



IP Linux command line



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1 Article purpose

This article provides the basic information needed to start using the Linux kernel tool: `ip` ^[1].



2 Introduction

The following table provides a brief description of the tool, as well as its availability depending on the software packages:

✔: this tool is either present (ready to use or to be activated), or can be integrated and activated on the software package.

✘: this tool is not present and cannot be integrated, or it is present but cannot be activated on the software package.

| Tool | | | STM32MPU Embedded Software distribution | | | STM32MPU Embedded Software distribution for Android™ | | |
|------|------------------|---|---|-------------------|----------------------|--|-------------------|----------------------|
| Name | Category | Purpose | Starter Package | Developer Package | Distribution Package | Starter Package | Developer Package | Distribution Package |
| ip | Monitoring tools | <p><code>ip</code>^[1] shows / manipulates routing, devices, policy routing and tunnels of network interfaces.</p> <p><code>ip</code> replaces the deprecated command <code>ifconfig</code></p> | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |



3 Installing the trace and debug tool on your target board

3.1 Using the STM32MPU Embedded Software distribution

`ip` is installed by default (`/sbin/ip`) and is ready to be used with all STM32MPU software packages.

```
Board $> which ip
/sbin/ip
```

It is integrated into the Weston image distribution by using the following meta-st package recipe to enable the `iproute2` module: *meta-st/meta-st-openstlinux/recipes-st/packagegroups/packagegroup-framework-tools.bb*.

```
RDEPENDS_packagegroup-framework-tools-network-base = "\
  ethtool      \
  iproute2     \
"
```

3.2 Using the STM32MPU Embedded Software distribution for Android™

`ip` is installed by default (`/system/bin/ip`) and is ready to be used with all STM32MPU software packages for Android™.

```
Board $> which ip
/system/bin/ip
```

It is integrated in Android image distribution through Android base makefile: *build/make/target/product/core_minimal.mk*:

```
# Base modules (will move elsewhere, previously user tagged)
PRODUCT_PACKAGES += \
  BackupRestoreConfirmation \
  CompanionDeviceManager \
  ...
  ims-common \
  ip \
  ip-up-vpn \
  ...
```



4 Getting started

Below information is related to the Android™ distribution

Need to enable root access rights for any changes

- Using ADB shell is ADB link available:

```
PC $> adb root
PC $> adb shell
Board $> ...
```



- Using uart console shell:

```
Board $> su
Board $> ...
```

- To check network interfaces

```
Board $> ip addr show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen
1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: can0: <NOARP,ECHO> mtu 16 qdisc noop state DOWN group default qlen 10
    link/can
3: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen
1000
    link/ether 00:80:e1:42:43:65 brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.237/22 brd 192.168.3.255 scope global dynamic eth0
        valid_lft 172057sec preferred_lft 172057sec
    inet 192.168.0.4/32 scope global eth0
        valid_lft forever preferred_lft forever
    inet6 fe80::280:e1ff:fe42:4365/64 scope link
        valid_lft forever preferred_lft forever
4: sit0@NONE: <NOARP> mtu 1480 qdisc noop state DOWN group default qlen 1000
    link/sit 0.0.0.0 brd 0.0.0.0
```

- To assign an IP address to an interface

```
Board $> ip addr add 192.168.1.53 dev eth0
```

- To remove an IP address



```
Board $> ip addr del 192.168.1.53 dev eth0
```

- To enable an interface

```
Board $> ip link set eth0 up
```

- To disable an interface

```
Board $> ip link set eth0 down
```

- To check a route table

```
Board $> ip route show  
default via 192.168.3.254 dev eth0 proto dhcp src 192.168.1.237 metric 1024  
192.168.0.0/22 dev eth0 proto kernel scope link src 192.168.1.237  
192.168.3.254 dev eth0 proto dhcp scope link src 192.168.1.237 metric 1024
```

- To add a static route

```
Board $> ip route add 192.168.2.0/16 via 192.168.1.1 dev eth0
```

- To remove a static route

```
Board $> ip route del 192.168.2.0/16
```

- To set the default gateway

```
Board $> ip route add default via 192.168.1.1
```




5 To go further

Some usage examples are available for reference^[2].



