

# QUICKSPECS

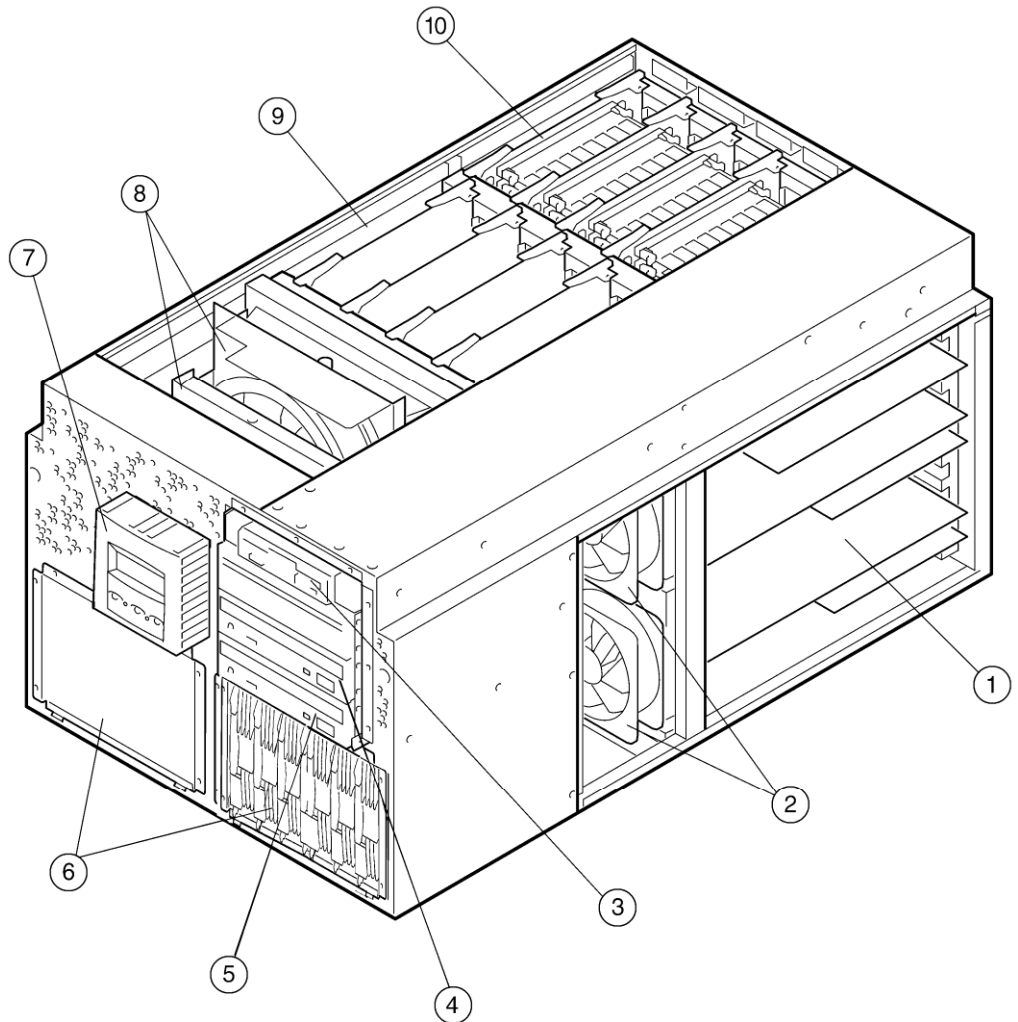
Compaq AlphaServer ES40  
Compaq AlphaStation ES40

## Overview

### AT A GLANCE

Compaq AlphaServer/AlphaStation ES40 Systems include:

- Alpha 21264 6/500-MHz CPU with 4-MB L2 Late Write Cache, 67/667-MHz CPU with 8-MB L2 Dual Data Rate Cache, or 68/833-MHz CPU with 8-MB L2 Dual Data Rate Cache
- 6-10 64-bit PCI I/O expansion slots
- 512-MB, 1-GB, 2-GB, or 4-GB memory options (AlphaServers)
- 512-MB memory option (AlphaStations)
- 1.44-MB diskette drive
- 600-MB 40X IDE CD-ROM drive
- Two 9-pin serial ports
- One 25-pin parallel port
- RMC dedicated serial port, 6-pin MMJ connector
- Dual USB ports
- Keyboard and mouse port
- Knockouts for two 68-pin SCSI connections
- Auto-sensing power supply
- U.S. English keyboard with North America orders
- 3-button mouse
- Integral remote system management console
- Customer documentation
- *Tru64™* UNIX or *OpenVMS™* Factory Installed Software
- 90-day software warranty
- Protected by Compaq Services, including three-year hardware warranty, on-site with 5 x 9 next business day response



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|-------------------------|-----------------------------------|
| 1. PCI cards            | 6. 6-bay disk drive storage cages |
| 2. Fans                 | 7. Control panel                  |
| 3. Diskette drive       | 8. Fans                           |
| 4. Removable media bays | 9. CPUs                           |
| 5. CD-ROM drive         | 10. Memory                        |

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## *Standard Features*

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### Processor

Alpha 21264 6/500-MHz CPU, 67/667-MHz CPU, or 68/833-MHz CPU

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### Cache Memory

4-MB L2 Late Write Backup Cache (6/500-MHz CPU);  
8-MB L2 Dual Data Rate Backup Cache (67/667-MHz CPU, 68/833-MHz CPU)

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### Upgradability

Supports additional processors and upgrades of memory and hard drives

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### Memory

Minimum	512 MB – AlphaServer ES40 Model 1 512 MB – AlphaStation ES40 1 GB – AlphaServer ES40 Model 2
Maximum	16 GB (16 DIMM slots) Model 1; 32 GB (32 DIMM slots) Model 2

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### Network Controller

Choice of Ethernet controllers

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### Expansion

PCI I/O slots	6 slots Model 1; 10 slots Model 2
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### Storage

Diskette Drive	1.44 MB diskette drive in dedicated slot
CD-ROM	600-MB 40X IDE CD-ROM
Hard Drives	Choice of 9.1-GB, 18.2-GB, or 36.4-GB drives

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### Interfaces

Parallel	1 25-pin parallel port
Serial	2 9-pin serial ports
USB	Dual USB ports
Keyboard	1
Mouse	1
Remote systems management	1 dedicated remote systems management port
SCSI connections	Two 68-pin SCSI connections knockouts

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### Graphics

Optional

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### Form Factor

Tower, Pedestal, Rackmount (M-Series Cabinet)

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### Power Supply

Auto sensing power supply, hot swappable, N+1

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### Manageability

Compaq Insight Manager

## *Standard Features*

### **OS Support**

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AlphaServer ES40 Tru64 UNIX systems include pre-installed software, Base license, Unlimited User license, Server Extension license, Open Source Internet Solutions and iPlanet Web Server – Enterprise Edition 4.0

AlphaStation ES40 Tru64 UNIX systems include pre-installed software, 2-user Base license and Compaq Open3D traditional license

AlphaServer ES40 OpenVMS systems include pre-installed software, Base license with System Manager license and Enterprise Integration Server License Package for OpenVMS V3.0A

AlphaStation ES40 OpenVMS systems include pre-installed software, Base license, Concurrent Use 1-user license, NAS 150 Client license, Compaq MMS RT license and Compaq Open3D traditional license

Minimum OS support – Tru64 UNIX V4.0F or OpenVMS V7.1-2

### **Service and Support**

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Protected by Compaq Services including a 3-year on-site hardware warranty with next business day 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.

## Systems/Options

### Step 1 – Select system

ES40 systems require the **mandatory** selection of the following items:

- Disk drive cage or *StorageWorks*™ shelf (Step 5)
  - Disk drive cage includes 1-port UltraSCSI storage adapter
  - StorageWorks shelf requires UltraSCSI adapter and SCSI cable (Step 10)
- System disk drive (Step 5)
- Ethernet adapter (Step 7)
- Tower, Pedestal, or Rack Kit (Step 8)
- Non-North American systems require country-specific keyboard (Step 16); North American systems include U.S. English keyboard
- Software media and documentation for first system onsite

