

sensor.peel.gain

This command retrieves the current peel sensor gain level.

Getvar

To return the current peel sensor gain level:

```
! U1 getvar "sensor.peel.gain"
```

Example

In the example below, the `getvar` retrieves the current peel gain level of "2".

```
! U1 getvar "sensor.peel.gain" "2"
```

sensor.paper_supply

Returns current paper supply status.

Getvar

To return the current paper supply status:

```
! U1 getvar "sensor.paper_supply"
```

Result

- "ok" indicates the printer has paper.
- "out" indicates that the printer is out of paper.

sensor.peeler

Obtains current peeler sensor status.

Getvar

To retrieve the current peeler sensor status:

```
! U1 getvar "sensor.peeler"
```

Result

- "clear" means the last printed item has been removed, or there are no items waiting to be removed.
- "not clear" means the last printed item has not yet been removed.

sensor.peel.brightness

This command returns the current peel sensor brightness level.

Getvar

To return the current peel sensor brightness level:

```
! U1 getvar "sensor.peel.brightness"
```

Example

In the example below, the `getvar` returns the current peel sensor brightness level of "2".

```
! U1 getvar "sensor.peel.brightness" "2"
```

sensor.proximity.current_reading

This command returns proximity information. The higher the number, the closer the item is.

Getvar

To return the proximity information from the sensor:

```
! U1 getvar "sensor.proximity.current_reading"
```

Values

- "0" to "4095" A higher number indicates closer proximity.
- " " indicates that the sensor is not installed.

sensor.width.in_dots

This command retrieves the current width sensor value in dots.

Getvar

To return the current width sensor value in dots:

```
! U1 getvar "sensor.width.in_dots"
```

Example

In the example below, the `getvar` retrieves the current width sensor value that is "200" dpi.

```
! U1 getvar "sensor.width.in_dots" "200"
```

sensor.width.cur

This command retrieves the current width sensor value.

Getvar

To return the current width sensor value:

```
! U1 getvar "sensor.width.cur"
```

Result

"0" to "255"

Example

In the example below, the `getvar` retrieves the current width sensor value.

```
! U1 getvar "sensor.width.cur" "5"
```

sensor.self_adjusting_enable

Enables the self-adjusting gap sensor.

Setvar

To enable the self-adjusting gap sensor:

```
! U1 setvar "sensor.self_adjusting_enable" "value"
```

Values

- "yes" enables the self-adjusting gap sensor and disables the traditional gap sensor
- "no" disables the self-adjusting gap sensor and enables the traditional gap sensor

Getvar

To retrieve the self-adjusting gap sensor:

```
! U1 getvar "sensor.self_adjusting_enable"
```

Example

This setvar example shows the value set to "yes".

```
! U1 setvar "sensor.self_adjusting_enable" "yes"
```

The setvar value is the getvar result. In this example, the getvar result is "yes".

usb.device.device_id_string

This command retrieves the manufacturer assigned IEEE1284 Device Identification string for USB devices.

Getvar

To retrieve the device ID string:

```
! U1 getvar "usb.device.device_id_string"
```

Example

```
! U1 getvar "usb.device.device_id_string"
```

Result

```
"MANUFACTURER:Zebra Technologies ;COMMAND SET:ZPL;MODEL:ZTC  
ZT220-200dpi ZPL;CLASS:PRINTER;OPTIONS:XML; "
```

usb.device.device_unique_id

This command sets the USB Unique Device ID setting. The identifier that makes any printer unique is set by the "usb.device.serial_string" command which is reported to the USB driver.

By default "usb.device.serial_string" reports the printer's serial number. If "usb.device_unique_id" is set to "off" the printer will report the usb.device.serial_string parameter as its product family (e.g. ZT230, etc).

When subsequent printers of the same model, with "usb.device_unique_id" parameter to "off", are connected via USB, the host computer will not treat them as a new Plug and Play events, nor require new driver installations.

Setvar

To set the current USB Unique Device Id setting:

```
! U1 setvar "usb.device.device_unique_id" "value"
```

Values

- "off"
- "on"

Default

"on"

Getvar

To return the current USB Unique Device Id setting stored in the printer:

```
! U1 getvar "usb.device.device_unique_id"
```

Example

```
! U1 setvar "usb.device.device_unique_id" "off"
```

usb.device.device_version

This command returns the version of the USB device being queried.

Getvar

This command instructs the printer to respond with the printer's USB version.

```
! U1 getvar "usb.device.device_version"
```

Example

```
! U1 getvar "usb.device.device_version"  
"1.1"
```

usb.device.manufacturer_string

This command retrieves the USB device manufacturer's name.

Getvar

To respond with the manufacturer name:

```
! U1 getvar "usb.device.manufacturer_string"
```

Example

```
! U1 getvar "usb.device.manufacturer_string"  
"Zebra Technologies"
```

usb.device.product_id

This command retrieves the Product Identification number that a manufacturer assigned to a particular product. This number, along with the Vendor ID, allows a USB host to distinguish between devices.

Getvar

To retrieve the product ID:

```
! U1 getvar "usb.device.product_id"
```

Example

```
! U1 getvar "usb.device.product_id"  
"003D"
```

usb.device.product_string

This command returns the manufacturer-assigned string describing a particular USB product.

Getvar

To instruct the printer to respond with the product string description:

```
! U1 getvar "usb.device.product_string"
```

Example

Issuing the command on a ZT210 printer:

```
! U1 getvar "usb.device.product_string"  
"ZT210"
```

Issuing the command on a QLn320 printer:

```
! U1 getvar "usb.device.product_string"  
"ZTC QLn320-203dpi CPCL"
```



NOTE: For firmware V68.19.0 and V72.19.0, the return value was changed to the longer name, which is the same as the USB PID. The QLnXXX is replaced by the printer model and number for each printer.

usb.device.serial_string

This command returns the manufacturer-assigned serial number for a particular USB product.

Getvar

To return the printer's serial number:

```
! U1 getvar "usb.device.serial_string"
```

Example

```
! U1 getvar "usb.device.serial_string"  
"ABC1234567890"
```

usb.device.vendor_id

This command returns the Vendor Identification number that the USB-IF organization has assigned to a manufacturer. This number, along with the Product ID, allows a USB host to distinguish between devices.

Getvar

To retrieve the vendor ID of the device:

```
! U1 getvar "usb.device.vendor_id"
```

Example

```
! U1 getvar "usb.device.vendor_id"  
"0a5f"
```


usb.halt

This command controls whether the printer allows communication over the USB port when the printer is in an error condition.

Setvar

To control whether the printer allows communication over the USB port when the printer is in an error condition:

```
! U1 setvar "usb.halt" "value"
```

Values

- "yes"
- "no"

Default

"no"

Getvar

To return the current "usb.halt" setting stored in the printer:

```
! U1 getvar "usb.halt"
```

Example

```
! U1 setvar "usb.halt" "yes"
```

usb.host.config_info_to_usb

This command is used by WML to save the ^HH output files to the USB thumb drive. The file names are written in the CONFIGxxx.TXT format, where xxx ranges from 1 to 999.

Setvar

To enable or disable saving the ^HH output to the USB thumb drive:

```
! U1 setvar "usb.host.config_info_to_usb" "values"
```

Values

"yes" means ^HH output is saved

"no" means no action is taken

Example

In the setvar example below, the ^HH output file is saved to the USB thumb drive.

```
! U1 setvar "usb.host.config_info_to_usb" "yes"
```

usb.host.fn_field_data

This command is used to collect a user's response to a presented ^FN prompt.



IMPORTANT: This command is used only in the context of the on-printer Print Station application. Altering the use of this command in the WML can make the Print Station application non-functional. It is recommended changes to portions of this portion of the menu system be done by Zebra Professional Services team.

Setvar

To collect a user's response to a presented ^FN prompt:

```
! U1 setvar "usb.host.fn_field_data" "value"
```

Values

The text entered by the user via a USB Human Interface Device (HID) keyboard.

Default

"NULL"

Getvar

To retrieve the current setting value:

```
! U1 getvar "usb.host.fn_field_data"
```

Result

Result

One of the following:

- "NULL"
- The user response to an ^FN prompt

usb.host.fn_last_field

This command is intended for use by WML code to control the presentation of ^FN fields contained within a template file that resides on the E : / drive and has an extension of . ZPL.

Getvar

To return the current setting value:

```
! U1 getvar "usb.host.fn_last_field"
```

Result

- "YES"
- "NO"

usb.host.hid_count

This command displays the number of USB Human Interface Devices (HIDs) connected to the printer.

Refer to <http://www.usb.org> for further details on USB device types.

Getvar

To retrieve the number of USB HIDs connected to the printer:

```
! U1 getvar "usb.host.hid_count"
```

Result

When no devices are attached:

```
! U1 getvar "usb.host.hid_count"  
"0"
```

usb.host.keyboard_input

This command enables/disables USB keyboard input to the printer, affecting the Print Station user menu item.

Setvar

To enable or disable USB keyboard input to the printer:

```
! U1 setvar "usb.host.keyboard_input"
```

Values

- "on" means keyboard input is supported.
- "off" means keyboard input is not supported

Default

"on"

Getvar

To retrieve the current setting value:

```
! U1 getvar "usb.host.keyboard_input"
```

usb.host.lock_out

This command enables/disables the USB host port.

Setvar

To enable or disable the USB port:

```
! U1 setvar "usb.host.lock_out" "value"
```

Values

- "on" disables the USB host port.
- "off" enables the USB host port.

Default

"off"

Getvar

To return the current setting value:

```
! U1 getvar "usb.host.lock_out"
```

usb.host.mass_storage_count

This command displays the number of USB mass storage devices connected to the printer. Only the first USB mass storage device found will be mounted and accessible.

Getvar

To retrieve the current setting value:

```
! U1 getvar "usb.host.mass_storage_count"
```


usb.host.read_list

This command scans the mounted usb mass storage device for non-user-restricted files and displays the files in a list.

Setvar

To scan the mounted usb mass storage device for non-user-restricted files and displays the files in a list:

```
! U1 setvar "usb.host.read_list" "value"
```

Values

- "fill_store" The printer creates a list of all of the top-level files that are readable on a connected mass storage device. (.ZPL and .XML files)
- "store" The printer copies the current file (the file listed on the display) or all eligible files if SELECT ALL is displayed from the USB mass storage device to the printer's E: drive.



NOTE: "store" does an exact byte-for-byte copy of the file being stored. ZPL files that are transferred to the printer using the "store" command are NOT prepared to be used with a recall format command (^XF). See XREF Character Substitution (in Mirror) for the modifications necessary to prepare a ZPL file for use with ^XF. If the ZPL file contains a ^DF, the appropriate way to place it on the printer's memory is to use the "print" command, below.

- "fill_print" The printer analyzes the content of the USB mass storage device and creates a list of files that may be printed. (.ZPL files only)
- "print" The printer prints the current file (the file listed on the display) or all eligible files if SELECT ALL is displayed
- "clear"

Getvar

To return the current setting value:

```
! U1 getvar "usb.host.read_list"
```

Result

The current file in the list or "NONE".

Example

```
! U1 getvar "usb.host.read_list"
```

One of the following:

- The current file in the list.
- "NONE" if there are no files on the USB mass storage device.

usb.host.read_list_print_delay

This command specifies a number of milliseconds for the printer to wait before processing the next file when "SELECT ALL" is chosen on the USB PRINT FILES user menu.

Setvar

To specify the print delay time in milliseconds:

```
! U1 setvar "usb.host.read_list_print_delay"
```

Values

"0" to "65535"

Default

"0"

Getvar

To return the current setting value:

```
! U1 getvar "usb.host.read_list_print_delay"
```

usb.host.template_list

This command is used by WML to support selecting .ZPL template files resident on the E : / drive.

Setvar

To list the .ZPL files from the E drive:

```
! U1 getvar "usb.host.template_list"
```

Values

- "fill" The printer analyzes the contents of its E : / drive and creates a list of the template files with a .ZPL extension.
- "up" moves to the previous file in the list
- "down" moves to the next file in the list

Default

"on"

Getvar

To return the current setting value:

```
! U1 getvar "usb.host.template_list"
```

Result

One of the following:

- "UNINITIALIZED"
- "IN PROGRESS"
- "NONE" if no .ZPL files reside on the E : / drive
- the current .ZPL file

usb.host.template_print_amount

This command is used by WML to control the number of template-type labels to print.

Setvar

To control the number of template-type labels to print:

```
! U1 setvar "usb.host.template_print_amount" "value"
```

Values

- "1" to "99999"
- "up" moves to the previous file in the list
- "down" moves to the next file in the list

Default

"1" which will change based on the contents of the selected template file

Getvar

To retrieve the current setting value:

```
! U1 getvar "usb.host.template_print_amount"
```

Result

The current value.

usb.host.write_list

This command scans the E: flash drive for non-user-restricted files and displays the files in a list.

Setvar

To scan the E: flash drive for non-user-restricted files and displays the files in a list:

```
! U1 setvar "usb.host.write_list" "value"
```

Values

- "fill_store" The printer analyzes the contents of its E: drive and creates a list of files that may be copied to a USB mass storage device connected to the printer.
- "store" The printer copies the current file (the file listed on the display) or all eligible files if "SELECT ALL" is displayed to the USB mass storage device.
- "up"
- "down"

Default

"on"

Getvar

To return the current setting value:

```
! U1 getvar "usb.host.write_list"
```

Result

One of the following:

The current file in the list.

- "NONE" if there are no files on the E: drive of the printer.
- "READONLY" if the USB mass storage device is read-only.

usb.mirror.appl_path

This command specifies the path to the location on a USB device from which Mirror files are retrieved. If no path is specified, then the path is `zebra/appl`.

Setvar

To specify the path to the location on a USB device from which Mirror files are retrieved:

```
! U1 setvar "usb.mirror.appl_path" "path"
```

Values

A valid path up to 255 characters.

Default

`"zebra/appl"`

Getvar

To retrieve the current setting value:

```
! U1 getvar "usb.mirror.appl_path"
```

usb.mirror.auto

This command determines if mirroring happens automatically when a USB device is inserted in the printer. To use this function, the setting for `usb.mirror.enable` must be "on".

Setvar

To set the automatic mirroring of a USB device:

```
! U1 setvar "usb.mirror.auto" "value"
```

Values

- "on" Mirroring occurs automatically when the USB device is inserted and `usb.mirror.enable` is on.
- "off" Mirroring does not occur automatically when the USB device is inserted.
- "prompt" The printer gives you the option to start or abort a mirroring process.

Getvar

To return the current setting value:

```
! U1 getvar "usb.mirror.auto"
```

usb.mirror.enable

This command enables or disables the ability to perform mirroring of a USB device.

