
| Years 1-3, 5 x 12, 4-hour response time | FM-8V512-36 |
| Years 1-3, 6 x 16, 4-hour response time | FM-8V616-36 |
| Years 1-3, 7 x 24, 4-hour response time | FM-8V724-36 |
| Years 1-5, 5 x 9, 4-hour response time | FM-8V4HR-60 |
| Years 1-5, 5 x 12, 4-hour response time | FM-8V512-60 |

## *Options*

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**Hardware and Software Supplemental Support Services** *(continued)*

### *Hardware Supplemental Support— 1-GB memory Americas and Asia Pacific only* (continued)

| | |
|---|---|
| Years 1-5, 6 x 16, 4-hour response time | FM-8V616-60 |
| Years 1-5, 7 x 24, 4-hour response time | FM-8V724-60 |
| Years 1-3, 5 x 9, 4-hour response time | FM-8D4HR-36 |
| Years 1-3, 5 x 12, 4-hour response time | FM-8D512-36 |
| Years 1-3, 6 x 16, 4-hour response time | FM-8D616-36 |
| Years 1-3, 7 x 24, 4-hour response time | FM-8D724-36 |
| Years 1-5, 5 x 9, 4-hour response time | FM-8D4HR-60 |
| Years 1-5, 5 x 12, 4-hour response time | FM-8D512-60 |
| Years 1-5, 6 x 16, 4-hour response time | FM-8D616-60 |
| Years 1-5, 7 x 24, 4-hour response time | FM-8D724-60 |

### *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.

### *Software Supplemental Support— 2 CPU Systems (Tru64 UNIX)*

| | |
|---|---|
| 12-month 5 x 9 Bronze Software Supplemental Support | FM-60EU9-12 |
| 36-month 5 x 9 Bronze Software Supplemental Support | FM-60EU9-36 |
| 60-month 5 x 9 Bronze Software Supplemental Support | FM-60EU9-60 |
| 12-month 7 x 24 Bronze Software Supplemental Support | FM-60EUS-12 |
| 36-month 7 x 24 Bronze Software Supplemental Support | FM-60EUS-36 |
| 60-month 7 x 24 Bronze Software Supplemental Support | FM-60EUS-60 |
| 12-month Bronze Node Software Supplemental Support | FM-60EUN-12 |
| 36-month Bronze Node Software Supplemental Support | FM-60EUN-36 |
| 60-month Bronze Node Software Supplemental Support | FM-60EUN-60 |

### *Software Supplemental Support— 2 CPU Systems (OpenVMS)*

| | |
|---|---|
| 12-month 5 x 9 Bronze Software Supplemental Support | FM-60EV9-12 |

</td><td>

**Hardware and Software Supplemental Support Services** *(continued)*

### *Software Supplemental Support— 2 CPU Systems (OpenVMS)* (continued)

| | |
|---|---|
| 36-month 5 x 9 Bronze Software Supplemental Support | FM-60EV9-36 |
| 60-month 5 x 9 Bronze Software Supplemental Support | FM-60EV9-60 |
| 12-month 7 x 24 Bronze Software Supplemental Support | FM-60EVS-12 |
| 36-month 7 x 24 Bronze Software Supplemental Support | FM-60EVS-36 |
| 60-month 7 x 24 Bronze Software Supplemental Support | FM-60EVS-60 |
| 12-month Bronze Node Software Supplemental Support | FM-60EVN-12 |
| 36-month Bronze Node Software Supplemental Support | FM-60EVN-36 |
| 60-month Bronze Node Software Supplemental Support | FM-60EVN-60 |

### *Software Supplemental Support— SMPs for Tru64 UNIX and OpenVMS*

| | |
|---|---|
| 1-year, 82/GS60-84/GS140-GS60E Dual-CPU SMP | FM-824DP-12 |
| 3-year, 82/GS60-84/GS140-GS60E Dual-CPU SMP | FM-824DP-36 |
| 5-year, 82/GS60-84/GS140-GS60E Dual-CPU SMP | FM-824DP-60 |

### *Hardware and Software Supplemental Support Services— Europe only*

Europe does not offer specific part numbers for Hardware and Software Supplemental Support Services; prices are quoted based on worldwide service reference pricing. Contact MCS Sales in your country for information on Hardware and Software Supplemental Support Services.

