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Integrated Baseboard Management Controller Web Console (Integrated BMC Web Console)

User Guide

For the Intel[®] Server Boards D50TNP, M50CYP, and D40AMP.

Rev. 1.2

March 2022

Delivering Breakthrough Datacenter System Innovation – Experience What's Inside!

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Revision History

Date	Revision	Changes
April 2021	1.0	Initial release.
September 2021	1.1	 Added Intel Server D40AMP. Updated Figures 14, 41, 43, 66. Minor updates throughout for clarity.
March 2022	1.2	 Updated descriptions for KCS policy control modes Deny All and Restrict in Table 19. Edits throughout the document to improve style and formats.

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1. Introduction

This user guide describes how to use the Integrated Baseboard Management Controller Web Console (Integrated BMC Web Console). It provides an overview of the features of the web console.

The Integrated BMC Web Console provides both exceptional stability and permanent availability independent of the present state of the server's operating system. As a system administrator, use the Integrated BMC Web Console to gain location-independent remote access to respond to critical incidents and to undertake necessary maintenance.

From the Intel Server Boards D50TNP, M50CYP, and D40AMP BMC-enabled remote keyboard, video, and mouse (KVM) and media redirection on the server system through the built-in web console, from anywhere, at any time.

1.1 Support Information

For support on the Integrated BMC Web Console, visit <u>https://www.intel.com/content/www/us/en/support.html</u>. This support page provides the following:

- Latest BIOS, firmware, drivers, and utilities.
- Product documentation, installation guides, and quick start guides.
- Full product specifications, technical advisories, and errata.
- Compatibility documentation for memory, hardware add-in cards, chassis support matrices, and operating systems.
- Server and chassis accessory parts list for ordering upgrades and spare parts.
- Searchable knowledge base of product information.

For further assistance, contact Intel Customer Support at http://www.intel.com/support/feedback.htm.

1.2 Warranty Information

To obtain warranty information, visit https://www.intel.com/content/www/us/en/support/articles/000006361/services.html.

2. Advanced System Management Feature

This section explains the advanced management features supported by the BMC firmware and highlights significance benefits of its features.

2.1 Advanced Management Features Overview

The Advanced management features are delivered as part of the BMC firmware image, starting with Intel[®] Server D50TNP, M50CYP, and D40AMP families' products moving to a software license key to activate BMC Advanced Management Features.

Advanced manageability features are supported over all NIC ports enabled for server manageability. This includes baseboard integrated BMC-shared NICs, which share network bandwidth with the host system, as well as the LAN channel provided by the onboard Intel[®] Dedicated Server Management NIC.

Standard with system and do not require a key:

- Virtual KVM over HTML5
- Integrated BMC Web Console
- Redfish* 2.0
- IPMI 2.0
 - Node Manager
- Email Alerting
- Out-of-band BIOS/BMC Update and Configuration
- System Inventory
- Autonomous Debug Log

Advanced features require software key:

- Software Key to enable features
- Included single system license for Intel[®] Data Center Manager (Intel[®] DCM)
 - Intel DCM is a software solution that collects and analyzes the real-time health, power, and thermals of a variety of devices in data centers helping to improve the efficiency and uptime. For more information, go to <u>https://www.intel.com/content/www/us/en/software/intel-dcmproduct-detail.html</u>
- Virtual Media Image Redirection (HTML5 and Java*)
- Virtual Media over network share and local folder
- Active Directory support
- Full system firmware update including drives, memory, and RAID (Available Q4 2021)
- Storage and network device monitoring (Available Q4 2021)
- Out-of-band hardware RAID Management for latest Intel[®] RAID cards (Available Q4 2021)

2.1.1 Advanced Management Features Details

Standard System Management Features

Virtual KVM over HTML5. The BMC firmware supports keyboard, video, and mouse redirection (KVM) over LAN. This feature is available remotely from the embedded web server as an HTML5 application. USB1.1 or USB 2.0 based mouse and keyboard redirection are supported. It is also possible to use the KVM-redirection (KVM-r) session concurrently with media-redirection (media-r). This feature allows a user to use the keyboard interactively, video, and mouse (KVM) functions of the remote server as if the user were physically at the managed server.

KVM redirection consoles support the following keyboard layouts: English, Chinese (traditional), Japanese, German, French, Spanish, Korean, Italian, and United Kingdom. KVM redirection includes a

"soft keyboard" function. The "soft keyboard" is used to simulate an entire keyboard that is connected to the remote system. The "soft keyboard" functionality supports the following layouts: English, Dutch, French, German, Italian, Russian, and Spanish.

The KVM-redirection feature automatically senses video resolution for best possible screenshot and provides high-performance mouse tracking and synchronization. It allows remote viewing and configuration in pre-boot POST and BIOS setup, once BIOS has initialized video.

- Integrated BMC Web Console. The BMC firmware has an embedded web server that can remotely serve web pages to any supported browser. This web console allows administrator to view system information including firmware versions, server health, diagnostic information, power statistics. It enables configuration of the BMC and BIOS. It provides the ability for users to perform power actions, launch KVM and set up virtual media redirection.
- **Redfish*.** The BMC supports several Redfish schemas. The BMC currently supports version 1.7 and schema version 2019.1. DMTF's Redfish is a standard designed to deliver simple and secure management for converged, hybrid IT and the Software Defined Data Center (SDDC). Both human readable and machine capable, Redfish leverages common Internet and web services standards to expose information directly to the modern tool chain.
- **IPMI 2.0.** The BMC is IPMI 2.0 compliant including support for Intel Dynamic Power Node Manager. IPMI defines a set of interfaces used by system administrators for out-of-band management of computer systems and monitoring of their operation.
- **Out-of-band BIOS/BMC Update and Configuration.** The BMC supports Redfish schemas and embedded web console features that allow administrators to update the BMC, BIOS, Intel ME, and SDR firmware. The BMC firmware also includes Power Supply and Back plan firmware. The BMC update will happen immediately and cause a BMC reset to occur at the end. The BIOS and Intel ME firmware is staged in the BMC and will be updated on the next reboot. The BMC also supports Redfish and embedded web console feature to view and modify BIOS settings. On each boot, BIOS will provide all its settings and active value to the BMC to be displayed. It will also check if any changes are requested and perform those changes.
- **System Inventory.** The BMC supports Redfish schemas and embedded web console pages to display system inventory. This inventory includes FRU information, CPU, Memory, NVMe*, networking, and storage. When applicable, the firmware version will also be provided.
- Autonomous Debug Log. The BMC has a debug log that can be downloaded to facilitate support issues. This debug log can be downloaded from the embedded web console or via Intel® Server Configuration Utility and Intel® Server Debug and Provisioning Tool (Intel® SDP Tool). The debug log contains configuration data including SDR, SEL, BMC configuration, PCI configuration, power supply configuration, and power supply black box data. The debug log also contains SMBIOS data and the POST codes from the last 2 boots. Finally, when the system has a catastrophic error condition leading to a system shutdown, the BMC will hold the CPU in reset long enough to collect processor machine check registers, memory controller machine check registers, I/O global error registers, and other processor state info.
- Security Features. The BMC contains several security features including OpenLDAP and Active Directory, security logs, ability to turn off any remote port, SSL certificate upload, VLAN support, and KCS control. The BMC also supports full user management with the ability to define password complexity rules. Each BMC release is given a security version number to prevent firmware downgrades from going to lower security versions. Intel provides a best practices security guide available at

https://www.intel.com/content/www/us/en/support/articles/000055785/server-products.html

• **Eventing.** The BMC supports alerting based on system issues. BMC supports SNMP traps, email alerting (SMTP), and Redfish event subscriptions.

Advanced System Management Features

- **Software Key to enable features.** BMC supports a method to upload advanced system management license files to enable the following features. The license file can be uploaded via embedded web console, Redfish, and Intel Server Configuration Utility. Not all features are available at launch.
- Single license for Intel® Data Center Manager (Intel® DCM). All systems that have the Advanced System Management Key uploaded can be managed by Intel DCM for free. Intel DCM comes with a 30 day trial. However, when the trial expires, all systems with this key can continue to be managed. Intel DCM allows administrators to manage and monitor the health, power, thermals, utilization, inventory, and firmware versions of servers across the entire data center. For more information on Intel DCM, go to: https://www.intel.com/content/www/us/en/software/intel-dcm-product-detail.html?wapkw=DCM
- Virtual Media Image Redirection (HTML5 and Java*). The BMC supports media redirection of local folders and .IMG and .ISO image files. This redirection is supported in both HTML5 and Java remote console clients. When the user selects "Virtual Media over HTML5", a new web page will be displayed which provides the user interface to select which type of source media (image file or file folder) to mount, and then allows the user to select the desired media to make available to the server system. After the type and specific media are selected, the interface provides a mount/unmount interface so the user can connect the media to or disconnect the media from the server system. Once connected, the selected image file or file folder is presented in the server system as standard removable media, and may be interacted with in the normal fashion based on the operating system running on the server system. This feature allows system administrators to install software (including operating system installation), copy files, perform firmware updates, etc., from media on their remote workstation.

Note: The file folder share is presented to the server system as a UDF file system; the server system operating system must be able to interact with UDF file systems for this feature to be used with the operating system.

- Virtual Media over network share. In addition to supporting virtual media redirection from the remote workstation, the BMC also supports media redirection of file folders and .IMG and .ISO files hosted on a network file server accessible to the BMC network interface. The current version supports Samba shares (Microsoft Windows* file shares), and future versions will add support for NFS shares. This virtual media redirection is more effective for mounting virtual media at scale, as instead of processing all files from the workstation's drive through the HTML5 application and over the workstation's network, each BMC makes a direct network file share connection to the file server and accesses files across that network share directly.
- Active Directory support. The BMC supports Active Directory. Active Directory (AD) is a directory service developed by Microsoft* for Windows domain networks. This feature allows users to log in to the web console or Redfish via an Active Directory username instead of local authentication. This allows administrators to only change passwords on this single domain account instead on every remote system.
- Full system firmware update including drives, memory, and RAID. The BMC supports a staging area to allow customers to upload EFI utilities and supporting files, which will be silently executed by BIOS on the next reboot. Examples include firmware update for SSD, Network, RAID, or other components that have EFI utilities. User can also use this to collect inventory data or configure advanced RAID options. Redfish schemas support both the uploading and downloading of files. Intel[®] Server Debug and Provisioning Tool and Intel DCM will use this region to perform multiple firmware update tasks.
- Storage and network device monitoring. The BMC supports MCTP protocol that allows the monitoring of storage and networking devices. This includes asset inventory including firmware versions as well as link status and health.

• **Out-of-band hardware RAID Management.** The BMC supports basic RAID management of latest generation Intel RAID cards. The BMC will be able to see asset inventory of all drives behind RAID controllers, view RAID health and do basic RAID 0/1 configuration intended for boot virtual drives.

Note: The following are available post launch:

- Full system firmware update including drives, memory, and RAID.
- Storage and network device monitoring.
- Out-of-band hardware RAID Management.

2.2 Supported Browsers

Virtual KVM over HTML5 and Virtual Media over HTML5 features require browser to support the features of Websocket and HTML5.

The following browsers are tested:

- Ubuntu* 16.04 64-bit: Google Chrome* 69.0.3497.100
- Ubuntu 16.04 64-bit: Mozilla Firefox* 64.0
- Windows Server 2016 64-bit: Google Chrome 73.0.3683.86 64-bit
- Windows Server 2016 64-bit: Mozilla Firefox 66.0.2

3. Installing the Advanced Management Key

3.1 How to Order Advanced System Management Key

CTO/L9: If ordering a fully integrated system, select the AdvSysMgmtKey within the CTO portal and the Intel factory will automatically upload the license key during system integration.

Accessory: If ordering as an individual accessory via WOM, follow the steps in chapter 3.1.1 to receive the license file and upload to the BMC.

3.1.1 Ordering as an Accessory (Not Via CTO)

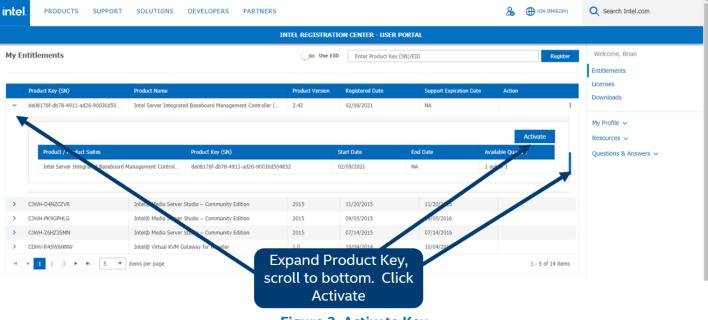
- 1. Place the order via WOM like any other component
- 2. Receive an email with the product key
 - o Depending on how it was ordered, may be forwarded from distributor or reseller
- 3. Click link on email to go to https://lemcenter.intel.com to register, activate, and download the license file for that product key
 - Use existing Intel account or create a new one from the web site. Email address is required.
- 4. Use the BMC web console or Intel Server Configuration Utility to upload the key to the BMC.
 - o Only single license file per order is needed to activate multiple systems

Purchase Order - PO#				
Intel Registration Center [Cons] <noreply-lem-cons@lemcenter.intel.com> To To Retention Policy Mail Cloud - Inbox (60 days) Click here to download pictures. To help protect your privacy, Outlook prevented automatic download of some pictures in this message.</noreply-lem-cons@lemcenter.intel.com>	← Reply	≪ Reply All	→ Forward Tue 2/9/2021 10	 0:29 AN
Purchase Order				
This email includes all of your purchase information. Keep this email for future reference. Note that you need the serial number to install your new software.				
Product : Intel Server Integrated Baseboard Management Controller (BMC) Advanced Features Quantity : 1 Product Key 1 : de08176f-db78-4911-ad26-90030d504852 Register Product already installed? You can use the new serial number to activate a previously in Click Register It menu entry. Please remember to register in order to receive p Click Intel® FlexLM License Manager FAQ for more information.				
Order Summary Product Key 1: de08176f db78-4911-ad26-90030d504552 Register Enttlement Activation Info ¹ : During activation, please use default fingerprint available in LEM user portal. SKU: ADVSYSMGMTKEY Vendor: Internal Version: 2.42 Number of Seats 1 Quantity 1: Support Code: Full Support Support Code: Full Support Fulfilment Type : Order Number : NA Comments :				

Figure 1. Example Email

inte	PRODUCTS SUPPORT	SOLUTIONS DEVELOPERS PARTNERS				USA (ENGLISH)	Q Search Intel.com
			INTEL REGISTRATI	ION CENTER - USER PO	DRTAL		
My E	ntitlements		🔵 Use EID	de08176f-db78-4911	-ad26-90030d504852	Register	Welcome, Brian Entitlements
	Product Key (SN)	Product Name	Product Version	Registered Date	Support Expiration Date	Action	Key automatically
>	CJWH-D4NZCZVR	Intel® Media Server Studio – Community Edition	2015	11/20/2015	11/20/2016		filled in. Click Register
>	CJWH-PK9GPHLG	Intel® Media Server Studio – Community Edition	2015	09/05/2015	09/05/2016		My Profile 🗸
>	CJWH-Z6HZ3SMN	Intel® Media Server Studio – Community Edition	2015	07/14/2015	07/14/2016		Resources V
>	CDHV-R45W6HNW	Intel® Virtual KVM Gateway for Reseller	1.0	10/04/2014	10/04/2019		Ouestions & Answers V
>	VFTS-XZ36LPT6	Intel® Data Center Manager Console	1.1	08/01/2013	10/30/2013		Queecons et visioners -
>	C3K8-4VZWK3JG	Intel® SW Dev Tools License Servers	2.0	07/10/2012	07/09/2013		
>	C4LN-Z7SGGW3P	Intel® Graphics Performance Analyzers	2012	07/10/2012	07/09/2013		
>	C4LN-242GJJL5	Intel® Graphics Performance Analyzers	2012	04/19/2012	04/18/2013		
>	CCH7-FM677D9X	Cryptography for Intel® Parallel Composer	2011	04/19/2012			
>	CCH7-WL7BNCB6	Cryptography for Intel® Parallel Composer	2011	04/19/2012			
>	CCH7-GGD5H86L	Cryptography for Intel® Parallel Composer	2011	04/19/2012			
>	C4LN-V3P58HJC	Intel® Graphics Performance Analyzers	2012	04/19/2012	04/18/2013		
>	C4LN-PFS73732	Intel® Graphics Performance Analyzers	2012	04/19/2012	04/18/2013		
н	 ✓ 1 > > > 20 ▼ items per 	r page				1 - 13 of 13 items	

Figure 2. Register Key





		-	
icense Certificate		×	
ctivation ID :	5b6b80fe-39e1-4e06-88d0-c5d6c0ebe039		
ontact :	brian.j.vandecoevering@intel.com		
ssociated Products		ctival	te
Product Name : Intel Ser	ver Integrated Baseboard Management Controller (BMC) Advanced Features 2.42		
Product Key :	de08176f-db78-4911-ad26-90030d504852		
Activation Quantity :	1		
License File			
	CAAAAAABGAAAABgBqAliCAAAAAAAagiIAAAAeDVmSkZRcUIYAAAARnRtZ		
VAAAAkQAAAAIAAAAAAA	73379DAAAAEIRQUFBQUFBQUFBPcsAAADHAAAABgABAAAAAQAAAAIAAAC QAAAANAFAAfwAAAHsAAAAFAJAGAQAAAAMAAABMAAAASAAAAAIAAQAAA	1-5	s of
	KAAAAAQAAABAAABBAAAAAEABAEEAAAAAQDBAAQAAABBAP4ABAAAAAE AXAAAAAgAAAAAACAAAAHF1YW50aXR5AQAAADEQAAAAZgqRvYxOSc+5im		Download License F
IHw+vfyQgAAAADAAIAAg	ACAA4BAAAKAQAAAgAEAAAAAAAAAAAAAAAAAAAAAAAAAAAA		Downtoad Licenser
	/0wa1YCmUlW6QmIs6BmA0mAdPeWwyDIysRA5fLsdQpyfTMwp+WdXgiisAc gjh/WS7cCd9KGxGSvregKuhEVxGrdvUW4w0f533ZRqAS1hyQruV4/psb9bf5T	_	
	+ +KJDoKQHijvFoDPgY8alCubZb1VHU6ruaoDnogy3CAuTKEIfcR4vbPvjE5We2 WLM8rmIW0xsBj54H4f8DZuWjzv0aLDXIbRrYh/e03OaBJZCPZA=		
1 SHIPWOMGKOBOWIZ	menoniamosojon modeumjerosekatiki mjeososakete za-		
		Close	
		Ciuse	

Figure 4. Download Key

Note: If any key or email is lost, Intel can generate new product keys as needed.

3.2 Advanced Management Key Installation

The user can pick one of the three available options to upload the key: Integrated BMC Web Console for Intel server boards, Intel Server Configuration Utility, Redfish.

3.2.1 Installation Procedure

Customer can navigate to Advanced System Management Key under Configuration to upload their key. All advanced features will be activated immediately after the key upload. The status of Advanced System Key is also displayed under System Information page.

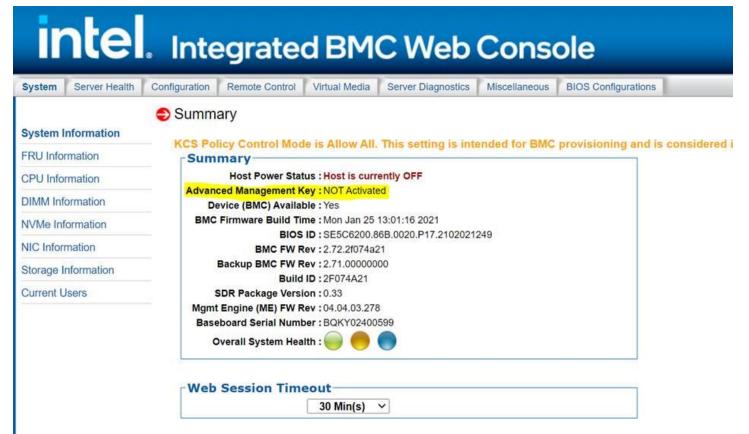


Figure 5. System Information Page

intel. Integrated BMC Web Console

System	Server Health	Configuration	Remote Control	Virtual Media	Server Diagnostics	Miscellaneous	BIOS Configura			
Alerts			ced System N	Notestary October States	Key advanced system ma	nagement featu	ires			
Alert Em	ail	-Koy Uni	oad							
Date & 1	Time	20. 0022012 -00.	Last Update Time :							
IPv4 Net	twork	Lustoput								
IPv6 Net	twork	Key File :			ile chosen					
VLAN			U	pload						
LDAP										
Active D	irectory	Activate	ed Features-							
KVM & Media		BMC Vir	BMC Virtual Media NOT Activated							
SSL Cer	tification	Active Directory NOT Activated								
	ed System ment Key									
Users										
Security	Settings									
001										

Integrated BMC Web Console User Guide for the Intel[®] Server Boards D50TNP, M50CYP, and D40AMP Upload Software Key to BMC via Intel Server Configuration Utility example:

[root@localhost RHEL_Lib]# ./syscfg /lic AES_licenseFile.v2c

System Configuration Utility Version 14.2 Build 7 Copyright (c) 2020 Intel Corporation

Key Transfer... Starting key upload... Check and verify license: done Program license file: done Parsing license file: done Upload ready

Figure 7. Intel[®] Server Configuration Utility to Upload Software Key

Optional Check Software Key Status via Intel Server Configuration Utility:

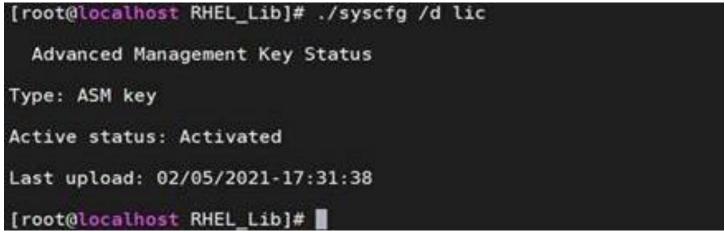


Figure 8. Intel[®] Server Configuration Utility to Check Advanced Management Key Status

4. Configuring Server Management Hardware

This section discusses using the server utilities to enable a system to use the Integrated BMC Web Console from a new, unset state to an operational one.

When first powered on, by default, the server management BMC LAN has a static IP address of 172.16.10.10.

Two steps are necessary before server management BMC LAN can be used:

- 1. One or both LAN channels must be configured as either DHCP or static addresses.
- 2. At least one user must be enabled to use the LAN channels.

The server management BMC LAN can be configured in multiple ways:

- Using BIOS setup
- Using Intel Server Configuration Utility (available at <u>http://downloadcenter.intel.com/default.aspx</u>)
- Using IPMI commands

4.1 Configuring Server Management Hardware Using BIOS Setup

- 1. During POST, press **<F2>** to go to the BIOS setup main page.
- 2. Navigate to the **Server Management** tab and select **BMC LAN Configuration** to enter the BMC LAN Configuration screen (Figure 9).
- 3. For an IPv4 network:
 - If configuring the server management BMC LAN, scroll to Baseboard LAN configuration > IP source and then select either Static or Dynamic. If Static is selected, configure the IP address, Subnet mask, and Gateway IP as needed.
 - If configuring the advanced management feature, scroll down to Dedicated Management LAN Configuration> IP source and then select either Static or Dynamic. If Static is selected, configure the IP address, Subnet mask, and Gateway IP as needed.
- 4. For an IPv6 network:
 - If configuring the server management BMC LAN, scroll to Baseboard LAN IPv6 configuration > IP source and then select Enabled. Then scroll to IPV6 source and select either Static or Dynamic. If Static is selected, configure the IPV6 address, Gateway IPV6, and IPV6 Prefix Length as needed.
- 5. Select **User Configuration** to enter the User Configuration screen (Figure 10).
- 6. Under **User ID**, set the following settings as desired:
 - **Privilege** Select the privilege to be used. (Administrator privilege is required to use KVM or media redirection enabled by the Advanced Management Feature.)
 - User status Select Enabled.
 - **User name** Enter the desired name. Note that the anonymous user cannot be changed.
 - **User password** Enter the desired password twice.
- 7. Press **<F10>** to save the configured settings and exit BIOS setup. The server reboots with the new LAN settings.

	BMC LAN Configuration	
 Jser Configuration Dedicated Management LAN Conf Remote Management Module IP Source IP Address Subnet Mask Gateway IP Dedicated Management LAN IPut Dedicated IPut BMC DHCP Host Name 	<present> <static> 10.239.55.90 255.255.255.0 10.239.55.241</static></present>	View/Configure User information and settings of the BMC.
↑↓=Move Highlight Copu	F10=Save Changes and Exit <enter>=Select Entry right (c) 2006-2021, Intel Corp</enter>	F9=Reset to Defaults Esc=Exit oration-

Figure 9. BIOS Setup BMC LAN Configuration Screen

	User Configuration	
Enable Complex Password	<disabled></disabled>	When enabled User password
UUUI IP	anonymous <no access=""></no>	should match the complexity criteria. 8 to 20 character
Privilege User Status	<disabled></disabled>	& Must Contain Letters (Bot
	(DISdDIed)	
User Password		Upper & Lower case),
llser ID	llser2	Numbers(0-9) and Special Characters & Cannot be the
Privilege	<administrator></administrator>	same as the username or
User Status	<enabled></enabled>	username in reverse order 8
liser Name	root	Have at least two new
User Password	1000	characters when compared
USEI TASSWULU		with previous password.
llser ID	llser3	with previous pussword.
Privilege	<no access=""></no>	
User Status	<disabled></disabled>	
User Name		
User Password		
User ID	User4	
Privilege	<no access=""></no>	
User Status	<disabled></disabled>	
		+
	F10=Save Changes and Exit	F9=Reset to Defaults
4=Move Highlight	<enter>=Select Entry</enter>	Esc=Exit
	pyright (c) 2006-2021, Intel Cor	poration

Figure 10. BIOS Setup User Configuration Screen

4.2 Configure Server Management Hardware via Intel[®] Server Configuration Utility

This section describes the basic commands needed to configure the advanced management feature using Intel Server Configuration Utility commands. This utility is supported in EFI, Linux*, and Microsoft Windows operating systems. The commands are the same for all versions.

At a minimum, configure the settings outlined in the following sections.

Note: The examples in the following sections use the Intel[®] Dedicated Server Management NIC LAN channel 3. If using a different NIC, substitute the appropriate channel number; for NIC1 use channel 1 and for NIC 2 use channel 2.

4.2.1 Configuring the User

1. Set the password for BMC user 2. This example sets the password to superuser.

syscfg /u 2 "root" "superuser"

2. Enable BMC user 2 on LAN channel 3.

syscfg /ue 2 enable 3

3. Enable the admin privilege and set the payload type to SOL+KVM for BMC user 2 on LAN channel 3. syscfg /up 2 3 admin sol+kvm

4.2.2 Configuring the IP Address

1. Set a static IP address and subnet mask on LAN channel 3.

syscfg /le 3 static <STATIC_IP> <SUBNET_MASK>

- 2. If needed, set the default gateway on LAN channel 3. syscfg /lc 3 12 <DEFAULT GATEWAY IP>
- 3. Set the DHCP IP address source on LAN channel 3.

syscfg /le 3 dhcp

4.2.3 Configuring Serial-over-LAN (SOL)

If needed, enable serial-over-LAN (SOL) on LAN channel 3.

syscfg /sole 3 Enable Admin <BAUD_RATE> <RETRY_COUNT>
 <RETRY INTERVAL IN MILLISECONDS>

5. Getting Started with Advanced Management Feature Operation

The advanced management feature enables remote KVM access and control through LAN or Internet. The Integrated BMC Web Console is part of the standard BMC firmware/server management software and is used to access the remote KVM. This section provides basic information needed to access both interfaces. The Integrated BMC Web Console and remote console interfaces are described in detail in Sections 6 and 7, respectively.

For initial setup information, including enabling the intended user, refer to Section 4. The examples in this chapter use user root, but other usernames and passwords could be used.

5.1 Client Browsers

The advanced management features may be accessed using a standard Java-enabled web browser. To access the web console using a securely encrypted connection, use a browser that supports the HTTPS protocol. Strong security is only assured by using a cipher strength (encryption) of 256-bit. Some older browsers may not have a strong 128-bit encryption algorithm.

To use the remote console (KVM) window of the managed server, Java Runtime Environment* (JRE*) version 6 update 22 or higher must be installed.

