**Experiment 3**

SNMP in Cisco Packet Tracer

1. Complete the network sample as in the photo without configuring the IP address of the **switches** and the **routers**.

|  |  |
| --- | --- |
| Device | Addresses |
| PC 0 | IP: 172.16.0.3  Subnet Mask: /16  Default Gateway: 172.16.0.1 |
| PC 1 | IP: 172.16.0.2  Subnet Mask: /16  Default Gateway: 172.16.0.2 |
| PC 2 | IP: 192.168.0.3  Subnet Mask: /24  Default Gateway: 192.168.0.1 |
| Router\_A | Fastethernet Interface: f 0/0: 172.16.0.1  Subnet Mask: /16  Serial Interface: s 0/0/0: 123.12.1.1  Subnet Mask: /30 |
| Router\_B | Fastethernet Interface: f 0/0: 192.168..0.1  Subnet Mask: /24  Serial Interface: s 0/0/0: 123.12.1.2  Subnet Mask: /30 |
| Switch\_A | Vlan 1 IP address 172.16.0.99  Subnet Mask: /16  Default Gateway: 172.16.0.1 |
| Switch\_B | Vlan 1 IP address 172.16.0.100  Subnet Mask: /16  Default Gateway: 172.16.0.1 |
| Switch\_A | Vlan 1 IP address 172.16.0.101  Subnet Mask: /16  Default Gateway: 172.16.0.1 |
| Switch\_D | Vlan 1 IP address 192.168..0.100  Subnet Mask: /24  Default Gateway: 192.168..0.1 |

1. For Router\_A and Router\_B, go to the Physical tab and add WIC\_2T module (This step will add the serial ports)
2. Now we will configure the switches and routers manually as follows:

**Routers:**

Router>enable

Router#configure terminal

Router(config)#hostname Router\_A

Router\_A(config)#int f0/0

Router\_A(config-if)#ip address 172.16.0.1 255.255.0.0

Router\_A(config-if)#no shutdown

Router\_A(config-if)#ex

!

Router\_A(config)#int s0/0/0

Router\_A(config-if)#ip address 123.12.1.1 255.255.255.252

Router\_A(config-if)#clock rate 64000

Router\_A(config-if)#no shutdown

Router\_A(config-if)#ex

!

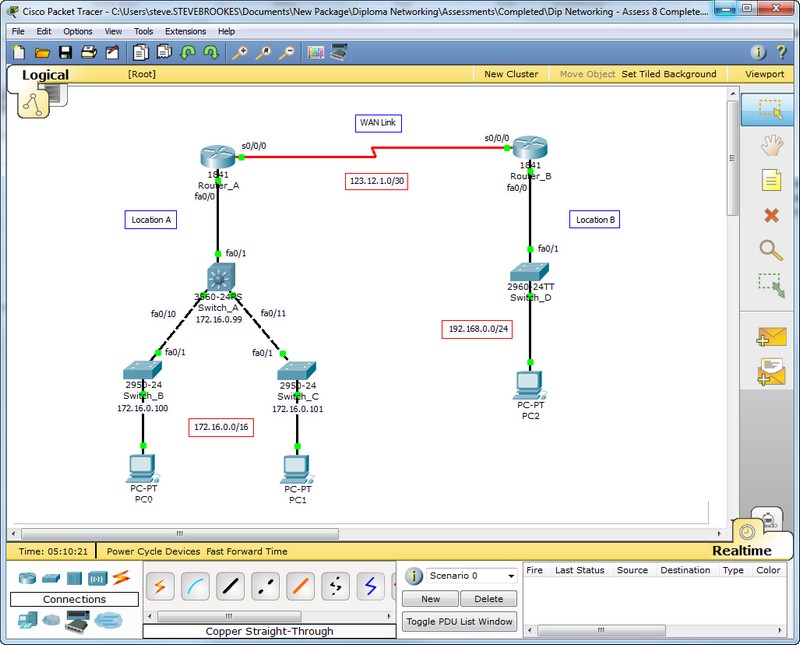
Router\_A(config)#do copy run start

Destination filename [startup-config]?

Building configuration...

[OK]

Router\_A(config)#

[](http://www.stevebrookes.id.au/mediawiki/index.php/File:SNMP_A1.jpg)

*Sample network used for the following configuration.*

With both routers and the switches configured it is a good idea to add a routing protocol to the routers so that we get to the point where everything can ping everything else. In this case I'll use EIGRP but in a small network like this RIP would also be fine.

Router\_A(config)#router eigrp 1

Router\_A(config-router)#network 172.16.0.0

Router\_A(config-router)#network 123.12.1.0

Router\_A(config-router)#no auto-summary

Router\_A(config-router)#ex

Router\_A(config)#

Next we'll configure SNMP, as mentioned previously there are not a lot of options here so the configuration is pretty simple. Below is the configuration for Router\_A but the other router and switches use exactly the same syntax - nothing changes.

Router\_A(config)#snmp-server community testro ro

Router\_A(config)#snmp-server community testrw rw

Those two lines effectively start the SNMP service and apply 'passwords' (for want of a better name). The ro and rw at the end of each line refer to Read Only (ro) and Read Write (rw) respectively. That's it, nothing else we can do on the routers or switches. Worth mentioning here that the switches will have to have an IP address and default-gateway assigned so we can contact them. A sample for the syntax for doing that is below:

Switch\_D>enable

Switch\_D#configure terminal

Switch\_D(config)#int vlan 1

Switch\_D(config-if)#ip address 192.168.0.100 255.255.255.0

Switch\_D(config-if)#no shutdown

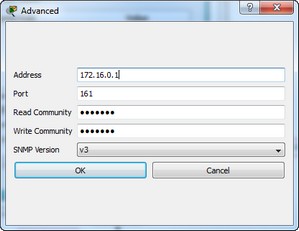
Switch\_D(config-if)#ex

!

