NVIDIA RTX BLADE SERVER

Installation Guide

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Chapter 1.
INTRODUCTION TO THE NVIDIA RTX BLADE SERVER

The NVIDIA® RTX™ Blade Server is a high-density GPU server consisting of 10 twin blades, 20 CPU nodes and 40 NVIDIA Turing™ GPUs in an 8U form factor. The blade enclosure system provides all the power, cooling and I/O infrastructure needed to support a modular server design for graphical edge cloud applications like gaming and AR/VR. Power and 10Gb Ethernet is delivered through a common backplane that connects the nodes to a 40Gb network module. The enclosure supports 10 PSUs with 2200W platinum ratings for N+N redundancy.
1.1. Hardware Specifications

1.1.1. Components

**System Overview**

<table>
<thead>
<tr>
<th>Component</th>
<th>Qty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blades</td>
<td>10</td>
<td>Hot-pluggable. Each blade contains two independent nodes.</td>
</tr>
<tr>
<td>Power Supply</td>
<td>10</td>
<td>5+5 redundancy 2200 W each.</td>
</tr>
<tr>
<td>Management Module</td>
<td>1</td>
<td>Chassis level BMC functionality (CMC/CMM).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aggregate 1Gb management port from each node to 2x 1Gb uplinks</td>
</tr>
<tr>
<td>Network Modules</td>
<td></td>
<td>Aggregate 2x 10Gb from each node to 4x 40Gb uplinks</td>
</tr>
</tbody>
</table>

**Per Node Specifications**

<table>
<thead>
<tr>
<th>Component</th>
<th>Qty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>1</td>
<td>Intel Core i9-based CPU</td>
</tr>
<tr>
<td>GPU</td>
<td>See</td>
<td>NVIDIA RTX GPU: 2x 150W Single Width GPU</td>
</tr>
<tr>
<td></td>
<td>description</td>
<td>NVIDIA CUDA Cores: 3,584</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Memory: 16 GB GDDR6</td>
</tr>
<tr>
<td>Network</td>
<td>1</td>
<td>Dual 10 Gb NIC</td>
</tr>
<tr>
<td>Storage (OS) Drive</td>
<td>1</td>
<td>500 GB M.2 SSD</td>
</tr>
<tr>
<td>System Memory</td>
<td>2</td>
<td>16 GB DDR4 UDIMM (32 GB total per node)</td>
</tr>
</tbody>
</table>

**Mechanical**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form Factor</td>
<td>8U Rackmount</td>
</tr>
<tr>
<td>Dimensions</td>
<td>17.6” (447 mm) W x 31.3” (795 mm) D x 13.82” (351 mm) H</td>
</tr>
<tr>
<td>Gross Weight</td>
<td>300 lbs</td>
</tr>
</tbody>
</table>
## Power

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Input</td>
<td>200-240 V (ac) 10 kW max.</td>
<td>The RTX Blade Server contains ten load-balancing power supplies, with 5+5 redundancy</td>
</tr>
<tr>
<td>Per Power Supply</td>
<td>2200 W @ 200-240 6 A, 50-60 Hz</td>
<td></td>
</tr>
<tr>
<td>Per Node</td>
<td>450 W</td>
<td></td>
</tr>
<tr>
<td>Per GPU</td>
<td>150 W TDP</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 2.
INSTALLATION AND SETUP

This chapter provides the basic instructions for installing and setting up the NVIDIA RTX Blade Server.

2.1. Choosing a Setup Location / Site Preparation

Decide on a suitable location for setting up and operating the RTX Blade Server. The location should be clean, dust-free, and well ventilated.

General Conditions

- Prepare a sufficiently wide aisle to accommodate the unboxed chassis (chassis dimensions - 17.6” (447 mm) W x 31.3” (795 mm) D x 13.82” (351 mm) H).
  The rack doors should fully open and not obstruct the path of the server as it is installed.
- The rack must accommodate a 300 lb, 8U rack mount system (chassis dimensions - 17.6” (447 mm) W x 31.3” (795 mm) D x 13.82” (351 mm) H).
  The rail assemblies shipped with the server fit into a standard 19” rack between 29-inches and 36.5-inches deep (73.66 cm to 92.71 cm).
- The rack can have either square or round mounting holes.
- Leave enough clearance in front of the rack (36” (91.4 cm)) to enable you to install the unit into the rack and to service the blades.
- Leave approximately 20” (76.2cm) of clearance in the back of the rack to allow for sufficient airflow and ease in servicing components such as power supplies, fans, switches, and the CMM.
- Always make sure the rack is secured and stable before adding or removing the appliance or any other component.
- Prepare adequate sound-proofing: The equipment fans can generate 72-100 dBA.
Rack Layout Considerations

Examine the power distribution units (PDUs) and cables present in the rack and ensure that

- they do not interfere with the installation of the RTX Blade Server, and
- they do not obstruct airflow to and around the server.

If needed, use a cable management harness to provide for airflow to the back of the system.

