Serial ATA Hot Swap Drive Cage Upgrade Kit for:

Intel® Server Chassis SC5200

Intel® Server Chassis SC5250-E

A Guide for Technically Qualified Assemblers of Intel® Identified Subassemblies/Products

Order Number: C32342-002

C32342-002

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Warnings and Cautions

These warnings and cautions apply whenever you remove the access cover to access components inside the server. Only a technically qualified person should integrate and configure the server.

⚠ WARNINGS

The power button on the front panel DOES NOT turn off the AC power. To remove power from server, you must unplug the AC power cord from the wall outlet or the chassis.

Hazardous electrical conditions may be present on power, telephone, and communication cables. Turn off the server and disconnect the power cords, telecommunications systems, networks, and modems attached to the server before opening it. Otherwise, personal injury or equipment damage can result.

Hazardous voltage, current, and energy levels are present inside the power supply. There are no user-serviceable parts inside it; servicing should be done by technically qualified personnel.

⚠ CAUTIONS

ESD can damage disk drives, boards, and other parts. Perform all procedures in this chapter only at an ESD workstation. If one is not available, provide ESD protection by wearing an antistatic wrist strap attached to chassis ground—any unpainted metal surface—on your server when handling parts.

Always handle boards carefully. They can be extremely sensitive to ESD. Hold boards only by their edges. Do not touch the connector contacts. After removing a board from its protective wrapper or from the server, place the board component side up on a grounded, static free surface. Use a conductive foam pad if available but not the board wrapper. Do not slide board over any surface.

For proper cooling and airflow, always install the access cover before turning on the server. Operating it without the cover in place can damage system parts.

Before You Begin

Before removing the access cover for any reason, observe these safety guidelines.

1. Turn off all peripheral devices connected to the server.
2. Turn off the server by pressing the power button on the front of the chassis. Then unplug the AC power cord from the chassis or wall outlet.
3. Label and disconnect all peripheral cables and all telecommunication lines connected to I/O connectors or ports on the back of the chassis.
4. Provide electrostatic discharge (ESD) protection by wearing an antistatic wrist strap attached to a chassis ground—any unpainted metal surface—when handling components.

About the S-ATA Hot Swap Drive Cage Upgrade Kit

The Serial ATA (S-ATA) hot swap drive cage upgrade kit allows you to install up to four Serial ATA drives into the following Intel® Server Chassis:

- Intel® Server Chassis SC5200 Base
- Intel® Server Chassis SC5200 Base Redundant Power
- Intel® Server Chassis SC5250-E

With this kit, you can connect directly from the Serial ATA hot swap drive cage to the Serial ATA connectors on your server board for those server boards that have integrated Serial ATA, or to a Serial ATA RAID card, such as the Intel® RAID Card SRCS14L. The RAID level that is supported depends on the Serial ATA features offered by your server board or by the Serial ATA card you install.

NOTE

Refer to your server board documentation to determine Serial ATA (S-ATA) support for your server system.

If you want to use your S-ATA drives for a RAID configuration, you may need to installation a S-ATA RAID add-in card. Refer to your server board documentation and / or your S-ATA RAID card documentation for additional installation instructions and requirements.

Kit Contents

This upgrade kit contains the following:

Item	Quantity
S-ATA hot swap drive cage assembly	1
Metal SC5200 drive cage brackets (pre-installed on exterior of drive cage)	2
Plastic fan bracket (pre-installed on exterior of drive cage)	1
Plastic air baffle (pre-installed in top drive bay)	1
S-ATA drive bays (pre-installed in drive cage)	4
S-ATA connection ID label	1
S-ATA cable	4
LED cable for use with the Intel® RAID Controller SRCS14L	1
This manual	1

Tools and Supplies Needed

- Phillips* (cross head) screwdriver (#2 bit)
- Antistatic wrist strap (recommended)
- Needle-nosed pliers
- Screws / fasteners (included with your server chassis)
- Serial ATA RAID card (dependent on installation)
- SC5250-E drive cage brackets (quantity 2, for SC5250-E installation only). Brackets are included with the server chassis SC5250-E. See Figure 1.

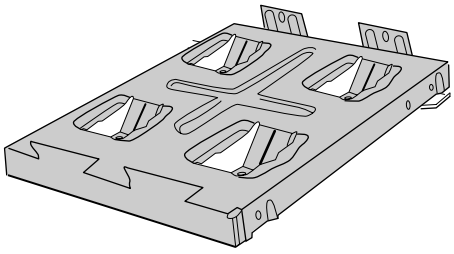

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Figure 1. SC5250-E Drive Cage Bracket

How to use this Guide

If you are installing the S-ATA hot swap drive cage kit into an Intel Server Chassis SC5200 Base or SC5200 Base Redundant power, follow the instructions under the section titled “Server Chassis SC5200 Base / SC5200 Base Redundant Power Installation.”

If you are installing the S-ATA hot swap drive cage kit into an Intel Server Chassis SC5250-E, follow the instructions under the section titled “Server Chassis SC5250-E Installation.”

For either chassis, after the S-ATA hot swap drive cage is installed, follow the instructions under the section titled “Installing a Hot Swap Hard Drive.”

Server Chassis SC5200 Base / SC5200 Base Redundant Power Installation

NOTE

This chapter is only for installations into the Intel Server Chassis SC5200 Base or the Intel Server Chassis SC5200 Base Redundant Power. If you are installing the S-ATA hot swap drive cage kit into an Intel Server Chassis SC5250-E, follow the instructions under the chapter titled “Server Chassis SC5250-E Installation.”

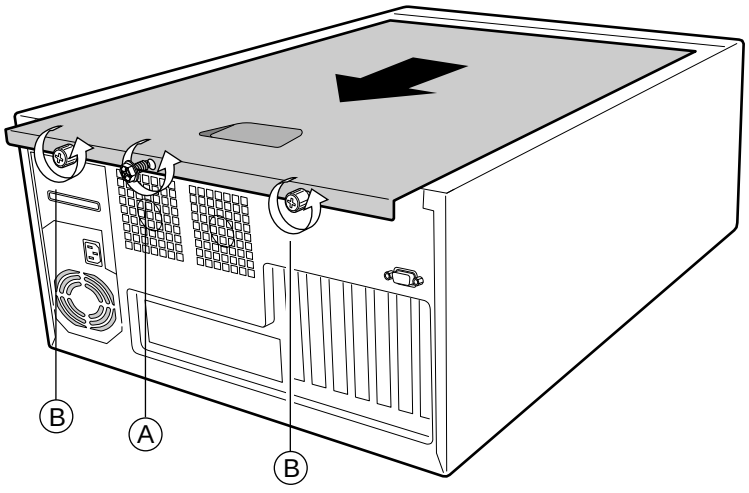
Remove the Access Cover

When your chassis is upright (in a tower / pedestal position), and you are facing the front of it, the access cover is on the left side. Lay the chassis on its right side, so the left access cover is on the top.

If your chassis is in a rack-mounted position, the left size is already on the top.

The front bezel needs to hang over the edge of your work surface in order to fully open the front bezel door.

1. Observe all safety and ESD precautions at the beginning of this document.
2. If the shipping screw is installed, remove it. (Letter “A” in the figure below)
3. Loosen the two captive thumbscrews at the rear of the chassis. (Letter “B” in the figure below)
4. Slide the cover backward a short distance, until it stops.
5. Lift the cover upward to remove it.



