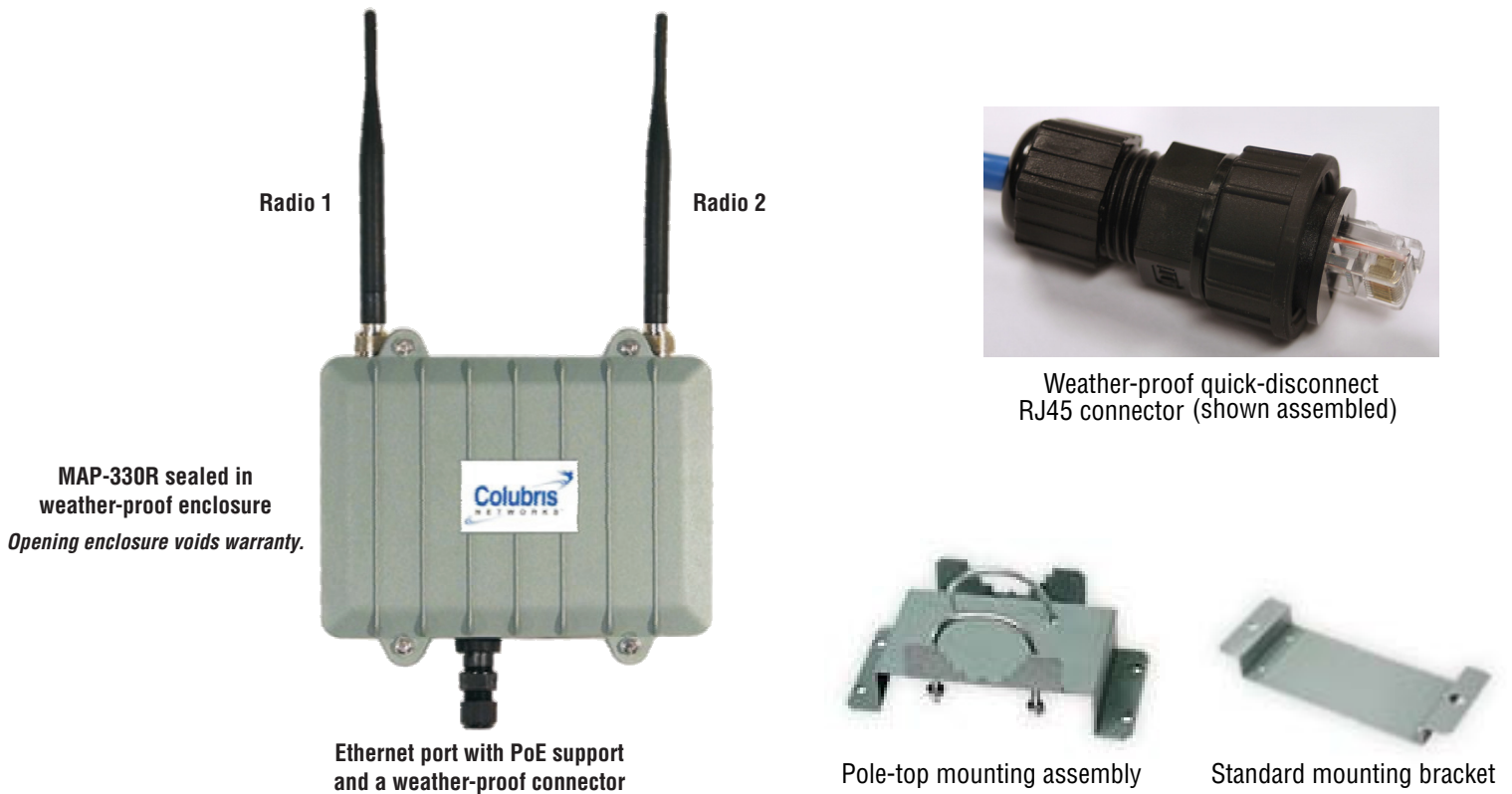


This guide shows you how to set up a MAP-330R MultiService Access Point. For detailed configuration and operating information see the *MAP-300 Series Administrator's Guide*, which is available on the Colubris Networks documentation CD or at www.colubris.com (select *Support* and then *Product Registration*).