Examples of poor rack installations

The following two images show examples of a server that blocks the ports of the PDU and an example of PDU cables that interfere with the serviceability of the RTX Blade Server.

Examples of ideal rack installations

The following two images show examples of PDUs and cables that do not interfere with the serviceability of the RTX Blade Server.
Environmental Conditions

- Operating environment
  - Temperature: 5°C to 35°C (41°F to 95°F)
  - Relative humidity: 20% to 85% noncondensing
- Air flow
  - The chassis fans can produce a maximum of 340 CFM of air flow.
  - Do not block the ventilation areas at the front and rear of the chassis.
  - Minimize any restrictions on air flow around the chassis.

Connections

- Power:
  - The RTX Blade Server is powered through ten 1200W power supply units, each rated at 200-240VAC, 8A, 50/60 Hz. Total system power requirement: 7500W
  - C19/C20 cables provided for each power supply to connect to a compatible PDU.

  **IMPORTANT: Do not use the provided cables with any other product or for any other purpose.**

- Switch Management: 10GBASE-T RJ45 connection
  - Use industry standard CAT6 Ethernet cables for connecting to the network port.
  (Cables not included.)
Installation and Setup

- **IPMI: 10/100BASE-T RJ45 connection**
  
  Use industry standard CAT6 Ethernet cables for connecting to the network ports. (Cables not included.)

- **InfiniBand: Qty 4 - QSFP28 ports, InfiniBand and Ethernet compliant**
  
  Use Mellanox-compliant InfiniBand cables for connecting to the InfiniBand ports. (Cables not included.)

**Preparing for Network Access**

- The IPMI port and Ethernet ports can be connected to your local LAN.
  
  These ports are configured for DHCP by default.
  
  - To use DHCP, connect the port to a local DHCP server which should provide an IP address and assign a DNS configuration to the RTX Blade Server.
  
  - If DHCP is not available, then you will need to set up a static IP for each Ethernet port.

- NVIDIA recommends that customers follow best security practices for BMC management (IPMI port). These include, but are not limited to, such measures as:
  
  - Restricting the RTX Blade Server IPMI port to an isolated, dedicated, management network
  
  - Using a separate, firewalled subnet
  
  - Configuring a separate VLAN for BMC traffic if a dedicated network is not available

**2.2. Unpacking the RTX Blade Server**

1. Examine the packaging to make sure there are no -
  
  - Dents or punctures
  
  - Water damage
  
  - Broken seals

   If there is any damage, contact NVIDIA Enterprise Support for further instructions.

2. Remove all four clips from the box.
3. Cut through the tape and open the cardboard box flaps.
4. Remove the wooden frames that support the box.

5. Remove the cardboard box by pulling it straight up until it clears the system.
Be careful not to cause the ship kit to fall off as you are lifting the box.

6. Remove the accessory and rail kit boxes.

7. Preserve and retain packaging.

8. Be sure to inspect each piece of equipment shipped in the packing box.
   
   If anything is missing or damaged, contact your supplier.
2.3. What's In the Box

The NVIDIA RTX Blade Server shipping box includes the following:

- NVIDIA RTX Blade Server
- Ship kit
  - AC Power Cables (qty 10 – IEC 60320 C19/20, 3.3-ft./1-meter, compatible with data center PDUs)
  
  IMPORTANT: Do not use the provided cables with any other product or for any other purpose.
- One of the following rackmount kits:
  - Rail kit, or
  - Shelf kit

The ten power cables included in the box are not optional. All power cables are necessary and must be plugged into individual 10 A capable sockets for optimal RTX Blade Server operation. Failure to do so can result in a reduction in power redundancy, a reduction in performance, or a complete system failure.

2.4. Installing the RTX Blade Server Into a Rack

**CAUTION:** To prevent bodily injury when mounting or servicing the RTX Blade Server in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety.

- The RTX Blade Server should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting the RTX Blade Server in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the RTX Blade Server in the rack.
- The RTX Blade Server weighs approximately 300 lbs, so an equipment lift is required to safely lift the unit and then accurately align the chassis rails with the rack rails.
- **DO NOT** use the handles at the front of the RTX Blade Server to lift the unit. The handles are designed for sliding the unit out of a rack, and not for carrying the full weight of the RTX Blade Server.

2.4.1. Installing the Rails

Follow these instructions if your RTX Blade Server includes a rail mount kit.

The rail assemblies shipped with the appliance fit into a standard 19” rack between 29-inches and 36.5-inches deep (73.66 cm to 92.71 cm).
The RTX Bladeserver rack mount kit acts as a shelf in the rack, it does not allow the system to be moved once installed. All components are serviceable from the front or rear, so this movement is not necessary.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Metal clips that hold the rail in place.</td>
</tr>
<tr>
<td>2</td>
<td>Screw position for securing the rail onto the rack.</td>
</tr>
<tr>
<td>3</td>
<td>Prongs that enter the holes of the rack. Holes can be square or round.</td>
</tr>
<tr>
<td>4</td>
<td>Thread for securing the captive screw in the RTX Blade Server chassis to rack, assuming installed in a Type A rack.</td>
</tr>
<tr>
<td>5</td>
<td>Bottom lip to support the RTX Blade Server.</td>
</tr>
</tbody>
</table>

- Use a Phillips screwdriver to assist in mounting the rails to the rack.
- Follow any designations on the slide rail to determine front/back and left-side/right-side positioning against the rack.

