

## P03: Networking with Layer 1 Devices, Simulating Internet

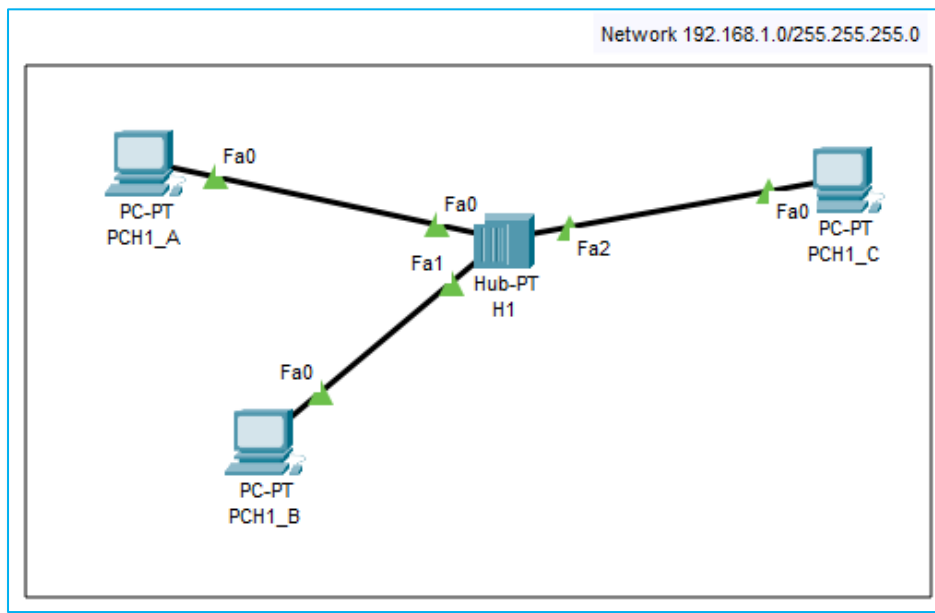
### Q1: Understand the elements on the Layer 1

An Ethernet hub, active hub, network hub, repeater hub, multiport repeater, or simply hub is a network hardware device for connecting multiple Ethernet devices together and making them act as a single network segment. It has multiple input/output (I/O) ports, in which a signal introduced at the input of any port appears at the output of every port except the original incoming. A hub works at the physical layer (layer 1) of the OSI model.



**Q2: Simple network with a hub**

- Open **PTLab 03.1.pka** and implement the network shown below:



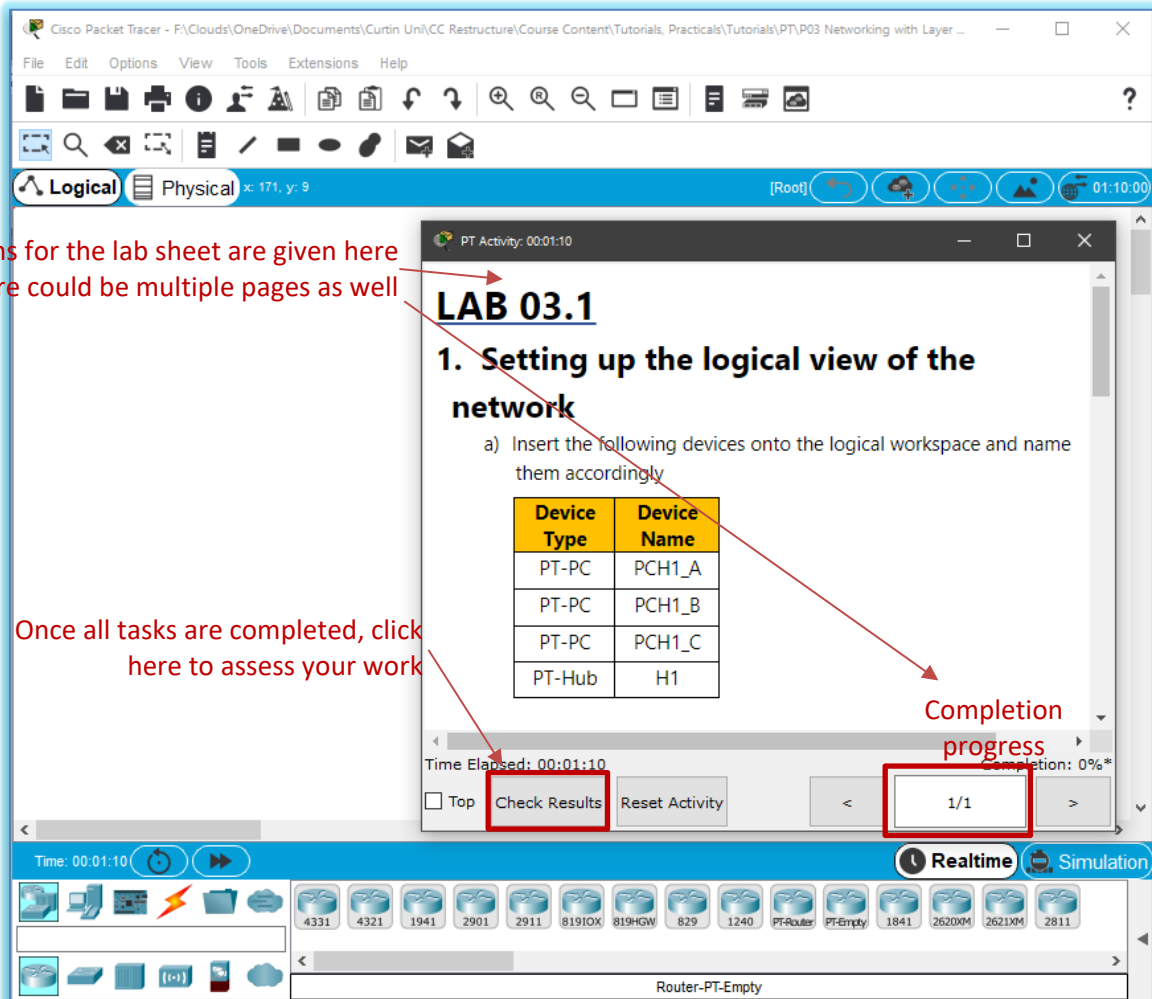
### Q3: Working with a packet tracer activity files

- Packet tracer activity files (.pka), unlike regular packet tracer files (.pkt); are used to assess your work while providing a feedback.
- Open packet tracer activity for the first time?
- 

Instructions for the lab sheet are given here  
There could be multiple pages as well

Once all tasks are completed, click here to assess your work

Completion progress



Device Type	Device Name
PT-PC	PCH1_A
PT-PC	PCH1_B
PT-PC	PCH1_C
PT-Hub	H1

Time Elapsed: 00:01:10

Check Results Reset Activity

1/1

Router-PT-Empty

Activity Results Time Elapsed: 00:01:09

You did not complete the activity. Please close this window and try again.

Overall Feedback **Assessment Items** Connectivity Tests

Expand/Collapse All Show Incorrect Items

Assessment Items	Status	Points	Component(s)	Feedback
Encircling Tests				
Shape Test 0				
Included				
H1				
PCH1_A				
PCH1_A itself	Incorrect	1	Other	Mark the network boundary for "Network 192.168.1.0 / ...
PCH1_B				
PCH1_B itself	Incorrect	1	Other	Mark the network boundary for "Network 192.168.1.0 / ...
PCH1_C				
PCH1_C itself	Incorrect	1	Other	Mark the network boundary for "Network 192.168.1.0 / ...
Must Match Name	Incorrect	1	Network Understanding	Name the rectangle shape to "Network 192.168.1.0 / 25...
Device Model	Correct	1	Network Design	
PCH1_A				
Device Model	Correct	1	Network Design	
Ports				
FastEthernet0				
IP Address	Correct	1	Network Configuration	
PCH1_B				
Device Model	Correct	1	Network Design	
Ports				
FastEthernet0				
IP Address	Correct	1	Network Configuration	
PCH1_C				
Device Model	Correct	1	Network Design	
Ports				
FastEthernet0				
IP Address	Correct	1	Network Configuration	

Corrections needed

Score	: 7/12
Item Count	: 7/12

Component	Items/Total	Score
Network Configuration	3/3	3/3
Network Design	4/4	4/4
Network Understanding	0/5	0/5

Close

Activity Results Time Elapsed: 00:06:08

Congratulations Guest! You completed the activity.

