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## ROUTER COMMANDS

### TERMINAL CONTROLS:

- Config# terminal editing - allows for enhanced editing commands
- Config# terminal monitor - shows output on telnet session
- Config# terminal ip netmask-format hexadecimal|bit-count|decimal - changes the format of subnet masks

### HOST NAME:

- Config# hostname ROUTER\_NAME

### BANNER:

- Config# banner motd # TYPE MESSAGE HERE # - # can be substituted for any character, must start and finish the message

### DESCRIPTIONS:

- Config# description THIS IS THE SOUTH ROUTER - can be entered at the Config-if level

### CLOCK:

- Config# clock timezone Central -6
- # clock set hh:mm:ss dd month yyyy - Example: clock set 14:35:00 25 August 2003

### CHANGING THE REGISTER:

- Config# config-register 0x2100 - ROM Monitor Mode
- Config# config-register 0x2101 - ROM boot
- Config# config-register 0x2102 - Boot from NVRAM

### BOOT SYSTEM:

- Config# boot system tftp FILENAME SERVER\_IP - Example: boot system tftp 2600\_ios.bin 192.168.14.2
- Config# boot system ROM
- Config# boot system flash - Then - Config# reload

### CDP:

- Config# cdp run - Turns CDP on
- Config# cdp holdtime 180 - Sets the time that a device remains. Default is 180
- Config# cdp timer 30 - Sets the update timer. The default is 60
- Config# int Ethernet 0
- Config-if# cdp enable - Enables cdp on the interface
- Config-if# no cdp enable - Disables CDP on the interface
- Config# no cdp run - Turns CDP off

### HOST TABLE:

- Config# ip host ROUTER\_NAME INT\_Address - Example: ip host lab-a 192.168.5.1
- or-
- Config# ip host RTR\_NAME INT\_ADD1 INT\_ADD2 INT\_ADD3 - Example: ip host lab-a 192.168.5.1 205.23.4.2 199.2.3.2 - (for e0, s0, s1)

### DOMAIN NAME SERVICES:

- Config# ip domain-lookup - Tell router to lookup domain names
- Config# ip name-server 122.22.2.2 - Location of DNS server
- Config# ip domain-name cisco.com - Domain to append to end of names

**CLEARING COUNTERS:**

- # clear interface Ethernet 0 - Clears counters on the specified interface
- # clear counters - Clears all interface counters
- # clear cdp counters - Clears CDP counters

**STATIC ROUTES:**

- Config# ip route Net\_Add SN\_Mask Next\_Hop\_Add - Example: ip route 192.168.15.0 255.255.255.0 205.5.5.2
  - Config# ip route 0.0.0.0 0.0.0.0 Next\_Hop\_Add - Default route
- or-**
- Config# ip default-network Net\_Add - Gateway LAN network

**IP ROUTING:**

- Config# ip routing - Enabled by default
  - Config# router rip
- or-**
- Config# router igrp 100
  - Config# interface Ethernet 0
  - Config-if# ip address 122.2.3.2 255.255.255.0
  - Config-if# no shutdown

**IPX ROUTING:**

- Config# ipx routing
- Config# interface Ethernet 0
- Config# ipx maximum-paths 2 - Maximum equal metric paths used
- Config-if# ipx network 222 encapsulation sap - Also Novell-Ether, SNAP, ARPA on Ethernet. Encapsulation HDLC on serial
- Config-if# no shutdown

**ACCESS LISTS:**

IP Standard	1-99
IP Extended	100-199
IPX Standard	800-899
IPX Extended	900-999
IPX SAP Filters	1000-1099

**IP STANDARD:**

- Config# access-list 10 permit 133.2.2.0 0.0.0.255 - allow all src ip's on network 133.2.2.0
- or-**
- Config# access-list 10 permit host 133.2.2.2 - specifies a specific host
- or-**
- Config# access-list 10 permit any - allows any address
- Config# int Ethernet 0

- Config-if# ip access-group 10 in - also available: out

#### **IP EXTENDED:**

- Config# access-list 101 permit tcp 133.12.0.0 0.0.255.255 122.3.2.0 0.0.0.255 eq telnet

- protocols: tcp, udp, icmp, ip (no sockets then), among others
- source then destination address
- eq, gt, lt for comparison
- sockets can be numeric or name (23 or telnet, 21 or ftp, etc)

