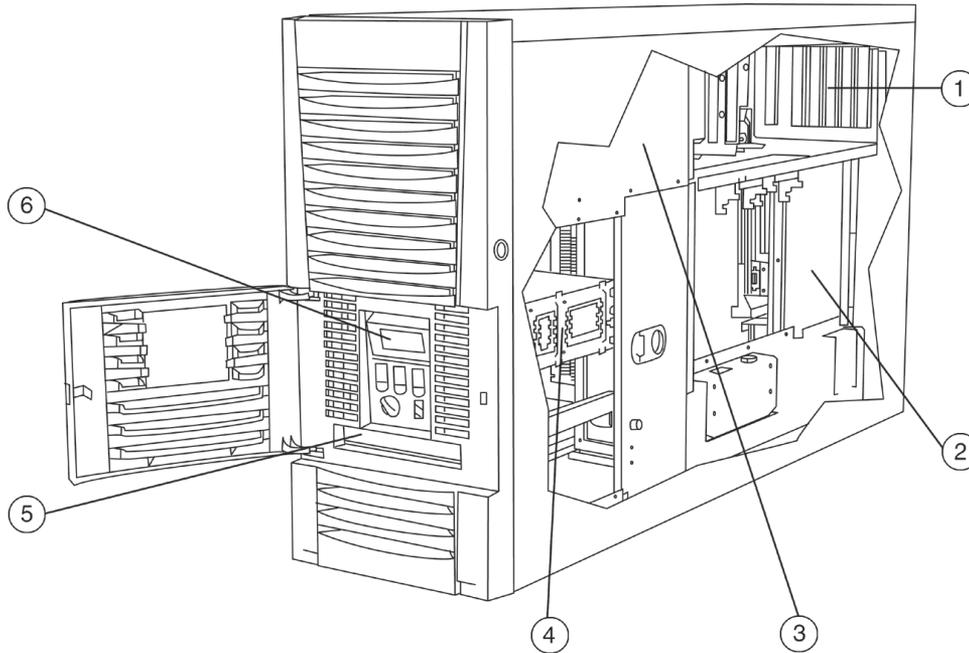


## Overview



- |                              |                           |
|------------------------------|---------------------------|
| 1. I/O Slots                 | 4. Hard Disk Drive Bays   |
| 2. CPU Building Block Module | 5. CD-RW Drive            |
| 3. Hot-swap Power Supplies   | 6. Operator Control Panel |

## At A Glance

### AlphaServer/AlphaStation ES47 Tower systems

- Two 1000-MHz Alpha 21364 processors
- Advanced on-chip memory controllers and switch logic capable of providing 10.7-GB/s of peak memory bandwidth per processor
- Choice of memory options; up to 4-GB of RDRAM memory per processor (16-GB total)
- Redundant features providing maximum uptime - N+1 Voltage regulator Modules (VRMs); hot-plug redundant power supplies; cooling provided by four hot-plug redundant system fans
- Optional RAID memory support
- Five PCI-X I/O slots
  - One 64-bit/133-MHz slot
  - Four 64-bit/66-MHz slots
- One AGP slot
- Internal hot-plug disk drive storage of 292 GB with two 146-GB SCSI disk drives
- Integrated Ultra3 SCSI
- CD-RW Drive
- Dual USB port
- Enhanced reliability with ECC-protected memory, processor cache and system data paths
- Tru64 UNIX or OpenVMS factory installed software (FIS); optional high availability support with Tru64 UNIX and OpenVMS cluster solutions
- Product warranty, 1-year hardware, on-site next business day and 90-day software, telephone support delivered by HP Services
- Consult the HP Customer Support Center at 1-800 345 1518 for details

## Standard Features

<b>Processor</b>	Two Alpha 21364 1000-MHz CPUs	
<b>Cache Memory</b>	1.75-MB ECC L2 on-chip cache per CPU	
<b>Architecture</b>	Low-latency, interprocessor (IP) network with on-chip RDRAM memory controllers and on-chip L2 cache	
<b>CPUs, Memory, and I/O slots</b>	CPU's supported	2
	Memory supported	Up to 16 GB
	PCI-X slots supported	5
	AGP slots supported	1
<b>Storage Controller</b>	Integrated Ultra3 SCSI adapter for internal disk drives	
<b>Interfaces</b>	USB	One Dual USB port
	Server Mgt	One MBM Server Management LAN Connection
	Serial	One MBM serial connection
<b>Form Factor</b>	Tower	
<b>Boot/Diagnostic Devices</b>	CD-R	Slim line multi-bay 16X/10X/24X CD-RW
	Hard Drives	Choice of 18.2/36.4/72.8/146-GB SCSI disk drives
<b>Internal Disk Expansion</b>	Total Internal Drive Bays	2
<b>Power Supplies</b>	Two @208V (700-Watt @120V) 48V auto-sensing power supplies, hot swappable, N+1 (220v operation only)	
<b>OS Support</b>	AlphaServer ES47Tru64 UNIX Tower systems include pre-installed software, Base license, Unlimited User license, Server Extension license, Internet Express, and Secure Web Server AlphaServer ES47 OpenVMS Tower systems include pre-installed software, Base license with System Manager license and Enterprise Integration Server License Package for OpenVMS. Minimum OS support - Tru64 UNIX V5.1B + IPK or OpenVMS V7.3-1 + VMS731-EV7_V0100 upgrade kit AlphaStation ES47 Tru64 UNIX Tower systems include pre-installed software, 2-user Base license AlphaStation ES47 OpenVMS Tower systems include pre-installed software (V7.3-1), Base license, Concurrent Use 1-user license, and NAS 150 Client license	

**Service and Support** Protected by HP Services including a 1-year on-site hardware warranty 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.

**NOTE:** For the complete list of supported options, refer to the following Web page:  
[http://h18002.www1.hp.com/alphaserver/options/ases47/ases47\\_options.html](http://h18002.www1.hp.com/alphaserver/options/ases47/ases47_options.html)

## Systems

### Step 1 - Assess Application Requirements

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- Selection of system components must be made in the context of total application requirements. Although the configuration of system components must be done in steps (for example, base system, memories, disks, etc.), these steps should not be done in isolation.
- The order in which requirements are assessed is also important, since one requirement may impact others. Before proceeding, it would be useful to assess the total application requirements in the following order:
- What level of availability is required?
  - If no single points of failure are allowed, then the solution should be configured as a multi-system cluster.
  - If access to specific devices must be assured, consider redundant adapters, RAID memory, etc.
- What overall capacities are required in terms of performance, memory capacity, and disk storage?
- How should the system be configured to optimize performance?
  - Memory should be configured according to application guidelines listed in Step 4.
- What are the near-term system expansion needs?

**NOTE:** Most configuration steps require that the above data be considered in whole or in part. Be sure to execute each step in the context of the total application requirements.