Note: The web console is designed for a screen size of 1280 pixels by 1024 pixels or larger. In smaller screens, use the browser slider controls to see the full content of each web page.

5.2 Logging In

Enter the configured IP address the configured BMC onboard NIC into the web browser to open the Integrated BMC Web Console module login page (Figure 11). To use a secure connection, type:

```
https://<IPaddress or Hostname>/
```

Enter the username and password and select a language option. For example:

- Username: root
- Password: superuser
- Language: English

Click the **Login** button to view the homepage.

intel. Integrated BMC	Web Console	
Pass	Please Login mame	

Figure 11. Integrated BMC Web Console Login Page

After the initial login, system administrators may change passwords and create new users and have full control over access to the advanced management features.

Note: The username and password are case-sensitive. The printable set of ASCII characters can be used for username and password.

5.3 Navigation

The Integrated BMC Web Console homepage contains eight tabs along the top for navigation within the web console (Figure 12). For details on each tabbed page, see Table 1. Each tab contains a secondary browser on the left edge of the window. For details on the specific functions of secondary menu items, see Section 7.

inte	Integrated BMC Web Console	
System Server Health	Configuration Remote Control Virtual Media Server Diagnostics Miscellaneous BIOS Configurations	Cologout CoRefresh CoHelp Colout
	Summary	
System Information	 KCS Policy Control Mode is Allow All. This setting is intended for BMC provisioning and is 	a considered incours for deployment
FRU Information	Summary	s considered insecure for deployment.
CPU Information	Host Power Status : Host is currently ON	
DIMM Information	Advanced Management Key : Activated Device (BMC) Available : Yes	
NVMe Information	BMC Firmware Build Time : Fri Mar 19 05:34:25 2021 BIOS ID : SE5C6201.86B.0022.D02.2103180902	
NIC Information	BIOS ID : SESC6201.868.0022.002.2103180902 BMC FW Rev : 2.78.c6f89d5b	
Storage Information	Backup BMC FW Rev : 2.71.00000000 Build ID : C6F89D5B	
Current Users	SDR Package Version : 0.34	
	Mgmt Engine (ME) FW Rev : 04.04.04.53	
	Baseboard Serial Number :	
	Web Session Timeout	
	30 Min(s) 🗸	
Copyright © 2016-2021	Intel Corporation. All Rights Reserved. Portions Copyright © 2016-2021 - Insyde Software Corp.	

Figure 12. Integrated BMC Web Console Homepage

Table 1. Integrated BMC Web Console Tabs	

Tab	Function	Secondary Menu		
System	Provides access to general information about the server. The tab automatically opens the System Information page.	 System Information FRU Information CPU Information DIMM Information NVMe Information NIC Information Storage Information Current Users 		
Server Health	Provides access to the sensors and event log. The tab automatically opens the Sensor Readings page.	Sensor ReadingsEvent Log		

Tab	Function	Secondary Menu
Configuration	Provides access to configure various settings for the server. The tab automatically opens the Alerts page.	 Alerts Alert Email Date & Time IPv4 Network IPv6 Network VLAN LDAP Active Directory KVM & Media SSL Certification Advanced System Management Key Users Security Settings SOL SDR Configuration BMC Firmware Update BIOS/ME Firmware Update CPLD Update Syslog Server Configuration
Remote Control	Provides access to the remote console and control of the server power state. The tab automatically opens the KVM/Console Redirection page.	 KVM/Console Redirection Server Power Control Launch SOL Virtual Front Panel iKVM over HTML5
Virtual Media	Allows the user to share an ISO image or folder over HTML5. Maximum size of ISO image is 4.7GB, and folder is 2GB. Each image/folder will be emulated to the host as a USB device. The tab automatically opens the Virtual Media over HTML5 page.	Virtual Media over HTML5Web ISO
Server Diagnostics	Provides access to server diagnostics information. The tab automatically opens the System Diagnostics page.	 System Diagnostics POST Codes System Defaults SOL Log
Miscellaneous	Provides access to node manager configuration, power statistics, and power telemetry. The tab automatically opens the NM Configuration page.	NM ConfigurationPower StatisticsPower Telemetry
BIOS Configuration	Provides access to BIOS configuration. The tab automatically opens the NIC Configuration page.	 PCI Configuration Serial Port Configuration UPI Configuration Integrated IO Configuration Memory Configuration Power n Performance Processor Configuration Mass Storage Controller Configuration System Acoustic and Performance Configuration System Event Log Security USB Configuration Server Management Advanced Boot Options Main

Integrated BMC Web Console User Guide for the Intel[®] Server Boards D50TNP, M50CYP, and D40AMP In addition, the top of every page contains a toolbar with options explained in Table 2.

Table 2. Integrated BMC Web Console Toolbar

Button	Function					
Logout	End the current web console session. Click OK to confirm (Figure 13). After logging out, the web console returns to the login screen.					
Refresh	Refresh the current web page, including any data shown on the page.					
	Note : Using the web browser's refresh/reload button or pressing the function key <f5></f5> to do a refresh/reload is not supported for reloading the web console pages. Using either of them returns the web console to the homepage.					
Help	View a brief description of the current page in a frame at the right side of the browser window (Figure 14). Close the help frame by clicking the "X" in the upper right corner of the frame or by clicking the Help button again.					
About	View the Intel copyright information and a statement about the use of open source code.					



Figure 13. Logging Out of the Integrated BMC Web Console



Figure 14. Integrated BMC Web Console Help

Note: If there is no user activity detected by the web console for 30 minutes, the current session is automatically terminated and the user must log in again for continued access to the web console. If a KVM remote console window is open, the web session does not automatically time out.

6. Remote Console (KVM) Operation

The remote console is the redirected keyboard, video, and mouse of the remote host system. To use the remote console window of the managed host system, the browser must include a Java Runtime Environment (JRE) plug-in. If the browser has no Java support, such as with a small handheld device, the user can maintain the remote host system using the administration forms displayed by the browser.

Starting the remote console opens a new window to display the screen content of the host system. The remote console acts as if the administrator were sitting directly in front of the screen of the remote system. This means that the keyboard and mouse can be used as usual.

6.1 Launching the Redirection Console

Launch the remote console KVM redirection window by clicking **Launch Console** from the Remote Control tab of the Integrated BMC Web Console (Figure 15).

Note: If the user is using Microsoft Windows Internet Explorer*, Smart Screen is enabled, and the system is on a network with no direct connectivity to the internet, it may take an extremely long time to open a KVM window.

intel.	Inte	grated	BMC V	Veb	Con	sole	
stem Server Health Con	figuration	Remote Control Vir	tual Media Server	Diagnostics	Miscellaneo	BIOS Configura	itions
٢	KVM/Co	onsole Redirection	on				
nsole Redirection	Launch	Console					
er Power Control	Keybo	oard Macros					
nch SOL	You can	view and modify keyboa		-		. Use Help to see the s	upported key names
al Front Panel		Key Se	quence		Button Name		
over HTML5	#1						
	#2						
	#3						
	#4						
	#5						
	#6						
	#7						
	#8						
	#9						
	#10						
ght © 2016-2021 <u>- Inte</u> l	Corporation	. All Rights Reserved.	Portions Copyright	© 2016-202	1 - Insyde Softv	ware Corp.	

Figure 15. Remote Control Console Redirection Page

When the **Launch Console** button is clicked, a pop-up window is displayed to download the Java Network Launch Protocol launch.jnlp file. This in turn downloads the stand-alone Java application implementing the remote console.

Microsoft Internet Explorer, Mozilla Firefox, Google Chrome and Apple Safari* browsers are supported.

Notes:

- JRE (version 6, update 22 or higher) must be installed on the client before the launch of a JNLP file.
- The client browser must allow pop-up windows from the Integrated BMC Web Console IP address.
- JCE Unlimited Strength Jurisdiction Policy Files required by AES-256 need be installed on the client side or the KVM automatically downgrades to AES-128. The additional strength is only required for users who need AES-256.

The remote console window is a Java Applet* that establishes TCP connections to the Integrated BMC Web Console. The protocol that is used to run these connections is a unique KVM protocol and not HTTP or HTTPS. This protocol uses ports #5900 for KVM and #623 for Floppy/USB media redirection. The local network environment must permit these connections to be made. That is, the firewall and, in case of a private internal network, the Network Address Translation (NAT) settings must be configured accordingly.

🗟 iKVM Viewer v2.5.16 r01 [10.239.55.90] Algo: AES_256 - Res: 1024 x 768 - Tx: 1 — 🛛 🛛 🛛 🕹
Virtual Media Macro Options User List Capture Power Control Exit
UEFI Interactive Shell v2.2 EDK II
UEFI u2.70 (EDK II, 0x00010000)
Mapping table
FS0: Alias(s):HD0c::BLK2: NVMe(0x1,00-00-00-00-00-00-00-01)/HD(2,GPT,46F0F692-1A68-47AA-B22C-75D14B10F871,0xFA000,0x
32000)
FS1: Alias(s):HD0c:;BLK10: NVMe(0x1,00-00-00-00-00-00-02)/HD(2,GPT,DBF23235-037C-4D34-A70A-A67AB70148BF,0xFA000,0x
31800)
BLK0: Alias(s): NVMe(0x1,00-00-00-00-00-00-01) BLK1: Alias(s):
NUMe (0x1,00-00-00-00-00-00-01) /HD (1,GPT,54A146E9-0869-4774-9B1B-58E335832116,0x800,0xF9
800)
BLK3: Alias(s):
NVMe(0x1,00-00-00-00-00-00-00-01)/HD(3,GPT,86C46258-1F35-43BA-935F-E4105802A712,0x12C000,0 x8000)
BLK4: Alias(s): NUMe(0x1,00-00-00-00-00-00-01)/HD(4,GPT,8F05A13D-2F6A-43D8-B246-775889A34D71,0x134000,0
x2000000)
BLK5: Alias(s): NUMe(0x1,00-00-00-00-00-00-01)/HD(5,GPT,114F40F1-7367-484E-BBDB-4FE7377076E1,0x40134000
,0x7A3A0A8F) BLK6: Alias(s):
DLNO: HTTAS (S): NUMe (0x1,00-00-00-00-00-00-00-01) /HD (6,GPT, B35F83AA-16F9-477A-88B0-40E37A182C41,0x20134000
,0x200000)
BLK7: Alias(s):
NUMe (0x1,00-00-00-00-00-00-01)/HD (7,GPT,71D580E7-B8F1-4AE9-A0FD-19BE1B10AF5A,0x20334000
.0x1FE00000)
BLK8: Alias(s):

Figure 16. Remote Console Window

6.2 Main Window

Starting the remote console opens a host window (Linux operating system window shown in Figure 17).



Figure 17. Remote Console Main Window

It displays the screen content of the remote server. The remote console responds as if it were at the remote server. The responsiveness may be slightly delayed depending on the bandwidth and latency of the network between the Integrated BMC Web Console and the remote console. Enabling KVM and/or media encryption on the **Configuration** > **KVM & Media** page slightly degrades performance, as well.

The remote console window always shows the remote screen in its optimal size. This means it adapts its size to the size of the remote screen initially and after the screen resolution of the remote screen has been changed. However, the remote console window can be resized in the local window as usual.

6.3 Remote Console Control Bar

The top of the remote console window contains a control bar for viewing the status of the remote console and to configure remote console settings. The following sub sections describe each control task.

Virtual Media Macro Options User List Capture Power Control Exit Figure 18. Remote Console Control Bar

6.3.1 Virtual Media Menu

Click **Virtual Media** in the remote console control bar to open the virtual storage and virtual keyboard menu as shown in Figure 19.

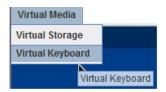


Figure 19. Remote Console Virtual Media Menu

Integrated BMC Web Console User Guide for the Intel[®] Server Boards D50TNP, M50CYP, and D40AMP Use the options in this menu to do the following:

• Virtual Storage – Allow starting/stopping remote media redirection as shown in Figure 20. Redirect up to four devices at the same time. Select a logical device from a local CDROM/DVD drive or an ISO image on the local client file system as a virtual CD-ROM device on the remote system; a local floppy drive; a USB key drive; or a floppy disk or USB key image (. IMA/. IMG) file on the local client file system as a virtual floppy device on the remote system.

Virtual Storage 2.5.14 r1 -	
Device1 Device2 Device3 Settings for Device3	
Logical Drive Type Image File Name and Full Path ISO File	Open Image
Refresh Plug in Unplug	ОК
Connection Status History	
	_

Figure 20. Remote Console Virtual Storage Menu

- 🚣 English(US) keyboard F2F4 F5 Fб FS F11 F12 Esc F1 F3 F7 F9 F10 Psc Slk Pau + 1 2 3 4 5 б 7 8 9 0 Home PgUp nlk * = Ins 1 _ _ 뉵 r] 7 8 9 q w е t у u i ο р [١ Del End PgDn Ω f k . 4 5 б d h 1 a s g j ÷, Û v ь 1 2 3 z х с n m 1 t لھ ٢. 2 25 -+ + Ļ Alt Alt Ctrl 0 Ctrl
- Virtual Keyboard Display a soft keyboard as shown in Figure 21.

Figure 21. Remote Console Virtual Keyboard Menu

6.3.2 Macro Menu

Click Macro to open the keyboard macro menu as shown in Figure 22.

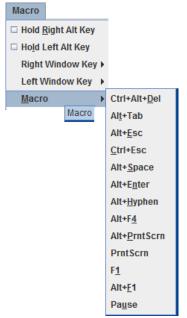


Figure 22. Remote Console Macro Menu

Using the options in this menu, to do the following:

- Hold Right Alt Key Simulate holding down the right <Alt> key on the remote keyboard. On the local keyboard, right <Alt> key presses are processed by the local operating system and not passed on to the remote operating system.
- Hold Left Alt Key Simulate holding down the left < Alt> key on the remote keyboard. On the local keyboard, left <Alt> key presses are processed by the local operating system and not passed on to the remote operating system.
- **Right Windows Key** Simulate holding down the right **<Win>** key on the remote keyboard. On the local keyboard, right **<Win>** key presses are processed by the local operating system and not passed on to the remote operating system.
- Left Windows Key Simulate holding down the left <Win> key on the remote keyboard. On the local keyboard, left <Win> key presses are processed by the local operating system and not passed on to the remote operating system.
- Macro Simulate special key combinations to the remote operating system, which include
 <Ctrl+Alt+Del>, <Alt+Tab>, <Alt+Esc>, <Ctrl+Esc>, <Alt+Space>, <Alt+Enter>, <Alt+Hyphen>,
 <Alt+F4>, <Alt+Prntscrn>, <PrntScrn>, <F1>, <Alt+F1>, <Pause>.

6.3.3 Options Menu

Click **Options** to open the options menu as shown in Figure 23.

Options			
Hotkey Settings			
Preference			
Full-Scree	n Mode		
OSD UI Sty	/le		
Keyboard	Mouse Hotplug		

Figure 23. Remote Console Options Menu

Integrated BMC Web Console User Guide for the Intel[®] Server Boards D50TNP, M50CYP, and D40AMP Use the options in this menu, to do the following:

• HotKey Settings – Configure hotkeys as shown in Figure 24. Configure up to seven hotkeys to perform specific functions including adjust mouse, exit remote location, enter full-screen mode, refresh screen, send Ctrl+Alt+Del, toggle mouse display, and toggle UI display.

🔹 Hotkey Settings						
Hotkey Settings						
Action	Hotkeys					
Adjust Mouse	Ctrl + 1					
Exit Remote Location	Ctrl + 2					
Full-Screen Mode	Ctrl + 3					
Refresh screen	Ctrl + 4					
Send Ctrl+Alt+Del	Ctrl + 5					
Toggle Mouse Display	Ctrl + 6					
Toggle UI Display	Ctrl + 7					
- Keyboard Monitor						
Start Stop	Assign Close Default					

Figure 24. Remote Console HotKey Settings

- **Preference** Configure the remote console display, mouse and keyboard settings, window, video stream, session timeout, and debug log level. The preference window toolbar has six tabs.
 - **Display** (Figure 25) Adjust display brightness, image quality, display scale, compression mode, and enable FPS control by specifying frames per second.

🛃 Preference								
Display	Input	Window	Video Stream	Session	Timeout	Debug Log		
Performance Display Scale								
Enabl	e FPS Co	ntrol 10	frame per second	I (FPS)		25 50	75	
Brightnes	s				Compres	sion		
Low	0	25 50	т н 75 100	ligh	 Norma Enhan 	al Mode Iced Text Mode		
Image Qu	ality							
Low High								
OK Cancel								

Figure 25. Remote Console Display Settings

• Input (Figure 26) – Enable/disable mouse/keyboard input, change the mouse mode, specify keyboard layout, and set repeat key timeout.

🖆 Preference								
Display	Input	Window	Video Stream	Session Timeout	Debug Log			
-Mouse Se	Mouse Settings							
	✓ Enable Mouse Input							
	Absolute Mouse (Windows, Ubuntu, RHEL 6.x, SLES 12 and later)							
	 Relative Mouse (Rest of the Linux) 							
	Single Mouse							
Keyboard	Settings	i						
			Enable Keyboard I	nput				
	Keyboard layout English(US) keyboard 🗸							
	Repeat Key Timeout 0ms 500ms 1000ms							
OK Cancel								

Figure 26. Remote Console Input Settings

• **Window** (Figure 27) – Enable or disable window auto-resize.

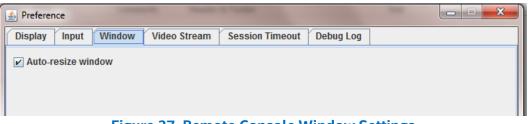


Figure 27. Remote Console Window Settings

 Video Stream (Figure 28) – Enable flow control by specifying a speed of T1, T2, or 256K Cable/DSL.

Preference						
Display Input Window Video Stream	Session Timeout Debug Log					
LAN Flow Control Speed 256K Cable/DSL 256K Cable/DSL T1						
	Τ2					

Figure 28. Remote Console Video Stream Settings

 Session Timeout (Figure 29) – Enable session timeout by specifying how many minutes for timeout.

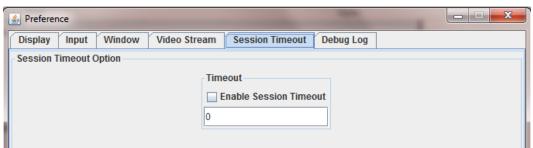


Figure 29. Remote Console Session Timeout Settings

 Debug Log (Figure 30) – Select a log level of Disabled, Emergency, Alert, Critical, Error, Warning, Notice, Info, or Debug. Table 3 defines each log level. The debug level is only for Java viewers and log messages will appear on the Java console, if enabled.

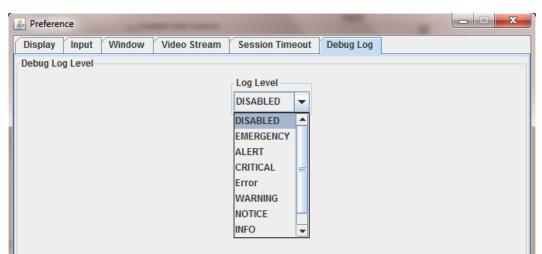


Figure 30. Remote Console Debug Log Settings

	Table 3. Remote Console Log Level Definition	
Log Level	Definition	
Disabled	No debug log.	
Emergency	Emergency conditions, such as system hangs, will save to the debug log.	
Alert	Alert conditions such as system database corruption will save to debug log.	
Critical	Critical conditions such as hard device errors.	
Error	Error conditions.	
Warning	Warning conditions.	
Notice	Normal but significant conditions that are not error conditions.	
Info	Informational messages.	
Debug	Debug-level messages. Messages that contain information normally of use only when debugging a program.	

Table 3. Remote Console Log Level Definition

• Full-Screen Mode/Leave Full Screen Mode – Enter or leave full screen mode (depending on the current state).

• **OSD UI Style** – Change the style of the remote console control bar as shown in Figure 31. Clicking the icons on this window performs tasks as shown in Table 4.

🕂 🎦 🔛 🎬 💥 🖸 🏠 🔛 📉 🚺	0
1024 X 768	
bmca4bf0126dcda.sh	

Figure 31. Remote Console Control Panel – OSD UI Style

Table 4. Remote console OSD UI Style Control Bar Options

Menu Icon	Function	
-100	Move OSD UI menu	
\succ	Hotkey Settings	
8	Virtual Storage	
***	Virtual Keyboard	
۲	Preference menu	
	Full-screen mode	
2	Exit	
	Show User List	
	Switch back to menu UI mode	
	Keyboard Mouse Hotplug	
Μ	Macro menu	
0	Power Control menu	

• Keyboard Mouse Hotplug – Simulate remote console virtual USB keyboard/mouse unplug then plug.

6.3.4 User List Menu

Click **Show User List** to display information about connected users such as user name and client IP address (Figure 32).

🛓 User List			- - X
User List			
ID	User Name	IP Address	Privilege Request
1	root	10.239.163.22	
Action			
			Close

Figure 32. Remote Console User List

6.3.5 Capture Menu

Click **Capture** in the Remote Console control bar to capture a full screen view and save the image to the client. Click **Full screen view** to save the current full screen view of the remote console to the client.

Capture Full screen view	
🛓 Save	
Save In: 📑 Documents	▼ a d = 88 =
2016Doc	T Intel(R) Integrator Toolkit T My Shapes
Camtasia Studio	Taining Taining
📑 Custom Office Template	es 📑 Jeason 📑 ODC
📑 Hi Suite	Master Master OneNote Notebooks
📑 HuKou	📑 MG-SOFT MIB Browser 🛛 📑 Others
📑 Info	My Received Files Outlook Files
- III	
File <u>N</u> ame:	
Files of <u>T</u> ype: *.jpg, *.jpeg	v
	Save Cancel

Figure 33. Remote Console Capture Menu

6.3.6 Power Control Menu

Click Power Control to open the power control menu as shown in Figure 34.

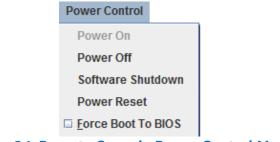


Figure 34. Remote Console Power Control Menu

Table 5 describes the power control operations that can be performed.

Note: All power control actions are done through the BMC and are immediate actions. Intel suggests to gracefully shut down the operating system using the KVM interface or other interface before initiating power actions.

Table 5. Remote Console Power Control

Option	Task
Power ON	Power on the host.
Power OFF	Immediately power off the host.
Software Shutdown	Soft power off the host.
Power Reset	Hard reset the host without powering off.
Force Boot To BIOS	Enter BIOS setup after resetting the server.

6.3.7 Exit Menu

Click Exit and then click Yes (Figure 35) to exit the remote console.



Figure 35. Exit the Remote Console

6.4 Remote Console Status Line

The status line at the top of the Remote Console screen displays the console state as shown in figure below. status line provides BMC host name, Java encryption, resolution, transaction speed, and display frames per second.

```
🚣 iKVM Viewer v2.4.8 r01 [bmca4bf0126dcda.sh.intel.com] Algo: AES_256 - Res: 1024 x 768 - Tx: 2.0k (2.9k) Rx: 7.8k (8.6k) - FPS: 25 (23)
```

Figure 36. Remote Console Status Line

7. Integrated BMC Web Console Options

This chapter provides a detailed description of each Integrated BMC Web Console page. The descriptions are organized in sections corresponding to the six tabs in the horizontal menu. To access similar information about each page in the web console, click **Help** from the toolbar.

For information on navigating the web console interface, see Section 5.3. For a brief summary of the available pages and their secondary menus, see Table 1. The first secondary menu item for each tab is the default page that appears when the tab is selected.

When the web console is working on a user request, a busy indicator bar appears as shown in Figure 37.



Figure 37. Busy Indicator Bar

Note: Not all of the following sections are used by or directly related to advanced management enabled features but have been added here for completeness.

7.1 System Tab

The System tab contains general information about the system as explained in the following sub sections.

7.1.1 System Information

The System Information page displays a summary of the general system information. This includes the power status, Advanced Management key status, BMC firmware build time and version, BIOS ID, SDR package version, Intel[®] Management Engine (Intel[®] ME) firmware version, baseboard serial number, and overall system health status. For a complete description of the summary information, see Table 6.

intel	Integrated BMC Web Console	
System Server Health	Configuration Remote Control Virtual Media Server Diagnostics Miscellaneous BIOS Configurations	Cologout CoRefresh CoRefresh Core About
	Summary	
System Information	KCR Balloy Control Mode is Allow All. This action is intended for BMC provide states and is accessed	and down of the second flow of an interview of
FRU Information	KCS Policy Control Mode is Allow All. This setting is intended for BMC provisioning and is cor Summary	isidered insecure for deployment.
CPU Information	Host Power Status : Host is currently ON	
DIMM Information	Advanced Management Key : Activated Device (BMC) Available : Yes	
NVMe Information	BMC Firmware Build Time : Fri Mar 19 05:34:25 2021	
NIC Information	- BIOS ID : SE5C6201.86B.0022.D02.2103180902 BMC FW Rev : 2.78.c6f89d5b	
Storage Information	Backup BMC FW Rev : 2.71.00000000 Build D : C6F89D5B	
Current Users	SDR Package Version : 0.34	
	Mgmt Engine (ME) FW Rev : 04.04.04.53	
	Baseboard Serial Number : Overall System Health : 🔴 🔴 🔵	
	Web Session Timeout	
	30 Min(s) ✓	
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Figure 38. System Information Page

Table 6. S	vstem In	formation	Page	Details
	ystern m		I MBC	Detuits

Information	Details	
Host Power Status	Power status of the host (on/off).	
Advanced Management Key	Indicates whether the software license has been activated.	
Device (BMC) Available	Indicates whether the BMC is available for normal management tasks.	
BMC FW Build Time	The build date and time of the installed BMC firmware.	
BIOS ID	Major and minor revision of the BIOS.	
BMC FW Rev	Major and minor revision of the BMC firmware.	
Backup BMC FW Rev	Major and minor revision of the backup BMC firmware.	
Build ID	The Git commit number of the build.	
SDR Package Version	Version of the Sensor Data Record.	
Mgmt Engine (ME) FW Rev	Major and minor revision of the Intel Management Engine firmware.	
Baseboard Serial Number	Serial number of the baseboard in this system.	
Overall System Health	A general indication of the system heath:	
	 Left (Green) = System Ready LED Center (Amber) = System Fault LED Right (Blue) = Chassis ID LED 	

7.1.2 Field Replaceable Unit (FRU) Information

The Field Replaceable Unit (FRU) Information page displays information from the FRU repository of the baseboard, front panel, hot swap backplane, riser card, and power supply. Specify the FRU component by clicking the FRU Information pull-down box (Figure 39).

Base	board	~
Base	board	
HS E	Backplane	91
Pwr	Supply 1	FRU
Pwr	Supply 2	FRU
1		

Figure 39. FRU Board Options

All data in the FRU information page is compliant with standard specifications (Platform Management FRU Information Storage Definition). See Figure 40 for details of the baseboard FRU.

System Server Health	Configuration Remote Control Virtual Media Server Diagnostics Miscellaneous BIOS Configurations	🚱 Logout 😋 Refresh 😮 Help 🚯 Abou
	FRU Information	
System Information		
FRU Information	Baseboard V	
CPU Information		
DIMM Information	Chassis Information	
	Chassis Type: Rack Mount Chassis	
NVMe Information	Chassis Part Number:	
NIC Information	Chassis Serial Number:	
Storage Information	-Board Information	
Current Users	Language: English	
	Board Manufacturing Date/Time: 2021/03/16 14:54:00	
	Board Manufacturer: Intel Corporation	
	Board Product Name: M50CYP2SBSTD	
	Board Serial Number:	
	Board Part/Model Number:	
	FRU File ID: FRU Ver 0.34	
	Product Information	
	Language: English	
	Manufacturer Name: Intel Corporation	
	Product Name: M50CYP2SBSTD	
	Product Part Number:	
	Product Version:	
	Product Serial Number:	
	Asset Tag:	

Figure 40. System FRU Information Page

7.1.3 CPU Information

ration All Diabte De

enred Bortions Conviright @ 2016

The CPU Information page displays information on CPUs installed on the host system. The CPU information includes socket designation, manufacturer, version, processor signature, processor type, family, speed, number of cores, voltage, socket type, status, serial number, asset tag, and part number. See Figure 41 for details.

