



## BIOS Parameters by Server Model

This section contains the following topics:

- [C220 M5 and C240 M5, on page 1](#)

### C220 M5 and C240 M5

#### I/O Tab



**Note** BIOS parameters listed in this tab may vary depending on the server.

*Table 1: BIOS Parameters in I/O Tab*

Name	Description
<b>Reboot Host Immediately</b> checkbox	Upon checking, reboots the host server immediately. You must check the checkbox after saving changes.
<b>Legacy USB Support</b> drop-down list	Whether the system supports legacy USB devices. This can be one of the following: <ul style="list-style-type: none"><li>• <b>Disabled</b>—USB devices are only available to EFI applications.</li><li>• <b>Enabled</b>—Legacy USB support is always available.</li></ul>
<b>Intel VT for directed IO</b> drop-down list	Whether the processor uses Intel Virtualization Technology (VT), which allows a platform to run multiple operating systems and applications in independent partitions. This can be one of the following: <ul style="list-style-type: none"><li>• <b>Disabled</b>—The processor does not permit virtualization.</li><li>• <b>Enabled</b>—The processor allows multiple operating systems in independent partitions.</li></ul> <p><b>Note</b> If you change this option, you must power cycle the server before the setting takes effect.</p>

Name	Description
<b>Intel VTD coherency support</b> drop-down list	<p>Whether the processor supports Intel VT-d Coherency. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—The processor does not support coherency.</li> <li>• <b>Enabled</b>—The processor uses VT-d Coherency as required.</li> </ul>
<b>Intel VTD ATS support</b> drop-down list	<p>Whether the processor supports Intel VT-d Address Translation Services (ATS). This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—The processor does not support ATS.</li> <li>• <b>Enabled</b>—The processor uses VT-d ATS as required.</li> </ul>
<b>All Onboard LOM Oprom</b> drop-down list	<p>Whether Option ROM is available on all LOM ports. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—Option ROM is disabled on all the ports.</li> <li>• <b>Enabled</b>—Option ROM is enabled on all the ports.</li> </ul>
<b>Onboard LOM Port0 Oprom</b> drop-down list	<p>Whether Option ROM is available on the LOM port 0. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—Option ROM is not available on LOM port 0.</li> <li>• <b>Enabled</b>—Option ROM is available on LOM port 0.</li> </ul>
<b>Onboard LOM Port1 Oprom</b> drop-down list	<p>Whether Option ROM is available on the LOM port 1. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—Option ROM is not available on LOM port 1.</li> <li>• <b>Enabled</b>—Option ROM is available on LOM port 1.</li> </ul>
<b>Pcie Slot<math>n</math> Oprom</b> drop-down list	<p>Whether the server can use the Option ROMs present in the PCIe card slot designated by <math>n</math>. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—Option ROM for slot <math>n</math> is not available.</li> <li>• <b>Enabled</b>—Option ROM for slot <math>n</math> is available.</li> </ul>
<b>MLOM Oprom</b> drop-down list	<p>This options allows you to control the Option ROM execution of the PCIe adapter connected to the MLOM slot. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—Does not execute Option ROM of the PCIe adapter connected to the MLOM slot.</li> <li>• <b>Enabled</b>—Executes Option ROM of the PCIe adapter connected to the MLOM slot.</li> </ul>