* Some chassis details shown may be different in your chassis.

Figure 2. Removing the Access Cover

Remove the Bezel (Rack Mount Chassis)

If you have a rack-mounted server, you must remove the bezel. If you do not have a rack-mounted server, proceed to the next section.

1. Remove the handle from the right side.
2. Push up on the tab ("A" in the figure below).
3. Slide the bezel to the right and then pull it forward to remove it.

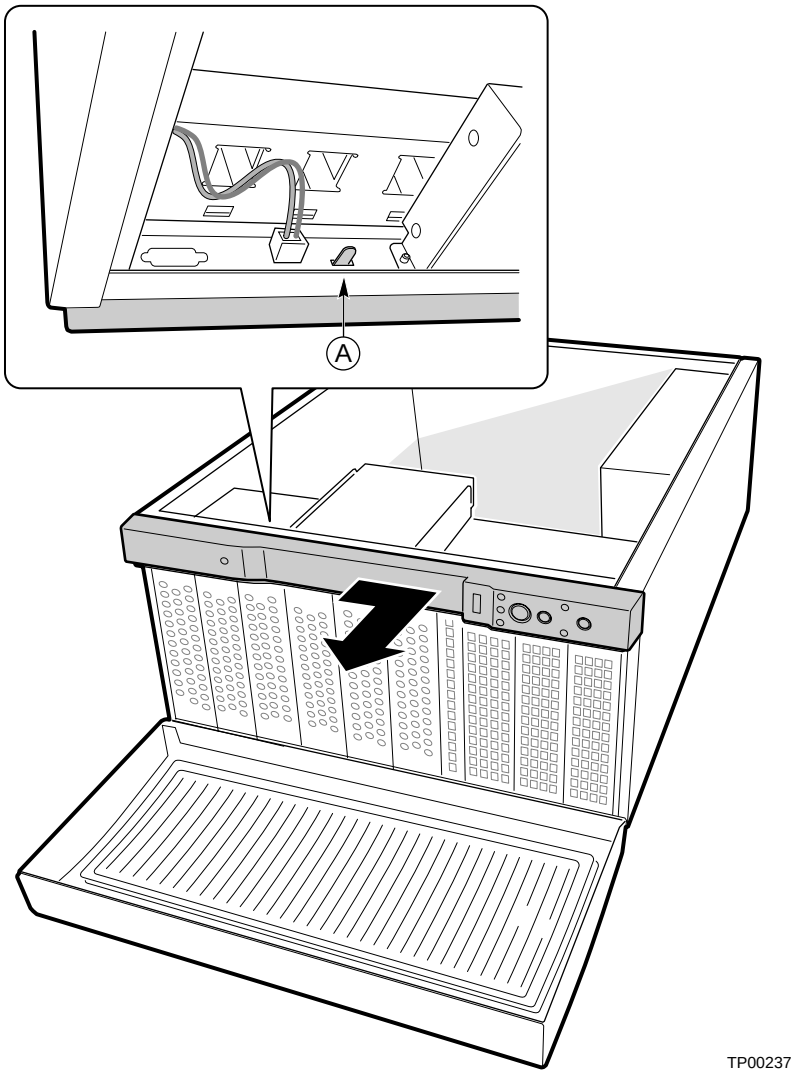


Figure 3. Removing the Bezel

Remove the Top Piece of Foam Epac

The foam epac is located near the front of the chassis, over the top of the front fans. Remove the top piece of foam epac from the system fans.

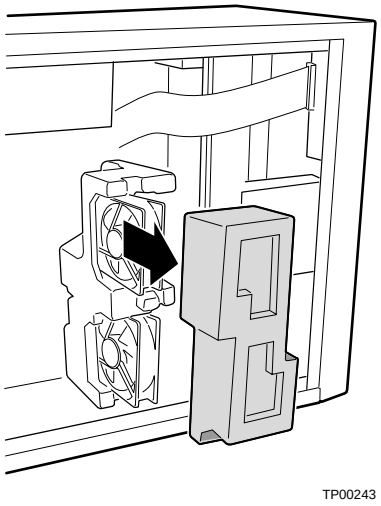


Figure 4. Removing the Top of Foam Epac

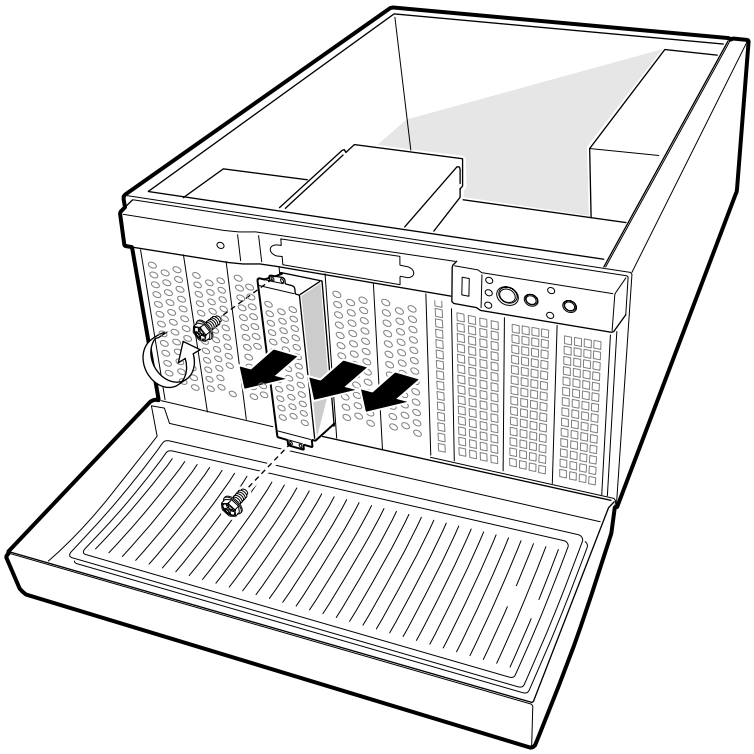
Remove Hard Drive Carriers

NOTE

Installing the S-ATA drive carrier into the location of the bottom three drive carriers is not recommended because of the thermal impact on the PCI slots.

Remove the center three drive carriers, indicated by the arrows in the figure below. Do not remove the upper 5 ¼-inch peripheral bays or the vented shield. For each drive carrier do the following:

1. If a drive is installed in the carrier, disconnect the power and data cables from it.
2. Remove and save the two screws that hold the carrier in the chassis.
3. Remove the carrier from the chassis.



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* Some chassis details shown may different in your chassis.

Figure 5. Removing the Drive Carriers

Insert S-ATA Hot Swap Cage

1. Slide the S-ATA hot swap cage into the chassis. When inserting the cage, make sure the connections on the rear of the cage point toward the right side of the chassis. As pictured below, the right side of the chassis is facing up when the chassis is lying on its side.
2. Insert and tighten the five screws that hold the cage in the chassis.

