BMC

Common IPMI
User's Manual

UM_BMC_COMMON_IPMI_v1.0_050625

Table of Contents

Document Release History

Release Date	Version	Author	Update Content
May 6, 2025	1.0	Jethro Yeh	1. Initial Release

Preface

Copyright

Trademarks

Changes

The material in this document is for information purposes only and is subject to change without notice.

Warning

1. A shielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord be used.
2. Use only shielded cables to connect I/O devices to this equipment.
3. You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

Disclaimer

AIC® shall not be liable for technical or editorial errors or omissions contained herein. The information provided is provided "as is" without warranty of any kind. To the extent permitted by law, neither AIC® or its affiliates, subcontractors or suppliers will be liable for incidental, special or consequential damages including downtime cost; lost profits; damages relating to the procurement of substitute products or services; or damages for loss of data, or software restoration. The information in this document is subject to change without notice.

Instruction Symbols

Special attention should be given to the instruction symbols below.

NOTE	This symbol indicates that there is an explanatory or supplementary instruction.
CAUTION	This symbol denotes possible hardware impairment. Upmost precaution must be taken to prevent serious hardware damage.
WARNING	This symbol serves as a warning alert for potential body injury. The user may suffer possible injury from disregard or lack of attention.

Chapter 1. Introduction

The Intelligent Platform Management Interface (IPMI) is an open, industry-standard interface designed for the management of computer systems and monitoring of their operation. IPMI operates independently of the system's CPU, firmware, and operating system, allowing administrators to remotely monitor, manage, and recover systems even if they are powered off or otherwise unresponsive.

IPMI defines a set of standardized interfaces for platform management hardware and firmware. It enables the collection of sensor data, event logging, remote power control, system recovery, and out-of-band management through a Baseboard Management Controller (BMC).

This manual primarily focuses on the use of **ipmitool**, a command-line utility used to interface with devices that support the IPMI protocol. **ipmitool** can be used for a wide variety of system management tasks, such as retrieving system information, monitoring hardware sensors, controlling system power states, and managing BMC network settings.

Understanding and utilizing IPMI is critical for maintaining server availability, diagnosing issues without physical access, and reducing downtime. This manual is intended for system administrators, engineers, and technical users who require efficient, reliable tools for server management.

In the following chapters, we will explore how to install **ipmitool**, connect to a BMC, and use a wide range of IPMI commands to perform remote server management tasks.

Chapter 2. Getting Started with ipmitool

2.1 Installing IPMItool

ipmitool is widely available across major operating systems. The installation method may vary depending on the platform.

- On Ubuntu/Debian-based systems:

```
$ sudo apt update
$ sudo apt install ipmitool
```

- On CentOS/RHEL-based systems:

```
$ sudo yum install ipmitool
```

- On FreeBSD:

```
$ sudo pkg install ipmitool
```

- On Windows:

  IPMItool binaries for Windows are available from various vendors. For example: https://ipmiutil.sourceforge.net/

  Alternatively, it can be used through a virtual machine or Windows Subsystem for Linux (WSL).

2.2 Access Methods

IPMItool supports multiple access interfaces depending on the environment:

HW Interface	SW Interface	ipmitool Option	Description
KCS (LPC Bus)	OpenIPMI Kernel Modules	-I open	Default. Local access method. Communicates directly with BMC via KCS through Linux kernel drivers. Used for accessing BMC on the same server. No IP or login needed.
Network	Built-in RMCP	-I lan	Remote access via IPMI v1.5 over the network using RMCP protocol (unencrypted). Simple and compatible but not secure. Use only in trusted/internal networks.
Network	RMCP+ (secure)	-I lanplus	Remote access via IPMI v2.0 over the network using RMCP+ protocol (encrypted, recommended) Preferred method for remote management. Requires user/IP/password.
IPMB (I2C-based bus)	IPMB Bridge Driver	-I ipmb	Access BMC via a bridge controller on IPMB (Intelligent Platform Management Bus). Advanced scenarios or multi-node systems. Not common in basic setups.

2.3 Local Access vs Remote Access

2.3.1 Local Access (No network needed)

When **ipmitool** is executed on the same system where the BMC resides (e.g., a physical server), it communicates with the BMC through a direct motherboard interface, typically KCS (Keyboard Controller Style)**.** This method does **not require** a username, password, or IP address.

This method leverages the OpenIPMI kernel subsystem, which provides a software interface between user-space tools and the underlying IPMI-compatible firmware via system buses (such as LPC).

