



QxD

Summary of Firmware Changes

This document summarizes the following firmware releases:

Firmware	Release Date	Page	Firmware	Release Date	Page
<i>11z74</i>	07 June 2013	1	<i>11z32</i>	19 April 2010	7
<i>11z71</i>	25 January 2012	2	<i>11z25-44</i>	23 November 2009	7
<i>11z66</i>	28 November 2011	2	<i>11x20</i>	27 February 2009	9
<i>11z61-6 (Service Pack)</i>	06 September 2011	4	<i>11x19</i>	06 February 2009	9
<i>11z49</i>	12 November 2010	5	<i>11x17</i>	10 February 2009	9
<i>11z43-5 (Service Pack)</i>	31 August 2010	6	<i>11x16</i>	18 August 2008	10
<i>11z43-1</i>	19 July 2010	6	<i>Additional Notes</i>		10

Hardware Requirements

This firmware requires one of the following Zebra Mobile Printers (where “X” means the value is not important):

- QL 420 Plus (Q4D-XXXXXXXX-XX)
- QL 320 Plus (Q3D-XXXXXXXX-XX)
- QL 220 Plus (Q2D-XXXXXXXX-XX)

Note that this firmware does not run on the older QL (H8 based) series printers (QXA-XXXXXXXX-XX or QXB-XXXXXXXX-XX), or the QL Plus QXC models (QXC-XXXXXXXX-XX).

Caution • Warning: Loading a QxD release on a QxA, QxB, QxC, or any other model is not supported, will make the printer inoperable, and could make it unable to revert back to a previous version. Check the label on the back of the printer to determine the model number.

11z74

Release Date: 07 June 2013

Enhancements

- Implemented bluetooth.connected_security_mode SGD.



Note • The security mode that will be used during communication is controlled by the terminal. During the pairing process, the printer and terminal will negotiate to the highest security level supported by both units. To confirm the security mode during operation, use the following command:

```
! U1 getvar "bluetooth.connected.security_mode"
```

Issues Corrected

- Mirror processing time has been improved.
- Pairing in Bluetooth Security Mode 3 is now functioning correctly.
- Line mode support for .FNT fonts has been improved.

11z71

Release Date: 25 January 2012

Enhancements

- n/a

Issues Corrected

- Avalanche: does not list “G” radio as WPA2-compatible [9312]
- PRINT: Dropped characters followed by the ‘!’ character in line-print mode [8877]
- PRINT: 12 of 5 barcode calculates incorrect checksum if using field justification [6601]
- USB: SGD parameter usb.device.device_unique_id should default to off [9219]
- WLAN: Certificates with version 1 and 2 are rejected [9046]

11z66

Release Date: 28 November 2011

Enhancements

- Print: Add support for datamatrix barcodes [7629]
- WLAN: Added SHA2 support for EAP authentication methods [7875]
- WLAN: Update 802.11 radio firmware [8767]
- Mirror: Added support for encrypted command files, see below for description [6326]

Issues Corrected

- Avalanche custom properties not working correctly [6721]
- Avalanche auto-run does not update correctly with multiple packages enabled [6868]
- Unable to save multiple files to flash using Bluetooth [7725]
- Print.tone parameter does not handle values above 127 [7335]
- Print: Correct media.width_sense.enable parameter to update width when enabled [8267]
- Print: 4 dot row media registration error introduced in 11z32 release [8518]

- Print: byte alignment and rotation problems when handling PCX graphics [7050]
- WLAN: “G” radio incompatible with Symbol 4131 access point [7329]
- WLAN: EAP authentication unsuccessful due to unsupported certificate fields [7940]
- WLAN: EAP-FAST failing on ACS 5.1 [8010]
- WLAN: Inability to connect or roam using WEP on the ‘G’ radio [8082]
- ZPL: MicroPDF printing text behind barcode [7154]

Additional information regarding the WEP issue [8082]:

- The problem is only present with the new “G” radio configuration (QxD-xxGxxxxx-xx). Older radios, e.g. (QxD-xxKxxxxx-xx), are not affected.
- Encrypted Command Files [6326]:

Benefit: Secure configuration files.

Summary: Configuring the printer to operate on a secure wireless network requires commands containing sensitive information, such as encryption keys, passwords, pass phrases, etc., to be sent to the printer. For customers using the mirror function to upgrade their printers, this new feature allows those files to be stored in encrypted form.

The feature requires several steps, as follows:

1. Use a printer (any Zebra mobile printer that supports this feature) to encrypt the sensitive command file. First send the following command to install the encryption key:

```
! U1 setvar "device.crypt.key" "key data"
```



Note • Key data is a 64 bit ASCII value representing a 32 byte binary key. For example, the string “11223344” represents 0x11, 0x22, 0x33, 0x44. The key is saved in printer NVRAM. If the length of ‘key data’ is not 64 bytes, the operation will fail.