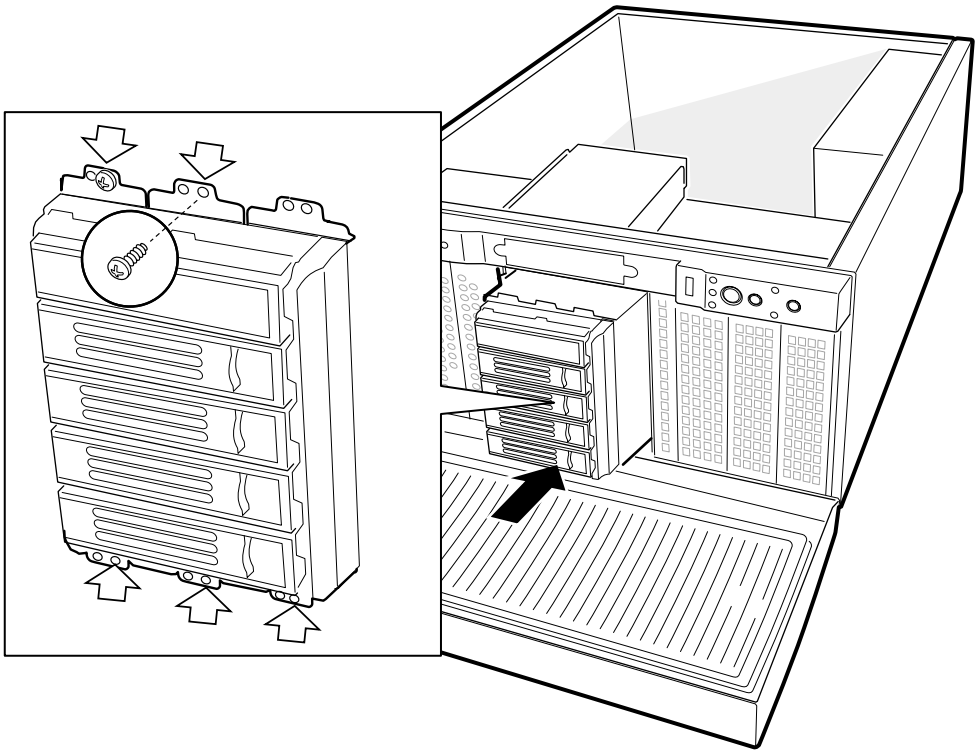


Figure 6. Inserting the S-ATA Hot Swap Drive Cage

Attach Connection ID Label

The connection ID label provides a way to identify the connections for the S-ATA Drive 0, Drive 1, Drive 2, and Drive 3. It is critical that you connect the cable on the S-ATA kit to the matching connection on your server board or S-ATA add-in card. Mixing up the connections / drive cables may result in data loss.

Attach the connection ID label to the chassis as shown. Note that when you are facing the front of the chassis, the label should appear upside down.

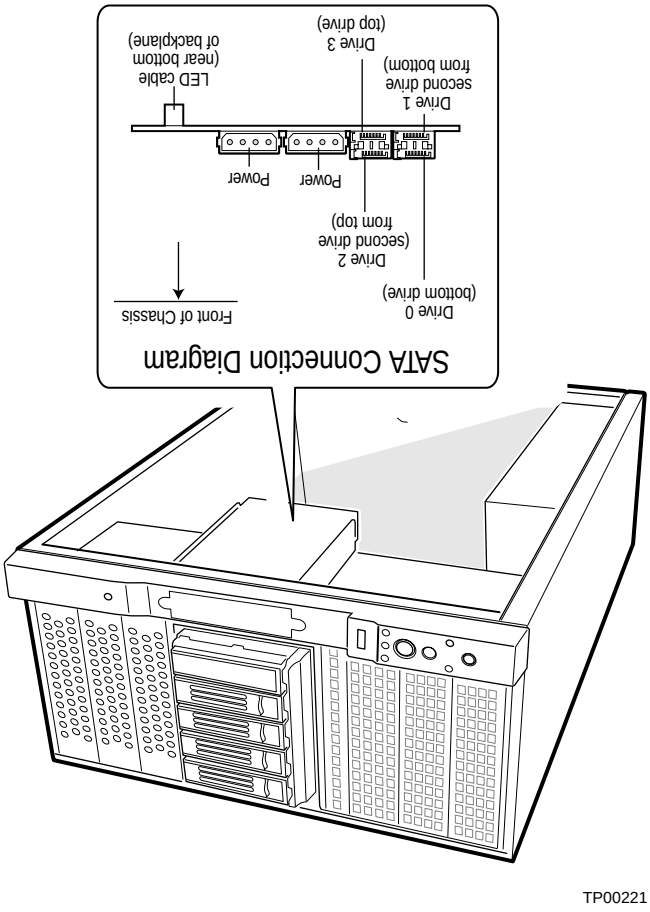


Figure 7. Attaching the Connection ID Label

Connect S-ATA Backplane Cables

1. Connect the power cables labeled P9 and P10 from the power supply to the S-ATA hot swap backplane (numbers 4 and 5 in the diagram below). Regardless of the number of drives that will be installed, both power connectors should be used. Connectors P9 and P10 should be used because these two connectors have an additional 12V wire to prevent power drops.
2. Connect each S-ATA cable to the S-ATA hot swap backplane. The connectors and associated drives are identified as follows:

Drive bay	Drive number	Connection number and drive number in figure
Bottom	Drive 0	0
Second from bottom	Drive 1	1
Second from top	Drive 2	2
Top	Drive 3	3

