



# Link-OS V5, build V82.20.10Z

## Printer OS Release Notes

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This document summarizes the following printer OS releases. For support, please visit [www.zebra.com/support](http://www.zebra.com/support).

Link-OS 5	
V82.20.10Z .....	22 January 2018 ..... 1
Link-OS 4	
V82.20.06ZB .....	01 November 2017 ..... 5
V82.20.06Z .....	30 August 2017 ..... 5

## Link-OS 5

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### V82.20.10Z

#### **Release Date: 22 January 2018**

This Printer OS release includes all features of the previous build, unless noted otherwise. It is for use with the following printer models:

- ZR318
- ZR328

#### Changes

- This is Link-OS version 5.
- Support has been added for the following features (see the PrintSecure Administration Guide for details):
  - IP Address Whitelisting for incoming print connections
  - 802.1x, with support for user name, password and private key password
  - User supplied certificates for 802.1x
  - Transport Layer Socket (TLS)
  - User supplied certificates for TLS
  - User control TTLS with support for “pap”, “chap”, “mschap” and “mschapv2”
  - HTTPS for the printer web pages
  - User supplied certificates for HTTPs
  - User Defined Gateway Ping intervals
  - User supplied web sockets certificates
  - New Service control commands
  - OpenSSL v1.0.21
  - The user supplied certificates for web sockets, TLSRAW and HTTPS can now be P12 formatted.
- 802.11r, also known as “Fast Roaming”, is now supported.

- The Visibility Agent shall now attempt to use the Google DNS and OpenDNS systems to resolve the address when a static IP address is used.
- The SYSLOG now supports an entry for power down/reset.
- A “BATTERY MISSING” alert has been added, for those printers that support it.
- The default for the power.sleep.timeout and power.inactivity\_timeout have been changed on selected products:

	QLn series	ZQ500 series	iMZ series	ZQ3 series
power.sleep.timeout	N/A	20 minutes	N/A	20 minutes
power.inactivity_timeout	No change	10 hours	no change	10 hours

- The Visibility Agent has been updated (see the AppNote on “Disabling the Visibility Agent” for complete details):
  - head.serial\_number has been added.
  - wlan.bssid has been added.
  - device.location has been added.
  - interface.network.active.speed has been removed.
- The Bluetooth system has been updated. This involves several changes:
  - The LE GAP Device name – this GATT attribute will require pairing before it can be read.
  - Bluetooth pairing bonds will be retained across upgrades, but not across printer OS downgrades.
  - Printers with radios that support 4.1 or later now support Numeric Comparison pairing for Bluetooth Low Energy pairing events. NOTE – only used if both devices support Bluetooth 4.1 and the Secure LE connection protocol.
  - SetGetDo changes. Several commands have changed:
    - bluetooth.bonding – This command now applies to both Classic and Low Energy devices. Previously, it was only possible to completely disable bonding for Classic devices.
    - bluetooth.minimum\_security\_mode – This SGD now applies to both Classic and Low Energy devices. Its functionality for Classic devices remains unchanged; its value affects LE security modes as follows:
      - 1: No encryption or authentication is required to access the Zebra Parser Service.
      - 2: Encryption, but not authentication is required to access the Zebra Parser Service. MITM protection is not required.
      - 3 or 4: Encryption and authentication are required to access the Zebra Parser Service. MITM protection is required, and “Passkey Entry” is the only pairing method that will allow access.

- `bluetooth.allow_non_display_numeric_comparison` – This command now applies to both Classic and Low Energy devices that do not have a display. Its functionality for Classic devices remains unchanged; its value affects LE pairing as follows:

SGD Value	I/O Capabilities	Affect on LE
print (default)	Display Only	If Passkey Pairing is used, the printer will print out a small label with the passkey to be entered on the remote device.  If LE Numeric Comparison is used, the printer will print out the passkey and will auto-confirm the pairing request.
noprint	Display Only	If Passkey Pairing is used, the printer will not print out the passkey.  If LE Numeric Comparison is used, the printer will not print out the passkey, but will auto-confirm the pairing request.
off	No I/O	Passkey pairing is not allowed. Only “Just Works” pairing can be used, and MITM protection is not possible. It is not possible to reject the pairing request!

- **Deprecated Commands:**

Command Name	Use This Command Instead
<code>bluetooth.le.print_passkey</code>	<code>bluetooth.allow_non_display_numeric_comparison</code>
<code>bluetooth.le.minimum_security</code>	<code>bluetooth.minimum_security_mode</code>

- **LE Security Changes:**

LE Minimum Security Value	Previous Minimum Security Value	New Minimum Security Value
<code>unauth_key_encrypt</code>	1	2
<code>auth_key_encrypt</code>	1 or 2	4
<code>none</code>	1, 2, 3, or 4	No change

### Issue Corrected

- ZBI now correctly handles output on the serial port.
- The printer now correctly handles repeated `~WR` commands.
- Printer web page rendering has been made more reliable.
- Web sockets have been improved to better handle idle time, resets, connection retries/declines and incidents where `conn1` and `conn2` are set to the same address.
- The WLAN system now correctly handles scenarios where an access point offers it un-allowed mixes of security protocols (such as TKIP and HT and VHT support).
- The Unicode system now correctly handles shaping/rendering of Khmar character, when code combination are used.
- The WLAN radio has been updated to better handle DFS channels.
- LPR throughput has been improved.
- The Bluetooth system can now better handle complex scenarios involving multiple connects and disconnects.

- The GS1 Databar implementation has been enhanced to handle more data structure scenarios.
- Mirror Feedback files are now working correctly.
- The display of “Labels remaining in batch” information on the front panel has been optimized.
- The Protected Management Frames implementation has been updated to support newer radios.
- New SGD commands added to allow users to compensate for label layout variations.

#### "media.tof\_tune"

- Range: -50 to 50. The media.tof limit (-400 to +400) will be applied to the sum of media.tof\_tune and media.tof\_adjust.
- Example:
  - ! U1 setvar "media.tof\_tune" "5"
  - Followed by a carriage return/line feed.
  - The total top-of-form that is used by the printer will be the sum of media.tof (assuming 0 for this example) and media.tof\_tune. Given the example command above, that would be 5.
- Suggested starting value when migrating from RW to ZQ500: “-13”.
- Not affected by a printer default.

#### " print.vertical\_dpi\_adjust "

- Range: 95.0 to 105.0.
- Default: 100.0 (no change in y-coordinate or height of print fields)
- Example:
  - ! U1 setvar "device.cpc1\_adjust\_length\_dpi" "97.8"
  - Followed by a carriage return/line feed.
  - When a label height is specified as 2000, it will be changed to 1956 (97.8% of 2000) before printing the label. If a field y-coordinate is specified as 1000, it will be change to 978 (97.8% of 1000) before processing the field.
- Suggested starting value when migrating from RW to ZQ500: “98.4”.
- Not affected by a printer default.

## Link-OS 4

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### V82.20.06ZB

**Release Date: 01 November 2017**

This Printer OS release includes all features of the previous build, unless noted otherwise. It is for use with the following printer models:

- ZR318
- ZR328

#### Issues Corrected

The WLAN system has been updated to fix the “Key Reinstallation Attacks” issues reported against the WPA/WPA2 WiFi protocols.

These issues are detailed at <https://www.krackattacks.com/>

Zebra maintains a website with details on this issue at:

<https://www.zebra.com/us/en/support-downloads/lifeguard-security/lifeguard-krack.html>

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### V82.20.06Z

**Release Date: 30 August 2017**

This is the initial release of this printer OS.

It is for use with the following printer models:

- ZR318
- ZR328