Networks

In Class Exercise

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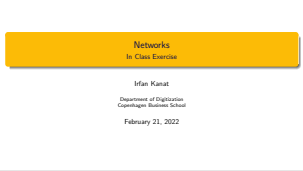
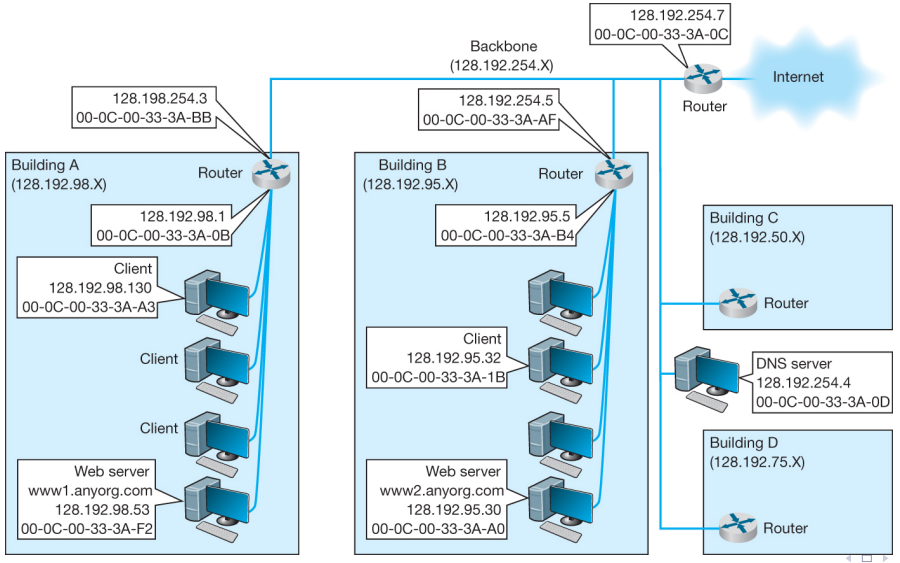
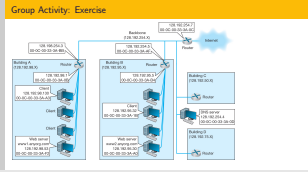


Group Activity: Exercise





Exercise Case 1

CASE: Client (128.192.98.130) requests a web page from server (www1.anyorg.com)

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Client knows the server's IP and Ethernet Addresses

List out the steps in getting the request to the server starting from client.

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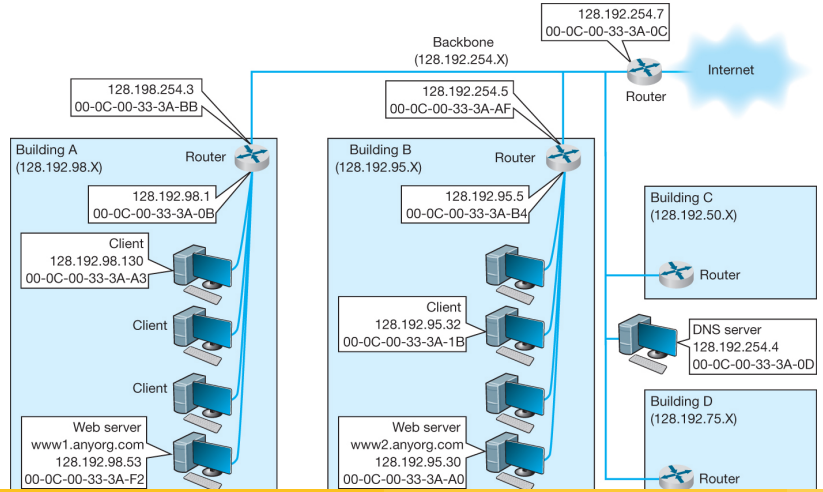
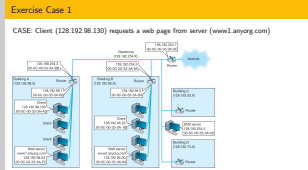




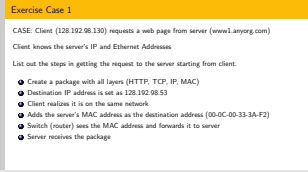
Exercise Case 1

CASE: Client (128.192.98.130) requests a web page from server (www1.anyorg.com)

Client knows the server's IP and Ethernet Addresses

List out the steps in getting the request to the server starting from client.

1. Create a package with all layers (HTTP, TCP, IP, MAC)
2. Destination IP address is set as 128.192.98.53
3. Client realizes it is on the same network
4. Adds the server's MAC address as the destination address (00-0C-00-33-3A-F2)
5. Switch (router) sees the MAC address and forwards it to server
6. Server receives the package



This one is for demonstration purposes. It is ok if the students miss a few steps here and there. Understanding the level of detail requested is not easy. We want them to learn so they can solve the subsequent cases.

Exercise Case 2

CASE: Server (www1.anyorg.com) responds to client (128.192.98.130)

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List out the steps in getting the response to the client starting from server.

