Conditional DHCP Option Delivery Based Upon Vendor ID

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CONDITIONAL DHCP OPTION DELIVERY BASED UPON VENDOR ID

Many devices use DHCP Options to determine their default configuration and / or firmware loads. For instance, many VoIP endpoints listen for DHCP Option 66 or DHCP Option 160 when booting and use the contents as the location from which to obtain their configuration file(s). This works very well in general, however when there are multiple devices from differing vendors or even multiple models from the same vendor the situation can degenerate into chaos. It is a bad idea, for instance, for Polycom phones to boot up while attempting to use Panasonic phone configuration files!

Most devices, when they generate a DHCP address request, include a DHCP Option 60 Vendor Class / ID string identifying themselves as part of the request to the DHCP server. The DHCP server can utilize this value to determine what options should be returned.

Values for some popular endpoints/phones are:

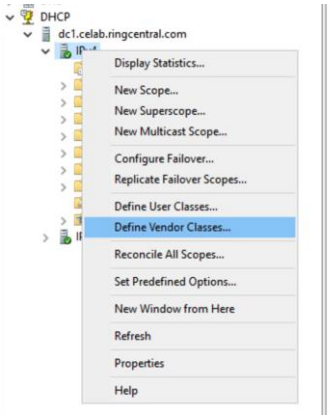
Manufacturer	Option 60 Value (VendorID)	Notes
Polycom	Polycom-{model}	Initial capital letter. Model is appended after hyphen. Use trailing wild-card to allow for all models.
Yealink	yealink	All lower case. Same for all models. Use trailing wild-card to allow for future changes.
Cisco	Cisco* or CISCO*	Anything starting with Cisco or CISCO… There is no consistency between phone models.
Panasonic	Panasonic	Initial capital letter. Same for all models. Use trailing wild-card to allow for future changes.

Different DHCP servers have differing methods of using the Vendor Class/ID. Examples are given below.

Please note that the configuration changes must be made identically on ALL DHCP servers that may possibly service the devices.

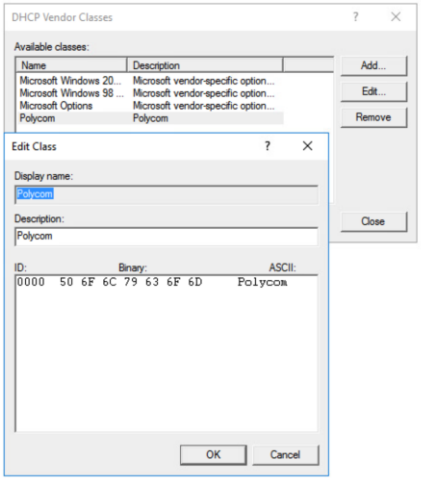
CONFIGURATIONS

1. Windows Server 2012 or later DHCP Server
   1.1. Create a Polycom vendor class
      1.1.1. Right click on the 'IPv4' tree item and select 'Define Vendor Classes…'.



      1.1.2. Click on the 'Add' button.
      1.1.3. Enter 'Polycom' for both 'Display Name' and 'Description', then click directly under the 'ASCII' heading and enter 'Polycom'. Click on 'OK', then click on 'Close'. Repeat for any other vendors that

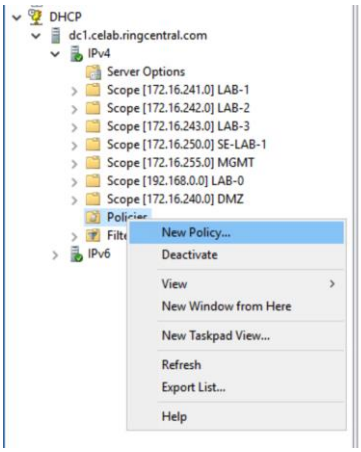
may be needed based upon the table of vendors previously provided. Use descriptive names.