1. Align the bottom lip of the left or right rail to the bottom of the first rack unit for the server.
2. Attach the front of the rail to the rack.
   Push the metal tab on the rail and then insert the three spring-loaded prongs into the holes on the front rack post.
On square-holed racks, make sure the prongs are completely inserted into the hole by confirming that the spring is fully extended.

The prong behind the metal clip will hold a screw that secures the rack mount kit in place. The metal clip helps secure the rail in place while installing the rail to the rear of the rack.

3. Extend the rail to the rear post of the rack and secure the rail to the post. Make sure that rail is level and the attachment on the rear post is at the same rack unit as the front.
   a) Insert the spring-loaded prongs into the holes on the rear rack post.

   b) On square-holed racks, make sure the prongs are completely inserted into the hole by confirming that the spring is fully extended.

4. Repeat these steps for the other rail.

5. Secure the rails to the rack using the provided screws.
   Install one screw for each rail end.
   a) Install the flat head screws to the front by first pressing on the metal clip and then installing the screws on both left and right side rails.
Make sure the clip returns to its original position after the screw is secured.
b) Install the pan or round head screws to the back of the rails in the position indicated in the following diagram for left and right side rails.

6. Confirm that the rails have been installed properly.
   - Both sides are installed on the same rack unit and are horizontal to each other.
   - The bottom lip is at the same height on all four posts.
   - The metal clips are properly attached.
   - Four screws are installed - flat head on the front and pan head on the back.

2.4.2. Installing the Rack Shelf

A heavy-duty shelf for 4-post racks may be provided instead of the rail kit. Once installed, it does not allow the system to be moved. All components are serviceable from the front or rear, so this movement is not necessary. See https://www.racksolutions.com/downloads/dl/file/id/672/product/1783/heavy_duty_fixed_shelf_installation_instructions.pdf for instructions on installing the rack shelf.
2.4.3. Installing the Cage Nuts

The RTX Blade Server is secured to the rack using four captive screws - one at each corner of the front of the unit.

- If your rack has round holes with 10-32 threads, then the screws will attached directly to the rack mounting holes.
- If your rack has square holes, then you need to install the included cage nuts to provide attachment points for mounting the RTX Blade Server to the front of the rack.

The number of cage nuts to install depends on the type of rack that is used. On most racks, cage nuts are needed only for the top screws. The bottom screws will attach to the threads in the rails. The image on the left side of the following diagram shows this type. Green arrows indicate the general area for the cage nuts.

The image on the right side shows a rack with square posts such that the rail does not meet the front-most part of the rack. In this rack, cage nuts need to be installed at the bottom holes as well, as indicated by the green arrows. All four cage nuts are also needed if you have installed a rack shelf instead of rack rails.

Use the provided template to determine the exact location for installing the cage nuts.
1. Place the template so that the bottom of the template rests on the rail lip (or at the same level as the rail lip).

2. Install the cage nuts at the positions indicated on the template.
   - Rail kits attached to Type A racks require two (2) cage nuts installed.
   - Rail kits attached to Type B racks require four (4) cage nut installed.
   - Rack shelf installations require four (4) cage nuts installed.

2.4.4. Mounting the RTX Blade Server

**Caution** Stability hazard — The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the RTX Blade Server out for servicing. Failure to stabilize the rack can cause the rack to tip over.

**CAUTION:** The RTX Blade Server weighs approximately 300 lbs, so an equipment lift is required to safely lift the unit and then accurately align the chassis rails with the rack rails.

1. Move the RTX Blade Server to the lift.
a) Pull the side cardboard flaps down on both sides.

b) Remove the supporting foam from both sides.

c) Move the lift towards the unit so that the lift platform fits below the unit but above the cardboard.

2. Free the RTX Blade Server from the packaging.
Installation and Setup

3. Move the RTX Blade Server to the rack.

   a) Align the system with the rack and raise the lift platform ¼ inch or ~1 cm above the lip of the rack mount kit.
   b) Push the system into the rack ¾ of the way before it falls off the platform.
   c) Lower the platform so the system is no longer resting on it.
   d) Finish pushing the system into the rack until the ears are flush with the rack posts.

4. Complete the installation by tightening the four captive screws on the front of the RTX Blade Server to secure the unit to the rack.
2.5. Connecting the Cables

1. Connect one of the dual Ethernet ports to your LAN to connect to the RTX Blade Server via SSH.

   NVIDIA recommends connecting only one of the Ethernet ports to your LAN. If you are connecting both Ethernet ports, each port must be connected to separate networks. The RTX Blade Server is not configured from the factory to have multiple Ethernet interfaces on the same network.

