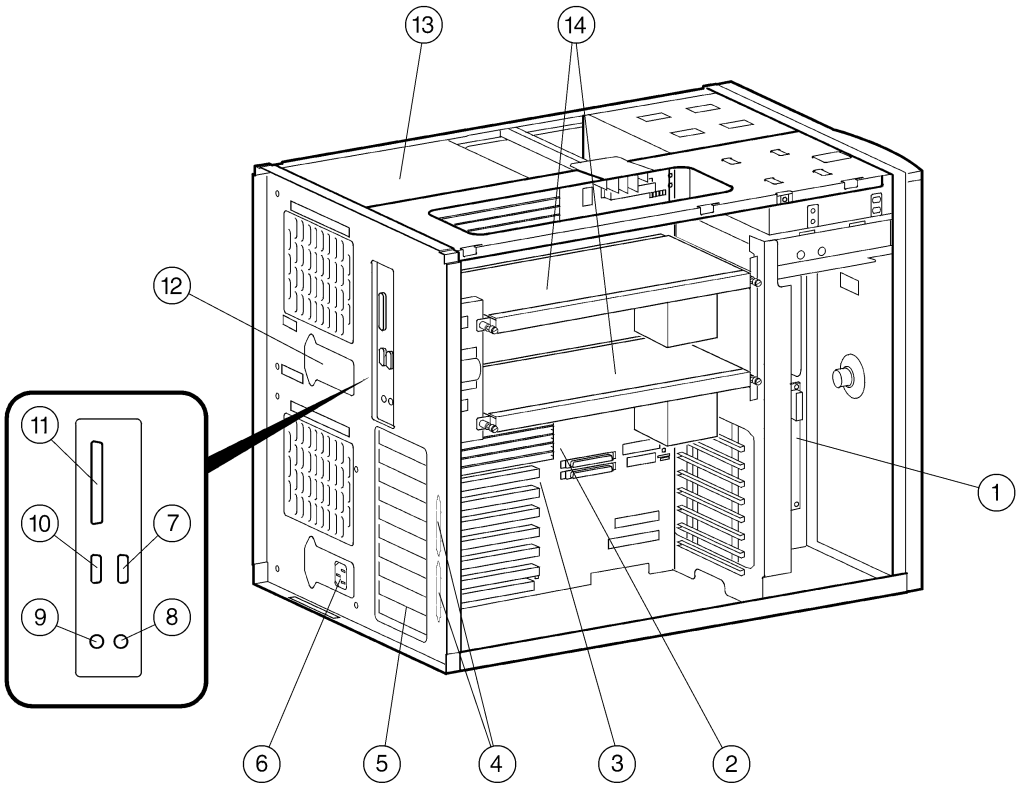
Overview

AT A GLANCE

AlphaServer DS20 systems include:

- Alpha microprocessor 21264 500-MHz CPU with 4-MB ECC onboard cache
- Pedestal enclosure
- Five 64-bit PCI slots and one 64-bit PCI/ISA combination slot
- 256-MB, 512-MB, or 1-GB memory (16 DIMM memory slots)
- 1.44-MB diskette drive
- 600-MB 32X CD-ROM drive
- Removable media slot
- Seven StorageWorks hard drive slots
- Two serial ports, support full-duplex asynchronous modem control
- Bi-directional enhanced parallel port
- PS/2 style keyboard port and mouse port
- 3-button mouse
- U.S. English keyboard and 120V power cord with North American orders
- 675-Watt self-switching (120/240V, 60/50 Hz) power supply
- Compaq ServerWorks Manager
- Tru64™ UNIX or OpenVMS Factory Installed Software
- 90-day software product warranty
- Protected by Compaq Services, including three-year, on-site with 5 x 9, 24-hour response time



1. Server feature card
2. Memory DIMMs
3. PCI slots
4. SCSI breakouts
5. PCI/ISA bulkhead port
6. Power inlet and power supply
7. Serial port (COM1)
8. Mouse port
9. Keyboard port
10. Serial port (COM2)
11. Parallel port
12. Optional power inlet
13. Fan or optional power supply
14. CPU modules

Standard Features

Processor

Alpha 21264 6/500-MHz processor

Cache Memory

4-MB ECC onboard cache

Upgradability

Standard	1 CPU
Maximum	2 CPUs

Memory

Standard	256 MB, 512 MB, 1 GB
Maximum	4 GB

Network Controller

Choice of Ethernet controllers

Expansion

Total expansion slots	6
PCI I/O Slots	5
PCI/ISA	1
Total memory slots	16 DIMM slots support four memory options
Total storage slots	10
Diskette drive slot	1
CD-ROM drive slot	1
Removable media slot	1
Hard drive slots	7

Storage

CD-ROM	5.25″ half height CD-ROM drive
Hard Drives	Choice of 9.1-GB, 18.2-GB, 36.4-GB UltraSCSI disk drives
Diskette Drive	1.44-MB diskette drive

Storage Adapter

Choice of UltraSCSI adapters

Power Supply

675W self-switching (120/240V, 60/50 Hz) power supply for normal operation; system supports additional power supply for N+1 power redundancy

Intelligent Manageability

ServerWORKs Manager

OS Support

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

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

Minimum OS support: Tru64 UNIX V4.0E or OpenVMS V7.1-2

Service and Support

Protected by Compaq Services, including a three-year, on-site hardware warranty with 5 x 9, 24-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.

