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All other trademarks or registered trademarks mentioned herein are the property of their respective holders.

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Inspur is intensely focused on server product safety and has placed a high priority on this. For a better understanding of our server products, carefully read through the following security risk statements.

• When servers are to be repurposed or retired, it is recommended to restore their firmware factory settings, delete information and clear logs from BIOS and BMC to protect data privacy. Meanwhile, we recommend you to wipe the drive data thoroughly and securely with trusted third-party erasing tools.

• The products, services or features you purchased may obtain or use some personal data (such as email address for alerts and IP address) during operation or fault locating. There should be user privacy policies in place with adequate measures implemented in accordance with the applicable laws to ensure that users’ personal data are fully protected.

• For server open source software statements, please contact Inspur Customer Service.

• Some interfaces and commands for production, assembly and return-to-depot, and advanced commands for locating faults, if used improperly, may cause equipment abnormality or business interruption. This is not described herein. Please contact Inspur for such information.

• External interfaces of Inspur servers do not use private protocols for communication.

• Inspur has established emergency response procedures and action plans for
security vulnerabilities, so that product safety issues can be dealt with in a timely manner. Please contact Inspur Customer Service for any safety problems found or necessary support on security vulnerabilities when using our products.

Inspur will remain committed to the safety of our products and solutions to achieve better customer satisfaction.

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Technical Support

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Abstract

This white paper describes the NF5688M6 server's appearance, features, performance parameters, and software and hardware compatibility, providing in-depth information of NF5688M6.

Intended Audience

This white paper is intended for:

- Inspur pre-sales engineers
- Pre-sales engineers of channel partners
- Enterprise pre-sales engineers

Symbol Conventions

The symbols that may be found in this document are defined as follows.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DANGER</td>
<td>A potential for serious injury, or even death if not properly handled</td>
</tr>
<tr>
<td>WARNING</td>
<td>A potential for minor or moderate injury if not properly handled</td>
</tr>
<tr>
<td>CAUTION</td>
<td>A potential loss of data or damage to equipment if not properly handled</td>
</tr>
<tr>
<td>IMPORTANT</td>
<td>Operations or information that requires special attention to ensure successful installation or configuration</td>
</tr>
<tr>
<td>NOTE</td>
<td>Supplementary description of manual information</td>
</tr>
</tbody>
</table>

Revision History

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Description of Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1.0</td>
<td>2022/07/29</td>
<td>Initial release</td>
</tr>
</tbody>
</table>
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1 Product Overview

The Inspur AI server NF5688M6 features outstanding scalability, leading performance, superior energy efficiency and flexible deployment. With computing capacity up to 5 petaFLOPS, it is ideal for AI applications such as image/video processing, speech recognition, financial analysis, and intelligent customer service.

The NF5688M6 uses the advanced NVIDIA® NVSwitch™ interconnect fabric and provides an optimal GPU-IB-NVMe ratio of 1:1:1 based on excellent hardware topology. The server comes with 8 powerful NVIDIA® SXM4 A100 Tensor Core GPUs, allowing direct P2P data communication at 600 GB/s between any two of them. With 2 Intel® Ice Lake processors and the leading Ultra Path Interconnect (UPI), the NF5688M6 delivers top AI computing performance for deep learning scenarios. A 6U standard form factor and 3+3 redundant power supplies enable the system to be applicable to extensive data centers, providing increased reliability and stability. Besides, the NF5688M6 delivers a variety of flexible cluster deployment options and allows integrated deployment from hardware to AI applications. Moreover, the 54 V power supply offers higher energy efficiency. The layered and zoned cooling channels and an intelligent PID control strategy ensure optimal cooling performance.

The NF5688M6 enables AI users to efficiently build AI infrastructures and development environments with high computing performance and low deployment and operational costs.
Figure 1-1 NF5688M6 (8-Drive Configuration)

Figure 1-2 NF5688M6 (16-Drive Configuration)
2 Features

2.1 Scalability and Performance

- Features two 3rd Gen Intel® Xeon® Scalable processors (Ice Lake), with up to 40 cores per processor, a Turbo frequency up to 3.7 GHz, and up to 3 UPI links at up to 11.2 GT/s.
- Maintains the high quality and reliability of Inspur servers for different scenarios, and offers an optimal GPU-IB-NVMe ratio of 1:1:1.
- Provides the AI computing performance up to 5 petaFLOPS, 300X higher than the traditional 2-socket server.
- Adopts a standard 6U form factor, and comes with a NVIDIA® HGX A100 8-GPU baseboard hosting 8 SXM4 A100 GPUs with P2P data communication at up to 600 GB/s.
- Up to 8 hot-swap NVMe SSDs and 2 SATA M.2 SSDs, increasing the read/write speeds and storage capacity to the utmost.
- Up to ten 100/200 Gb high-speed NIC cards that support RDMA, providing high-speed expansion channels for AI clusters.
- Uses the optimal balance topology between CPUs and GPUs for workload balancing, improving data communication efficiency and reducing latency.
- GPUs are interconnected with NVIDIA® NVSwitch™, the globally advanced interconnect fabric, realizing full interconnection and P2P communication.
- Up to 2 RAID controller cards, and up to 10 HHL PCIe 4.0 x16 slots and 2 PCIe 4.0 x16 slots (x8 bandwidth only and RAID controller cards dedicated), offering customers with improved I/O expansion capabilities.
- Up to 32 DDR4 ECC DIMMs (3200 MT/s, 4 TB max., LRDIMM/RDIMM/BPS) and 16 memory channels, delivering superior speeds and high availability.
- Supports a variety of drive configurations, providing elastic and scalable storage capacities to meet different capacity and upgrade requirements.

2.2 Availability and Serviceability

- Based on humanization design, the server allows tool-less maintenance. The modular structural parts enable quick removal/installation, greatly reducing O&M time.
- Inspur’s unique intelligent control technology combined with the cutting-edge air-cooling technology creates an optimum working environment to ensure stable running of the server.

- The server supports up to 16 hot-swap storage drives and 2 RAID controller cards with RAID levels 0/1/10/5/50/6/60, RAID cache and data protection enabled by the super-capacitor in case of power failures.

- The UID LED enables technicians to identify the failed system and the BMC Web GUI and LEDs for fault diagnosis can help technicians to quickly locate components that have failed (or are about to fail), simplifying maintenance, speeding up troubleshooting, and enhancing system availability.

- The BMC can monitor system parameters and send alerts in advance, enabling technicians to take appropriate measures and ensuring stable running of the server.

- The intelligent management software ISPIM allows centralized management of the server and full lifecycle management covering part-level asset management, intelligent monitoring and alerting, automatic inspection, fault diagnosis and reporting, energy consumption management, and firmware update/configuration.

- The ISIB system enables rapid server initialization and supports batch RAID configuration and OS deployment.

For documentation of the NF5688M6 system (such as product marketing materials, user manuals, product drivers, firmware, and product certifications), visit Inspur website: [https://en.inspur.com](https://en.inspur.com).

### 2.3 Manageability and Security

- Supports ISBMC, a self-developed remote server management system.
  - ISBMC supports such mainstream management specifications in the industry as IPMI 2.0 and Redfish 1.8.
  - ISBMC improves operational reliability.
  - ISBMC features easy serviceability for different business scenarios.
  - ISBMC provides comprehensive and accurate fault diagnosis capabilities.
  - ISBMC offers industry-leading security reinforcement capabilities.

- Supports Trusted Platform Module (TPM 2.0) and Trusted Cryptography Module (TCM) that provide advanced encryption.

- Supports Intel® Trusted Execution Technology that provides hardware-based mechanisms that help protect against software-based attacks.
• Supports Intel® Software Guard Extensions (SGX) technology that allows applications to run in enclaves, helping prevent malicious theft and modification of critical codes and data.

• Supports the firmware update mechanism based on digital signatures to prevent unauthorized firmware updates.

• Supports UEFI Secure Boot to protect the system from malicious boot loaders.

• Supports hierarchical password protection in BIOS, ensuring system boot and management security.

• Supports BIOS Secure Flash and BIOS Lock Enable (BLE), reducing attacks from malicious software on the BIOS flash region.

• Supports dual-image mechanism for BMC and BIOS, recovering firmware upon detection of firmware damage.

• Supports BMC Secure Boot to protect BMC from malicious tampering.

• Supports flexible BMC access control policies, improving BMC management security.

2.4 Energy Efficiency

• Equipped with 80 PLUS Platinum level PSUs (3,000 W) with power efficiency up to 95% at a load of 50%.

• Offers 3+3 redundant PSUs for improved system reliability.

• Features the efficient single-board voltage regulator down (VRD) PSU, reducing DC-DC conversion loss.

• Supports intelligent fan speed control and intelligent CPU frequency scaling, conserving energy.

• Offers a fully-optimized system cooling design with energy-efficient cooling fans, lowering energy consumption from system cooling.
System Parts Breakdown

Figure 3-1 System Parts Breakdown (8-Drive Configuration)

<table>
<thead>
<tr>
<th>Item</th>
<th>Feature</th>
<th>Item</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Switch Drawer</td>
<td>2</td>
<td>Motherboard Drawer</td>
</tr>
<tr>
<td>3</td>
<td>Motherboard + OCP Module</td>
<td>4</td>
<td>PSU × 6</td>
</tr>
<tr>
<td>5</td>
<td>Fan Module × 12</td>
<td>6</td>
<td>Fan Board × 3</td>
</tr>
<tr>
<td>7</td>
<td>Midplane Board</td>
<td>8</td>
<td>6U Chassis</td>
</tr>
<tr>
<td>9</td>
<td>Switch Board + Riser + Drive Modules (8-bay)</td>
<td>10</td>
<td>NVIDIA HGX GPU Module</td>
</tr>
<tr>
<td>11</td>
<td>GPU Module Drawer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure 4-1 System Logical Diagram (8-Drive Configuration)

Table 4-1 8-Drive and 16-Drive Configuration Specifications

<table>
<thead>
<tr>
<th></th>
<th>NF5688M6 (8-Drive Configuration)</th>
<th>NF5688M6 (16-Drive Configuration)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>2 × Intel® Ice Lake CPU</td>
<td>2 × Intel® Ice Lake CPU</td>
</tr>
<tr>
<td>Memory</td>
<td>• 32 × DDR4 DIMM</td>
<td>• 32 × DDR4 DIMM</td>
</tr>
<tr>
<td></td>
<td>• RDIMM/LRDIMM/BPS supported</td>
<td>• RDIMM/LRDIMM/BPS supported</td>
</tr>
<tr>
<td>RAID Controller Card</td>
<td>0</td>
<td>1 or 2</td>
</tr>
<tr>
<td>SSD</td>
<td>8 × NVMe</td>
<td>16 × SATA/SAS</td>
</tr>
<tr>
<td>M.2 SSD</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>PCIe Card</td>
<td>10 × PCIe x16 card, 2 × PCIe x8 card</td>
<td>6 × PCIe x16 card</td>
</tr>
<tr>
<td>OCP NIC 3.0 Card</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Power Supply</td>
<td>6 × 3,000 W PSU (3+3 redundant)</td>
<td>6 × 3,000 W PSU (3+3 redundant)</td>
</tr>
<tr>
<td></td>
<td>NF5688M6 (8-Drive Configuration)</td>
<td>NF5688M6 (16-Drive Configuration)</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-----------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>Dimensions (W × H × D)</td>
<td>447 × 263.9 × 850 mm (17.60 × 10.39 × 33.46 in.)</td>
<td>447 × 263.9 × 850 mm (17.60 × 10.39 × 33.46 in.)</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>10°C to 35°C (50°F to 95°F)</td>
<td>10°C to 35°C (50°F to 95°F)</td>
</tr>
</tbody>
</table>
5 Hardware Description

5.1 Front Panel

5.1.1 Appearance

- NF5688M6 (16-Drive Configuration)

Figure 5-1 Front View

<table>
<thead>
<tr>
<th>Item</th>
<th>Feature</th>
<th>Item</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>OCP NIC 3.0 Module</td>
<td>2</td>
<td>Motherboard Drawer Handle × 2</td>
</tr>
<tr>
<td>3</td>
<td>PCIe Slots (Up to 6 PCIe Cards)</td>
<td>4</td>
<td>System Serial Port</td>
</tr>
<tr>
<td>5</td>
<td>BMC Serial Port</td>
<td>6</td>
<td>BMC Management Network Port</td>
</tr>
<tr>
<td>7</td>
<td>VGA Port</td>
<td>8</td>
<td>USB 3.0 Port</td>
</tr>
<tr>
<td>9</td>
<td>USB 2.0/LCD Port</td>
<td>10</td>
<td>Screw Cover × 4</td>
</tr>
<tr>
<td>11</td>
<td>Drive Bay × 16</td>
<td>12</td>
<td>Ear Latch × 2</td>
</tr>
<tr>
<td>13</td>
<td>GPU Drawer Handle × 2</td>
<td>14</td>
<td>Switch Drawer Handle × 2</td>
</tr>
<tr>
<td>15</td>
<td>UID/BMC RST Button and LED</td>
<td>16</td>
<td>LEDs</td>
</tr>
<tr>
<td>17</td>
<td>Power Button and LED</td>
<td>18</td>
<td>GPU Drawer</td>
</tr>
</tbody>
</table>
Table 5-1 PCIe Slots (Marked with 3 in the figure above, from left to right)

