Pre-lab equipment checkup:

- Make sure you have checked all the cable connection on the router and they match with the diagram shown on the lab.

Problem #1: no Ethernet cable on the router Ethernet interface

Problem #2: no clock rate command on the serial (DCE) interface
Check whether you are using DTE or DCE cables using commands below:

```
show controller serial 0
or
show controller serial 1
```

If you see the following screen display, you need to wait for about 2 minutes for the router to boot-up completely. Once it is up and running, enter “router(config)#no service config” to stop the following config to keep popping-up on the screen.
Module 3

- 3.1.2 (Lab Comp. 12.1) Command Modes and Router Identification
- 3.1.3 (Lab Comp. 12.2) Configuring Router Passwords
- 3.1.4 (Lab Comp. 12.3) Using Router show Commands
- 3.1.5 (Lab Comp. 12.4) Configuring a Serial Interface
- 3.1.7 (Lab Comp. 12.5) Configuring an Ethernet Interface
- 3.1.6 (Lab Comp. 12.6) Making Configuration Changes
- 3.2.3 (Lab Comp. 12.7) Configuring Interface Descriptions
- 3.2.5 (Lab Comp. 12.8) Configuring Message-of-the-Day (MOTD)
- 3.2.7 (Lab Comp. 12.9) Configuring Host Tables
- 3.2.9 (Not in the lab Comp.) Copying, Editing, and Pasting Configurations
- (lab Comp12-10) Password Recovery Procedures

Lab 3.1.5 (lab comp. 12.4) Configuring a Serial Interface

Step 7 Configure serial interface Serial 0
From the configure terminal mode, configure serial interface Serial 0 on Router BHM. Refer to interface chart.
BHM(config)#interface serial 0
BHM(config-if)#ip address 192.168.15.1 255.255.255.0
BHM(config-if)#no shutdown
BHM(config-if)#exit
BHM(config)#exit

Change 192.168.15.1 to 192.168.12.2. The following are the correct config.

BHM(config)#interface serial 0
BHM(config-if)#ip address 192.168.15.2 255.255.255.0
BHM(config-if)#no shutdown
BHM(config-if)#exit
BHM(config)#exit

**Lab 3.1.7 (lab comp. 12.5) Configuring an Ethernet Interface**
* You need to complete this lab before 3.1.6.
* You need to make sure you have 2 cables connected to the router. One for the console cable and the other one is for crossover cable connected to PC
* You can use the physical configuration for the lab 3.1.6

**Lab 3.1.6 (lab comp. 12.6) Making Configuration Changes**

Problems in this lab:
* You need to make sure you have 2 cables connected to the router. One for the console cable and the other one is for crossover cable connected to PC just like the lab in the 3.1.7 (Lab Comp. 12.5). Configuring an Ethernet Interface

* Any reference of serial in this lab, you change it to Ethernet:
  For example:
  GAD(config)#interface Serial 0
  GAD(config-if)#ip address 192.168.14.1 255.255.255.0
  GAD(config-if)#no shutdown

  change to:
  GAD(config)#interface ethernet 0
  GAD(config-if)#ip address 192.168.14.1 255.255.255.0
  GAD(config-if)#no shutdown

**Lab 3.2.7 (lab comp. 12.9) Configuring Host Tables**

Step 8 Configure the IP host table for the network
a. Create a name for each router in the network lab. Enter that name along with the IP addresses of the routers interfaces. This is a local name and can be anything that is comfortable. Although the name does not have to match the configured hostname of the router, that would be the normal procedure.

<table>
<thead>
<tr>
<th>Router Name</th>
<th>IP Address Ethernet</th>
<th>IP Address Interface Serial</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

b. From the global configuration mode, enter the command `ip host` followed by the name of each router in the network, as well as all of the IP addresses of the interfaces on each of the routers. For example to name the GAD router accessible from BHM by the name “G”, enter:

```
BHM(conf)# ip host G 172.16.0.1 172.17.0.1
```

**Change G to GAD. The following are the correct config.**

### Step 8 Configure the IP host table for the network

a. Create a name for each router in the network lab. Enter that name along with the IP addresses of the routers interfaces. This is a local name and can be anything that is comfortable. Although the name does not have to match the configured hostname of the router, that would be the normal procedure.

