Basic Cisco IOS

Emphasis on the “Basic”

Kenneth Zahn
Fall 2005
Florida State University
Command Mode Prompts

- EXEC Mode, hostname ends in >
- PRIV Mode, hostname ends in #
- GC Mode, hostname ends in (config)#
- LINE Mode, hostname ends in (config-line)#
- INT Mode, hostname ends in (config-if)#
- ROUTER Mode, hostname ends in (config-router)
Mode Switch Commands

• EXEC ↔ PRIV: enable ↔ disable
• PRIV ↔ GC: configure terminal ↔ exit
• PRIV ↔ LINE: line console 0 ↔ exit
• GC ↔ INT: interface <name> <#> ↔ exit
• GC ↔ ROUTER: router <name> ↔ exit
Show Commands

- Show version will display router information
- Show running-config will display current running configuration
- Show startup-config will display configuration stored in NVRAM
- Show history will display last commands typed
- Show interface <type> <#>
- Show <layer 3 protocol> interface <type> <#>
- Show access-lists will display access lists that have been set up
Negating commands

- To remove most commands, simply retype the command with the word no in front of it
  - Shutdown ⇔ no shutdown
  - Ip address ⇔ no ip address
  - Access-list 101 ⇔ no access-list 101
  - Interface async 1 ⇔ no interface async 1
Setting up Router

- Give router a hostname
  - Hostname command in GC
- Secure enable mode
  - Enable password in GC
  - Enable secret in GC
- Secure line console
  - Password and login in Line Console 0
- Secure vty terminals
  - Password and login in Line vty <#-#>
Setting up Interfaces

• Add IP address and subnet mask to interface
• Apply any encapsulation
• Apply clock rate to interfaces connected as the DCE
• Apply no shutdown to the interface
Banners (if you care)

• MOTD banner
  – Displays immediately after connection is made
  – Banner motd # command in GC

• Login banner
  – Displays immediately after MOTD, but before logging in
  – Banner login # command in GC

• EXEC banner
  – Displays after logging into EXEC mode
  – Banner exec # command in GC
Basic Diagnostics

- Ping
- Traceroute
- Show running-config
- Show interface `<type> <#>`
- Show `<layer 3 protocol> interface<type> <#>`
Copying configurations

- On older Cisco IOS’s use write mem to copy running-config to startup-config
- Erase flash, erase nvram, erase startup-config
- Write mem has been deprecated, now use copy <source> <destination>
  - Copy running-config startup-config
  - Copy startup-config running-config
- Reload command restarts and reloads the startup-config
Static Routes

• All used in router configuration mode

• Ip route <destination> <next hop>
  – Ip route 192.168.1.0 255.255.255.0 192.168.1.2 30

• Ip route <destination> <interface>
  – Ip route 192.168.1.0 255.255.255.0 serial 1 30 permanent
Creating access lists

• To create, must be in GC Mode
• Use access-list <#> command
  – 1-99 are for standard IP access lists
  – 100-199 are for extended IP access lists
  – USE EXTENDED LISTS ONLY
  – To create an access list numbered 101 which will permit tcp traffic on port 22 from anywhere to anywhere:
    • access-list 101 permit tcp any eq 22 any
Wildcard Masks (YAY!)

- Wildcard masks are the logical inverses of subnet masks.
- Used to calculate which IP addresses in a specified range apply to the access list.
- Subtract each octet in the subnet mask from 255.
- The 1 bits are “don’t care bits.”
- The 0 bits mean match exactly.
- If you want to block traffic from network 10.0.0.0 with the standard class A subnet mask:
  - Access-list 1 deny 10.0.0.0 0.255.255.255.
- If you want to block traffic from a specific IP 10.0.2.3 you could:
  - Access-list 1 deny 10.0.2.3 0.0.0.0.
Applying Access Lists

• Must be in Interface Configuration Mode
• Ip access-list <#> in/out
  – Ip access-list 101 out will apply the extended access-list 101 to all outgoing packets on the interface
More next week

• We will go over more examples of access lists next week, don’t worry