

### OPTION KITS

A wide variety of rigorously tested, Compaq-qualified, SMART capable, Wide-Ultra SCSI-3 and Wide Ultra2 SCSI Hard Drives offering data integrity and availability in hot pluggable and non-pluggable models.

New 10,000 rpm Hard Drives provide up to 40% better performance over standard 7200 rpm drives<sup>1</sup>.



All Compaq hard drives pass a rigorous qualification process which ensures that every Compaq drive is proven to perform in your Compaq server or workstation. Before final certification, all Compaq hard drives are provided with Compaq-unique firmware specifically designed to optimize compatibility and functionality, including support of SMART and the Compaq Insight Manager.

#### Drive Quality

Today's distributed enterprise is seeing larger, more complex applications, an increase of mission-critical data moving to the server, increasing demand for transaction processing and critical server consolidation. In this environment, storage has become a critical component of the information system, significantly defining both the systems reliability and performance. This is why Compaq drives undergo an intense qualification process that eliminates data integrity problems, firmware and O/S incompatibilities and other causes of data corruption or premature failure. All drive firmware is specific to our drives and is designed to maximize both functionality and compatibility. All drives are proven to perform in the Compaq systems for which they were designed.

#### Performance

Only those drives whose performance is suitable for an enterprise environment are selected through the Compaq qualification process and are labeled "best in class". All our drives are proven to be reliable and tuned for optimum performance in the Compaq equipment for which they were designed.

#### Pre-Failure Warranty<sup>2</sup>

When used in conjunction with a SMART Array Controller and Compaq Insight Manager, the SMART capable firmware in Compaq hard drives enables extensive fault prediction capabilities. If potential problems develop in one of the drives, the SMART Array Controller, Compaq Insight Manager and/or SMART hard disk drive lets you know in advance so you can have the drive replaced, before it fails, under the Compaq Pre-Failure Warranty<sup>2</sup>.

#### Integration

Many issues customers have with third party drives are "simple" integration issues. When buying from another supplier, there is no guarantee that a drive has been correctly set for proper operation with Compaq servers and storage systems. These incompatibilities can create problems in configuration, can rob your system of performance, or at their worst, can cause you to lose data. Compaq hard drives are specifically designed and tested for flawless operation in your Compaq equipment. The integration of hard drives in Compaq systems means that cables, SCSI ID settings, termination, hot plug drive trays and firmware are right for your Compaq server or storage system.

#### Wide-Ultra SCSI-3 Hard Drives

Wide-Ultra SCSI-3 hard drives are compatible with Compaq Fast-Wide, Wide-Ultra SCSI-3, and Wide Ultra2 SCSI controllers, but will run at Fast-Wide speeds if used with Fast-Wide controllers. These Wide-Ultra SCSI-3 drives may also be combined with Fast-Wide SCSI-2 drives on the same SCSI bus. Wide-Ultra SCSI-3 drives use the same cables and connectors as Fast-Wide drives. Wide-Ultra drives provide enterprise level performance and continued support of the existing ProLiant-style hot-plug drive tray.

#### Wide Ultra2 SCSI Hard Drives

Compaq's new Ultra2 hard drives increase the maximum transfer rate of the SCSI bus to 80 MB/s. By reducing the opportunity for SCSI bus saturation, this increased data rate allows all SCSI devices to perform at optimum levels. Ultra2 hard drives are being offered in an improved hot plug drive carrier. In addition to improved drive performance and increased storage density, the new carrier will also help prevent the inadvertent insertion of single-ended SCSI drives into Ultra2 capable equipment. The increased bandwidth offered by Ultra2 can only be achieved if all SCSI devices are Ultra2 capable.

#### 10,000 rpm Hard Disk Drives

Compaq's new 10,000 rpm (10k-II) hard disk drives provide the highest level of performance available in an enterprise class drive. The increased spindle speed reduces seek and latency times to provide an up to 40 per cent increase in drive performance. Compaq 10,000 rpm hard disk drives are ideal for transaction-intensive or performance-critical applications and are rapidly becoming the new standard for drive performance.