Requirements:

- The host OS must have IPMI kernel modules loaded. (e.g., ipmi_si, ipmi_devintf, ipmi_msghandler on Linux)

```
$ modprobe ipmi_si
$ modprobe ipmi_devintf
$ modprobe ipmi_msghandler
```

Permissions:

- Access to IPMI device files (such as /dev/ipmi0) typically requires root privileges.
- Therefore, sudo may be necessary when running **ipmitool** commands locally.

Example –View System Event Log (SEL):

```
$ sudo ipmitool sel list
```

Example –View BMC Info:

```
$ sudo ipmitool mc info
```

2.3.2 Remote Access (Over the network)

When managing a remote server, you must specify the BMC's IP address, username, and password. It is recommended to use **lanplus** for secure (encrypted) communication.

Requirements:

- The BMC must be reachable over the network with proper IP settings.
- Firewall and security rules must allow IPMI traffic (UDP port 623).

BMC Network Connection Types:

- Dedicated BMC LAN Port: A special, independent RJ45 port specifically reserved for IPMI management.
- Shared LAN Port: Sharing the standard Ethernet RJ45 port used for normal network traffic with IPMI functions.

Note: Refer to your device's hardware manual to identify which port is active for BMC access.

The IPMI interface can be divided into two main types:

1. LAN Interface:
   - IPMI Over LAN (IOL): Standard network-based IPMI management using Ethernet.
   - Serial Over LAN (SOL): Redirection of the server's serial console over the network via IPMI.
2. Serial Port Interface: Direct IPMI communication over a physical serial (COM) port, although this method is less commonly used.

In most cases, IPMI Over LAN (IOL) is used for server management.

To remotely control the BMC (IOL) the following parameters are required.

```
$ ipmitool -I lanplus -H <BMC_IP> [-U <username>] [-P <password>]
```

Example –Check BMC Info:

```
$ ipmitool -I lanplus -H 192.168.1.100 -U admin -P password mc info
```

2.4 Basic Usage Syntax

General command format:

```
$ ipmitool [options] <command> [command-options]
```

Where:

- options: How to connect (interface, host, credentials).
- command: The IPMI operation (e.g., power, sensor).
- command-options: Additional parameters (optional).

2.5 Commonly Used Options

Option	Description
-h	Help for ipmitool command.
-I <interface>	Specify interface: lan, lanplus, open, etc.
-H <BMC_IP>	Hostname or IP address of the target BMC.
-U <username>	The user account of the target BMC.
-P <password>	The user account password of the target BMC.
-p <port>	Remote RMCP port (default: 623).
-V	Show version information.
-E	Read password from environment variable IPMI_PASSWORD.
-v	Verbose mode for debugging.

2.6 Verifying Connectivity

It is recommended to verify the connection before performing major operations.

Local test:

```
$ sudo ipmitool mc info
```

Remote test:

```
$ ipmitool -I lanplus -H 192.168.1.100 -U admin -P password mc info
```

Chapter 3. Commonly Used IPMI Commands

Unless otherwise specified, the following examples assume remote access using LAN interface.

Common command pattern:

> $ ipmitool -I lanplus -H <BMC_IP> -U <username> -P <password> **<command>** [command-options]

3.1 Power Control

<command>	[command-options]	Description
chassis power	status	Check current power status of the server.
chassis power	on	Power on the server.
chassis power	off	Force shutdown of the server.
chassis power	cycle	Restart (power cycle) the server.
chassis power	reset	Soft reset the server.
chassis power	help	Display available power options.

Example – Help for chassis power options:

```
jethro@bmc3-server:~$ ipmitool -I lanplus -H 192.168.121.70 -U admin -P admin123 chassis power help
chassis power Commands: status, on, off, cycle, reset, diag, soft
```

Example – Get current power status for server:

```
jethro@bmc3-server:~$ ipmitool -I lanplus -H 192.168.121.70 -U admin -P admin123 chassis power status
Chassis Power is on
```

3.2 Chassis Power policy

<command>	[command-options]	Description
chassis policy	list	Show supported chassis power policies.
chassis policy	always-on	Set policy to always power on after AC loss.
chassis policy	previous	Restore last known state after AC loss.
chassis policy	always-off	Stay powered off after AC loss.

Example – Show supported chassis policies:

```
jethro@bmc3-server:~$ ipmitool -I lanplus -H 192.168.121.70 -U admin -P admin123 chassis policy list
Supported chassis power policy:  always-off always-on previous
```

3.3 Sensor and Health Information

<command>	[command-options]	Description
sensor	list	Show detailed sensor information (e.g., thresholds).
sdr	list	Lists all sensors from the SDR in a compact format.
sdr	elist	Extended sensor list with human-readable output.
sdr	help	Show help for sdr commands.