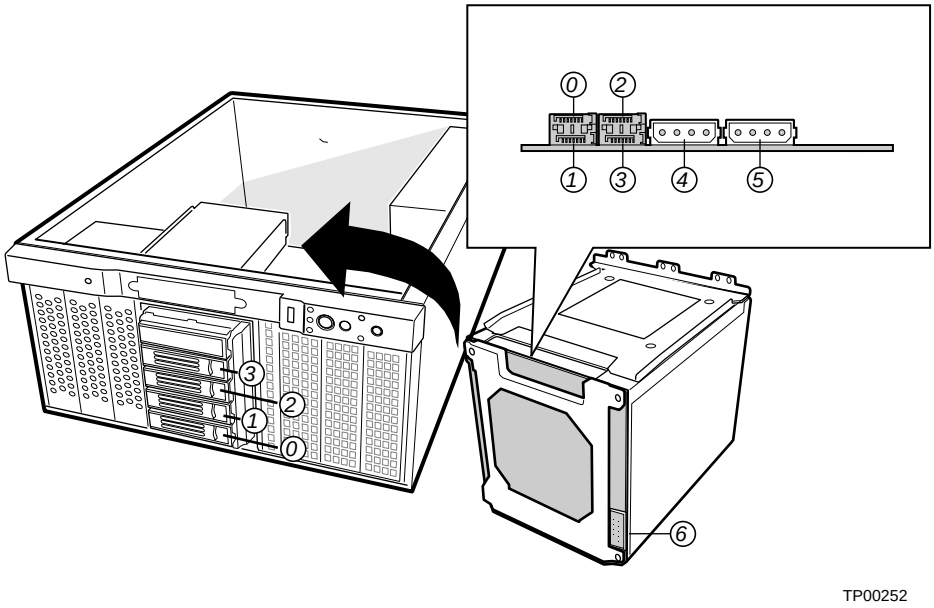


Figure 8. Attaching Cables to the S-ATA Backplane

3. Route the S-ATA cables around the front fans, as shown below.

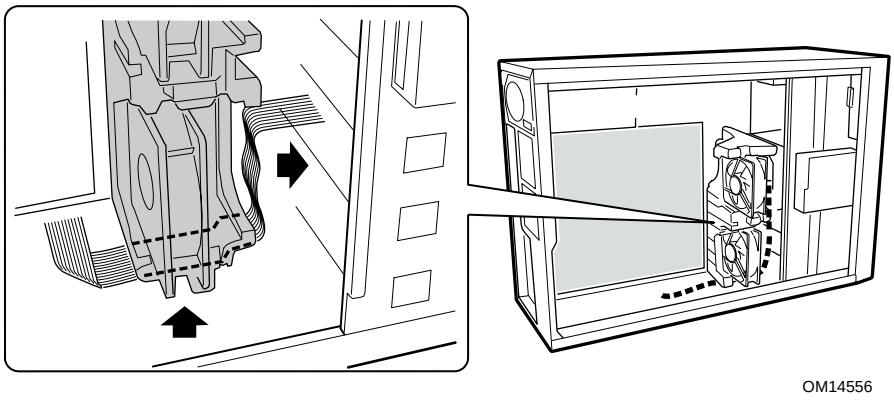


Figure 9. Routing the S-ATA Cables

4. Attach each S-ATA cable to the corresponding connection on your S-ATA RAID add-in card or to the server board. Refer to your server board documentation or to your S-ATA RAID card documentation for the location of the connectors on your server board or add-in card.

WARNING

You must connect the S-ATA drives correctly from the S-ATA backplane to your server board or to your S-ATA RAID card. If you do not connect Drive '0' on the backplane to Drive '0' on your server board or your S-ATA RAID card, Drive '1' to Drive '1' and so on, your RAID software may report incorrect information about the drive it is connected to. Data loss may occur.

5. If you are using the Intel RAID Controller SRCS14L, connect the LED cable to the S-ATA backplane. See connection number 6 in Figure 8. The twisted pair side of the LED connector goes toward the back of the chassis.

Replace Upper Foam Epac

1. Make sure the fan cables are in positioned in the lower foam epac.
2. Place the upper part of the foam epac into the chassis.
3. Press the foam epac into place. You may need to push the fans back and forth to get the upper foam eapc to sit flush with the lower foam epac.

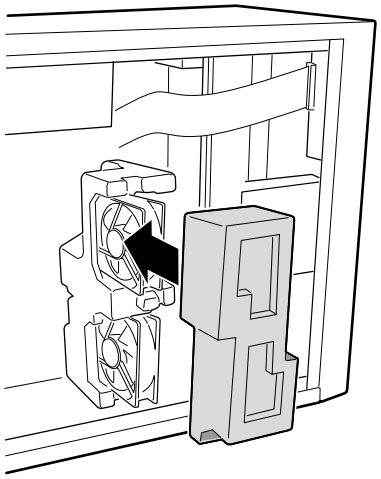


Figure 10. Installing the Upper Foam Epac

Install Bezel (Rack Mount Chassis)

If you previously removed the bezel, install it as follows.

1. Position the bezel. Make sure the plastic tabs (“A” in the figure below) are aligned with their holes.
2. Slide the bezel to the left.

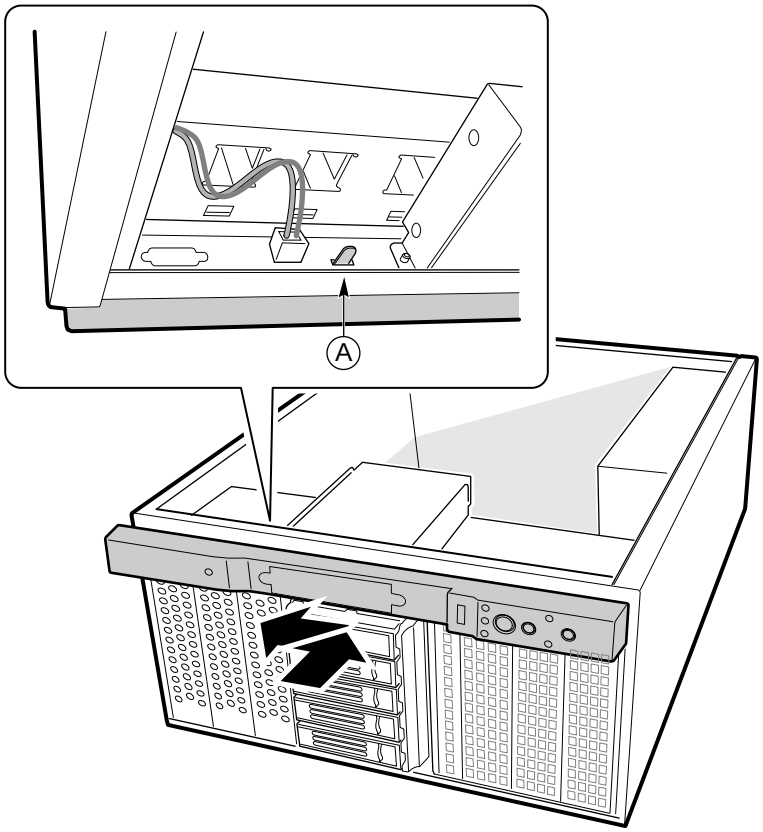


Figure 11. Installing the Bezel

Replace Access Cover

1. Place the cover so the tabs go into the slots on the server. The cover should be flush against the chassis.
2. Slid the cover forward until it stops.
3. Tighten the two captive screws into the rear of the chassis.

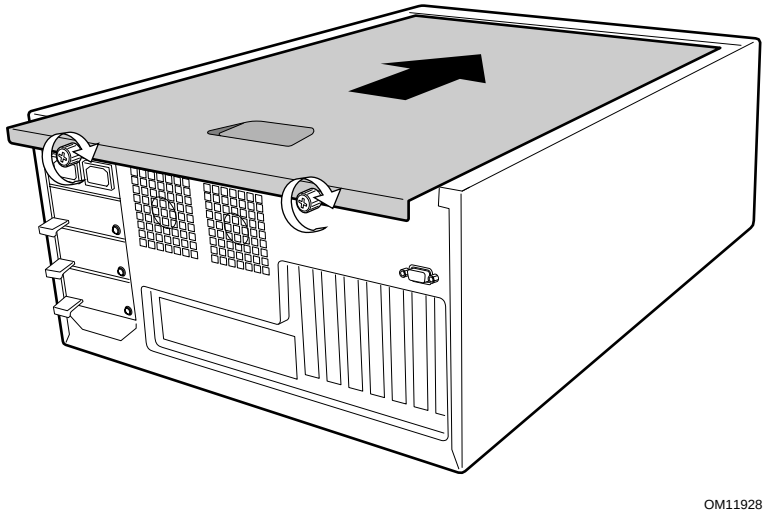


Figure 12. Installing the Access Cover

Update BIOS

You may need to update the system BIOS for proper operation. See your server board documentation for information and instructions.

Install Hard Drives

Follow the instructions under the section titled “Installing a Hot Swap Hard Drive.”