2. Connect four QSFP network data cables to the QSFP ports.
3. Connect the switch management cable to the RJ45 port.
4. Connect the ten power cables (C19/C20) from each power socket in the back of the unit to at least two different power sources (appropriately rated AC outlet or PDU).
   a) Connect the odd numbered PSUs to one power source.
   b) Connect the even numbered PSUs to a different power source.
There are several options for contacting NVIDIA Customer Support for assistance reporting, troubleshooting, or diagnosing problems with your RTX Blade Server.

**NVIDIA Enterprise Support Portal**

The best way to file an incident is to log on to NVIDIA Enterprise Services (https://nvid.nvidia.com/dashboard/).

**NVIDIA Enterprise Support Email**

enterprisesupport@nvidia.com

**NVIDIA Enterprise Support - Local Language Phone Numbers**

Visit NVIDIA Enterprise Support (http://www.nvidia.com/en-us/support/enterprise/)

Our support team can help collect appropriate information about your issue and involve internal resources as needed.
To reduce the risk of bodily injury, electrical shock, fire, and equipment damage, read this document and observe all warnings and precautions in this guide before installing or maintaining your server product.

In the event of a conflict between the information in this document and information provided with the product or on the website for a particular product, the product documentation takes precedence.

Your server should be integrated and serviced only by technically qualified persons.

You must adhere to the guidelines in this guide and the assembly instructions in your server manuals to ensure and maintain compliance with existing product certifications and approvals. Use only the described, regulated components specified in this guide. Use of other products or components will void the UL Listing and other regulatory approvals of the product, and may result in noncompliance with product regulations in the region(s) in which the product is sold.

### 4.1. Safety Warnings and Cautions

To avoid personal injury or property damage, before you begin installing the product, read, observe, and adhere to all of the following safety instructions and information. The following safety symbols may be used throughout the documentation and may be marked on the product and/or the product packaging.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAUTION</td>
<td>Indicates the presence of a hazard that may cause minor personal injury or property damage if the CAUTION is ignored.</td>
</tr>
<tr>
<td>WARNING</td>
<td>Indicates the presence of a hazard that may result in serious personal injury if the WARNING is ignored.</td>
</tr>
<tr>
<td></td>
<td>Indicates potential hazard if indicated information is ignored.</td>
</tr>
<tr>
<td>⚡</td>
<td>Indicates shock hazards that result in serious injury or death if safety instructions are not followed</td>
</tr>
<tr>
<td>Symbol</td>
<td>Meaning</td>
</tr>
<tr>
<td>--------</td>
<td>---------</td>
</tr>
<tr>
<td><img src="image1" alt="Symbol" /></td>
<td>Indicates hot components or surfaces.</td>
</tr>
<tr>
<td><img src="image2" alt="Symbol" /></td>
<td>Indicates do not touch fan blades, may result in injury.</td>
</tr>
<tr>
<td><img src="image3" alt="Symbol" /></td>
<td>Indicates to unplug all AC power cord(s) to disconnect AC power.</td>
</tr>
<tr>
<td><img src="image4" alt="Symbol" /></td>
<td>High leakage current ground(earth) connection to the Power Supply is essential before connecting the supply.</td>
</tr>
<tr>
<td><img src="image5" alt="Symbol" /></td>
<td>Recycle the battery.</td>
</tr>
<tr>
<td><img src="image6" alt="Symbol" /></td>
<td>The rail racks are designed to carry only the weight of the server system. Do not use rail-mounted equipment as a workspace. Do not place additional load onto any rail-mounted equipment.</td>
</tr>
<tr>
<td><img src="image7" alt="Symbol" /></td>
<td>Indicates two people are required to safely handle the system</td>
</tr>
</tbody>
</table>

### 4.2. Intended Application Uses

This product was evaluated as Information Technology Equipment (ITE), which may be installed in offices, schools, computer rooms, and similar commercial type locations. The suitability of this product for other product categories and environments (such as medical, industrial, residential, alarm systems, and test equipment), other than an ITE application, may require further evaluation.

### 4.3. Site Selection

Choose a site that is:

- Clean, dry, and free of airborne particles (other than normal room dust).
- Well-ventilated and away from sources of heat including direct sunlight and radiators.
- Away from sources of vibration or physical shock.
- In regions that are susceptible to electrical storms, we recommend you plug your system into a surge suppressor and disconnect telecommunication lines to your modem during an electrical storm.
- Provided with a properly grounded wall outlet.
- Provided with sufficient space to access the power supply cord(s), because they serve as the product's main power disconnect.
4.4. Equipment Handling Practices

Reduce the risk of personal injury or equipment damage:

- Conform to local occupational health and safety requirements when moving and lifting equipment.
- Use mechanical assistance or other suitable assistance when moving and lifting equipment.