Systems/Options

Step 1 – Select system

DS20 systems require the **mandatory** selection of the following items:

- Mandatory selection of system disk drive
- Mandatory selection of two SCSI ports
- Mandatory selection of Ethernet adapter
- Country-specific keyboard and power cord for all non-North American orders
- Software media and documentation for first system on-site
- Graphics adapter and monitor recommended for all systems
- Minimum OS support: Tru64 UNIX V4.0E or OpenVMS V7.1-2

O/S	CPU	Memory	PCI Slots	Hard Drive	Network Adapter	2 SCSI Ports	Order No.
Tru64 UNIX	500 MHz	256 MB	6	Mandatory	Mandatory	Mandatory	DA-55NJA-DA
Tru64 UNIX	500 MHz	512 MB	6	Mandatory	Mandatory	Mandatory	DA-55NJA-EA
Tru64 UNIX	500 MHz	1 GB	6	Mandatory	Mandatory	Mandatory	DA-55NJA-FA
OpenVMS	500 MHz	256 MB	6	Mandatory	Mandatory	Mandatory	DY-55NJA-DA
OpenVMS	500 MHz	512 MB	6	Mandatory	Mandatory	Mandatory	DY-55NJA-EA
OpenVMS	500 MHz	1 GB	6	Mandatory	Mandatory	Mandatory	DY-55NJA-FA

Step 2 – Mandatory Options

Step 2a – System Disk Drive

- Selection of disk drive is mandatory
- 18.2-GB drives or greater not supported on KZPAC-xx PCI controllers
- If more than one disk size is ordered, operating system will be factory installed on smallest disk

36.4-GB 7200 rpm UltraSCSI drive	DS-RZ1FB-VW
18.2-GB 10,000 rpm UltraSCSI drive	DS-RZ1ED-VW
18.2-GB 7200 rpm UltraSCSI drive	DS-RZ1EA-VW
9.1-GB 10,000 rpm UltraSCSI drive	DS-RZ1DD-VW
9.1-GB 7200 rpm UltraSCSI drive	DS-RZ1DA-VW

Step 2b – SCSI Ports

- Two SCSI ports mandatory to support internal storage
- Internal removable media devices are supported on KZPCM-DA and KZPBA-CA adapters only; internal removable media devices are not supported on KZPAC-AA/CA/CB RAID controllers.
- Internal StorageWorks 7-disk shelf requires one SCSI port when configured in single-bus mode; to configure disk shelf in split-bus mode, one additional SCSI port is required.
- System includes SCSI cable(s) to connect SCSI adapters/controllers to internal storage.
- The two SCSI ports requirement can be fulfilled by ordering:
  One KZPCM-DA 2-port adapter, or two KZPBA-CA 1-port adapters, or one KZPBA-CA 1-port adapter and one KZPAC-AA/CA/CB UltraSCSI RAID controller.

PCI 2-port UltraSCSI single-ended adapter and 10/100 Mb Ethernet combo adapter	KZPCM-DA
PCI 1-port UltraSCSI single-ended adapter	KZPBA-CA
PCI 1-port UltraSCSI single-ended adapter	KZPAC-AA
PCI 3-port UltraSCSI RAID controller	KZPAC-CA/CB

SCSI Accessories

SCSI Hub 3.5″ SBB (three ports)	DS-DWZZH-03
SCSI Hub 3.5″ SBB (five ports)	DS-DWZZH-05
SCSI Hub 3.5″ SBB (21 ports)	DS-DWZZH-21

Options

Step 2 – Mandatory Options *(continued)*

Step 2c – Ethernet Adapters

- Selection of Ethernet adapter is mandatory
- **Note:** Ethernet adapter is not required if KZPCM is selected as the SCSI adapter.

PCI 1-port 32-bit 10/100-Mb single-channel UTP FE Ethernet adapter (Twisted Pair); maximum 2 per system	3X-DE600-AA
PCI 2-port 32/64-bit 10/100-Mb UTP FE Ethernet adapter (Twisted Pair); maximum 2 per system	3X-DE602-AA
SC-SC dual Fibre Optic cable, mm, pp xx = length in meters	BN34B-xx

Step 3 – Additional CPU Modules – Optional

- Systems support one additional CPU module

Tru64 UNIX SMP upgrade with one 6/500 CPU and Tru64 UNIX SMP license	KN310-AB
OpenVMS SMP upgrade with one 6/500 CPU and OpenVMS SMP license	KN310-AC

Step 4 – Memory – Optional

- System supports four memory kits (each kit includes four industry-standard ECC DIMMs) – one kit included
- Maximum 4-GB memory per system

1-GB (4 x 256-MB DIMMs) memory kit	MS340-EA
512-MB (4 x 128-MB DIMMs) memory kit	MS340-DA
256-MB (4 x 64-MB DIMMs) memory kit	MS340-CA

Step 5 – Internal Storage – Optional

Pedestal enclosure supports 10 storage devices:

- One dedicated 1.44-MB diskette drive slot (included)
- Two 5.25″ removable media slots (600-MB 32X CD-ROM drive included in one slot)
- Seven 3.5″ internal hard disk drive slots

Step 5a – Internal Storage Disk Drives

- Selection of one system disk drive is mandatory; six additional disk drives are supported in internal storage disk shelf.
- Internal storage disk shelf is configured in single-bus mode; to configure internal storage disk shelf in split-bus mode, one additional SCSI port and one H8253-AA UltraSCSI bus splitter kit are required.
- KZPAC RAID Array 230/Plus controller supports 9.1-GB drives.
- 18.2-GB or higher disk drives not supported with KZPAC-xx RAID controllers

36.4-GB 7200 rpm UltraSCSI drive	DS-RZ1FB-VW
18.2-GB 10,000 rpm UltraSCSI	DS-RZ1ED-VW
18.2-GB 7200 rpm UltraSCSI drive	DS-RZ1EA-VW
9.1-GB 10,000 rpm UltraSCSI drive	DS-RZ1DD-VW
9.1-GB 7200 rpm UltraSCSI drive	DS-RZ1DA-VW

Step 5b – Internal UltraSCSI Cable Kit

UltraSCSI bus splitter kit with SCSI bus repeater card, two data cables, Y power cable harness, SCSI active terminator assembly, and installation guide; required to configure internal storage shelf in split-bus mode	H8253-AA

Step 5c – Internal Removable Media Devices

- System includes CD-ROM drive in 5.25″ half-height removable media slot
- System supports one additional 5.25″ half-height removable media device

600-MB 5.25″ 32X CD-ROM drive (RRD47), top gun blue	RRD47-VD
12/24-GB 4 mm 5.25″ DAT SCSI tape drive (TLZ10), top gun blue	TLZ10-LB