NOTE: The MAP-330R is a ruggedized version of the MAP-330 and shares the same feature set. However, due to its weather-proof enclosure, Ethernet port 2 and the reset button are not available. When using the management tool, ignore references to port 2. For units purchased after March 1, 2006, see the Administrator's Guide for instructions on how to reset to factory default settings.

IMPORTANT NOTE ABOUT WIRELESS SECURITY: To provide easy wireless access to the management interface, the MAP-330R ships with all wireless security options disabled. Colubris strongly recommends that once the MAP-330R is installed you enable a wireless security option to properly safeguard the wireless network from intruders. For more information see the Administrator's Guide.

Hardware overview



Package contents

- MAP-330R unit featuring die-cast aluminum enclosure with three-point silicone rubber gasket.
- Two 5.5-dBi 2.4-GHz omnidirectional antennas. These antennas support 802.11b and 802.11g modes only. They do not support 802.11a.
- Weather-proof quick-disconnect RJ45 connector (disassembled).
- Standard mounting bracket.
- Pole-top mounting assembly.
- Documentation CD.

Antennas

The MAP-330R has two radios, each with one antenna connector. Each radio can create a single wireless cell or be used as an Integrated Sensor as described on page 6. The antenna connectors are weather-proof straight-polarity N-type female bulkhead antenna connectors with diversity

Note: By default radio 1 is set to b/g mode, and radio 2 is set to Monitor.

Ethernet port

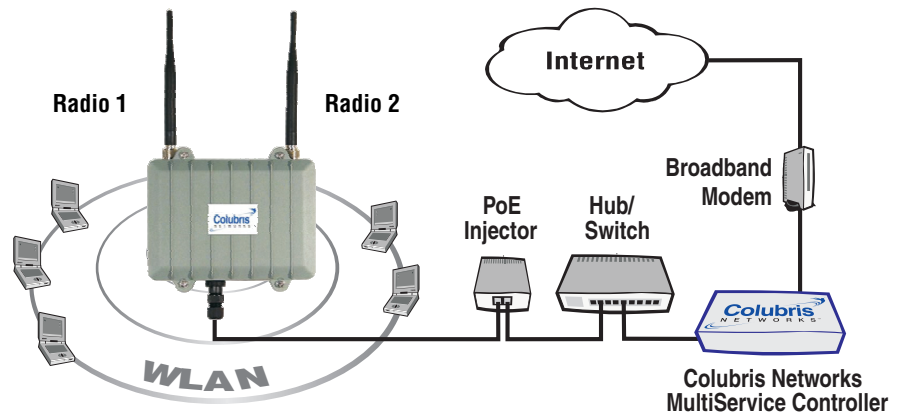
The MAP-330R has a single 10/100 Mbps Ethernet port with weather-proof RJ45 connector. Power over Ethernet (PoE) is used to power the MAP-330R on this port.

Typical deployment

In a typical installation the MAP-330R is mounted outdoors (in a salt-free environment), providing a wireless cell. It is connected to a PoE injector (not supplied) and then to a hub or switch that connects it to a Colubris Networks MultiService Controller.

Important

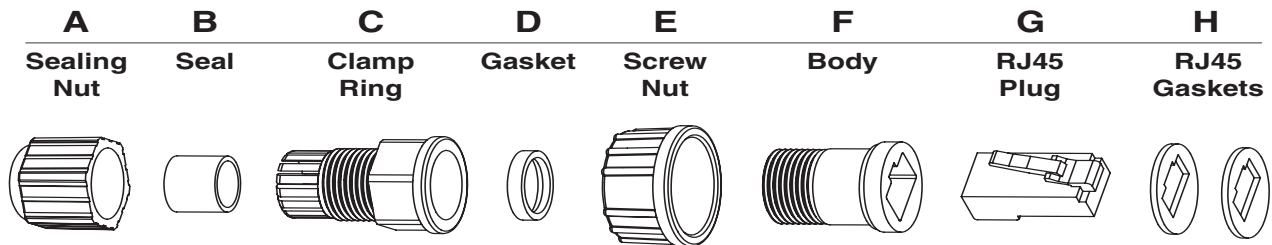
- The MAP-330R must always be mounted with its antennas pointing up.
- Do not connect the Ethernet port directly to a metropolitan area network (MAN) or wide area network (WAN).



