

# Controlar Fans/Coolers - Linux

Controla os fans/coolers/temperatura com ipmitool

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# How to control Dell server fanspeeds with ipmitool

Link: <https://wiki.joeplaa.com/en/tutorials/how-to-control-dell-server-fanspeeds-with-ipmitool>

## Introduction

I'm running a homelab partly as a hobby, but also to support our business needs, especially the software development part. My current setup consist of three servers, one HP and two Dell servers. The HP server is running perfectly fine when considering its temperatures and fanspeeds. The fans are throttled down pretty aggressively, so I don't really have too much of an issue with noise. It will speed up and make a racket when TeamCity is doing its thing, but that is shortlived.

The Dells however are troublesome. I have a T320 with 8 harddisks running TrueNAS. The disks obviously produce heat and the single fan in the tower doesn't generate enough airflow. Or better said, because the air shroud is missing, the air is not properly routed along the disk and through the CPU heat sink. The CPU will run into the 50°C region (when idling) when the ambient temperature is around 30°C (we're experiencing a heat wave).

The other Dell, a R320, is just loud. The little fans have to spin at an insane rate to keep the CPU cool. On top of that, I flashed the RAID card to passthrough mode for ZFS. The server doesn't get any disk temperature readings and thus preventatively speeds up the fans (this doesn't seem to apply to the T320).

The real solution would be to have a dedicated, air-conditioned (or at least well ventilated) room. But alas, we don't have that luxury. Currently the servers are in a little hallway next to the office. This little room will heat up quickly with three servers buzzing away, so the doors cannot be closed permanently.

A temporary "fix", well it isn't really a fix, because they are still very loud, is to slow down the fans manually using `ipmitool` commands. The downside obviously is that temperatures will go up quickly. Luckily [brezlord](#) made [a script](#) to fix that, thanks man!.

## The script

I modified it a little to fit my specific usecase:

- Changed the "dynamic" temperature from 35 to 45°C
- Added additional speed settings
- Use the CPU instead of inlet (ambient) temperature to control the speeds
- Added additional speed increments

```
#!/bin/bash

#
# https://github.com/brezlord/iDRAC7_fan_control
# A simple script to control fan speeds on Dell generation 12 PowerEdge servers.
# If the inlet temperature is above 45deg C enable iDRAC dynamic control and exit program.
# If inlet temp is below 45deg C set fan control to manual and set fan speed to predetermined value.
# The tower servers T320, T420 & T620 inlet temperature sensor is after the HDDs so temperature will
# be higher than the ambient temperature.

# Variables
IDRAC_IP="IP address of iDRAC"
IDRAC_USER="user"
IDRAC_PASSWORD="password"

# Fan speed in %
SPEED0="0x00"
SPEED5="0x05"
SPEED10="0x0a"
SPEED15="0x0f"
SPEED20="0x14"
SPEED25="0x19"
SPEED30="0x1e"
SPEED35="0x23"
SPEED40="0x28"
SPEED45="0x2D"
SPEED50="0x32"

TEMP_THRESHOLD="45" # iDRAC dynamic control enable threshold
#TEMP_SENSOR="04h" # Inlet Temp
#TEMP_SENSOR="01h" # Exhaust Temp
TEMP_SENSOR="0Eh" # CPU 1 Temp
#TEMP_SENSOR="0Fh" # CPU 2 Temp

# Get system date & time.
DATE=$(date +%d-%m-%Y\ %H:%M:%S)
echo "Date $DATE"
```

```

# Get temperature from iDRAC.
T=$(ipmitool -I lanplus -H $IDRAC_IP -U $IDRAC_USER -P $IDRAC_PASSWORD sdr type temperature | grep
$TEMP_SENSOR | cut -d'|' -f5 | cut -d' ' -f2)
echo "--> iDRAC IP Address: $IDRAC_IP"
echo "--> Current CPU Temp: $T"

# If CPU ~~ambient~~ temperature is above 45deg C enable dynamic control and exit, if below set manual
control.
if [[ $T > $TEMP_THRESHOLD ]]
then
    echo "--> Temperature is above 45deg C"
    echo "--> Enabled dynamic fan control"
    ipmitool -I lanplus -H $IDRAC_IP -U $IDRAC_USER -P $IDRAC_PASSWORD raw 0x30 0x30 0x01 0x01
    exit 1
else
    echo "--> Temperature is below 45deg C"
    echo "--> Disabled dynamic fan control"
    ipmitool -I lanplus -H $IDRAC_IP -U $IDRAC_USER -P $IDRAC_PASSWORD raw 0x30 0x30 0x01 0x00
fi

# Set fan speed dependant on CPU ~~ambient~~ temperature if CPU ~~inlet~~ temperature is below 45deg
C.
# If CPU ~~inlet~~ temperature between 0 and 19deg C then set fans to 15%.
if [ "$T" -ge 0 ] && [ "$T" -le 19 ]
then
    echo "--> Setting fan speed to 15%"
    ipmitool -I lanplus -H $IDRAC_IP -U $IDRAC_USER -P $IDRAC_PASSWORD raw 0x30 0x30 0x02 0xff $SPEED15

# If inlet temperature between 20 and 24deg C then set fans to 20%
elif [ "$T" -ge 20 ] && [ "$T" -le 24 ]
then
    echo "--> Setting fan speed to 20%"
    ipmitool -I lanplus -H $IDRAC_IP -U $IDRAC_USER -P $IDRAC_PASSWORD raw 0x30 0x30 0x02 0xff $SPEED20

# If inlet temperature between 25 and 29deg C then set fans to 25%
elif [ "$T" -ge 25 ] && [ "$T" -le 29 ]
then
    echo "--> Setting fan speed to 25%"
    ipmitool -I lanplus -H $IDRAC_IP -U $IDRAC_USER -P $IDRAC_PASSWORD raw 0x30 0x30 0x02 0xff $SPEED25