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

#### AlphaServer ES40 Systems

ES40	OS	CPU	PCI I/O Slots	Memory / Cache	Order No.
Model 1	Tru64 UNIX	500 MHz	6	512 MB / 4 MB	DA-62AAA-CA
Model 1	Tru64 UNIX	500 MHz	6	1 GB / 4 MB	DA-62AAA-DA
Model 1	Tru64 UNIX	667 MHz	6	512 MB / 8 MB	DA-62BAA-CA
Model 1	Tru64 UNIX	667 MHz	6	1 GB / 8 MB	DA-62BAA-DA
Model 1	Tru64 UNIX	667 MHz	6	2 GB / 8 MB	DA-62BAA-EA
Model 1	Tru64 UNIX	833 MHz	6	512 MB / 8 MB	DA-62CAA-CA
Model 1	Tru64 UNIX	833 MHz	6	1 GB / 8 MB	DA-62CAA-DA
Model 1	Tru64 UNIX	833 MHz	6	2 GB / 8 MB	DA-62CAA-EA
Model 2	Tru64 UNIX	500 MHz	10	1 GB / 4 MB	DA-64AAA-DA
Model 2	Tru64 UNIX	500 MHz	10	2 GB / 4 MB	DA-64AAA-EA
Model 2	Tru64 UNIX	667 MHz	10	1 GB / 8 MB	DA-64BAA-DA
Model 2	Tru64 UNIX	667 MHz	10	2 GB / 8 MB	DA-64BAA-EA
Model 2	Tru64 UNIX	667 MHz	10	4 GB / 8 MB	DA-64BAA-FA
Model 2	Tru64 UNIX	833 MHz	10	512 MB / 8 MB	DA-64CAA-CA
Model 2	Tru64 UNIX	833 MHz	10	1 GB / 8 MB	DA-64CAA-DA
Model 2	Tru64 UNIX	833 MHz	10	2 GB / 8 MB	DA-64CAA-EA
Model 2	Tru64 UNIX	833 MHz	10	4 GB / 8 MB	DA-64CAA-FA
Model 1	OpenVMS	500 MHz	6	512 MB / 4 MB	DY-62AAA-CA
Model 1	OpenVMS	500 MHz	6	1 GB / 4 MB	DY-62AAA-DA
Model 1	OpenVMS	667 MHz	6	512 MB / 8 MB	DY-62BAA-CA
Model 1	OpenVMS	667 MHz	6	1 GB / 8 MB	DY-62BAA-DA
Model 1	OpenVMS	667 MHz	6	2 GB / 8 MB	DY-62BAA-EA
Model 1	OpenVMS	833 MHz	6	512 MB / 8 MB	DY-62CAA-CA
Model 1	OpenVMS	833 MHz	6	1 GB / 8 MB	DY-62CAA-DA
Model 1	OpenVMS	833 MHz	6	2 GB / 8 MB	DY-62CAA-EA
Model 2	OpenVMS	500 MHz	10	1 GB / 4 MB	DY-64AAA-DA
Model 2	OpenVMS	500 MHz	10	2 GB / 4 MB	DY-64AAA-EA
Model 2	OpenVMS	667 MHz	10	1 GB / 8 MB	DY-64BAA-DA
Model 2	OpenVMS	667 MHz	10	2 GB / 8 MB	DY-64BAA-EA
Model 2	OpenVMS	667 MHz	10	4 GB / 8 MB	DY-64BAA-FA
Model 2	OpenVMS	833 MHz	10	512 MB / 8 MB	DY-64CAA-CA
Model 2	OpenVMS	833 MHz	10	1 GB / 8 MB	DY-64CAA-DA
Model 2	OpenVMS	833 MHz	10	2 GB / 8 MB	DY-64CAA-EA
Model 2	OpenVMS	833 MHz	10	4 GB / 8 MB	DY-64CAA-FA

## Systems/Options

### Step 1 – Select system (continued)

#### AlphaStation ES40 Systems

ES40	OS	CPU	PCI I/O Slots	Memory / Cache	Order No.
Model 1	Tru64 UNIX	667 MHz	6	512 MB / 8 MB	DA-62BAA-BW
Model 2	Tru64 UNIX	667 MHz	10	512 MB / 8 MB	DA-64BAA-CW
Model 1	OpenVMS	667 MHz	6	512 MB / 8 MB	DY-62BAA-BW
Model 2	OpenVMS	667 MHz	10	512 MB / 8 MB	DY-64BAA-CW

### Step 2 – Additional CPU Modules – Optional

- One CPU included, three additional CPUs are supported

SMP upgrade, includes one 6/500-MHz CPU with 4-MB cache and Tru64 UNIX SMP license	KN610-AB
SMP upgrade, includes one 6/500-MHz CPU with 4-MB cache and OpenVMS SMP license	KN610-AC
SMP upgrade, includes one 67/667-MHz CPU with 8-MB cache and Tru64 UNIX SMP license	KN610-BB
SMP upgrade, includes one 67/667-MHz CPU with 8-MB cache and OpenVMS SMP license	KN610-BC
SMP upgrade, includes one 68/833-MHz CPU with 8-MB cache and Tru64 UNIX SMP license	KN610-CB
SMP upgrade, includes one 68/833-MHz CPU with 8-MB cache and OpenVMS SMP license	KN610-CC

**Note:** When upgrading to 68/833-MHz CPUs, all 67/667-MHz CPUs or all 6/500-MHz CPUs must be replaced; all CPU modules must be at the same speed. Additionally, when upgrading to 67/667-MHz CPUs, the EV6 system (54-25385-01) must be at Rev E05 or higher. For Revisions lower than E05, contact Customer Services or 1-800-OK-COMPAQ (1-800-652-6672) and reference FCO #00-ES40 F002.

## Options

### Step 3 – Memory – Optional

- Systems include one memory option
- Model 1 systems supports four memory options (total of 16 DIMMs)
- Model 2 systems support eight memory options (total of 32 DIMMs)
- Installation of 5<sup>th</sup> memory set or option (17<sup>th</sup> DIMM and beyond) requires additional power supply
- Memory performance considerations: Interleaved operations reduce the average latency and increase the memory throughput over non-interleaved operations. With one memory option (4 DIMMs) installed, memory interleaving will not occur. With two identical memory options (8 DIMMs) installed, memory read-write operations are two-way interleaved. With four identical memory options (16 DIMMs) installed, memory read-write operations are four-way interleaved, maximizing memory throughput.

256-MB memory option (4x64-MB DIMMs)	MS610-BA
512-MB memory option (4x128-MB DIMMs)	MS610-CA
1-GB memory option (4x256-MB DIMMs)	MS610-DA
2-GB memory option (4x512-MB DIMMs)	MS610-EA
4-GB memory option (4x1024-MB DIMMs)	MS610-FA

### Step 4 – Additional Power Supplies – Required for third and fourth CPUs and/or second Disk Drive Cage

- Power supply included with system provides support for two CPUs and one disk drive cage
- Third and fourth CPUs and/or second disk drive cage require additional power supply
- Second power supply supports third and fourth CPU and second disk drive cage, or provides N+1 for up to two CPUs and one disk drive cage
- Third power supply provides full N+1 redundancy
- Each additional power supply ordered with a tower system requires an additional country-specific power cord
- Pedestal system and Rack kit include three internal power cords regardless of the number of power supplies ordered
- Installation of 5<sup>th</sup> memory set or option (17<sup>th</sup> DIMM and beyond) requires additional power supply

ES40 720W power supply	H7906-A9
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### Step 5 – Disk Drive Cage or StorageWorks Shelf – Mandatory

- Tower enclosure supports one system and two disk drive cages
- Pedestal enclosure supports one system and two disk drive cages, two Universal 42xx/43xx StorageWorks shelves or three BA36R StorageWorks shelves
- M-Series cabinets support four systems each with two disk drive cages and up to six StorageWorks shelves

#### Step 5a – Disk Drive Cage – Requires selection of system disk drive

6-bay disk drive cage with cable for use with 1.0" universal drives – requires mandatory selection of Ultra2 SCSI adapter (3X-KZPCA-AA) per disk drive cage	BA610-6D
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**Note:** See [ES40 Configuration Chart for Storage Adapters in Step 10](#)

#### System Disk Drives (Supported in Disk Drive Cage)

9.1-GB Ultra2 SCSI 7,200 rpm 1.0" Universal disk drive	3R-A0525-AA
9.1-GB Ultra3 SCSI 10,000 rpm 1.0" Universal disk drive	3R-A0584-AA
9.1-GB Ultra3 SCSI 15,000 rpm 1.0" Universal disk drive	3R-A1542-AA
18.2-GB Ultra2 SCSI 7,200 rpm 1.0" Universal disk drive	3R-A0527-AA
18.2-GB Ultra3 SCSI 10,000 rpm 1.0" Universal disk drive	3R-A0585-AA
18.2-GB Ultra3 SCSI 15,000 rpm 1.0" Universal disk drive	3R-A1543-AA
36.4-GB Ultra3 SCSI 10,000 rpm 1.0" Universal disk drive	3R-A0919-AA

## Options

### Step 5 – Disk Drive Cage or StorageWorks Shelf – Mandatory *(continued)*

**Step 5b – StorageWorks BA36R Shelf** – Requires selection of UltraSCSI adapter and SCSI cable (Step 10) and system disk drive

- StorageWorks Shelf supports seven 3.5" x 1.6" hard disk drives; with addition of redundant power supply, only six drives are supported
- StorageWorks shelf kits are mounted back-to-back in pedestals and cabinets

StorageWorks UltraSCSI single-bus shelf kit	BA36R-RC
StorageWorks UltraSCSI split-bus shelf kit; <b>Note:</b> When ordering a split-bus shelf to be mounted in a Pedestal Enclosure, order one BN37A-03 cable per shelf	BA36R-RD
3-m SCSI cable	BN37A-03

#### System Disk Drives *(Supported in StorageWorks BA36R Shelf)*

9.1-GB Ultra2 SCSI 7,200 rpm disk drive	DS-RZ1DA-VW
9.1-GB Ultra3 SCSI 10,000 rpm disk drive	DS-RZ1DD-VW
18.2-GB Ultra2 SCSI 7,200 rpm disk drive	DS-RZ1EA-VW
18.2-GB Ultra3 SCSI 10,000 rpm disk drive	DS-RZ1ED-VW
36.4-GB Ultra3 SCSI 10,000 rpm disk drive	DS-RZ1FC-VW

#### Solid State Disk Drives *(Supported in StorageWorks BA36R Shelf)*

536-MB solid state disk drive in 3.5" SBB, supported with KZPCM-DA, KZPBA-CA, 3X-KZPCA-AA	DS-EZ454-VW
1.6-GB solid state disk drive in 5.25" SBB, supported with KZPCM-DA, KZPBA-CA, 3X-KZPCA-AA	DS-EZ716-VW
3.2-GB solid state disk drive in 3.5" SBB, supported with KZPCM-DA, KZPBA-CA, 3X-KZPCA-AA	DS-EZ832-VW

### Step 5c – StorageWorks Model 4254 and Models 4314R, 4354R Universal Drive Shelves

StorageWorks Model 4254 Ultra2 SCSI (LVD) split-bus Universal drive shelf; refer to Compaq StorageWorks Enclosure 4200 QuickSpec when configuring shelf. When selecting a DS-SSL14-Rx split-bus shelf, order two 3X-KZPCA-AA adapters with BN38C-05 cables. Model 4254 enclosures are compatible with Wide Ultra2 (LVD) adapters only. Note that the depth of a DS-SSL14-Rx shelf does not allow front and rear mounting, US

Model 4254, same as above, International	DS-SSL14-R3 (138151-B31)
Model 4254, same as above, Japan	DS-SSL14-R4 (138151-291)

StorageWorks Model 4314R, 4354R Ultra2 SCSI (LVD) single-bus and split-bus Universal drive shelves; refer to Compaq StorageWorks Enclosure 4300 Family QuickSpec when configuring shelves. When selecting a DS-SSL13-Rx split-bus shelf, order two 3X-KZPCA-AA adapters with BN38C-05 cables. Model 43xx shelves are compatible with Wide Ultra2 (LVD) adapters only. Note that the depth of a DS-SL13R-xx shelf does not allow front and rear mounting.