2. Save the file on the printer’s flash file system using Label Vista:

```
Printer Menu > Send File > Browse and select file >
Check the Store to flash file system box > Send
```

3. Encrypt the file by sending the following command to the printer:

```
! U1 setvar "device.crypt.file" "input filename, output
filename"
```



Note • ‘output filename’ is optional. If no ‘output filename’ is provided, the encrypted file created will be named ‘input filename.nre’.



Example • This example will encrypt a file named ‘settings.txt’ and write the encrypted data to a file named ‘settings.nre’.

```
! U1 setvar "device.crypt.file" "settings.txt"
```

4. Retrieve the encrypted file from the printer using Label Vista:

```
Printer Menu > Read Files >
Select encrypted file from directory listing > Clone file
```

5. Install the decryption key on the printers to be updated using mirror with the encrypted command file, by sending the following command to each printer:

```
! U1 setvar "device.crypt.key" "key data"
```
6. Step 6: Load the encrypted command file to the "commands" directory on the mirror server
7. Step 7: The next time the printer performs a mirror operation it will download the encrypted command file, decrypt it, and execute the commands provided in the file.



Notes

- Files in the mirror server commands directory are not stored in the printer's flash memory.
- The encrypted command file can be updated as often as needed, as long as the same key is used.
- It may be desirable to create a custom configuration with the decryption key pre-installed at the factory. If this is of interest contact Zebra Sales and request information on Zebra professional services via telephone at +1-866-230-9495.

11z61-6 (Service Pack)

Release Date: 06 September 2011

Enhancements

- WLAN: Added SHA2 support for PEAP authentication [7875]

Issues Corrected

- Multiple enabled Avalanche auto-run packages will not update correctly [6868]
- Unable to save multiple files to flash using Bluetooth [7725]
- WLAN: PEAP auth unsuccessful due to unsupported certificate fields [7940]
- WLAN: EAP-FAST failing on ACS 5.1
- WLAN: Inability to connect or roam using WEP on the 'G' radio [8082]

Additional information regarding the WEP issue [8082]:

The problem is only present with the new "G" radio configuration (QxD-xxGxxxxx-xx). Older radios, e.g. (QxD-xxKxxxxx-xx), are not affected.

11z49

Release Date: 12 November 2010

Enhancements

- WLAN: Add EAP session resumption (see below for description) [6958]
- WLAN: Removed VPN firmware [4948]
- WLAN: Removed MSP 2.x support [4947]

Issues Corrected

- CPCL: PACE command not functioning properly for labels [6227]
- WLAN: “K” radio based printers do not initiate roam based on roam threshold [6533]
- WLAN: RSSI and Association state not updated on LCD on network fringe with “G” radio QxD-xxGxxxxx-xx [6605]
- WLAN: User was allowed to turn the unsupported 802.11d feature on which resulted in wireless communication interruptions [5146]
- ZPL: Firmware does not disable bar sensor in continuous mode (^MNN) [6289]
- ZPL: Saving to ZPL flash erases RAM and deleting flash hangs or reboots printer [6100]
- ZPL: Page width not working correctly with ^JUS command [6700]

EAP Session Resumption

Benefit: Enables faster roaming when using EAP-based protocols.

Summary: After a printer and the network have previously negotiated an EAP session, and have begun a new EAP negotiation due to roaming or falling out of range and returning into range, they can agree to resume the previous session. This significantly reduces the time required to establish the new session from tens of seconds to seconds. In order for this to work, EAP Session Resumption must be enabled in the network infrastructure equipment by the network administrator. EAP Session Resumption is automatically supported in the printer when using any EAP-based protocols such as PEAP, LEAP, EAP-TLS, EAP-TTLS, or EAP-FAST. No printer configuration changes are required.

11z43-5 (Service Pack)

Release Date: 31 August 2010

Issues Corrected

- 802.11 “K” radio based printers do not initiate roam based on roam threshold [6533]

Additional information regarding the roaming issue:

Affected Units

- The problem is only present with the older “K” radio configuration (QxD-xxKxxxxx-xx).
- The new “G” configuration is not affected (QxD-xxGxxxxx-xx).

Problem Description

A roam event with the “K” radio is normally triggered when the RSSI (Received Signal Strength Indicator) falls below the value specified in the wlan.roam.signal Set/Get/Do parameter. The firmware bug prevents the roam trigger from occurring. Hence the printer will no longer roam to another AP (Access Point), assuming one is within range. However, if the printer falls off the network due to lack of a signal, and then subsequently comes in range of the original or a different AP, it will (still) associate with this AP.

11z43-1

Release Date: 19 July 2010

Enhancements

- Add support for “G” radio, part number QxD-xxGxxxxx-xx
- Add print adjust Set/Get/Do parameter to adjust tone setting (see below for details) [5384]

Issues Corrected

- 802.11 radio can occasionally lock up [4776] [5442]
- 802.11 improper TCP handshake, occasionally not setting SYN flag in acknowledgment packets [5258]
- 802.11: Mirror failures using WPA PSK with the new “G” radio, part number QxD-xxGxxxxx-xx [6179]
- 802.11 not properly responding to duplicate SYNs [6373]
- Pressing FEED after power up prints first PRESENT-AT label at max speed [5352]
- Print compression and missing dot rows may occur when using 11z25-44 when printing multiple (~15) labels [5468]
- Printers may lock up the serial port if a command is sent at the wrong baud rate [5702]

The purpose of the print adjust parameter is to provide an offset to the printer tone that is settable and readable remotely. This offset is additive to any TONE command settings.

