

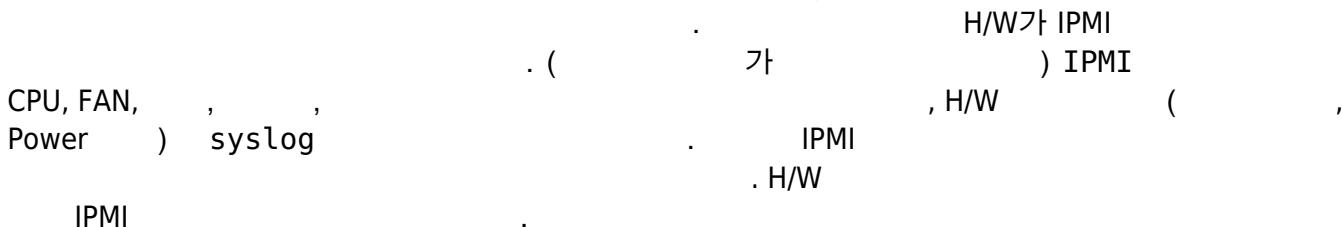
<b>IPMI</b>	.....	3
<b><i>IPMI</i></b>	.....	3
Linux (CentOS)	.....	3
FreeBSD	.....	3
<b><i>IPMI</i></b>	.....	4
<b><i>IPMI IP</i></b>	.....	8
<b><i>IPMI user</i></b>	.....	9
<b><i>IPMI event</i></b>	.....	10
Linux (CentOS)	.....	10
FreeBSD	.....	10
<b>LCD</b> <b>(Dell</b> <>)	.....	11
	.....	12

Last ipmi\_  
update: https://atl.kr/dokuwiki/doku.php/ipmi\_%EC%85%8B%ED%8C%85%EA%B3%BC\_%EC%9D%B4%EC%9A%A9?rev=1626165353  
2021/07/13 -  
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# IPMI

IPMI(Intelligent Platform Management Interface)



# IPMI

IPMI 가 , 2.0 ( dmidecode 1.5 ) IPMI

```
# dmidecode | grep -A10 IPMI
```

## Linux (CentOS)

IPMI . freeipmi, ipmitool ipmitool

```
# yum install ipmitool OpenIPMI
# ipmitool lan print 1 <-- IPMI
Could not open device at /dev/ipmi0 or /dev/ipmi/0 or /dev/ipmidev/0: No
such file or directory
```

IPMI

```
# service ipmi start
# lsmod |grep ipmi
ipmi_devintf      7729  2
acpi_ipmi          3745  1 power_meter
ipmi_si            44687  2 acpi_ipmi
ipmi_msghandler   38826  3 ipmi_devintf,acpi_ipmi,ipmi_si
```

## FreeBSD

ipmitool

```
# pkg install ipmitool
```

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```
# kldload ipmi
# kldstat | grep ipmi
3 1 0xffffffff80fdc000 f970      ipmi.ko
```

IPMI /boot/loader.conf , FreeBSD  
8.1 (?) kernel panic ,

```
ipmi_load="YES"
coretemp_load="YES"
```

## IPMI

- (System Event Log, SEL)

```
# ipmitool sel list
 1 | 06/20/2012 | 21:32:52 | Event Logging Disabled #0x72 | Log area
reset/cleared | Asserted
 2 | 07/18/2012 | 14:19:01 | Power Supply #0x63 | Power Supply AC lost |
Asserted
 3 | 07/18/2012 | 14:19:11 | Power Supply #0x74 | Redundancy Lost |
Asserted
... ...
```

- FRU(Field Replaceable Unit)

```
# ipmitool fru
...
FRU Device Description : iDRAC7
Board Mfg Date       : Wed May  2 17:27:00 2012
Board Mfg             : DELL
Board Product         : PowerEdge R620
...
...
FRU Device Description : PS1 (ID 1)
Board Mfg Date       : Mon Jun  4 18:14:00 2012
Board Mfg             : DELL
Board Product         : PWR SPLY,750WP,RDNT,DELTA
...
...
FRU Device Description : PS2 (ID 2)
Board Mfg Date       : Mon Jun  4 18:44:00 2012
Board Mfg             : DELL
Board Product         : PWR SPLY,750WP,RDNT,DELTA
...
```

- 1

```
# ipmitool sensor  
... ...  
FAN MOD 1A RPM | 4320.000 | RPM | ok | na | 1920.000 |  
na | na | na | na | na |  
FAN MOD 2A RPM | 4440.000 | RPM | ok | na | 1920.000 |  
na | na | na | na | na |  
FAN MOD 3A RPM | 4320.000 | RPM | ok | na | 1920.000 |  
na | na | na | na | na |  
... ...
```

- SDR(Sensor Data Repository)

SDR(Sensor Data Repository) FAN type fan 가  
(type temp), Voltage (type voltage), (type batt)

