Lab 1: Setup and RIP Routing

CNIT34500-006
Group 2
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PROCEDURES

The procedures section was broken up into major groups of steps. In the steps, the **buttons pressed** were bolded, *options* were italicized, text entered into console/terminal was typed in `Courier New`, menu navigation and repeated actions were shown with the | pipe | symbol. Repeated steps were shortened by referencing specific information in the Appendix. Varying input is also placed between [brackets].

Phase 1

Reset the Cisco 2811 Router to defaults

Before beginning any configurations, it was necessary to wipe all old configurations off of the router to be used as the term server so that no conflicting configurations existed. Cisco routers are reset by removing the compact flash.

1. Plugged console cable into Cisco 2811
    a. See Appendix A, Table 1 for cabling information
2. Powered off Cisco 2811
3. Removed compact flash
4. Powered device on
5. Opened PuTTy on a lab computer with the serial connection.
6. Selected *Serial* | *Open*
7. Entered `confreg 0x2142` to reset the config page.
8. Inserted compact flash into Cisco 2811
9. Entered `reset` to reboot the machine.
10. Entered `no` to skip default configuration dialog.

Configured Basic 2811 Settings

Before adding more advanced configurations to the Cisco 2811, basic configurations of a networking device needed to be added to the machine's config. For example, hostname, loopback address, domain name, and SSH access were configured.

1. Entered `conf t` to enter terminal config.
2. Input `hostname G2TermServer` to configure the machine's hostname
3. Entered `interface loopback 0` to create a loopback interface,
4. Input `ip address 10.10.10.10 255.255.255.255` to set an IP address for the loopback interface.
5. Entered `ip domain name cit.lcl` to set a domain name.
6. Input `ip route 0.0.0.0 0.0.0.0 10.21.2.1` to set the default route.
7. Entered `ip ssh version 2` to set SSH to version 2.
8. Input `service password-encryption` to encrypt all passwords.
9. Entered `line vty 0 4`
10. Input `login local`
11. Entered `transport input ssh` to allow SSH access.

Configured 2811 as Term Server

After initial configurations were completed, the router was to be turned into a Terminal Server. Terminal Servers serve as a way to access 8 devices via a serial cable from the term server. The 2811 offers this service through telnetting through the term server.

1. Connected octal cable from Term Server to devices
    a. See Appendix A, Table 2 for octal cabling information

Setup and RIP Routing

2. Entered `ip host [host name] [port] 10.10.10.10`
    a. See Appendix A, Table 3 for more information
3. Entered `menu cisco title $`
4. Created a title banner
5. Entered `$`
6. Entered `menu cisco prompt $`
7. Set a prompt message
8. Entered `$`
9. Input `menu cisco line-mode`
10. Entered `menu cisco command e menu-exit`
11. Input `menu cisco text e menu-exit`
12. Entered `menu cisco command q exit`
13. Input `menu cisco text q disconnect from term server`
14. Entered `menu cisco command 1 telnet 10.10.10.10 [port]`
15. Input `menu cisco text 1 login to [device name]`
    a. Repeated steps 13-14 for each command number- see Appendix A, Table 3 for more information

Reset Cisco Routers

After adding all networking devices to the term server, they all needed to be reset to basic configurations. Cisco routers can be reset by rebooting the machine and entering commands in rommon mode.

1. Powered device off

Setup and RIP Routing

2. Powered device on
3. Pressed **Ctrl+Break** in console terminal
4. Entered `confreg 0x2142`
5. Entered `reset`
6. Pressed **Ctrl+C**
7. Entered `en`
8. Input `conf t`
9. Entered `config-register 0x2102`
10. Pressed **Ctrl+Z**
11. Entered `wr`
    a. Repeated steps 1-11 on all routers

Reset Cisco Switches

Cisco switches also needed to be reset to factory defaults. The method of resetting a Cisco switch is much simpler than a router. There was a simple command to erase the configs on the switch.

1. Entered `write erase` into console terminal to erase the config page.
2. Pressed **Enter** to confirm
3. Entered `reload` to restart the machine.
4. Waited for switch to reboot
5. Entered `no` to skip initial setup
    a. Repeated steps 1-5 on 3750-A and B

Updated IOS images on devices

All networking devices function the best when on the newest available Cisco IOS. The operating system update was done through a command that parses an IOS from a Purdue TFTP server.

1. Entered `sh ver | i image` to view current version
2. Input `copy tftp://10.2.1.31/[filename] sup-bootdisk:`
3. Entered `conf t` to enter terminal configuration.
4. Input `boot system flash sup-bootdisk:[filename]`
5. Entered `wr mem` to save the new config page.
6. Input `reload`
    a. Repeated steps 1-6 on all devices- see Appendix A, Table 4 for filename information

Phase 2

Configured SSH on all devices

SSH is convenient to have on all devices for redundancy. In the event that the term server goes down, or someone is already using the telnet port from the term server, SSH is efficient to gain direct access to the device. This is done through a few SSH configurations as well as the setup of a Loopback address.

1. Connected all devices with patch cables
    a. See Appendix A, Table 5 for cabling information
2. Entered `en` in console terminal
3. Input `conf t`
4. Entered `interface loopback 0` to create a loopback interface.
5. Input `ip address [loopback address] [subnet mask]`
    a. See Appendix A, Table 6 for loopback addressing information
6. Input `no shutdown` to enable the port.
7. Entered `description ssh loopback` as descriptions
8. Input `ip domain name cit.lcl` to set the domain name.
9. Entered `crypto key generate rsa` to encrypt SSH access.
10. Input `1024` when prompted for number of bits
11. Entered `ip ssh version 2` to switch SSH to version 2.

Configured interfaces on all devices

For all physical uplink and downstream interface on all devices, there need to be IPs associated to handle the traffic. This is done by entering the interface in the configuration and assigning an IP and subnet mask.