### WIDE ULTRA2 SCSI HOT-PLUG HARD DISK DRIVES<sup>3</sup>

#### Application Information

Compaq hot pluggable hard disk drives provide the ability to install or remove drives online. Our hot pluggable hard disk drives are required to meet our most rigorous standards for reliability and performance. These drives are intended for use in the most demanding, data-critical enterprise environments and are ideal for use in RAID applications. Hot pluggable option kits are configured and pre-mounted in the appropriate hot plug tray for immediate installation into your Compaq server or storage system.

**9.1-GB Pluggable Ultra2 SCSI  
10,000 rpm<sup>4</sup> Hard Drive**  
328939-B21

<b>9.1 GB 10K<sup>4</sup></b>	<b>Capacity</b>	9100 MB	<b>Seek Time</b> (typical reads, including settling)	
	<b>Height</b>	1 in	Single Track	0.8 ms
	<b>Size</b>	3.5 in	Average	5.4 ms
	<b>Interface</b>	Wide Ultra2 SCSI	Full Stroke	12.2 ms
	<b>Transfer Rate</b>		Rotational Speed	10,000 rpm
	Synchronous (Max)	80 MB/s	<b>Physical Configuration</b>	
			Bytes/Sector	512
			Logical Blocks	17,773,524
			<b>Operating Temperature</b> 50° to 95°F/10° to 35°C	

**9.1-GB Pluggable Ultra2 SCSI  
Hard Drive**  
349514-B21

<b>9.1 GB</b>	<b>Capacity</b>	9100 MB	<b>Seek Time</b> (typical reads, including settling)	
	<b>Height</b>	1 in	Single Track	0.8 ms
	<b>Size</b>	3.5 in	Average	7.9 ms
	<b>Interface</b>	Wide Ultra2 SCSI	Full Stroke	17 ms
	<b>Transfer Rate</b>		Rotational Speed	7200 rpm
	Synchronous (Max)	80 MB/s	<b>Physical Configuration</b>	
			Bytes/Sector	512
			Logical Blocks	17,773,524
			<b>Operating Temperature</b> 50° to 95°F/10° to 35°C	

**4.3-GB Pluggable Ultra2 SCSI  
10,000 rpm<sup>4</sup> Hard Drive**  
328938-B21

<b>4.3 GB 10K<sup>4</sup></b>	<b>Capacity</b>	4290.6 MB	<b>Seek Time</b> (typical reads, including settling)	
	<b>Height</b>	1 in	Single Track	0.8 ms
	<b>Size</b>	3.5 in	Average	5.4 ms
	<b>Interface</b>	Wide Ultra2 SCSI	Full Stroke	12.2 ms
	<b>Transfer Rate</b>		Rotational Speed	10,000 rpm
	Synchronous (Max)	80 MB/s	<b>Physical Configuration</b>	
			Bytes/Sector	512
			Logical Blocks	8,380,080
			<b>Operating Temperature</b> 50° to 95°F/10° to 35°C	

**4.3-GB Pluggable Ultra2 SCSI  
Hard Drive**  
349513-B21

<b>4.3 GB</b>	<b>Capacity</b>	4290.6 MB	<b>Seek Time</b> (typical reads, including settling)	
	<b>Height</b>	1 in	Single Track	0.8 ms
	<b>Size</b>	3.5 in	Average	8.8 ms
	<b>Interface</b>	Wide Ultra2 SCSI	Full Stroke	17 ms
	<b>Transfer Rate</b>		Rotational Speed	7200 rpm
	Synchronous (Max)	80 MB/s	<b>Physical Configuration</b>	
			Bytes/Sector	512
			Logical Blocks	8,380,080
			<b>Operating Temperature</b> 50° to 95°F/10° to 35°C	

### WIDE ULTRA2 SCSI NON-HOT-PLUG HARD DISK DRIVES

#### Application Information

Compaq non-plug hard disk drives provide an economical, reliable, fully Compaq supported primary storage solution. These drives provide functionality and features to satisfy our business and professional users. All non-plug hard disk drive kits provide mounting hardware for both 3 1/2 inch and 5 1/4-inch bays and include detailed instructions for mounting and configuring your new hard disk drive in your Compaq server or workstation.