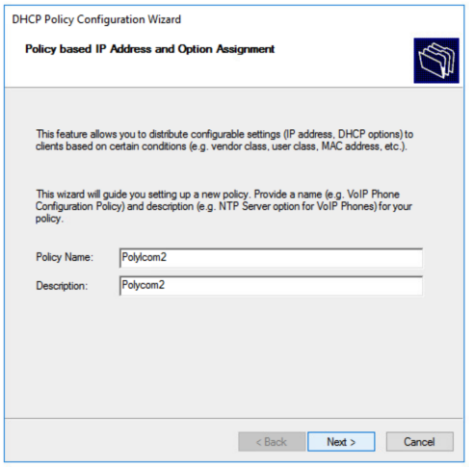
1.2. Create one or more policies. We will use Polycom endpoints for an example. This should be repeated if you have multiple vendors' devices in your network, using appropriate names.

1.2.1. You will find 'Policies' in the selection tree under both the IPv4 heading and under each individual scope. To create a policy that applies to all IPv4 scopes you perform the following steps using the 'Policies' under the IPv4 heading. Using the 'Policies' under an individual scope results in a policy that only applies to that IP scope/range, for instance only the LAB/TEST network.

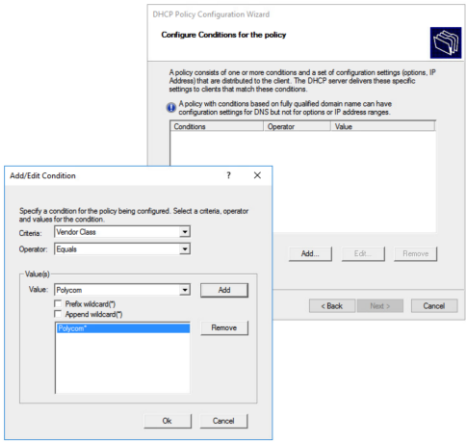
1.2.2. Right click on the 'Policies' item appropriate for the desired scope, then select 'New Policy'.

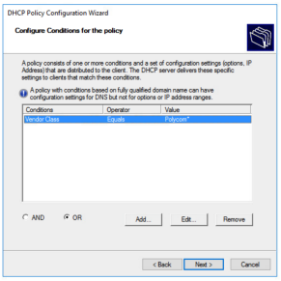


1.2.3. Name the policy 'Polycom' and use 'Polycom' as the description, then click 'Next'.



1.2.4. Click on 'Add…' to add a criterion. Set 'Criteria' to 'Vendor Class', 'Operator' to 'Equals', 'Value' to 'Polycom', check the 'Append Wildcard' box, and then click 'Add'. You should see a single criterion with 'Polycom*' listed. Click 'OK', then click 'Next'.

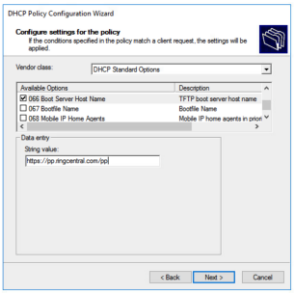




1.2.5. If you are creating a policy restricted to a single scope, you will be asked if you want to define a select IP range for assignments to requests that match the criteria, select 'No' and then click 'Next'.

1.2.6. Select Option 066, enter a value of 'https://pp.ringcentral.com/pp', and then click 'Next'. For Yealink use a value of 'https://yp.ringcentral.com/yp' and for Cisco use a value of 'https://cp.ringcentral.com/cp'. Other phones which are not part of RingCentral's assisted provisioning system may have a custom URL pointing the configuration files on your local web

server.



1.2.7. Click 'Finish'.

2. Mikrotik DHCP Server
   2.1. SSH to the device or use Winbox to open a New Terminal.
   2.2. Create the DHCP Option and Option Set values by typing the following commands:

```
/ ip dhcp-server option add code=66 name=PolyConf-RC value="'https://pp.ringcentral.com/pp'"
```

(Please note the odd value syntax, a single quoted string inside of double quotes.)

```
/ ip dhcp-server option sets add name=Poly-RC options=PolyConf-RC
```

   2.3. You can now apply the DHCP Option Set to the entire address space served by a particular DHCP Server instance or a particular subnet scope. At this point there is not a good way to use Vendor Class conditional option delivery.
   2.4. detailed info to follow
3. Fortinet
   Fortinet/Fortigate does not provide a mechanism to conditionally send an option based upon the Vendor Class/ID received.
4. ISC DHCP Server
   detailed info to follow