

DHCP configuration for the ProVision switch series



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Automatic configuration and switch software update with DHCP

For HP Networking simplicity is important within network infrastructures. This configuration example supports simplifying configuration and switch software updates by using DHCP options. HP ProVision switches are initially booted up with factory-shipped configuration file. The default configuration files has following settings enabled:

- VLAN 1 for all ports untagged
- IP address for VLAN 1 based on DHCP allocated
- `dhcp config-file-update` enabled
- DHCP image file update
- DHCP vendor specific options enabled

The switch will receive IP address from TFTP server, name of image file, and name of configuration file in DHCP ACK packet when it requests IP address from DHCP server. DHCP server will use following options in the DHCP ACK packet:

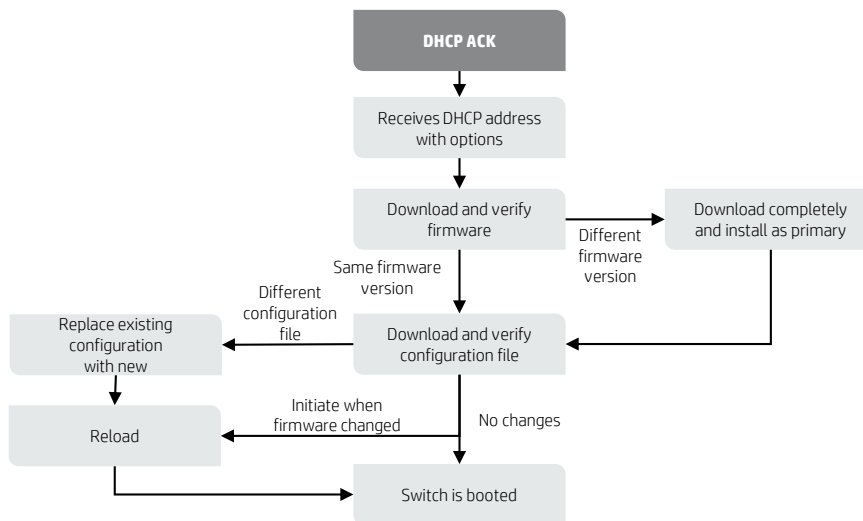
- DHCP option 66—IP address of TFTP server
- DHCP option 67—Name of configuration file
- DHCP option 43—Name of image file
 - DHCP option 43 is vendor specific. Figure 1 provides overview of the format needed.

Figure 1. DHCP option 43 overview

	Sub option	Length of data	Data
Decimal/String value	145	16	K_15_16_0005.swi
Hex value	91	10	4b5f31355f31365f303030352e737769

These options will cause the switch to download image file and configuration file from TFTP server. After switch receives the first 4 KB, it compares the image file with running image on the switch. When image is the same, process will be aborted. If image is different, the file will be completely downloaded and installed as a primary image. The configuration file process works differently since it will be completely downloaded. When successfully downloaded, the switch compares configuration file from TFTP server with existing configuration. If content is different, switch will replace the existing configuration file with a new file and initiate reload. Figure 2 describes the process.