<table>
<thead>
<tr>
<th>Item</th>
<th>Slot Type</th>
<th>Uplink Port</th>
<th>Hot-Swappable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slot 0</td>
<td>PCIe x16</td>
<td>CPU0</td>
<td>No</td>
</tr>
<tr>
<td>Slot 1</td>
<td>PCIe x16</td>
<td>CPU0_SwitchA</td>
<td>No</td>
</tr>
<tr>
<td>Slot 2</td>
<td>PCIe x16</td>
<td>CPU0_SwitchB</td>
<td>No</td>
</tr>
<tr>
<td>Slot 3</td>
<td>PCIe x16</td>
<td>CPU1_SwitchC</td>
<td>No</td>
</tr>
<tr>
<td>Slot 4</td>
<td>PCIe x16</td>
<td>CPU1_SwitchD</td>
<td>No</td>
</tr>
<tr>
<td>Slot 5</td>
<td>PCIe x16</td>
<td>CPU1</td>
<td>No</td>
</tr>
</tbody>
</table>

- NF5688M6 (8-Drive Configuration)

Figure 5-2 Front View

Table 5-2 PCIe Slots (Marked with 20 in the figure above, from left to right)

<table>
<thead>
<tr>
<th>Item</th>
<th>Feature</th>
<th>Item</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Drive Bay × 8</td>
<td>20</td>
<td>PCIe Slots (Up to 12 PCIe Cards)</td>
</tr>
</tbody>
</table>

Table 5-2 PCIe Slots (Marked with 20 in the figure above, from left to right)

<table>
<thead>
<tr>
<th>Item</th>
<th>Slot Type</th>
<th>Uplink Port</th>
<th>Hot-Swappable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slot 0</td>
<td>PCIe x16</td>
<td>CPU0</td>
<td>No</td>
</tr>
<tr>
<td>Slot 1</td>
<td>PCIe x16</td>
<td>CPU0_SwitchA</td>
<td>No</td>
</tr>
<tr>
<td>Slot 2</td>
<td>PCIe x16</td>
<td>CPU0_SwitchA</td>
<td>No</td>
</tr>
<tr>
<td>Slot 3</td>
<td>PCIe x16</td>
<td>CPU0_SwitchB</td>
<td>No</td>
</tr>
<tr>
<td>Slot 4</td>
<td>PCIe x16</td>
<td>CPU0_SwitchB</td>
<td>No</td>
</tr>
</tbody>
</table>

10
<table>
<thead>
<tr>
<th>Item</th>
<th>Slot Type</th>
<th>Uplink Port</th>
<th>Hot-Swappable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slot 5</td>
<td>PCIe x16</td>
<td>CPU1_SwitchC</td>
<td>No</td>
</tr>
<tr>
<td>Slot 6</td>
<td>PCIe x16</td>
<td>CPU1_SwitchC</td>
<td>No</td>
</tr>
<tr>
<td>Slot 7</td>
<td>PCIe x8</td>
<td>CPU1_SwitchC</td>
<td>No</td>
</tr>
<tr>
<td>Slot 8</td>
<td>PCIe x8</td>
<td>CPU1_SwitchD</td>
<td>No</td>
</tr>
<tr>
<td>Slot 9</td>
<td>PCIe x16</td>
<td>CPU1_SwitchD</td>
<td>No</td>
</tr>
<tr>
<td>Slot 10</td>
<td>PCIe x16</td>
<td>CPU1_SwitchD</td>
<td>No</td>
</tr>
<tr>
<td>Slot 11</td>
<td>PCIe x16</td>
<td>CPU1</td>
<td>No</td>
</tr>
</tbody>
</table>

### 5.1.2 LEDs & Buttons

- The 8-drive configuration and 16-drive configuration adopt the same LED and button design.

Figure 5-3 Front Panel LEDs and Buttons

![Front Panel LEDs and Buttons](image)

<table>
<thead>
<tr>
<th>Item</th>
<th>Feature</th>
<th>Item</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power Button and LED</td>
<td>2</td>
<td>System Status LED</td>
</tr>
<tr>
<td>3</td>
<td>Memory Status LED</td>
<td>4</td>
<td>Power Status LED</td>
</tr>
<tr>
<td>5</td>
<td>Fan Status LED</td>
<td>6</td>
<td>System Overheat LED</td>
</tr>
<tr>
<td>7</td>
<td>Network Status LED</td>
<td>8</td>
<td>UID/BMC RST Button and LED</td>
</tr>
</tbody>
</table>
## 1. LED and Button Description

Table 5-3 Front Panel LED and Button Description

<table>
<thead>
<tr>
<th>Icon</th>
<th>LED &amp; Button</th>
<th>Description</th>
</tr>
</thead>
</table>
| ![Power Button and LED](image) | Power Button and LED | **Power LED:**  
• Off = No power  
• Solid green = Power-on state  
• Solid orange = Standby state  

**Power button:**  
Long press 4 seconds to force a shutdown from the power-on state.  
**Note:**  
Follow the prompt under different OSs to shut down the OS.  
Short press the power button to power on the system in standby state. |
| ![UID/BMC RST Button and LED](image) | UID/BMC RST Button and LED | The UID LED is used to identify the device to be operated:  
• Off = System unit not identified  
• Solid blue = System unit identified  
• Flashing blue = System unit being operated remotely  

**Note:**  
The UID LED turns on or off when activated by the UID button or via ISBMC remotely.  
Long press the UID button for over 6 seconds to reset the BMC. |
| ![Memory Status LED](image) | Memory Status LED |  
• Off = Normal  
• Flashing red (1 Hz) = A non-critical warning occurs  
• Solid red = A critical warning occurs |
| ![System Status LED](image) | System Status LED |  
• Off = Normal  
• Flashing red (1 Hz) = A non-critical warning occurs  
• Solid red = A critical warning occurs |
| ![Power Status LED](image) | Power Status LED |  
• Off = Normal |
<table>
<thead>
<tr>
<th>Icon</th>
<th>LED &amp; Button</th>
<th>Description</th>
</tr>
</thead>
</table>
|     |              | • Flashing red (1 Hz) = A non-critical warning occurs  
|     |              | • Solid red = A critical warning occurs |
| 🕗   | System Overheat LED | • Off = Normal  
| |                  | • Flashing red (1 Hz) = A non-critical warning occurs  
| |                  | • Solid red = A critical warning occurs |
| ⚡   | Fan Status LED | • Off = Normal  
| |                  | • Flashing red (1 Hz) = A non-critical warning occur  
| |                  | • Solid red = A critical warning occurs |
| 🌐   | Network Status LED | • NA (No LOM)  |

### 5.1.3 Ports

- The 8-drive configuration and 16-drive configuration adopt the same port design on the front panel.

Figure 5-4 Front Panel Ports (16-Drive Configuration)

<table>
<thead>
<tr>
<th>Item</th>
<th>Feature</th>
<th>Item</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>VGA Port</td>
<td>2</td>
<td>USB 3.0 Port</td>
</tr>
</tbody>
</table>
### 1. Port Description

Table 5-4 Front Panel Port Description

<table>
<thead>
<tr>
<th>Feature</th>
<th>Type</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VGA Port</td>
<td>DB15</td>
<td>1</td>
<td>Enables you to connect a display terminal, for example, a monitor or KVM, to the system.</td>
</tr>
<tr>
<td>USB 3.0 Port</td>
<td>USB 3.0</td>
<td>1</td>
<td>Enables you to connect a USB 3.0 device to the system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Note: Make sure the USB device is in good condition or it may cause the server to work abnormally.</td>
</tr>
<tr>
<td>USB 2.0 Port/LCD Port</td>
<td>USB 2.0</td>
<td>1</td>
<td>• Enables you to connect a USB 2.0 device to the system</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Note: Make sure the USB device is in good condition or it may cause the server to work abnormally.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Enables you to connect an Inspur exclusive LCD module to the system</td>
</tr>
</tbody>
</table>
5.2 Rear Panel

5.2.1 Appearance

Figure 5-5 Rear View (Same for 8-Drive Configuration and 16-Drive Configuration)

<table>
<thead>
<tr>
<th>Item</th>
<th>Feature</th>
<th>Item</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PSU × 6</td>
<td>2</td>
<td>Fan Module × 12</td>
</tr>
<tr>
<td>3</td>
<td>VGA Port</td>
<td>4</td>
<td>USB 3.0 Port</td>
</tr>
</tbody>
</table>

5.2.2 LEDs
1. LED Description

Table 5-5 Rear Panel LED Description

<table>
<thead>
<tr>
<th>Icon</th>
<th>LED</th>
<th>Description</th>
</tr>
</thead>
</table>
| ![Fan Module LEDs](image) | Fan Module LEDs | • Solid green = Normal  
                          |                  | • Solid orange = Fan failure |
| ![PSU LED](image)     | PSU LED         | • Off = No AC power to PSU  
                          |                  | • Flashing green (1 Hz) = PSU operating in standby state with normal AC input.  
<pre><code>                      |                  | • Flashing green (2 Hz) = PSU firmware updating |
</code></pre>
<table>
<thead>
<tr>
<th>Icon</th>
<th>LED</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>- Flashing green (off for 1 second, on for 2 seconds): PSU in cold redundant state</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Solid green = Normal input and output</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Flashing amber (1 Hz) = PSU warning event where the PSU continues to operate (possible causes: PSU overtemperature, PSU output overcurrent, excessively high or low fan speed)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Solid amber = PSU critical event causing a shutdown (possible causes: PSU overtemperature protection, PSU output overcurrent or short circuit, output overvoltage, short circuit protection, component (not all components) failure)</td>
</tr>
</tbody>
</table>

5.2.3 Ports and PSU

1. Port and PSU Location

Figure 5-7 Rear Panel Ports and PSU (Same for 8-Drive Configuration and 16-Drive Configuration)

<table>
<thead>
<tr>
<th>Item</th>
<th>Feature</th>
<th>Item</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PSU × 6</td>
<td>2</td>
<td>VGA Port</td>
</tr>
<tr>
<td>3</td>
<td>USB 3.0 Port</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. Port and PSU Description

Table 5-6 Rear Panel Port and PSU Description

<table>
<thead>
<tr>
<th>Feature</th>
<th>Type</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>USB Port</td>
<td>USB 3.0</td>
<td>2</td>
<td>Enables you to connect a USB 3.0 device to the system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Note: The maximum current supported by the USB port is 0.9 A.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Make sure the USB device is in good condition or it may cause the server to work abnormally.</td>
</tr>
<tr>
<td>VGA Port</td>
<td>DB15</td>
<td>1</td>
<td>Enables you to connect a display terminal, for example, a monitor or KVM to the system.</td>
</tr>
<tr>
<td>PSU</td>
<td>N/A</td>
<td>6</td>
<td>Connected through a power cord. User can select the PSUs as needed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Note: Make sure that the total rated power of the PSUs is greater than that of the server.</td>
</tr>
</tbody>
</table>

5.3 Processor

- Supports 2 processors.
- The processors used in the same server must be of the same model.

For specific system processor options, consult your local Inspur sales representative or refer to 7.2 Hardware Compatibility.

5.4 Memory

5.4.1 DDR4 DIMM

1. Identification

To determine DIMM characteristics, refer to the label attached to the DIMM and the following figure and table.
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Capacity</td>
<td>• 16 GB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 32 GB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 64 GB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 128 GB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 256 GB</td>
</tr>
<tr>
<td>2</td>
<td>Rank(s)</td>
<td>• 1R = Single rank</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 2R = Dual rank</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 2S2R = Two ranks of two high stacked 3DS DRAM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 4DR = Four ranks of dual die packaged DRAM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 4R = Quad rank</td>
</tr>
<tr>
<td>3</td>
<td>Data width of DRAM</td>
<td>• x4 = 4 bits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• x8 = 8 bits</td>
</tr>
<tr>
<td>4</td>
<td>DIMM slot type</td>
<td>PC4 = DDR4</td>
</tr>
<tr>
<td>5</td>
<td>Maximum memory speed</td>
<td>• 2933 MT/s</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 3200 MT/s</td>
</tr>
<tr>
<td>6</td>
<td>CAS latency</td>
<td>SDP-chip-based</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• V = CAS-19-19-19</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
<td>Example</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>---------</td>
</tr>
</tbody>
</table>
| 7    | DIMM type   | ▪ R = RDIMM  
       |             | ▪ L = LRDIMM |

### 2. Memory Subsystem Architecture

The NF5688M6 supports 32 DIMM slots and 8 channels per CPU with 2 DIMM slots per channel.

Within a channel, populate the DIMM slot with its silk screen ending with D0 first and second the DIMM slot with its silk screen ending with D1. For instance, within CPU0 Channel 0, populate CPU0_C0D0 first and second CPU0_C0D1.

#### Table 5-7 DIMM Slot List

<table>
<thead>
<tr>
<th>CPU</th>
<th>Channel ID</th>
<th>Silk Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU0</td>
<td>Channel 0</td>
<td>CPU0_C0D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU0_C0D1</td>
</tr>
<tr>
<td></td>
<td>Channel 1</td>
<td>CPU0_C1D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU0_C1D1</td>
</tr>
<tr>
<td></td>
<td>Channel 2</td>
<td>CPU0_C2D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU0_C2D1</td>
</tr>
<tr>
<td></td>
<td>Channel 3</td>
<td>CPU0_C3D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU0_C3D1</td>
</tr>
<tr>
<td></td>
<td>Channel 4</td>
<td>CPU0_C4D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU0_C4D1</td>
</tr>
<tr>
<td></td>
<td>Channel 5</td>
<td>CPU0_C5D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU0_C5D1</td>
</tr>
<tr>
<td></td>
<td>Channel 6</td>
<td>CPU0_C6D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU0_C6D1</td>
</tr>
<tr>
<td></td>
<td>Channel 7</td>
<td>CPU0_C7D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU0_C7D1</td>
</tr>
<tr>
<td>CPU1</td>
<td>Channel 0</td>
<td>CPU1_C0D0</td>
</tr>
<tr>
<td>CPU</td>
<td>Channel ID</td>
<td>Silk Screen</td>
</tr>
<tr>
<td>----------</td>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU1_C0D1</td>
</tr>
<tr>
<td>Channel 1</td>
<td></td>
<td>CPU1_C1D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU1_C1D1</td>
</tr>
<tr>
<td>Channel 2</td>
<td></td>
<td>CPU1_C2D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU1_C2D1</td>
</tr>
<tr>
<td>Channel 3</td>
<td></td>
<td>CPU1_C3D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU1_C3D1</td>
</tr>
<tr>
<td>Channel 4</td>
<td></td>
<td>CPU1_C4D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU1_C4D1</td>
</tr>
<tr>
<td>Channel 5</td>
<td></td>
<td>CPU1_C5D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU1_C5D1</td>
</tr>
<tr>
<td>Channel 6</td>
<td></td>
<td>CPU1_C6D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU1_C6D1</td>
</tr>
<tr>
<td>Channel 7</td>
<td></td>
<td>CPU1_C7D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU1_C7D1</td>
</tr>
</tbody>
</table>

### 3. Compatibility

Refer to the following rules to select the DDR4 DIMMs.

