BIOS Parameters by Server Model

This appendix contains the following sections:

C22 and C24 Servers

Main BIOS Parameters for C22 and C24 Servers

Name	Description
TPM Support	TPM (Trusted Platform Module) 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: • **Disabled**—The server does not use the TPM. • **Enabled**—The server uses the TPM. **Note** We recommend that you contact your operating system vendor to make sure the operating system supports this feature.

Advanced BIOS Parameters for C22 and C24 Servers

Processor Configuration Parameters

Name	Description
Intel Hyper-Threading Technology	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: • **Disabled**—The processor does not permit hyperthreading. • **Enabled**—The processor allows for the parallel execution of multiple threads. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.
Execute Disable	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: • **Disabled**—The processor does not classify memory areas. • **Enabled**—The processor classifies memory areas. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.
Intel VT	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: • **Disabled**—The processor does not permit virtualization. • **Enabled**—The processor allows multiple operating systems in independent partitions. **Note** If you change this option, you must power cycle the server before the setting takes effect.
Intel VT-d	Whether the processor uses Intel Virtualization Technology for Directed I/O (VT-d). This can be one of the following: • **Disabled**—The processor does not use virtualization technology. • **Enabled**—The processor uses virtualization technology.

Name	Description
Intel VT-d Coherency Support	Whether the processor supports Intel VT-d Coherency. This can be one of the following: • **Disabled**—The processor does not support coherency. • **Enabled**—The processor uses VT-d Coherency as required.
Intel VT-d ATS Support	Whether the processor supports Intel VT-d Address Translation Services (ATS). This can be one of the following: • **Disabled**—The processor does not support ATS. • **Enabled**—The processor uses VT-d ATS as required.
Hardware Prefetcher	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: • **Disabled**—The hardware prefetcher is not used. • **Enabled**—The processor uses the hardware prefetcher when cache issues are detected.
Adjacent Cache Line Prefetcher	Whether the processor fetches cache lines in even/odd pairs instead of fetching just the required line. This can be one of the following: • **Disabled**—The processor only fetches the required line. • **Enabled**— The processor fetches both the required line and its paired line.
DCU Streamer Prefetch	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: • **Disabled**—The processor does not try to anticipate cache read requirements and only fetches explicitly requested lines. • **Enabled**—The DCU prefetcher analyzes the cache read pattern and prefetches the next line in the cache if it determines that it may be needed.

Name	Description
DCU IP Prefetcher	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: • **Disabled**—The processor does not preload any cache data. • **Enabled**—The DCU IP prefetcher preloads the L1 cache with the data it determines to be the most relevant.
Direct Cache Access Support	Allows processors to increase I/O performance by placing data from I/O devices directly into the processor cache. This setting helps to reduce cache misses. This can be one of the following: • **Disabled**—Data from I/O devices is not placed directly into the processor cache. • **Enabled**—Data from I/O devices is placed directly into the processor cache.
Power Technology	Enables you to configure the CPU power management settings for the following options: • Enhanced Intel Speedstep Technology • Intel Turbo Boost Technology • Processor Power State C6 Power Technology can be one of the following: • **Custom**—The server uses the individual settings for the BIOS parameters mentioned above. You must select this option if you want to change any of these BIOS parameters. • **Disabled**—The server does not perform any CPU power management and any settings for the BIOS parameters mentioned above are ignored. • **Energy Efficient**—The server determines the best settings for the BIOS parameters mentioned above and ignores the individual settings for these parameters.

Name	Description
Enhanced Intel Speedstep Technology	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: • **Disabled**—The processor never dynamically adjusts its voltage or frequency. • **Enabled**—The processor utilizes Enhanced Intel SpeedStep Technology and enables all supported processor sleep states to further conserve power. We recommend that you contact your operating system vendor to make sure the operating system supports this feature. **Note** **Power Technology** must be set to **Custom** or the server ignores the setting for this parameter.
Intel Turbo Boost Technology	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: • **Disabled**—The processor does not increase its frequency automatically. • **Enabled**—The processor utilizes Turbo Boost Technology if required. **Note** **Power Technology** must be set to **Custom** or the server ignores the setting for this parameter.
Processor Power State C6	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: • **Disabled**—The BIOS does not send the C6 report. • **Enabled**—The BIOS sends the C6 report, allowing the OS to transition the processor to the C6 low power state. **Note** **Power Technology** must be set to **Custom** or the server ignores the setting for this parameter.

Name	Description
Processor Power State C1 Enhanced	Whether the CPU transitions to its minimum frequency when entering the C1 state. This can be one of the following: • **Disabled**—The CPU continues to run at its maximum frequency in C1 state. • **Enabled**—The CPU transitions to its minimum frequency. This option saves the maximum amount of power in C1 state.
Frequency Floor Override	Whether the CPU is allowed to drop below the maximum non-turbo frequency when idle. This can be one of the following: • **Disabled**— The CPU can drop below the maximum non-turbo frequency when idle. This option decreases power consumption but may reduce system performance. • **Enabled**— The CPU cannot drop below the maximum non-turbo frequency when idle. This option improves system performance but may increase power consumption.
Energy Performance	Allows you to determine whether system performance or energy efficiency is more important on this server. This can be one of the following: • **Balanced Energy** • **Balanced Performance** • **Energy Efficient** • **Performance** **Note** **Power Technology** must be set to **Custom** or the server ignores the setting for this parameter. In addition, some operating systems, such as Windows 2008, ignore this parameter in favor of their own power plan.

Memory Configuration Parameters

Name	Description
Select Memory RAS	How the memory reliability, availability, and serviceability (RAS) is configured for the server. This can be one of the following: • **Lockstep**—If the DIMM pairs in the server have an identical type, size, and organization and are populated across the SMI channels, you can enable lockstep mode to minimize memory access latency and provide better performance. This option offers better system performance than Mirroring and better reliability than Maximum Performance but lower reliability than Mirroring and lower system performance than Maximum Performance. • **Maximum Performance**—System performance is optimized. • **Mirroring**—System reliability is optimized by using half the system memory as backup.
NUMA	Whether the BIOS supports NUMA. This can be one of the following: • **Disabled**—The BIOS does not support NUMA. • **Enabled**—The BIOS includes the ACPI tables that are required for NUMA-aware operating systems. If you enable this option, the system must disable Inter-Socket Memory interleaving on some platforms.
Low Voltage DDR Mode	Whether the system prioritizes low voltage or high frequency memory operations. This can be one of the following: • **Power Saving Mode**—The system prioritizes low voltage memory operations over high frequency memory operations. This mode may lower memory frequency in order to keep the voltage low. • **Performance Mode**—The system prioritizes high frequency operations over low voltage operations.

Name	Description
Channel Interleaving	Whether the CPU divides memory blocks and spreads contiguous portions of data across interleaved channels to enable simultaneous read operations. This can be one of the following: • **Auto**—The CPU determines what interleaving is done. • **1 Way**—Some channel interleaving is used. • **2 Way** • **3 Way** • **4 Way**—The maximum amount of channel interleaving is used.
Rank Interleaving	Whether the CPU interleaves physical ranks of memory so that one rank can be accessed while another is being refreshed. This can be one of the following: • **Auto**—The CPU determines what interleaving is done. • **1 Way**—Some rank interleaving is used. • **2 Way** • **4 Way** • **8 Way**—The maximum amount of rank interleaving is used.
Patrol Scrub	Whether the system actively searches for, and corrects, single bit memory errors even in unused portions of the memory on the server. This can be one of the following: • **Disabled**—The system checks for memory ECC errors only when the CPU reads or writes a memory address. • **Enabled**—The system periodically reads and writes memory searching for ECC errors. If any errors are found, the system attempts to fix them. This option may correct single bit errors before they become multi-bit errors, but it may adversely affect performance when the patrol scrub is running.
Demand Scrub	Whether the system corrects single bit memory errors encountered when the CPU or I/O makes a demand read. This can be one of the following: • **Disabled**— Single bit memory errors are not corrected. • **Enabled**— Single bit memory errors are corrected in memory and the corrected data is set in response to the demand read.

Name	Description
Altitude	The approximate number of meters above sea level at which the physical server is installed. This can be one of the following: • **Auto**—The CPU determines the physical elevation. • **300 M**—The server is approximately 300 meters above sea level. • **900 M**—The server is approximately 900 meters above sea level. • **1500 M**—The server is approximately 1500 meters above sea level. • **3000 M**—The server is approximately 3000 meters above sea level.

QPI Configuration Parameters

Name	Description
QPI Link Frequency	The Intel QuickPath Interconnect (QPI) link frequency, in gigatransfers per second (GT/s). This can be one of the following: • **Auto**—The CPU determines the QPI link frequency. • **6.4 GT/s** • **7.2 GT/s** • **8.0 GT/s**

Onboard Storage Parameters

Name	Description
Onboard SCU Storage Support	Whether the onboard software RAID controller is available to the server. This can be one of the following: • **Disabled**—The software RAID controller is not available. • **Enabled**—The software RAID controller is available.

USB Configuration Parameters

Name	Description
Legacy USB Support	Whether the system supports legacy USB devices. This can be one of the following: • **Disabled**—USB devices are only available to EFI applications. • **Enabled**—Legacy USB support is always available. • **Auto**—Disables legacy USB support if no USB devices are connected.
Port 60/64 Emulation	Whether the system supports 60h/64h emulation for complete USB keyboard legacy support. This can be one of the following: • **Disabled**—60h/64 emulation is not supported. • **Enabled**—60h/64 emulation is supported. You should select this option if you are using a non-USB aware operating system on the server.

PCI Configuration Parameters

Name	Description
PCIe OptionROM Priority	If the server has both legacy and EFI compatible PCI Option ROMs, this parameter specifies which Option ROM the server should launch. This can be one of the following: • **EFI Compatible ROM**—The server launches the EFI compatible PCI Option ROM. • **Legacy ROM**—The server launches the legacy PCI Option ROM.
MMIO Above 4GB	Whether to enable or disable memory mapped I/O of 64-bit PCI devices to 4GB or greater address space. Legacy option ROMs are not able to access addresses above 4GB. PCI devices that are 64-bit compliant but use a legacy option ROM may not function correctly with this setting enabled. This can be one of the following: • **Disabled**—The server does not map I/O of 64-bit PCI devices to 4GB or greater address space. • **Enabled**—The server maps I/O of 64-bit PCI devices to 4GB or greater address space.

Serial Configuration Parameters

Name	Description
Console Redirection	Allows a serial port to be used for console redirection during POST and BIOS booting. After the BIOS has booted and the operating system is responsible for the server, console redirection is irrelevant and has no effect. This can be one of the following: • **Disabled**—No console redirection occurs during POST. • **Enabled**—Enables console redirection on serial port A during POST.
Terminal Type	What type of character formatting is used for console redirection. This can be one of the following: • **PC-ANSI**—The PC-ANSI terminal font is used. • **VT100**—A supported vt100 video terminal and its character set are used. • **VT100+**—A supported vt100-plus video terminal and its character set are used. • **VT-UTF8**—A video terminal with the UTF-8 character set is used. **Note** This setting must match the setting on the remote terminal application.
Bits per second	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: • **9600**—A 9,600 BAUD rate is used. • **19200**—A 19,200 BAUD rate is used. • **38400**—A 38,400 BAUD rate is used. • **57600**—A 57,600 BAUD rate is used. • **115200**—A 115,200 BAUD rate is used. **Note** This setting must match the setting on the remote terminal application.