```
# ipmitool sdr
...
...
Current 1          | 0.40 Amps      | ok
Current 2          | 0.20 Amps      | ok
Voltage 1          | 216 Volts       | ok
Voltage 2          | 216 Volts       | ok
PS Redundancy     | 0x00           | ok
...
...
# ipmitool sdr type
# ipmitool sdr type fan
Fan1A RPM          | 30h | ok | 7.1 | 2400 RPM
Fan2A RPM          | 32h | ok | 7.1 | 2280 RPM
Fan3A RPM          | 34h | ok | 7.1 | 2400 RPM
Fan4A RPM          | 36h | ok | 7.1 | 2160 RPM
Fan5A RPM          | 38h | ok | 7.1 | 2280 RPM
Fan6A RPM          | 3Ah | ok | 7.1 | 2280 RPM
Fan Redundancy    | 75h | ok | 7.1 | Fully Redundant
```



```
# ipmitool power status  
Chassis Power is on
```

- Boot Device

PXE , CDROM . BIOS  
IPMI SOL(Serial Over LAN)

BIOS . (※ SOL .) IPMI  
SOL

```
# ipmitool chassis bootdev
bootdev [clear-cmos=yes|no]
bootdev [options=help,...]
  none : Do not change boot device order
  pxe  : Force PXE boot
  disk : Force boot from default Hard-drive
  safe : Force boot from default Hard-drive, request Safe Mode
  diag : Force boot from Diagnostic Partition
  cdrom : Force boot from CD/DVD
  bios  : Force boot into BIOS Setup
  floppy: Force boot from Floppy/primary removable media
#
# ipmitool chassis bootdev cdrom      # <-- CD/DVD
Set Boot Device to cdrom
# ipmitool chassis bootparam get 5
Boot parameter version: 1
Boot parameter 5 is valid/unlocked
Boot parameter data: 8014000000
Boot Flags :
  - Boot Flag Valid                                # <-- Invalid ->
Valid
  - Options apply to only next boot                # <--      Boot
Device
  - BIOS PC Compatible (legacy) boot
  - Boot Device Selector : Force Boot from CD/DVD      # <-- No override
-> Force Boot ...
  - Console Redirection control : System Default
  - BIOS verbosity : Console redirection occurs per BIOS configuration
setting (default)
  - BIOS Mux Control Override : BIOS uses recommended setting of the mux at
the end of POST
#
# ipmitool chassis bootdev bios      <--          BIOS
Set Boot Device to bios
# ipmitool chassis bootparam set bootflag force_bios <--      chassis
bootparam
Set Boot Device to force_bios
```

persistent 가 . Dell 1950 persistent
, R610 ^^^ 가 . R610 가

```
# ipmitool chassis bootdev none  options=help      <--
```

```
# ipmitool chassis bootdev cdrom options=persistent <-
CDROM BIOS      가
# ipmitool chassis bootparam get 5
...
Boot Flags :
- Boot Flag Valid
- Options apply to all future boots <-
...
...
```

- 
- ipmitool mc info : Management Controller . IPMI firmware ,
- ipmitool channel info 1 : Management Controller . IPMI LAN access on/off (Access Mode)
- ipmitool sol info 1 : SOL(Serial-over-LAN), . Serial BPS
- ipmitool delloem mac : Dell OEM LAN Interface MAC IPMI MAC
- ipmitool delloem powermonitor : Dell ,

```
# ipmitool delloem mac

System LOMs
NIC NumberMAC AddressStatus

0???:fd:???:baEnabled
1???:fd:???:bbEnabled
2???:fd:???:b8Enabled
3???:fd:???:b9Enabled
```

```
iDRAC7 MAC Address ???:fd:???:54
# ipmitool delloem powermonitor
Power Tracking Statistics
Statistic : Cumulative Energy Consumption
Start Time : Thu Mar 31 16:05:44 2011
Finish Time : Mon Nov 24 18:21:01 2014
Reading : 1142.4 kWh
...
```

ipmitool OEM freeipmi ipmi-oem ,

```
# ipmi-oem dell get-power-consumption-data <- ipmitool delloem powermonitor
Cumulative Energy Start Time : 03/31/11 - 16:05:44
Cumulative Energy : 1142.39 kWh
...
```

IPMI IP

IPMI IP  
IPMI (?) . IPMI IP .  
FAN RPM,

IPMI IP 가? , IPMI IP 가 IP IP  
IPMI IP 가

IPMI IP

```
# ipmitool lan set 1 ipsrc static  
# ipmitool lan set 1 ipaddr  
# ipmitool lan set 1 netmask  
# ipmitool lan set 1 defgw ipaddr  
# ipmitool lan set 1 access on
```

```
-      IP : 10.10.1.120  (ifconfig)           IP. IPMI      )
- IPMI IP : 10.10.20.120
- IPMI GW : 10.10.20.1  (                  IP가          IPMI
    .)
```

```
# ipmitool lan print 1
Set in Progress          : Set Complete
Auth Type Support        : NONE MD2 MD5 PASSWORD
Auth Type Enable         : Callback : MD2 MD5
                           : User     : MD2 MD5
                           : Operator : MD2 MD5
                           : Admin    : MD2 MD5
                           : OEM      :
IP Address Source       : Static Address      <-- static
IP Address               : 192.168.0.120      <--
Subnet Mask              : 255.255.255.0
MAC Address              : ?:?:?:c4:ee:?:??
SNMP Community String   : public
IP Header                : TTL=0x40 Flags=0x40 Precedence=0x00 TOS=0x10
BMC ARP Control          : ARP Responses Enabled, Gratuitous ARP Disabled
Default Gateway IP       : 192.168.0.1
Default Gateway MAC      : 00:00:00:00:00:00
...
...
# ipmitool lan set 1 ipsrc static      <-- DHCP
                                         static                                     가
```

