Illustrated Parts & Service Map

HP Compaq dc5850 Small Form Factor Business PC

Key Specifications

Processor Type	AMD Athlon 64, Sempron-64, Phenom
RAM Type	PC2-6400 (800 MHz) non-ECC
Maximum RAM Supported	8 GB
Expansion Slots	• 1 PCIe-x16 • 2 PCIe-x1 • 3 PCI
Graphics Adapter	ATI Radeon 3100 graphics
Drive Support	• 4 SATA (HDD + Optical) • RAID 1 Support • FDD, Media Card Reader, Removable HDD
I/O Interfaces	Serial (2, 1 optional), parallel (1), USB 2.0 (8), RJ-45 (1), front and rear audio jacks (2 each), PS/2 ports (2), VGA connector (1), USB header on system board

Spare Parts
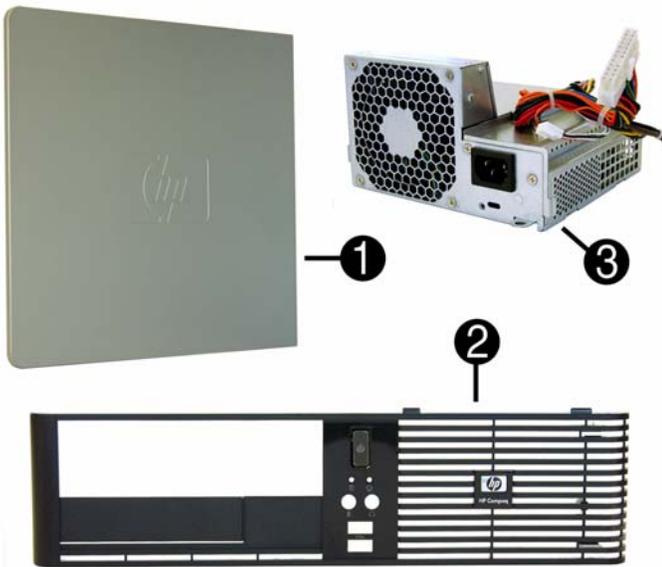
System Unit

1	Access panel	460893-001
2	Front bezel	451148-001
3	Power supply, 240W	460888-001
3	Power supply, 240W, 80% efficient	460889-001
*	5.25-inch bezel blank	335937-001

Not shown
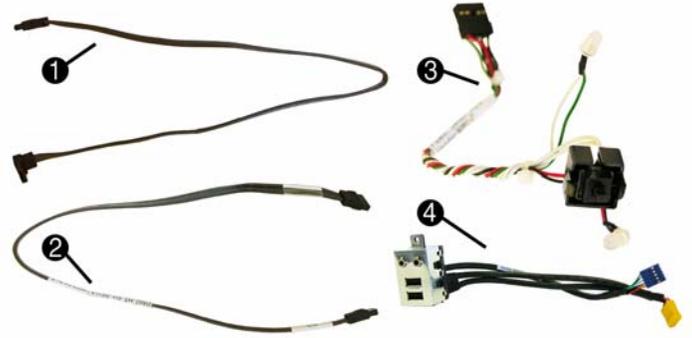
Cables

1	SATA cable, 25 inch, 1 straight end, 1 right angle end	461535-001
2	SATA cable, 17 inch, 2 straight ends	453317-001
3	Power switch/LED cable assembly	460896-001
4	Front I/O with USB	460895-001

Not shown

Keyboards (not illustrated)

PS/2, Basic USB, Basic USB SmartCard	435302-xxx 435382-xxx 435385-xxx		
Arabic	-171	Korean (Hangul)	-AD1
Belgian	-181	LA Spanish	-161
BHCSY	-B41	Norwegian	-091
Brazilian Portuguese	-201	PRC	-AA1
Czech	-221	Portuguese	-131
Danish	-081	Romanian*	-271
Finnish	-351	Russian	-251
French	-051	Slovakian	-231
French Arabic	-DE1	Spanish	-071
French Canadian	-121	Swedish	-101
German	-041	Swiss	-111
Greek	-151	Taiwanese	-AB1
Hebrew	-BB1	Thai	-281
Hungarian	-211	Turkish	-141
International	-B31	U.S.	-001
Italian	-061	U.K.	-031
Japanese	-291		