Setvar

To enable or disable the USB device mirroring ability:

```
! U1 setvar "usb.mirror.enable" "value"
```

Values

- "on" Mirroring is enabled
- "off" Mirroring is disabled

Default

"on"

Getvar

To retrieve the current setting value:

```
! U1 getvar "usb.mirror.enable"
```


usb.mirror.enabled

Enables or disables the ability to perform mirroring using a USB device memory stick.

Setvar

To set the command:

```
! U1 setvar "usb.mirror.enabled" "value"
```

Values

- "on" Mirroring is enabled
- "off" Mirroring is disabled

Default

"on"

Getvar

To have the printer return the current setting value:

```
! U1 getvar "usb.mirror.enabled"
```

usb.mirror.error_retry

This command specifies the number of times that the USB mirror operation will be repeated if the process fails.

Setvar

To specify the number of times that the USB mirror operation will be repeated:

```
! U1 setvar "usb.mirror.error_retry" "value"
```

Values

"0" to "65535"

Default

"0"

Getvar

To retrieve the current setting value:

```
! U1 getvar "usb.mirror.error_retry"
```

usb.mirror.feedback.auto

This command determines if a feedback file is written to the USB device connected to the printer after mirroring.

Setvar

To specify if the feedback file is written to the USB device or not:

```
! U1 setvar "usb.mirror.feedback.auto" "value"
```

Values

- "on" A feedback file is written to the USB device connected to the printer.
- "off" A feedback file is not written to the USB device connected to the printer.

Getvar

To return the current setting value:

```
! U1 getvar "usb.mirror.feedback.auto"
```

usb.mirror.feedback.odometer

This command instructs the printer to set or retrieve the `usb.mirror.feedback.odometer` value.

Setvar

To set the `usb.mirror.feedback.odometer` value:

```
! U1 setvar "usb.mirror.feedback.odometer" "value"
```

Values

"0" to "65535"

Default

"0"

Example

This example sets the counter to 0, which resets the counter.

```
! U1 setvar "usb.mirror.feedback.odometer" "0"
```

Getvar

To retrieve the `usb.mirror.feedback.odometer` value:

```
! U1 getvar "usb.mirror.feedback.odometer"
```

usb.mirror.feedback.path

This command specifies where the feedback file is stored on the USB drive connected to the printer.

Setvar

To specify the path of the feedback file stored on the USB drive:

```
! U1 setvar "usb.mirror.feedback.path" "value"
```

Values

A valid path up to 255 characters



NOTE: The path must exist on the USB drive before the printer can write files to it.

Default

"zebra/feedback"

Getvar

To return the current setting value:

```
! U1 getvar "usb.mirror.feedback.path"
```

usb.mirror.fetch

This command immediately initiates a USB mirroring operation. To use this function, the setting for `usb.mirror.enable` must be "on".

Do

To initiate a USB mirroring operation:

```
! U1 do "usb.mirror.fetch"
```

usb.mirror.last_error

This command returns the last USB mirroring error string. If there are no errors, the result is "No Error".

Getvar

To return the last USB mirroring error string:

```
! U1 getvar "usb.mirror.last_error"
```

usb.mirror.last_time

This command returns the date and time of the last USB mirroring operation. The date and time reported are from the printer's clock.

Getvar

To return the date and time of the last USB mirroring operation:

```
! U1 getvar "usb.mirror.last_time"
```

Result

```
02 18 2015 11:10:09
```

In the format mm dd yyyy hh:mm:ss

usb.mirror.path

This command specifies the root directory on the connected USB drive. The root directory contains the subdirectories from which files are retrieved during the mirror operation. If no path is specified, then the path is /zebra.

The standard subdirectories to use are:

- "<update-root>/appl
- "<update-root>/files
- "<update-root>"
- "<feedback-root>"

See [How Mirror Works](#) on page 1684 for a comprehensive overview of mirroring.

Setvar

To specify the root directory on the connected USB drive:

```
! U1 setvar "usb.mirror.appl_path" "path"
```

Values

A valid path up to 255 characters.

Default

"zebra"

Getvar

To retrieve the current setting:

```
! U1 getvar "usb.mirror.path"
```

usb.mirror.reset_delay

This command specifies a number of seconds for the printer to wait after it loads the last of the files in the /commands directory during mirroring.

Setvar

To specify the USB mirror reset delay time:

```
! U1 setvar "usb.mirror.reset_delay"
```

Values

"0" to "900"

Default

"5"

Getvar

To return the current setting value:

```
! U1 getvar "usb.mirror.reset_delay"
```

usb.mirror.success

This command returns the last USB mirroring event status string.

Getvar

To return the last USB mirroring event status string:

```
! U1 getvar "usb.mirror.success"
```

Values

- "yes" Indicates that the mirroring operation was successful.
- "no" Indicates that the mirroring operation was not successful.

usb.mirror.success_time

This command returns the date and time of the last successful USB mirroring operation. The date and time reported are from the printer's clock.

Getvar

To return the date and time of the last successful USB mirroring operation:

```
! U1 getvar "usb.mirror.success_time.fm"
```

Result

```
02 18 2015 11:10:09
```

In mm dd yyyy hh:mm:ss format.

zbi.control.add_breakpoint

This command instructs the printer to set a ZBI program break point.

Setvar

To instruct the printer to set a ZBI program break point:

```
! U1 setvar "zbi.control.add_breakpoint" "value"
```

Values

Any line number of the program currently being debugged.

Example

This setvar example shows setting the breakpoint at line "30".

```
! U1 setvar "zbi.control.add_breakpoint" "30"
```

zbi.control.break

This command breaks the execution of the ZBI 2.0 program that is currently running.

Setvar

To break the execution of the ZBI program that is currently running:

```
! U1 setvar "zbi.control.break" " "
```

Values

" "

Example

This setvar example shows the value set to " ".

```
! U1 setvar "zbi.control.break" " "
```

zbi.control.clear_breakpoints

This command deletes all breakpoints in the current ZBI 2.0 program.

Setvar

To instruct the printer to delete all breakpoints:

```
! U1 setvar "zbi.control.clear_breakpoints" " "
```

Values

" "

Example

This setvar example shows the value set to " ".

```
! U1 setvar "zbi.control.clear_breakpoints" " "
```

zbi.control.delete_breakpoint

This command deletes a breakpoint in the current ZBI 2.0 program.

Setvar

To instruct the printer to delete the breakpoint at the line indicated by the value parameter:

```
! U1 setvar "zbi.control.delete_breakpoint" "value"
```

Values

You can use the same value as add_breakpoint.

Example

This setvar example shows the breakpoint set to "30".

```
! U1 setvar "zbi.control.delete_breakpoint" "30"
```


zbi.control.line_number

This command gives you control and information about which line of a stopped ZBI 2.0 program is being executed.

Setvar

To sets which line of the current ZBI 2.0 program should be executed:

```
! U1 setvar "zbi.control.line_number" "value"
```

Values

Any line number of the currently stopped ZBI program.

Default

"0"

Getvar

To return the line number that is currently being executed in the ZBI 2.0 program:

```
! U1 getvar "zbi.control.line_number"
```

Example

This setvar example shows the value parameter set to "30".

```
! U1 setvar "zbi.control.line_number" "30"
```

When the setvar value is set to "30", the getvar result is "30".

zbi.control.restart

This command restarts a ZBI 2.0 program that is currently stopped.

Setvar

To restart a ZBI 2.0 program that is currently stopped:

```
! U1 setvar "zbi.control.restart" "value"
```

Values

" "

Example

This setvar example shows the value set to " ".

```
! U1 setvar "zbi.control.restart" " "
```

zbi.control.run

This command runs the current ZBI 2.0 program that is loaded in the interpreter.

Setvar

To run the ZBI 2.0 program that is loaded in the interpreter:

```
! U1 setvar "zbi.control.run" ""
```

Values

""

Example

This setvar example shows the value set to "".

```
! U1 setvar "zbi.control.run" ""
```

zbi.control.step

This command restarts the execution of the currently stopped ZBI 2.0 program for one line.

Setvar

To instruct the printer to restart the execution of the currently stopped ZBI 2.0 program for one line:

```
! U1 setvar "zbi.control.step" " "
```

Values

" "

Default

" "

Example

This setvar example shows the value set to " ".

```
! U1 setvar "zbi.control.step" " "
```

When the setvar value is set to " ".

zbi.control.terminate

This command instructs the ZBI 2.0 program to terminate and shuts down the interpreter.

Setvar

To instruct the ZBI 2.0 program to terminate and shuts down the interpreter:

```
! U1 setvar "zbi.control.terminate" "value"
```

Values

" "

Example

This setvar example shows the value set to " ".

```
! U1 setvar "zbi.control.terminate" " "
```

zbi.control.variable_name

This command sets the name of the variable that is to be read or modified through `variable_value`.

Setvar

To set the variable that is to show on the front panel:

```
! U1 setvar "zbi.control.variable_name" "value"
```

Values

Any ZBI variable in the program that is currently being debugged.

Default

" "

Getvar

To retrieve the variable value that is to show on the front panel:

```
! U1 getvar "zbi.control.variable_name"
```

Example

This setvar example shows the value set to "MYVAR\$".

```
! U1 setvar "zbi.control.variable_name" "MYVAR$"
```

When the setvar value is set to "MYVAR\$", the getvar result is "MYVAR\$".

zbi.control.variable_value

This command identifies the variable name.

Setvar

To set a value to the variable referenced by a variable_name:

```
! U1 setvar "zbi.control.variable_value" "value"
```

Values

A string or integer that is dependent on the variable type in variable_name.

Default

The current value of the variable referenced by variable_name.

Getvar

To retrieve the variable name that is loaded into the variable_name:

```
! U1 getvar "zbi.control.variable_value"
```

Example

This setvar example shows the value set to "Hello World".

```
! U1 setvar "zbi.control.variable_value" "Hello World"
```

When the setvar value is set to "Hello World", the getvar result is "Hello World".

zbi.enable

This command enables ZBI on the printer.

Setvar

To set the command:

```
! U1 setvar "zbi.enable" "value"
```

Values

- "on"
- "off"

Default

"on"

Getvar

To have the printer return the current setting value:

```
! U1 getvar "zbi.enable"
```


zbi.key

This command identifies if the ZBI 2.0 option is enabled or disabled on the printer.

Getvar

To retrieve the status of the ZBI 2.0 option on the printer:

```
! U1 getvar "zbi.key"
```

Example

In this example, the `getvar` shows the status of ZBI on the printer.

```
! U1 getvar "zbi.key"  
"ENABLED"
```

zbi.last_error

This command identifies the last error that the ZBI 2.0 interpreter encountered.

Getvar

To show the last error that the ZBI 2.0 interpreter encountered:

```
! U1 getvar "zbi.last_error"
```

Example

This example demonstrates how to make the ZBI 2.0 interpreter return the last error it encountered.

```
! U1 getvar "zbi.last_error"
```

zbi.program_list

This SGD is intended to be used on WML pages. Its purpose is to support displaying the name of each ZBI program file contained on the E: drive.



IMPORTANT: A specific sequence required to get an accurate listing of files. See the example below.

Setvar

To display the program list:

```
! U1 setvar "zbi.program_list" "value"
```

Values

- "fill" initializes the device (first step)
- "up" gets the previous file in the list
- "down" gets the next file in the list
- "execute" executes the currently specified zbi file (as determined by the getvar command)

Default

- "none"

Example

A specific sequence of commands is required to get an accurate listing of files.

Initialize the device by issuing:

```
! U1 setvar "zbi.program_list" "fill"
```

To get the first file, issue:

```
! U1 getvar "zbi.program_list"
```

This will return the current filename in the list of zbi files present on the E: drive. If the response returned is "none" you have reached the end of the list.

To get the next filename in the list, issue:

```
! U1 setvar "zbi.program_list" "up"
```

To get the previous filename in the list, issue:

```
! U1 setvar "zbi.program_list" "down"
```

To execute the current zbi filename, i.e. the one returned by a getvar, issue:

```
! U1 setvar "zbi.program_list" "execute"
```

Getvar

To return the current setting value:

```
! U1 getvar "zbi.program_list"
```

zbi.reseller_key

This command allows programs that are encrypted with this key in ZBI- Developer to run.

Setvar

To allow programs that are encrypted with this key in ZBI developer to run:

```
! U1 setvar "zbi.reseller_key" "value"
```

Values

Any valid encryption key provided by ZBI Developer.

Example

This setvar example shows the value set to "abc123" .

```
! U1 setvar "zbi.reseller_key" "abc123".
```

zbi.revision

This command identifies the current ZBI version.

Getvar

To retrieve the current ZBI version:

```
! U1 getvar "zbi.revision"
```

Example

In this example, the `getvar` shows the current ZBI version.

```
! U1 getvar "zbi.revision"
```

zbi.running_program_name

This command identifies the name of the ZBI 2.0 program that is currently running.

Getvar

To retrieve the name of the currently running ZBI 2.0 program:

```
! U1 getvar "zbi.running_program_name"
```

Example

In this example, the `getvar` command causes the printer to respond that the program `choices.bas` is currently running.

```
! U1 getvar "zbi.running_program_name"  
"CHOICES.BAS"
```

zbi.start_info.execute

This command instructs the ZBI 2.0 environment to execute the program listed in the file_name.

Setvar

To instruct the ZBI 2.0 environment to execute the program listed in the file_name:

```
! U1 setvar "zbi.start_info.execute"
```

Example

This setvar example executes the "choices.bas" program.

```
! U1 setvar "zbi.start_info.execute" "choices.bas"
```


zbi.start_info.file_name

This command prepares a program to run when the `zbi.start_info.execute` command is used. This command does not run the program.

Setvar

To prepare a ZBI 2.0 program to be executed using the `zbi.start_info.execute` command:

```
! U1 setvar "zbi.start_info.file_name" "value"
```

Values

A file name or path of a basic program

Getvar

To return the file path and file name of a ZBI 2.0 program to run using the `zbi.start_info.execute` command:

```
! U1 getvar "zbi.start_info.file_name"
```

Default

The last program run. If nothing has been run, `"*:\.BAZ"`.

Example

This setvar example shows the value set to `"E:PROGRAM1.BAS"`.

```
! U1 setvar "zbi.start_info.file_name" "E:PROGRAM1.BAS"
```

When the setvar value is set to `"E:PROGRAM1.BAS"`, the getvar result is `"E:PROGRAM1.BAS"`.

zbi.start_info.memory_alloc

This command identifies the amount of memory currently in use in a ZBI 2.0 program.

Getvar

To show the amount of memory currently in use in bytes:

```
! U1 getvar "zbi.start_info.memory_alloc"
```

Example

In this example, the `getvar` shows the amount of memory currently in use.

```
! U1 getvar "zbi.start_info.memory_alloc"  
"17203"
```

zbi.state

This command shows the current state of the ZBI 2.0 program.