```

```
# If inlet temperature between 30 and 34deg C then set fans to 30%
elif [ "$T" -ge 30 ] && [ "$T" -le 34 ]
then
    echo "--> Setting fan speed to 30%"
    ipmitool -I lanplus -H $IDRAC_IP -U $IDRAC_USER -P $IDRAC_PASSWORD raw 0x30 0x30 0x02 0xff $SPEED30

# If inlet temperature between 35 and 40deg C then set fans to 35%
elif [ "$T" -ge 35 ] && [ "$T" -le 39 ]
then
    echo "--> Setting fan speed to 35%"
    ipmitool -I lanplus -H $IDRAC_IP -U $IDRAC_USER -P $IDRAC_PASSWORD raw 0x30 0x30 0x02 0xff $SPEED35

# If inlet temperature between 40 and 45deg C then set fans to 40%
elif [ "$T" -ge 40 ] && [ "$T" -le 45 ]
then
    echo "--> Setting fan speed to 40%"
    ipmitool -I lanplus -H $IDRAC_IP -U $IDRAC_USER -P $IDRAC_PASSWORD raw 0x30 0x30 0x02 0xff $SPEED40
fi
```

Copy

# Implementation

## pfSense

1. Create a folder `/root/fan_control`
2. The Bash executable in pfSense is located in `usr/local/bin/bash`, so make sure this is specified in the top of the script:

```
#!/usr/local/bin/bash
...
```

3. Copy the script to the folder
4. Make script executable: `chmod +x /root/fan_control/fan_control.sh`
5. Add iDRAC credentials in script
6. Run the script to test
7. Create a cron job with `crontab -e` and add line:

```
***** /usr/local/bin/bash /root/fan_control/fan_control.sh >/dev/null 2>&1
```

# TrueNAS

I followed [breznet's guide](#).

1. Create a dataset `fan_control`
2. Copy the script to the dataset
3. Make script executable: `chmod +x /mnt/store1/fan_control/fan_control.sh`
4. Add iDRAC credentials in script
5. Run the script to test
6. Create a cron job in TrueNAS GUI running every minute

cronjob-truenas-fan\_control.png

# Script controla fan - decimal/hexadecimal

Link: <https://forum.proxmox.com/threads/ipmi-tool-error-after-v8-upgrade.129334/page-2>

Bash:

```
#!/bin/bash

# Fancontrol v1.1 2022-09-15 15:42

# Define variables

MAX_FAN=90
MIN_FAN=20
HIGH_TEMP=37
LOW_TEMP=35
SPEED_STEP=10
IDRAC_IP=10.0.0.1
IPMI_USER=fancontrol
IPMI_PASSWORD=yoursupercomplexpassword

# Define Functions

ENABLE_FAN ()
{
    ipmitool -I lanplus -H $IDRAC_IP -U $IPMI_USER -P $IPMI_PASSWORD raw 0x30 0x30 0x01 0x00 > /dev/null 2>&1
}

GET_TEMP ()
{
    ipmitool -I lanplus -H $IDRAC_IP -U $IPMI_USER -P $IPMI_PASSWORD sensor reading "Exhaust Temp"|sed 's/[^0-9]//g'
}
```

```

SET_FAN ()
{
    ipmitool -I lanplus -H $IDRAC_IP -U $IPMI_USER -P $IPMI_PASSWORD raw 0x30 0x30 0x02 0xff $FAN_SETTING >
/dev/null 2>&1
}

# File to save the last fan speed

[ -f fan_speed.last ] || echo $MIN_FAN > fan_speed.last

FAN_SPEED=$(<fan_speed.last)

#-----

CURRENT_TEMP=$(GET_TEMP)          # get the current temperature

if (($CURRENT_TEMP > $HIGH_TEMP)) ; then
    FAN_SPEED=$(expr $FAN_SPEED + $SPEED_STEP)
    if (($FAN_SPEED > $MAX_FAN)) ; then
        FAN_SPEED=$MAX_FAN
    fi
fi

if (($CURRENT_TEMP < $LOW_TEMP)) ; then
    FAN_SPEED=$(expr $FAN_SPEED - $SPEED_STEP)
    if (($FAN_SPEED < $MIN_FAN)) ; then
        FAN_SPEED=$MIN_FAN
    fi
fi

FAN_SETTING=$(printf "0x"%"%x\n" $FAN_SPEED)
ENABLE_FAN
SET_FAN

logger -t FanControl "Current Temperature" $CURRENT_TEMP"C" "Fans at" $FAN_SPEED%"
echo $FAN_SPEED > fan_speed.last

exit 0