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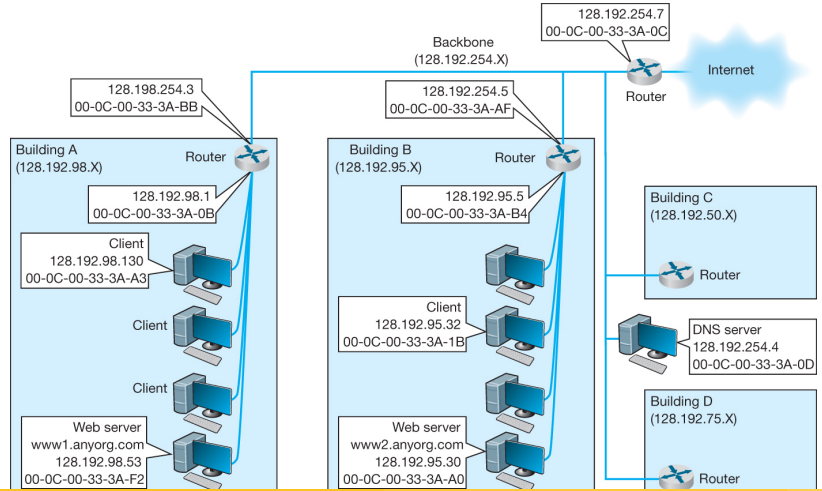

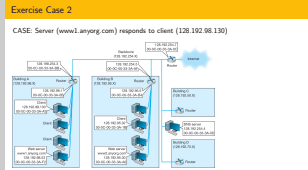

Exercise Case 2

CASE: Server (www1.anyorg.com) responds to client (128.192.98.130)

List out the steps in getting the response to the client starting from server.

1. package received, goes up through the stack (MAC, IP, TCP, HTTP)
2. Prepare HTTP response with proper HTML web page (HTTP, TCP, IP, MAC)
3. Destination IP address is set as 128.192.98.130
4. Server realizes it is the same network.
5. Adds the client's MAC address as the destination (00-0C-00-33-3A-A3)
6. Switch (router) sees the MAC address and forwards it to client
7. Client receives the package

Exercise Case 2
CASE: Server (www1.anyorg.com) responds to client (128.192.98.130)
List out the steps in getting the response to the client starting from server.
- package received, goes up through the stack (MAC, IP, TCP, HTTP)
- Prepare HTTP response with proper HTML web page (HTTP, TCP, IP, MAC)
- Destination IP address is set as 128.192.98.130
- Server realizes it is the same network.
- Adds the client's MAC address as the destination (00-0C-00-33-3A-A3)
- Switch (router) sees the MAC address and forwards it to client
- Client receives the package

Essentially the same as before

Exercise Case 3

CASE: Client (128.192.98.130) requests a web page from www2.anyorg.com.

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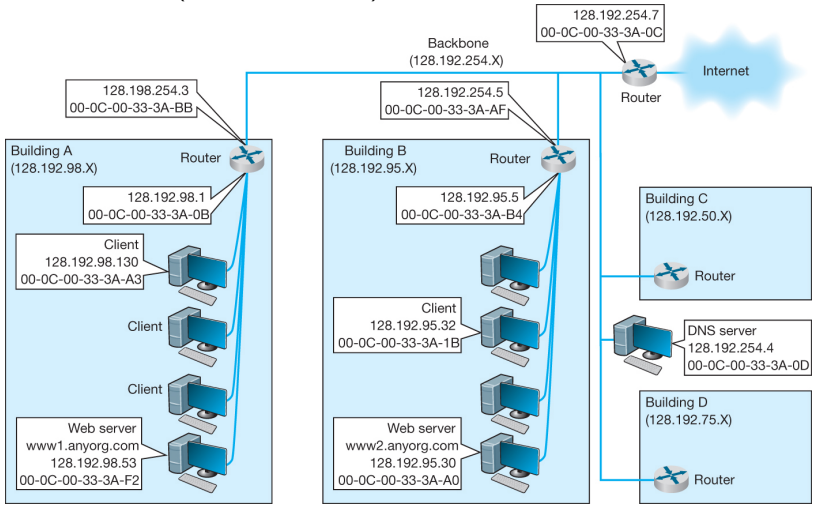

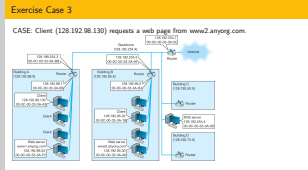

Exercise Case 3

CASE: Client (128.192.98.130) requests a web page from www2.anyorg.com.

1. Create a package with all layers (HTTP, TCP, IP, MAC)
2. Destination IP address is set as 128.192.95.30
3. Client realizes it is not on the same network
4. Destination MAC address is set for the Gateway router (00-0C-00-33-3A-0B)
5. Router receives the package (it is the L2 destination)
6. Router removes L2 header
7. Router determines next node (Router Table)
8. Creates a new L2 header with next router MAC address (00-0C-00-33-3A-B4)
9. Second router receives
10. Determines destination for local delivery (IP)
11. Replaces L2 header (MAC set to server's 00-0C-00-33-3A-A0)
12. Server receives the package.

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Create a package with all layers (HTTP, TCP, IP, MAC)
Destination IP address is set as 128.192.95.30
Client realizes it is not on the same network
Destination MAC address is set for the Gateway router (00-0C-00-33-3A-0B)
Router receives the package (it is the L2 destination)
Router removes L2 header
Router determines next node (Router Table)
Creates a new L2 header with next router MAC address (00-0C-00-33-3A-B4)
Second router receives
Determines destination for local delivery (IP)
Replaces L2 header (MAC set to server's 00-0C-00-33-3A-A0)
Server receives the package.

Case 3: A picture is worth a thousand words