**18.2-GB Ultra2 SCSI  
10,000 rpm<sup>4</sup> Hard Drive**  
328943-B21

<b>18.2 GB 10K<sup>4</sup></b>	<b>Capacity</b>	18209.3 MB	<b>Seek Time</b> (typical reads, including settling)	
	<b>Height</b>	1.6 in	Single Track	0.8 ms
	<b>Size</b>	3.5 in	Average	5.7 ms
	<b>Interface</b>	Wide Ultra2 SCSI	Full Stroke	12.2 ms
<b>Transfer Rate</b>	Synchronous (Max)	80 MB/s	Rotational Speed	
			10,000 rpm	
			<b>Physical Configuration</b>	
			Bytes/Sector	512
			Logical Blocks	35,565,080
			<b>Operating Temperature</b>	
			50° to 95°F/10° to 35°C	

**9.1-GB Ultra2 SCSI  
10,000 rpm<sup>4</sup> Hard Drive**  
328942-B21

<b>9.1 GB 10K<sup>4</sup></b>	<b>Capacity</b>	9100 MB	<b>Seek Time</b> (typical reads, including settling)	
	<b>Height</b>	1 in	Single Track	0.8 ms
	<b>Size</b>	3.5 in	Average	5.4 ms
	<b>Interface</b>	Wide Ultra2 SCSI	Full Stroke	12.2 ms
<b>Transfer Rate</b>	Synchronous (Max)	80 MB/s	Rotational Speed	
			10,000 rpm	
			<b>Physical Configuration</b>	
			Bytes/Sector	512
			Logical Blocks	17,773,524
			<b>Operating Temperature</b>	
			50° to 95°F/10° to 35°C	

**9.1-GB Ultra2 SCSI  
Hard Drive**  
349526-B21

<b>9.1 GB</b>	<b>Capacity</b>	9100 MB	<b>Seek Time</b> (typical reads, including settling)	
	<b>Height</b>	1 in	Single Track	1.9 ms
	<b>Size</b>	3.5 in	Average	7.5 ms
	<b>Interface</b>	Wide Ultra2 SCSI	Full Stroke	15 ms
<b>Transfer Rate</b>	Synchronous (Max)	80 MB/s	Rotational Speed	
			7200 rpm	
			<b>Physical Configuration</b>	
			Bytes/Sector	512
			Logical Blocks	17,773,524
			<b>Operating Temperature</b>	
			50° to 95°F/10° to 35°C	

**4.3-GB Ultra2 SCSI  
10,000 rpm<sup>4</sup> Hard Drive**  
328941-B21

<b>4.3 GB 10K<sup>4</sup></b>	<b>Capacity</b>	4290.6 MB	<b>Seek Time</b> (typical reads, including settling)	
	<b>Height</b>	1 in	Single Track	0.8 ms
	<b>Size</b>	3.5 in	Average	5.4 ms
	<b>Interface</b>	Wide Ultra2 SCSI	Full Stroke	12.2 ms
<b>Transfer Rate</b>	Synchronous (Max)	80 MB/s	Rotational Speed	
			10,000 rpm	
			<b>Physical Configuration</b>	
			Bytes/Sector	512
			Logical Blocks	8,380,080
			<b>Operating Temperature</b>	
			50° to 95°F/10° to 35°C	

### WIDE ULTRA2 SCSI NON-HOT-PLUG HARD DISK DRIVES

(continued)

4.3-GB Ultra2 SCSI  
Hard Drive  
349525-B21

<b>4.3 GB</b>	<b>Capacity</b>	4290.6 MB	<b>Seek Time</b> (typical reads, including settling)	
	<b>Height</b>	1 in	Single Track	0.8 ms
	<b>Size</b>	3.5 in	Average	7.5 ms
	<b>Interface</b>	Wide Ultra2 SCSI	Full Stroke	18 ms
	<b>Transfer Rate</b>		Rotational Speed	7200 rpm
	Synchronous (Max)	80 MB/s	<b>Physical Configuration</b>	
			Bytes/Sector	512
			Logical Blocks	8,380,080
			<b>Operating Temperature</b>	50° to 95°F/10° to 35°C

### WIDE ULTRA SCSI-3 HOT-PLUG HARD DISK DRIVES

#### Application Information

Compaq hot pluggable hard disk drives provide the ability to install or remove drives on-line. Our hot pluggable hard disk drives are required to meet our most rigorous standards for reliability and performance. These drives are intended for use in the most demanding, data-critical enterprise environments and are ideal for use in RAID applications. Hot pluggable option kits are pre-mounted in the appropriate hot plug tray for immediate installation into your Compaq server or storage system with no additional configuration necessary.

