



# Intel<sup>®</sup> Server Chassis SC5275-E

## *Technical Product Specification*

C75531-001



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Enterprise Platforms and Services Division

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## *Revision History*

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03/02/04	0.5	Initial review copy
06/16/04	1.0	Final Revision
12/21/04	1.1	Update Fan Information
12/09/05	1.2	Corrected Chassis Depth

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# 1. Introduction

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This specification details the feature set of the Intel® Server Chassis SC5275-E, an entry-level server chassis designed for Intel® server board products. The Server Chassis SC5275-E is low cost and allows for utilization of multiple platforms and configurations.

The Server Chassis SC5275-E addresses the value server market. It includes a single 600W power factor correction (PFC) power supply and supports four non-hot-swap hard drives. Two tachometer fans (one mounted in front of the fixed hard drive cage and one mounted at the rear of the chassis) provide main chassis cooling. This chassis is currently compatible with the following Intel® server boards: Intel® Server Board SE7320SP2, Intel® Server Board SE7525GP2, and Intel® Server Board SE7520BD2.

Two 5.25-in, half-height drive bays are available for peripherals, such as CD-ROM drives and tape drives. A removable access cover provides entry to the interior of the chassis. The rear I/O panel conforms to the *Advanced Technology Extended (ATX) Specification*, Revision 2.2. The chassis supports seven full-length expansion cards. A front panel board designed for Server Standards Infrastructure (SSI) Entry E-Bay (EEB) 3.0-compliant server boards is also provided with the server chassis.

An optional hot-swap SCSI drive bay kit provides an upgrade path to allow the Server Chassis SC5275-E to support six hot-swap drives. This optional hot-swap SCSI hard disk drive bay supports up to five 1-in single connector attachment (SCA) low-voltage differential SCSI (LVD) hard drives to enhance serviceability, availability, and upgradeability of the system. When the hot-swap drive bay is installed, it replaces the fixed hard drive bay. Refer to the *Intel® Server Chassis SC5300/SC5275-E Hot-swap SCSI Bay Upgrade Kit* for complete installation instructions.

An optional hot-swap SATA upgrade drive bay assembly is available for the Server Chassis SC5275-E. It should be mounted in place of the middle three 5.25-in drive trays in the base, non-redundant chassis models. For the redundant power models, the upgrade accessory should be installed in the lower three 5.25-in drive trays to bring the total number of available hot-swap SATA drives to eight. Refer to the *Intel® Server Chassis SC5300/SC5275-E SATA Hot-swap Bay Upgrade Kit* for complete installation instructions. **Note:** Part of the replacement process requires removing the fan from the fixed hard drive bay and attaching it to the rear of the hot-swap drive bay.

This specification details the key features of the product. Reference documents listed at the back of this document provide additional product specification details for the server boards, backplanes, and power supplies validated for use with this chassis. Check the compatibility section on the support website for more details:

<http://support.intel.com/support/motherboards/server/chassis/SC5275E/>.

## 2. Chassis

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**Table 1. Chassis Dimensions (approximate)**

Configuration	Pedestal
Height	17.8 inches (452mm) 17.6 inches (447mm) if feet are removed
Width	9.256 inches (235mm)
Depth	18 inches (485mm)
Clearance Front	17.83 inches (452mm). 19.1 inches with bezel (485mm)
Clearance Rear	5 inches (12.7mm)
Clearance Side	3 inches (7.62mm) additional side clearance is needed for service access

### 2.1 System Color

The Intel® Server Chassis SC5275-E is offered in one color:

- Black (GE701), Order code KPTBASE450BLK

### 2.2 Front Bezel Features

The standard front bezel is molded plastic and attaches to the front of the chassis with a hinge on the right side and two snaps on the left. The snaps at the left attach behind the access cover, thereby preventing accidental removal of the bezel. The bezel can only be removed by first removing the server access cover. This provides additional security to the hard drive and peripheral bay area. The bezel includes a key-locking door that covers the drive cage area.

The peripheral bays are covered with plastic snap-in cosmetic pieces that must be removed to add peripherals to the system. Front panel buttons and lights are located along the right side of the peripheral bays.

### 2.3 Security

A variety of chassis security options are provided at the system level:

- A removable padlock loop at the rear of the system access cover can be used to prevent access to the microprocessors, memory, and add-in cards. A variety of lock sizes can be accommodated by the 0.270-inch diameter loop.
- A two-position key lock/switch will unlock the front bezel.
- A chassis intrusion switch is provided, allowing server management software to detect unauthorized access to the system cover.

**Note:** See the technical product specification appropriate to the server board for a description of BIOS and management security features for each specific supported platform. The technical product specifications can be found at <http://support.intel.com>.

## 2.4 I/O Panel

All input/output (I/O) connectors are accessible from the rear of the chassis. The SSI E-bay 3.0-compliant chassis provides an ATX\* 2.2-compatible cutout for I/O shield installation. Boxed Intel® server boards provide the required I/O shield for installation in the cutout. The I/O cutout dimensions are shown in the following figure for reference.

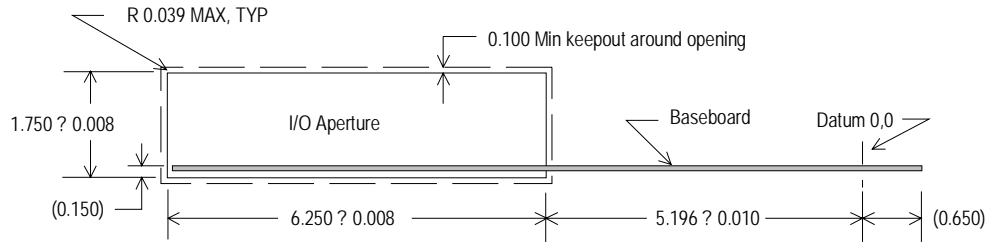
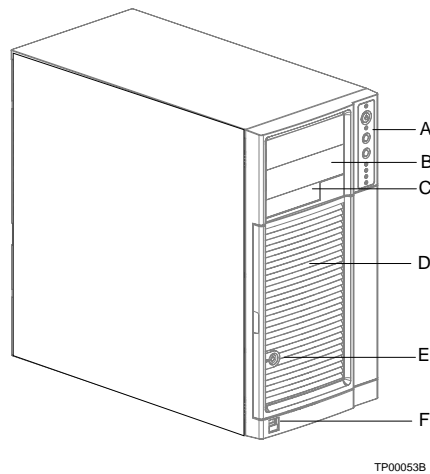


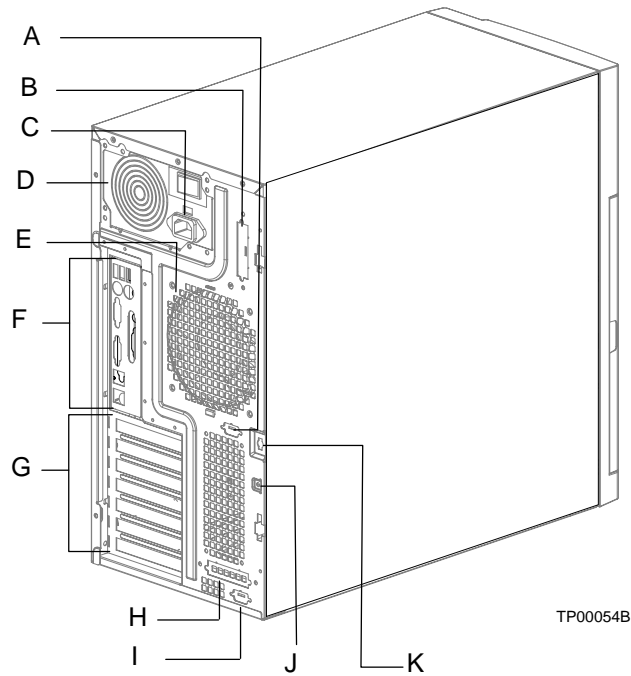
Figure 1. ATX 2.2 I/O Aperture

## 2.5 Chassis Views



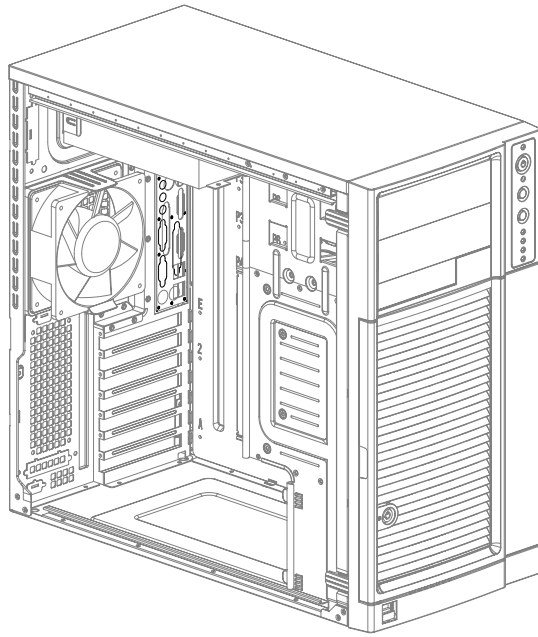
- A. Front panel controls and indicators
- B. Two 5.25-inch removable media drive bays
- C. 3.5-inch removable media drive bay
- D. Internal hard drive bay cage (behind door)
- E. Security lock
- F. USB port