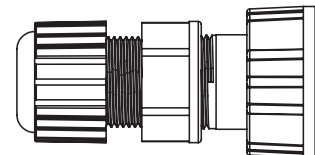
Attaching an Ethernet cable

To provide a weather-proof seal, the Ethernet port on the MAP-330R uses a custom weather-proof cable connector. You must terminate your Ethernet cable with this connector as described in the following procedure. Make sure that you use ruggedized, shielded, outdoor-rated category 5 Ethernet cable. Cable length should not exceed 300 feet (100 meters).

Weatherproof connector parts



1. Carefully unpack the nine quick-disconnect items from the plastic bag, identifying all parts as illustrated. If any parts are missing, **DO NOT** proceed until you get a replacement parts kit.
2. If your Cat 5 Ethernet cable already has an RJ45 connector on the end that will connect to the Colubris equipment, remove the RJ45 connector by cutting the cable at least half an inch (1.2 cm) before the RJ45 connector.
Be sure to make a clean cut with a pair of sharp angle cutters. The complete cut (through both the cable sheath and all wires) must occur in a single cutting motion.
3. Hold Clamp Ring (C) horizontally, with its fingers to the left. Insert the Seal (B) into the fingers on the left end so that it is flush with the end of the fingers. Insert the Gasket (D) into the right end, pushing it against the ridge at the end of the threads. The Gasket is beveled on one side. The beveled side should face inwards away from the Screw Nut.
4. Thread the Sealing Nut (A) onto the left end of the Clamp Ring (C). Tighten it only enough for it to stay attached.
5. Hold the Screw Nut (E) vertically, with the open threads facing up, and drop the Body (F) into it, with the RJ45 connector opening facing up.
6. Hold the Clamp Ring (C) vertically below the Screw Nut/Body items and screw the Body into the threads on the Clamp Ring (C). Tighten it only enough to stay attached. Note that the Screw Nut (E) remains loose on the Body (F).
7. Remove the white backing paper from one of the RJ45 Gaskets (H) and press the glued side onto the Body (F) being **very careful** to align the gasket with the RJ45 connector shape on the Body (F).
8. Remove the backing paper from the second RJ45 Gasket (H) and press it over the first one, being sure to maintain alignment.
9. Tighten the threads between Body (F) and Clamp Ring (C) **by hand**. **DO NOT tighten between Clamp Ring (C) and Sealing Nut (A). Do not over tighten. Do not tighten with tools.**
The quick-disconnect assembly should now look like this when held horizontally, with the Sealing Nut (A) at the left end, and the Screw Nut (E) over the Body (F) at the right end.



10. Carefully thread the cleanly-cut end of the Cat 5 Ethernet cable through the Sealing Nut (A) end of the quick-disconnect assembly, and push through approximately 1 foot (30 cm) of cable.

Note: *The next two steps should be performed by someone with experience building Ethernet cables.*

11. Prepare the cable and attach it to the RJ45 Plug (G) according to the directions included with your crimping tool.

12. Before continuing, test the cable with a portable Ethernet cable tester to ensure that the RJ45 plug (G) is correctly connected.

13. Carefully pull the cable slack back through the quick-disconnect assembly until the RJ45 Plug (G) is almost touching the Body (F). Adjust the cable position so that the RJ45 Plug (G) fits precisely into the RJ45 cutout in the Body (F), and press down the plastic tab so the plug fits correctly.