Integrated BMC Web Console	O Logout O Refresh
CPU Information	
stem Information	
RU Information	
CPU Information CPU Information	
Socket Designation : CPU 0	
MM Information Manufacturer : Intel(R) Corporation	
Me Information Version : Intel(R) Xeon(R) Gold 6330 CPU @ 2.00GHz	
C Information Processor Signature : 60-6a-6	
Processor Type : Central Processor	
orage information Family : Intel Xeon processor	
irrent Users Speed : 2.0GHz	
Number of Cores : 28 Voltage : 1.6V	
vottage : 1.6V Socket Type : LGA4189	
Status - Populated CPU Enabled	
Serial Number : NULL	
Asset Tag : UNKNOWN	
Part Number : NULL	
CPU Information	
Socket Designation : CPU 1	
Manufacture: Intel®(R Corporation	
Version: Intel(R) Xeon(R) Gold 6330 CPU @ 2.00GHz	
Processor Signature : 60-5a-6	
Processor Type : Central Processor	
Family : Intel Xeon processor	
Speed: 2.0GHz	
Number of Cores : 28	
Voltage : 1.5V	
Socket Type : LGA4189	
Status : Populated, CPU Enabled	
Serial Number : NULL	
Asset Tag: UNKROWN	
Part Number : NULL	

7.1.4 DIMM Information

The DIMM Information page displays information on DIMMs installed in the host system. The DIMM information includes slot number, size, memory type, manufacturer, asset tag, memory serial/part number. See Figure 42 for details.

System Server Health	Configuration	Remote Control	Virtual Media	C Web	Miscellaneous	BIOS Configurations	C Lo	gout @Refresh @Help Abo
	DIMM I	nformation						
System Information								Number of system DIMM:2
FRU Information	Slot Nu	mber Si	ze Tv	pe Speed	Manufacturer	Asset Tag	Serial Number	Part Number
CPU Information	CPU0_D			DR4 2400MH	Micron		1626-1312CD90	36ASF2G72PZ-2G3B1
DIMM Information	CPU0_D	MM_F1 163	84 <mark>MB D</mark>	DR4 2400MH	Micron		1626-1312CDD5	36ASF2G72PZ-2G3B1
NVMe Information								
NIC Information								
Storage Information								

7.1.5 NVMe* Information

The NVMe Information page displays information on supported NVMe drives installed on the host system. See Figure 43 for details. Note that the BMC only displays information about NVMe drives that meet all of the support requirements.



Figure 43. System NVMe* Information Page

7.1.6 NIC Information

The NIC Information page displays information for NIC modules installed in the host system. The NIC information includes PCI Class code, slot number, Vendor ID, Device ID, Current Speed(Mbps), Portidx, Media State, MAC Address, Firmware Version. See Figure 44 for details.

intel	Integra	ated E	BMC	Neb	Console		4	-	AET.
System Server Health	Configuration Remote	e Control Virtua	I Media Serv	er Diagnostics	Miscellaneous BIOS	Configurations		🕜 Logout	😋 Refresh 🕜 Help 🚯 Abou
	NIC Information	ion							
System Information									Number of system NIC: 2
FRU Information	PCI Class Code	Slot Number	Vendor ID	Device ID	Current Speed(Mbps)	Portidx	Media State	MAC Address	Firmware Version
CPU Information	2	0x0000	0x8086	0x1563	8000	0	Media is not connected	a4-bf-01-23-13-74	
DIMM Information	2	0x0000	0x8086	0x1563	8000	2	Media is not connected	a4-bf-01-23-13-75	
NVMe Information									
NIC Information									
Storage Information									
Current Users									
		Fi	gure 44.	System	NIC Informa	tion Pa	ge		

7.1.7 Storage Information

The Storage Information page displays information of Storage devices installed in the host system. The Storage information includes Port Destination, Device Index, Connector Type, Protocol, Device Type, Capacity(GB), RPM, Model, Serial, PCI Class Code, Vendor ID, Device ID. See Figure 45 for details.

intel	. Integra	ated E	BMC W	/eb (Consc	ble					H		HEL
System Server Health	Configuration Remote	Control Virtua	I Media Server Dia	agnostics	Miscellaneous	BIOS Configuration	ons				Q	Logout OR	efresh 🔞 Help 🚯 Ab
	Storage Information	mation											
System Information												Number	of system Storage: 4
FRU Information	Port Destination	Device Index	Connector Type	Protocol	Device Type	Capacity(GB)	RPM	Model	Serial	PCI Class Code	Vendor ID	Device ID	Firmware Version
CPU Information	SB Port 18	0x0	USB	USB	USB	Non HDD	0	SB Port	SB Port	0x0	0x0000	0x0000	
DIMM Information		0.0	035	000	000	NOTTIDD	0	18	18	0.00	0x0000	0x0000	
Divini information		0x0	Unknown	NVMe	SSD	Non HDD	0			0x0	0x0000	0x0000	
NVMe Information		0x0	Unknown	NVMe	SSD	Non HDD	0			0x0	0x0000	0x0000	
NIC Information		0x0	Unknown	NVMe	SSD	Non HDD	0			0x0	0x0000	0x0000	
Storage Information													

Figure 45. System Storage Information Page

7.1.8 Current Users

The Current Users page displays users currently logged in to the BMC via the embedded web server, IPMI 1.5 or IPMI 2.0 session, and Integrated BMC Web Console login type via HTTP or HTTPs. KVM session number, virtual media usage status, and client IP address are also listed in this table. See Figure 46 for details.

intel	. Integrate	d BMC W	leb Cons	ole		
System Server Health	Configuration Remote Control	Virtual Media Server Dia	agnostics Miscellaneous	BIOS Configurations		🔇 Logout 🕒 Refresh 😮 Help 🚯 About
	Current Users					
System Information						
FRU Information	User Name	Туре	KVM Number	Operations	vMedia Usable	IP Address
CPU Information	root (me)	Web(HTTPS)	0	-	No	10.238.4.11
DIMM Information	root	Web(HTTPS)	1 <u>+</u>	-	No	10.238.5.105
NVMe Information						
NIC Information						
Storage Information						
Current Users						

Figure 46. System Current Users Page

Notice: Intel added to the BMC a new KCS Policy Control Mode; when set to "Deny ALL" on the BMC Integrated BMC Web Console, neither the BMC nor the FRUSDR can be upgraded/downgraded as expected behavior. Updates can still be performed via Redfish or BMC Integrated BMC Web Console. By default, the BMC KCS Policy is set to "Allow All".

7.2 Server Health Tab

The Server Health tab shows data related to the server's health, such as sensor readings and the event log.

7.2.1 Sensor Readings

The Sensor Readings page displays system sensor information including status, health, and reading as shown in

stem Server Health	Configuration Rem	ote Control Virtual Media Server Diagnostics Mis	scellaneous BIOS Configurations	C Logout	🔾 Refresh 😮 Help 🚺
	ᢒ Sensor Rea	Idings			
nsor Readings					
ent Log	Select a sensor of	owner: BMC 🗸			
	Select a sensor t				
	Auto Refresh(see	c): 60 🗸		Se	nsor Readings: 96 sen
	Healthy •	Name =	Status 🖷	Reading	maor rreadings. ao aem
	OK	System Airflow	Normal	51 C.F.M	
	OK	BB P0 VR Temp	Normal	32 degree C	
	OK	Front Panel Temp	Normal	25 degree C	
	OK	PCH Temp	Normal	38 degree C	
	OK	BB P1 VR Temp	Normal	32 degree C	
	OK	BB BMC Temp	Normal	36 degree C	
	OK	BB M.2 Temp	Normal	36 degree C	
	OK	BB OCP Temp	Normal	38 degree C	
	OK	2U HSBP 1 Temp	Normal	28 degree C	
	OK	Exit Air Temp	Normal	31 degree C	
	OK	System Fan 1	Normal	4635 R.P.M	
	OK	System Fan 2	Normal	4532 R.P.M	
	OK	System Fan 3	Normal	4635 R.P.M	
	OK	System Fan 4	Normal	4635 R.P.M	
	OK	System Fan 5	Normal	4635 R.P.M	
	OK	System Fan 6	Normal	4635 R.P.M	
	Refresh	Show Thresholds			

Figure 47 and Figure 48 (with threshold). Table 7 lists the options available in this page. By default, this page displays all sensors owned by the BMC and auto-refreshes every 60 seconds.

	Virtual Media Server Diagnostics Miscellar	BIOS Configurations	Cogout C	Refresh 😧 Help 🕕
Sensor Readings				
nt Log Select a sensor owner:	BMC 🗸			
Select a sensor type catego	ory: All Sensors			
Auto Refresh(sec):	60 ~			
			Sen	sor Readings: 96 sen
Healthy =	Name 🔹	Status 🔶	Reading 🔸	
	System Airflow	Normal	51 C.F.M	
	BB P0 VR Temp	Normal	32 degree C	
OK F	Front Panel Temp PCH Temp	Normal	25 degree C 38 degree C	
	BB P1 VR Temp	Normal	38 degree C 32 degree C	
	BB BMC Temp	Normal	32 degree C 36 degree C	
OK	BB M.2 Temp	Normal	36 degree C	
	BB OCP Temp	Normal	38 degree C	
	2U HSBP 1 Temp	Normal	28 degree C	
OK	Exit Air Temp	Normal	31 degree C	
ОК	System Fan 1	Normal	4635 R.P.M	
OK	System Fan 2	Normal	4532 R.P.M	
OK	System Fan 3	Normal	4635 R.P.M	
OK	System Fan 4	Normal	4635 R.P.M	
	System Fan 5	Normal	4635 R.P.M	
OK	oystom r un o			



stem Server Health Config	iguration F	Remote Control Virtual N	ledia Server Diagr	ostics Miscellaneous BIC	S Configurations				O Logout O Refre	esh 😮 Help 🌘
€	Sensor F	Readings								
nsor Readings										
ent Loa										
0	Select a sense		~							
		sor type category: All Ser		\mathbf{v}						
	Auto Refresh	n(sec): 60	~						0	eadings: 96 se
	11	Mana	04-4	Deceller	Law ND		1			-
	Healthy	Name System Airflow	Status Normal	Reading = 51 C.E.M	Low NR = N/A	Low CT 🔹	Low NC =	High NC = N/A	High CT = N/A	High NF N/A
	OK	BB P0 VR Temp	Normal	32 degree C	N/A	0	5	110	115	N/A
	ОК	Front Panel Temp	Normal	25 degree C	N/A	0	5	50	55	60
	OK	PCH Temp	Normal	38 degree C	N/A	0	5	98	103	N/A
	OK	BB P1 VR Temp	Normal	32 degree C	N/A	0	5	110	115	N/A
	OK	BB BMC Temp	Normal	36 degree C	N/A	0	5	110	115	N/A
	OK	BB M.2 Temp	Normal	36 degree C	N/A	0	5	110	115	N/A
	OK	BB OCP Temp	Normal	38 degree C	N/A	0	5	110	115	N/A
	ОК	2U HSBP 1 Temp	Normal	28 degree C	N/A	0	5	100	105	N/A
	OK	Exit Air Temp	Normal	31 degree C	N/A	N/A	N/A	N/A	N/A	N/A
	OK	System Fan 1	Normal	4635 R.P.M	N/A	1648	1957	N/A	N/A	N/A
	OK	System Fan 2	Normal	4532 R.P.M	N/A	1648	1957	N/A	N/A	N/A
	OK	System Fan 3	Normal	4635 R.P.M	N/A	1648	1957	N/A	N/A	N/A
	OK	System Fan 4	Normal	4635 R.P.M	N/A	1648	1957	N/A	N/A	N/A
		System Fan 5	Normal	4635 R.P.M	N/A	1648	1957	N/A	N/A	N/A

ation. All Rights Reserved. Portions Copyright © 2016-2021 - Insyde Software Corp. Figure 48. Server Health Sensor Readings Page (Thresholds Displayed)

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Table 7. Server Health Sensor Readings Options

Option	Task
Select a sensor owner	Select the owner of sensor readings to display in the list. Choose BMC, ME, or SATELITE. The default owner is BMC.
Select a sensor type category	Select the sensor type category to display in the list. The default is to display all sensors.

Option	Task
Auto Refresh (sec)	Select the time (in seconds) to wait between sensor reading updates. Choose 0, 10, 15, 30, 60, 150, 300, or never. The default refresh time is 60 seconds.
Refresh	Click to refresh the selected sensor readings.
Show Thresholds	Click to show low and high, critical (CT) and non-critical (NC) threshold assignments. Use the scroll bar at the bottom to move the display left and right.
Hide Thresholds	Click to return to the original display, hiding the threshold values.

7.2.2 Event Log

The Event Log page displays the system server management event log (Figure 49). Table 8 lists the options available in this page.

	Configuration Ren	note Control Virtual Media S	erver Diagnostics Misc	ellaneous BIOS Co	nfigurations		G Logout G Refre	sh 🕢 Help 🚯 A
ensor Readings	😑 Event Log							
vent Log	Select an even All Events	t log category:						
		ory: nai Warning Critical is 50 event entries	Number of en	tries per page 50	✓ << < 1/20	> >>	Total Event Log Even	: 971 event entr nt Log is 24% f
	Event ID	Timestamp	Sensor Name	Controller	Severity	Sensor Type	Description	
	971	Tue Mar 23 10:47:44 2021	BIOS Evt Sensor	BIOS	Informational	System Event	OEM System Boot Event - Asserted	
	970	Tue Mar 23 10:47:18 2021	FW Resilience	BMC	Informational	Firmware Security	Platform firmware boot completed - Asserted	
	969	Tue Mar 23 10:47:14 2021	POST Err Sensor	BIOS	Warning	System Firmware Progress	reserved offset 0x10a - Asserted	
	968	Tue Mar 23 10:47:14 2021	POST Err Sensor	BIOS	Warning	System Firmware Progress	reserved offset 0x10a - Asserted	
	967	Tue Mar 23 10:47:14 2021	POST Err Sensor	BIOS	Warning	System Firmware Progress	reserved offset 0x10a - Asserted	
	966	Tue Mar 23 10:47:14 2021	POST Err Sensor	BIOS	Warning	System Firmware Progress	reserved offset 0x10a - Asserted	
	965	Tue Mar 23 10:47:14 2021	POST Err Sensor	BIOS	Warning	System Firmware Progress	reserved offset 0x10a - Asserted	
	964	Tue Mar 23 10:47:14 2021	POST Err Sensor	BIOS	Warning	System Firmware Progress	reserved offset 0x10a - Asserted	
	963	Tue Mar 23 10:47:14 2021	POST Err Sensor	BIOS	Warning	System Firmware Progress	reserved offset 0x10a - Asserted	
		Tue Mar 23 10:47:14 2021	POST Err Sensor	BIOS	Warning	System Firmware Progress	reserved offset 0x10a - Asserted	
	962		POST Err Sensor	BIOS	Warning	System Firmware Progress	reserved offset 0x10a - Asserted	
	962 961	Tue Mar 23 10:47:14 2021		BIOS	Warning	System Firmware Progress	reserved offset 0x10a - Asserted	
		Tue Mar 23 10:47:14 2021 Tue Mar 23 10:47:14 2021	POST Err Sensor	BIUS			reserved offset 0x10a - Asserted	
	961		POST Err Sensor POST Err Sensor	BIOS	Warning	System Firmware Progress		
	961 960	Tue Mar 23 10:47:14 2021			Warning Warning	System Firmware Progress System Firmware Progress	reserved offset 0x10a - Asserted	
	961 960 959	Tue Mar 23 10:47:14 2021 Tue Mar 23 10:47:14 2021	POST Err Sensor	BIOS				

Copyright © 2016-2021 - Intel Corporation. All Rights Reserved. Portions Copyright © 2016-2021 - Insyde Software Corp. Figure 49. Server Health Event Log Page

Table 8. Server Health Event Log Options

Option	Task
Select an event log category	Select the type of events to display in the list.
Severity category	Select the severity of events to display in the list. Choose informational, warning, or critical.
Number of entries per page	Specify how many events are displayed per page.
Event full indicator	An estimate of how full the event log is.
Page selection	Navigate to other pages of recorded events. The selections are first page, previous page, next page, and last page.
Event log list	Selected sensors are shown with their name, status, and readings. This includes a list of the events with their ID, time stamp, sensor name, controller, severity, sensor type, and description.
Clear Event Log	Clear the event log.
Save Event Log	Save the event log to file.
Refresh Event Log	Refresh the event log.

7.3 Configuration Tab

The Configuration tab is used to configure various settings such as alerts, alert email, IPv4 and IPv6 networks, VLAN, KVM and media, SSL certification, users, security settings, SOL, SDR configuration, and firmware as discussed in the following subsections.

7.3.1 Alerts

Use this page to configure which system events should trigger alerts and the destination for those alerts. Up to two destinations can be selected for each LAN channel (Figure 50). Table 9 lists the options to select the events that should trigger alerts and where the alerts are to be sent.

intel.	Integrated BMC Web Console	
System Server Health 0	Configuration Remote Control Virtual Media Server Diagnostics Miscellaneous BIOS Configurations	🔇 Logout 😋 Refresh 😮 Help 🕕 About
		<table-cell> Logout 🕜 Refresh 🖗 Help 🕕 About</table-cell>
Syslog Server Configuration	Alert Destination #2 SNMP SNMP IP: Email Send Email to: Save Send Test Alert tel Corporation. All Rights Reserved. Portions Copyright © 2016-2021 - Insyde Software Corp.	

Figure 50. Alerts Page

Table 9. Alerts Options

Option	Task
Globally Enable Platform Event Filtering	This can be used to prevent sending alerts until the users have fully specified their desired alerting policies.
Log Event For Filter Action	This can be used to enable or disable the logging of an event into the System Event Log when a Filter Action is taken.
Select the events that will trigger alerts	Select one or more system events that will trigger an alert.
Check/Clear All	Click to select or clear all events.
Alert Destination #1/#2	Select either SNMP along with the IP address or email address that the alert will be sent to. Up to two destinations can be selected for each LAN channel.
Save	Click to use the selected setup.
Send Test Alerts	After configuring, select this to send a test alert.

7.3.2 Alert Email

Use this page to configure the parameters for alert emails. Table 10 lists the options to configure alert emails.

intel	Integrated I	BMC Web	Console	1 Art		
System Server Health	Configuration Remote Control Virt	ual Media Server Diagnostics	Miscellaneous BIOS Configu	rations G	Logout ORefresh OHe	elp 🚯 About
	Configuration Remote Control Virt Configuration Remote Control Virt SMTP Server IP: SMTP Server Port: Sender Email Address: SMTP Authentication Method: SMTP Authentication Password: Save			rations	Logout 🕜 Refresh 🖗 He	About
Copyright © 2016-2021 - I	Intel Corporation. All Rights Reserved. P	ortions Copyright © 2016-2021	- Insyde Software Corp.			

Figure 51. Alert Email Page

Table 10. Alert Email Options

Option	Task
SMTP Server IP	The IP address of the remote SMTP mail server that the alert emails will be sent to. The IP address is made of four numbers separated by dots as in "xxx.xxx.xxx.xxx". 'xxx' ranges from 0 to 255. The first 'xxx' must not be 0.
SMTP Server Port	The IP port number for which the remote SMTP Mailserver is listening. SMTP servers without encryption and servers supporting STARTTLS generally listen on TCP Port 25. SMTP servers supporting SSL/TLS (SMTPS) generally listen on TCP port 465.
Sender Email Address	The sender address string to be put in the "From:" field of outgoing alert emails.
SMTP Authentication Method	 Select the SMTP authentication and encryption methods supported by the remote SMTP Mailserver. SMTP authentication without encryption is not supported. Options: None - use this option if the remote SMTP Mailserver does not support authentication or does not support STARTTLS or SSL/TLS encryption methods. Authentication after STARTTLS - Use this option if the remote SMTP Mailserver only supports STARTTLS encryption. Authentication over TLS/SSL Session - Use this option if the remote SMTP Mailserver supports full SSL/TLS encrypted sessions (SMTPS).
SMTP Authentication User	User email account on the remote SMTP mail server used for SMTP authentication. This option is not available if SMTP Authentication Method is set to None.
SMTP Authentication Password	User password on the remote SMTP mail server used for SMTP authentication. This option is not available if SMTP Authentication Method is set to None.
Save button	Click to save any changes made.

7.3.3 Date & Time

Use this page to view and change the devices' date and time from NTP server or RTC. Table 11 lists the options to configure Date & Time.

intel.	Integrated BMC Web Console	
System Server Health Con	nfiguration Remote Control Virtual Media Server Diagnostics Miscellaneous BIOS Configuration	ons 🕜 Logout 😋 Refresh 😮 Help 🚯 About
	Date & Time	
Alerts	_	
Alert Email	11 : 4 : 14	
Date & Time	2021 / 3 / 23 Tuesday	
IPv4 Network	2021 / 3 / 23 Idesday	
IPv6 Network	Time Zone: GMT+00:00 Casablanca/London	\checkmark
VLAN		
LDAP	BMC time use NTP	
Active Directory	NTP Server	
KVM & Media		
SSL Certification	Primary NTP Server:	
Advanced System Management Key	Secondary NTP Server:	
Users		
Security Settings	Save	
SOL		
SDR Configuration		
BMC Firmware Update		
BIOS/ME Firmware Update		
CPLD Update		
Syslog Server Configuration		
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Figure 52. Date & Time Page

Table 11. Date & Time Options

Option	Task
Time Zone	Time zone setting.
BMC time use NTP	Enable/Disable NTP service.
Primary NTP Server	Primary NTB Server address.
Second NTP Server	Second NTB Server address.
Save button	Click to save any changes made.

7.3.4 IPv4 Network

The IPv4 settings page is used to configure the IPv4 network settings for the server management LAN interface to the BMC controller. See Figure 53 or Figure 54 for details.

Integrated BMC Web Console User Guide for the Intel[®] Server Boards D50TNP, M50CYP, and D40AMP Table 12 lists the options available in this page.

