

# HiveManager NG Discovery through DHCP



This guide explains how to provide the FQDN (fully qualified domain name) or IP address of HiveManager NG for Aerohive APs and Aerohive and Dell switches by configuring vendor-specific DHCP options on two common types of DHCP servers: Linux ISC server and a Windows DHCP server. Informing Aerohive and Dell devices about the FQDN or IP address of HiveManager NG is unnecessary when using the HiveManager NG public cloud platform because those devices ship preconfigured with the information they need. It becomes necessary when using HiveManager NG Virtual Appliance because the devices must learn its location on a site-by-site basis.

The use of vendor-specific DHCP options is one of several HiveManager NG discovery methods to accomplish this. Another method is to configure a DNS server that is authoritative for the domain where your devices are located to map `hivemanager.<local_domain>` to the IP address of the on-premises HiveManager NG Virtual Appliance. Yet another is to set the FQDN or IP address of the on-premises HiveManager NG Virtual Appliance on Aerohive and Dell devices through their CLI.

## Document Revision History

Revision	Date	Notes
01	10/17/2016	Initial version

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## Introduction

For a switch or an AP to discover its HiveManager NG instance, you can configure DHCP vendor class option 43, sub-option 225 or 226, where 225 is the domain name of HiveManager NG and 226 is its IP address. RFC 2132 defines two DHCP options that are relevant to vendor-specific options. They are option 60 and option 43. DHCP option 60 is the VCI (Vendor Class Identifier). The VCI is a text string that uniquely identifies a type of vendor device. DHCP clients, such as Aerohive APs and Aerohive and Dell switches, include option 60 in the DHCPDISCOVER message that they broadcast to identify themselves to the DHCP server.

A DHCP server must be configured to return the HiveManager NG IP address or FQDN based on the VCI that the switches and APs send. The DHCP server maps VCI text strings to vendor-specific information. When it receives a recognizable VCI in a DHCPDISCOVER message from a DHCP client, it returns the mapped vendor-specific information in its DHCPOFFER as DHCP Option 43. On the DHCP server, option 43 will be defined globally or in each DHCP pool (scope).

The semantics of a DHCP server configuration vary depending on vendor. This document contains specific instructions on the Linux ISC DHCP Server and Microsoft DHCP server. For other DHCP servers, consult the relevant product documentation for instructions on configuring vendor-specific options.

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## Configuring Linux-Based DHCP Servers

The following is an example of how to configure a Linux ISC server to return vendor-specific information to Aerohive and Dell devices.

```
ddns-update-style interim;
allow bootp;
option space Aerohive;
option Aerohive.HMFQDN code 225 = text;
option Aerohive.HMIP code 226 = ip-address;
...
class "AEROHIVE"
match if option vendor-class-identifier = "AEROHIVE";
Vendor-option-space Aerohive;
option Aerohive.HMIP 10.100.1.20";
option Aerohive.HMFQDN "hmng.ah-lab.com";
...
```

## Configuring Windows-Based DHCP Servers

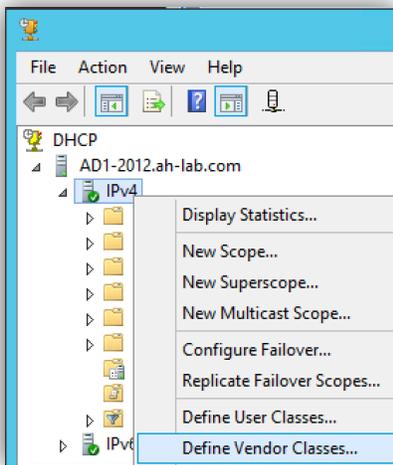
This section describes how to configure a Windows DHCP server to return vendor-specific information to Aerohive and Dell devices. You need to know this key information:

- VCI (Vendor Class Identifier)
- Option 43 sub-option codes

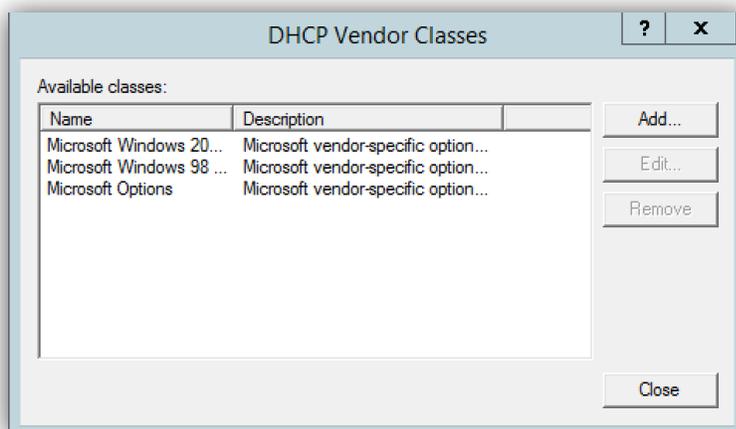
As mentioned earlier, option 60 identifies and associates a DHCP client with a particular vendor. Any DHCP server configured to take action based on client vendor ID should also have this option configured.