Name	Description
<b>HBA Oprom</b> drop-down list	<p>This options allows you to control the Option ROM execution of the PCIe adapter connected to the HBA slot. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—Does not execute Option ROM of the PCIe adapter connected to the HBA slot.</li> <li>• <b>Enabled</b>—Executes Option ROM of the PCIe adapter connected to the HBA slot.</li> </ul>
<b>Front NVME1 Oprom</b> drop-down list	<p>This options allows you to control the Option ROM execution of the PCIe adapter connected to the SSD:NVMe1 slot. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—Does not execute Option ROM of the PCIe adapter connected to the SSD:NVMe1 slot.</li> <li>• <b>Enabled</b>—Executes Option ROM of the PCIe adapter connected to the SSD:NVMe1 slot</li> </ul>
<b>Front NVME2 Oprom</b> drop-down list	<p>This options allows you to control the Option ROM execution of the PCIe adapter connected to the SSD:NVMe2 slot. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—Does not execute Option ROM of the PCIe adapter connected to the SSD:NVMe2 slot.</li> <li>• <b>Enabled</b>—Executes Option ROM of the PCIe adapter connected to the SSD:NVMe2 slot</li> </ul>
<b>HBA Link Speed</b> drop-down list	<p>This option allows you to restrict the maximum speed of an adapter card installed in PCIe HBA slot. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—The maximum speed is not restricted.</li> <li>• <b>Auto</b>—System selects the maximum speed allowed.</li> <li>• <b>GEN1</b>—2.5GT/s (gigatransfers per second) is the maximum speed allowed.</li> <li>• <b>GEN2</b>—5GT/s is the maximum speed allowed.</li> <li>• <b>GEN3</b>—8GT/s is the maximum speed allowed.</li> </ul>
<b>MLOM Link Speed</b> drop-down list	<p>This option allows you to restrict the maximum speed of an adapter card installed in PCIe MLOM slot. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—The maximum speed is not restricted.</li> <li>• <b>Auto</b>—System selects the maximum speed allowed.</li> <li>• <b>GEN1</b>—2.5GT/s (gigatransfers per second) is the maximum speed allowed.</li> <li>• <b>GEN2</b>—5GT/s is the maximum speed allowed.</li> <li>• <b>GEN3</b>—8GT/s is the maximum speed allowed.</li> </ul>

Name	Description
<b>PCIe Slot<math>n</math> Link Speed</b> drop-down list	<p>System IO Controller <math>n</math> (SIOC<math>n</math>) add-on slot (designated by <math>n</math>) link speed. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—Slot is disabled, and the card is not enumerated.</li> <li>• <b>Auto</b>— The default link speed. Link speed is automatically assigned.</li> <li>• <b>GEN1</b>—Link speed can reach up to first generation.</li> <li>• <b>GEN2</b>—Link speed can reach up to second generation.</li> <li>• <b>GEN3</b>—Link speed can reach up to third generation.</li> </ul>
<b>Front NVME1 Link Speed</b> drop-down list	<p>Link speed for NVMe front slot 1. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—Slot is disabled, and the card is not enumerated.</li> <li>• <b>Auto</b>—The default link speed. Link speed is automatically assigned.</li> <li>• <b>GEN1</b>—Link speed can reach up to first generation.</li> <li>• <b>GEN2</b>—Link speed can reach up to second generation.</li> <li>• <b>GEN3</b>—Link speed can reach up to third generation.</li> </ul>
<b>Front NVME2 Link Speed</b> drop-down list	<p>Link speed for NVMe front slot 2. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—Slot is disabled, and the card is not enumerated.</li> <li>• <b>Auto</b>—The default link speed. Link speed is automatically assigned.</li> <li>• <b>GEN1</b>—Link speed can reach up to first generation.</li> <li>• <b>GEN2</b>—Link speed can reach up to second generation.</li> <li>• <b>GEN3</b>—Link speed can reach up to third generation.</li> </ul>
<b>Rear NVME1 Link Speed</b> drop-down list	<p>Link speed for NVMe rear slot 1. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—Slot is disabled, and the card is not enumerated.</li> <li>• <b>Auto</b>—The default link speed. Link speed is automatically assigned.</li> <li>• <b>GEN1</b>—Link speed can reach up to first generation.</li> <li>• <b>GEN2</b>—Link speed can reach up to second generation.</li> <li>• <b>GEN3</b>—Link speed can reach up to third generation.</li> </ul>

