

Frequently Used Router Configurations

Introduction

Goals of this Presentation

- Standalone Reference for any configuration, any clime, any place, for any and every possible scenario you could dream of..... j/k ☺
- Demystification of Cisco routers
- Tools to use when implementing new configurations, or out of the box/brand new implementations

Basic Cisco Router Basics

Configuration prompts:

anyrouter#configure terminal	←To enter Global configuration mode
Enter configuration commands, one per line. End with CNTL/Z.	
anyrouter(config)#	←Global configuration mode
anyrouter(config)#interface serial 1/0	←To enter Interface Configuration mode
anyrouter(config-if)#	←Interface Configuration mode
anyrouter(config)#line vty 0 4	←To enter Line Configuration mode
anyrouter(config)#	←Line Configuration mode
anyrouter(config)#router eigrp 1	←To enter Router Configuration mode
anyrouter(config-router)#	←Router Configuration mode

CCO router configuration example

```
version 11.2 <*>
service udp-small-servers <*>
service tcp-small-servers <*>
!
hostname Atlanta
!
enable secret cisco
!
ip subnet-zero
no ip domain-lookup
ipx routing 0000.0caa.1111
!
interface Ethernet0
ip address 10.1.1.1 255.0.0.0
ipx network 100 encapsulation SAP
ipx network 101 encapsulation NOVELL-ETHER secondary
!
interface Serial0
no ip address <*>
encapsulation frame-relay
frame-relay lmi-type ansi
```

```

!
interface Serial0.16 point-to-point
description Frame Relay to Boston
ip unnumbered Ethernet0
ipx network AAAA
frame-relay interface-dlci 16 broadcast
!
interface Serial0.17 point-to-point
description Frame Relay to Chicago
ip unnumbered Ethernet0
ipx network BBBB
frame-relay interface-dlci 17 broadcast
!
router rip
version 2
network 10.0.0.0
no auto-summary
!
ip http server
ip classless
!
line con 0
password console
login
line aux 0 <*>
line vty 0 4
password telnet
login <*>
!
end <*>

```

Common/Useful Configuration Commands

anyschool(config)#ip name-server xxx.xxx.xxx.xxx	←To point to a DNS server
anyschool(config-if)# no ip directed-broadcast	←Prevent directed broadcasts
anyschool(config-if)#ip helper-address xxx.xxx.xxx.xxx	←Where broadcasts can be expected for common services (DHCP, TFTP, DNS, etc.)

Access Control Lists (ACLs)

Basic Rules:

- Top-Down Processing
- Added Entries appear at bottom
- ACL placement
 - Extended ACL as close as possible to source *being filtered*
 - Standard ACL as close as possible to destination
 - More specific entries before less specific entries in ACL itself
- Filtering direction defines whether inbound or outbound packets are examined.
- Packets generated by the router not subject to being operated on by an outbound ACL, only via inbound

Remember the ACL won't work until it is applied to an interface!

- access-group, distribute-list, access-class, etc.

STANDARD ACL

access-list access-list-number {deny | permit} source [source-wildcard] log

EXTENDED ACL

{deny | permit} protocol source source-wildcard destination destination-wildcard [precedence precedence] [tos tos] [established] [log | log-input]

URL for Configuring IP Services

http://www.cisco.com/univercd/cc/td/doc/product/software/ios113ed/113ed_cr/np1_c/1cip.htm#xtocid1592341

ACL Examples

```
interface Ethernet0/5
ip address 2.0.5.1 255.255.255.0
ip access-group Internet_filter out
ip access-group marketing_group in
...
ip access-list standard Internet_filter
permit 1.2.3.4
deny any
ip access-list extended marketing_group
permit tcp any 171.69.0.0 0.0.255.255 eq telnet
deny tcp any any
permit icmp any any
deny udp any 171.69.0.0 0.0.255.255 lt 1024
deny ip any any log
```

Out of the Box/New Setup

Out of the Box:

Initial setup dialog

New Setup:

Conf t

Write erase

Reload

No

Confirm

Eyes On Example

Navigating CCO(e-mail note)

Eyes On Example

TECHNICAL DOCUMENTS

<http://www.cisco.com/cgi-bin/ibld/all.pl?i=support&c=2&m=GUEST>

INTERNETWORKING TECHNOLOGY OVERVIEW

http://www.cisco.com/univercd/cc/td/doc/cisintwk/ito_doc/index.htm

Links to routing basics, Frame Relay and Point to Point

DESIGNING SWITCHED LAN INTERNETWORKS

<http://www.cisco.com/univercd/cc/td/doc/cisintwk/idg4/nd2012.htm>

IOS COMMAND REFERENCES

<http://www.cisco.com/univercd/cc/td/doc/product/software/index.htm>

TROUBLESHOOTING

http://www.cisco.com/univercd/cc/td/doc/cisintwk/itg_v1/index.htm

Links for Serial line and Frame Relay problems

ROUTER COOKBOOKS

http://www.cisco.com/warp/public/793/access_dial/index.html

Basics, 2500, 3600, etc

2500 SERIES CONFIGS

http://www.cisco.com/warp/public/779/smbiz/service/configs/2500_configs.htm

Links for Frame Relay and Leased Line configs

Basic Leased Line Dynamic IP routing config

http://www.cisco.com/warp/public/779/smbiz/service/configs/leasedline/ll_ip.htm

Basic Frame Relay Dynamic IP and IPX routing config

http://www.cisco.com/warp/public/779/smbiz/service/configs/framerelay/fr_ipipx.htm

3600 SERIES CONFIGS

http://www.cisco.com/warp/public/779/smbiz/service/configs/3600_configs.htm

Links for Frame Relay and Leased Line configs

PRODUCTS

http://www.cisco.com/public/products_prod.shtml

Links for Routers, Switches, Interfaces and Port Adapters, etc.