Syntax: ! U1 setvar "print.print_adj" "value"

Values: -30 to +30



Example • An example setting the print adjust parameter to 10 is shown below:

```
! U1 setvar "print.print_adj" "10"
```

Caution • Releases 11x16, 11x17, 11x19, 11x20, 11z25-44, and 11z32 are not compatible with the new "G" radio, part number QxD-xxGxxxxx-xx, released in April 2010.

11z32

Release Date: 19 April 2010

Enhancements:

- n/a

Issues Corrected

- Encryption not indicated properly in 2-key report when Bluetooth authentication is enabled [0640]
- Incorrect media resting position in absence of PRESENT-AT command [5443]
- ZPL ~TA command not working properly [5438]
- Authentication failed with PEAP on IAS2008 server [5620]
- Incorrect behavior when using multiple ZPL ^PO commands in one label file [6058]

11z25-44

Release Date: 23 November 2009

Enhancements

- Added optional Q3B and Q4B backwards compatible print mode. See details below. [4390] [4392]
- Improved label present sensor algorithm [4686]
- Reduced delay between closing media latch and resuming printing [5081]

Issues Corrected

- Skipping fourth or fifth label when using 5.5 mil tag stock [2097]
- Print density and motor speed variation on long labels [2260]
- Compressed print output if speed is raised too high [2368]
- Normalize print darkness for 2-key across all printers [3542]
- Present @ at the wrong position and slower [3798] [4392]
- Grinding and compressed print on Q3D and Q4D [3977]
- Print becomes light after 9 or 10 consecutive labels (note that the printer will now pause to cool down if the print head becomes too hot instead of printing lighter) [4058]
- Printer over burns a vertical barcode on all labels after the first is printed [4300]
- Q3D printers hang in loop processing paper motion commands [4337]
- Print compression and light printing [4363] [4364]
- Q2D incorrectly reading media width sensor causes print compression [4937]
- WLAN Unable to perform EAP-FAST authentication with Cisco 2106 [3669]
- WLAN Printer intermittently reboots in 802.11 power save mode [4777]
- WLAN Unable to receive broadcast messages after TKIP key rotation [4778]
- WLAN Difficulty re-authenticating after roaming [4690]
- WLAN Initial PEAP connection fails [5119]
- ZPL label using ^GF fails to print graphic if optional parameter is missing [3165]
- ZPL label with embedded ~SD command causes printer to hang [4382]
- ZPL ~JS or ~SD commands cause printer to hang [4434] [4440]
- ZPL conflict between ^PO command and zpl.print_orientation SGD parameter [4521]
- ZPL graphic only prints 15 times then stops [2884]
- ZPL ~JC or ~JL command inside ^XA and ^XZ tags hangs printer [4841]

The print experience using QxD models is designed to be compatible with the QxC models by default. Customers with Q3B or Q4B printers have the option to change this personality to be backwards compatible with these older models. This feature is not recommended unless attempting to operate a QxD printer in the same environment (i.e. with the same application software and/or label formats) as the QxB.

The print darkness of text and barcodes is designed to be identical for QxB, QxC, and QxD printers. The backwards compatibility mode is intended to address two differences with the older QxB model: 1) media registration, and 2) processing of TONE and CONTRAST commands. The available choices are summarized in the table below:

Printer Model	Default Print Experience	Backward Compatibility Mode
Q3D	Q3C	Q3B
Q4D	Q4C	Q4B
Q2D	Q2C	Not supported

11x20

Release Date: 27 February 2009

Enhancements

- Merged (common) release for Q2D, Q3D, and Q4D

Issues Corrected

- None (on QL Plus series)

11x19

Release Date: 06 February 2009

Enhancements

- Original release on Q2D

Issues Corrected

- None (on QL Plus series)

11x17

Release Date: 10 February 2009

Enhancements

- Original release on Q4D

Issues Corrected

- n/a

11x16

Release Date: 18 August 2008

Enhancements

- Original release on Q3D

Issues Corrected

- n/a

Additional Notes

Compressed Application: Starting with the QxD models, the firmware is stored on the printer in compressed format. This is done to reduce the amount of storage needed in flash memory. It also has the benefit of reducing the file transfer time. The firmware is stored in compressed form in flash, and then decompressed at power up and run out of RAM memory. This decompression takes roughly 5-8 seconds after power is turned on. A progress bar is displayed on the LCD during this process.

Failsafe Download: Starting with the QxD models, a new feature has been added that protects the printer from transmission failures during firmware download. The printer retains the current version in flash while downloading the new version. If the download succeeds the printer will reboot and flip over to the new version. If the download fails the printer will revert to the old version of firmware and continue to operate properly, allowing a second download attempt.