18.2-GB Pluggable  
Wide-Ultra SCSI-3  
10,000 rpm<sup>4,5</sup> Hard Drive  
336358-B21

<b>18.2 GB</b> <b>10K<sup>5,6</sup></b>	<b>Capacity</b>	18209.8 MB	<b>Seek Time</b> (typical reads, including settling)	
	<b>Height</b>	1.6 in	Single Track	0.8 ms
	<b>Size</b>	3.5 in	Average	5.7 ms
	<b>Interface</b>	Wide-Ultra SCSI-3	Full Stroke	12.2 ms
	<b>Transfer Rate</b>		Rotational Speed	10,000 rpm
	Synchronous (Max)	40 MB/s	<b>Physical Configuration</b>	
			Bytes/Sector	512
			Logical Blocks	35,566,000
			<b>Operating Temperature</b>	50° to 95°F/10° to 35°C

18.2-GB Pluggable  
Wide-Ultra SCSI-3  
Hard Drive  
400739-B21

<b>18.2 GB</b>	<b>Capacity</b>	18209.8 MB	<b>Seek Time</b> (typical reads, including settling)	
	<b>Height</b>	1 in	Single Track	0.8 ms
	<b>Size</b>	3.5 in	Average	6.9 ms
	<b>Interface</b>	Wide-Ultra SCSI-3	Full Stroke	16 ms
	<b>Transfer Rate</b>		Rotational Speed	7,200 rpm
	Synchronous (Max)	40 MB/s	<b>Physical Configuration</b>	
			Bytes/Sector	512
			Logical Blocks	35,566,000
			<b>Operating Temperature</b>	50° to 95°F/10° to 35°C

18.2-GB Pluggable  
Wide-Ultra SCSI-3  
Hard Drive  
313756-B21

<b>18.2 GB</b>	<b>Capacity</b>	18209.8 MB	<b>Seek Time</b> (typical reads, including settling)	
	<b>Height</b>	1.6 in	Single Track	0.9 ms
	<b>Size</b>	3.5 in	Average	8 ms
	<b>Interface</b>	Wide-Ultra SCSI-3	Full Stroke	18 ms
	<b>Transfer Rate</b>		Rotational Speed	7,200 rpm
	Synchronous (Max)	40 MB/s	<b>Physical Configuration</b>	
			Bytes/Sector	512
			Logical Blocks	35,566,000
			<b>Operating Temperature</b>	50° to 95°F/10° to 35°C

# QUICKSPECS

## Compaq SCSI Hard Drive Option Kits (Servers)

### WIDE ULTRA SCSI-3 HOT-PLUG DISK DRIVES *(continued)*

9.1-GB Pluggable  
Wide-Ultra SCSI-3  
10,000 rpm<sup>4,6</sup> Hard Drive  
336357-B21

<b>9.1 GB 10K<sup>4,6</sup></b>	<b>Capacity</b>	9100 MB	<b>Seek Time</b> (typical reads, including settling)	
	<b>Height</b>	1 in	Single Track	0.8 ms
	<b>Size</b>	3.5 in	Average	5.4 ms
	<b>Interface</b>	Wide-Ultra SCSI-3	Full Stroke	12.2 ms
	<b>Transfer Rate</b>		Rotational Speed	10,000 rpm
	Synchronous (Max)	40 MB/s	<b>Physical Configuration</b>	
			Bytes/Sector	512
			Logical Blocks	17,773,500
			<b>Operating Temperature</b> 50° to 95°F/10° to 35°C	

9.1-GB Pluggable  
Wide-Ultra SCSI-3  
Hard Drive  
313706-B21

<b>9.1 GB</b>	<b>Capacity</b>	9100 MB	<b>Seek Time</b> (typical reads, including settling)	
	<b>Height</b>	1 in	Single Track	0.8 ms
	<b>Size</b>	3.5 in	Average	7.9 ms
	<b>Interface</b>	Wide-Ultra SCSI-3	Full Stroke	17 ms
	<b>Transfer Rate</b>		Rotational Speed	7,200 rpm
	Synchronous (Max)	40 MB/s	<b>Physical Configuration</b>	
			Bytes/Sector	512
			Logical Blocks	17,773,500
			<b>Operating Temperature</b> 50° to 95°F/10° to 35°C	