<table>
<thead>
<tr>
<th>Router Name</th>
<th>IP Address Ethernet</th>
<th>IP Address Interface Serial</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

b. From the global configuration mode, enter the command `ip host` followed by the name of each router in the network, as well as all of the IP addresses of the interfaces on each of the routers. For example to name the GAD router accessible from BHM by the name “GAD”, enter:

```
BHM(conf)# ip host GAD 172.16.0.1 172.17.0.1
```

### Step 9 Exit configuration mode and test

a. Go to the enable, or privileged EXEC mode.
b. Examine the host table entries, using the `show ip hosts` command on each router.
c. Are the host entries that were configured in the previous steps visible?

GAD ____________________ BHM ____________________

d. If there are no IP host entries go back and repeat Step 6.
e. Now ping the other router by host name. From the enable prompt type `ping host`. The “host” is the ip host name that was configured in the previous steps. For example for a host name of “G”, enter:

```
BHM# ping G
```
f. Was the ping successful? ____________________
g. If the ping was not successful, check the accuracy of the IP host table entries.
h. From the enable prompt, enter the host name. Press Enter. For example for a host name of “G”, enter:

```
BHM#G
```
i. What happened? __________________________________________________________

1. Change **show ip hosts** to **show hosts**.
2. Change **G** to **GAD**.
The following are the correct config.

**Step 9 Exit configuration mode and test**
a. Go to the enable, or privileged EXEC mode.
b. Examine the host table entries, using the **show hosts** command on each router.
c. Are the host entries that were configured in the previous steps visible?  
   GAD __________________ BHM __________________
d. If there are no IP host entries go back and repeat Step 6.
e. Now ping the other router by host name. From the enable prompt type **ping host**. The “host” is 
   the ip host name that was configured in the previous steps. For example for a host name of  
   “GAD”,
   enter:  
   BHM#ping GAD
f. Was the ping successful? ______________________________________________________
g. If the ping was not successful, check the accuracy of the IP host table entries.
h. From the enable prompt, enter the host name. Press **Enter**. For example for a host name of  
   “G”,
   enter: 
   BHM#GAD
i. What happened? __________________________________________________________

**Lab: Comp12-10: Password Recovery Procedures**

The steps included in this lab are for Cisco 2600 routers. The following links included the password recovery for all Cisco equipment.


The following steps are for 2500 routers.

**Step 1**: Attach a terminal or PC with terminal emulation to the console port of the router. Use the 
following terminal settings:  
9600 baud rate  
No parity  
8 data bits  
1 stop bit  
No flow control  
The required console cable specifications are described in the Cabling Guide for RJ-45 Console 
and AUX Ports(Cisco 1000 Series, 2500 Series, and AS5100).

**Note**: Password recovery procedures cannot be done using telnet connections.
Step 2: Using the power switch, turn the router off and then turn it back on.

Step 3: Send a break sequence from the terminal keyboard within 60 seconds of the power-up to put the router into ROMMON. The break sequence depends on your Operating System/Terminal Emulator. See Standard Break Key Sequence Combinations During Password Recovery for different key combinations.

Step 4: Type `o` and press Enter at the `>` prompt, and record the current value of the configuration register (usually 0x2102, or 0x102):

```
>o
```  

--- Shows the configuration register option settings

Configuration register = 0x2102 at last boot
Bit# Configuration register option settings:
15 Diagnostic mode disabled

......

Step 5: Type `o/r 0x2142` and press Enter at the `>` prompt to boot from Flash without loading the configuration.

Step 6: Type `i` at the `>` prompt and press Enter. The router reboots, but ignores its saved configuration.

Step 7: Type `no` after each setup question or press Ctrl-C to skip the initial setup procedure.

Step 8: Type `enable` at the `Router>` prompt. You'll be in enable mode and see the `Router#` prompt.

Step 9: Type `configure memory` or `copy startup-config running-config` to copy the NVRAM into memory. Do *not* type `write memory` or `copy running startup-config`.

Step 10: Type `write terminal` or `show running-config`.