Example – Show detailed sensor information:

```
jethro@bmc3-server:~$ ipmitool -I lanplus -H 192.168.121.70 -U admin -P admin123 sensor list
FAN1_A           | 17150.000  | RPM        | ok    | na        | 525.000   | na        | na        | na        | na
FAN1_B           | 14350.000  | RPM        | ok    | na        | 525.000   | na        | na        | na        | na
FAN2_A           | 16975.000  | RPM        | ok    | na        | 525.000   | na        | na        | na        | na
FAN2_B           | 14525.000  | RPM        | ok    | na        | 525.000   | na        | na        | na        | na
FAN3_A           | na         | RPM        | na    | na        | na        | na        | na        | na        | na
FAN3_B           | na         | RPM        | na    | na        | na        | na        | na        | na        | na
FAN4_A           | na         | RPM        | na    | na        | na        | na        | na        | na        | na
FAN4_B           | na         | RPM        | na    | na        | na        | na        | na        | na        | na
FAN5_A           | na         | RPM        | na    | na        | na        | na        | na        | na        | na
FAN5_B           | na         | RPM        | na    | na        | na        | na        | na        | na        | na
FAN6_A           | na         | RPM        | na    | na        | na        | na        | na        | na        | na
FAN6_B           | na         | RPM        | na    | na        | na        | na        | na        | na        | na
FAN7_A           | 16975.000  | RPM        | ok    | na        | 525.000   | na        | na        | na        | na
FAN7_B           | 14350.000  | RPM        | ok    | na        | 525.000   | na        | na        | na        | na
FAN8_A           | 16975.000  | RPM        | ok    | na        | 525.000   | na        | na        | na        | na
FAN8_B           | 14175.000  | RPM        | ok    | na        | 525.000   | na        | na        | na        | na
P0_Temp          | 33.000     | degrees C  | ok    | na        | na        | na        | na        | 106.000   | 109.000
P1_Temp          | na         | degrees C  | na    | na        | na        | na        | na        | 102.000   | 103.000
CARDSIDE_2_Temp  | 24.000     | degrees C  | ok    | na        | na        | na        | na        | 65.000    | 70.000
M2_1_Area_Temp   | 33.000     | degrees C  | ok    | na        | na        | na        | na        | 65.000    | 70.000
JTHM_Temp        | na         | degrees C  | na    | na        | na        | na        | na        | 65.000    | 70.000
CARDSIDE_1_Temp  | 32.000     | degrees C  | ok    | na        | na        | na        | na        | 65.000    | 70.000
M2_2_Area_Temp   | 33.000     | degrees C  | ok    | na        | na        | na        | na        | 65.000    | 70.000
P1_VR_INLET_Temp | 24.000     | degrees C  | ok    | na        | na        | na        | na        | 45.000    | 50.000
P0_VR_INLET_Temp | 27.000     | degrees C  | ok    | na        | na        | na        | na        | 45.000    | 50.000
P0_VR_Temp       | 35.000     | degrees C  | ok    | na        | na        | na        | na        | 100.000   | 105.000
P1_VR_Temp       | 23.000     | degrees C  | ok    | na        | na        | na        | na        | 100.000   | 105.000
PSU1_Temp        | 22.000     | degrees C  | ok    | na        | na        | na        | na        | 57.000    | na
PSU2_Temp        | na         | degrees C  | na    | na        | na        | na        | na        | 57.000    | na
P0_DTS_Margin    | -76.000    | degrees C  | ok    | na        | na        | na        | na        | na        | 0.000
P1_DTS_Margin    | na         | degrees C  | na    | na        | na        | na        | na        | na        | 0.000
P0_DIMM_A_Temp   | 27.000     | degrees C  | cr    | na        | na        | na        | na        | 22.000    | 85.000
P0_DIMM_B_Temp   | na         | degrees C  | na    | na        | na        | na        | na        | 82.000    | 85.000
P0_DIMM_C_Temp   | na         | degrees C  | na    | na        | na        | na        | na        | 82.000    | 85.000
P0_DIMM_D_Temp   | na         | degrees C  | na    | na        | na        | na        | na        | 82.000    | 85.000
```