1. Entered `interface GigabitEthernet[interface]`
2. Input `ip address [interface address] [subnet mask]`
    a. See Appendix A, Table 7 for interface addressing information
3. Entered `no shut`
    a. Repeated steps 1-3 on all wired interfaces
4. Pressed **Ctrl+Z**
5. Entered `wr`

Configured NAT on 6504

When possessing a private IP range, the devices needed a way to access the internet through the CIT DNS servers. The way that they were able to communicate was through the usage of NAT. NAT needed to be configured to convert the internal IPs to IPs outside of the network.

1. Entered `ip nat pool g2 10.21.2.3 10.21.2.3 netmask 255.255.255.0` to choose the source IPs.
2. Input `ip nat inside source list 1 interface gigabitethernet1/3 overload` to choose the outbound port.
3. Entered `access-list 1 permit 192.168.0.0 0.0.255.255` to permit all internal IPs to be NATted.
4. Input `interface gigabitethernet1/3`

5. Entered `ip nat outside` to set the outbound interface.
6. Input `interface gigabitethernet3/1`
7. Entered `ip nat inside` to set the inbound interface.
    a. Repeated steps 6-7 on interfaces GigabitEthernet3/3 and GigabitEthernet3/5

Implemented RIP on routers

Routing protocols can be used to speed up the routing configurations as well as improve convergence times within the network. RIP was configured for the Cisco 6504, 2911a, 2911b, 2901a, and 2901b.

1. Entered `router rip` to enter RIP configuration.
2. Input `version 2` to allow RIP to use classless addressing.
3. Entered `network [network address]`
    a. See Appendix A, Table 8 for more information
4. Input `no auto-summary` to not allow the protocol to summarize routes.
    a. Repeated steps 1-4 on all routers
5. Entered `default-information originate` on the 6504.

Configured IP Addressing on PCs

In order for the PCs to connect to the networking devices, they needed to be set with the correct IPs, subnet masks, default gateways, and DNS servers. This was done through the Windows Control Panel.

1. Logged into PC1 with CIT credentials
2. Opened *Control Panel* from the Windows Start Menu
3. Navigated to *Network and Internet* | *Ethernet0* | *IPv4*

Setup and RIP Routing

4. Changed the IP configurations
    a. Repeated steps 1-4 on PC3- see Appendix A, Table 9 for IP addressing information
5. Logged into the TFTP Server and clicked the *Ethernet* settings in the top right
6. Entered the *Wired Settings* and changed the IPv4 configurations
    a. See Appendix A, Table 9 for IP addressing information

Captured Network Traffic on Wireshark

To examine what packets are going through to the end of the network, a Wireshark session was created on PC3. This was to examine the purpose of a passive interface on a router, and how when this is not configured, routing protocol information is sent to the end devices.

1. Logged into PC3
2. Opened *Wireshark* through the Windows Start Menu
3. Selected *Ethernet* network interface as the interface to monitor.
4. Set the capture filter to *RIP* to only see RIP traffic.
5. Examined how the RIP packets navigated through to end devices as there are no passive interfaces configured.

Created Virtual Machine for TFTP

To allow for router configs to be sent to a TFTP server, one needed to be created on the student cluster. As long as IP configurations were set correctly, the TFTP server should be able to contact the rest of the internal network.

1. Logged into https://studentvc.cit.lcl with CIT credentials.
2. Right clicked the *KNOY Cluster* and created a new VM named

"CNIT34500.Group02.TFTPServer"

3. Attached a CD/DVD and mapped it to the Alma Linux 9 Server ISO in \\rtfm.cit.lcl\iso
4. Clicked on *HDD.*
5. Selected *thin provisioning* to not use up CIT resources.
6. Attached the CNIT345G02 network adapter.
7. Selected *automatic drive partitioning* during the installation.
8. Created an administrative user named 'g2' and set a password.
9. Clicked *install* to install the VM onto the cluster.

Configured TFTP Server

After installation of the TFTP Server, Linux terminal configurations needed to be entered to create the TFTP service. The service contains config pages in the /usr/lib/systemd/system directory that were modified.

1. Opened a terminal window on Linux VM.
2. Entered `sudo yum update && sudo apt upgrade` to update the OS.
3. Entered `sudo dnf install tftp-server` to install the service.
4. Input `sudo cp -v /usr/lib/systemd/system/tftp.service /etc/systemd/system/tftp-server.service` to give the machine a record of the service.
5. Entered `sudo cp -v /usr/lib/systemd/system/tftp.socket /etc/systemd/system/tftp-server.socket` to give the machine a record of the port.
6. Entered `sudo nano /etc/systemd/system/tftp-server.service` and modified the following lines:

   a. Added "`Also=tftp-server.socket`"
   b. Modified "`ExecStart=/usr/sbin/in.tftpd -c -p -s /var/lib/tftpboot`"

7. Entered `sudo nano /etc/systemd/system/tftp-server.socket` and modified the following lines:
   a. Added "`BindIPv4Only=both`"
   b. Added "`WantedBy=sockets.target`"
8. Input `sudo systemctl start tftp-server.service` to start the service.
9. Entered `sudo systemctl enable tftp-server.service` to enable the service.
10. Input `sudo systemctl restart tftp-server.service` to restart the new service.
11. Entered `sudo firewall-cmd -add-service=tftp -permanent` to allow the service to use the TFTP port.
12. Input `sudo firewall-cmd -reload` to reload the firewall rules.

Configured devices to backup to TFTP

The purpose of the TFTP server was to serve as a place to automatically store router configuration pages when the memory was written to. Commands can be utilized in the routers to auto send config pages to the TFTP server over the network.

1. Input `en` in device console terminal
2. Entered `conf t` to enter terminal configuration.
3. Input `archive` to choose where to save machine configurations.