Not for 435385-xxx

### Mass Storage Devices (not illustrated)

Diskette drive with bezel	431452-001
Media card reader, 3.5-inch	412838-001
16X SATA DVD±RW and CD-RW drive with LightScribe	447310-001
16X SATA DVD-ROM drive	419496-001
48X CD-RW/DVD-ROM combo drive	419497-001
500 GB SATA hard drive, 3.0 Gb/s, NCQ	457909-001
250 GB, 7200-RPM SATA hard drive, 8-MB cache, 3.0 Gb/s, NCQ	449980-001
250 GB, 7200-RPM SATA hard drive, 8-MB cache, 3.0 Gb/s	440747-001
160 GB, 7200-RPM SATA hard drive, 8-MB cache, 3.0 Gb/s	449979-001
160 GB, 7200-RPM SATA hard drive, 8-MB cache, 3.0 Gb/s	440499-001
160 GB, 10000-RPM SATA hard drive, 16-MB cache, 1.5Gb/s	439995-001
80 GB, 7200-RPM SATA hard drive, 8-MB cache, 3 Gb/s, NCQ	449978-001
80 GB, 7200-RPM SATA hard drive, 8-MB cache, 3 Gb/s	440754-001
80 GB, 10000-RPM SATA hard drive, 16-MB cache, 1.5 Gb/s	439994-001
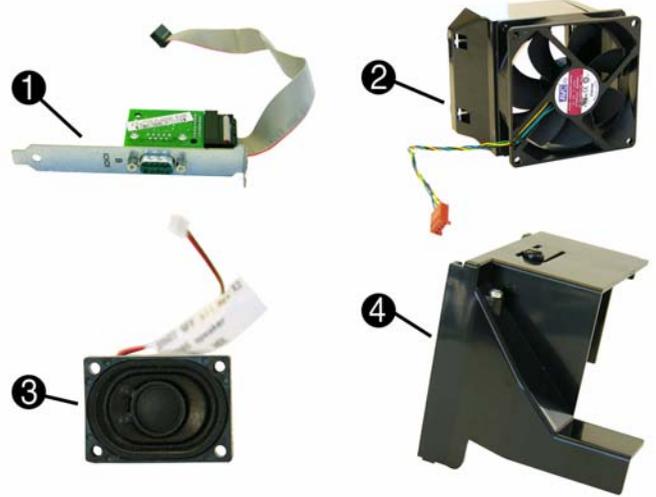
Standard and Optional Boards

1	ReadyBoost module, 1 GB	462851-001
Memory modules		
*	512 MB, PC2-6400, CL6	418952-001
*	1 GB, PC2-6400, CL6	418951-001
*	2 GB, PC2-6400, CL6	457624-001
Other boards		
*	Belkin 802.11a/g, WLAN adapter for use in the rest of the world	391866-002
*	ATI HD X2400, PCIEx16, DMS-59 and TV outputs, 256MB graphics adapter	462477-001
*	Broadcom NetXtreme GbE PCI-E NIC, FH	430654-001
*	56K modem, Agere 2006 PCI Hi-Speed, FH	398661-001
*	nVidia GeForce 8400 GS 256-MB video card with DMS-59 and TV (S-Video) outputs, LP	445743-001
	HP FireWire IEEE 1394 PCI card, 2 external, 1 internal port, FH	441448-001
System boards with thermal grease, alcohol pad, and CPU socket cover		
3	System board	461537-001
*	System board, excludes ES	462852-001
AMD Athlon 64 processor with alcohol pad and thermal grease		
*	X2 5400+, 2.8 GHz, 2x512-KB L2 cache	465312-001
*	X2 5200+, 2.7 GHz, 2x512-KB L2 cache	465302-001
*	X2 5000+ 2.6 GHz, 2x512-KB L2 cache	465301-001
*	X2 4450+, 2.3 GHz, 2x512-KB L2 cache	465303-001
*	LE-1640, 2.6GHz, 1-GB L2 cache	465304-001
AMD Sempron-64 processor with alcohol pad and thermal grease		
*	1300, 2.3 GHz, 512-KB L2 cache	458069-001
*	1200, 2.1 GHz, 512-KB L2 cache	460341-001
AMD Phenom processor with alcohol pad and thermal grease		
*	9600, quad core, 2.4 GHz, 4x512-KB L2 cache	465459-001
*	8600, tri core, 2.3 GHz, 3x512-KB L2 cache	466174-001