### Defining a DHCP Vendor Class

1. From DHCP Manager, right-click **IPv4** under the server host name and then click **Define Vendor Classes**.



2. In the *DHCP Vendor Classes* dialog box that appears, click **Add** to create a new DHCP vendor class.

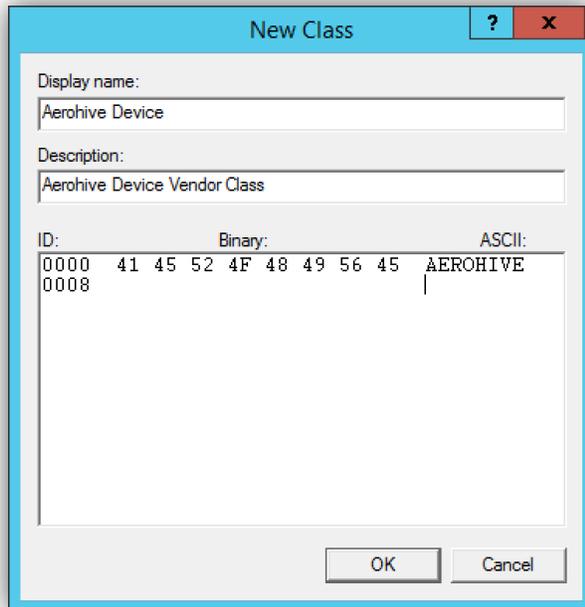


3. Enter the following in the *New Class* dialog box that appears and then click **OK**:

**Display Name:** Enter a value such as **Aerohive Device**.

**Description:** Optionally enter a short description, such as **Aerohive Device Vendor Class**.

Add the VCI string by clicking in the ASCII field and typing **AEROHIVE** in uppercase letters.

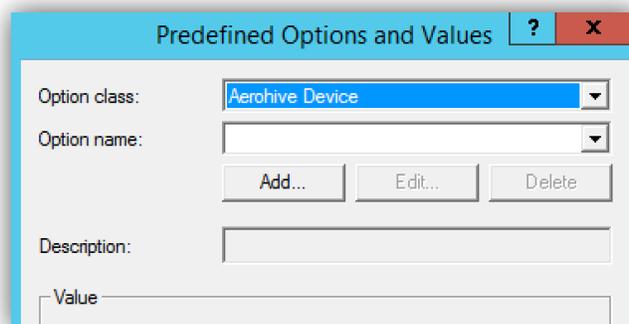


## Defining Vendor-Specific Options for Aerohive and Dell Devices

Create a new entry for the Aerohive sub-options in the *Predefined Options and Values* dialog box for the newly created vendor class. Then define the sub-option code type and the data format that DHCP servers use to deliver vendor-specific information to Aerohive and Dell devices.

To create a predefined option:

1. Right-click the **IPv4** icon and choose **Set Predefined Options**.
2. Choose the option class configured for the vendor class. To continue from the previous example, choose **Aerohive Device**.



3. To define the sub-option code that specifies a FQDN or IP address for HiveManager NG, click **Add**.

4. In the *Option Type* dialog box that appears, enter the following and then click **OK**:

**Name:** Enter a name, such as **FQDN of HiveManager NG** or **IP of HiveManager NG**.

**Data Type:** Choose **String** for option 225 or **IP Address** for 226.

**Code:** Type the sub-option value **225** or **226**.

*Note: If you want to specify the Fully Qualified Domain Name (FQDN) of HiveManager NG use 225. Use 226 to specify the IP address of HiveManager NG.*

**Description:** Optionally, enter a useful description for future reference.

The dialog box is titled "Option Type" and has a class of "Aerohive Device". The "Name" field contains "FQDN of HiveManager NG". The "Data type" dropdown is set to "String" and the "Array" checkbox is unchecked. The "Code" field contains "225". The "Description" field contains "Fully Qualified Domain Name of HiveManager NG". There are "OK" and "Cancel" buttons at the bottom.

OR

The dialog box is titled "Option Type" and has a class of "Aerohive Device". The "Name" field contains "IP of HiveManager NG". The "Data type" dropdown is set to "IP Address" and the "Array" checkbox is unchecked. The "Code" field contains "226". The "Description" field contains "IP Address of HiveManager NG". There are "OK" and "Cancel" buttons at the bottom.