Model 4314R single-bus, rackmount, US	DS-SL13R-AA (190209-001)
Model 4314R single-bus, rackmount, International	DS-SL13R-AB (190209-B31)
Model 4314R single-bus, rackmount, Japan	DS-SL13R-AJ (190209-291)
Model 4354R single-bus, rackmount, US	DS-SL13R-BA (190211-001)
Model 4354R split-bus, rackmount, International	DS-SL13R-BB (190211-B31)
Model 4354R split-bus, rackmount, Japan	DS-SL13R-BJ (190211-291)

**Note:** Model 4314 shelf with DS-KZPCC-AC adapter does not support a disk drive in last slot.

## Options

### Step 5 – Disk Drive Cage or StorageWorks Shelf – Mandatory *(continued)*

#### System Disk Drives *(Supported in Model 4254 and Models 4314R, 4354R Universal Drive Shelves)*

9.1-GB Ultra2 SCSI 7,200 rpm 1.0" Universal disk drive	3R-A0525-AA
9.1-GB Ultra3 SCSI 10,000 rpm 1.0" Universal disk drive	3R-A0584-AA
9.1-GB Ultra3 SCSI 15,000 rpm 1.0" Universal disk drive	3R-A1542-AA
18.2-GB Ultra2 SCSI 7,200 rpm 1.0" Universal disk drive	3R-A0527-AA
18.2-GB Ultra3 SCSI 10,000 rpm 1.0" Universal disk drive	3R-A0585-AA
18.2-GB Ultra3 SCSI 15,000 rpm 1.0" Universal disk drive	3R-A1543-AA
36.4-GB Ultra3 SCSI 10,000 rpm 1.0" Universal disk drive	3R-A0919-AA

### Step 6 – Internal Removable Media – Optional

- System supports four internal removable devices
- System includes 1.44-MB diskette drive
- System includes 5.25" half-height 600-MB 40X IDE CD-ROM drive
- Removable media slots provide support for two 5.25" half-height devices, or one 5.25" full-height removable media device

5.25" half-height 12/24-GB 4mm DAT SCSI tape drive, top gun blue; requires single-ended UltraSCSI adapter (KZPBA-CA or KZPCM-DA) and SCSI cable (3X-BN46M-01)	TLZ10-LB
5.25" half-height 20/40-GB 4mm DAT Ultra2 (LVD) SCSI tape drive, top gun blue; requires Ultra2 (LVD) adapter (3X-KZPCA-AA) and SCSI Cable (3X-BN46M-01)	3X-SD20X-LB
5.25" half-height 35/70-GB 8mm AIT Wide UltraSCSI tape drive, top gun blue; requires single ended UltraSCSI adapter or Ultra2 adapter (KZPBA-CA/KZPCM-DA or 3X-KZPCA-AA) and SCSI cable (BN46L-01 or 3X-BN46M-01)	3X-SZ35X-LB
5.25" half-height 50/100-GB 8mm AIT Ultra2 (LVD) SCSI tape drive, top gun blue; requires Ultra2 (LVD) adapter (3X-KZPCA-AA) and SCSI cable (3X-BN46M-01)	3X-SZ50X-LB
1-m Ultra2 68-pin LVD cable with two connectors, multimode terminator and two wide-to-narrow adapters (for connection of 50-pin narrow devices)	3X-BN46M-01

### Step 7 – Ethernet Adapters – Mandatory

- Adapters require a minimum of Tru64 UNIX V4.0F or OpenVMS V7.1-2
- Each adapter uses one PCI slot
- See Step 12 for additional networking options

**Note:** Ethernet adapter is not required if KZPCM is selected as SCSI adapter for StorageWorks shelf

	Maximum # Supported		
	Tru64 UNIX	OpenVMS	
PCI 1-port 32-bit 10/100-Mb single-channel UTP FE Ethernet adapter (Twisted Pair)	4	4	3X-DE600-AA
PCI to dual-port 10/100 UTP Fast Ethernet adapter (supported under Tru64 UNIX V4.0F and TruCluster V1.6)	2	2	3X-DE602-AA
PCI single-port MMF add-on daughter card for 3X-DE602-AA (supported under Tru64 UNIX V4.0F and TruCluster V1.6)	2	2	3X-DE602-FA
PCI 4-port 10/100 Mb Ethernet adapter	1	1	DE504-BA
Cable for 10BaseT Twisted Pair connection			BN25G-xx
PCI Gigabit Ethernet adapter, SC connectors, MMF – no boot support	4	4	DEGPA-SA
SC-SC dual Fibre Optic cable, mm, pp xx = length in meters			BN34B-xx



## Options

### Step 8 – System Enclosures – Mandatory selection of Tower, Pedestal, or Rack Kit

#### Step 8a – Tower Enclosure

- Tower enclosure supports one system
- Tower enclosure ordered in North America includes 120V power cord; country-specific power cord mandatory for all non-North American systems; additional power cord mandatory for each power supply ordered with a system installed in a tower enclosure

Tower Enclosure

BA61M-MT

#### Step 8b – Pedestal Enclosure

- Pedestal enclosure supports one system, two Universal 42xx/43xx StorageWorks shelves or three UltraSCSI BA36R StorageWorks shelves
- Pedestal enclosure (BA61P-PB, 240V only) supports Universal shelves
- 120V pedestal enclosure includes two external 120V power cords; 240V pedestal enclosure requires two country-specific power cords
- Pedestal enclosure includes two factory-configured power strips that provide five available outlets; if the number of BA356-RC/RD power supplies requires a sixth outlet, this can be accommodated only if the system chassis is limited to two H7906-A9 power supplies

120V Pedestal Enclosure, includes two external power cords

BA61P-PA

240V Pedestal Enclosure, requires two country-specific power cords

BA61P-PB

#### Step 8c – Rack Kit for M-Series Cabinet

- Rack Kit required for each ES40 system installed in a new or existing M-Series Cabinet
- Rack Kit supports one system

Rack kit for ES40, includes dress bezel, slides, three internal power cords, all bracketry and hardware for mounting in M-Series cabinets

BA61R-RM

### Step 9 – M-Series Cabinets

- M-Series cabinet enclosures support up to four systems, up to six StorageWorks shelves, and/or two BA370 enclosures; M-series Enclosures require selection of the following items:
- H9A10 or H9A15 cabinet, 120V or 240V
- Rack kit for each system
- H9A10 or H9A15 rear cabinet extender
- Cabinet front door based on cabinet height
- Factory integration
- Ballast kit if only one system is ordered for the H9A15 cabinet

**Note:** For configurations beyond those listed in the following charts, contact *CustomSystems*.

#### Cabinet Configuration Chart for AlphaServer ES40 (8U) with StorageWorks Shelves (4U)

Cabinet	Rack Kit	Cabinet Extender	Cabinet Height/Space	Systems	BA356 Shelves	DS-SSL14 120V Shelves <sup>2</sup>	BA356/ DS-SSL14 <sup>3</sup>	
							BA356	DS-SSL14
H9A10-MC/MD <sup>1</sup>	BA61R-RM	H9C10-TE	56"/32U	1	6	8	6	4
				2	6	5	6	1
				3	2	2	4	0
				4 <sup>1</sup>	0	0	0	0
H9A15-MC/MD <sup>4</sup>	BA61R-RM	H9C15-TE	68.25"/39U	1	6	8	6	5
				2	6	5	6	2
				3	6	2	6	0
				4	2	0	2	0

(1) Contact Compaq *CustomSystems* for cabinet configurations with four ES40 systems installed in H9C10-MC/MD cabinet.

(2) Japan only – 240V cabinet required when using universal shelves

(3) When using a combination of BA356 and DS-SSL14 shelves in the same cabinet, do not remove the top fan (only remove fan when using DS-SSL14 shelves exclusively).

(4) Installation of one ES40 system in an H9A15 cabinet requires the mandatory selection of a ballast kit.

## Options

### Step 9 – M-Series Cabinets (continued)

#### Cabinet Configuration Chart for AlphaServer ES40 (8U) with StorageWorks BA370 Enclosure (20U) and Disk Shelves

- 20U of vertical cabinet space reserved for one front-mounted BA370 rackmount enclosure, or one front-mounted and one rear-mounted BA370 enclosure in top of cabinet, front to back.  
**Note:** The top fan (1U) is removed from the cabinet when a BA370 rackmount enclosure is installed.
- Systems and StorageWorks shelves are supported in remaining vertical space; StorageWorks shelves are not supported in rear of cabinet behind a front-mounted BA370 rackmount enclosure.

