Video - Sending a Frame to the Default Gateway (3 min)

In this video, PC A is going to send a packet to the internet, because the destination IP address in on another network. So in this case, the source MAC address is that of PC A. The destination MAC address is that of the router of 00-0D. So the Ethernet frame is sent to switch S1. switch S1 receives the frame, examines the source MAC address, which is in its MAC address table. So it just simply refreshes the 5-minute timer. It examines the destination MAC address, and because that destination MAC address is not in MAC address table of switch S1, it floods it out all ports. PC B receives the Ethernet frame, and because the destination MAC address does not match its own MAC address, it does not accept the rest of the frame. Switch S2 receives the Ethernet frame, examines the source MAC address, which is in its MAC address table, so it also simply refreshes the 5-minute timer. It examines the destination MAC address of the frame, which is not in its MAC address table, so it floods it out all ports. PC C gets the Ethernet frame, and because the destination MAC address does not match its own MAC address, it does not accept the rest of the Ethernet frame. The router receives the Ethernet frame, and because the destination MAC address does match its own MAC address, it accepts the rest of the frame.

Now we'll look at the Ethernet frame coming from the router back to PC A. The source IP address is the IP address actually of a device on a remote network. The source MAC address is that of the router, at 00-0D, and the destination MAC address is that of PC A. The frame is sent to switch S2. S2 receives it, examines the source MAC address, which is not in its MAC address table, so it adds it. It then examines the destination MAC address, which is in its MAC address table, so it forwards it out port 1. S1 receives the Ethernet frame, examines the source MAC address, which is not in its MAC address table, so it adds it to its MAC address table. It examines the destination MAC address, which is in its MAC address table, so it goes ahead and just forwards it out port 1 towards PC A. PC A examines the destination MAC address, and because it is a match, it accepts the rest of the frame.