Name	Description
Flow Control	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: • **None**—No flow control is used. • **Hardware RTS/CTS**—RTS/CTS is used for flow control. **Note** This setting must match the setting on the remote terminal application.

LOM and PCIe Slots Configuration Parameters

Name	Description
LOM Port 0 Legacy OptionROM	Whether LOM port 0 is available to the server. This can be one of the following: • **Disabled**—LOM port 0 is not available. • **Enabled**—LOM port 0 is available.
LOM Port 1 Legacy OptionROM	Whether LOM port 1 is available to the server. This can be one of the following: • **Disabled**—LOM port 1 is not available. • **Enabled**—LOM port 1 is available.
All PCIe Slots OptionROM	Whether the server can use the PCIe Option ROM expansion slots. This can be one of the following: • **Disabled**—PCIe Option ROMs are not available. • **Enabled**—PCIe Option ROMs are available.
PCIe Slot:*n* OptionROM	Whether PCIe expansion slot ***n*** is available to the server. This can be one of the following: • **Disabled**—The expansion slot ***n*** is not available. • **Enabled**—The expansion slot ***n*** is available.

Name	Description
PCIe Slot:*n* Link Speed	This option allows you to restrict the maximum speed of an adapter card installed in PCIe slot ***n***. This can be one of the following: • **GEN1**—2.5GT/s (gigatransfers per second) is the maximum speed allowed. • **GEN2**—5GT/s is the maximum speed allowed. • **GEN3**—8GT/s is the maximum speed allowed. For example, if you have a 3rd generation adapter card in PCIe slot 2 that you want to run at a maximum of 5GT/s instead of the 8GT/s that card supports, set the PCIe Slot 2 Link Speed to **GEN2**. The system then ignores the card's supported maximum speed of 8GT/s and forces it to run at a maximum of 5 GT/s.

Server Management BIOS Parameters for C22 and C24 Servers

Name	Description
FRB-2 Timer	Whether the FRB2 timer is used by CIMC to recover the system if it hangs during POST. This can be one of the following: • **Disabled**—The FRB2 timer is not used. • **Enabled**—The FRB2 timer is started during POST and used to recover the system if necessary.
OS Watchdog Timer	Whether the BIOS programs the watchdog timer with a specified timeout value. This can be one of the following: • **Disabled**—The watchdog timer is not used to track how long the server takes to boot. • **Enabled**—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 **OS Boot Watchdog Timer Timeout** field, the CIMC logs an error and takes the action specified in the **OS Boot Watchdog Policy** field.

Name	Description
OS Watchdog Timer Timeout	What timeout value the BIOS uses to configure the watchdog timer. This can be one of the following: • **5 Minutes**—The watchdog timer expires 5 minutes after the OS begins to boot. • **10 Minutes**—The watchdog timer expires 10 minutes after the OS begins to boot. • **15 Minutes**—The watchdog timer expires 15 minutes after the OS begins to boot. • **20 Minutes**—The watchdog timer expires 20 minutes after the OS begins to boot. **Note** This option is only applicable if you enable the OS Boot Watchdog Timer.
OS Watchdog Timer Policy	What action the system takes if the watchdog timer expires. This can be one of the following: • **Do Nothing**—The server takes no action if the watchdog timer expires during OS boot. • **Power Down**—The server is powered off if the watchdog timer expires during OS boot. • **Reset**—The server is reset if the watchdog timer expires during OS boot. **Note** This option is only applicable if you enable the OS Boot Watchdog Timer.

Name	Description
Boot Order Rules	How the server changes the boot order list defined through the CIMC GUI or CLI when there are no devices of a particular device type available or when the user defines a different boot order using the server's BIOS Setup Utility. The supported device types are: • **HDD**—Hard disk drive • **FDD**—Floppy disk drive • **CDROM**—Bootable CD-ROM or DVD • **PXE**—PXE boot • **EFI**—Extensible Firmware Interface The Boot Order Rules option can be one of the following: • **Strict**—When no devices of a particular type are available, the system creates a placeholder for that device type in the boot order list. When a device of that type becomes available, it is added to the boot order in the previously defined position. If the user defines a boot order through the server's BIOS Setup Utility, that boot order is given priority over the boot order configured through the CIMC GUI or CLI. All device types defined through CIMC that are not present in the boot order defined through the BIOS Setup Utility are removed from the boot order list. • **Loose**—When no devices of a particular type are available, the system removes that device type from the boot order. When a device of that type becomes available, the system adds it to the end of the boot order list. If the boot order is configured through the server's BIOS Setup Utility, that boot order is given priority over the boot order configured through the CIMC GUI or CLI. All device types defined through CIMC that are not present in the boot order defined through the BIOS Setup Utility are moved to the end of the boot order list.

C200 and C210 Servers

Main BIOS Parameters for C200 and C210 Servers

Name	Description
POST Error Pause	What happens when the server encounters a critical error during POST. This can be one of the following: • **Enabled**—The BIOS pauses the attempt to boot the server and opens the Error Manager when a critical error occurs during POST. • **Disabled**—The BIOS continues to attempt to boot the server.
Boot Option Retry	Whether the BIOS retries NON-EFI based boot options without waiting for user input. This can be one of the following: • **Enabled**—Continually retries NON-EFI based boot options without waiting for user input. • **Disabled**—Waits for user input before retrying NON-EFI based boot options.
USB Boot Priority	Whether the BIOS tries to boot from any available USB device before it tries to boot from the server hard drive. This can be one of the following: • **Enabled**—The server attempts to boot from a USB device if one is available. In addition, when a USB device is discovered, it is put at the top of its boot category. • **Disabled**—The server attempts to boot from the server hard drive before it tries USB devices. In addition, when a USB device is discovered, it is put at the bottom of its boot category.

Advanced BIOS Parameters for C200 and C210 Servers

Processor Configuration Parameters

Name	Description
Intel Turbo Boost Technology	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: • **Disabled**—The processor does not increase its frequency automatically. • **Enabled**—The processor utilizes Turbo Boost Technology if required.
Enhanced Intel Speedstep Technology	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: • **Disabled**—The processor never dynamically adjusts its voltage or frequency. • **Enabled**—The processor utilizes Enhanced Intel SpeedStep Technology and enables all supported processor sleep states to further conserve power. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.
Intel Hyper-Threading Technology	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: • **Disabled**—The processor does not permit hyperthreading. • **Enabled**—The processor allows for the parallel execution of multiple threads. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.

Name	Description
Number of Enabled Cores	Allows you to disable one or more of the physical cores on the server. This can be one of the following: • **All**—Enables all physical cores. This also enables Hyper Threading on the associated logical processor cores. • **1** through ***n***—Specifies the number of physical processor cores that can run on the server. Each physical core has an associated logical core. To disable Hyper Threading and have only one logical processor core running on the server, select **1**. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.
Execute Disable	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: • **Disabled**—The processor does not classify memory areas. • **Enabled**—The processor classifies memory areas. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.
Intel Virtualization Technology	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: • **Disabled**—The processor does not permit virtualization. • **Enabled**—The processor allows multiple operating systems in independent partitions. **Note** If you change this option, you must power cycle the server before the setting takes effect.
Intel VT for Directed IO	Whether the processor uses Intel Virtualization Technology for Directed I/O (VT-d). This can be one of the following: • **Disabled**—The processor does not use virtualization technology. • **Enabled**—The processor uses virtualization technology.

Name	Description
Intel VT-d Interrupt Remapping	Whether the processor supports Intel VT-d Interrupt Remapping. This can be one of the following: • **Disabled**—The processor does not support remapping. • **Enabled**—The processor uses VT-d Interrupt Remapping as required.
Intel VT-d Coherency Support	Whether the processor supports Intel VT-d Coherency. This can be one of the following: • **Disabled**—The processor does not support coherency. • **Enabled**—The processor uses VT-d Coherency as required.
Intel VT-d Address Translation Services	Whether the processor supports Intel VT-d Address Translation Services (ATS). This can be one of the following: • **Disabled**—The processor does not support ATS. • **Enabled**—The processor uses VT-d ATS as required.
Intel VT-d PassThrough DMA	Whether the processor supports Intel VT-d Pass-through DMA. This can be one of the following: • **Disabled**—The processor does not support pass-through DMA. • **Enabled**—The processor uses VT-d Pass-through DMA as required.
Direct Cache Access	Allows processors to increase I/O performance by placing data from I/O devices directly into the processor cache. This setting helps to reduce cache misses. This can be one of the following: • **Disabled**—Data from I/O devices is not placed directly into the processor cache. • **Enabled**—Data from I/O devices is placed directly into the processor cache.

Name	Description
Processor C3 Report	Whether the BIOS sends the C3 report to the operating system. When the OS receives the report, it can transition the processor into the lower C3 power state to decrease energy usage while maintaining optimal processor performance. This can be one of the following: • **Disabled**—The BIOS does not send the C3 report. • **ACPI C2**—The BIOS sends the C3 report using the ACPI C2 format, allowing the OS to transition the processor to the C3 low power state. • **ACPI C3**—The BIOS sends the C3 report using the ACPI C3 format, allowing the OS to transition the processor to the C3 low power state.
Processor C6 Report	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: • **Disabled**—The BIOS does not send the C6 report. • **Enabled**—The BIOS sends the C6 report, allowing the OS to transition the processor to the C6 low power state.

Name	Description
CPU Performance	Sets the CPU performance profile for the server. The performance profile consists of the following options: • Data Reuse Optimization • DCU Streamer Prefetcher • DCU IP Prefetcher • Hardware Prefetcher • Adjacent Cache-Line Prefetch This can be one of the following: • **Enterprise**—Only the DCU IP Prefetcher is enabled. The rest of the options are disabled. • **High Throughput**—All options are enabled. • **HPC**—Data Reuse Optimization is disabled and all other options are enabled. This setting is also known as high performance computing. • **Custom**—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 in the fields below.
Hardware Prefetcher	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: • **Disabled**—The hardware prefetcher is not used. • **Enabled**—The processor uses the hardware prefetcher when cache issues are detected. **Note** **CPU Performance** must be set to **Custom** in order to specify this value. For any value other than **Custom**, this option is overridden by the setting in the selected CPU performance profile.