The `show running-config` and `write terminal` commands show the configuration of the router. In this configuration you see under all the interfaces the `shutdown` command, which means all interfaces are currently shutdown. Also, you can see the passwords either in encrypted or unencrypted format.

Step 11: Type `configure terminal` and make the changes. The prompt is now:

```
hostname(config)#
```

Step 12: Type `enable secret <password>`.

Step 13: Issue the `no shutdown` command on every interface that is used. If you issue a `show ip interface brief` command after you exit configuration mode, every interface that you want to use should be "up up".

Step 14: Type `config-register 0x2102`, or the value you recorded in step 4.

This causes the router to load the Cisco IOS software from the Flash with the configuration from NVRAM at the next reload.

Step 15: Press Ctrl-z to leave the configuration mode.
The prompt is now: 
hostname#

**Step 16:** Type `write memory` or `copy running-config startup-config` to commit the changes.

**Step 17:** Type **Reload** to restart the router with the Cisco IOS software booting from the Flash.
Module 4

- 4.1.4 (Lab Comp. 13.1) Creating a Network Map using CDP
- 4.1.6 (Lab Comp. 13.2) Using CDP Commands
- 4.2.2 (Lab Comp. 13.3) Establishing and Verifying a Telnet Connection
- 4.2.3 (Lab Comp. 13.4) Suspending and Disconnecting Telnet Sessions
- 4.2.4 (Lab Comp. 13.5) Advanced Telnet Operations
- 4.2.5a (Lab Comp. 13.6) Connectivity Tests – Ping
- 4.2.5b (Lab Comp. 13.7) Connectivity Tests – Traceroute
- 4.2.6 (Lab Comp. 13.8) Troubleshooting IP Address Issues

For any of the following labs, if any steps require you to reach (ping or telnet) to remote router, you need to make sure you turn on the RIP router protocol.

4.2.2 (Lab Comp. 13.3) Establishing and Verifying a Telnet Connection
4.2.3 (Lab Comp. 13.4) Suspending and Disconnecting Telnet Sessions
4.2.4 (Lab Comp. 13.5) Advanced Telnet Operations
4.2.5a (Lab Comp. 13.6) Connectivity Tests – Ping
4.2.5b (Lab Comp. 13.7) Connectivity Tests – Traceroute

The following commands shows you how to configure RIP.

```
Router(config)#router rip (turn on routing protocol)
Router(config-router)#network 172.16.0.0  (directed connected network)
Router(config-router)#network 172.17.0.0  (directed connected network)
```

Lab 4.2.6 (Lab Comp. 13.8) Troubleshooting IP Address Issues

- If you use the online lab, there is only one problem.
- If you use the lab companion guide, there are two problems.

Mod 5:

- 5.1.3 (Lab Comp. 14.1) Using the Boot System Command
- 5.1.5 (Lab Comp. 14.2) Troubleshooting Config Register Boot Problems
- 5.2.3 (Lab Comp. 14.3) Managing Configuration Files with TFTP
- **3.2.9** (Lab Comp.14.4) **Copying, Editing, and Pasting Configurations**
- **5.2.5** (Lab Comp. 14.5) Managing IOS Images with TFTP
- **5.2.6a** (Lab Comp. 12.10) Password Recovery Procedures
- **5.2.6b** (Lab Comp. 14.6) Managing IOS Images with ROMmon and Xmodem

**Lab 3.2.9 (Lab Comp.14.4) Copying, Editing, and Pasting Configurations**

- In the addressing table, the subnet mask should all be 255.255.255.0

**Step 2 Configure the interfaces and routing protocol on the Gadsden router**

a. Go to the proper command mode and enter the following:

```
GAD(config)#interface fastethernet 0
GAD(config-if)#ip address 172.16.0.1 255.255.0.0
GAD(config-if)#no shutdown
GAD(config-if)#exit
GAD(config)#interface serial 0
GAD(config-if)#ip address 172.17.0.1 255.255.0.0
GAD(config-if)#clock rate 56000
GAD(config-if)#no shutdown
```