* Not shown

Miscellaneous Parts

1	Second serial port, low profile	393601-001
2	Chassis fan	460891-001
3	Speaker	394779-001
4	Fan duct	460892-001
*	Stand	451150-001
*	Heatsink with alcohol pad and factory-applied thermal grease	460897-001
*	Backwall	461533-001
*	System board tray	460894-001
*	Rubber feet	460890-001
*	Mouse, PS2, optical	417966-001
*	Mouse, optical	390938-001
*	Mouse, USB laser	459821-001
*	Printer port	465339-001
*	Battery, real-time clock	153099-001

*Not shown

System Board
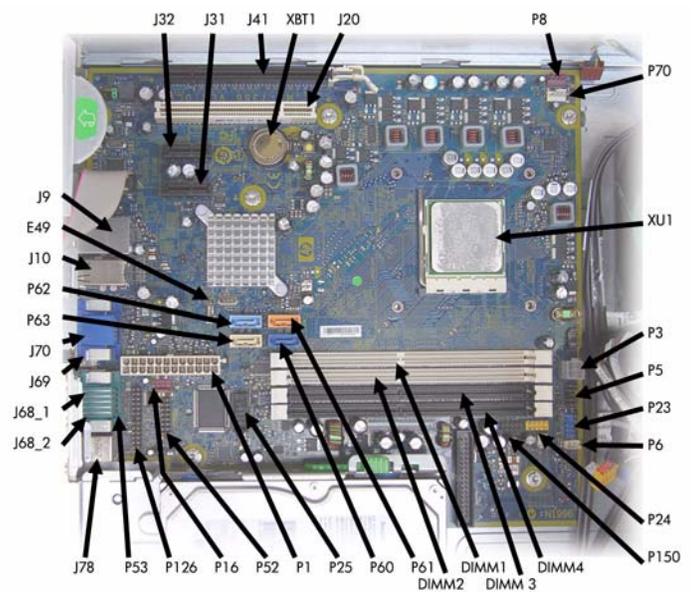
System Board Connectors and Jumpers (position of some untitled components may vary in location)

E49	Password	P23	Front audio
J9	RJ-45 over dual USB	P25	ReadyBoost
J10	Quad stack USB	P52	Second serial port
J20	PCI slot 1	P53	Serial port connector
J31	PCIe X1, slot 1	P6	Internal speaker
J32	PCIe X1, slot 2	P60	SATA0
J41	PCIe X16	P61	SATA1
J68_1	Mouse	P62	SATA2
J68_2	Keyboard	P63	SATA3
J69	VGA connector	P70	Primary CPU fan
J70	DVI	P8	Primary chassis fan
J78	Double stack audio connector	P150	Media reader
P1	Main power	XBT1	Real-time-clock battery
P16	System fan	XMM1	DIMM 1
P126	Parallel connector	XMM2	DIMM 2
P24	Front USB	XMM4	DIMM 4
P3	CPU power	XU1	Processor
P5	Power button/LED		

Setup Utility

Basic system information is maintained in the Setup Utility held in the system ROM, accessed by pressing the F10 key when prompted (on screen) during the boot sequence.

