

DHCP Option 43

Overview

The DHCP Option 43 feature can configure a networked Link-OS™ printer with the details necessary for the printer to connect to a Profile Manager, SOTI® MobiControl™ Connector, or AirWatch® Connector or to use a Mirror solution.

Use Case

DHCP Option 43 provides a method to configure Link-OS printers with the necessary details to allow the printer to connect securely to a server using the Cloud Connect/weblink feature or to connect securely to an FTP server to use the Mirror solution.

The set of Cloud Connect/weblink details that can be configured using Option 43 includes:

- Server address
- Authentication server name
- User name and password for proxy logins

The set of Mirror details that can be configured using Option 43 includes:

- Server address
- Mirror path
- Mirror feedback path
- Mirror appl path
- Mirror mode

Details

The feature allows the printer to obtain the settings used to configure secure Cloud Connect/weblink connections or Mirror events as part of receiving a DHCP assigned IP address. Using this feature requires configuring your DHCP server to send Option 43 information during address assignment.

This requires that DHCP option 60 is not empty and that the [ip.dhcp.auto_provision_enable](#) printer setting is set to "on" (the default is "on")

Once DHCP delivers Option 43 information to the printer, it will use that information to connect to the defined server. The format for the information is

"10642 <auto provision code> < auto provision settings>"

Example

The remainder of this document is an example showing how to get this solution up and running using a Microsoft® Windows® DHCP server.

Requirements for the Example

- Microsoft Windows Server with DHCP Server role installed (Microsoft Windows Server 2008 R2 x64 is used in this example)
- Zebra printer with firmware capable of Link-OS 2.0 or later and DHCP Option 43, connected to the DHCP server's network (a QLn320 is used in this example)

This printer	Needs this firmware version or later
iMZ Series™	V73.19.15Z
QLn Series™	V68.19.15Z
ZQ500 Series™	V76.19.15Z
ZT200 Series™	V72.19.15Z
ZT400 Series™	V75.19.15Z
ZD500 Series™	V74.19.15Z
ZD400 Series™	V77.19.15Z

- Zebra Setup Utilities (<http://www.zebra.com/setup>) or a similar program for bidirectional communication with the printer (the Zebra Setup Utilities program is used in this example).
- Optionally, the target server that the printer is being configured to connect to. Typically, this would be a Profile Manager, SOTI MobiControl Connector, AirWatch Connector, or Mirror server.
- Optionally, Wireshark or a similar program to provide network traces

Steps:

1. Using the “Open Communication with the Printer” tool in the Zebra Setup Utility, ensure that the printer is capable of auto-provisioning.
Send the following command to the printer followed by a <CR><LF>. If the printer receives the command properly, it will return "on".

```
! U1 getvar "ip.dhcp.auto_provision_enable"
```

NOTE: The default for this setting is “on.”

2. Determine the vendor information that the printer will report to the DHCP server.

Send the following command to the printer followed by a <CR><LF>.

```
! U1 getvar "ip.dhcp.vendor_class_id"
```

The printer returns a vendor class ID string similar to "Zebra Technologies ZTC QLn320-203dpi CPCL".

3. Verify that the printer is ready to accept an auto-provision configuration from the DHCP server. For Cloud Connect/weblink connections, the "weblink.ip.conn1" bank of settings should contain mostly null values.

Send the following command to the printer followed by a <CR><LF>.

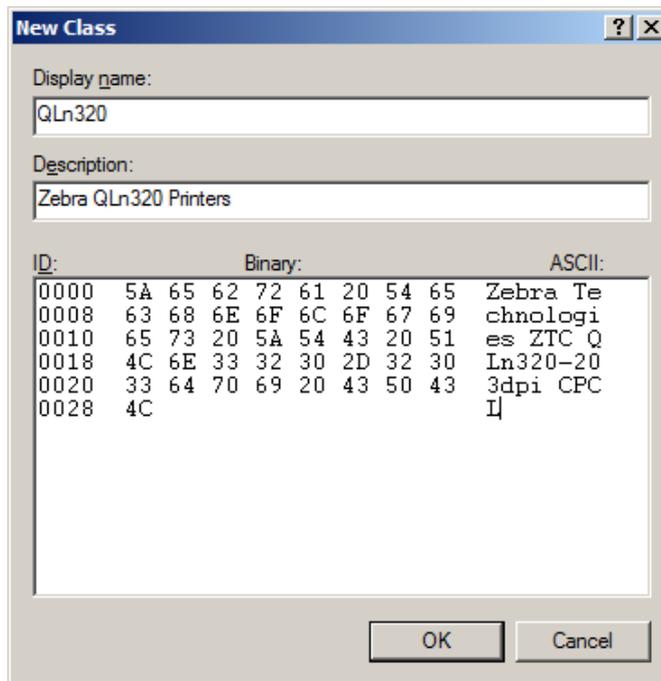
```
! U1 getvar "weblink.ip.conn1.location"
```