Options

Step 6 – Storage Adapters/Controllers – Optional

- Storage controllers require Tru64 UNIX V4.0E or OpenVMS V7.1-2

UltraSCSI Adapters

PCI 2-port UltraSCSI single-ended 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 cable (0.3- to 20-m) to connect to UltraSCSI shelf; maximum four per system	KZPCM-DA
VHDCI male-to-VHDCI male UltraSCSI cable; required for each external UltraSCSI shelf attached to KZPCM; xx = 0C [0.3m], 0E [0.5m], 01 [1.0m], 1E [1.5m], 02 [2.0m], 2E [2.5m], 03, 05, 10, 15, 20, 25 m	BN37A-xx
PCI 1-port UltraSCSI single-ended adapter (uses one PCI slot); includes internal 68-pin and 50-pin HD connectors and external 68-pin HD connector, requires BN38C cable (2 to 20 m) to connect to UltraSCSI shelf, maximum four per system.	KZPBA-CA
PCI 1-port UltraSCSI differential adapter, (uses one PCI slot); includes external 68-pin HD connector, requires BN38C cable (2 to 25 m) to connect to differential UltraSCSI shelf or external RAID array controller, maximum four per system.	KZPBA-CB
68-pin HD male-to-VHDCI male UltraSCSI cable; xx = 02, 03, 05, 10, 20, 25 m	BN38C-xx

UltraSCSI RAID Controllers

- Maximum four KZPAC-xx controllers per system

PCI 1-port UltraSCSI RAID controller with 4-MB cache memory, includes RAID Array 230/Plus Subsystem software and documentation kit and VHDCI female connector; tape drives not supported, maximum four per Tru64 UNIX systems, maximum three per OpenVMS systems–18.2-GB or higher disk drives not supported on KZPAC-xx RAID controllers; requires BN37A cable (0.3 to 20 m) to connect to UltraSCSI shelf	KZPAC-AA
PCI 3-port UltraSCSI RAID controller with 4-MB cache memory, includes RAID Array 230/Plus Subsystem Software and documentation kit; tape drives not supported; SCSI cable required for each active port; requires BN31K-0E for external third-port connection, maximum three per system; requires BN37A cable (0.3 to 20 m) to connect to UltraSCSI shelf	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 m **Note**: Manufacturing may substitute BN37A-02 cable for certain cabinet configurations.	BN37A-xx
SCSI cable/bulkhead assembly kit with KZPAC-CA/CB, allows external connection of one third port	BN31K-0E
SCSI cable/bulkhead assembly kit with two ports for KZPAC-CA/CB, allows external connection of two third ports	KZPAC-SB

Fibre Channel Controller

Fibre Channel External RAID controller (Tru64 UNIX only); maximum four per system	KGPSA-BC
8-port optional Fibre Channel switch	DS-DSGGA-AA
16-port optional Fibre Channel switch	DS-DSGGA-AB

CI Adapter

PCI CI adapter (OpenVMS systems only); requires two PCI slots and CI cable for each adapter, maximum one per system	CIPCA-BA
CI cable	BNCIA-xx

Options

Step 7 – 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).
- Fast10 BA356-xx SCSI shelves cannot be retrofitted; replace Fast10 SCSI shelf with DS-BA356-xx shelf when adding an UltraSCSI disk and when connecting to UltraSCSI adapter.
- 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 Shelves

- UltraSCSI top gun blue shelf provides support for UltraSCSI disk drives. The shelf is available in single-bus or split-bus configurations, and the shelf includes 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 Pedestal Enclosure

UltraSCSI single-ended pedestal, single-bus personality module, 180W power supply, U.S. power cord	DS-BA356-KF
UltraSCSI single-ended pedestal, split-bus personality module, 180W power supply, U.S. power cord	DS-BA356-KG
UltraSCSI pedestal, differential personality module, 180W power supply, U.S. power cord (non-U.S./Canada require country-specific power cords)	DS-BA356-KH
180W power supply, requires country-specific power cord	DS-BA35X-HH

Tabletop Tape Drives

- Tape drives require dedicated KZPBA-CA UltraSCSI adapter, BN21K-xx SCSI cable, and country-specific power cord.

12/24-GB 4 mm DAT narrow single-ended tabletop SCSI tape, includes 120V North American power cord, and requires BN31W-xx SCSI cable	DS-TLZ10-DB
35/70-GB DLT single-ended tabletop tape drive	DS-TZ89N-TA
DLT mini-library single-ended tabletop tape drive	DS-TL891-NE
DLT mini-library 16-slot expansion unit tabletop tape drive	DS-TL890-NE

Step 8 – External CI Controllers – Optional

- Supported in M-Series Cabinets
- Supported on OpenVMS systems only
- Require CIPCA-BA storage controller and cables
- QB-5C4AA-SA software kit required per external cache (for example, one per HSJ50, two per HSJ52)

StorageWorks 6-channel CI Array controller with 32-MB write-back cache and external cache battery	HSJ50-AF
Same as above with 64-MB write-back cache and external cache battery	HSJ50-AH
Same as above with 128-MB write-back cache and external cache battery	HSJ50-AJ
StorageWorks dual 6-channel CI Array controller with 64-MB cache and dual external cache battery	HSJ52-AF
Same as above with 128-MB cache and dual external cache battery	HSJ52-AH
Same as above with 256-MB cache and dual external cache battery	HSJ52-AJ
Same as above with 512-MB cache and dual external cache battery	HSJ54-AJ

Controller Accessories

External SCSI 68-pin male 8-bit or 16-bit differential terminator	H879-AA
SCSI tri-link connector, 68-pin, two female and one male connector	H885-AA
SCSI Y cable 68-pin, two female and one male connector	BN21W-0B

