



Lab 5.2.2 Configuring Basic AP Settings

Estimated Time: 30 minutes

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

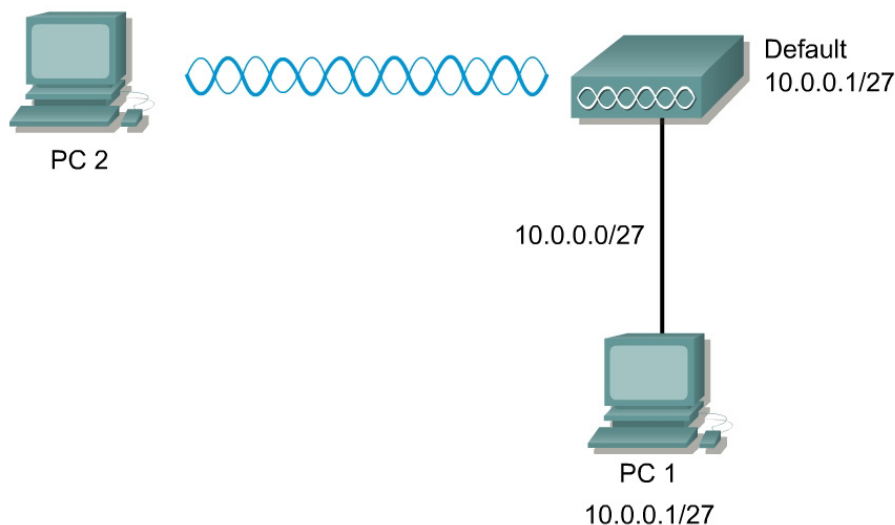
Objective

In this lab, the student will assign basic parameters to the AP using the GUI and IOS CLI. The Express Setup page will also be accessed through a web browser to assign the IP address, subnet mask, default gateway, and SSID to the AP.

Scenario

Basic configuration of an AP can be done through the GUI or IOS CLI.

Topology



Preparation

The student PC should be connected to the AP through an isolated wired network or crossover cable. The AP should be set to factory defaults.

Tools and Resources

Each team will need:

- One AP
- The AP power supply or source
- A PC (PC1) that is connected to the same wired network as the AP
- A wireless PC or laptop (PC2)

Additional Materials

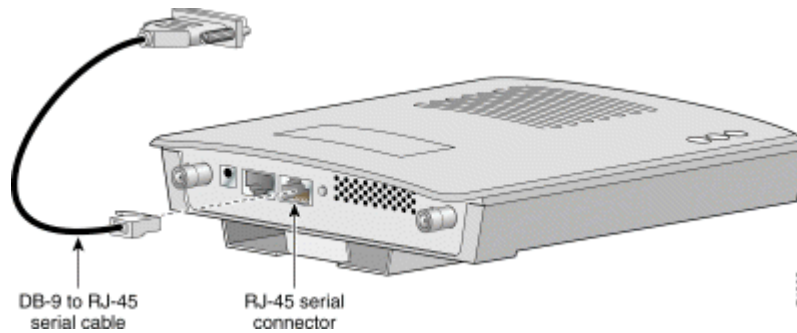
http://www.cisco.com/en/US/products/hw/wireless/ps430/products_installation_and_configuration_guide_book09186a0080147d69.html