Cabinet	Rack Kit	Cabinet Extender	Cabinet Height/Space	Systems	BA370	Shelves
H9A10-MC/MD	BA61R-RM	H9C10-TE	56" / 32U	1	1 front BA370 or 2 front & back BA370s	2
H9A15-MC/MD	BA61R-RM	H9C15-TE	68.25" / 39U	1	1 front BA370 or 2 front & back BA370s	6
				2 <sup>1</sup>	1 front BA370	2

(1) Contact Compaq CustomSystems when configuring more than one BA370 with two AlphaServer ES40 systems.

#### Cabinet Configuration Chart for AlphaServer ES40 (8U) with Modular Array 6000

Cabinet	Rack Kit	Cabinet Extender	Cabinet Height	Systems	Shelves	HSG60 Controller	Switch	PDUs
H9A10-MC/MD	BA61R-RM	H9C10-TE	56" / 32U	1	4	2	1	3
				2	2	1	0	2
				3	1	1	0	3
H9A15-MC/MD	BA61R-RM	H9C15-TE	68.25" / 39U	1	6	3	1	4
				2	3	1	0	2
				3	2	1	0	3
				4	1	1	0	3

#### Cabinet Configuration Chart for AlphaServer ES40 (8U) with Modular Array 8000

Cabinet	Rack Kit	Cabinet Extender	Cabinet Height	Systems	Shelves	HSG80 Controller	Switch	PDUs
H9A10-MC/MD	BA61R-RM	H9C10-TE	56" / 32U	1	6	1	0	4
				1	4	2	1	3
				2	3	1	0	2
				3	1	1	0	3
H9A15-MC/MD	BA61R-RM	H9C15-TE	68.25" / 39U	1	6	2	1	4
				2	6	1	0	4
				3	3	1	0	3
				4	1	1	0	3

#### Notes:

- Select Model 4254, Model 4314R, or 4354R shelves, not mounted front and back
- Select DS-KGPSA-CA or KGPSA-BC
- HSGx0 minimum firmware: V8.5L or V4.0F; minimum TruCluster V1.6
- OpenVMS minimum version: V7.2-1; requires Tima Kits:
  - DEC-AXPVMS-VMS721\_HARDWARE-V0100 – 4.PCSI
  - DEC-AXPVMS-VMS721\_FIBRECHAN-V0300 – PCSI
  - For Fibre Channel configuration support, refer to: <http://www.openvms.digital.com>
- Tru64 UNIX: minimum version: V4.0F; minimum TruCluster V1.6; do not install or boot on Fibre Channel disk
- Order one ACS software kit per controller
- AlphaServer ES40 systems include two PDUs; order additional PDUs if more than two are required (H7600-AA, 120V, H7600-DB, 240V)
- Refer to Compaq StorageWorks Modular Array 6000 and 8000 QuickSpecs for details -- [http://www.compaq.com/products/quickspecs/North\\_America/10418\\_na.html](http://www.compaq.com/products/quickspecs/North_America/10418_na.html)

## Options

### Step 9 – M-Series Cabinets *(continued)*

#### M-Series Cabinets – Required selection of one cabinet

- Two H7600-xx power distribution units are standard in the M-series cabinet
- For cabinet configurations that require a third power distribution unit (H7600-xx), contact Compaq CustomSystems at 1-800-AT-COMPAQ

67" cabinet with 56" or 32U of usable vertical space, 120V dual-24A controller, each with 10 NEMA 5-15R outlets, input power plug NEMA L5-30P, Americas, Asia Pacific; includes rear door and top fan tray H9A10-MC

67" cabinet with 56" or 32U of usable vertical space, 240V dual-16A controller, each with 12 IEC C13 outlets, input power plug IEC 309, 16A, Europe; includes rear door and top fan tray H9A10-MD

79" cabinet with 68.25" or 39U of usable vertical space, 120V dual-24A controller, each with 10 NEMA 5-15R outlets, input power plug NEMA L5-30P, Americas, Asia Pacific; includes rear door and top fan tray H9A15-MC

79" cabinet with 68.25" or 39U of usable vertical space, 240V dual-16A controller, each with 12 IEC C13 outlets, input power plug IEC 309, 16A, Europe; includes rear door and top fan tray H9A15-MD

#### Rear Cabinet Extender – Required selection of one cabinet extender for each H9A10 or H9A15 cabinet

Rear cabinet extender, top gun blue, for H9A10-MC/MD cabinets H9C10-TE

Rear cabinet extender, top gun blue, for H9A15-MC/MD cabinets H9C15-TE

#### Cabinet Front Door – Required selection of door based on cabinet height

Front door, top gun blue, for H9A10-MC/MD cabinet enclosure H9C10-TF

Front door, top gun blue, for H9A15-MC/MD cabinet enclosure H9C15-TF

#### Factory Integration – Required

Factory Integration of systems and storage devices assembled and configured in cabinet enclosure in predefined locations YS-ASCAA-AA

#### Ballast Kit – Required only if one system is ordered for the H9A15 cabinet

Ballast is added to a cabinet at particular locations for specific configurations to meet safety regulations for installation, operation, and service; see Cabinet Configuration Charts.

Two 35-40 lb. steel plates H9C10-MC

#### Shelves Supported in M-series Cabinets – Optional

UltraSCSI single-ended RETMA rack, single-bus personality module, 180W power supply BA36R-RC

UltraSCSI single-ended RETMA rack, split-bus personality module, 180W power supply BA36R-RD

Rackmount StorageWorks controller shelf with RETMA mounting kit, and NEMA power for H9A10-MC/H9A15-MC cabinets, North America, Asia Pacific; order BN30B-02 for mounting in H9A10-MD/H9A15-MD cabinet (Europe) BA35R-MR

180W power supply, includes 120V North American and 240V IEC power cord CK-BA35X-HH

## Options

### Step 10 – Storage Adapters/Controllers

**Note:** Refer to the following chart when configuring adapters, shelves, and disks.

#### ES40 Configuration Chart for Storage Adapters

Adapter	Shelf	Disk Drive	Tru64 UNIX	OpenVMS						
3X-KZPCA-AA	BA610-6D DS-SSL14-Rx DS-SL13R-xx	3R-Aoxxx-AA 1.0" Universal 3R-A1xxx-AA 1.0" Universal	V4.0F to V5.1	V7.2-1						
KZPCM-DA	BA36R-xx	DS-RZ1xx-VW	V4.0F to V5.1	V7.2-1						
KZPBA-CA	BA36R-xx	DS-RZ1xx-VW	V4.0F to V5.1	V7.2-1						
<b>External RAID Adapters</b>										
KZPAC-AA/CA/CB	BA36R-xx	DS-RZ1xx-VW	V4.0F to V5.1	V7.2-1						
DS-KZPCC-AC <sup>(1)</sup>	DS-SSL14-Rx DS-SL13R-xx	3R-A0xxx-AA 1.0" Universal 3R-A1xxx-AA 1.0" Universal	V4.0F only	V7.2-1						
DS-KZPCC-CE <sup>(1)</sup>	DS-SSL14-Rx DS0SL13R-xx	3R-A0xxx-AA 1.0" Universal 3R-A1xxx-AA 1.0" Universal	V4.0F only	V7.2-1						
(1) External RAID controllers (DS-KZPCC-AC/CE) cannot be used with the BA610-6D disk drive cage. Internal RAID support is not currently available; support is planned for mid-2001.										
			<table border="1"> <thead> <tr> <th colspan="2">Maximum # Supported</th> </tr> <tr> <th>Tru64 UNIX</th> <th>OpenVMS</th> </tr> </thead> <tbody> <tr> <td>See Note</td> <td>See Note</td> </tr> </tbody> </table>		Maximum # Supported		Tru64 UNIX	OpenVMS	See Note	See Note
Maximum # Supported										
Tru64 UNIX	OpenVMS									
See Note	See Note									
PCI to Fibre Channel adapter, 64-bit, single-channel (uses one PCI slot) – <b>Note:</b> When used in a switched standalone or cluster environment, a maximum of four adapters is supported. When used in an arbitrated loop non-clustered environment, a maximum of one adapter is supported.				DS-KGPSA-CA (168794-B21)						
Fibre Channel cable (BNGBX-xx) xx = 02, 05, 15, 30, 50 meters, x = 1 (02 m), 2 (05 m), 3 (15 m), 4 (30 m), 5 (50 m)				234457-B2x						
PCI 1-port Ultra2 (LVD) SCSI adapter, 32-bit, single-channel (uses one PCI slot); includes internal 68-pin and external 68-pin HD connectors; requires BN38C-xx cable to connect adapter to Ultra2 shelf; HSZxx RAID controllers not supported. OpenVMS V7.1-2 requires Tima Kit: DEC-AXPVMS-VMS712_UPDATE-V0300—4.PCSI; Tru64 UNIX V4.0F requires Patch Kit2 BL13: DUV40FAS0002-19991116.tar			6	6	3X-KZPCA-AA					
68-pin HD male-to-VHDCI male UltraSCSI cable; xx = 02, 03, 05, 10, 20, 25 m					BN38C-xx					
PCI 2-port UltraSCSI single-ended adapter and 10/100 Mb Ethernet combo adapter (uses one PCI slot); includes internal 68-pin and 50-pin HD connectors and two external 68-pin VHDCI SCSI connectors, requires BN37A-xx cable to connect to single-ended UltraSCSI shelf			4	4	KZPCM-DA					
VHDCI male-to-VHDCI male UltraSCSI cable, xx = 02, 2E [2.5], 03, 05, 10, 20 m					BN37A-xx					
PCI 1-port UltraSCSI differential adapter (uses one PCI slot); includes external 68-pin HD connector, requires BN38C-xx cable (2 to 25 m) to connect adapter to differential UltraSCSI shelf or RAID controller			5	5	KZPBA-CB					
68-pin HD male-to-VHDCI male UltraSCSI cable; xx = 02, 03, 05, 10, 20, 25 m					BN38C-xx					
PCI 1-port UltraSCSI RAID controller with 4-MB cache memory (uses one PCI slot); includes RAID Array 230/Plus Subsystem software and documentation kit; includes VHDCI female connector; tape drives not supported; 18.2-GB disk drives not supported, requires BN37A-xx cable (.3 to 20 m) to connect to single-ended UltraSCSI shelf			4	4	KZPAC-AA					