Options

Step 8 – External CI Controllers – Optional *(continued)*

Controller Accessories *(continued)*

Rackmount StorageWorks controller shelf with RETMA mounting kit, and 180 W NEMA power for H9A10-MC/ H9A15-MC Cabinet, Americas, Asia Pacific–order BN30B-02 for mounting in H9A10-MD/ H9A15-MD cabinet, Europe	BA35R-MR
IEC-to-IEC gray power cord for BA35R-MR self mounted in H9A1x-MD Cabinet, Europe	BN30B-02
IEC-to-IEC black power cord for BA35R-MR shelf mounted in H9A1x-MD Cabinet, Europe	BN35S-02
Power supply for N+1 redundant support in UltraSCSI StorageWorks controller shelf and power cords	CK-BA35X-HH
Star Coupler Passive Hub device, supports eight CI ports	SC008-AC
Star Coupler Passive Hub expansion device, supports eight CI ports (supported in SC008-AC)	SC008-AD

Step 9 –UltraSCSI RAID Array Controllers and UltraSCSI RAID Packaged Solutions –Optional

RAID Array 3000 Rackmount Controller Shelf

- RA3000 is currently supported on Tru64 UNIX V4.0D or higher; selection of RA3000 Solutions Software Kit is required.
- Supported SCSI adapter– KZPBA-CB PCI 1-port UltraSCSI differential adapter

RA3000 rackmount controller shelf, blue, with one controller, 110V Includes: UltraSCSI BA356 controller shelf, one HSZ22 2-channel controller with 16-MB cache, integrated Environmental Monitoring Unit (EMU), two 180W power supplies, two dual-port host differential UltraSCSI I/O SBBs, dual-channel UltraSCSI single-ended personality modules, one 120V 1000VA rackmount UPS, 5-m host SCSI cable (BN37A-05), BN38E-0B adapter, UPS serial cable, PC connection serial cable (DB-9), two 68-pin HD tri-link adapters (H8861-AA), two North American power cords, and RETMA mounting bracket (disk shelves and disks not included) Requires: Solutions Software Kit for platform, host adapter, RA3000 disk shelf, and disks Options: Second HSZ22 controller, up to three additional RA3000 disk shelves, cache memory upgrade	DS-SWXRA-GH
RA3000 rackmount controller shelf, blue, with one controller, 230V Includes: UltraSCSI BA356 controller shelf, one HSZ22 2-channel controller with 16-MB cache, integrated Environmental Monitoring Unit (EMU), two 180W power supplies, two dual-port host differential UltraSCSI I/O SBBs, dual-channel UltraSCSI single-ended personality modules, one 230V 1000VA rackmount UPS, 5-m host SCSI cable (BN37A-05), BN38E-0B adapter, UPS serial cable, PC connection serial cable (DB-9), two 68-pin HD tri-link adapters (H8861-AA), RETMA mounting bracket (disk shelves and disks not included) Requires**:** Solutions Software Kit for platform, two country-specific power cords, host adapter, RA3000 disk shelf, and disks Options**:** Second HSZ22 controller, up to three additional RA3000 disk shelves, cache memory upgrade	DS-SWXRA-GK

RAID Array 3000 Rackmount Disk Shelf

- Select one to four disk shelves.
- Third and fourth DS-SWXRA-GN disk shelf ordered will be installed in rear of M-series cabinet; rear mounted shelves require that a 2-m BN37A-02 SCSI cable be ordered.

RA3000 rackmount disk shelf, blue, includes UltraSCSI BA356 disk shelf, two 180 W power supplies, single-ended UltraSCSI personality card, one half-meter SCSI cable (BN37A-0E), two North American power cords, and RETMA mounting bracket (disks not included); order two country-specific power cords for non-North American use	DS-SWXRA-GN

HSZ22 Controller

Note: Second HSZ22 controller ordered is field installable only, not factory installed; requires BN37A-0E SCSI jumper cable be ordered separately.

Second HSZ22 controller with 16-MB cache and two 16-MB SIMMs for mirror cache, one BN37A-05 5-m UltraSCSI cable, one BN38E-0B cable adapter—field installable only. **Note**: Second HSZ22 controller does not require additional Solution Software Kit.	DS-HSZ22-AA
RA3000 16-MB SIMM cache memory upgrade, field-installed only	DS-HSSIM-BA
RA3000 32-MB SIMM cache memory upgrade, field-installed only	DS-HSSIM-BB

Options

Step 9 –UltraSCSI RAID Array Controllers and UltraSCSI RAID Packaged Solutions –Optional *(continued)*

RA3000 Solutions Software Kits

- RA3000 Solutions Software Kits include: StorageWorks Command Console (SWCC) software, platform-specific software, Installation scripts and installation documentation

RA3000 Solutions Software Kit for Tru64 UNIX	QB-5TWAB-SA
RA3000 Solutions Software Kit for OpenVMS	QB-5TWAC-SA

HSG80/HSZ80 External Controllers

- HSG80 supported externally; HSZ80 supported internally and externally

Fibre Channel controller (DS-HSG80-BJ), 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
Fibre Channel controller (DS-HSG80-BH), includes 2-MB cache expandable to 32 MB; requires 128697-B21 HSG80 ACS V8.4F software kit or 128698-B21 V8.4P software kit for each HSG80 ordered	380671-B21
UltraSCSI controller (DS-HSZ80-AH), includes 2-MB cache expandable to 32 MB; requires 400569-001 for Tru64 UNIX or 400571-001 for OpenVMS	400564-B21
UltraSCSI controller (DS-HSZ80-AJ), includes 2-MB cache expandable to 128 MB; requires 400569-001 for Tru64 UNIX or 400571-001 for OpenVMS	400565-B21

ESA 10000 , RAID Array 7000, RAID Array 8000

- Enterprise Storage Array 10000 and RAID Array 7000 and 8000 (HSZ70 and HSZ80) product sets are supported on AlphaServer DS20 systems
- Ordering and configuring information is available at www.compaq.com/products/storage — Please note this web site is available in English only.

Step 10 –Graphics Adapters –Recommended

- Select graphics adapter, monitor, and country-specific keyboard for Tru64 UNIX and OpenVMS systems, if required.
- RAID Configuration Utility is accessible via the console port for Tru64 UNIX and OpenVMS systems; optional graphics capability is available.
- Tru64 UNIX systems support multi-head homogeneous graphics; a monitor is recommended for each graphics adapter.