4.3-GB Pluggable  
Wide-Ultra SCSI-3  
10,000 rpm<sup>4</sup> Hard Drive  
336356-B21

<b>4.3 GB 10K<sup>4</sup></b>	<b>Capacity</b>	4293.6 MB	<b>Seek Time</b> (typical reads, including settling)	
	<b>Height</b>	1 in	Single Track	0.8 ms
	<b>Size</b>	3.5 in	Average	5.4 ms
	<b>Interface</b>	Wide-Ultra SCSI-3	Full Stroke	12.2 ms
	<b>Transfer Rate</b>		Rotational Speed	10,000 rpm
	Synchronous (Max)	40 MB/s	<b>Physical Configuration</b>	
			Bytes/Sector	512
			Logical Blocks	8,386,000
			<b>Operating Temperature</b> 50° to 95°F/10° to 35°C	

4.3-GB Pluggable  
Wide-Ultra SCSI-3  
Hard Drive  
272577-001

<b>4.3 GB</b>	<b>Capacity</b>	4293.6 MB	<b>Seek Time</b> (typical reads, including settling)	
	<b>Height</b>	1 in	Single Track	0.8 ms
	<b>Size</b>	3.5 in	Average	8.8 ms
	<b>Interface</b>	Wide-Ultra SCSI-3	Full Stroke	17 ms
	<b>Transfer Rate</b>		Rotational Speed	7200 rpm
	Synchronous (Max)	40 MB/s	<b>Physical Configuration</b>	
			Bytes/Sector	512
			Logical Blocks	8,386,000
			<b>Operating Temperature</b> 50° to 95°F/10° to 35°C	

### WIDE ULTRA SCSI-3 NON-HOT-PLUG HARD DISK DRIVES

For use in Compaq servers and workstations.

#### Application Information:

Compaq non-plug hard disk drives provide an economical, reliable, fully Compaq supported primary storage solution. These drives provide functionality and features to satisfy our business and professional users. Examples of recent enhancements include reductions in seek and ambient noise levels, capacity expansion to 9 GB in the compact low-profile (3.5" x 1") form factor, and the addition of write cache functionality for improved workstation performance. All non-plug hard disk drive kits provide mounting hardware for both 3 1/2" and 5 1/4" bays and include detailed instructions for mounting and configuring your new hard disk drive in your Compaq server or workstation.

**18.2-GB Wide-Ultra  
SCSI-3 10,000 rpm<sup>4,5</sup>  
Hard Drive**  
336370-B21

<b>18.2 GB 10K<sup>4,5</sup></b>	<b>Capacity</b>	18209.8 MB	<b>Seek Time</b> (typical reads, including settling)	
	<b>Height</b>	1.6 in	Single Track	0.8 ms
	<b>Size</b>	3.5 in	Average	5.7 ms
	<b>Interface</b>	Wide-Ultra SCSI-3	Full Stroke	12.2 ms
	<b>Transfer Rate</b> Synchronous (Max)	40 MB/s	Rotational Speed	
			10,000 rpm	
	<b>Physical Configuration</b>			
			Bytes/Sector	512
			Logical Blocks	35,566,000
	<b>Operating Temperature</b>			50° to 95°F/10° to 35°C

**9.1-GB Wide-Ultra  
SCSI-3 10,000 rpm<sup>4,6</sup>  
Hard Drive**  
336369-B21

<b>9.1 GB 10K<sup>4,6</sup></b>	<b>Capacity</b>	9100 MB	<b>Seek Time</b> (typical reads, including settling)	
	<b>Height</b>	1 in	Single Track	0.8 ms
	<b>Size</b>	3.5 in	Average	5.4 ms
	<b>Interface</b>	Wide-Ultra SCSI-3	Full Stroke	12.2 ms
	<b>Transfer Rate</b> Synchronous (Max)	40 MB/s	Rotational Speed	
			10,000 rpm	
	<b>Physical Configuration</b>			
			Bytes/Sector	512
			Logical Blocks	17,773,500
	<b>Operating Temperature</b>			50° to 95°F/10° to 35°C