Getvar

To retrieve the current state of ZBI:

```
! U1 getvar "zbi.state"
```

Values

- "running" ZBI Interpreter is active and running a program
- "off" ZBI Interpreter is inactive
- "stopped" ZBI Interpreter is active but not executing a program

Example

In this example, the `getvar` shows that state of ZBI.

```
! U1 getvar "zbi.state"  
"running"
```

zpl.calibrate

This command measures the media label length that is installed in the printer. It then sets the "zpl.label_length" parameter to the detected media label length.

Do

To calibrate to the media installed in the printer:

```
! U1 do "zpl.calibrate" ""
```

Values

NA

zpl.format_prefix

This command sets or returns the format character to the character corresponding to the ASCII Hex value xx. This command is similar to the ^CC and ~CC commands.

Setvar

To set the format character to the character corresponding to the ASCII Hex value xx:

```
! U1 setvar "zpl.format_prefix" "xx"
```

Values

"xx" = "00-FF", "00-ff", "up", "down"

- Specifying the up or down will increment or decrement the current value.
- Note that the increment/decrement will skip over conflicting values.
- Conflicting values for zpl.format_prefix are zpl.command_prefix, and zpl.delimiter.

Getvar

To return the current value of the format character:

```
! U1 getvar "zpl.format_prefix"
```

Result

^ (5E)

zpl.caret

This command is used to change the format command prefix for ZPL commands. The default prefix is the caret (^)

This command is equivalent to the ~CC and ^CC ZPL commands.

Setvar

To set the command prefix:

```
! U1 setvar "zpl.caret" "value"
```

Values

Any ASCII character

Default

" ^ "

Getvar

To retrieve the current format command prefix:

```
! U1 getvar "zpl.caret"
```

Example

This setvar example changes the format prefix to a forward slash " / "

```
! U1 setvar "zpl.caret" "/"
```

zpl.control_character

This command is used to change the control command prefix. The default prefix is the tilde (~).

This command is equivalent to the ^CT and ~CT commands.

Setvar

To change the control character:

```
! U1 setvar "zpl.control_character" "value"
```

Values

ASCII values for the desired character "00-FF,00-ff,up,down"

See [ASCII](#) on page 1559 for more information.

Default

"7E" (tilde)

Getvar

To return the currently set control character:

```
! U1 getvar "zpl.control_character"
```

Example

This example sets the value set to "+".

```
! U1 setvar "zpl.control_characater" "2b"
```

zpl.delimiter

This command is used to change the delimiter character for ZPL commands. The default delimiter character is the comma (,).

Related Commands: ^CD and ~CD commands.

Setvar

To change the delimiter character for ZPL commands:

```
! U1 setvar "zpl.delimiter" "value"
```

Values

HEX values for the desired character "00-FF,00-ff,up,down"

See [ASCII](#) on page 1559 for more information.

Default

"2C" (comma)

Getvar

To return the currently set delimiter character:

```
! U1 getvar "zpl.delimiter"
```

Example

This example changes the delimiter to a semi-colon (;).

```
! U1 setvar "zpl.delimiter" "3B"
```


zpl.label_length

This command defines the length of the label. This command is necessary when using continuous media (media that is not divided into separate labels by gaps, spaces, notches, slots, or holes).

This command is equivalent to the `^LL` command.

Setvar

To set the label length:

```
! U1 setvar "zpl.label_length" "value"
```

Values

"1" to "32000", (in dots) not to exceed the maximum label length.

While the printer accepts any value for this parameter, the amount of memory installed determines the maximum length of the label.

Getvar

To return the current label length setting:

```
! U1 getvar "zpl.label_length"
```

Comments

These formulas can be used to determine the value of y :

For 6 dot/mm printheads...	Label length in inches x 152.4 (dots/inch) = y
For 8 dot/mm printheads...	Label length in inches x 203.2 (dots/inch) = y
For 12 dot/mm printheads...	Label length in inches x 304.8 (dots/inch) = y
For 24 dot/mm printheads...	Label length in inches x 609.6 (dots/inch) = y

Values for y depend on the memory size. If the entered value for y exceeds the acceptable limits, the bottom of the label is cut off. The label also shifts down from top to bottom.

Example

```
! U1 setvar "zpl.label_length" "1281"
```

zpl.label_length_always

This command allows the label length defined by ^LL to apply when the media is Gap or Black Mark. This command is persistent across a power cycle.

See also ^LL on page 294.

Setvar

To enable or disable the label length parameter:

```
! U1 setvar "zpl.label_length_always" "value"
```

Values

- "yes" applies the label length to all media.
- "no" causes the label length to apply only to continuous media.

Getvar

To determine the setting for zpl.label_length_always:

```
! U1 getvar "zpl.label_length_always"
```

Values

- "yes" indicates that the label length applies to all media.
- "no" indicates that the label length applies only to continuous media.

Default

"no"

zpl.label_orientation

This command instructs the printer to rotate the entire label output by 0, 90, 180, or 270 degrees.

Setvar



NOTE: If this command is set to 180, `print.invert_label` is enabled, and `^POI` is used. The outcome results in an inverted label orientation (because it is triple inverting).

To assign the value of the label orientation:

```
! U1 setvar "zpl.label_orientation" "value"
```

Values

"0", "90", "180", "270"

Default

"0"

Getvar

To retrieve the value of the label orientation:

```
! U1 getvar "zpl.label_orientation"
```

Example

This setvar example shows the value set to "90".

```
! U1 setvar "zpl.label_orientation" "90"
```

zpl.left_position

This command sets the label's left margin offset in dots.

Related Command: ^LS

Setvar

To set the label left margin offset in dots:

```
! U1 setvar "zpl.left_position" "value"
```

Values

"-9999" to "9999"

Default

"0"

Getvar

To retrieve the currently set left margin offset for the label:

```
! U1 getvar "zpl.left_position"
```

Example

```
! U1 setvar "zpl.left_position" "100"
```

zpl.system_error

This command returns the system error flags.

This command is equivalent to the error recording of ~HQES.

Getvar

To return the state of the system error flags:

```
! U1 getvar "zpl.system_error"
```

Result

```
"0,0,00000000,00000000"
```

(flag, error flag, Group 2, Group 1)

Example

This example shows how to request the printer's status.

To request the printer's status, type `! U1 getvar "zpl.system_error"`

The printer responds with data similar to this:

```
"1,1,00000000,00000004"
```

In this example, the Printer Status resolves to these conditions:

- The printer is in Pause (value = 1)
- The Error Flag is 0 if there are no errors (i.e. Group 2 and Group 1 are all 0s), and 1 if there are any errors.
- The cover/printhead is open (value = 4).

Table 24 Error Flags (~HQES)

Error Flags	Flag	Group 2	Group 1 (X = Value can be any hexadecimal number [0-9, A-F])							
		Nibbles16-9	Nibble8	Nibble7	Nibble6	Nibble5	Nibble4	Nibble3	Nibble2	Nibble1
No Error	0	00000000	0	0	0	0	0	0	0	0
Error Present	1	00000000	X	X	X	X	X	X	X	X
Printhead Thermistor Open	1	00000000	X	X	X	X	X	2	X	X
Invalid Firmware Config.	1	00000000	X	X	X	X	X	1	X	X
Printhead Detection Error	1	00000000	X	X	X	X	X	X	8	X
Bad Printhead Element	1	00000000	X	X	X	X	X	X	4	X

Table 24 Error Flags (~HQUES) (Continued)

Error Flags	Flag	Group 2	Group 1 (X = Value can be any hexadecimal number [0-9, A-F])							
		Nibbles16-9	Nibble8	Nibble7	Nibble6	Nibble5	Nibble4	Nibble3	Nibble2	Nibble1
Motor Over Temperature	1	00000000	X	X	X	X	X	X	2	X
Printhead Over Temperature	1	00000000	X	X	X	X	X	X	1	X
Cutter Fault	1	00000000	X	X	X	X	X	X	X	8
Head Open	1	00000000	X	X	X	X	X	X	X	4
Ribbon Out	1	00000000	X	X	X	X	X	X	X	2
Media Out	1	00000000	X	X	X	X	X	X	X	1
Clear Paper Path Failed ¹	1	00000000	X	X	X	X	8	X	X	X
Paper Feed Error ¹	1	00000000	X	X	X	X	4	X	X	X
Presenter Not Running ¹	1	00000000	X	X	X	X	2	X	X	X
Paper Jam during Retract ¹	1	00000000	X	X	X	X	1	X	X	X
Black Mark not Found ¹	1	00000000	X	X	X	8	X	X	X	X
Black Mark Calibrate Error ¹		00000000	X	X	X	4	X	X	X	X
Retract Function timed out ¹	1	00000000	X	X	X	2	X	X	X	X
Paused ¹	1	00000000	X	X	X	1	X	X	X	X

1. This error flag is supported only on KR403 printers.

zpl.system_status

This command returns the errors and warnings of the system.

This command is equivalent to all data reported by the ~HQES ZPL command.

Getvar

To return the system error and warning flags:

```
! U1 getvar "zpl.system_status"
```

Result

"0", "0", "00000000", "00000000", "0", "00000000", "00000000"
(flag, error flag, group 2, group 1, warning flag, group 2, group 1)

Example

This example shows how to request the printer's status.

To request the printer's status, type `! U1 getvar "zpl.system_status"`

The printer responds with data similar to this:

```
"1,1,00000000,00000004,0,00000000,00000000"
```

In this example, the Printer Status resolves to these conditions:

- The printer is in Pause (value = 1)
- The Error Flag is 0 if there are no errors (i.e. Group 2 and Group 1 are all 0s), and 1 if there are any errors (non-zero).
- The cover/printhead is open (value = 4).
- The Warning Flag is 0 if there are no warnings (i.e. Group 2 and Group 1 are all 0s), and 1 if there are any errors (non-zero).

Table 25 Error Flags (~HQES)

Error Flags	Flag	Group 2	Group 1 (X = Value can be any hexadecimal number [0-9, A-F])							
		Nibbles16-9	Nibble8	Nibble7	Nibble6	Nibble5	Nibble4	Nibble3	Nibble2	Nibble1
No Error	0	00000000	0	0	0	0	0	0	0	0
Error Present	1	00000000	X	X	X	X	X	X	X	X
Printhead Thermistor Open	1	00000000	X	X	X	X	X	2	X	X
Invalid Firmware Config.	1	00000000	X	X	X	X	X	1	X	X
Printhead Detection Error	1	00000000	X	X	X	X	X	X	8	X
Bad Printhead Element	1	00000000	X	X	X	X	X	X	4	X

Table 25 Error Flags (~HQUES) (Continued)

Error Flags	Flag	Group 2	Group 1 (X = Value can be any hexadecimal number [0-9, A-F])							
		Nibbles16-9	Nibble8	Nibble7	Nibble6	Nibble5	Nibble4	Nibble3	Nibble2	Nibble1
Motor Over Temperature	1	00000000	X	X	X	X	X	X	2	X
Printhead Over Temperature	1	00000000	X	X	X	X	X	X	1	X
Cutter Fault	1	00000000	X	X	X	X	X	X	X	8
Head Open	1	00000000	X	X	X	X	X	X	X	4
Ribbon Out	1	00000000	X	X	X	X	X	X	X	2
Media Out	1	00000000	X	X	X	X	X	X	X	1
Clear Paper Path Failed ¹	1	00000000	X	X	X	X	8	X	X	X
Paper Feed Error ¹	1	00000000	X	X	X	X	4	X	X	X
Presenter Not Running ¹	1	00000000	X	X	X	X	2	X	X	X
Paper Jam during Retract ¹	1	00000000	X	X	X	X	1	X	X	X
Black Mark not Found ¹	1	00000000	X	X	X	8	X	X	X	X
Black Mark Calibrate Error ¹	1	00000000	X	X	X	4	X	X	X	X
Retract Function timed out ¹	1	00000000	X	X	X	2	X	X	X	X
Paused ¹	1	00000000	X	X	X	1	X	X	X	X

1. This error flag is only supported on KR403 printers.

Table 26 Warning Flags (~HQUES)

Warning Flags	Flag	Group 2	Group 1 (X = Value can be any hexadecimal number [0-9, A-F])							
		Nibbles16-9	Nibble8	Nibble7	Nibble6	Nibble5	Nibble4	Nibble3	Nibble2	Nibble1
No Warning	0	00000000	0	0	0	0	0	0	0	0
Warning Present	1	00000000	X	X	X	X	X	X	X	X
Paper-near-end Sensor ¹	1	00000000	X	X	X	X	X	X	X	8
Replace Printhead	1	00000000	X	X	X	X	X	X	X	4
Clean Printhead	1	00000000	X	X	X	X	X	X	X	2
Need to Calibrate Media	1	00000000	X	X	X	X	X	X	X	1

Table 26 Warning Flags (~HQUES) (Continued)

Warning Flags	Flag	Group 2	Group 1 (X = Value can be any hexadecimal number [0-9, A-F])							
		Nibbles16-9	Nibble8	Nibble7	Nibble6	Nibble5	Nibble4	Nibble3	Nibble2	Nibble1
Sensor 1 (Paper before head) ¹	1	00000000	X	X	X	X	X	X	1	X
Sensor 2 (Black mark) ¹	1	00000000	X	X	X	X	X	X	2	X
Sensor 3 (Paper after head) ¹	1	00000000	X	X	X	X	X	X	4	X
Sensor 4 (loop ready) ¹	1	00000000	X	X	X	X	X	X	8	X
Sensor 5 (presenter) ¹	1	00000000	X	X	X	X	X	1	X	X
Sensor 6 (retract ready) ¹	1	00000000	X	X	X	X	X	2	X	X
Sensor 7 (in retract) ¹	1	00000000	X	X	X	X	X	4	X	X
Sensor 8 (at bin) ¹	1	00000000	X	X	X	X	X	8	X	X

1. This warning flag is only supported on KR403 printers.

zpl.zpl_mode

This command sets the ZPL mode to ZPL II or ZPL.

Setvar

To set the printer ZPL mode:

```
! U1 setvar "zpl.zpl_mode" "value"
```

Values

- "zpl"
- "zpl II"

Default

"zpl II"

Getvar

To return the current ZPL mode setting:

```
! U1 getvar "zpl.zpl_mode"
```

Example

This setvar example sets the ZPL mode to ZPL.

```
! U1 setvar "zpl.system_status" "zpl"
```

zpl.zpl_override

Enable this menu item to prevent the following ZPL commands from changing the printer's current settings:

- ^MM (print mode)
- ^MT (Direct Thermal or Thermal Transfer print method)
- ^MN (media type - non-continuous or continuous)

When this menu item is disabled, these commands override the printer's settings.

