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| **Sheridan College** | | | |
| **Course** | **Data Network Design and Configuration –**  **Routers** | | |
| **Professor** | **Ida Leung** | | |
| **Student Name** | **Kunjan Patel** | | |
| **Table number** |  | **Partner:** | |
| **Lab 2: Basic Router (or Router) Configuration** | | | |
| **Performed Date** | **27/5/2019** | | |
| **Instructor's Sign** |  | | **(marks)** |

**IMPORTANT**: Fill up all the fields above, except the last row. (10% marks reduction for any empty field)

**OBJECTIVES:**

* Logon to Cisco router
* Understand modes of operation
* Investigate available major commands
* Make basic configuration of the router/router, learn some basic commands
* Connect PCs to the router for data communication and verify connectivity
* We will use Cisco Packet Tracer to simulate the situation

**Note:** Students should work individually

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| **Part A: Logging in and Navigating Basic Modes of Operation** |

**Task 1: Choose two different types of routers**

1. Choose router 2901 model and router 2911 model
2. Go to the CLI mode of the devices

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| router> |

May ask if you want to enter the initial configuration dialog. Enter yes and do some basic setup.

Setup the hostname to <initial\_of\_your\_name\_router1> & (initial\_of\_your\_name *router2> example il*\_router\_1

Setup the secret and enable password. Write it down as you will need them for further configuration.

You can exit the initial configuration.

1. Type ‘enable’ and hit Enter to enter into the **privileged EXEC** mode of the router.

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| Router# |

The ‘#’ sign in the prompt indicate that you are in **privileged EXEC**. In this mode you have full access to the configuration of the router (router).

**Task 2: View Default Configuration of the router**

1. Type ‘**show running-config**’ to see the current configuration of the router. The output should something similar to below. Investigate the output. (**Note**: The bold face items are what you should type. The rest is what appears (output) in the on the console. The bold and italic is my comment.)

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| Router#**show running-config**  Building configuration...  Current configuration : 1009 bytes  !  version 12.2  no service timestamps log datetime msec  no service timestamps debug datetime msec  no service password-encryption  !  hostname Router  !  !  !  interface FastEthernet0/1  !  interface FastEthernet0/2  !  !  interface GigabitEthernet1/1  !  interface GigabitEthernet1/2  !  interface Vlan1  no ip address  shutdown  !  line con 0  !  line vty 0 4  login  line vty 5 15  login  !  !  end  il\_router\_1# |

**Note**: Depending on the particular router you are using, you may get different output.

1. Use the ‘?’ command to view all the available command at this user Exec mode. The following listing is a sample output. You will gradually learn to use some of the commands in this course.

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| Il\_router\_1#**?**  Exec commands:  <1-99> Session number to resume  clear Reset functions  clock Manage the system clock  configure Enter configuration mode  connect Open a terminal connection  copy Copy from one file to another  debug Debugging functions (see also 'undebug')  delete Delete a file  **!Output omitted- KM**  ping Send echo messages  reload Halt and perform a cold restart  resume Resume an active network connection  setup Run the SETUP command facility  show Show running system information  telnet Open a telnet connection  terminal Set terminal line parameters  traceroute Trace route to destination  undebug Disable debugging functions (see also 'debug')  vlan Configure VLAN parameters  write Write running configuration to memory, network, or terminal  Router# |

**Note**: Again your actual output may vary.

1. Use the ‘**show version**’ command to see the detailed version information of the router. The output should be similar to the following. Specific details may vary.

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| Il\_router\_1#**show version**  Cisco IOS Software, C2960 Software (C2960-LANBASE-M), **Version 12.2(25)FX**, RELEASE SOFTWARE (fc1)  Copyright (c) 1986-2005 by Cisco Systems, Inc.  Compiled Wed 12-Oct-05 22:05 by pt\_team  ROM: C2960 Boot Loader (C2960-HBOOT-M) Version 12.2(25r)FX, RELEASE SOFTWARE (fc4)  System returned to ROM by power-on  Cisco WS-C2960-24TT (RC32300) processor (revision C0) with 21039K bytes of memory.  **!Output omitted -KM**  Configuration register is 0xF  Il\_router\_01# |