Initial setup output

--- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: yes

At any point you may enter a question mark '?' for help.

Use ctrl-c to abort configuration dialog at any prompt.

Default settings are in square brackets '[]'.

Basic management setup configures only enough connectivity for management of the system, extended setup will ask you to configure each interface on the system

Would you like to enter basic management setup? [yes/no]: yes

Configuring global parameters:

Enter host name [Router]: anyschool

The enable secret is a password used to protect access to privileged EXEC and configuration modes. This password, after entered, becomes encrypted in the configuration.

Enter enable secret: becareful

The enable password is used when you do not specify an enable secret password, with some older software versions, and some boot images.

Enter enable password: letmein

The virtual terminal password is used to protect access to the router over a network interface.

Enter virtual terminal password: hellorouter

Configure SNMP Network Management? [yes]:

Community string [public]: school

Current interface summary

Any interface listed with OK? value "NO" does not have a valid configuration

Interface	IP-Address	OK?	Method	Status	Protocol
Ethernet0	unassigned	NO	unset	up	up
Ethernet1	unassigned	NO	unset	up	up
Serial0	unassigned	NO	unset	down	down
Serial1	unassigned	NO	unset	down	down

Enter interface name used to connect to the management network from the above interface summary: Ethernet0

Configuring interface Ethernet0:

Configure IP on this interface? [yes]:

IP address for this interface: 192.16.1.1

Subnet mask for this interface [255.255.255.0] :

Class C network is 192.16.1.0, 24 subnet bits; mask is /24

The following configuration command script was created:

```
hostname anyschool
enable secret 5 $1$48o9$UcijtvjhT3bM4x6gFVfGR0
enable password letmein
line vty 0 4
password hellorouter
snmp-server community school
!
no ip routing

!
interface Ethernet0
no shutdown
ip address 192.16.1.1 255.255.255.0
no mop enabled
!
interface Ethernet1
```

```
shutdown
no ip address
!
interface Serial0
shutdown
no ip address
!
interface Serial1
shutdown
no ip address
!
end
```

- [0] Go to the IOS command prompt without saving this config.
- [1] Return back to the setup without saving this config.
- [2] Save this configuration to nvram and exit.

Enter your selection [2]:
Building configuration...
Use the enabled mode 'configure' command to modify this configuration.

Press RETURN to get started!

```
00:00:59: %LINK-3-UPDOWN: Interface Ethernet0, changed state to up
00:01:00: %LINK-3-UPDOWN: Interface Ethernet1, changed state to up
00:01:00: %LINK-3-UPDOWN: Interface Serial0, changed state to down
00:01:00: %LINK-3-UPDOWN: Interface Serial1, changed state to down
00:01:00: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet0, changed state
to up
00:01:01: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet1, changed state
to up
00:01:01: %LINEPROTO-5-UPDOWN: Line protocol on Interface S
anyschool>erial0, changed state to down
00:01:01: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1, changed state t
o down
00:02:12: %LINK-5-CHANGED: Interface Ethernet1, changed state to administratively
down
00:02:13: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet1, changed state
to down
00:02:13: %LINK-5-CHANGED: Interface Serial0, changed state to administratively do
wn
00:02:14: %LINK-5-CHANGED: Interface Serial1, changed state to administratively do
wn
00:02:20: %IP-5-WEBINST_KILL: Terminating DNS process
00:02:36: %SYS-5-RESTART: System restarted --
Cisco Internetwork Operating System Software
IOS (tm) 2500 Software (C2500-JS-L), Version 12.0(4), RELEASE SOFTWARE (fc1)
Copyright (c) 1986-1999 by cisco Systems, Inc.
Compiled Wed 14-Apr-99 21:40 by ccai
anyschool>en
Password:
anyschool#show run
Building configuration...
```

Current configuration:

```
!  
version 12.0  
service timestamps debug uptime  
service timestamps log uptime  
no service password-encryption  
!  
hostname anyschool  
!  
enable secret 5 $1$48o9$UcijtvjhT3bM4x6gFVfGR0  
enable password letmein  
!  
ip subnet-zero  
no ip routing  
!  
!  
interface Ethernet0  
ip address 192.16.1.1 255.255.255.0  
no ip directed-broadcast  
no ip route-cache  
no mop enabled  
--More-- □□□□□□□□ □□□□□□□□!  
interface Ethernet1  
no ip address  
no ip directed-broadcast  
no ip route-cache  
shutdown  
!  
interface Serial0  
no ip address  
no ip directed-broadcast  
no ip route-cache  
no ip mroute-cache  
shutdown  
!  
interface Serial1  
no ip address  
no ip directed-broadcast  
no ip route-cache  
shutdown  
!  
ip classless  
!  
!  
--More-- □□□□□□□□ □□□□□□□□snmp-server community school RO  
!  
line con 0  
transport input none  
line aux 0  
line vty 0 4  
password hellorouter  
login  
!  
end
```

anyschool#