Name	Description
Adjacent Cache-Line Prefetch	Whether the processor fetches cache lines in even/odd pairs instead of fetching just the required line. This can be one of the following: • **Disabled**—The processor only fetches the required line. • **Enabled**— The processor fetches both the required line and its paired line. **Note** **CPU Performance** must be set to **Custom** in order to specify this value. For any value other than **Custom**, this option is overridden by the setting in the selected CPU performance profile.
CPU C State	Whether the system can enter a power savings mode during idle periods. This can be one of the following: • **Disabled**—The system remains in high performance state even when idle. • **Enabled**—The system can reduce power to system components such as the DIMMs and CPUs. The amount of power reduction is specified in the **Package C State Limit** field.
C1E	Whether the CPU transitions to its minimum frequency when entering the C1 state. This can be one of the following: • **Disabled**—The CPU continues to run at its maximum frequency in C1 state. • **Enabled**—The CPU transitions to its minimum frequency. This option saves the maximum amount of power in C1 state. **Note** This option is used only if **CPU C State** is enabled.
OEM AESNI	Whether the server uses the AES-NI encryption instruction set that improves on the Advanced Encryption Standard (AES) algorithm. This can be one of the following: • **Disabled**—The server only uses AES encryption. • **Enabled**—The server uses AES-NI encryption when possible.

Mass Storage Controller Configuration Parameters

Name	Description
Onboard SATA Controller	Whether the processor uses its built-in SATA controller. This can be one of the following: • **Disabled**—The server does not use the onboard SATA controller. • **Enabled**—The processor uses the built-in SATA controller.
SATA Mode	The mode in which the SATA controller runs. This can be one of the following: • **AHCI**—The controller enables the Advanced Host Controller Interface (AHCI) and disables RAID. • **Compatibility**—The controller disables both AHCI and RAID and runs in IDE emulation mode. • **Enhanced**—The controller enables both AHCI and RAID. • **S/W RAID**—The controller enables RAID and disables the AHCI.

Serial Port Configuration Parameters

Name	Description
Serial A Enable	Whether serial port A is enabled or disabled. This can be one of the following: • **Disabled**—The serial port is disabled. • **Enabled**—The serial port is enabled.
Serial A Address	If serial port A is enabled, select the hex address that it should use. This can be one of the following: • **3F8** • **2F8** • **3E8** • **2E8**
Serial B Enable	Whether serial port B is enabled or disabled. This can be one of the following: • **Disabled**—The serial port is disabled. • **Enabled**—The serial port is enabled.

Name	Description
Serial B Address	If serial port B is enabled, select the hex address that it should use. This can be one of the following: • **3F8** • **2F8** • **3E8** • **2E8**

USB Configuration Parameters

Name	Description
USB Controller	Whether the processor uses its built-in USB controller. This can be one of the following: • **Disabled**—The server does not use the built-in USB controller. • **Enabled**—The processor uses the built-in USB controller.
Make Device Non-Bootable	Whether the server can boot from a USB device. This can be one of the following: • **Disabled**—The server can boot from a USB device. • **Enabled**—The server cannot boot from a USB device.
USB Performance Mode	Whether the server uses USB 2.0 or USB 1.1 mode. This can be one of the following: • **High Performance**—The server enables the EHCI (USB 2.0) controllers so that all USB devices function in USB 2.0 mode. This option maximizes USB device performance but requires additional power. • **Lower Idle Power**—The server disables the EHCI (USB 2.0) controllers so that all USB devices function in USB 1.1 mode. This option requires less power but decreases USB device performance.

PCI Configuration Parameters

Name	Description
Memory Mapped I/O Above 4GB	Whether to enable or disable memory mapped I/O of 64-bit PCI devices to 4GB or greater address space. Legacy option ROMs are not able to access addresses above 4GB. PCI devices that are 64-bit compliant but use a legacy option ROM may not function correctly with this setting enabled. This can be one of the following: • **Disabled**—The server does not map I/O of 64-bit PCI devices to 4GB or greater address space. • **Enabled**—The server maps I/O of 64-bit PCI devices to 4GB or greater address space.
Onboard Gb NIC 1	Whether the first onboard Network Interface Card (NIC) is enabled or disabled on the server. This can be one of the following: • **Disabled**—NIC 1 is not available. • **Enabled**—NIC 1 is available.
Onboard Gb NIC 2	Whether the second onboard NIC is enabled or disabled on the server. This can be one of the following: • **Disabled**—NIC 2 is not available. • **Enabled**—NIC 2 is available.
Onboard Gb NIC *n* ROM	Whether the system loads the embedded PXE option ROM for the onboard NIC designated by ***n***. This can be one of the following: • **Disabled**—PXE option ROM is not available for NIC ***n***. • **Enabled**—PXE option ROM is available for NIC ***n***.
PCIe OptionROMs	Whether the server can use the PCIe Option ROM expansion slots. This can be one of the following: • **Disabled**—PCIe Option ROMs are not available. • **Enabled**—PCIe Option ROMs are available.
PCIe Slot *n* ROM	Whether PCIe expansion slot ***n*** is available to the server. This can be one of the following: • **Disabled**—The expansion slot ***n*** is not available. • **Enabled**—The expansion slot ***n*** is available.

Name	Description
PCIe Mezzanine Slot ROM	Whether the PCIe mezzanine slot expansion ROM is available to the server. This can be one of the following: • **Disabled**—The mezzanine slot is not available. • **Enabled**—The mezzanine slot is available.
Active Video	How the server displays video. This can be one of the following: • **Auto**—The server uses an external graphics adapter for display if one is available. • **Onboard Device**—The server always uses its internal graphics adapter even if an external graphics adapter is available.

Server Management BIOS Parameters for C200 and C210 Servers

Name	Description
Assert NMI on SERR	Whether the BIOS generates a non-maskable interrupt (NMI) and logs an error when a system error (SERR) occurs. This can be one of the following: • **Disabled**—The BIOS does not generate an NMI or log an error when a SERR occurs. • **Enabled**—The BIOS generates an NMI and logs an error when a SERR occurs. You must enable this setting if you want to enable **Assert NMI on PERR**.
Assert NMI on PERR	Whether the BIOS generates a non-maskable interrupt (NMI) and logs an error when a processor bus parity error (PERR) occurs. This can be one of the following: • **Disabled**—The BIOS does not generate an NMI or log an error when a PERR occurs. • **Enabled**—The BIOS generates an NMI and logs an error when a PERR occurs. You must enable **Assert NMI on SERR** to use this setting.

Name	Description
FRB2 Enable	Whether the FRB2 timer is used by CIMC to recover the system if it hangs during POST. This can be one of the following: • **Disabled**—The FRB2 timer is not used. • **Enabled**—The FRB2 timer is started during POST and used to recover the system if necessary.
PlugNPlay BMC Detection	Whether the system automatically detects the BMC in ACPI-compliant operating systems. This can be one of the following: • **Disabled**—The system never automatically detects the BMC. • **Enabled**—The system automatically detects the BMC whenever possible.
ACPI1.0 Support	Whether the BIOS publishes the ACPI 1.0 version of FADT in the Root System Description table. This version may be required for compatibility with OS versions that only support ACPI 1.0. This can be one of the following: • **Disabled**—ACPI 1.0 version is not published. • **Enabled**—ACPI 1.0 version is published.
Console Redirection	Allows a serial port to be used for console redirection during POST and BIOS booting. After the BIOS has booted and the operating system is responsible for the server, console redirection is irrelevant and has no effect. This can be one of the following: • **Disabled**—No console redirection occurs during POST. • **Serial Port A**—Enables console redirection on serial port A during POST. **Note** If you enable this option, you also disable the display of the Quiet Boot logo screen during POST.
Flow Control	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: • **None**—No flow control is used. • **RTS-CTS**—RTS/CTS is used for flow control. **Note** This setting must match the setting on the remote terminal application.

Name	Description
Baud Rate	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: • **9.6k**—A 9600 BAUD rate is used. • **19.2k**—A 19200 BAUD rate is used. • **38.4k**—A 38400 BAUD rate is used. • **57.6k**—A 57600 BAUD rate is used. • **115.2k**—A 115200 BAUD rate is used. **Note** This setting must match the setting on the remote terminal application.
Terminal Type	What type of character formatting is used for console redirection. This can be one of the following: • **PC-ANSI**—The PC-ANSI terminal font is used. • **VT100**—A supported vt100 video terminal and its character set are used. • **VT100-PLUS**—A supported vt100-plus video terminal and its character set are used. • **VT-UTF8**—A video terminal with the UTF-8 character set is used. **Note** This setting must match the setting on the remote terminal application.
Legacy OS Redirection	Whether redirection from a legacy operating system, such as DOS, is enabled on the serial port. This can be one of the following: • **Disabled**—The serial port enabled for console redirection is hidden from the legacy operating system. • **Enabled**—The serial port enabled for console redirection is visible to the legacy operating system.

C220 and C240 Servers

Main BIOS Parameters for C220 and C240 Servers

Name	Description
TPM Support	TPM (Trusted Platform Module) 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: • **Disabled**—The server does not use the TPM. • **Enabled**—The server uses the TPM. **Note** We recommend that you contact your operating system vendor to make sure the operating system supports this feature.

Advanced BIOS Parameters for C220 and C240 Servers

Processor Configuration Parameters

Name	Description
Intel Hyper-Threading Technology	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: • **Disabled**—The processor does not permit hyperthreading. • **Enabled**—The processor allows for the parallel execution of multiple threads. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.

Name	Description
Execute Disable	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: • **Disabled**—The processor does not classify memory areas. • **Enabled**—The processor classifies memory areas. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.
Intel VT	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: • **Disabled**—The processor does not permit virtualization. • **Enabled**—The processor allows multiple operating systems in independent partitions. **Note** If you change this option, you must power cycle the server before the setting takes effect.
Intel VT-d	Whether the processor uses Intel Virtualization Technology for Directed I/O (VT-d). This can be one of the following: • **Disabled**—The processor does not use virtualization technology. • **Enabled**—The processor uses virtualization technology.
Intel VT-d Coherency Support	Whether the processor supports Intel VT-d Coherency. This can be one of the following: • **Disabled**—The processor does not support coherency. • **Enabled**—The processor uses VT-d Coherency as required.
Intel VT-d ATS Support	Whether the processor supports Intel VT-d Address Translation Services (ATS). This can be one of the following: • **Disabled**—The processor does not support ATS. • **Enabled**—The processor uses VT-d ATS as required.

Name	Description
Hardware Prefetcher	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: • **Disabled**—The hardware prefetcher is not used. • **Enabled**—The processor uses the hardware prefetcher when cache issues are detected.
Adjacent Cache Line Prefetcher	Whether the processor fetches cache lines in even/odd pairs instead of fetching just the required line. This can be one of the following: • **Disabled**—The processor only fetches the required line. • **Enabled**— The processor fetches both the required line and its paired line.
DCU Streamer Prefetch	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: • **Disabled**—The processor does not try to anticipate cache read requirements and only fetches explicitly requested lines. • **Enabled**—The DCU prefetcher analyzes the cache read pattern and prefetches the next line in the cache if it determines that it may be needed.
DCU IP Prefetcher	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: • **Disabled**—The processor does not preload any cache data. • **Enabled**—The DCU IP prefetcher preloads the L1 cache with the data it determines to be the most relevant.
Direct Cache Access Support	Allows processors to increase I/O performance by placing data from I/O devices directly into the processor cache. This setting helps to reduce cache misses. This can be one of the following: • **Disabled**—Data from I/O devices is not placed directly into the processor cache. • **Enabled**—Data from I/O devices is placed directly into the processor cache.

