

LAB Configuring AP as a Repeater

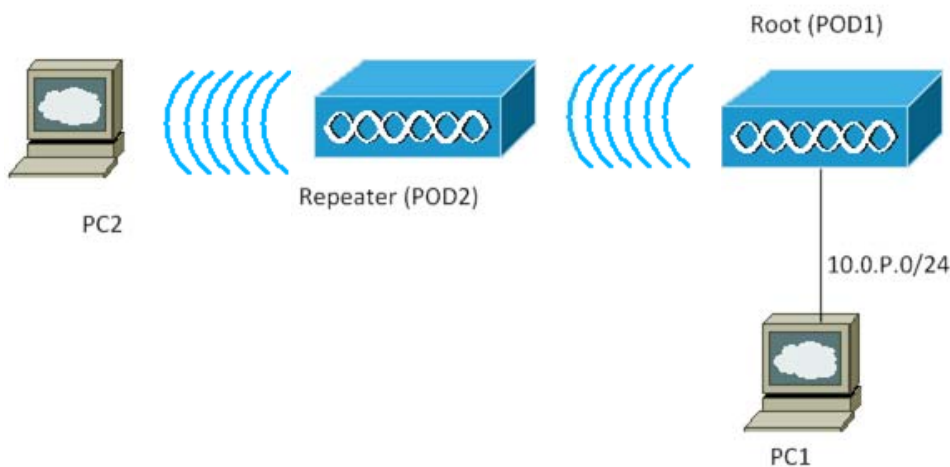
Objective

In this lab, the student will extend the coverage of basic service set topology by implementing an AP as a repeater AP using the IOS CLI.

Scenario

An AP can be configured as a repeater to extend the wireless infrastructure range or to overcome an obstacle that blocks radio communication. The repeater forwards traffic between wireless users and the wired LAN by sending packets to either another repeater or to an AP connected to the wired LAN. The data is sent through the route that provides the best performance for the client. A chain of several repeater APs can be setup, but throughput for client devices at the end of the repeater chain will be quite low. Because each repeater must receive and then re-transmit each packet on the same channel, throughput is cut in half for each repeater you add to the chain.

Topology



Preparation

The student PC1 should be connected to the AP through a wired network. The AP should be set to factory defaults. Default password is Cisco, username is Cisco.

Tools and Resources

- Two AP
- A PC (PC1) that is connected to the same wired network as the AP
- A wireless PC or laptop (PC2)

Step1 Basic AP Configuration to both APs

Console into the AP. Clear the configuration on both of the APs. Then put a basic configuration in the APs. The P is a number of your lab team, for example team 1 should use ip address 10.0.1.1 and SSID AP1. Default password is Cisco.

A sample config is shown using root AP:

```
ap(config)#hostname Pod1
Pod1(config)#int bvi 1
Pod1(config-if)#ip address 10.0.P.1 255.255.255.0
Pod1(config-if)#no shutdown
Pod1(config-if)#exit
Pod1(config)#int Dot11Radio 0
Pod1(config-if)#ssid APP
Pod1(config-if-ssid)#authentication open
Pod1(config-if-ssid)#infrastructure-ssid
Pod1(config-if-ssid)# no shutdown
Pod1(config-if-ssid)# end
Pod1#copy run start.
```

A sample config is shown using repeater AP:

```
ap(config)#hostname Pod2
Pod2(config)#int bvi 1
Pod2(config-if)#ip address 10.0.P.2 255.255.255.0
Pod2(config-if)#no shutdown
Pod2(config-if)#exit
Pod2(config)#int Dot11Radio 0
Pod2(config-if)#ssid APP
Pod2(config-if-ssid)#authentication open
Pod2(config-if-ssid)#infrastructure-ssid
Pod2(config-if-ssid)#no shutdown
Pod2(config-if-ssid)#end
Pod2#copy run start
```

Configure a client and make sure it can associate with the first AP and then the second AP. You will probably have to power off the AP that you are not testing. This will confirmed that the APs are configured and operational and clients can connect to the AP.

Step 2 Basic configure the repeater AP

A sample config is hown using Pod1 as root and Pod 2 as repeater.

Pod1 will be the root AP and should have a SSID of "APP". Pod2 will become the repeater AP. The repeater AP will not require any Ethernet cables when configured in repeater mode. Also, if Aironet extensions are disabled, enable Aironet extensions.

```
Pod2#config t
Pod2(config)#int Dot11Radio 0
Pod2(config-if)#station-role repeater
Pod2(config-if)#dot11 extension aironet
Pod2(config-if)#end
Pod2# copy run start
```

MAC addresses can be entered for up to four parent APs. The repeater attempts to associate to MAC address 1 first; if that AP does not respond, the repeater tries the next AP in its parent list. Enter the MAC address for the AP's radio interface to which the repeater should associate:

```
Pod2(config-if)#parent 1 RRRR.RRRR.RRRR
```

(where RRRR.RRRR.RRRR = the MAC address of Pod1 11.b radio [not the fastethernet interface]) To find MAC address use this command :

```
#show interfaces Dot11Radio 0
```

Verify the configuration (use show run command).

Step 3 Verify client associates with root.

After the repeater is setup, force the client to associate with the repeater and not the root. Make sure the TCP/IP settings and SSID are configured on the laptop. The client may be associated with the repeater or the root. To ensure that the client is associated to the repeater AP:

- Make sure the configuration on the root AP is saved by using the copy run start command.
- Remove the power from the root AP.
- Verify the client is associated to the repeater using the Aironet Client Utility.
- When the client is associated with the repeater, re-power the root AP.
- Once the root AP has booted, ping the root bridge from the client.

Step 4 Verify connections on repeater

After the client is associated with the repeater AP, check the LEDs on top of the repeater AP. If the repeater is functioning correctly, the LEDs on the repeater and the root AP to which it is associated behave like this:

- The status LED on the root AP is steady green, indicating that at least one client device is associated with it (in this case, the repeater).
- The status LED on the repeater AP is steady green when it is associated with the root AP and the repeater has client devices associated to it. The repeater's status LED

flashes (steady green for 7/8 of a second and off for 1/8 of a second) when it is associated with the root AP but the repeater has no client devices associated to it.

The repeater AP should also appear as associated with the root AP in the root AP's Association Table. On Pod1, verify that Pod2 is connected. There may also be other wireless clients associated.

- a. In privilege mode of the repeater, enter the following command to view what information can be displayed

Pod2#show dot11 associations

What information is available? _____

- b. Now check the detailed status of all clients

Pod2#show dot11 associations all-clients

What information is available? _____

- b. In privilege mode of the repeater, verify that the laptop is associated. There may also be other wireless clients associated.
- c. Check the detailed status of all clients

Pod2#show dot11 associations all-clients

Is the laptop associated? What information can be used to verify the connection? _____

Step 4 Verify connectivity

Configure the IP address, subnet mask on PC1 and PC2

PC1 : IP address 10.0.P.5, Subnet Mask 255.255.255.0

PC2 : IP address 10.0.P.10, Subnet Mask 255.255.255.0

Perform pings from PC1 to PC2, PC1 to Pod1 and PC1 to Pod2 .

Is ping from PC1 to PC2 successful? _____

Is ping from PC1 to Pod1 successful? _____

Is ping from PC1 to Pod1 successful? _____

All pings must be successful. If not, there are issues that need to be resolved.