sht Email Enable HOST Interface te & Time Enable LAN Failover r4 Network Bonding of LAN channel r6 Network Primary LAN channel r6 Nic Description Dedicated to BMC r6 Disable Disable r1 D Address 10 239.55.90 Subnet Mask 255 255.25.5 Default Gateway 10 239.55.241 <	lerts lert Email lert Email lert Email left & Time enable LAN Falover Primary LAN channel Channel-3 Primary LAN channel Channel-3 Primary LAN channel Configuration Adv A Media SL Certification MAC Address 28-68-05-8d-90-01 MAC Address 28-68-05-8d-90-01 MAC Address 28-68-05-8d-90-01 Insagement Key ecurity Settings OL DC Configuration MC Firmware Update IOSME Firmware Update VS Berver onfiguration VC Firmware Update Viso Server onfiguration VI Setver ID 239-55-20	stem Server Health Configura	tion Remote Control	Virtual Media	Server Diagnostics	Miscellaneous	BIOS Configurat	tions	Cogout O	Refresh 🔞 Help
It Email Enable HOST Interface It e & Time Enable LAN Failover It e & Time Channel-3 AN Interface AP Hostname Hostname EMC0000000000 It c entification MAC Address anagement Key NIC Description NIC Description Dedicated to BMC ers Link Status Link Status UP Ic Firmware Update Disable DSME Firmware Update IP Address alog Server Ip Address Infguration Subnet Mask 255 255.0 Default Gateway	trt Email Enable HOST Interface te & Time Enable HAST Interface te & Time Enable HAST Interface te & Time Enable LAN Fallover 4 Network Bonding of LAN channel 6 Network Primary LAN channel AN AP Hostname Hostname BMC000000000 M & Media LAN Channel Loertification MAC Address vanced System BAC Configuration nagement Key NIC Description VL Roding an IP address automatically (use DHCP) C Erimware Update IP Address SMS Erimware Update IP Address SMS Erimware Update IP Address SMS Erimware Update IP Address Subret Mask 25255250 Default Gateway 10239.55241 Primary DNS Server 10248.25	ə IP	v4 Network Settin	gs						
It channel Ite & Time Ite & Time Enable LAN Failover Bonding of LAN channel Channel-3 P Pimary LAN channel AN AP Hostname BMC0000000000 LAN Channel AP Hostname BMC0000000000 LAN Channel Configuration NaC Address 28-86-05-8d-9c-01 MAC Address 28-86-05-8d-9c-01 MAC Address 28-86-05-8d-9c-01 NIC Description Dedicated to BMC Link Status UP © Obtain an IP address automatically (use DHCP) C Erimware Update SME Firmware Update Subnet Mask 252 S52 S52.0 Default Gateway 10 239.55.241	At National Ite & Time Ite & Time Enable LAN Falover Bonding of LAN channel Channels Inimary LAN channel Image Lan Kannel Image Lan Kann	erts								
A Network Bonding of LAN channel A Network Primary LAN channel AN Configuration management AP Hostname M & Media LAN Channel L Certification MAC Address vanced System MAC Address agement Key NIC Description NC Description Dedicated to BMC ers Link Status L Certification VUP IL R Configuration IC Firmware Update Obtain an IP address SME Firmware Update Disable ID Update IP Address ID Update IP Address Inguration Stop Server Infiguration Stop Server Infiguration Default Gateway 10 239 55 261	Index End Parker Index End Parker Bonding of LAN channel G Network 6 Network Pimary LAN channel AN AP No AR AP No Addia L Certification Mac Address 28-66-05-8d-9c-01 MAC Address 29-66-05-8d-9c-01 MAC Address 29-66-05-8d-9c-01 MAC Address 20-66-05-8d-9c-01 MAC Address 20-66-05-8d-9c-01 MC Description Dedicated to BMC Link Status UP Ink Status Up Ink Status UP In Status UP In Status Up address In Disable IP Address In Address In Status IP Address In Status In Address In Mack 255.255.0 Default Gateway </td <td>rt Email Ena</td> <td>able HOST Interface</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	rt Email Ena	able HOST Interface							
6 Network Primary LAN channel AN Primary LAN channel AP Configuration management hostname BMC0000000000 M & Media LAN Channel L Certification MAC Address aranced System 26-66-05-84-9C-01 nagement Key NIC Description Dedicated to BMC srs Link Status UP L Configuration C Firmware Update Dydate ID Update IP Address 10 239 55 90 Jog Server Infiguration Subnet Mask 255 255 255 0 Default Gateway 10 239 55 241	6 Network Denoming of LAV channel Primary LAN channel AN AP We Directory M & Media L Certification MAC Address 28-86-05-8d-9c-01 NAC Address 28-86-05-8d-9c-01 NIC Description Dedicated to BMC unity Settings L Certification NIC Description Dedicated to BMC Link Status UP Link Status UP Use the following IP address O Disable IP Address Subnet Mask 255.255.255.0 Default Gateway 10.239.55.241 Primary DNS Server 10.248.2.5	e & Time Ena	ble LAN Failover	Z						
AN AP AP AP Hostname Exclusive Exclu	AN AP	v4 Network	Bonding of LAN channel	Channel-	-3 🗆					
AP tive Directory M & Media LAN Channel Definition WaC Address LAN Channel Channel.3 LAN Channel Deficited to BMC LAN Channel NIC Description Dedicated to BMC Link Status UP OL	AP Hostname EMC0000000000 M & Media LAN Channel Channel-3 ✓ L. Certification MAC Address 28-66-05-86-9c-01 wanced System MAC Address 28-66-05-86-9c-01 magement Key INIC Description Dedicated to BMC ers Link Status UP © Obtain an IP address automatically (use DHCP) O Use the following IP address O Disable IP Address 10 239.55.90 Subnet Mask 255.255.255.0 Default Gateway 10 239.55.241 Primary DNS Server 10 248.2.5	/6 Network	Primary LAN channel	\checkmark						
HostnameBMC000000000M & MediaLAN ChannelChannel-3 AL CertificationMAC Address28-66-05-8d-9c-01MAC Address28-66-05-8d-9c-01MAC Address28-66-05-8d-9c-01MAC Address28-66-05-8d-9c-01NIC DescriptionDedicated to BMCersLink StatusUPCurity SettingsUPOLInk StatusUPIc Firmware UpdateObtain an IP addressDS/ME Firmware UpdateDisableIP Address10.239.55.90Subnet Mask255.255.0Default Gateway10.239.55.241	Hostname BMC0000000000 M & Media LAN Channel Channel-3 ✓ SL Certification MAC Address 28-66-05-8d-9c-01 MAC Address 28-66-05-8d-9c-01 NIC Description Dedicated to BMC Link Status UP OL © Obtain an IP address automatically (use DHCP) OL Oute the following IP address SME Firmware Update Disable Subnet Mask 255.255.0 Default Gateway 10.239.55.241 Primary DNS Server 10.239.55.241	AN COR	nfiguration mana	gement						
two Directory LAN Channel M & Media LAN Channel L. Certification MAC Address vanced System MAC Address inagement Key NIC Description ers Link Status outry Settings In Dedicated to BMC DL Imagement Key Ink Status UP Ink Configuration Obtain an IP address automatically (use DHCP) In Use the following IP address Imagement CF imware Update DS/ME Firmware Update Disable IP Address 10.239.55.90 Subnet Mask 255.255.255.0 Default Gateway 10.239.55.241	three Directory Lan Channel AM & Media LAN Channel SL Certification MAC Address ivanced System 26-66-05-8d-9c-01 MAC Address 26-66-05-8d-9c-01 NIC Description Dedicated to BMC seres Link Status UP OL		Hastaama	RMC000000000	000					
L Certification MAC Address 26-66-05-8d-9c-01 Management Key NIC Description Dedicated to BMC ers Link Status UP curity Settings © Obtain an IP address automatically (use DHCP) OL © Obtain an IP address automatically (use DHCP) OL Use the following IP address DS/ME Firmware Update Disable IP Address 10.239.55.90 Subnet Mask 255.255.255.0 Default Gateway 10.239.55.241	SL Certification MAC Address 26-66-05-8d-9c-01 Management Key NIC Description Dedicated to BMC security Settings Link Status UP OL © Obtain an IP address automatically (use DHCP) Use the following IP address OS/ME Firmware Update Disable In 239.55.90 PLD Update IP Address 10.239.55.241 Default Gateway 10.239.55.241 Primary DNS Server 10.239.55.241	tive Directory	losularite	BINCOUDOUDO	000					
warced System inagement KeyMAC Address26-66-05-8d-9c-01inagement KeyNIC DescriptionDedicated to BMCcurity SettingsLink StatusUP0LImage: ConfigurationObtain an IP address automatically (use DHCP)0C Use the following IP addressDisable0S/ME Firmware UpdateDisable0L UpdateIP Address10 Address10.239.55.90Subnet Mask255.255.255.0Default Gateway10.239.55.241	MAC Address26-66-05-8d-9c-01anagement KeyNIC DescriptionDedicated to BMCsecurity SettingsLink StatusUPDLIn StatusUPO Chain an IP address automatically (use DHCP)Use the following IP addressOS/ME Firmware UpdateDisablePLD UpdateIP AddressVosing Server10.239.55.90Default Gateway10.239.55.241Primary DNS Server10.248.2.5	·	LAN Channel	Channel-3 🗸						
Inagement Key NIC Description Dedicated to BMC curity Settings Link Status UP OL Imagement Key Imagement Key OL Obtain an IP address automatically (use DHCP) O Use the following IP address OS/ME Firmware Update PLD Update slog Server infiguration U P Address ID Logate IP Address ID 239.55.90 Default Gateway ID 239.55.241	anagement Key NIC Description Dedicated to BMC security Settings Link Status UP DL Imagement Key Obtain an IP address DR Configuration Ouse the following IP address OS/ME Firmware Update Disable PLD Update IP Address Subnet Mask 255 255 255 0 Default Gateway 10 239 55 241 Primary DNS Server 10 238 25		MAC Address	26-66-05-8d-9c-	01					
ers Dedicated to BMC curity Settings Link Status UP oL Obtain an IP address automatically (use DHCP) O Use the following IP address O Disable O Disable IP Address 10.239.55.90 Default Gateway Default Gateway 10.239.55.241 	Nic Description Dedicated to BMC security Settings Link Status UP OL • Obtain an IP address automatically (use DHCP) • Use the following IP address • Disable • Use the following IP address • Disable OSAME Firmware Update • Disable • IP Address • 10.239.55.90 Subnet Mask 255.255.255.0 • Default Gateway • 10.239.55.241 Primary DNS Server • 10.248.2.5 • 10.248.2.5	anagement Key								
Curry Settings DL DL OL IR Configuration IC Firmware Update DS/ME Firmware Update DL Update IP Address slog Server infiguration Subnet Mask Default Gateway 10.239.55.241	DL Obtain an IP address automatically (use DHCP) Use the following IP address Disable OS/ME Firmware Update Disable IP Address 10.239.55.90 Subnet Mask 255.255.255.0 Default Gateway 10.239.55.241 Primary DNS Server 10.248.25 		NIC Description	Dedicated to E	3MC					
IR Configuration O Use the following IP address IC Firmware Update Disable DS/ME Firmware Update IP Address PLD Update IP Address slog Server mfiguration Subnet Mask 255.255.255.0 Default Gateway 10.239.55.241	OR Configuration Outer and Pladdeess additional (dise bitCP) OR Configuration O Use the following IP address OS/ME Firmware Update Disable PLD Update IP Address IP Address 10.239.55.90 Subnet Mask 255.255.255.0 Default Gateway 10.239.55.241 Primary DNS Server 10.248.2.5	curity Settings	Link Status	UP						
R Configuration O Use the following IP address IC Firmware Update O Disable DS/ME Firmware Update IP Address PLD Update IP Address slog Server 10.239.55.90 Subnet Mask 255.255.255.0 Default Gateway 10.239.55.241	R Configuration O Use the following IP address MC Firmware Update O Disable DS/ME Firmware Update IP Address Slog Server 10.239.55.90 slog Server Subnet Mask Default Gateway 10.239.55.241 Primary DNS Server 10.248.2.5)L	Obtain an IP address	automatically (use	DHCP)					
IC Firmware Update O Disable DS/ME Firmware Update IP Address 10.239.55.90 slog Server nfiguration Subnet Mask 255.255.255.0 Default Gateway 10.239.55.241	IC Firmware Update O Disable DS/ME Firmware Update IP Address IIP Address 10.239.55.90 slog Server Subnet Mask Default Gateway 10.239.55.241 Primary DNS Server 10.248.2.5	R Configuration	-		,					
DS/ME Firmware Update IP Address 10.239.55.90 slog Server infiguration Subnet Mask 255.255.255.0 Default Gateway 10.239.55.241	DS/ME Firmware Update IP Address 10.239.55.90 slog Server infiguration Subnet Mask 255.255.255.0 Default Gateway 10.239.55.241 Primary DNS Server 10.248.2.5	IC Firmware Update	-	uuress						
IP Address 10.239.55.90 slog Server infiguration Subnet Mask Default Gateway 10.239.55.241	IP Address 10.239.55.90 slog Server infiguration Subnet Mask Default Gateway 10.239.55.241 Primary DNS Server 10.248.2.5		O Disable							
slog Server slog Server nfiguration Subnet Mask Default Gateway 10.239.55.241	slog Server Subnet Mask Default Gateway 10.239.55.241 Primary DNS Server 10.248.2.5	PLD Update	P Address	10 239 55 90						
Default Gateway 10.239.55.241	Default Gateway 10.239.55.241 Primary DNS Server 10.248.2.5	vslog Server		10.200.00.00						
	Primary DNS Server 10.248.2.5	onfiguration	Subnet Mask	255.255.255.0						
Primary DNS Server 10 248 2 5		I	Default Gateway	10.239.55.241						
	Secondary DNS Sector 40 000 07 000		Primary DNS Server	10.248.2.5						
	Secondary Division 10.239.27.226	5	Secondary DNS Server	10.239.27.228						
	Secondary DNS Secure 40 000 07 000	MC Firmware Update OS/ME Firmware Update PLD Update rslog Server onfiguration	O Disable P Address Subnet Mask Default Gateway	10.239.55.90 255.255.255.0 10.239.55.241						

Figure 53. IPV4 Network DHCP Page

intel.	Integrate	dBMC	Web	Conso	ole	
	onfiguration Remote Control	Virtual Media	Server Diagnostics	Miscellaneous	BIOS Configurations	🔇 Logout 😋 Refresh 😮 Help 🚯 About
	IPv4 Network Settin	ngs				
Alerts						
Alert Email	Enable HOST Interface					
Date & Time	Enable LAN Failover					
IPv4 Network	Bonding of LAN channel	Channel	2 🗆			
IPv6 Network	Primary LAN channel					
VLAN	Configuration mana					
LDAP	comgaration man	gement				
Active Directory	Hostname	BMC00000000	000			
KVM & Media	LAN Channel	Channel-3 🗸	Г			
SSL Certification		onannel-o 🔹				
Advanced System Management Key	MAC Address	26-66-05-8d-9c-	01			
Users	NIC Description	Dedicated to E	BMC			
Security Settings	Link Status	UP				
SOL			DU (CD)			
SDR Configuration	O Obtain an IP address		DHCP)			
BMC Firmware Update	Use the following IP a	ddress				
BIOS/ME Firmware Update	O Disable					
CPLD Update						
Syslog Server Configuration	IP Address	10.239.55.90				
	Subnet Mask	255.255.255.0				
	Default Gateway	10.239.55.241				
	Primary DNS Server	10.248.2.5				
	Secondary DNS Server	10.239.27.228				
	Save					-
Copyright © 2016-2021 - In	tel Corporation. All Rights Reser	ved. Portions Cop	yright © 2016-2021 -	Insyde Software	Corp.	
		Figure !	54. IPv4 Ne	etwork St	atic Page	

WARNING: Each network controller must be on a different subnet than all other controllers used for management traffic.

WARNING: When LAN failover is enabled, the system administrator must ensure that each network controller connection, which can be seen by the BMC, has connectivity to the same networks. If there is a loss of functionality on the primary network controller channel, it will randomly failover to any of the other network controller channels that are connected and seen by the BMC.

	Table 12. IPv4 Network Settings Options
Option	Task
Host Name	The hostname is an RFC 1123 compliant string less than 64 alpha-numeric characters. Hyphen characters are allowed as long as the hyphen is not the first or final character in the hostname. The default value is "BMC" + MAC address.
Enable LAN Failover	Enabling failover bonds Ethernet interfaces into the primary LAN Channel, the Bonding of LAN channel option can select Ethernet device to bond, the Primary LAN channel option can specify a LAN channel to primary LAN channel. When the primary interface's leash is lost, one of the secondary interfaces is activated automatically with the same IP address.
	Select the channel on which to configure the network settings. Lists the LAN Channels available for server management. The LAN channels describe the physical NIC connection on the server. D50TNP/D40AMP:
LAN Channel	 Baseboard NIC (BMC LAN Channel 1) is the onboard, shared NIC configured for management and shared with the operating system. Dedicated Management Channel (BMC LAN Channel 3) is Dedicated Management NIC.
	 M50CYP: Dedicated Management Channel (BMC LAN Channel 1) is Dedicated Management NIC.
MAC Address	The MAC address of the device (read only).
NIC Description	NIC dedicated to BMC / Host or shared between Host and BMC of LAN Channel(s) (read only).
Link Status	NIC Link status of LAN Channel(s) (read only).
	Select one of the three options for configuring the IP address:
IP address	 Obtain an IP address automatically (use DHCP) – Uses DHCP to obtain the IP address. Use the following IP address – Manually configure the IP address. Disable LAN Channel – Sets the IP address, Subnet Mask, and Default Gateway to 0.0.0.0.
IP Address Subnet Mask Gateway	If configuring a static IP, enter the requested address, subnet mask, and gateway in the given fields. The IP Address is made of four numbers separated by dots as in "xxx.xxx.xxx.xxx". 'xxx' ranges from 0 to 255. The first 'xxx' must not be 0.
Primary DNS Server Secondary DNS Server	If configuring a static IP, enter the Primary and Secondary DNS servers.
Save	Click to save any changes made.

7.3.5 IPv6 Network

The IPv6 settings page is used to enable and configure the IPv6 network settings and to enable and configure LAN failover (Figure 55) Table 13 lists the options available in this page.

intel.	Integrated	d BMC Web Console	1
System Server Health Cor	figuration Remote Control	Virtual Media Server Diagnostics Miscellaneous BIOS Configurations O Logout O Refresh O Help	1 About
	IPv6 Network Settin	ngs	
Alerts			
Alert Email	Enable HOST Interface		
Date & Time	Enable LAN Failover	Π	
IPv4 Network	Configuration mana	_	
IPv6 Network	comguration mana		
VLAN	LAN Channel	Channel-3 V	
LDAP	MAC Address	26-66-05-8d-9c-01	
Active Directory			
KVM & Media	NIC Description	Dedicated to BMC	
SSL Certification	Link Status	UP	
Advanced System Management Key	O Obtain an IP address	automatically (use DHCPv6/SLAAC)	
Users	O Use the following IP a	address	
Security Settings	Disable		
SOL			
SDR Configuration	IP Address		
BMC Firmware Update			
BIOS/ME Firmware Update	Prefix Length	64	
CPLD Update	Default Gateway		
Syslog Server Configuration	Primary DNS Server	::fff:10.248.2.5	
	Secondary DNS Server	::fff: 10.239.27.228	
_	L		
L	Save		
Copyright © 2016-2021 - Intel	Corporation. All Rights Reserve	ved. Portions Copyright © 2016-2021 - Insyde Software Corp.	
		Figure 55. IPv6 Network Page	

WARNING: Each network controller must be on a different subnet than all other controllers used for management traffic.

WARNING: When LAN failover is enabled, the system administrator must ensure that each network controller connection, which can be seen by the BMC, has connectivity to the same networks. If there is a loss of functionality on the primary network controller channel, it will randomly failover to any of the other network controller channels that are connected and seen by the BMC.

Table 13. IPv6 Network Settings Options

Option	Task
Enable LAN Failover	Enabling failover bonds Ethernet interfaces into the primary LAN Channel, the Bonding of LAN channel option can select Ethernet device to bond, the Primary LAN channel option can specify a LAN channel to primary LAN channel. When the primary interface's leash is lost, one of the secondary interfaces is activated automatically with the same IP address.
LAN Channel	 Select the channel on which to configure the network settings. Lists the LAN Channels available for server management. The LAN channels describe the physical NIC connection on the server. D50TNP/D40AMP: Baseboard NIC (BMC LAN Channel 1) is the onboard, shared NIC configured for management and shared with the operating system. Dedicated Management Channel (BMC LAN Channel 3) is Dedicated Management NIC. M50CYP: Dedicated Management Channel (BMC LAN Channel 1) is Dedicated Management NIC.
MAC Address	The MAC address of the device (read only).
NIC Description	NIC dedicated to BMC / Host or shared between Host and BMC of LAN Channel(s) (read only).
Link Status	NIC link status of LAN Channel(s) (read only).
IP address	Select one of the three options for configuring the IP address: Use IPv6 auto-configuration (stateless ICMPv6 discovery) – Uses ICMPv6 to obtain the IP address. Obtain an IP address automatically (use DHCPv6) – Uses DHCPv6 to obtain the IP address. Use the following IP address – Manually configure the IP address.
IP Address Gateway	If configuring a static IP, enter the requested address and gateway in the given fields. The IP Address and Gateway are 128-bit fields made of eight hexadecimal numbers separated by colons as in "xxxx:xxxx:xxxx:xxxx:xxxx:xxxx: 'xxxx' ranges from 0 to FFFF. First 'xxxx' must not be 0. One or more consecutive groups of zero value may be replaced with a single empty group using two consecutive colons (::).
Prefix Length	Select the routing prefix length.
Primary/Secondary DNS server	If configuring a static IP, enter the Primary and Secondary DNS servers.
Save	Click to save any changes made.

7.3.6 VLAN Settings

The VLAN settings page is used to enable and configure the VLAN private network settings on the selected server management LAN channels (Figure 56). Table 14 lists the options available in this page.

intel.	Integrated	d BMC Web	Consol	le	
System Server Health C	Configuration Remote Control	Virtual Media Server Diagnostics	Miscellaneous	BIOS Configurations	🔇 Logout 🕒 Refresh 😮 Help 🕕 About
					C Logout C Refresh Help About
Copyright © 2016-2021 - In	tel Corporation. All Rights Reserv	ved. Portions Copyright © 2016-2021	- Insyde Software Co	orp.	

Figure 56. VLAN Settings Page

Table 14. VLAN Settings Options

Option	Task
LAN Channel	 Select the channel on which to configure the network settings. Lists the LAN Channels available for VLAN. The LAN channel describes the physical NIC connection on the server. D50TNP/D40AMP: Baseboard NIC (BMC LAN Channel 1) is the onboard, shared NIC configured for management and shared with the operating system. Dedicated Management Channel (BMC LAN Channel 3) is Dedicated Management NIC. M50CYP: Dedicated Management Channel (BMC LAN Channel 1) is Dedicated Management NIC.
Enable VLAN	Enable VLAN for the LAN channel selected in the drop-down box.
VLAN ID	Specify the VLAN ID to use. Values are from 1 to 4094. Only one ID can be used at a time.
VLAN Priority	Specify the VLAN Priority field to place in outgoing packets. Priority code point (PCP) values in order of priority are: 1 (background), 0 (best effort), 2 (excellent effort), 3 (critical application), 4 (video), 5 (voice), 6 (internetwork control), 7 (network control). 0 (best effort) is the default.
Save	Click to save the current settings.

7.3.7 LDAP Settings

The LDAP settings page is used to enable/disable the LDAP settings on the selected server management LAN channels. See Figure 57 and Table 15 for available options on this page.

System Server Health Configuration Remote Control Virtual Media Server Diagnostics Miscellaneous BIOS Configurations Alerts Alert Email LDAP Settings LDAP Authentication Date & Time LDAP authentication over SSL IPv4 Network IP Address 0.0.0 Bind DN LDAP Searchbase Active Directory LDAP Gorup Configuration Advanced System Caliback role filter Galback role filter Save Sol SDR Configuration BIOS Sol Sol Sol Sol Sol Configuration BIOS Sol Configuration	intel.	Integrated	BMC Web	Console
Alerts Alert Email LDAP Authentication Date & Time LDAP authentication over SSL IPv4 Network Pot 636 IPv6 Network Bind Password VLAN Bind Password LDAP Searchbase Active Directory LDAP Group Configuration KVM & Media Operator role filter SSL Certification User role filter Vanagement Key Caliback role filter Users Save SOL SOL SDR Configuration Bind Password BINC Firmware Update Bind Password BIOS/ME Firmware Update Systog Server	System Server Health C	onfiguration Remote Control Vir	tual Media Server Diagnostics	Miscellaneous BIOS Configuration
Alert Email LDAP Authentication Date & Time LDAP authentication over SSL IPv4 Network Port 636 IPv6 Network IP Address 0.0.0 VLAN Bind Password 0 DAP Searchbase 0 Active Directory LDAP Group Configuration KVM & Media Operator role filter SSL Certification User role filter Vanagement Key Save Solu Sove BINC Firmware Update Save BIOS/ME Firmware Update Syslog Server		LDAP Settings		
Date & Time E LDAP Authentication over SSL IPv4 Network Port 636 IPv6 Network IP Address 0.0.0 VLAN Bind Password IP UDAP Searchbase IP Active Directory LDAP Group Configuration Admin role filter KVM & Media Operator role filter IP SSL Certification User ole filter IP Vanagement Key Save Save SOL SDR Configuration Save BIOS/ME Firmware Update BIOS/ME Firmware Update Syslog Server				
IPv4 Network Port 636 IPv6 Network IP Address 0.0.0 IPv6 Network Bind Password IP UDAP Searchbase IP Active Directory LDAP Group Configuration Admin role filter Active Directory LDAP Group Configuration IP KVM & Media Operator role filter IP SSL Certification User ole filter IP Management Key Save Save SOL SDR Configuration Save BIOS/ME Firmware Update BIOS/ME Firmware Update IP BIOS/ME Firmware Update Syslog Server IP	Alert Email	LDAP Authentication		
IP4 Address 0.0.0 IP4 Address 0.0.0 Bind Password Image: Stress S	Date & Time	LDAP authentication over SS	SL	
IPVo Network Bind Password Bind Password Bind Password Bind DN Bind DN LDAP Searchbase Active Directory LDAP Group Configuration Admin role filter Admin role filter SSL Certification User role filter Advanced System Calback role filter Management Key Calback role filter Users Save Security Settings Sol SDR Configuration Bind Password Bind Passwo	IPv4 Network			
VLAN Bind DN LDAP Searchbase Active Directory LDAP Group Configuration KVM & Media Operator role filter SSL Certification User role filter Advanced System Callback role filter Management Key Save Security Settings SoL SOL SDR Configuration BIOS/ME Firmware Update CPLD Update Systog Server Save	IPv6 Network		0.0.0.0	
LDAP Searchbase Active Directory LDAP Group Configuration Admin role filter Admin role filter SSL Certification User role filter Advanced System Callback role filter Advanced System Callback role filter Management Key Save Security Settings Save SOL SDR Configuration BIOS/ME Firmware Update EIOS/ME Firmware Update Systog Server Save	VLAN			
Active Directory LDAP Group Configuration KVM & Media Operator role filter SSL Certification User role filter Advanced System Caliback role filter Management Key Caliback role filter Users Save Solc Solc SDR Configuration Solc BIOS/ME Firmware Update BIOS/ME Firmware Update Systog Server Save	LDAP			
KVM & Media Admin role filter SSL Certification User role filter Advanced System Callback role filter Management Key Callback role filter Users Save Security Settings Save SOL SDR Configuration BMC Firmware Update BIOS/ME Firmware Update EIOS/ME Firmware Update Systog Server				
SSL Certification User role filter Advanced System Caliback role filter role f		Admin role filter		
Advanced System Caliback role filter Management Key Users Save Security Settings SOL SDR Configuration BMC Firmware Update BIOS/ME Firmware Update CPLD Update Systog Server		Operator role filter		
Management Key Users Users Security Settings SOL SDR Configuration BMC Firmware Update BIOS/ME Firmware Update CPLD Update Syslog Server				
Security Settings SOL SDR Configuration BMC Firmware Update BIOS/ME Firmware Update CPLD Update Syslog Server		Callback role filter		
Security Settings SOL SDR Configuration BMC Firmware Update BIOS/ME Firmware Update CPLD Update Syslog Server	Users	Save		
SDR Configuration BMC Firmware Update BIOS/ME Firmware Update CPLD Update Syslog Server	Security Settings			
BMC Firmware Update BIOS/ME Firmware Update CPLD Update Syslog Server	SOL			
BIOS/ME Firmware Update CPLD Update Syslog Server	SDR Configuration			
CPLD Update Syslog Server	BMC Firmware Update			
Syslog Server	BIOS/ME Firmware Update			
	CPLD Update			
		tel Corporation. All Rights Reserved.		

Figure 57. LDAP Settings Page

Table 15. LDAP Settings Options

Option	Task
LDAP Authentication	Check this box to enable LDAP authentication, then enter the required information to access the LDAP server.
LDAP authentication over SSL	Check this box to enable LDAP authentication over SSL.
Port	Specify the LDAP Port.
IP Address	 The IP address of LDAP server. IP Address made of 4 numbers separated by dots as in "xxx.xxx.xxx.xxx". 'xxx' ranges from 0 to 255. First 'xxx' must not be 0.
Bind Password	Authentication password for LDAP server; the password must be at least 4 characters long.
Bind DN	The Distinguished Name of the LDAP server, like "cn=Manager, dc=my-domain, dc=com".
Searchbase	The searchbase of the LDAP server, like "dc=my-domain, dc=com".
LDAP Group Configuration	Configure the LDAP search filters associated with BMC network privileges. Like "(&(cn=BMCAdminGroup)(memberUid=%s))".
Admin role filter	LDAP query filter for Admin network privilege.
Operator role filter	LDAP query filter for Operator network privilege.
User role filter	LDAP query filter for User network privilege.
Callback role filter	LDAP query filter for callback network privilege.
Save	Click to save the current settings.

7.3.8 Active Directory Settings

The Active Directory Settings page used to config Active Directory Authentication and enable/disable Active Directory Authentication over SSL. See Figure 58 and Table 16 for available options on this page.

intel.	Integrated E	BMC Web	Console	
System Server Health Co	onfiguration Remote Control Virtua	al Media Server Diagnostics	Miscellaneous BIOS Configurations	O Logout O Refresh O Help D About
	Active Directory Settings	;		
Alerts				
Alert Email	Enable Active Directory Authent	ication		
Date & Time	Active Directory Authentication of Active Direct			
IPv4 Network	Port	636		
IPv6 Network	User Domain Name			
	Time Out	5		
VLAN	Domain Controller Server Address1			
LDAP	Domain Controller Server Address2			
Active Directory	Domain Controller Server Address3	0.0.0.0		
KVM & Media	Save			Number of configured role groups: 0
SSL Certification	Role Group ID 0	Group Name	Group Domain	Network Privilege
Advanced System	1	~	Group Domain	Reserved
Management Key	2	~	~	Reserved
Users	3	~	~	Reserved
Security Settings	4 5	~	~	Reserved
SOL	5	~	~	Reserved
SDR Configuration	Add Role Group Modify Ro	le Group Delete Role Grou	p	
BMC Firmware Update				
BIOS/ME Firmware Update				
CPLD Update				
Syslog Server Configuration				
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Figure 58. Active Directory Settings Page

Table 16. Active Directory Settings Options

Option	Task
Enable Active Directory Authentication	Click check box to enable.
Active Directory Authentication over SSL	Click check box to enable.
Port	Port 636 (the default LDAP port with SSL)
User Domain Name	User belongs to which domain in Active Directory server
Time Out	Timeout (sec) after request AD Server for authentication
Domain Controller Server Address1/2/3	IP address of a domain controller server. Users can enter up to three sets of IP addresses.
Save (Remote Session)	Click to save any changes for Remote Session.
Add Role Group	Select an empty role group (Group Name: "~", Group Domain: "~" and Network Privilege: Reserved).
Modify Role Group	Modify Role Group Name, Domain, and select Privilege.
Delete Role Group	Delete role group.
Save (Mouse Mode Setting)	Click to save any changes for Mouse Mode Setting.

7.3.9 KVM & Media

Use this page to change the type and port of KVM encryption and the port of media encryption during a redirect session (Figure 59). Table 17 lists option details.

intel.	Integrated BMC Web Console
	Configuration Remote Control Virtual Media Server Diagnostics Miscellaneous BIOS Configurations O Logout O Refresh P Help 1 Al
	KVM Remote Session & Mouse Mode Setting
Alerts	
Alert Email	Remote Session
Date & Time	The following options allow the user to change the encryption type and port on KVM and the encryption port of Media during a redirection session.
IPv4 Network	KVM Encryption AES-256 V
IPv6 Network	KVM Encryption
VLAN	Default Ports:
LDAP	KVM (Secure) 5902 USB/Floppy (Secure) 627
Active Directory	Save
KVM & Media	Mouse Mode Setting
SSL Certification	
Advanced System Management Key	O Absolute Mode(Windows, Ubuntu, RHEL 6.x, SLES 12 and later)
Users	Relative Mode(Rest of the Linux) Single Mode
Security Settings	
SOL	Save
SDR Configuration	
BMC Firmware Update	
BIOS/ME Firmware Update	
CPLD Update	
Syslog Server Configuration	
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Figure 59. KVM & Media Page

Table 17. KVM & Media Options

Option	Task
KVM Encryption	Enable/disable encryption on KVM data during a redirection session. Choose any one from the supported encryption techniques.
Default Ports	Set the ports used by KVM and remote media (both standard and secure ports). Users must not change these values unless they know that the new ports are unused.
Save (Remote Session)	Click to save any changes for Remote Session.
	Redirection Console handles mouse emulation from local window to remote screen in one of the following methods:
Mouse Mode Setting	 Absolute Mode - Select to have the absolute position of the local mouse sent to the server. Preferred method where supported. Use this mode for Windows operating system and newer versions of Linux (Ubuntu, RHEL*, SLES). Relative Mode - Select Relative Mode to have the calculated relative mouse position displacement sent to the server. Use this mode for older Linux versions such as Red Hat Enterprise Linux* (RHEL) 5.x. For best results, server and client operating system mouse acceleration/threshold settings should match. Alternatively, use the mouse calibration option in JViewer*. Single Mode - Select Single Mode to have the calculated displacement from the local mouse in the center position, sent to the server. Under this mode, Ctrl+6 should be used to switch between Host and client mouse cursor. Use this mode in special situations such as the SLES 11 Linux operating system installation.
Save (Mouse Mode Setting)	Click to save any changes for Mouse Mode Setting.