Example – Lists all sensors from the SDR in a compact format:

```
jethro@bmc3-server:~$ ipmitool -I lanplus -H 192.168.121.70 -U admin -P admin123 sdr list
FAN1_A           | 16975 RPM         | ok
FAN1_B           | 14350 RPM         | ok
FAN2_A           | 16975 RPM         | ok
FAN2_B           | 14525 RPM         | ok
FAN3_A           | no reading        | ns
FAN3_B           | no reading        | ns
FAN4_A           | no reading        | ns
FAN4_B           | no reading        | ns
FAN5_A           | no reading        | ns
FAN5_B           | no reading        | ns
FAN6_A           | no reading        | ns
FAN6_B           | no reading        | ns
FAN7_A           | 16800 RPM         | ok
FAN7_B           | 14350 RPM         | ok
FAN8_A           | 16975 RPM         | ok
FAN8_B           | 14175 RPM         | ok
P0_Temp          | 33 degrees C      | ok
P1_Temp          | no reading        | ns
CARDSIDE_2_Temp  | 24 degrees C      | ok
M2_1_Area_Temp   | 33 degrees C      | ok
JTHM_Temp        | no reading        | ns
CARDSIDE_1_Temp  | 32 degrees C      | ok
M2_2_Area_Temp   | 33 degrees C      | ok
P1_VR_INLET_Temp | 24 degrees C      | ok
P0_VR_INLET_Temp | 27 degrees C      | ok
P0_VR_Temp       | 35 degrees C      | ok
P1_VR_Temp       | 23 degrees C      | ok
PSU1_Temp        | 22 degrees C      | ok
PSU2_Temp        | no reading        | ns
P0_DTS_Margin    | -76 degrees C     | ok
P1_DTS_Margin    | no reading        | ns
P0_DIMM_A_Temp   | 27 degrees C      | cr
P0_DIMM_B_Temp   | no reading        | ns
P0_DIMM_C_Temp   | no reading        | ns
P0_DIMM_D_Temp   | no reading        | ns
```

Example –Extended SDR list:

```
jethro@bmc3-server:~$ ipmitool -I lanplus -H 192.168.121.70 -U admin -P admin123 sdr elist
FAN1_A           | 10h | ok  | 29.0 | 5075 RPM
FAN1_B           | 11h | ok  | 29.1 | 4375 RPM
FAN2_A           | 12h | ok  | 29.2 | 4900 RPM
FAN2_B           | 13h | ok  | 29.3 | 4375 RPM
FAN3_A           | 14h | ns  | 29.4 | No Reading
FAN3_B           | 15h | ns  | 29.5 | No Reading
FAN4_A           | 16h | ns  | 29.6 | No Reading
FAN4_B           | 17h | ns  | 29.7 | No Reading
FAN5_A           | 18h | ns  | 29.8 | No Reading
FAN5_B           | 19h | ns  | 29.9 | No Reading
FAN6_A           | 1Ah | ns  | 29.10 | No Reading
FAN6_B           | 1Bh | ns  | 29.11 | No Reading
FAN7_A           | 1Ch | ok  | 29.12 | 4900 RPM
FAN7_B           | 1Dh | ok  | 29.13 | 4200 RPM
FAN8_A           | 1Eh | ok  | 29.14 | 5075 RPM
FAN8_B           | 1Fh | ok  | 29.15 | 4375 RPM
P0_Temp          | 20h | ok  | 65.0 | 46 degrees C
P1_Temp          | 21h | ns  | 65.1 | No Reading
CARDSIDE_2_Temp  | 22h | ok  | 66.0 | 26 degrees C
M2_1_Area_Temp   | 23h | ok  | 66.1 | 39 degrees C
JTHM_Temp        | 24h | ns  | 66.2 | No Reading
CARDSIDE_1_Temp  | 25h | ok  | 66.3 | 39 degrees C
M2_2_Area_Temp   | 26h | ok  | 66.4 | 39 degrees C
P1_VR_INLET_Temp | 27h | ok  | 66.5 | 25 degrees C
P0_VR_INLET_Temp | 28h | ok  | 66.6 | 30 degrees C
P0_VR_Temp       | 29h | ok  | 66.0 | 44 degrees C
P1_VR_Temp       | 2Ah | ok  | 66.1 | 23 degrees C
PSU1_Temp        | 2Bh | ok  | 10.2 | 24 degrees C
PSU2_Temp        | 2Ch | ns  | 10.3 | No Reading
P0_DTS_Margin    | 3Eh | ok  | 65.0 | -63 degrees C
P1_DTS_Margin    | 3Fh | ns  | 65.0 | No Reading
P0_DIMM_A_Temp   | 40h | ok  | 32.0 | 33 degrees C
P0_DIMM_B_Temp   | 41h | ns  | 32.2 | No Reading
P0_DIMM_C_Temp   | 42h | ns  | 32.4 | No Reading
P0_DIMM_D_Temp   | 43h | ns  | 32.6 | No Reading
```

3.4 SEL (System Event Log) Management

<command>	[command-options]	Description
sel	list	Lists all entries in the SEL in a compact format.
sel	elist	Extended" SEL listing, providing human-readable interpretations of events (including sensor names and descriptions)
sel	info	Show information about SEL storage (e.g., space used).
sel	clear	Clear all entries from the SEL.
sel	time get	Get current SEL timestamp from BMC.
sel	time set "<YYYY-MM-DD HH:MM:SS>"	Set SEL timestamp (use caution).
sel	help	Display help for SEL commands.