PowerStorm 4D51T 3D Graphics, 16- MB texture memory 1280 x 1024, High-Performance 3D shading, texture mapping, OpenGL, (when using PowerStorm with the V500 monitor, use PowerStorm switch number two [1024x1280 at 60 Hz] to allow V500 to display UNIX screen completely)– maximum three per Tru64 UNIX systems	SN-PBXGI-AD
PowerStorm 300 PCI 15-MB Texture memory/ 16-MB Frame buffer memory	SN-PBXGD-AD
PowerStorm 350 PCI 30-MB Texture memory/ 32-MB Frame buffer memory	SN-PBXGD-AE
ELSA Gloria synergy graphics with 8-MB SGRAM 1600 x 1200, 2D/3D graphic accelerator; maximum three per Tru64 UNIX system and one per OpenVMS system	SN-PBXGK-BB

Step 11 –Monitors –Recommended

- RAID Configuration Utility is accessible via the console port for Tru64 UNIX and OpenVMS systems; optional graphics capability is available.
- Graphics monitors other than those listed below can be used if compatible with SVGA graphics that are ordered with a system.
- Selection of video extension cable and country-specific power cord is mandatory for all monitors.

15″ (13.8″ viewable image size) Corporate Series auto-scan color monitor, flat square Invar CRT, 0.28 mm dot pitch, VGA to 1024 x 768 at 85 Hz, TCO 95, MPRII, Energy Star, attached 1.8-m video cable; requires video extension cable and country-specific power cord; Northern Hemisphere without power cord	3R-VRQV5-24
Same as above except Southern Hemisphere without power cord	3R-VRQV5-11

Options

Step 11 –Monitors –Recommended *(continued)*

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	3R-VRQP7-24
Same as above except Southern Hemisphere without power cord	3R-VRQP7-23
21″ (19.6″ viewable image size) auto-scanning color monitor, Trinitron CRT, 0.25 mm aperture grill pitch, VGA to 1600 x 1200 at 75 Hz NI, TCO 95, Energy Star, includes 1.8-m video cable; requires video extension cable and country-specific power cord; Northern Hemisphere without power cord	3R-VRQP1-24
Same as above except Southern Hemisphere without power cord	3R-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

Step 12 – Networks and Communications – Optional

- Controllers/adapters require a minimum of Tru64 UNIX V4.0E or OpenVMS V7.1-2

PCI 10/100-Mb 1-port Fast Ethernet controller (Twisted Pair); maximum two per system	DE500-BA
PCI 10/100-Mb 4-port Fast Ethernet controller (Twisted Pair); maximum one per system	DE504-BA
Cable for 10BaseT Twisted Pair connection	BN25G-xx
PCI 10/100-Mb Fast Ethernet controller (MMF); maximum two per system	DE500-FA
PCI Gigabit Ethernet adapter, no boot support, maximum two per Tru64 UNIX systems	DEGPA-SA
SC-SC dual fibre optic cable, mm, pp.	BN34B-xx
PCI-to-ATM 155 Mb Fibre adapter (Tru64 UNIX only); maximum four per system	3X-DAPBA-FA
PCI-to-ATM 622 Mbit Fibre adapter (Tru64 UNIX only); maximum two per system	3X-DAPCA-FA
PCI FDDI adapter, single attachment station (SAS), multi-mode fibre (MMF), SC connector, maximum two per system	DEFPA-AB
PCI FDDI adapter, DAS, MMF, SC connector, maximum two per system	DEFPA-DB
MIC-SC dual fibre optic cable	BN34D-xx
SC-to-SC dual fibre optic cable	BN34B-xx
PCI FDDI adapter, SAS, TP-PMD, requires BN25H-03; maximum two per system	DEFPA-UB
PCI FDDI dual adapter, DAS, TP-PMD, requires BN25H-03; maximum two per system	DEFPA-MB
9.8 ft (3-m) FDDI crossover cable	BN25H-03
PCI 4-port asynchronous controller, cable included; maximum two per Tru64 UNIX system; maximum two PBXDA-xx per system	PBXDA-AA
PCI 8-port asynchronous controller, cable included; maximum two per Tru64 UNIX system; maximum two PBXDA-xx per system	PBXDA-AB
PCI 16-port asynchronous controller, cable included; maximum two per Tru64 UNIX systems, maximum two PBXDA-xx per system	PBXDA-AC

Options

Step 13 – MEMORY CHANNEL – Optional

- Supported on Tru64 UNIX systems only; requires Tru64 UNIX V4.0F with TruCluster V1.6 or later
- Up to two PCI System Area Network controllers are supported with Console Firmware V5.5-x or later
- Each system node in a MEMORY CHANNEL cluster requires a TruCuster Production Server license (QB-3RLAE-KA) or TruCluster MEMORY CHANNEL (QB-4ZCAE-AA) software license.
- TruCluster MEMORY CHANNEL license (QB-4ZCAE-AA), normally used for high- performance technical computing applications, is not required if systems include TruCluster Production Server license (QB-3RLAE-KA).

MEMORY CHANNEL Controller/Hub

PCI System Area Network controller, maximum two	CCMAB-AA
System Area Network hub with four line cards; includes BN19P-2E power cord for Canada/US operations; country-specific power cord for other regions is required; maximum two	CCMHB-AA
MEMORY CHANNEL hub expansion box with no line cards; maximum two	CCMHB-BA
Expansion line card for CCMHB hub; maximum two	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
TruCluster Production Server Software for Tru64 UNIX	QB-3RLAE-AA
Tru64 UNIX Driver for MEMORY CHANNEL license	QB-4ZCAE-AA

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
Japan	3X-BN46F-02

Step 14 –Additional Power Supply –Optional

- One additional power supply can be added to DS20 Pedestal system for N+1 redundancy. Redundant power supply requires country-specific power cord.