Computer Setup Menu

Heading	Option/Description
File	System Information - Lists the following main system specifications: • Product name • SKU number (some models) • Processor type/speed/stepping • Cache Size (L1/L2) • Memory size/speed/ no. channels • Integrated MAC Address • System BIOS • Chassis serial number • Asset tracking number
	About - Displays copyright notice.
	Set Time and Date - Allows you to set system time and date.
	Flash System ROM - Allows you to select a drive containing a new BIOS.
	Replicated Setup-Save to Removable Media & Restore from Removable Media
	Default Setup • Save Current Settings as Default • Restore Factory Settings as Default
	Apply Defaults and Exit - Applies the selected default settings and clears any established passwords.
	Ignore Changes and Exit - Exits setup without applying or saving any changes.
	Save Changes and Exit - Saves changes to system configuration or default settings and exits Computer Setup.
Storage	Device Configuration - Lists all installed BIOS-controlled storage devices. The following options are available: • Diskette Type(Legacy Diskettes only)-3.5" 1.44 MB and 5.25" 1.2 MB • Emulation Type - ATAPI Zip drive, hard disk, legacy diskette, CD-ROM drive, and ATAPI LS-120 drive • Drive Emulation Type Options • Multisector Transfers • Translation Mode • Translation Parameters • Default Values SATA
	Storage Options: Removable Media Boot, Legacy Diskette Write, SATA Emulation, SATA 0 and 2, SATA 1 and 3
	DPS Self-Test - Allows you to execute self-tests on ATA hard drives.
	Boot Order - Allows you to specify boot order. • Shortcut to Temporarily Override Boot Order
Security	Setup Password - Allows you to set and enable setup (Administrator) password.
	Power-On Password - Allows you to set and enable power-on password.
	Password Options - When any password exists allows you to lock legacy resources, enable/disable network server mode, specify password requirement for warm boot, and allows you to enable/disable Setup Browse Mode.
	Device Security (some models) - Enables/disables all I/O ports, audio, network controllers, SMBus controller, and embedded security devices.
	Network Service Boot - Enables/disables boot from OS on a server.
	System IDs - Allows you to set Asset tag, ownership tag, Chassis serial number, UUID, and keyboard locale setting.
	DriveLock Security-Lets you assign/modify hard drive p/w for added security.
	System Security (some models) - Allows you to enable/disable: • Data Execution Prevention • Virtualization Technology • Virtualization Technology Directed I/O • Trusted Execution Technology • Embedded Security Device Support • OS management of Embedded Security Device through OS • Virtual Appliance options • Smart Card BIOS Password Support
	Setup Security Level - Provides method to allow users limited access to change specified setup options without knowing Setup password.
Power	OS Power Management - Lets you enable/disable Runtime Power Management, Idle Power Savings, ACPI S3 Hard Disk Reset, ACPI S3 PS2 Mouse Wakeup, USB Wake on Device Insertion, Unique Sleep State Blink Rates.
	Hardware Power Management-Lets you enable/disable SATA bus power mgmt.
	Thermal - Allows you to control minimum permitted fan idle speed.
Advanced	Power-On Options - Allows you to set: • POST mode - QuickBoot, FullBoot, or FullBoot every 1-30 days. • POST messages - Enable/disable • MEBx Setup prompt - Enable/disable or hidden/displayed • F9 prompt - Enable/disable • F10 prompt - Enable/disable • F12 prompt - Enable/disable • Factory Recovery Boot Support - Enable/disable • Option ROM prompt - Enable/disable • WOL After Power Loss - Enable/disable • Remote wakeup boot source - Remote server/local hard drive • After Power Loss - Off/on/previous state • POST delay - None, 5, 10, 15, or 20 seconds • Limit CPUID
	Execute Memory Test -Restarts computer and executes POST memory test.
	BIOS Power-On - Allows you to set the computer to turn on at a preset time.
	Onboard Devices - Lets you set resources or disable onboard system devices.
	PCI Devices - Lists installed PCI devices with their IRQ settings and allows you to reconfigure IRQ or disable devices.
	PCI VGA Configuration - Allows you to specify which VGA controller will be used when multiple video adapters are available.
	Bus Options (some models) - Allows you to enable/disable PCI SERR# Generation and PCI VGA palette snooping.
	Device Options - Allows you to set: • Printer Mode - Bi-Directional, EPP & ECP, Output Only • Num Lock state at power-on - off/on • S5 Wake on LAN - enable/disable • Processor cache - enable/disable • Multi-Processor - enable/disable • Integrated video - enable/disable • Internal speaker - enable/disable • Monitor Tracking - enable/disable • NIC PXE Option ROM Download - enable/disable • SATA RAID Option ROM Download - enable/disable • HPET - enable/disable