Example – Lists all entries in the SEL in a compact format:

```
jethro@bmc3-server:~$ ipmitool -I lanplus -H 192.168.121.70 -U admin -P admin123 sel list
   1 | 04/29/2025 | 09:20:16 | Temperature #0x40 | Upper Critical going high | Deasserted
   2 | 04/29/2025 | 09:20:28 | Temperature #0x40 | Upper Critical going high | Asserted
   3 | 04/29/2025 | 09:31:57 | Power Unit #0xa0 | Transition to Power Off | Asserted
   4 | 04/29/2025 | 09:33:24 | Power Unit #0xa0 | Transition to Running | Asserted
   5 | 04/29/2025 | 09:33:33 | Power Unit #0xa0 | Transition to Power Off | Asserted
   6 | 04/29/2025 | 09:33:41 | Power Unit #0xa0 | Transition to Running | Asserted
   7 | 04/29/2025 | 09:35:27 | OS Boot #0xc0 | ROM boot completed | Asserted
   8 | 04/29/2025 | 09:35:27 | Power Unit #0xa0 | Transition to Power Off | Asserted
   9 | 04/29/2025 | 09:35:34 | Power Unit #0xa0 | Transition to Running | Asserted
   a | 04/29/2025 | 09:37:21 | OS Boot #0xc0 | ROM boot completed | Asserted
```

Example – Extended" SEL listing:

```
jethro@bmc3-server:~$ ipmitool -I lanplus -H 192.168.121.70 -U admin -P admin123 sel elist
   1 | 04/29/2025 | 09:20:16 | Temperature P0_DIMM_A_Temp | Upper Critical going high | Deasserted | Reading 27 > Threshold 82 degrees C
   2 | 04/29/2025 | 09:20:28 | Temperature P0_DIMM_A_Temp | Upper Critical going high | Asserted | Reading 27 > Threshold 22 degrees C
   3 | 04/29/2025 | 09:31:57 | Power Unit Power_State | Transition to Power Off | Asserted
   4 | 04/29/2025 | 09:33:24 | Power Unit Power_State | Transition to Running | Asserted
   5 | 04/29/2025 | 09:33:33 | Power Unit Power_State | Transition to Power Off | Asserted
   6 | 04/29/2025 | 09:33:41 | Power Unit Power_State | Transition to Running | Asserted
   7 | 04/29/2025 | 09:35:27 | OS Boot OS_Boot | ROM boot completed | Asserted
   8 | 04/29/2025 | 09:35:27 | Power Unit Power_State | Transition to Power Off | Asserted
   9 | 04/29/2025 | 09:35:34 | Power Unit Power_State | Transition to Running | Asserted
   a | 04/29/2025 | 09:37:21 | OS Boot OS_Boot | ROM boot completed | Asserted
```

3.5 FRU (Field Replaceable Unit) Information

<command>	[command-options]	Description
fru	*(none)*	Display summary information for all FRU devices.
fru	print [id]	Display detailed information for a specific FRU (e.g., fru print 0).
fru	read <id> <file>	Read FRU data and save to a binary file.
fru	write <id> <file>	Write FRU data from a binary file.
fru	help	Display help for FRU-related commands.

Example – Display the FRU information:

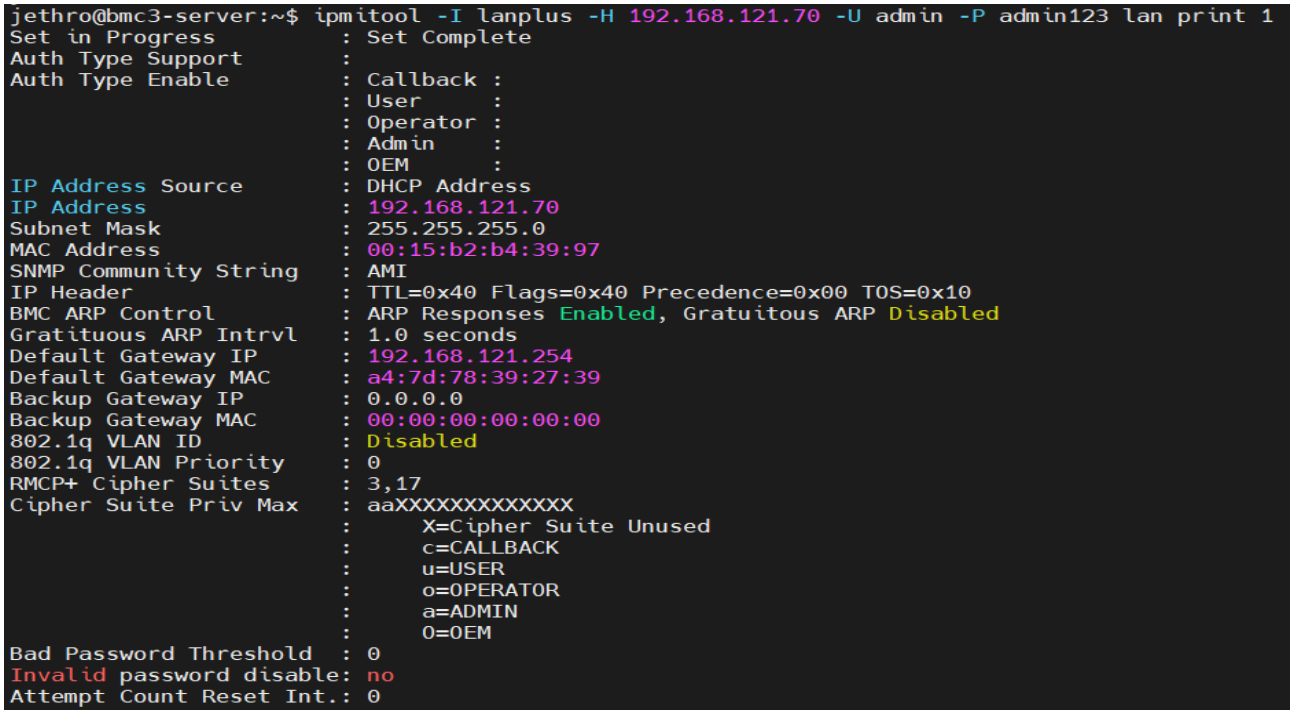
```
jethro@bmc3-server:~$ ipmitool -I lanplus -H 192.168.121.70 -U admin -P admin123 fru
FRU Device Description : Builtin FRU Device (ID 0)
 Chassis Type          : Rack Mount Chassis
 Chassis Part Number   : XP1-S201SU03D01
 Chassis Serial        : 515-24120500300003
 Board Mfg Date        : Tue Nov  5 18:10:00 2024
 Board Mfg             : AIC
 Board Product         : SIRIUS
 Board Serial          : 11444-2444-00004
 Board Part Number     : BMB-DPG0000AC01

 Product Manufacturer  : AIC
 Product Name          : SB201-SU
 Product Part Number   : XP1-S201SU03D01
 Product Version       : 01
 Product Serial        : 515-24120500300003
 Product Asset Tag     : 01
```

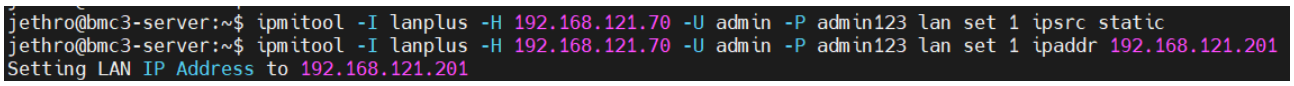
3.6 Network Configuration

<command>	[command-options]	Description
lan print <channel>	*(none)*	Display current BMC network settings (usually channel 1).
lan set <channel> ipsrc <source>	*(none)*	Set IP address source: static, dhcp, or bios.
lan set <channel> ipaddr <x.x.x.x>	*(none)*	Set the BMC's IP address.
lan set <channel> netmask <x.x.x.x>	*(none)*	Set subnet mask.
lan set <channel> defgw ipaddr <x.x.x.x>	*(none)*	Set default gateway.
lan set <channel> access <on/off>	*(none)*	Enable or disable LAN access on the specified channel.
lan help	*(none)*	Help for lan options

Example –Display BMC network settings:



Example – Set IP address source to static IP:



3.7 User Management

<command>	[command-options]	Description
user list	*(none)*	List all user accounts and their privilege levels.
user set password <ID> <password>	*(none)*	Set or change password for the given user ID.
user enable <ID>	*(none)*	Enable a user account for user ID.
user disable <ID>	*(none)*	Disable a user account for user ID.
user priv <ID> <privilege level>	*(none)*	Set user privilege level for user ID. Privilege levels: * 0x1 - Callback * 0x2 - User * 0x3 - Operator * 0x4 - Administrator * 0x5 - OEM Proprietary * 0xF - No Access
user help	*(none)*	Show help for user management commands.

Caution: Always ensure at least one active admin account is available to avoid losing access.