Change 255.255.0.0 to 255.255.255.0. The following are the correct config.

```
GAD(config)#interface fastethernet 0
GAD(config-if)#ip address 172.16.0.1 255.255.255.0
GAD(config-if)#no shutdown
GAD(config-if)#exit
GAD(config)#interface serial 0
GAD(config-if)#ip address 172.17.0.1 255.255.255.0
GAD(config-if)#clock rate 56000
GAD(config-if)#no shutdown
```

**Step 2 Configure the interfaces and routing protocol on the Gadsden router**

a. Go to the proper command mode and enter the following:

```
BHM(config)#interface fastethernet 0
BHM(config-if)#ip address 172.18.0.1 255.255.0.0
BHM(config-if)#no shutdown
BHM(config-if)#exit
BHM(config)#interface serial 0
BHM(config-if)#ip address 172.17.0.2 255.255.0.0
BHM(config-if)#no shutdown
BHM(config-if)#exit
```

Change 255.255.0.0 to 255.255.255.0. The following are the correct config.

```
BHM(config)#interface fastethernet 0
BHM(config-if)#ip address 172.18.0.1 255.255.255.0
BHM(config-if)#no shutdown
BHM(config-if)#exit
BHM(config)#interface serial 0
BHM(config-if)#ip address 172.17.0.2 255.255.255.0
BHM(config-if)#no shutdown
BHM(config-if)#exit
Lab 5.2.5  (Lab Comp. 14.5) Managing IOS Images with TFTP

- The Lab 5.2.5 needs to included setup with a crossover cable between router and PC.

Step 10 Copy the IOS image to the TFTP server

  a. From the console session in the privileged EXEC mode, enter the `copy flash tftp` command. At the prompt enter the IP address of the TFTP server:

  GAD#copy flash tftp
  Source filename []? flash:c1700-y-mz.122-11.T.bin
  Address or name of remote host []? 192.168.14.2
  Destination filename [c1700-y-mz.122-11.T.bin]? y

Change “y” to “ENTER”. The following are the correct config.

  a. From the console session in the privileged EXEC mode, enter the `copy flash tftp` command. At the prompt enter the IP address of the TFTP server:

  GAD#copy flash tftp
  Source filename []? flash:c1700-y-mz.122-11.T.bin
  Address or name of remote host []? 192.168.14.2
  Destination filename [c1700-y-mz.122-11.T.bin]? ENTER

Lab 7.3.5 Configuring IGRP

Lab 7.3.5 Configuring IGRP

Incorrect IP ardes assignment.

<table>
<thead>
<tr>
<th>Router Designation</th>
<th>Router Name</th>
<th>Fast Ethernet 0 Address</th>
<th>Interface Type</th>
<th>Serial 0 Address</th>
<th>Subnet mask for both interfaces</th>
<th>Enable secret password</th>
<th>Enable, VTY and console password</th>
</tr>
</thead>
<tbody>
<tr>
<td>Router 1</td>
<td>GAD</td>
<td>192.168.20.1</td>
<td>DCE</td>
<td>172.17.0.1</td>
<td>255.255.255.0</td>
<td>class</td>
<td>Cisco</td>
</tr>
<tr>
<td>Router 2</td>
<td>BHM</td>
<td>192.168.25.1</td>
<td>DTE</td>
<td>172.17.0.2</td>
<td>255.255.255.0</td>
<td>class</td>
<td>Cisco</td>
</tr>
</tbody>
</table>

Corrected IP ardes assignment.

<table>
<thead>
<tr>
<th>Router Designation</th>
<th>Router Name</th>
<th>Fast Ethernet 0 Address</th>
<th>Interface Type</th>
<th>Serial 0 Address</th>
<th>Subnet mask for both interfaces</th>
<th>Enable secret password</th>
<th>Enable, VTY and console password</th>
</tr>
</thead>
<tbody>
<tr>
<td>Router 1</td>
<td>GAD</td>
<td>192.168.20.1</td>
<td>DCE</td>
<td>192.168.99.1</td>
<td>255.255.255.0</td>
<td>class</td>
<td>cisco</td>
</tr>
<tr>
<td>Router 2</td>
<td>BHM</td>
<td>192.168.25.1</td>
<td>DTE</td>
<td>192.168.22.2</td>
<td>255.255.255.0</td>
<td>class</td>
<td>cisco</td>
</tr>
</tbody>
</table>