Dell PowerEdge T620 : How To Reduce FAN Speed with IPMI

Link: https://std.rocks/dell_t620_fanspeed.html

- *Last updated: Feb 8, 2022*

Dell logoDell PowerEdge T620

Recently I had to replace **Dell** certified mechanical **hard drives** with uncertified **SSD** drives on a **PowerEdge T620** server and was unpleasantly suprised to find that the fans were spinning noisly when inserted.

After quick research, I discovered that it was a known issue and that **Dell** wasn't able to offer any solution...

Thanks to god/internet, I also found a post where a user has been able to control the fan speed with the **ipmitool**. So, big thanks to, tatmde.

I will simply post here what I have done in my situation.

⚠ Be advised that changing the fan speed may result in overheating and damage to the components. ⚠

Enable IPMI over LAN

To control the **FANs speed** via network we need to enable **IPMI over LAN** from **IDRAC**.

⚠ Enable **IPMI over LAN** could be considered as security issue cause a remote station would have the capability to control the system's power state as well as being able to gather certain platform information. ⚠

- Connect to your **iDRAC**, go to **iDRAC Settings** > **Network** and enable **IPMI Over LAN** :

Dell IDRAC | enable IPMI

ipmitool utility

Installing on GNU/Linux

Install **ipmitool** software. This utility will allow us to communicate with the **IPMI**.

- From a **Debian** you could use this command to install **ipmitool** :

```
root@host:~# apt-get install ipmitool
```

Using ipmitool

Check temperature

- Get **temperature** informations :

```
user@host:~$ ipmitool -I lanplus -H <iDRAC IP> -U <iDRAC user> -P <iDRAC password> sdr type temp
Inlet Temp       | 04h | ok  |  7.1 | 21 degrees C
Temp             | 0Eh | ok  |  3.1 | 29 degrees C
Temp             | 0Fh | ok  |  3.2 | 35 degrees C
```

- We can see the corresponding values in **iDRAC** :

Dell IDRAC | temperature probes

Control FAN Speed

- To disable **manual**/**static** fan control (auto mode) :

```
user@host:~$ ipmitool -I lanplus -H <iDRAC IP> -U <iDRAC user> -P <iDRAC password> raw 0x30 0x30
```

- To enable **manual**/**static** fan control (manual mode) :

```
user@host:~$ ipmitool -I lanplus -H <iDRAC IP> -U <iDRAC user> -P <iDRAC password> raw 0x30 0x30
```

- Get current **Fan** speed :

```
user@host:~$ ipmitool -I lanplus -H <iDRAC IP> -U <iDRAC user> -P <iDRAC password> sdr get Fan1
 Sensor Reading        : 1560 (+/- 120) RPM
 Sensor Reading        : 1560 (+/- 120) RPM
```

- Set **Fan** speed at **1320 RPM (16%)** :

```
user@host:~$ ipmitool -I lanplus -H <iDRAC IP> -U <iDRAC user> -P <iDRAC password> raw 0x30 0x30
```

- Set **Fan** speed at **1560 RPM (20%)** :

```
user@host:~$ ipmitool -I lanplus -H <iDRAC IP> -U <iDRAC user> -P <iDRAC password> raw 0x30 0x30
```

- Set **Fan** speed at **2040 RPM (30%)** :

```
user@host:~$ ipmitool -I lanplus -H <iDRAC IP> -U <iDRAC user> -P <iDRAC password> raw 0x30 0x30
```

- Set **Fan** speed at **3000 RPM (50%)** :

```
user@host:~$ ipmitool -I lanplus -H <iDRAC IP> -U <iDRAC user> -P <iDRAC password> raw 0x30 0x30
```

- Set **Fan** speed at **5040 RPM (100%)** :

```
user@host:~$ ipmitool -I lanplus -H <iDRAC IP> -U <iDRAC user> -P <iDRAC password> raw 0x30 0x30
```

Create ipmi service

I got mad and decided to create a **service** that automatically regulates the **speed** of the **fans**.

I will detail here the different **steps** to set it up.

Note : This script is adapted to my own configuration

Create system account

- For **security** reason I decided to run the service with **system account**. So let's create a **system** account :

```
root@host:~# useradd --system --no-create-home ipmiservice
```

- Create **log** folder :

```
root@host:~# mkdir /var/log/ipmiservice
```

```
root@host:~# chown -R ipmiservice /var/log/ipmiservice
```

Create bash script

- Create **/usr/local/sbin/ipmiservice.sh** file :

```
root@host:~# touch /usr/local/sbin/ipmiservice.sh
```

```
root@host:~# chown ipmiservice: /usr/local/sbin/ipmiservice.sh
```

```
root@host:~# chmod +x /usr/local/sbin/ipmiservice.sh
```

