Description: How to configure GRE Tunnel between a company Head Quater and a Branch.

Use Case: Bank: GT Bank HQ and a Branch

Lab Environment: VMware EVE NG VM, Visual Studio Code IDE.

Required Resources: Python, Library, Mikrotik CHR ROSv7

Objectives:

1. Verify Router Connectivity
2. Configure GRE Tunnels
3. Verify PC Connectivity

Scenario or Case Use:

You are the network administrator for a company which wants to set up a GRE tunnel to a remote office. Both networks are locally configured, and need only tunnel configure

TASK

1. Design the topology-This show the network node and the connection between each node in the network.

1. Select 4 Mikrotik routers and a Management Cloud Network (named Net)
2. Select 2 cisco switches, 2 VPC and 2 window-7 computers
3. Connect the Mikrotik router, cisco switch, the VPC and computer as express and shown in the Table and figure below
4. Arrange the network nodes very well.
5. Label the nodes and label nodes interface and connections accordingly as they were used or connected

Addressing Table

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Device** | **Network Identity** | **Interface** | **IP Address** | **Subnet | CIDR** | **Default Gateway** |
| **Mikrotik1** | HQ-MKT | Eth1 | DHCP | 255.255.255.0 | /24 |  |
| Eth2 | 192.168.2.1 | 255.255.255.0 | /24 |  |
| Eth3 | 172.16.1.1 | 255.255.255.252 | /30 | 172.16.1.2 |
| GRE | 192.168.10.1 | 255.255.255.252 | /30 | 192.168.10.2 |
| **Mikrotik2** | ISP-PE-HQ | Eth1 | DHCP | 255.255.255.0 | /24 |  |
| Eth2 | 172.16.1.2 | 255.255.255.252 | /30 | 172.16.1.1 |
| Eth3 | 172.16.1.5 | 255.255.255.252 | /30 | 172.16.1.6 |
| **Mikrotik3** | ISP-PE-BH | Eth1 | DHCP | 255.255.255.0 | /24 |  |
| Eth2 | 172.16.1.9 | 255.255.255.252 | /30 | 172.16.1.10 |
| Eth3 | 172.16.1.6 | 255.255.255.252 | /30 | 172.16.1.5 |
| **Mikrotik4** | BH-MKT | Eth1 | DHCP | 255.255.255.0 | /24 |  |
| Eth2 | 172.16.1.10 | 255.255.255.252 | /30 | 172.16.1.9 |
| Eth3 | 192.168.1.1 | 255.255.255.0 | /24 | 172.16.1.2 |
| GRE | 192.168.10.2 | 255.255.255.252 | /30 | 192.168.10.1 |
| **VPC** | VPC-19 | NIC | 192.168.1.2 | 255.255.255.0/24 | 192.168.1.1 |
| **VPC** | VPC-17 | NIC | 192.168.2.2 | 255.255.255.0/24 | 192.168.2.1 |

Note:

1.The network *node(s)* refers to the Routers, Switches, VPC and computers as mention above

2. The Management Cloud Network (also known as Net) is the interface or passage between the connected node and the other external application on the HOST computer. External App like CMD, Visual studio code.

IMAGE

2. Basic Mikrotik Router Configuration and Telnet Setup

1. Power all the devices (nodes) in the topology. (Tip: Give some seconds or minutes for each to boot-up)
2. Set admin password
3. Ensure that router get IP address from the Net node thru its ether1 (a DHCP client interface by default) connection
4. Ensure that the IP on the interface (ether1) is reachable from the Visual studio code terminal using ping command
5. Verify password.
6. Verify ether1 interface IP address.
7. Test and verify reachability to the ether1 IP address or interface for VSC or HOST CMD.

3. Developed/Write the Python script with Mikrotik router GRE Tunnel script

i. Develop python code using Telnetlib or Telnetlib3 with the following step

1. Define the required libraries
2. Define the required Variables
3. Using the info (IP, Username and password) to telnet into the Router
4. Execute some command on the router
5. Generate command line configuration

F1 Give the list of available commands

command F1 Give help on the command and list of arguments

[Tab] Complete the command/word. If the input is ambiguous,

a second [Tab] gives possible options

F3 or Ctrl-R Search command history

F4 or Ctrl-X Toggle safe mode

F5 or Ctrl-L Repaint the screen

F7 Toggle hotlock mode

Ctrl-\ Split line

Home or Ctrl-A Go to the beginning of the line

End or Ctrl-E Go to the end of the line

Ctrl-C Interrupt current action

Ctrl-D Terminate session (on empty prompt)

Ctrl-K Delete to the end of the line

Ctrl-U Delete to the beginning of the line

Ctrl-T Switch to a background task

/ Move up to base level

.. Move up one level

/command Use command at the base level