```



Informações adicionais:

Launch a command prompt on the server and navigate to the directory above. Then run the following commands, substituting the ip address (-H), username (-U), and password (-P) of your iDRAC:

```
To enable remote fan control: ipmitool -I lanplus -H 192.168.1.240 -U root -P calvin raw 0x30 0x30 0x01 0x00

To set the fan to 20%: ipmitool -I lanplus -H 192.168.1.240 -U root -P calvin raw 0x30 0x30 0x02 0xff 0x14

To set the fan to 25%: ipmitool -I lanplus -H 192.168.1.240 -U root -P calvin raw 0x30 0x30 0x02 0xff 0x19

To set the fan to 30%: ipmitool -I lanplus -H 192.168.1.240 -U root -P calvin raw 0x30 0x30 0x02 0xff 0x1e

To set the fan to 35%: ipmitool -I lanplus -H 192.168.1.240 -U root -P calvin raw 0x30 0x30 0x02 0xff 0x23

To set the fan to 40%: ipmitool -I lanplus -H 192.168.1.240 -U root -P calvin raw 0x30 0x30 0x02 0xff 0x28

To set the fan to 45%: ipmitool -I lanplus -H 192.168.1.240 -U root -P calvin raw 0x30 0x30 0x02 0xff 0x2D

To set the fan to 50%: ipmitool -I lanplus -H 192.168.1.240 -U root -P calvin raw 0x30 0x30 0x02 0xff 0x32
```

TABELA CONVERSÃO DECIMAL PARA HEXADECIMAL

# Decimal-hexadecimal-binary conversion table

Dec	Hex	Bin	Dec	Hex	Bin	Dec	Hex	Bin	Dec	Hex	Bin
0	0	000	64	40	010	128	80	100	192	c0	110
		000			000			000		c0	000
		00			00			00			00
1	1	000	65	41	010	129	81	100	193	c1	110
		000			000			000		c1	000
		01			01			01			01

2	2	000 000 10	66	42	010 000 10	130	82	100 000 10	194	c2	110 000 10
3	3	000 000 11	67	43	010 000 11	131	83	100 000 11	195	c3	110 000 11
4	4	000 001 00	68	44	010 001 00	132	84	100 001 00	196	c4	110 001 00
5	5	000 001 01	69	45	010 001 01	133	85	100 001 01	197	c5	110 001 01
6	6	000 001 10	70	46	010 001 10	134	86	100 001 10	198	c6	110 001 10
7	7	000 001 11	71	47	010 001 11	135	87	100 001 11	199	c7	110 001 11
8	8	000 010 00	72	48	010 010 00	136	88	100 010 00	200	c8	110 010 00
9	9	000 010 01	73	49	010 010 01	137	89	100 010 01	201	c9	110 010 01
10	a	000 010 10	74	4a	010 010 10	138	8a	100 010 10	202	ca	110 010 10
11	b	000 010 11	75	4b	010 010 11	139	8b	100 010 11	203	cb	110 010 11
12	c	000 011 00	76	4c	010 011 00	140	8c	100 011 00	204	cc	110 011 00
13	d	000 011 01	77	4d	010 011 01	141	8d	100 011 01	205	cd	110 011 01
14	e	000 011 10	78	4e	010 011 10	142	8e	100 011 10	206	ce	110 011 10

15	f	000 011 11	79	4f	010 011 11	143	8f	100 011 11	207	cf	110 011 11
16	10	000 100 00	80	50	010 100 00	144	90	100 100 00	208	d0	110 100 00
17	11	000 100 01	81	51	010 100 01	145	91	100 100 01	209	d1	110 100 01
18	12	000 100 10	82	52	010 100 10	146	92	100 100 10	210	d2	110 100 10
19	13	000 100 11	83	53	010 100 11	147	93	100 100 11	211	d3	110 100 11
20	14	000 101 00	84	54	010 101 00	148	94	100 101 00	212	d4	110 101 00
21	15	000 101 01	85	55	010 101 01	149	95	100 101 01	213	d5	110 101 01
22	16	000 101 10	86	56	010 101 10	150	96	100 101 10	214	d6	110 101 10
23	17	000 101 11	87	57	010 101 11	151	97	100 101 11	215	d7	110 101 11
24	18	000 110 00	88	58	010 110 00	152	98	100 110 00	216	d8	110 110 00
25	19	000 110 01	89	59	010 110 01	153	99	100 110 01	217	d9	110 110 01
26	1a	000 110 10	90	5a	010 110 10	154	9a	100 110 10	218	da	110 110 10
27	1b	000 110 11	91	5b	010 110 11	155	9b	100 110 11	219	db	110 110 11