Overall Feedback **Assessment Items** Connectivity Tests

Expand/Collapse All Show Incorrect Items

Assessment Items	Status	Points	Component(s)	Feedback
Network				
Encircling Tests				
Shape Test 0				
Included				
H1				
H1 itself	Correct	1	Other	
PCH1_A		0	Other	
PCH1_A itself	Correct	1	Network Underst...	
PCH1_B		0	Other	
PCH1_B itself	Correct	1	Network Underst...	
PCH1_C		0	Other	
PCH1_C itself	Correct	1	Network Underst...	
Must Match Name	Correct	1	Network Underst...	
H1		0	Other	
Device Model	Correct	1	Network Design	
PCH1_A				
Device Model	Correct	1	Network Design	
Ports		0	Other	
FastEthernet0		0	Other	
IP Address	Correct	1	Network Configu...	
PCH1_B				
Device Model	Correct	1	Network Design	
Ports		0	Other	
FastEthernet0		0	Other	
IP Address	Correct	1	Network Configu...	
PCH1_C				
Device Model	Correct	1	Network Design	
Ports		0	Other	
FastEthernet0		0	Other	
IP Address	Correct	1	Network Configu...	

Component	Items/Total	Score
Network Configuration	3/3	3/3
Network Design	4/4	4/4
Network Understanding	5/5	5/5

Once the activity is completed without any incomplete items

Close

Activity Results Time Elapsed: 00:00:35

You did not complete the activity. There are connectivity tests that failed. Please close this window and try again.

Overall Feedback Assessment Items **Connectivity Tests**

Below are the results of your connectivity tests:

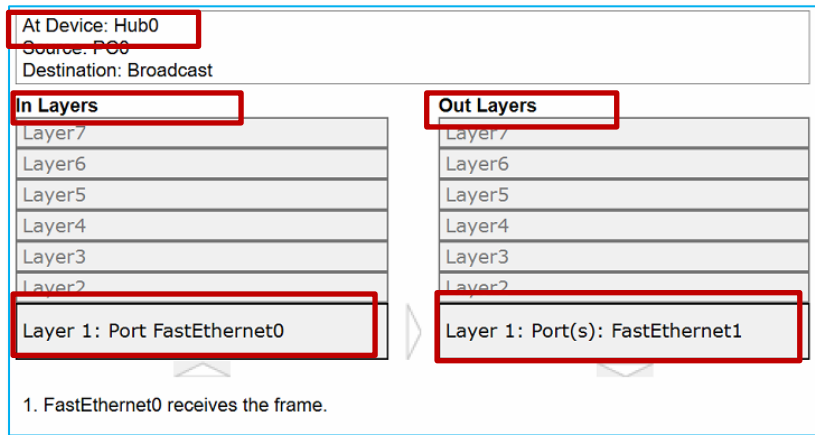
	Status	Test Condition	Points	Source	Destination	Type
1	Incorrect	Successful	1	PCH1_A	PCH1_C : 192.168.1.4	ICMP
2	Incorrect	Successful	1	PCH1_A	PCH1_B : 192.168.1.3	ICMP
3	Incorrect	Successful	1	PCH1_B	PCH1_C : 192.168.1.4	ICMP
4						

Send Simple PDUs from Source To Destination to pass these tests on network connectivity

**IMPORTANT: Packet Tracer v7.3 Connectivity Tests does not support working with HUBs, but Switches and Routers and End Devices**