## Options

### Step 10 – Storage Adapters/Controllers – Required if StorageWorks shelf is selected in Step 5 (continued)

	Maximum # Supported		
	Tru64 UNIX	OpenVMS	
PCI 3-port UltraSCSI RAID controller with 4-MB cache memory (uses one PCI slot), includes RAID Array 230/Plus Subsystem Software and documentation kit; tape drives not supported; 18.2-GB disk drives not supported; SCSI cable required for each active port; requires BN37X-xx cable (.3 to 20 m) to connect to single-ended UltraSCSI shelf, and BN31K-0E for external third port connection	4	4	KZPAC-CA
Same as KZPAC-CA with 8-MB cache memory			KZPAC-CB
Cache battery backup for KZPAC controller			KZPSC-UB
VHDCI male-to-VHDCI male UltraSCSI cable; xx = 02, 2E [2.5], 03, 05, 10, 20, 25 m <b>Note:</b> Manufacturing may substitute BN37A-02 cable for specific cabinet configurations.			BN37A-xx
SCSI cable/bulkhead assembly kit, supports one third-port connection from KZPAC-CA/CB, allows external connection of one third port			BN31K-0E
SCSI cable/bulkhead assembly kit, supports two third-port connections from KZPAC-CA/CB, allows external connection of two third ports			KZPAC-SB
PCI CI adapter for OpenVMS systems only; requires two PCI slots and CI cable for each adapter	-	2	CIPCA-BA
CI cable			BNCIA-xx
PCI DSSI controller for OpenVMS systems only; requires HSDxx controller to connect directly to StorageWorks shelf; requires BC29S-xx cable	-	4	KFP5A-AA
6' DSSI cable for connection to HSD10 installed in BA36R pedestal shelf			BC29S-06
9' DSSI cable for connection to HSD10 installed in BA36R cabinet shelf			BC29S-09

### Step 11 – Storage Devices – Optional

#### UltraSCSI Configuration Rules

- 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)
- UltraSCSI and Fast10 drives can be mixed in DS-BA356 top gun blue UltraSCSI shelf; UltraSCSI adapter negotiates maximum transfer speed of drives

#### UltraSCSI StorageWorks Pedestals

- UltraSCSI top gun blue pedestals provide support for UltraSCSI disk drives; pedestals are available in single-bus or split-bus configurations and include a personality module and 180W power supply
  - UltraSCSI shelf supports: seven 3.5" hard disk drives, or one 5.25" device and four 3.5" hard disk drives, or two 5.25" devices and one 3.5" hard disk drive
  - Installation of redundant power supply reduces number of 3.5" drive slots by one
- |   |             |
|---|-------------|
| UltraSCSI single-ended pedestal, single-bus personality module, 180W power supply     | DS-BA356-KF |
| UltraSCSI single-ended pedestal, split-bus personality module, 180W power supply      | DS-BA356-KG |
| UltraSCSI pedestal, single-channel differential personality module, 180W power supply | DS-BA356-KH |
| 180W power supply, includes 120V North American and 240V IEC power cord               | DS-BA35X-HH |

#### Tape Drives

- Tape drives require single-ended UltraSCSI adapter and country-specific power cord
- For more information on Compaq tape drives, see <http://www.compaq.com/products/storageworks/sitemap.html#tapedrives>

## Options

### Step 11 – Storage Devices – Optional (continued)

#### AIT Drives

35/70-GB 8mm AIT SCSI tabletop tape drive with 120V North American power cord; requires 3X-KZPCA-AA or KZPBA-CA SCSI adapter	388507-001
35/70-GB 8mm AIT SCSI tabletop tape drive, International; requires 3X-KZPCA-AA or KZPBA-CA SCSI adapter	388507-B31
50/100-GB 8mm AIT SCSI tabletop tape drive with 120V North American power cord; requires 3X-KZPCA-AA Wide Ultra2 (LVD) adapter	157767-001
50/100-GB 8mm AIT SCSI tabletop tape drive, International; requires 3X-KZPCA-AA Wide Ultra2 (LVD) adapter	157767-B31
Tabletop SSL2020 AIT library with one AIT 50-GB drive and 20 slots, LVD	175196-B21
Tabletop SSL2020 AIT library with two AIT 50-GB drives and 20 slots, LVD	175196-B22

#### DAT Drives

12/24-GB 4mm DAT narrow single-ended tabletop SCSI tape drive with 120V North American power cord; requires BN31W-xx SCSI cable	DS-TLZ10-DB
20/40-GB 4mm DAT Wide Ultra2 (LVD) tabletop SCSI tape drive with 120V North American power cord; requires 3X-KZPCA-AA Wide Ultra2 (LVD) adapter	157770-001
20/40-GB 4mm DAT Wide Ultra2 (LVD) tabletop SCSI tape drive, International; requires 3X-KZPCA-AA Wide Ultra2 (LVD) adapter	157770-B31
20/40-GB DAT auto loader external, North America	166505-001
20/40-GB DAT auto loader external, International	166505-B31
20/40-GB DAT auto loader external, Japan	166505-291

#### DLT Drives

35/70-GB DLT single-ended tabletop tape drive, requires BN21K-xx SCSI cable	DS-TZ89N-TA
Tabletop TL881 DLT mini-library with one DLT4000 tape drive	128667-B21
Tabletop TL881 DLT mini-library with two DLT4000 tape drives	128667-B22
Tabletop TL891 DLT mini-library with one TZ89N tape drive	120875-B21
Tabletop TL891 DLT mini-library with two TZ89N tape drives	120875-B22
Tabletop DLT8000 40/80-GB DLT external tape drive	146197-B21
Tabletop DLT8000 40/80-GB DLT external tape drive, Japan	146197-291

#### Removable Media Devices for StorageWorks Shelves

- For maximum performance, tape libraries must be configured with Fast Wide Differential (FWD) controllers for tape backup
- For more information on Compaq tape drives, see <http://www.compaq.com/products/storageworks/sitemap.html#tapedrives>

#### AIT Drives

35/70-GB 8mm AIT SCSI tape drive in 3.5" StorageWorks carrier	DS-AIT35-VW
SSL2020 AIT library with one AIT 50-GB drive and 20 slots, rackmount, LVD	175196-B21
SSL2020 AIT library with two AIT 50-GB drives and 20 slots, rackmount, LVD	175196-B22

#### DAT Drives

12/24-GB 4mm DAT narrow SCSI tape drive in StorageWorks carrier	DS-TLZ10-VA
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#### DLT Drives

40/80-GB DLT8000 tape drive in StorageWorks carrier	DS-TZ90N-VW
20/40-GB DLT single-ended tape drive in StorageWorks carrier	TZ88N-VA
35/70-GB DLT single-ended tape drive in StorageWorks carrier	DS-TZ89N-VW
DLT mini-library expansion unit with bar code reader, 16 cartridges, wide differential SCSI robotic controller with 68-pin HD female SCSI connector, universal mounting rails (Metric/RETMA)	DS-TL890-NE
DLT 10-slot rackmount mini-library with one TZ89N-AV and 68-pin HD female SCSI connector; requires interlock kit (2T-TL891-SL) and differential controller	DS-TL891-NE
Cable assembly 18AWG, straight C13-to-straight C14, 2.5m	BN30B-02
ESL9326D DLT Enterprise Tape Library, (International versions, 146205-B21–1446205-B28)	146205-001
TL895 DLT tape library with two drives; (349350-B23–3439350-B27, 3–7 drives)	349350-B22

## Options

### Step 11 – Storage Devices – Optional (continued)

#### DLT Drives (continued)

Rackmount TL881 DLT mini-library with one DLT4000 tape drive	128668-B21
Rackmount TL881 DLT mini-library with two DLT4000 tape drives	128668-B22
Rackmount TL891 DLT mini-library with one TZ89N tape drive	120876-B21
Rackmount TL891 DLT mini-library with two TZ89N tape drives	120876-B22

#### BA370 Rackmount Enclosure

- Mandatory rear cabinet extender ordered for systems installed in M-series cabinets (H9A10 and H9A15) allows two BA370 enclosures to be installed front to back in cabinet
- Host adapter, RAID Array controller, ACS firmware, cache battery, cables, platform-specific Solutions Software Kit, and disk drives must be ordered separately

BA370 front mount rackmount enclosure with five 180W power supplies, includes RETMA rackmount kit; first BA370 enclosure must be front mounted in cabinet, 20U height 2T-BA370-AS

BA370 rear mount rackmount enclosure with five 180W power supplies, includes RETMA rackmount kit; second BA370 enclosure must be rear mounted in cabinet, 20U height 2T-BA370-AR