7.3.10 SSL Certification

The BMC generates a unique, self-signed SSL certificate when the server is first plugged into AC power. This default certificate is less secure than one signed by a Certificate Authority (CA). Uploading a CA signed certificate is recommended to allow client software to verify the authenticity of the BMC. Use this page to upload an SSL certificate and private key, which allows the device to be accessed in a secured mode. See Figure 60 for details.

intel.	Integrat	ed BMC Web	Console	
System Server Health C	Configuration Remote Con	trol Virtual Media Server Diagnostics	Miscellaneous BIOS Configu	rations 🕜 Logout 😋 Refresh 💡 Help 🕕 Abou
Alerts	SSL Upload			
Alert Email	Certification Valid From	3/12/2021, 9:27:02 AM		
Date & Time	Certification Valid Until	3/12/2022, 9:27:02 AM		
IPv4 Network	New SSL Certificate	Choose File No file chosen		
IPv6 Network	New Private Key	Choose File No file chosen		
VLAN	United			
LDAP	Upload			
Active Directory				
KVM & Media				
SSL Certification				
Advanced System Management Key				
Users				
Security Settings				
SOL				
SDR Configuration				
BMC Firmware Update				
BIOS/ME Firmware Update				
CPLD Update				
Syslog Server Configuration				
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Figure 60. SSL Certification Page

First, upload the SSL certificate. The device will prompt to upload the private key. A notification will be displayed if either of the files is invalid and on successful upload. Click the **Upload** button. On successful upload, the device will prompt to reboot. Click **Ok** to reboot or click **Cancel** to cancel the reboot operation.

7.3.11 Advanced System Management Key

The Users page lists the Advanced System Management Key info, use this page to upload new advanced system management key. See Figure 61 for details.

intel.	Integrated BMC Web Console
System Server Health C	Configuration Remote Control Virtual Media Server Diagnostics Miscellaneous BIOS Configurations Configurations Concerning Configurations
	Advanced System Management Key
Alerts	Use this page to upload new key to activate advanced system management features
Alert Email	r Key Upload
Date & Time	Last Update Time : Tue Mar 16 16:29:00 2021
IPv4 Network	
IPv6 Network	Key File : No file chosen
VLAN	Upload
LDAP	
Active Directory	Activated Features
KVM & Media	BMC Virtual Media Activated
SSL Certification	Active Directory Activated
Advanced System Management Key	
Users	
Security Settings	
SOL	
SDR Configuration	
BMC Firmware Update	
BIOS/ME Firmware Update	
CPLD Update	
Syslog Server Configuration	
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Figure 61. Advanced System Management Key Page

Table 18. Advanced System Management Key Options

Option	Task
Last Upload Time	Show the last upload time of the advanced system management key.
Advanced System Management Key Upload	Set the ports used by KVM and remote media (both standard and secure ports). Users must not change these values unless they know that the new ports are unused.
Choose File	Choose file to upload.
Upload	Upload the advanced system management key to the BMC for update action.

7.3.12 Users

The Users page lists the configured users, along with their statuses and network privileges. It also provides the capability to add, modify, and delete users. See Figure 62 for details.

intel. In	tegrated BM	C Web Consc	ole	
System Server Health Configura	tion Remote Control Virtual Media	Server Diagnostics Miscellaneous	BIOS Configurations	🕜 Logout 🔘 Refresh 💡 Help 🚯 About
😌 Us	ser List			
Alerts				Number of configured users: 2
Alert Email	User ID	User Name	User Status	Network Privilege
Date & Time	1	anonymous	Disable	No Access
IPv4 Network	2 3	root	Enable	Administrator
IPv6 Network	4	~	~	~
VLAN	5	~	~	~
	6	~	~	~
LDAP	7 8	~	~	~ ~
Active Directory	9	~	~	~
KVM & Media	10	~	~	~
SSL Certification	11	~	~	~
Advanced System	12	~	~	~
Management Key	13	~	~	~
Users	15	~	~	~
Security Settings				
SOL	Add User Modify User Delete U	ser		
SDR Configuration				
BMC Firmware Update				
BIOS/ME Firmware Update				
CPLD Update				
Syslog Server Configuration				
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This page allows the operator to configure the IPMI users and privileges for this server. UserID 1 (anonymous) may not be renamed or deleted. To add a user, select an empty slot in the list and click the **Add User** button. Set the User Name, Password, and Network Privileges as shown in Figure 63.

intel.	Integrated BMC Web Console	
System Server Health C	onfiguration Remote Control Virtual Media Server Diagnostics Miscellaneous BIOS Configurations	🔇 Logout 🕞 Refresh 😮 Help 🚯 About
	Add New User	
Alerts		
Alert Email	Enter the information for the new user below and press Add. Press Cancel to return to the user list.	
Date & Time		
IPv4 Network	User Name:	
IPv6 Network	Password:	
VLAN	Confirm Password:	
LDAP	Network Privileges: Administrator	
Active Directory	Add Cancel	
KVM & Media		
SSL Certification		
Advanced System Management Key		
Users		
Security Settings		
SOL		
SDR Configuration		
BMC Firmware Update		
BIOS/ME Firmware Update		
CPLD Update		
Syslog Server Configuration		
Copyright © 2016-2021 - Int	tel Corporation. All Rights Reserved. Portions Copyright © 2016-2021 - Insyde Software Corp.	
	Figure 63. Add New User Page) }

To modify a user, select a user in the list and click the **Modify User** button. Change the User Name, Password, Enable status, and Network Privileges as shown in Figure 64.

Veris Veris Veris Date & Time Pv4 Network Pv4 Network Pv6 Network ALAN DAP Active Directory VCM & Media SSL Certification Advanced System Advanced System Socurity Settings SoL SSD Configuration BMC Firmware Update SPHO Update Systep Server Systep Server		onfiguration Remote C	ontrol Virtual Media	Server Diagnostics	Miscellaneous	BIOS Configurations	G Logout	🖸 Refresh 🔞 Help 🚯 A
Date & Time Confunge Rassword Pv4 Network Password: Pv6 Network Network Privileges: Administrator V Network Privileges: Administrator V J.A.N User Enable: Unchanged V VM & Media SSL Certification Vdvanced System Solc Solc Solc Firmware Update ROS/ME Firmware Update System		Modify User						
Date & Time Change Password Pv4 Network Password: Network Prvileges: Administrator V Network Prvileges: Modify Modify Cancel VM & Media SSL Certification Management Key Jaers SoC Infiguration SOL SDR Configuration SMC Firmware Update Systog Server	lert Email	User Name:	root					
Pv4 Network Confirm Password: Network Privilegies: Administrator V JDAP Viore Enable: Unchanged V Network Privilegies: Advanced System Aanagement Key Security Settings SoL SoL Configuration BRC Configuration BMC Firmware Update DSME Firmware Update Systog Server	Date & Time							
Pv6 Network Network Privileges: LAN User Enable: Unchanged × Nodify Cancel Modify Cancel Management Key Jers Solu Solu Solu Cimare Update Solu Crimere Update Sydog Server	Pv4 Network							
ALAN User Enable: Unchanged ▼ DAP Modify Cancel Skdive Directory CM & Modify Cancel VM & Media Skdive Certification Skdive Certification Advanced System Skdive Certification Skdive Certification Skdive Certification Skdive Certification Skdive Certification	Pv6 Network		Administrator V					
Kutive Directory Kvtive Directory Kvtive Directory SSL Certification Advanced System Aanagement Key Jsers Security Settings SoL SSR Configuration MC Firmware Update Story E Limiter Update Systog Server	/LAN							
Active Directory CVM & Media SSL Certification Advanced System Aanagement Key Jaers Security Settings SOL DRC Configuration BMC Firmware Update BJOS/ME Firmware Update Systog Server	.DAP	Modify Cane	el					
SSL Certification Advanced System Aanagement Key Jeers Security Settings SoL SoR Configuration SMC Firmware Update alOS/ME Firmware Update Systog Server	Active Directory	induly Culic						
dvanced System Aanagement Key Jeers Security Settings SOL SDR Configuration BMC Firmware Update BIOS/ME Firmware Update Systog Server	CVM & Media							
Management Key Jeers Security Settings SOL BDR Configuration BMC Firmware Update BIOS/ME Firmware Update Systog Server	SL Certification							
Security Settings SOL SDR Configuration BMC Firmware Update BIOS/ME Firmware Update Systog Server								
SOL SDR Configuration BMC Firmware Update BIOS/ME Firmware Update Systog Server	Jsers							
SDR Configuration MIC Firmware Update SDS/ME Firmware Update Spstog Server	Security Settings							
3MC Firmware Update SIOS/ME Firmware Update SplD Update Systog Server	SOL							
BIOS/ME Firmware Update CPLD Update Systog Server	DR Configuration							
Sysiog Server	BMC Firmware Update							
Syslog Server	BIOS/ME Firmware Update							
	CPLD Update							

Figure 64. Modify User Page

Integrated BMC Web Console User Guide for the Intel[®] Server Boards D50TNP, M50CYP, and D40AMP To delete a user, select the user in the list and click the **Delete User** button (Figure 65).

intel.	Integrated	BMC Web	Console	-	
System Server Health	Configuration Remote Control	Virtual Media Server Diagnostics	Miscellaneous BIOS	S Configurations	Cogout CRefresh PHelp 1 About
Alerts Alert Email	User List				Number of configured users: 3
	User ID	User Nan		User Status	Network Privilege
Date & Time	1	anonymo root	bus	Disable	No Access Administrator
IPv4 Network	3	test1		Enable	Administrator
IPv6 Network	4	~		~	~
VLAN	5	~		~	~
LDAP	6	~		~	~
	8	~		~	~
Active Directory	9	~		~	~
KVM & Media	10	~		~	~
SSL Certification	11	~		~	~
Advanced System	12	Conf	irm?	×	~ ~
Management Key	13				~
Users	15	Are y	ou sure to dele	te this	~
Security Settings		user?	•		
SOL	Add User Modify User	Delete User			
SDR Configuration			Cancel	OK	
BMC Firmware Update					
BIOS/ME Firmware Update					
CPLD Update					
Syslog Server Configuration					
Convright @ 2016-2021 - Ir	atel Comporation All Dighte Deserve	d. Portions Copyright © 2016-2021 -	Innuda Software Com		

Figure 65. Delete User Page

7.3.13 Security Settings

View and modify the security settings on this page. Configure how many failed login attempts are allowed before a user is locked out and how long the lock-out will last before the user can attempt to log in again. See Figure 66 for details. Table 19 lists the options to modify the security settings.

intel.	Integrated BM0	C Web	Consc	ble			H
	onfiguration Remote Control Virtual Media	Server Diagnostics	Miscellaneous	BIOS Configura	ations	O Logout O Refresh	h 😮 Help (
	Security Settings						
Alerts	KCS Delieu Control Mada in Allem All T						
Alert Email	KCS Policy Control Mode is Allow All. T	his setting is inten	ded for BMC pr	ovisioning an	ia is considered ii	isecure for deployment	•
Date & Time	KCS Policy Control Mode	Allow All 🗸					
IPv4 Network							
IPv6 Network	SSL Cipher Policy Control Mod						
VLAN	SSL Cipher Mode	Advanced	\mathbf{v}				
LDAP	-Login Attempt						
Active Directory	Failed Login Attempts	3					
KVM & Media	Used a short Time (see)						
SSL Certification	User Lockout Time (sec)	60					
Advanced System Management Key	Port Settings						
Users	HTTPS (Secure) Port	443					
Security Settings							
SOL	-Password Rules						
SDR Configuration	Complexity	Disabled 🗸					
BMC Firmware Update	Decement History						
BIOS/ME Firmware Update	Password History	2 🗸					
CPLD Update							
Syslog Server	Optional Network Services	— — —					
Configuration	SOL SSH	Enable					
	HTTPS	Enable					
	нттр	Enable					
	IPMI over LAN	Enable					
	Remote Media	Enable					
	RMCP+ Cipher Suite3 Configur	ation for each	LAN channe				
	Save						

Figure 66. Configuration Security Settings page

Table 19. Configuration Security Settings Options

Table 19. Configuration Security Settings Options		
Option	Task	
	KCS Policy Control Modes allow an authenticated BMC administrative user to control the level of protection from IPMI commands executed over the KCS channels. Within this generation of BMC firmware, three different KCS Policy Control Modes are supported:	
KCS Mode	 Allow All – This configuration setting is intended for normal IPMI-compliant communications between the host operating system and the BMC. This mode should be used when provisioning the BMC configuration for deployment. Deny All – This configuration setting disables the IPMI KCS command interfaces between the host operating system and the BMC. This is a configuration that does not comply with IPMI and impacts the operation of the server management software running on the host operating system. This mode only applies to the IPMI commands over the KCS interfaces and does not apply to the authenticated network interfaces to the BMC. Restricted – This configuration setting enables the use of an Access Control List by the BMC firmware that allows applications executing on the host operating system to have access to a limited set of IPMI commands using the KCS interfaces. This is a configuration that does not comply with IPMI and may impact the operation of the server management software running on the host operating system. This mode only applies to the IPMI commands over the KCS interfaces not comply with IPMI and may impact the operation of the server management software running on the host operating system. This mode only applies to the IPMI commands over the KCS interfaces and does not apply to the authenticated network interfaces to the BMC. 	
SSL Cipher Mode	 Four Cipher modes are provided for different scenarios: Advanced - wide browser compatibility, like to most newer browser versions. Board Compatibility - check the compatibility to other protocols before using it, like IMAPS. Widest Compatibility - compatibility to most legacy browsers, legacy libraries (still patched), and other application protocols besides HTTPS, like IMAPS. Legacy - widest compatibility to real old browsers and legacy libraries and other application protocols like SMTP. 	
Failed Login Attempts	Input the allowed number of Failed Login Attempts. This is the number of failed login attempts a user is allowed before being locked out. Zero means no lockout. Failed Login Attempts should be from 0 to 255. Default is 3 attempts.	
User Lockout Time(Sec)	Set the time in seconds that the user is locked out before being allowed to log in again. Zero means that User Lockout Time is disabled. If a user was automatically disabled due to the Bad Password threshold, the user will remain disabled until re-enabled via the Set User Access command. User Lockout Time should be from 0 to 65535. Default is 60 sec.	
HTTPS(Secure) Port	Set the port used for HTTPS (default: 443) web sessions. Changing this setting will immediately terminate all current web sessions.	
Complexity	Set Complexity Password level, Medium/High/Low, or Disable Complexity Password feature.	
Password History	The feature of password history is to avoid setting a password that is duplicate with one we used earlier for security consideration.	
SOL SSH	Enable/disable the SOL SSH service.	
HTTPS	Enable/disable the HTTPS service.	
НТТР	Enable/disable the HTTP service.	
IPMI Over LAN	Enable/disable the RMCP/RMCP+ service.	
Remote Media	Enable/Disable the Virtual Media service.	
Channel-1	Enable/Disable Cipher Suite3 Configuration for LAN Channel-1.	
Channel-2	Enable/Disable Cipher Suite3 Configuration for LAN Channel-2.	
Channel-3	Enable/Disable Cipher Suite3 Configuration for LAN Channel-3.	
Save	Click to save any changes.	

Note: Due to weaknesses in the security of most of the defined cipher suites, they are disabled by default. Only cipher suites 3 and 17 use algorithms that have not been proven to be cryptographically insecure and are enabled by default.

7.3.13.1 Integrated BMC Web Console access under KCS Restricted/Deny All Mode

Most of Integrated BMC Web Console content access is allowed across all KCS modes, except for below Integrated BMC Web Console Page/Options, which are limited to conditional access when KCS mode is set to Restricted Mode/Deny All Mode.

KCS Policy Control Mode – Deny All

This configuration setting disables the IPMI KCS command interfaces between the host operating system and the BMC. This is a non-compliant IPMI configuration that will impact the operation of the Server Management Software running on the host operating system. This only applies to the IPMI commands over the KCS interfaces and does not apply to the authenticated network interfaces to the BMC.

KCS Policy Control Mode – Restricted

This configuration setting enables the use of an Access Control List by the BMC Firmware that allows applications executing on the host operating system to have access to a limited set of IPMI commands using the KCS interfaces. This is a non-compliant IPMI configuration that may impact the operation of the Server Management Software running on the host operating system.

- Server Power Control Page: Power On Server/**Force-enter BIOS Setup** option will be grey out when KCS = Deny All
- Server Power Control Page: Reset Server/Force-enter BIOS Setup option will be grey out when KCS = Deny All

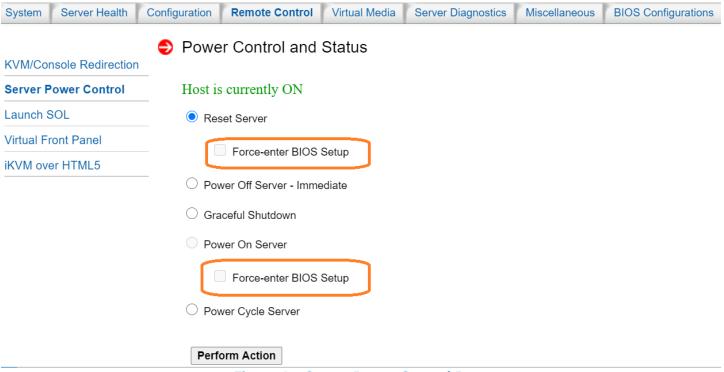


Figure 67. Server Power Control Page

• "BIOS/ME Firmware Update" Page will be grey out when KCS = Deny All.

intel	Integrated BMC Web Console	S- CEED
System Server Health	Configuration Remote Control Virtual Media Server Diagnostics Miscellaneous BIOS Configurations	🔇 Logout 🕒 Refresh 😮 Help 🚹 At
Alerts Alert Email Date & Time IPv4 Network	BIOS/ME Firmware Update Use this page to upload new BIOS/ME firmware BIOS/ME Firmware Update BIOS Rev : SE5C6201.86B.0022.D02.2103180902	
IPv6 Network VLAN LDAP Active Directory KVM & Media SSL Certification	Mgmt Engine (ME) FW Rev : 04.04.04.53 PCH PFM Active Rev : 0.0-1 PCH PFM Recovery Rev : 0.0-1 BIOS Region : Backup NVRam Reset Immediately Drop a file on this page or select Browse Upload	
Advanced System Management Key Users Security Settings SOL	grey out when KCS=Deny All	
SDR Configuration BMC Firmware Update BIOS/ME Firmware Update		
CPLD Update Syslog Server Configuration	Figure 68. BIOS/ME Firmware Update Page	

• "BIOS Configuration" will be unavailable when KCS = Restrict or Deny All mode.

intel	Integrated BM	1C Web Consol	e	
	Configuration Remote Control Virtual Medi		DS Configurations	🕜 Logout 😋 Refresh 😮 Help 🚯 About
PCI Configuration	PCI Configuration Select a BIOS Variable			
UPI Configuration	BIOS Variable Value			
Integrated IO Configuration	Key Value	BIOS Variable Description	Value	SavedValue
Memory Configuration	Key value	DIOS Variable Description	Value	Saveuvalue
Power n Performance				
Processor Configuration				
Mass Storage Controller Configuration				
System Acoustic and Performance Configuration				
System Event Log				
Security		Caution!	×	
USB Configuration				
Server Management		Note: BIOS configu information isn't a	uration	
Advanced Boot Options		because KCS mode		
Main	Save Cancel	restricted or deny- change KCS mode all.		

Figure 69. BIOS Configuration Page

"CPU information" and "DIMM information" Pages will display contents captured on last DC when KCS
 = Restricted or Deny All mode.

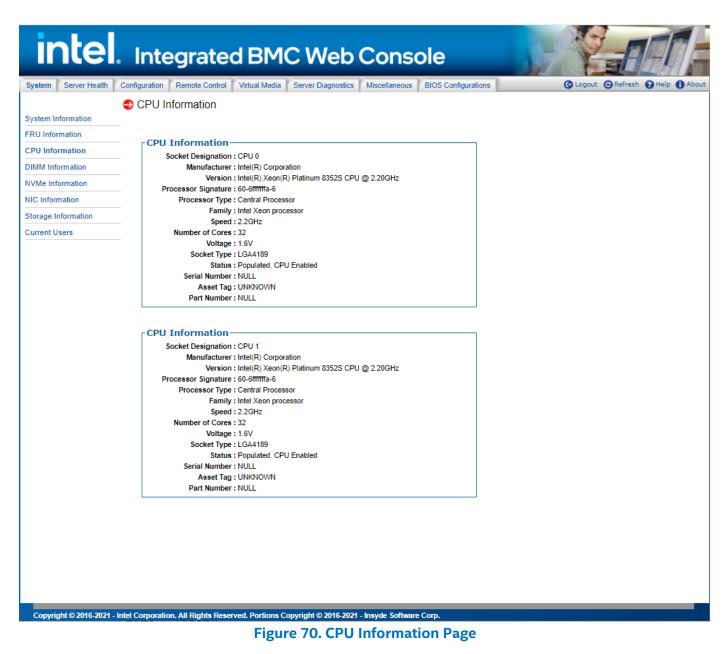




Figure 71. DIMM Information Page

7.3.14 SOL

Use this page to enable or disable SOL for each LAN channel (Figure 72). Table 20 lists the options to modify SOL settings.

intel	Integrated BMC Web Console	
	Configuration Remote Control Virtual Media Server Diagnostics Miscellaneous BIOS Confi	gurations O Logout O Refresh O Help O About
	SOL	
Alerts	Serial Over LAN	
Alert Email		
Date & Time	Enable or disable serial over LAN communications.	
IPv4 Network	LAN Channel: Channel-1 🗸	
IPv6 Network	Enable SOL for Baseboard Momt	
VLAN		
LDAP	Save	
Active Directory	SOL SSH Port	
KVM & Media		
SSL Certification	Customize the ssh port number used by Serial Over LAN (SOL).	
Advanced System Management Key	Port: 66	
Users	Save	
Security Settings		
SOL		
SDR Configuration		
BMC Firmware Update		
BIOS/ME Firmware Update		
CPLD Update		
Syslog Server Configuration		

Figure 72. SOL Page

Table 20. SOL Options

Option	Task		
	Select the channel on which the user wants to configure the network settings. Lists the LAN Channels available for SOL. The LAN channel describes the physical NIC connection on the server.		
LAN Channel	 Baseboard Mgmt (BMC LAN Channel 1) is the onboard, shared NIC configured for management and shared with the operating system. Baseboard Mgmt 2 (BMC LAN Channel 2) is the second onboard, shared NIC configured for management and shared with the operating system. 		
Enable SOL for Baseboard Mgmt	Enable or disable serial-over-LAN for baseboard management controller.		
Save (Serial-over-LAN)	Click to save any changes for Serial over LAN Setting.		
Port	Change the SSH port number used by SOL.		
Save (SOL SSH Port)	Click to save any changes for SOL SSH Port Setting.		

7.3.15 SDR Configuration

Use this page to upload and parse sensor data repository records and configuration files, which allows updating the FRUSDR package (Figure 73). Table 21 lists the options available on this page.

intel.	Integrat	ed BMC Web Console	
System Server Health C	onfiguration Remote Co	ntrol Virtual Media Server Diagnostics Miscellaneous BIOS Configurations	🔇 Logout 🗿 Refresh 😮 Help 🚯 About
	SDR Configurati	on	
Alerts	Use this page to upload a	and parse sensor data repository records and configuration files	
Alert Email			
Date & Time	Enable SDR Auto-config		
IPv4 Network	SDR Configuratio		
IPv6 Network	Current SDR File	0.34 (840027 bytes)	
VLAN	Current Config File	Revision M50CYP_0.34 (55322 bytes)	
LDAP	Last Upload	Tue Mar 16 14:54:23 2021	
Active Directory	New Config File	Choose File No file chosen	
KVM & Media	New SDR File	Choose File No file chosen	
SSL Certification	Upload	Parse	
Advanced System Management Key	Processed Tags-		
Users		kage for Intel(R) Server Board M50CYPx (M50CYP_0.34)	
Security Settings	Copyright (c) 2021 Intel Corporation		
SOL	Auto-detecting chass	is model and attached hardware.	
SDR Configuration	This may take up to 1 minute to complete.		
BMC Firmware Update	*****	Detected Hardware	
BIOS/ME Firmware Update		em R2000WT Product Family For R2208 (2U8x25)*1	
CPLD Update	Intel(R) Server Boar CPU 1 FamilyID model	is ICX	
Syslog Server	CPU 2 FamilyID model Intel(R) Xeon(R) Sca	. is ICX lable Processor in socket 1	
Configuration	Intel(R) Xeon(R) Sca Hot-Swap and Redunda	lable Processor in socket 2 nt fans	
	Front Panel Temperat Baseboard FRU Device	ure Sensor	
	1300 Watt Power Supp	ly Module 1	
	Power Supply Module 1600 Watt Power Supp	ly Module 2	
	Power Supply Module Redundant Power Supp		
	HSBP 1 FRU found HSBP 1 is a 2U 8 slo	t 2.5 inch HDD Backplane	
	HSBP 1 is a 2U 8 slot 2.5 inch PCIE SSD Combo HDD Backplane		
	LAN Temperature Device LAN Voltage Sensing Device		
		Descend Durlings Councids & 2015 2024 Jacude Software Corro	

Figure 73. SDR Configuration Page

Table 21. SDR Configuration Options

Option	Task	
Current SDR file	Information about the current SDR file is shown here. Version information is only available after a parse has been successfully completed.	
Current Config File	Information about the current configuration file is shown here. Version information is only available after a parse has been successfully completed.	
Last Upload	The date and time of the last FRUSDR update.	
New Config File	Specify new configuration file to upload.	
New SDR File	Specify new SDR file to upload.	
Upload	Choose a new sensor data record file and configuration file and click "Upload". Uploading large files may take some time, depending on the network connection speed.	
Parse	Scan and reload SDRs within the BMC. This will cause the BMC to re-arm sensors and may result in duplicate events in the system event log.	
Processed Tags	This area shows tags processed on the last successful parse operation. If the parse fails, this area will display the error message.	
Enable SDR Auto-configuration	Administrators or operators may enable or disable this feature by clicking the appropriate Enable/Disable radio button and clicking "Save." This section will only be visible to administrators or operators.	
Save	Click to save any changes.	

7.3.16 BMC Firmware Update

Use this page to upload new images for online-update of BMC firmware (Figure 74). Table 22 lists the options available in this page.

intel.	Integrated	BMC Web Cons	sole			A
System Server Health Co	onfiguration Remote Control	Virtual Media Server Diagnostics Miscellaneo	us BIOS Config	gurations	O Logout O Refresh	😮 Help
	BMC Firmware Updat Use this page to upload new BM					
Alert Email	BMC Firmware Update			-		
Date & Time	BMC FW Rev :	2.78.c6f89d5b				
IPv4 Network	BMC Firmware Build Time :					
IPv6 Network	BMC PFM Active Rev :	2.78-1				
VLAN	BMC PFM Recovery Rev :	2.71-1				
LDAP	BMC Update Options :		1			
Active Directory	Dwic opuale options :	□Backup □NVRam □Reset Immediate	Iy			
KVM & Media	Drop a file on this page or	Choose File No file chosen				
SSL Certification	select Browse	Upload				
Advanced System Management Key						
Users						
Security Settings						
SOL						
SDR Configuration						
BMC Firmware Update						
BIOS/ME Firmware Update						
CPLD Update						
Syslog Server Configuration						

Figure 74. BMC Firmware Update Page

Table 22. BMC Firmware Update Options

Option	Task
BMC FW Rev	Displays the current firmware version.
BMC Firmware Build Time	Displays the firmware build time
BMC PFM Active Rev	Displays the current PCH PFM active version.
BMC PFM Recovery Rev	Displays the current PCH PFM recovery version.
BMC Update Options	 Backup When the option is enabled, the Backup region of current BMC will be updated together. Reset Immediately When the option is enabled, the system will reset immediately after the firmware update is completed. NVRam When the option is enabled, the NVRam region of current BMC will be updated together.
Drop a file on this page or select Browse	The option to select and upload or drop a new firmware image on the page.
Upload	Begin the firmware update process, which will take a couple of minutes. When finished, the BMC reboots to run the new firmware. Progress is reported up until the time of reboot, after which it takes about one minute for the embedded web server to start responding again. As all web sessions are terminated on a BMC reboot, log in again to verify that the firmware update was successful.