Figure 2. Front Closed View of the Intel® Server Chassis SC5275-E



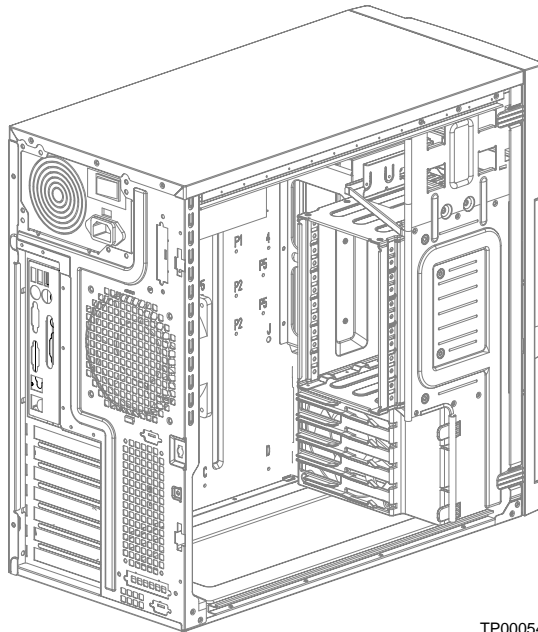
- A. Alternate Serial B port knockout
- B. Alternate ICMB or external SCSI knockout
- C. AC input power connector
- D. Power supply
- E. Fan
- F. I/O ports
- G. Expansion slot covers
- H. ICMB or external SCSI knockout
- I. Serial B port knockout
- J. Location to install padlock loop
- K. Chassis intrusion switch

**Figure 3. Rear Closed View of the Intel® Server Chassis SC5275-E**



TP00053C

Figure 4. Front Internal View of the Intel® Server Chassis SC5275-E



TP00054C

Figure 5. Rear Internal View of the Intel® Server Chassis SC5275-E

### 3. Chassis Power Subsystem

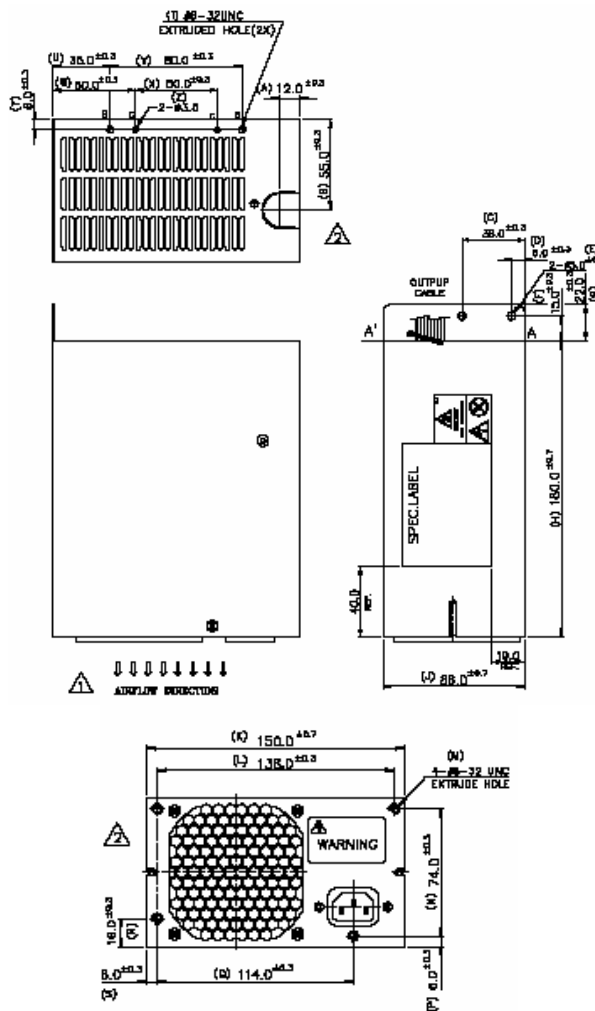
The Server Chassis SC5275-E power supplies are SSI (Server System Infrastructure) compliant. The SSI specifications are provided at the following website: [www.ssifourm.org](http://www.ssifourm.org).

#### 3.1 600W Power Supply

The 600W power supply has 8 outputs: 3.3V, 5V, 12V1, 12V2, 12V3, 12V4, -12V, and 5Vsb (standby). The 600W power supply contains a single 80-mm fan for cooling the power supply, which also provides part of the cooling for the system. The power supply contains a single 80mm fan for cooling the power supply and part of the system.

##### 3.1.1 Mechanical Outline

The power supply size is 150mm x 180mm x 86mm and has a wire harness for the DC outputs. The AC power cord plugs directly into the external face of the power supply.



Note: All dimensions are in mm.

Figure 6. Mechanical Outline of Power Supply

### 3.1.2 Output Wire Harness

Listed or recognized component appliance wiring material (AVLV2), CN, rated min 105°C, 300VDC shall be used for all output wiring.

From	Length (mm)	To connector #	No of pins	Description
Power Supply cover exit hole	425	P1	24	Baseboard Power Connector
Power Supply cover exit hole	375	P2	8	Processor Power Connector
Power Supply cover exit hole	375	P14	5	Power Signal Connector
Power Supply cover exit hole	375	P15	6	PCI Express Connector
Power Supply cover exit hole	450	P3	4	Peripheral Power Connector
Extension	100	P4	4	Peripheral Power Connector
Extension from P4	100	P5	4	Floppy Power Connector
Power Supply cover exit hole	575	P6	4	Peripheral Power Connector
Extension	75 (cover with sleeve)	P7	4	Right-angle Peripheral Power Connector
Power Supply cover exit hole	740	P8	4	Peripheral Power Connector
Extension	75	P9	4	Peripheral Power Connector
Power Supply cover exit hole	740	P10	4	Peripheral Power Connector
Extension	75	P11	4	Peripheral Power Connector
Power Supply cover exit hole	740	P12	5	Right-angle SATA Power Connector
Extension	75	P13	5	SATA Power Connector

Table 2: Cable Lengths

#### 3.1.2.1 Baseboard Power Connector (P1)

Connector housing: 24-Pin Molex\* Mini-Fit, Jr. 39-01-2245 or equivalent

Contact: Molex Mini-Fit, HCS, Female, Crimp 44476 or equivalent

Table 3. Pin-out Baseboard Power Connector P1

Pin	Signal	18 AWG Color	Pin	Signal	18 AWG Color
1*	+3.3VDC	Orange	13	+3.3VDC	Orange
	3.3V RS	Orange (24AWG)	14	-12VDC	Blue
2	+3.3VDC	Orange	15	COM	Black
3*	COM	Black	16	PSON#	Green (24AWG)
	COM RS	Black (24AWG)	17	COM	Black
4*	+5VDC	Red	18	COM	Black
	5V RS	Red (24AWG)	19	COM	Black
5	COM	Black	20	Reserved	N.C.
6	+5VDC	Red	21	+5VDC	Red
7	COM	Black	22	+5VDC	Red
8	PWR OK	Gray (24AWG)	23	+5VDC	Red
9	5 VSB	Purple	24	COM	Black
10	+12V3	Yellow			
11	+12V3	Yellow			
12	+3.3VDC	Orange			