Setvar

To set the override status to the specified value:

```
! U1 setvar "zpl.zpl_override" "value"
```

Values

- "disabled" allows override
- "enabled" prevents ZPL commands from overriding printer settings.

Default

"disabled"

Example

This example enables `zpl.zpl_override`, which prevents ^MM, ^MT, and ^MN from making changes to the current printer settings.

```
! U1 setvar "zpl.zpl_override" "enabled"
```

zpl.relative_darkness

Changes the relative darkness for ZPL labels. This command is similar to the ZPL ^MD command.



IMPORTANT: This value is saved permanently on Desktop printers, but it is not saved permanently on Industrial or Mobile.

Setvar

To set the relative darkness for ZPL labels:

```
! U1 setvar "zpl.relative_darkness" "value"
```

Values

" " to "300"

Default

"0"

Getvar

To return the current setting value:

```
! U1 getvar "relative_darkness"
```

Example

These examples show setting the printer to different darkness levels:

- If the current value shown on the configuration label is "16", using a `zpl.relative_darkness` command of "-90" decreases the value to "7.0".
- If the current value shown on the configuration label is "1", using a `zpl.relative_darkness` command of "153" increases the value to "16.3".
- If the current value shown on the configuration label is "25", using a `zpl.relative_darkness` command of "105" increases the value to "30.0", which is the maximum value allowed.

Each `zpl.relative_darkness` command is treated separately in relation to the current value as printed on the configuration label.

SGD Network Commands

This section provides a high-level overview of the network Set / Get / Do (SGD) commands.

.15†

Wireless SGD commands are available in printers with the following firmware versions or later:

- V60.16.2Z or later
- V60.15.xZ or later
- V50.15.xZ or later
- V61.15.xZ or later
- V56.15.xZ or later
- V53.16.x or later
- V53.15.2Z or later
- R53.16.3Z or later
- R60.15.8Z or later
- R62.15.8Z or later
- R63.15.8Z or later
- R65.15.8Z or later



NOTE: The wireless commands listed in this chapter are for use with the Wireless Print Server and Wireless Plus Print Server, when used with firmware version V60.15.x, V50.15.x, or later.

Wired SGD commands are available in printers with the following firmware versions or later:

- V54
- V66
- V68
- V72
- V73
- V74
- V75
- V76
- V78
- V79
- V60.16.2Z or later
- V60.15.xZ or later
- V50.15.xZ or later
- V61.15.xZ or later
- V56.15.xZ or later
- V53.16.x or later
- V53.15.2Z or later
- R53.16.3Z or later
- R60.15.8Z or later
- R62.15.8Z or later
- R63.15.8Z or later
- R65.15.8Z or later

bluetooth.address

This command returns the printer's Bluetooth device address.

Getvar

To retrieve the printer's Bluetooth address:

```
! U1 getvar "bluetooth.address"
```

Example

In this example, the `getvar` command causes the printer to return the printer's Bluetooth address.

```
! U1 getvar "bluetooth.address"
```

bluetooth.afh_map

Sets or retrieves the default AFH (adaptive frequency hopping) channel map (Bluetooth radios 1.2 and later); 20 bytes.

Setvar

To selectively enables or disables individual Bluetooth channels for use when AFH mode is set to "on" :

```
! U1 setvar "bluetooth.afh_map" "value"
```

Values

20-byte string of hexadecimal characters

Default

"7FFFFFFFFFFFFFFFFFFFFFFF"

Getvar

To retrieve default AFH channel map:

```
! U1 getvar "bluetooth.afh_map"
```

Example

This setvar example shows the value set to "7FFFFFFFFFFFFFFFFFFFFFFF".

```
! U1 setvar "bluetooth.afh_map" "7FFFFFFFFFFFFFFFFFFFFFFF"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "7FFFFFFFFFFFFFFFFFFFFFFF".

bluetooth.afh_map_curr

This command retrieves the current AFH (adaptive frequency hopping) channel map (Bluetooth radios 1.2 and later).

Getvar

To retrieve the current AFH channel map:

```
! U1 getvar "bluetooth.afh_map_curr"
```

Example

In this example, the `getvar` command causes the printer to retrieve the current AFH channel map.

```
! U1 getvar "bluetooth.afh_map_curr"
```


bluetooth.afh_mode

This command sets or retrieves AFH (adaptive frequency hopping) mode setting (Bluetooth radios 1.2 and later).

Setvar

To enable or disable AFH mode:

```
! U1 setvar "bluetooth.afh_mode" "value"
```

Values

- "on" enables AFH mode
- "off" disables AFH mode

Default

"off"

Getvar

To retrieve the current setting of the AFH mode:

```
! U1 getvar "bluetooth.afh_mode"
```

Example

This setvar example shows the value set to "on".

```
! U1 setvar "bluetooth.afh_mode" "on"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "on".

bluetooth.allow_non_display_numeric_comparison

This command allows the user to enable or disable a numeric comparison connection for printers without a display and also enables or disables displaying the pass key.



NOTE: This is an unsupported command for printers with display.

Setvar

To set the numeric comparison connection:

```
! U1 setvar "device.allow_non_display_numeric_comparison" "value"
```

Values

"off"	Does not allow pass key connection for non display printers.
"print"	Prints and accepts the pass key on non display printers (Man in the Middle protection).
"no print"	Accepts but does not print the pass key for non display printer (no Man in the Middle protection).

Default

"print"

Getvar

To return the current setting value:

```
! U1 getvar "device.allow_non_display_numeric_comparison"
```

bluetooth.authentication

This command sets or retrieves Bluetooth authentication mode and works in combination with the `bluetooth.bluetooth_pin`.

Setvar

To enable or disable Bluetooth authentication:

```
! U1 setvar "bluetooth.authentication" "value"
```

Values

- "off" disables authentication (can connect to master device without PIN)
- "setpin" enables authentication (requires PIN or passkey to connect to a master device)

Default

"off"

Getvar

To retrieve the current Bluetooth authentication mode:

```
! U1 getvar "bluetooth.authentication"
```

Example

This `setvar` example shows the value set to "setpin".

```
! U1 setvar "bluetooth.authentication" "setpin"
```

What the `setvar` value is set to is the `getvar` result. In this example, the `getvar` result is "setpin".

bluetooth.bluetooth_pin

This command is used to connect to the printer only when the command `bluetooth.authentication` is set to `"setpin"`.

Setvar

To set the Bluetooth pin value:

```
! U1 setvar "bluetooth.bluetooth_pin" "value"
```

Values

Any text string up to 10 characters

Default

" "

Getvar

To retrieves the current Bluetooth pin:

```
! U1 getvar "bluetooth.bluetooth_pin"
```

Example

This `setvar` example shows the value set to `"1234567890"`.

```
! U1 setvar "bluetooth.bluetooth_pin" "1234567890"
```

What the `setvar` value is set to is the `getvar` result. In this example, the `getvar` result is `"1234567890"`.

bluetooth.clear_bonding_cache

Deletes all information related to previous Bluetooth pairing events from the printer.

Do

To delete all information related to previous Bluetooth pairing events from the printer:

```
! U1 do "bluetooth.clear_bonding_cache"
```

Values

NA

Default

NA

bluetooth.date

This command shows the release date of the Bluetooth module.

Getvar

To show the release date of the Bluetooth module:

```
! U1 getvar "bluetooth.date"
```

Example

In this example, the `getvar` command returns the release date of the Bluetooth module.

```
! U1 getvar "bluetooth.date"
```

bluetooth.discoverable

This command enables or disables the Bluetooth discoverable mode.

Setvar

To enable or disable the Bluetooth discoverable mode:

```
! U1 setvar "bluetooth.discoverable" "value"
```

Values

"on" enables Bluetooth discoverable mode

"off" disables Bluetooth discoverable mode

Default

"on" for Printers running Link-OS v5.3 or earlier versions

"off" for Printers running Link-OS 6 or later versions)

Getvar

To retrieve the current Bluetooth discoverable mode:

```
! U1 getvar "bluetooth.discoverable"
```

Example

This setvar example shows the value set to "on".

```
! U1 setvar "bluetooth.discoverable" "on"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "on".

bluetooth.enable

This command enables or disables the Bluetooth radio.

Setvar

To enable or disable the Bluetooth radio:

```
! U1 setvar "bluetooth.enable"
```

Values

- "on" enables the Bluetooth radio
- "off" disables the Bluetooth radio

Default

"on"

Getvar

To retrieve the current status of the Bluetooth radio:

```
! U1 getvar "bluetooth.enable"
```

Example

This setvar example shows the value set to "on".

```
! U1 setvar "bluetooth.enable" "on"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "on".

bluetooth.enable_reconnect

Enables the Bluetooth reconnect feature required by iOS devices.

Setvar

To enable or disable the Bluetooth reconnect feature:

```
! U1 setvar "bluetooth.enable_reconnect" "value"
```

Values

- "off" disables the command
- "iOS_only" enables the command to work with iOS devices only

Getvar

To return the current setting value:

```
! U1 getvar "bluetooth.enable_reconnect"
```

bluetooth.friendly_name

This command sets the friendly name, which is used during service discovery. For changes to take effect, you must power cycle the printer or issue the `device.reset` command. If `bluetooth.friendly_name` is not set by you, it will default to the printer serial number.

Setvar

To set the Bluetooth discoverable mode:

```
! U1 setvar "bluetooth.friendly_name" "value"
```

Values

Any text string up to 17 characters

Getvar

To retrieve the current Bluetooth discoverable mode:

```
! U1 getvar "bluetooth.friendly_name"
```

Example

This `setvar` example shows the value set to "1234567".

```
! U1 setvar "bluetooth.friendly_name" "1234567"
```

What the `setvar` value is set to is the `getvar` result. In this example, the `getvar` result is "1234567".

bluetooth.json_config_channel_enable

Enables or disables the Bluetooth JSON configuration channel. Changes to this command setting only take effect when the printer is reset or power cycled.



NOTE: The JSON config channel will stop being advertised when there is no connection to the JSON channel and there is no connection on the main SPP channel.



IMPORTANT: All Bluetooth devices must first make an SPP connection before being able to make the JSON channel connection to a printer.

Setvar

To enable or disable the Bluetooth JSON configuration channel:

```
! U1 setvar "bluetooth.json_config_channel_enable" "value"
```

Values

- "on" means the channel is advertised and available for use only when the main serial port protocol (SPP) channel is connected.
- "off" means the channel is not advertised or available for use.

Default

"on"

Example

```
! U1 setvar "bluetooth.json_config_channel_enable" "off"
```

Getvar

To return the current setting value:

```
! U1 getvar "bluetooth.json_config_channel_enable"
```

bluetooth.power_class

This command sets the maximum transmit power level of the Bluetooth radio. If the Bluetooth radio is configured for "1", then the maximum power level of the radio is 20 dBm. If the radio is configured for "2", then the maximum power level of the radio is 4 dBm.

Setvar

To set the bluetooth power class value for the printer:

```
! U1 setvar "bluetooth.power_class" "value"
```

Values

- "1" iMZ220, iMZ320, ZD500, ZQ610, ZQ620, ZQ630, ZR658, ZR668, ZT210, ZT220, ZT410, ZT411, ZT420, ZT421, ZT510, ZT610, ZT620
- "2" iMZ220, iMZ320, ZD500, ZQ610, ZQ620, ZQ630, ZR658, ZR668, ZT210, ZT220, ZT410, ZT411, ZT420, ZT421, ZT510, ZT610, ZT620
- "3" ZT510, ZT610, ZT620

Default

- "2" ZQ610, ZQ620, ZQ630, ZR658, ZR668, iMZ220 Non-Sdio radio, iMZ320 Non-Sdio radio, ZT410 Non-Sdio Radio, ZT411 Non-Sdio Radio, ZT420 Non-Sdio Radio, ZT510 8887 Sdio Radio, ZT620 Non-Sdio Radio
- "1" ZT620 8787 Sdio Radio, ZT610 8787 Sdio Radio, ZT421 8787 Sdio Radio, ZT420 8787 Sdio Radio, ZT410 Sdio Radio, ZD500 8787 Sdio Radio

Getvar

To return the current setting:

```
! U1 getvar "bluetooth.power_class"
```

bluetooth.le.controller_mode

For printers that support both Bluetooth Classic and Bluetooth Low-Energy mode, this command controls the mode of operation.

Setvar

To control the mode of operation:

```
! U1 setvar "bluetooth.le.controller_mode" "value"
```

Values

- "both" means the Bluetooth radio operates in both low energy and classic mode
- "le" means the Bluetooth radio operates in low energy mode
- "classic" means the Bluetooth radio operates in the classic mode

Default

"both"

Getvar

To return the current setting value:

```
! U1 getvar "bluetooth.le.controller_mode"
```

bluetooth.le.power_class

This command sets the maximum transmit power level of the Bluetooth low energy radio.

Setvar

To set the power class value of the bluetooth low energy printers:

```
! U1 setvar "bluetooth.le.power_class" "value"
```

Values

The values varies printer to printer as given below.

- "1" ZQ610, ZQ620, ZQ630, ZR658, ZR668, ZT510, ZT610, ZT620
- "2" ZQ610, ZQ620, ZQ630, ZR658, ZR668, ZT510, ZT610, ZT620
- "3" ZT510, ZT610, ZT620

Default Value

The default values varies printer to printer as given below.

- "2" ZQ610, ZQ620, ZQ630, ZR658, ZR668
- "3" ZT510, ZT610, ZT620

Getvar

To return the current setting:

```
! U1 getvar "bluetooth.le.power_class"
```

bluetooth.le.minimum_security

Determines the minimum device-level security settings the printer will use to connect for Bluetooth Low-Energy (LE) connections.

Setvar

To set the device-level security settings the printer will use to connect for Bluetooth Low-Energy (LE) connections:

```
! U1 setvar "bluetooth.le.minimum_security" "value"
```

Values

- "none" security is not required unless the particular Bluetooth LE service or characteristic being accessed requires security. For all other choices, all services will require pairing and apply some form of security.
- "unauth_key_signing" (un)authenticated pairing and signing keys are required
- "auth_key_signing" authenticated pairing and signing keys are required.
- "unauth_key_encrypt" (un)authenticated pairing and encryption are required.
- "auth_key_encrypt" authenticated pairing and encryption are required.

Default

"none" if the printer has a Bluetooth LE radio. If the printer does not have a Bluetooth LE radio installed, there is no default value.

Getvar

To return the current setting value:

```
! U1 getvar "bluetooth.le.minimum_security"
```

If the printer does not have a Bluetooth LE radio installed, the printer will return an empty string.

bluetooth.page_scan_window

This command sets the page scan window timing. It can be either 15 or 60 ms. 60 ms is the default value.