Command List

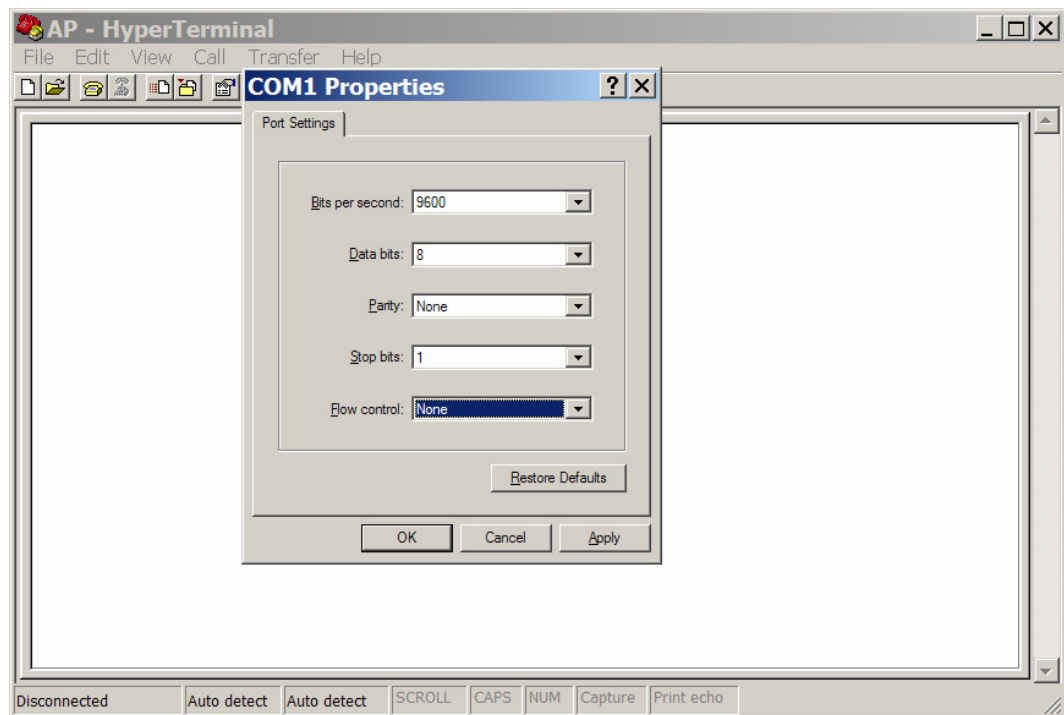
In this lab exercise, the following commands will be used. Refer to this list if assistance or help is needed during the lab exercise.

Command	Description
<code>configure terminal</code>	Enter Global configuration mode
<code>hostname</code>	Set the hostname on the device
<code>interface bvi1</code>	Enter the virtual interface for the AP
<code>ip address</code>	Set the IP address and subnet mask on the device
<code>interface dot11radio 0</code>	Enter the device radio interface
<code>station role repeater root [fallback { shutdown repeater }]</code>	Set the AP role. Set the role to repeater or root. (Optional) Select the fallback role of the radio. If the Ethernet port of the AP is disabled or disconnected from the wired LAN, the AP can either shut down its radio port or become a repeater AP associated to a nearby root AP.
<code>ssid ssid-string</code>	Create an SSID and enter SSID configuration mode for the new SSID. The SSID can consist of up to 32 alphanumeric characters. SSIDs are case sensitive. Note: Do not include spaces or underscore characters in SSIDs.
<code>enable password password</code>	The default password is Cisco. This commands allows an administrator to change the password
<code>enable secret password</code>	The default enable password is <i>Cisco</i> .
<code>enable password level level password</code>	The default is level 15 (privileged EXEC level). The password is encrypted before it is written to the configuration file.
<code>show dot11 associations</code>	View the connected wireless clients
<code>show running-config</code>	Display the current configuration of the device
<code>show startup-config</code>	Display the startup configuration of the device
<code>copy running-config startup-config</code>	Save the entries into the configuration file
<code>show interfaces</code>	Display interface information of the device

Step 1 Connect to the AP using a console



- Connecting a Cisco rollover cable (console cable) between PC1 and the AP
- Open a terminal emulator.



- Enter these settings for the connection:
 - Bits per second (baud rate): 9600
 - Data bits: 8
 - Parity: none
 - Stop bits: 1
 - Flow control: none
- Press return to get started
- Now apply the AP power by plugging in the power supply cable or powered Ethernet cable. Hold the MODE button until the Status LED turns amber (approximately 1 to 2 seconds), and release the button. The AP reboots with the factory default values including the IP address. Without a connected DHCP server, the AP will default to 10.0.0.1/27.

```

flashfs[0]: 141 files, 6 directories
flashfs[0]: 0 orphaned files, 0 orphaned directories
flashfs[0]: Total bytes: 7741440
flashfs[0]: Bytes used: 3331584
flashfs[0]: Bytes available: 4409856
flashfs[0]: flashfs fsck took 12 seconds.
Reading cookie from flash parameter block...done.
Base ethernet MAC Address: 00:0b:fd:4a:70:0c
Initializing ethernet port 0...
Reset ethernet port 0...
Reset done!

ethernet link up, 100 mbps, full-duplex
Ethernet port 0 initialized: link is up
button pressed for 5 seconds
process_config_recovery: set IP address and config to default 10.0.0.1
Loading "flash:/c1200-k9w7-mx.122-11.JA/c1200-k9w7-mx.122-11.JA" ..#####
#####

```

Step 2 Configure PC1

Make sure the AP is connected to PC1 by way of a wired connection.