#### External Storage Solutions/Controllers

Modular Array 6000 D14 Fibre Channel RAID storage solution, includes HSG60 controller with 256-MB cache, M2 controller shelf, one 14-bay drive enclosure (dual bus, dual power) 187738-B21

Modular Array 6000 S14 Fibre Channel RAID storage solution, includes HSG60 controller with 256-MB cache, M2 controller shelf, two 14-bay drive enclosures (dual bus, dual power), and two universal power supplies 187739-B21

Modular Array 8000 Fibre Channel RAID storage solution, 60 Hz 175992-B21

Modular Array 8000 Fibre Channel RAID storage solution, 50 Hz 175992-B22

Enterprise Modular Array 12000 Fibre Channel RAID storage solution, 60 Hz 175993-B21

Enterprise Modular Array 12000 Fibre Channel RAID storage solution, 50 Hz 175993-B22

**Note:** For Modular Array 6000, Modular Array 8000, and Enterprise Modular Array 12000 configuration and ordering information, see <http://www.compaq.com/products/storageworks/raidstoragesystems.html>

Fibre Channel controller (HSG80), includes 64-MB cache; each HSG80 requires 128697-B21 HSG80 ACS V8.4F software kit 380671-B21

Fibre Channel controller (HSG80), includes 256-MB cache; each HSG80 requires 128697-B21 HSG80 ACS V8.4F software kit 380672-B21

UltraSCSI controller (HSZ80), includes 64-MB cache; requires 400569-001 for Tru64 UNIX or 400571-001 for OpenVMS 400564-B21

UltraSCSI controller (HSZ80), includes 256-MB cache; requires 400569-001 for Tru64 UNIX or 400571-001 for OpenVMS 400565-B21

#### RA3000 RAID Array

- RAID Array 3000 (HSZ22) storage array is supported on ES40 systems
- For ordering information see: [http://www.compaq.com/products/storageworks/raidstorage/RA3000ped\\_config.html](http://www.compaq.com/products/storageworks/raidstorage/RA3000ped_config.html)

#### RA8000, ESA12000 Ultra and RA8000, ESA12000 Fibre Channel

- RAID Array 8000 and ESA 12000 (HSZ80) storage arrays are supported on ES40 systems
- RAID Array 8000 FC and ESA 12000 FC (HSG80) storage arrays are supported on ES40 systems
- For ordering information see: <http://www.compaq.com/products/storageworks/raidstoragesystems.html>

## Options

### Step 12 – Networking Adapters/Controllers – Optional

- Adapters require a minimum of Tru64 UNIX V4.0F or OpenVMS V7.1-2
- Each adapter/controller uses one PCI slot
- See Step 6 for supported Ethernet adapters

	Maximum # Supported		
	Tru64 UNIX	OpenVMS	
PCI FDDI adapter, single attachment station (SAS), multi-mode fiber (MMF), SC connector	4	4	3X-DEFPA-AC
PCI FDDI adapter, DAS, MMF, SC connector	4	4	3X-DEFPA-DC
MIC-SC dual fiber optic cable			BN34D-xx
SC-to-SC dual fiber optic cable			BN34B-xx
PCI FDDI adapter, DAS, TP-PMD	4	4	3X-DEFPA-MC
PCI FDDI adapter, SAS, TP-PMD, requires BN25H-03	4	4	3X-DEFPA-UC
3-m (9.8") FDDI cross-over cable			BN25H-03
<hr/>			
PCI 2-port synchronous controller; maximum two or five PBXDP-Ax per system (Tru64 UNIX systems require V4.0F and minimum of X.25 V3.0)	5	2	PBXDP-AA
PCI 4-port synchronous controller; maximum two or five PBXDP-Ax per system (Tru64 UNIX systems require V4.0F and minimum of X.25 V3.0)	5	2	PBXDP-AB
PCI 4-port asynchronous controller; maximum two PBXDA-Ax per system (Tru64 UNIX systems require V4.0F)	2	2	PBXDA-AA
PCI 8-port asynchronous controller, cable included; maximum two PBXDA-Ax per system (Tru64 UNIX systems require V4.0F)	2	2	PBXDA-AB
PCI 16-port asynchronous controller, cable included; maximum two PBXDA-Ax per system (Tru64 UNIX systems require V4.0F)	2	2	PBXDA-AC
<hr/>			
PCI-to-ATM 155 Mb adapter - Fiber	6	-	3X-DAPBA-FA
PCI-to-ATM 155 Mb adapter - UTP	6	-	3X-DAPBA-UA
PCI-to-ATM 622 Mb adapter - Fiber	4	-	3X-DAPCA-FA
<hr/>			
Asynchronous multi-port MUX expander XEM			CXI01-AB
Asynchronous MUX cable converter (RJ45-DB25)			CXI01-AC
Asynchronous MUX adapter (RJ45-MJ11), 8 pack			CXI01-AF

### Step 13 – MEMORY CHANNEL – Optional

#### Tru64 UNIX Systems (V5.0A and later)

- Each system node in the cluster requires a TruCluster software license (QL-6BRAE-AA)

#### Tru64 UNIX Systems (V4.0F)

- Requires a minimum of Tru64 UNIX V4.0F with TruCluster V1.6 or later
- Each system node in the cluster requires a TruCluster Production Server (QB-3RLAE-AA) or TruCluster MEMORY CHANNEL software license (QB-4ZCAE-AA)
- TruCluster MEMORY CHANNEL license (QB-4ZCAG-AA), normally used for high performance technical computing applications, not required if systems include a TruCluster Production Server license (QB-3RLAE-AA)

#### OpenVMS Systems

- OpenVMS V7.1-2 or later and OpenVMS Cluster license (QL-MUZAE-AA) are required



## Options

### Step 13 – MEMORY CHANNEL – Optional *(continued)*

#### Configuring Information

- Up to two PCI-to-System Area Network adapters (CCMAB-AA) are supported in a single system.
- For two-node clusters order a CCMAB-AA for each system and one BN39B-04 or BN39B-10 cable; cable connects directly to CCMAB-AA in each system.
- For three or four system nodes, order one CCMAB-AA adapter, one BN39B-04 or BN39B-10 cable and one CCMHB-AA; make connections from the CCMAB-AA in a system to the CCMHB-AA.
- 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 CCMLB-AA line cards.
- If two CCMAB-AAs are configured in each system, a second CCMHB-AA is required for three or more nodes; in two-node clusters, the CCMAB-AAs may be directly connected.
- If nodes must be separated by a distance longer 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.
- 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 from Compaq (BN34R-10 and BN34R-31); however, users normally provide this fiber optic connection. Fiber optic connectivity is completely transparent to the systems using it and has no performance impact.

#### MEMORY CHANNEL Controller/System Area Network Hub

PCI-to-System Area Network Controller, maximum two	CCMAB-AA
System Area Network Hub with four line cards; includes BN19P-2E power cord for Canada, Japan, and US –for other regions, order appropriate power cord from the following list:	CCMHB-AA
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
Rackmount kit for CCMHB hub	2T-MAVRK-AA
Power cord for rackmount CCMHB hub	BN35S-02

#### MEMORY CHANNEL Power Cords

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

## Options

### Step 14 – Graphics Adapters – Optional

- RAID Configuration Utility is accessible via console port; optional graphics capability is available
- Select graphics adapter, monitor, and country-specific keyboard for Tru64 UNIX and OpenVMS systems if required

	Maximum # Supported		
	Tru64 UNIX	OpenVMS	
ELSA GLoria synergy graphics with 8-MB SGRAM 1600 x 1200, 2D/3D graphics accelerator	1	1	SN-PBXGK-BB
PowerStorm 4D51T advanced 3D graphics accelerator	4	-	SN-PBXGI-AD
PowerStorm 300 3D multi-head graphics accelerator with 15-MB frame buffer memory and 16-MB texture memory; Patch Kit 1, Environmental Patch; V1.4 for multi-head (Kit Rev 4.0)	8	4	SN-PBXGD-AD
PowerStorm 350 3D multi-head graphics accelerator with 30-MB frame buffer memory and 32-MB texture memory; Patch Kit 1, Environmental Patch; V1.4 for multi-head (Kit Rev 4.0)	8	4	SN-PBXGD-AE

### Step 15 – Monitors – Optional

- Graphics monitors other than those listed can be used if compatible with SVGA graphics ordered with system
  - Selection of a video extension cable and country-specific power cord is mandatory for all monitors
- |   |             |
|---|-------------|
| 15" Corporate Series auto-scan color monitor, VGA to 1024 x 768 @ 85 Hz; Northern Hemisphere without power cord   | 3R-VRQV5-24 |
| Same as above except Southern Hemisphere without power cord   | 3R-VRQV5-11 |
| 17" (16" viewable image size) professional series auto-scanning color monitor Flat Definition CRT, 0.25mm aperture grill pitch, VGA to 1280 x 1024 at 75 Hz, TCO 99, MPR-II, Energy Star, attached 1.8-m video cable; Northern Hemisphere without power cord            | 3R-VRQP7-24 |
| Same as above except Southern Hemisphere without power cord   | 3R-VRQP7-23 |
| 19" (18" viewable image size) professional series auto-scanning color monitor, Flat Definition Trinitron CRT, 0.25mm aperture grill pitch, VGA to 1280 x 1024 at 75 Hz, TCO 99, MPR-II, Energy Star, attached 1.8-m video cable; Northern Hemisphere without power cord | 3R-VRQP9-24 |
| Same as above except Southern Hemisphere without power cord   | 3R-VRQP9-23 |
| 21" (19.6" viewable image size) auto-scanning color monitor, Trinitron CRT, 0.28mm aperture grill pitch, VGA to 1600 x 1200 @85 Hz NI, TCO 99, Energy Star, includes 1.8-m video cable; Northern Hemisphere without power cord  | 3R-VRQP1-24 |
| Same as above except Southern Hemisphere without power cord   | 3R-VRQP1-23 |
| TFT8020 (Flat Panel) 18" monitor, U.S. – Use with SN-PBXGD-A* or SN-PBXGK-BB (326100-001)   | 3R-A0852-AA |