### Recommended Online Power Protection/UPS Solutions for GS60E

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

| | |
|---|---|
| 2-wire modem, wall plug-in | 4N-GA249-AB |
| 10BaseT, wall plug-in | 4N-GA249-CA |
| Din rail and modules, up to 32 ports per rack or wall mount | 4N-GA245-xx |

### *Powerware Plus UPS Models*

Models are hardwired on input and rated 50/60 Hz; North American models are rated 176V-256V in, 100/200V, 120/208V, 127/220V out; International models are rated 380/415V in, 380/415/220V out.

| | |
|---|---|
| 15kVA/10kW, 10 minutes battery time at full load, two batteries, North America or other 60-Hz applications | 4N-AEAAN-BA |
| 18kVA/12kW, seven minutes battery time at full load, two batteries, North America or other 60-Hz applications | 4N-AEAAP-BA |
| 15kVA/10kW, 16 minutes battery time at full load, two batteries, North America or other 60-Hz applications | 4N-AEAAN-BC |

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## *Options*

### Recommended Online Power Protection/UPS Solutions for GS60E
*(continued)*

#### *Powerware Plus UPS Models* *(continued)*

| | |
|---|---|
| 18kVA/12kW, 10 minutes battery time at full load, two batteries, North America or other 60-Hz applications | 4N-AEAAP-BC |
| 15 kVA/10kW, 16 minutes of battery time at full load, three batteries, North America or other 60-Hz applications | 4N-AEAAN-BD |
| 18kVA/12kW, 10 minutes of battery time at full load, three batteries, North America or other 60-Hz applications | 4N-AEAAP-BD |
| 15 kVA/10kW, 10 minutes of battery time at full load, two batteries, International or other 50-Hz applications, hardwired only | 4N-AEAAN-BE |
| 18kVA/12kW, seven minutes of battery time at full load, two batteries, International or other 50-Hz applications, hardwired only | 4N-AEAAP-BE |
| 24kVA/16kW, 12 minutes of battery time at full load, one battery, North America or other 60-Hz applications, Distribution cab option | 4N-AEAAR AA |
| 36kVA/24kW, five minutes of battery time at full load, one battery, North America or other 60-Hz applications, Distribution cab option | 4N-AEAAS-AA |
| 24kVA/16kW, 30 minutes of battery time at full load, two batteries, North America or other 60-Hz applications, Distribution cab option | 4N-AEAAR-AB |
| 36kVA/24kW, 15 minutes of battery time at full load, two batteries, North America or other 60-Hz applications, Distribution cab option | 4N-AEAAS-AB |
| 24kVA/16kW, 50 minutes of battery time at full load, three batteries, North America or other 60-Hz applications, Distribution cab option | 4N-AEAAR-AC |
| 36kVA/24kW, 30 minutes of battery time at full load, three batteries, North America or other 60-Hz applications, Distribution cab option | 4N-AEAAS-AC |

#### *UPS Receptacle Options/ Extended Battery Options*

Choose UPS receptacle option, depending on input plug configuration of external storage cabinet used–ESA 10000 requires two L6-30R, SW800 requires two L21-30R, and GS60E Expansion Cabinet requires one L21-30R.