- **/usr/local/sbin/ipmiservice.sh** :

```
#!/bin/bash

#Stops script on errors, unset variables or failing pipeline
set -euo pipefail

#variables definitions
LOG=/var/log/ipmiservice/ipmi.log
IP="192.168.1.10"
PASSWORD='STp@ssw0rd!'

#functions
##Set Fan Speed, accept one argument to set speed
FanSpeed()
{
        ipmitool -I lanplus -H "$IP" -U root -P "$PASSWORD" raw 0x30 0x30 0x02 $1
}
##Get Temp values
GetValues()
{
        #Get motherboard, cpu1 and cpu2 temperature
        OUTPUT=$(/usr/bin/ipmitool -I lanplus -H "$IP" -U root -P "$PASSWORD" sdr type temperatu
        #Extract motherboard temp
        SB=$(echo $OUTPUT| awk -F'|' '{ print $5 $9 $13 }' | awk '{ print $1 }')
        #Extract cpu1 temp
        CPU1=$(echo $OUTPUT| awk -F'|' '{ print $5 $9 $13 }' | awk '{ print $5 }')
        #Extract cpu2 temp
        CPU2=$(echo $OUTPUT| awk -F'|' '{ print $5 $9 $13 }' | awk '{ print $9 }')
        #motherboard+cpu1+cpu2 temp
        LOG_TOTAL=$(($SB+$CPU1+$CPU2))
        #Get Fan1 speed
        FANS=$(ipmitool -I lanplus -H "$IP" -U root -P "$PASSWORD" sensor reading Fan1 | awk '{
}

#set manual mode
```

```
ipmitool -I lanplus -H "$IP" -U root -P "$PASSWORD" raw 0x30 0x30 0x01 0x00

GetValues
echo "$(date "+%Y-%m-%d %H:%M:%S")" "MB : $SB | CPU1 : $CPU1 | CPU2 : $CPU2 | LOG_TOTAL : $LOG_T

while :
do
        if [ "$LOG_TOTAL" -le 100 ] && [ $FANS -eq 1440 ]; then
                echo "$(date "+%Y-%m-%d %H:%M:%S")" "FAN speed : 1440, don't do anything" | tee
        elif [ "$LOG_TOTAL" -le 100 ] && [ $FANS -ne 1440 ]; then
                FanSpeed "0xff 0x12" #Set speed to 1440
                echo "$(date "+%Y-%m-%d %H:%M:%S")" "Set speed to 1440" | tee -a "$LOG"
        elif [ "$LOG_TOTAL" -gt 100 ] && [ "$LOG_TOTAL" -le 105 ] && [ $FANS -ne 1560 ]; then
                FanSpeed "0xff 0x14" #Set speed to 1560
                echo "$(date "+%Y-%m-%d %H:%M:%S")" "Set speed to 1560" | tee -a "$LOG"
        elif [ "$LOG_TOTAL" -gt 105 ] && [ "$LOG_TOTAL" -le 115 ] && [ $FANS -ne 2040 ]; then
                FanSpeed "0xff 0x1e" #Set speed to 2040
                echo "$(date "+%Y-%m-%d %H:%M:%S")" "Set speed to 2040" | tee -a "$LOG"
        elif [ "$LOG_TOTAL" -gt 115 ] && [ "$LOG_TOTAL" -le 130 ] && [ $FANS -ne 3000 ]; then
                FanSpeed "0xff 0x32" #Set speed to 3000
                echo "$(date "+%Y-%m-%d %H:%M:%S")" "Set speed to 3000" | tee -a "$LOG"
        elif [ "$LOG_TOTAL" -gt 130 ] && [ $FANS -ne 5040 ]; then
                FanSpeed "0xff 0x64" #Set speed to 5040
                echo "$(date "+%Y-%m-%d %H:%M:%S")" "Set speed to 5040" | tee -a "$LOG"
        fi
        sleep 30s
        GetValues
        echo "$(date "+%Y-%m-%d %H:%M:%S")" "MB : $SB | CPU1 : $CPU1 | CPU2 : $CPU2 | TEMP TOTAL
        echo "$(date "+%Y-%m-%d %H:%M:%S")" "FAN speed : $FANS" | tee -a "$LOG"
done
```

Create systemd service

Now we will create a **systemd** service.

- Create **systemd** service :

```
root@host:~# vim /etc/systemd/system/ipmi.service
```

```
[Unit]
Description=ipmi t620 fan control
After=network.target

[Service]
Type=simple
User=ipmiservice
Group=ipmiservice
WorkingDirectory=/usr/local/sbin/
ExecStart=/usr/local/sbin/ipmiservice.sh
Restart=always
```

```
[Install]
WantedBy=multi-user.target
```

- Enable **systemd** service :

```
root@host:~# systemctl enable ipmi.service
```

- Start **systemd** service :

```
root@host:~# systemctl start ipmi.service
```

- Check **logs** output :

```
root@host:~# tail -f /var/log/ipmiservice/ipmi.log
2021-05-09 15:16:57 FAN speed : 1440, don't do anything
2021-05-09 15:17:32 MB : 22 | CPU1 : 37 | CPU2 : 40 | TEMP TOTAL : 99
2021-05-09 15:17:32 FAN speed : 1440, don't do anything
2021-05-09 15:18:04 MB : 22 | CPU1 : 38 | CPU2 : 40 | TEMP TOTAL : 100
2021-05-09 15:18:04 FAN speed : 1440, don't do anything
2021-05-09 15:18:36 MB : 22 | CPU1 : 39 | CPU2 : 40 | TEMP TOTAL : 101
2021-05-09 15:18:36 FAN speed : 1440, don't do anything
2021-05-09 15:18:37 Set speed to 1560
2021-05-09 15:19:09 MB : 22 | CPU1 : 38 | CPU2 : 40 | TEMP TOTAL : 100
2021-05-09 15:19:09 FAN speed : 1560
```

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