#### Video Extension Cable

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

#### Monitor Power Cords

- |                                  |             |
|----------------------------------|-------------|
| North American, 120V, 75"        | BN26J-1K    |
| Australia, New Zealand, 2.5m     | BN19H-2E    |
| Central Europe, 2.5m             | BN19C-2E    |
| Denmark, 2.5m                    | BN19K-2E    |
| Egypt, India, South Africa, 2.5m | BN19S-2E    |
| Israel, 2.5m                     | BN18L-2E    |
| Italy, 2.5m                      | BN19M-2E    |
| Japan, 2.5m, Dentori approved    | 3X-BN46F-02 |
| Switzerland, 2.5m                | BN19E-2E    |
| UK, Ireland, 2.5m                | BN19A-2E    |

## Options

### Step 16 – Keyboards, Power Cords, Documentation

#### Step 16a – Keyboards – Required for all non-North American systems

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

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

#### Keyboard or Mouse Extension Cable

6 ft keyboard or mouse extension cable; to extend both keyboard and mouse order two cables

3X-BC34A-06

## Options

### Step 16 – Keyboards, Power Cords, Documentation *(continued)*

#### Step 16b – Power Cords

##### Tower Power Cords

- Tower enclosure ordered in North America includes 120V power cord; selection of country-specific power cord is mandatory for all non-North American systems.
- Each additional power supply ordered with a system installed in tower enclosure requires additional power cord

##### Pedestal Power Cords

- Pedestal systems ordered in North America include two 120V power cords; selection of two country-specific power cords is mandatory for all non-North American systems.

North American 120V, 75"	BN26J-1K
Australia, New Zealand, 2.5m	BN19H-2E
Central Europe, 2.5m	BN19C-2E
Denmark, 2.5m	BN19K-2E
Egypt, India, South Africa, 2.5m	BN19S-2E
Germany, 2.5m	BN35S-02
Israel, 2.5m	BN18L-2E
Italy, 2.5m	BN19M-2E
Japan, 2.5m	3X-BN46F-02
Switzerland, 2.5m	BN19E-2E
UK, Ireland, 2.5m	BN19A-2E

#### Step 16c – Documentation

Additional ES40 System Information Kit (print and CD), Owners Guide, User Interface Guide, and Release Notes	QA-6E88A-G8
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### Step 17 – Console Terminal – Optional

- Any terminal can be used as a console device
- Third-party console devices require an EIA-232 25-pin DSUB connector

VT510 video terminal; requires H8575-x cable	VT510-xx
Console cable, female connector	H8575-A
Console cable, male connector	H8575-D
Console cable, male connector (IBM compatible)	H8975-E

### Step 18 – Upgrade Kit – Optional

Upgrades ES40 Model 1 with six I/O slots and support for four memory options to ES40 Model 2 with 10 I/O slots and support for eight memory options	3X-KFPPA-AA
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## Options

### Step 19 – Software – Required selection of media and documentation for first system on site

- Software Processor Code = E

#### Tru64 UNIX

- AlphaServer ES40 Tru64 UNIX systems include Unlimited User license, Server Extension license, Open Source Internet Solutions and iPlanet Web Server – Enterprise Edition 4.0
- AlphaStation ES40 Tru64 UNIX systems include pre-installed software, 2-user Base license and Compaq Open3D traditional license

#### When using Tru64 UNIX V5.0A or later

Tru64 UNIX media and online documentation on CD-ROM	QA-6ADAA-H8
Tru64 UNIX full hard copy documentation	QA-6ADAA-GZ
StorageWorks Software Package, with licenses for Logical Storage Manager and AdvFS Utilities	QB-5RXAE-AA
TruCluster Server License	QL-6BRAE-AA
Advanced Server for Tru64 UNIX, 25 client concurrent use license	QL-5U29M-3D
Advanced Server for Tru64 UNIX, 50 client concurrent use license	QL-5U29M-3E
Advanced Server for Tru64 UNIX, 100 client concurrent use license	QL-5U29M-3F
Advanced Server for Tru64 UNIX, 250 client concurrent use license	QL-5U29M-3G
Advanced Server for Tru64 UNIX, 500 client concurrent use license	QL-5U29M-3H
Layered products media and documentation for Tru64 UNIX on CD-ROM	QA-054AA-H8
DECnet/OSI extended function license for Tru64 UNIX	QL-MTJAE-AA
DECnet/OSI end-system license for Tru64 UNIX	QL-MTKAE-AA
Open3D for Tru64 UNIX on CD-ROM, includes graphics drivers	QA-OAFAA-H8

#### When using Tru64 UNIX V4.0F

Tru64 UNIX media and online documentation on CD-ROM	QA-MT4AA-H8
Tru64 UNIX full hard copy documentation	QA-MT4AA-GZ
StorageWorks Software Package, with licenses for Logical Storage Manager and AdvFS Utilities	QB-5RXAE-AA
TruCluster Available Server License	QL-05SAE-AA
TruCluster Production Server License	QB-3RLAE-AA
Tru64 UNIX Driver for MEMORY CHANNEL license	QB-4ZCAE-AA
Advanced Server for Tru64 UNIX, 25 client concurrent use license	QL-5U29M-3D
Advanced Server for Tru64 UNIX, 50 client concurrent use license	QL-5U29M-3E
Advanced Server for Tru64 UNIX, 100 client concurrent use license	QL-5U29M-3F
Advanced Server for Tru64 UNIX, 250 client concurrent use license	QL-5U29M-3G
Advanced Server for Tru64 UNIX, 500 client concurrent use license	QL-5U29M-3H
Layered products media and documentation for Tru64 UNIX on CD-ROM	QA-054AA-H8
DECnet/OSI end-system license for Tru64 UNIX	QL-MTJAE-AA
DECnet/OSI extended function license for Tru64 UNIX	QL-MTKAE-AA
Open3D for Tru64 UNIX on CD-ROM, includes graphics drivers	QA-OAFAA-H8

## Options

### Step 19 – Software – Required selection of media and documentation for first system on site (continued)

#### OpenVMS

- AlphaServer ES40 OpenVMS systems include Base license with System Manager license and Compaq Enterprise Integration Server License Package for OpenVMS Revision V3.0A
- AlphaStation ES40 OpenVMS systems include pre-installed software, Base license, Concurrent Use 1-user license, NAS 150 Client license, Compaq MMS RT license and Compaq Open3D traditional license
- 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 system at a time. It cannot be shared between systems or in an OpenVMS VAX or OpenVMS Alpha Cluster.

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-MT2AE-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 full hard copy documentation	QA-001AA-GZ
Layered products media and documentation for OpenVMS on CD-ROM, includes Enterprise Integration Server for OpenVMS media and documentation.	QA-03XAA-H8
DECnet extended function license for OpenVMS	QL-MTGAE-AA
DECnet end-system to extended function upgrade license for OpenVMS	QL-MTHAE-AA
OpenVMS Cluster license for Alpha systems	QL-MUZAE-AA
OpenVMS Volume Shadowing license	QL-2A1AE-AA

## Options

### Step 20 – Hardware and Software Supplemental Support Services – Optional

#### Hardware—Americas and Asia Pacific Only

- Systems include three-year hardware warranty, onsite with 5 x 9, 24-hour response time
- Options ordered as part of initial system sale take on warranty of the enclosure
- Options added after initial system sale take on warranty of the enclosure until enclosure warranty ends
- All unique ES40 options have a minimum of one-year Return to Compaq Warranty
- Select optional Hardware Supplemental Support Services if required

Supplemental Service for ES40 Tower System	Model 1	Model 2
3-year, 5 x 9, 4-hour response time	FM-4T4HR-36	FM-4Q4HR-36
5-year, 5 x 9, 4-hour response time	FM-4T4HR-60	FM-4Q4HR-60
3-year, 7 x 24, 4-hour response time	FM-4T724-36	FM-4Q724-36
5-year, 7 x 24, 4-hour response time	FM-4T724-60	FM-4Q724-60
5-year, 5 x 9, next day, on-site	FM-4TXHW-60	FM-4QXHW-60

Supplemental Service for ES40 Pedestal System	Model 1	Model 2
3-year, 5 x 9, 4-hour response time	FM-4F4HR-36	FM-4G4HR-36
5-year, 5 x 9, 4-hour response time	FM-4F4HR-60	FM-4G4HR-60
3-year, 7 x 24, 4-hour response time	FM-4F724-36	FM-4G724-36
5-year, 7 x 24, 4-hour response time	FM-4F724-60	FM-4G724-60
5-year, 5 X 9, next day, on-site	FM-4FXHW-60	FM-4GXHW-60

Installation Services	Model 1	Model 2
Hardware product installation for ES40 Tower System	FM-4TINS-IN	FM-4QINS-IN
Hardware product installation for ES40 Pedestal System	FM-4FINS-IN	FM-4GINS-IN