4. Entered `path tftp://192.168.2.30/$h-$t` to set the destination path to the TFTP server.
5. Input `time-period 360` to have the machines auto send the page.
6. Pressed **Ctrl+Z**
7. Entered `wr`
    a. Repeated steps 1-7 on all devices

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APPENDIX A: TABLES

Table 1: 2811 Console Cabling

Device	Interface	Cable	Interface	Device
Cisco 2811	Console	Patch Cable	COM1	PC1

Table 2: Octal Console Cabling

Device	Interface	Cable	Interface	Device
TERM Server	ASYNC-16	Octal ASYNC	Console	2911-A
-	-	-	Console	2911-B
-	-	-	Console	2901-A
-	-	-	Console	2901-B
-	-	-	Console	1921-A
-	-	-	Console	3750-A
-	-	-	Console	3750-B
-	-	-	Console	6504

Table 3: Term Server Menu Mapping

Command #	Port Value	Device Name
1	2002	2911r1
2	2003	3750s1
3	2004	2911r2
4	2005	1921r3
5	2006	3750s2
6	2007	2901r4
7	2008	6504r5
8	2009	2901r6

Table 4: IOS Files

Device	Image Filename
2911-A	c2900-universalk9-mz.SPA.157-3.M4b.bin
2911-B	c2900-universalk9-mz.SPA.157-3.M4b.bin
2901-A	c2900-universalk9-mz.SPA.156-3.M8.bin
2901-B	c2900-universalk9-mz.SPA.156-3.M8.bin
3750-A	c3750e-universalk9-mz.152-4.E10.bin
3750-B	c3750e-universalk9-mz.152-4.E10.bin
6504	s72033-adventerprisek9-mz.151-2.SY16.bin

Table 5: Network Cabling Information

Device	Interface	Cable	Interface	Device
6504	g1/3	Patch Cable	Uplink	-
6504	g3/1	Patch Cable	g0/0	2911-A
6504	g3/3	Patch Cable	g0/0	2911-B
6504	g3/5	Patch Cable	Ethernet	PC2
2911-A	g0/1	Patch Cable	g0/0	2901-A
2901-A	g0/1	Patch Cable	g0/1	3750-A
3750-A	g0/3	Patch Cable	Ethernet	PC1
2911-B	g0/1	Patch Cable	g0/0	2901-B
2901-B	g0/1	Patch Cable	g0/1	3750-B
3750-B	g0/3	Patch Cable	Ethernet	PC3

Table 6: Loopback Addressing Information

Device	Loopback Address	Subnet Mask
Term Server	10.10.10.10	255.255.255.255
2901-A	192.168.1.17	255.255.255.252
2901-B	192.168.1.18	255.255.255.252
2911-A	192.168.3.33	255.255.255.224
2911-B	192.168.3.3	255.255.255.224
3750-A	192.168.5.2	255.255.255.0

3750-B	192.168.4.2	255.255.255.0
6504	192.168.1.21	255.255.255.252

Table 7: Interface Addressing Information

Device	Interface	IP Address	Subnet Mask
6504	g1/3	10.21.2.3	255.255.255.0
	g3/1	192.168.1.13	255.255.255.252
	g3/3	192.l68.1.10	255.255.255.252
	g3/5	192.168.2.1	255.255.255.0
2911-A	g0/0	192.168.1.14	255.255.255.252
	g0/1	192.168.1.2	255.255.255.252
2911-B	g0/0	192.168.1.9	255.255.255.252
	g0/1	192.168.1.4	255.255.255.252
2901-A	g0/0	192.168.1.1	255.255.255.252
	g0/1	192.168.5.1	255.255.255.0
2901-B	g0/0	192.168.1.5	255.255.255.252
	g0/1	192.168.4.1	255.255.255.0

Table 8: RIP network information

Device	RIP Network

6504	192.168.0.0
	192.168.1.0
2911-A	192.168.1.0
	192.168.3.0
2911-B	192.168.1.0
	192.168.3.0
2901-A	192.168.1.0
	192.168.5.0
2901-B	192.168.1.0
	192.168.4.0

Table 9: PC IP Addressing Information

Device	IP Address	Subnet Mask	Gateway	DNS Servers
PC1	192.168.5.19	255.255.255.0	192.168.5.1	10.2.1.11, 10.2.1.12
PC2	192.168.2.28	255.255.255.0	192.168.2.1	10.2.1.11, 10.2.1.12
PC3	192.168.4.18	255.255.255.0	192.168.4.1	10.2.1.11, 10.2.1.12

