Dell PowerEdge C8220X

Tesla K20 GPGPU Card Installation Guide

Regulatory Model: B06B
Regulatory Type: B06B001

Notes, Cautions, and Warnings

NOTE: A NOTE indicates important information that helps you make better use of your computer.

CAUTION: A CAUTION indicates potential damage to hardware or loss of data if instructions are not followed.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

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Important Safety Information

Observe the following safety precautions when installing NVIDIA Tesla K20 GPGPU cards in the PowerEdge C8220X sled.

WARNING: Working on systems that are still connected to a power supply can be extremely dangerous.

CAUTION: The sled must be operated with the cover installed to ensure proper cooling.

CAUTION: To ensure proper airflow in the PowerEdge C8000 server enclosure, if a sled module is removed it should be immediately replaced with another sled or sled blank.

CAUTION: Operating the system for extended periods of time without a sled blank installed can cause the PowerEdge C8000 server enclosure to overheat.

CAUTION: GPGPU cards can only be installed in the slots on the GPGPU card riser. Do not attempt to install GPGPU expansion cards directly into the riser connector on the system board.

NOTE: It is recommended that you always use a static mat and static strap while working on components in the interior of the system.

To avoid injury to yourself or damage to your system, follow these guidelines:

- Always disconnect the system from the power outlet whenever you are working inside the system.
- If possible, wear a grounded wrist strap when you are working inside the system. Alternatively, discharge any static electricity by touching the bare metal chassis of the system case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Do not flex or stress the circuit board.
- Leave all components inside the static-proof packaging until you are ready to use the component for the installation.
- Some cables have a connector with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before you disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.

Recommended Tools

You may need the following items to install NVIDIA Tesla K20 GPGPU cards in the PowerEdge C8220X sled.

- #1 or #2 Phillips screwdriver
- Static mat
- Static strap

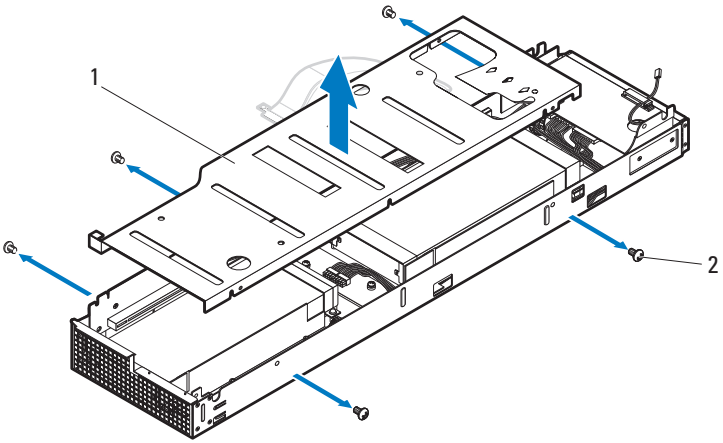
Information You May Need

For information about system features, troubleshooting, and component replacement, see the *PowerEdge C8220X Hardware Owner's Manual*. This document is available at **support.dell.com/manuals**.

Tesla K20 GPGPU Cards

1. Remove the sled from the PowerEdge C8000 server enclosure. For detailed information on removing the sled, see the *PowerEdge C8220X Hardware Owner's Manual*.
2. Place the sled on a flat, stable surface.
3. Open the sled. For detailed information on opening the sled, see the *PowerEdge C8220X Hardware Owner's Manual*.
4. Remove the five M3 screws securing the top cover.
5. Lift the top cover away from the sled cover.