7.3.17 BIOS/ME Firmware Update

Use the BIOS/ME Firmware update page shown in Figure 75 to upload and update new BIOS/ME firmware. The image version information is available for viewing, as well as the option to select, upload, or drag and drop a new firmware image. By dropping a new image on the page or selecting the **Upload** button, the web service takes a few minutes and begins its firmware update process. Once finished, it stores the image inside the BMC. When performing the update server reboot (DC cycle), the BIOS mounts the image as both the USB virtual media and the image. See Table 23 for all options available on this page.

intel.	Integrated	BMC Web Cons	ole	
System Server Health Co	onfiguration Remote Control	Virtual Media Server Diagnostics Miscellaneous	BIOS Configurati	ations
Alerts Alert Email	BIOS/ME Firmware U Use this page to upload new BIC BIOS/ME Firmware Up	DS/ME firmware		7
Date & Time	BIOS Rev :	SE5C6201.86B.0022.D02.2103180902		
IPv6 Network	Mgmt Engine (ME) FW Rev :	04.04.04.53		
VLAN	PCH PFM Active Rev :	0.0-1		
	PCH PFM Recovery Rev :	0.0-1		
Active Directory	BIOS Region :	□Backup □NVRam □Reset Immediatel	ÿ.	
KVM & Media	Drop a file on this page or	Choose File No file chosen		
SSL Certification	select Browse	Upload		
Advanced System Management Key				1
Users				
Security Settings				
SOL				
SDR Configuration				
BMC Firmware Update				
BIOS/ME Firmware Update				
CPLD Update				
Syslog Server Configuration				

Figure 75. BIOS/ME Firmware Update Page

Table 23. BIOS	/ME Firmware I	Update O	ptions
		opunce o	

Option	Task	
BIOS Rev	Displays the current BIOS version.	
Mgmt Engine (ME) FW Rev	Displays the current ME firmware version.	
PCH PFM Active Rev	Displays the current PCH PFM active version.	
PCH PFM Recovery Rev	Displays the current PCH PFM recovery version.	
BIOS Region	 Backup When the option is enabled, the Backup region of current BIOS will be updated together. NVRam When the option is enabled, the NVRam region of current BIOS will be updated together. Reset Immediately When the option is enabled, the system will reset immediately after the firmware update is completed. 	
Password	The option will appear when "Enforce Password Mode" is Enabled in BIOS. Users should input password before uploading the image.	
Drop a file on this page or select Browse The option to select and upload or drop a new firmware image on the page of the p		
Upload	Upload the firmware image file.	

7.3.18 CPLD Update

Use this page to upload new CPLD firmware in Figure 76. Table 24 lists the options available in this page.

intel.	Integrate	d BMC Web Console	
System Server Health C	Configuration Remote Control	Virtual Media Server Diagnostics Miscellaneous BIOS Cont	figurations O Logout O Refresh O Help O About
	CPLD Update		
Alerts	Use this page to upload new	CPLD firmware	
Alert Email	CPLD Update		
Date & Time	CPLD FW Rev :	1-0	
IPv4 Network			
IPv6 Network	CPLD Update Option :	Backup Reset Immediately	
VLAN	Drop a file on this page	Choose File No file chosen	
LDAP	or select Browse	Upload	
Active Directory			
KVM & Media			
SSL Certification			
Advanced System Management Key			
Users			
Security Settings			
SOL			
SDR Configuration			
BMC Firmware Update			
BIOS/ME Firmware Update			
CPLD Update			
Syslog Server Configuration			

Figure 76. CPLD Update Page

Table 24. CPLD Update Options

Option	Task
CPLD FW Rev	Displays the current firmware version.
CPLD Update Option	 Backup When the option is enabled, the Backup region of current CPLD will be updated together. Reset Immediately When the option is enabled, the system will reset immediately after the firmware update is completed.
Drop a file on this page or select Browse	The option to select and upload or drop a new firmware image on the page.
Upload	Upload the firmware update image file to the BMC for update action.

7.3.19 Syslog Server Configuration

Use the Syslog Server Configuration page to enable the Remote Syslog service or to configure the IP of the Syslog Server. This page allows the logging of any login to the BMC or any configurations to be logged to the Syslog server. See Table 25 for all options available on this page.

Before using the syslog service in the server, it must be configured with the following steps:

- 1. Open the configuration file by vim /etc/rsyslog.conf
- 2. Open Modload imudp/UDPServeRun 514/ModLoad imtcp/InputTCPServerRun 514
- 3. Service syslog restart
- 4. Set syslog server from Integrated BMC Web Console --> Configuration--> Syslog Server Configuration
- 5. Cat /var/log/messages to see log

System Server Health Cor		Web Conso		100	E	L-Li
	nfiguration Remote Control Virtual Media	Server Diagnostics Miscellaneous	BIOS Configurati	ons	O Logout O Refresh	3 Help
	Syslog Server Configuration					
Alert Email						
Date & Time	Syslog Server Configuration	_				
IPv4 Network	Enable Remote Syslog					
IPv6 Network	Syslog Server Port:	514				
VLAN	Current Syslog Server IP:	0.0.0.0				
LDAP	New Syslog Server IP:					
Active Directory						
KVM & Media	Save					
SSL Certification						
Advanced System Management Key						
Users						
Security Settings						
SOL						
SDR Configuration						
BMC Firmware Update						
BIOS/ME Firmware Update						
CPLD Update						
Syslog Server Configuration						

Figure 77. Syslog Server Configuration Page

Option	Task	
Enable Remote Syslog	To enable/disable Remote Syslog, check or uncheck the "Enable Remote Syslog"	
Syslog Server PortThe port number of remote Syslog Server is 514		
Current Syslog Server IP	Display the current IP address of Syslog Server	
New Syslog Server IP	Input the new Syslog Server IP address	
Save button	Save the current settings	

Table 25. Syslog Server Configuration Options

7.4 Remote Control Tab

The Remote Control tab is used to launch the remote console KVM redirection window, initialize power control, launch SOL, and access the virtual front panel.

7.4.1 KVM/Console Redirection

Use this page to launch the remote console KVM redirection window. This requires a Remote Management Module add-in card to be installed in the remote system; otherwise, the launch button is grayed-out. Clicking **Launch Console** prompts to download a launch.jnlp file. When the file is downloaded and launched, the Java redirection window is displayed. Figure 78 shows the details.

Note: Java Runtime Environment (JRE version 6, update 22 or higher) must be installed on the client before launch of the JNLP file.

	Integrated BMC Web Console
	iguration Remote Control Virtual Media Server Diagnostics Miscellaneous BIOS Configurations (S Logout O Refresh P Help About KVM/Console Redirection
KVM/Console Redirection Server Power Control	Launch Console
Launch SOL Virtual Front Panel	You can view and modify keyboard macros on this page. Button Name is optional. Use Help to see the supported key names. Key Sequence Button Name
iKVM over HTML5	#1

Figure 78. Remote Control KVM Page

Keyboard macros can be configured on this page that appear in the macro menu of the KVM Remote Console application window. Each button is assigned a sequence of keys to execute when the button is clicked.

Each button can optionally be given a short mnemonic name. If this field is blank, the key sequence itself is used as the button label.

Click **Save** to save the changes. If a Remote Console session is open at that time, the changes do not take effect until that session is closed and a new session is opened.

7.4.1.1 Key Sequences

A key sequence is a set of one or more key names separated by a '+' or '-'.

A '+' (plus sign) indicates keep the previous keys pressed while holding down the next key, whereas a '-' (minus sign) indicates release all previous keys first before pressing the next key. A '*' (asterisk) inserts a one second pause in the key sequence.

Key names are either a printable character such as "a", "5", "@", etc. or one of the non-printable keys in the table below. Names in parentheses are aliases for the same key. Numeric keypad keys are prefixed with "NP_".

A plain '*' indicates a pause. Use '*' for the actual '*' key. The '\' key must also be escaped as '\\'.

Note: The key sequences are sent to the target as scan codes that get interpreted by the target operating system, so they will be affected by modifiers such as Num Lock as well as the target operating system keyboard language setting.

Tuble Lot Haclo Holl Thinkable Key Hames					
Shift (LShift)	RShift	Ctrl (LCtrl)	RCtrl		
Alt (LAlt)	RAlt (AltGr)	Win (LWin)	RWin		
Enter	Esc	F1 - F12			
Bksp	Tab	CapsLk	Space		
Ins	Del	Home	End		
PgUp	PgDn	Context (Menu)			
Up	Left	Down	Right		
NumLk	NP_Div	NP_Mult	NP_Minus		
NP_Plus	NP_0 - NP_9	NP_Dec	NP_Enter		
PrtSc (SysRq)	ScrLk	Pause (Break)			

Table 26. Macro Non-Printable Key Names

7.4.2 Server Power Control

The Server Power Control page shows the power status and allows power/reset control of the server Figure 79. Table 27 lists the power control operations that can be performed.

intel	Integrated BMC Web Console			
System Server Health	Configuration Remote Control Virtual Media Server Diagnostics Miscellaneous BIOS Configurations	O Logout O Refresh O Help O About		
KVM/Console Redirection	Power Control and Status			
Server Power Control	Host is currently ON			
Launch SOL	Reset Server			
Virtual Front Panel	Force-enter BIOS Setup			
iKVM over HTML5				
	O Power Off Server - Immediate			
	O Graceful Shutdown			
	O Power On Server			
	Force-enter BIOS Setup			
	O Power Cycle Server			
	Perform Action			

Figure 79. Remote Control Server Power Control Page

Option	Task
Reset Server	Hard reset the host without powering off.
Power OFF Server - Immediate	Immediately power off the host.
Graceful Shutdown	Soft power off the host. For the Graceful Shutdown option to function properly the operating system must be ACPI aware and be configured to shut down without operator intervention. After a graceful shutdown has been requested, if the system does not shut down as requested, the command cannot be executed again for five minutes.
Power ON Server	Power on the host.
Power Cycle Server	Immediately power off the host and power it back on after one second.
Force-enter BIOS Setup	Enter BIOS setup after powering on the server.
Perform Action	Execute the selected remote power command.

Table 27. Remote Control Power Control Options

Note: All power control actions are done through the BMC and are immediate actions. Intel suggests to gracefully shut down the operating system using the KVM interface or other interface before initiating power actions.

7.4.3 Launch SOL

The Launch SOL page allows launching the SOL console to manage the server remotely. Click Launch SOL to download a launch.jnlp file. When the file is downloaded and launched, the Java SOL window is displayed. See Figure 80 details.

inte	. Inte	egrate	dBM	C Web	Conse	ole	
System Server Health	Configuration	Remote Control	Virtual Media	Server Diagnostics	Miscellaneous	BIOS Configurations	O Logout O Refresh O Help 1 About
KVM/Console Redirectio Server Power Control Launch SOL Virtual Front Panel iKVM over HTML5	Launch n Launch						

Figure 80. Remote Control Launch SOL Page

Starting the SOL console opens an additional window as shown in Figure 81. It displays the screen content of the remote server. The SOL console behaves as if the user were connected to a serial terminal on the remote server. The responsiveness may be slightly delayed depending on the bandwidth and latency of the network between Integrated BMC Web Console and remote console.

iKVM Viewer v2.5.16 r07 Virtual Media Macro Options User Li	1 [10.239.55.90] Algo: AES st Capture PowerControl Exit	5_256 — 🗆 🗙
M50CYP Intel(R) Xeon(R) Platinum 83528 IFWI Version:SE5C620.86B.WD.64.2 SE5C6201.86B.0022.D02.2103180902 Copyright(c) 2006-2021.Intel() Tain) Advanced) Security) Server Management) Error Manager) Boot Maintenance Manager) Boot Maintenance Manager) Save & Exit	CPU @ 2.20GHz 2021.11.4.03.0902 2	02.20 GHz 32768 MB RAM Press <enter> to select the Main System Setup options.</enter>
t↓=Move Highlight	F10-Save Changes and Exit <enter>=Select Entry</enter>	F9=Reset to Defaults

Figure 81. Remote Control Launch SOL Screen Page

Note: Make sure to enable SOL for baseboard management control from **Configuration > SOL** before launching SOL.

7.4.4 Virtual Front Panel

The Virtual Front Panel page provides virtual access to the front panel functionality just like the systems front panel (Figure 82). Table 28 lists the power control operations that can be performed.



Figure 82. Remote Control Virtual Front Panel Page

Table 28. Remote Control Virtual Front Panel Options

Option	Task
Power	Power on or power off.
Reset	Reset the server while system is ON.
Chassis ID	When the Chassis ID button is pressed, the chassis ID LED changes to solid on. If the button is pressed again, the chassis ID LED turns off.
Power LED	The power LED shows the system power status. If the Power LED is green, the system is ON. If the Power LED is gray, the system is OFF.
Status LED	The status LED reflects the system status LED status and it is automatically in sync with the BMC every 60 seconds. This reflects the System Status LED.
Chassis ID LED	The Chassis ID LED shows the current system chassis ID status. If the Chassis ID LED is blue, the Chassis ID is ON. If the Chassis ID LED is gray, the Chassis ID is OFF.

7.4.5 iKVM over HTML5

Launch the remote iKVM over HLTM5 redirection window from this page, accessing the two menus listed within: **Keyboard** and **Power Control.**

The two sub-menus within the Keyboard menu are:

- Virtual Keyboard: Click the submenu Virtual Keyboard within the Keyboard menu to display a soft keyboard, shown in Figure 85.
- **Keyboard Macro:** Click the submenu **Keyboard Macro** within the **Keyboard** menu to open the keyboard macro menu, shown in Figure 86.

The four sub-menus within the **Power Control** menu (shown in menu shown in Figure 87) are:

- Power On: Click the Power On menu to start the system.
- **Power Off**: Click the **Power Off** menu to turn the system off.
- Software Shutdown: Click the Software Shutdown menu to gracefully shut down the system.
- **Power Reset:** Click the **Power Reset** menu to reset the system.

Note: A Remote Management Module add-in card is required in the remote system, otherwise the launch button is grayed-out. See Figure 83 or Figure 84 for more details.

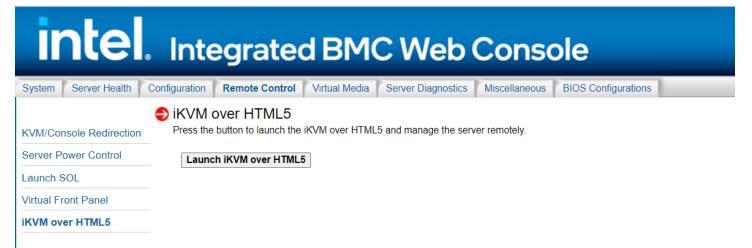


Figure 83. iKVM Over HTML5 Page

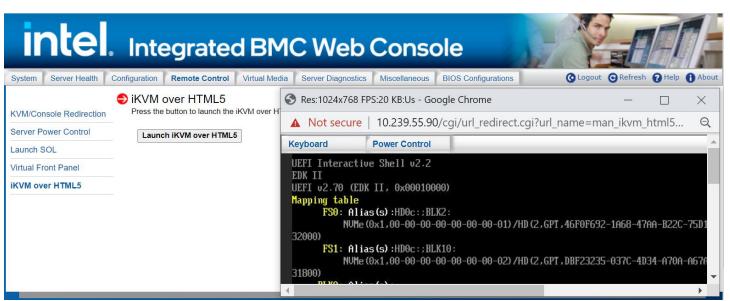


Figure 84. HTML5 Screen Page

oard		F	owe	er Co	ontro	ol 👘		_																						
																Virtu	al K	eybo	bard											X
	Esc		F1		F2	F3		F4		F5		F6	F7		F8		F	9	F10	F11	F12		Psc	Sik	Pau					Us
	$\overline{}$	1	2		3	4		5	6		7	8		9		0	•	-	-		<i>~</i>		Ins	Home	PgUp] [nlk	1	*	-
	*		9	w		e	r		t	у	u	ı	i		0	р		[1				Del	End	PgDn		Home	î	PgUp	
	ĴCap	s	a		s	d		f	g		h	j		k			;	 		١	ب ب						←		→	+
	Û			z		x	с	,	v	b	n		m		,			1			ûShift			1			End	Ļ	PgDn	لم لم
	Ctrl		7	Alt												Alte	r	4		Ð	Ctrl] [←	Ļ	\rightarrow] [Ins		Del	

Figure 85. HTML5 Virtual Keyboard Page

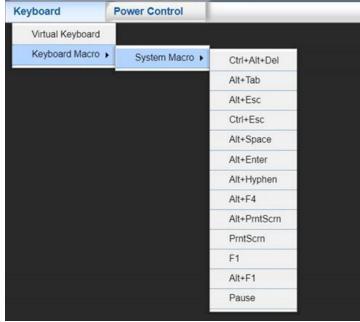


Figure 86. HTML5 Keyboard Macro menu page

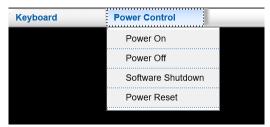


Figure 87. HTML5 Power Control menu page

7.5 Virtual Media Tab

The Virtual Media tab allows the user to share an ISO image or folder over HTML5, which only includes one Virtual Media over HTML5 page. Each image/folder is emulated to the host as a USB device with the maximum sizes of 4.7GB for ISO images, and 2GB for folders. See Figure 88 for more details.

To open the operation window, click **the Launch virtual media over HTML5** as shown in Figure 89. To upload ISO files to the BMC over HTML5, click the **Browse** button. Up to three devices may be mounted simultaneously.

Note: A Remote Management Module add-in card is required in the remote system, otherwise the **launch virtual media over HTML5** button is grayed-out.



Figure 88. Virtual Media Over HTML5 Page

intel.	Integrated B	Virtual Media over I	HTML5								
System Server Health Co	nfiguration Remote Control Virtual	Warning! DO	Warning! DO NOT close this window while the device(s) is plugged in								
Virtual Media over HTML5	Virtual Media over HTML5 Launch the operation win	Device 1	Device 2	Device 3							
Web ISO	Launch virtual media over HTML5	Select type 💙 Select modia Plug in	No Media Se _{Ready}	lected							

intel.	Integrate	ed BM(C Web	Conse	ole		TEAL
System Server Health Cond Virtual Media over HTML5 Web ISO	figuration Remote Contr Web ISO Device Refresh Status Mount type Share host Path to image User Password Save Mount	No disk em	Server Diagnostics	Miscellaneous	BIOS Configurations	€ Logout	sh 🤪 Help 🕦 About
Copyright © 2016-2021 - Intel	Corporation. All Rights R		opyright © 2016-2021		e Corp.		

Figure 90. Web ISO

7.6 Server Diagnostics Tab

The Server Diagnostics tab contains general system diagnostics information as explained in the following sub sections.

7.6.1 System Diagnostics

The System Diagnostics page allows administrators to collect system debugging information. This feature allows a user to export data into a file that is retrievable for the purpose of sending to an Intel engineer or Intel partners for enhanced debugging capability. The files are compressed, encrypted, and password protected. The files are not meant to be viewable by the end user but rather provide additional debugging capability to the system manufacturer or an Intel support engineer. See Figure 91 for details.

Figure 89. Launch Virtual Media Over HTML5 Page

inte	l. Inte	egrate	d BM	C Web	Conso	ole		ED-
System Server Health	Configuration	Remote Control	Virtual Media	Server Diagnostics	Miscellaneous	BIOS Configurations	Cogout CRefresh	Help 🚹 About
System Diagnostics		m Diagnostic		facturer for analysis.				
POST Codes	Log mos	Should be solid to t	no system mana	dotaron for analysis.				
System Defaults	Sys	tem Debug L	.og					
SOL Log	Last	t Log:		N	one			
	Gen	erate Log		- Suctor	D:			

Figure 91. Server System Diagnostics Page

Click the **Generate Log** button. It may take some time for the debugging information to be collected. After the debug log dump is finished, click the debug log filename to save the results as a *.zip file on the client system. The file can then be sent to the system manufacturer or an Intel support engineer for analysis.

The data that may be captured using this feature includes but is not limited to:

- **Platform sensor readings** This includes all "readable" sensors that can be accessed by the BMC firmware and have associated SDRs populated in the SDR repository. This does not include any "event-only" sensors. (All BIOS sensors and some BMC and Intel ME sensors are "event-only", meaning that they are not readable using an IPMI *Get Sensor Reading* command but rather are used just for event logging purposes.)
- **SEL** The current SEL contents are saved in both hexadecimal and text format.
- **CPU/memory register data** useful for diagnosing the cause of the following system errors: CATERR, ERR2, SMI timeout, PERR, and SERR The debug data is saved and time stamped for the last three occurrences of the error conditions.
 - o PCI error registers
 - MSR registers
 - Integrated Memory Controller (iMC) and Integrated I/O (IIO) module registers
- BMC configuration data
- BMC firmware debug log (SysLog) Captures firmware debug messages.

7.6.2 POST Codes

The POST Codes page displays recent power-on self-test (POST) results. See Figure 92 for details. The time base may be viewed as the time from start of POST, or time since the previous POST code was logged. Select this by clicking the **Show time** drop-down box. All time formats are in minutes:seconds.milliseconds.

Previous and current boot POST codes are shown. The current boot codes become previous codes when the system is reset or shut down.

Holding the cursor over a time, POST code, or description highlights all other occurrences of that same POST code. Clicking a time, POST code, or description causes the highlighting to persist until another code is clicked.

System Server Health	Configuration Remote Control Virtual Media Server Diagnostics Miscellaneous	BIOS Configurations OLogout ORefresh OHelp
System Diagnostics	System POST Codes	
OST Codes	Show time from start of POST	
our occes	Previous Boot	Current Boot
ystem Defaults	POST Started: Tue Mar 23 12:27:49 2021	POST Started: Tue Mar 23 12:29:45 2021
	Time Code	Time Code
OL Log	00:00.000 0x01 First POST code after CPU reset	00:00.000 0x01 First POST code after CPU reset
	00:00.000 0x02 Microcode load begin	00:00.000 0x02 Microcode load begin
	00:00.010 0x03 CRAM initialization begin 00:00.090 0x04 PEI Cache When Disabled	00:00.000 0x03 CRAM initialization begin 00:00.000 0x03 CRAM initialization begin
	00:00.090 0x04 PEI Cache When Disabled 00:00.090 0x04 PEI Cache When Disabled	00:00.000 0x03 CRAM initialization begin 00:00.090 0x04 PEI Cache When Disabled
	00:01.190 0x05 SEC Core At Power On Begin	00:00.090 0x04 PEI Cache When Disabled
	00:01.190 0x05 SEC Core At Power On Begin	00:01.170 0x05 SEC Core At Power On Begin
	00:01.190 0x06 Early CPU initialization during SEC Phase	00:01.170 0x05 SEC Core At Power On Begin
	00:04.670 0xA1 Collect infor such as SBSP, boot mode, reset type, etc.	00:01.170 0x06 Early CPU initialization during SEC Phase
	00:04.800 0xA3 Setup minimum path between SBSP and other sockets	00:04.680 0xA1 Collect infor such as SBSP, boot mode, reset type, etc.
	00:04.810 0xA3 Setup minimum path between SBSP and other sockets	00:04.800 0xA3 Setup minimum path between SBSP and other sockets
	00:04.820 0xA3 Setup minimum path between SBSP and other sockets	00:04.820 0xA3 Setup minimum path between SBSP and other sockets
	00:04.840 0xA3 Setup minimum path between SBSP and other sockets	00:04.830 0xA3 Setup minimum path between SBSP and other sockets
	00:04.840 0xA3 Setup minimum path between SBSP and other sockets	00:04.840 0xA3 Setup minimum path between SBSP and other sockets
	00:04.870 0xA7 Topology discovery and route calculation	00:04.850 0xA3 Setup minimum path between SBSP and other sockets
	00:05.010 0xA9 Program final IO SAD setting	00:04.880 0xA7 Topology discovery and route calculation
	00:05.530 0xA7 Topology discovery and route calculation	00:05.020 0xA9 Program final IO SAD setting
	00:05.540 0xA7 Topology discovery and route calculation	00:05.530 0xA7 Topology discovery and route calculation
	00:05.610 0xA7 Topology discovery and route calculation 00:05.610 0xA7 Topology discovery and route calculation	00:05.540 0xA7 Topology discovery and route calculation 00:05.610 0xA7 Topology discovery and route calculation
	00:05.010 0xA7 Topology discovery and route calculation 00:05.730 0xA9 Program final IO SAD setting	00:05.620 0xA7 Topology discovery and route calculation 00:05.620 0xA7 Topology discovery and route calculation
	00:05.730 0xA9 Program Intal IO SAD setting 00:05.730 0xA9 Program Intal IO SAD setting	00:05.020 0XA7 ropology discovery and route calculation 00:05.740 0XA9 Program final IO SAD setting

Figure 92. Server Diagnostics POST Codes Page

7.6.3 System Defaults

The System Defaults page allows resetting all BMC settings to factory defaults. See Figure 93 for details. Click the **Restore** button to reset all BMC settings to factory defaults. Once complete, all remote management, including the web server, will not be accessible until users and network settings are restored locally. Settings lost include, but are not limited to:

- All network addresses and settings
- Power restore policies
- Platform event filters
- Alert destinations

This does not affect the BMC's system event log, sensor data repository, or any Node Manager Settings and policies.



Figure 93. Server Diagnostics Default Page

Check **"Keep User and LAN configuration"** to reset other BMC settings to factory defaults, and retain the current user and LAN settings.

WARNING: This action will reset all BMC settings to factory defaults and cannot be undone.

7.6.4 SOL Log

The SOL Log page allows enabling/disabling SOL logging and downloading the log (Figure 94). Table 29 lists the SOL log operations that can be performed.

intel.	Integrated BMC Web Console	
System Server Health C	Configuration Remote Control Virtual Media Server Diagnostics Miscellaneous BIOS Configurations	G Logout G Refresh 😮 Help 🚯 About
System Diagnostics POST Codes System Defaults SOL Log	SOL Log Enable SOL log Enable SOL log Save	
	View & Dump SOL log SOL Log View Save SOL Log	

Figure 94. Server Diagnostics SOL Log Page

Table 29. Server Diagnostics SOL Log Options

Option	Task
Enable SOL Log	Enable or disable SOL log.
Save Button for Enable SOL Log	Save the setting of enable/disable SOL log.
Save SOL Log Button for Enable SOL Log	Save the log to the local device.

7.7 Miscellaneous Tab

The **Miscellaneous** tab contains Intel[®] Node Manager (Intel[®] NM) configuration, power statistics, and power telemetry information as explained in the following sub sections.

7.7.1 NM Configuration

Intel NM configuration is used to view, add, and configure the Intel Node Manager Policies. See Figure 95 for details. Table 30 lists the options to view, add, and edit the Intel NM power policies.

NM Configuration Power Statistics Policy ID Timers Enable Shutdown Alert Power Limit (Watt) 0" 0 1 0 1 1600 Add/Edit Node Manager Policies. Policy ID Enable System Shutdown Log Event				C Logout C Refresh C Help 0 Ab
Power Telemetry Policy ID Timers Enable Shutdown Alert Power Limit (Watt) 0' 0 1 0 1 100	1 1 1		neous BIOS configurations	Grogour Greenesii Greep Grad
Power Telemetry Policy ID Timers Enable Shutdown Alert Power Limit (Vatt) 0* 0 1 0 1 0 1 1600	Configuration			
0* 0 1 0 1 1600 Add/Edit Node Manager Policies. Policy ID Enable System Shutdown Log Event	er Statistics			Policy Table: 1 entries
0* 0 1 0 1 1600 Add/Edit Node Manager Policies. Policy ID Enable System Shutdown Log Event	er Telemetry Policy I	icy ID Timers Enr	ble Shutdown Alert	Power Limit (Watt)
Policy ID Enable System Shutdown Log Event			1 0 1	
Power Limit (Watt): Use Policy Suspend Timers: O Yes No Save Delete Cancel		Avatt):	Jown 🗌 Log Event	

Figure 95. Intel[®] NM Configuration Page

Option	Task
List of Policies	This table lists the currently configured policies. Selecting an item from the table will populate the editable fields in the settings section below.
Policy ID	The policy ID to add/edit/delete. Valid range is 0–255. In the policy table, policy IDs with an asterisk (*) are policies set externally using a non-platform domain. Changing parameters on these policies will not affect their triggers, trigger limits, reporting periods, correction timeouts, or aggressive CPU throttling settings.
Enabled	Check this box if the policy is to be enabled immediately.
Shutdown	Enable a system shutdown if the policy is exceeded and cannot be corrected within the correction timeout period. The operating system is given 30 seconds to shut down gracefully. If the system is still not shut down after 30 seconds, the BMC initiates an immediate shutdown.
Log Event	Enable the node manager to send a platform event message to the BMC when a policy is exceeded.
Power Limit (Watt)	The desired platform power limit, in watts.
Use Policy Suspend Periods	If enabled, configure policy suspend periods. Each policy may have up to five suspend periods (see Figure 96). Suspend periods are repeatable by day-of-week. Start and stop times are designated in 24-hour format, in increments of 6 minutes. To specify a suspended period crossing midnight, two suspend periods must be used.
Save	Click to save any changes made.
Delete	Select a policy in the list and click to delete.
Cancel	Click to discard changes.