APPENDIX B: NETWORK DIAGRAMS

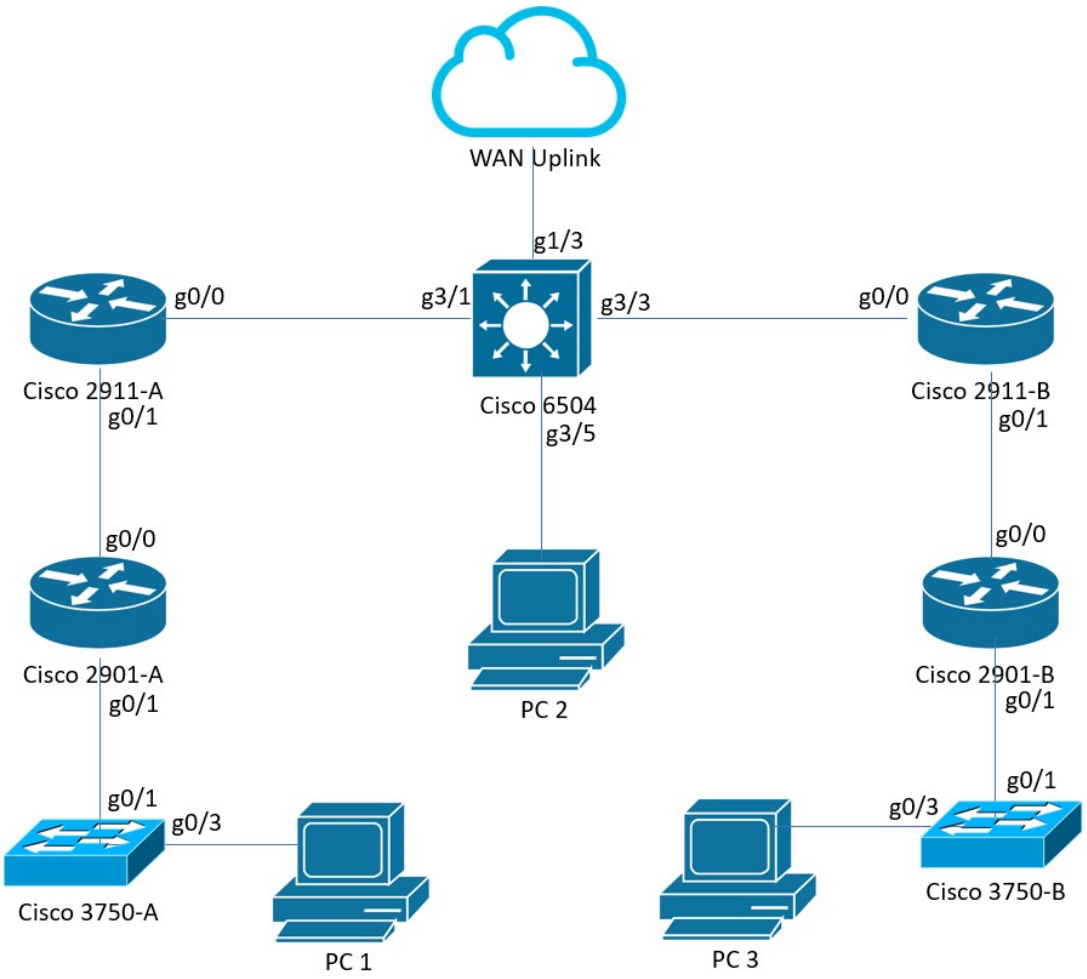

Figure 1: Physical Diagram of Network

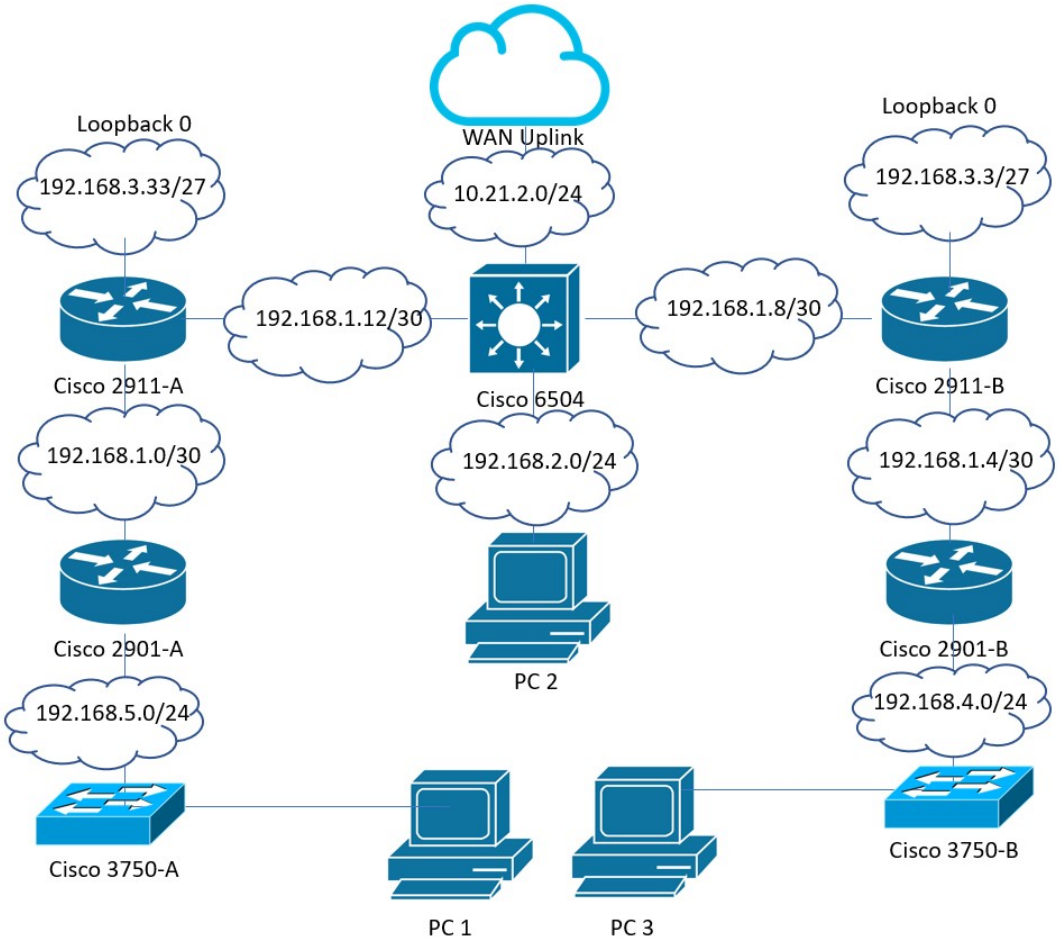

Figure 2: Logical Diagram of Network

APPENDIX C: ROUTER AND SWITCH CONFIGURATIONS

This section contains a full copy of all configured options in their final form from each device on the network.