Add-on memory installation for ES40 FM-64MEM-IN

Add-on SMP CPU installation for ES40 FM-64CPU-IN

**Note:** Add-on installation part numbers should be used when options are added to existing systems.

#### Software — Americas and Asia Pacific Only

- Tru64 UNIX and OpenVMS 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 operating system for time period indicated.
- Software service upgrades for OpenVMS include advisory and remedial software support with new version license rights for operating system and Enterprise Integration Package for time period indicated.
- Software service upgrades for SMP Upgrades running Tru64 UNIX or OpenVMS include new version license rights for Tru64 UNIX or OpenVMS SMP Upgrades for the time period indicated; one required for each SMP Upgrade

#### Software Supplemental Support

**Note:** \* = 9 for Bronze Support, 9 x 5, S for Bronze Plus Support 24 x 7, N for Node Support

12-month support for Tru64 UNIX ES40 systems FM-62UN\*-12

36-month support for Tru64 UNIX ES40 systems FM-62UN\*-36

60-month support for Tru64 UNIX ES40 systems FM-62UN\*-60

12-month support for OpenVMS ES40 systems FM-62VM\*-12

36-month support for OpenVMS ES40 systems FM-62VM\*-36

60-month support for OpenVMS ES40 systems FM-62VM\*-60

**Note:** \*\* = 12 for 1 year, 36 for 3 years, 60 for 5 years

Software Supplemental Support for Tru64 UNIX ES40 SMP FM-62USM-\*\*

Software Supplemental Support for OpenVMS ES40 SMP FM-62VSM-\*\*

## *Options*

### **Step 20 – Hardware and Software Supplemental Support Services – Optional** *(continued)*

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#### **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.



# QUICKSPECS

Compaq AlphaServer ES40  
Compaq AlphaStation ES40

## Technical Specifications

### Tower Configuration

<b>Dimensions (HxWxD)</b>	20 x 15.25 x 31 in / 50.8 x 38.7 x 78.7 cm	
<b>Shipping Dimensions</b>	32.2 x 24 x 40 in / 82.48 x 60.2 x 101.6 cm	
<b>Weight</b>		
Typical Configuration	144.3 lbs/65.6 kg	
Maximum Configuration	212.8 lbs/96.7 kg	
<b>Shipping Weight</b>		
Typical Configuration	172 lbs/78 kg	
Maximum Configuration	242 lbs/110 kg	
<b>Clearances</b>	<b>Operating</b>	<b>Service</b>
Front	29.5 in/75 cm	29.5 in/75 cm
Rear	6 in/15 cm	29.5 in/75 cm
Left Side	None	29.5 in/75 cm
Right Side	None	None

### Pedestal Configuration

<b>Dimensions (HxWxD)</b>	30.8 x 20 x 31.75 in/78.2 x 50.8 x 80.6 cm	
<b>Shipping Dimensions</b>	42.4 x 39.5 x 23.9 in/107.7 x 100.3 x 60.7 cm	
<b>Weight</b>		
Typical Configuration	280 lbs/127 kg	
Maximum Configuration	350 lbs/159 kg	
<b>Shipping Weight</b>		
Nominal	328 lbs/149 kg	
Maximum	407 lbs/185 kg	
<b>Clearances</b>	<b>Operating</b>	<b>Service</b>
Front	29.5 in/75 cm	29.5 in/75 cm
Rear	6 in/15 cm	29.5 in/75 cm
Left Side	None	None
Right Side	None	29.5 in/75 cm

### Rackmount System

<b>Dimensions (HxWxD)</b>	13.87 x 17.6 x 30.1 in/35.2 x 44.7 x 76.5 cm (fits 14 in [8U] standard RETMA cabinet)	
<b>Shipping Dimensions</b>	28.8 x 24 x 40 in/73.2 x 60.7 x 101.6 cm	
<b>Weight</b>		
When lifting:		
Nominal	110 lbs/50 kg	
Maximum	167.2 lbs/76 kg	
Total added to cabinet (brackets, slides, cables):		
Nominal	130 lbs/59 kg	
Maximum	202.4 lbs/92 kg	
<b>Shipping Weight</b>		
Nominal	158 lbs/72 kg	
Maximum	233 lbs/106 kg	
<b>Clearances</b>	<b>Operating</b>	<b>Service</b>
	See specific cabinet requirements	Minimum 4 ft/121.9 cm, 30 in/76.3 cm withdrawal on rails

# QUICK SPECS

Compaq AlphaServer ES40  
Compaq AlphaStation ES40

## Technical Specifications

### Cabinet Configuration

	H9A10 M-Series	H9A15 M-Series
<b>Dimensions (HxWxD)</b>	67 x 23.6 x 43.27 in/ 170 x 60 x 110 cm	79 x 23.6 x 35.4 in/ 200 x 60 x 90 cm
<b>Shipping Dimensions</b>	73 x 36 x 48 in/ 185.5 x 91.5 x 122 cm	85 x 36 x 48 in/ 216 x 91.5 x 122 cm
<b>Weight</b>	Configuration dependent	Configuration dependent
<b>Shipping Weight</b>	Nominal: 946 lbs/430 kg Maximum: 1,375 lbs/625 kg	Nominal: 1,056 lbs/550 kg Maximum: 1,408 lbs/640 kg

### System Unit

#### Environmental

##### Temperature

Operating (Tower, Pedestal, Rackmount) <sup>1</sup>	50° to 95°F/10° to 35°C
Non-operating	-40° to 151°F/-40° to 66°C
Storage (60 days)	-40° to 151°F/-40° to 66°C
Rate of change	20°F/hr/11°C/hr

##### Relative Humidity

Operating	20% to 80%
Non-operating	20% to 80%
Storage (60 days)	10% to 95%
Rate of change	20% hr

##### Maximum Wet Bulb Temperature

Operating	82°F/28°C
Storage (60 days)	115°F/46°C

##### Maximum Dew Point Temperature

Operating	36°F/2°C
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##### Heat Dissipation

	Nominal	Maximum
Tower and Rack	900W, 3,074 BTU/hr	1300W, 4,440 BTU/hr
Pedestal	1480W, 5,054 BTU/hr	2400W, 8,196 BTU/hr
H9A10/H9A15 Cabinets	Configuration dependent	4800W, 16,392 BTU/hr

##### Air Flow and Quality

Intake location	Front
Exhaust location	Rear Tower, Pedestal, Rack; Rear/top H9A10/H9A15
Particle size	N/A
Concentration	N/A

##### Altitude

Operating <sup>2</sup>	10,000 ft/3,048 m
Non-operating	40,000 ft/12,192 m

##### Acoustics (Declared values per ISO 9296 and ISO 7779)

##### Acoustics<sup>3</sup>

	L <sub>WAd3B</sub>	L <sub>nAm5dBA</sub> (bystander position)
Idle	6.6	48
Operating	6.6	48

##### Vibration

Operating	10 to 500 Hz 0.1 G peak
Non-operating	1.03 Grms 5-300 Hz

## Technical Specifications

### System Unit *(continued)*

**Electrical** (Power supplies are universal, PFC, auto ranging, 100/240 Vac)

<b>Nominal Voltage (VAC)</b>	100	120	200 to 240
<b>Voltage Range (VAC) temporary condition</b>	90 to 100	110 to 128	180 to 250
<b>Power Source Phase</b>	Single	Single	Single
<b>Nominal Frequency (Hz)</b>	50/60	50/60	50/60
<b>Frequency Range (Hz)</b>	49 to 51/59 to 61	49 to 51/59 to 61	49 to 51/59 to 61

**RMS Current** (maximum steady state)

*Tower and Rackmount*

Single power cord	11.0A	8.5A	5.0A
Multiple power cords	6.5A	5.3A	3.0A
Maximum VA	1,300	1,270	1,250

*Pedestal*

Each power cord	12.0A	10.5A	6.0A
Maximum VA	1,960	1,900	1,880

*M-series Cabinet* (configuration dependent)

Nominal voltage (VAC)	100	120	220 to 240
Each power cord	24A	24A	16A

**Power Cords**

Tower	Up to 3 (75 in/190 cm)	IEC 320 C13 to NEMA 5-15 (N. America) or IEC 320 C13 to country-specific
Pedestal	2 (75 in/190 cm)	120V non-removable NEMA 5-15 (N. America) or 200-240V IEC 320 C13 to country-specific
Rackmount	3 (14 ft 10 in/52 cm)	IEC 320 C13 to NEMA 5-15 (N. America) or IEC 320 C13 to IEC 320 C14 (other countries)
Cabinet	2 (10 ft 10 in/30 cm)	120V non-removable NEMA L5-30P or 200-240V non-removable IEC 309

**Regulatory**

Agency Approvals

UL: Listed to UL1950 (third edition)  
CSA: Certified to CAN/CSA-C22.2 No. 950-M95  
TUV: EN 60950/A4: 1997 VDE 0805 GS marked  
FCC: Part 15.B Class A  
CE: EN55022, EN50082  
VCCI Class II ITE

Reviewed to

BCIO: CISPR22, CNS13438  
C-Tick: CISPR22, AS/NZS 3548  
AS/NZ 3260:1993 Australian/New Zealand Standard  
EN 60950/A4: 1997 European Norm  
IEC 950 (second edition, third amend)

<sup>1</sup> Maximum operating temperature at sea level; reduce by 1.8°F (1°C) for each 2,000 ft (600 m) above sea level.

<sup>2</sup> Higher altitudes are possible if maximum operating temperature is reduced (see Temperature); other restrictions may apply such as maximum permissible altitude for hard drives.

<sup>3</sup> Current values for specific configurations are available from Compaq, note that 1 B = 10 dBA.