Setvar

To set the page scan window timing:

```
! U1 setvar "bluetooth.page_scan_window" "value"
```

Values

"15"

"60"

Default Value

"60"

Getvar

To view the current setting:

```
! U1 getvar "bluetooth.page_scan_window"
```


bluetooth.local_name

This command retrieves the local name that is provided during service discovery.

Getvar

To retrieve the local name that is provided during service discovery:

```
! U1 getvar "bluetooth.local_name"
```

Example

In this example, the `getvar` command returns the local name that is provided during service discovery.

```
! U1 getvar "bluetooth.local_name"
```

bluetooth.minimum_security_mode

This printer setting parameter sets the Bluetooth Minimum Security mode. Minimum Security Mode provides for three levels of security, depending on the printer radio version and printer firmware: "1", "2", and "3".



IMPORTANT: This feature is available in printers with Bluetooth® radio version 2.0 or higher.

Setvar

To set the Bluetooth Minimum Security mode:

```
! U1 setvar "bluetooth.minimum_security_mode" "value"
```

Values

"1 " Security mode 1 means the printer will:

- be discoverable
- not require a PIN to connect to

"2 " means the printer will:

- switch to bluetooth.authentication = "setpin" (Connecting device must provide the printer's bluetooth.bluetooth_pin),
- switch to Bluetooth.encryption = "on", and
- use existing Bluetooth.discoverable setting

"3 " means Link Level Enforced Security and the printer will:

- switch to bluetooth.authentication = "setpin" (Connecting device must provide the printer's bluetooth.bluetooth_pin)
- switch to bluetooth.encryption = "on"
- switch to bluetooth.discoverable = "off"
- only connect to devices which use Link Level Enforced Security

"4 "

- switch to bluetooth.authentication = "setpin" (Connecting device must provide the printer's bluetooth.bluetooth_pin)
- switch to bluetooth.encryption = "on"
- switch to bluetooth.discoverable = "off"
- only connect to devices which use Link Level Enforced Security
- will not connect to a device with Bluetooth version 2.1 or lower

Default

"1 "

Getvar

To retrieve the current Bluetooth Minimum Security Mode:

```
! U1 getvar "bluetooth.minimum_security_mode"
```

Example

This setvar example shows the value set to "2".

```
! U1 setvar "bluetooth.minimum_security_mode" "2"
```

bluetooth.radio_auto_baud

This command retrieves the Bluetooth radio data rate.

Getvar

To retrieve Bluetooth radio data rate:

```
! U1 getvar "bluetooth.radio_auto_baud"
```

Example

In this example, the `getvar` retrieves the short Bluetooth address.

```
! U1 getvar "bluetooth.radio_auto_baud"
```

bluetooth.radio_version

This command returns the version of the currently installed Bluetooth radio.

Getvar

To return the version of the currently installed Bluetooth radio:

```
! U1 getvar "bluetooth.radio_version"
```

Example

In this example, the `getvar` command returns the currently installed Bluetooth radio.

```
! U1 getvar "bluetooth.radio_version"
```

bluetooth.short_address

This command shortens the Bluetooth address by removing the colons (" : ").

Getvar

To retrieve the shortened Bluetooth address:

```
! U1 getvar "bluetooth.short_address"
```

Example

In this example, the `getvar` retrieves the short Bluetooth address.

```
! U1 getvar "bluetooth.short_address"
```

bluetooth.version

This command returns the Bluetooth library version number.

Getvar

To return the Bluetooth library version number:

```
! U1 getvar "bluetooth.version"
```

Example

In this example, the `getvar` command returns the Bluetooth library version number.

```
! U1 getvar "bluetooth.version"
```

card.mac_addr

This command retrieves the MAC address of the wireless radio card.

Getvar

To instruct the printer to respond with the MAC address:

```
! U1 getvar "card.mac_addr"
```

Example

In this example, the `getvar` result is the MAC address for the wireless radio card.

```
! U1 getvar "card.mac_addr"
```


card.inserted

This command indicates whether the wireless radio card is or is not inserted.

Getvar

To instruct the printer to respond with the wireless radio card status. It's inserted or it's not inserted:

```
! U1 getvar "card.inserted"
```

Example

In this example, the `getvar` result is "Inserted".

```
! U1 getvar "card.inserted"
```

external_wired.check

This command controls whether to check for external print server during the network interface search.

Setvar

To instruct the printer to set the network interface search:

```
! U1 setvar "external_wired.check" "value"
```

Values

- "on" = turn on external wired network interface search
- "off" = turn off external wired network interface search

Default

- "on" = If wireless option board is not installed
- "off" = If wireless option board is installed

Getvar

To retrieve the status of the network interface search:

```
! U1 getvar "external_wired.check"
```

Example

This setvar example shows the value set to "off".

```
! U1 setvar "external_wired.check" "off"
```

When the setvar value is set to "off", the getvar result is "off".

external_wired.ip.addr

This command allows you to get or set the external wired print server's IP address.



IMPORTANT: For a set IP address to take affect, the IP protocol must be set to permanent and the print server must be reset.

Setvar

To instruct the printer to change its current external wired print server IP address upon powering the printer on:

```
! U1 setvar "external_wired.ip.addr" "value"
```

Values

Any valid IP address

Default

"0.0.0.0"

Getvar

To respond with the current external wired print server IP address:

```
! U1 getvar "external_wired.ip.addr"
```

On SEH print server models PS102-Z or the PS105-Z, only the getvar command is supported.



NOTE: The setvar value of this command can be affected by the external_wired.ip.dhcp.enable command.

Example

This setvar example shows the value set to "10.14.4.235".

```
! U1 setvar "external_wired.ip.addr" "10.14.4.235"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "10.14.4.235".

external_wired.ip.arp_interval

This print server setting allows you to specify the ARP (Address Resolution Protocol) interval or the ARP cache time out for the external wired print server.

Setvar

To instruct the printer to change the ARP interval or the ARP cache time out for the external wired print server:

```
! U1 setvar "external_wired.ip.arp_interval" "value"
```

Values

"0" - "30"

Default

"0"

Getvar

To instruct the printer to respond with the ARP interval or the ARP cache time out value for the external wired print server:

```
! U1 getvar "external_wired.ip.arp_interval"
```

On SEH print server models PS102-Z or the PS105-Z, only the getvar command is supported.

Example

This setvar example shows the value set to "0".

```
! U1 setvar "external_wired.ip.arp_interval" "0"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "0".

external_wired.ip.default_addr_enable

This command allows you to default the external wired print server's IP address.



IMPORTANT: For a set IP address to take affect, the IP protocol must be set to permanent and the print server must be reset.

Setvar

To instruct the printer to use it's default address:

```
! U1 setvar "external_wired.ip.default_addr_enable" "value"
```

If no address is provided through DHCP or BOOTP. If you do not assign an IP address after 2 minutes, the 10/100 Internal PS defaults to IP address 192.168.254.254.

Values

- "on" enabled
- "off" disabled

Default

"on"

Getvar

To instruct the printer to show the status of the setting of external wired print server's default IP address feature:

```
! U1 getvar "external_wired.ip.default_addr_enable"
```

On SEH print server models PS102-Z or the PS105-Z, only the getvar command is supported.

Example

This setvar example shows the value set to "on".

```
! U1 setvar "external_wired.ip.default_addr_enable" "on"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "on".

external_wired.ip.dhcp.cid_all

This printer setting defines the entire client identifier (DHCP option 61) if DHCP is enabled on the external print server and "external_wired.ip.dhcp.cid_type" is set to "0", or "2". The MAC address is used if the type is set to "1".

Setvar

To instruct the printer to change the client identifier prefix and suffix of the external wired print server:

```
! U1 setvar "external_wired.ip.dhcp.cid_all" "value"
```

Values

A maximum length of 60 characters if the CID type is ASCII, or 120 characters if the CID type is hexadecimal.

Default

" "

Getvar

To instruct the printer to respond with the client identifier prefix and suffix of the external wired print server:

```
! U1 getvar "external_wired.ip.dhcp.cid_all"
```

On SEH print server models PS102-Z or the PS105-Z, only the getvar command is supported.

Example

This setvar example shows the value set to "printer".

```
! U1 setvar "external_wired.ip.dhcp.cid_all" "printer"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "printer".

external_wired.ip.dhcp.cid_enable

This command determines if DHCP (option 61) on the external wired print server is turned on or off.

Setvar

To instruct the printer to set the status of the client identifier of the external wired print server:

```
! U1 setvar "external_wired.ip.dhcp.cid_enable" "value"
```

Values

- "off" client identifier is turned off
- "on" client identifier is turned on

Default

"off"

Getvar

To instruct the printer to respond with the status of the client identifier of the external wired print server:

```
! U1 getvar "external_wired.ip.dhcp.cid_enable"
```

On SEH print server models PS102-Z or the PS105-Z, only the getvar command is supported.

Example

This setvar example shows the value set to "off".

```
! U1 setvar "external_wired.ip.dhcp.cid_enable" "off"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "off".

external_wired.ip.dhcp.cid_prefix

This printer setting defines the prefix to be prepended to the DHCP client identifier (option 61) when DHCP is enabled on the external wired print server and "external_wired.ip.dhcp.cid_type" is set to "0" or "2".

Setvar

To instruct the printer to change the CID prefix of the external wired print server:

```
! U1 setvar "external_wired.ip.dhcp.cid_prefix" "value"
```

Values

Any text string up to 10 characters if the CID type is ASCII, or 20 characters if the CID type is hexadecimal.

Default

" "

Getvar

To instruct the printer to respond with the client identifier prefix of the external wired print server:

```
! U1 getvar "external_wired.ip.dhcp.cid_prefix"
```

On SEH print server models PS102-Z or the PS105-Z, only the getvar command is supported.

Example

This setvar example shows the value set to "PRT001".

```
! U1 setvar "external_wired.ip.dhcp.cid_prefix" "PRT001"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "PRT001".

external_wired.ip.dhcp.cid_suffix

This printer setting defines the unique suffix to be used as the client identifier (DHCP option 61) if DHCP is enabled repeated on the external wired print server and `external_wired.ip.dhcp.cid_type` on page 1077 is set to "0" or "2", not "1".

Setvar

To instruct the printer to change the client identifier suffix value:

```
! U1 setvar "external_wired.ip.dhcp.cid_suffix" "value"
```

Values

The maximum length of a value allowed is 60 ASCII characters when the CID type is ASCII, or 120 hexadecimal values when the CID type is hexadecimal.

Default

" "

Getvar

To instruct the printer to respond with the client identifier suffix on the external wired print server:

```
! U1 getvar "external_wired.ip.dhcp.cid_suffix"
```

On SEH print server models PS102-Z or the PS105-Z, only the getvar command is supported.

Example

This setvar example shows setting the suffix to "printer".

```
! U1 setvar "external_wired.ip.dhcp.cid_suffix" "printer"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "printer".

external_wired.ip.dhcp.cid_type

This printer setting defines the type of client identifier (DHCP option 61) that will be sent if DHCP is enabled on the external wired print server. A value of "1" means the type of "Ethernet" and the printer's MAC address will be used. A value of "0" or "2" means the client identifier sent will be "external_wired.ip.dhcp.cid_prefix" concatenated with "external_wired.ip.dhcp.cid_suffix".

Setvar

To instruct the printer to enable "synthetic" Client Identifier for the external wired print server:

```
! U1 setvar "external_wired.ip.dhcp.cid_type" "value"
```

Values

- "0" uses an ASCII string
- "1" uses MAC address of wired print server
- "2" uses HEX value

Default

"1"

Getvar

To instruct the printer to respond with the client identifier type for the external wired print server:

```
! U1 getvar "external_wired.ip.dhcp.cid_type"
```

On SEH print server models PS102-Z or the PS105-Z, only the getvar command is supported.

Example

This setvar example shows the value set to "1".

```
! U1 setvar "external_wired.ip.dhcp.cid_type" "1"
```

When the setvar value is set to "1", the getvar result is "1".

external_wired.ip.gateway

This command instructs the printer to change the external wired print server's gateway address.



IMPORTANT: This setting refers to the gateway address. A set value is ignored if the IP protocol is not set to permanent.

Setvar

To instruct the printer to change the external wired printer server's gateway address:

```
! U1 setvar "external_wired.ip.gateway" "value"
```

Values

Any valid gateway address

Default

"0.0.0.0"

Getvar

To instruct the printer to respond with the external wired printer server's gateway address:

```
! U1 getvar "external_wired.ip.gateway"
```

On SEH print server models PS102-Z or the PS105-Z, only the `getvar` command is supported.

Example

This `setvar` example shows the value set to "10.3.5.1".

```
! U1 setvar "external_wired.ip.gateway" "10.3.5.1"
```

When the `setvar` value is set to "10.3.5.1", the `getvar` result is "10.3.5.1".

external_wired.ip.netmask

This setting refers to the external wired print server's subnet mask address. This value is ignored if the IP protocol is not set to permanent.

Setvar

To instruct the printer to change the external wired print servers subnet mask:

```
! U1 setvar "external_wired.ip.netmask" "value"
```

Values

Any valid subnet mask.

Default

"255.255.255.0"

Getvar

To instruct the printer to respond with the external wired print server's subnet mask:

```
! U1 getvar "external_wired.ip.netmask"
```

On SEH print server models PS102-Z or the PS105-Z, only the getvar command is supported.

Example

This setvar example shows the value set to "255.255.255.0".

```
! U1 setvar "external_wired.ip.netmask" "255.255.255.0"
```

When the setvar value is set to "255.255.255.0", the getvar result is "255.255.255.0".

external_wired.ip.port

This printer setting refers to the external wired print server's port number that the TCP print service is listening on. Normal TCP communications from the host should be directed to this port.

Setvar

To instruct the printer to set the external wired print server's TCP/UDP port number:

```
! U1 setvar "external_wired.ip.port" "value"
```

Values

1 - 65535 (excluding any ports currently used by other services, such as 21, 23, 80, and 515).

Default

"9100"

Getvar

To instruct the printer to respond with the external wired printer server's TCP/UDP port number:

```
! U1 getvar "external_wired.ip.port"
```

On SEH print server models PS102-Z or the PS105-Z, only the getvar command is supported.

Example

This setvar example shows the value set to "9100".