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### System Ordering Requirements:

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Certain system components or services are either required for normal operation or are recommended for best system performance and/or operation. This document uses the following definitions to specify these options:

- **Mandatory purchase:** The system cannot function without this option or service - the option or service must be ordered with the system.
- **Required to function:** This option or service is needed to support a working system - the option or service must be ordered with the system or be available onsite.
- **Recommended:** System performance or function will be enhanced if this option or service is ordered.

AlphaServer/AlphaStation ES47 Tower systems require selection of the following items:

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### Mandatory Purchases:

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- One Base system (see Step 2)
- One CPU Building Block Module (see Step 3)
- One memory option (see Step 4)
- One system disk drive (see Step 5)
- Two country-specific power cords (See Step 6)
- Ethernet adapter (see Step 8)

**NOTE:** AlphaStation ES47 systems require a graphics adapter (see Step 9)

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### Optional Purchases:

- Software media and documentation only required for first system onsite
- Country-specific keyboard and mouse only if required (see Step 10)

### Recommended Services:

- HP Care Pack Service Package
-

## Systems

### System Management Hardware/Software Requirements

**NOTE:** The following Server Management requirements only apply to customers who prefer to use the AMS or AMU Server Management software.

- The AlphaServer Management Station (AMS) provides the highest level of server management for a single or multi platform environment. The AMS provides for a local or remote Web accessible central point of management and control for a multiple ES47/ES80/GS1280 environment.
- The AlphaServer Management Station software requires the following hardware in order to operate:
  - Tru64 UNIX platform with 1-GB memory, 1-GB disk space, and two network interface cards running Tru64 UNIX V5.1B
  - Wintel platform running Linux, 500-MHz CPU or faster, 1-GB memory, 10-GB disk space
- The AlphaServer Management Utility (AMU) provides the next highest level of server management. The AMU is a GUI based application that provides a sophisticated, yet user-friendly graphics interface to monitor and manage a single ES47/ES80/GS1280 system. From this application, the user can monitor the status of the platform, and provide a significant level of control of the platform. The AMU is a Web based utility, which allows a user local and remote access from a browser.
- The AlphaServer Management Utility requires one of the following hardware platforms in order to operate:
  - Wintel platform running Windows 2000, 500-MHz CPU or faster, 1-GB memory, 10-GB disk space
  - Wintel platform running Linux, 500-MHz CPU or faster, 1-GB memory, 10-GB disk space
  - Tru64 UNIX platform running V5.1B or later, 1-GB memory, 10-GB disk space
- Both the AMS and AMU Software require Internet Explorer 5 or later or Netscape 6.
- Downloadable AMS/AMU kits and instructions available at: <http://ftp.digital.com/pub/Digital/Alpha/firmware/interim/ams/index.html>

### Step 2 - Select Base System

- **Mandatory** selection of at least one Base System required

**NOTE:** Base systems do not include CPUs or memory (see Steps 3 and 4)

AlphaServer ES47 Tower Base Systems				
Model	OS	CPUs Supported (See Step 3)	I/O Slots	Order No.
Tower	Tru64 UNIX	2	5 PCI/PCI-X, 1 AGP	DA-20AAA-AB
Tower	OpenVMS	2	5 PCI/PCI-X, 1 AGP	DY-20AAA-AB
AlphaStation ES47 Tower Base Systems				
Tower	Tru64 UNIX	2	5 PCI/PCI-X, 1 AGP	DA-20AAA-AC
Tower	OpenVMS	2	5 PCI/PCI-X, 1 AGP	DY-20AAA-AC

### Step 3 - CPU Building Block Modules - Mandatory

- **Mandatory** selection of one CPU Building Block Module or one Capacity on Demand (CoD) CPU Building Block Module required per AlphaServer ES47 Tower System
- CPU Building Block Module includes two 1000-MHz Alpha 21364 CPUs
- Selection of CPU Building Block Module type (Tru64 UNIX or OpenVMS) must match base system operating system selected in Step 2

CPU Building Block Modules	AlphaServer ES47 Dual CPU Building Block Module, 2xEV7 CPUs, 1000 MHz, Tru64 UNIX SMP License	3X-KN73A-BB
	AlphaServer ES47 Dual CPU Building Block Module, 2xEV7 CPUs, 1000 MHz, OpenVMS SMP License	3X-KN73A-BC

### Systems

#### Capacity on Demand (CoD) CPU Building Block Modules

AlphaServer ES47 Tower Systems can be configured with CoD CPUs. Capacity on Demand CPUs for the ES47 Tower are licensed to allow activation of one CPU at installation and the activation of the second CPU within 18 months. Memory is NOT included with CoD CPUs but must be ordered (see Step 4).

**NOTE:** Each CoD CPU must be populated with at least one memory option.

One CPU on the CoD CPU Building Block must remain active, and the active CPU must be the one connected to the internal I/O.

AlphaServer ES47 Tower CoD Dual CPU Building Block Module, one CoD CPU and one active CPU, 1000 MHz, Tru64 UNIX SMP License

3X-KN73A-DB

AlphaServer ES47 Tower CoD Dual CPU Building Block Module, 1000 MHz, one CoD CPU and one active CPU, OpenVMS SMP License

3X-KN73A-DC

## Options

### Step 4 - Memory - Mandatory

#### Memory Configuration Guidelines

Memory options should be selected in the context of the application's sensitivity to memory bandwidth and future memory capacity expansion. This will determine the number of memory options to order. The total capacity required will determine the size of the options to be ordered.

- **Mandatory** selection of at least one memory option required per ES47 tower system. If CoD CPU is selected in Step 3, two memory options are required.
- Each ES47 tower system supports up to four memory options (four RIMMs each) and up to four memory RAID options (one RIMM each) for a total of 20 RIMMs.
- Each CPU has two memory controllers.
  - Each memory controller can support four RIMMs (one memory option) and a fifth RIMM slot for redundancy (RAID option).
  - If populated, the two memory controllers per CPU **must** contain the same size RIMMs.
- Order one RAID option (one RIMM) per memory option if desired.
- If RAID memory option is selected, the number of RAID options selected must equal the number of memory options selected.

The following examples illustrate different ways of configuring an ES47 Tower system with a total of 2 GB of memory

Case	Memory Option	ES47 Tower System			
		CPU 1		CPU 2	
		Controller 1	Controller 2	Controller 1	Controller 2
A	3X-MS7AB-AA (4x128MB)	1	1	1	1
B	3X-MS7AB-BA (4x256MB)	1	-	1	-
C	3X-MS7AB-CA (4x512MB)	1	-	-	-

## Options

### Memory Application Examples

Configuring memory is a compromise between cost, total memory capacity, and memory bandwidth requirements. The behavior of the application must be used to define the most-desired configuration. Some applications are sensitive to memory capacity while some are sensitive to memory bandwidth. If actual application measurements are not available, the following may be used as guidelines:

- Large memory (VLM) applications, in which large amounts of memory can substantially reduce I/O throughput, may be optimized for total memory capacity and future capacity growth. In VLM applications, the right balance might be one memory option per CPU. (Case B)
- Typical commercial applications, such as transaction processing (OLTP) and multi-user timesharing, usually operate efficiently from cache and may not be materially affected by memory bandwidth. Memory configuration is a balance between memory bandwidth and future capacity growth. It is advisable to match the number of memory options to the number of CPUs. (Case B)
- Data mining can benefit from additional memory bandwidth. In these cases, configure four memory options, two per CPU. (Case A)
- The most demanding high-performance technical applications achieve a performance level that is directly proportional to memory bandwidth. In these cases, configure four memory options, two per CPU. (Case A)

512-MB RDRAM Memory (4x128) Option	3X-MS7AB-AA
512-MB RDRAM Memory (1x128) RAID Option	3X-MS7AB-AC
1-GB RDRAM Memory (4x256) Option	3X-MS7AB-BA
1-GB RDRAM Memory (1x256) RAID Option	3X-MS7AB-BC
2-GB RDRAM Memory (4x512) Option	3X-MS7AB-CA
2-GB RDRAM Memory (1x512) RAID Option	3X-MS7AB-CC
4-GB RDRAM Memory (4x1024) Option	3X-MS7AB-DA
4-GB RDRAM Memory (1x1024) RAID Option	3X-MS7AB-DC
VRM/Bracket Kit for 4-GB RDRAM Memory Option	3X-H7188-AA

**NOTE:** Order one VRM/Bracket Kit for each CPU Building Block module that will contain any 3X-MS7AB-DA options.

### Step 5 - Select System Disk

- **Mandatory** selection of at least one system disk drive is required for each ES47 Tower system ordered.  
**NOTE:** Integrated Ultra3 SCSI controller for internal disk drives and cabling included.
- ES47 Tower systems support up to two internal hard disk drives.

36.4-GB Ultra320 SCSI 10,000 rpm 1-inch Universal disk drive	3R-A3838-AA
72.8-GB Ultra320 SCSI 10,000 rpm 1-inch Universal disk drive	3R-A3839-AA
146-GB Ultra320 SCSI 10,000 rpm 1-inch Universal disk drive	3R-A3841-AA
18.2-GB Ultra320 SCSI 15,000 rpm 1-inch Universal disk drive	3R-A3848-AA
36.4-GB Ultra320 SCSI 15,000 rpm 1-inch Universal disk drive	3R-A3849-AA
72.8-GB Ultra320 SCSI 15,000 rpm 1-inch Universal disk drive	3R-A3851-AA

## Options

### Step 6 - Tower Enclosure Power Cords - Mandatory

- Mandatory selection of two power cords required for each ES47 Tower system ordered.

**NOTE:** Power supplies included with the Base System.

North America	BN26J-1K
Australia, New Zealand, 2.5-meter	BN19H-2E
Central Europe, 2.5-meter	BN19C-2E
Denmark, 2.5-meter	BN19K-2E
Egypt, India, South Africa, 2.5-meter	BN19S-2E
Israel, 2.5-meter	BN18L-2E
Italy, 2.5-meter	BM19M-2E
Japan, 2.5-meter, Dentori approved	3X-BN46F-02
Switzerland, 2.5-meter	BN19E-2E
UK, Ireland, 2.5-meter	BM19M-2E

### I/O Configuration Guidelines:

ES47 Tower systems support six total slots spread over three buses (ports). The following table details the internal I/O slots:

Port #	Slot #	Maximum Bus Speed	Signal Voltage	Number of Devices Supported
0	1	133 MHz	3.3V	1 – 133 MHz or 66 MHz PCI-X or 1 – 66 or 33 MHz PCI
1	1	66 MHz	3.3V	2 – 66 MHz PCI-X or 2 – 66 MHz PCI or 4 – 33 MHz PCI
	2	66 MHz	3.3V	
	3	66 MHz	3.3V	
	4	66 MHz	3.3V	
3	1	2X AGP	1.5V	1 – 1X or 2X AGP

**NOTE:** Four 66-MHz PCI devices are supported in Port 1, Slots 1-4; however, they will operate at 33 MHz.

### Step 7- Storage

#### Step 7a – Storage Adapters/Controllers.

## Options

	Maximum # Supported		Slot Type	
	Tru64 UNIX	OpenVMS		
	Per System	Per System		
<b>SCSI</b>				
PCI 2-port Ultra3 (LVD) SCSI adapter, 64-bit/66-MHz dual-channel (uses one PCI slot); includes internal 68-pin and external 68-pin VHDCI connectors; requires 3X-BC56J-xx cable to connect adapter to DS-SL13R-Bx shelf. NOTE: Dual bus/shelf and single/bus shelf (DS-SL13R-xx) are supported. Restrictions: HSZxx RAID controllers not supported; SDLT tape drives not supported; Tru64 UNIX requires graphics adapter to run console utilities (RUN BIOS); OpenVMS not supported in shared bus configurations; maximum cable length 12 meters. <b>NOTE:</b> Red Hat Linux V7.2 supported option, maximum one per system.	4	4	3.3V	3X-KZPEA-DB
Ultra160 cable, VHDCI to VHDCI xx = 02 (6-feet), 03 (12-feet), 04 (24-feet)				3X-BC56J-xx
<b>RAID</b>				
Ultra160 2-channel internal RAID controller with 128-MB cache <b>NOTE:</b> Red Hat Linux V7.2 supported option, maximum one per system.	4	1	3.3V	3X-KZPDC-BE
Ultra160 4-channel internal RAID controller with 256-MB cache <b>NOTE:</b> Red Hat Linux V7.2 supported option, maximum one per system.	4	1	3.3V	3X-KZPDC-DF
<b>NOTES:</b>				
<ul style="list-style-type: none"> <li>● Tru64 UNIX V5.1B Patch Kit (BL22) required: T64V51BB22AS0002-20030415.</li> <li>● ACU-XE (Array Configuration Utility ACU-XE) for Tru64 UNIX and OpenVMS is shipped on a CD-ROM with the controller; utilities are located at: <a href="http://h18002.www1.hp.com/alphaserver/products/storage/sa5300a/">http://h18002.www1.hp.com/alphaserver/products/storage/sa5300a/</a></li> <li>● For Tru64 UNIX, Insight Management Agents kit, minimum V3.1 required; located at <a href="http://h30097.www3.hp.com/cma/">http://h30097.www3.hp.com/cma/</a></li> <li>● HP Management CD minimum V6.2 required</li> <li>● CPQIM310.STOR.01 Patch Kit required; located at <a href="http://h30097.www3.hp.com/cma/">http://h30097.www3.hp.com/cma/</a></li> </ul>				
Ultra160 cable, VHDCI to VHDCI xx = 02 (6-feet), 03 (12-feet), 04 (24-feet)				3X-BC56J-xx
<b>Fibre Channel</b>				
PCI to 2-Gbit Fibre Channel host bus adapter, 64 bit/66 MHz, single-channel	4	4	3.3V	DS-KGPSA-DA
PCI-X 2-Gbit Fibre Channel Host Bus Adapter <b>NOTES:</b>	4	4	3.3V	DS-KGPSA-EA
<ul style="list-style-type: none"> <li>● Tru64 UNIX: Requires V5.1B with Patch Kit: T64v51bb03as0001-20021229.tar</li> <li>● OpenVMS: Requires V7.3-1 with TIMA kit: VMS73_1_SCSI_FIBRE_V0300</li> <li>● OpenVMS Clusters: Requires V7.3-1 with TIMA kit: VMS7_31_CLUSTER_V0100</li> </ul>				
PCI to Fibre Channel host bus adapter, 64 bit-bit/66 MHz <b>NOTE:</b> Red Hat Linux V7.2 supported option, maximum one per system.	-	-	3.3V	DS-SWLA4-PD
Fibre Channel cable xx=02, 03, 05, 10, 15, 30, 50 meters				BNGBX-xx