28	1c	000 111 00	92	5c	010 111 00	156	9c	100 111 00	220	dc	110 111 00
29	1d	000 111 01	93	5d	010 111 01	157	9d	100 111 01	221	dd	110 111 01
30	1e	000 111 10	94	5e	010 111 10	158	9e	100 111 10	222	de	110 111 10
31	1f	000 111 11	95	5f	010 111 11	159	9f	100 111 11	223	df	110 111 11
32	20	001 000 00	96	60	011 000 00	160	a0	101 000 00	224	e0	111 000 00
33	21	001 000 01	97	61	011 000 01	161	a1	101 000 01	225	e1	111 000 01
34	22	001 000 10	98	62	011 000 10	162	a2	101 000 10	226	e2	111 000 10
35	23	001 000 11	99	63	011 000 11	163	a3	101 000 11	227	e3	111 000 11
36	24	001 001 00	100	64	011 001 00	164	a4	101 001 00	228	e4	111 001 00
37	25	001 001 01	101	65	011 001 01	165	a5	101 001 01	229	e5	111 001 01
38	26	001 001 10	102	66	011 001 10	166	a6	101 001 10	230	e6	111 001 10
39	27	001 001 11	103	67	011 001 11	167	a7	101 001 11	231	e7	111 001 11
40	28	001 010 00	104	68	011 010 00	168	a8	101 010 00	232	e8	111 010 00

41	29	001 010 01	105	69	011 010 01	169	a9	101 010 01	233	e9	111 010 01
42	2a	001 010 10	106	6a	011 010 10	170	aa	101 010 10	234	ea	111 010 10
43	2b	001 010 11	107	6b	011 010 11	171	ab	101 010 11	235	eb	111 010 11
44	2c	001 011 00	108	6c	011 011 00	172	ac	101 011 00	236	ec	111 011 00
45	2d	001 011 01	109	6d	011 011 01	173	ad	101 011 01	237	ed	111 011 01
46	2e	001 011 10	110	6e	011 011 10	174	ae	101 011 10	238	ee	111 011 10
47	2f	001 011 11	111	6f	011 011 11	175	af	101 011 11	239	ef	111 011 11
48	30	001 100 00	112	70	011 100 00	176	b0	101 100 00	240	f0	111 100 00
49	31	001 100 01	113	71	011 100 01	177	b1	101 100 01	241	f1	111 100 01
50	32	001 100 10	114	72	011 100 10	178	b2	101 100 10	242	f2	111 100 10
51	33	001 100 11	115	73	011 100 11	179	b3	101 100 11	243	f3	111 100 11
52	34	001 101 00	116	74	011 101 00	180	b4	101 101 00	244	f4	111 101 00
53	35	001 101 01	117	75	011 101 01	181	b5	101 101 01	245	f5	111 101 01

54	36	001 101 10	118	76	011 101 10	182	b6	101 101 10	246	f6	111 101 10
55	37	001 101 11	119	77	011 101 11	183	b7	101 101 11	247	f7	111 101 11
56	38	001 110 00	120	78	011 110 00	184	b8	101 110 00	248	f8	111 110 00
57	39	001 110 01	121	79	011 110 01	185	b9	101 110 01	249	f9	111 110 01
58	3a	001 110 10	122	7a	011 110 10	186	ba	101 110 10	250	fa	111 110 10
59	3b	001 110 11	123	7b	011 110 11	187	bb	101 110 11	251	fb	111 110 11
60	3c	001 111 00	124	7c	011 111 00	188	bc	101 111 00	252	fc	111 111 00
61	3d	001 111 01	125	7d	011 111 01	189	bd	101 111 01	253	fd	111 111 01
62	3e	001 111 10	126	7e	011 111 10	190	be	101 111 10	254	fe	111 111 10
63	3f	001 111 11	127	7f	011 111 11	191	bf	101 111 11	255	ff	111 111 11

# Quiet Fans on Dell PowerEdge Servers Via IPMI

Link: <https://blog.hessindustria.com/quiet-fans-on-dell-poweredge-servers-via-ipmi/>

JOSHUA HESS 29 DEC 2021 • 3 MIN READ

Quiet Fans on Dell PowerEdge Servers Via IPMI

## Intro

You just got your new shiny Dell PowerEdge server all set up, but you are getting annoyed by the constant fan ramping up and down or the louder than desired whining of fans. Or worse yet, you just added an "unsupported" GPU or another PCIe device to your PowerEdge and now the fans are ripping at near 100% and screaming away like a jet engine. Fear not! This quick tutorial will get your server to STFU in no time!

When I first got into servers and HomeLab years ago, the standard and accepted way to quiet down PowerEdge servers was to add a resistor in series with each of the fans. Luckily, the newer generations of PowerEdge servers since then have a standard IPMI interface and some known commands to manually control the fan speed. No resistors or soldering irons required this time, nice.

## Step By Step

### Before We Begin

Before starting, you'll need to:

1. Have access to a Linux machine (Ubuntu recommended)
2. Know your Dell iDRAC IP address and login credentials
3. Make sure IPMI Over LAN option is enabled in iDRAC as shown below



## Install IPMI Tool

The first thing to do is install IPMI Tool. To do so, open a terminal and run the following command:

```
sudo apt install ipmitool
```

This is what we will use to send raw IPMI commands to the server.