```
! U1 setvar "external_wired.ip.port" "9100"
```

When the setvar value is set to "9100", the getvar result is "9100".

external_wired.ip.protocol

This command configures the IP addressing method used by the external wired print server.

Setvar

To instruct the printer to configure the IP addressing method used by the external wired print server:

```
! U1 setvar "external_wired.ip.protocol" "value"
```

Values

- "bootp" uses the standard bootp addressing method to obtain an IP address and configuration
- "dhcp" uses the standard dhcp addressing method to obtain an IP address and configuration for a server specified period of time
- "rarp" uses the standard rarp addressing method to obtain an IP address
- "glean" uses the IP address from a PING packet that is sent to its hardware address (unicast address)
- "permanent" uses static values assigned through other commands
- "all" tries all of the dynamic addressing methods, not permanent, to obtain an IP address

Default

"all"

Getvar

To return the IP addressing method used by the external print server:

```
! U1 getvar "external_wired.ip.protocol"
```

On SEH print server models PS102-Z or the PS105-Z, only the getvar command is supported.

Example

In this example, the setvar result is the current programming language that the printer is using.

```
! U1 setvar "external_wired.ip.protocol" "bootp"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "bootp".

external_wired.ip.timeout.enable

This network setting refers to enabling the connection timeout on the external wired 10/100 print server. For this to take effect, the print server must be reset.

Setvar

To instruct the printer to enable or disable the timeout checking on the external wired print server:

```
! U1 setvar "external_wired.ip.timeout.enable" "value"
```

Values

- "off" turns off the connection checking
- "on" turns on the connection checking

Default

"on"

Getvar

To instruct the printer to return whether the timeout checking is enabled on the external wired print server:

```
! U1 getvar "external_wired.ip.timeout.enable"
```

On SEH print server models PS102-Z or the PS105-Z, only the getvar command is supported.

Example

This setvar example shows the value set to "on".

```
! U1 setvar "external_wired.ip.timeout.enable" "on"
```

When the setvar value is set to "on", the getvar result is "on".

external_wired.ip.timeout.value

This network setting refers to the number of seconds before the connection times out for the external wired print server.

Setvar

To instructs the printer to set the time of the external wired print server, in seconds, before the connection times out:

```
! U1 setvar "external_wired.ip.timeout.value" "value"
```

Values

"1" through "3600"

Default

"300"

Getvar

To instruct the printer to respond with the time of the external wired print server, in seconds, before the connection times out:

```
! U1 getvar "external_wired.ip.timeout.value"
```

On SEH print server models PS102-Z or the PS105-Z, only the getvar command is supported.

Example

This setvar example shows the value set to "300".

```
! U1 setvar "external_wired.ip.timeout.value" "300"
```

When the setvar value is set to "300", the getvar result is "300".

external_wired.ip.v6.addr

This command retrieves the IPv6 address of the SEH wired print server. This command is only supported on SEH print server models PS105-Z and PS102-Z with firmware version V60.16.5Z or V53.16.5Z and later.

Getvar

To retrieve the IPv6 address of the SEH wired print server:

```
! U1 getvar "external_wired.ip.v6.addr"
```

Values

8 group of four hexadecimal digits with a colon delimiter

character set A-F or 0-9 with a 39-character maximum

- SEH print server model PS105-Z with firmware version V60.16.5Z or V53.16.5Z and later.
- SEH print server model PS102-Z with firmware version V60.16.5Z or V53.16.5Z and later.

Example

In this example, the `getvar` returns the IPv6 address of the wired print server.

```
! U1 getvar "external_wired.ip.v6.addr"
```

external_wired.ip.v6.gateway

This command retrieves the IPv6 gateway of the SEH wired print server.

Getvar

To retrieve the IPv6 gateway of the SEH wired print server:

```
! U1 getvar "external_wired.ip.v6.gateway"
```

Values

8 group of four hexadecimal digits with a colon delimiter

character set = A-F or 0-9 with a 39-character maximum

- SEH print server model PS105-Z with firmware version V60.16.5Z or V53.16.5Z and later.
- SEH print server model PS102-Z with firmware version V60.16.5Z or V53.16.5Z and later.

Example

In this example, the `getvar` returns the IPv6 gateway of the wired print server.

```
! U1 getvar "external_wired.ip.v6.gateway"
```

external_wired.ip.v6.prefix_length

This command retrieves the IPv6 address prefix length of the SEH wired print server.

Getvar

To retrieve the IPv6 address prefix length of the SEH wired print server:

```
! U1 getvar "external_wired.ip.v6.prefix_length"
```

Values

character set = 0-9 (3-character maximum)

- SEH print server model PS105-Z with firmware version V60.16.5Z or V53.16.5Z and later.
- SEH print server model PS102-Z with firmware version V60.16.5Z or V53.16.5Z and later.

Example

In this example, the `getvar` returns the IPv6 address prefix length of the wired print server.

```
! U1 getvar "external_wired.ip.v6.prefix_length"
```

external_wired.mac_addr

This command retrieves the MAC address of the external wired print server.

Getvar

To instruct the printer to respond with the MAC address of the external wired print server:

```
! U1 getvar "external_wired.mac_addr"
```

Example

In this example, the `getvar` result is the MAC address of the external wired print server.

```
! U1 getvar "external_wired.mac_addr"
```

external_wired.mac_raw

This command specifies the RAW MAC address of the external print server. The raw mac address is the mac address without the colons (" : ").

Getvar

To retrieve the RAW MAC address of the external print server:

```
! U1 getvar "external_wired.mac_raw"
```

Example

In this example, the `getvar` retrieves the RAW MAC address of the external print server.

```
! U1 getvar "external_wired.mac_raw" "00074d2408ff"
```

interface.network.active.arp_interval

This command changes the arp interval.

Setvar

To retrieve the gateway address of the active print server:

```
! U1 getvar "interface.network.active.arp_interval" "value"
```

Values

Integer values from "0" to "30"

Default

"0"

Getvar

To retrieve the current arp interval setting, shown in minutes:

```
! U1 getvar "interface.network.active.arp_interval"
```

Example

In this example, the `setvar` changes the arp interval to three minutes.

```
! U1 getvar "interface.network.active.arp_interval" "3"
```

interface.network.active.cable_type

This command returns the cable type of the active network, either 10/100BaseT, Wireless 802.11b/g, or Wireless 802.11n.



NOTE: This command will only give a valid response once an IP address has been established.

Getvar

To retrieve the current cable type of the active network:

```
! U1 getvar "interface.network.active.cable_type"
```

Values

- "10/100BaseT"
- "Wireless 802.11b/g"
- "Wireless 802.11n"

Default

NA

interface.network.active.dhcp_received_host_name

This command reports the Host Name as assigned by the DHCP Server. If one is not assigned, or DHCP is not used, then the field will be blank.



NOTE: This command will only give a valid response once an IP address has been established.

Getvar

To report the host name:

```
! U1 getvar "interface.network.active.dhcp_received_host_name"
```

Example

```
! U1 getvar "interface.network.active.dhcp_received_host_name"
```

Result

```
"Zebra Printer on shelf 2112"
```


interface.network.active.gateway

This command retrieves the gateway address of the active print server. Getvar

Getvar

To retrieve the gateway address of the active print server:

```
! U1 getvar "interface.network.active.gateway"
```

Example

In this example, the `getvar` retrieves the gateway address of the active print server.

```
! U1 getvar "interface.network.active.gateway"  
"10.3.5.1"
```

interface.network.active.ip_addr

This command retrieves the IP address of the active print server.

Getvar

To retrieve the IP address of the active print server:

```
! U1 getvar "interface.network.active.ip_addr"
```

Example

In this example, the `getvar` retrieves the IP address of the active print server.

```
! U1 getvar "interface.network.active.ip_addr"  
"10.3.5.92"
```

interface.network.active.ipv6.addresses

This command returns a list of up to ten IPv6 addresses.

Getvar

To retrieve the active IPv6 addresses:

```
! U1 getvar "interface.network.active.ipv6.addresses"
```

interface.network.active.ipv6.address_type

This command displays the method, either static or automatic, to get IPv6 addresses with wired or wireless networking.

Getvar

To retrieve the active network address type:

```
! U1 getvar "interface.network.active.ipv6.address_type"
```

Example

```
! U1 getvar "interface.network.active.ipv6.address_type"
```

Result

```
"auto"
```

interface.network.active.ipv6.dhcp_server_duid

This command returns the DHCP unique identifier (DUID), as provided by the DHCPv6 server that provided the printer network information.

Getvar

To retrieve the DUID:

```
! U1 getvar "interface.network.active.ipv6.dhcp_server_duid"
```

interface.network.active.ipv6 gateways

This command returns the active IPv6 network gateway(s).

Getvar

To retrieve the active network address type:

```
! U1 getvar "interface.network.active.ipv6.gateways"
```

interface.network.active.mac_addr

This command retrieves the MAC address of the active print server.

Getvar

To retrieve the MAC address of the active print server:

```
! U1 getvar "interface.network.active.mac_addr"
```

Example

In this example, the `getvar` retrieves the MAC address of the active print server.

```
! U1 getvar "interface.network.active.mac_addr"  
"00:07:4d:24:08:ff"
```

interface.network.active.mac_raw

This command identifies the RAW MAC address of the active print server. The raw mac address is the mac address without the colons (":").

Getvar

To retrieve the RAW MAC address of the active print server:

```
! U1 getvar "interface.network.active.mac_raw"
```

Example

In this example, the `getvar` retrieves the RAW MAC address of the active print server.

```
! U1 getvar "interface.network.active.mac_raw"  
"00074d2408ff"
```


interface.network.active.netmask

This command retrieves the netmask of the active print server.

Getvar

To retrieve the netmask of the active print server:

```
! U1 getvar "interface.network.active.netmask"
```

Example

In this example, the `getvar` retrieves the netmask of the active print server.

```
! U1 getvar "interface.network.active.netmask"  
"255.255.255.0"
```

interface.network.active.protocol

This command retrieves IP protocol of the active print server.

Getvar

To retrieve the IP protocol of the active print server:

```
! U1 getvar "interface.network.active.protocol"
```

interface.network.active.protocol_error

This command returns the last error reported by the active print server.

Getvar

To return the last error reported by the active print server:

```
! U1 getvar "interface.network.active.protocol_error"
```

interface.network.active.rx_errors

This command returns the current number of packet receive errors on the active network interface.

Getvar

To return the current number of packet receive errors:

```
! U1 getvar "interface.network.active.rx_errors"
```

Result

The current number of errors.

interface.network.active.rx_packets

This command returns the number of packets received on the active network interface since the last power cycle.

Getvar

To return the number of packets received on the active network interface since the last power cycle:

```
! U1 getvar "interface.network.active.rx_packets"
```

Result

An integer.

interface.network.active.server_address

This command returns the network IP address of the server that provided the printer's IP address.

Getvar

To return the network IP address of the server providing the printer's IP address:

```
! U1 getvar "interface.network.server_address"
```

Result

An IP address.

interface.network.active.speed

This command returns the speed in megabits per second of the active print server network since the last power cycle.

Getvar

To return the active print server network speed since the last power cycle:

```
! U1 getvar "interface.network.active.speed"
```

Result

A number indicating megabits/second.

interface.network.active.tx_errors

This command returns the number of packet transmit errors on the active print server network since the last power cycle.

Getvar

To return the number of packet transmit errors on the active print server network since the last power cycle:

```
! U1 getvar "interface.network.active.tx_errors"
```

Result

An integer number.

interface.network.active.tx_packets

This command returns the number of packets transmitted on the active print server network since the last power cycle.

Getvar

To return the number of packets transmitted on the active print server network since the last power cycle:

```
! U1 getvar "interface.network.active.tx_packets"
```

Result

A number.

interface.network.active.wins_addr

This command sets and retrieves the active WINS address.

Setvar

To set the WINS address of the active print server:

```
! U1 setvar "interface.network.active.wins_addr" "value"
```

Values

"0.0.0.0" - "255.255.255.255"

Getvar

To retrieve the WINS address of the active print server:

```
! U1 getvar "interface.network.active.wins_addr"
```

Result

A WINS address.

Example

In this example, the `setvar` sets the Wins address of the active print server.

```
! U1 setvar "interface.network.active.wins_addr" "10.3.5.120"
```

interface.network.settings_require_reset

Displays whether or not the network system has to be reset for a new configuration setting to take effect.

Getvar

To display whether or not the network system has to be reset for a new configuration setting to take effect:

```
! U1 getvar "interface.network.settings_require_reset"
```

Values

- "no" means no settings have been changed that require a reset to take effect.
- "yes" means one or more settings has been changed that requires a reset to take effect.

internal_wired.8021x.password

Sets the password to be used for authentication with the wired network.

Setvar

To set the command:

```
! U1 setvar "internal_wired.8021x.password" "value"
```

Values

The value is a string of up to 32 ASCII characters.

internal_wired.8021x.peap.validate_server_certificate

When using PEAP, this command determines if the printer requires the server certificate to be signed by a CA in Zebra's CA chain of trust.

Setvar

To set the command:

```
! U1 setvar "internal_wired.8021x.peap.validate_server_certificate" "value"
```

Values

- "on"
- "off"

Default

"on"

Getvar

To have the printer return the current setting value:

```
! U1 getvar "internal_wired.8021x.peap.validate_server_certificate"
```

internal_wired.8021x.peap.anonymous_identity

Sets the phase 1 ID name when authenticating with the wired network.

Setvar

To set the command:

```
! U1 setvar "internal_wired.8021x.peap.anonymous_identity" "value"
```

Values

The value is a string of up to 32 ASCII characters.

Default

""

Getvar

To confirm the command is set:

```
! U1 getvar "internal_wired.8021x.peap.anonymous_identity"
```

internal_wired.8021x.private_key_password

Sets the private key password for encryption in the certificate file.

Setvar

To set the command:

```
! U1 setvar "internal_wired.8021x.private_key_password" "value"
```

Values

The value is a string of up to 32 ASCII characters.

Default

""

Getvar

To have the printer return the current setting value:

```
! U1 getvar "internal_wired.8021x.private_key_password"
```

internal_wired.8021x.security

Returns the security type used for the wired network.

Setvar

To set the command:

```
! U1 setvar "internal_wired.8021x.security" "none"
```

Values

- "none"
- "peap"
- "eap-tls"
- "eap-ttls"

Default

"none"

Getvar

To have the printer return the current setting value:

```
! U1 getvar "internal_wired.8021x.security"
```


internal_wired.8021x.ttls_anonymous_identity

This command returns the anonymous identity string for EAP-TTLS that is used as the unencrypted identity for a wired Ethernet connection. The value of the identity string can be up to 32 characters.

Getvar

To return the anonymous identity string:

```
! U1 getvar "internal_wired.8021x.ttls_anonymous_identity"
```

Default

NA

internal_wired.8021x.ttls_tunnel

Sets the TTLS tunnel protocol to use in the authentication process.