## Options

### Step 7b - Storage Expansion – Optional

<b>StorageWorks Model 4314T Standalone Enclosures for Universal Drives</b>	Model 4314T Ultra3 SCSI, single-bus tower enclosure, US	DS-SL13T-AA
	Model 4314T Ultra3 SCSI, single-bus tower enclosure, International	DS-SL13T-AB
	Model 4314T Ultra3 SCSI, single-bus tower enclosure, Japan	DS-SL13T-AJ

**NOTE:** DS-SL13T enclosures include one 12-foot VHDCI to VHDCI SCSI cable

<b>Universal Disk Drives</b> (Supported in Model 4314T Standalone Enclosures)	36.4-GB Ultra320 SCSI 10,000 rpm 1-inch Universal disk drive	3R-A3838-AA
	72.8-GB Ultra320 SCSI 10,000 rpm 1-inch Universal disk drive	3R-A3839-AA
	146-GB Ultra320 SCSI 10,000 rpm 1-inch Universal disk drive	3R-A3841-AA
	18.2-GB Ultra320 SCSI 15,000 rpm 1-inch Universal disk drive	3R-A3848-AA
	36.4-GB Ultra320 SCSI 15,000 rpm 1-inch Universal disk drive	3R-A3849-AA

### External Tape Storage

<b>AIT Tabletop Tape Drives</b>	AIT 35/70-GB 8-mm LVD tabletop tape drive, carbon black, North America; requires LVD adapter	216885-001
	Same as above, International	216885-B31
	Same as above, Japan	216885-291
	AIT 50/100-GB 8-mm SCSI tabletop tape drive with 120V North America power cord, carbon black; requires Ultra2 (LVD) adapter	157767-002
	Same as above, International	157767-B32
	Same as above, Japan	157767-292

<b>AIT Hot-plug Tape Drives</b> (for use in StorageWorks Model 4314T Standalone Enclosures)	• AIT hot-plug tape drives require two Universal slots	
	AIT 35/70-GB hot-plug LVD Universal tape drive, uses two slots in 43xxx shelves	3R-A2396-AA
	AIT 50/100-GB hot-plug LVD Universal tape drive, uses two slots in 43xxx shelves	3R-A2779-AA

<b>AIT Autoloaders</b>	AIT 35-GB tabletop autoloader, 8 cartridge, U.S.	292355-001
	Same as above, International	292355-B31

<b>AIT Tape Libraries</b>	SSL2020 AIT tabletop library with one AIT 50-GB drive and 20 slots, LVD	175195-B21
	SSL2020 AIT tabletop library with two AIT 50-GB drives and 20 slots, LVD	175195-B22

<b>DAT Tabletop Tape Drives</b>	DAT 12/24-GB 4-mm narrow single-ended tabletop SCSI tape, includes 120V North America power cord, requires BN31W-xx SCSI cable	DS-TLZ10-DB
	DAT 20/40-GB 4-mm Wide Ultra2 (LVD) tabletop SCSI tape drive with 120V North America power cord, carbon black; requires Ultra2 (LVD) adapter	157770-002
	Same as above, International	157770-B32
	Same as above, Japan	157770-292

## Options

<b>DAT - Tape Drives</b> (for use in StorageWorks Model 4314T Standalone Enclosures)	DAT 20/40-GB DDS4 hot-plug LVD Universal tape drive, uses two slots in 43xxx shelves	3R-A2780-AA
	DAT72 internal tape drive kit	3R-A4544-AA
	DAT72 external tape drive kit, U.S.	3R-A4545-AA
	DAT72 external tape drive kit, International	3R-A4546-AA
	DAT72 hot-plug tape drive kit	3R-A4546-AA
<b>DAT Autoloaders</b>	DAT 20/40-GB auto loader external; requires BN31W-xx SCSI cable and 3X-KZPCA-AA, or 3X-DEPVZ-AA adapter, North America	166505-001
	Same as above, International	166505-B31
	Same as above, Japan	166505-291
<b>DLT/SDLT Tabletop Tape Drives</b>	DLT8000 tabletop 40/80-GB DLT external tape drive, carbon black - requires 3X-KZPCA-AA LVD adapter - U.S.	146197-B23
	Same as above - Japan	146197-292
	SDLT tabletop 110/220-GB external tape drive, carbon black- requires 3X-KZPCA-AA LVD adapter - U.S.	192103-002
	Same as above - International	192103-B32
	Same as above - Japan	192103-292
	SDLT tabletop 160/320-GB external tape drive, carbon black - requires 3X-KZPCA-AA LVD adapter - U.S.	257319-001
	Same as above - International	257319-B31
	Same as above - Japan	257319-291
<b>DLT/SDLT Tape Libraries</b>	MSL5026DLX, DLT tabletop library with one 40/80-GB DLT tape drive, LVD	231821-B21
	MSL5026DLX, DLT tabletop library with two 40/80-GB DLT tape drives, LVD	231821-B22
	MSL5026SL, SDLT tabletop library with one 110/220-GB SDLT tape drive, LVD; graphite	302511-B21
	MSL5026SL, SDLT tabletop library with two 110/220-GB SDLT tape drives, LVD; graphite	302511-B22
	MSL5026S2, SDLT tabletop library with one 160/320-GB SDLT tape drive, LVD; graphite	293473-B21
	MSL5026S2, SDLT tabletop library with two 160/320-GB SDLT tape drives, LVD; graphite	293473-B21
	MSL5000 SDLT2 upgrade drive, all	293475-B21
	MSL5052SL SDLT 110/220-GB drive field upgrade, LVD	231823-B22
	MSL5052S2, SDLT tabletop library with two 160/320-GB SDLT tape drives, LVD; graphite	293476-B21

## Options

### Step 8 - Storage Adapters/Controllers

### Step 8a - Networks and Communications – Mandatory

- **Mandatory** selection of at least one of the following Ethernet adapters (3X-DE602-BB or 3X-DEGXA-TA) is required for each ES47 Tower system ordered