Server Chassis SC5250-E Installation

NOTE

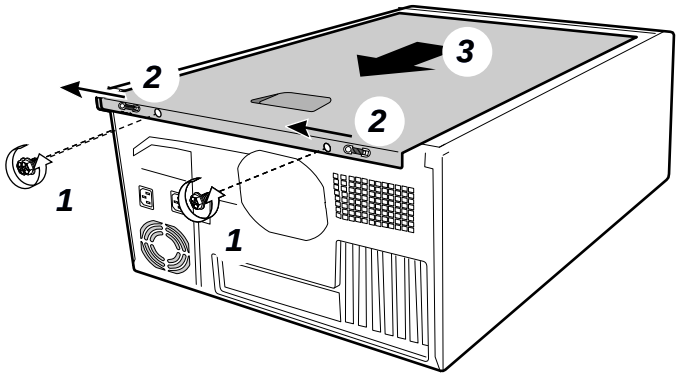
This chapter is only for installations into the Intel Server Chassis SC5250-E. If you are installing the S-ATA hot swap drive cage kit into an Intel Server Chassis SC5200 Base or the Intel Server Chassis SC5200 Base Redundant Power, follow the instructions under the chapter titled “Server Chassis SC5200 Base / SC5200 Base Redundant Power Installation.”

Remove Access Cover

When your chassis is upright (in a tower / pedestal position), and you are facing the front of it, the access cover is on the left side. Lay the chassis on its right side, so the left access cover is on the top.

If your chassis is in a rack-mounted position, the left size is already on the top.

1. If the shipping screws are installed, remove them (number 1 in the figure below).
2. Slide the thumb latches to the left to the unlocked position (number 2 in the figure).
3. Slide the cover backward a short distance, until it stops (number 3 in the figure).
4. Pull the entire cover upward to disengage the rows of tabs from the chassis. Set the cover aside.



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* Some chassis details shown may different in your chassis.

Figure 13. Removing the Access Cover

Remove Front Bezel

1. Pull the left side of the bezel forward to disengage the tabs. When the chassis is lying on its side, these tabs are at the top. See number 1 in the figure below.
2. Remove the bezel from the tabs at the right side of the chassis. When the chassis is lying on its side, these tabs are at the bottom. See number 2 in the figure below.

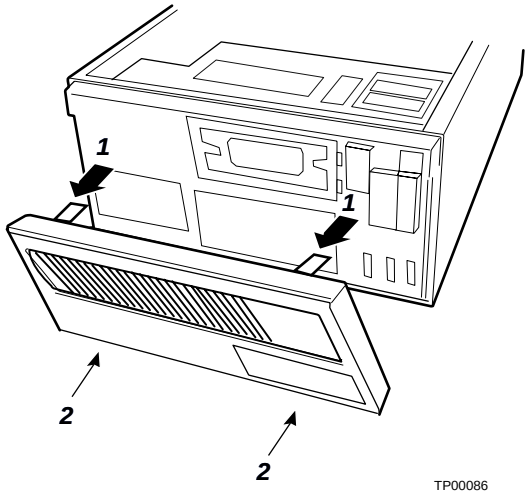

Figure 14. Removing the Front Bezel

Remove Drive Cage

1. Note the location of the fan connection on the server board so you will be able to reconnect it later, then disconnect the fan cable from the server board.
2. If hard drives are installed in the drive cage, disconnect the power and data cables from them.
3. Remove and save the four screws that secure the drive cage to the chassis. Two screws are at the front of the chassis and two are at the side of it.
4. Slide the drive cage out of the chassis. You may need to push the cage out from the inside of the chassis.

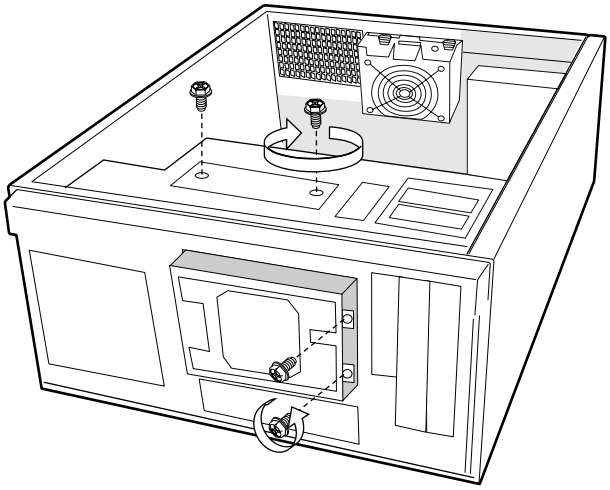

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Figure 15. Removing the Drive Cage

Remove Fan from Drive Cage

The front fan is installed inside of the standard drive cage that shipped with your chassis. The fan must be removed from the cage and attached to the S-ATA hot swap drive cage. Remove the fan from the standard drive cage as follows.

1. Use a flat-head screwdriver to pry up the four nylon rivets that hold the fan in place.
2. Slide the fan out through the fan opening.

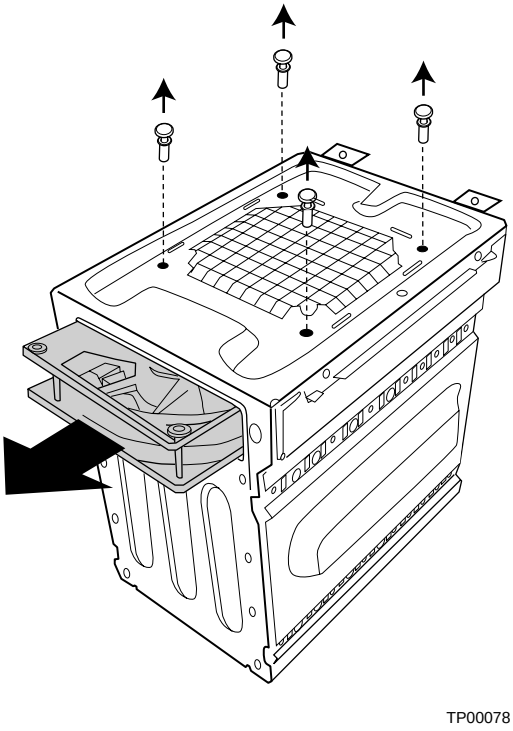

Figure 16. Removing the Front System Fan from the Standard Drive Cage

Attach Fan to S-ATA Backplane

The front fan must be attached to the plastic bracket that is in attached to the S-ATA backplane on the rear of the hot swap drive cage.

1. Remove the four screws that hold the plastic fan bracket to the drive bay. Do not remove the S-ATA backplane from the hot swap drive cage.

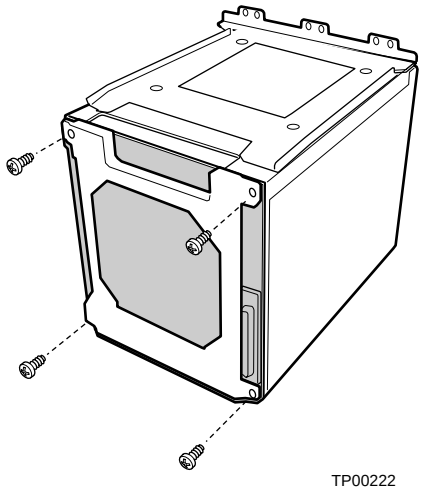

Figure 17. Removing the Plastic Fan Bracket

2. Use four screws from the fastener bag labeled “D” (included with your server chassis SC5250-E) to attach the fan to the bracket. Make sure the airflow is towards the server board. For the correct fan orientation see letter “A” in the figure below.