2811 Term Server

```
Current configuration : 3619 bytes

 Last configuration change at 11:36:22 UTC Sat Feb 4 2023 by g2
version 15.1
service timestamps debug datetime msec
service timestamps log datetime msec
service password-encryption

hostname G2TermServer

boot-start-marker
boot-end-marker

no aaa new-model

dot11 syslog
ip source-route
```

```
ip cef


ip domain name cit.lcl
ip host 2911r1 2002 10.10.10.10
ip host 3750s1 2003 10.10.10.10
ip host 2911r2 2004 10.10.10.10
ip host 1921r3 2005 10.10.10.10
ip host 3750s2 2006 10.10.10.10
ip host 2901r4 2007 10.10.10.10
ip host 6504r5 2008 10.10.10.10
ip host 2901r6 2009 10.10.10.10
no ipv6 cef


multilink bundle-name authenticated


voice-card 0


crypto pki token default removal timeout 0









license udi pid CISCO2811 sn FTX1045A0TL
archive
```

```
 path tftp://192.168.2.30/$h-$t
 time-period 360
username g2 password 7 10420F1C0D

redundancy

ip ssh version 1

interface Loopback0
 ip address 10.10.10.10 255.255.255.255

interface FastEthernet0/0
 ip address 10.21.2.2 255.255.255.0
 duplex auto
 speed auto

interface FastEthernet0/1
 no ip address
 shutdown
 duplex auto
 speed auto

interface Async0/0/0
 no ip address
```

```
 encapsulation slip

interface Async0/0/1
 no ip address
 encapsulation slip

interface Async0/0/2
 no ip address
 encapsulation slip

interface Async0/0/3
 no ip address
 encapsulation slip

interface Async0/0/4
 no ip address
 encapsulation slip

interface Async0/0/5
 no ip address
 encapsulation slip

interface Async0/0/6
 no ip address
```

```
 encapsulation slip

interface Async0/0/7
 no ip address
 encapsulation slip

interface Async0/0/8
 no ip address
 encapsulation slip

interface Async0/0/9
 no ip address
 encapsulation slip

interface Async0/0/10
 no ip address
 encapsulation slip

interface Async0/0/11
 no ip address
 encapsulation slip

interface Async0/0/12
 no ip address
```

```
 encapsulation slip

interface Async0/0/13
 no ip address
 encapsulation slip

interface Async0/0/14
 no ip address
 encapsulation slip

interface Async0/0/15
 no ip address
 encapsulation slip

ip forward-protocol nd
no ip http server
no ip http secure-server


ip route 0.0.0.0 0.0.0.0 10.21.2.1

menu cisco title ^C
==========================================================
Welcome Laura/Ethan. Another day, another 345 lab :(
```

To exit, CTRL+SHIFT+6 then press x.

==========

^C

menu cisco prompt ^C

Select an option

^C

menu cisco text e menu-exit

menu cisco command e menu-exit

menu cisco text q disconnect from term server

menu cisco command q exit

menu cisco text 1 login to 2911r1

menu cisco command 1 telnet 10.10.10.10 2002

menu cisco text 2 login to 3750s1

menu cisco command 2 telnet 10.10.10.10 2003

menu cisco text 3 login to 2911r2

menu cisco command 3 telnet 10.10.10.10 2004

menu cisco text 4 login to 1921r3

menu cisco command 4 telnet 10.10.10.10 2005

menu cisco text 5 login to 3750s2

menu cisco command 5 telnet 10.10.10.10 2006

menu cisco text 6 login to 2901r4

menu cisco command 6 telnet 10.10.10.10 2007

menu cisco text 7 login to 6504r5

menu cisco command 7 telnet 10.10.10.10 2008

```
menu cisco text 8 login to 2901r6
menu cisco command 8 telnet 10.10.10.10 2009
menu cisco line-mode

control-plane

mgcp profile default

line con 0
 password 7 060A092444
 login local
 no exec
line aux 0
 login local
 no exec
line 0/0/0 0/0/13
 login local
 no exec
 transport input telnet
line 0/0/14 0/0/15
 transport input telnet
line vty 0 4
 password 7 141B140E04
 login local
```

```
 transport input ssh


scheduler allocate 20000 1000
end
```