- Remote Sense wire double crimped

#### 3.1.2.2 Processor Power Connector (P2)

Connector housing: 8-Pin Molex, 39-01-2080 or equivalent

Contact: Molex, 44476-1111 or equivalent

**Table 4. Processor Power Connector P2**

Pin	Signal	18 AWG color	Pin	Signal	18 AWG Color
1	COM	Black	5*	+12V1	White
2	COM	Black		12V1 RS	Yellow (24AWG)
3	COM	Black	6	+12V1	White
4	COM	Black	7	+12V2	Brown
			8	+12V2	Brown

**3.1.2.3 Power Signal Connector (P14)**

Connector housing: 5-pin Molex 50-57-9405 or equivalent  
 Contacts: Molex 16-02-0087 or equivalent

**Table 5: Power Signal Connector**

Pin	Signal	24 AWG Color
1	I2C Clock	White
2	I2C Data	Yellow
3	Reserved	N.C.
4	COM	Black
5	3.3RS	Orange

**3.1.2.4 PCI Express Connector (P15)**

Connector housing: 6-pin Molex 39-01-2065 or equivalent  
 Contacts: Molex Mini-Fit, HCS, Female, Crimp 44476

**Table 6: PCI Express Connector**

PIN	SIGNAL	18 AWG Colors	PIN	SIGNAL	18 AWG Colors
1	+12V4	Green	4	COM	Black
2	+12V4	Green	5	COM	Black
3	+12V4	Green	6	COM	Black

**3.1.2.5 Peripheral Power Connectors (P3, P4, and P6, P8 - P11)**

Connector housing: Amp, 1-480424-0 or equivalent;  
 Contact: Amp, 61314-1 contact or equivalent

**Table 7: Peripheral Power Connectors**

Pin	Signal	18 AWG Color
1	+12V4	Green
2	COM	Black
3	COM	Black
4	+5 VDC	Red

**3.1.2.6 Right-Angle Peripheral Power Connectors (P7)**

Connector housing: JWT F6001HS2-4P or equivalent

**Table8: Peripheral Power Connectors**

Pin	Signal	18 AWG Color
1	+12V4	Green
2	COM	Black
3	COM	Black
4	+5 VDC	Red

**3.1.2.7 Floppy Power Connector (P5)**

Connector housing: Amp, 171822-4 or equivalent;  
 Contact: Amp, 170204-1 contact or equivalent

**Table 9. Floppy Power Connector P6**

Pin	Signal	22 AWG Color
1	+5VDC	Red
2	COM	Black
3	COM	Black
4	+12V4	Green

**3.1.2.8 Right-Angle SATA Power Connector (P12)**

Connector housing: JWT F6002HS0-5P-18 or equivalent;

**Table 10: SATA Power Connector**

Pin	Signal	18 AWG Color
1	+3.3V	Orange
2	COM	Black
3	+5VDC	Red
4	COM	Black
5	+12V4	Green

**3.1.2.9 SATA Power Connector (P13)**

Connector housing: JWT A3811H00-5P or equivalent;

Contact: JWT A3811TOP-0D or equivalent

**Table 11: SATA Power Connector**

Pin	Signal	18 AWG Color
1	+3.3V	Orange
2	COM	Black
3	+5VDC	Red
4	COM	Black
5	+12V4	Green

**3.2 AC Input requirements**

The power supply shall incorporate universal power input with active **power factor correction**, which shall reduce line harmonics in accordance with the EN61000-3-2 and JEIDA MITI standards, see section 10.2.

**3.2.1 AC Inlet Connector**

The AC input connector is an *IEC 320 C-14* power inlet. This inlet is rated for 10A / 250VAC.

**3.2.1.1 AC Input Voltage Specification**

The power supply must operate within all specified limits over the following input voltage range, shown in below [Table 13](#). Harmonic distortion of up to 10% of the **rated line voltage** must not cause the power supply to go out of specified limits. The power supply shall power off if the AC input is less than 75VAC +/-5VAC range. The power supply shall start up if the AC input is greater than 85VAC +/-4VAC. Application of an input voltage below 85VAC shall not cause damage to the power supply, including a fuse blow.

### 3.2.1.2 Efficiency

The power has an efficiency of 68% at maximum load and over the specified AC voltage.

### 3.2.1.3 AC Line Fuse

The power supply shall have one line fused in the **single line fuse** on the line (Hot) wire of the AC input. The line fusing shall be acceptable for all safety agency requirements. The input fuse shall be a slow blow type. AC inrush current shall not cause the AC line fuse to blow under any conditions. All protection circuits in the power supply shall not cause the AC fuse to blow unless a component in the power supply has failed. This includes DC output load short conditions.

## 3.2.2 600W DC Output Specifications

### 3.2.2.1 Grounding

**3.2.2.2 The output ground of the pins of the power supply provides the output power return path. The output connector ground pins shall be connected to the safety ground (power supply enclosure). Outputs**

The 5VSB output shall be present when an AC input greater than the power supply turn on voltage is applied.

### 3.2.2.3 Fan-less Operation

Fan-less operation requirement is the PS ability to work indefinitely in Stand-By mode: w/ power on, PS off and the 5VSB at full load (=2A) under the environmental conditions (temperature, humidity, altitude). In this mode the components' max temperature should follow the same guidelines.

### 3.2.2.4 Voltage Regulation

The power supply output voltages must stay within the following voltage limits when operating at steady state and dynamic loading conditions. These limits include the peak-peak ripple/noise. All outputs are measured with reference to the return remote sense signal (ReturnS). The +12V3, +12V4, -12V and 5VSB outputs are measured at the power supply connectors referenced to ReturnS. The +3.3V, +5V, +12V1, and +12V2 are measured at it remote sense signal located at the signal connector.

**Table 12: Voltage Regulation Limits**

PARAMETER	TOLERANCE	MIN	NOM	MAX	UNITS
+3.3V	- 5% / +5%	+3.14	+3.30	+3.46	V <sub>rms</sub>
+5V	- 5% / +5%	+4.75	+5.00	+5.25	V <sub>rms</sub>
+12V1	- 5% / +5%	+11.40	+12.00	+12.60	V <sub>rms</sub>
+12V2	- 5% / +5%	+11.40	+12.00	+12.60	V <sub>rms</sub>
+12V3	- 5% / +5%	+11.40	+12.00	+12.60	V <sub>rms</sub>
+12V4	- 5% / +5%	+11.40	+12.00	+12.60	V <sub>rms</sub>
- 12V	- 5% / +9%	- 11.40	-12.00	-13.08	V <sub>rms</sub>
+5VSB	- 5% / +5%	+4.75	+5.00	+5.25	V <sub>rms</sub>

test, the probe clips and capacitors should be located close to the load.

### 3.3 Protection Circuits

Protection circuits inside the power supply shall cause only the power supply's main outputs to shutdown. If the power supply latches off due to a protection circuit tripping, an AC cycle OFF for 15sec and a PSON# cycle HIGH for 1sec shall be able to reset the power supply.

### 3.4 Current Limit (OCP)

The power supply shall have current limit to prevent the +3.3V, +5V, and +12V outputs from exceeding the values shown in [Table 23](#). If the current limits are exceeded the power supply shall shutdown and latch off. The latch will be cleared by toggling the PSON# signal or by an AC power interruption. The power supply shall not be damaged from repeated power cycling in this condition. -12V and 5VSB shall be protected under over current or shorted conditions so that no damage can occur to the power supply. 5Vsb will be auto-recovered after removing OCP limit.

### 3.5 Over Voltage Protection (OVP)

The power supply over voltage protection shall be locally sensed. The power supply shall shutdown and latch off after an over voltage condition occurs. This latch shall be cleared by toggling the PSON# signal or by an AC power interruption.

### 3.6 Over Temperature Protection (OTP)

The power supply will be protected against over temperature conditions caused by loss of fan cooling or excessive ambient temperature. In an OTP condition the PSU will shutdown. When the power supply temperature drops to within specified limits, the power supply shall restore power automatically, while the 5VSB remains always on.

### 3.7 Control and Indicator Functions

The following sections define the input and output signals from the power supply.