**IMPORTANT**

- A server must use DDR4 DIMMs with the same part number (P/N code). All DDR4 DIMMs operate at the same speed, which is the lowest of:
  - Memory speed supported by a specific CPU.
  - Maximum operating speed of a memory module.
- Mixing DDR4 DIMM types (RDIMM, LRDIMM) or mixing DDR4 DIMM specifications (capacity, bit width, rank, height, etc) is not supported.
- For specific system memory options, consult your local Inspur sales representative or refer to 7.2 Hardware Compatibility.

- Total memory capacity is the sum of the capacity of all DDR4 DIMMs of two CPUs.
- The total memory capacity cannot exceed the maximum memory capacity supported by two CPUs.
- The maximum number of DIMMs supported varies with the CPU type, DIMM type and the rank quantity.
Maximum number of DIMMs supported per channel ≤ Maximum number of ranks supported per channel/Number of ranks per DIMM.

Table 5-8 DDR4 DIMM Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity per DDR4 DIMM (GB)</td>
<td>16</td>
</tr>
<tr>
<td>Type</td>
<td>RDIMM</td>
</tr>
<tr>
<td>Rated speed (MT/s)</td>
<td>3,200</td>
</tr>
<tr>
<td>Operating voltage (V)</td>
<td>1.2</td>
</tr>
<tr>
<td>Maximum number of DDR4 DIMMs supported in a server&lt;sup&gt;a&lt;/sup&gt;</td>
<td>32</td>
</tr>
<tr>
<td>Maximum capacity of DDR4 DIMMs supported in a server (GB)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>512</td>
</tr>
<tr>
<td>Actual speed (MT/s) 1DPC&lt;sup&gt;c&lt;/sup&gt;</td>
<td>3,200</td>
</tr>
<tr>
<td>Actual speed (MT/s) 2DPC&lt;sup&gt;c&lt;/sup&gt;</td>
<td>3,200</td>
</tr>
</tbody>
</table>

<sup>a</sup> The maximum number of DDR4 DIMMs supported is based on the 2-processor configuration.

<sup>b</sup> It indicates the maximum DDR4 memory capacity supported when all DDR4 DIMMs are populated. The maximum DDR4 capacity varies with the CPU type.

<sup>c</sup> DIMM Per Channel (DPC) is the number of DIMMs per memory channel.

The above information is for reference only, consult your local Inspur sales representative for details.

4. Population Rules

This section describes the DIMM population rules when all DDR4 DIMMs are populated. If mixing DDR4 DDIMs and PMems is required, refer to 4 Population Rules in 5.4.2.

General population rules for DDR4 DIMMs:
• Install DIMMs and dummies only when the corresponding processor has been installed.

• Mixing LRDIMMs and RDIMMs is not allowed.

• Install dummies in the DIMM slots where no DIMMs are installed.

Population rules for DDR4 DIMMs in specific modes:

• Memory sparing
  – Follow the general population rules.
  – Each channel must have a valid online spare configuration.
  – Each channel can have a different online spare configuration.
  – Each channel with a DIMM installed must have a spare rank.

• Memory mirroring
  – Follow the general population rules.
  – Each processor supports 8 channels via 4 integrated memory controllers (IMCs). DIMMs installed must be of the same model.
  – In a multi-processor configuration, each processor must have a valid memory mirroring configuration.

5. DIMM Slot Layout

Up to 32 DDR4 DIMMs can be installed in the server. Balance the total memory capacity between the installed processors for optimal memory performance. DIMM configuration must be compliant with the DIMM population rules.

---

**IMPORTANT**

At least one DDR4 DIMM must be installed in the DIMM slot(s) corresponding to each CPU.

---

Figure 5-9 DIMM Slot Location
Table 5-9 DDR4 DIMM Population Rules

<table>
<thead>
<tr>
<th>Memory Slot</th>
<th>2</th>
<th>4</th>
<th>8</th>
<th>12</th>
<th>16</th>
<th>24</th>
<th>32</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU0_C0D0</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU0_C0D1</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU0_C1D0</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU0_C1D1</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU0_C2D0</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU0_C2D1</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU0_C3D0</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU0_C3D1</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU0_C4D0</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU0_C4D1</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU0_C5D0</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU0_C5D1</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU0_C6D0</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU0_C6D1</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU0_C7D0</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU0_C7D1</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU1_C0D0</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU1_C0D1</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU1_C1D0</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU1_C1D1</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU1_C2D0</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU1_C2D1</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU1_C3D0</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU1_C3D1</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU1_C4D0</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU1_C4D1</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU1_C5D0</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU1_C5D1</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU1_C6D0</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU1_C6D1</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU1_C7D0</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CPU1_C7D1</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>
5.4.2 PMem

1. Identification

Figure 5-10 PMem Identification

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Component name</td>
<td>Intel® Optane™ Persistent Memory</td>
</tr>
<tr>
<td>2</td>
<td>Serial number</td>
<td>8089-A2-2008-00002461</td>
</tr>
<tr>
<td>3</td>
<td>Model</td>
<td>NMB1XXDS12GPSU4</td>
</tr>
<tr>
<td>4</td>
<td>Capacity</td>
<td>• 128 GB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 256 GB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 512 GB</td>
</tr>
</tbody>
</table>

2. Memory Subsystem Architecture

The NF5688M6 supports 32 DIMM slots and 8 channels per CPU with 2 DIMM slots per channel. Only one PMem can be populated in each channel.

PMems must be used with DDR4 DIMMs.

Table 5-10 DIMM Slot List

<table>
<thead>
<tr>
<th>CPU</th>
<th>Channel ID</th>
<th>Silk Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU0</td>
<td>Channel 0</td>
<td>CPU0_C0D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU0_C0D1</td>
</tr>
<tr>
<td></td>
<td>Channel 1</td>
<td>CPU0_C1D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU0_C1D1</td>
</tr>
</tbody>
</table>
### 3. Compatibility

Refer to the following rules to configure PMems:

- PMems must be used with DDR4 DIMMs.
- PMems must be used with the 3rd Gen Intel® Xeon® Scalable processors (Ice Lake).
- PMems can only be configured in two modes: App Direct Mode (AD) and Memory Mode (MM), and the calculation formula for the total memory capacity is as follows:
  - AD: Total memory capacity = Sum of all PMem capacities + Sum of DDR4

<table>
<thead>
<tr>
<th>CPU</th>
<th>Channel ID</th>
<th>Silk Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>CPU0_C2D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU0_C2D1</td>
</tr>
<tr>
<td></td>
<td>Channel 2</td>
<td>CPU0_C3D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU0_C3D1</td>
</tr>
<tr>
<td></td>
<td>Channel 3</td>
<td>CPU0_C4D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU0_C4D1</td>
</tr>
<tr>
<td></td>
<td>Channel 4</td>
<td>CPU0_C5D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU0_C5D1</td>
</tr>
<tr>
<td></td>
<td>Channel 5</td>
<td>CPU0_C6D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU0_C6D1</td>
</tr>
<tr>
<td></td>
<td>Channel 6</td>
<td>CPU0_C7D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU0_C7D1</td>
</tr>
<tr>
<td></td>
<td>Channel 7</td>
<td>CPU1_C0D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU1_C0D1</td>
</tr>
<tr>
<td>CPU1</td>
<td>Channel 0</td>
<td>CPU1_C1D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU1_C1D1</td>
</tr>
<tr>
<td></td>
<td>Channel 1</td>
<td>CPU1_C2D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU1_C2D1</td>
</tr>
<tr>
<td></td>
<td>Channel 2</td>
<td>CPU1_C3D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU1_C3D1</td>
</tr>
<tr>
<td></td>
<td>Channel 3</td>
<td>CPU1_C4D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU1_C4D1</td>
</tr>
<tr>
<td></td>
<td>Channel 4</td>
<td>CPU1_C5D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU1_C5D1</td>
</tr>
<tr>
<td></td>
<td>Channel 5</td>
<td>CPU1_C6D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU1_C6D1</td>
</tr>
<tr>
<td></td>
<td>Channel 6</td>
<td>CPU1_C7D0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPU1_C7D1</td>
</tr>
</tbody>
</table>
DIMM capacities.

- **MM**: Total memory capacity = Sum of all PMem capacities (DDR4 DIMMs operate as cache only and do not count toward the total memory capacity).

Table 5-11 PMem Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity per PMem (GB)</td>
<td>128</td>
</tr>
<tr>
<td></td>
<td>256</td>
</tr>
<tr>
<td></td>
<td>512</td>
</tr>
<tr>
<td>Rated speed (MT/s)</td>
<td>3,200</td>
</tr>
<tr>
<td></td>
<td>3,200</td>
</tr>
<tr>
<td></td>
<td>3,200</td>
</tr>
<tr>
<td>Operating voltage (V)</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>1.2</td>
</tr>
<tr>
<td>Maximum number of PMems supported in a server(^a)</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>16</td>
</tr>
<tr>
<td>Maximum capacity of PMems supported in a server (GB)(^b)</td>
<td>2,048</td>
</tr>
<tr>
<td></td>
<td>4,096</td>
</tr>
<tr>
<td></td>
<td>8,192</td>
</tr>
<tr>
<td>Actual speed (MT/s)</td>
<td>3,200</td>
</tr>
<tr>
<td></td>
<td>3,200</td>
</tr>
<tr>
<td></td>
<td>3,200</td>
</tr>
</tbody>
</table>

\(^a\): The maximum number of PMem supported is based on the 2-processor configuration.

\(^b\): The maximum capacity of PMem supported varies with the operating modes of PMem.

The above information is for reference only, consult your local Inspur sales representative for details.

### 4. Population Rules

- **General population rules for PMems**:
  - DDR4 DIMM types used with PMems include RDIMMs and LRDIMMs.
  - A server must use PMems with the same part number (P/N code).
  - In a server, DDR4 DIMMs used with PMems must have the same part number (P/N code).

- **Population rules for PMems in specific modes**:
  - **AD**: In a server, the recommended capacity ratio of DDR4 DIMMs to PMems is between 1:1 and 8:1.
  - **MM**: In a server, the recommended capacity ratio of DDR4 DIMMs to PMems is between 4:1 and 16:1.

### 5. DIMM Slot Location

Up to 16 PMems can be installed in a server, and PMems must be used with DDR4 DIMMs. PMem configuration must be compliant with the PMem population rules.
Figure 5-11 DIMM Slot Location

Table 5-12 PMem Population Rules

| Processor | Channel ID | Memory Slot | AD 8x8 Population | AD 12x8 Population | AD 16x2 Population | AD 16x8 Population | AD 16x16 Population | AD 24x4 Population |
|-----------|------------|-------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| CPU0      | Channel0   | CPU0_C0D0   | ●                 | ●                  | ●                  | ●                  | ●                  | ●                  |
| CPU0      | Channel0   | CPU0_C0D1   | ○                 | ○                  | ○                  | ○                  | ○                  | ○                  |
| CPU0      | Channel1   | CPU0_C1D0   | ●                 | ●                  | ●                  | ●                  | ●                  | ●                  |
| CPU0      | Channel1   | CPU0_C1D1   | ○                 | ○                  | ○                  | ○                  | ○                  | ○                  |
| CPU0      | Channel2   | CPU0_C2D0   | ●                 | ●                  | ●                  | ●                  | ●                  | ●                  |
| CPU0      | Channel2   | CPU0_C2D1   | ○                 | ○                  | ○                  | ○                  | ○                  | ○                  |
| CPU0      | Channel3   | CPU0_C3D0   | ○                 | ○                  | ●                  | ●                  | ●                  | ●                  |
| CPU0      | Channel3   | CPU0_C3D1   | ○                 | ○                  | ○                  | ○                  | ○                  | ○                  |
| CPU0      | Channel4   | CPU0_C4D0   | ●                 | ●                  | ●                  | ●                  | ●                  | ●                  |
| CPU0      | Channel4   | CPU0_C4D1   | ○                 | ○                  | ○                  | ○                  | ○                  | ○                  |
| CPU0      | Channel5   | CPU0_C5D0   | ○                 | ●                  | ●                  | ●                  | ●                  | ●                  |
| CPU0      | Channel5   | CPU0_C5D1   | ○                 | ○                  | ○                  | ○                  | ○                  | ○                  |
| CPU0      | Channel6   | CPU0_C6D0   | ●                 | ●                  | ●                  | ●                  | ●                  | ●                  |
| CPU0      | Channel6   | CPU0_C6D1   | ○                 | ○                  | ○                  | ○                  | ○                  | ○                  |
| CPU0      | Channel7   | CPU0_C7D0   | ○                 | ●                  | ●                  | ●                  | ●                  | ●                  |
| CPU0      | Channel7   | CPU0_C7D1   | ○                 | ○                  | ○                  | ○                  | ○                  | ○                  |
| CPU0      | Channel0   | CPU0_C0D0   | ●                 | ●                  | ●                  | ●                  | ●                  | ●                  |
| CPU0      | Channel0   | CPU0_C0D1   | ○                 | ○                  | ○                  | ○                  | ○                  | ○                  |
| CPU0      | Channel1   | CPU0_C1D0   | ●                 | ●                  | ●                  | ●                  | ●                  | ●                  |
| CPU0      | Channel1   | CPU0_C1D1   | ○                 | ○                  | ○                  | ○                  | ○                  | ○                  |
| CPU0      | Channel2   | CPU0_C2D0   | ●                 | ●                  | ●                  | ●                  | ●                  | ●                  |
| CPU0      | Channel2   | CPU0_C2D1   | ○                 | ○                  | ○                  | ○                  | ○                  | ○                  |
| CPU0      | Channel3   | CPU0_C3D0   | ○                 | ○                  | ●                  | ●                  | ●                  | ●                  |
| CPU0      | Channel3   | CPU0_C3D1   | ○                 | ○                  | ○                  | ○                  | ○                  | ○                  |
| CPU0      | Channel4   | CPU0_C4D0   | ●                 | ●                  | ●                  | ●                  | ●                  | ●                  |
| CPU0      | Channel4   | CPU0_C4D1   | ○                 | ○                  | ○                  | ○                  | ○                  | ○                  |
| CPU0      | Channel5   | CPU0_C5D0   | ○                 | ●                  | ●                  | ●                  | ●                  | ●                  |
| CPU0      | Channel5   | CPU0_C5D1   | ○                 | ○                  | ○                  | ○                  | ○                  | ○                  |
| CPU0      | Channel6   | CPU0_C6D0   | ●                 | ●                  | ●                  | ●                  | ●                  | ●                  |
| CPU0      | Channel6   | CPU0_C6D1   | ○                 | ○                  | ○                  | ○                  | ○                  | ○                  |
| CPU0      | Channel7   | CPU0_C7D0   | ○                 | ●                  | ●                  | ●                  | ●                  | ●                  |
| CPU0      | Channel7   | CPU0_C7D1   | ○                 | ○                  | ○                  | ○                  | ○                  | ○                  |