	Maximum # Supported		Slot Type	
	Tru64 UNIX	OpenVMS		
	Per System	Per System		
<b>Ethernet Adapters</b>				
PCI (32/64-bit, 33-MHz to 66-MHz) dual-port 10/100 Ethernet (UTP/RJ45s) NIC and Base Module. (One 3X-DE602-TA or 3X-DE602-FA optional add-on daughter card can be combined with this module.) Use BN25G, BN26M, BN24Q, or BN28Q twisted pair RJ45 cables. <b>NOTE:</b> Red Hat Linux V7.2 supported option, maximum one per system.	4	4	3.3V	3X-DE602-BB
PCI-X/PCI Single-port 10/100/1000 Mbps (Twisted-pair Copper with RJ45) Gigabit Ethernet NIC. Use BN25G, BN26M, BN24Q, BN28Q or equivalent cables with RJ45 connectors. <b>NOTES:</b> Only supported in PCI mode. Supported as a cluster interconnect under OpenVMS only. OpenVMS remedial kit required: EV7 Tima: DEC-AXPVMS-VMS731_EV7-V0100- -4.PCSI LAN Tima: DEC-AXPVMS-VMS731_LAN-V0100- -4.PCSI Red Hat Linux V7.2 supported option, maximum one per system.	4	4	3.3V	3X-DEGXA-TA

## Options

### Step 8b - Networks and Communications – Optional

	Maximum # Supported		Slot Type	
	Tru64 UNIX	OpenVMS		
	Per System	Per System		
<b>Ethernet Adapters</b>				
Dual-port 10/100 Ethernet (UTP/RJ45) add-on daughter card for use with the 3X-DE602-BB only. The combined 3X-DE602-BB and 3X-DE602-TA modules provide four 10/100 (UTP/RJ45s) ports in a single PCI slot option. Use BN25G, BN26M, BN24Q, or BN28Q twisted pair RJ45 cables. <b>NOTE:</b> 3X-DE602-TA cannot be used standalone.	4	4	3.3V	3X-DE602-TA
Single-port 100 Mbps (MMF/duplex-SC) add-on daughter card for use with the 3X-DE602-BB. The combined 3X-DE602-BB and 3X-DE602-FA provides two 10/100 (UTP/RJ45s) and one 100Mbps (MMF/SC) ports in a single PCI slot option. Use BN34A or BN34B cables. <b>NOTE:</b> 3X-DE602-FA cannot be used standalone.	4	4	3.3V	3X-DE602-FA
PCI-X/PCI Single-port 1000 Mbps (Fiber with duplex-SC) Gigabit Ethernet NIC. Use BN34A, BN34B or equivalent cables with SC connectors. <b>NOTES:</b> Only supported in PCI mode. Supported as a cluster interconnect under OpenVMS only. OpenVMS remedial kit required: EV7 Tima: DEC-AXPVMS-VMS731_EV7-V0100- -4.PCSI LAN Tima: DEC-AXPVMS-VMS731_LAN-V0100- -4.PCSI Red Hat Linux V7.2 supported option, maximum one per system.	4	4	3.3V	3X-DEGXA-SA
<b>FDDI Controllers</b>				
PCI (32-bit, 33-MHz) to FDDI SAS (MMF/duplex-SC) NIC Use BN34A, BN34B, or BN34D cables.	4	4	3.3V	3X-DEFPA-AC
PCI (32-bit, 33-MHz) to FDDI DAS (MMF/duplex-SC) NIC Use BN34A, BN34B, or BN34D cables.	4	4	3.3V	3X-DEFPA-DC
PCI (32-bit, 33-MHz) to FDDI DAS (UTP/RJ45) NIC Use BN25G, BN26M, BN24Q, or BN28Q twisted pair RJ45 cables.	4	4	3.3V	3X-DEFPA-MC
PCI (32-bit, 33-MHz) to FDDI SAS (UTP/RJ45) NIC Use BN25G, BN26M, BN24Q, or BN28Q twisted pair RJ45 cables.	4	4	3.3V	3X-DEFPA-UC
Multimode fiber optic (MMF) 62.5/125um duplex cable with SC-to-MIC connectors, xx = available lengths: (01, 03, and 10) for 1, 3, and 10 meters				BN34D-xx

## Options

<b>Synchronous/Asynchronous Controllers</b>				
PCI (32-bit, 33-MHz) to Dual-port Intelligent Synchronous Communications NIC -- Requires at least one (maximum two) BN34x sync cable listed below	4	2	3.3V	3X-PBXDD-AA
PCI (32-bit, 33-MHz) to Quad-port Intelligent Synchronous Communications NIC -- Requires at least one (maximum four) BN34x sync cable listed below.	4	2	3.3V	3X-PBXDD-AB
<b>Synchronous-specific Cables</b>				
EIA-530 single-port cable				3X-BC34G-06
V.24/EIA-232 single-port cable				3X-BC34L-06
V.11/x.21 single-port cable				3X-BC33S-06
V.35 single-port cable				3X-BC34T-06
<b>ATM Adapters</b>				
PCI (32-bit, 33-MHz) to 155 Mbps ATM, Copper NIC with RJ45 connector Use BN25G-xx, or BN26M-xx cables.	4	4	3.3V	3X-DAPBA-UA
PCI (32-bit, 33-MHz) to 155 Mbps ATM Fiber NIC with SC connector Use BN34B-xx cable.	4	4	3.3V	3X-DAPBA-FA
<b>Asynchronous Communications</b>				
PCI (32-bit, 33-MHz) to 4-port Async Communications NIC with DB-25 octopus cable.	2	2	3.3V	PBXDA-BA
PCI (32-bit, 33-MHz) to 8-port Async Communications NIC	2	2	3.3V	PBXDA-BB
PCI (32-bit, 33-MHz) to 16-port Async Communications Controller and rackmount 16-port distribution box with RJ45 connectors	2	2	3.3V	PBXDA-AC
<b>Asynchronous Connector Adapters</b>				
RJ45-to-DB-25 Converter Cable				CXI01-AC
RJ45-to-DEC MJ11 Converter Cable (8 pack)				CXI01-AF

<b>Ethernet, FDDI, ATM Cables</b>				
Multimode fiber optic (MMF) 62.5/125um duplex cable, with SC-to-ST connectors. xx = available lengths: (2E, 4E, 01, 03, 10, 20, 30) for 2.4, 4.5, 1, 3, 10, 20, and 30 meters				BN34A-xx
Multimode fiber optic (MMF) 62.5/125um duplex cable, with SC-to-SC connectors. xx = available lengths: (2E, 4E, 01, 03, 10, 20, 30) for 2.4, 4.5, 1, 3, 10, 20, and 30 meters				BN34B-xx
Category 5e (4-Unshielded Twisted Pairs / UTP) straight-through cable with RJ45-to-RJ45 connectors for system to switch, repeater, or hub connectivity. xx = available lengths: (0B, 0E, 01, 03, 04, 07) for 0.2, 0.5, 1, 3, 4, and 7 meters				BN25G-xx
Category 5e (4-Twisted Pairs, Screened / ScTP) straight-through cable with RJ45-to-RJ45 connectors for system to switch, repeater, or hub connectivity. xx = available lengths: (0E, 01, 03, 04, 07) for 0.5, 1, 3, 4, and 7 meters				BN26M-xx
Category 5e (4-Unshielded Twisted Pairs / UTP) Xover cable with RJ45-to-RJ45 connectors for system to switch, repeater, or hub connectivity. xx = available lengths: (0E, 01, 03, 04, 07) for 0.5, 1, 3, 4, and 7 meters				BN24Q-xx
Category 5e (4-Twisted Pairs, Screened / ScTP) Xover cable with RJ45-to-RJ45 connectors for system to switch, repeater, or hub connectivity. xx = available lengths: (0E, 01, 03, 04, 07) for 0.5, 1, 3, 4, and 7 meters				BN28Q-xx