**Signals that can be defined as low true use the following convention:**

*Signal#* = low true

### 3.8 PSON# Input Signal

The PSON# signal is required to remotely turn on/off the power supply. PSON# is an active low signal that turns on the +3.3V, +5V, +12V, and -12V power rails. When this signal is not pulled low by the system, or left open, the outputs (except the +5VSB) turn off. This signal is pulled to a standby voltage by a pull-up resistor internal to the power supply

### 3.9 PWOK (Power OK) Output Signal

PWOK is a power OK signal and will be pulled HIGH by the power supply to indicate that all the outputs are within the regulation limits of the power supply. When any output voltage falls below regulation limits or when AC power has been removed for a time sufficiently long so that power supply operation is no longer guaranteed, PWOK will be de-asserted to a LOW state.

#### 3.9.1 Mean Time Between Failures (MTBF)

The power supply shall have a minimum MTBF at continuous operation of 100,000 hours at 80% load at 40°C, as calculated by the Belcore\* RPP, or 250,000 hours demonstrated at 80% load at 40°C.

### 3.10 SMBus Monitoring Interface

The 600W is compatible with both SMBus 2.0 'high power' and I<sup>2</sup>C V<sub>dd</sub> based power and drive. This bus operates at 3.3V. The SMBus pull-ups are located on the server board.

The SMBus provides power monitoring, failure conditions, warning conditions, and FRU data. Two pins have been reserved on the connector to provide this information: one pin for the Serial Clock (PSM Clock) and one pin for the Serial Data (PSM Data). Both pins are bi-directional and are used to form a serial bus.

## 4. System Cooling

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### 4.1 Fan Configuration

The cooling sub-system in the Server Chassis SC5275-E consists of two system fans and one power supply fan. A 92mm x 25mm fan located in the front of the fixed hard drive cage draws fresh air into the chassis from the front and provides cooling for the hard drive bay. A 120mm x 38mm fan provides cooling at the rear of the chassis, exhausting warm air out of the system. The power supply fan assists in drawing air through the peripheral bay area, through the power supply and exhausting it out the rear of the chassis.

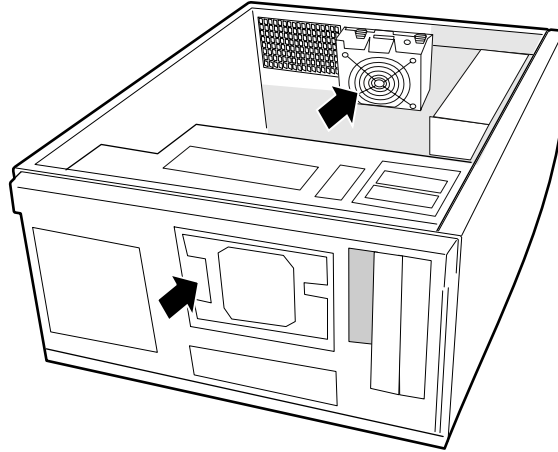
In addition to these pre-installed fans, locations for three additional fans are provided for customized configurations. Intel does not provide order part numbers for these customizable fan options. A 120mm fan can be mounted to the rear of the PCI card guide and provide additional cooling to the PCI card area and two 80mm fans can be mounted at the front of the chassis to the right of the hard drive bay opening to provide more cooling.

### 4.2 Fan Control

The fans provided in the Server Chassis SC5275-E contain a tachometer signal that can be adjusted by the Server Management subsystem for the Intel® Server Board SE7520BD2 or SE7320SP2. See the specific baseboard Technical Product Specification for details on how this feature works.

### 4.3 Cooling Solution

Air should flow through the system from front to back as indicated by the arrows in the following figure.



**Figure 72: Cooling Fan Configuration**

The Server Chassis SC5275-E is engineered to provide sufficient cooling for all internal components of the server. The Server Chassis SC5275-E cooling subsystem is dependent upon proper airflow. The designated cooling vents on both the front and back of the chassis must be left open and must not be blocked by improperly installed devices. All internal cables must be routed in a manner that does not impede airflow.

Active heat sinks incorporate a fan to provide cooling. This thermal solution is included with all boxed Intel® Xeon™ processors. Proper installation of the processor cooling solution is required for circulating air toward the rear of the chassis (toward I/O connectors).

Latest BIOS and FRUSDR version is required to be configured for proper performance. In addition, it is recommended that system fans be connected to the Intel® server board SYS Fan header #2 and SYS Fan header #3 for the chassis fans for SE7525GP2 or Intel® Server Board SE7320SP2.

Server

Products

### Connecting the Correct Processor and Chassis Fan Headers

Intel® Entry Server Chassis SC5275-E contains two system fans, and will need to be connected to the correct fan headers of the Intel® Server Board SE7320SP2 and SE7525GP2. The following information is provided to ensure the correct fan headers are using for the chassis.

#### Processor and System Fan Headers:

Header Designator	Label on Board	Action
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System Fan Header 1	SYS FAN 1	Ø
System Fan Header 2	SYS FAN 2	Rear Chassis Fan
System Fan Header 3	SYS FAN 3	Front Chassis Fan
System Fan Header 4	SYS FAN 4	Ø
System Fan Header 5	SYS FAN 5	Ø
System Fan Header 6	SYS FAN 6	Ø
Processor Fan Header 1	CPU 1 FAN	CPU 1 fan
Processor Fan Header 2 (if 2nd processor is installed)	CPU 2 FAN	CPU 2 fan

#### 4.4 Workstation Cooling Kit Solution

The Workstation Cooling Kit was designed to work with the Intel® Server Board SE7525GP2 or Intel® Server Board SE7320SP2 with the Intel® Entry Server Chassis SC5275-E, to dramatically reduce system level acoustics making it an effective solution when acoustics is a concern. Intel product code APTWKT2COOLKIT (Intel MM # 861825).

The Intel® Workstation Cooling Kit can be used to retrofit either a new or existing Intel® Server Board SE7525GP2 or Intel® Server Board SE7320SP2 in the Intel® Entry Server Chassis SC5275-E. Do not install the Intel® Workstation Cooling Kit in systems that have a passive heat sink solution. This kit is designed only for systems that use an active fan-cooled heat sink. The following item is included in the kit: Cooling Kit assembly (includes fan, fan bracket, heat sink, thermal pad, and four screws).

## 5. System Peripheral Bays

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### 5.1 3.5-in Peripheral Drive Bay

The Server Chassis SC5275-E provides for the installation of a 3.5-in peripheral, such as a floppy drive, below the 5.25-in peripheral bays. The bezel must be removed prior to floppy drive installation. When a floppy drive is not installed, a snap-in EMI shield must be in place to ensure regulatory compliance. A cosmetic plastic filler is provided to snap into the bezel.

The 3.5-in bay is designed so that screws are only required on the left side of the chassis, as indicated in the following figure. On the right side of the chassis, two protrusions in the sheet metal hold the drive in place.



Figure 8: Drive Bay Locations for Server Chassis SC5275-E

### 5.2 5.25-in Peripheral Drive Bays

The Server Chassis SC5275-E supports two half-height or one full-height 5.25-in removable media peripheral device, such as a magnetic/optical disk, CD-ROM drive, or tape drive. These peripherals can be up to 9 inches (228.6 mm) deep. As a guideline, the maximum recommended power per device is 18W. Thermal performance of specific devices must be verified to ensure compliance to the manufacturer's specifications.

The 5.25-in peripherals are removable from the front of the chassis after taking off the access cover and removing the front bezel. EMI shield panels are installed and should be retained in unused 5.25-in bays to ensure proper cooling and EMI conformance.

**Note:** Use caution when approaching the maximum level of integration for the 5.25-in drive bays. Power consumption of the devices integrated needs must be carefully considered to ensure that the maximum power levels of the power supply are not exceeded. Typical configurations can

supply enough power for a floppy drive, a tape drive, a CD-ROM drive, and four fixed hard drives.

## 6. Hard Disk Drive Bays

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### 6.1 Fixed Hard Drive Bay

The Server Chassis SC5275-E comes with a removable hard drive bay that can accept up to six cabled 3.5-in x 1-in hard drives. Power requirements for each individual hard drive may limit the maximum number of drives that can be integrated into a Server Chassis SC5275-E. This bay has a 92-mm (6.2 inches) x 25-mm fan mounted to the front to provide airflow to the hard drives. The drive bay is secured with two screws in the front and two screws on the side.