If the "weblink.ip.conn1.location" value is blank (the printer returns ""), you may proceed. If this value is not blank, the printer will ignore the auto-provision settings sent by the DHCP server. You must set this value to null using the following command if you wish to use DHCP auto-provisioning:

```
! U1 setvar "weblink.ip.conn1.location" ""
```

NOTE: This value does not get updated during auto-provision

4. In the DHCP Server Manager dialog, open the DHCP Server role. Right-click on IPv4 and choose "DHCP Vendor Classes." Click Add.
5. Populate the fields in the New Class window as follows according to your specific printer. For the ASCII field, enter in the vendor class ID exactly as reported by the printer, without quotation marks. Ensure that there are no leading or trailing spaces. Click OK.
 - a. Display name: QLn320
 - b. Description: Zebra QLn320 printers
 - c. ASCII: Zebra Technologies ZTC QLn320-203dpi CPCL



New Class

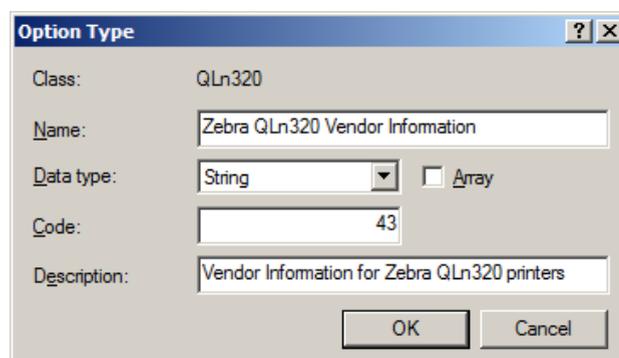
Display name: QLn320

Description: Zebra QLn320 Printers

ID:	Binary:	ASCII:
0000	5A 65 62 72 61 20 54 65	Zebra Te
0008	63 68 6E 6F 6C 6F 67 69	chnologi
0010	65 73 20 5A 54 43 20 51	es ZTC Q
0018	4C 6E 33 32 30 2D 32 30	Ln320-20
0020	33 64 70 69 20 43 50 43	3dpi CPC
0028	4C	I

OK Cancel

6. In the DHCP Server role window, right-click on IPv4 and choose Set Predefined Options. Choose your newly created vendor class from the Option class dropdown. Click Add.
7. Populate the fields in the Option Type window as follows according to your specific printer. Click OK.
 - a. Name: Zebra QLn320 Vendor Information
 - b. Data type: String
 - c. Code: 43
 - d. Description: Vendor Information for Zebra QLn320 printers