Boot Block Emergency Recovery Mode

failure. For example, if a power failure were to occur during a BIOS upgrade, the ROM flash would be incomplete. This would render the system BIOS unusable. The Boot Block is a flash-protected section of the ROM that contains code that checks for a valid system BIOS image when the system is turned on.
- If the system BIOS image is valid, the system starts normally.
- If the system BIOS image is not valid, a failsafe Boot Block BIOS provides enough support to search removable media for BIOS image files. If an appropriate BIOS image file is found, it is automatically flashed into the ROM.

When an invalid system BIOS image is detected, the system power LED will blink red 8 times, one blink every second. Simultaneously, the speaker will beep 8 times. If the portion of the system ROM containing the video option ROM image is not corrupt, Boot Block Emergency Recovery Mode will be displayed on the screen.

To recover the system after it enters Boot Block Emergency Recovery Mode, complete the following steps:

1. Turn off the computer.

2. Insert a flash drive or CD containing the BIOS image in the root directory. The media must be formatted using the FAT12, FAT16, or FAT32 file system.

3. Turn on the computer. If no appropriate BIOS image is found, you will be prompted to insert media containing a BIOS image file. The system will automatically flash the ROM. After a successful flash, the system will either automatically restart or prompt the user to unplug the unit, wait 5 seconds, reattach the power cord, and then press the power button.

4. Remove the removable media used to upgrade the BIOS.

5. Turn the power on to restart the computer.

NOTE: BitLocker prevents Windows Vista from booting when a CD containing the BIOS image file is in an optical drive. If BitLocker is enabled, remove this CD before attempting to boot to Windows Vista.

Password Security

Establishing a Setup password using computer setup

1. Turn on or restart the computer. If you are in Windows, click **Start > Shut Down > Restart**.

2. As soon as the computer is turned on, press F10 when the monitor light turns green to enter Computer Setup. Press Enter to bypass the title screen, if necessary. If you do not press F10 when prompted, a restart will be necessary.

3. Select **Security > Setup Password** and follow the instructions on the screen.

4. Before exiting, click **File > Save Changes and Exit**.

Changing a Power-on or Setup password

1. Turn on or restart the computer. If you are in Windows, click **Start > Shut Down > Restart**.

2. If you want to change the Setup password, as soon as the computer is turned on, press F10 when the monitor light turns green to enter Computer Setup. Press Enter to bypass the title screen, if necessary.

3. If you want to change the Power-On password, when the key icon appears, type your current password, a slash (/) or alternate delimiter character, your new password, another slash (/) or alternate delimiter character, and your new password again as shown:

current password/new password/new password.

NOTE: Type the new password carefully since the characters do not appear on the screen.

4. Press Enter.

The new password will take effect the next time the computer is restarted.

Deleting a Power-on or Setup password

1. Turn on or restart the computer. If you are in Windows, click **Start > Shut Down > Restart**.

2. To delete the Setup password, as soon as the computer is turned on, press F10 when the monitor light turns green to enter Computer Setup. Press Enter to bypass the title screen, if necessary.

3. To delete the Power-on password, when the key icon appears, type the current password followed by a slash (/) or alternate delimiter character as shown: currentpassword/

4. Press Enter.

Clearing CMOS

1. Turn off the computer and any external devices, and disconnect the power cord from the power outlet.

2. Remove the access panel.

3. On the system board, press and hold the CMOS button for 5 seconds.

4. Replace the access panel, external devices, and reconnect the power cord.

5. Turn on the computer.

You will receive POST error messages after clearing CMOS and rebooting advising you that configuration changes have occurred. Use Computer Setup to reset any special system setups along with the date and time.