6504 Router/Switch

Current configuration : 5286 bytes

version 15.1

service timestamps debug datetime msec

service timestamps log datetime msec

service password-encryption

service counters max age 5

hostname c345-g2-6504

boot-start-marker

boot system tftp s72033-adventerprisek9-mz.151-2.SY16.bin 255.255.255.255

boot system flash:s72033-adventerprisek9-mz.151-2.SY16.bin

boot system flash sup-bootdisk:s72033-adventerprisek9-mz.151-2.SY16.bin

boot-end-marker

username g2 password 7 11051F001F

no aaa new-model

vtp mode transparent

ip domain-name cit.lcl

```
mls netflow interface

archive
 path tftp://192.168.2.30/$h-$t
 time-period 360

spanning-tree mode pvst
spanning-tree extend system-id

redundancy
 main-cpu
  auto-sync running-config
 mode sso

vlan internal allocation policy ascending
vlan access-log ratelimit 2000

ip ssh version 2

interface Loopback0
 ip address 192.168.1.21 255.255.255.252

interface GigabitEthernet1/1
 no ip address
```

```
 shutdown

interface GigabitEthernet1/2
 no ip address
 shutdown

interface GigabitEthernet1/3
 description "CIT Uplink"
 ip address 10.21.2.3 255.255.255.0
 ip nat outside

interface TenGigabitEthernet1/4
 no ip address
 shutdown

interface TenGigabitEthernet1/5
 no ip address

interface TenGigabitEthernet2/1
 no ip address
 shutdown

interface TenGigabitEthernet2/2
 no ip address
```

```
 shutdown

interface TenGigabitEthernet2/3
 no ip address
 shutdown

interface TenGigabitEthernet2/4
 no ip address
 shutdown

interface TenGigabitEthernet2/5
 no ip address
 shutdown

interface TenGigabitEthernet2/6
 no ip address
 shutdown

interface TenGigabitEthernet2/7
 no ip address
 shutdown

interface TenGigabitEthernet2/8
 no ip address
```

```
 shutdown

interface GigabitEthernet3/1
 ip address 192.168.1.13 255.255.255.252
 ip nat inside

interface GigabitEthernet3/2
 no ip address
 shutdown

interface GigabitEthernet3/3
 ip address 192.168.1.10 255.255.255.252
 ip nat inside

interface GigabitEthernet3/4
 no ip address
 shutdown

interface GigabitEthernet3/5
 ip address 192.168.2.1 255.255.255.0
 ip nat inside

interface GigabitEthernet3/6
 no ip address
```

```
 shutdown

interface GigabitEthernet3/7
 ip address 192.168.28.1 255.255.255.0

interface GigabitEthernet3/8
 no ip address
 shutdown

interface GigabitEthernet3/9
 no ip address
 shutdown

interface GigabitEthernet3/10
 no ip address
 shutdown

interface GigabitEthernet3/11
 no ip address
 shutdown

interface GigabitEthernet3/12
 no ip address
 shutdown
```

```
interface GigabitEthernet3/13
 no ip address
 shutdown

interface GigabitEthernet3/14
 no ip address
 shutdown

interface GigabitEthernet3/15
 no ip address
 shutdown

interface GigabitEthernet3/16
 no ip address
 shutdown

interface GigabitEthernet3/17
 no ip address
 shutdown

interface GigabitEthernet3/18
 no ip address
 shutdown
```

```
interface GigabitEthernet3/19
 no ip address
 shutdown

interface GigabitEthernet3/20
 no ip address
 shutdown

interface GigabitEthernet3/21
 no ip address
 shutdown

interface GigabitEthernet3/22
 no ip address
 shutdown

interface GigabitEthernet3/23
 no ip address
 shutdown

interface GigabitEthernet3/24
 no ip address
 shutdown
```

```
interface GigabitEthernet3/25
 no ip address
 shutdown

interface GigabitEthernet3/26
 no ip address
 shutdown

interface GigabitEthernet3/27
 no ip address
 shutdown

interface GigabitEthernet3/28
 no ip address
 shutdown

interface GigabitEthernet3/29
 no ip address
 shutdown

interface GigabitEthernet3/30
 no ip address
 shutdown
```

```
interface GigabitEthernet3/31
 no ip address
 shutdown

interface GigabitEthernet3/32
 no ip address
 shutdown

interface GigabitEthernet3/33
 no ip address
 shutdown

interface GigabitEthernet3/34
 no ip address
 shutdown

interface GigabitEthernet3/35
 no ip address
 shutdown

interface GigabitEthernet3/36
 no ip address
 shutdown
```

```
interface GigabitEthernet3/37
 no ip address
 shutdown

interface GigabitEthernet3/38
 no ip address
 shutdown

interface GigabitEthernet3/39
 no ip address
 shutdown

interface GigabitEthernet3/40
 no ip address
 shutdown

interface GigabitEthernet3/41
 no ip address
 shutdown

interface GigabitEthernet3/42
 no ip address
 shutdown
```

```
interface GigabitEthernet3/43
 no ip address
 shutdown

interface GigabitEthernet3/44
 no ip address
 shutdown

interface GigabitEthernet3/45
 no ip address
 shutdown

interface GigabitEthernet3/46
 no ip address
 shutdown

interface GigabitEthernet3/47
 no ip address
 shutdown

interface GigabitEthernet3/48
 no ip address
 shutdown
```

```
interface Vlan1
 no ip address
 shutdown

router rip
 version 2
 network 192.168.0.0
 network 192.168.1.0
 default-information originate
 no auto-summary

ip nat pool g2 10.21.2.3 10.21.2.3 netmask 255.255.255.0
ip nat inside source list 1 interface GigabitEthernet1/3 overload
ip forward-protocol nd
no ip http server
no ip http secure-server

ip route 0.0.0.0 0.0.0.0 10.21.2.1

access-list 1 permit 192.168.0.0 0.0.255.255

control-plane
```

```
dial-peer cor custom


line con 0
 password 7 082D4A4B01
 login
line vty 0 4
 password 7 082D4A4B01
 login
 transport input ssh

monitor session 1 source interface Gi3/13
mac address-table aging-time 480
diagnostic bootup level minimal

end
```

2911-A Router

```
Current configuration : 1884 bytes

version 15.7
service timestamps debug datetime msec
service timestamps log datetime msec
service password-encryption

hostname c345-g2-2911a

boot-start-marker
boot system flash:c2900-universalk9-mz.SPA.157-3.M2.bin
boot system flash sup-bootdisk:c2900-universalk9-mz.SPA.157-3.M2.bin
boot-end-marker

enable secret 5 $1$QxLn$VkuLlYLMcCzYNTVo1CywS/

no aaa new-model

ip domain name cit.lcl
ip cef
no ipv6 cef
multilink bundle-name authenticated
```

```
voice-card 0

vxml logging-tag
license udi pid CISCO2911/K9 sn FTX1631AKEZ

archive
 path tftp://192.168.2.30/$h-$t
 time-period 360
username g2 password 7 000815030C

redundancy

interface Loopback0
 ip address 192.168.3.33 255.255.255.224

interface Embedded-Service-Engine0/0
 no ip address
 shutdown

interface GigabitEthernet0/0
 ip address 192.168.1.14 255.255.255.252
 duplex auto
 speed auto
```

```
interface GigabitEthernet0/1
 ip address 192.168.1.2 255.255.255.252
 duplex auto
 speed auto

interface GigabitEthernet0/2
 no ip address
 shutdown
 duplex auto
 speed auto

router rip
 version 2
 network 192.168.1.0
 network 192.168.3.0
 no auto-summary

ip forward-protocol nd

no ip http server
no ip http secure-server

ip ssh version 2
```

```
ipv6 ioam timestamp

control-plane

mgcp behavior rsip-range tgcp-only
mgcp behavior comedia-role none
mgcp behavior comedia-check-media-src disable
mgcp behavior comedia-sdp-force disable

mgcp profile default

gatekeeper
 shutdown

 vstack

line con 0
 password 7 03085D0E0E
 login
line aux 0
line 2
 no activation-character
 no exec
```

```
 transport preferred none
 transport output lat pad telnet rlogin lapb-ta mop udptn v120 ssh
 stopbits 1
line vty 0 4
 password 7 082D4A4B01
 login local
 transport input ssh

scheduler allocate 20000 1000

end
```