6 References

- 1.01.1 <https://linux.die.net/man/8/ip>
- <https://www.linuxtechi.com/ip-command-examples-for-linux-users/>

- Useful external links

| Document link | Document Type | Description |
|------------------------------------|---------------|----------------------------|
| IP Command example | Standard | Documentation from tecmint |
| ifconfig vs ip | Standard | Documentation |

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Android debug bridge (Android specific)

[uniprocessor](#)

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This category groups together all articles and subcategories related to the **monitoring tools and methods** that allow to get static status about the Linux[®] frameworks, the U-Boot or the TF-A.

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Das U-Boot -- the Universal Boot Loader (see [U-Boot_overview](#))

Trusted Firmware for Arm Cortex-A



Subcategories

This category has only the following subcategory.

- [Linux monitoring tools \(16 P\)](#)

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1 Article purpose

This article provides the basic information needed to start using the Linux[®] kernel tool: **ifconfig**^[1].



2 Introduction

The following table provides a brief description of the tool, as well as its availability depending on the software packages:

✔: this tool is either present (ready to use or to be activated), or can be integrated and activated on the software package.

✘: this tool is not present and cannot be integrated, or it is present but cannot be activated on the software package.

| Tool | | | STM32MPU Embedded Software distribution | | | STM32MPU Embedded Software distribution for Android™ | | |
|----------|------------------|---|---|-------------------|----------------------|--|-------------------|----------------------|
| Name | Category | Purpose | Starter Package | Developer Package | Distribution Package | Starter Package | Developer Package | Distribution Package |
| ifconfig | Monitoring tools | <p><code>ifconfig</code>^[1] is a system administration utility for network interface configuration.</p> <p><code>ifconfig</code> is deprecated and has been replaced by <code>ip</code> (A web page provides a comparison</p> | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |



| Tool | | | STM32MPU Embedded Software distribution | | | STM32MPU Embedded Software distribution for Android™ | | |
|------|----------|---|---|-------------------|----------------------|--|-------------------|----------------------|
| Name | Category | Purpose | Starter Package | Developer Package | Distribution Package | Starter Package | Developer Package | Distribution Package |
| | | between n ifconfig and ip [2]) | | | | | | |



3 Installing the trace and debug tool on your target board

3.1 Using the STM32MPU Embedded Software distribution

ifconfig is installed by default and ready to be used with all STM32MPU Embedded Software Packages.

It comes with the **busybox**:

```
Board $> which ifconfig | xargs ls -la  
/sbin/ifconfig -> /bin/busybox.nosuid
```

3.2 Using the STM32MPU Embedded Software distribution for Android™

ifconfig is installed by default and ready to be used with all STM32MPU Embedded Software Packages for Android™.

It comes with the **toybox**:

```
Board $> which ifconfig | xargs ls -la  
/system/bin/ifconfig -> toybox
```



4 Getting started

Follow the sequence described below to get started with the ifconfig tool.

Below information is related to the Android™ distribution

Need to enable root access rights for any changes

- Using ADB shell is ADB link available:



```
PC $> adb root
PC $> adb shell
Board $> ...
```

- Using uart console shell:

```
Board $> su
Board $> ...
```

4.1 List the available network interfaces

```
Board $> ifconfig
```

```
eth0      Link encap:Ethernet  HWaddr 00:80:E1:42:43:65
          inet addr:10.48.1.144  Bcast:10.48.3.255  Mask:255.255.252.0
          inet6 addr: fe80::280:e1ff:fe42:4365%lo/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:181274 errors:0 dropped:14553 overruns:0 frame:0
          TX packets:28583 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:23082127 (22.0 MiB)  TX bytes:6438412 (6.1 MiB)
          Interrupt:66 Base address:0x4000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1%1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:202 errors:0 dropped:0 overruns:0 frame:0
          TX packets:202 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:13454 (13.1 KiB)  TX bytes:13454 (13.1 KiB)
```

4.2 Disable the network interface



Warning

Please make sure that no remote terminal is connected through this network (ssh), otherwise you will



lost your shell connection.

- For example, proceed as follows for eth0

```
Board $> ifconfig eth0 down
```

4.3 Enable the network interface if it is not already available

- For example, proceed as follows for eth0

```
Board $> ifconfig eth0 up
```

4.4 Assign a given IP address to a network interface

- Proceed as follows to assign 10.48.1.324 address to eth0

```
Board $> ifconfig eth0 10.48.1.324
```



5 To go further

Refer to the man page^[1] for more details on command options.



6 References

- 1.01.11.2 <https://linux.die.net/man/8/ifconfig>
- https://tty1.net/blog/2010/ifconfig-ip-comparison_en.html

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Android debug bridge (Android specific)

uniprocessor

Receive

Transmit