- a. Configure the IP address, subnet mask, and gateway on PC1.telnet
 1. IP address 10.0.0.2
 2. Subnet Mask 255.255.255.224
 3. Gateway 10.0.0.1

Step 3 Connect to AP using the web browser

- a. Open an Internet browser. The default IP address of an AP from the factory is 10.0.0.1.
- b. Type the AP IP address in the browser address location field. Press **Enter**.

.....

Cisco 1200 Access Point

HOME		Hostname ap	ap uptime is 12 minutes
EXPRESS SET-UP			
NETWORK MAP +			
ASSOCIATION			
NETWORK INTERFACES +			
SECURITY +			
SERVICES +			
WIRELESS SERVICES +			
SYSTEM SOFTWARE +			
EVENT LOG +			
Home: Summary Status			
Association			
Clients: 0		Repeaters: 0	
Network Identity			
IP Address		10.0.0.1	
MAC Address		000b.f4a.700c	
Network Interfaces			
Interface	MAC Address	Transmission Rate	
↑ FastEthernet	000b.f4a.700c	100Mb/s	
↑ Radio0-802.11B	0007.85b3.c270	11.0Mb/s	
↑ Radio1-802.11A	000b.fd01.05b7	54.0Mb/s	
Event Log			
Time	Severity	Description	

- c. A log in screen appears. Type in the password of **Cisco** (case sensitive) and click OK.
- d. When the AP HOME page appears, click **Express Setup** if the Express Setup does not appear.

HOME

EXPRESS SET-UP

NETWORK MAP

ASSOCIATION

NETWORK INTERFACES

SECURITY

SERVICES

WIRELESS SERVICES

SYSTEM SOFTWARE

EVENT LOG

Hostname ap

ap uptime is 12 minutes

Express Set-Up

System Name:

ap

MAC Address:

000b.f44a.700c

Configuration Server Protocol:

☐ DHCP
 ☒ Static IP

IP Address:

10.0.0.1

IP Subnet Mask:

255.255.255.224

Default Gateway:

0.0.0.0

SNMP Community:

defaultCommunity

☒ Read-Only
 ☐ Read-Write

Radio0-802.11B

SSID:

tsunami

Broadcast SSID in Beacon:

☒ Yes
 ☐ No

Role in Radio Network:

☒ Access Point Root
 ☐ Repeater Non-Root

Optimize Radio Network for:

☐ Throughput
 ☐ Range
 ☒ Custom

Aironet Extensions:

☒ Enable
 ☐ Disable

Radio1-802.11A

SSID:

tsunami

Broadcast SSID in Beacon:

☒ Yes
 ☐ No

Role in Radio Network:

☒ Access Point Root
 ☐ Repeater Non-Root

Optimize Radio Network for:

☐ Throughput
 ☐ Range
 ☒ Default
 ☐ Custom

Aironet Extensions:

☒ Enable
 ☐ Disable

- e. Type a system name of Pod**P** (where **P** is the Pod or Team number) for the AP in the System Name field.
- f. Select **Static IP** as a configuration server protocol from the Configuration Server Protocol selections.

Note If using the BR350 in AP mode, the VxWorks display will be slightly different than the IOS GUI display. These can allow two additional teams to complete the labs. All students should complete the labs with the new 1200 Cisco GUI. If students have available time, then the same labs can be completed using the BR350 in AP mode, remembering the user interface is different. This will allow students to be able to configure legacy Cisco APs such as the AP 340, AP 350, and BR350 in AP mode.

Step 4 Assign the IP address and SSID

Team	AP Name	SSID	AP Address	PC1 Address	PC2 Address
1	Pod1	AP1	10.0.1.1/24	10.0.1.10/24	10.0.1.12/24
2	Pod2	AP2	10.0.2.1/24	10.0.2.10/24	10.0.2.12/24