Example – List users:

```
jethro@bmc3-server:~$ ipmitool -I lanplus -H 192.168.121.70 -U admin -P admin123 user list
ID  Name             Callin  Link Auth  IPMI Msg   Channel Priv Limit
1                    false   false      false      NO ACCESS
2   admin            false   false      true       ADMINISTRATOR
3   aic_test1        true    true       true       USER
4                    true    false      false      NO ACCESS
5                    true    false      false      NO ACCESS
6                    true    false      false      NO ACCESS
7                    true    false      false      NO ACCESS
8                    true    false      false      NO ACCESS
9                    true    false      false      NO ACCESS
10                   true    false      false      NO ACCESS
11                   true    false      false      NO ACCESS
12                   true    false      false      NO ACCESS
13                   true    false      false      NO ACCESS
14                   true    false      false      NO ACCESS
15                   true    false      false      NO ACCESS
```

Example – Change the password of the user account for user ID to "admin1234":

```
jethro@bmc3-server:~$ ipmitool -I lanplus -H 192.168.121.70 -U admin -P admin123 user set password 2 admin1234
Set User Password command successful (user 2)
```

3.8 BMC Management

<command>	[command-options]	Description
mc info	*(none)*	Show BMC firmware version, device ID, manufacturer ID, etc.
mc reset	cold	Perform cold reset of BMC
mc reset	warm	Perform warm reset of BMC

Note: Resetting the BMC may temporarily interrupt remote access and monitoring.

Example – Show BMC information (It lists BMC firmware version and supported IPMI version and others):

```
jethro@bmc3-server:~$ ipmitool -I lanplus -H 192.168.121.70 -U admin -P admin123 mc info
Device ID                 : 32
Device Revision           : 1
Firmware Revision         : 1.07
IPMI Version              : 2.0
Manufacturer ID           : 42385
Manufacturer Name         : Unknown (0xA591)
Product ID                : 18944 (0x4a00)
Product Name              : Unknown (0x4A00)
Device Available          : yes
Provides Device SDRs      : yes
Additional Device Support :
    Sensor Device
    SDR Repository Device
    SEL Device
    FRU Inventory Device
    IPMB Event Receiver
    IPMB Event Generator
    Chassis Device
Aux Firmware Rev Info     :
    0x02
    0x00
    0x00
    0x00
```

3.9 DCMI (Data Center Management Interface)

DCMI is an IPMI extension for data center environments. It provides standardized power and thermal management features such as power reading, power capping, and thermal sensor monitoring.

Command	[command-options]	Description
dcmi power reading	*(none)*	Shows current, min, max, and average power usage from the system.
dcmi power get_limit	*(none)*	Get the configured power limits.
dcmi power set_limit	action <no_action | sel_logging | power_off>	Action to take if the power limit is exceeded: • **no_action**: No action taken • **sel_logging**: Log the event to the System Event Log (SEL) • **power_off**: Forcefully power off the system
dcmi power set_limit	limit <watts>	Maximum allowed power in Watts.
dcmi power set_limit	correction <ms>	Time window (in milliseconds) allowed to correct a power violation.
dcmi power set_limit	sample <sec>	Duration (in seconds) over which average power is measured.
dcmi power activate	*(none)*	Activate the set power limit.
dcmi power deactivate	*(none)*	Deactivate the set power limit.

Note: Actual DCMI support may vary by vendor or firmware version.

Example – Shows current, min, max, and average power usage from the system:

```
jethro@bmc3-server:~$ ipmitool -I lanplus -H 192.168.121.70 -U admin -P admin123 dcmi power reading

    Instantaneous power reading:                   138 Watts
    Minimum during sampling period:                137 Watts
    Maximum during sampling period:                138 Watts
    Average power reading over sample period:      137 Watts
    IPMI timestamp:                           Mon May  5 02:52:35 2025
    Sampling period:                          00000005 Seconds.
    Power reading state is:                   activated
```

Example – Get the configured power limits:

```
jethro@bmc3-server:~$ ipmitool -I lanplus -H 192.168.121.70 -U admin -P admin123 dcmi power get_limit

    Current Limit State: Power Limit Active
    Exception actions:   No Action
    Power Limit:         2000 Watts
    Correction time:     1000 milliseconds
    Sampling period:     5 seconds
```

Example – Sets a 2000W power cap with a 1-second correction window. If exceeded, the system logs the event to SEL:

```
jethro@bmc3-server:~$ ipmitool -I lanplus -H 192.168.121.70 -U admin -P admin123 dcmi power set_limit limit=2000 action=sel_logging
```

3.10 SOL (Serial Over LAN)

<command>	[command-options]	Description
sol info	*(none)*	Show SOL configuration and status.
sol activate	[usesolkeepalive|nokeepalive] [instance=<number>]	Start an SOL session. Optional flags control keepalive behavior and instance.
sol deactivate	[instance=<number>]	Terminate the active SOL session for the specified instance.
sol help	*(none)*	Show help for SOL options.