### Recommended Online Power Protection/UPS Solutions for GS60E
*(continued)*

#### *UPS Receptacle Options/ Extended Battery Options* *(continued)*

| | |
|---|---|
| 15/18kVA model output receptacle module–two L21-30R, three 5-20R2 | 4N-AEACM-BK |
| 15/18kVA model output receptacle module–two L6-30R, two L21-30R, one 5-20R2 | 4N-AEACM-BN |
| 15/18kVA model output receptacle module, Module 1–two L21-30R and conduit kit for connecting Module 1 to Module 2; Module 2– two L21-30R, three 5-20R2 | 4N-AEACM-PA |
| Add-on battery cabinet for 15 and 18kVA models; can be added to Model 4N-AEAAN/P-BD – approximately 12 minutes per cabinet | 4N-AEACH-BB |
| Add-on battery pack for 24 and 36kVA models; can be added to Model 4N-AEAAR/S-AC – approximately 15-20 minutes per cabinet | 4N-AEACN-AA |

#### *UPS Monitoring and Unattended Shutdown Software* *(for previous UPS systems only)*

Power Management software is included with all Alpha Servers in ServerWORKS manager kit. Software communicates with recommended UPS. Network adapter is required for Tru64 UNIX; multi-interface module (connects via terminal server) is required for OpenVMS. Software includes toolbar plug-in for ServerWORKS Manager on Tru64 UNIX only.

| | |
|---|---|
| Connect-UPS network adapter, Twisted Pair, 60 Hz 120V NEMA – Tru64 UNIX only | 4N-AEAEO-DA |
| Connect-UPS network adapter ThinWire, 60 Hz 120V NEMA – Tru64 UNIX only | 4N-AEAEO-DC |
| Connect-UPS network adapter, Twisted Pair, 50 Hz 240V IEC – Tru64 UNIX only | 4N-AEAEO-DB |
| Connect-UPS network adapter, ThinWire, 50 Hz 240V IEC – Tru64 UNIX only | 4N-AEAEO-DD |
| Multi-interface module, one to four systems on one UPS, includes splitter cable to interface with network adapter (Tru64 UNIX) and terminal server output (OpenVMS) for mixed operating platforms on one UPS; kits can be daisy-chained | 4N-JMIU4-AB |
| Tru64 software kit for existing installation; same communications interface hardware as above required | 4N-AEAES-GA |
| OpenVMS software kit for existing installation; same communications interface hardware as above required | 4N-ONVMS-PL |

## *Options*

### AlphaServer GS60E System Upgrades

The following AlphaServer 8200 or GS60 upgrades are complete box-swap system upgrades to the AlphaServer GS60E. As a result of this upgrade, the system cabinet is replaced, however, the existing AlphaServer GS60 CPU and CPU clock module, AlphaServer 8200/GS60 memory, and PCI I/O modules remain usable and are transferable.

The AlphaServer 8200 to AlphaServer GS60E upgrade includes one dual Alpha 21264 CPU module, which is the minimum generation CPU technology supported with this system. For additional AlphaServer GS60E system expansion options, see the "Options" section in this QuickSpec.

Upgrades include the AlphaServer GS60E system cabinet with the following:

- 7-slot system bus
- Three 1600W 48V DC power regulators for redundant hot-swappable power support; 3-phase power subsystem
- One 12-slot PCI shelf
- One UltraSCSI 16-bit StorageWorks shelf with power supply and 1-m SCSI cable
- Upgrade documentation
- Base operating system license

**Note**: AlphaServer 8200 to GS60E system upgrades also include one dual Alpha 21264 CPU module.

| | |
|---|---|
| Dual AlphaServer GS60 to AlphaServer GS60E System Upgrade, Tru64 UNIX | DA-76U8A-AA/AB |
| Dual AlphaServer GS60 to AlphaServer GS60E System Upgrade, OpenVMS | DY-76U8A-AA/AB |
| Dual AlphaServer 8200 to AlphaServer GS60E System Upgrade, Tru64 UNIX | DA-76U8B-AA/AB |
| Dual AlphaServer 8200 to AlphaServer GS60E System Upgrade, OpenVMS | DY-76U8B-AA/AB |