5. In the *Predefined Options and Values* dialog box, ensure the **Aerohive Device** option class is chosen.

6. From the Option name drop-down list, choose **225 FQDN of HiveManager NG** or **226 IP of HiveManager NG**.

7. Enter the FQDN or IP address of your on-premises HiveManager NG Virtual Appliance in the Value String field or Value IP Address field and then click **OK**.

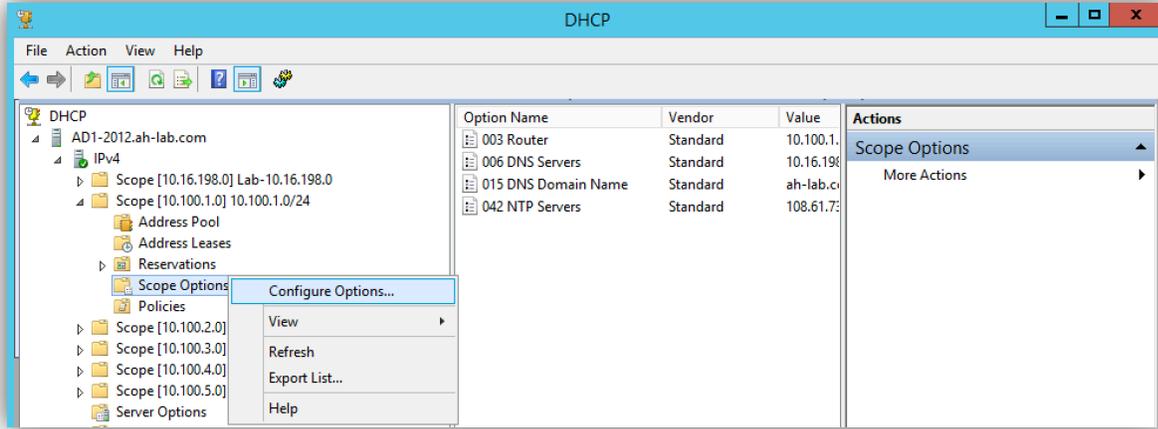
The dialog box is titled "Predefined Options and Values" and has an "Option class" of "Aerohive Device". The "Option name" dropdown is set to "225 FQDN of HiveManager NG". There are "Add...", "Edit...", and "Delete" buttons. The "Description" field contains "Fully Qualified Domain Name of HiveManager NG". Under the "Value" section, the "String" field contains "hmg.ah-lab.com". There are "OK" and "Cancel" buttons at the bottom.

OR

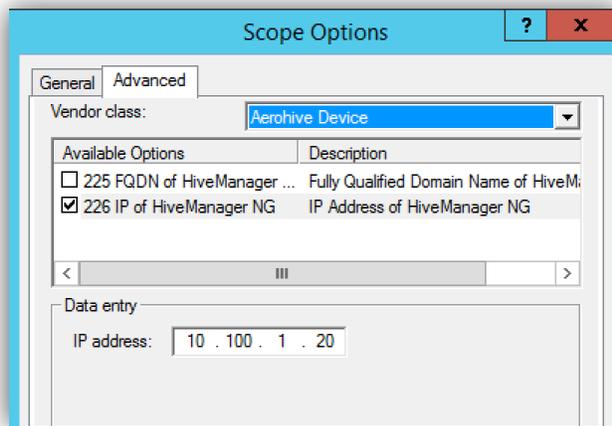
The dialog box is titled "Predefined Options and Values" and has an "Option class" of "Aerohive Device". The "Option name" dropdown is set to "226 IP of HiveManager NG". There are "Add...", "Edit...", and "Delete" buttons. The "Description" field contains "IP Address of HiveManager NG". Under the "Value" section, the "IP Address" field contains "10 . 100 . 1 . 20". There are "OK" and "Cancel" buttons at the bottom.

This completes the creation of the Vendor class and sub-option type needed to support HiveManager NG discovery. The final step is to set the vendor-specific options at the DHCP scope level.

1. Expand the DHCP scope from which your devices will obtain their network settings.
2. Right-click **Scope Options** and then click **Configure Options**.



3. In the Scope Options dialog box that appears, click the *Advanced* tab.



4. From the Vendor Class drop-down list, choose **Aerohive Device**.
5. Select the check box next to the 255 or 226 sub-option to assign it to this scope, and then click **Apply**.
6. From your switch, you can verify its connection status with HiveManager NG by restarting HiveAgent and then viewing its connection status.

```
(AH-Switch) # application stop hiveagent
(AH-Switch) # application start hiveagent
(AH-Switch) # show hivemanager status
```

```
HiveAgent Version..... 0.2.82
HiveAgent Status..... CONNECTING TO HIVEMANAGER
HiveAgent AssociationUrl..... https://10.100.1.20/hac-
webapp/rest/v1/association
HiveAgent AssociationMethod..... IP_DHCP
```