Table 30. Intel[®] NM Configuration Options

For all policies set through this page, the following default values will be applied:

- **Domain:** Platform Power for the entire platform.
- Trigger: None Always monitor after end of POST.
- **Aggressive CPU Power Correction:** AUTO Use of T-states and memory throttling controlled by policy exception actions.
- Trigger Limit: None.
- **Reporting Period:** 10 seconds This is a rolling average for reporting only. It will not affect the average power monitored by the node manager.
- **Correction Timeout:** 22.555 seconds Maximum time for the NM to correct power before taking an exception action (that is, shutdown or alert).

stem Server Health	Configuration Remote Control	Virtual Media Server Diag	eb Console	S Configurations		O Logout O Refresh O Help
	LISE UL FUILLES					
Configuration						Policy Table: 1 entries
wer Statistics	Policy ID	Timers	Enable	Shutdown	Alert	Power Limit (Watt)
ver Telemetry	0*	0	1	0	1	1600
	Add/Edit Node Mar	nager Policies.	System Shutdown	Log Event		
	Power Limit (Watt):					
	Use Policy Suspend Timers:		O No			
		Timer 2 Timer 3	Timer 4 Time	r 5		
		nday Monday	Monday Monday			
		sday U Tuesday	Tuesday Tuesday			
	Wednesday Wednesday	dnesday Wednesday	Wednesday Wednesd	1.5		
	Friday Friday		Friday			
		urday 🗍 Saturday	Saturday Saturday			
		iday 🗌 Sunday	Sunday Sunday			
		rt Time Start Time	Start Time Start Tin	1e		
	State of the second sec			÷		
	Production and the second	d Time End Time	End Time End Tim	and a second		
		V : 00 V :	00 🗸 : 00 🗸	112)		
	· Verbalder strengt					
	· Verbalder strengt		00 🗸 00 🗸			

7.7.2 **Power Statistics**

The Power Statistics page displays the entire platform, CPU, and memory power statistics as shown with current, average, maximum, minimum, time stamp and period in Figure 97.

inte	Integrated BM	C Web	Conse	ole		-	-IEI
System Server Health	Configuration Remote Control Virtual Media	Server Diagnostics	Miscellaneous	BIOS Configura	tions		O Logout O Refresh O Help 1 About
NM Configuration Power Statistics	Power Statistics						
Power Telemetry	Subsystem			Maximum	Minimum	Timestamp	Period
	Entire Platform CPU	315 232	308 230	560 335	8 216	Tue Mar 23 13:22:46 2021 Tue Mar 23 13:22:46 2021	2 hours 41 minutes 7 seconds 52 minutes 58 seconds
	Memory	1	1	5	1	Tue Mar 23 13:22:46 2021	52 minutes 58 seconds



7.7.3 Power Telemetry

The Power Telemetry page provides a method to get onboard component power, including PSU, CPU, memory, PCH, BMC, and other components. See Figure 98 for details. To select a device category, use the **Select a device category** drop-down box (Figure 99).

inte	. Integrated BN	1C Web Conso	le	
System Server Health	Configuration Remote Control Virtual Med	ia Server Diagnostics Miscellaneous	BIOS Configurations	O Logout O Refresh O Help 1 About
NM Configuration Power Statistics Power Telemetry	Power Telemetry Select a device category: Device ID:0 - PSU			
	Register Index	Register Address	Energy Counter (MJ)	Timestamp (ms)
	0	0x86	0.00000000	9706230
	1	0x87	0.00000000	9706230
	4	0x96	0.00000000	9706230
	5	0x97	0.00000000	9706230



Device ID:0 - PSU	•
Device ID:1 - PSU	
Device ID:6 - Memory VR	
Device ID:7 - Memory VR	
Device ID:8 - Memory VR	
Device ID:9 - Memory VR	
Device ID:10 - CPU VR	
Device ID:11 - CPU VR	
Device ID:12 - CPU VR	
Device ID:13 - CPU VR	
Device ID:14 - CPU VR	
Device ID:15 - CPU VR	-

Figure 99. Power Telemetry Device Categories

7.8 BIOS Configurations Tab

The **BIOS Configurations** tab provides a method to configure any BIOS Setup Variables through the BMC Integrated BMC Web Console, containing the PCI, Serial Port, UPI, IIO, Memory, PnP, Processor, Mass Storage Controller, System Acoustic and Performance, SEL, Security and USB configuration options. To select a BIOS variable, click the **Select a BIOS Variable** drop-down menu. Once a BIOS Variable is selected, the corresponding BIOS Variables Current Value will be displayed in the **BIOS Variable Value** drop-down box. Other available options for the corresponding BIOS Variable can be viewed by clicking the **BIOS Variable Value** drop-down box, and if the value needs to be changed for the above variable other available values can be selected from this drop down box. Once the BIOS Variable Value has been chosen, click the **Save** button and the changed value will then be reflected in the Grid Table.

7.8.1 PCI Configuration

This page allows the user to enable or disable MMIO above 4G/MMIO High base/MMIO Size/Add in video controller/Onboard Video/Fast video/Onboard VGA Always O/ARI Support/SR-IOV Support/UEFI Network Stack/IPv4 PXE Support/IPv6 PXE Support/CPU VMD and so on. See Figure 100 for details.

intel.	Integrated BMC	C Web Console		
System Server Health Co	nfiguration Remote Control Virtual Media	Server Diagnostics Miscellaneous BIOS Configuration	ns	OLogout ORefresh OHelp OAbout
PCI Configuration	PCI Configuration			Î
Serial Port Configuration	Select a BIOS Variable Memory Mapped I/O a	bove 4 GB 🗸		
UPI Configuration	BIOS Variable Value 0x1 (Enabled) V			
Integrated IO Configuration				
Memory Configuration	Key Value 🔹	BIOS Variable Description Enable or disable memory mapped I/O of 64-	Value 🔹	SavedValue
Power n Performance	Memory Mapped I/O above 4 GB	bit PCI devices to 4 GB or greater address space.	0x1 (Enabled)	0x1 (Enabled)
Processor Configuration	MMIO High Base	Select MMIO High Base	0x0 (56T)	0x0 (56T)
	Memory Mapped I/O Size	Sets the Size of MMIO space above 4GB.	0x4 (256G)	0x4 (256G)
Mass Storage Controller Configuration		When Onboard Video is Enabled, and Add-in Video Adapter is also Enabled, both can be active. The onboard video is still the primary console and active during BIOS POST: the		
Performance Configuration		add-in video adapter would be active under an OS environment with the video driver support.		
System Event Log	Add-in Video Adapter	When Onboard Video is Enabled, and Add-in Video Adapter is Disabled, then only the	0x2 (Disabled)	0x2 (Disabled)
Security		onboard video would be active. When Onboard Video is Disabled and Add-in Video		
USB Configuration		Adapter is Enabled, then only the add-in video adapter would be active.		
Server Management		Enable or disable onboard video controller. Warning: System video is completely disabled		
Advanced Boot Options	Onboard Video	if this option is disabled and an add-in video	0x1 (Enabled)	0x1 (Enabled)
Main	Save Cancel			

Figure 100. BIOS PCI Configuration Page

7.8.2 Serial Port Configuration

This page allows the user to enable or disable serial port, select serial base I/O address. See Figure 101 for details. Table 31 lists all serial port configuration variables that can be viewed and edited.

intel.	Integrated BM	C Web Console		S- CEF
System Server Health Co	onfiguration Remote Control Virtual Media	Server Diagnostics Miscellaneous BIOS Configurations		O Logout O Refresh O Help O A
PCI Configuration	Serial Port Configuration			
Serial Port Configuration	Select a BIOS Variable Serial A Enable V			
UPI Configuration	BIOS Variable Value 0x1 (Enabled) V			
Integrated IO Configuration				
	Key Value	BIOS Variable Description	Value 🔹	SavedValue
Memory Configuration	Serial A Enable	Enable or Disable Serial port A.	0x1 (Enabled)	0x1 (Enabled)
Power n Performance	Serial A Address	Select Serial port A base I/O address.	0x0 (3F8h)	0x0 (3F8h)
-	Serial B Enable	Enable or Disable Serial port B.	0x1 (Enabled)	0x1 (Enabled)
Processor Configuration Mass Storage Controller Configuration	Serial B Address	Select Serial port B base I/O address. This field will not appear when Serial B port enable/disable does not appear.	0x1 (2F8h)	0x1 (2F8h)
System Acoustic and Performance Configuration				
System Event Log				
Security				
USB Configuration				
Server Management				
Advanced Boot Options				
Main	Save Cancel			
	Figure	101. BIOS Serial Port Confi	iguration Page	

Table 31. BIOS Serial Port Configuration Variables

Variables	BIOS Variable Description
Serial A Enable	Enable or Disable Serial port A.
Serial A Address	Select Serial port A base I/O address.
Serial B Enable	Enable or Disable Serial port B.
Serial B Address	Select Serial port B base I/O address. This field will not appear when Serial B port enable/disable does not appear

7.8.3 UPI Configuration

This page allows the user to select the UPI frequency/ IO Directory Cache(IODC)/KTI Prefetch/Stale AtoS Dir optimization/LLC dead line allocation/Direct To Core(D2C) /Direct To UPI(D2K). See Figure 102 for details. Table 32 lists all UPI configuration variables that can be viewed and edited.

PCI Configuration Serial Port Configuration	UPI Configuration Select a BIOS Variable Intel(R) UPI Frequency BIOS Variable Value 0x3 (Auto Max) ✓ Key Value	BIOS Variable Description	Value	SavedValue
UPI Configuration	BIOS Variable Value 0x3 (Auto Max) V	BIOS Variable Description	Value	SavedValue
UPI Configuration Integrated IO Configuration	BIOS Variable Value 0x3 (Auto Max) V	BIOS Variable Description	Value	SavedValue
	Key Value		Value 🔹	SavedValue
Memory Configuration	Key Value 🔹		Value 🗧	SavedValue
		Allows for selecting the Intel(R) UltraPath		
Power n Performance	Intel(R) UPI Frequency Select	Interconnect Frequency. Recommended to leave in [Auto Max] so that the BIOS can select	0x3 (Auto Max)	0x3 (Auto Max)
Processor Configuration		the highest common Intel(R) UltraPath Interconnect frequency.		
Mass Storage Controller	XPT Prefetch	XPT Prefetch.	0x2 (Auto)	0x2 (Auto)
Configuration	Hit Me	CHA HitME Cache Enable	0x2 (Auto)	0x2 (Auto)
System Acoustic and Performance Configuration	IO Directory Cache (IODC)	IO Directory Cache (IODC): generate snoops instead of memory lookups, for remote InvItoM (IIO) and/or WCiLF (cores), Auto - Auto sets to WCiLF.	0x1 (Auto)	0x1 (Auto)
System Event Log	KTI Prefetch	KTI Prefetch.	0x2 (Auto)	0x2 (Auto)
Security	Stale AtoS	Stale A to S Dir optimization.	0x0 (Disabled)	0x0 (Disabled)
USB Configuration	LLC Dead Line Alloc	Enable - opportunistically fill dead lines in LLC. Disable - never fill dead lines in LLC.	0x1 (Enabled)	0x1 (Enabled)
Server Management				
Advanced Boot Options				
Main	Save Cancel			

Figure 102. BIOS UPI Configuration Page

Table 32. BIOS UPI Configuration Variables

Variables	BIOS Variable Description
Intel(R) UPI Frequency Select	Select UPI frequency from 0x1(Auto Max), 0x0(9.6GT/s), 0x1(10.4GT/s).
IO Directory Cache(IODC)	Enable or disable IO Directory Cache(IODC).
KTI Prefetch	Enable or disable KTI Prefetch.
Stale AtoS	Enable or disable Stale AtoS.
LLC Dead Line Alloc	Switch the LLC Dead Line Alloc mode to enable, disable, or auto.
Direct To Core(D2C)	Switch the Direct To Core(D2C) mode to enable, disable, or auto.
Direct To UPI(D2K)	Switch the Direct To UPI(D2K) mode to enable, disable, or auto.

7.8.4 Integrated IIO Configuration

This page allows the user to configure NTB PCIe port and BAR23/4/5/45 size, enable/disable NTB Bars/SPLIT Bars. See Figure 103 for details. Table 33 lists all IIO configuration variables that can be viewed and edited.

intel.	Integrated BMC \	Neb Console		
System Server Health C	Configuration Remote Control Virtual Media Serve	Diagnostics Miscellaneous BIOS Configuration	ons	🚱 Logout 🕝 Refresh 🔞 Help 🚯 Ab
PCI Configuration	Integrated IO Configuration			
Serial Port Configuration	Select a BIOS Variable Intel(R) VT for Directed I/O	×		
UPI Configuration	BIOS Variable Value 0x0 (Disabled) V			
Integrated IO Configuration	Key Value	BIOS Variable Description	Value	SavedValue
Memory Configuration	Intel(R) VT for Directed I/O	Enable/Disable Intel(R) Virtualization Technology for Directed I/O (Intel(R) VT-d). Report the I/O device assignment to VMM	0x0 (Disabled)	0x0 (Disabled)
Power n Performance Processor Configuration	DMA Control Opt-In Flag	through DMAR ACPI Tables. Enable/Disable DMA_CTRL_PLATFORM_OPT_IN_FLAG in	0x0 (Disabled)	0x0 (Disabled)
Mass Storage Controller	· •	DMAR table in ACPI. Not compatible with Direct Device Assignment (DDA).	() ,	
Configuration	Pcie Pll SSC	Pcie PII SSC percentage or Disable SSC. Range is 0.0%-1.9%. Last one is the POR for LBG.	0x14 (POR - Reg. Value:0x1F)	0x14 (POR - Reg. Value:0x1F)
Performance Configuration	DMI-PCIe Port MPSWorkaround	Set Maxpayload size to 256B if possible	0x0 (128B)	0x0 (128B)
histon Event Lea	Relaxed Ordering	Relaxed Ordering Enable/Disable	0x0 (Disabled)	0x0 (Disabled)
System Event Log	No Snoop(Sck0 IOAT Function 0)	No Snoop Enable/Disable for each CB device	0x0 (Disabled)	0x0 (Disabled)
Security	No Snoop(Sck0 IOAT Function 1)	No Snoop Enable/Disable for each CB device	0x0 (Disabled)	0x0 (Disabled)
JSB Configuration	No Snoop(Sck0 IOAT Function 2)	No Snoop Enable/Disable for each CB device	0x0 (Disabled)	0x0 (Disabled)
	No Snoop(Sck0 IOAT Function 3)	No Snoop Enable/Disable for each CB device	0x0 (Disabled)	0x0 (Disabled)
Server Management	No Snoop(Sck0 IOAT Function 4)	No Snoop Enable/Disable for each CB device	0x0 (Disabled)	0x0 (Disabled)
Advanced Boot Options	Save Cancel		0.00° U.N	0.0751115

Figure 103. BIOS IIO Configuration Page

Table 33. BIOS IIO Configuration Variables

Variables	BIOS Variable Description
NTB PCIe Port 1a on CPU socket 1 NTB PCIe Port 2a on CPU socket 1 NTB PCIe Port 3a on CPU socket 1 NTB PCIe Port 1a on CPU socket 2 NTB PCIe Port 2a on CPU socket 2 NTB PCIe Port 3a on CPU socket 2	Configure NTB PCIe port for socket 1 and socket 2.
Enable NTB Bars	Enable or disable NTB Bars.
Enable SPLIT BARs	Enable or disable NTB SPLIT Bars.
Primary BAR 23 Size Primary BAR 4 Size Primary BAR 5 Size Primary BAR 45 Size Secondary BAR 23 Size Secondary BAR 4 Size Secondary BAR 5 Size Secondary BAR 45 Size	Select BAR23/4/5/45 size for each PCIe port on the socket 1 and socket 2.
Intel(R) VT for Directed I/O	Enable or disable Intel(R) VT for Directed I/O.
PCIe PII SSC	Enable or disable PCIe PII SSC
Relaxed Ordering	Enable or disable Relaxed Ordering
No Snoop(Sck0 IOAT Function 0) No Snoop(Sck0 IOAT Function 1) No Snoop(Sck0 IOAT Function 2) No Snoop(Sck0 IOAT Function 3) No Snoop(Sck0 IOAT Function 4) No Snoop(Sck0 IOAT Function 5) No Snoop(Sck0 IOAT Function 6)	Enable or disable for each CB device on sock0.

- 			
Variables	BIOS Variable Description		
No Snoop(Sck0 IOAT Function 7)			
No Snoop(Sck1 IOAT Function 1)			
No Snoop(Sck1 IOAT Function 2)			
No Snoop(Sck1 IOAT Function 3)			
No Snoop(Sck1 IOAT Function 4)	Enable or disable for each CB device on sock1.		
No Snoop(Sck1 IOAT Function 5) No Snoop(Sck1 IOAT Function 6)			
No Snoop(Sck1 IOAT Function 7)			
DMI- PCIe Port MPS Workaround	Enable or disable for DMI- PCIe Port MPS Workaround		
Data Link Protocol Error Mask	Enable or disable for Data Link Protocol Error Mask		
Surprise Down Error Mask	Enable or disable for Surprise Down Error Mask		
Poisoned TLP Mask	Enable or disable for Poisoned TLP Mask		
Flow Control Protocol Error Mask	Enable or disable for Flow Control Protocol Error Mask		
Completion Timeout Mask	Enable or disable for Completion Timeout Mask		
Unexpected Completion Mask	Enable or disable for Unexpected Completion Mask		
Receiver Overflow Mask	Enable or disable for Receiver Overflow Mask		
Malformed TLP Mask	Enable or disable for Malformed TLP Mask		
ECRC Error Mask	Enable or disable for ECRC Error Mask		
ACS Volation Mask	Enable or disable for ACS Volation Mask		
Uncorrectable Internal Error Mask	Enable or disable for Uncorrectable Internal Error Mask		
MC Blocked TLP Mask	Enable or disable for MC Blocked TLP Mask		
AtomicOp Egress Blocked Mask	Enable or disable for AtomicOp Egress Blocked Mask		
TLP Prefix Blocked Error Mask	Enable or disable for TLP Prefix Blocked Error Mask		

7.8.5 **Memory Configuration**

This page allows the user to select memory operation speed/IMC interleaving/page policy and enable or disable ADR/Erase-Arm NVDIMMS/restore NVDIMMS/ADDDC sparing/memory sparing/Multi-Rank sparing/memory Corrected Error. See Figure 104 for details. Table 34 lists all memory configuration variables that can be viewed and edited.

System Server Health Cor	nfiguration Remote Control Virtual Media Serve	r Diagnostics Miscellaneous BIOS Configurations		O Logout O Refresh O Help
PCI Configuration	Memory Configuration			
Serial Port Configuration	Select a BIOS Variable Memory Operating Speed S	election ¥		
JPI Configuration	BIOS Variable Value 0x0 (Auto) V			
ntegrated IO Configuration				
Memory Configuration	Key Value 🔹	BIOS Variable Description	Value 🗧	SavedValue =
lemory Configuration	Memory Operating Speed Selection	Force specific Memory Operating Speed or use Auto setting.	0x0 (Auto)	0x0 (Auto)
ower n Performance	Page Policy	Select Page Policy.	0x2 (Adaptive)	0x2 (Adaptive)
Processor Configuration	Enforce Population POR	Enable Memory Population POR Enforcement. Selecting Enforce Validated Populations will only allow populations that have been validated.	0x0 (Disable Enforcement)	0x0 (Disable Enforcement)
Aass Storage Controller Configuration		Selects whether 1LM or 2LM memory mode. If 2LM Volatile Memory Mode, BIOS will try to configure 2LM but if BIOS is unable to configure 2LM, volatile memory mode will fall back to 1LM. 1LM+2LM will		
erformance Configuration	Volatile Memory Mode	enable the ?DDR Cache? option. When the 1LM + 2LM option is selected, the UEFLEW will use the	0x1 (2LM)	0x1 (2LM)
ystem Event Log		DDR Cache Size option to determine the DDR		
ecurity		Cache Size for each populated channel. Any remaining DDR will be mapped as 1LM memory.		
ISB Configuration	Publish ARS capability	Enable\Disable publishing of the Address Range Scrub capability to the OS	0x1 (Enabled)	0x1 (Enabled)
erver Management		Sets DDR4 SMBus Clock Frequencies For SPD Access, Current default is 700Khz, Note: If Intel(R)		
	SMB Clock Frequency	Optane(TM) PMem is present. SMBus Clock	0x2 (700 Khz)	0x2 (700 Khz)

Figure 104. BIOS Memory Configuration Page

Table 34. BIOS Memory Configuration Variables

Variables	BIOS Variable Description		
Memory Operating Speed Selection	Force specific Memory Operating Speed or use Auto setting.		
Page Policy	Select page policy.		
Enforce Population POR	Enable Memory Population POR Enforcement.		
Volatile Memory Mode	Select whether 1LM or 2LM memory mode should be enabled.		
Intel® Optane™ PMem Error Injection	Enable/Disable Intel Optane PMem Error Injection.		
Publish ARS capability	Enable\Disable publishing of the Address Range Scrub capability to the operating system.		
Background ARS	Auto: go background on initial short ARS sequence.		
SMB Clock Frequency	Sets DDR4 SMBus Clock Frequencies For SPD Access. Auto - Sets it to the MRC default setting; current default is 400K.		
Attempt Fast Boot	Enable - Portions of memory reference code will be skipped when possible to increase boot speed on warm boots. Disable - Disables this feature. Auto - Sets it to the MRC default setting; current default is Enabled.		
Attempt Fast Cold Boot Enable - Portions of memory reference code will be skipped when possible to increa speed on cold boots. Disable - Disables this feature. Auto - Sets it to the MRC default current default is Enabled.			
Enable Power Cycle Policy	Enable/Disable power cycle policy when PMem receive surprise clock stop		
Halt on mem Training Error	Halt on mem Training Error Disable/Enable		
ADDDC Sparing	Enable/Disable Adaptive Double Device Data Correction Sparing.		
UMA-Based Clustering	UMA Based Clustering options include Disable (ALL2ALL), Hemisphere (2 cluster), and Quadrant (4 cluster, not supported on ICX). These options are only valid when SNC is disabled. If SNC is enabled, UMA-Based Clustering is automatically disabled by BIOS.		

Variables	BIOS Variable Description	
Patrol Scrub	When enabled, performs periodic checks on memory cells and proactively walks through populated memory space, to seek and correct soft ECC errors.	
Memory Corrected Error	Enable/Disable Memory Corrected Error	
Memory Error	Enable/Disable Memory Error.	
Cloaking	If disabled, CMCI event appears when CE happens. If enabled, CMCI event is blocked when C happens.	
Snoopy mode for 2LM	Enables new 2LM specific feature to avoid directory updates to far-memory from non-NUMA optimized workloads	
Snoopy mode for AD	Enables new AD specific feature to avoid directory updates to PMem memory from non-NUMA optimized workloads	
PMem Performance Setting	PMem baseline performance settings depending on the workload behavior	
PMem Factory Reset/Clear	Enable\Disable Factory Reset/Clear	
PMem FastGo Configuration	Select PMem QoS Configuration Profiles	

7.8.6 Power n Performance

This page allows the user to configure CPU power and performance policy/workload configuration/TDP level/hardware P-State/, enable or disable uncore frequency scaling/performance P-limit/enhanced Intel tech/Intel[®] configurable TDP/Turbo Boost/C1E /processor C6. See Figure 105 for details. Table 35 lists all PnP configuration variables that can be viewed and edited.

					About
	5				
PCI Configuration	Power n Performance				
Serial Port Configuration	Select a BIOS Variable CPU Power and Performance				
UPI Configuration	BIOS Variable Value 0x0 (Balanced Performance				
Integrated IO Configuration					
Memory Configuration	Key Value 🔹	BIOS Variable Description Allows the user to set an overall power and	Value 🔹	SavedValue 🔹	
Power n Performance Processor Configuration Mass Storage Controller Configuration	CPU Power and Performance Policy	Autors in each to set all overall power and performance policy for the system, and when changed will modify a selected list of options to achieve the policy. These options are still changeable outside of the policy but do reflect the changes that the policy makes when a new policy is selected. [Performance] Optimization is strongly toward performance, even at the expense of energy efficiency. [Balanced Performance] Weights	0x0 (Balanced Performance)	0x0 (Balanced Performance)	
System Acoustic and Performance Configuration		optimization toward performance, while conserving energy. [Balanced Power] Weights optimization toward energy conservation, with good			
System Event Log		performance. [Power] Optimization is strongly toward energy efficiency, even at the expense of			
Security		performance. Enhanced Intel SpeedStep(R) Technology allows			
USB Configuration		the system to dynamically adjust processor voltage and core frequency, which can result in decreased			
Server Management	Enhanced Intel SpeedStep(R) Tech	average power consumption and decreased average heat production. Contact your OS vendor	0x1 (Enabled)	0x1 (Enabled)	
Advanced Boot Options	Dynamic SST.PP	regarding OS support of this feature. Support Dynamic SST-PP Select			
Main	Save Cancel	Sunnori Uvnamic SSLPP Select	0x0 (Disabled)	0x0 (Disabled)	

Figure 105. BIOS PnP Configuration Page

Table 35. BIOS PnP Configuration Variables

Variables	BIOS Variable Description
CPU Power and Performance Policy	Allows the user to set an overall power and performance policy for the system, and when changed will modify a selected list of options to achieve the policy. These options are still changeable outside of the policy but do reflect the changes that the policy makes when a new policy is selected. [Performance] Optimization is strongly toward performance, even at the expense of energy efficiency. [Balanced Performance] Weights optimization toward performance, while conserving energy. [Balanced Power] Weights optimization toward energy conservation, with good performance. [Power] Optimization is strongly toward energy efficiency, even at the expense of performance.
Enhanced Intel SpeedStep(R)Enhanced Intel SpeedStep(R) Technology allows the system to dynamically adju voltage and core frequency, which can result in decreased average power consu decreased average heat production. Contact the operating system vendor regar system support of this feature.	
Dynamic SST-PP	Support Dynamic SST-PP Select.
Activate SST-BF This Option allows Activate SST-BF to be enabled.	
Configure SST-BF	This Option allows BIOS to configure SST-BF High Priority Cores so that the software does not have to configure.
EIST PSD Function	Choose HW_ALL/SW_ALL in _PSD return
Hardware P-statesDisable: Hardware chooses a P-state based on OS Request (Legacy P-states) but Hardware chooses a P-state based on operating system guidance. Out of Band autonomously chooses a P-state (no operating system guidance).	
HardwarePM Interrupt	Enable/Disable Hardware PM Interrupt.
EPP Enable When enabled, hardware masks EPP in CPUID[6].10 and uses the energy performance register for Energy vs. Performance Preference input.	

Variables	BIOS Variable Description			
APS rocketing	Enable/Disable the rocketing mechanism in the HWP P-state selection pcode algorithm. Rocketing enables the core ratio to jump to max turbo instantaneously as opposed to a smooth ramp up.			
Scalability	Enable/Disable the use of scalability in HWP pcode power efficiency algorithms. Scalability is the measure of estimated performance improvement for a given increase in core frequency.			
RAPL Prioritization	This knob controls whether RAPL balancer is enabled. When enabled, it activates per core power budgeting.			
Package C-state	Set and specifies the lowest C-state for Processor package. CO/C1 sate is no package C-state support. C6 retention state provides more power saving than C6 non retention state. No Limit is no package C-state limit.			
C1E When Enabled, the CPU will switch to the Minimum Enhanced Intel SpeedStep(R) Tech operating point when all execution cores enter C1. Frequency will switch immediately, by gradual Voltage switching. When Disabled, the CPU will not transit to the minimum Enhanced Intel SpeedStep® Technology operating point when all cores enter C1.				
Processor C6	Enable/Disable Processor C6 (ACPI C3) report to operating system.			