## Enter Manual Fan Control Mode

To put the fan speed controller into manual or fixed speed mode, run the following command with your own iDRAC IP and credentials:



```
ipmitool -I lanplus -H <ip> -U <user> -P <pass> raw 0x30 0x30 0x01 0x00
```

## Set Static Fan Speed

To set a static fan speed run the following command with your own iDRAC IP, credentials, and fan speed as a percentage (0-100) in hexadecimal format (0x00-0x64).

```
ipmitool -I lanplus -H <ip> -U <user> -P <pass> raw 0x30 0x30 0x02 0xFF <speed>
```

For example, setting the speed to 10% (0xA) would be as follows:

```
ipmitool -I lanplus -H <ip> -U <user> -P <pass> raw 0x30 0x30 0x02 0xFF 0xA
```

**NOTE:** The static fan speed commands only work if the speed controller is set in manual mode as set above. It will return to automatic mode upon an iDRAC reset.

## Maximizing Sound Reduction

It may be counterintuitive, but to minimize sound level, lower fan speed isn't always better. In my case, with the R730 server, I found that the optimum fan speed for minimum perceived sound was 11% fan speed. I found that the lower speeds had a lower frequency sound which was actually more noticeable than the higher frequency whine at slightly higher speeds. It's worth sweeping through the speeds on your setup and finding the highest speed with an acceptable sound level.

## Double Check Your Temps

The downside to setting the fans to a static speed is, of course, reduced cooling performance and no reaction during high load. In my case, this was not an issue since my server never goes near full load and my ambient temperatures are consistently quite low. However, it is worth double-checking your temperatures and running some synthetic loads to see what the worse case would look like. You can find most of the critical temperatures exposed in the iDRAC web interface.

## Final Thoughts

This method worked great for me and I have used this on all my servers in my home lab. I took this one step further and made a bash script that I can call at a moment's notice if the settings get reset. This can happen if the iDRAC is reset in any way (FW update, SW reset, sustained power outage). You can see the simple bash script below for reference:

```
#!/bin/bash
```

```
ipmitool -I lanplus -H <ip> -U <user> -P <pass> raw 0x30 0x30 0x01 0x00
```

```
ipmitool -I lanplus -H <ip> -U <user> -P <pass> raw 0x30 0x30 0x02 0xFF 0xB
```

```
echo Server STFU done!
```

That's it! I hope this was helpful and saves some headaches and bleeding ears for fellow PowerEdge owners.

# Dell Fan Noise Control - Silence Your Poweredge

Link:

[https://www.reddit.com/r/homelab/comments/7xqb11/dell\\_fan\\_noise\\_control\\_silence\\_your\\_poweredge/](https://www.reddit.com/r/homelab/comments/7xqb11/dell_fan_noise_control_silence_your_poweredge/)

Hey,

there were some threads complaining about server noise in this sub the last days. I did some research on how to manually controlling the PowerEdge fans.

I read threads on this sub and other boards and found a lot of commands. These are already widely known, but I wanted to list them again. Maybe they will help others.

I tested them with my R210II, T620 and T330. So basically a 11th, 12th and 13th generation PowerEdge. Although you might have to change the sensors' names accordingly.

```
### Dell Fan Control Commands
#
#
# Hex to Decimal: http://www.hexadecimaldictionary.com/hexadecimal/0x1a/
#
#
# print temps and fans rpms
ipmitool -I lanplus -H <iDRAC-IP> -U <iDRAC-USER> -P <iDRAC-PASSWORD> sensor reading "Ambient Temp" "FAN 1 RPM" "FAN 2 RPM" "FAN 3 RPM"
#
# print fan info
ipmitool -I lanplus -H <iDRAC-IP> -U <iDRAC-USER> -P <iDRAC-PASSWORD> sdr get "FAN 1 RPM" "FAN 2 RPM" "FAN 3 RPM"
#
# enable manual/static fan control
ipmitool -I lanplus -H <iDRAC-IP> -U <iDRAC-USER> -P <iDRAC-PASSWORD> raw 0x30 0x30 0x01 0x00
#
# disable manual/static fan control
ipmitool -I lanplus -H <iDRAC-IP> -U <iDRAC-USER> -P <iDRAC-PASSWORD> raw 0x30 0x30 0x01 0x01
#
# set fan speed to 0 rpm
ipmitool -I lanplus -H <iDRAC-IP> -U <iDRAC-USER> -P <iDRAC-PASSWORD> raw 0x30 0x30 0x02 0xff 0x00
#
# set fan speed to 20 %
ipmitool -I lanplus -H <iDRAC-IP> -U <iDRAC-USER> -P <iDRAC-PASSWORD> raw 0x30 0x30 0x02 0xff 0x14
#
# set fan speed to 30 %
ipmitool -I lanplus -H <iDRAC-IP> -U <iDRAC-USER> -P <iDRAC-PASSWORD> raw 0x30 0x30 0x02 0xff 0x1e
```

```
#
# set fan speed to 100 %
ipmitool -I lanplus -H <iDRAC-IP> -U <iDRAC-USER> -P <iDRAC-PASSWORD> raw 0x30 0x30 0x02 0xff 0x64
```