Figure 1-1. Removing the Top Cover



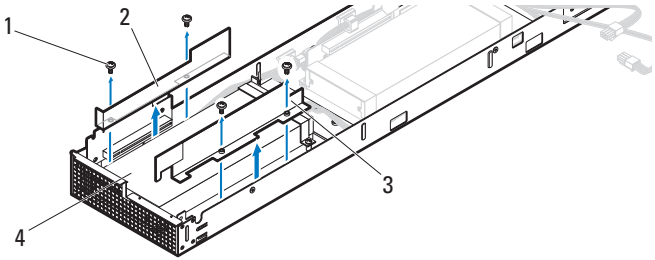
1 top cover

2 M3 screws (5)

Installing the Front Tesla K20 GPGPU card

1. Remove the four M3 screws securing the air baffles.
2. Lift the air baffles out of the sled cover.

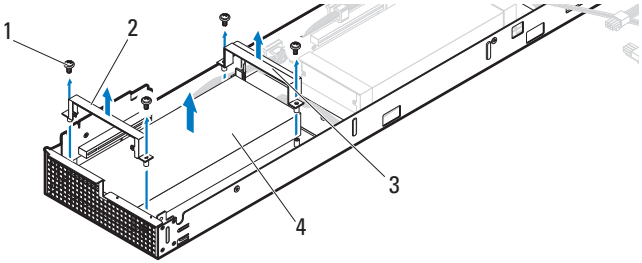
Figure 1-2. Removing the Air Baffles



1	M3 screws (4)	2	right air baffle
3	left air baffle	4	GPGPU blank

3. Remove the four M3 screws securing the mounting brackets.
4. Lift the mounting brackets away from the GPGPU blank. Save the mounting brackets.
5. Lift the GPGPU blank out of the sled cover. Save the GPGPU blank for future use.

Figure 1-3. Removing the Mounting Brackets and GPGPU Blank

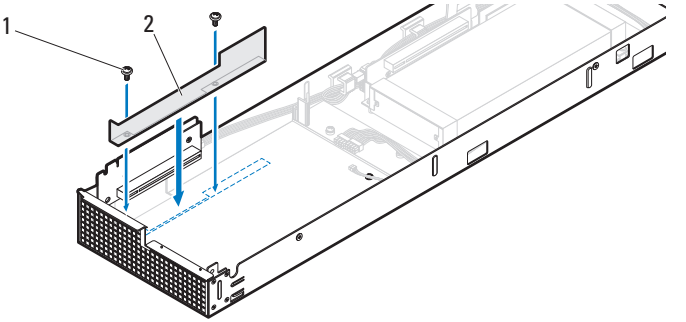


1	M3 screws (4)	2	front mounting bracket
3	back mounting bracket	4	GPGPU blank

6 Align the right air baffle with the screw holes on the front of the sled cover.

7 Secure the right air baffle to the sled cover using the two M3 screws. Tighten the screws to 5.21 in-lbs.

Figure 1-4. Installing the Right Air Baffle

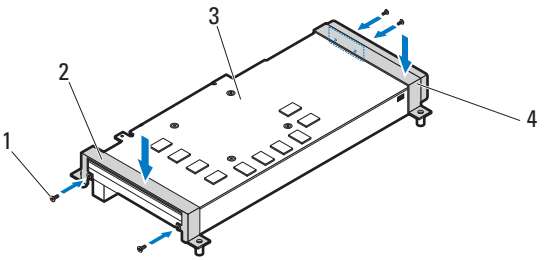


1	M3 screws (2)	2	right air baffle

8 Align the front mounting bracket with the screw holes on the left of the GPGPU card and secure with two M3 screws. Tighten the screws to 5.21 in-lbs.

9 Align the back mounting bracket with the screw holes on the right of the GPGPU card and secure with two M3 screws. Tighten the screws to 5.21 in-lbs.