- a. Type the IP address in the **IP Address** field.
What IP address will be assigned to this AP?
-
- b. Enter an IP subnet mask in the **IP Subnet Mask** field.
What Subnet mask will be assigned to this AP? Write the answer in dotted decimal notation.
-
- What Subnet mask in binary.
-
- c. Enter the IP address of the default Internet gateway in the **Default Gateway** field. Assume the router address is 10.0.P.254.
- d. Leave the **SNMP Community** field alone at this time.
- e. Type an SSID for the AP in the **Radio Service Set ID (SSID)** field.
What SSID will be assigned to this AP?
-
- f. Verify the **AP Root:** as the network role for the AP from the **Role in Radio Network**.
- g. Select **Throughput:** as the **Optimize Radio Network**.
- h. Click **OK**.
- i. The connection will be lost.
- j. Reconfigure the IP address, subnet mask and gateway on PC1?
1. IP address 10.0.P.10
 2. Subnet Mask 255.255.255.0
 3. Gateway 10.0.P.254
- k. Reconnect to the AP from PC1 web browser and verify the settings.

Step 5 Connect to the AP by way of a wireless PC

Using a laptop or desktop with a wireless adapter, connect to the correct AP. Make sure the wireless device is not connected through the wired network.

- a. Configure and select a profile to connect to the AP. Make sure the SSID is configured in the profile to match the AP.
- b. Configure a unique **Client Name** in the profile, such as a first initial last name of one of the team members
- c. Make sure to check or configure the TCP/IP settings of the laptop or desktop to connect to the proper IP network. If a DHCP server is running, configure TCP/IP to receive the address automatically, or configure static IP setting with 10.0.P.12/24.

Step 6 Verify the wireless connection

The screenshot shows the Cisco 1200 Access Point configuration interface. The left sidebar contains a menu with options: HOME, EXPRESS SET-UP, NETWORK MAP, ASSOCIATION (highlighted), NETWORK INTERFACES, SECURITY, SERVICES, WIRELESS SERVICES, SYSTEM SOFTWARE, and EVENT LOG. The main content area is titled 'Cisco 1200 Access Point' and shows 'Hostname AP1200' and 'AP1200 uptime is 23 hours, 32 minutes'. The 'Association' tab is active, displaying 'Clients: 1' and 'Repeaters: 0'. Below this, there are checkboxes for 'View: Client' and 'Repeater', with an 'Apply' button. A table titled 'Radio802.11B' shows the SSID 'AP1200' and a list of associated devices. The table has columns for Device Type, Name, IP Address, MAC Address, State, Parent, and VLAN. One device is listed: '350-client' with Name 'TONORWOO-W2K', IP Address '0.0.0.0', MAC Address '0007.50ca.e208', State 'Associated', Parent 'self', and VLAN 'none'. Below this, there is a section for 'Radio802.11A' which is currently empty. A 'Refresh' button is located at the bottom right of the configuration area.

Device Type	Name	IP Address	MAC Address	State	Parent	VLAN
350-client	TONORWOO-W2K	0.0.0.0	0007.50ca.e208	Associated	self	none

- Go to the **ASSOCIATIONS Page** to check the wireless connection.
 - Does the Client Name appear which was previously configured?
 - Record the MAC Addresses of the devices associated to this AP. One of these should be the MAC Address of the laptop or desktop configured in Step 4.

MAC ADDRESS

- Now check to see if the ACU icon in the system tray is green, which indicates a successful link to the AP. Double click on the icon to verify the correct **AP Name** and **AP IP Address**.



Record the values below.

- Now check to see if a connection to the AP using a web browser can be achieved from the wireless device. Enter <http://10.0.P.1> for the URL within the browser. Did the AP GUI display?
- Test connectivity to other devices by way of ping, Telnet, http, and ftp. This will vary depending on the devices connected and configured on the wired network.

Step 7 Draw a current topology

- a. Using the space below, use the existing Topology and draw an updated Topology with the gateway router and updated IP addresses and subnet masks.

Step 8 Access the AP through IOS CLI

Open the HyperTerminal window on PC1. PC1 should still be connected through the console cable. Enter privileged mode with the following command. **Cisco** is the default password.

```
PodP>enable
Password:
PodP#
```

Step 9 Erase the configuration through CLI

Erase the configuration with the following commands:

```
PodP#erase startup-config
Erasing the nvram filesystem will remove all files! Continue?
[confirm]          (press Enter)
[OK]
Erase of nvram: complete
PodP# reload

System configuration has been modified. Save? [yes/no]: N
```



```
Proceed with reload? [confirm]      (press Enter)
Radio system is preparing for reload...
Radio system is ready for reload.
*Mar  1 00:31:09.103: %SYS-5-RELOAD: Reload requested by console.

...
```

Step 10 Configure Hostname

The system name, while not an essential setting, helps identify the AP on your network. The system name appears in the titles of the management system pages.