Name	Description
Power Technology	Enables you to configure the CPU power management settings for the following options: • Enhanced Intel Speedstep Technology • Intel Turbo Boost Technology • Processor Power State C6 Power Technology can be one of the following: • **Custom**—The server uses the individual settings for the BIOS parameters mentioned above. You must select this option if you want to change any of these BIOS parameters. • **Disabled**—The server does not perform any CPU power management and any settings for the BIOS parameters mentioned above are ignored. • **Energy Efficient**—The server determines the best settings for the BIOS parameters mentioned above and ignores the individual settings for these parameters.
Enhanced Intel Speedstep Technology	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: • **Disabled**—The processor never dynamically adjusts its voltage or frequency. • **Enabled**—The processor utilizes Enhanced Intel SpeedStep Technology and enables all supported processor sleep states to further conserve power. We recommend that you contact your operating system vendor to make sure the operating system supports this feature. **Note** **Power Technology** must be set to **Custom** or the server ignores the setting for this parameter.

Name	Description
Intel Turbo Boost Technology	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: • **Disabled**—The processor does not increase its frequency automatically. • **Enabled**—The processor utilizes Turbo Boost Technology if required. **Note** **Power Technology** must be set to **Custom** or the server ignores the setting for this parameter.
Processor Power State C6	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: • **Disabled**—The BIOS does not send the C6 report. • **Enabled**—The BIOS sends the C6 report, allowing the OS to transition the processor to the C6 low power state. **Note** **Power Technology** must be set to **Custom** or the server ignores the setting for this parameter.
Processor Power State C1 Enhanced	Whether the CPU transitions to its minimum frequency when entering the C1 state. This can be one of the following: • **Disabled**—The CPU continues to run at its maximum frequency in C1 state. • **Enabled**—The CPU transitions to its minimum frequency. This option saves the maximum amount of power in C1 state.
Frequency Floor Override	Whether the CPU is allowed to drop below the maximum non-turbo frequency when idle. This can be one of the following: • **Disabled**— The CPU can drop below the maximum non-turbo frequency when idle. This option decreases power consumption but may reduce system performance. • **Enabled**— The CPU cannot drop below the maximum non-turbo frequency when idle. This option improves system performance but may increase power consumption.

Name	Description
Energy Performance	Allows you to determine whether system performance or energy efficiency is more important on this server. This can be one of the following: • **Balanced Energy** • **Balanced Performance** • **Energy Efficient** • **Performance** **Note** **Power Technology** must be set to **Custom** or the server ignores the setting for this parameter. In addition, some operating systems, such as Windows 2008, ignore this parameter in favor of their own power plan.

Memory Configuration Parameters

Name	Description
Select Memory RAS	How the memory reliability, availability, and serviceability (RAS) is configured for the server. This can be one of the following: • **Lockstep**—If the DIMM pairs in the server have an identical type, size, and organization and are populated across the SMI channels, you can enable lockstep mode to minimize memory access latency and provide better performance. This option offers better system performance than Mirroring and better reliability than Maximum Performance but lower reliability than Mirroring and lower system performance than Maximum Performance. • **Maximum Performance**—System performance is optimized. • **Mirroring**—System reliability is optimized by using half the system memory as backup.
NUMA	Whether the BIOS supports NUMA. This can be one of the following: • **Disabled**—The BIOS does not support NUMA. • **Enabled**—The BIOS includes the ACPI tables that are required for NUMA-aware operating systems. If you enable this option, the system must disable Inter-Socket Memory interleaving on some platforms.

Name	Description
Low Voltage DDR Mode	Whether the system prioritizes low voltage or high frequency memory operations. This can be one of the following: • **Power Saving Mode**—The system prioritizes low voltage memory operations over high frequency memory operations. This mode may lower memory frequency in order to keep the voltage low. • **Performance Mode**—The system prioritizes high frequency operations over low voltage operations.
Channel Interleaving	Whether the CPU divides memory blocks and spreads contiguous portions of data across interleaved channels to enable simultaneous read operations. This can be one of the following: • **Auto**—The CPU determines what interleaving is done. • **1 Way**—Some channel interleaving is used. • **2 Way** • **3 Way** • **4 Way**—The maximum amount of channel interleaving is used.
Rank Interleaving	Whether the CPU interleaves physical ranks of memory so that one rank can be accessed while another is being refreshed. This can be one of the following: • **Auto**—The CPU determines what interleaving is done. • **1 Way**—Some rank interleaving is used. • **2 Way** • **4 Way** • **8 Way**—The maximum amount of rank interleaving is used.

Name	Description
Patrol Scrub	Whether the system actively searches for, and corrects, single bit memory errors even in unused portions of the memory on the server. This can be one of the following: • **Disabled**—The system checks for memory ECC errors only when the CPU reads or writes a memory address. • **Enabled**—The system periodically reads and writes memory searching for ECC errors. If any errors are found, the system attempts to fix them. This option may correct single bit errors before they become multi-bit errors, but it may adversely affect performance when the patrol scrub is running.
Demand Scrub	Whether the system corrects single bit memory errors encountered when the CPU or I/O makes a demand read. This can be one of the following: • **Disabled**— Single bit memory errors are not corrected. • **Enabled**— Single bit memory errors are corrected in memory and the corrected data is set in response to the demand read.
Altitude	The approximate number of meters above sea level at which the physical server is installed. This can be one of the following: • **Auto**—The CPU determines the physical elevation. • **300 M**—The server is approximately 300 meters above sea level. • **900 M**—The server is approximately 900 meters above sea level. • **1500 M**—The server is approximately 1500 meters above sea level. • **3000 M**—The server is approximately 3000 meters above sea level.

QPI Configuration Parameters

Name	Description
QPI Link Frequency	The Intel QuickPath Interconnect (QPI) link frequency, in gigatransfers per second (GT/s). This can be one of the following: • **Auto**—The CPU determines the QPI link frequency. • **6.4 GT/s** • **7.2 GT/s** • **8.0 GT/s**

Onboard Storage Parameters

Name	Description
Onboard SCU Storage Support	Whether the onboard software RAID controller is available to the server. This can be one of the following: • **Disabled**—The software RAID controller is not available. • **Enabled**—The software RAID controller is available.

USB Configuration Parameters

Name	Description
Legacy USB Support	Whether the system supports legacy USB devices. This can be one of the following: • **Disabled**—USB devices are only available to EFI applications. • **Enabled**—Legacy USB support is always available. • **Auto**—Disables legacy USB support if no USB devices are connected.
Port 60/64 Emulation	Whether the system supports 60h/64h emulation for complete USB keyboard legacy support. This can be one of the following: • **Disabled**—60h/64 emulation is not supported. • **Enabled**—60h/64 emulation is supported. You should select this option if you are using a non-USB aware operating system on the server.

PCI Configuration Parameters

Name	Description
PCIe OptionROM Priority	If the server has both legacy and EFI compatible PCI Option ROMs, this parameter specifies which Option ROM the server should launch. This can be one of the following: • **EFI Compatible ROM**—The server launches the EFI compatible PCI Option ROM. • **Legacy ROM**—The server launches the legacy PCI Option ROM.
MMIO Above 4GB	Whether to enable or disable memory mapped I/O of 64-bit PCI devices to 4GB or greater address space. Legacy option ROMs are not able to access addresses above 4GB. PCI devices that are 64-bit compliant but use a legacy option ROM may not function correctly with this setting enabled. This can be one of the following: • **Disabled**—The server does not map I/O of 64-bit PCI devices to 4GB or greater address space. • **Enabled**—The server maps I/O of 64-bit PCI devices to 4GB or greater address space.

Serial Configuration Parameters

Name	Description
Console Redirection	Allows a serial port to be used for console redirection during POST and BIOS booting. After the BIOS has booted and the operating system is responsible for the server, console redirection is irrelevant and has no effect. This can be one of the following: • **Disabled**—No console redirection occurs during POST. • **COM 0**—Enables console redirection on COM port 0 during POST. • **COM 1**—Enables console redirection on COM port 1 during POST.

Name	Description
Terminal Type	What type of character formatting is used for console redirection. This can be one of the following: • **PC-ANSI**—The PC-ANSI terminal font is used. • **VT100**—A supported vt100 video terminal and its character set are used. • **VT100+**—A supported vt100-plus video terminal and its character set are used. • **VT-UTF8**—A video terminal with the UTF-8 character set is used. **Note** This setting must match the setting on the remote terminal application.
Bits per second	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: • **9600**—A 9,600 BAUD rate is used. • **19200**—A 19,200 BAUD rate is used. • **38400**—A 38,400 BAUD rate is used. • **57600**—A 57,600 BAUD rate is used. • **115200**—A 115,200 BAUD rate is used. **Note** This setting must match the setting on the remote terminal application.
Flow Control	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: • **None**—No flow control is used. • **Hardware RTS/CTS**—RTS/CTS is used for flow control. **Note** This setting must match the setting on the remote terminal application.

PCIe Slots Configuration Parameters

Name	Description
LOM Port *n* Legacy OptionROM	Whether Option ROM is available on the legacy LOM port designated by ***n***. This can be one of the following: • **Disabled**—Option ROM is not available on LOM port ***n***. • **Enabled**—Option ROM is available on LOM port ***n***.
All PCIe Slots OptionROM	Whether the server can use the PCIe Option ROM expansion slots. This can be one of the following: • **Disabled**—PCIe Option ROMs are not available. • **Enabled**—PCIe Option ROMs are available.
PCIe Slot:*n* OptionROM	Whether PCIe expansion slot ***n*** is available to the server. This can be one of the following: • **Disabled**—The expansion slot ***n*** is not available. • **Enabled**—The expansion slot ***n*** is available.
PCIe Mezzanine OptionROM	Whether the PCIe mezzanine slot expansion ROM is available to the server. This can be one of the following: • **Disabled**—The mezzanine slot is not available. • **Enabled**—The mezzanine slot is available.
PCIe Slot:*n* Link Speed	This option allows you to restrict the maximum speed of an adapter card installed in PCIe slot ***n***. This can be one of the following: • **GEN1**—2.5GT/s (gigatransfers per second) is the maximum speed allowed. • **GEN2**—5GT/s is the maximum speed allowed. • **GEN3**—8GT/s is the maximum speed allowed. For example, if you have a 3rd generation adapter card in PCIe slot 2 that you want to run at a maximum of 5GT/s instead of the 8GT/s that card supports, set the PCIe Slot 2 Link Speed to **GEN2**. The system then ignores the card's supported maximum speed of 8GT/s and forces it to run at a maximum of 5 GT/s.