1. Copy and paste (not screenshot) your actual output (text) in the box below.

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| **Output#1**: Router 2901 version information |
| Cisco IOS Software, C2900 Software (C2900-UNIVERSALK9-M), Version 15.1(4)M4, RELEASE SOFTWARE (fc2)  Technical Support: http://www.cisco.com/techsupport  Copyright (c) 1986-2012 by Cisco Systems, Inc.  Compiled Thurs 5-Jan-12 15:41 by pt\_team  ROM: System Bootstrap, Version 15.1(4)M4, RELEASE SOFTWARE (fc1)  cisco2901 uptime is 4 minutes, 39 seconds  System returned to ROM by power-on  System image file is "flash0:c2900-universalk9-mz.SPA.151-1.M4.bin"  Last reload type: Normal Reload  This product contains cryptographic features and is subject to United  States and local country laws governing import, export, transfer and  use. Delivery of Cisco cryptographic products does not imply  third-party authority to import, export, distribute or use encryption.  Importers, exporters, distributors and users are responsible for  compliance with U.S. and local country laws. By using this product you  agree to comply with applicable laws and regulations. If you are unable  to comply with U.S. and local laws, return this product immediately.  A summary of U.S. laws governing Cisco cryptographic products may be found at:  http://www.cisco.com/wwl/export/crypto/tool/stqrg.html  If you require further assistance please contact us by sending email to  export@cisco.com.  Cisco CISCO2901/K9 (revision 1.0) with 491520K/32768K bytes of memory.  Processor board ID FTX152400KS  2 Gigabit Ethernet interfaces  DRAM configuration is 64 bits wide with parity disabled.  255K bytes of non-volatile configuration memory.  249856K bytes of ATA System CompactFlash 0 (Read/Write)  License Info:  License UDI:  -------------------------------------------------  Device# PID SN  -------------------------------------------------  \*0 CISCO2901/K9 FTX152447Z8-  Technology Package License Information for Module:'c2900'  ----------------------------------------------------------------  Technology Technology-package Technology-package  Current Type Next reboot  -----------------------------------------------------------------  ipbase ipbasek9 Permanent ipbasek9  security None None None  uc None None None  data None None None  Configuration register is 0x2102 |

1. Answer the following question using the output from the version info of your router.

**Output#2**:

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| **Item** | **Value** |
| What is the model of your router? | C2900 |
| What is the IOS version of the router? | 15.1(4)M4 |
| How many Fast Ethernet ports are the in the router? | ZERO |
| How many Giga bit ports are there (if there are any)? | TWO |
| How many 10Giga bit ports are there (if there are any)? | ZERO |
| What is the base MAC address? | 000d.bd81.420X |

**Task 3a: Build the Connectivity between two routers**

1. Use fibre connect router1 to router 2 GigabitEthernet interfaces
2. Use the cli to build a basic configuration. Enable “Ipv6 unicast routing” under global configuration mode. Enter the global configuration mode as below :

il\_router\_1>enable

il\_router\_1#config terminal <- enter “global configuration mode”

To enter the interface specific configuration, enter “interface <interface\_name>” to configure the interface address. Build the connectivity based on the following information:

Use the following for IPv4 subnet: 24.114.114.128/30 (1st IP for router 1 and 2nd IP for router 2)

Use the following for IPv6 subnet: 2607:f798:1000:f::/127 (1st IP for router 1 and 2nd IP for router 2)

Enable cdp for both end interfaces.

**Task 3b : Verify Connectivity between the routers**

1. Use the **ping** command under the command prompt to test the connectivity between the routers for both IPv4 and Ipv6. Was the ping successful? If not, troubleshoot.
2. If yes, take a screenshot and place in the output box below.

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| **Output#7**: |
| Fig 1.1 Router 1 ping      Fig 1.2 router 2 ping |

At the end of the activity, enter the command “ copy runn start” to save the current configuration. Submit your pkt file as well.

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| **Part C: Commands Learned** |

In the table below note the functions of each command that you used/learned in this lab.

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| **Command** | **Function** |
| Enable | Allow to enter in configuration mode |
| Show version | Display manufacture information of device |
| ? | List all available options and arguments |
| Show interfaces | Display information of available interfaces in device |
| Config terminal | Allow to enter configuration mode of device network settings |
| exit | Close out current mode |
| end | End of current configuration setup |
| hostname | Display device hostname |
| Show cdp neighbor | Display nearby connected devices |
| Show running-config | Display current device settings before saving it |
| Show startup-config | Display saved configurations of device |
| Show ip interface brief | Gives you overall detail of available interfaces |
| Show mac-address-table | Display mac address entry related to device based on packet request |

**References**

[1] http://www.cisco.com/en/US/tech/tk801/tk36/technologies\_tech\_note09186a0080094465.shtml