I wrote a small script, that will check the servers temperature periodically (crontab) and disables or enables the dynamic fan control based on a temperature threshold. You may have to adjust the time frame depending on your server usage.

```
#!/bin/bash
#
# crontab -l > mycron
# echo "#" >> mycron
# echo "# At every 2nd minute" >> mycron
# echo "*/2 * * * * /bin/bash /scripts/dell_ipmi_fan_control.sh >> /tmp/cron.log" >> mycron
# crontab mycron
# rm mycron
# chmod +x /scripts/dell_ipmi_fan_control.sh
#
DATE=$(date +%Y-%m-%d-%H%M%S)
echo "" && echo "" && echo "" && echo "" && echo ""
echo "$DATE"
#
IDRACIP="<iDRAC-IP>"
IDRACUSER="<iDRAC-USER>"
IDRACPASSWORD="<iDRAC-PASSWORD>"
STATICSPEEDBASE16="0x0f"
SENSORNAME="Ambient"
TEMPTHRESHOLD="29"
#
T=$(ipmitool -I lanplus -H $IDRACIP -U $IDRACUSER -P $IDRACPASSWORD sdr type temperature | grep $SENSORNAME)
# T=$(ipmitool -I lanplus -H $IDRACIP2 -U $IDRACUSER -P $IDRACPASSWORD sdr type temperature | grep $SENSORNAME)
echo "$IDRACIP: -- current temperature --"
echo "$T"
#
if [[ $T > $TEMPTHRESHOLD ]]
then
    echo "--> enable dynamic fan control"
    ipmitool -I lanplus -H $IDRACIP -U $IDRACUSER -P $IDRACPASSWORD raw 0x30 0x30 0x01 0x01
else
    echo "--> disable dynamic fan control"
    ipmitool -I lanplus -H $IDRACIP -U $IDRACUSER -P $IDRACPASSWORD raw 0x30 0x30 0x01 0x00
    echo "--> set static fan speed"
    ipmitool -I lanplus -H $IDRACIP -U $IDRACUSER -P $IDRACPASSWORD raw 0x30 0x30 0x02 0xff $STATICSPEEDBASE16
fi
```

# brezlord/iDRAC7\_fan\_control

Link: [https://github.com/brezlord/iDRAC7\\_fan\\_control](https://github.com/brezlord/iDRAC7_fan_control)

A simple script to control fan speeds on Dell generation 12 PowerEdge servers.

If the monitored temperature is above 35deg C enable iDRAC dynamic control and exit program.

If monitored temperature is below 35deg C set fan control to manual and set fan speed to predetermined value.

The tower servers T320, T420 & T620 inlet temperature sensor is after the HDDs so temperature will be higher than the ambient temperature.

As you may have discovered, when you cross flash a Dell H310 raid controller to IT mode and as soon as the iDRAC detects that a drive has been inserted the fans spin up and get loud even when the ambient temperature is low, say 20deg C. This is as designed by Dell, which sucks.

## Directly from page 30 PowerEdge T320 Technical Guide

*RAID Setup with PERC H310: A system configured as non-RAID has a higher noise level than a system configured as RAID. With non-RAID, the temperature of the hard disk drives is not monitored, which causes the fan speed to be higher to ensure sufficient cooling resulting in higher noise level*

There is no warranty provided and you use this scrip at your own risk. Please ensure you review the temperature set points for your use case to ensure your hard drives are kept at your desired temperature, change the set points as needed. I suggest that you trend you HDD temps to validate your setting and that you setup alarms in TrueNAS so that you get warnings if the HDD temperatures get to high.

I use this script on a Dell T320 running TrueNAS 12 and it work great. The server lives in my garage, which in Western Australia can get into the low 40s deg C.

You will need to create a data set for the script to reside in and make it executable, this assumes that you have a pool called tank and a dataset named fan\_control.

```
chmod +x /mnt/tank/fan_control/fan_control.sh
```

Make sure you set the below variables;

```
IDRAC_IP="IP address of iDRAC"
IDRAC_USER="user"
IDRAC_PASSWORD="passowrd"
```

There are multiple temperature sensors that you can choose to use. Just uncomment the one you would like the script to monitor. Not all temperature sensors are available in some models. You can run the following command from the shell to list all of the available temperature sensors on your generation 12 Dell server.

```
ipmitool -I lanplus -H <ip address> -U <username> -P <password> sdr type temperature
```

Output from a Dell T320

```
Inlet Temp    | 04h | ok | 7.1 | 23 degrees C
Temp         | 0Eh | ok | 3.1 | 33 degrees C
Temp         | 0Fh | ns | 3.2 | Disabled
```

Output from a Dell R720

```
Inlet Temp    | 04h | ok | 7.1 | 20 degrees C
Exhaust Temp  | 01h | ok | 7.1 | 31 degrees C
Temp         | 0Eh | ok | 3.1 | 50 degrees C
Temp         | 0Fh | ok | 3.2 | 45 degrees C
```

You will need to enable IPMI in the iDRAC and the user must have administrator privileges.

You can test the script by running `./fan_control.sh` from the `scrips` directory. If it is working you should get an output similar to this;

```
Date 04-09-2020 10:24:52
--> iDRAC IP Address: 192.168.40.140
--> Current Inlet Temp: 22
--> Temperature is below 35deg C
--> Disabled dynamic fan control

--> Setting fan speed to 20%
```

Once you have verified the script is working you can set it to run every 5 minutes via cron.

On TrueNAS Core this can be found under the Tasks menu --> Cron Jobs.