Name	Description
<b>Rear NVME2 Link Speed</b> drop-down list	<p>Link speed for NVMe rear slot 2. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—Slot is disabled, and the card is not enumerated.</li> <li>• <b>Auto</b>—The default link speed. Link speed is automatically assigned.</li> <li>• <b>GEN1</b>—Link speed can reach up to first generation.</li> <li>• <b>GEN2</b>—Link speed can reach up to second generation.</li> <li>• <b>GEN3</b>—Link speed can reach up to third generation.</li> </ul>
<b>VGA Priority</b> drop-down list	<p>Allows you to set the priority for VGA graphics devices if multiple VGA devices are found in the system. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>OnBoard</b>—Priority is given to the onboard VGA device. BIOS post screen and OS boot are driven through the onboard VGA port.</li> <li>• <b>OffBoard</b>—Priority is given to the PCIE Graphics adapter. BIOS post screen and OS boot are driven through the external graphics adapter port.</li> <li>• <b>OnBoardDisabled</b>—Priority is given to the PCIE Graphics adapter, and the onboard VGA device is disabled. The vKVM does not function when the onboard VGA is disabled.</li> </ul>
<b>P-SATA OptionROM</b> drop-down list	<p>Allows you to select the PCH SATA optionROM mode. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>LSI SW Raid</b>— Sets both SATA and sSATA controllers to raid mode for LSI SW Raid.</li> <li>• <b>Disabled</b>— Disables both SATA and sSATA controllers.</li> </ul>
<b>M2.SATA OptionROM</b> drop-down list	<p>Mode of operation of Serial Advanced Technology Attachment (SATA) Solid State Drives (SSD). This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>AHCI</b>— Sets both SATA and sSATA controllers to AHCI mode.</li> <li>• <b>LSI SW Raid</b>— Sets both SATA and sSATA controllers to raid mode for LSI SW Raid.</li> <li>• <b>Disabled</b>— Disables both SATA and sSATA controllers.</li> </ul>
<b>USB Port Rear</b> drop-down list	<p>Whether the rear panel USB devices are enabled or disabled. This can be one of the following</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>— Disables the rear panel USB ports. Devices connected to these ports are not detected by the BIOS and operating system.</li> <li>• <b>Enabled</b>— Enables the rear panel USB ports. Devices connected to these ports are detected by the BIOS and operating system.</li> </ul>

Name	Description
<b>USB Port Front</b> drop-down list	<p>Whether the front panel USB devices are enabled or disabled. This can be one of the following</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>— Disables the front panel USB ports. Devices connected to these ports are not detected by the BIOS and operating system.</li> <li>• <b>Enabled</b>— Enables the front panel USB ports. Devices connected to these ports are detected by the BIOS and operating system.</li> </ul>
<b>USB Port Internal</b> drop-down list	<p>Whether the internal USB devices are enabled or disabled. This can be one of the following</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>— Disables the internal USB ports. Devices connected to these ports are not detected by the BIOS and operating system.</li> <li>• <b>Enabled</b>— Enables the internal USB ports. Devices connected to these ports are detected by the BIOS and operating system.</li> </ul>
<b>USB Port KVM</b> drop-down list	<p>Whether the KVM ports are enabled or disabled. This can be one of the following</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>— Disables the KVM keyboard and/or mouse devices. Keyboard and/or mouse will not work in the KVM window.</li> <li>• <b>Enabled</b>— Enables the KVM keyboard and/or mouse devices.</li> </ul>
<b>USB Port SD Card</b> drop-down list	<p>Whether the SD card is enabled or disabled. This can be one of the following</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>— Disables the SD card ports. Devices connected to these ports are not detected by the BIOS and operating system.</li> <li>• <b>Enabled</b>— Enables the SD card ports. Devices connected to these ports are detected by the BIOS and operating system.</li> </ul>
<b>IPV6 PXE Support</b> drop-down list	<p>Enables or disables IPv6 support for PXE. This can be one of the following</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—IPv6 PXE support is not available.</li> <li>• <b>Enabled</b>—IPv6 PXE support is always available.</li> </ul>

## Server Management Tab



**Note** BIOS parameters listed in this tab may vary depending on the server.

Table 2: BIOS Parameters in Server Management Tab

Name	Description
<b>Reboot Host Immediately</b> checkbox	If the Reboot Host Immediately check box is checked, the server is rebooted immediately and the new BIOS settings go into effect. Otherwise the changes are saved until the server is manually rebooted.
<b>OS Boot Watchdog Timer Policy</b> drop-down list	<p>What action the system takes if the watchdog timer expires. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Power Off</b>—The server is powered off if the watchdog timer expires during OS boot.</li> <li>• <b>Reset</b>—The server is reset if the watchdog timer expires during OS boot.</li> </ul> <p><b>Note</b> This option is only applicable if you enable the OS Boot Watchdog Timer.</p>
<b>OS Watchdog Timer</b> drop-down list	<p>Whether the BIOS programs the watchdog timer with a specified timeout value. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—The watchdog timer is not used to track how long the server takes to boot.</li> <li>• <b>Enabled</b>—The watchdog timer tracks how long the server takes to boot. If the server does not boot within the length of time specified in the <b>OS Boot Watchdog Timer Timeout</b> field, the Cisco IMC logs an error and takes the action specified in the <b>OS Boot Watchdog Policy</b> field.</li> </ul>
<b>OS Watchdog Timer Timeout</b> drop-down list	<p>If OS does not boot within the specified time, OS watchdog timer expires and system takes action according to timer policy. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>5 Minutes</b>—The OS watchdog timer expires 5 minutes after it begins to boot.</li> <li>• <b>10 Minutes</b>—The OS watchdog timer expires 10 minutes after it begins to boot.</li> <li>• <b>15 Minutes</b>—The OS watchdog timer expires 15 minutes after it begins to boot.</li> <li>• <b>20 Minutes</b>—The OS watchdog timer expires 20 minutes after it begins to boot.</li> </ul> <p><b>Note</b> This option is only applicable if you enable the OS Boot Watchdog Timer.</p>