HP Insight Diagnostics

The HP Insight Diagnostics utility allows you to view information about the hardware configuration of the computer and perform hardware diagnostic tests on the subsystems of the computer. The utility simplifies the process of effectively identifying, diagnosing, and isolating hardware issues.

The Survey tab is displayed when you invoke HP Insight Diagnostics. This tab shows the current configuration of the computer. From the Survey tab, there is access to several categories of information about the computer. Other tabs provide additional information, including diagnostic test options and test results. The information in each screen of the utility can be saved as an html file and stored on a diskette or USB HP flash drive.

Use HP Insight Diagnostics to determine if all the devices installed on the computer are recognized by the system and functioning properly. Running tests is optional but recommended after installing or connecting a new device.

You should run tests, save the test results, and print them so that you have printed reports available before placing a call to the Customer Support Center.

Insight Diagnostics may be found on the *Documentation and Diagnostics* CD that shipped with the computer. The tool may also be downloaded from the HP Web site using the following procedure:

1. Go to www.hp.com
2. Click the **Software & Download driver** link.
3. Enter the product number (for example, dc5800) in the text box and press the Enter key.
4. Select the specific product.
5. Select the OS.
6. Click the **Diagnostics** link.
7. Select **HP Insight Diagnostics Offline Edition**.
8. Select the proper language and click **Download**.

NOTE: The download includes instructions on how to create a bootable CD.

Common POST Error Messages

Screen Message	Description	Recommended Action
101-Option ROM Error	1. System ROM checksum. 2. Expansion board option ROM checksum.	1. Verify ROM, reflash if required 2. Remove suspected card, reboot 3. If expansion board recently added, remove to see if problem remains. 4. Clear CMOS. 5. If message disappears, may be problem with expansion card. 6. Replace system board.
162-System Options Not Set	Configuration incorrect. RTC battery may need to be replaced.	Run Computer Setup and check configuration in **Advanced > Onboard Devices**. Reset date and time in Control Panel. If problem persists, replace RTC battery.
163-Time & Date Not Set	Invalid time or date in configuration memory. RTC (real-time clock) battery may need to be replaced.	Reset the date and time under Control Panel (Computer Setup can also be used). If the problem persists, replace the RTC battery.
164-Memory Size Error	Memory amount has changed since the last boot (memory added or removed). Incorrect memory configuration.	Press the F1 key to save the memory changes. -or- 1. Run Setup (F10). 2. Make sure the memory module(s) are installed properly. 3. If third-party memory has been added, test using HP-only memory. 4. Verify proper memory module type.
201-Memory Error	RAM failure.	1. Run Setup (F10). 2. Ensure memory modules are correctly installed. 3. Verify proper memory module type. 4. Remove and replace the identified faulty memory module(s). 5. If the error persists after replacing memory modules, replace the system board.
213-Incompatible Memory Module in Memory Socket(s) X, X, ...	A memory module in memory socket identified in the error message is missing critical SPD information, or is incompatible with the chipset.	1. Verify proper memory module type. 2. Try another memory socket. 3. Replace DIMM with a module conforming to the SPD standard.
214-DIMM Configuration Warning	Populated DIMM configuration is not optimized.	Rearrange the DIMMs so that each channel has the same amount of memory.
215-DIMM Configuration Warning	Populated DIMM configuration is not optimized.	Remove power from the system and reinstall memory modules. Populate modules starting with slot XMM4, then XMM3, followed by slots XMM2 and XMM1.
219-ECC Memory Module Detected ECC Modules not supported on this Platform	Recently added memory module(s) support ECC memory error correction.	1. If additional memory was recently added, remove it to see if the problem remains. 2. Check product documentation for memory support information.
301, 304-Keyboard error	Keyboard failure.	1. Reconnect keyboard with computer turned off. 2. Check connector for bent of missing pins. 3. Ensure that none of the keys are depressed. 4. Replace keyboard. 5. If 304 possible system board issue.