## Options

### Step 9 - Graphics – Optional

- Select graphics adapter, monitor, and country-specific keyboard for Tru64 UNIX and OpenVMS systems if required

	Maximum # Supported		Slot Type	
	Tru64 UNIX	OpenVMS		
ATI RADEON 7500 2D AGP graphics accelerator <b>NOTE:</b> Red Hat Linux V7.2 supported option, maximum one per system.	4	1	AGP(1)	3X-PBXGG-AB
ATI RADEON 7500 2D PCI graphics accelerator <b>NOTE:</b> Red Hat Linux V7.2 supported option, maximum one per system.	4	1	3.3V PCI	3X-PBXGG-AA
Tru64 UNIX Open3D license for RADEON 7500 (required for 3D functionality)				QL-6ZRA9-AA
OpenVMS Open3D license for RADEON 7500 (required for 3D functionality)				QL-0ADA9-AA
Additional Tru64 UNIX media kit for RADEON 7500 (initial kit ships with RADEON card)				QA-6ZRAA-H8
Additional OpenVMS media kit for RADEON 7500 (initial kit ships with RADEON card)				QA-6ZPAA-H8

(1) Only supported in 2X mode

**NOTE:** Maximum graphics adapters per system, all types - Tru64 UNIX 4, OpenVMS 1

### Step 10 - Mouse, Monitors, and Keyboards

<b>Mouse</b>	3-button mouse - USB	3X-PBQWS-WB
<b>PS2 to USB Converter</b>	Keyboard and Mouse adapter for USB - allows for connection of a PS2 keyboard and/or mouse to an AlphaServer ES47 Tower System	3R-A4495-AA

#### Monitors

- Graphics monitors other than those listed can be used if compatible with SVGA graphics ordered with system
- A video cable, 6-foot/1.8-meter length, is included with all variants of monitors
- Video extension cable required if monitor is located more than 1-meter from server
- Monitors will ship with, but not be integrated with systems.

## Options

<b>Carbon/Silver Monitors</b>	V7550 17-inch (16-inch viewable image size) flat-faced shadow mask color monitor, two-tone (carbon/silver), 0.25mm dot pitch, VGA to 1024 x 768 @85 Hz, MPRII/TCO99/ Energy Star compliant, Northern Hemisphere with North America power cord, VGA cable	3R-A4002-AA
	Same as above, with Euro power cord	3R-A4201-AA
	Same as above, APD, no power cord	3R-A4202-AA
	Same as above, Southern Hemisphere, with Australia/New Zealand power cord	3R-A4203-AA
	S7500 17-inch (16-inch viewable image size) FST multi-frequency color monitor, 2-tone (carbon/silver), 0.24-mm dot pitch, VGA to 1024 x 768 @85 Hz, MPRII/TCO 99/Energy Star Compliant, Northern Hemisphere with PRC power cord CCIB, VGA cable	3R-A4800-AA
	P930 19-inch (18-inch viewable image size) auto-scanning color monitor, Diamondtron NF, 0.24-mm aperture grille pitch, VGA to 1600 x 1200 @85 Hz, MPRII/TCO 99/Energy Star Compliant, Northern Hemisphere with North America power cord, VGA cable	3R-A4215-AA
	Same as above, with Euro power cord	3R-A4391-AA
	Same as above, Taiwan, with North America power cord	3R-A4392-AA
	Same as above, Southern Hemisphere, 0.25 to 0.27 mm aperture grille pitch, with Australia/New Zealand power cord	3R-A4393-AA
	S9500 19-inch (18-inch viewable image size) FST multi-frequency color monitor, 2-tone (carbon/silver), 0.24-mm dot pitch, VGA to 1280 x 1024 @85 Hz, MPRII/TCO 99/Energy Star Compliant, Northern Hemisphere with PRC power cord CCIB, VGA cable	3R-A4801-AA
<b>Carbon/Silver Flat Panel Monitors</b>	P1130 21-inch (19.8-inch viewable image size) FD Trinitron auto-scanning color monitor, 0.24-mm aperture grille pitch, VGA to 1792 x 1344 @85Hz, dual video input, USB Hub, MPRII/TCO 99/Energy Star Compliant, Northern Hemisphere with North America power cord, VGA cable	3R-A4216-AA
	Same as above, with Euro power cord	3R-A4396-AA
	Same as above, Taiwan, North America power cord	3R-A4397-AA
	Same as above, with PRC power cord, CCIB	3R-A4400-AA
	Same as above, Southern Hemisphere, with Australia/New Zealand power cord	3R-A4398-AA
<b>Carbon/Silver Flat Panel Monitors</b>	TFT1825, 18-inch (18-inch viewable image size) TFT flat panel monitor, 0.28mm pixel pitch, 1600 x 1200 @60Hz, multi-mode support, MPRII/TCO99/Energy Star compliant, one VGA, one DVI-I input connector, North America power cord, VGA and DVI-I cables	3R-A4292-AA
	L1530, 15-inch (15-inch viewable image size) TFT flat panel monitor, 0.297 mm pixel pitch, 1024 x 768 @60 Hz, multi-mode support, MPRII/TCO99/Energy Star compliant, two video input connectors (one VGA and one DVI-I), North America power cord, VGA and DVI-I cables	3R-A4857-AA
	L1530, 15-inch (15inch viewable image size) TFT flat panel monitor, 0.297 mm pixel pitch, 1024 x 768 @60 Hz, multi-mode support, MPRII/TCO99/Energy Star compliant, two video input connectors (one VGA and one DVI-I), Euro power cord, VGA and DVI-I cables	3R-A4858-AA

### Options

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<b>Monitor Power Cords</b>	North America, 120V, 75-inch	BN26J-1K
	Australia, New Zealand, 2.5-meter	BN19H-2E
	Central Europe, 2.5-meter	BN19C-2E
	Denmark, 2.5-meter	BN19K-2E
	Egypt, India, South Africa, 2.5-meter	BN19S-2E
	Israel, 2.5-meter	BN18L-2E
	Italy, 2.5-meter	BN19M-2E
	Japan, 2.5-meter, Dentori approved	3X-BN46F-02
	Switzerland, 2.5-meter	BN19E-2E
	UK, Ireland, 2.5-meter	BN19A-2E