2911-B Router

Current configuration : 1727 bytes

Last configuration change at 18:59:59 UTC Wed Feb 1 2023

version 15.7

service timestamps debug datetime msec

service timestamps log datetime msec

service password-encryption

hostname c345-g2-2911b

boot-start-marker

boot system tftp c2900-universalk9-mz.SPA.157-3.M2.bin 255.255.255.255

boot system flash sup-bootdisk:c2900-universalk9-mz.SPA.157-3.M2.bin

boot-end-marker

enable secret 5 $1$8mf.$cbHFU8GPoh9eIwV0.Gde81

no aaa new-model

ip domain name cit.lcl

ip cef

```
no ipv6 cef

multilink bundle-name authenticated

license udi pid CISCO2911/K9 sn FTX1821ALC6

archive
 path tftp://192.168.2.30/$h-$t
 time-period 360
username g2 password 7 1309111703

redundancy

interface Loopback0
 ip address 192.168.3.3 255.255.255.224

interface Embedded-Service-Engine0/0
 no ip address
 shutdown

interface GigabitEthernet0/0
 ip address 192.168.1.9 255.255.255.252
 duplex auto
 speed auto
```

```
interface GigabitEthernet0/1
 ip address 192.168.1.6 255.255.255.252
 duplex auto
 speed auto

interface GigabitEthernet0/2
 no ip address
 shutdown
 duplex auto
 speed auto

interface GigabitEthernet0/0/0
 no ip address
 shutdown
 duplex auto
 speed auto

router rip
 version 2
 network 192.168.1.0
 network 192.168.3.0
 no auto-summary
```

```
ip forward-protocol nd


no ip http server
no ip http secure-server


ip ssh version 2


control-plane


line con 0
 password 7 141B140E04
 login
line aux 0
line 2
 no activation-character
 no exec
 transport preferred none
 transport output pad telnet rlogin lapb-ta mop udptn v120 ssh
 stopbits 1
line vty 0 4
 password 7 060A092444
 login local
 transport input ssh
```

```
scheduler allocate 20000 1000


end
```

2901-A Router

Current configuration : 1493 bytes

Last configuration change at 18:36:55 UTC Wed Feb 1 2023

version 15.6

service timestamps debug datetime msec

service timestamps log datetime msec

service password-encryption

hostname c345-g2-2901a

boot-start-marker

boot system tftp c2900-universalk9-mz.SPA.156-3.M8.bin 255.255.255.255

boot-end-marker

enable secret 5 1zQFH$7LfOOZTe5pMeZFuW2KiEh.

no aaa new-model

ip domain name cit.lcl

ip cef

no ipv6 cef

Setup and RIP Routing

multilink bundle-name authenticated

license udi pid CISCO2901/K9 sn FTX164583HE

archive

path tftp://192.168.2.30/$h-$t

time-period 360

vtp mode transparent

username g2 password 7 060A092444

redundancy

interface Loopback0

ip address 192.168.1.17 255.255.255.252

interface Embedded-Service-Engine0/0

no ip address

shutdown

interface GigabitEthernet0/0

ip address 192.168.1.1 255.255.255.252

duplex auto

speed auto

Setup and RIP Routing

```
interface GigabitEthernet0/1
ip address 192.168.5.1 255.255.255.0
duplex auto
speed auto

router rip
version 2
network 192.168.1.0
network 192.168.5.0
no auto-summary

ip forward-protocol nd

no ip http server
no ip http secure-server

ip ssh version 2

control-plane

line con 0
password 7 04570D0307
login
line aux 0
```

```
line 2
no activation-character
no exec
transport preferred none
transport output pad telnet rlogin lapb-ta mop udptn v120 ssh
stopbits 1
line vty 0 4
password 7 0703274946
login local
transport input ssh

scheduler allocate 20000 1000

end
```

2901-B Router

Current configuration : 1772 bytes

Last configuration change at 15:54:39 UTC Wed Feb 1 2023

version 15.6

service timestamps debug datetime msec

service timestamps log datetime msec

service password-encryption

hostname c345-g2-2901b

boot-start-marker

boot-end-marker

enable secret 5 1tUao$phATYwqrjIFlN4GKfGobf/

no aaa new-model

ip domain name cit.lcl

ip cef

no ipv6 cef

```
multilink bundle-name authenticated

voice-card 0

vxml logging-tag
license udi pid CISCO2901/K9 sn FTX1502802W
license boot module c2900 technology-package datak9
hw-module pvdm 0/0

archive
 path tftp://192.168.2.30/$h-$t
 time-period 360
username g2 password 7 020A025E03

redundancy

interface Loopback0
 ip address 192.168.1.18 255.255.255.252

interface Embedded-Service-Engine0/0
 no ip address
 shutdown

interface GigabitEthernet0/0
```

```
 ip address 192.168.1.5 255.255.255.252
 duplex auto
 speed auto

interface GigabitEthernet0/1
 ip address 192.168.4.1 255.255.255.0
 duplex auto
 speed auto

router rip
 version 2
 network 192.168.1.0
 network 192.168.4.0
 no auto-summary

ip forward-protocol nd

no ip http server
no ip http secure-server

ip ssh version 2

control-plane
```

```
mgcp behavior rsip-range tgcp-only
mgcp behavior comedia-role none
mgcp behavior comedia-check-media-src disable
mgcp behavior comedia-sdp-force disable

mgcp profile default

gatekeeper
 shutdown

line con 0
 password 7 11051F001F
 login
line aux 0
line 2
 no activation-character
 no exec
 transport preferred none
 transport output pad telnet rlogin lapb-ta mop udptn v120 ssh
 stopbits 1
line vty 0 4
 password 7 0507000A29
 login local
 transport input ssh
```

```
scheduler allocate 20000 1000

end
```

3750-A Switch

Current configuration : 2846 bytes

Last configuration change at 15:39:33 UTC Wed Jan 4 2006

version 15.2

no service pad

service timestamps debug datetime msec

service timestamps log datetime msec

service password-encryption

hostname c345-g2-3750a

boot-start-marker

boot-end-marker

enable secret 5 1a5dU$aAStU1.s0/eciOl3cDX0F.