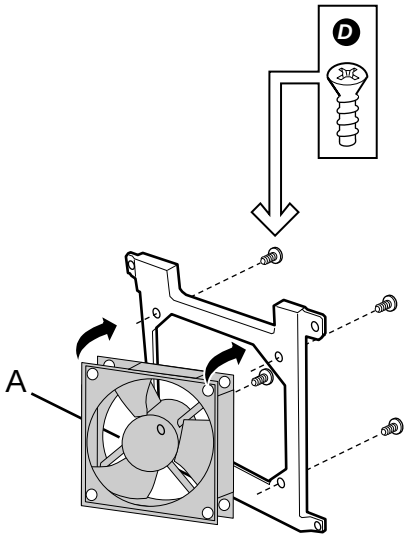

Figure 18. Attaching Fan to Fan Bracket

3. Reattach the fan bracket, with the fan attached, to the drive cage. See the figure below. When correctly installed:
   — The label on the fan must be visible through the fan bracket (See letter “A” in the figure below)
   — The fan cable must extend from the bottom of the S-ATA drive cage.

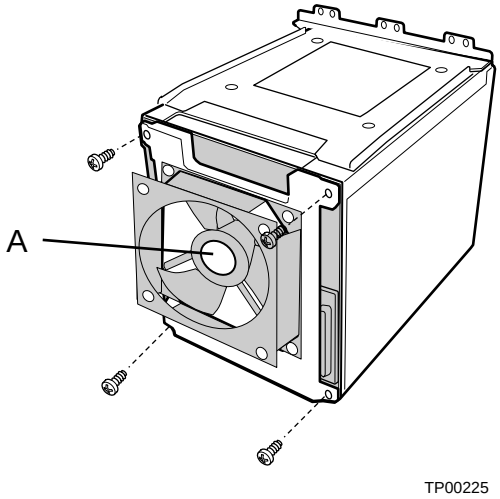

Figure 19. Attaching Fan and Fan Bracket to the S-ATA Backplane

Install SC5250-E Brackets

The two metal brackets that come pre-installed on the S-ATA hot swap drive cage are for use only with the server chassis SC5200. To install the S-ATA hot swap drive cage into the server chassis SC5250-E, you need to remove the SC5200 brackets and install the SC5250-E brackets in their place. The SC5250-E brackets were included with your server chassis SC5250-E. See Figures 15 and 16 to identify the brackets.

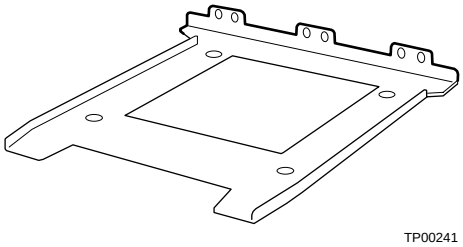

Figure 20. SC5200 Drive Cage Bracket

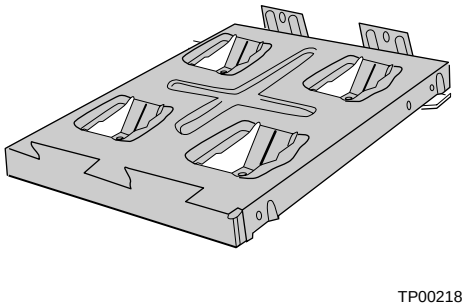

Figure 21. SC5250-E Drive Cage Bracket

1. Remove the four screws that attach each SC5200 metal bracket to the S-ATA hot swap drive cage.
2. Use the same screws to attach both SC5250-E brackets to the drive cage.

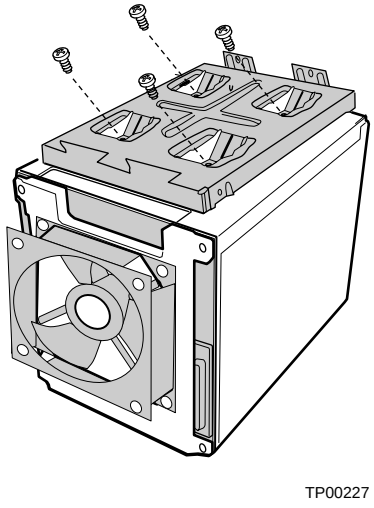

Figure 22. Attaching Fan and Bracket to the S-ATA Backplane

Attach Cables

Attach the S-ATA cables and the power supply cables before inserting the S-ATA hot swap cage into the server chassis SC5250-E. Once the cage is inserted, it is not possible to access the cable connections on the backplane.

NOTE

If you want to use your S-ATA drives for a RAID configuration, you may need to installation a S-ATA RAID add-in card. Refer to your S-ATA RAID card documentation for additional installation instructions and requirements.

1. Connect each S-ATA cable to the S-ATA connectors on the backplane. The connectors and associated drives are identified as follows:

Drive bay	Drive number	Connection number in figure
Bottom	Drive 0	0
Second from bottom	Drive 1	1
Second from top	Drive 2	2
Top	Drive 3	3

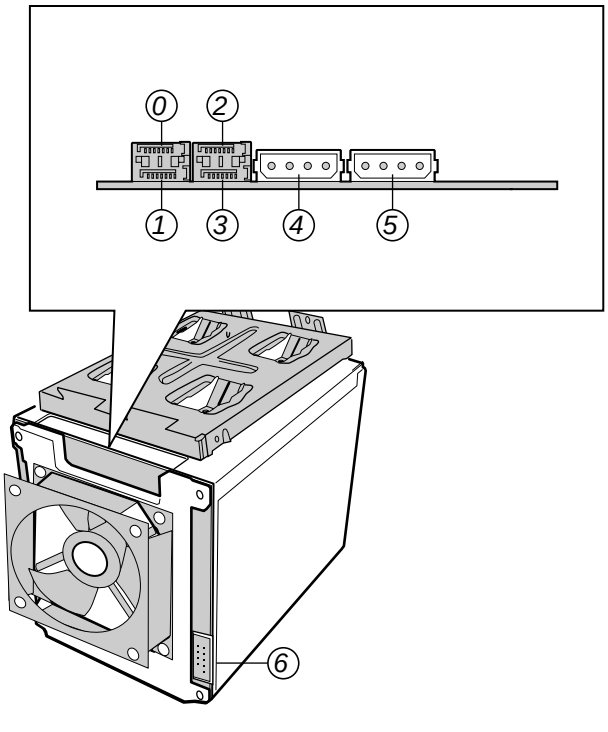

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Figure 23. Attaching Cables to the S-ATA Backplane

2. Pull the power cables labeled P9 and P10 through the drive cage opening in the chassis and attach them to the S-ATA backplane (numbers 4 and 5 in the diagram above). Regardless of the number of drives that will be installed, both power connectors should be used. Connectors P9 and P10 should be used because these two connectors have an additional 12V wire to prevent power drops.
3. Feed the S-ATA cables, and power cables through the drive cage opening and into the chassis.

Insert S-ATA Hot Swap Cage

1. Slide the S-ATA hot swap cage into the chassis. When inserting the cage, make sure the connections on the rear of the cage point toward the top of the chassis. As pictured below, the top of the chassis is facing the right when the chassis is lying on its side.
2. Insert and tighten the four screws that hold the cage in the chassis. Two screws attach at the front of the chassis and two attach at the left side of the chassis (at the top when the chassis is lying on its side).