**Note:** The hard drive bay must be slid forward or removed to install the baseboard.

The Server Chassis SC5275-E is capable of accepting a single SCSI hot swap backplane hard drive enclosure in place of the fixed drive bay. The backplane is an LVD/SE SCSI design, which provides support for SCSI devices using Low Voltage Differential Signaling, as well as provides support for older SE SCSI devices (Ultra 160 and older). The backplane has a connector to accommodate a SAF-TE controller on an add-in card. The backplane supports five 1-in hot swap SCA-2 drives when mounted in the docking drive carrier.

### 6.2 SCSI Interface

#### 6.2.1 SCSI Hot Swap Backplane Specifications

The SCSI hot swap backplane is an embedded application subsystem, which during normal operation does the following:

- Responds to SAF-TE messages (transmitted to the back plane via the SCSI bus).
- Monitors the temperature on the back plane, and reports a warning or critical error if outside programmed limits.
- Monitors the speed of the fans (if present), and reports a warning or critical error if outside programmed limits.

The SCSI hot swap backplane board set is made up of the following functional blocks:

- SCSI Bus with SCA drive connectors, and active LVDS terminators
- Microcontroller with program Flash and RAM
- SCSI interface that allows the microcontroller to respond as a SCSI target
- I<sup>2</sup>C interface to server board
- SCSI drive power control
- Fault indicator support
- Support for two cooling fans (fan-tach inputs and power control)
- Temperature sensor

The SCSI interface on the LVD SCSI backplane provides the link between the SCSI bus and the SCSI Accessed Fault Tolerant Enclosure (SAF-TE) controller. The SAF-TE interface allows the enclosure management controller to respond as a SCSI target to implement the SAF-TE protocol.

Power control on the LVD SCSI backplane supports the following features.

1. Spin-down of a drive when failure is detected and reported (using enclosure services messages) via the SCSI bus. An application or RAID controller detects a drive-related problem that indicates a data risk. In response, it removes the drive from service and sends a spin-down SCSI command to the drive. This decreases the likelihood that the drive will be damaged during removal from the hot-swap drive bay. When a new drive is inserted, the power control waits a small amount of time for the drive to be fully seated, and then applies power with a controlled power ramp.
2. If the system power is on, the LVD SCSI backplane immediately powers off a drive slot when it detects that a drive has been removed. This prevents possible damage to the drive when it is partially removed and re-inserted while full power is available, and disruption of the entire SCSI array from possible sags in supply voltage and resultant current spikes.

### 6.2.2 FET Short Protection

The Field Effect Transistor (FET) short protection circuit is useful for protecting both the 12-V and 5-V power control FETs located on the LVD SCSI backplane.

### 6.2.3 Device SCSI ID

Each device on a SCSI bus must have a unique SCSI ID. The 6 x 1.0-in LVD SCSI backplane device SCSI ID is dependent on whether it is configured as a primary backplane.

**Table 13. SCSI ID Assignments**

Device	SCSI ID as Primary Backplane I <sup>2</sup> C* connector (J2A1) pin1=1
Drive 1	0x0H
Drive 2	0x1H
Drive 3	0x2H
Drive 4	0x3H
Drive 5	0x4H
Drive 6	0x5H
SAF-TE Controller	0x8H (6 HDD)

### 6.2.4 Hard Drive Activity LED

Each SCSI hard drive turns on a green LED when it is accessed. The LEDs are 4-terminal dual-color (yellow and green) and are physically located on the backplane.

**Table 14. Hard Drive Activity LED**

Drive	HSBP LED Activated	LED Designator	LED Color
1	1	TBD	Green
2	2	TBD	Green
3	3	TBD	Green
4	4	TBD	Green

5	5	TBD	Green
6	6	TBD	Green

**6.2.5 Hard Drive Fault LED**

The hot-swap controller (HSC) is responsible for turning the drive fault LEDs on or off according to the states specified via commands received from the SAF-TE controller and the IMB. The drive fault LEDs are 4-terminal dual-color (yellow and green) and indicate the failure status for each drive. The LEDs are physically located on the LVD SCSI backplane.

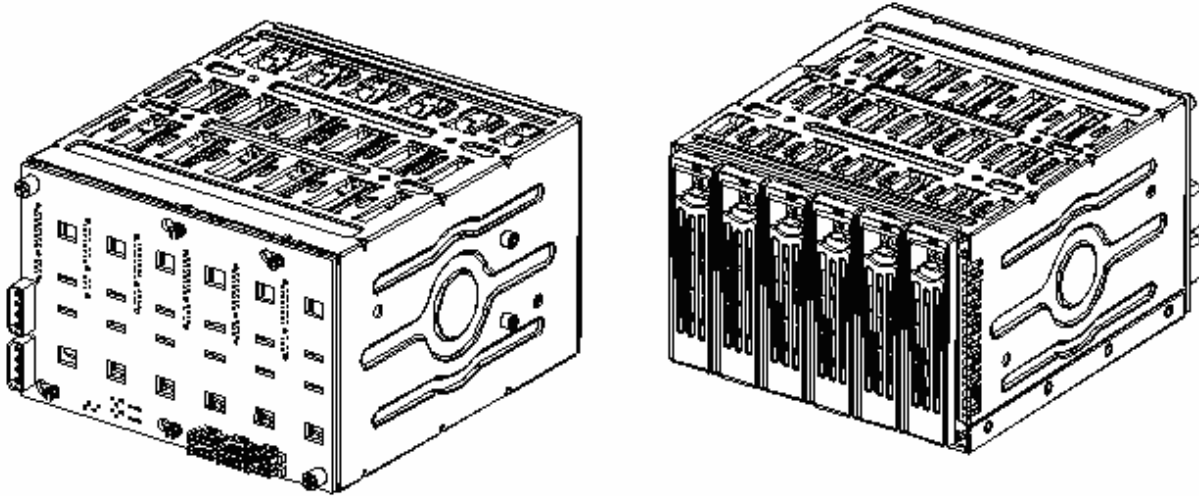


Figure 9: 6-HDD Hot Swap Drive Bay, Front/Rear Isometric View

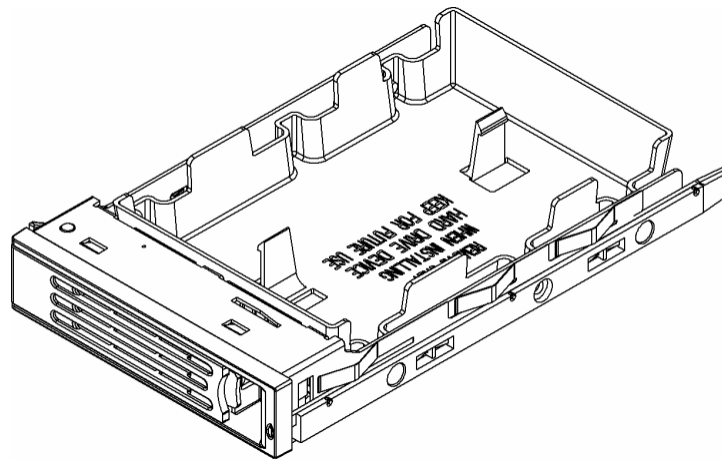


Figure 10: Drive Carrier with Air Baffle Installed

**6.2.6 Hot Swap Drive Bay Electronics**

The hot swap SCSI backplane board set supports the following features:

- Hot-swapping of SCSI drives, which allows for connection of SCSI devices while the system is powered on.
- Enclosure management and monitoring functions conforming to the *SCSI-Accessed Fault-Tolerant Enclosures Specification (SAF-TE)*, Revision 1.00.

## 6.3 SATA Hardware Overview

One SATA backplane (supporting up to 6 drives) can be mounted in a Server Chassis SC5275-E if a SATA controller is installed.

### 6.3.1 SATA Hot Swap Drive Cage Upgrade Kit

The Serial ATA (SATA) drive cage allows for installation of up to six SATA drives in the Server Chassis SC5275-E. The kit includes a SATA hot-swap drive bay with mounting hardware.