28
5.5 Storage

5.5.1 Drive Configurations

Table 5-13 Drive Configurations

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Front Drives</th>
<th>Internal Drives</th>
<th>Drive Management Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-Drive Configuration</td>
<td>8 × 2.5-inch NVMe drive</td>
<td>2 × M.2 SSD</td>
<td>Directly connected to CPUs</td>
</tr>
<tr>
<td>16-Drive Configuration</td>
<td>16 × 2.5-inch SAS/SATA drive</td>
<td>2 × M.2 SSD</td>
<td>SAS/SATA drives: 2 × 8i RAID controller card or 1 × 16i RAID controller card</td>
</tr>
</tbody>
</table>

**NOTE**

- A request for mixing NVMe, SAS and SATA drives shall be submitted to Inspur for a technical review.
- Under the NVIDIA framework, the device VMD function must be disabled. A hardware error will be recorded in the OS or BMC SEL log when NVMe hot plug is performed, which is normal and will not affect the function.

5.5.2 Drive Numbering

- NF5688M6 (16-Drive Configuration)
Figure 5-12 Drive Numbering

Table 5-14 Drive Number Identified by ISBMC and 16i RAID Controller Card

<table>
<thead>
<tr>
<th>Physical Drive No.</th>
<th>Drive No. Identified by the ISBMC</th>
<th>Drive No. Identified by the 16i RAID Controller Card</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
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<td>4</td>
<td>4</td>
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<td>14</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>
Table 5-15 Drive Number Identified by ISBMC and 2 × 8i RAID Controller Card

<table>
<thead>
<tr>
<th>Physical Drive No.</th>
<th>Drive No. Identified by the ISBMC</th>
<th>Drive No. Identified by the 2 × 8i RAID Controller Card</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
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<td>4</td>
<td>4</td>
<td>4</td>
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<tr>
<td>6</td>
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<td>14</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
<td>7</td>
</tr>
</tbody>
</table>

- NF5688M6 (8-Drive Configuration)

Figure 5-13 Drive Numbering
### 5.5.3 Drive LEDs

#### 1. SAS/SATA Drive LEDs

Figure 5-14 SAS/ SATA Drive LEDs

<table>
<thead>
<tr>
<th>Physical Drive No.</th>
<th>Drive No. Identified by the ISBMC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>

Table 5-16 SAS/SATA Drive LEDs

<table>
<thead>
<tr>
<th>Activity LED (marked with 1)</th>
<th>Error LED (marked with 2)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid green</td>
<td>Off</td>
<td>Drive present but not in use</td>
</tr>
<tr>
<td>Flashing green</td>
<td>Off</td>
<td>Drive present and in use</td>
</tr>
<tr>
<td>Flashing green</td>
<td>Solid pink</td>
<td>Copyback/Rebuild in progress (RAID created)</td>
</tr>
<tr>
<td>Solid green</td>
<td>Solid blue</td>
<td>Drive selected but not in use</td>
</tr>
<tr>
<td>Flashing green</td>
<td>Solid blue</td>
<td>Drive selected and in use</td>
</tr>
<tr>
<td>Off</td>
<td>Solid blue</td>
<td>Drive absent or failed (RAID not created), and selected</td>
</tr>
<tr>
<td>Off</td>
<td>Off</td>
<td>Drive absent or failed (RAID not created), and not selected</td>
</tr>
<tr>
<td>Any status</td>
<td>Solid red</td>
<td>Drive absent or failed (RAID created)</td>
</tr>
</tbody>
</table>
2. NVMe Drive LEDs

Figure 5-15 NVMe Drive LEDs

Table 5-17 NVMe Drive LEDs

<table>
<thead>
<tr>
<th>Activity LED (marked with 1)</th>
<th>Error LED (marked with 2)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid green</td>
<td>Off</td>
<td>Drive present but not in use</td>
</tr>
<tr>
<td>Flashing green</td>
<td>Off</td>
<td>Drive present and in use</td>
</tr>
<tr>
<td>Flashing green</td>
<td>Solid pink</td>
<td>Copyback/Rebuild/Initializing/Verifying in progress</td>
</tr>
<tr>
<td>Solid green</td>
<td>Solid blue</td>
<td>Drive selected but not in use</td>
</tr>
<tr>
<td>Flashing green</td>
<td>Solid blue</td>
<td>Drive selected and in use</td>
</tr>
<tr>
<td>Any status</td>
<td>Solid red</td>
<td>Drive failed</td>
</tr>
<tr>
<td>Off</td>
<td>Off</td>
<td>Drive absent</td>
</tr>
</tbody>
</table>

5.5.4 RAID Controller Cards

The RAID controller card provides functions such as RAID configuration, RAID level migration, and drive roaming. For specific RAID controller card options, consult your local Inspur sales representative or refer to 7.2 Hardware Compatibility.

5.6 Network

NICs provide network expansion capabilities.

- The OCP I/O slot supports the OCP NIC 3.0 card. Users can select the OCP NIC 3.0 card based on their needs.
- The PCIe expansion slots support PCIe NICs. Users can select the PCIe cards based on their needs.
- For specific network options, consult your local Inspur sales representative or refer to 7.2 Hardware Compatibility.
5.7 I/O Expansion

5.7.1 PCIe Cards

The PCIe cards provide system expansion capabilities.

- The server supports up to 13 PCIe 4.0 expansion slots, including 1 dedicated slot for the OCP NIC 3.0 card.
- For specific PCIe card options, consult your local Inspur sales representative or refer to 7.2 Hardware Compatibility.

5.7.2 PCIe Slots

1. PCIe Slot Location

Figure 5-16 PCIe Slots (16-Drive Configuration)

<table>
<thead>
<tr>
<th>Item</th>
<th>Slot Type</th>
<th>Uplink Port</th>
<th>Hot-Swappable</th>
</tr>
</thead>
<tbody>
<tr>
<td>/</td>
<td>OCP NIC 3.0</td>
<td>CPU0</td>
<td>No</td>
</tr>
<tr>
<td>Slot 0</td>
<td>PCIe x16</td>
<td>CPU0</td>
<td>No</td>
</tr>
<tr>
<td>Slot 1</td>
<td>PCIe x16</td>
<td>CPU0_SwitchA</td>
<td>No</td>
</tr>
<tr>
<td>Slot 2</td>
<td>PCIe x16</td>
<td>CPU0_SwitchB</td>
<td>No</td>
</tr>
<tr>
<td>Slot 3</td>
<td>PCIe x16</td>
<td>CPU1_SwitchC</td>
<td>No</td>
</tr>
<tr>
<td>Slot 4</td>
<td>PCIe x16</td>
<td>CPU1_SwitchD</td>
<td>No</td>
</tr>
<tr>
<td>Slot 5</td>
<td>PCIe x16</td>
<td>CPU1</td>
<td>No</td>
</tr>
</tbody>
</table>
5.8 PSUs

- The server supports up to 6 PSUs.
- The server supports AC or DC power input.
- The PSUs are hot-swappable.
- The server supports 6 PSUs in 3+3 redundancy.
- The server must use PSUs with the same part number (P/N code).
5.9 Fans

- The server supports 12 fan modules (8086).
- The fans are hot-swappable.
- The server supports fans in N+1 redundancy, which means that the server can continue working properly when a single fan fails.
- The server supports intelligent fan speed control.
- The server must use fans with the same part number (P/N code).
5.10 LCD Module (Optional)

5.10.1 Function

The LCD module reads server-related information from the BMC, such as the operating status of processors and memories, network status, logs, and alerts, and transmits the information to client mobile terminals via Bluetooth.

The LCD module synchronizes information with the ISBMC through I²C and can display information on an LCD screen or in the app. The server’s basic information, system status and alert diagnosis can be displayed in the app via Bluetooth, facilitating the operation and maintenance.

Figure 5-20 How LCD Subsystem Works
5.10.2 Interface

Figure 5-21 App Home Screen
5.11 Boards

5.11.1 Motherboard

Figure 5-22 Motherboard Layout

<table>
<thead>
<tr>
<th>Item</th>
<th>Feature</th>
<th>Item</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TPM Connector</td>
<td>2</td>
<td>BMC_TF Card Slot</td>
</tr>
<tr>
<td>3</td>
<td>BMC Management Network Port Connector</td>
<td>4</td>
<td>CPU1</td>
</tr>
<tr>
<td>5</td>
<td>DIMM Slots (CPU1)</td>
<td>6</td>
<td>Slimline x8 Connector × 2</td>
</tr>
<tr>
<td>7</td>
<td>BMC Management Network Port Connector</td>
<td>8</td>
<td>BMC Management Network Port</td>
</tr>
<tr>
<td>9</td>
<td>BMC Serial Port</td>
<td>10</td>
<td>System Serial Port</td>
</tr>
<tr>
<td>11</td>
<td>M.2 SSD Connector × 2</td>
<td>12</td>
<td>Motherboard Handle</td>
</tr>
<tr>
<td>13</td>
<td>OCP 3.0 Power Connector</td>
<td>14</td>
<td>Intrusion Switch Connector</td>
</tr>
<tr>
<td>15</td>
<td>Slimline x8 Connector × 2</td>
<td>16</td>
<td>DIMM Slots (CPU0)</td>
</tr>
<tr>
<td>17</td>
<td>CPU0</td>
<td>18</td>
<td>SYS_TF Card Slot</td>
</tr>
<tr>
<td>19</td>
<td>Power Button</td>
<td>20</td>
<td>RAID Key Connector</td>
</tr>
<tr>
<td>21</td>
<td>CLR_CMOS</td>
<td>22</td>
<td>Battery Socket</td>
</tr>
<tr>
<td>23</td>
<td>OCP Retimer Card Connector</td>
<td>24</td>
<td>XDP Connector</td>
</tr>
</tbody>
</table>
### 5.11.2 Drive Backplane

#### 1. Front Drive Backplane

Figure 5-23 8 × 2.5-inch Drive Backplane (8 × SAS/SATA/NVMe Drive)

<table>
<thead>
<tr>
<th>Item</th>
<th>Feature</th>
<th>Item</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power Connector</td>
<td>2</td>
<td>Slimline x8 Connector 0</td>
</tr>
<tr>
<td>3</td>
<td>Slimline x4 Connector 0</td>
<td>4</td>
<td>Slimline x8 Connector 1</td>
</tr>
<tr>
<td>5</td>
<td>VPP Connector</td>
<td>6</td>
<td>Slimline x4 Connector 1</td>
</tr>
<tr>
<td>7</td>
<td>Slimline x8 Connector 2</td>
<td>8</td>
<td>Slimline x8 Connector 3</td>
</tr>
<tr>
<td>9</td>
<td>BMC I²C Connector</td>
<td>10</td>
<td>CPLD JTAG Connector</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>Motherboard Handle</td>
</tr>
<tr>
<td>26</td>
<td>Bridge Module Connector</td>
</tr>
</tbody>
</table>
5.12 GPUs