- a. Enter into configuration mode

```
ap>enable
Password:
ap#
ap#configure terminal
ap(config)#
```

- b. Now configure the host name with the following command:

```
ap(config)#hostname PodP          (where P is the pod number)
PodP(config)#
```

Step 11 Configure the Bridge Virtual Interface (BVI)

Enter the bvi1 interface mode to configure the ip address, subnet mask settings:

Assign an IP address and address mask to the BVI.

```
PodP(config)#interface bvi1
PodP(config-if)#ip address 10.0.P.1 255.255.255.0
```

Note If you are connected to the AP using a Telnet session, you lose your connection to the AP when you assign a new IP address to the BVI. If you need to continue configuring the AP using Telnet, use the new IP address to open another Telnet session to the AP.

Step 12 Configure passwords

Now configure the enable password to *cisco*. Also, configure the secret password to *class*. The password is not encrypted and provides access to level 15 (traditional privileged EXEC mode access):

```
PodP(config)#enable password cisco
PodP(config)#enable secret class
```

Use the **level1** keyword to define a password for a specific privilege level. After you specify the level and set a password, give the password only to users who need to have access at this level. Use the **privilege level1** global configuration command to specify commands accessible at various levels.

Now set the **configure** command to privilege level 15 and define *cisco* as the password users must enter to use level 15 commands:

```
PodP(config)#privilege exec level 15 configure
PodP(config)#enable password level 15 cisco
```

Step 13 Configure SSID

Name an SSID and set the maximum number of client devices that can associate using this SSID to 15.

```
PodP(config)#interface dot11radio 0
PodP(config-if)#ssid APP           (where P is the pod number)
PodP(config-if-ssid)#authentication open
PodP(config-if-ssid)#max-associations 15
PodP(config-if-ssid)#end           (or Ctrl-Z)
PodP#
```

Step 14 Check the running configuration and interface status

Display the current configuration of the device

```
PodP#show running-config

Pod1#show run
Building configuration...

Current configuration : 2660 bytes
!
version 12.2
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
service password-encryption
!
hostname PodP
[output omitted]
```

Display the condition and information of the device interfaces.

```
PodP#show interfaces
```

Step 15 Save and verify the configuration is saved to Flash

Save the current configuration of the device into the configuration file.

```
PodP#copy running-config startup-config
```

Verify the startup configuration saved in Flash.

```
PodP#show startup-config
```

Step 16 Connect to the AP using a wireless PC

Using a laptop or desktop with a wireless adapter, connect to the correct AP. Make sure the wireless device is not connected through the wired network.

- Configure and select a profile to connect to the AP. Make sure the SSID is configured in the profile to match the AP.
- Configure a unique **Client Name** in the profile, such as a first initial last name of one of the team members
- Make sure to check or configure the TCP/IP settings of the laptop or desktop to connect to the proper IP network. If a DHCP server is running, configure TCP/IP to receive the address automatically, or configure static IP setting.
- Now check to see if the ACU icon in the system tray is green, which indicates a successful link to the AP. Double click on the ACU icon to verify the correct **AP Name** and **AP IP Address**.



Record the values below?

Step 17 Verify the Associations

View the current device associations. The wireless device configured in step 11 should appear in the association output.

```
PodP#show dot11 associations
802.11 Client Stations on Dot11Radio0:
SSID [tsunami] :
Others:  (not related to any ssid)
802.11 Client Stations on Dot11Radio1:
SSID [tsunami] :
Others:  (not related to any ssid)
PodP#
```

Step 18 Connect to the AP remotely through Telnet

Follow these steps to open the IOS CLI with Telnet. These steps are for a PC running Microsoft Windows with a Telnet terminal application. Check your PC operating instructions for detailed instructions for your operating system.

- From PC2, Open a Telnet session to the AP located at 10.0.P.1
- If Telnet is not listed in your Accessories menu, select Start > Run, type Telnet in the entry field, and press Enter.
- At the username and password prompts, enter your administrator username and password. The default username is Cisco, and the default password is Cisco. The default enable password is also Cisco. The enable secret password is class. Usernames and passwords are case-sensitive.

```
C:\>telnet 10.0.P.1
User Access Verification
Username:
Password:
PodP>
```