With this kit, the SATA hot swap drive cage can be directly connected to the SATA connectors on the server board for those server boards that have integrated Serial ATA, or to a Serial ATA RAID card, such as the Intel® RAID Controller SRCS14L. The RAID level that is supported depends on the feature set of the Serial ATA controller.

### 6.3.2 Connect SATA Backplane Cables

1. Connect the power cables from the power supply to the SATA hot swap backplane. Regardless of the number of drives that will be installed, both power connectors should be used.
2. Connect each SATA cable to the SATA hot swap backplane. The connectors and associated drives are identified as follows.

**Table 15. SATA Drive Connectors**

Drive Bay	Drive Number	Connection Number and Drive Number
Bottom	Drive 0	0
Second from bottom	Drive 1	1
Second from top	Drive 2	2
Top	Drive 3	3
TBD	Drive 4	4
TBD	Drive 5	5

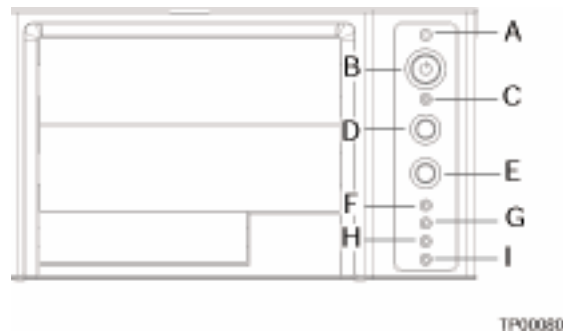
3. The system BIOS may need to be updated for proper operation. See the server board documentation for information and instructions on upgrading the BIOS.

## 6.4 Front Panel

The front panel control buttons and LED indicators are displayed in the following figure. Not shown in the following figure is a tool-activated non-maskable Interrupt (NMI) switch, which is located below the Status LED. The Server Chassis SC5275-E provides a 34-pin cable option with the chassis kit. A 34-pin Entry Ebay SSI (rev 3.0) front panel header for Intel® server boards is located on the back of the front panel. This allows for connection of a 34-pin ribbon

cable for use with SSI rev 3.0-compliant server boards. The connector cable is compatible with the 24-pin SSI standard.

When the hot-swap drive bay is installed, a bi-color hard drive LED is located on each drive carrier (six total) to indicate specific drive failure or activity. For pedestal systems, these LEDs are visible upon opening the front bezel door.



- A. Power / Sleep LED
- B. Power button
- C. NMI button
- D. Reset Button
- E. Sleep Button
- F. LAN # 1 Activity LED
- G. LAN # 2 Activity LED
- H. Hard Drive Activity LED
- I. Status LED

Figure 11: Front Panel Controls and Indicators

Table 16. Front Panel LED Functions

LED Name	Color	Condition	Description
Power/Sleep LED	Green	ON	Power on
	Amber	ON	Sleep (S1)
		OFF	Power off or Sleep (S4)
LAN # 1-Link/Activity	Green	ON	Linked
		BLINK	LAN activity
		OFF	Disconnected
LAN # 2-Link/Activity	Green	ON	Linked
		BLINK	LAN activity
		OFF	Disconnected
Hard drive activity	Green	BLINK	Hard drive activity
	Amber	ON	Fault
		OFF	No Activity
Status LED	Green	ON	System ready (not supported by all server boards)
		BLINK	Processor or memory disabled
	Amber	ON	Critical temperature or voltage fault; CPU/Terminator missing

		BLINK	Power fault; Fan fault; Non-critical temperature or voltage fault
		OFF	Fatal error during POST

For additional details about front panel functions supported for a specific board, refer to the individual server board specifications.

## 7. System Interconnection

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### 7.1 Signal Definitions

The pin-out on the connectors referred to in this section are defined in the respective server board Technical Product Specification (TPS).

### 7.2 Chassis Internal Cables

The following cables/connectors are provided as part of the chassis kit:

- Front panel cable
- USB cable
- Fan connectors

#### 7.2.1 Front Panel Cable

A 34-conductor ribbon cable with 34-pin IDC connectors links the front panel to the SSI EEB Revision 3.0-compliant server board.

#### 7.2.2 USB Cable

A 4-conductor USB cable with a 10-pin server board connector and a 4-pin external USB connector is used to connect the front mounted USB connector to the server board.

#### 7.2.3 Fan Connector

The installed system fans provide 3-pin connectors that are designed to mate with SSI (ATX\*)-compatible fan headers.

### 7.3 Server Board Internal Cables

Depending on the specific server board support for these features, some or all of the following cables may be included as part of the boxed board kit:

- IDE Cable: One or two 40-pin, 80-conductor DMA33/66/100 IDE cables.
- SCSI Cable: One 68-pin, 68-conductor twisted-pair wide SCSI cable with terminator. Cable supports connection of up to four SCSI drives to the server board.
- Floppy Cable: One 34-conductor cable featuring two 34-pin IDC connectors (2x17) floppy cable.

- Serial Cable: One 8-conductor cable terminated in a 2x5 header at one end and a 9-pin panel mount D sub connector on the other.

## 7.4 Accessory Cables

### 7.4.1 ICMB Interface Card Cable

One 5-pin ICMB cable connects the server board to the ICMB interface card mounted on the chassis rear panel or add-in card slot (included in the ICMB Interface Card Kit, AXX21CMBKIT).

### 7.4.2 External SCSI Cable

One 68-pin SCSI cable connects the server board or add-in SCSI card to the panel that mounts to the back of the chassis (SCSI Card Add-in cable, AXXEXTSCSICBL).

## 7.5 I/O Panel Connectors

The Server Chassis SC5275-E provides an ATX 2.2 and SSI E-bay 3.0-compliant I/O aperture for the backside I/O. The specific panel used will be provided in the boxed server board kit. The following are typical panel connections:

- PS/2 keyboard connector
- PS/2 mouse connector
- 9-pin serial port(s)
- 25-pin parallel port
- USB port(s)
- 15-pin video port
- Ethernet RJ-45 connector(s)

## 8. Compatible Intel® Server Boards

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The Intel Server Chassis SC5275-E supports the following Intel® server boards:

- Intel® Server Board SE7320SP2
- Intel® Server Board SE7525GP2
- Intel® Server Board SE7520BD2

## 9. Product Regulatory Compliance

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The Server Chassis SC5275-E is designed and tested to meet the standards and regulations listed in the following sections when configured with the Intel® server boards specified.

### 9.1 Product Safety Compliance

The Server Chassis SC5275-E complies with the following safety requirements:

- UL 1950 – CSA 950 (US/Canada).
- EN 60 950 (European Unión).
- IEC 60 950 (International).
- CE – Low Voltage Directive (73/23/EEC) (European Limits).
- EMKO-TSE (74-SEC) 207/94 (Nordics).

### 9.2 Product EMC Compliance

The system has been tested and verified to comply with the following EMC regulations when configured with the Intel server boards specified. For information on compatible server boards, refer to Intel's Server Builder website (<http://www.intel.com/go/serverbuilder>) or contact your local Intel representative.

- FCC (Class A Verification) – Radiated and Conducted Emissions (USA).
- ICES-003 (Class A) – Radiated and Conducted Emissions (Canada).
- CISPR 22, 3<sup>rd</sup> Edition (Class A) – Radiated and Conducted Emissions (International).
- EN45022 (Class A) – Radiated and Conducted Emissions (European Union).
- EN45024 (Immunity) (European Union).
- EN6100-3-2 & -3 (Power Harmonics and Fluctuation and Flicker).
- CE – EMC Directive (89/33/EEC) (European Union).
- VCCI (Class A) – Radiated and Conducted Emissions (Japan).
- RRL (Class A) – Radiated and Conducted Emissions (Korea).
- BSMI (Class A) – Radiated and Conducted Emissions (Taiwan).

### 9.3 Product Regulatory Compliance Markings

This product is provided with the following Product Certification Markings:

- UL/cUL Listing Mark.
- CE Mark.
- German GS Mark.
- Russian GOST Mark.
- FCC, Class A Verification Marking.
- ICES-003 (Canada EMC Compliance Marking).
- VCCI, Class A Mark.
- Australian C-Tick Mark.
- Taiwan BSMI Certification Number and Class A Warning.

## 9.4 Electromagnetic Compatibility Notices

### 9.4.1 USA

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2), this device must accept any interference received, including interference that may cause undesired operation.