Name	Description
<b>Baud Rate</b> drop-down list	<p>What Baud rate is used for the serial port transmission speed. If you disable Console Redirection, this option is not available. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>9.6k</b>—A 9,600 Baud rate is used.</li> <li>• <b>19.2k</b>—A 19,200 Baud rate is used.</li> <li>• <b>38.4k</b>—A 38,400 Baud rate is used.</li> <li>• <b>57.6k</b>—A 57,600 Baud rate is used.</li> <li>• <b>115.2k</b>—A 115,200 Baud rate is used.</li> </ul> <p>This setting must match the setting on the remote terminal application.</p>
<b>Console Redirection</b> drop-down list	<p>Allows a serial port to be used for console redirection during POST and BIOS booting. After the OS has booted, console redirection is irrelevant. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Serial Port A</b>—Enables console redirection on serial port A during POST.</li> <li>• <b>Serial Port B</b>—Enables console redirection on serial port B during POST.</li> <li>• <b>Disabled</b>—No console redirection occurs during POST.</li> </ul>
<b>CDN Control</b> drop-down list	<p>Whether the Ethernet Network naming convention is according to Consistent Device Naming (CDN) or the traditional way of naming conventions. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>— CDN support for VIC cards is disabled</li> <li>• <b>Enabled</b>— CDN support is enabled for VIC cards.</li> </ul>
<b>FRB 2 Timer</b> drop-down list	<p>Whether the FRB2 timer is used by Cisco IMC to recover the system if it hangs during POST. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—The FRB2 timer is not used.</li> <li>• <b>Enabled</b>—The FRB2 timer is started during POST and used to recover the system if necessary.</li> </ul>



Name	Description
<b>Flow Control</b> drop-down list	<p>Whether a handshake protocol is used for flow control. Request to Send / Clear to Send (RTS/CTS) helps to reduce frame collisions that can be introduced by a hidden terminal problem. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>None</b>—No flow control is used.</li> <li>• <b>RTS/CTS</b>—RTS/CTS is used for flow control.</li> </ul> <p><b>Note</b> This setting must match the setting on the remote terminal application.</p>
<b>Terminal type</b> drop-down list	<p>What type of character formatting is used for console redirection. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>PC-ANSI</b>—The PC-ANSI terminal font is used.</li> <li>• <b>VT100</b>—A supported VT100 video terminal and its character set are used.</li> <li>• <b>VT100-PLUS</b>—A supported VT100-plus video terminal and its character set are used.</li> <li>• <b>VT-UTF8</b>—A video terminal with the UTF-8 character set is used.</li> </ul>

## Security Tab




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**Note** BIOS parameters listed in this tab may vary depending on the server.

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Table 3: BIOS Parameters in Security Tab

Name	Description
<b>Reboot Host Immediately checkbox</b>	<b>If the Reboot Host Immediately check box is checked, the server is rebooted immediately and the new BIOS settings go into effect. Otherwise the changes are saved until the server is manually rebooted.</b>
<b>Trusted Platform Module Support</b> drop-down list	<p>Trusted Platform Module (TPM ) is a microchip designed to provide basic security-related functions primarily involving encryption keys. This option allows you to control the TPM Security Device support for the system. It can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—The server does not use the TPM.</li> <li>• <b>Enabled</b>—The server uses the TPM.</li> </ul> <p><b>Note</b> Contact your operating system vendor to make sure the operating system supports this feature.</p>
<b>Power on Password</b> drop-down list	<p>This token requires that you set a BIOS password before using the F2 BIOS configuration. If enabled, password needs to be validated before you access BIOS functions such as IO configuration, BIOS set up, and booting to an operating system using BIOS. It can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—Support is disabled.</li> <li>• <b>Enabled</b>—Support is enabled.</li> </ul>

## Processor Tab




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**Note** BIOS parameters listed in this tab may vary depending on the server.