Figure 5-24 GPU Layout
# 6 Product Specifications

## 6.1 Technical Specifications

Table 6-1 Technical Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form Factor</td>
<td>6U rack server</td>
</tr>
<tr>
<td>Chipset</td>
<td>Intel® C621A</td>
</tr>
<tr>
<td><strong>Processor</strong></td>
<td>Supports 2 processors</td>
</tr>
<tr>
<td></td>
<td>• 3rd Gen Intel® Xeon® Scalable processors (Ice Lake)</td>
</tr>
<tr>
<td></td>
<td>• Integrated memory controllers and 8 memory channels per processor</td>
</tr>
<tr>
<td></td>
<td>• Integrated PCIe controllers with PCIe 4.0 supported and 64 lanes per processor</td>
</tr>
<tr>
<td></td>
<td>• 3 UPI links at up to 11.2 GT/s</td>
</tr>
<tr>
<td></td>
<td>• Up to 40 cores</td>
</tr>
<tr>
<td></td>
<td>• Max. Turbo frequency at 3.7 GHz</td>
</tr>
<tr>
<td></td>
<td>• TDP up to 270 W</td>
</tr>
<tr>
<td>Note:</td>
<td>The information above is for reference only, see <a href="#">7.2 Hardware Compatibility</a> for details.</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>Supports 32 DIMM slots</td>
</tr>
<tr>
<td></td>
<td>• Up to 32 DDR4 DIMMs</td>
</tr>
<tr>
<td></td>
<td>- RDIMM or LRDIMM</td>
</tr>
<tr>
<td></td>
<td>- Up to 3,200 MT/s.</td>
</tr>
<tr>
<td></td>
<td>- Mixing DDR4 DIMMs of different types (RDIMM and LRDIMM) and specifications (such as capacity, bit width, rank, and height) is not supported.</td>
</tr>
<tr>
<td></td>
<td>- A server must use DDR4 DIMMs with the same part number (P/N code).</td>
</tr>
<tr>
<td></td>
<td>• Up to 16 PMems</td>
</tr>
<tr>
<td></td>
<td>- PMems must be used with DDR4 DIMMs and up to</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>1 PMem can be installed in each memory channel.</td>
</tr>
<tr>
<td></td>
<td>- Up to 3,200 MT/s.</td>
</tr>
<tr>
<td></td>
<td>- Mixing PMems of different specifications (such as capacity and rank) is not supported.</td>
</tr>
<tr>
<td>Note:</td>
<td>The information above is for reference only, see 7.2 Hardware Compatibility for details.</td>
</tr>
<tr>
<td>Storage</td>
<td>Supports multiple drive configurations, see 5.5.1 Drive Configurations for details.</td>
</tr>
<tr>
<td></td>
<td>- Supports 2 M.2 SSDs</td>
</tr>
<tr>
<td>Notes:</td>
<td>It is recommended that the M.2 SSD is only used as the boot device for installing the OS.</td>
</tr>
<tr>
<td></td>
<td>The M.2 SSD has low endurance and cannot be used as a data storage device.</td>
</tr>
<tr>
<td></td>
<td>For data storage, use enterprise-class SSDs with higher DWPD.</td>
</tr>
<tr>
<td></td>
<td>Write-intensive business software will cause the M.2 SSD to reach write endurance and wear out; therefore, the M.2 SSD is not recommended for such</td>
</tr>
<tr>
<td></td>
<td>business scenarios.</td>
</tr>
<tr>
<td></td>
<td>Do not use the M.2 SSD as caching.</td>
</tr>
<tr>
<td></td>
<td>- Supports hot-swap SAS/SATA/NVMe drives</td>
</tr>
<tr>
<td>Notes:</td>
<td>VMD is disabled by default in BIOS.</td>
</tr>
<tr>
<td></td>
<td>- Supports multiple models of RAID controller cards. See 7.2 Hardware Compatibility for details</td>
</tr>
<tr>
<td>Network</td>
<td>OCP NIC 3.0 card</td>
</tr>
<tr>
<td></td>
<td>- Supports 1 OCP NIC 3.0 card, which can be selected as required</td>
</tr>
<tr>
<td></td>
<td>- Non-hot-swappable</td>
</tr>
<tr>
<td>I/O Expansion</td>
<td>Supports PCIe expansion slots</td>
</tr>
<tr>
<td></td>
<td>- 8-drive configuration: 1 dedicated expansion slot for an OCP NIC 3.0 card and 12 standard PCIe expansion slots</td>
</tr>
<tr>
<td></td>
<td>- 16-drive configuration: 1 dedicated expansion slot for an OCP NIC 3.0 card and 6 standard PCIe expansion slots</td>
</tr>
<tr>
<td>Port</td>
<td>Supports multiple ports</td>
</tr>
<tr>
<td></td>
<td>- Front panel ports:</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
|                       | – 1 USB 2.0 port  
|                       | – 1 USB 3.0 port  
|                       | – 1 VGA port  
|                       | – 1 system serial port  
|                       | – 1 BMC management network port  
|                       | – 1 BMC serial port  
|                       | • Rear panel ports:  
|                       | – 1 USB 3.0 port  
|                       | – 1 VGA port  
| Note:                | OS installation on the USB storage media is not recommended.                                                                                     |
| Graphics Card         | Integrated graphics chips on the motherboard with a video memory of 64 MB and a maximum 16M color resolution of 1,920 × 1,200 at 60 Hz  
| Notes:               | The integrated graphics card can support a maximum resolution of 1,920 × 1,200 only when the graphics driver matching the OS version is installed; otherwise only the default resolution of the OS is supported.  
|                       | When the front and rear VGA ports are both connected to monitors, only the monitor connected to the front VGA port works.                    |
| System Management     | • UEFI  
|                       | • ISBMC  
|                       | • NC-SI  
|                       | • Inspur Physical Infrastructure Manager                                                                                                        |
| Security Feature      | • Intel® Platform Firmware Resilience (PFR)  
|                       | • Trusted Platform Module (TPM 2.0) and Trusted Cryptography Module (TCM)  
|                       | • Intel® Trusted Execution Technology  
|                       | • Firmware update mechanism based on digital signatures  
|                       | • UEFI Secure Boot  
|                       | • Hierarchical BIOS password protection  
|                       | • BIOS Secure Flash and BIOS Lock Enable (BLE)                                                                                                   |
### Item

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• BMC and BIOS dual-image mechanism</td>
</tr>
<tr>
<td></td>
<td>• Chassis intrusion detection</td>
</tr>
</tbody>
</table>

## 6.2 Environmental Specifications

Table 6-2 Environmental Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| Temperature¹,²,³ | • Operating: 10°C to 35°C (50°F to 95°F)  
• Storage (packed): -40°C to +60°C (-40°F to +140°F) |
| Relative Humidity (RH, non-condensing) | • Operating: 20% - 80% RH  
• Storage (packed): 20% - 93% RH |
| Operating Altitude | ≤ 3,050 m (10,000 ft) |

**Corrosive Gaseous Contaminants**

Maximum growth rate of corrosion film thickness:

• Copper coupon: 300 Å/month (compliant with the gaseous corrosivity level of G1 defined in ANSI/ISA-71.04-2013)

• Silver coupon: 200 Å/month (compliant with the gaseous corrosivity level of G1 defined in ANSI/ISA-71.04-2013)

**Noise levels⁴,⁵,⁶**

Noise emissions are measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109). Listed are the declared A-weighted sound power levels (LWAd) and the declared average bystander position A-weighted sound pressure levels (LpAm) at a server operating temperature of 23°C (73.4°F):

• Idle:
  - LWAd: 6.7 B for maximum configuration
  - LpAm: 64.0 dBA for maximum configuration

• Operating:
Parameter | Description
--- | ---
- LWAd: 7.6 B for maximum configuration
- LpAm: 73.4 dBA for maximum configuration

**CAUTION**

1. 10°C to 35°C (50°F to 95°F) is the standard operating temperature.

2. For temperatures between 10°C and 35°C (50°F and 95°F), de-rate the maximum allowable temperature by 1°C per 305 m (1°F per 556 ft) above sea level. The maximum temperature gradient is 20°C/h (36°F/h) and the maximum operating altitude is 3,050 m (10,000 ft), both varying with server configuration.

3. Any fan failure or operations above 30°C (86°F) may lead to system performance degradation.

4. This document lists the LWAd and LpAm of the product at a 23°C (73.4°F) ambient environment. All measurements are conducted in conformance with ISO 7779 (ECMA 74) and declared in conformance with ISO 9296 (ECMA 109). The listed sound levels apply to the maximum configuration. Additional options may result in increased sound levels. Contact your sales representative for more information.

5. The sound levels shown here were measured based on the maximum configuration of a specific server. Sound levels vary with server configuration. These values are for reference only and subject to change without notice.

6. Product conformance to cited normative standards is based on sample testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.

### 6.3 Physical Specifications

Table 6-3 Physical Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (W × H × D)</td>
<td>• With mounting ears: 447 × 263.9 × 850 mm (17.60 × 10.39 × 33.46 in.)</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Installation Dimension Requirements</strong></td>
<td>Installation requirements for the cabinet are as follows:</td>
</tr>
<tr>
<td></td>
<td>• General cabinet compliant with the International Electrotechnical Commission 297 (IEC 297) standard</td>
</tr>
<tr>
<td></td>
<td>• Width: 482.6 mm (19 in.)</td>
</tr>
<tr>
<td></td>
<td>• Depth: Above 1,000 mm (39.37 in.)</td>
</tr>
<tr>
<td></td>
<td>Installation requirements for the server rails are as follows:</td>
</tr>
<tr>
<td></td>
<td>• L-bracket rails: only applicable to Inspur cabinets</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>Net weight (maximum configuration):</td>
</tr>
<tr>
<td></td>
<td>• 88 kg (194.01 lbs)</td>
</tr>
<tr>
<td></td>
<td>Gross weight (maximum configuration, including chassis, packaging, rails, and accessory box):</td>
</tr>
<tr>
<td></td>
<td>• 126 kg (277.78 lbs)</td>
</tr>
<tr>
<td><strong>Power Consumption</strong></td>
<td>Power consumption varies with configurations. Consult Inspur Customer Service for details.</td>
</tr>
</tbody>
</table>
7 Operating System and Hardware Compatibility

This section describes the OS and hardware compatibility of the NF5688M6. For the latest compatibility configuration and the component models not listed in this manual, contact your local Inspur sales representative.

**IMPORTANT**

Using incompatible components may cause the server to work abnormally, and such failures are not covered by technical support or warranty.

The server performance is strongly influenced by application software, middleware and hardware. The subtle differences in them may lead to performance variation in the application and test software.

- For requirements on the performance of specific application software, contact Inspur sales representatives to confirm the detailed hardware and software configurations during the pre-sales phase.
- For requirements on hardware performance consistency, define specific configuration requirements (for example, specific drive models, RAID controller cards, or firmware versions) during the pre-sales phase.

7.1 Supported Operating Systems

Table 7-1 Supported Operating Systems

<table>
<thead>
<tr>
<th>OS</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Hat</td>
<td>Red Hat Enterprise Linux 8.2</td>
</tr>
<tr>
<td>CentOS</td>
<td>CentOS 8.2</td>
</tr>
<tr>
<td>Ubuntu</td>
<td>Ubuntu 18.04.1</td>
</tr>
<tr>
<td></td>
<td>Ubuntu 20.04.1</td>
</tr>
<tr>
<td>Debian</td>
<td>Debian 9.x</td>
</tr>
</tbody>
</table>

**IMPORTANT**

During the hard disk/RAID test for SUSE OS certification, the "SCSI Controller" dialog box will pop up, indicating that at least one device shall be connected. This is normal and will not affect normal use.
7.2 Hardware Compatibility

7.2.1 CPU Specifications

The NF5688M6 supports 2 Intel® Xeon® Scalable processors.

Table 7-2 CPU Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Cores</th>
<th>Threads</th>
<th>Base Frequency</th>
<th>Max. Turbo Frequency</th>
<th>Cache</th>
<th>TDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>8380</td>
<td>40</td>
<td>80</td>
<td>2.3 GHz</td>
<td>3.4 GHz</td>
<td>60 MB</td>
<td>270 W</td>
</tr>
<tr>
<td>8368</td>
<td>38</td>
<td>76</td>
<td>2.3 GHz</td>
<td>3.4 GHz</td>
<td>57 MB</td>
<td>270 W</td>
</tr>
<tr>
<td>8358</td>
<td>32</td>
<td>64</td>
<td>2.6 GHz</td>
<td>3.4 GHz</td>
<td>48 MB</td>
<td>250 W</td>
</tr>
<tr>
<td>8360Y</td>
<td>36</td>
<td>72</td>
<td>2.4 GHz</td>
<td>3.5 GHz</td>
<td>54 MB</td>
<td>250 W</td>
</tr>
<tr>
<td>8358P</td>
<td>32</td>
<td>64</td>
<td>2.6 GHz</td>
<td>3.4 GHz</td>
<td>48 MB</td>
<td>240 W</td>
</tr>
<tr>
<td>8352Y</td>
<td>32</td>
<td>64</td>
<td>2.2 GHz</td>
<td>3.4 GHz</td>
<td>48 MB</td>
<td>205 W</td>
</tr>
<tr>
<td>8352S</td>
<td>32</td>
<td>64</td>
<td>2.2 GHz</td>
<td>3.4 GHz</td>
<td>48 MB</td>
<td>205 W</td>
</tr>
<tr>
<td>6348</td>
<td>28</td>
<td>56</td>
<td>2.6 GHz</td>
<td>3.5 GHz</td>
<td>42 MB</td>
<td>235 W</td>
</tr>
<tr>
<td>6338</td>
<td>32</td>
<td>64</td>
<td>2.0 GHz</td>
<td>3.2 GHz</td>
<td>48 MB</td>
<td>205 W</td>
</tr>
</tbody>
</table>

7.2.2 DIMM Specifications

The NF5688M6 supports up to 32 DDR4 DIMMs. Each processor supports 8 memory channels with 2 memory slots per memory channel. The server supports RDIMMs/LRDIMMs/BPS DIMMs.