14. Tighten the threads between Sealing Nut (A) and Clamp Ring (C) **by hand**, until the cable is firmly anchored. **Do not over tighten. Do not tighten with tools.**

15. Mate the RJ45 Plug (G) with the socket on the Colubris Networks equipment, hold it firmly in place, and tighten the Screw Nut (E) **by hand. Do not over tighten. Do not tighten with tools.**

Creating a drip loop

A drip loop provides additional protection against water running down the Ethernet cable and into the connector. Form the loop as shown in the diagram. Make sure that the distance between the loop start and end points is at least 6 inches (15 cm), and that the cable hangs down at least 10 inches (25 cm).



Lightning and electrical discharge protection

Colubris Networks recommends the following best practices for installing the MAP-330R in an area that is lightning-prone or subject to high electrical discharge. Compliance with these guidelines can help reduce the potential for damage from atmospheric static discharge during electrical storms. No protection against damage caused by static discharge or a direct lightning strike is implied and/or covered under warranty.

- Ensure that the MAP-330R is well grounded, in accordance with the NFPA 70 National Electrical Code and any pertinent local codes.
- Use a shielded Ethernet cable to connect to the MAP-330R.
- If possible, ensure that a properly grounded lightning rod or other static dissipation device is placed higher than the MAP-330R.
- Attach lightning surge suppressors to each MAP-330R antenna post.
- When a long outdoor run of Ethernet cable is used, maximum length 300 feet (100 meters), install an Ethernet surge suppressor as close as possible to the MAP-330R—ideally within 2 feet (.5 meters). This helps reduce the effects of any charge carried by the cable to the MAP-330R.

The following third-party products (available at www.hyperlinktech.com) or their equivalents are compatible with the MAP-330R.

- **Antenna surge suppressor:** N-Male to N-Female Bulkhead 0-6 GHz Coaxial Lightning Surge Protector, part number AL6-NMNFB-9.
- **PoE lightning protector:** Weather-proof PoE compatible 10/100 base-T CAT5 lightning protector, part number AL-CAT5W.

Note: *Colubris Networks does not guarantee or warrant third-party products.*

Controlled and Autonomous modes

The MAP-330R supports two modes of operation: controlled mode and autonomous mode.

Controlled mode

Controlled mode is the default operating mode for the MAP-330R when shipped with 5.1 firmware and higher. It lets you take advantage of centralized management and plug-and-play installation.

When operating in controlled mode:

- The MAP-330R must be installed in conjunction with an MSC-5000 series service controller.
- The MAP-330R's management tool will not allow local configuration changes. The MAP-330R must be configured and managed through the service controller's management tool. For more information see the *MSC-5000 Series Administrator's Guide*.

Autonomous mode

In autonomous mode, the MAP-330R operates as an independently managed access point, just as in software releases prior to 5.1.

This means:

- The MAP-330R is managed and configured locally.
- Centralized management and monitoring via an MSC-5000 series service controller are not available.

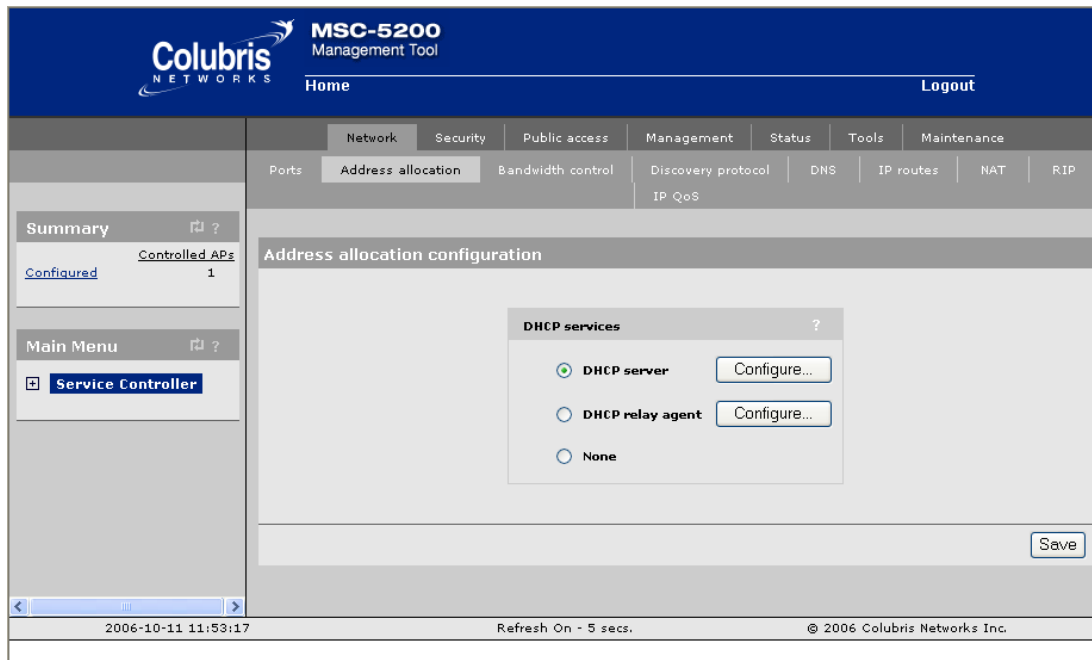
Important: *If you upgrade a MAP-330R from a software release prior to 5.1, it starts up in autonomous mode.*