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## Options

### Keyboards

Keyboards - USB Keyboard/Language	Tru64 UNIX USB only	OpenVMS USB and PS/2
U.S./English/International keyboard	3R-LKQ50-BA	3X-LK463-A2
Arabic keyboard	3R-LKQ50-BR	-
Belgian keyboard	3R-LKQ50-AB	3X-LK463-AB
BHCSY keyboard	3R-LKQ50-AX	-
Canadian/English keyboard	-	3X-LK463-AQ
Canadian/French keyboard	3R-LKQ50-AC	3X-LK463-AC
Cyrillic keyboard (Russian)	3R-LKQ50-BT	3X-LK463-BT
Czech keyboard	3R-LKQ50-BV	3X-LK463-BV
Danish keyboard	3R-LKQ50-AD	3X-LK463-AD
Dutch keyboard	3R-LKQ50-AH	3X-LK463-AH
Finnish keyboard	3R-A4590-AA	3X-LK463-AF
French keyboard	3R-LKQ50-AP	3X-LK463-AP
German keyboard	3R-LKQ50-AG	3X-LK463-AG
Greek keyboard	3R-LKQ50-BH	3X-LK463-BH
Hebrew keyboard	3R-LKQ50-AT	3X-LK463-AT
Hungarian keyboard	3R-LKQ50-BQ	3X-LK463-BQ
Italian keyboard	3R-LKQ50-AI	3X-LK463-AI
Japanese keyboard	3R-LKQ50-AJ	-
Korean keyboard	3R-LKQ50-BK	-
Latin-American keyboard	3R-LKQ50-AR	-
Norwegian keyboard	3R-LKQ50-AN	3X-LK463-AN
Polish keyboard	3R-LKQ50-BP	3X-LK463-BP
Portuguese keyboard	3R-LKQ50-AV	3X-LK463-AV
Romanian keyboard	-	3X-LK463-BL
Simplified Chinese keyboard	3R-LKQ50-CV	-
Spanish keyboard	3R-LKQ50-AS	3X-LK463-AS
Swedish keyboard	3R-LKQ50-AM	3X-LK463-AM
Swiss/French keyboard	3R-LKQ50-AK	3X-LK463-AK
Swiss/German keyboard	-	3X-LK463-AL
Traditional Chinese keyboard	3R-LKQ50-BI	-
Thai keyboard	3R-LKQ50-CB	-
Turkish keyboard	3R-LKQ50-BU	3X-LK463-BU
Turkish/F keyboard	-	3X-LK463-BW
UK keyboard	3R-LKQ50-AE	-
Yugoslavian keyboard	-	3X-LK463-BY

## Options

### Step 11 - System Software

#### Tru64 UNIX

- Media and documentation required for first system on site
- Software Processor Code = E
- Tru64 UNIX base systems include pre-installed software, Base license, Unlimited User license, Server Extension license, Internet Express, and Secure Web Server

Tru64 UNIX media and online documentation on CD-ROM	QA-6ADAA-H8
Tru64 UNIX full hard copy documentation	QA-6ADAA-GZ
TruCluster Plus Software Package with licenses for TruCluster Server, Logical Storage Manager and AdvFS Utilities	QP-6R9AC-AA
TruCluster Server license	QL-6BRAC-AA
Logical Storage Manager license	QL-2GVAE-AA
AdvFS Utilities license	QL-0EGAE-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 function license for Tru64 UNIX	QL-MTJAE-AA
DECnet/OSI extended license for Tru64 UNIX	QL-MTKAE-AA

#### OpenVMS

- Media and documentation required for first system on site
- Software Processor Code = E
- AlphaServer ES47 Tower OpenVMS systems include Base license with System Manager license and Enterprise Integration Server Package for OpenVMS -- OpenVMS OS media on CD-ROM
- AlphaStation ES47 Tower OpenVMS systems include Base license, Concurrent Use 1-user license and NAS 150 Client license
- Enterprise Integration Package includes licenses for TCP/IP Services for OpenVMS, DECwindows Motif for OpenVMS Alpha, DECnet-Plus for OpenVMS Alpha End System, Archive/Backup System for OpenVMS Management Tools, Archive/Backup Agent for Windows NT®, Office Server for OpenVMS, Office Server Client Access, PATHWORKS 32, PATHWORKS for OpenVMS and Advanced Server.
- 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.

## Options

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 media and online documentation on CD-ROM	QA-MT1AA-H8
OpenVMS hard copy documentation	QA-001AA-GZ
OpenVMS base hard copy documentation	QA-09SAA-GZ
OpenVMS Alpha Software Products Library Package: Layered products media and documentation for OpenVMS on CD-ROM, includes media and documentation for all products licensed in the Enterprise Integration Package.	QA-03XAA-H8
OpenVMS Cluster license for Alpha systems	QL-MUZAC-AA
OpenVMS Cluster Client license for Alpha systems	QL-3MRAC-AA
OpenVMS Cluster Client to Full VMS Cluster Migration license	QL-6J7AC-AA
DECnet-Plus/DECnet extended function license for OpenVMS	QL-MTGAE-AA
DECnet-Plus/DECnet end-system to extended function upgrade license for OpenVMS	QL-MTHAE-AA
OpenVMS Volume Shadowing license	QL-2A1AE-AA

A more complete software list can be found at:

<http://www.openvms.compaq.com/swcat/index.html>

### OpenVMS Galaxy Licensing Requirements

For more details about OpenVMS Galaxy licensing requirements, refer to Software Product Description for the Galaxy Software Architecture on OpenVMS Alpha, SPD 70.44.xx

- OpenVMS SMP License (included in Dual CPU Building Block Module) is mandatory for each CPU.
- For each AlphaServer ES47 CPU in an OpenVMS Galaxy, one OpenVMS Galaxy License is mandatory
- HP layered products are licensed as follows:
  - One capacity license per system
  - One user license per user
- One capacity license per system
- One user license per user
- One OpenVMS Base Operating System License is mandatory for an AlphaServer ES47 configured as an OpenVMS Galaxy system

Maximum instances per system or hard partition for ES47/ES80:

	ES47 AlphaStation, Tower, and Model 2	ES47/ES80 Model 4	ES80 Model 6	ES80 Model 8
CPUs	2	4	6	8
Instances	1	2	4	8

## Options

For more information about OpenVMS Galaxy requirements, configurations, and procedures, refer to the OpenVMS Alpha Galaxy Guide. The latest version is always available at

<http://h71000.www7.hp.com/availability/AA-REZQE-TE.pdf>

Galaxy 1-CPU License	QL-66XAA-3B
Galaxy 2-CPU License	QL-66XAA-3C
Galaxy 4-CPU License	QL-66XAA-3D
Galaxy 8-CPU License	QL-66XAA-3E
Galaxy 16-CPU License	QL-66XAA-3F

Example: 2 CPU ES47 Tower system in which all processors are licensed for OpenVMS and Galaxy

- Base system order would include a DY-20AAA-AB and one 3X-KN73A-BC Dual CPU Building Block module
- One QL-66XAA-3C Galaxy 2-CPU license for a total of two Galaxy licenses for the 2-CPU hard partition with Galaxy

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## Step 12 - Hardware and Software Support Services

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- Select one of the optional HP Care Pack Service Packages described below that best supports the customer's operational requirements for system availability.