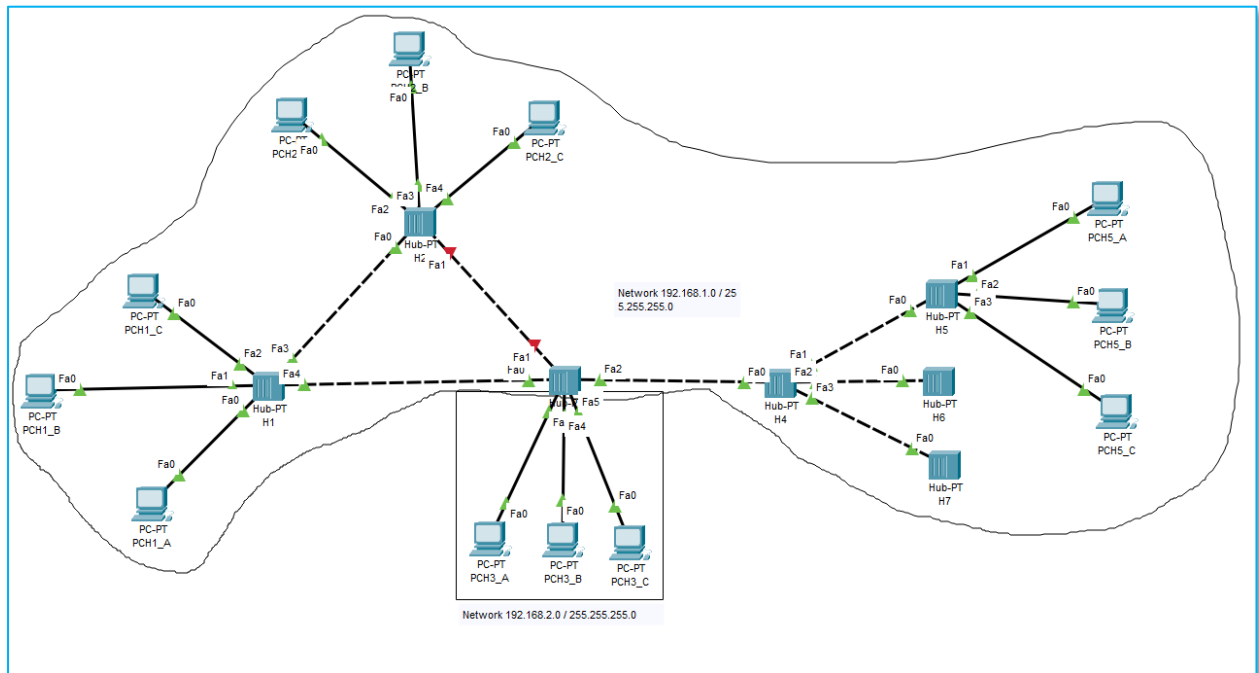
**Q4: Observe the packet information, structure**

1. Switch to simulation mode
2. Send a PDU from PC\_A to PC\_B, observe how it broadcasts the message on every port.
3. Observe the internals of the packet at the HUB by clicking on it
4. Note that HUBs do not work with layer 2 information (MAC address) of the packet, in fact they are unable to see layer 2 information of the packet



### Q5: Complex network with cascading hubs

- Open **PTLab 03.2.pka** and implement the network shown below:

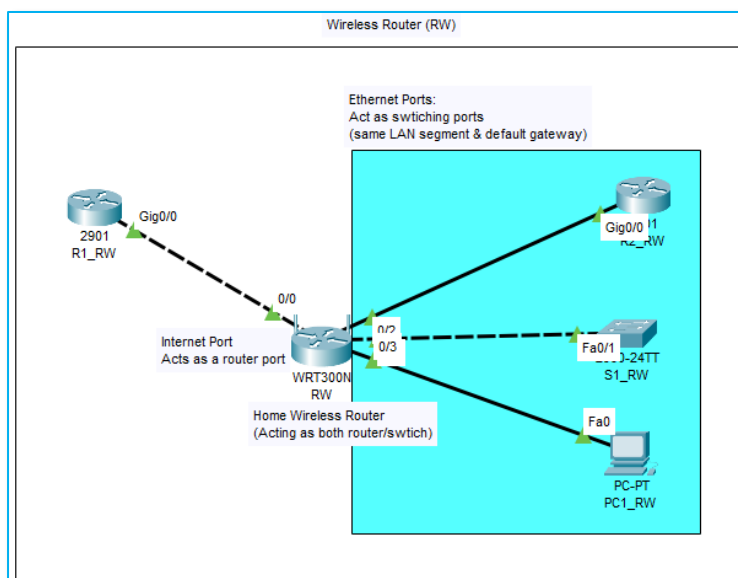
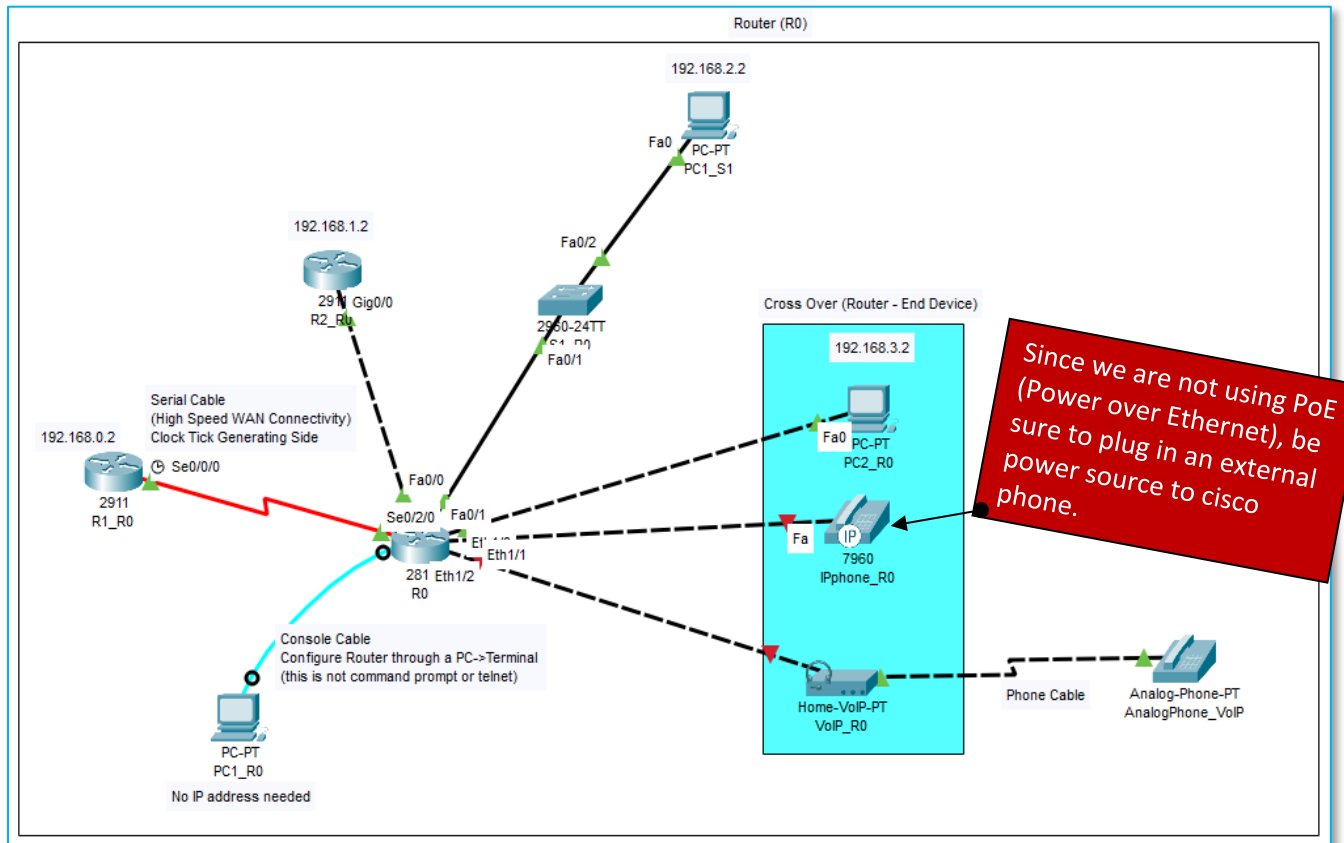


- Try to send a simple PDU from a PC connected to H1 to a PC connected to H2/H5? Is the delivery successful?
- Try to send a simple PDU from a PC connected to H1 to a PC connected to H3? Is the delivery successful?

Why?

## Q6: Networking with physical medium

- Open **PTLab 03.3.pka** and implement the network shown below:



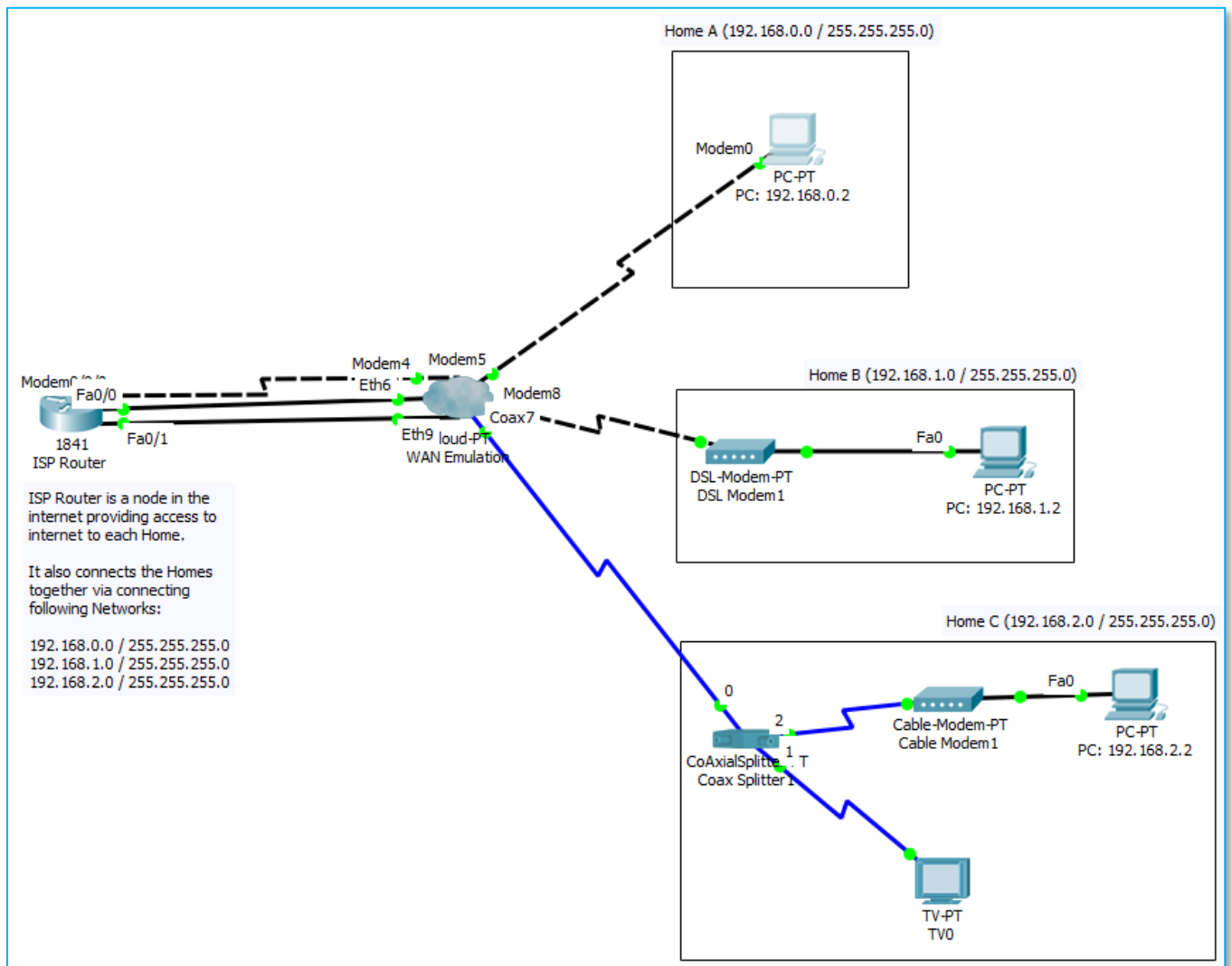
- Change the cable configuration from cross-over to straight-through purposely to see whether the links work. For i.e. **PC2\_R0 to R0** link



### Q7: Connecting to the Internet

- Open PTLab 03.4 (v7.3.1).pka in Packet Tracer v7.3.1 (not Packet Tracer v7.3.0) and implement the network shown below:

**IMPORTANT: Packet Tracer v7.3.0 has connectivity failures on modem dial-up connections. Therefore, use Packet Tracer v7.3.1 for this activity**



**Q8: Try me! Questions**

1. In **Q5**, why is the link H2 – H3 is put to offline? What happens if H1-H2 link go offline (you may disconnect the link in PT and observe the situation to come up with an answer)
2. In **Q6**, insert a HWIC-4ESW module (this module provides four switching ports) to one of the empty slots of R1\_R0 Router. Connect a switch to one of the ports on HWIC-4ESW module. What cable configuration (cross-over or straight-through) should you use? Why?
3. In **Q7**, How would you extend Home C network to support 3 TVs and a small network with 3 PCs connected to the internet via the cable modem?

**Summary**

1. Understand the elements on Layer 1
2. Simple network with a hub
3. Working with a packet tracer activity
4. Observe the packet information, structure
5. Complex network with cascading hubs
6. Networking with physical medium
7. Connecting to the Internet
8. **Try me! Questions**



# WELL DONE!