**9.1-GB Wide-Ultra  
SCSI-3 Hard Drive**  
339509-B21

<b>9.1 GB</b>	<b>Capacity</b>	9100 MB	<b>Seek Time</b> (typical reads, including settling)	
	<b>Height</b>	1 in	Single Track	1.9 ms
	<b>Size</b>	3.5 in	Average	7.5 ms
	<b>Interface</b>	Wide-Ultra SCSI-3	Full Stroke	15 ms
	<b>Transfer Rate</b> Synchronous (Max)	40 MB/s	Rotational Speed	
			7200 rpm	
	<b>Physical Configuration</b>			
			Bytes/Sector	512
			Logical Blocks	17,773,500
	<b>Operating Temperature</b>			50° to 95°F/10° to 35°C

**4.3-GB Wide-Ultra SCSI-3  
10,000 rpm<sup>4</sup> Hard Drive**  
336368-B21

<b>4.3 GB 10K<sup>4</sup></b>	<b>Capacity</b>	4293.6 MB	<b>Seek Time</b> (typical reads, including settling)	
	<b>Height</b>	1 in	Single Track	0.8 ms
	<b>Size</b>	3.5 in	Average	5.4 ms
	<b>Interface</b>	Wide-Ultra SCSI-3	Full Stroke	12.2 ms
	<b>Transfer Rate</b> Synchronous (Max)	40 MB/s	Rotational Speed	
			10,000 rpm	
	<b>Physical Configuration</b>			
			Bytes/Sector	512
			Logical Blocks	8,386,000
	<b>Operating Temperature</b>			50° to 95°F/10° to 35°C

## WIDE ULTRA SCSI-3 NON-HOT-PLUG HARD DISK DRIVES

(continued)

4.3-GB Wide-Ultra  
SCSI-3 Hard Drive  
339506-B21

4.3 GB	<b>Capacity</b>	4293.6 MB	<b>Seek Time</b> (typical reads, including settling)	
	<b>Height</b>	1 in	Single Track	0.8 ms
	<b>Size</b>	3.5 in	Average	8.8 ms
	<b>Interface</b>	Wide-Ultra SCSI-3	Full Stroke	17 ms
	<b>Transfer Rate</b>		Rotational Speed	7200 rpm
	Synchronous (Max)	40 MB/s	<b>Physical Configuration</b>	
			Bytes/Sector	512
			Logical Blocks	8,386,000
			<b>Operating Temperature</b>	
			50° to 95°F/10° to 35°C	

<sup>1</sup> Actual performance increases will vary depending upon application and configuration.

<sup>2</sup> All drives are protected by a Pre-Failure Warranty when used with a Compaq array controller (SMART or SMART-2) and Compaq Insight Manager, allowing hard drives to be replaced before failure free of charge. In addition, all drives are covered by a one-year limited on-site warranty, or the remaining warranty of the Compaq CPU in which it is installed (up to three years).

<sup>3</sup> For ease of deployment it is recommended that RAID sets not contain a combination of Ultra2 drives and previous version SCSI drives. Mixed RAID sets may be used if desired, however some combinations may require reconfiguring the RAID array (such as adding Ultra2 drives to an existing RAID array of ProLiant-type Wide-Ultra drives).

<sup>4</sup> For complete information on compatibility, refer to the Compaq SCSI Hard Drive Compatibility Table located at <http://www.compaq.com/products/servers/storage/non-hotplug-compatibility.html> and <http://www.compaq.com/products/servers/storage/compatibility.html>. Using Compaq hard drives in unsupported configurations will result in voiding of the warranty and could result in damage to the drive and/or loss of data.

<sup>5</sup> When used in a tower mounted server in conjunction with the Compaq Hot Plug Redundant Power Supply (PN 283697-B21/291) at altitudes above 5,000 feet (1,520 meters) the server should not be operated in ambient temperatures exceeding 35°C (95°F). 18-GB 10k-II hard drives are not supported in rack configurations in conjunction with the Compaq Hot Plug Redundant Power Supply.

<sup>6</sup> When used in a rack mounted server in conjunction with the Compaq Hot Plug Redundant Power Supply (PN 283697-B21/291) at altitudes above 5,000 feet (1,520 meters) the server should not be operated in ambient temperatures exceeding 35°C (95°F).