7.8.7 Processor Configuration

This page allows the user to configure the number of cores to enable in each processor package, enable/disable Intel(R) Hyper-Threading/execute disable bit/Intel(R) virtualization/Intel(R) TXT. See Figure 106 for details. Table 36 lists all processor configuration variables that can be viewed and edited.

intel.	Integrated BN	MC Web Console		S- YEFF	6
System Server Health Co	onfiguration Remote Control Virtual Mee	dia Server Diagnostics Miscellaneous BIOS Configurations		O Logout O Refresh O Hel	p 🔒 🏻
PCI Configuration	Processor Configuration				
Serial Port Configuration	Select a BIOS Variable Direct To Core	(D2C) ×			
UPI Configuration		×			
Integrated IO Configuration					
	Key Value	BIOS Variable Description 🖷	Value 🔹	SavedValue	
Memory Configuration	Direct To Core (D2C)	Direct To Core (D2C)	0x2 (Auto)	0x2 (Auto)	- 1
Power n Performance	Direct To UPI (D2K)	Direct To UPI (D2K)	0x2 (Auto)	0x2 (Auto)	
Processor Configuration	Intel(R) Virtualization Technology	Intel(R) Virtualization Technology allows a platform to run multiple operating systems and applications in independent partitions. Note: A change to this option requires the system to be powered off and then	0x0 (Disabled)	0x0 (Disabled)	ł
Mass Storage Controller Configuration	Intel(R) TXT	back on before the setting takes effect. Enable/Disable Intel(R) Trusted Execution Technology. Takes effect after reboot.	0x0 (Disabled)	0x0 (Disabled)	
System Acoustic and Performance Configuration	MLC Streamer	MLC Streamer is a speculative prefetch unit within the processor(s). Note: Modifying this setting may affect performance.	0x1 (Enabled)	0x1 (Enabled)	
System Event Log	MLC Spatial Prefetcher	[Enabled] - Fetches adjacent cache line (128 bytes) when required data is not currently in cache. [Disabled] - Only fetches cache line with data required by the processor (64 bytes).	0x1 (Enabled)	0x1 (Enabled)	
Security		The next cache line will be prefetched into L1 data cache from L2 or			
JSB Configuration	DCU Data Prefetcher	system memory during unused cycles if it sees that the processor core has accessed several bytes sequentially in a cache line as data. [Disabled] - Only fetches cache line with data required by the	0x1 (Enabled)	0x1 (Enabled)	
Server Management		processor (64 bytes).			
Advanced Boot Options	DCI Unstruction Prefetcher	The next cache line will be prefetched into L1 instruction cache from L2 or system memory during unused cycles if it sees that the	Ov1 (Enabled)	Ny1 (Enabled)	-
Main	Save Cancel				

Figure 106. BIOS Processor Configuration Page

Table 36. BIOS Processor Configuration Variables

Variables	BIOS Variable Description		
Direct To Core (D2C)	Direct To Core (D2C)		
Direct To UPI (D2K)	Direct To UPI (D2K)		
Intel(R) Virtualization Technology	Intel(R) Virtualization Technology allows a platform to run multiple operating systems and applications in independent partitions. Note: A change to this option requires the system to b powered off and then back on before the setting takes effect.		
Intel(R) TXT	Enable/Disable Intel(R) Trusted Execution Technology (Inte(R) TXT). Takes effect after reboot.		
MLC Streamer	MLC Streamer is a speculative prefetch unit within the processor(s). Note: Modifying this setting may affect performance.		
MLC Spatial Prefetcher	[Enabled] - Fetches adjacent cache line (128 bytes) when required data is not currently in cache. [Disabled] - Only fetches cache line with data required by the processor (64 bytes).		
DCU Data Prefetcher	The next cache line will be prefetched into L1 data cache from L2 or system memory during unused cycles if it sees that the processor core has accessed several bytes sequentially in a cache line as data. [Disabled] - Only fetches cache line with data required by the processor (64 bytes).		
DCU Instruction Prefetcher	The next cache line will be prefetched into L1 instruction cache from L2 or system memory during unused cycles if it sees that the processor core has accessed several bytes sequentially in a cache line as data.		
Х2АРІС	Enable/disable extended APIC support		
Limit CPU PA to 46 bits	Limit CPU physical address to 46 bits to support older Hyper-V.		
LLC Prefetch	Enable/Disable LLC Prefetch on all threads.		
Hyper-Threading [ALL]	Enables Hyper Threading (Software Method to Enable/Disable Logical Processor threads.		
IED Trace memory	Option to allocate memory for PSMI trace		
Skip Flex Ratio Override	Skip Flex Ratio overrides to use power-on default Flex Ratio values. In multi-socket systems, this will allow mixed flex ratio limits.		

Variables BIOS Variable Description			
Check CPU BIST Result	Disable failed BIST core when enabled, otherwise, ignore BIST result		
Core Failover	Enable spare core(s) in place of core(s) that fail BIST		
3StrikeTimer	The 3 strike counter can be turned off by writing into the MISC_FEATURE_CONTROL_DISABLE_THREE_STRIKE_CNT(MSR 0x01a4).		
Fast String	When enabled, enable fast strings for REP MOVS/STOS		
Machine Check	Enable or Disable the Machine Check		
Max CPUID Value Limit	This should be enabled in order to boot legacy operating systems that cannot support CPUs with extended CPUID functions.		
Hardware Prefetcher	- MLC Streamer Prefetcher (MSR 1A4h Bit[0])		
L2 RFO Prefetch Disable	- L2 RFO Prefetch (MSR 972h Bit[3])		
Adjacent Cache Prefetch	- MLC Spatial Prefetcher (MSR 1A4h Bit[1])		
DCU Streamer Prefetcher	DCU streamer prefetcher is an L1 data cache prefetcher (MSR 1A4h [2]).		
DCU IP Prefetcher	DCU IP prefetcher is an L1 data cache prefetcher (MSR 1A4h [3]).		
LLC Prefetch	Enable/Disable LLC Prefetch on all threads		
DCU Mode	Normal: The whole DCU used for caching; Mirror-Mode: DCU organized as 2x16KB mirrored copies		
Bsp Selection	Choose the method to select BSP		
Extended APIC	Enable/disable extended APIC support Note: This will enable VT-d automatically if x2APIC is enabled		
APIC Physical Mode	Enable/Disable the APIC physical destination mode		
Down Stream PECI	Enable PCIe Down Stream PECI Write		
PECI	PECI in trust bit enables		
Legacy Agent	Legacy PECI agent in trust bit enables		
SMBus Agent	SMBus PECI agent in trust bit enables		
IE Agent	IE PECI agent in trust bit enables		
Generic Agent	Generic PECI agent in trust bit enables		
eSPI Agent	ESPI PECI agent in trust bit enables		
DBP-F	The DBP-F can be turned off by writing into the (MSR 792h [5:6] for CLX, CPX, and MSR 6Dh [2:3] for ICX).		
IIO LLC Ways [19:0](Hex)	MSR CBO_SLICEO_CR_IIO_LLC_WAYS bitmask		
Remote Ways [22:12](Hex)	MSR INGRESS_SPARE bitmask[26:16], Value 0 means no override		
SMM Blocked and Delayed	Enable/Disable SMM Blocked and Delayed		
eSMM Save State	Enable or Disable the eSMM Save State Feature		
Smbus Error Recovery	Enable or Disable Smbus Error Recovery		
Enable Intel(R) TXT	Enables Intel® TXT.		
VMX	Enables the Vanderpool Technology, takes effect after reboot.		
Enable SMX	Enables Safer Mode Extensions.		
Lock Chipset	Lock or Unlock chipset		
MSR Lock Control	Enable - MSR 3Ah and CSR 80h will be locked. Power Good reset is needed to remove lock bits.		
PKG CST CONFIG CONTROL MSR Lock	Enable - MSR E2h will be locked. Power Good reset is needed to remove lock bits.		
PPIN Control	Unlock and Enable/Disable PPIN Control		
AES-NI	Enable/disable AES-NI support		
TSC Reset	Enable or Disable TSC reset during warm reboot		
Total Memory Encryption (TME)	Enable/Disable Intel® Total Memory Encryption (Intel® TME)		
Limit CPU PA to 46 bits	Limit CPU physical address to 46 bits to support older Hyper-V. If enabled, automatically disables Intel TME-MT.		

Variables	BIOS Variable Description	
RDT CAT Opportunistic	Cache Allocation Technology mask tuning options.	
Tuning	Note: If IOT is enabled on any socket, this option will override to 0x003	
Global PSMI Enable	Global PSMI Enable	
PSMI Enable	PSMI Enable	
Disable Bitmap	0: Enable all cores. FFFFFFFFFFFF: Disable all cores	

7.8.8 Mass Storage Controller Configuration

This page allows the user to configure the AHCI capable SATA controller/SATA RAID options/AHCI capable sSATA controller and enable/disable SATA HDD staggered Spin-up/sSATA HDD Staggered Spin-Up. See Figure 107 for details. Table 37 lists all mass storage controller configuration variables that can be viewed and edited.

	Integrated BMC			
		ver Diagnostics Miscellaneous BIOS Configurations		🕜 Logout 🕜 Refresh 💡 Help 🚯 Abou
PCI Configuration	Mass Storage Controller Configura	ation		
Serial Port Configuration	Select a BIOS Variable AHCI Capable SATA Contr	roller ×		
UPI Configuration	BIOS Variable Value 0x0 (AHCI)			
Integrated IO Configuration				
Memory Configuration	Key Value	BIOS Variable Description - AHCL enables the Advanced Host Controller	Value 🔸	SavedValue •
Power n Performance	AHCI Capable SATA Controller	Interface, which provides Enhanced SATA functionality RAID Mode provides host based RAID	0x0 (AHCI)	0x0 (AHCI)
Processor Configuration		support on the onboard SATA ports. If enabled for the AHCI Capable SATA controller.		
Mass Storage Controller Configuration	SATA HDD Staggered Spin-Up	Staggered Spin-Up will be performed on drives attached to it. Otherwise these drives will all spin up at boot.	0x0 (Disabled)	0x0 (Disabled)
System Acoustic and Performance Configuration	AHCI Capable sSATA Controller	 - AHCI enables the Advanced Host Controller Interface, which provides Enhanced SATA functionality RAID Mode provides host based RAID support on the onboard SATA ports. 	0x0 (AHCI)	0x0 (AHCI)
System Event Log		If enabled for the AHCI Capable sSATA controller, Staggered Spin-Up will be performed on drives		
Security	sSATA HDD Staggered Spin-Up	attached to it. Otherwise these drives will all spin up at boot.	0x0 (Disabled)	0x0 (Disabled)
USB Configuration		a 500.		
Server Management				
Advanced Boot Options				
Main	Save Cancel			

Figure 107. BIOS Mass Storage Controller Configuration Page

Variables BIOS Variable Description			
AHCI Capable SATAAHCI enables the Advanced Host Controller Interface, which provides Enhanced SATAControllerfunctionality RAID Mode provides host based RAID support on the onboard SATA ports.			
SATA HDD Staggered Spin-Up If enabled for the AHCI Capable SATA controller, Staggered Spin-Up will be performed o drives attached to it. Otherwise, these drives will all spin up at boot.			
AHCI Capable sSATAAHCI enables the Advanced Host Controller Interface, which provides Enhanced SATAControllerfunctionality RAID Mode provides host based RAID support on the onboard SATA p			
sSATA HDD Staggered Spin- Up	If enabled for the AHCI Capable sSATA controller, Staggered Spin-Up will be performed on drives attached to it. Otherwise, these drives will all spin up at boot.		

Table 37. BIOS Mass Storage Configuration Variables

7.8.9 System Acoustic and Performance Configuration

This page allows the user to configure fan speed control profile. See Figure 108 for details. Table 38 lists all system acoustic and performance configuration variables that can be viewed and edited.

	•	°		
PCI Configuration	System Acoustic and Performance	Computation		
Serial Port Configuration	Select a BIOS Variable Set Fan Profile V			
UPI Configuration	BIOS Variable Value 0x2 (Acoustic)			
Integrated IO Configuration				
Memory Configuration	Key Value	BIOS Variable Description [Performance] - Fan control provides primary system	Value 🔸	SavedValue
Power n Performance	Set Fan Profile	cooling before attempting to throttle memory. [Acoustic] - The system will favor using throttling of	0x2 (Acoustic)	0x2 (Acoustic)
Processor Configuration		memory over boosting fans to cool the system if thermal thresholds are met.		
Mass Storage Controller Configuration				
System Acoustic and Performance Configuration				
System Event Log				
Security				
USB Configuration				
Server Management				
Advanced Boot Options	Save			
Main	ourse Sunser			

Figure 108. BIOS System Acoustic and Performance Configuration Page

Table 38. BIOS System Acoustic and Performance Configuration Variables

Variables BIOS Variable Description		BIOS Variable Description
	Set Fan Profile	[Performance] - Fan control provides primary system cooling before attempting to throttle memory. [Acoustic] - The system will favor using throttling of memory over boosting fans to cool the system if thermal thresholds are met.

7.8.10 System Event Log

This page allows the user to configure what Event types to monitor by System Event log. See Figure 109 for details.

	Integrated BMC			
		er Diagnostics Miscellaneous BIOS Configurations		🕜 Logout 🕝 Refresh 🕜 Help 🚯 Abou
PCI Configuration	System Event Log			
Serial Port Configuration	Select a BIOS Variable System Errors	~		
UPI Configuration	BIOS Variable Value 0x1 (Enabled) V			
Integrated IO Configuration				
Memory Configuration	Key Value System Errors	BIOS Variable Description System Error Enable/Disable setup options.	Value Ox1 (Enabled)	SavedValue 0x1 (Enabled)
Power n Performance	System Poison	Enable/Disable System Poison.	0x1 (Enabled)	0x1 (Enabled)
	Viral Status	Enable/Disable Viral.	0x0 (Disabled)	0x0 (Disabled)
Processor Configuration	IIO/PCH Global Error Support	Enable/Disable IIO/PCH Error Support.	0x1 (Enabled)	0x1 (Enabled)
Mass Storage Controller Configuration	WHEA Support	[Enabled] - WHEA (Windows Hardware Error Architecture) is enabled. [Disabled] - WHEA is disabled.	0x1 (Enabled)	0x1 (Enabled)
System Acoustic and Performance Configuration	IERR Shutdown Policy	Allows to configure Shutdown Policy Select in General Interrupt Register. Available modes are INIT and PLTRST.	0x0 (INIT)	0x0 (INIT)
System Event Log	IIO Error Registers Clear	Enable/Disable Clear IIO Error Registers	0x1 (Enabled)	0x1 (Enabled)
Security	PCIE Correctable Errors	[Enabled] - Processor n PCH PCIe correctable error logging is enabled. [Disabled] - Processor n PCH PCIe correctable error logging is disabled.	0x1 (Enabled)	0x1 (Enabled)
USB Configuration		Threshold value for logging Correctable Errors(CE)		
Server Management	PCIE Correctable Error Threshold	 Threshold of 20/10/5 logs 20th/10th/5th CE, ?20? (default) logs every CE. 	0x14 (20)	0x14 (20)
Advanced Boot Options	Assert NMI on SERR	On SERR, generate an NMI and log an error. Note: [Enabled] must be selected for the Assert NMI on DEDE software attion to be visible.	0x1 (Enabled)	0x1 (Enabled)
Main	Save Cancel			

Figure 109. System Event Log Page

7.8.11 Security

This page allows the user to configure BIOS security variables, such as power-on password, front panel lockout, TPM administrative control. See Figure 110 for details. Table 39 lists all security variables that can be viewed and edited.

	Integrated BMC	Web Console		© Logout. © Refresh @ Help ① Abou
	Security			
PCI Configuration				
Serial Port Configuration	Select a BIOS Variable Power On Password V]		
UPI Configuration	BIOS Variable Value 0x0 (Disabled) V			
Integrated IO Configuration				
Memory Configuration	Key Value 🔹	BIOS Variable Description Enable Power On Password support. If enabled,	Value 🔹	SavedValue 👒
Power n Performance	Power On Password	password entry is required in order to boot the system.	0x0 (Disabled)	0x0 (Disabled)
Processor Configuration		If enabled, locks the power button OFF function and the reset and NMI Diagnostic Interrupt buttons on		
Mass Storage Controller Configuration	Front Panel Lockout	the system?s front panel. If [Enabled] is selected, power-off and reset must be controlled via a system management interface, and the NMII Diagnostic	0x0 (Disabled)	0x0 (Disabled)
System Acoustic and Performance Configuration		Interrupt is not available.		
System Event Log				
Security				
USB Configuration				
Server Management				
Advanced Boot Options				
	Save Cancel			

Figure 110. BIOS Security Configuration Page

Table 39. BIOS Security Variables

Variables	BIOS Variable Description		
Power On Password	Enable Power On Password support. If enabled, password entry is required in order to boot the system.		
Front Panel Lockout	If enabled, locks the power button OFF function and the reset and NMI Diagnostic Interrupt buttons on the system's front panel. If [Enabled] is selected, power-off and reset must be controlled via a system management interface, and the NMI Diagnostic Interrupt is not available.		

7.8.12 USB Configuration

This page allows the user to enable/disable legacy USB support/port 60 and port 64 emulation/make USB device non-bootable, configure device reset timeout for USB device. See Figure 111 for details. Table 40 lists all USB configuration variables that can be viewed and edited.

		Web Console		C Logout @ Refresh @ Help. @ Abou
PCI Configuration	USB Configuration			
Serial Port Configuration				
UPI Configuration	Select a BIOS Variable USB Front Ports Enable BIOS Variable Value 0x1 (Enabled) V	~		
	BIOS Valiable Value OXT (Linables) -			
Integrated IO Configuration	Key Value		Value +	SavedValue
Memory Configuration	USB Front Ports Enable	BIOS Variable Description Enable or disable the USB Front Ports	0x1 (Enabled)	0x1 (Enabled)
Power n Performance	USB Rear Ports Enable	Enable or disable the USB Rear Ports	0x1 (Enabled)	0x1 (Enabled)
Processor Configuration	USB Internal Ports Enable	Enable or disable the USB Internal and BMC Ports.	0x1 (Enabled)	0x1 (Enabled)
Mass Storage Controller Configuration				
System Acoustic and Performance Configuration				
System Event Log				
Security				
USB Configuration				
Server Management				
Advanced Boot Options				
Main	Save Cancel			

Figure 111. BIOS USB Configuration Page

Table 40. BIOS USB Configuration Variables

[
Variables	BIOS Variable Description		
USB Front Ports Enable	Enable or disable the USB Front Ports		
USB Rear Ports Enable Enable or disable the USB Rear Ports			
USB Internal Ports Enable Enable or disable the USB Internal and BMC Ports.			

7.8.13 Server Management

The page allows the user to configure server management features, such as Console redirection enabling. See Figure 112 for details. Table 41 lists all options that can be viewed and edited.

intel.	Integrated BMC	Web Console		
System Server Health Co	onfiguration Remote Control Virtual Media Serv	er Diagnostics Miscellaneous BIOS Configurations		C Logout C Refresh P Help 1 Abo
	Server Management			
PCI Configuration				
Serial Port Configuration	Select a BIOS Variable Reset on CATERR	×		
UPI Configuration	BIOS Variable Value 0x1 (Enabled) V			
Integrated IO Configuration				
Memory Configuration	Key Value 😐	BIOS Variable Description When enabled system gets reset upon	Value 🗕	SavedValue 🖌
Power n Performance	Reset on CATERR	encountering Catastrophic Error (CATERR); when disabled system does not get reset on CATERR.	0x1 (Enabled)	0x1 (Enabled)
Processor Configuration	Reset on ERR2	When enabled system gets reset upon encountering ERR2 (Fatal error); when disabled system does not get reset on ERR2.	0x1 (Enabled)	0x1 (Enabled)
Mass Storage Controller Configuration	Enforced Password Support	Enables or Disables the Enforced Password support. Enabling it will allow the BIOS to send the Seed, Algorithm and password information to BMC.	0x0 (Disabled)	0x0 (Disabled)
System Acoustic and Performance Configuration	Power Restore Delay	Allows a delay in powering up after a power failure, to reduce peak power requirements. The delay can be fixed or automatic between 60-300 seconds.	0x0 (Disabled)	0x0 (Disabled)
System Event Log	Power Restore Delay Value	Fixed time period 60-300 seconds for Power Restore Delay	0x003C	0x003C
Security		Fault Resilient Boot (FRB). The BIOS programs the		
USB Configuration	FRB-2 Enable	BMC watchdog timer for approximately 6 minutes. If the BIOS does not complete POST before the timer expires, the BMC will reset the system.	0x1 (Enabled)	0x1 (Enabled)
Server Management	FRB-2 Timeout Value	If FRB-2 enabled, this is the timeout value that BIOS will use to configure the FRB-2 timer.	0x168 (6 minutes)	0x168 (6 minutes)
Advanced Boot Options		The BIOS programs the watchdog timer with the timeout value selected. If the OS does not complete		•
Main	Save Cancel			

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Table 41. Server Management

Variables	BIOS Variable Description
Reset on CATERR	When enabled system gets reset upon encountering Catastrophic Error (CATERR); when disabled system does not get reset on CATERR.
Reset on ERR2	When enabled system gets reset upon encountering ERR2 (Fatal error); when disabled system does not get reset on ERR2.
Enforced Password Support	Enables or Disables the Enforced Password support. Enabling it will allow the BIOS to send the Seed, Algorithm, and password information to BMC.
Power Restore Delay	Allows a delay in powering up after a power failure, to reduce peak power requirements. The delay can be fixed or automatic between 60-300 seconds.
Power Restore Delay Value	Fixed time period 60–300 seconds for Power Restore Delay.
FRB-2 Enable	Fault Resilient Boot (FRB). The BIOS programs the BMC watchdog timer for approximately 6 minutes. If the BIOS does not complete POST before the timer expires, the BMC will reset the system.
FRB-2 Timeout Value	If FRB-2 enabled, this is the timeout value that BIOS will use to configure the FRB-2 timer.
OS Boot Watchdog Timer	The BIOS programs the watchdog timer with the timeout value selected. If the operating system does not complete booting before the timer expires, the BMC will reset the system and an error will be logged. Requires operating system support or Intel Management Software Support.
OS Boot Watchdog Timer Policy	If the operating system watchdog timer is enabled, this is the system action taken if the watchdog timer expires. [Reset] - System performs a reset. [Power Off] - System powers off.
OS Boot Watchdog Timer Timeout	If the operating system watchdog timer is enabled, this is the timeout value the BIOS will use to configure the watchdog timer.
Plug n Play BMC Detection	If enabled, the BMC will be detectable by operating systems, which support plug and play loading of an IPMI driver. Do not enable this option if the user's operating system does not support this driver.
Console Redirection	Console redirection allows a serial port to be used for server management tasks. [Disabled] - No console redirection. [Serial Port A/B] - Configure serial port A/B for console redirection.

Variables	BIOS Variable Description
	Enabling this option will disable display of the Quiet Boot logo screen during POST. [Advanced - Serial Port Configuration - Serial A/B Enable] needs be enabled before enabling this option.
Flow Control	Flow control is the handshake protocol. This setting must match the remote terminal application. [None] - Configure for no flow control. [RTS/CTS] - Configure for hardware flow control.
Baud Rate	Serial port transmission speed. This setting must match the remote terminal application.
Terminal Type	Character formatting used for console redirection. This setting must match the remote terminal application.
Legacy Operating System Redirection	This option enables legacy operating system redirection (i.e., DOS) on serial port. If it is enabled, the associated serial port is hidden from the legacy operating system.
Terminal Resolution	Remote Terminal Resolution.

7.8.14 Advanced Boot Options

This page allows the user to configure advanced boot options. See Figure 113 for details. Table 42 lists all Advanced Boot Options that can be viewed and edited.

	Integrated BMC			
System Server Health C	onfiguration Remote Control Virtual Media S	erver Diagnostics Miscellaneous BIOS Configurations		OLogout ORefresh OHelp BAbout
PCI Configuration	Advanced Boot Options			
Serial Port Configuration	Select a BIOS Variable System Boot Timeout	~		
UPI Configuration	BIOS Variable Value 0x0001 V			
Integrated IO Configuration				
Memory Configuration	Key Value	BIOS Variable Description The number of seconds BIOS will pause at the end	Value	SavedValue 🗧
Power n Performance	Outer Dest Trees t	of POST to allow the user to press the [F2] key for entering the BIOS Setup utility. Valid values are 0-	0x0001	0x0001
Processor Configuration	System Boot Timeout	65535. Ť is the default. Á valué of 65535 causes the system to go to the Boot Manager menu and wait for user input for every system boot.		
Mass Storage Controller Configuration	Early System Boot Timeout	The number of seconds the BIOS will pause before Option ROMs are dispatched Valid values are 0- 65535 Zero is the default A value of 65535 causes	0x0000	0x0000
System Acoustic and Performance Configuration	Lany System Boot Amount	the system to go to the Boot Manager menu and wait for user input for every system boot. If enabled, newly discovered USB devices are	0,000	00000
System Event Log	USB Boot Priority	If enabled, newly discovered USB devices are moved to the top of their boot device category. If disabled, newly discovered USB devices are moved	0x1 (Enabled)	0x1 (Enabled)
Security		to the bottom of their boot device category.		
USB Configuration				
Server Management				
Advanced Boot Options				
Main	Save Cancel			

Figure 113. BIOS Advanced Boot Page

Table 42. BIOS Advanced Boot

Variables	BIOS Variable Description	
System Boot Timeout	The number of seconds BIOS will pause at the end of POST to allow the user to press the [F2] key for entering the BIOS setup utility. Valid values are 0–65535. 1 is the default. A value of 65535 causes the system to go to the Boot Manager menu and wait for user input for every system boot.	
Early System Boot Timeout	The number of seconds the BIOS will pause before Option ROMs are dispatched. Valid values are 0–65535.Zero is the default. A value of 65535 causes the system to go to the Boot Manager menu and wait for user input for every system boot.	
USB Boot Priority	If enabled, newly discovered USB devices are moved to the top of their boot device category. If disabled, newly discovered USB devices are moved to the bottom of their boot device category.	

7.8.15 Main

This page allows the user to configure main BIOS variables, such as quiet boot. See Figure 114 for details. Table 43 lists all main BIOS variables that can be viewed and edited.

intel.	Integrated BMC	Web Console		
System Server Health Co	nfiguration Remote Control Virtual Media Ser	ver Diagnostics Miscellaneous BIOS Configurations		Cogout O Refresh O Help 1 About
PCI Configuration	∋ Main			
Serial Port Configuration	Select a BIOS Variable Quiet Boot 🗸			
UPI Configuration	BIOS Variable Value 0x1 (Enabled) 🗸			
Integrated IO Configuration				
Memory Configuration	Key Value	BIOS Variable Description [Enabled] - Display the logo screen during POST.	Value 🔹	SavedValue
Power n Performance	Quiet Boot	[Disabled] - Display the diagnostic screen during POST.	0x1 (Enabled)	0x1 (Enabled)
Processor Configuration				
Mass Storage Controller Configuration				
System Acoustic and Performance Configuration				
System Event Log				
Security				
USB Configuration				
Server Management				
Advanced Boot Options				
Main	Save Cancel			
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Figure 114. BIOS Main Page

Table 43. BIOS Main Configuration Variables

Variables	BIOS Variable Description	
Quiet Boot	[Enabled] - Display the logo screen during POST. [Disabled] - Display the diagnostic screen during POST.	

Appendix A. Glossary

Term	Definition	
ARP	Address Resolution Protocol	
Intel® ASMI	Intel® Advanced Server Management Interface	
ВМС	Baseboard Management Controller	
Intel [®] DCM	Intel® Data Center Manager	
DHCP	Dynamic Host Configuration Protocol	
DNS	Domain Name System	
НWP	Hardware Controlled Performance, hardware P-state.	
ICMP	Internet Control Message Protocol	
IPMI	Intelligent Platform Management Interface	
KCS	Keyboard Controller Style	
ким	Keyboard, Video, Mouse	
LAN	Local Area Network	
LDAP	Lightweight Directory Address Protocol	
MAC	Media Access Controller	
Intel® ME	Intel® Management Engine	
MII	Media Independent Interface	
NIC	Network Interface Controller	
Intel [®] NM	Intel® Node Manager	
ООВ	Out Of Band – no operating system interaction on server	
PCIe*	Peripheral Component Interconnect Express*	
Intel® RMM	Intel® Remote Management Module	
SDR	Sensor Data Record	
SOL	Serial-over-LAN	
TCP/IP	Transmission Control Protocol/Internet Protocol	
Intel® TME	Intel® Total Memory Encryption	
Intel® TXT	Intel® Trusted Execution Technology	
UDP	User Datagram Protocol	
VLAN	Virtual Local Area Network	
Intel [®] VT	Intel® Virtualization Technology	