Table 7-3 DIMM Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Capacity</th>
<th>Frequency</th>
<th>Data Width</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDIMM</td>
<td>16 GB</td>
<td>3,200</td>
<td>x72</td>
<td>1R x4/2R x8</td>
</tr>
<tr>
<td>RDIMM</td>
<td>16 GB</td>
<td>2,933</td>
<td>x72</td>
<td>1R x4/2R x8</td>
</tr>
<tr>
<td>RDIMM</td>
<td>32 GB</td>
<td>3,200</td>
<td>x72</td>
<td>2R x4</td>
</tr>
<tr>
<td>RDIMM</td>
<td>32 GB</td>
<td>2,933</td>
<td>x72</td>
<td>2R x4</td>
</tr>
<tr>
<td>RDIMM</td>
<td>64 GB</td>
<td>3,200</td>
<td>x72</td>
<td>2R x4</td>
</tr>
<tr>
<td>RDIMM</td>
<td>64 GB</td>
<td>2,933</td>
<td>x72</td>
<td>2R x4</td>
</tr>
<tr>
<td>RDIMM</td>
<td>128 GB</td>
<td>2,933</td>
<td>x72</td>
<td>4R x4</td>
</tr>
</tbody>
</table>

7.2.3 Drive Specifications

Table 7-4 SSD Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Max. Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SATA SSD</td>
<td>240 GB</td>
<td>16</td>
</tr>
</tbody>
</table>
### Table 7-5 U.2 NVMe SSD Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Max. Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.2 NVMe SSD</td>
<td>960 GB</td>
<td>8</td>
</tr>
<tr>
<td>U.2 NVMe SSD</td>
<td>1 TB</td>
<td>8</td>
</tr>
<tr>
<td>U.2 NVMe SSD</td>
<td>1.6 TB</td>
<td>8</td>
</tr>
<tr>
<td>U.2 NVMe SSD</td>
<td>2 TB</td>
<td>8</td>
</tr>
<tr>
<td>U.2 NVMe SSD</td>
<td>3.2 TB</td>
<td>8</td>
</tr>
<tr>
<td>U.2 NVMe SSD</td>
<td>4 TB</td>
<td>8</td>
</tr>
<tr>
<td>U.2 NVMe SSD</td>
<td>6.4 TB</td>
<td>8</td>
</tr>
<tr>
<td>U.2 NVMe SSD</td>
<td>7.68 TB</td>
<td>8</td>
</tr>
<tr>
<td>U.2 NVMe SSD</td>
<td>8 TB</td>
<td>8</td>
</tr>
</tbody>
</table>

### Table 7-6 M.2 SSD Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Max. Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.2 SATA SSD</td>
<td>240 GB</td>
<td>2</td>
</tr>
<tr>
<td>M.2 SATA SSD</td>
<td>480 GB</td>
<td>2</td>
</tr>
<tr>
<td>M.2 SATA SSD</td>
<td>960 GB</td>
<td>2</td>
</tr>
<tr>
<td>M.2 SATA SSD</td>
<td>1.92 TB</td>
<td>2</td>
</tr>
</tbody>
</table>

### 7.2.4 SAS/RAID Controller Card Specifications

Table 7-7 SAS/RAID Controller Card Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Manufacturer</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAID Controller Card</td>
<td>Inspur</td>
<td>PM8204-8i_2GB</td>
</tr>
<tr>
<td></td>
<td>Broadcom</td>
<td>9460-8i_2GB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9460-16i_4GB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9361-8i_2GB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9361-16i_2GB</td>
</tr>
<tr>
<td>SAS Controller Card</td>
<td>Broadcom</td>
<td>SAS3008</td>
</tr>
</tbody>
</table>
7.2.5 NIC Specifications

Table 7-8 OCP NIC Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Speed (Gb/s)</th>
<th>Network Port Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCP NIC 3.0 Card</td>
<td>MCX566ACDAB</td>
<td>100</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>MCX562A-ACAB</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>MCX4121A-ACAT</td>
<td>25</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 7-9 PCIe NIC Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Speed (Gb/s)</th>
<th>Network Port Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCIe NIC</td>
<td>MCX516A-CCAT</td>
<td>100</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>MCX515A-CCAT</td>
<td>100</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>MCX512A-ACAT</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>82599ES</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>X550T2</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>I350-AM2</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

7.2.6 HCA Card Specifications

Table 7-10 HCA Card Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Speed (Gb/s)</th>
<th>Port Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCA Card</td>
<td>MCX653105A-ECAT</td>
<td>100</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>MCX653106A-ECAT</td>
<td>100</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>MCX653105A-HDAT</td>
<td>200</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>MCX653106A-HDAT</td>
<td>200</td>
<td>2</td>
</tr>
</tbody>
</table>

7.2.7 GPU Specifications

Table 7-11 GPU Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Model &amp; Description</th>
<th>Max. Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPU</td>
<td>GPU_NV_40G_Tesla-A100-SXM4</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>GPU_NV_80G_Tesla-A100-SXM4</td>
<td>8</td>
</tr>
</tbody>
</table>

7.2.8 PSU Specifications

The NF5688M6 supports up to six 80 PLUS Platinum PSUs in 3+3 redundancy that follow the Intel® Common Redundant Power Supply (CRPS) specification with
standard electrical and structural design. The PSUs are hot-swappable with the rated input voltage of 110 - 230 VAC and 240 VDC. The PSUs will lock automatically after being inserted into the power bay, enabling tool-less maintenance.

Table 7-12 PSU Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Power</th>
<th>Efficiency Rating</th>
<th>Input Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>GW-CRPS3000L5</td>
<td>3,000 W</td>
<td>Platinum</td>
<td>110 - 230 VAC and 240 VDC (When the input voltage is 110 V, the output power is 1,250 W).</td>
</tr>
</tbody>
</table>

Table 7-13 Rated Voltage and Operating Voltage Range

<table>
<thead>
<tr>
<th>Rated Voltage Range</th>
<th>Operating Voltage Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>110 - 230 VAC</td>
<td>100 - 264 VAC</td>
</tr>
<tr>
<td>240 VDC</td>
<td>180 - 310 VDC</td>
</tr>
</tbody>
</table>
8 Regulatory Information

8.1 Safety

8.1.1 General

- Strictly comply with local laws and regulations while installing the equipment. The safety instructions in this section are only a supplement to local safety regulations.

- To ensure personal safety and to prevent damage to the equipment, all personnel must strictly observe the safety instructions in this section and on the device labels.

- People performing specialized activities, such as electricians and electric forklift operators, must possess qualifications recognized by the local government or authorities.

8.1.2 Personal Safety

- Only personnel certified or authorized by Inspur are allowed to perform the installation procedures.

- Stop any operation that could cause personal injury or equipment damage. Report to the project manager and take effective protective measures.

- Working during thunderstorms, including but not limited to handling equipment, installing cabinets and installing power cords, is forbidden.

- Do not carry the weight over the maximum load per person allowed by local laws or regulations. Arrange appropriate installation personnel and do not overburden them.

- Installation personnel must wear clean work clothes, work gloves, safety helmets and safety shoes, as shown in Figure 8-1.
Before touching the equipment, put on ESD clothes and ESD gloves or an ESD wrist strap, and remove any conductive objects such as wrist watches or metal jewelry, as shown in Figure 8-2, in order to avoid electric shock or burns.

How to put on an ESD strap (Figure 8-3).

1. Put your hand through an ESD wrist strap.
2. Tighten the strap buckle to ensure a snug fit.
3. Plug the alligator clip of the ESD wrist strap into the corresponding jack on the grounded cabinet or grounded chassis.
8.1.3 Equipment Safety

- Use tools correctly to avoid personal injury.
- When moving or lifting equipment above shoulder height, use lifting devices and other tools as necessary to avoid personal injury or equipment damage due to equipment slippage.
- The power sources of the server carry a high voltage. Direct contact or indirect contact through damp objects with the high-voltage power source is fatal.
- To ensure personal safety, ground the server before connecting power.
- When using ladders, always have someone hold and guard the bottom of the ladders. In order to prevent injury, never use a ladder alone.
- When connecting, testing or replacing optical fiber cable, avoid looking into the optical port without eye protection in order to prevent eye damage from laser light.
To ensure equipment safety, always ground the equipment before powering it on.

8.1.4 Transportation Precautions

Contact the manufacturer for precautions before transportation as improper transportation may damage the equipment. The precautions include but not limited to:

- Use a trusted logistics company to move all equipment. The transportation process must comply with international transportation standards for electronic equipment. Always keep the equipment being transported upright. Avoid collision, moisture, corrosion, packaging damage or contamination.
- Transport the equipment in its original packaging.
- If the original packaging is unavailable, separately package heavy and bulky components (such as chassis, blade servers and blade switches), and fragile components (such as optical modules and PCIe cards).
- Power off all equipment before shipping.

8.1.5 Manual Handling Weight Limits

CAUTION

Observe local laws or regulations regarding the manual handling weight limits per person. The limits shown on the equipment and in the document are recommendations only.

Table 8-1 lists the manual handling weight limits per person specified by some organizations.

<table>
<thead>
<tr>
<th>Organization</th>
<th>Weight Limit (kg/lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Committee for Standardization (CEN)</td>
<td>25/55.13</td>
</tr>
<tr>
<td>International Organization for Standardization (ISO)</td>
<td>25/55.13</td>
</tr>
<tr>
<td>National Institute for Occupational Safety and Health (NIOSH)</td>
<td>23/50.72</td>
</tr>
<tr>
<td>Health and Safety Executive (HSE)</td>
<td>25/55.13</td>
</tr>
</tbody>
</table>
| General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China (AQSIQ) | Male: 15/33.08
  Female: 10/22.05                                                           |
8.2 Warranty

For information about warranty policy, refer to Chapter 9 Inspur Limited Warranty in Inspur Server NF5688M6 User Manual.
9 System Management

9.1 Intelligent Management System ISBMC

ISBMC, an Inspur self-developed remote server management system, supports mainstream management specifications in the industry such as IPMI 2.0 and Redfish 1.8. ISBMC features high operational reliability, easy serviceability for different business scenarios, accurate and comprehensive fault diagnosis capabilities, and industry-leading security reinforcement capabilities.

ISBMC supports:

- IPMI 2.0
- Redfish 1.8
- SNMP v1/v2c/v3
- HTML5/Java remote consoles (Keyboard Video Mouse)
- remote virtual media
- login via web browsers
- intelligent fault diagnosis

Table 9-1 ISBMC Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management Interface</td>
<td>Supports extensive remote management interfaces for various server O&amp;M scenarios. The supported interfaces include:</td>
</tr>
<tr>
<td></td>
<td>- IPMI</td>
</tr>
<tr>
<td></td>
<td>- SSH CLI</td>
</tr>
<tr>
<td></td>
<td>- SNMP</td>
</tr>
<tr>
<td></td>
<td>- HTTPS</td>
</tr>
<tr>
<td></td>
<td>- Web GUI</td>
</tr>
<tr>
<td></td>
<td>- Redfish</td>
</tr>
<tr>
<td></td>
<td>- RESTful</td>
</tr>
<tr>
<td></td>
<td>- DCMI</td>
</tr>
<tr>
<td></td>
<td>- Syslog</td>
</tr>
</tbody>
</table>

58
<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accurate and Intelligent Fault Location</td>
<td>IDL, a self-developed fault diagnosis system, offers accurate and comprehensive hardware fault location capabilities, and outputs detailed fault causes and handling suggestions.</td>
</tr>
<tr>
<td>Alert Management</td>
<td>Supports rich automatic remote alert capabilities, including proactive alerting mechanisms such as SNMP Trap (v1/v2c/v3), email alerts and syslog remote alerts to ensure 24 x 7 reliability.</td>
</tr>
<tr>
<td>Remote Console KVM</td>
<td>Supports HTML5- and Java-based remote console to remotely control and operate the monitor/mouse/keyboard of the server, providing highly available remote management capabilities without on-site operation.</td>
</tr>
<tr>
<td>Virtual Network Console (VNC)</td>
<td>Supports mainstream third-party VNC clients without relying on Java, improving management flexibility.</td>
</tr>
<tr>
<td>Remote Virtual Media</td>
<td>Supports virtualizing images, USB devices, folders and local media devices as media devices of remote servers, simplifying OS installation, file sharing, and other O&amp;M tasks.</td>
</tr>
<tr>
<td>Web GUI</td>
<td>Supports the visual management interface developed by Inspur, displaying abundant information of the server and components, and offers easy-to-use Web GUIs.</td>
</tr>
<tr>
<td>Crash Screenshot and Manual Screenshot</td>
<td>Supports automatic crash screenshot with the last screen before crash saved, and provides manual screenshot, which can quickly capture the screen for easy inspection at scheduled time.</td>
</tr>
<tr>
<td>Dual-Flash and Dual-Image</td>
<td>Supports dual flash and dual image, enabling automatic flash failover in case of software faults or flash damage, improving operational reliability.</td>
</tr>
<tr>
<td>Power Capping</td>
<td>Supports power capping, increasing deployment density and reducing energy consumption.</td>
</tr>
<tr>
<td>IPv4/IPv6</td>
<td>Supports both IPv4 and IPv6, enhancing network deployment flexibility.</td>
</tr>
<tr>
<td>Auto-Switching of Management Network Port</td>
<td>Supports auto-switching between the dedicated management network port and shared management network port, providing customers with flexible network deployment solutions for different management network deployment scenarios.</td>
</tr>
</tbody>
</table>
| ISBMC Self-Diagnosis and Self-Recovery System | • Supports the reliable dual watchdog mechanism for hardware and software, enabling automatic restoration of BMC in case of BMC abnormality  
• Provides a thermal protection mechanism, which is automatically triggered when the BMC is abnormal to |
<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
</table>
|                               | ensure that the fan operates at safe speeds to avoid system overheating  
|                               | • Supports self-diagnosis of processors, memory modules, and storage devices of ISBMC, and automatically cleans the workload to restore to normal when the device usage rate is too high |
| Power Supply Control          | Supports virtual power buttons for startup, shutdown, restart, and restart after shutdown.                                                                                                                  |
| UID LED and Remote Control LED| Supports remote lighting of the UID LED for locating the server in the server room, and supports remote control LED. The UID LED flashes when a user remotely logs in via web, KVM, or SSH to inform the on-site personnel that an administrator is accessing the server |
| Secure Firmware Update        | Supports firmware update based on secure digital signatures, mismatch prevention mechanism for firmware from different manufacturers and firmware for different server models, and firmware update of BMC/BIOS/CPLD/PSU |
| Serial Port Redirection       | Supports remote redirection of the system serial port, BMC serial port and other serial ports, and directs the server-side serial port output to the local administrator via the network for server debugging |
| Storage Information Display   | Displays RAID logical array information and drive information, supports remote RAID creation for improved deployment efficiency                                                                             |
| User Role Management          | Supports user detail management based on user roles and flexible creation of user roles with different privileges, and provides more user roles to allow administrators to grant different privileges to O&M personnel |
| Security Features             | Adopts the industry-leading Inspur server security baseline standard V2.0. SSH, HTTPS, SNMP and IPMI use secure and reliable algorithms. ISBMC offers capabilities including secure update and boot and security reinforcement mechanisms such as anti-replay, anti-injection, and anti-brute force. |

9.2 Inspur Physical Infrastructure Manager (ISPIM)

The NF5688M6 server is compatible with the latest version of Inspur Physical
Infrastructure Manager (ISPIM).