4.5. Electrical Precautions

Power and Electrical Warnings

**Caution:** The power button, indicated by the stand-by power marking, DOES NOT completely turn off the system AC power, SV standby power is active whenever the system is plugged in. To remove power from system, you must unplug the AC power cord from the wall outlet. Your system may use more than one AC power cord. Make sure all AC power cords are unplugged. Make sure the AC power cord(s) is/are unplugged before you open the chassis, or add or remove any non hot-plug components.

Do not attempt to modify or use an AC power cord if it is not the exact type required. A separate AC cord is required for each system power supply.

Some power supplies in servers use Neutral Pole Fusing. To avoid risk of shock use caution when working with power supplies that use Neutral Pole Fusing.

The power supply in this product contains no user-serviceable parts. Do not open the power supply. Hazardous voltage, current and energy levels are present inside the power supply. Return to manufacturer for servicing.

When replacing a hot-plug power supply, unplug the power cord to the power supply being replaced before removing it from the server.

To avoid risk of electric shock, turn off the server and disconnect the power cord, telecommunications systems, networks, and modems attached to the server before opening it.

**Power Cord Warnings**

Use certified AC power cords to connect to both the power distribution unit (PDU) and server system installed in your rack.

Do not attempt to modify or use the AC power cord(s) if they are not the exact type required to fit into the grounded electrical outlets.

**Caution:** To avoid electrical shock or fire, check the power cord(s) that will be used with the product as follows:

- The power cord must have an electrical rating that is greater than that of the electrical current rating marked on the product.
4.6. System Access Warnings

Caution: To avoid personal injury or property damage, the following safety instructions apply whenever accessing the inside of the product:

- Turn off all peripheral devices connected to this product.
- Turn off the system by pressing the power button to off.
- Disconnect the AC power by unplugging all AC power cords from the system or wall outlet.
- Disconnect all cables and telecommunication lines that are connected to the system.
- Retain all screws or other fasteners when removing access cover(s). Upon completion of accessing inside the product, refasten access cover with original screws or fasteners.
- Do not access the inside of the power supply. There are no serviceable parts in the power supply. Return to manufacturer for servicing.
- Power down the server and disconnect all power cords before adding or replacing any non hot-plug component.
- When replacing a hot-plug power supply, unplug the power cord to the power supply being replaced before removing the power supply from the server.

Caution: If the server has been running, any installed processor(s) and heat sink(s) may be hot.

Unless you are adding or removing a hot-plug component, allow the system to cool before opening the covers. To avoid the possibility of coming into contact with hot component(s) during a hot-plug installation, be careful when removing or installing the hot-plug component(s).

Caution: To avoid injury do not contact moving fan blades. Your system is supplied with a guard over the fan, do not operate the system without the fan guard in place.

4.7. Rack Mount Warnings

Note: The following installation guidelines are required by UL for maintaining safety compliance when installing your system into a rack.

The equipment rack must be anchored to an unmovable support to prevent it from tipping when a server or piece of equipment is extended from it. The equipment rack must be installed according to the rack manufacturer's instructions.
Install equipment in the rack from the bottom up with the heaviest equipment at the bottom of the rack.

Extend only one piece of equipment from the rack at a time.

You are responsible for installing a main power disconnect for the entire rack unit. This main disconnect must be readily accessible, and it must be labeled as controlling power to the entire unit, not just to the server(s).

To avoid risk of potential electric shock, a proper safety ground must be implemented for the rack and each piece of equipment installed in it.

Elevated Operating Ambient- If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

Reduced Air Flow -Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

Mechanical Loading- Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

Circuit Overloading- Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Earthing- Reliable earthing of rack-mounted equipment should be maintained.

Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

4.8. Electrostatic Discharge

Caution: ESD can damage drives, boards, and other parts. We recommend that you perform all procedures at an ESD workstation. If one is not available, provide some 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. 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.
4.9. Other Hazards

PROPOSITION 65 WARNING
This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL
Perchlorate Material – special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate.
Perchlorate Material: Lithium battery (CR2032) contains perchlorate. Please follow instructions for disposal.

NICKEL

NVIDIA Bezel: The bezel's decorative metal foam contains some nickel. The metal foam is not intended for direct and prolonged skin contact. Please use the handles to remove, attach or carry the bezel. While nickel exposure is unlikely to be a problem, you should be aware of the possibility in case you’re susceptible to nickel-related reactions.

Battery Replacement
Caution: There is the danger of explosion if the battery is incorrectly replaced. When replacing the battery, use only the battery recommended by the equipment manufacturer.
Dispose of batteries according to local ordinances and regulations. Do not attempt to recharge a battery.
Do not attempt to disassemble, puncture, or otherwise damage a battery.