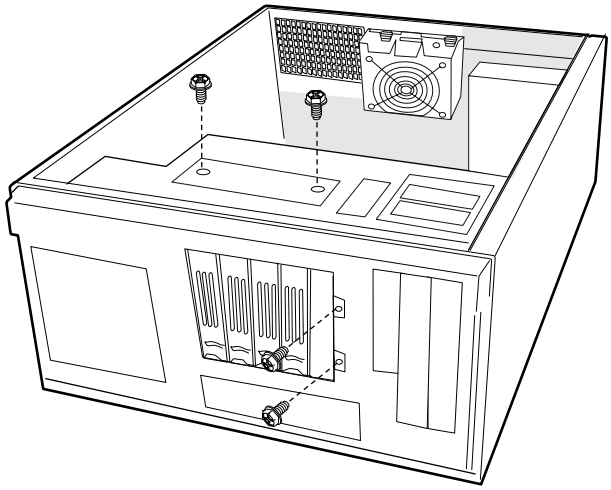

Figure 24. Inserting the S-ATA Hot Swap Drive Cage

Attach Connection ID Label

The Connection ID label provides a way to identify the connections for the S-ATA D0, D1, D2, and D3 drives. It is critical that you connect the cable on the S-ATA kit to the matching connection on your server board or S-ATA add-in card. Mixing up the connections may result in data loss.

Attach the Connection ID label to the chassis as shown. Note that when facing the front of the chassis, the label should appear upside down.

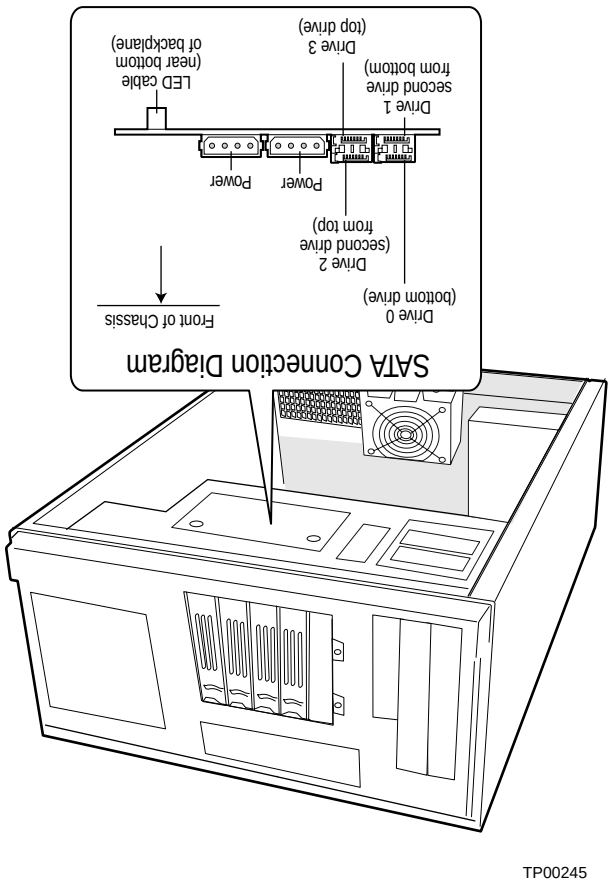

Figure 25. Attaching Connection ID Label

Make Server Board / Add-in Card Connections

NOTE

If you want to use your S-ATA drives for a RAID configuration, you may need to installation a S-ATA RAID add-in card. Refer to your S-ATA RAID card documentation for additional installation instructions and requirements.

WARNINGS

You must connect the S-ATA drives correctly from the S-ATA backplane to your server board or to your S-ATA RAID card. If you do not connect Drive '0' on the backplane to Drive '0' on your server board or your S-ATA RAID card, Drive '1' to Drive '1' and so on, your RAID software may report incorrect information about the drive it is connected to. Data loss may occur.

1. Attach the fan wire extending from the bottom of the S-ATA drive cage to the nearest system fan connector on the server board. Refer to your server board documentation for fan location information.
2. Attach each S-ATA cable to the S-ATA RAID add-in card or to the server board. The connections on the S-ATA backplane are associated to the drive bays as shown in the following figure. The drive bay marked "0" in the figure is connected to the backplane connector marked "0". Refer to your server board documentation or to your S-ATA RAID card documentation for the location of the connectors on your server board or add-in card.

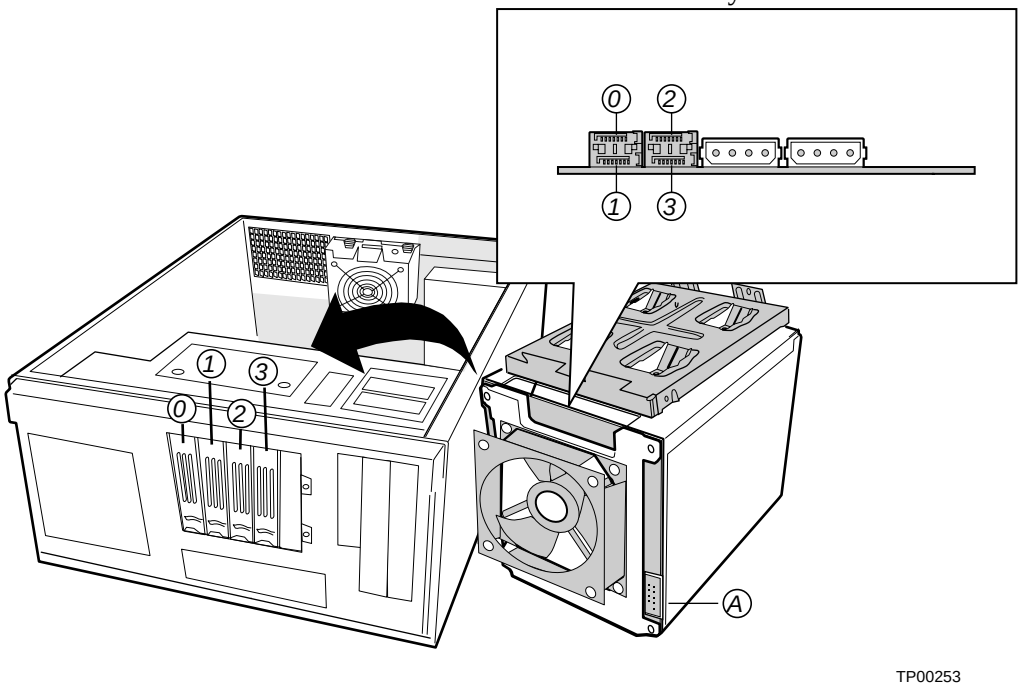

Figure 26. Drive Bay and Associated Backplane Connections

4. If you are using the Intel® RAID controller SRCS14L, connect the LED cable to the S-ATA backplane. See letter “A” in Figure 26. The twisted pair side of the connector goes toward the back of the chassis.

Install Front Bezel

1. Angle the bezel toward the chassis as shown by number 1 in the figure below.
2. Insert the latches on the right side of the bezel (facing down in the figure below) into the corresponding slots in the chassis. See number 2 in the figure below.
3. Rotate the left side of the bezel (facing up in the figure below) over the side of the chassis to engage the two tabs. See number 3 in the figure below.