Option Type

Class: QLn320

Name: Zebra QLn320 Vendor Information

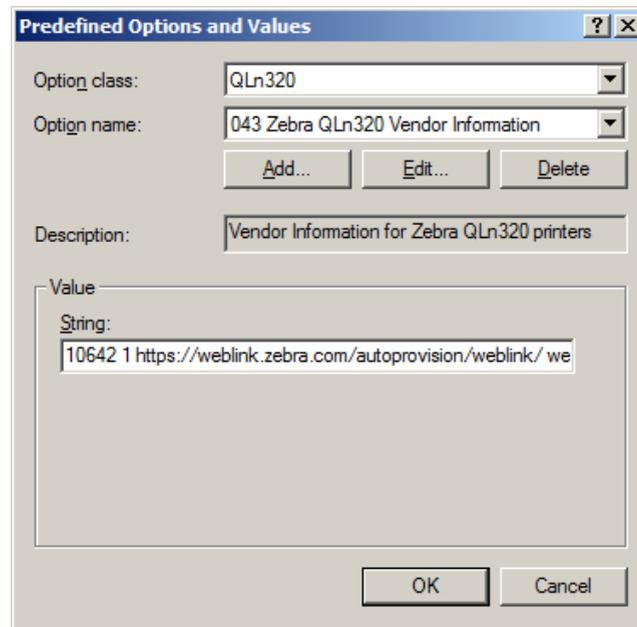
Data type: String Array

Code: 43

Description: Vendor Information for Zebra QLn320 printers

OK Cancel

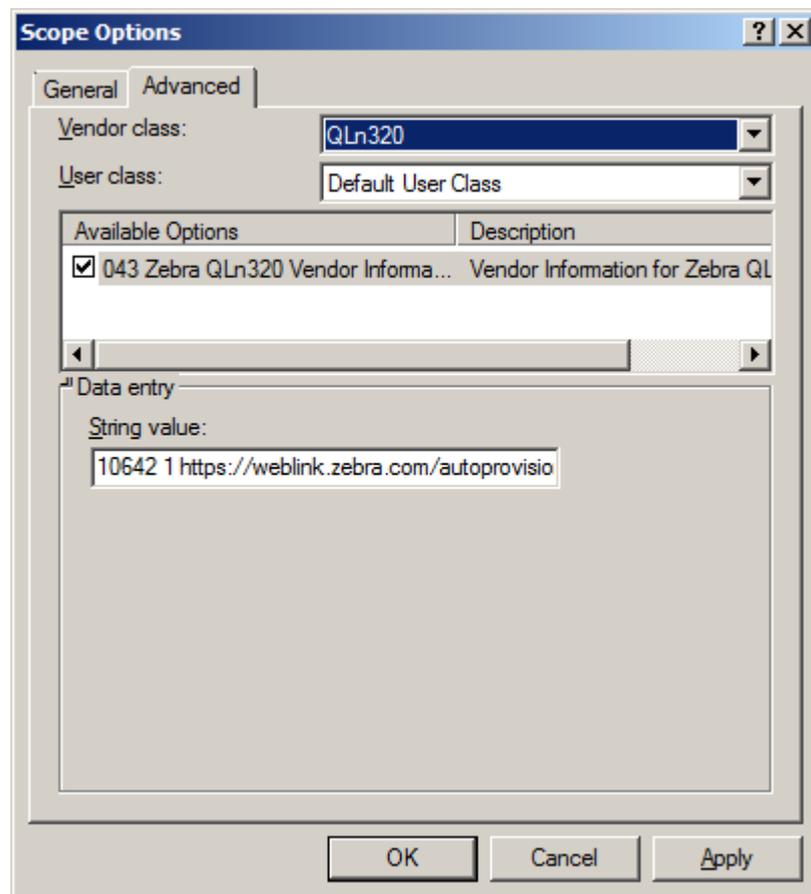
8. Select your newly created option name in the Option name dropdown, and enter the String value according to your server's settings. Then click OK.
 - a. Sample format: 10642 1 [weblink server URI] [weblink server name] [proxy server (optional)]
 - b. Sample string: 10642 1
<https://weblink.zebra.com/autoprovision/weblink/weblink.zebra.com> <https://proxy.zebra.com>



The screenshot shows a dialog box titled "Predefined Options and Values". It contains the following fields and controls:

- Option class:** A dropdown menu with "QLn320" selected.
- Option name:** A dropdown menu with "043 Zebra QLn320 Vendor Information" selected.
- Buttons:** "Add...", "Edit...", and "Delete" buttons are located below the "Option name" dropdown.
- Description:** A text field containing "Vendor Information for Zebra QLn320 printers".
- Value:** A section with a "String:" label and a text area containing "10642 1 https://weblink.zebra.com/autoprovision/weblink/we".
- Buttons:** "OK" and "Cancel" buttons are at the bottom right.

9. Under IPv4, expand the Scope that you wish to use. Right-click on Scope Options and choose Configure Options. Click on the Advanced tab. Select your Vendor class created for the printer from the Vendor class dropdown. Check your newly created option under Available Options. The string value should automatically be populated with the value established in the predefined options. Click OK.



10. Check under Address Leases within the scope you are using and ensure that the printer that you are testing does not already have a lease. Revoke the lease if one is present.
11. OPTIONAL: Launch your network protocol analyzer to watch the DHCP negotiation, if desired.
12. Power cycle the printer.
13. After the printer has obtained its IP lease from the DHCP server, send the following command followed by a <CR><LF> to see that Cloud Connect/weblink has been enabled. It should return "on".

```
! U1 getvar "weblink.enable"
```

14. Send the following command followed by a <CR><LF> to enable weblink logging:

```
! U1 setvar "weblink.logging.max_entries" "1000"
```

15. To check to see the log from the Cloud Connect/weblink server connection attempt, send the following command followed by a <CR><LF>.

```
! U1 getvar "weblink.logging.entries"
```

An entry should appear in the log saying "[Info][Weblink] Starting Weblink for Connection 1 from DHCP received" followed by connection attempts to the server.

Troubleshooting Tips:

- Verify that the printer is on the DHCP network. It should be present under Address Leases in the Scope after the power cycle, and if the printer has a display, it should show an IP address.
- If you have done a packet trace, look at the trace and follow the DHCP packets between the printer and the DHCP server. There should be a sequence of DHCP packets in the order of Discover-Offer-Request-ACK.
 - In the bootstrap section of the DHCP Discover packet, the vendor class ID of the printer should appear under Option 60.
 - In the bootstrap section of the DHCP Offer packet, the option 43 string should appear under Option 43.
 - In the bootstrap section of the DHCP Request packet, the vendor class ID of the printer should appear under Option 60.
 - In the bootstrap section of the DHCP ACK packet, the option 43 string should appear under Option 43.
- If the printer is successfully receiving the auto provision settings but is not connecting to the server, check the "weblink.logging.entries" entries for additional details.