For questions related to the EMC performance of this product, contact:

Intel Corporation  
5200 N.E. Elam Young Parkway  
Hillsboro, OR 97124  
1-800-628-8686

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit other than the one to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment. The customer is responsible for ensuring compliance of the modified product.

Only peripherals (computer input/output devices, terminals, printers, etc.) that comply with FCC Class B limits may be attached to this computer product. Operation with noncompliant peripherals is likely to result in interference to radio and TV reception.

All cables used to connect to peripherals must be shielded and grounded. Operation with cables, connected to peripherals that are not shielded and grounded, may result in interference to radio and TV reception.

#### 9.4.2 FCC Verification Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and (2), this device must accept any interference received, including interference that may cause undesired operation.

For questions related to the EMC performance of this product, contact:

Intel Corporation  
5200 N.E. Elam Young Parkway  
Hillsboro, OR 97124-6497

Phone: 1 (800)-INTEL4U or 1 (800) 628-8686

#### 9.4.3 ICES-003 (Canada)

Cet appareil numérique respecte les limites bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques", NMB-003 édictée par le Ministre Canadien des Communications.

##### English translation of the notice above:

"This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of the Canadian Department of Communications."

#### 9.4.4 Europe (CE Declaration of Conformity)

This product has been tested in accordance to, and complies with the Low Voltage Directive (73/23/EEC) and EMC Directive (89/336/EEC). The product has been marked with the CE Mark to illustrate its compliance.

#### 9.4.5 Japan EMC Compatibility

Electromagnetic Compatibility Notices (International).

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

##### English translation of the notice above:

"This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI) from Information Technology Equipment. If this is used near a radio or

television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.”

### 9.4.6 BSMI (Taiwan)

The BSMI Certification number and the following warning are located on the product safety label, which is located on the bottom side of the chassis.

Installation of the Intel® Workstation Acoustic Kit does not effect original compliance to Safety or EMC requirements. Refer to the system product guide for details on regulatory information.

## 10. Environmental Limits

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### 10.1 System Office Environment

Table 17. System Office Environment Summary

Parameter	Limits
Operating Temperature	+5 degrees C to +35 degrees C with the maximum rate of change not to exceed 10 degrees C per hour.
Non-Operating Temperature	-40 degrees C to +70 degrees C
Non-Operating Humidity	95%, non-condensing @ 30 degrees C
Acoustic noise	50 dBA in a typical office ambient temperature (18-25 degrees C)
Operating Shock	No errors with a half sine wave shock of 2G (with 11-millisecond duration).
Package Shock	Operational after a free fall, 18 – 24 inch depending on the weight.
ESD	15kV per Intel Environmental Test Specification

### 10.2 System Environmental Testing

The system will be tested per the Environmental Standards Handbook, Intel Doc.#662394-05. These tests shall include:

- Temperature Operating and Non-Operating
- Humidity Non-Operating
- Packaged Shock
- Packaged and Unpackaged Vibration
- AC Voltage, Frequency, and Source Interrupt
- AC Surge
- Acoustics
- Electrostatic Discharge (ESD)
- EMC Radiated Investigation

## 11. Reliability, Serviceability, and Availability

### 11.1 MTBF

Calculated Mean Time Between Failures (MTBF) at maximum configuration has been calculated at 74,000 hours for KDK at 35 degrees C.

**Table 18. MTBF Calculations**

Subassembly (Server at 35 degrees C ambient air)	Standard Configuration MTBF (hours)	Standard Configuration with Optional Backplane MTBF (hours)
600W power supply	100,000	100,000
Cooling fans (2 - non redundant)	300,000	300,000
Hot Swap BP and SAF-TE card	1,500,000	1,500,000
Hot Swap SATA backplane	2,024,479	2,024,479
Front Panel Board	7,000,000	7,000,000
Intrusion switch	25,000,000	25,000,000
Total chassis subassembly	74,000	70,000

### 11.2 Serviceability

The system is designed to be serviced only by qualified technical personnel.

The desired Mean Time To Repair (MTTR) of the system is 30 minutes, including diagnosis of the system problem. To meet this goal, the system enclosure and hardware have been designed to minimize the MTTR.

The following are the maximum times that a trained field service technician should take to perform the listed system maintenance procedures after diagnosis of the system.

**Table 19. Maximum Maintenance Procedure Times**

Remove cover	1 minute
Remove and replace hard disk drive	5 minutes
Remove and replace 5.25-in peripheral device	5 minutes
Remove and replace power supply	5 minutes
Remove and replace drive cage fan	7 minutes
Remove and replace expansion board	5 minutes
Remove and replace front panel board	5 minutes
Remove and replace server board (with no expansion boards)	15 minutes
Overall MTTR	20 minutes

## 12. Upgradeability

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Listed below are accessory kits available for the Server Chassis SC5275-E. Illustrations are provided to indicate some of the kit contents. Not all parts for each kit are shown and the actual part may differ in appearance.

### 12.1 SCSI Hot Swap Drive Bay Upgrade

The optional hot swap SCSI six-drive bay, Product Code AXX6SCSIDB, is available for all of the Server Chassis SC5275-E. It supports up to six 1-inch single connector attachment (SCA) low-voltage differential SCSI (LVD) hard drives to enhance serviceability, availability, and upgradeability of the system.

The kit includes a hot-swap drive bay with mounting hardware, a 68-pin LVD SCSI cable for data transfer, and a 4-pin I<sup>2</sup>C cable for server management communication.

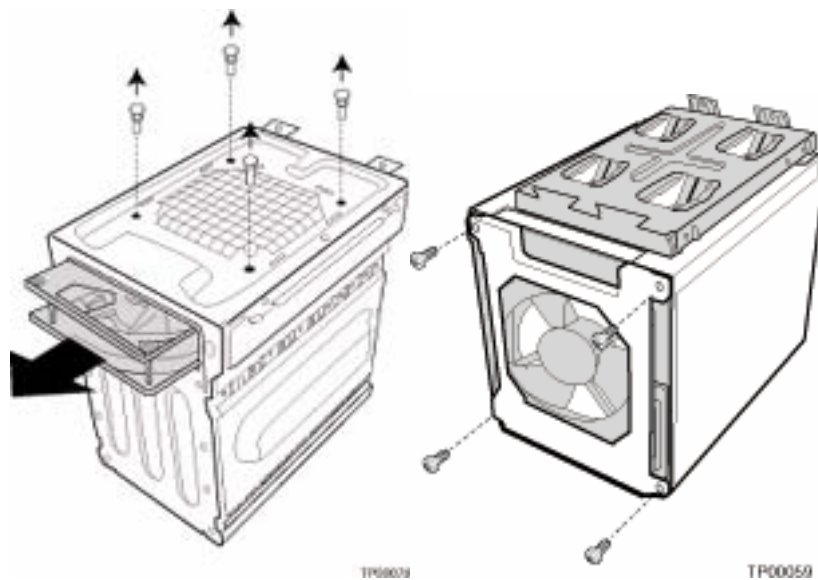


Figure 12: Replacing System Fan from IDE Drive Carrier to the SCSI Drive Carrier

### 12.2 External SCSI Adapter Cable

The 68-pin external LVD SCSI cable, Product Code AXXEXTSCSICBL, allows an internal SCSI connection from the motherboard to be routed to the ICMB/SCSI knockout at the rear of the chassis.

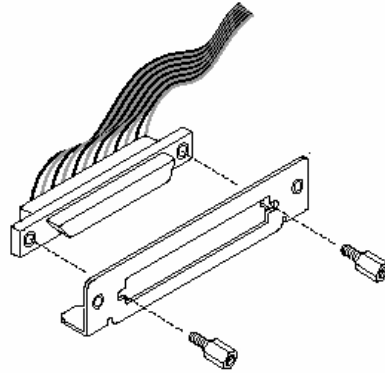


Figure 13. External SCSI Adapter Cable Detail

### 12.3 SATA Hot Swap Drive Bay Upgrade

The SATA Hot Swap Drive Bay Kit, Product Code AXX6SATADB, includes a SATA hot swap drive bay with mounting hardware. It supports up to six 1-inch single connector attachment (SCA) low-voltage differential SATA (LVD) hard drives to enhance serviceability, availability, and upgradeability of the system. When the hot-swap drive bay is installed, it utilizes the 6 available fixed bay positions.