Server Management BIOS Parameters for C220 and C240 Servers

Name	Description
FRB-2 Timer	Whether the FRB2 timer is used by CIMC to recover the system if it hangs during POST. This can be one of the following: • **Disabled**—The FRB2 timer is not used. • **Enabled**—The FRB2 timer is started during POST and used to recover the system if necessary.
OS Watchdog Timer	Whether the BIOS programs the watchdog timer with a specified timeout value. This can be one of the following: • **Disabled**—The watchdog timer is not used to track how long the server takes to boot. • **Enabled**—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 **OS Boot Watchdog Timer Timeout** field, the CIMC logs an error and takes the action specified in the **OS Boot Watchdog Policy** field.
OS Watchdog Timer Timeout	What timeout value the BIOS uses to configure the watchdog timer. This can be one of the following: • **5 Minutes**—The watchdog timer expires 5 minutes after the OS begins to boot. • **10 Minutes**—The watchdog timer expires 10 minutes after the OS begins to boot. • **15 Minutes**—The watchdog timer expires 15 minutes after the OS begins to boot. • **20 Minutes**—The watchdog timer expires 20 minutes after the OS begins to boot. **Note** This option is only applicable if you enable the OS Boot Watchdog Timer.

Name	Description
OS Watchdog Timer Policy	What action the system takes if the watchdog timer expires. This can be one of the following: • **Do Nothing**—The server takes no action if the watchdog timer expires during OS boot. • **Power Down**—The server is powered off if the watchdog timer expires during OS boot. • **Reset**—The server is reset if the watchdog timer expires during OS boot. **Note** This option is only applicable if you enable the OS Boot Watchdog Timer.

Name	Description
Boot Order Rules	How the server changes the boot order list defined through the CIMC GUI or CLI when there are no devices of a particular device type available or when the user defines a different boot order using the server's BIOS Setup Utility. The supported device types are: • **HDD**—Hard disk drive • **FDD**—Floppy disk drive • **CDROM**—Bootable CD-ROM or DVD • **PXE**—PXE boot • **EFI**—Extensible Firmware Interface The Boot Order Rules option can be one of the following: • **Strict**—When no devices of a particular type are available, the system creates a placeholder for that device type in the boot order list. When a device of that type becomes available, it is added to the boot order in the previously defined position. If the user defines a boot order through the server's BIOS Setup Utility, that boot order is given priority over the boot order configured through the CIMC GUI or CLI. All device types defined through CIMC that are not present in the boot order defined through the BIOS Setup Utility are removed from the boot order list. • **Loose**—When no devices of a particular type are available, the system removes that device type from the boot order. When a device of that type becomes available, the system adds it to the end of the boot order list. If the boot order is configured through the server's BIOS Setup Utility, that boot order is given priority over the boot order configured through the CIMC GUI or CLI. All device types defined through CIMC that are not present in the boot order defined through the BIOS Setup Utility are moved to the end of the boot order list.

C250 Servers

Main BIOS Parameters for C250 Servers

Name	Description
POST Error Pause	What happens when the server encounters a critical error during POST. This can be one of the following: • **Enabled**—The BIOS pauses the attempt to boot the server and opens the Error Manager when a critical error occurs during POST. • **Disabled**—The BIOS continues to attempt to boot the server.
Boot Option Retry	Whether the BIOS retries NON-EFI based boot options without waiting for user input. This can be one of the following: • **Enabled**—Continually retries NON-EFI based boot options without waiting for user input. • **Disabled**—Waits for user input before retrying NON-EFI based boot options.
USB Boot Priority	Whether the BIOS tries to boot from any available USB device before it tries to boot from the server hard drive. This can be one of the following: • **Enabled**—The server attempts to boot from a USB device if one is available. In addition, when a USB device is discovered, it is put at the top of its boot category. • **Disabled**—The server attempts to boot from the server hard drive before it tries USB devices. In addition, when a USB device is discovered, it is put at the bottom of its boot category.

Advanced BIOS Parameters for C250 Servers

Processor Configuration Parameters

Name	Description
Intel Turbo Boost Technology	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: • **Disabled**—The processor does not increase its frequency automatically. • **Enabled**—The processor utilizes Turbo Boost Technology if required.
Enhanced Intel Speedstep Technology	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: • **Disabled**—The processor never dynamically adjusts its voltage or frequency. • **Enabled**—The processor utilizes Enhanced Intel SpeedStep Technology and enables all supported processor sleep states to further conserve power. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.
Intel Hyper-Threading Technology	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: • **Disabled**—The processor does not permit hyperthreading. • **Enabled**—The processor allows for the parallel execution of multiple threads. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.

Name	Description
Number of Enabled Cores	Allows you to disable one or more of the physical cores on the server. This can be one of the following: • **All**—Enables all physical cores. This also enables Hyper Threading on the associated logical processor cores. • **1** through ***n***—Specifies the number of physical processor cores that can run on the server. Each physical core has an associated logical core. To disable Hyper Threading and have only one logical processor core running on the server, select **1**. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.
Execute Disable	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: • **Disabled**—The processor does not classify memory areas. • **Enabled**—The processor classifies memory areas. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.
Intel Virtualization Technology	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: • **Disabled**—The processor does not permit virtualization. • **Enabled**—The processor allows multiple operating systems in independent partitions. **Note** If you change this option, you must power cycle the server before the setting takes effect.
Intel VT for Directed IO	Whether the processor uses Intel Virtualization Technology for Directed I/O (VT-d). This can be one of the following: • **Disabled**—The processor does not use virtualization technology. • **Enabled**—The processor uses virtualization technology.

Name	Description
Intel VT-d Interrupt Remapping	Whether the processor supports Intel VT-d Interrupt Remapping. This can be one of the following: • **Disabled**—The processor does not support remapping. • **Enabled**—The processor uses VT-d Interrupt Remapping as required.
Intel VT-d Coherency Support	Whether the processor supports Intel VT-d Coherency. This can be one of the following: • **Disabled**—The processor does not support coherency. • **Enabled**—The processor uses VT-d Coherency as required.
Intel VT-d Address Translation Services	Whether the processor supports Intel VT-d Address Translation Services (ATS). This can be one of the following: • **Disabled**—The processor does not support ATS. • **Enabled**—The processor uses VT-d ATS as required.
Intel VT-d PassThrough DMA	Whether the processor supports Intel VT-d Pass-through DMA. This can be one of the following: • **Disabled**—The processor does not support pass-through DMA. • **Enabled**—The processor uses VT-d Pass-through DMA as required.
Direct Cache Access	Allows processors to increase I/O performance by placing data from I/O devices directly into the processor cache. This setting helps to reduce cache misses. This can be one of the following: • **Disabled**—Data from I/O devices is not placed directly into the processor cache. • **Enabled**—Data from I/O devices is placed directly into the processor cache.

Name	Description
Processor C3 Report	Whether the BIOS sends the C3 report to the operating system. When the OS receives the report, it can transition the processor into the lower C3 power state to decrease energy usage while maintaining optimal processor performance. This can be one of the following: • **Disabled**—The BIOS does not send the C3 report. • **ACPI C2**—The BIOS sends the C3 report using the ACPI C2 format, allowing the OS to transition the processor to the C3 low power state. • **ACPI C3**—The BIOS sends the C3 report using the ACPI C3 format, allowing the OS to transition the processor to the C3 low power state.
Processor C6 Report	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: • **Disabled**—The BIOS does not send the C6 report. • **Enabled**—The BIOS sends the C6 report, allowing the OS to transition the processor to the C6 low power state.

Name	Description
CPU Performance	Sets the CPU performance profile for the server. The performance profile consists of the following options: • Data Reuse Optimization • DCU Streamer Prefetcher • DCU IP Prefetcher • Hardware Prefetcher • Adjacent Cache-Line Prefetch This can be one of the following: • **Enterprise**—Only the DCU IP Prefetcher is enabled. The rest of the options are disabled. • **High Throughput**—All options are enabled. • **HPC**—Data Reuse Optimization is disabled and all other options are enabled. This setting is also known as high performance computing. • **Custom**—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 in the fields below.
Hardware Prefetcher	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: • **Disabled**—The hardware prefetcher is not used. • **Enabled**—The processor uses the hardware prefetcher when cache issues are detected. **Note** **CPU Performance** must be set to **Custom** in order to specify this value. For any value other than **Custom**, this option is overridden by the setting in the selected CPU performance profile.

Name	Description
Adjacent Cache-Line Prefetch	Whether the processor fetches cache lines in even/odd pairs instead of fetching just the required line. This can be one of the following: • **Disabled**—The processor only fetches the required line. • **Enabled**— The processor fetches both the required line and its paired line. **Note** **CPU Performance** must be set to **Custom** in order to specify this value. For any value other than **Custom**, this option is overridden by the setting in the selected CPU performance profile.
CPU C State	Whether the system can enter a power savings mode during idle periods. This can be one of the following: • **Disabled**—The system remains in high performance state even when idle. • **Enabled**—The system can reduce power to system components such as the DIMMs and CPUs. The amount of power reduction is specified in the **Package C State Limit** field.
C1E	Whether the CPU transitions to its minimum frequency when entering the C1 state. This can be one of the following: • **Disabled**—The CPU continues to run at its maximum frequency in C1 state. • **Enabled**—The CPU transitions to its minimum frequency. This option saves the maximum amount of power in C1 state. **Note** This option is used only if **CPU C State** is enabled.
Spread Spectrum	Spread Spectrum modulates the pulses produced by the clock on the motherboard in order to reduce the EMI (Electromagnetic Interference) generated by those pulses. This can be one of the following: • **Disabled**— The server does not use the spread spectrum function. • **Enabled**— The server uses the spread spectrum function.

Name	Description
OEM AESNI	Whether the server uses the AES-NI encryption instruction set that improves on the Advanced Encryption Standard (AES) algorithm. This can be one of the following: • **Disabled**—The server only uses AES encryption. • **Enabled**—The server uses AES-NI encryption when possible.

Memory Configuration Parameters

Name	Description
Select Memory RAS	How the memory reliability, availability, and serviceability (RAS) is configured for the server. This can be one of the following: • **Maximum Performance**—System performance is optimized. • **Mirroring**—System reliability is optimized by using half the system memory as backup. • **Sparing**—The system reserves some memory for use in the event a DIMM fails. If that happens, the server takes the DIMM offline and replaces it with the reserved memory. This option provides less redundancy than mirroring, but it leaves more of the memory available for programs running on the server.
NUMA Optimized	Whether the BIOS supports NUMA. This can be one of the following: • **Disabled**—The BIOS does not support NUMA. • **Enabled**—The BIOS includes the ACPI tables that are required for NUMA-aware operating systems. If you enable this option, the system must disable Inter-Socket Memory interleaving on some platforms.
Low Voltage DDR Mode	Whether the system prioritizes low voltage or high frequency memory operations. This can be one of the following: • **Power Saving Mode**—The system prioritizes low voltage memory operations over high frequency memory operations. This mode may lower memory frequency in order to keep the voltage low. • **Performance Mode**—The system prioritizes high frequency operations over low voltage operations.