675W redundant power supply, requires country-specific 4.5-m rackmount power cord	H7899-AA

Step 15 – Keyboards, Power Cords, Documentation

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

Keyboards

	Tru64 UNIX	OpenVMS
U.S./English keyboard	SN-LKQ47-AA	LK461-A2
Belgian keyboard	SN-LKQ47-AB	LK461-AB
Canadian/French keyboard	SN-LKQ47-AC	LK461-AC
Danish keyboard	SN-LKQ47-AD	LK461-AD
UK keyboard	SN-LKQ47-AE	-
Finnish keyboard	SN-LKQ47-AF	LK461-AF
German keyboard	SN-LKQ47-AG	LK461-AG
Dutch keyboard	SN-LKQ47-AH	LK461-AH

Options

Step 15 – Keyboards, Power Cords, Documentation *(continued)*

Keyboards *(continued)*

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

Pedestal Power Cords

- Systems ordered in North America include BN26J-1K 120V North American power cord; order country-specific power cord for all non-North American systems and for redundant system power supplies.

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

Options

Step 15 – Keyboards, Power Cords, Documentation *(continued)*

Rackmount Power Cords

- Each system installed in a cabinet requires a Rackmount Kit (2T-R1200-AB) and one 4.5-m power cord for each power supply ordered with the system.

4.5-m power cord –North American	BN20Z-4E
4.5-m power cord –non-North American	BN35S-4E

Documentation

Additional AlphaServer DS20 User Guide (print and CD), Installation Card, and Release Notes	QZ-014AA-GZ

Step 16 – Printers – Optional

- Systems include two full-duplex asynchronous serial ports and one bi-directional enhanced parallel port.
- Asynchronous serial ports have 9-pin D-subminiature connectors; 9-pin to MMJ adapter (H8571-J) is required for each connection.

Step 17 –Console Terminal –Optional

- RAID Configuration Utility is accessible via the console port for Tru64 UNIX and OpenVMS systems.
- Console terminal with EIA-232 25-pin DSUB connector is required, unless otherwise available.
- Shielded console cable (BC16E-25) is required for console terminal, unless available on-site.

VT510 terminal	VT510-xx
Shielded console cable with six-pin MMJ connectors	BC16E-25

Step 18 –M-series Cabinet Enclosures –Mounting kit required for each system installed in M-Series Cabinet

- For more information on M-series Cabinet Enclosures, see www.digital.com/alphaserver/products/m-series/index.html
- M-series enclosure for DS20 requires the mandatory selection of the following items:
  - H9A10 or H9A15 cabinet, 120V or 240V
  - Rack kit for each system
  - 4-5-m power cord per system
  - Cabinet front door based on cabinet height
  - Factory integration
  - Ballast kit as required

Cabinet Configuration Chart for AlphaServer DS20 (11U) **with StorageWorks Shelves (4U)**

Cabinet	Mounting Kit	Cabinet Height/Space	Systems	Shelves	Ballast Kit
H9A10-MC/MD	2T-R1200-AB	54.2″/ 31U	1 2	6 2	1 1
H9A15-MC/MD	2T-R1200-AB	66.5″/ 38U	1 2 3	6 6 2	2 1

Options

Step 18 –M-series Cabinet Enclosures –Mounting kit required for each system installed in M-Series Cabinet *(continued)*

Cabinet Configuration Chart for AlphaServer DS20 (11U) **with StorageWorks RA3000 and Disk Shelves** (12U)

- 12U of vertical cabinet space is reserved for one RA3000 controller shelf and up to five disk shelves mounted in top of cabinet, front to back; an additional 2U of vertical space is required for RA3000 controller shelf UPS.
- Disk shelves can be a combination of RA3000 DS-SWXRA-GN disk shelves and StorageWorks BA36R-RC/RD disk shelves. Maximum five device shelves – one to four RA3000 device shelves plus up to four StorageWorks BA36R-RC/RD device shelves.
- RA3000 controller shelf supports a maximum of four DS-SWXRA-GN disk shelves.
  The third and fourth DS-SWXRA-GN disk shelf ordered will be installed in rear of an M-series cabinet; rear mounted shelves require a 2-m SCSI cable (BN37A-02) be ordered separately.
- Systems are supported in remaining vertical space.

Cabinet	Mounting Kit	Cabinet Height / Space	Systems	RA3000 + Shelves	Ballast Kit
H9A10-MC/MD	2T-R1200-AB	54.2″/ 31U	1	1 + 5	1
H9A15-MC/MD	2T-R1200-AB	66.5″/ 38U	1 2	1 + 5 1 + 5	2 1

Cabinet Configuration Chart for AlphaServer DS20 (11U) **with StorageWorks BA370** (20U) **and Disk Shelves**

- 20U of vertical cabinet space is 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: Top fan (1U) is removed from cabinet when BA370 rackmount enclosure is installed.
- Rear cabinet extender is mandatory when second BA370 is ordered.
- Select H9C10-TE rear cabinet extender for H9A10 or H9C15-TE rear cabinet extender for H9A15 Cabinet
- Systems and StorageWorks shelves are supported in remaining vertical space; StorageWorks shelves are not supported in rear of cabinet behind front mounted BA370 rackmount enclosure.

Cabinet	Mounting Kit	Cabinet Height / Space	Systems	BA370	Shelves
H9A10-MC/MD	2T-R1200-AB	54.2″/ 31U	1 1	1 front BA370, or 2 front & back BA370s	-
H9A15-MC/MD	2T-R1200-AB	66.5″/ 38U	1 1	1 front BA370, or 2 front & back BA370s	4 4

Cabinet Enclosures

67″ cabinet enclosure with 31U or 54.2″ 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, top fan tray, and two H7600-AA power distribution units	H9A10-MC
67″ cabinet enclosure with 31U or 54.2″ of usable vertical space; 240V dual-16A controller, each with 12 IEC C13 outlets, input power plug IEC 309, 16A, Europe; includes rear door, top fan tray, and two H7600-DB power distribution units	H9A10-MD
79″ cabinet enclosure with 38U or 66.5″ 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, top fan tray, and two H7600-AA power distribution units	H9A15-MC
79″ cabinet enclosure with 38U or 66.5″ of usable vertical space; 240V dual-16A controller, each with 12 IEC C13 outlets, input power plug IEC 309, 16A, Europe; includes rear door, top fan tray, and two H7600-DB power distribution units	H9A15-MD