Setvar

To set the command:

```
! U1 setvar "internal_wired.8021x.ttls_tunnel" "value"
```

Values

- "pap"
- "chap"
- "mschap"
- "mschapv2"

Default

"mschapv2"

Getvar

To have the printer return the current setting value:

```
! U1 getvar "internal_wired.8021x.ttls_tunnel"
```

internal_wired.8021x.username

Sets the user name to use for authentication with the wired network.

Setvar

To set the command:

```
! U1 setvar "internal_wired.8021x.username" "value"
```

Values

The value is a string of up to 32 ASCII characters.

Default

""

Getvar

To have the printer return the current setting value:

```
! U1 getvar "internal_wired.8021x.username"
```

The value is a string of up to 32 ASCII characters.

internal_wired.activity_led

Controls whether the Ethernet activity LED will blink or be solid when there is link.

Setvar

To set the Ethernet activity LED value:

```
! U1 setvar "internal_wired.activity_led" "value"
```

Values

- "blink" means the LED will blink
- "solid" means the LED will be solid

Default

"blink"

Getvar

To return the current setting value:

```
! U1 getvar "internal_wired.activity_led"
```

internal_wired.auto_switchover

This command instructs the printer to switch from wireless to the internal wired print server when an Ethernet cable is plugged into the printer and the printer detects an active data link.

Setvar

To configure switches between the wireless and wired interfaces:

```
! U1 setvar "internal_wired.auto_switchover" "value"
```

Values

- "on" indicates switchover enabled
- "off" indicates switchover disabled

Default

"off"

Getvar

To retrieve the current automatic switchover value:

```
! U1 getvar "internal_wired.auto_switchover"
```

Example

This setvar example shows the value set to "off".

```
! U1 setvar "internal_wired.auto_switchover" "off"
```

When the setvar value is set to "off", the getvar result is "off".



IMPORTANT: For this command to work, be sure:

- you are using a ZM400/ZM600 or RZ400/RZ600 printer with both the internal 10/100 wired print server and wireless option board installed
- the value for this command is set to "on" (switchover enabled)
- the printer is currently communicating to the network through a wireless connection
- a Ethernet cable is plugged into the ZM400/ZM600 or RZ400/RZ600 printer and the printer recognizes a data link connection

When the above conditions exist and an active Ethernet cable is plugged into an internal wired print server, the printer will detect the wired data link and automatically switch to the wired interface. The printer will automatically switch back to the wireless interface when the Ethernet cable is disconnected.

internal_wired.enable

Enables or disables the wired network interface.



IMPORTANT: A network or printer reset is required for this setting to take effect.

Setvar

To set the command:

```
! U1 setvar "internal_wired.enable" "value"
```

Values

- "on"
- "off"

Default

"on"

Getvar

To have the printer return the current setting value:

```
! U1 getvar "internal_wired.enable"
```

internal_wired.installed

Returns if the wired option is installed in the printer.

Getvar

To return if the wired option is installed in the printer:

```
! U1 getvar "internal_wired.installed"
```

Values

"yes" the wired print server is installed

"no" the wired print server is not installed

internal_wired.ip.addr

This command allows you to get or set the internal wired IP address of the print server.



NOTE: For a set IP address to take effect, the IP protocol must be set to permanent and the print server must be reset.

Setvar

To instruct the printer to change its current internal wired print server IP address upon powering the printer on:

```
! U1 setvar "internal_wired.ip.addr" "value"
```

Values

Any valid IP address

Default

"0.0.0.0"

Getvar

To respond with the current internal wired print server IP address:

```
! U1 getvar "internal_wired.ip.addr"
```



NOTE: The setvar value of this command can be affected by the internal_wired.ip.dhcp.enable command.

Example

This setvar example shows the value set to "10.14.4.235".

```
! U1 setvar "internal_wired.ip.addr" "10.14.4.235"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "10.14.4.235".

internal_wired.ip.arp_interval

This print server setting allows you to specify the ARP (Address Resolution Protocol) interval or the ARP cache time out for the internal wired print server.

Setvar

To instruct the printer to change the ARP interval or the ARP cache time out for the internal wired print server:

```
! U1 setvar "internal_wired.ip.arp_interval" "value"
```

Values

"0" - "30"

Default

"0"

Getvar

To instruct the printer to respond with the ARP interval or the ARP cache time out value for the internal wired print server:

```
! U1 getvar "internal_wired.ip.arp_interval"
```

Example

This setvar example shows the value set to "0".

```
! U1 setvar "internal_wired.ip.arp_interval" "0"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "0".

internal_wired.ip.default_addr_enable

This command allows you to default the internal wired print server's IP address.



IMPORTANT: For a set IP address to take affect, the IP protocol must be set to permanent and the print server must be reset.

Setvar

To tell the printer to use it's default address:

```
! U1 setvar "internal_wired.ip.default_addr_enable" "value"
```

Values

- "on" means enabled
- "off" means disabled

Default

"on"

Getvar

To instruct the printer to show the status of the setting of internal wired print server's default IP address feature:

```
! U1 getvar "internal_wired.ip.default_addr_enable"
```

Example

This setvar example shows the value set to "on".

```
! U1 setvar "internal_wired.ip.default_addr_enable" "on"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "on".

internal_wired.ip.dhcp.arp_verify

This command controls whether the internal wired print server will send an ARP response after receiving an IP address via DHCP.

Setvar

To control whether the internal wired print server will send an ARP response after receiving an IP address via DHCP:

```
! U1 setvar "internal_wired.ip.dhcp.arp_verify" "value"
```

Values

"off" ARP response will not be sent.

"on" ARP response will be sent.

Default

"off" for mobile Link-OS printers

"on" for desktop and industrial printers

Getvar

To return the current setting value:

```
! U1 getvar "internal_wired.ip.dhcp.arp_verify"
```

internal_wired.ip.dhcp.cache_ip

This command enables or disables the IP cache on the internal wired print server.

Setvar

To set the status of the IP cache:

```
! U1 setvar "internal_wired.ip.dhcp.cache_ip" "value"
```

Values

- "on" means enabled
- "off" means disabled

Default

"off"

Getvar

To retrieve the status of the IP cache on the internal wired print server:

```
! U1 getvar "internal_wired.ip.dhcp.cache_ip"
```

Example

This setvar example shows the value set to "off".

```
! U1 setvar "internal_wired.ip.dhcp.cache_ip" "off"
```

When the setvar value is set to "off", the getvar result is "off".

internal_wired.ip.dhcp.cid_all

This printer setting defines the entire client identifier (DHCP option 61) if DHCP is enabled on the internal print server and "internal_wired.ip.dhcp.cid_type" is set to "0", or "2". The MAC address is used if the type is set to "1".

Setvar

To instruct the printer to change the client identifier prefix and suffix of the internal wired print server:

```
! U1 setvar "internal_wired.ip.dhcp.cid_all" "value"
```

The prefix gets cleared and the suffix contains the entire client identifier.

Values

A maximum length of 60 characters if the CID type is ASCII, or 120 characters if the CID type is hexadecimal.

Default

" "

Getvar

To instruct the printer to respond with the client identifier prefix and suffix of the internal wired print server:

```
! U1 getvar "internal_wired.ip.dhcp.cid_all"
```

Example

This setvar example shows the value set to "printer".

```
! U1 setvar "internal_wired.ip.dhcp.cid_all" "printer"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "printer".

internal_wired.ip.dhcp.cid_enable

This command determines if DHCP (option 61) is turned on or off of the internal wired print server.

Setvar

To instruct the printer to set the status of the client identifier of the internal wired print server:

```
! U1 setvar "internal_wired.ip.dhcp.cid_enable" "value"
```

Values

- "off" client identifier is turned off
- "on" client identifier is turned on

Default

"off"

Getvar

To instruct the printer to respond with the status of the client identifier of the internal wired print server:

```
! U1 getvar "internal_wired.ip.dhcp.cid_enable"
```

Example

This setvar example shows the value set to "off".

```
! U1 setvar "internal_wired.ip.dhcp.cid_enable" "off"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "off".

internal_wired.ip.dhcp.cid_prefix

This printer setting defines the prefix to be prepended to the DHCP client identifier (option 61) when DHCP is enabled on the internal wired print server and "internal_wired.ip.dhcp.cid_type" is set to "0" or "2".

Setvar

To instruct the printer to change the CID prefix of the internal wired print server:

```
! U1 setvar "internal_wired.ip.dhcp.cid_prefix" "value"
```

Values

Any text string up to 10 characters if the CID type is ASCII, or 20 characters if the CID type is hexadecimal.

Default

" "

Getvar

To instruct the printer to respond with the client identifier prefix of the internal wired print server:

```
! U1 getvar "internal_wired.ip.dhcp.cid_prefix"
```

Example

This setvar example shows the value set to "PRT001".

```
! U1 setvar "internal_wired.ip.dhcp.cid_prefix" "PRT001"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "PRT001".

internal_wired.ip.dhcp.cid_suffix

This printer setting defines the unique suffix to be used as the client identifier (DHCP option 61) if DHCP is enabled on the internal wired 10/100 print server and "internal_wired.ip.dhcp.cid_type" is set to "0" or "2".

Setvar

To instruct the printer to change the client identifier suffix value of the internal wired 10/100 print server:

```
! U1 setvar "internal_wired.ip.dhcp.cid_suffix" "value"
```

Values

The maximum length of a value allowed is 60 ASCII characters when the CID type is ASCII, or 120 hexadecimal values when the CID type is hexadecimal.

Default

" "

Getvar

To instruct the printer to respond with the client identifier suffix of the internal wired 10/100 print server:

```
! U1 getvar "internal_wired.ip.dhcp.cid_suffix"
```

Example

This setvar example shows the value set to "printer".

```
! U1 setvar "internal_wired.ip.dhcp.cid_suffix" "printer"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "printer".

internal_wired.ip.dhcp.cid_type

This printer setting defines the type of client identifier (DHCP option 61) that will be sent if DHCP is enabled on the internal wired print server. A value of "1" means the type of "Ethernet" and the printer's MAC address will be used. A value of "0" or "2" means the client identifier sent will be "internal_wired.ip.dhcp.cid_prefix" concatenated with "internal_wired.ip.dhcp.cid_suffix".

Setvar

To instruct the printer to enable "synthetic" Client Identifier for the internal wired print server:

```
! U1 setvar "internal_wired.ip.dhcp.cid_type" "value"
```

Values

- "0" ASCII string
- "1" wired print server's MAC address
- "2" HEX value

Getvar

To instruct the printer to respond with the client identifier type for the internal wired print server:

```
! U1 getvar "internal_wired.ip.dhcp.cid_type"
```

Example

This setvar example shows the value set to "1".

```
! U1 setvar "internal_wired.ip.dhcp.cid_type" "1"
```

When the setvar value is set to "1", the getvar result is "1".

internal_wired.ip.dhcp.lease.last_attempt

This command retrieves the last time a DHCP request was sent from the internal wired print server.

Getvar

To retrieve the last time a DHCP request was sent from the internal wired print server:

```
! U1 getvar "internal_wired.ip.dhcp.lease.last_attempt"
```

Example

In this example, the `getvar` retrieves the last time a DHCP request was sent to the internal wired print server.

```
! U1 getvar "internal_wired.ip.dhcp.lease.last_attempt"
```

internal_wired.ip.dhcp.lease.length

This command retrieves the original length (in seconds) of the DHCP lease on the internal wired print server.

Getvar

To retrieve the original length (in seconds) of the DHCP lease on the internal wired print server:

```
! U1 getvar "internal_wired.ip.dhcp.lease.length"
```

Example

In this example, the `getvar` returns the original length of the DHCP lease on the internal wired print server.

```
! U1 getvar "internal_wired.ip.dhcp.lease.length"  
"691200"
```

internal_wired.ip.dhcp.lease.server

This command retrieves the address of the server that provided the DHCP lease on the internal wired print server.

Getvar

To retrieve the address of the server that provided the DHCP lease on the internal wired print server:

```
! U1 getvar "internal_wired.ip.dhcp.lease.server"
```

Example

In this example, the `getvar` retrieves the address of the server that provided the DHCP lease on the internal wired print server.

```
! U1 getvar "internal_wired.ip.dhcp.lease.server" "10.3.1.98"
```

internal_wired.ip.dhcp.lease.time_left

This command retrieves the time (in seconds) left in the current DHCP lease on the internal wired print server.

Getvar

To retrieve the time (in seconds) left in the current DHCP lease on the internal wired print server:

```
! U1 getvar "internal_wired.ip.dhcp.lease.time_left"
```

Example

In this example, the `getvar` retrieves the time left in the current DHCP lease on the wired internal print server.

```
! U1 getvar "internal_wired.ip.dhcp.lease.time_left" "10.3.1.98"
```

internal_wired.ip.dhcp.option12

This command specifies if the DHCP option 12 (host name) is on or off in the discovery packet that is sent from the internal wired print server.

Setvar

To instruct the printer to set the DHCP option 12 (host name) in the discovery packet of the internal wired print server:

```
! U1 setvar "internal_wired.ip.dhcp.option12" "value"
```

Values

- "on" turns on option 12
- "off" turns off option 12

Default

"on"

Getvar

To retrieve the status of the DHCP option 12 (host name) in the discovery packet of the internal wired print server:

```
! U1 getvar "internal_wired.ip.dhcp.option12"
```

Example

This setvar example shows the value set to "on".

```
! U1 setvar "internal_wired.ip.dhcp.option12" "on"
```

When the setvar value is set to "on", the getvar result is "on".

internal_wired.ip.dhcp.option12_format

This command specifies the value which will be used for option 12 (host name) to be used in the DHCP discovery packet of the internal wired print server.

Setvar

To instruct the printer to set value which will be used for option 12 (host name) to be used in the DHCP discovery packet of the internal wired print server:

```
! U1 setvar "internal_wired.ip.dhcp.option12_format" "value"
```

Values

0 to 109 alphanumeric characters

Default

" "

Getvar

To retrieve the value which will be used for option 12 (host name) to be used in the DHCP discovery packet of the internal wired print server:

```
! U1 getvar "internal_wired.ip.dhcp.option12_format"
```

Example

This setvar example shows configuring the internal_wired.ip.dhcp.option12_format to the value contained in the device.friendly_name parameter.

It is necessary to surround the SGD entry to be used as source for the data with the < and > characters.

```
! U1 setvar "internal_wired.ip.dhcp.option12_format"
"<device.friendly_name>"
```

To further explain, if the above command was issued and the value currently stored in the device.friendly_name parameter was "ShipPrinter", then the response to following command would be "ShipPrinter":

```
! U1 getvar "internal_wired.ip.dhcp.option12_value"
```

internal_wired.ip.dhcp.option12_value

This command retrieves the actual value which will be used in the discovery packet of the internal wired print server.

Getvar

To retrieve the actual value which will be used in the discovery packet of the internal wired print server:

```
! U1 getvar "internal_wired.ip.dhcp.option12_value"
```

Example

This setvar example shows configuring the internal_wired.ip.dhcp.option12_format to the value contained in the device.friendly_name.

It is necessary to surround the SGD entry to be used as source for the data with the < and > characters.