Common POST Error Messages (continued)

Screen Message	Description	Recommended Action
501-Display Adapter Failure	Graphics display controller.	1. Reseat graphics card. 2. Clear CMOS. 3. Check monitor connection. 4. Replace graphics card (if possible).
510-Flash Screen Image Corrupted	Flash Screen image has errors.	Reflash the system ROM with the latest BIOS image.
511-CPU, CPUA, or CPUB Fan not Detected	CPU fan is not connected or may have malfunctioned.	1. Reseat CPU fan. 2. Reseat fan cable. 3. Replace CPU fan.
512-Chassis, Rear Chassis, or Front Chassis Fan not Detected	Chassis, rear chassis, or front chassis fan is not connected or may have malfunctioned.	1. Reseat chassis, rear chassis, or front chassis fan. 2. Reseat fan cable. 3. Replace chassis, rear chassis, or front chassis fan.
601-Diskette Controller Error	Diskette controller circuitry or floppy drive circuitry incorrect.	1. Run Computer Setup. 2. Check and/or replace cables. 3. Clear CMOS. 4. Replace diskette drive. 5. Replace the system board.
605-Diskette Drive Type Error	Mismatch in drive type.	1. Run Computer Setup. 2. Disconnect any other diskette controller devices (tape drives). 3. Clear CMOS.
917-Front Audio Not Connected	Front audio harness has been detached or unseated from motherboard.	Reconnect or replace front audio harness.
918-Front USB Not Connected	Front USB harness has been detached or unseated from motherboard.	Reconnect or replace front USB harness.
921-Device in PCI Express slot failed to initialize	There is an incompatibility/problem with this device and the system or PCI Express Link could not be retrained to an x1.	Try rebooting the system. If the error reoccurs, the device may not work with this system
1720-SMART Hard Drive Detects Imminent Failure	Hard drive is about to fail. (Some hard drives have a hard drive firmware patch that will fix an erroneous error message.)	1. Determine if hard drive is giving correct error message. Enter Computer Setup and run the Drive Protection System test under **Storage > DPS Self-test**. 2. Apply hard drive firmware patch if applicable. 3. Back up contents and replace hard drive.
1796-SATA Cabling Error	One or more SATA devices are improperly attached. For optimal performance, the SATA 0 and SATA 1 connectors must be used before SATA 4 and SATA 5.	Ensure SATA connectors are used in ascending order. For one device, use SATA 0. For two devices, use SATA 0 and SATA 1. For three devices, use SATA 0, SATA1, and SATA 4.
1797-SATA Drivelock is not supported in RAID mode.	Drivelock is enabled on one or more SATA hard drives, and they cannot be accessed while the system is configured for RAID mode.	Either remove the Drivelocked SATA device or disable the Drivelock feature. To disable the Drivelock feature, enter Computer Setup, change **Storage > Storage Options > SATA Emulation** to IDE, and select **File > Save Changes and Exit.** Re-enter Computer Setup and select **Security > Drivelock**. For each listed Drivelock-capable SATA device, ensure Drivelock is Disabled. Lastly, change **Storage > Storage Options > SATA Emulation** back to RAID and select **File > Save Changes and Exit**.
1801-Microcode Patch Error	Processor not supported by ROM BIOS.	1. Upgrade BIOS to proper version. 2. Change the processor.
Invalid Electronic Serial Number	Electronic serial number is missing.	Enter the correct serial number in Computer Setup.
Memory Parity Error	Parity RAM failure. Third-party graphics card may be causing a problem.	Run Computer Setup and Diagnostic utilities. Remove third-party graphics card to see if the problem goes away.
Network Server Mode Active and No Keyboard Attached	Keyboard failure while Network Server Mode enabled.	1. Reconnect keyboard with computer turned off. 2. Check connector for bent or missing pins. 3. Ensure that none of the keys are depressed. 4. Replace keyboard.
Parity Check 2	Parity RAM failure. Third-party graphics card may be causing a problem.	Run Computer Setup and Diagnostic utilities. Remove third-party graphics card to see if problem goes away.