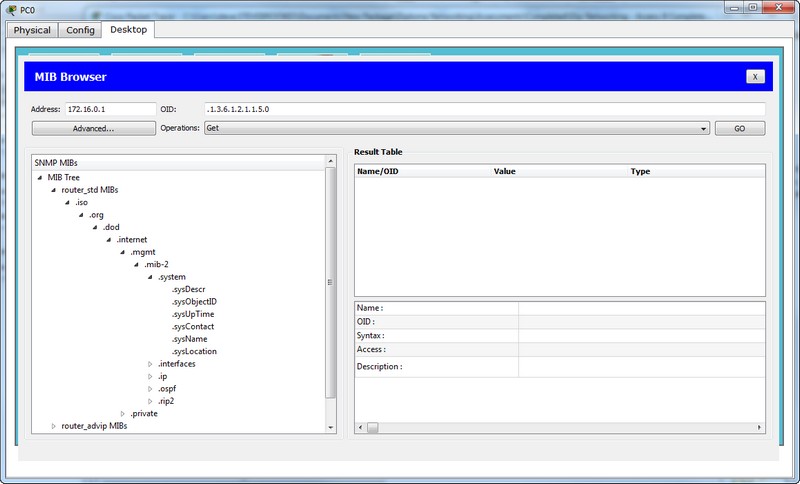
Switch\_D(config)#ip default-gateway 192.168.0.1

MIB

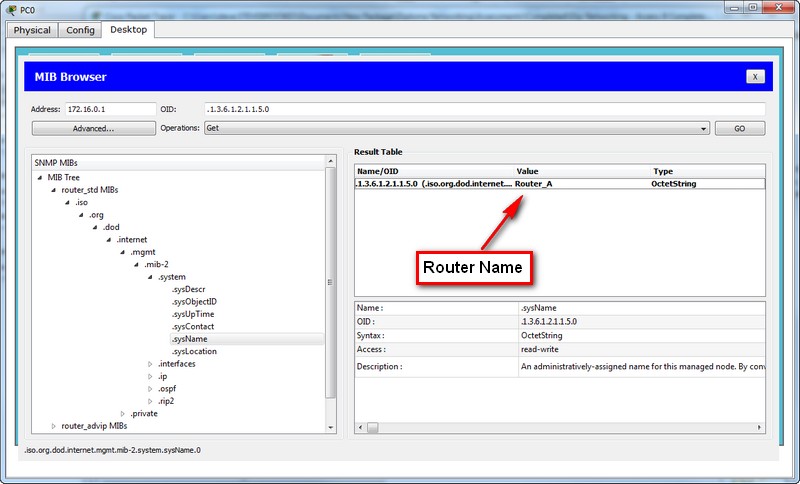
1. Now that we have done all the configuration we can fire up the MIB browser and see what we can actually do now. On a PC click the Desktop tab and select the MIB Browser.
2. First we have to select a target (or an SNMP agent) so click the Advanced... button and enter the IP address of the device you want to connect to; in this case I'll choose Router\_A:

[](http://www.stevebrookes.id.au/mediawiki/index.php/File:SNMP_A3.jpg)

Leave the port number as 161 and enter the two 'passwords' we used on all the routers and switches; in this case the two we had were testro and testrw then select the SNMP version, we'll use v3. We should now be ready to connect to the device, so in the left hand pane expand out the MIB Tree as shown below:

[](http://www.stevebrookes.id.au/mediawiki/index.php/File:SNMP_A4.jpg)

Once there we can start to view a few of the options available. For example, click on .sysName and in the Operations: drop down box select Get and hit the Go button and you should see the display below:

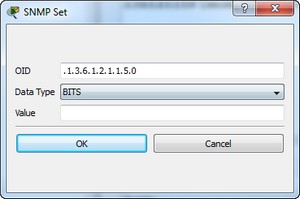
[](http://www.stevebrookes.id.au/mediawiki/index.php/File:SNMP_A5.jpg)

Play around with the various fields you have and keep clicking the Get button; feel free to knock yourself out in the other areas (like .interfaces for example) and you will get a bit of an idea how much information is available on the device. Also try connecting to the switches and the other router as well, remember that you will have to go back into the Advanced... area and select the new target to do this.

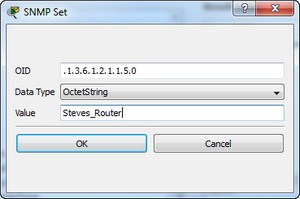
Setting Values

As well as viewing information we can also Set some fields; not all fields are writable so it won't work with everything. Using the .sysName field we had a look at earlier we'll go and change the value for that.

To do this change the Operations: drop down box and pick Set and a dialog box will pop up like the one below:

[](http://www.stevebrookes.id.au/mediawiki/index.php/File:SNMP_A6.jpg)

Leave the OID line as is but change the Data Type to OctetString. This Data Type should be the same type of data as displayed in the Result Table when you performed the Get function earlier. Then enter a value in the Value field as shown below:

[](http://www.stevebrookes.id.au/mediawiki/index.php/File:SNMP_A7.jpg)

Hit the OK button and the value will be sent to the device. You can check this by switching back to the Get function and seeing the new value. Also in this case it will change the router name so you should also see that in the running configuration for the router:

Steves\_Router#sh run

Building configuration...

Current configuration : 898 bytes

!

version 12.4

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname Steves\_Router

That's about all you can do with SNMP in Packet Tracer but it should give an idea of the capabilities of SNMP, especially in a large network.