Controlled MAP-330R initial configuration

When operating in controlled mode, initial configuration of the MAP-330R is not required. Simply power it up and connect it to a network that provides access to an MSC-5000 series service controller. Once the MAP-330R connects with the service controller, its firmware and configuration settings will be updated if required.

Note: *A MAP-330R operating in controlled mode must obtain its IP address from a DHCP server. Ensure that a DHCP server is available on the network, or that an MSC is configured to operate as a DHCP server. To configure an MSC to act as a DHCP server, on the MSC in the left pane select **Service Controller**, and then in the right pane select **Network > Address allocation**.*

To power-up the MAP-330R, connect an 802.3af PoE power source. The MAP-330R is fully operational when the power light stops flashing.



Autonomous MAP-330R initial configuration

For initial configuration of an autonomous MAP-330R you use the built-in web-based management tool to perform the following steps. Access this tool by establishing a web browser connection to the MAP-330R. Supported web browsers are Microsoft Internet Explorer 6.0 or higher and Mozilla Firefox 1.5 or higher.

1 Power-on the MAP-330R

Connect a PoE source (not supplied) to the MAP-330R.

2 Connect your computer

- Use a crossover cable (not supplied) to connect the LAN port on your computer to the PoE source.
- Configure your computer with the static IP address **192.168.1.2**.

3 Start the Management Tool

- Open a Web browser and in the address bar specify **https://192.168.1.1**. Press **Enter**.
- When prompted to accept a Colubris Networks security certificate, do so in order to continue.
- The MAP-330R Login page opens. Specify **admin** for both **Username** and **Password**, and then click **Login**.

4 The first time you log in, you are prompted to do the following:

- Switch to **Autonomous** mode. If the following warning appears on the **Welcome** page, at bottom click **Switch to Autonomous Mode**.

You are in controlled mode. Click here for more information.

Switching modes reboots the MAP-330R and resets all configuration settings to factory defaults. Before you can continue, you must log in again.

- Accept the end user license agreement. Read the agreement and then click **Accept License Agreement**. You must quit the application if you do not agree.
- Configure the country where the MAP-330R is installed. Select the appropriate **Country** from the list and click **Save**.
- Change the default administrator password. Enter a new password and click **Save**.

5 Configure the wireless network

By default the MAP-330R is configured to automatically select the best operating channel (frequency) and to create a wireless network named *Colubris Networks*. There is no need to change these settings for this initial configuration.

6 Configure the MAP-330R

- Select **VSC > Profiles** and click the **Colubris Networks** profile. The **Add/Edit Virtual Service Community** page opens.
 - To install the MAP-330R as a stand-alone device that is not connected to an access controller, clear the **Wireless security filters** checkbox.
 - To install a MAP-330R that connects to a Colubris Networks access controller, under **General**, select the **Use Colubris access controller** checkbox.

