Lab 8.3.3.2 Configure an AP as a repeater using WEP

Estimated Time: 30 minutes

Number of Team Members: Students will work in teams of two.

Objective

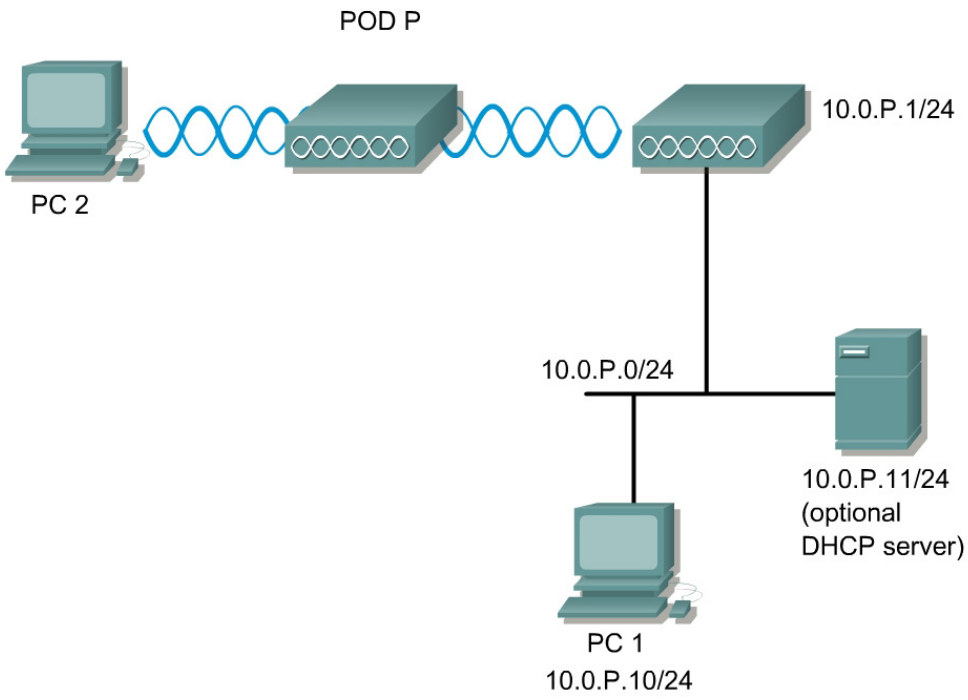
The student will extend the coverage of a basic service set topology by implementing an AP as a repeater using WEP.

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 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. In this lab, the Root AP will be Pod1. The repeater AP will be Pod2.

WEP must now be enabled per the security policy.

Topology



Preparation

Team	Access Point Name	SSID	Address
1	Pod1 (root)	AP1	10.0.1.1/24
2	Pod2 (repeater)	AP1	10.0.1.2/24

The instructor should have a working wired network. PC1 should be connected to the wired network.

Tools and Resources

Each team will need:

- 2 APs
- A PC or laptop
- Console cable

Additional Materials

http://www.cisco.com/en/US/products/hw/wireless/ps430/products_installation_and_configuration_guide_book09186a0080147d69.html

Step 1 Configure the repeater AP

Make sure the first AP is configured and operational and clients can connect to the AP1. Pod1 will be the root AP and should have a SSID of AP1. Pod2 will become the repeater AP. The repeater AP will not require any Ethernet cables when configured in repeater mode.

a. Enter global configuration mode. Enter interface configuration mode for the 5-GHz radio 1. Turn the interface off.

```
Pod2(config)#interface dot11Radio 1
Pod2(config-if)#shutdown
```

b. Enter interface configuration mode for the 2.4-GHz radio.

```
Pod2(config)#interface dot11Radio 0
Pod2(config-if)#
```

c. Create the SSID that the repeater uses to associate to a root AP. The next step will designate this SSID as an infrastructure SSID. If an infrastructure SSID was created on the root AP, create the same SSID on the repeater.

```
Pod2(config-if)#ssid AP1
Pod2(config-if-ssid)#
```

d. Designate the SSID as an infrastructure SSID. The repeater uses this SSID to associate to the root AP. Infrastructure devices must associate to the repeater AP using this SSID unless the optional keyword is also entered.

```
Pod2(config-if-ssid)#infrastructure-ssid
Pod2(config-if-ssid)#
*Mar  1 01:12:54.406: %LINK-5-CHANGED: Interface Dot11Radio0,
changed state to reset
*Mar  1 01:12:54.424: %LINK-3-UPDOWN: Interface Dot11Radio0, changed
state to up

Pod2(config-if-ssid)#
```


e. Exit SSID configuration mode and return to radio interface configuration mode.

```
Pod2(config-if-ssid)#exit
Pod2(config-if)#
```

f. Set the role of the AP in the wireless LAN to repeater.

```
Pod2(config-if)#station-role repeater
```

g. If Aironet extensions are disabled, enable Aironet extensions.

```
Pod2(config-if)#dot11 extension aironet
```

h. 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. (Optional) Enter the MAC address for the AP to which the repeater should associate.

```
Pod2(config-if)#parent 1 0987.1234.e345
```

(This should be the MAC address of Pod1 11.b radio.)

i. Verify the configuration

```
Pod2#show run
   interface Dot11Radio0
    no ip address
    no ip route-cache
    !
    ssid AP1
       authentication open
       infrastructure-ssid
   !
    parent 1 0987.1234.e345
    speed basic-1.0 basic-2.0 basic-5.5 basic-11.0
    rts threshold 2312
    station-role repeater
```

Step 2 Verify connections on Pod1

After the repeater is setup, 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 will behave as follows:

- 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 status LED of the repeater 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 Association Table of the root AP. On Pod1, verify that Pod2 is connected. There may also be other wireless clients associated.

a. Check the detailed status of all clients

```
Pod1#show dot11 associations all-clients
```


Step 3 Verify connections on Pod2

Move the wireless laptop out of the range of Pod1 into the range of Pod2.

On Pod2, verify that the laptop is associated. There may also be other wireless clients associated.

a. Check the detailed status of all clients

```
Pod2#show dot11 associations all-clients
```

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

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Step 4 Configure WEP on the root and repeater AP

a. In interface mode, check the available encryption types that can be set. Then view the available key sizes.

```
Pod2(config-if)#encryption ?
  key   Set one encryption key
  mode  encryption mode
  vlan  vlan
PodP(config-if)#encryption key 1 size ?
  128bit  128-bit key
  40bit   40-bit keyCreate a WEP key and set the key properties
```

b. Create a WEP key and set up its properties.

```
PodP(config-if)#encryption key 1 size 128 12345678901234567890123456
transmit-key
```

Step 5 Verify connections on Pod1

a. After the WEP is setup, check the LEDs on top of the repeater AP for correct operation.

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

c. Check the detailed status of all clients.

```
Pod1#show dot11 associations all-clients
```

Step 6 Verify connections on Pod2

a. Now move the wireless laptop out of range of Pod1 into the range of Pod2.

b. On Pod2, 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
```

d. Are any laptops associated? Why?

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Step 7 Configure the 802.11a radio as a repeater (optional)

Erase the configuration on Pod2. Return to Step 1 and configure the repeater topology using the 801.11a radio instead. In this case, disable the 11b radio. Make sure Pod1 is configured to accept the 5 GHz clients.