Cooling and Airflow
Caution: Carefully route cables as directed to minimize airflow blockage and cooling problems. For proper cooling and airflow, operate the system only with the chassis covers installed. Operating the system without the covers in place can damage system parts. To install the covers:
  ▶ Check first to make sure you have not left loose tools or parts inside the system.
  ▶ Check that cables, add-in cards, and other components are properly installed.
Attach the covers to the chassis according to the product instructions.
Chapter 5. COMPLIANCE

The NVIDIA RTX Blade Server is compliant with the regulations listed in this section.

5.1. United States

Federal Communications Commission (FCC)

FCC Marking (Class A)

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 any interference that may cause undesired operation of the device.

NOTE: 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 when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

5.2. United States / Canada

cULus Listing Mark

![cULus Listed](image)
5.3. Canada
Innovation, Science and Economic Development Canada (ISED)
CAN ICES-3(A)/NMB-3(A)
The Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulation.
Cet appareil numérique de la class A respecte toutes les exigences du Reglement sur le materiel brouilleur du Canada.

5.4. CE
European Conformity; Conformité Européenne (CE)

This is a Class A product. In a domestic environment this product may cause radio frequency interference in which case the user may be required to take adequate measures.

This device bears the CE mark in accordance with Directive 2014/53/EU.

This device complies with the following Directives:
‣ Low Voltage Directive for electrical safety.
‣ RoHS Directive for hazardous substances.
‣ Energy-related Products Directive (ErP).

A copy of the Declaration of Conformity to the essential requirements may be obtained directly from NVIDIA GmbH (Floessergasse 2, 81369 Munich, Germany).

5.5. Australia and New Zealand
Australian Communications and Media Authority
This product meets the applicable EMC requirements for Class A, I.T.E equipment.

5.6. Russia/Kazakhstan/Belarus

Customs Union Technical Regulations (CU TR)

**EAC**

This device complies with the technical regulations of the Customs Union (CU TR).

5.7. Japan

Voluntary Control Council for Interference (VCCI)

This is a Class A product.

In a domestic environment this product may cause radio interference, in which case the user may be required to take corrective actions. VCCI-A

2008年、日本における製品含有表示方法、JISC0950が公示されました。製造事業者は、2006年7月1日以降に販売される電気・電子機器の特定化学物質の含有に付きまして情报提供を义务付けられました。製品の部材表示に付きましては、
A Japanese regulatory requirement, defined by specification JIS C 0950, 2008, mandates that manufacturers provide Material Content Declarations for certain categories of electronic products offered for sale after July 1, 2006.

To view the JIS C 0950 material declaration for this product, visit www.nvidia.com.

Japan RoHS Material Content Declaration

<table>
<thead>
<tr>
<th>Main Component</th>
<th>Pb</th>
<th>Hg</th>
<th>Cd</th>
<th>Cr(VI)</th>
<th>PbB</th>
<th>POHDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pcb</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PCB</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Processor</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td>Motherboard</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Power Supply</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>System Storage</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Hard Disk Drive</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Frame Parts</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cable/Connector</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
</tr>
<tr>
<td>Other Attached Material</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Note:
1. "0" is a specific substance with a concentration below the Japan RoHS standard.
2. "除外项目" indicates that the specific substance concentration is below the Japan RoHS standard.
3. "0.1%" or "0.01%" indicates that the specific substance concentration is below the Japan RoHS standard.

For more information, please visit www.nvidia.com.

Product Model Number: Bladerunner

<table>
<thead>
<tr>
<th>Major Classification</th>
<th>Symbols of Specified Chemical Substance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pb</td>
</tr>
<tr>
<td>Chassis</td>
<td>Exempt</td>
</tr>
<tr>
<td>PCA</td>
<td>Exempt</td>
</tr>
<tr>
<td>Processor</td>
<td>0</td>
</tr>
<tr>
<td>Motherboard</td>
<td>Exempt</td>
</tr>
<tr>
<td>Power supply</td>
<td>Exempt</td>
</tr>
<tr>
<td>System storage</td>
<td>Exempt</td>
</tr>
<tr>
<td>Hard drive</td>
<td>Exempt</td>
</tr>
<tr>
<td>Mechanical parts</td>
<td>Exempt</td>
</tr>
<tr>
<td>Cables/Connectors</td>
<td>Exempt</td>
</tr>
<tr>
<td>Soldering material</td>
<td>0</td>
</tr>
<tr>
<td>Flux, Solder Paste, label and other consumable materials</td>
<td>0</td>
</tr>
</tbody>
</table>

Notes:
1. "0" indicates that the level of the specified chemical substance is less than the threshold level specified in the standard, JIS C 0950: 2008.
2. "Exempt" indicates that the specified chemical substance is exempt from marking and it is not required to display the marking for that specified chemical substance per the standard, JIS C 0950: 2008.
3. "Exceeding 0.1wt%" or "Exceeding 0.01wt%" is entered in the table if the level of the specified chemical substance exceeds the threshold level specified in the standard, JIS C 0950: 2008.