The independently developed ISPIM for data centers features asset management, monitoring, inspection, energy consumption management and stateless management. It also provides interfaces such as Restful and SNMP for easy integration and interfacing. ISPIM has the following key features:

- Lightweight deployment in multiple scenarios and full lifecycle management of devices
- High reliability and on-demand node scalability enabled by 1 to N data collectors
- Intelligent asset management and real-time tracking of asset changes
- Comprehensive monitoring and automatic fault diagnosis
- Batch configuration, deployment and update, shortening the deployment time
- Intelligent analysis and control of power consumption, helping save energy and improving operational stability of data centers
- Improved version management efficiency
- Standardized northbound interfaces for easy integration and interfacing
- Centralized management of edge devices

Table 9-2 ISPIM Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centralized Device Management</td>
<td>Supports centralized management of network-wide devices, including servers (the full range of Inspur server family, including general-purpose rack servers, AI servers, blade servers, all-in-one servers and other high-end server products, and third-party servers), storage devices (Inspur general-purpose disk arrays, distributed storage devices, and storage devices of other manufacturers), and network devices (Inspur switches, third-party switches, and third-party firewall devices)</td>
</tr>
<tr>
<td>Monitoring</td>
<td>Supports centralized display, search, blocking and email notifications of device alerts, creation of alert rules, notification rules and blocking rules, alert severity level setting, alert forwarding and southbound settings, device performance monitoring, and distributed monitoring</td>
</tr>
<tr>
<td>Stateless Computing</td>
<td>Supports BMC/BIOS update and configuration of Inspur servers, RAID configuration of Inspur servers, firmware configuration templates, automatic firmware baseline management and the repository for update files</td>
</tr>
</tbody>
</table>
### Feature | Description
--- | ---
OS Deployment | Supports batch deployment of OSs via BMC interfaces, one-click deployment with automatic and detailed logging and with no manual intervention needed, and concurrent deployment of up to 40 devices
Asset Management | Supports part-level asset management, multi-dimensional asset report, 3D data centers and asset maintenance management
Inspection | Supports active inspection, alert-triggered passive inspection, intelligent fault diagnosis and analysis, and call home
Power Consumption Management | Supports multi-dimensional report of power consumption, intelligent power capping strategies and intelligent power consumption prediction; provides a variety of power consumption optimization analyses, including cooling analysis, server utilization analysis, server power consumption analysis, and load distribution analysis
Security Management | Implements security control of ISPIM via a set of security policies such as user management, role management, authentication management (local authentication and LDAP authentication) and certificate management

### 9.3 Inspur Server Intelligent Boot (ISIB)

The NF5688M6 server is compatible with the latest version of Inspur Server Intelligent Boot (ISIB) system, a self-developed automatic O&M management system throughout the server lifecycle. Based on the SSH and PXE technologies, it is compatible with the full range of Inspur servers, and offers more efficient and reliable automatic deployment and software and hardware configuration management. ISIB has the following key features:

- Full lifecycle management from deployment to automatic O&M
- One-stop and one-click deployment for bare metal servers
- Flexible task scheduling with O&M capabilities in multiple scenarios
- Large-scale deployment of technical architecture, shortening the deployment time
- Zero network deployment with plug-and-play support
- Accurate logging and instruction-level tracing of execution results
- Rich built-in O&M scripts and management schemes
### Table 9-3 ISIB Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Home</strong></td>
<td>Provides multi-dimensional report of assets, repositories, operations and jobs, displays jobs 24 hours dynamically and column bars of jobs in the last 30 days</td>
</tr>
<tr>
<td><strong>Asset</strong></td>
<td>Supports automatic device discovery, OS information collection, and out-of-band/in-band power supply management</td>
</tr>
<tr>
<td><strong>Repository</strong></td>
<td>Enables you to manage images, software, firmware, configuration files, scripts and sources for easy OS deployment and firmware update</td>
</tr>
</tbody>
</table>
| **Operation** | • Firmware update  
• Hardware configuration  
• Automatic OS installation via PXE  
• Installation template management  
• Image cloning and restoration  
• Software distribution  
• Configuration changes  
• System inspection |
| **Task** | • Supports job scheduling, and scheduled and periodic task execution  
• Provides visual multi-dimensional task display and detailed logging |
| **GShell** | Remote management of a single SSH terminal or multiple SSH terminals |
| **DFX** | • Supports high availability (HA) and secure access via HTTPS  
• Supports system snapshots and self-service management  
• Supports batch O&M at a scale of 10,000 devices  
• Provides the northbound RESTful interfaces |
# Certifications

## Table 10-1 Certifications

<table>
<thead>
<tr>
<th>Country/Region</th>
<th>Certification</th>
<th>Logo</th>
<th>Mandatory/ Voluntary</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>China Environmental Labelling</td>
<td><img src="image" alt="Logo" /></td>
<td>Voluntary</td>
</tr>
<tr>
<td>International Mutual Recognition</td>
<td>CB</td>
<td><img src="image" alt="Logo" /></td>
<td>Voluntary</td>
</tr>
<tr>
<td>EU</td>
<td>CE</td>
<td><img src="image" alt="Logo" /></td>
<td>Mandatory</td>
</tr>
<tr>
<td>US</td>
<td>FCC</td>
<td><img src="image" alt="Logo" /></td>
<td>Mandatory</td>
</tr>
<tr>
<td></td>
<td>UL</td>
<td><img src="image" alt="Logo" /></td>
<td>Voluntary</td>
</tr>
<tr>
<td>South Korea</td>
<td>KC</td>
<td><img src="image" alt="Logo" /></td>
<td>Mandatory</td>
</tr>
<tr>
<td>Russia</td>
<td>EAC</td>
<td><img src="image" alt="Logo" /></td>
<td>Mandatory</td>
</tr>
</tbody>
</table>
11 Appendix A

11.1 Operating Temperature Specification Limits

Table 11-1 Operating Temperature Specification Limits

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Max. Operating Temperature: 35°C (95°F)</th>
<th>Max. Operating Temperature: 40°C (104°F)</th>
<th>Max. Operating Temperature: 45°C (113°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-Drive Configuration</td>
<td>• 8086 Fan</td>
<td>Not supported</td>
<td>Not supported</td>
</tr>
<tr>
<td>16-Drive Configuration</td>
<td>• RDIMM/LRDIM M (≤ 32 pcs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• CPU power consumption ≤ 270 W</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE

- The maximum operating temperature will drop by 5°C (9°F) if a single fan fails.
- Single fan failure may affect system performance.

11.2 Model

Table 11-2 Model

<table>
<thead>
<tr>
<th>Certified Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NF5688M6</td>
<td>Global</td>
</tr>
</tbody>
</table>

11.3 RAS Features

The NF5688M6 supports a variety of RAS (Reliability, Availability, and Serviceability) features. By configuring these features, the NF5688M6 can provide greater reliability, availability, and serviceability.
### 11.4 Sensor List

Table 11-3 Sensor List

<table>
<thead>
<tr>
<th>Sensor</th>
<th>Description</th>
<th>Sensor Location</th>
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<tbody>
<tr>
<td>Inlet_Temp</td>
<td>Air inlet temperature</td>
<td>Right mounting ear</td>
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<tr>
<td>Outlet_Temp</td>
<td>Air outlet temperature</td>
<td>Motherboard</td>
</tr>
<tr>
<td>PCH_Temp</td>
<td>PCH temperature</td>
<td>Motherboard</td>
</tr>
<tr>
<td>CPUn_Temp</td>
<td>CPUn core temperature</td>
<td>CPUn n indicates the CPU number</td>
</tr>
<tr>
<td></td>
<td></td>
<td>with a value of 0 - 1</td>
</tr>
<tr>
<td>CPUn_DTS</td>
<td>CPUn DTS value</td>
<td>CPUn n indicates the CPU number</td>
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<td>CPUn_DDR DIMM_T</td>
<td>CPUn DIMM temperature</td>
<td>DIMM (CPUn) n indicates the CPU</td>
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<td>PSUn_Temp</td>
<td>PSUn temperature</td>
<td>The corresponding power supply for</td>
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<tr>
<td></td>
<td></td>
<td>PSUn n indicates the PSU number</td>
</tr>
<tr>
<td></td>
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<td>with a value of 0 - 5</td>
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<tr>
<td>HDD_MAX_Temp</td>
<td>Maximum temperature among all drives</td>
<td>Drive attached to drive backplane</td>
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<tr>
<td>NVMe_F_MAX_T</td>
<td>Maximum temperature among all front NVMe drives</td>
<td>NVMe drive attached to drive backplane</td>
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<td>OCP_NIC_Temp</td>
<td>OCP NIC temperature</td>
<td>OCP NIC</td>
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<td>PClen_Card_Temp</td>
<td>PClen card temperature</td>
<td>PClen card n indicates the PCIe card</td>
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<td>number with a value of 0 - 11</td>
</tr>
<tr>
<td>RAID_Temp</td>
<td>The maximum temperature among all RAID controller cards</td>
<td>PCIe RAID controller card</td>
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<tr>
<td>GPUn_Temp</td>
<td>GPUn temperature</td>
<td>GPUn card n indicates GPU card</td>
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<tr>
<td></td>
<td></td>
<td>number with a value of 0 - 7</td>
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<tr>
<td>SYS_12V</td>
<td>12 V voltage supplied by motherboard to CPU</td>
<td>Motherboard</td>
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<table>
<thead>
<tr>
<th>Sensor</th>
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<tr>
<td>SYS_5V</td>
<td>5 V voltage supplied by motherboard to BMC</td>
<td>Motherboard</td>
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<tr>
<td>SYS_3V3</td>
<td>3.3 V voltage supplied by motherboard to BMC</td>
<td>Motherboard</td>
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<tr>
<td>CPU_n_DDR_VDDQ1</td>
<td>1.2 V DIMM voltage</td>
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<td>CPU_n_Vcore voltage</td>
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<td>PSU_n_VIN input voltage</td>
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<td>n indicates the PSU number with a value of 0 - 5</td>
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<td>PSU_n_VOUT</td>
<td>PSU_n_VOUT output voltage</td>
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<td>n indicates the PSU number with a value of 0 - 5</td>
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<td>RTC_Battery</td>
<td>RTC battery voltage</td>
<td>RTC battery on</td>
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<td>motherboard</td>
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<td>FAN_n_F_Speed</td>
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<td>fan module</td>
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<td></td>
<td>number with a</td>
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<td>value of 0 - 11</td>
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<td>Total_Power</td>
<td>Total power</td>
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<td>PSU_n_PIN</td>
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<td>PSU number with</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a value of 0 - 5</td>
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<td>PSU_n_POUT output power</td>
<td>PSU_n</td>
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<td>n indicates the</td>
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<td>PSU number with</td>
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<td>a value of 0 - 5</td>
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<td>FAN_Power</td>
<td>Total fan power</td>
<td>Fans</td>
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<td>CPU_Power</td>
<td>Total CPU power</td>
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<tr>
<td>Memory_Power</td>
<td>Total memory power</td>
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<tr>
<td>Disk_Power</td>
<td>Total drive power</td>
<td>Motherboard</td>
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<tr>
<td>Sensor</td>
<td>Description</td>
<td>Sensor Location</td>
</tr>
<tr>
<td>------------------------</td>
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<tr>
<td>GPU{n} Power</td>
<td>GPUn power</td>
<td>GPUn n indicates the GPU number with a value of 0 - 7</td>
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<tr>
<td>CPU{n} Status</td>
<td>CPU{n} status</td>
<td>CPU{n} n indicates the CPU number with a value of 0 - 1</td>
</tr>
<tr>
<td>CPU{Config}</td>
<td>CPU configuration status</td>
<td>CPU</td>
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<tr>
<td>CPU{n} MEM_Hot</td>
<td>CPU{n} DIMM overtemperature</td>
<td>CPU{n} n indicates the CPU number with a value of 0 - 1</td>
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<tr>
<td>CPU{n} CxDy</td>
<td>CPU{n} DIMM status</td>
<td>The corresponding DIMM for CPU{n} n indicates the CPU number with a value of 0 - 1 x indicates the memory channel number under the CPU with a value of 0 - 7 y indicates the DIMM number with a value of 0 - 1</td>
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<td>FAN{n} Status</td>
<td>FAN{n} failure status</td>
<td>FAN{n} n indicates the fan number with a value of 0 - 11</td>
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<tr>
<td>FAN Redundant</td>
<td>Fan redundancy lost alert status</td>
<td>Fans</td>
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<tr>
<td>PCIe Status</td>
<td>PCIe card status error</td>
<td>PCIe card</td>
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<tr>
<td>Power Button</td>
<td>Power button pressed</td>
<td>Motherboard</td>
</tr>
<tr>
<td>Watchdog2</td>
<td>Watchdog</td>
<td>Motherboard</td>
</tr>
<tr>
<td>Sys Health</td>
<td>BMC health status</td>
<td>BMC</td>
</tr>
<tr>
<td>UID Button</td>
<td>UID button status</td>
<td>Motherboard</td>
</tr>
<tr>
<td>PWR Drop</td>
<td>Voltage drop status</td>
<td>Motherboard</td>
</tr>
<tr>
<td>PWR On TMOUT</td>
<td>Power-on timeout</td>
<td>Motherboard</td>
</tr>
<tr>
<td>PWR_CAP Fail</td>
<td>Power capping status</td>
<td>Motherboard</td>
</tr>
<tr>
<td>BP_F Disk Stat</td>
<td>Front drive backplane status</td>
<td>Drive backplane</td>
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<td>PSU Redundant</td>
<td>PSU redundancy lost alert status</td>
<td>PSU</td>
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<tr>
<td>Sensor</td>
<td>Description</td>
<td>Sensor Location</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------------------------</td>
<td>-----------------</td>
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<tr>
<td>PSU_Mismatch</td>
<td>Power supply model mismatch</td>
<td>PSU</td>
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<tr>
<td>PSUn_Status</td>
<td>PSUn failure status</td>
<td>PSUn \n indicates the PSUn number with a value of 0 - 5</td>
</tr>
<tr>
<td>Intrusion</td>
<td>Chassis-opening activity</td>
<td>Motherboard</td>
</tr>
<tr>
<td>SysShutdown</td>
<td>Reason for system shutdown</td>
<td></td>
</tr>
<tr>
<td>ACPI_PWR</td>
<td>ACPI status</td>
<td></td>
</tr>
<tr>
<td>SysRestart</td>
<td>Reason for system restart</td>
<td></td>
</tr>
<tr>
<td>BIOS_Boot_Up</td>
<td>BIOS boot up complete</td>
<td></td>
</tr>
<tr>
<td>System_Error</td>
<td>Emergency system failure</td>
<td></td>
</tr>
<tr>
<td>POST_Status</td>
<td>POST status</td>
<td></td>
</tr>
<tr>
<td>BMC_Boot_Up</td>
<td>Record the BMC boot event</td>
<td></td>
</tr>
<tr>
<td>SEL_Status</td>
<td>Record the event that system event logs are almost full/cleared</td>
<td></td>
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<tr>
<td>BMC_Status</td>
<td>BMC status</td>
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</tr>
<tr>
<td>ME_FW_Status</td>
<td>ME status</td>
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## Appendix B Acronyms and Abbreviations

