Connecting the OSPF islands to the Internet

Campus network Design

We have 5 groups of routers that are all isolated. For our next sessions we want to connect the routers to our real network (10.10.0.0/24) and a virtual machine into the CORE switch (the same switch that has routers RX1 RX2 and RX3).

Your instructors will deal with setting up a virtual machine and connecting it to the CORE switch. The instructors have also plugged in the interface GigabitEthernet2/0 on router RX1 into the wifi backbone. However, by default that virtual machine starts up using DHCP. At this point we have two options.

1. install DHCP servers either on one of the routers in each group
2. use the central DHCP server that is handing out IP addresses for the wireless LAN.

we shall go with option 2 because this is what you should be doing on your networks. you should have one central DHCP server that manages DHCP for the entire network. However DHCP by default does not cross routers. It only works on a particular segment (because routers don't forward broadcasts). To have DHCP cross a router you need a feature called dhcp helper. Different vendors have different names for this feature. It allows a router that receives a DHCP broadcast request on a segment to forward the request to a particular server.

To configure this on our routers and to bring up the interface that's facing the wifi backbone, add the following to router RX1

```
!
interface GigabitEthernet1/0
 ip helper-address 10.10.0.241
!
interface GigabitEthernet2/0
 description uplink
 ip address 10.10.0.X 255.255.255.0
 no shutdown
```

As food for thought, what would you need to add to this configuration for router RX3 to be able to reach the internet?

Answer: you need a default route that is propagated to RX3. Rather than do it on all routers we'll do it on router RX1 and add it to ospf.

```
ip route 0.0.0.0 0.0.0.0 10.10.0.254
!
router ospf X0
default-information originate
```