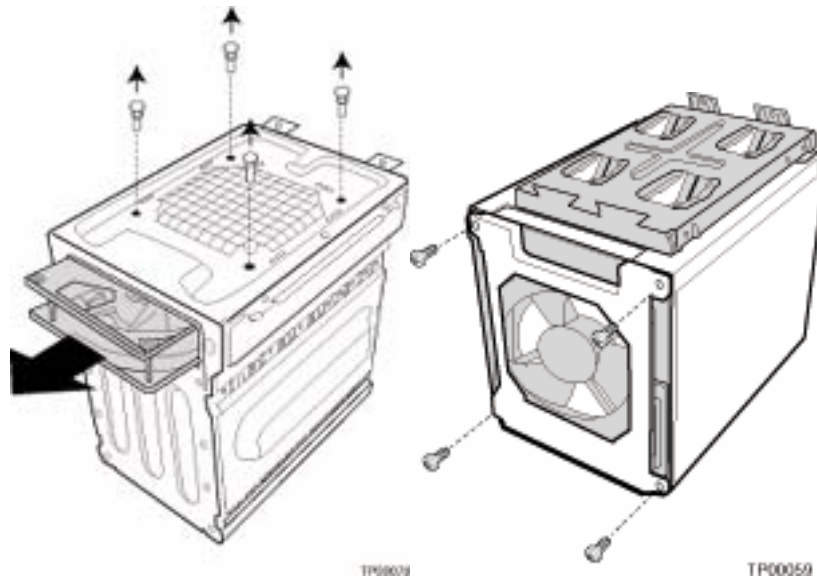


Figure 14: Replacing System Fan from IDE Drive Carrier to the SATA Drive Carrier

## Appendix A: Chassis Spares and Accessories

### Upgrade and Accessory Parts

Product Code	MM #	UPC	Qty.	Description
AXX6SCSIDB	TBD	TBD	1	Hot-Swap SCSI Drive Upgrade Kit – Upgrade Base Chassis 6 drives
AXX6SATADB	TBD	TBD	1	Hot-Swap SATA Drive Upgrade Kit – Upgrade Base Chassis 6 drives
AXXEXTSCSICBL	830656	7 35858 13953 3	1	External SCSI Cable Accessory. For use with SCSI Knock-out on rear of chassis.
APT2WKTCKIT	861825	00735858169059	1	Workstation Cooling Kit for Intel® Server Board SE7320SP2/Intel® Server Board SE7525GP2 boards only and Intel® Server Chassis SC5275-E. Improves system cooling and acoustics. Includes 2 heatsinks, retention mechanisms, fans spacers, cooling duct, screws and documentation.

### Replacement and Spare Parts for Intel® Server Chassis SC5275-E

Product Code	MM #	UPC	Qty.	Description
FPTCOSMKIT	852424	735858159739	1	Cosmetic Kit <ul style="list-style-type: none"> <li>• One black bezel</li> <li>• One dusty beige bezel</li> <li>• Four chassis feet</li> <li>• Two side cover latches</li> </ul>
FPT2PMKIT	857643	00735858164788	1	Preventive Maintenance Kit <ul style="list-style-type: none"> <li>• One Front Panel Board</li> <li>• One Front Panel cable</li> <li>• One USB cable</li> <li>• One Intrusion Switch/cable</li> <li>• One 92-mm fan</li> <li>• One 120-mm fan with fan guard attached</li> <li>• One box of hardware which consist of:               <ul style="list-style-type: none"> <li>- Two left side peripheral rails</li> <li>- Two right side peripheral rails</li> <li>- One lock plate</li> <li>- Fifteen standoffs for server board mounting</li> <li>- Nine screws to mount RM</li> <li>- 38 screws to mount server board, etc (common screw)</li> <li>- Eleven countersunk screws to mount CDROM, floppy drive, etc</li> <li>- Four screws to mount fan to a HS bay</li> <li>- Four tie wraps for cable management</li> <li>- One cable clamp for cable management</li> <li>- One cable tie to cable management with HS bay</li> <li>- One rubber bumper for server board mounting</li> <li>- Two mounting brackets for HS bay</li> </ul> </li> </ul>
AXX6SATADB	TBD	TBD	1	Hot-swap SATA Drive Upgrade Kit – Upgrade. Base KDK SKU to six SATA Drives

FHD3PS450	844924	7 35858 15351 5	1	Non-redundant 600W Power Supply for Intel® Server Chassis <i>SC5275-E</i>
FSATAHSDBBRD	85327 8	007358-581 16062 9	1	Spare serial ATA backplane board.

## Glossary

This appendix contains important terms used in the preceding chapters. For ease of use, numeric entries are listed first (e.g., “82460GX”) with alpha entries following (e.g., “AGP 4x”). Acronyms are then entered in their respective place, with non-acronyms following.

Term	Definition
AC	Alternating Current
ACPI	Advanced Configuration and Power Interface.
ATX	Advanced technology extended (motherboard type).
BKM	Best Known Method – a document, created by an Intel organization that details the proper or customary steps used to perform a specific task (e.g., operating system installation).
BMC	Baseboard Management Controller – Provides monitoring, alerting, and logging of critical system information obtained from embedded sensors on the baseboard.
DC	Direct Current
DDR	Double Data Rate
DIMM	Dual Inline Memory Module
DLT	Digital Linear Tape
ECC	Error Correcting Code
EEB	Entry E-Bay
EEPROM	Electrically Erasable Programmable Read-Only Memory
EMC	Electromagnetic compatibility
EMI	Electromagnetic Interference
EPS	Entry Power Supply; External Product Specification
EPG	Enterprise Products Group – a division of Intel Corporation.
ESD	Electrostatic Discharge
FET	Field Effect Transistor
FRU	Field Replaceable Unit
FWH	Firmware Hub
HCT	Hardware Compatibility Test
HSBP	Hot-Swap Backplane
HSC	Hot-Swap Controller
Hz	Hertz (1 cycle/second)
I2C	Inter-integrated circuit bus
ICMB	Intelligent Chassis Management Bus
IDE	Integrated Drive Electronics
I/O	Input / Output
IP	Internet protocol
IPMI	Intelligent Platform Management Interface
ISM	Intel® Server Management
LAN	Local Area Network
LED	Light Emitting Diode
LPC	Low Pin Count
LVDS	Low-voltage differential SCSI
MTBF	Mean Time Between Failures
MTTR	Mean Time to Repair

NMI	Nonmaskable Interrupt
OEM	Original Equipment Manufacturer
OS	Operating System
PCI	Peripheral Component Interconnect
PFC	Power Factor Correction
RPM	Revolutions Per Minute
RPS	Redundant Power Supply
PWT	Processor Wind Tunnel – Active cooling device included with the Intel® Boxed Xeon™ Processors
SAF-TE	SCSI Accessed Fault –Tolerant Enclosure
SATA	Serial AT-Attachment interface
SCA	Single connector attachment.
SCSI	Small Computer Systems Interface.
SDR	Sensor Data Record
SKU	Stock Keeping Unit
SMBus	A subset of the I2C bus/protocol, developed by Intel.
SSI	Server System Infrastructure – Organization which defines and promotes specifications for the server market
TBD	To Be Documented – Used when item being described has not yet been designed or formalized.
TPS	Thin Power Supply; Technical Product Specification
USB	Universal Serial Bus
VCCI	Voluntary Control Council for Interference
VRAM	Video Random Access Memory
VRM	Voltage Regulation Module
WfM	Wired for Management
WOL	Wake-on-LAN

## ***Reference Documents***

Refer to the following documents for additional information:

- Intel® Server Chassis SC5275-E Subassembly Product Guide
- Intel® Server Chassis SC5275-E Hot Swap Bay Upgrade Kit
- Intel® Server Chassis SC5100 and SC5200 External SCSI Cable Install Guide
- SCSI Accessed Fault-Tolerant Enclosures Specification, Revision 1.00
- SSI Entry-Level Electronics–Bay Specification, Version 3.0
- Advance Technology Extended (ATX) Specification, Revision 2.2
- ANSI/IEEE STD C62.45-1992
- Environmental Standards Handbook