Serial Port Configuration Parameters

Name	Description
Serial A Enable	Whether serial port A is enabled or disabled. This can be one of the following: • **Disabled**—The serial port is disabled. • **Enabled**—The serial port is enabled.
Serial A Address	If serial port A is enabled, select the hex address that it should use. This can be one of the following: • **3F8** • **2F8** • **3E8** • **2E8**

USB Configuration Parameters

Name	Description
USB Controller	Whether the processor uses its built-in USB controller. This can be one of the following: • **Disabled**—The server does not use the built-in USB controller. • **Enabled**—The processor uses the built-in USB controller.
Make Device Non-Bootable	Whether the server can boot from a USB device. This can be one of the following: • **Disabled**—The server can boot from a USB device. • **Enabled**—The server cannot boot from a USB device.

PCI Configuration Parameters

Name	Description
Memory Mapped I/O Above 4GB	Whether to enable or disable memory mapped I/O of 64-bit PCI devices to 4GB or greater address space. Legacy option ROMs are not able to access addresses above 4GB. PCI devices that are 64-bit compliant but use a legacy option ROM may not function correctly with this setting enabled. This can be one of the following: • **Disabled**—The server does not map I/O of 64-bit PCI devices to 4GB or greater address space. • **Enabled**—The server maps I/O of 64-bit PCI devices to 4GB or greater address space.
Onboard Gb NIC 1	Whether the first onboard Network Interface Card (NIC) is enabled or disabled on the server. This can be one of the following: • **Disabled**—NIC 1 is not available. • **Enabled**—NIC 1 is available.
Onboard Gb NIC 2	Whether the second onboard NIC is enabled or disabled on the server. This can be one of the following: • **Disabled**—NIC 2 is not available. • **Enabled**—NIC 2 is available.
Onboard Gb NIC *n* ROM	Whether the system loads the embedded PXE option ROM for the onboard NIC designated by ***n***. This can be one of the following: • **Disabled**—PXE option ROM is not available for NIC ***n***. • **Enabled**—PXE option ROM is available for NIC ***n***.
PCIe OptionROMs	Whether the server can use the PCIe Option ROM expansion slots. This can be one of the following: • **Disabled**—PCIe Option ROMs are not available. • **Enabled**—PCIe Option ROMs are available.
PCIe Slot *X* ROM	Whether the PCIe expansion slot designated by ***X*** is available to the server. This can be one of the following: • **Disabled**—The expansion slot ***X*** is not available. • **Enabled**—The expansion slot ***X*** is available.

Name	Description
Active Video	How the server displays video. This can be one of the following: • **Auto**—The server uses an external graphics adapter for display if one is available. • **Onboard Device**—The server always uses its internal graphics adapter even if an external graphics adapter is available.

Server Management BIOS Parameters for C250 Servers

Name	Description
Assert NMI on SERR	Whether the BIOS generates a non-maskable interrupt (NMI) and logs an error when a system error (SERR) occurs. This can be one of the following: • **Disabled**—The BIOS does not generate an NMI or log an error when a SERR occurs. • **Enabled**—The BIOS generates an NMI and logs an error when a SERR occurs. You must enable this setting if you want to enable **Assert NMI on PERR**.
Assert NMI on PERR	Whether the BIOS generates a non-maskable interrupt (NMI) and logs an error when a processor bus parity error (PERR) occurs. This can be one of the following: • **Disabled**—The BIOS does not generate an NMI or log an error when a PERR occurs. • **Enabled**—The BIOS generates an NMI and logs an error when a PERR occurs. You must enable **Assert NMI on SERR** to use this setting.
FRB2 Enable	Whether the FRB2 timer is used by CIMC to recover the system if it hangs during POST. This can be one of the following: • **Disabled**—The FRB2 timer is not used. • **Enabled**—The FRB2 timer is started during POST and used to recover the system if necessary.

Name	Description
PlugNPlay BMC Detection	Whether the system automatically detects the BMC in ACPI-compliant operating systems. This can be one of the following: • **Disabled**—The system never automatically detects the BMC. • **Enabled**—The system automatically detects the BMC whenever possible.
ACPI1.0 Support	Whether the BIOS publishes the ACPI 1.0 version of FADT in the Root System Description table. This version may be required for compatibility with OS versions that only support ACPI 1.0. This can be one of the following: • **Disabled**—ACPI 1.0 version is not published. • **Enabled**—ACPI 1.0 version is published.
Console Redirection	Allows a serial port to be used for console redirection during POST and BIOS booting. After the BIOS has booted and the operating system is responsible for the server, console redirection is irrelevant and has no effect. This can be one of the following: • **Disabled**—No console redirection occurs during POST. • **Serial Port A**—Enables console redirection on serial port A during POST. **Note** If you enable this option, you also disable the display of the Quiet Boot logo screen during POST.
Flow Control	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: • **None**—No flow control is used. • **RTS-CTS**—RTS/CTS is used for flow control. **Note** This setting must match the setting on the remote terminal application.

Name	Description
Baud Rate	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: • **9.6k**—A 9600 BAUD rate is used. • **19.2k**—A 19200 BAUD rate is used. • **38.4k**—A 38400 BAUD rate is used. • **57.6k**—A 57600 BAUD rate is used. • **115.2k**—A 115200 BAUD rate is used. **Note** This setting must match the setting on the remote terminal application.
Terminal Type	What type of character formatting is used for console redirection. This can be one of the following: • **PC-ANSI**—The PC-ANSI terminal font is used. • **VT100**—A supported vt100 video terminal and its character set are used. • **VT100-PLUS**—A supported vt100-plus video terminal and its character set are used. • **VT-UTF8**—A video terminal with the UTF-8 character set is used. **Note** This setting must match the setting on the remote terminal application.
Legacy OS Redirection	Whether redirection from a legacy operating system, such as DOS, is enabled on the serial port. This can be one of the following: • **Disabled**—The serial port enabled for console redirection is hidden from the legacy operating system. • **Enabled**—The serial port enabled for console redirection is visible to the legacy operating system.

C260 Servers

Main BIOS Parameters for C260 Servers

Name	Description
POST Error Pause	What happens when the server encounters a critical error during POST. This can be one of the following: • **Enabled**—The BIOS pauses the attempt to boot the server and opens the Error Manager when a critical error occurs during POST. • **Disabled**—The BIOS continues to attempt to boot the server.
Boot Option Retry	Whether the BIOS retries NON-EFI based boot options without waiting for user input. This can be one of the following: • **Enabled**—Continually retries NON-EFI based boot options without waiting for user input. • **Disabled**—Waits for user input before retrying NON-EFI based boot options.

Advanced BIOS Parameters for C260 Servers

Processor Configuration Parameters

Name	Description
Intel Turbo Boost Technology	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: • **Disabled**—The processor does not increase its frequency automatically. • **Enabled**—The processor utilizes Turbo Boost Technology if required.

Name	Description
Enhanced Intel Speedstep Technology	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: • **Disabled**—The processor never dynamically adjusts its voltage or frequency. • **Enabled**—The processor utilizes Enhanced Intel SpeedStep Technology and enables all supported processor sleep states to further conserve power. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.
Intel Hyper-Threading Technology	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: • **Disabled**—The processor does not permit hyperthreading. • **Enabled**—The processor allows for the parallel execution of multiple threads. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.
Number of Enabled Cores	Allows you to disable one or more of the physical cores on the server. This can be one of the following: • **All**—Enables all physical cores. This also enables Hyper Threading on the associated logical processor cores. • **1** through ***n***—Specifies the number of physical processor cores that can run on the server. Each physical core has an associated logical core. To disable Hyper Threading and have only one logical processor core running on the server, select **1**. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.

Name	Description
Execute Disable	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: • **Disabled**—The processor does not classify memory areas. • **Enabled**—The processor classifies memory areas. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.
Intel Virtualization Technology	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: • **Disabled**—The processor does not permit virtualization. • **Enabled**—The processor allows multiple operating systems in independent partitions. **Note** If you change this option, you must power cycle the server before the setting takes effect.
Intel VT for Directed IO	Whether the processor uses Intel Virtualization Technology for Directed I/O (VT-d). This can be one of the following: • **Disabled**—The processor does not use virtualization technology. • **Enabled**—The processor uses virtualization technology.
Intel VT-d Interrupt Remapping	Whether the processor supports Intel VT-d Interrupt Remapping. This can be one of the following: • **Disabled**—The processor does not support remapping. • **Enabled**—The processor uses VT-d Interrupt Remapping as required.
Intel VT-d Coherency Support	Whether the processor supports Intel VT-d Coherency. This can be one of the following: • **Disabled**—The processor does not support coherency. • **Enabled**—The processor uses VT-d Coherency as required.

Name	Description
Intel VT-d Address Translation Services	Whether the processor supports Intel VT-d Address Translation Services (ATS). This can be one of the following: • **Disabled**—The processor does not support ATS. • **Enabled**—The processor uses VT-d ATS as required.
Intel VT-d PassThrough DMA	Whether the processor supports Intel VT-d Pass-through DMA. This can be one of the following: • **Disabled**—The processor does not support pass-through DMA. • **Enabled**—The processor uses VT-d Pass-through DMA as required.
Direct Cache Access	Allows processors to increase I/O performance by placing data from I/O devices directly into the processor cache. This setting helps to reduce cache misses. This can be one of the following: • **Disabled**—Data from I/O devices is not placed directly into the processor cache. • **Enabled**—Data from I/O devices is placed directly into the processor cache.
Processor C3 Report	Whether the BIOS sends the C3 report to the operating system. When the OS receives the report, it can transition the processor into the lower C3 power state to decrease energy usage while maintaining optimal processor performance. This can be one of the following: • **Disabled**—The BIOS does not send the C3 report. • **ACPI C2**—The BIOS sends the C3 report using the ACPI C2 format, allowing the OS to transition the processor to the C3 low power state. • **ACPI C3**—The BIOS sends the C3 report using the ACPI C3 format, allowing the OS to transition the processor to the C3 low power state.

Name	Description
Processor C6 Report	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: • **Disabled**—The BIOS does not send the C6 report. • **Enabled**—The BIOS sends the C6 report, allowing the OS to transition the processor to the C6 low power state.
Package C State Limit	The amount of power available to the server components when they are idle. This can be one of the following: • **C0 state**—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. • **C1 state**—When the CPU is idle, the system slightly reduces the power consumption. This option requires less power than C0 and allows the server to return quickly to high performance mode. • **C3 state**—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. • **C6 state**—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. • **C7 state**—When the CPU is idle, the server makes a minimal amount of power available to the components. This option saves the maximum amount of power but it also requires the longest time for the server to return to high performance mode. • **No Limit**—The server may enter any available C state. **Note** This option is used only if **CPU C State** is enabled.

