

# AN-002 Store MAC IDs in EEPROM using sysfs Node

- [Overview](#)
- [Targeted Hardware](#)
- [Store MAC IDs in EEPROM using sysfs Node](#)
  - [Format of MAC IDs](#)
    - [Single MAC ID](#)
    - [Multiple MAC IDs](#)
  - [MAC IDs are contained in a file](#)
  - [MAC IDs are not contained in a file](#)
  - [Append MAC IDs](#)
- [Retrieve MAC IDs from EEPROM using sysfs Node](#)
  - [Display entire contents of EEPROM](#)
  - [Display a single line from EEPROM](#)
  - [Display a single line from EEPROM \(based on the interface\)](#)
  - [Strip the interface information from the output](#)
  - [Sample script to automate setting MAC IDs using ifconfig](#)

## Overview

This Application Note explains a simple method showing how to Store/Retrieve MAC IDs from EEPROM.

## Targeted Hardware

Your target hardware may have different sysfs IDs for the EEPROM you are targeting. Please note that you may have to modify the device ID from what is used in the code-blocks below. You may also have different ethernet interfaces on your device. You can use ifconfig to list your interfaces.

## Store MAC IDs in EEPROM using sysfs Node

### Format of MAC IDs

#### Single MAC ID

Beginning at byte 0 of the EEPROM, the data is formatted as follows:

```
eth0:001122334455
```

#### Multiple MAC IDs

Beginning at byte 0 of the EEPROM, the data is formatted as follows:

```
eth1:002233445566
eth2:DEEEADBEEFEF
wlan0:502d00cceedd
```

### MAC IDs are contained in a file

Write a file containing MAC IDs to the EEPROM

```
$ dd if=macids.txt of=/sys/bus/i2c/devices/2-0051/eeprom
```

### MAC IDs are not contained in a file

Create a string of MAC IDs (assuming you have multiple interfaces) and write them to the EEPROM

```
$ printf "eth1:002233445566\neth2:DEEEADBEEFEF\nwlan0:502d00cceedd\n" > /sys/bus/i2c/devices/2-0051/eeprom
```

## Append MAC IDs

The `dd` command can also take in `stdin` instead of an `if=` argument, and can be used to skip (seek past) # blocks of size `bs=`. This is useful to append MAC IDs instead of overwriting each one, allowing individual writes.

```
$ printf "eth2:DEEEADBEEEEF\nwlan0:502d00cceedd\n" | dd of=/sys/bus/i2c/devices/2-0051/eeprom bs=1 seek=18
```

## Retrieve MAC IDs from EEPROM using sysfs Node

### Display entire contents of EEPROM

```
$ cat /sys/bus/i2c/devices/2-0051/eeprom
eth1:002233445566
eth2:DEEEADBEEEEF
wlan0:502d00cceedd
```

### Display a single line from EEPROM

`3p` directs `sed` to print the third line.

```
$ sed -n '3p' /sys/bus/i2c/devices/2-0051/eeprom
wlan0:502d00cceedd
```

### Display a single line from EEPROM (based on the interface)

```
$ grep -i eth2 /sys/bus/i2c/devices/2-0051/eeprom
eth2:DEEEADBEEEEF
```

### Strip the interface information from the output

A `sed` command: `sed -e 's/^.*://'` is used to strip the interface and display only the MAC ID that can be directly passed to `ifconfig`. It can be combined with the output of any of the display commands to grab the desired MAC IDs.

```
$ cat /sys/bus/i2c/devices/2-0051/eeprom | sed -e 's/^.*://'
002233445566
DEEEADBEEEEF
502d00cceedd

$ sed -n '3p' /sys/bus/i2c/devices/2-0051/eeprom | sed -e 's/^.*://'
502d00cceedd

$ grep -i eth2 /sys/bus/i2c/devices/2-0051/eeprom | sed -e 's/^.*://'
DEEEADBEEEEF
```

## Sample script to automate setting MAC IDs using ifconfig

This script uses `ifconfig` to gather a list of supported ethernet and wlan interfaces then sets the corresponding MAC ID for that interface. This example is done after the interfaces have potentially come up, but can be modified and implemented as part of the network init scripts specific to each device's filesystem.

```
#!/bin/sh

INTERFACES=`ifconfig -a | grep -o "eth[0-9]\|wlan[0-9]"`

for iface in ${INTERFACES[@]}; do
    MACID=`grep -i ${iface} /sys/bus/i2c/devices/2-0051/eeprom | sed -e 's/^`
    ifconfig ${iface} down
    ifconfig ${iface} hw ether ${MACID}
    ifconfig ${iface} up
done
exit 0
```