**-or-**

- Config# access-list 101 deny tcp any host 133.2.23.3 eq www

**-or-**

- Config# access-list 101 permit ip any any

- Config# interface Ethernet 0
- Config-if# ip access-group 101 out

#### **IPX STANDARD:**

- Config# access-list 801 permit 233 AA3 - source network/host then destination network/host

**-or-**

- Config# access-list 801 permit -1 -1 - "-1" is the same as "any" with network/host addresses

- Config# interface Ethernet 0
- Config-if# ipx access-group 801 out

#### **IPX EXTENDED:**

- Config# access-list 901 permit sap 4AA all 4BB all
  - Permit protocol src\_add socket dest\_add socket
  - "all" includes all sockets, or can use socket numbers

**-or-**

- Config# access-list 901 permit any any all any all
  - Permits any protocol with any address on any socket to go anywhere

- Config# interface Ethernet 0
- Config-if# ipx access-group 901 in

#### **IPX SAP FILTER:**

- Config# access-list 1000 permit 4aa 3 - "3" is the service type

**-or-**

- Config# access-list 1000 permit 4aa 0 - service type of "0" matches all services

- Config# interface Ethernet 0
- Config-if# ipx input-sap-filter 1000 - filter applied to incoming packets

**-or-**

- Config-if# ipx output-sap-filter 1000 - filter applied to outgoing packets

#### **NAMED ACCESS LISTS:**

- Config# ip access-list standard LISTNAME
  - can be ip or ipx, standard or extended
  - followed by the permit or deny list
- Config# permit any

- Config-if# ip access-group LISTNAME in
  - use the list name instead of a list number
  - allows for a larger amount of access-lists

#### PPP SETUP:

- Config-if# encapsulation ppp
- Config-if# ppp authentication chap pap
  - order in which they will be used
  - only attempted with the authentication listed
  - if one fails, then connection is terminated
- Config-if# exit
- Config# username Lab-b password 123456
  - username is the router that will be connecting to this one
  - only specified routers can connect

**-or-**

- Config-if# ppp chap hostname ROUTER
- Config-if# ppp chap password 123456
  - if this is set on all routers, then any of them can connect to any other
  - set same on all for easy configuration

#### ISDN SETUP:

- Config# isdn switch-type basic-5ess - determined by telecom
- Config# interface serial 0
- Config-if# isdn spid1 2705554564 - isdn "phonenumber" of line 1
- Config-if# isdn spid2 2705554565 - isdn "phonenumber" of line 2
- Config-if# encapsulation PPP - or HDLC, LAPD

DDR - 4 Steps to setting up ISDN with DDR

1. Configure switch type
  - Config# isdn switch-type basic-5ess - can be done at interface config
2. Configure static routes
  - Config# ip route 123.4.35.0 255.255.255.0 192.3.5.5 - sends traffic destined for 123.4.35.0 to 192.3.5.5
  - Config# ip route 192.3.5.5 255.255.255.255 bri0 - specifies how to get to network 192.3.5.5 (through bri0)
3. Configure Interface
  - Config-if# ip address 192.3.5.5 255.255.255.0
  - Config-if# no shutdown
  - Config-if# encapsulation ppp
  - Config-if# dialer-group 1 - applies dialer-list to this interface
  - Config-if# dialer map ip 192.3.5.6 name Lab-b 5551212
    - connect to lab-b at 5551212 with ip 192.3.5.6 if there is interesting traffic
    - can also use "dialer string 5551212" instead if there is only one router to connect to
4. Specify interesting traffic
  - Config# dialer-list 1 ip permit any
  - or-**
  - Config# dialer-list 1 ip list 101 - use the access-list 101 as the dialer list

## 5. Other Options

Config-if# hold-queue 75 - queue 75 packets before dialing

Config-if# dialer load-threshold 125 either

-load needed before second line is brought up

-"125" is any number 1-255, where % load is x/255 (ie 125/255 is about 50%)

-can check by in, out, or either

Config-if# dialer idle-timeout 180

-determines how long to stay idle before terminating the session

-default is 120

### **FRAME RELAY SETUP:**

- Config# interface serial 0
- Config-if# encapsulation frame-relay - cisco by default, can change to ietf
- Config-if# frame-relay lmi-type cisco - cisco by default, also ansi, q933a
- Config-if# bandwidth 56
  