Note: SOL requires compatible client (like ipmitool), a supported BMC, and proper user/channel configuration.

Example – Show SOL information:

```
jethro@bmc3-server:~$ ipmitool -I lanplus -H 192.168.121.70 -U admin -P admin123 sol info
Set in progress                 : set-complete
Enabled                         : true
Force Encryption                : false
Force Authentication            : false
Privilege Level                 : USER
Character Accumulate Level (ms) : 60
Character Send Threshold        : 96
Retry Count                     : 7
Retry Interval (ms)             : 500
Volatile Bit Rate (kbps)        : 115.2
Non-Volatile Bit Rate (kbps)    : 115.2
Payload Channel                 : 1 (0x01)
Payload Port                    : 623
```

3.11 Raw Command (For IPMI OEM Commands)

<command>	[command-options]	Description
raw <NetFn> <Command>	[data bytes]	Send a custom raw IPMI command with specified NetFn, Command, and optional data bytes.
raw help		Show help for raw commands.

Note: Raw commands are hardware/vendor-specific. Please refer to the “Special IPMI Commands and Sensors” documentation included in the BMC firmware release for detailed usage and supported OEM features.

Example –Get CPU Info (NetFn=0x3A and Command=0x2B, OEM dependent):

```
jethro@bmc3-server:~$ ipmitool -I lanplus -H 192.168.121.70 -U admin -P admin123 raw 0x3a 0x2b
 49 6e 74 65 6c 28 52 29 20 58 65 6f 6e 28 52 29
 20 36 37 34 30 45 00 00 00 00 00 00 00 00 00 00
```

```
jethro@bmc3-server:~$ ipmitool -I lanplus -H 192.168.121.70 -U admin -P admin123 raw 0x3a 0x2b | xxd -r -p; echo
Intel(R) Xeon(R) 6740E
```

Example – raw help:

```
jethro@bmc3-server:~$ ipmitool -I lanplus -H 192.168.121.70 -U admin -P admin123 raw help
RAW Commands:  raw <netfn> <cmd> [data]

Network Function Codes:

  VAL   HEX     STRING
================================================
  0     0x00    Chassis
  2     0x02    Bridge
  4     0x04    SensorEvent
  6     0x06    Application
  8     0x08    Firmware
  10    0x0a    Storage
  12    0x0c    Transport

(can also use raw hex values)
```

Chapter 4. Technical Support

www.aicipc.com

Taiwan, Global Headquarters

Address: No. 152, Section 4, Linghang N. Rd, Dayuan District, Taoyuan City 337, Taiwan
Tel: +886-3-433-9188
Fax: +886-3-287-1818
Sales Email: sales@aicipc.com.tw
Support Email: support@aicipc.com

Shanghai, China

Address: Room 215, Building 4, No.471 Guiping Road, Xuhui District, Shanghai City, 200233 China
Tel: +86-21-54961421
Sales Email: sales@aicipc.com.cn
Support Email: support@aicipc.com

Moscow, Russia

Address: No. 500, 5th Floor, 5th Entrance, 32A, Khoroshevskoye Shosse, Moscow, 123007
Tel: +7-4997019998
Sales Email: support-ru@aicipc.com.tw
Support Email: rma.russia@aicipc.com.tw

North California, United States

Address: 48531 Warm Springs Boulvard Suite 404 Fremont, CA 94539, United States Tel: +1-510-573-6730
Sales Email: sales@aicipc.com
Support Email: support@aicipc.com

South California, United States

Address: 21808 Garcia Lane City of Industry, CA 91789, United States
Toll free: + 1-866-800-0056
Tel: +1-909-895-8989
Fax: +1-909-895-8999
Sales Email: sales@aicipc.com
Support Email: support@aicipc.com

New Jersey, United States

Address: 322 Route 46 West Suite 100 Parsippany, NJ 07054 United States
Tel: +1-973-884-8886
Fax: +1-973-884-4794
Sales Email: sales@aicipc.com
Support Email: support@aicipc.com

Houten, The Netherlands

Address: Peppelkade 58, 3992AK, Houten, The Netherlands
Tel: +31-30-6386789
Fax: +31-30-6360638
Sales Email: sales@aicipc.nl
Support Email: support@aicipc.com

For additional technical support or questions about trouble shooting, please contact the AIC® representative nearest to you or visit our AIC® website for more information.
AIC® website: **https://www.aicipc.com/en/faq**.