

Descriptions:

We will implement a firewall for the Enterprise Network topology shown in Figure 1. **Note the departments are organized into subnets.** Your goal will be to allow or block traffic between the different devices based on the 4 Network Topology Rules given below. In this assignment, you cannot use flooding unless you are doing ARP(i.e., you cannot use flooding: of.FFPP_FLOOD or of.FFPP_NORMAL)! Instead, you will need to specify specific ports for all traffic and the forwarding must be done by subnet, not by enumerating all of the IP addresses. You might consider a method to determine if an IP Address is valid on a particular subnet. Additionally, notice that the rules are written according to the subnet.

You may implement your router however you choose—although as a suggestion, you may find it easiest to determine the correct destination port by using either

- the source and destination IP addresses
- or the source port on the switch from which the packet originated.

. You will need to do the following:

- Complete the topology file by adding all the hosts (be sure to manually specify the MAC address, IP address and subnet for each host), switches and links
- Implement the router based on the 4 Network Topology Rules

4 Network Topology and Rules to be implemented:

- **Rule 1:** ICMP traffic is forwarded only between the Student Housing LAN, Faculty LAN and IT Department subnets or between devices that are on the same subnet.
- **Rule 2:** TCP traffic is forwarded only between the University Data Center, IT Department, Faculty LAN, Student Housing LAN, **trustedPC**, or between devices that are on the same subnet; however, **only the Faculty LAN may access the exam server.**
- **Rule 3:** UDP traffic is forwarded only between the University Data Center, IT Department, Faculty LAN, Student Housing LAN, or between devices that are on the same subnet
- **Rule 4:** All other traffic should be dropped.

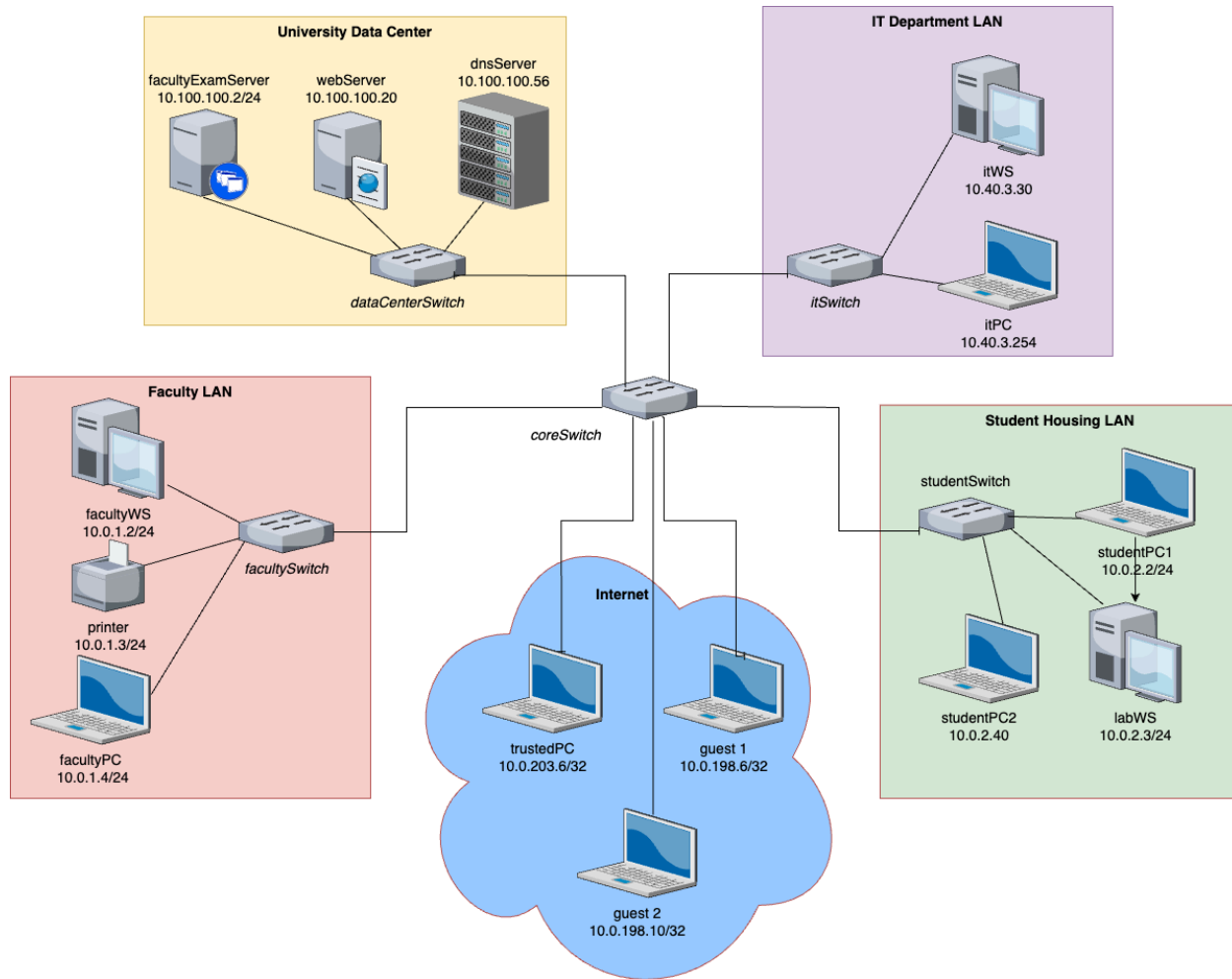


Figure 1

Your code must use the required naming convention for the switches and hosts in Table 1:

Device	Required Naming Convention					
	Core	Faculty LAN	Student Housing LAN	IT Department LAN	University Data Center	Internet
Workstations		'facultyWS'	'labWS'	'itWS'		
Laptops		'facultyPC'	'studentPC1' 'studentPC2'	'itPC'		'trustedPC', 'guest1', 'guest2'
Servers					'examServer', 'webServer', 'dnsServer'	

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Laptops		'facultyPC'	'studentPC1' 'studentPC2'	'itPC'		'trustedPC', 'guest1' 'guest2'
Other		'printer'				
Switches	's1'	's2'	's3'	's4'	's5'	