Name	Description
CPU C State	Whether the system can enter a power savings mode during idle periods. This can be one of the following: • **Disabled**—The system remains in high performance state even when idle. • **Enabled**—The system can reduce power to system components such as the DIMMs and CPUs. The amount of power reduction is specified in the **Package C State Limit** field.
C1E	Whether the CPU transitions to its minimum frequency when entering the C1 state. This can be one of the following: • **Disabled**—The CPU continues to run at its maximum frequency in C1 state. • **Enabled**—The CPU transitions to its minimum frequency. This option saves the maximum amount of power in C1 state. **Note** This option is used only if **CPU C State** is enabled.

Memory Configuration Parameters

Name	Description
Select Memory RAS	How the memory reliability, availability, and serviceability (RAS) is configured for the server. This can be one of the following: • **Maximum Performance**—System performance is optimized. • **Mirroring**—System reliability is optimized by using half the system memory as backup. • **Sparing**—The system reserves some memory for use in the event a DIMM fails. If that happens, the server takes the DIMM offline and replaces it with the reserved memory. This option provides less redundancy than mirroring, but it leaves more of the memory available for programs running on the server.

Name	Description
NUMA Optimized	Whether the BIOS supports NUMA. This can be one of the following: • **Disabled**—The BIOS does not support NUMA. • **Enabled**—The BIOS includes the ACPI tables that are required for NUMA-aware operating systems. If you enable this option, the system must disable Inter-Socket Memory interleaving on some platforms.
Sparing Mode	The sparing mode used by the CIMC. This can be one of the following: • **Rank Sparing**—The spared memory is allocated at the rank level. • **DIMM Sparing**—The spared memory is allocated at the DIMM level. **Note** This option is used only if **Select Memory RAS** is set to **Sparing**.
Mirroring Mode	Mirroring is supported across Integrated Memory Controllers (IMCs) where one memory riser is mirrored with another. This can be one of the following: • **Intersocket**—Each IMC is mirrored across two sockets. • **Intrasocket**—One IMC is mirrored with another IMC in the same socket. **Note** This option is used only if **Select Memory RAS** is set to **Mirroring**.
Patrol Scrub	Whether the system actively searches for, and corrects, single bit memory errors even in unused portions of the memory on the server. This can be one of the following: • **Disabled**—The system checks for memory ECC errors only when the CPU reads or writes a memory address. • **Enabled**—The system periodically reads and writes memory searching for ECC errors. If any errors are found, the system attempts to fix them. This option may correct single bit errors before they become multi-bit errors, but it may adversely affect performance when the patrol scrub is running.

Name	Description
Patrol Scrub Interval	Controls the time interval between each patrol scrub memory access. A lower interval scrubs the memory more often but requires more memory bandwidth. Select a value between 5 and 23. The default value is 8. **Note** This option is used only if **Patrol Scrub** is enabled.
CKE Low Policy	Controls the DIMM power savings mode policy. This can be one of the following: • **Disabled**—DIMMs do not enter power saving mode. • **Slow**—DIMMs can enter power saving mode, but the requirements are higher. Therefore, DIMMs enter power saving mode less frequently. • **Fast**—DIMMs enter power saving mode as often as possible. • **Auto**—The BIOS controls when a DIMM enters power saving mode based on the DIMM configuration.

Serial Port Configuration Parameters

Name	Description
Serial A Enable	Whether serial port A is enabled or disabled. This can be one of the following: • **Disabled**—The serial port is disabled. • **Enabled**—The serial port is enabled.

USB Configuration Parameters

Name	Description
Make Device Non-Bootable	Whether the server can boot from a USB device. This can be one of the following: • **Disabled**—The server can boot from a USB device. • **Enabled**—The server cannot boot from a USB device.

PCI Configuration Parameters

Name	Description
Memory Mapped I/O Above 4GB	Whether to enable or disable memory mapped I/O of 64-bit PCI devices to 4GB or greater address space. Legacy option ROMs are not able to access addresses above 4GB. PCI devices that are 64-bit compliant but use a legacy option ROM may not function correctly with this setting enabled. This can be one of the following: • **Disabled**—The server does not map I/O of 64-bit PCI devices to 4GB or greater address space. • **Enabled**—The server maps I/O of 64-bit PCI devices to 4GB or greater address space.
Onboard NIC *n* ROM	Whether the system loads the embedded PXE option ROM for the onboard NIC designated by ***n***. This can be one of the following: • **Disabled**—PXE option ROM is not available for NIC ***n***. • **Enabled**—PXE option ROM is available for NIC ***n***.
PCIe OptionROMs	Whether the server can use the PCIe Option ROM expansion slots. This can be one of the following: • **Disabled**—PCIe Option ROMs are not available. • **Enabled**—PCIe Option ROMs are available.
PCIe Slot *n* ROM	Whether PCIe expansion slot ***n*** is available to the server. This can be one of the following: • **Disabled**—The expansion slot ***n*** is not available. • **Enabled**—The expansion slot ***n*** is available.

Server Management BIOS Parameters for C260 Servers

Name	Description
Assert NMI on SERR	Whether the BIOS generates a non-maskable interrupt (NMI) and logs an error when a system error (SERR) occurs. This can be one of the following: • **Disabled**—The BIOS does not generate an NMI or log an error when a SERR occurs. • **Enabled**—The BIOS generates an NMI and logs an error when a SERR occurs. You must enable this setting if you want to enable **Assert NMI on PERR**.
Assert NMI on PERR	Whether the BIOS generates a non-maskable interrupt (NMI) and logs an error when a processor bus parity error (PERR) occurs. This can be one of the following: • **Disabled**—The BIOS does not generate an NMI or log an error when a PERR occurs. • **Enabled**—The BIOS generates an NMI and logs an error when a PERR occurs. You must enable **Assert NMI on SERR** to use this setting.
Console Redirection	Allows a serial port to be used for console redirection during POST and BIOS booting. After the BIOS has booted and the operating system is responsible for the server, console redirection is irrelevant and has no effect. This can be one of the following: • **Disabled**—No console redirection occurs during POST. • **Serial Port A**—Enables console redirection on serial port A during POST. **Note** If you enable this option, you also disable the display of the Quiet Boot logo screen during POST.
Flow Control	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: • **None**—No flow control is used. • **RTS-CTS**—RTS/CTS is used for flow control. **Note** This setting must match the setting on the remote terminal application.

Name	Description
Baud Rate	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: • **9.6k**—A 9600 BAUD rate is used. • **19.2k**—A 19200 BAUD rate is used. • **38.4k**—A 38400 BAUD rate is used. • **57.6k**—A 57600 BAUD rate is used. • **115.2k**—A 115200 BAUD rate is used. **Note** This setting must match the setting on the remote terminal application.
Terminal Type	What type of character formatting is used for console redirection. This can be one of the following: • **PC-ANSI**—The PC-ANSI terminal font is used. • **VT100**—A supported vt100 video terminal and its character set are used. • **VT100-PLUS**—A supported vt100-plus video terminal and its character set are used. • **VT-UTF8**—A video terminal with the UTF-8 character set is used. **Note** This setting must match the setting on the remote terminal application.
OS Boot Watchdog Timer Timeout	What timeout value the BIOS uses to configure the watchdog timer. This can be one of the following: • **5 Minutes**—The watchdog timer expires 5 minutes after the OS begins to boot. • **10 Minutes**—The watchdog timer expires 10 minutes after the OS begins to boot. • **15 Minutes**—The watchdog timer expires 15 minutes after the OS begins to boot. • **20 Minutes**—The watchdog timer expires 20 minutes after the OS begins to boot. **Note** This option is only applicable if you enable the OS Boot Watchdog Timer.

Name	Description
OS Boot Watchdog Policy	What action the system takes if the watchdog timer expires. This can be one of the following: • **Power Off**—The server is powered off if the watchdog timer expires during OS boot. • **Reset**—The server is reset if the watchdog timer expires during OS boot. **Note** This option is only applicable if you enable the OS Boot Watchdog Timer.
Legacy OS Redirection	Whether redirection from a legacy operating system, such as DOS, is enabled on the serial port. This can be one of the following: • **Disabled**—The serial port enabled for console redirection is hidden from the legacy operating system. • **Enabled**—The serial port enabled for console redirection is visible to the legacy operating system.
OS Boot Watchdog Timer	Whether the BIOS programs the watchdog timer with a specified timeout value. This can be one of the following: • **Disabled**—The watchdog timer is not used to track how long the server takes to boot. • **Enabled**—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 **OS Boot Watchdog Timer Timeout** field, the CIMC logs an error and takes the action specified in the **OS Boot Watchdog Policy** field.

C460 Servers

Main BIOS Parameters for C460 Servers

Name	Description
POST Error Pause	What happens when the server encounters a critical error during POST. This can be one of the following: • **Enabled**—The BIOS pauses the attempt to boot the server and opens the Error Manager when a critical error occurs during POST. • **Disabled**—The BIOS continues to attempt to boot the server.

Name	Description
Boot Option Retry	Whether the BIOS retries NON-EFI based boot options without waiting for user input. This can be one of the following: • **Enabled**—Continually retries NON-EFI based boot options without waiting for user input. • **Disabled**—Waits for user input before retrying NON-EFI based boot options.

Advanced BIOS Parameters for C460 Servers

Processor Configuration Parameters

Name	Description
Intel Turbo Boost Technology	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: • **Disabled**—The processor does not increase its frequency automatically. • **Enabled**—The processor utilizes Turbo Boost Technology if required.
Enhanced Intel Speedstep Technology	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: • **Disabled**—The processor never dynamically adjusts its voltage or frequency. • **Enabled**—The processor utilizes Enhanced Intel SpeedStep Technology and enables all supported processor sleep states to further conserve power. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.

Name	Description
Intel Hyper-Threading Technology	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: • **Disabled**—The processor does not permit hyperthreading. • **Enabled**—The processor allows for the parallel execution of multiple threads. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.
Number of Enabled Cores	Allows you to disable one or more of the physical cores on the server. This can be one of the following: • **All**—Enables all physical cores. This also enables Hyper Threading on the associated logical processor cores. • **1** through ***n***—Specifies the number of physical processor cores that can run on the server. Each physical core has an associated logical core. To disable Hyper Threading and have only one logical processor core running on the server, select **1**. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.
Execute Disable	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: • **Disabled**—The processor does not classify memory areas. • **Enabled**—The processor classifies memory areas. We recommend that you contact your operating system vendor to make sure the operating system supports this feature.

