

IPMI

IPMI

Linux (CentOS)

FreeBSD

IPMI

IPMI IP

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Linux (CentOS)

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IPMI

IPMI(Intelligent Platform Management Interface)

가 H/W가 IPMI
() IPMI
CPU, FAN, , H/W (,
Power) syslog . IPMI
H/W
IPMI .

IPMI

IPMI , dmi decode . IPMI
가 . 2.0 (1.5)

```
# dmi decode | 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
```

```
# kldload ipmi
# kldstat | grep ipmi
3      1 0xfffffffff80fdc000 f970      ipmi.ko
```

8.1 IPMI (/boot/loader.conf 가 . , FreeBSD
(?) 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
...      ...
```

●

```
# ipmitool sensor
```

[illegible]

- 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

■ ■ ■ ■ ■ ■

- Power `. power`

```
# ipmitool power status
```

Chassis Power is on

- Boot Device

PXE , CDROM . BIOS

IPMI SOL(Serial Over LAN)

BIOS . IPMI
SOL . (* 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
```

, R610 persistent 가 . Dell 1950 persistent
^ ^ 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 Number MAC Address Status

```
0 fd:???:ba Enabled
1 fd:???:bb Enabled
2 fd:???:b8 Enabled
3 fd:???:b9 Enabled
```

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 IP
FAN RPM,
IPMI IP
가?
IP IP
가
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 가
static
```



```
# 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 .

```
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

```
ipmievd 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/ipmievd . (120 )
```

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

FreeBSD

```
ipmievd rc /usr/local/etc/rc.d/ipmievent
, rc.conf ipmievent_enable="YES" 가 .
```

```
# service ipmievent start
```

- ipmievent rc

```
#!/bin/sh
#
# ipmievd daemon
#
# PROVIDE: ipmievent
# REQUIRE: LOGIN
```

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

. /etc/rc.subr

ipmievent_enable=${ipmievent_enable:-"NO"}

name="ipmievent"
rcvar="ipmievent_enable" # `set_rcvar`
command="/usr/local/sbin/ipmievd"

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

load_rc_config $name
run_rc_command "$1"
```

- IPMI event syslog 가 ,

syslog (/etc/syslog.conf)

```
# 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 . coffeenix.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

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Last update: 2021/07/13 08:35