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Table 4: BIOS Parameters in Processor Tab

Name	Description
<b>Intel Virtualization Technology</b> drop-down list	<p>Whether the processor uses Intel Virtualization Technology (VT), which allows a platform to run multiple operating systems and applications in independent partitions. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—The processor does not permit virtualization.</li> <li>• <b>Enabled</b>—The processor allows multiple operating systems in independent partitions.</li> </ul>
<b>Extended Apic</b> drop-down list	<p>Allows you to enable or disable extended APIC support. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Enabled</b>—Enables APIC support</li> <li>• <b>Disabled</b>—Disables APIC support.</li> </ul>
<b>Processor C1E</b> drop-down list	<p>Whether the CPU transitions to its minimum frequency when entering the C1 state. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—The CPU continues to run at its maximum frequency in C1 state.</li> <li>• <b>Enabled</b>—The CPU transitions to its minimum frequency. This option saves the maximum amount of power in C1 state.</li> </ul> <p><b>Note</b> This option is available only on some C-Series servers.</p>

Name	Description
<b>Processor C6 Report</b> drop-down list	<p>Whether the BIOS sends the C6 report to the operating system. When the OS receives the report, it can transition the processor into the lower C6 power state to decrease energy usage while maintaining optimal processor performance. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—The BIOS does not send the C6 report.</li> <li>• <b>Enabled</b>—The BIOS sends the C6 report, allowing the OS to transition the processor to the C6 low power state.</li> </ul> <p><b>Note</b> <b>CPUPowerManagement</b> must be set to <b>Custom</b> or the server ignores the setting for this parameter.</p> <p><b>Note</b> This option is available only on some C-Series servers.</p>
<b>Execute Disable Bit</b> drop-down list	<p>Classifies memory areas on the server to specify where application code can execute. As a result of this classification, the processor disables code execution if a malicious worm attempts to insert code in the buffer. This setting helps to prevent damage, worm propagation, and certain classes of malicious buffer overflow attacks. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—The processor does not classify memory areas.</li> <li>• <b>Enabled</b>—The processor classifies memory areas.</li> </ul> <p><b>Note</b> Contact your operating system vendor to make sure the operating system supports this feature.</p>

Name	Description
<b>Intel Turbo Boost Tech</b> drop-down list	<p>Whether the processor uses Intel Turbo Boost Technology, which allows the processor to automatically increase its frequency if it is running below power, temperature, or voltage specifications. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—The processor does not increase its frequency automatically.</li> <li>• <b>Enabled</b>—The processor utilizes Turbo Boost Technology if required.</li> </ul> <p><b>Note</b> <b>CPUPowerManagement</b> must be set to <b>Custom</b> or the server ignores the setting for this parameter.</p>
<b>Enhanced Intel SpeedStep Tech</b> drop-down list	<p>Whether the processor uses Enhanced Intel SpeedStep Technology, which allows the system to dynamically adjust processor voltage and core frequency. This technology can result in decreased average power consumption and decreased average heat production. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—The processor never dynamically adjusts its voltage or frequency.</li> <li>• <b>Enabled</b>—The processor utilizes Enhanced Intel SpeedStep Technology and enables all supported processor sleep states to further conserve power.</li> </ul> <p>We recommend that you contact your operating system vendor to make sure the operating system supports this feature.</p> <p><b>Note</b> <b>CPUPowerManagement</b> must be set to <b>Custom</b> or the server ignores the setting for this parameter.</p>
<b>Intel HyperThreading Tech</b> drop-down list	<p>Whether the processor uses Intel Hyper-Threading Technology, which allows multithreaded software applications to execute threads in parallel within each processor. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—The processor does not permit hyperthreading.</li> <li>• <b>Enabled</b>—The processor allows for the parallel execution of multiple threads.</li> </ul>

