Enabling Controller Discovery

An AP can discover the IP address of the controller in the following ways:

- From a DNS server
- From a DHCP server
- Using the ArubaDiscovery Protocol (ADP)

At boot time, the AP builds a list of controller IP addresses and then tries these addresses in order until a controller is reached successfully. The list of controller addresses is constructed as follows:

1. If the **master** provisioning parameter is set to a DNS name, that name is resolved and all resulting addresses are put on the list. If **master** is set to an IP address, that address is put on the list.

2. If the **master** provisioning parameter is not set and a controller address was received in DHCP Option 43, that address is put on the list.

3. If the **master** provisioning parameter is not set and no address was received via DHCP option 43, ADP is used to discover a controller address and that address is put on the list.

4. Controller addresses derived from the **server-name** and **server-ip** provisioning parameters and the default controller name **aruba-master** are added to the list. Note that if a DNS name resolves to multiple addresses, all addresses are added to the list.

This list of controller IP addresses provides an enhanced redundancy scheme for controllers that are located in multiple data centers separated across Layer-3 networks.

Configuring DNS Resolution

APs are factory-configured to use the host name **aruba-master** for the master controller. For the DNS server to resolve this host name to the IP address of the master controller, you must configure an entry on the DNS server for the name **aruba-master**.

For information on how to configure a host name entry on the DNS server, refer to the vendor documentation for your server.

Aruba recommends using a DNS server to provide APs with the IP address of the master controller because it involves minimal changes to the network and provides the greatest flexibility in the placement of APs.

When using DNS, the AP can learn multiple IP addresses to associate with a controller. If the primary controller is unavailable or does not respond, the AP continues through the list of learned IP addresses until it establishes a connection with an available controller. This takes approximately 3.5 minutes per controller.

Configuring DHCP Server Communication with APs

You can configure a DHCP server to provide the master controller's IP address. You must configure the DHCP server to send the controller's IP address using the DHCP vendor-specific attribute option 43. APs identify themselves with a vendor class identifier set to **ArubaAP** in their DHCP request. When the DHCP server responds to the request, it will send the controller's IP address as the value of option 43.

When using DHCP option 43, the AP accepts only one IP address. If the IP address of the controller provided by DHCP is not available, the AP can use the other IP addresses provisioned or learned by DNS to establish a connection.

For more information on how to configure vendor-specific information on a DHCP server, see DHCP with Vendor-Specific Options on page 848 or refer to the documentation included with your server.

Using the Aruba Discovery Protocol (ADP)

ADP is enabled by default on all Aruba APs and controllers. To use ADP, all APs and controllers must be connected to the same Layer-2 network. If the devices are on different networks, a Layer-3 compatible discovery mechanism, such as DNS, DHCP, or IGMP forwarding, must be used instead.

With ADP, APs send out periodic multicast and broadcast queries to locate the master controller. You might need to perform additional network configuration, depending on whether the APs are in the same broadcast domain as the controller:

- If the APs are in the same broadcast domain as the master controller, the controller automatically responds to the APs' queries with its IP address.

- If the APs are not in the same broadcast domain as the master controller, you must enable multicast on the network (ADP multicast queries are sent to the IP multicast group address 239.0.82.11) for the controller to respond to the APs' queries. You also must make sure that all routers are configured to listen for Internet Group Management Protocol (IGMP) join requests from the controller and can route these multicast packets.

   To verify that ADP and IGMP join options are enabled on the controller, use the following CLI command:

   ```
   (host) #show adp config
   ADP Configuration
   -----------------
   key        value
   ---        -----
   discovery  enable
   igmp-join  enable
   ```

If ADP or IGMP join options are not enabled, use the following CLI commands:

```
(host) (config) #adp discovery enable
(host) (config) #adp igmp-join enable
```

Verigying that APs Are Receiving IP Addresses

Each AP requires a unique IP address on a subnetwork that has connectivity to a controller. Aruba recommends using the Dynamic Host Configuration Protocol (DHCP) to provide IP addresses for APs; the DHCP server can be an existing network server or an controller configured as a DHCP server.

You can use an existing DHCP server in the same subnetwork as the AP to provide the AP with its IP information. You can also configure a device in the same subnetwork to act as a relay agent for a DHCP server on a different subnetwork. (Refer to the vendor documentation for the DHCP Server or relay agent for information.)

If an AP is on the same subnetwork as the master controller, you can configure the controller as a DHCP server to assign an IP address to the AP. The controller must be the only DHCP server for this subnetwork.

In the WebUI

1. Navigate to the **Configuration > Network > IP > DHCP Server** window.

2. Select the **Enable DHCP Server** checkbox.

3. In the Pool Configuration section, click **Add**.

4. Enter information about the subnetwork for which IP addresses are to be assigned. Click **Done**.

5. If there are addresses that should not be assigned in the subnetwork:

   a. Click **Add** in the Excluded Address Range section.

   b. Enter the address range in the Add Excluded Address section.

   c. Click **Done**.

6. Click **Apply** at the bottom of the window.

In the CLI

```
(host)(config)# ip dhcp excluded-address ipaddripaddr2
```