Figure 1-5. Installing the Mounting Brackets

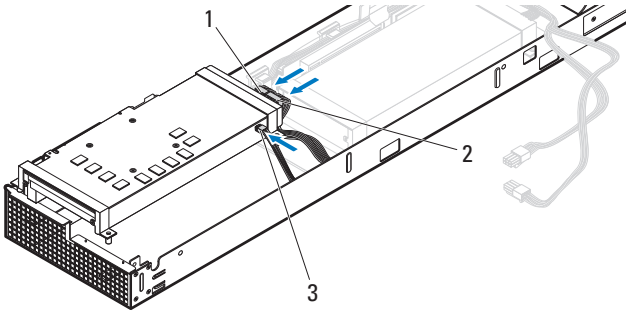


1	M3 screws (4)	2	front mounting bracket
3	Tesla K20 GPGPU card	4	back mounting bracket

10 Connect the power cables to the GPGPU card. Ensure the cables are properly attached.

11 Connect the emergency throttling cable to the GPGPU card. See Figure 1-17 for the cable routing diagram.

Figure 1-6. Connecting the Power and Emergency Throttling Cables



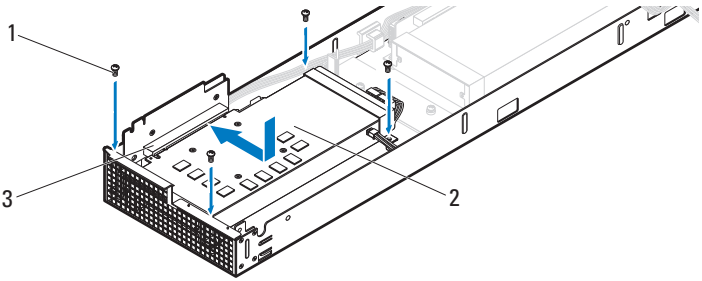
1, 2 power cables

3 emergency throttling cable

12 Align and insert the GPGPU card assembly into the front GPGPU card riser connector until the card is fully seated.

13 Secure the GPGPU card to the front of the sled cover using the four M3 screws, working in a clockwise sequence. Tighten the screws to 5.21 in-lbs.

Figure 1-7. Installing the Front GPGPU Card Assembly



1 M3 screws (4)

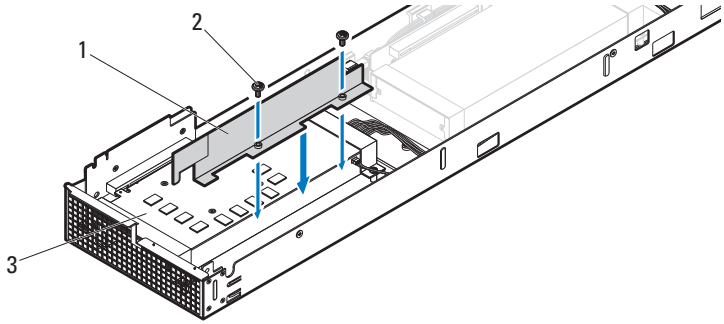
2 Tesla K20 GPGPU card assembly

3 front GPGPU card riser

14 Align the left air baffle with the screw holes on the front of the sled cover.

15 Secure the left air baffle to the sled cover using the two M3 screws. Tighten the screws to 5.21 in-lbs.

Figure 1-8. Installing the Left Air Baffle



1 left air baffle

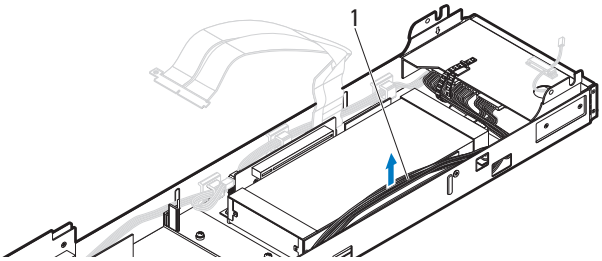
2 M3 screws (2)

3 Tesla K20 GPGPU card assembly

Installing the Back Tesla K20 GPGPU card

1 Release the cables from the retaining clips and slightly lift the cables to access the screws on the sled cover.

Figure 1-9. Releasing the Power and Emergency Throttling Cables

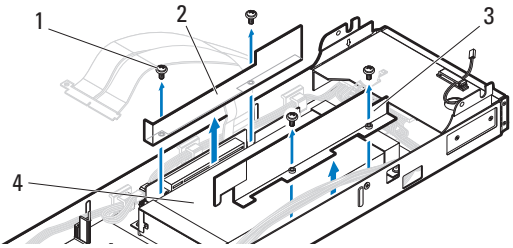


1 power and emergency throttling cables

2 Remove the four M3 screws securing the air baffles.

3 Lift the air baffles out of the sled cover.

Figure 1-10. Removing the Air Baffles



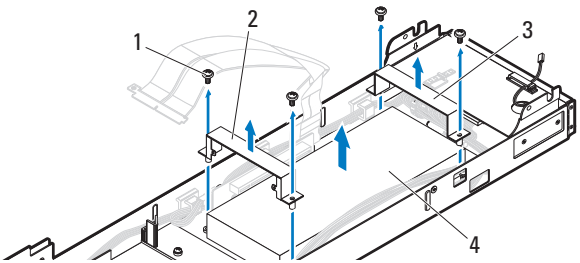
1	M3 screws (4)	2	right air baffle
3	left air baffle	4	GPGPU blank