The installation of the chassis access cover will prevent the bezel from being removed.

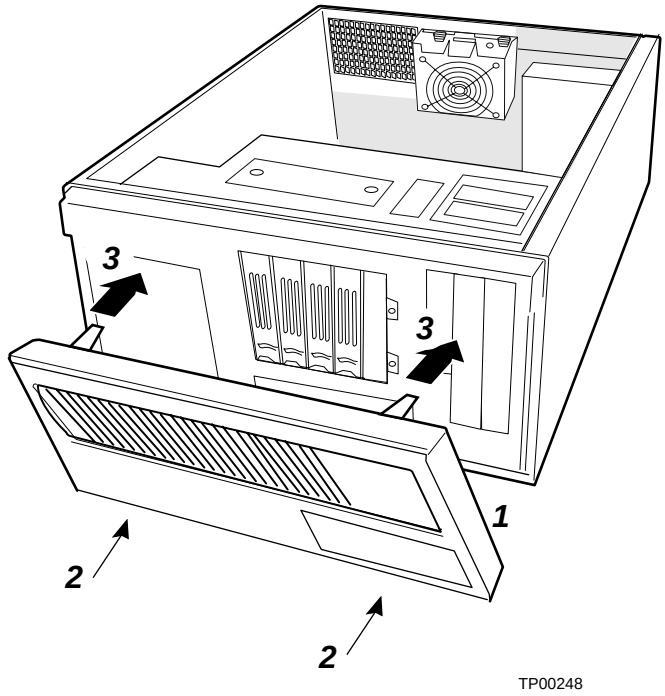

Figure 27. Installing the Front Bezel

Install Access Cover

1. Place the cover so the tabs on the cover fit into the slots on the server. The cover should be flush against the chassis.
2. Slide the cover forward until it stops (letter A in the figure below).
3. Slide the two thumb latches to the right to the “lock” position (letter B in figure). For additional security, you can also replace the shipping screws if desired.

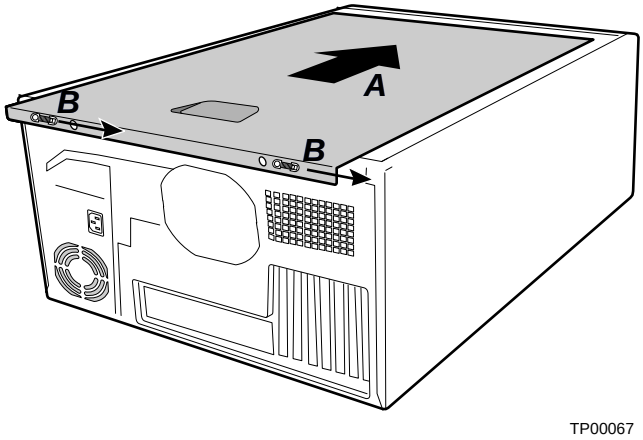

Figure 28. Installing the Access Cover

Update BIOS

You may need to update the system BIOS for proper operation. See your server board documentation for information and instructions.

Install Hard Drives

Follow the instructions under the section below, titled “Installing a Hot Swap Hard Drive.”

Installing a Hot Swap Hard Drive

The top drive bay in the S-ATA hot swap drive cage has a plastic baffles installed in it. This baffle must be left in place for proper airflow within the chassis. Install drives into the four removable bays, as described below.

1. Press in on the green latch at the end of the hard drive bay to disengage it.
2. Pull out on the black lever to fully open the drive bay. When the lever reaches a fully opened position, it will push the drive bay out from the chassis.
3. Slide the bay from the chassis.

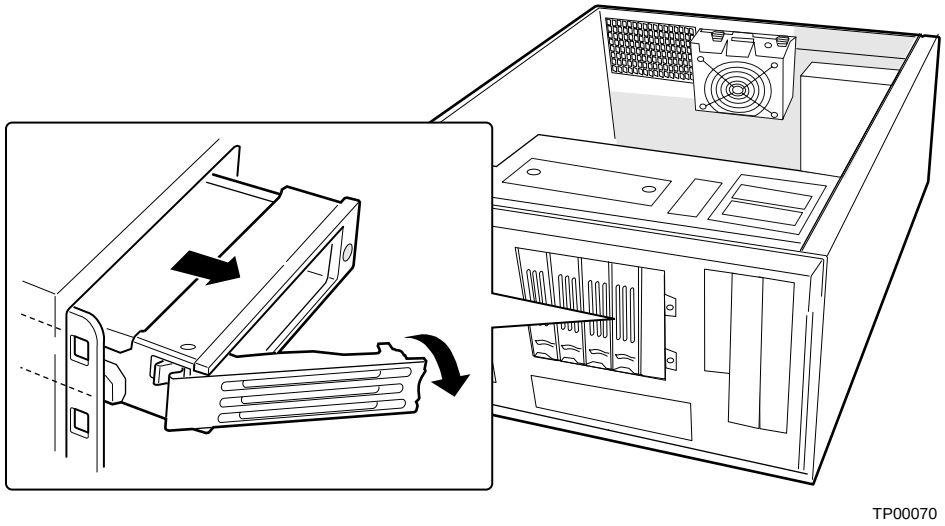

Figure 29. Removing a Drive Carrier

4. Remove the four screws that attach the plastic retention device at the bottom of the drive bay. Two screws are at each side of the retention device.
5. Screw the drive into the drive bay using the screws that were attached to the plastic retention device in place.

6. Slide the drive bay into the S-ATA hot swap drive bay and close the lever. Push firmly on the lever to lock it into place. Be sure to insert the bay in the correct direction. When the chassis is in an upright position:
   - In the SC5250-E chassis, the lever must close to the right.
   - In the SC5200 chassis, the lever must close to the top.

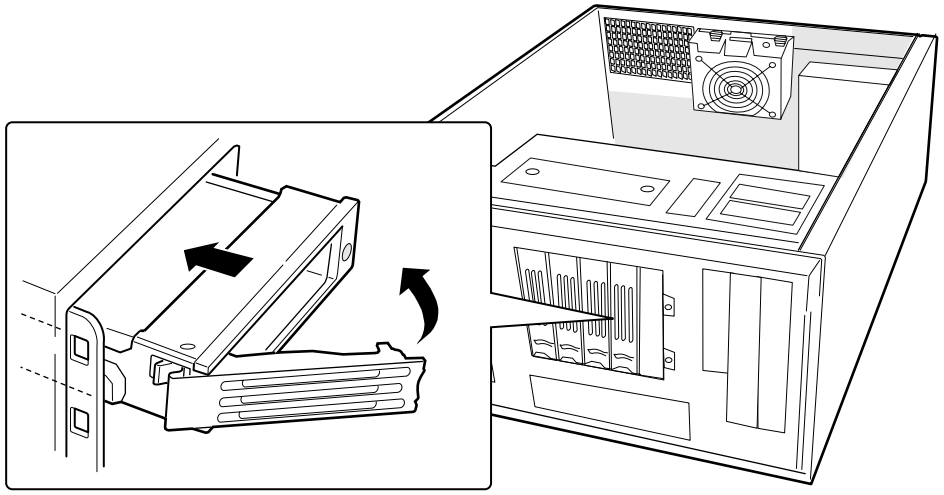

Figure 30. Inserting a Drive Bay