



# Configuration of Cisco Routers

## Basics

## Static Routing

### Mario Baldi

Politecnico di Torino

mario.baldi[at]polito.it

<http://staff.polito.it/mario.baldi>





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## Router Configuration Basics

- *User level* is entered at login
  - *Privileged level* can be entered through command  
`enable`
  - *Configuration mode* is entered with command  
`configure terminal`
  - Any command can be abbreviated if the abbreviation is not ambiguous
    - Command completion is performed by pressing the  
Tab key
    - Possible completions are shown when pressing the  
? key
- 




## Router Configuration Basics

- The configuration mode is exited through command  
`end`
- The current configuration (a.k.a. active or running) can be saved to a flash memory with  
`write [memory]`
- The privileged level is exited through command  
`exit`





## Router Configuration Basics

- A configuration command can be voided by preceding it with the keyword `no`
- The current/active/running configuration can be viewed with one of the following commands

```
write terminal
```

```
show running
```

- The configuration saved on the flash memory can be viewed with the command

```
show configuration
```

- When printing the current configuration, default options and values are not shown





# Router Configuration Basics

The configuration mode has multiple configuration levels

- *general*

- system parameters
  - password, configuration files
- parameters related to various protocols
  - default route, routing activation

- *interface*

- low level (physical and data link) configuration
  - encapsulation, speed
- higher layer protocol parameters
  - IP address

- *router*

- parameters related to a specific routing engine




# IP Address Configuration

```
# ip routing
```








- Enables IP packet forwarding

```
# ip address addr mask [secondary]
```

- Interface level command
- Assigns address *addr* to the interface
- Option *secondary* sets the address as secondary

## Configuration examples:

```
# interface Ethernet 1
    ip address 128.99.3.8 255.255.255.0
    ip addr 128.99.4.9 255.255.255.0 sec
# interface Bri 0
    ip address 128.99.9.2 255.255.255.0
```


## Static Routes

# ip route *addr mask router [distance]*

- Packets addressed to hosts within range (*addr, mask*) should be forwarded to *router*
- *router* should be part of a directly connected subnet
  - subnet connected to one of the interfaces of the router
- *distance* is called *administrative distance*
  - if *distance* is provided, a route learned dynamically through a routing protocol with a smaller associated distance, substitutes the static route

# no ip route *addr mask router*

- Gets rid of the static route towards (*addr, mask*) through *router*



# Static Routes

## Examples:

```
# interface Ethernet 1
    ip address 128.99.3.8 255.255.255.0
# ip route 130.192.0.0 255.255.0.0 128.99.3.2
# ip route 130.192.4.0 255.255.255.0 128.99.3.9
# ip route 198.205.2.0 255.255.255.0 128.99.3.2
```




# Control and Debugging

- The router state can be viewed with command

```
show
```

```
# show ?
```

- List of what can be viewed

```
# show ip route
```

- Displays the routing table for IP packet forwarding

- Activity logging is activated with command

```
debug
```

```
# debug ?
```

- List of activities that can be logged
- 
- 
- 
- 
- 
- 
- 
- 
- 
- 
- 
- 
- 





## Useful Commands

# `ping addr`

- Verifies reachability of *addr*
- ATTENTION! "Unreachability" does not necessarily imply a missing route towards the destination. The problem could be due to a missing route back to the source

# `trace addr`

- Lists the router traversed to reach *addr*

# `[telnet] addr`

- Starts a virtual terminal session with *addr*
- 