4 Remove the four M3 screws securing the mounting brackets.

5 Lift the mounting brackets away from the GPGPU blank. Save the mounting brackets.

6 Lift the GPGPU blank out of the sled cover. Save the GPGPU blank for future use.

Figure 1-11. Removing the Mounting Brackets and GPGPU Blank

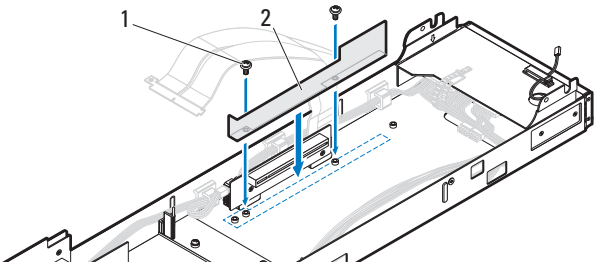


1	M3 screws (4)	2	front mounting bracket
3	back mounting bracket	4	GPGPU blank

7 Align the right air baffle with the screw holes on the back of the sled cover.

8 Secure the right air baffle to the sled cover using the two M3 screws. Tighten the screws to 5.21 in-lb.

Figure 1-12. Installing the Right Air Baffle

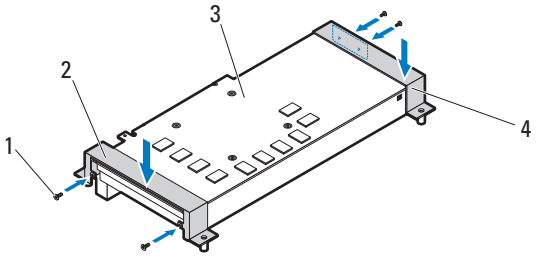


1	M3 screws (2)	2	right air baffle

9 Align the front mounting bracket with the screw holes on the left of the GPGPU card and secure with two M3 screws. Tighten the screws to 5.21 in-lb.

10 Align the back mounting bracket with the screw holes on the right of the GPGPU card and secure with two M3 screws. Tighten the screws to 5.21 in-lb.

Figure 1-13. Installing the Mounting Brackets

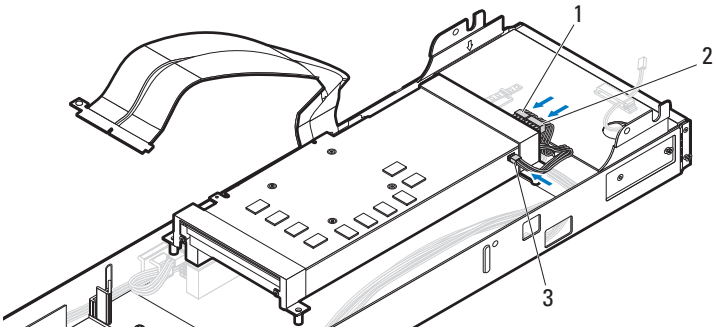


1	M3 screws (4)	2	front mounting bracket
3	Tesla K20 GPGPU card	4	back mounting bracket

11 Connect the power cables to the GPGPU card. Ensure the cables are properly attached.

12 Connect the emergency throttling cable to the GPGPU card.

Figure 1-14. Connecting the Power and Emergency Throttling Cables



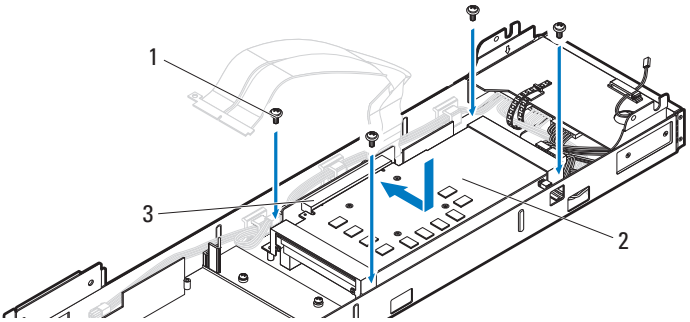
1, 2 power cables

3 emergency throttling cable

13 Align and insert the GPGPU card assembly into the back GPGPU card riser connector until the card is fully seated.

14 Secure the GPGPU card to the back of the sled cover using the four M3 screws, working in a clockwise sequence. Tighten the screws to 5.21 in-lb.