## *Technical Specifications*

**System Unit**

### Physical Characteristics

| | |
|---|---|
| Dimensions (HxWxD) | 67 x 23.6 x 39.4 in/170 x 60 x 100 cm |
| Shipping Dimensions | 76.25 x 36 x 47.9 in/194 x 91.5 x 121.5 cm |
| Weight | |
|     Minimum configuration | 650 lbs |
|     Maximum configuration | 775 lbs |
| Shipping Weight | |
|     Minimum configuration | 750 lbs |
|     Maximum configuration | 875 lbs |

| **Clearances** | **Operating** | **Service** |
|---|---|---|
| Front | 40 in/1 m | 59 in/1.5 m |
| Rear | 40 in/1 m | 40 in/1 m |
| Sides | 0 | 0 |

| **Environmental** | **Operating** | **Non-Operating** |
|---|---|---|
| Temperature | 41°F to 95°F/5°C to 35°C | −40°F to 151°F/−40°C to 66°C |
| Humidity | 10% to 90% | 10% to 95% |
| Altitude | 0 to 10,000 ft/0 to 3 km | 40,000 ft/12,192 m |
| Vibration | 5 to 500 Hz @ 0.1G maximum | |
| Heat dissipation | Minimally configured system[1] (system cabinet) 1200W/4100 Btu/hr | |
| | Fully configured system[2] (system cabinet) 2450W / 8300 Btu/hr | |
| | Fully configured system[3] (system cabinet with two I/O expansion cabinets) 5,150W/17,550 Btu/hr | |

### Regulatory

| | |
|---|---|
| Agency approvals | UL Listed to UL1950 |
| | cUL Listed to CAN/C22.2 No. 950-M89 |
| | FCC Part 15 (Class A) |
| | CE Declaration 4206 |
| Reviewed to | EN 60950 1922/A4:1997, European Norm |
| | AS/NZS 3260:1993, Australian/New Zealand Standard |
| | 73/23/EEC, Low Voltage Directive |
| | IEC950, second edition, fourth Amendment |

| **Power Requirements**[4] | **US/Canada** | **Japan** | **Europe** |
|---|---|---|---|
| Nominal voltage | 120/208V | 202V | 380-415V |
| Frequency range | 50 Hz to 60 Hz | 50 Hz to 60 Hz | 50 Hz to 60 Hz |
| Phases | 3-phase star 3-wire+N+GND | 3-phase delta 4-wire mid-GND or 3-wire junction GND | 3-phase star 3-wire+N+GND |
| Maximum input | 17A rms | 17A rms | 9A rms |
| Surge current | 210A peak | 210A peak | 215A peak |
| Rating | 30A | 30A | 32A |
| Power cord length | 15 ft/4.5 m | 15 ft/4.5 m | 15 ft/4.5 m |
| Power cap (system) | DEC 12-12314-00 | DEC 12-12314-01 | DEC 12-14379-06 |
| Receptacle (site) | DEC 12-12315-00 | DEC 12-12315-01 | Hubbell 532R6W |
| (industry equivalent) | NEMA L21-30R | NEMA L21-30R | IEC 309 (32A) |
| PCS/PDS/PDU/UPS cable | BC24W | BC24W | BN29X |

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[1] Minimally configured system contains three power supplies, dual-CPU module, memory module, system I/O module, CD-ROM, minimally configured PCI shelf, and one disk drive.

[2] Fully configured system contains three power supplies, three dual-CPU modules (six CPUs), two memory modules, two system I/O modules, two PCI shelves, CD-ROM, and two StorageWorks shelves with 12 disk drives.

[3] Fully configured system and two expansion cabinets consist of the above "fully configured system" and two expansion cabinets, each include three PCI shelves, four StorageWorks shelves, and 24 disk drives.

[4] Power system provides near unity power factor which allows full utilization of the input line current (Watts = VA).

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