Lab – Configure and Verify Password Recovery

1. Topology



1. Objectives

Part 1: Configure Basic Device Settings

Part 2: Reboot Router and Enter ROMMON

Part 3: Reset Password and Save New Configuration

Part 4: Verify the Router is Loading Correctly

1. Background / Scenario

The purpose of this lab is to reset the enable password on a specific Cisco router. The enable password protects access to privileged EXEC and configuration mode on Cisco devices. The enable password can be recovered, but the enable secret password is encrypted and will need to be replaced with a new password.

In order to bypass a password, a user must be familiar with the ROM monitor (ROMMON) mode, as well as the configuration register setting for Cisco routers. ROMMON is basic CLI software stored in ROM that can be used to troubleshoot boot errors and recover a router when an IOS is not found.

In this lab, you will change the configuration register in order to reset the enable password on a Cisco router.

1. Required Resources
* 1 Router (Cisco 1941 with Cisco IOS Release 15.2(4)M3 universal image or comparable)
* 1 PC (Windows 7, Vista, or XP with terminal emulation program, such as Tera Term)
* Console cable to connect to the Cisco IOS device via the console port
1. Configure Basic Device Settings

In Part 1, you will set up the network topology and copy the basic configuration into R1. The password is encrypted to setup the scenario of needing to recover from an unknown enabled password.

* 1. Cable the network as shown in the topology.
	2. Initialize and reload the routers as necessary.
	3. Configure basic settings on the router.
		1. Console into the router and enter global configuration mode.
		2. Copy the following basic configuration and paste it to the running-configuration on the router.

no ip domain-lookup

service password-encryption

hostname R1

enable secret 5 $1$SBb4$n.EuL28kPTzxMLFiyMLl5/

banner motd #

Unauthorized access is strictly prohibited. #

line con 0

logging sync

end

write

exit

* + 1. Press **Enter** and try to enable Privileged Exec mode.

As you can see, access to a Cisco IOS device is very limited if the enable password is unknown. It is important for a network engineer to be able to recover from an unknown enable password issue on a Cisco IOS device.

1. Reboot Router and Enter ROMMON
	1. Reboot the router.
		1. While still consoled into R1, remove the power cord from the back of R1.

**Note**: If you are working in a NETLAB pod, ask your instructor how to power cycle the router.

* + 1. From the console session on PC-A, issue a hard break to interrupt the routers normal boot process and enter ROMMON mode.

**Note**: To issue a hard break in Tera Term, press the **Alt** and the **B** keys simultaneously.

* 1. Reset the configuration register.
		1. From the ROMMON prompt, type a **?**, then press **Enter**. This will display a list of available ROMMON commands. Look for the **confreg** command in this list.

rommon 1 > **?**

alias set and display aliases command

boot boot up an external process

break set/show/clear the breakpoint

confreg configuration register utility

cont continue executing a downloaded image

context display the context of a loaded image

cookie display contents of motherboard cookie PROM in hex

dev list the device table

dir list files in file system

frame print out a selected stack frame

help monitor builtin command help

history monitor command history

iomemset set IO memory percent

meminfo main memory information

repeat repeat a monitor command

reset system reset

rommon-pref Select ROMMON

set display the monitor variables

showmon display currently selected ROM monitor

stack produce a stack trace

sync write monitor environment to NVRAM

sysret print out info from last system return

tftpdnld tftp image download

unalias unset an alias

unset unset a monitor variable

hwpart Read HW resources partition

rommon 2 >

**Note**: The number at the end of the ROMMON prompt will increment by one each time a command is entered.

* + 1. Type **confreg 0x2142** and press **Enter**. Changing the register to Hex 2142 tells the router not to automatically load the startup configuration when booting. The router will need to be rebooted for the configuration register change to take effect.

rommon 2 > **confreg 0x2142**

You must reset or power cycle for new config to take effect

rommon 3 >

* + 1. Issue the **reset** ROMON command to reboot the router.

rommon 3 > **reset**

System Bootstrap, Version 15.0(1r)M15, RELEASE SOFTWARE (fc1)

Technical Support: http://www.cisco.com/techsupport

Copyright (c) 2011 by cisco Systems, Inc.

Total memory size = 512 MB - On-board = 512 MB, DIMM0 = 0 MB

CISCO1941/K9 platform with 524288 Kbytes of main memory

Main memory is configured to 64/-1(On-board/DIMM0) bit mode with ECC disabled

Readonly ROMMON initialized

program load complete, entry point: 0x80803000, size: 0x1b340

program load complete, entry point: 0x80803000, size: 0x1b340

IOS Image Load Test

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Digitally Signed Release Software

program load complete, entry point: 0x81000000, size: 0x480ce0c

Self decompressing the image : ##################################################################################################################################################################################################################################################################################################################################################################################################################################################################################################################################################################################################################################################################################################################################################################### [OK]

< output omitted >

* + 1. When asked if you would like to enter the initial configuration dialog, type **no** and press **Enter**.

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

* + 1. The router will complete its boot process and display the User Exec prompt. Enter Privileged Exec mode.

Router> **enable**

Router#

1. Reset Password and Save New Configuration
	* 1. While in Privileged Exec mode, copy the startup configuration to the running configuration.

Router# **copy startup-config running-config**

Destination filename [running-config]?

1478 bytes copied in 0.272 secs (5434 bytes/sec)

R1#

* + 1. Enter global configuration mode.
		2. Reset the enable secret password to **cisco**.

R1(config)# **enable secret cisco**

* + 1. Reset the configuration register back to 0x2102 to allow the startup configuration to automatically load the next time the router is rebooted.

R1(config)# **config-register 0x2102**

* + 1. Exit global configuration mode.
		2. Copy the running configuration to the startup configuration.

R1# **copy running-config startup-config**

Destination filename [startup-config]?

Building configuration...

[OK]

R1#

You have successfully reset the enable password on a router.

1. Verify the Router is Loading Correctly
	1. Reboot R1.
	2. Verify that the startup configuration loaded automatically.
	3. Enter Privileged Exec mode.

The new enable secret password should be cisco. If you are able to enter Privileged Exec mode, then you have successfully completed this lab.

1. Reflection

Why is it of critical importance that a router be physically secured to prevent unauthorized access?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_