Name	Description
Intel Virtualization Technology	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: • **Disabled**—The processor does not permit virtualization. • **Enabled**—The processor allows multiple operating systems in independent partitions. **Note** If you change this option, you must power cycle the server before the setting takes effect.
Intel VT for Directed IO	Whether the processor uses Intel Virtualization Technology for Directed I/O (VT-d). This can be one of the following: • **Disabled**—The processor does not use virtualization technology. • **Enabled**—The processor uses virtualization technology.
Intel VT-d Interrupt Remapping	Whether the processor supports Intel VT-d Interrupt Remapping. This can be one of the following: • **Disabled**—The processor does not support remapping. • **Enabled**—The processor uses VT-d Interrupt Remapping as required.
Intel VT-d Coherency Support	Whether the processor supports Intel VT-d Coherency. This can be one of the following: • **Disabled**—The processor does not support coherency. • **Enabled**—The processor uses VT-d Coherency as required.
Intel VT-d Address Translation Services	Whether the processor supports Intel VT-d Address Translation Services (ATS). This can be one of the following: • **Disabled**—The processor does not support ATS. • **Enabled**—The processor uses VT-d ATS as required.
Intel VT-d PassThrough DMA	Whether the processor supports Intel VT-d Pass-through DMA. This can be one of the following: • **Disabled**—The processor does not support pass-through DMA. • **Enabled**—The processor uses VT-d Pass-through DMA as required.

Name	Description
Direct Cache Access	Allows processors to increase I/O performance by placing data from I/O devices directly into the processor cache. This setting helps to reduce cache misses. This can be one of the following: • **Disabled**—Data from I/O devices is not placed directly into the processor cache. • **Enabled**—Data from I/O devices is placed directly into the processor cache.
Processor C3 Report	Whether the BIOS sends the C3 report to the operating system. When the OS receives the report, it can transition the processor into the lower C3 power state to decrease energy usage while maintaining optimal processor performance. This can be one of the following: • **Disabled**—The BIOS does not send the C3 report. • **ACPI C2**—The BIOS sends the C3 report using the ACPI C2 format, allowing the OS to transition the processor to the C3 low power state. • **ACPI C3**—The BIOS sends the C3 report using the ACPI C3 format, allowing the OS to transition the processor to the C3 low power state.
Processor C6 Report	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: • **Disabled**—The BIOS does not send the C6 report. • **Enabled**—The BIOS sends the C6 report, allowing the OS to transition the processor to the C6 low power state.

Name	Description
Package C State Limit	The amount of power available to the server components when they are idle. This can be one of the following: • **C0 state**—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. • **C1 state**—When the CPU is idle, the system slightly reduces the power consumption. This option requires less power than C0 and allows the server to return quickly to high performance mode. • **C3 state**—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. • **C6 state**—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. • **C7 state**—When the CPU is idle, the server makes a minimal amount of power available to the components. This option saves the maximum amount of power but it also requires the longest time for the server to return to high performance mode. • **No Limit**—The server may enter any available C state. **Note** This option is used only if **CPU C State** is enabled.
CPU C State	Whether the system can enter a power savings mode during idle periods. This can be one of the following: • **Disabled**—The system remains in high performance state even when idle. • **Enabled**—The system can reduce power to system components such as the DIMMs and CPUs. The amount of power reduction is specified in the **Package C State Limit** field.

Name	Description
C1E	Whether the CPU transitions to its minimum frequency when entering the C1 state. This can be one of the following: • **Disabled**—The CPU continues to run at its maximum frequency in C1 state. • **Enabled**—The CPU transitions to its minimum frequency. This option saves the maximum amount of power in C1 state. **Note** This option is used only if **CPU C State** is enabled.

Memory Configuration Parameters

Name	Description
Select Memory RAS	How the memory reliability, availability, and serviceability (RAS) is configured for the server. This can be one of the following: • **Maximum Performance**—System performance is optimized. • **Mirroring**—System reliability is optimized by using half the system memory as backup. • **Sparing**—The system reserves some memory for use in the event a DIMM fails. If that happens, the server takes the DIMM offline and replaces it with the reserved memory. This option provides less redundancy than mirroring, but it leaves more of the memory available for programs running on the server.
NUMA Optimized	Whether the BIOS supports NUMA. This can be one of the following: • **Disabled**—The BIOS does not support NUMA. • **Enabled**—The BIOS includes the ACPI tables that are required for NUMA-aware operating systems. If you enable this option, the system must disable Inter-Socket Memory interleaving on some platforms.

Name	Description
Sparing Mode	The sparing mode used by the CIMC. This can be one of the following: • **Rank Sparing**—The spared memory is allocated at the rank level. • **DIMM Sparing**—The spared memory is allocated at the DIMM level. **Note** This option is used only if **Select Memory RAS** is set to **Sparing**.
Mirroring Mode	Mirroring is supported across Integrated Memory Controllers (IMCs) where one memory riser is mirrored with another. This can be one of the following: • **Intersocket**—Each IMC is mirrored across two sockets. • **Intrasocket**—One IMC is mirrored with another IMC in the same socket. **Note** This option is used only if **Select Memory RAS** is set to **Mirroring**.
Patrol Scrub	Whether the system actively searches for, and corrects, single bit memory errors even in unused portions of the memory on the server. This can be one of the following: • **Disabled**—The system checks for memory ECC errors only when the CPU reads or writes a memory address. • **Enabled**—The system periodically reads and writes memory searching for ECC errors. If any errors are found, the system attempts to fix them. This option may correct single bit errors before they become multi-bit errors, but it may adversely affect performance when the patrol scrub is running.
Patrol Scrub Interval	Controls the time interval between each patrol scrub memory access. A lower interval scrubs the memory more often but requires more memory bandwidth. Select a value between 5 and 23. The default value is 8. **Note** This option is used only if **Patrol Scrub** is enabled.

Name	Description
CKE Low Policy	Controls the DIMM power savings mode policy. This can be one of the following: • **Disabled**—DIMMs do not enter power saving mode. • **Slow**—DIMMs can enter power saving mode, but the requirements are higher. Therefore, DIMMs enter power saving mode less frequently. • **Fast**—DIMMs enter power saving mode as often as possible. • **Auto**—The BIOS controls when a DIMM enters power saving mode based on the DIMM configuration.

Serial Port Configuration Parameters

Name	Description
Serial A Enable	Whether serial port A is enabled or disabled. This can be one of the following: • **Disabled**—The serial port is disabled. • **Enabled**—The serial port is enabled.

USB Configuration Parameters

Name	Description
Make Device Non-Bootable	Whether the server can boot from a USB device. This can be one of the following: • **Disabled**—The server can boot from a USB device. • **Enabled**—The server cannot boot from a USB device.

PCI Configuration Parameters

Name	Description
Memory Mapped I/O Above 4GB	Whether to enable or disable memory mapped I/O of 64-bit PCI devices to 4GB or greater address space. Legacy option ROMs are not able to access addresses above 4GB. PCI devices that are 64-bit compliant but use a legacy option ROM may not function correctly with this setting enabled. This can be one of the following: • **Disabled**—The server does not map I/O of 64-bit PCI devices to 4GB or greater address space. • **Enabled**—The server maps I/O of 64-bit PCI devices to 4GB or greater address space.
Onboard NIC *n* ROM	Whether the system loads the embedded PXE option ROM for the onboard NIC designated by ***n***. This can be one of the following: • **Disabled**—PXE option ROM is not available for NIC ***n***. • **Enabled**—PXE option ROM is available for NIC ***n***.
PCIe OptionROMs	Whether the server can use the PCIe Option ROM expansion slots. This can be one of the following: • **Disabled**—PCIe Option ROMs are not available. • **Enabled**—PCIe Option ROMs are available.
PCIe Slot *n* ROM	Whether PCIe expansion slot ***n*** is available to the server. This can be one of the following: • **Disabled**—The expansion slot ***n*** is not available. • **Enabled**—The expansion slot ***n*** is available.

Server Management BIOS Parameters for C460 Servers

Name	Description
Assert NMI on SERR	Whether the BIOS generates a non-maskable interrupt (NMI) and logs an error when a system error (SERR) occurs. This can be one of the following: • **Disabled**—The BIOS does not generate an NMI or log an error when a SERR occurs. • **Enabled**—The BIOS generates an NMI and logs an error when a SERR occurs. You must enable this setting if you want to enable **Assert NMI on PERR**.
Assert NMI on PERR	Whether the BIOS generates a non-maskable interrupt (NMI) and logs an error when a processor bus parity error (PERR) occurs. This can be one of the following: • **Disabled**—The BIOS does not generate an NMI or log an error when a PERR occurs. • **Enabled**—The BIOS generates an NMI and logs an error when a PERR occurs. You must enable **Assert NMI on SERR** to use this setting.
Console Redirection	Allows a serial port to be used for console redirection during POST and BIOS booting. After the BIOS has booted and the operating system is responsible for the server, console redirection is irrelevant and has no effect. This can be one of the following: • **Disabled**—No console redirection occurs during POST. • **Serial Port A**—Enables console redirection on serial port A during POST. **Note** If you enable this option, you also disable the display of the Quiet Boot logo screen during POST.
Flow Control	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: • **None**—No flow control is used. • **RTS-CTS**—RTS/CTS is used for flow control. **Note** This setting must match the setting on the remote terminal application.

Name	Description
Baud Rate	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: • **9.6k**—A 9600 BAUD rate is used. • **19.2k**—A 19200 BAUD rate is used. • **38.4k**—A 38400 BAUD rate is used. • **57.6k**—A 57600 BAUD rate is used. • **115.2k**—A 115200 BAUD rate is used. **Note** This setting must match the setting on the remote terminal application.
Terminal Type	What type of character formatting is used for console redirection. This can be one of the following: • **PC-ANSI**—The PC-ANSI terminal font is used. • **VT100**—A supported vt100 video terminal and its character set are used. • **VT100-PLUS**—A supported vt100-plus video terminal and its character set are used. • **VT-UTF8**—A video terminal with the UTF-8 character set is used. **Note** This setting must match the setting on the remote terminal application.
OS Boot Watchdog Timer Timeout	What timeout value the BIOS uses to configure the watchdog timer. This can be one of the following: • **5 Minutes**—The watchdog timer expires 5 minutes after the OS begins to boot. • **10 Minutes**—The watchdog timer expires 10 minutes after the OS begins to boot. • **15 Minutes**—The watchdog timer expires 15 minutes after the OS begins to boot. • **20 Minutes**—The watchdog timer expires 20 minutes after the OS begins to boot. **Note** This option is only applicable if you enable the OS Boot Watchdog Timer.

Name	Description
OS Boot Watchdog Policy	What action the system takes if the watchdog timer expires. This can be one of the following: • **Power Off**—The server is powered off if the watchdog timer expires during OS boot. • **Reset**—The server is reset if the watchdog timer expires during OS boot. **Note** This option is only applicable if you enable the OS Boot Watchdog Timer.
Legacy OS Redirection	Whether redirection from a legacy operating system, such as DOS, is enabled on the serial port. This can be one of the following: • **Disabled**—The serial port enabled for console redirection is hidden from the legacy operating system. • **Enabled**—The serial port enabled for console redirection is visible to the legacy operating system.
OS Boot Watchdog Timer	Whether the BIOS programs the watchdog timer with a specified timeout value. This can be one of the following: • **Disabled**—The watchdog timer is not used to track how long the server takes to boot. • **Enabled**—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 **OS Boot Watchdog Timer Timeout** field, the CIMC logs an error and takes the action specified in the **OS Boot Watchdog Policy** field.