5.8. China

China RoHS Material Content Declaration
<table>
<thead>
<tr>
<th>部件名称</th>
<th>Parts</th>
<th>有害物质</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Hazardous Substances</td>
</tr>
<tr>
<td></td>
<td></td>
<td>锰 (Pb)</td>
</tr>
<tr>
<td>机箱</td>
<td>Chassis</td>
<td>X</td>
</tr>
<tr>
<td>印刷电路部件</td>
<td>PCA</td>
<td>X</td>
</tr>
<tr>
<td>处理器</td>
<td>Processor</td>
<td>O</td>
</tr>
<tr>
<td>主板</td>
<td>Motherboard</td>
<td>X</td>
</tr>
<tr>
<td>电源设备</td>
<td>Power supply</td>
<td>X</td>
</tr>
<tr>
<td>存储设备</td>
<td>System storage</td>
<td>X</td>
</tr>
<tr>
<td>硬盘驱动器</td>
<td>Hard drive</td>
<td>X</td>
</tr>
<tr>
<td>机械部件</td>
<td>Mechanical parts</td>
<td>X</td>
</tr>
<tr>
<td>线材/连接器</td>
<td>Cables/Connectors</td>
<td>X</td>
</tr>
<tr>
<td>焊接金属</td>
<td>Soldering material</td>
<td>O</td>
</tr>
<tr>
<td>助焊剂、焊料、标签及其他消耗材料</td>
<td>Flux, Solder Paste, label and other consumable materials</td>
<td>O</td>
</tr>
</tbody>
</table>

本表格依据 SJ/T 11364-2014 的规定编制
The table according to SJ/T 11364-2014

O: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572-2011 标准规定的限量要求以下。
X: 表示该有害物质至少在该部件的某一种均质材料中的含量超出 GB/T 26572-2011 标准规定的限量要求。
X: Indicates that this hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in GB/T 26572-2011.

此表中所有名称含“X”的部件均符合欧盟 RoHS 立法。
All parts named in this table with an “X” are in compliance with the European Union’s RoHS Legislation.

注: 环保使用期限的参考标准取决于产品正常工作的温度和湿度等条件
Note: The referenced Environmental Protection Use Period Marking was determined according to normal operating use conditions of the product such as temperature and humidity.

5.9. South Korea
Korean Agency for Technology and Standards (KATS)
Class A Equipment (Industrial Broadcasting & Communication Equipment). This equipment Industrial (Class A) electromagnetic wave suitability equipment and seller or user should take notice of it, and this equipment is to be used in the places except for home.

Korea RoHS Material Content Declaration
확인 및 평가 양식은 제품에 포함된 유해 물질의 허용 기준의 준수에 관한

<table>
<thead>
<tr>
<th>문 준비</th>
<th>상호: 엔비디아호텔링 dout 즈 리미티드(영업소)</th>
<th>법인등록번호</th>
<th>110181-0036373</th>
</tr>
</thead>
<tbody>
<tr>
<td>대표자성명</td>
<td>카렌테레사번즈</td>
<td>사업자등록번호:</td>
<td>120-84-06711</td>
</tr>
<tr>
<td>주소</td>
<td>서울특별시 강남구 영동대로 511, 2101호 (삼성동,</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

제품 내용

<table>
<thead>
<tr>
<th>제품의 종류</th>
<th>설기는 사람</th>
<th>제품명(규격)</th>
<th>설기는 사람</th>
</tr>
</thead>
<tbody>
<tr>
<td>세부모델명(번호):</td>
<td>해당없음</td>
<td>제품출시일</td>
<td>해당없음</td>
</tr>
</tbody>
</table>

제품의 중량: 해당없음
제조, 수입업자: 엔비디아

엔비디아의 그래픽 카드 제품은 전기 전자 제품 및 자동차의 자원순환에 관한 법률 시행령 제11조 제1항에 의거한 법 시행규칙 제3조에 따른 유해물질유무 기준을 확인 및 평가한 결과, 이를 준수하였음을 공표합니다.

구비서류: 없음
작성방법

① 제품의 종류는 "전기 전자 제품 및 자동차의 자원순환에 관한 법률 시행령" 제8조 제1항 및 제2항에 따른 품목별로 구분하여 기재합니다.

② 전기 전자 제품의 경우 모델명(번호), 자동차의 경우, 제원관리번호를 기재합니다.