no aaa new-model

switch 2 provision ws-c3750e-48pd

system mtu routing 1500

```
ip domain-name cit.lcl
vtp mode transparent

archive
 path tftp://192.168.2.30/$h-$t
 time-period 360

spanning-tree mode rapid-pvst
spanning-tree extend system-id

vlan internal allocation policy ascending

interface FastEthernet0
 no ip address

interface GigabitEthernet2/0/1

interface GigabitEthernet2/0/2

interface GigabitEthernet2/0/3

interface GigabitEthernet2/0/4
```

interface GigabitEthernet2/0/5

interface GigabitEthernet2/0/6

interface GigabitEthernet2/0/7

interface GigabitEthernet2/0/8

interface GigabitEthernet2/0/9

interface GigabitEthernet2/0/10

interface GigabitEthernet2/0/11

interface GigabitEthernet2/0/12

interface GigabitEthernet2/0/13

interface GigabitEthernet2/0/14

interface GigabitEthernet2/0/15

interface GigabitEthernet2/0/16

interface GigabitEthernet2/0/17

interface GigabitEthernet2/0/18

interface GigabitEthernet2/0/19

interface GigabitEthernet2/0/20

interface GigabitEthernet2/0/21

interface GigabitEthernet2/0/22

interface GigabitEthernet2/0/23

interface GigabitEthernet2/0/24

interface GigabitEthernet2/0/25

interface GigabitEthernet2/0/26

interface GigabitEthernet2/0/27

interface GigabitEthernet2/0/28

interface GigabitEthernet2/0/29

interface GigabitEthernet2/0/30

interface GigabitEthernet2/0/31

interface GigabitEthernet2/0/32

interface GigabitEthernet2/0/33

interface GigabitEthernet2/0/34

interface GigabitEthernet2/0/35

interface GigabitEthernet2/0/36

interface GigabitEthernet2/0/37

interface GigabitEthernet2/0/38

interface GigabitEthernet2/0/39

interface GigabitEthernet2/0/40

interface GigabitEthernet2/0/41

interface GigabitEthernet2/0/42

interface GigabitEthernet2/0/43

interface GigabitEthernet2/0/44

interface GigabitEthernet2/0/45

interface GigabitEthernet2/0/46

interface GigabitEthernet2/0/47

interface GigabitEthernet2/0/48

interface GigabitEthernet2/0/49

interface GigabitEthernet2/0/50

interface GigabitEthernet2/0/51

interface GigabitEthernet2/0/52

```
interface TenGigabitEthernet2/0/1

interface TenGigabitEthernet2/0/2

interface Vlan1
 ip address 192.168.5.2 255.255.255.0

ip default-gateway 192.168.5.1
ip forward-protocol nd

ip http server
ip http secure-server
ip ssh version 2




line con 0
 password 7 0940480C11
 login
line vty 0 4
 password 7 0940480C11
 login local
 transport input ssh
```

```
line vty 5 15
 login


end
```

3750-B Switch

Current configuration : 2850 bytes

Last configuration change at 16:06:00 UTC Wed Jan 4 2006

version 15.2

no service pad

service timestamps debug datetime msec

service timestamps log datetime msec

service password-encryption

hostname c345-g2-3750b

boot-start-marker

boot-end-marker

enable secret 5 1NLvH$Zj1LwkGFmuq4cg0/kXFWz0

no aaa new-model

switch 2 provision ws-c3750e-48pd

system mtu routing 1500

```
ip domain-name cit.lcl
vtp mode transparent

archive
 path tftp://192.168.2.30/$h-$t
 time-period 360

spanning-tree mode rapid-pvst
spanning-tree extend system-id

vlan internal allocation policy ascending

interface FastEthernet0
 no ip address

interface GigabitEthernet2/0/1

interface GigabitEthernet2/0/2

interface GigabitEthernet2/0/3

interface GigabitEthernet2/0/4

interface GigabitEthernet2/0/5
```

interface GigabitEthernet2/0/6

interface GigabitEthernet2/0/7

interface GigabitEthernet2/0/8

interface GigabitEthernet2/0/9

interface GigabitEthernet2/0/10

interface GigabitEthernet2/0/11

interface GigabitEthernet2/0/12

interface GigabitEthernet2/0/13

interface GigabitEthernet2/0/14

interface GigabitEthernet2/0/15

interface GigabitEthernet2/0/16

interface GigabitEthernet2/0/17

interface GigabitEthernet2/0/18

interface GigabitEthernet2/0/19

interface GigabitEthernet2/0/20

interface GigabitEthernet2/0/21

interface GigabitEthernet2/0/22

interface GigabitEthernet2/0/23

interface GigabitEthernet2/0/24

interface GigabitEthernet2/0/25

interface GigabitEthernet2/0/26

interface GigabitEthernet2/0/27

interface GigabitEthernet2/0/28

interface GigabitEthernet2/0/29

interface GigabitEthernet2/0/30

interface GigabitEthernet2/0/31

interface GigabitEthernet2/0/32

interface GigabitEthernet2/0/33

interface GigabitEthernet2/0/34

interface GigabitEthernet2/0/35

interface GigabitEthernet2/0/36

interface GigabitEthernet2/0/37

interface GigabitEthernet2/0/38

interface GigabitEthernet2/0/39

interface GigabitEthernet2/0/40

interface GigabitEthernet2/0/41

interface GigabitEthernet2/0/42

interface GigabitEthernet2/0/43

interface GigabitEthernet2/0/44

interface GigabitEthernet2/0/45

interface GigabitEthernet2/0/46

interface GigabitEthernet2/0/47

interface GigabitEthernet2/0/48

interface GigabitEthernet2/0/49

interface GigabitEthernet2/0/50

interface GigabitEthernet2/0/51

interface GigabitEthernet2/0/52

interface TenGigabitEthernet2/0/1

```
interface TenGigabitEthernet2/0/2

interface Vlan1
 ip address 192.168.4.2 255.255.255.0

ip default-gateway 192.168.4.1
ip forward-protocol nd

ip http server
ip http secure-server
ip ssh version 2

line con 0
 password 7 10420F1C0D
 login
line vty 0 4
 password 7 121503121A
 login
 transport input ssh
line vty 5 15
 login

end
```