Figure 2. Software update process

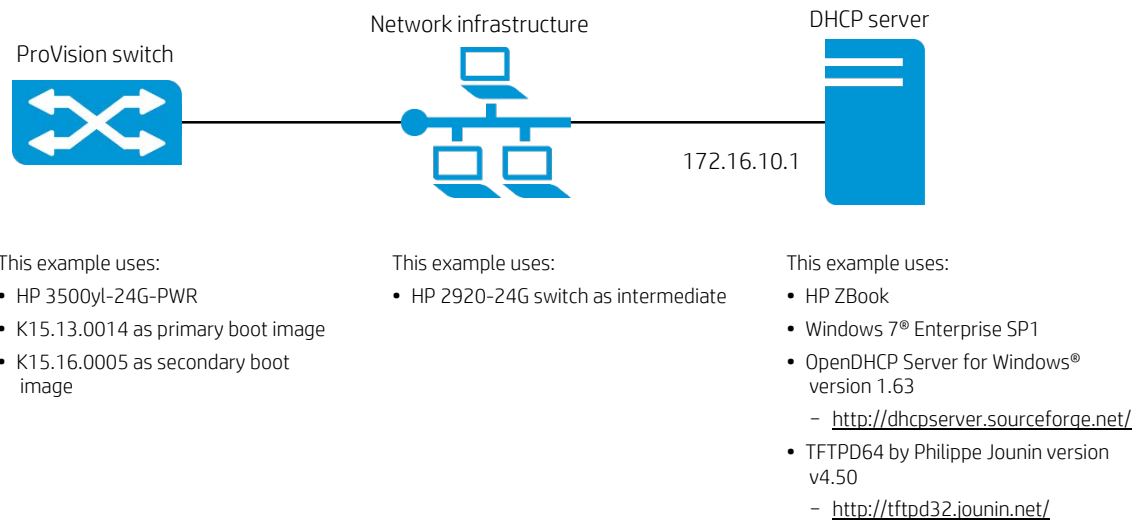


Note:

Configuration file on the TFTP server must be generated on switch in order to function correctly. DHCP option 66 and 43 is only processed on interface belonging to primary VLAN.

Topology

Figure 3. Sample topology diagram



OpenDHCP server configuration

OpenDHCPServer.ini configuration file is used for this example. Key points to note are in red text.

OpenDHCPServer.ini Config:

```
#Set listening interface
[LISTEN_ON]
172.16.10.1

#Configure DHCP range
[RANGE_SET]
DHCPRange=172.16.10.50-172.16.10.60
SubnetMask=255.255.255.0
Router=172.16.10.1
AddressTime=500
TFTPServerName=172.16.10.1
BootFileName=3500.cfg
43=91:10:4b:5f:31:35:5f:31:36:5f:30:30:30:35:2e:73:77:69

#Optional if you want to create multiple range sets in same subnet for different devices types, filters can be used
FilterVendorClass="HP J9471A Switch 3500-24-PoE"

#After these configuration changes save file and start OpenDHCP in standalone mode
Start > All Programs > OpenDHCP Server > Run Stand Alone
```

TFTP server configuration

Configuration example of TFTP server. Key points to note are in red text.

TFTPD64 Config:

#Create directory, in this example d:\tftpserver

#Place test configuration in this directory. For e.g.:

```
File name: 3500.cfg
; J9471A Configuration Editor; Created on release #K.15.13.0014
; Ver #06:10.18.6f.ff.3f.ef:4e
hostname "ItWorked"
module 1 type j94bba
logging 172.16.10.1
snmp-server community "public" unrestricted
snmp-server community "HPpublic" operator
snmp-server community "HPprivate" unrestricted
snmp-server host 172.16.10.1 community "HPpublic"
snmp-server contact "Dobias van Ingen - HP Networking"
vlan 1
    name "DEFAULT_VLAN"
    untagged 1-24
    ip address dhcp-bootp
    exit
vlan 10
    name "HPDemo"
    no ip address
    exit
vlan 20
    name "HPLab"
    no ip address
    exit
vlan 30
    name "HPQuest"
    no ip address
    exit
```

#Place image file in directory

In this example K_15_16_0005.swi is used

#Start TFTPD64 Server

Start > All Programs > TFTPD64 > TFTPD64

#Configure **current directory** and **server interface** in TFTP Server tab

Network infrastructure configuration

In this example, one switch is used to simulate network infrastructure and make sure port of DHCP server is up. In this example, all devices are in same VLAN. For larger networks, it is important that DHCP server and TFTP server are reachable.

ProVision switch configuration

In this example, factory default configuration is used. The new configuration file that will be implemented also uses DHCP to allocate its IP address. This provides the following added value:

- Dynamically replace image file
- Dynamically replace configuration file

When switch will renew IP address, it receives the options in DHCP ACK packet and process starts again. If there is no change, nothing will be done. When there is change in image or configuration file, this will be implemented and switch will be reloaded with new configuration. Within production network infrastructures, this needs to be planned during maintenance windows.

When everything is configured, the ProVision switch can be started and these automation features can be tested and implemented within network infrastructure to simplify configuration and software updates.

Additional links

Manuals for the HP Networking products can be found at <http://h17007.www1.hp.com/us/en/networking/library/index.aspx#>

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hp.com/networking

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4AA5-7850ENW, April 2015