③ 해당제품의 제조업자 또는 수입업자를 기재합니다.
Confirmation and Evaluation Form Concerning the Adherence to Acceptable Standards of Hazardous Materials Contained in Products

<table>
<thead>
<tr>
<th>Statement Prepared by</th>
<th>Company Name:</th>
<th>Corporate Identification Number:</th>
<th>Name of Company Representative:</th>
<th>Business Registration Number:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nvidia Hong Kong Holding Ltd. Korea branch</td>
<td>11081-0036373</td>
<td>Karen Theresa Burns</td>
<td>120-84-06711</td>
</tr>
<tr>
<td>Address</td>
<td>2788 San Tomas Expressway, Santa Clara, CA 95051</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Product Information

<table>
<thead>
<tr>
<th>Product Category:</th>
<th>Name of Product:</th>
<th>Manufacturer and/or Importer:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detailed Product</td>
<td>Date of first market release: N/A</td>
<td>NVIDIA Corporation</td>
</tr>
<tr>
<td>Model Name (Number):</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Weight of Product:</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

This form is publicly certify that NVIDIA Company has undergone the confirmation and evaluation procedures for the acceptable amounts of hazardous materials contained in graphic cards according to the regulations stipulated in Article 3 of the 'Status on the Recycling of Electrical and Electronic Products, and Automobiles' and that company has graphic cards adhered to the Enforcement Regulations of Article 11, Item 1 of the statute.

Attachment: None

Preparing the Form

1. Please indicate the product category according to the categories listed in Article 8, Items 1 and 2 of the 'Enforcement Ordinance of the Statute on the Recycling of Electrical, Electronic and Automobile Materials'.
2. For electrical and electronic products, please indicate the Model Name (and number). For automobiles, please indicate the Vehicle Identification Number.
3. Please indicate the name of manufacturer and/or importer of the product.

5.10. Taiwan

Bureau of Standards, Metrology & Inspection (BSMI)
警告使用者：
此為甲類資訊技術設備，於居住環境中使用時，可能會造成射頻擾動，在此種情況下，使用者會被要求採取某些適當的對策。

報驗義務人：
香港商輝達香港控股有限公司台灣分公司 統一編號：80022300
台北市內湖區基湖路 8 號。
<table>
<thead>
<tr>
<th>Parts</th>
<th>Restricted substances and its chemical symbols</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chassis</td>
<td>銅 (Pb), 水銀 (Hg), 鉻 (Cd), 大腸菌群 (Cr(VI)), 多溴聯苯 (PBB), 多溴二苯醚 (PBDE)</td>
</tr>
<tr>
<td>PCA</td>
<td>銅 (Pb), 水銀 (Hg), 鉻 (Cd), 大腸菌群 (Cr(VI)), 多溴聯苯 (PBB), 多溴二苯醚 (PBDE)</td>
</tr>
<tr>
<td>Processor</td>
<td>銅 (Pb), 水銀 (Hg), 鉻 (Cd), 大腸菌群 (Cr(VI)), 多溴聯苯 (PBB), 多溴二苯醚 (PBDE)</td>
</tr>
<tr>
<td>Motherboard</td>
<td>銅 (Pb), 水銀 (Hg), 鉻 (Cd), 大腸菌群 (Cr(VI)), 多溴聯苯 (PBB), 多溴二苯醚 (PBDE)</td>
</tr>
<tr>
<td>Power supply</td>
<td>銅 (Pb), 水銀 (Hg), 鉻 (Cd), 大腸菌群 (Cr(VI)), 多溴聯苯 (PBB), 多溴二苯醚 (PBDE)</td>
</tr>
<tr>
<td>System storage</td>
<td>銅 (Pb), 水銀 (Hg), 鉻 (Cd), 大腸菌群 (Cr(VI)), 多溴聯苯 (PBB), 多溴二苯醚 (PBDE)</td>
</tr>
<tr>
<td>Hard drive</td>
<td>銅 (Pb), 水銀 (Hg), 鉻 (Cd), 大腸菌群 (Cr(VI)), 多溴聯苯 (PBB), 多溴二苯醚 (PBDE)</td>
</tr>
<tr>
<td>Mechanical parts</td>
<td>銅 (Pb), 水銀 (Hg), 鉻 (Cd), 大腸菌群 (Cr(VI)), 多溴聯苯 (PBB), 多溴二苯醚 (PBDE)</td>
</tr>
<tr>
<td>Cables/Connectors</td>
<td>銅 (Pb), 水銀 (Hg), 鉻 (Cd), 大腸菌群 (Cr(VI)), 多溴聯苯 (PBB), 多溴二苯醚 (PBDE)</td>
</tr>
<tr>
<td>Soldering material</td>
<td>銅 (Pb), 水銀 (Hg), 鉻 (Cd), 大腸菌群 (Cr(VI)), 多溴聯苯 (PBB), 多溴二苯醚 (PBDE)</td>
</tr>
<tr>
<td>Flux, Solder Paste, label and other consumable materials</td>
<td>銅 (Pb), 水銀 (Hg), 鉻 (Cd), 大腸菌群 (Cr(VI)), 多溴聯苯 (PBB), 多溴二苯醚 (PBDE)</td>
</tr>
</tbody>
</table>

Note 1: ○：表示該限制性物質未含該百分比含量基準值
Note 2: “-”：表示該設備不含該物質

All parts named in this table with an “-” are in compliance with the European Union’s RoHS II Legislation.

Note: The referenced Environmental Protection Use Period Marking was determined according to normal operating use conditions of the product such as temperature and humidity.
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