- By default the MAP-330R operates as a DHCP client to obtain its IP address. In this configuration the MAP-330R's serial number can be used to manage the device. If static IP addressing is preferred, select **Network > Ports**, and then click **Bridge port** in the list. Select **Static** and then click **Configure**.

The MAP-330R is now ready for operation

For additional configuration and operating information, see the *MAP-300 Series Administrator's Guide*.

Initial configuration of the optional Integrated Sensor

In addition to its access point features, the MAP-330R can function as an RF sensor on one or both of its radios for use in conjunction with a Colubris Networks RF Manager server.

The MAP-330R Integrated Sensor is implemented by installing an optional license. The Sensor is disabled if no valid license is installed.

- If you purchased the Integrated Sensor license at the same time that you purchased your MAP-330R, the license is factory-installed. You do not need to worry about installing a license.
- If you purchased the Integrated Sensor license upgrade after you purchased the MAP-330R, you must install the license file.
 - For an autonomous mode MAP-330R, select **Maintenance > Licensing**. For more information see the *MAP-300 Series Administrator's Guide*.
 - For a controlled mode MAP-330R, the license is installed and managed using the service controller's management tool. For more information see the *MSC-5000 Series Administrator's Guide*.

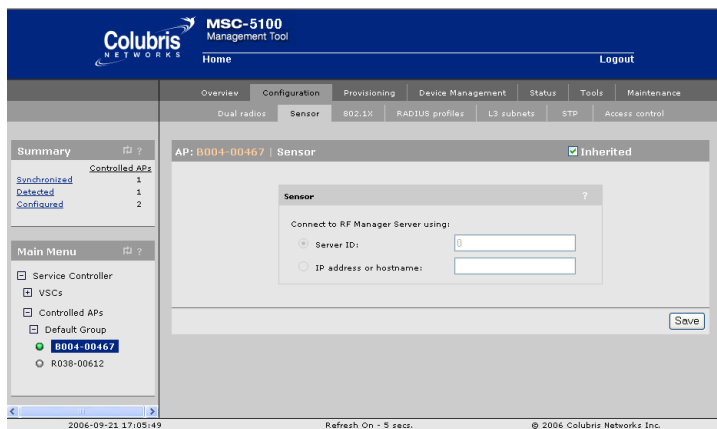
Use the following steps to enable and configure the Integrated Sensor.

1 Start the Management Tool

- For an autonomous MAP-330R, start the MAP-330R's management tool as described on page 5.
- For a controlled MAP-330R, start the management tool on the associated MSC-5000 series service controller.

2 Configure the sensor to connect to an RF Manager server

- a. Open the **Sensor configuration** page.
 - For an autonomous MAP-330R, select **Security > Sensor**.
 - For a controlled MAP-330R, in the left pane under **Main Menu**, expand the **Service Controller, Controlled APs**, and **Default Group** nodes, and then select the name of the MAP-330R (By default, this will be the MAP's serial number.). In the right pane select **Configuration > Sensor**. Clear the **Inherited** checkbox.



b. Under **Connect to RF Manager Server using**,

- Select **Server ID** and then enter the ID number of the RF Manager Server with which to connect. Enter **0** to specify that the MAP-330R search for the first available RF Manager Server.

Support for multicast traffic must be enabled on all routers and switches between the MAP-330R and the RF Manager Server.

- Select **IP address and hostname** to connect to a specific RF Manager Server, then enter the IP address of the RF Manager Server or its hostname. If you enter a hostname, ensure that the MAP-330R is able to resolve the hostname through DNS. An entry must be created on the network DNS server that points to the IP address of the RF Manager Server.

c. Click **Save**.

3 Connect to the network

Connect the MAP-330R to a network that provides access to an RF Manager Server.

- The MAP-330R must be able to reach the RF Manager Server through a network connected to port 1. You should be able to ping the RF Manager Server's IP address from the MAP-330R.
- If there are any firewalls between the MAP-330R and the RF Manager Server, TCP and UDP ports 3851 must be open in both directions.

The Integrated Sensor is now operational and should be detected by the RF Manager server.