Figure 1-15. Installing the Back GPGPU Card Assembly



1 M3 screws (4)

2 Tesla K20 GPGPU card assembly

3 back GPGPU card riser

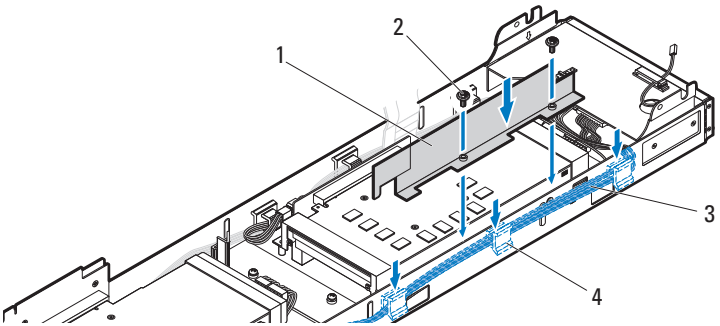
15 Align the left air baffle with the screw holes on the back of the sled cover.

16 Secure the left air baffle to the sled cover using the two M3 screws. Tighten the screws to 5.21 in-lb.

17 Route the cables along the inside wall of the sled cover.

18 Secure the cables to the retaining clips.

Figure 1-16. Installing the Left Air Baffle



1	left air baffle	2	M3 screws (2)
3	power and emergency throttling cables	4	retaining clips (3)

19 Replace the top cover.

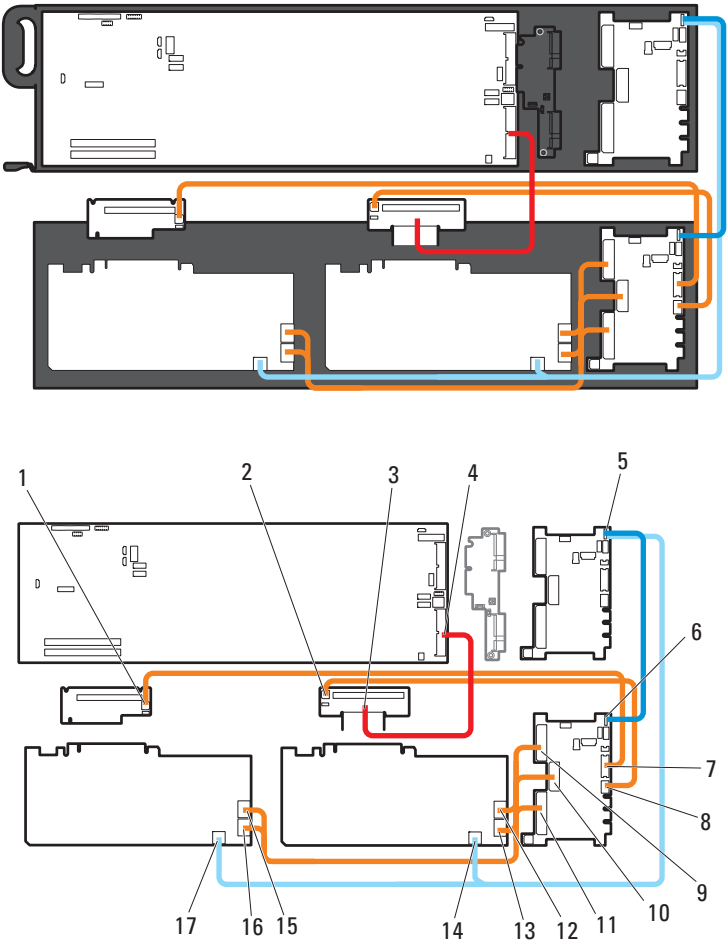
20 Close the sled.

21 Replace the sled in the server enclosure.

Cable Routing Diagram

NOTE: Route the cables properly inside the sled to prevent the cables from being pinched or crimped.

Figure 1-17. Cable Routing for Front and Back Tesla K20 GPGPU Card Assembly



1	power connector on front GPGPU card riser	2	power connector on back GPGPU card riser
3	twin axial cable on back GPGPU card riser	4	twin axial cable connector on system board
5	power/emergency throttling connector on node power distribution board (NPDB)	6	power/emergency throttling connector on NPDB
7	power connector on NPDB	8	power connector on NPDB
9	power connector on NPDB	10	power connector on NPDB
11	power connector on NPDB	12	power connector on back Tesla K20 GPGPU card
13	power connector on back Tesla K20 GPGPU card	14	power/emergency throttling connector on back Tesla K20 GPGPU card
15	power connector on front Tesla K20 GPGPU card	16	power connector on front Tesla K20 GPGPU card
17	power/emergency throttling connector on front Tesla K20 GPGPU card		