Options

Step 18 –M-series Cabinet Enclosures –Mounting kit required for each system installed in M-Series Cabinet *(continued)*

Rackmount Kit	
Rackmount Kit includes mounting shelf, slide rails, front dress bezel, interlock mechanism, and cable management bracket – system slides out front of cabinet for full service access; each system installed in cabinet requires one 4.5-m power cord for each power supply ordered with system	2T-R1200-AB
4.5-m power cord –North American	BN20Z-4E
4.5-m power cord –non-North American	BN35S-4E
Cabinet Front Door	
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
BA370 Rackmount Enclosure/Rear Cabinet Extender	
Rear Cabinet Extender is mandatory when a second BA370 is ordered for H9A10 or H9A15 M-series Cabinets; Rear Cabinet Extender provides 5.5″ of depth to H9A10 or H9A15 cabinets to allow two BA370 enclosures to be installed front to back in cabinet.	
BA370 front-mount rackmount enclosure includes RETMA rackmount kit; first BA370 enclosure must be front mounted in cabinet, 20U height.	2T-BA370-AS
BA370 rear-mount rackmount enclosure includes RETMA rackmount kit; second BA370 enclosure must be rear mounted in cabinet, 20U height. **Note**: Rear Cabinet Extender, H9C10-TE or H9C15-TE, is mandatory for second BA370.	2T-BA370-AR
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
Factory Integration	
Factory Integration of systems and storage devices assembled and configured in cabinet enclosure in predefined locations	YS-ASCAA-AA
Ballast Kit	
Ballast is added to a cabinet at exact locations for specific configurations to meet safety regulations for installation, operation, and service; it is required in H9A15 cabinets when only one system is installed. (See Cabinet Configuration charts.)	
Two 35 to 40 lb steel plates	H9C10-MC
Shelves supported in M-Series Cabinets	
UltraSCSI RETMA rack, single-ended, single-bus personality module, 180W power supply, U.S. power cord	BA36R-RC
UltraSCSI RETMA rack, single-ended split-bus personality module, 180W power supply, U.S. power cord	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
Shelves supported in SW8xx and SW5xx Cabinets	
UltraSCSI Metric rack, single-ended, single-bus personality module, 180W power supply	DS-BA356-JD
UltraSCSI Metric rack, single-ended split-bus personality module, 180W power supply	DS-BA356-JE
UltraSCSI Metric rack, single-ended, single-bus, differential personality module, 180W power supply	DS-BA356-JF

Options

Step 18 –M-series Cabinet Enclosures –Mounting kit required for each system installed in M-Series Cabinet *(continued)*

Removable Media Devices StorageWorks Shelves

8-GB 4 mm DAT 93 MB/min (compressed) narrow SCSI tape drive in StorageWorks carrier	TLZ09-VA
12/24-GB 4 mm DAT narrow SCSI tape drive in StorageWorks carrier	DS-TLZ10-VA
32-64-GB 4 mm DAT SCSI tape drive loader in full-height StorageWorks carrier	TLZ9L-VA
600-MB 32X CD-ROM drive in StorageWorks carrier	DS-RRD47-VA

StorageWorks Power Supply

180W power supply; requires country-specific power cord	DS-BA35X-HH

Compaq *Custom*Systems Support

Cabinets containing systems and storage must be assembled by qualified assemblers: Compaq Manufacturing, Compaq *Custom*Systems Group, or authorized Compaq Certified Integration Partner.

For custom integration of systems, options, cabinet expansion offerings, and additional Compaq and third-party devices, or for other cabinets, doors, and trim kits of a different color, contact Compaq *Custom*Systems at 1-800-AT COMPAQ, or your local authorized Compaq Certified Integration Partner.

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

- Software Processor Code = E

Tru64 UNIX

- Tru64 UNIX systems include Traditional Unlimited User License, Server Extension, Open Source Internet Solutions, and Netscape Enterprise Server 3.0.

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
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-MTJAE-AA
DECnet/OSI extended function license	QL-MTKAE-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

Options

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

OpenVMS *(continued)*

- 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.

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-MT2AQ-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 online documentation on CD-ROM	QA-MT1AA-H8
OpenVMS 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

Step 20 – Hardware and Software Supplemental Support Services – Optional

- Systems include three-year hardware warranty, on-site, with 5 x 9, 24-hour response time; select optional Hardware Supplemental Support Services if required.
- Options ordered as part of "Initial System Sale" take on warranty of the enclosure; options added after "Initial System Sale" take on warranty of enclosure until enclosure warranty ends.
- All unique AlphaServer DS20 options have a minimum of one-year Return-to-Compaq warranty.

Hardware Supplemental Support— 1-GB memory or less, Americas and Asia Pacific only

5 x 9, 4-hour response time	FM-TC4HR-36
5 x 12, 4-hour response time	FM-TC512-36
6 x 16, 4-hour response time	FM-TC616-36
7 x 24, 4-hour response time	FM-TC724-36
Years 1-5, next day, on-site	FM-TCXHW-60
Years 1-5, 5 x 9, 4-hour response time	FM-TC4HR-60
Years 1-5, 5 x 12, 4-hour response time	FM-TC512-60
Years 1-5, 6 x 16, 4-hour response time	FM-TC616-60
Years 1-5, 7 x 24, 4-hour response time	FM-TC724-60

Options

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

Hardware Supplemental Support— more than 1-GB memory, Americas and Asia Pacific only

5 x 9, 4-hour response time	FM-TF4HR-36
5 x 12, 4-hour response time	FM-TF512-36
6 x 16, 4-hour response time	FM-TF616-36
7 x 24, 4-hour response time	FM-TF724-36
Years 1-5, next day, on-site	FM-TFXHW-60
Years 1-5, 5 x 9, 4-hour response time	FM-TF4HR-60
Years 1-5, 5 x 12, 4-hour response time	FM-TF512-60
Years 1-5, 6 x 16, 4-hour response time	FM-TF616-60
Years 1-5, 7 x 24, 4-hour response time	FM-TF724-60

Installation Services

Hardware product installation for DS20	FM-TC12X-IN
Add-on memory installation for DS20	FM-TCMEM-IN
Add-on CPU installation for DS20	FM-TCSMP-IN

Software Supplemental Support— 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 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 time period indicated; one is required for each SMP upgrade.