Name	Description
<b>Workload Configuration</b> drop-down list	<p>This feature allows for workload optimization. The options are Balanced and I/O Sensitive:</p> <ul style="list-style-type: none"> <li>• <b>NUMA</b></li> <li>• <b>UMA</b></li> </ul>
<b>Core MultiProcessing</b> drop-down list	<p>Allows you to disable one or more of the physical cores on the server. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>All</b>—Enables all physical cores. This also enables Hyper Threading on the associated logical processor cores.</li> <li>• <b>1 through 28</b>—Specifies the number of physical processor cores that can run on the server. Each physical core has an associated logical core.</li> </ul> <p><b>Note</b> Contact your operating system vendor to make sure the operating system supports this feature.</p>
<b>Sub NUMA Clustering</b> drop-down list	<p>Whether the CPU supports sub NUMA clustering, in which the tag directory and the memory channel are always in the same region. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>— Sub NUMA clustering does not occur.</li> <li>• <b>Enabled</b>— Sub NUMA clustering occurs.</li> <li>• <b>Auto</b> — The BIOS determines what Sub NUMA clustering is done.</li> </ul>
<b>IMC Interleave</b> drop-down list	<p>This BIOS option controls the interleaving between the Integrated Memory Controllers (IMCs).</p> <ul style="list-style-type: none"> <li>• <b>1-way Interleave</b>—There is no interleaving.</li> <li>• <b>2-way Interleave</b>—Addresses are interleaved between the two IMCs.</li> <li>• <b>Auto</b> —CPU determines the IMC Interleaving mode.</li> </ul>

Name	Description
<b>XPT Prefetch</b> drop-down list	<p>Whether XPT prefetch is used to enable a read request sent to the last level cache to issue a copy of that request to the memory controller prefetcher. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—The CPU does not use the XPT Prefetch option.</li> <li>• <b>Enabled</b>—The CPU enables the XPT prefetch option.</li> </ul>
<b>UPI Prefetch</b> drop-down list	<p>UPI prefetch is a mechanism to get the memory read started early on a DDR bus. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—The processor does not preload any cache data.</li> <li>• <b>Enabled</b>—The UPI prefetcher preloads the L1 cache with the data it determines to be the most relevant.</li> </ul>
<b>Energy Performance BIOS Config</b> drop-down list	<p>Allows you to determine whether system performance or energy efficiency is more important on this server. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Performance</b> — The server provides all server components with full power at all times. This option maintains the highest level of performance and requires the greatest amount of power.</li> <li>• <b>Balanced Performance</b> — The server provides all server components with enough power to keep a balance between performance and power.</li> <li>• <b>Balanced Power</b> — The server provides all server components with enough power to keep a balance between performance and power.</li> <li>• <b>Power</b> — The server provides all server components with maximum power to keep reduce power consumption.</li> </ul>
<b>Power Performance Tuning</b> drop-down list	<p>Determines if the BIOS or Operating System can turn on the energy performance bias tuning. The options are BIOS and OS.</p> <ul style="list-style-type: none"> <li>• <b>BIOS</b>— Chooses BIOS for energy performance tuning.</li> <li>• <b>OS</b>— Chooses OS for energy performance tuning.</li> </ul>

Name	Description
<b>LLC Prefetch</b> drop-down list	<p>Whether the processor uses the LLC Prefetch mechanism to fetch the data into the LLC. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—The processor does not preload any cache data.</li> <li>• <b>Enabled</b>—The LLC prefetcher preloads the L1 cache with the data it determines to be the most relevant.</li> </ul>
<b>Package C State</b>	<p>The amount of power available to the server components when they are idle. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>No Limit</b>—The server may enter any available C state.</li> <li>• <b>Auto</b> —The CPU determines the physical elevation.</li> <li>• <b>C0 C1 State</b>—The server provides all server components with full power at all times. This option maintains the highest level of performance and requires the greatest amount of power.</li> <li>• <b>C2</b>—When the CPU is idle, the system reduces the power consumption further than with the C1 option. This requires less power than C1 or C0, but it takes the server slightly longer to return to high performance mode.</li> <li>• <b>C6 Non Retention</b>—When the CPU is idle, the system reduces the power consumption further than with the C3 option. This option saves more power than C0, C1, or C3, but there may be performance issues until the server returns to full power.</li> <li>• <b>C6 Retention</b>—When the CPU is idle, the system reduces the power consumption further than with the C3 option. This option saves more power than C0, C1, or C3, but there may be performance issues until the server returns to full power.</li> </ul>



Name	Description
Hardware P-States drop-down list	<p>Enables processor Hardware P-State. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—HWPM is disabled.</li> <li>• <b>HWPM Native Mode</b>—HWPM native mode is enabled.</li> <li>• <b>HWPM OOB Mode</b>—HWPM Out-Of-Box mode is enabled.</li> <li>• <b>Native Mode with no Legacy</b> (only GUI)</li> </ul>