### A

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td>Alternating Current</td>
</tr>
<tr>
<td>ACPI</td>
<td>Advanced Configuration and Power Management Interface</td>
</tr>
<tr>
<td>AD</td>
<td>App Direct</td>
</tr>
<tr>
<td>AES</td>
<td>Advanced Encryption Standard New Instruction Set</td>
</tr>
<tr>
<td>AI</td>
<td>Artificial Intelligence</td>
</tr>
<tr>
<td>ANSI</td>
<td>American National Standards Institute</td>
</tr>
<tr>
<td>AOC</td>
<td>Active Optical Cables</td>
</tr>
<tr>
<td>API</td>
<td>Application Program Interface</td>
</tr>
<tr>
<td>ARP</td>
<td>Address Resolution Protocol</td>
</tr>
<tr>
<td>AVL</td>
<td>Approved Vendor List</td>
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</table>

### B

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
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<tbody>
<tr>
<td>BIOS</td>
<td>Basic Input Output System</td>
</tr>
<tr>
<td>BLE</td>
<td>BIOS Lock Enable</td>
</tr>
<tr>
<td>BMC</td>
<td>Baseboard Management Controller</td>
</tr>
<tr>
<td>BPS</td>
<td>Barlow Pass</td>
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</table>

### C

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>CE</td>
<td>Conformite Europeenne</td>
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<tr>
<td>CLI</td>
<td>Command-Line Interface</td>
</tr>
<tr>
<td>CMOS</td>
<td>Complementary Metal-Oxide-Semiconductor Transistor</td>
</tr>
<tr>
<td>Acronym</td>
<td>Definition</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>CPLD</td>
<td>Complex Programming Logic Device</td>
</tr>
<tr>
<td>CPU</td>
<td>Central Processing Unit</td>
</tr>
<tr>
<td>CRPS</td>
<td>Common Redundant Power Supplies</td>
</tr>
<tr>
<td>CRU</td>
<td>Customer-Replaceable Unit</td>
</tr>
<tr>
<td>CSA</td>
<td>Canadian Standards Association</td>
</tr>
<tr>
<td>CSM</td>
<td>Compatibility Support Module</td>
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</table>

**D**

<table>
<thead>
<tr>
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<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>DC</td>
<td>Direct Current</td>
</tr>
<tr>
<td>DCMI</td>
<td>Data Center Manageability Interface</td>
</tr>
<tr>
<td>DDR4</td>
<td>Double Data Rate 4</td>
</tr>
<tr>
<td>DHCP</td>
<td>Dynamic Host Configuration Protocol</td>
</tr>
<tr>
<td>DIMM</td>
<td>Dual-Inline-Memory-Module</td>
</tr>
<tr>
<td>DNS</td>
<td>Domain Name System</td>
</tr>
<tr>
<td>DPC</td>
<td>DIMM Per Channel</td>
</tr>
<tr>
<td>DVD</td>
<td>Digital Video Disc</td>
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**E**

<table>
<thead>
<tr>
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<th>Definition</th>
</tr>
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<tr>
<td>ECC</td>
<td>Error Checking and Correcting</td>
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**F**

<table>
<thead>
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<th>Definition</th>
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<tbody>
<tr>
<td>FMA</td>
<td>Failure Mode Analysis</td>
</tr>
<tr>
<td>FRU</td>
<td>Field-Replaceable Unit</td>
</tr>
<tr>
<td>FTP</td>
<td>File Transfer Protocol</td>
</tr>
<tr>
<td>FW</td>
<td>Firmware</td>
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### G

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>GPU</td>
<td>Graphics Processing Unit</td>
</tr>
<tr>
<td>GUI</td>
<td>Graphical User Interface</td>
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### H

<table>
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<th>Description</th>
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<tr>
<td>HBA</td>
<td>Host Bus Adapter</td>
</tr>
<tr>
<td>HCA</td>
<td>Host Channel Adapter</td>
</tr>
<tr>
<td>HDD</td>
<td>Hard Disk Drive</td>
</tr>
<tr>
<td>HHHL</td>
<td>Half Height Half Length</td>
</tr>
<tr>
<td>HTML</td>
<td>Hyper Text Markup Language</td>
</tr>
<tr>
<td>HWRAID</td>
<td>Hardware Redundant Arrays of Independent Disks</td>
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### I

<table>
<thead>
<tr>
<th>Abbreviation</th>
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<td>I/O</td>
<td>Input/Output</td>
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<tr>
<td>IB</td>
<td>InfiniBand</td>
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<tr>
<td>IEC</td>
<td>International Electrotechnical Commission</td>
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<tr>
<td>IMC</td>
<td>Integrated Memory Controller</td>
</tr>
<tr>
<td>IOPS</td>
<td>Input/Output Operations Per Second</td>
</tr>
<tr>
<td>IP</td>
<td>Internet Protocol</td>
</tr>
<tr>
<td>IPMB</td>
<td>Intelligent Platform Management Bus</td>
</tr>
<tr>
<td>IPMI</td>
<td>Intelligent Platform Management Interface</td>
</tr>
<tr>
<td>IRQ</td>
<td>Interrupt ReQuest</td>
</tr>
<tr>
<td>iSCSI</td>
<td>Internet Small Computer System Interface</td>
</tr>
<tr>
<td>ISIB</td>
<td>Inspur Server Intelligent Boot</td>
</tr>
<tr>
<td>ISPIM</td>
<td>Inspur Physical Infrastructure Manager</td>
</tr>
<tr>
<td>JTAG</td>
<td>Joint Test Action Group</td>
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<td>-------------------------</td>
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<td>KVM</td>
<td>Keyboard Video Mouse</td>
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<tr>
<td>LAN</td>
<td>Local Area Network</td>
</tr>
<tr>
<td>LCD</td>
<td>Liquid Crystal Display</td>
</tr>
<tr>
<td>LED</td>
<td>Light Emitting Diode</td>
</tr>
<tr>
<td>LOM</td>
<td>LAN on Motherboard</td>
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<tr>
<td>LRDIMM</td>
<td>Load-reduced Dual In-line Memory Module</td>
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<tr>
<td>ME</td>
<td>Management Engine</td>
</tr>
<tr>
<td>MM</td>
<td>Memory Mode</td>
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<tr>
<td>NC-SI</td>
<td>Network Controller Sideband Interface</td>
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<tr>
<td>NEMA</td>
<td>National Electrical Manufacturers Association</td>
</tr>
<tr>
<td>NFPA</td>
<td>National Fire Protection Association</td>
</tr>
<tr>
<td>NIC</td>
<td>Network Interface Controller</td>
</tr>
<tr>
<td>NPU</td>
<td>Network Processing Unit</td>
</tr>
<tr>
<td>NTP</td>
<td>Network Time Protocol</td>
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<td>NVDIMM</td>
<td>Non-volatile Dual In-line Memory Module</td>
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<td>NVMe</td>
<td>Non-volatile Memory Express</td>
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<td>-----------------------------</td>
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<tr>
<td>OCP</td>
<td>Open Compute Project</td>
</tr>
<tr>
<td>OS</td>
<td>Operating System</td>
</tr>
<tr>
<td>PCH</td>
<td>Platform Controller Hub</td>
</tr>
<tr>
<td>PCI</td>
<td>Peripheral Component Interconnect</td>
</tr>
<tr>
<td>PCIe</td>
<td>Peripheral Component Interconnect Express</td>
</tr>
<tr>
<td>PDU</td>
<td>Power Distribution Unit</td>
</tr>
<tr>
<td>PFR</td>
<td>Platform Firmware Resilience</td>
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<tr>
<td>PHM</td>
<td>Processor Heatsink Module</td>
</tr>
<tr>
<td>PHY</td>
<td>Physical</td>
</tr>
<tr>
<td>PMem</td>
<td>Persistent Memory</td>
</tr>
<tr>
<td>POST</td>
<td>Power-on Self-test</td>
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<tr>
<td>PSU</td>
<td>Power Supply Unit</td>
</tr>
<tr>
<td>PXE</td>
<td>Pre-boot Execution Environment</td>
</tr>
<tr>
<td>RAM</td>
<td>Random-access Memory</td>
</tr>
<tr>
<td>RAS</td>
<td>Reliability, Availability, Serviceability</td>
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<td>RAID</td>
<td>Redundant Arrays of Independent Drives</td>
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<tr>
<td>RDIMM</td>
<td>Registered Dual In-line Memory Module</td>
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<tr>
<td>RDMA</td>
<td>Remote Direct Memory Access</td>
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<td>RH</td>
<td>Relative Humidity</td>
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<tr>
<td>Acronym</td>
<td>Full Form</td>
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<td>-----------</td>
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<tr>
<td>ROM</td>
<td>Read-only Memory</td>
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<tr>
<td>RTC</td>
<td>Real Time Clock</td>
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<td>SAS</td>
<td>Serial Attached SCSI</td>
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<tr>
<td>SATA</td>
<td>Serial Advanced Technology Attachment</td>
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<tr>
<td>SCSI</td>
<td>Small Computer System Interface</td>
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<tr>
<td>SEL</td>
<td>System Event Log</td>
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<td>SFP</td>
<td>Small Form-factor Pluggable</td>
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<tr>
<td>SGX</td>
<td>Software Guard Extensions</td>
</tr>
<tr>
<td>SIC</td>
<td>Smart Interface Card</td>
</tr>
<tr>
<td>SKU</td>
<td>Stock Keeping Unit</td>
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<tr>
<td>SMTP</td>
<td>Simple Mail Transfer Protocol</td>
</tr>
<tr>
<td>SNMP</td>
<td>Simple Network Management Protocol</td>
</tr>
<tr>
<td>SSD</td>
<td>Solid State Disk</td>
</tr>
<tr>
<td>SSH</td>
<td>Secure Shell</td>
</tr>
<tr>
<td>SWRAID</td>
<td>Software Redundant Arrays of Independent Drives</td>
</tr>
<tr>
<td>SAP HANA</td>
<td>SAP High Performance Analytic Application</td>
</tr>
<tr>
<td>TCG</td>
<td>Trusted Computing Group</td>
</tr>
<tr>
<td>TCM</td>
<td>Trusted Cryptography Module</td>
</tr>
<tr>
<td>TCO</td>
<td>Total Cost of Ownership</td>
</tr>
<tr>
<td>TDP</td>
<td>Thermal Design Power</td>
</tr>
<tr>
<td>TPCM</td>
<td>Trusted Platform Control Module</td>
</tr>
<tr>
<td>TPM</td>
<td>Trusted Platform Module</td>
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</tbody>
</table>
### U

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>UEFI</td>
<td>Unified Extensible Firmware Interface</td>
</tr>
<tr>
<td>UID</td>
<td>User Identification</td>
</tr>
<tr>
<td>UPI</td>
<td>Ultra Path Interconnect</td>
</tr>
<tr>
<td>UPS</td>
<td>Uninterruptible Power Supply</td>
</tr>
<tr>
<td>USB</td>
<td>Universal Serial Bus</td>
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</tbody>
</table>

### V

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>VGA</td>
<td>Video Graphics Array</td>
</tr>
<tr>
<td>VLAN</td>
<td>Virtual Local Area Network</td>
</tr>
<tr>
<td>VPP</td>
<td>Vector Packet Processing</td>
</tr>
<tr>
<td>VRD</td>
<td>Voltage Regulator Down</td>
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</tbody>
</table>

### X

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>XDP</td>
<td>eXtend Debug Port</td>
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</tbody>
</table>