5 x 9 12-month Software Supplemental Support–Tru64 UNIX	FM-D20U9-12
5 x 9 36-month Software Supplemental Support–Tru64 UNIX	FM-D20U9–36
5 x 9 60-month Software Supplemental Support–Tru64 UNIX	FM-D20U9-60
5 x 9 12-month Software Supplemental Support–OpenVMS	FM-D20V9-12
5 x 9 36-month Software Supplemental Support–OpenVMS	FM-D20V9-36
5 x 9 60-month Software Supplemental Support–OpenVMS	FM- D20V9-60
7 x 24 12-month Software Supplemental Support–Tru64 UNIX	FM-D20US-12
7 x 24 36-month Software Supplemental Support–Tru64 UNIX	FM-D20US–36
7 x 24 60-month Software Supplemental Support–Tru64 UNIX	FM-D20US-60
7 x 24 12-month Software Supplemental Support–OpenVMS	FM-D20VS-12
7 x 24 36-month Software Supplemental Support–OpenVMS	FM- D20VS-36
7 x 24 60-month Software Supplemental Support–OpenVMS	FM- D20VS-60
12-month Software Supplemental Support–OpenVMS or Tru64 UNIX DS20 SMP Upgrade	FM-12SMP-12
36-month Software Supplemental Support–OpenVMS or Tru64 UNIX DS20 SMP Upgrade	FM-12SMP-36
60-month Software Supplemental Support–OpenVMS or Tru64 UNIX DS20 SMP Upgrade	FM-12SMP-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.

Technical Specifications

System Unit

Dimensions (HxWxD)	18.1 x 14.1 x 23.1 in/46 x 35.8 x 58.6 cm	
Shipping Dimensions	23.8 x 16.9 x 25.6 in/60 x 43 x 65 cm	
Weight		
Typical Configuration	86 lbs/39 kg	
Maximum Configuration	113 lbs/51 kg	
Shipping Weight		
Nominal	95 lbs/43 kg	
Maximum	156 lbs/71 kg	
Clearances	**Operating**	**Service**
Front	29.5 in/75 cm	29.5 in/75 cm
Rear	6 in/15 cm	29.5 in/75 cm
Sides	None	29.5 in/75 cm
Environmental		
Temperature		
Operating[2]	50° to 104°F/10° to 40°C	
Rate of change	20°F/hr/ 11°C/hr	
Non-operating	–40 to 151°F/–40 to 66°C	
Storage (60 days)	–40 to 151°F/–40 to 66°C	
Rate of change	36°F/hr/20°C/hr	
Relative Humidity		
Operating	10% to 90%	
Non-operating	10% to 95%	
Storage (60 days)	10% to 95%	
Rate of change	20%/hr	
Maximum Wet Bulb Temperature		
Operating	82°F/28°C	
Storage	115°F/46°C	
Maximum Dew Point Temperature		
Operating	36°F/2°C	
Storage (60 days)	Not tested	
Maximum Heat Dissipation	Current	
Dual supply	4097 Btu/hr	
Air Flow and Quality		
Intake location	Front	
Exhaust location	Rear	
Particle size	N/A	
Concentration	N/A	
Altitude		
Operating[3]	10,000 ft/ 3,048 m	
Non-operating	40,000 ft/12,192 m	
Mechanical Shock		
Operating	10 G 10 ms	
Non-operating	20 G peak 30 ms	
Vibration		
Operating	10 to 500 Hz 0.1 G peak	
Non-operating	1.03 Grms 5 to 300Hz	
Acoustics (Average declared)		
Idle	5.7 L^{wA}, B 38 L^{pA^m}, dba	
Operating	5.6 L^{wA}, B 37 L^{pA^m}, dba	
Electrical (Power Supplies are universal, PFC, auto-ranging, 100/240 VAC)		
Nominal Voltage (VAC)	100 to 120 VAC	220 to 240 VAC
Operating Voltage Range (VAC)	90 to 128 VAC	180 to 256 VAC
Power Source Phase	Single	Single
Nominal Frequency (Hz)	60 Hz	50 Hz
Frequency Range (Hz)	59-61 Hz	49-51 Hz
Maximum Inrush Current per line core	11 Amps	22 Amps

Technical Specifications

System Unit *(continued)*

Electrical (Power Supplies are universal, PFC, auto-ranging, 100/240 VAC.) *(continued)*

RMS Current (maximum)	12 Amps	5 Amps
Single Power Supply	7.4 Amps each supply	3.7 Amps each supply
Dual Power Supply	11.7 Amps @ 100VAC	4.9 Amps @ 220VAC
RMS Current (typical)	9.3 Amps @ 120VAC	4.4 Amps @ 240VAC
Power Cord		
Type	IEC 320 C13	
Length	75 in (190 cm)	
U.S. plug	NEMA 5-15	
Regulatory		
Agency Approvals	UL: Listed to UL1950 (3rd edition)	
	CSA: Certified to CAN/CSA-C22.2 No. 950-M95	
	TUV: EN 60950 VDE 0805 GS marked	
	FCC: Part 15.B Class A	
	CE: EN55022, EN50082	
	VCCI Class II ITE	
	BCIQ: CISPR22, CNS13438	
	C-Tick: CISPR22, AS/NZS 3548	
Reviewed to	AS/NZ 3260: 1993 Australian/New Zealand Standard	
	EN 60950/A4: 1997 European Norm	
	IEC 950 (Second edition, Third amend)	

[1] Installing one BA370 and one system in an H9A10 or H9A15 cabinet requires mandatory selection of a ballast kit; ballast kit not required if two BA370s and one system are installed in an H9A10 or H9A15 cabinet.

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

[3] Higher altitudes are possible if maximum operating temperature is reduced (see Temperature); other restrictions may apply such as maximum permissible altitude for hard drives.