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### HP Care Pack Services

- HP Care Pack Services are available for AlphaServer systems running Tru64 UNIX or OpenVMS operating systems. HP Care Pack Services are designed for customers who require support beyond that provided by the hardware product warranty with coverage for both Principal servers systems and SSPs (Subsequent System Packages) - that meet a full range of customer support requirements.

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### Program Features – Principal Server

#### HP Support Plus

- 13x5 HW/SW support
- 4-hour response on-site hardware support
- 2-hour response for software support
- License Subscription for HP O/S software and embedded L/P (i.e., EIS for OpenVMS, unlimited users, and server extensions for Tru64 UNIX)
- Consolidated Software Media Update Distribution for OpenVMS or Tru64 UNIX and their layered products. (Some layered products on Consolidated Media Update Distribution can be ordered separately.)

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#### HP Support Plus 24

- 24x7 HW/SW support
  - Named HW engineer
  - 4-hour response on-site hardware support
  - 2-hour response for software support
  - License Subscription for HP O/S software and embedded L/P (i.e., EIS for OpenVMS, unlimited users, and server extensions for Tru64 UNIX)
  - Consolidated Software Media Update Distribution for OpenVMS or Tru64 UNIX and their layered products. (Some layered products on Consolidated Media Update Distribution can be ordered separately.)
-

## Options

### Program Features – Additional Services

- SSPs (Subsequent System Packages)**
- For HP Care Pack Support Plus and Support Plus 24
  - HW Support at same level as corresponding package for Principal server
  - License Subscription: HP O/S (where applicable)
  - Telephone support through Principal server covered by full support package

- Installation**
- Pre-installation review
  - Unpacking of equipment
  - Assemble and test
  - Basic product usage info
  - No software installation added

- Installation and Startup HP O/S**
- Pre-installation review
  - Unpacking of equipment
  - Assemble and test
  - Basic product usage info
  - Install operating systems
  - Product configuration
  - Print and network access
  - Orientation

Model/HP Care Pack Services	Principal Server 1 year	Principal Server 3 years	Subsequent Systems 1 year	Subsequent Systems 3 years
<b>AlphaServer ES47 Tower</b>				
HP Support Plus	FP-F01GB-12	FP-F01GB-36	FP-F21GB-12	FP-F21GB-36
HP Support Plus 24	FP-F02GB-12	FP-F02GB-36	FP-F22GB-12	FP-F22GB-36
Installation	FP-FINST-GB	FP-FINST-GB	FP-FINST-GB	FP-FINST-GB
Installation and Startup	FP-FSTAR-GB	FP-FSTAR-GB	FP-FSTAR-GB	FP-FSTAR-GB

### NOTES:

- AlphaServer ES47 Tower systems include one-year parts and labor warranty with 5x9, on-site Next Business Day response.
  - HP Care Pack Services include support for new HP branded hardware options internal to the AlphaServer enclosure plus a monitor (17-inch or less excluding flat panel models).
  - External storage devices/cabinets carry their own level of warranty and should be quoted separately for uplifted warranty services.
  - In addition to the HP Care Pack Services shown above, other service packages are available for separate hardware and software support. For more information on Hardware and Software Upfront Services and other HP service options available for AlphaServers, please consult your Sales Account Manager, HP Services Principal, or visit: <http://www.hp.com/services/>
- NOTE:** This website is available in English only.

### Upgrades

#### Step 13 - AlphaServer ES47 Tower Upgrades

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AlphaServer ES47 Tower can be field upgraded to an AlphaServer ES47 Model 2 with the following options:

- AlphaServer ES47 Tower to AlphaServer ES47 Model 2 Upgrade Kits
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<b>ES47 Tower Upgrades</b>	System expansion hardware and software to upgrade a Tru64 UNIX AlphaServer ES47 Tower to an AlphaServer ES47 Model 2. Includes one rackmount slide kit and one Tru64 UNIX SMP License. See the AlphaServer ES47 QuickSpecs for additional ordering requirements.	3X-BA60B-AA
	System expansion hardware and software to upgrade an OpenVMS AlphaServer ES47 Tower to an AlphaServer ES47 Model 2. Includes one rackmount slide kit and one OpenVMS SMP License. See the AlphaServer ES47 QuickSpecs for additional ordering requirements.	3X-BA60B-AF

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## TechSpecs

### Power Requirements

ES47 Tower System	US/Canada	Japan	Europe
Nominal voltage(s)	100-120/200-240 V *	100-120/200-240V	200-240V
Frequency range	50-60 Hz	50-60 Hz	50-60 Hz
Phases	1	1	1
Rating	10/7A per cord	10/7A per cord	10/7A per cord
Receptacle (site)	IEC 320 C13 to Country Specific	IEC 320 C13 to Country Specific	IEC 320 C13 to Country Specific

\* 100-120V operation requires that two power supplies be present; power supply redundancy is not provided during 100-120V operation

### Physical Characteristics

Dimensions (H x W x D)	20.1 x 8.6 x 35 in (51 x 22 x 90 cm)	
Shipping Dimensions	48 x 30 x 18.5 in (122 x 76 x 47 cm)	
Weight Maximum Configuration	132 lb (59 kg)	
Shipping Weight - Maximum Configuration - cardboard outside wrap not included	164 lb (73 kg)	
Heat dissipation	Minimally configured system	783W / 2672 Btu/hr
	Fully configured system	850W / 2701 Btu/hr

### Clearances

	Operating	Service
Front	6 in (15 cm)	6 in (15 cm)
Rear	6 in (15 cm)	6 in (15 cm)
Left Side	None	None
Right Side	None	29.5 in (75 cm)

### Environmental

Temperature	50 to 104° F (10 to 40° C)	-40 to 151° F (-40 to 66° C)
Humidity	10% to 90%	10% to 95%, Storage (60 days) 115° F/46° C
Altitude	10,000 ft (3,050 m)	40,000 ft (12,200 m)
	<b>NOTE:</b> Maximum operating temperature at sea level; reduce by 1.8° F (1° C) for each 2,000 ft (600 m) above sea level	
Vibration	10 to 500 Hz 0.1G peak	1.03 Grms 5-300 Hz
Shock	5G 30ms, half sine	

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

Description	Idle/Operating	(Bystander pos.)
	LwAd, B	LpAm, dBA
ES47 Model 2	6.6	47

### Regulatory

Agency approvals

UL: Listed to UL 60950; cUL: Listed to CAN/CSA-C22.2 No.950 3rd Ed, 1995  
 CB Report to IEC 950:1991+A1: 1992 + A2: 1993 + A3: 1995 + A4:1996  
 CB Report to EN60950 (1992) with Amdts. 1, 2, 3, 4 and 11  
 FCC: Part 15.B Class A  
 IC ICES-003 Class A  
 CE: EN55022: 1998, EN55024: 1998, EN61000-3-2: 1995, EN61000-3-3: 1995  
 VCCI: V-3/02.04 Class A  
 BSMI: CNS 13438 Class A  
 C-Tick:AS/NZS 3548:1995 Class A

## TechSpecs

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