```
# ipmitool lan set 1 ipaddr 10.10.20.120
Setting LAN IP Address to 10.10.20.120
# ipmitool lan set 1 netmask 255.255.255.0
Setting LAN Subnet Mask to 255.255.255.0
# ipmitool lan set 1 defgw ipaddr 10.10.20.1
Setting LAN Default Gateway IP to 10.10.20.1
# ipmitool lan set 1 access on
#
# ipmitool lan print 1
Set in Progress      : Set Complete
Auth Type Support   : NONE MD2 MD5 PASSWORD
Auth Type Enable    : Callback : MD2 MD5
                      : User     : MD2 MD5
                      : Operator : MD2 MD5
                      : Admin    : MD2 MD5
                      : OEM      :
IP Address Source   : Static Address
IP Address          : 10.10.20.120           <--
Subnet Mask         : 255.255.255.0
MAC Address         : ?:?:c4:ee:?:??
SNMP Community String: public
IP Header           : TTL=0x40 Flags=0x40 Precedence=0x00 TOS=0x10
BMC ARP Control    : ARP Responses Enabled, Gratuitous ARP Disabled
Default Gateway IP  : 10.10.20.1           <--
Default Gateway MAC : 00:00:00:00:00:00
...
...
```

IPMI 2 , ping 10.10.20.120 . ping  
ping IPMI over LAN(IPMI ) .

## IPMI user

user

```
# ipmitool user list 1
ID  Name[]  Callin Link Auth[] IPMI Msg  Channel Priv Limit
2   root     true   true   true   ADMINISTRATOR
# ipmitool user set password 2 <-- 2 ID     ID
  'root' ID.
Password for user 2: <-- PW
Password for user 2: <-- PW
# ipmitool user summary 1
Maximum IDs[] : 16
Enabled User Count : 1 <-- enable   가 1
Fixed Name Count : 1
```

Enabled User가 0

ipmitool user enable 2

enable

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2021/07/13 08:35

interactive , ipmitool user set password 2 < >

```
# ipmitool -I lan -H 10.10.20.20 -U root power status
Password:
Chassis Power is on
# ipmitool -I lan -H 10.10.20.20 -U root -P < > power status
Chassis Power is on
```

## IPMI event

ipmievda SEL(System Event Log, ipmitool sel info 가 ) 10  
syslog . syslog LOCAL4 facility . CPU,  
FAN, H/W , RAID , Redundancy , Disk H/W  
SEL .

### Linux (CentOS)

/etc/sysconfig/ipmievda . (120 )

```
IPMIEVD_OPTIONS="sel timeout=120 pidfile=/var/run/ipmievda.pid"
# #
$ service ipmievda start
```

### FreeBSD

ipmievda rc /usr/local/etc/rc.d/ipmievda
, rc.conf ipmievda\_enable="YES" 가 .

```
# service ipmievda start
```

- ipmievda rc

```
#!/bin/sh
#
# ipmievda daemon
#
# PROVIDE: ipmievda
# REQUIRE: LOGIN
```

```
# BEFORE:  securelevel
# KEYWORD: shutdown
#
# Add the following lines to /etc/rc.conf to enable 'ipmievfd':
# ipmievfd_enable="YES"
#
# by truefeel (      , http://coffeenix.net/)

. /etc/rc.subr

ipmievfd_enable=${ipmievfd_enable:-"NO"}

name="ipmievfd"
rcvar="ipmievfd_enable" # `set_rcvar` command="/usr/local/sbin/ipmievfd"

[ -z "${ipmievfd_flags}" ] && ipmievfd_flags="timeout=120"
ipmievfd_flags=" sel ${ipmievfd_flags}"
required_files="/dev/ipmi0"
pidfile="/var/run/ipmievfd.pid0"

load_rc_config $name
run_rc_command "$1"
```



```
# IPMI  
local4.debug[|||||]@10.10.1.123
```

rsyslog (/etc/rsyslog.d/ipmi.conf)

```
# IPMI  
local4.debug@10.10.1.123:514
```

## LCD (Dell )

Dell LCD (Service Tag)가 .coffenex.net



```
$ ipmitool delloem lcd
...
lcd set mode {none}|{modelname}|{ipv4address}|{macaddress}|{systemname}|{servicetag}|{ipv6address}|{ambienttemp}|{systemwatt }|{assettag}|{userdefined}
...
...
$ ipmitool delloem lcd set mode userdefined coffeenix.net
LCD info
Setting: User defined
Text:      coffeenix.net

$ ipmitool delloem lcd set mode servicetag
LCD info
Setting: System Tag
```

- [http://coffeenix.net/board\\_print.php?bd\\_code=1765](http://coffeenix.net/board_print.php?bd_code=1765)

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