## Memory Tab



**Note** BIOS parameters listed in this tab may vary depending on the server.

*Table 5: BIOS Parameters in Memory Tab*

Name	Description
Reboot Host Immediately checkbox	Upon checking, reboots the host server immediately. You must check the checkbox after saving changes.
Select Memory RAS configuration drop-down list	<p>Determines how the memory reliability, availability, and serviceability (RAS) is configured for the server. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Maximum Performance</b>—System performance is optimized.</li> <li>• <b>Mirror Mode 1LM</b>—System reliability is optimized by using half the system memory as backup.</li> </ul>
Above 4G Decoding drop-down list	<p>Enables or disables MMIO above 4GB or not. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—The server does not map I/O of 64-bit PCI devices to 4GB or greater address space.</li> <li>• <b>Enabled</b>—The server maps I/O of 64-bit PCI devices to 4GB or greater address space.</li> </ul> <p><b>Note</b> PCI devices that are 64-bit compliant but use a legacy option ROM may not function correctly with this setting enabled.</p>

Name	Description
DCPMM Firmware Downgrade drop-down list	Whether the BIOS supports downgrading the DCPMM firmware. This can be one of the following: <ul style="list-style-type: none"> <li>• <b>Disabled</b>—Support is disabled.</li> <li>• <b>Enabled</b>—Support is enabled.</li> </ul>
NUMA drop-down list	Whether the BIOS supports Non-Uniform Memory Access (NUMA). This can be one of the following: <ul style="list-style-type: none"> <li>• <b>Disabled</b>—Support is disabled.</li> <li>• <b>Enabled</b>—Support is enabled.</li> </ul>

## Power/Performance Tab



**Note** BIOS parameters listed in this tab may vary depending on the server.

*Table 6: BIOS Parameters in Power/Performance Tab*

Name	Description
Reboot Host Immediately checkbox	Upon checking, reboots the host server immediately. You must check the checkbox after saving changes.
Hardware Prefetcher drop-down list	Whether the processor allows the Intel hardware prefetcher to fetch streams of data and instruction from memory into the unified second-level cache when necessary. This can be one of the following: <ul style="list-style-type: none"> <li>• <b>Disabled</b>—The hardware prefetcher is not used.</li> <li>• <b>Enabled</b>—The processor uses the hardware prefetcher when cache issues are detected.</li> </ul>
Adjacent Cache Line Prefetcher drop-down list	Whether the processor fetches cache lines in even or odd pairs instead of fetching just the required line. This can be one of the following: <ul style="list-style-type: none"> <li>• <b>Disabled</b>—The processor only fetches the required line.</li> <li>• <b>Enabled</b>—The processor fetches both the required line and its paired line.</li> </ul>

Name	Description
<b>DCU Streamer Prefetch</b> drop-down list	<p>Whether the processor uses the DCU IP Prefetch mechanism to analyze historical cache access patterns and preload the most relevant lines in the L1 cache. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—The processor does not try to anticipate cache read requirements and only fetches explicitly requested lines.</li> <li>• <b>Enabled</b>—The DCU prefetcher analyzes the cache read pattern and prefetches the next line in the cache if it determines that it may be needed.</li> </ul>
<b>DCU IP Prefetcher</b> drop-down list	<p>Whether the processor uses the DCU IP Prefetch mechanism to analyze historical cache access patterns and preload the most relevant lines in the L1 cache. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Disabled</b>—The processor does not preload any cache data.</li> <li>• <b>Enabled</b>—The DCU IP prefetcher preloads the L1 cache with the data it determines to be the most relevant.</li> </ul>
<b>CPU Performance</b> drop-down list	<p>Sets the CPU performance profile for the options listed above. This can be one of the following:</p> <ul style="list-style-type: none"> <li>• <b>Enterprise</b>—All options are enabled.</li> <li>• <b>HPC</b>—All options are enabled. This setting is also known as high performance computing.</li> <li>• <b>Hight Throughput</b>—Only the DCU IP Prefetcher is enabled. The rest of the options are disabled.</li> <li>• <b>Custom</b>—All performance profile options can be configured from the BIOS setup on the server. In addition, the Hardware Prefetcher and Adjacent Cache-Line Prefetch options can be configured as well.</li> </ul>