On TrueNAS Scale this can be found under the System menu --> Advanced Cron Jobs tab.

# Systemd

# Running as a service

Once the service is up and running, the temperature will be checked every `INTERVAL_SEC` seconds. Fan speed will change if the temperature has changed and warrants a speed change.

There is a delay before the temperature monitoring begins and is controlled by the variable `INITIAL_START_DELAY_SEC`. After this initial delay the time between checks is governed by the `INTERVAL_SEC` value.

When the server is shutdown/rebooted or started, the manual control is reset, this is to avoid any left over low fan speeds from previous power outage/powerdown/shutdown etc.

The files required to run the service are `fan_control_dyn.sh` `fancontrol.service`

Simply execute the following to get the service set up.

```
sudo cp fan_control_dyn.sh /usr/local/sbin/fan_control_dyn.sh
sudo chmod 755 /usr/local/sbin/fan_control_dyn.sh
sudo cp fancontrol.service /etc/systemd/system/fancontrol.service
sudo systemctl enable fancontrol.service
sudo systemctl start fancontrol.service
```

If you are using a location other than `/usr/local/sbin/fan_control_dyn.sh` then you'll need to modify the location in the `fancontrol.service` file as well

```
ExecStart=/MY_ABSOLUTE_PATH/fan_control_dyn.sh
```

# Dell PowerEdge T620 : How To Reduce FAN Speed with IPMI

Link: [https://std.rocks/dell\\_t620\\_fanspeed.html](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 surprised to find that the fans were spinning noisily 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 temperature
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 0x01 0x0
```

- 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 0x01 0x0
```

- Get current **Fan** speed :

```
user@host:~$ ipmitool -I lanplus -H <iDRAC IP> -U <iDRAC user> -P <iDRAC password> sdr get Fan1 Fan2 | grep
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 0x02 0xff
```

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

```
user@host:~$ ipmitool -I lanplus -H <iDRAC IP> -U <iDRAC user> -P <iDRAC password> raw 0x30 0x30 0x02 0xff
```

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

```
user@host:~$ ipmitool -I lanplus -H <iDRAC IP> -U <iDRAC user> -P <iDRAC password> raw 0x30 0x30 0x02 0xff
```

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

```
user@host:~$ ipmitool -I lanplus -H <iDRAC IP> -U <iDRAC user> -P <iDRAC password> raw 0x30 0x30 0x02 0xff
```

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

```
user@host:~$ ipmitool -I lanplus -H <iDRAC IP> -U <iDRAC user> -P <iDRAC password> raw 0x30 0x30 0x02 0xff
```

# 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 "$PASSWORD" sdr type temperature | sed -e 's/Temperature//')
    #Extract motherboard temp
    SB=$(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 '{ print $3 }')
}

#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_TOTAL"
```

```
while :
```

```
do
```

```
    if [ "$LOG_TOTAL" -le 100 ] && [ $FANS -eq 1440 ]; then
```

```
        echo "$(date "+%Y-%m-%d %H:%M:%S")" "FAN speed : 1440, don't do anything" | tee -a "$LOG"
```