- Config-if# interface serial 0.100 point-to-point - subinterface
- Config-if# ip address 122.1.1.1 255.255.255.0
- Config-if# frame-relay interface-dlci 100
  - maps the dlci to the interface
  - can add BROADCAST and/or IETF at the end
  
- Config-if# interface serial 1.100 multipoint
- Config-if# no inverse-arp - turns IARP off; good to do
- Config-if# frame-relay map ip 122.1.1.2 48 ietf broadcast
  - maps an IP to a dlci (48 in this case)
  - required if IARP is turned off
  - ietf and broadcast are optional
- Config-if# frame-relay map ip 122.1.1.3 54 broadcast

### **SHOW COMMANDS**

- Show access-lists - all access lists on the router
- Show cdp - cdp timer and holdtime frequency
- Show cdp entry \* - same as next
- Show cdp neighbors detail - details of neighbor with ip add and ios version
- Show cdp neighbors - id, local interface, holdtime, capability, platform portid
- Show cdp interface - int's running cdp and their encapsulation
- Show cdp traffic - cdp packets sent and received
- Show controllers serial 0 - DTE or DCE status
- Show dialer - number of times dialer string has been reached, other stats
- Show flash - files in flash
- Show frame-relay lmi - lmi stats
- Show frame-relay map - static and dynamic maps for PVC's
- Show frame-relay pvc - pvc's and dlci's
- Show history - commands entered
- Show hosts - contents of host table
- Show int f0/26 - stats of f0/26
- Show interface Ethernet 0 - show stats of Ethernet 0
- Show ip - ip config of switch
- Show ip access-lists - ip access-lists on switch

- Show ip interface - ip config of interface
- Show ip protocols - routing protocols and timers
- Show ip route - Displays IP routing table
- Show ipx access-lists - same, only ipx
- Show ipx interfaces - RIP and SAP info being sent and received, IPX addresses
- Show ipx route - ipx routes in the table
- Show ipx servers - SAP table
- Show ipx traffic - RIP and SAP info
- Show isdn active - number with active status
- Show isdn status - shows if SPIDs are valid, if connected
- Show mac-address-table - contents of the dynamic table
- Show protocols - routed protocols and net\_addresses of interfaces
- Show running-config - dram config file
- Show sessions - connections via telnet to remote device
- Show startup-config - nvram config file
- Show terminal - shows history size
- Show trunk a/b - trunk stat of port 26/27
- Show version - ios info, uptime, address of switch
- Show vlan - all configured vlan's
- Show vlan-membership - vlan assignments
- Show vtp - vtp configs

### **CATALYST COMMANDS**

For Native IOS - Not CatOS

#### **SWITCH ADDRESS:**

- Config# ip address 192.168.10.2 255.255.255.0
- Config# ip default-gateway 192.168.10.1

#### **DUPLEX MODE:**

- Config# interface Ethernet 0/5 - "fastethernet" for 100 Mbps ports
- Config-if# duplex full - also, half | auto | full-flow-control

#### **SWITCHING MODE:**

- Config# switching-mode store-and-forward - also, fragment-free

#### **MAC ADDRESS CONFIGS:**

- Config# mac-address-table permanent aaab.000f.ffef e0/2 - only this mac will work on this port
- Config# mac-address-table restricted static aaab.000f.ffef e0/2 e0/3  
-port 3 can only send data out port 2 with that mac  
-very restrictive security
- Config-if# port secure max-mac-count 5 - allows only 5 mac addresses mapped to this port

#### **VLANS:**

- Config# vlan 10 name FINANCE
- Config# interface Ethernet 0/3
- Config-if# vlan-membership static 10

#### **TRUNK LINKS:**

- Config-if# trunk on - also, off | auto | desirable | nonegotiate

- `Config-if# no trunk-vlan 2`
  - removes vlan 2 from the trunk port
  - by default, all vlans are set on a trunk port

#### **CONFIGURING VTP:**

- `Config# delete vtp` - should be done prior to adding to a network
- `Config# vtp server` - the default is server, also client and transparent
- `Config# vtp domain Camp` - name doesn't matter, just so all switches use the same
- `Config# vtp password 1234` - limited security
- `Config# vtp pruning enable` - limits vtp broadcasts to only switches affected
- `Config# vtp pruning disable`

#### **FLASH UPGRADE:**

- `Config# copy tftp://192.5.5.5/configname.ios opcode` - "opcode" for ios upgrade, "nvram" for startup config

#### **DELETE STARTUP CONFIG:**

- `Config# delete nvram`