```
    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 : $LOG_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
```

# dell-idrac-6-fan-speed-control-service

Link: [hippyod/dell-idrac-6-or-7-fan-speed-control-service](https://github.com/hippyod/dell-idrac-6-or-7-fan-speed-control-service): Simple service to monitor ambient temp of Dell PowerEdge R610 or R720 (iDRAC 6 or 7) and set fan speed manually and appropriately via IPMI ([github.com](https://github.com))

git clone <https://github.com/hippyod/dell-idrac-6-or-7-fan-speed-control-service.git>

Simple service to monitor ambient temp of Dell PowerEdge R610 or R720 (iDRAC 6 & 7) and set fan speed manually and appropriately via IPMI.

This service will start on boot, monitor the average core CPU temperature every 30s, and adjust fan speed over LAN via the ipmitool based on a rolling average of the average CPU temperatures every two minutes; i.e. `${AVG_CPU_TEMPS_ARRAY_SUM}/4`

**[NOTE: if you don't understand the instructions, that's what internet search is for.]**

1. Make sure ipmitool and lm\_sensors is installed; e.g.  
`sudo dnf install ipmitool lm_sensors`
2. Make sure iDRAC is enabled over lan from the host OS
3. Get the IP address of iDRAC from the LCD menus at the front of the screen, or during boot
4. Enter the iDRAC IP address, username, and password in fan-speed-control.sh
  1. We suggest making the IP address static
  2. We suggest changing the root/calvin default username and password on iDRAC first if you haven't already done so
  3. If the fan isn't under control by the time your login screen comes up, check the IP address first
5. `sudo sensors-detect`
  1. Hit enter all the way through until it asks you to write out the results of the probe unless you know what you're doing
6. `sudo cp fan-speed-control.sh /usr/local/bin/`
7. `sudo cp fan-speed-control.service /usr/lib/systemd/system/`
8. `sudo systemctl enable /usr/lib/systemd/system/fan-speed-control.service`
9. `sudo systemctl start fan-speed-control.service`

The service will start and run every 5 seconds until a proper temperature average is calculated, and then every 30 seconds (default), adjusting the fan speed appropriately as the average core CPU temperature rises. Minimum rotation is set to 15%. Once the temp rises past 90% of the high CPU temperature as reported by the sensors command, it will return control to iDRAC until the core CPU

average temperature falls back under 90% of the reported high. *Please read through the script to understand the default settings, and to adjust the IP address of your iDRAC.*

This stopped my machine (first a Dell Poweredge R610, and later a R720) from sounding like a jet engine, but it still sounds like a loud, '90's era desktop with this. Still much better and much more tolerable. Expect the fan speed to adjust somewhat regularly depending on usage and sensor sensitivity, and adjust the way the service works to your heart's desire, but see warning and disclaimer below. Occasionally the sensors may miss a beat, which will cause the script to fail. The script is designed to restart the service until fixed.

## DISCLAIMER

**USE AT YOUR OWN RISK!!** No responsibility taken for any damage caused to your equipment as result of this script.

Original script before modification can be found and freely obtained from [NoLooseEnds](#)

# REDUCE THE FAN NOISE OF THE DELL R720XD (PLUS OTHER 12TH GEN SERVERS) WITH IPMI

Link: <https://blog.filegarden.net/2020/10/06/reduce-the-fan-noise-of-the-dell-r720xd-plus-other-12th-gen-servers-with-ipmi/>

October 6, 2020 Spencer LeB

## Introduction

In this guide I will be showing you how you can reduce the fan noise of the Dell Poweredge r720XD. This will probably work on the r720 and other 12th gen dell servers. To do this, we will be using IPMI to manually override the fan speed.

## Requirements

In order to follow this guide, you will need the following:

- A Linux machine (or anything with `ipmitool` available)
- 12th gen Dell Poweredge Server with iDRAC 7

## Disclaimer

Make sure you keep an eye out on the temperatures of the server or else it will overheat and could cause hardware damage. If you brick your server, thats your problem!



# Getting setup

## Enabling IPMI

The first thing you will need to do is connect to the iDRAC interface on your dell server. You can do so by entering the IP address of the DRAC in a browser. If you are unsure on the IP address, you can find it by powering on the server, pressing F2 to enter the system setup, go to the DRAC section and find the IP somewhere in there. You then need to login. the default credentials are username `root` and password `calvin`.

Once logged in, you will need to go to `Overview -> iDRAC Settings -> Network` and then scroll to the IMPI Settings. You will need to make sure this is enabled.



## Installing IPMI tool

First of all, check if you already have `ipmitool` installed. If you do, you can skip this step. If not, lets install it.

If you are on a debian based machine, you can use apt to install it. First, lets update our apt repo.

```
sudo apt update
```

Now lets install it

```
sudo apt install ipmitool
```

## Controlling some fans

## Enabling manual fan control

Once IPMI has been enabled, we now need to enable remote fan control. We can do so with this command. Make sure to replace the IP, username and password for your system.

```
ipmitool -I lanplus -H SERVERS_IP_HERE -U IDRAC_USERNAME -P 'IDRAC_PASSWORD_HERE' raw 0x30 0x30 0x01 0x00
```

## Setting the speed

You may not have noticed a difference in the sound yet but dont worry, we can now override the current fan speed with our own. Prepare yourself! Use this command to set the fan speed to 20%.

```
ipmitool -I lanplus -H SERVERS_IP_HERE -U IDRAC_USERNAME -P 'IDRAC_PASSWORD_HERE' raw 0x30 0x30 0x02 0xff 0x14
```

If you cant hear the difference or you would like to check the current speed, you can do so via the iDRAC system. go to [Overview -> Hardware -> Fans](#).



## Custom speeds

If you want to change the speed to something other than 20%, you just need to change the value at the end from `0x14` to whatever you'd like. `0x14` is the hexadecimal value for 20. Here are some premade values for you. If your not sure how to work out hexadecimal values, check out this [website](#).

## Set fan speed to 25%

```
ipmitool -I lanplus -H SERVERS_IP_HERE -U IDRAC_USERNAME -P 'IDRAC_PASSWORD_HERE' raw 0x30 0x30 0x02 0xff 0x19
```

## Set fan speed to 30%

```
ipmitool -I lanplus -H SERVERS_IP_HERE -U IDRAC_USERNAME -P 'IDRAC_PASSWORD_HERE' raw 0x30 0x30 0x02 0xff 0x1E
```

## Set fan speed to 50%

```
ipmitool -I lanplus -H SERVERS_IP_HERE -U IDRAC_USERNAME -P 'IDRAC_PASSWORD_HERE' raw 0x30 0x30 0x02 0xff 0x32
```

## Set fan speed to 60%

```
ipmitool -I lanplus -H SERVERS_IP_HERE -U IDRAC_USERNAME -P 'IDRAC_PASSWORD_HERE' raw 0x30 0x30 0x02 0xff 0x3C
```

## Set fan speed to 100%

```
ipmitool -I lanplus -H SERVERS_IP_HERE -U IDRAC_USERNAME -P 'IDRAC_PASSWORD_HERE' raw 0x30 0x30 0x02 0xff 0x64
```

Original Author

<https://back2basics.io/2020/05/reduce-the-fan-noise-of-the-dell-r720xd-plus-other-12th-gen-servers-with-ipmi/>

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