```
! U1 setvar "internal_wired.ip.dhcp.option12_format"  
"<device.friendly_name>"
```

To further explain, if the above command was issued and the value currently stored in the device.friendly_name parameter was " , then the response to following command would be "ShipPrinter":

```
! U1 getvar "internal_wired.ip.dhcp.option12_value"
```


internal_wired.ip.dhcp.requests_per_session

This command retrieves the maximum amount of DHCP discover requests for a single DHCP session on the internal wired print server.

Setvar

To instruct the printer to set the maximum amount of DHCP discover requests for a single DHCP session on the internal wired print server:

```
! U1 setvar "internal_wired.ip.dhcp.requests_per_session" "value"
```

Values

1-10

Default

"2"

Getvar

To retrieve the currently set maximum amount of DHCP discover requests for a single DHCP session on the internal wired print server:

```
! U1 getvar "internal_wired.ip.dhcp.requests_per_session"
```

Example

This setvar example shows the value set to "2".

```
! U1 setvar "internal_wired.ip.dhcp.requests_per_session" "2"
```

When the setvar value is set to "2", the getvar result is "2".

internal_wired.ip.dns.domain

This command sets the value for DNS domains in a wired network. Up to five domains are allowed to be set, separated by spaces.

Setvar

To set values to be used by the device as DNS domains when `internal_wired.ipv6.address_type` is "static" (IPv6) or `internal_wired.ip.protocol` is "permanent" (IPv4):

```
! U1 setvar "internal_wired.ip.dns.domain" "value"
```

Getvar

To retrieve a space-delimited list of domains currently in use by the device, up to five domains. The list will contain a mixture of domains received from DHCPv4, DHCPv6, and user-set values depending upon address acquisition settings, using the following rules:

- IPv4 sources are the priority.
- If IPv4 the source provides five domains, there will only be IPv4-sourced domains.
- If there are slots to fit more domains, they will be filled with IPv6 sources.

```
! U1 getvar "internal_wired.ip.dns.domain"
```



NOTE: Retrieved values are always the values currently in use, which may not match values that were just set, depending on if you are using a static or auto address type.

Example

The following example sets `internal_wired.ip.dns.domain` to the domains `zebra.com` and `zebra-lab.lan.com`.

These values will be retrieved immediately if `internal_wired.ipv6.address_type` is "static" (IPv6) or `internal_wired.ip.protocol` is "permanent" (IPv4).

```
! U1 setvar "internal_wired.ip.dns.domain" "zebra.com zebra-lab.lan.com"
```

```
! U1 getvar "internal_wired.ip.dns.domain"
```

Result

```
"zebra.com zebra-lab.lan.com"
```

internal_wired.ip.dns.domain_user_value

This command displays the value that the user has set to `internal_wired.ip.dns.domain`. Whether this value is used will depend on the rules for `internal_wired.ip.dns.domain`.

Getvar

To retrieve the domain name(s) from an internal wired print server:

```
! U1 getvar "internal_wired.ip.dns.domain_user_value"
```

internal_wired.ip.dns.servers

This command sets a space-delimited list of the domain name servers from an internal wired print server. Up to three addresses may be set. Both IPv4 and IPv6 are supported.

Setvar

To set the list of DNS internal wired print servers, specify a list of space-delimited IP addresses, separated by spaces, to be used as DNS servers when `internal_wired.ipv6.address_type` is "static" (IPv6) or `internal_wired.ip.protocol` is "permanent" (IPv4).

```
! U1 setvar "internal_wired.ip.dns.servers" "value"
```

Getvar

To retrieve a space-delimited list of IP address(es) of DNS server(s), up to three, that are currently in use by the device. The values to be used are a combination of addresses received from DHCPv4, DHCPv6, and user-set values using the following rules:

- At least one spot will be allocated to any enabled IP version.
- IPv4 addresses will take at least two slots if at least two IPv4 addresses are provided.
- User-set values will be included if static/permanent addresses are used.



NOTE: Retrieved values are always the values currently in use, which may not match values that were just set, depending on if you are using a static or auto address type.

```
! U1 getvar "internal_wired.ip.dns.servers"
```

Example

The following example sets `internal_wired.dns.servers` to `2001::123:4567:89ab:0:cdef` .

This value will be retrieved immediately if `internal_wired.ipv6.address_type` is "static" (IPv6) or `internal_wired.ip.protocol` is "permanent" (IPv4).

```
! U1 setvar "internal_wired.ip.dns.servers" "2001::123:4567:89ab:0:cdef"
```

```
! U1 getvar "internal_wired.ip.dns.servers"
```

Result

```
"2001::123:4567:89ab:0:cdef"
```

internal_wired.ip.dns.servers_user_value

This command displays the value that the user has set to `internal_wired.ip.dns.servers`. Whether this value is used will depend on the rules for `internal_wired.ip.dns.servers`.

Getvar

To retrieve the domain name server(s):

```
! U1 getvar "internal_wired.ip.dns.servers_user_value"
```

internal_wired.ip.gateway

This command instructs the printer to change the internal wired print servers gateway address.



IMPORTANT: This setting refers to the gateway address. A set value is ignored if the IP protocol is not set to permanent.

Setvar

To instruct the printer to change the internal wired printer servers gateway address:

```
! U1 setvar "internal_wired.ip.gateway" "value"
```

Values

Any valid gateway address

Default

"0.0.0.0"

Getvar

To instruct the printer to respond with the internal wired printer servers gateway address:

```
! U1 getvar "internal_wired.ip.gateway"
```

Example

This setvar example shows the value set to "10.3.5.1".

```
! U1 setvar "internal_wired.ip.gateway" "10.3.5.1"
```

When the setvar value is set to "10.3.5.1", the getvar result is "10.3.5.1".

internal_wired.ip.netmask

This setting refers to the internal wired print server's subnet mask address. This value is ignored if the IP protocol is not set to permanent.

Setvar

To instruct the printer to change the internal wired print servers subnet mask:

```
! U1 setvar "internal_wired.ip.netmask" "value"
```

Values

Any valid subnet mask.

Default

"255.255.255.0"

Getvar

To instruct the printer to respond with internal wired print servers subnet mask:

```
! U1 getvar "internal_wired.ip.netmask"
```

Example

This setvar example shows the value set to "255.255.255.0".

```
! U1 setvar "internal_wired.ip.netmask" "255.255.255.0"
```

When the setvar value is set to "255.255.255.0", the getvar result is "255.255.255.0".

internal_wired.ip.port

This printer setting refers to the internal wired print servers port number that the TCP print service is listening on. Normal TCP communications from the host should be directed to this port.

Setvar

To instruct the printer to set the internal wired print servers TCP/UDP port number:

```
! U1 setvar "internal_wired.ip.port" "value"
```

Values

1 - 65535 (excluding any ports currently used by other services, such as 21, 23, 80, and 515).

Default

"9100"

Getvar

To instruct the printer to respond with the internal wired printer servers TCP/UDP port number:

```
! U1 getvar "internal_wired.ip.port"
```

Example

This setvar example shows the value set to "9100".

```
! U1 setvar "internal_wired.ip.port" "9100"
```

When the setvar value is set to "9100", the getvar result is "9100".

internal_wired.ip.port_alterate

This command sets the port number of the alternate port.



NOTE: Print servers supporting this command will monitor both the primary port and the alternate port for connections at the same time.

Setvar

To set the alternate port for the print server:

```
! U1 setvar "internal_wired.ip.port_alterate" "value"
```

Values

Any valid TCP port address.

Default

"9100"

Getvar

To return the current alternate port setting:

```
! U1 setvar "internal_wired.ip.port_alterate"
```

internal_wired.ip.port_json_config

This command determines the TCP port number to listen on for JSON configuration packets.

Setvar

To set the TCP port number to listen on for JSON configuration packets:

```
! U1 setvar "internal_wired.ip.port_json_config" "value"
```

Values

- "0" disables the port
- 1-65535 Specifies the port number to listen on.

Ports that are already in use or the standard network ports are invalid values.#

Default

"9200"

Getvar

To retrieve the port number:

```
! U1 getvar "internal_wired.ip.port_json_config"
```

Example

This example sets the port value to listen on as 1234.

```
! U1 setvar "internal_wired.ip.port_json_config" "1234"
```

internal_wired.ip.protocol

This command configures the IP addressing method used by the internal wired print server.

Setvar

To instruct the printer to configure the IP addressing method used by the internal wired print server:

```
! U1 setvar "internal_wired.ip.protocol" "value"
```

Values

- "bootp" uses the standard bootp addressing method to obtain an IP address and configuration
- "dhcp" uses the standard dhcp addressing method to obtain an IP address and configuration for a server specified period of time
- "rarp" uses the standard rarp addressing method to obtain an IP address
- "glean" uses the IP address from a PING packet that is sent to its hardware address (unicast address)
- "permanent" uses static values assigned through other commands
- "all" = tries all of the dynamic addressing methods, not permanent, to obtain an IP address

Default

"all"

Getvar

To return the IP addressing method used by the internal wired print server:

```
! U1 getvar "internal_wired.ip.protocol"
```

Example

In this example, the setvar result is the current programming language that the printer is using.

```
! U1 setvar "internal_wired.ip.protocol" "bootp"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "bootp".

internal_wired.ip.timeout.enable

This network setting refers to enabling the connection timeout on the internal wired print server. For this to take effect, the print server must be reset.

Setvar

To instruct the printer to enable or disable the timeout checking on the internal wired print server:

```
! U1 setvar "internal_wired.ip.timeout.enable" "value"
```

Values

- "off" turns off the connection checking
- "on" turns on the connection checking

Default

"on"

Getvar

To instruct the printer to return whether the timeout checking is enabled on the internal wired print server:

```
! U1 getvar "internal_wired.ip.timeout.enable"
```

Example

This setvar example shows the value set to "on".

```
! U1 setvar "internal_wired.ip.timeout.enable" "on"
```

When the setvar value is set to "on", the getvar result is "on".

internal_wired.ip.timeout.value

This network setting refers to the number of seconds before the connection times out for the internal wired print server. For this to take effect, the print server must be reset.

Setvar

To instruct the printer to set the time of the internal wired print server, in seconds, before the connection times out:

```
! U1 setvar "internal_wired.ip.timeout.value" "value"
```

Values

"1" through "3600"

Default

"300"

Getvar

To instruct the printer to respond with the time of the internal wired print server, in seconds, before the connection times out:

```
! U1 getvar "internal_wired.ip.timeout.value"
```

Example

This setvar example shows the value set to "300".

```
! U1 setvar "internal_wired.ip.timeout.value" "300"
```

When the setvar value is set to "300", the getvar result is "300".

internal_wired.ip.wins.addr

Sets or returns the current WINS server address. If WinsAddressing is DHCP, then this will automatically be filled by the DHCP server.

Setvar

To set the current WINS server address:

```
! U1 setvar "internal_wired.ip.wins.addr" "value"
```

Values

A valid WINS IP address.

Default

"0.0.0.0"

Getvar

To return the WINS server address:

```
! U1 getvar "internal_wired.ip.wins.addr"
```

Result

The current WINS server address

internal_wired.ip.wins.permanent_source

Specifies if the WINS address will be permanent or set via DHCP.

Setvar

To specify if the WINS address will be permanent or set via DHCP:

```
! U1 setvar "internal_wired.ip.wins.permanent_source" "value"
```

Values

- "off" use DHCP-assigned WINS address
- "on" use currently stored WINS address

The WINS address can be set using the `interface.network.active.wins_address` command.

Default

"off"

Getvar

To return the current setting value:

```
! U1 getvar "internal_wired.ip.wins.permanent_source"
```

internal_wired.ipv6.addresses

This command returns a list of up to ten IPv6 addresses in use by the printer with a wired connection when `internal_wired.ipv6.address_type` is set to `auto`. The command returns " : : " when no address has been set.

Getvar

To retrieve the IPv6 addresses:

```
! U1 getvar "internal_wired.ipv6.addresses"
```


internal_wired.ipv6.address_type

This command controls how the interface gets IPv6 address(es). When set to "auto", the Router Advertisement packets determine the usage of SLAAC and/or DHCP.

Setvar

To set the active network address type:

```
! U1 setvar "internal_wired.ipv6.address_type" "value"
```

Values

"static" or "auto"

Default

"auto"

Getvar

To retrieve the address type:

```
! U1 getvar "internal_wired.ipv6.address_type"
```

Example

This example changes the address type to "static".

```
! U1 setvar "internal_wired.ipv6.address_type" "static"
```

```
! U1 getvar "internal_wired.ipv6.address_type"
```

Result

```
"static"
```

internal_wired.ipv6.dhcp.lease.last_attempt

This command retrieves the Unix timestamp of the last attempt to obtain a DHCPv6 lease for wired communication. The value is a whole number up to 4,294,967,295 in seconds..

Getvar

To retrieve the time of the last attempt:

```
! U1 getvar "internal_wired.ipv6.dhcp.lease.last_attempt"
```

internal_wired.ipv6.dhcp.lease.length

This command retrieves the value of the lease duration for an IP address provided by the DHCPv6 in seconds with a wired connection. The value is a whole number up to 4,294,967,295 in seconds.

Getvar

To retrieve the lease length:

```
! U1 getvar "internal_wired.ipv6.dhcp.lease.length"
```

internal_wired.ipv6.dhcp.lease.time_left

This command retrieves the value of the remaining lease duration for an IP address provided by the DHCPv6 in seconds with a wired connection. The value is a whole number up to 4,294,967,295 in seconds.

Getvar

To retrieve the lease time left:

```
! U1 getvar "internal_wired.ipv6.dhcp.lease.time_left"
```

internal_wired.ipv6.dhcp.option39_enable

This command enables option 39 (to configure the Fully Qualified Domain Name or FQDN) in DHCPv6 communication with a wired connection.

Setvar

To enable or disable option 39:

```
! U1 setvar "internal_wired.ipv6.dhcp.option39_enable" "value"
```

Values

"on" or "off"

Default

"on"

Getvar

To retrieve the option 39 status:

```
! U1 getvar "internal_wired.ipv6.dhcp.option39_enable"
```

Example

```
! U1 setvar "internal_wired.ipv6.dhcp.option39_enable" "off"
```

```
! U1 getvar "internal_wired.ipv6.dhcp.option39_enable"
```

Result

```
"off"
```

internal_wired.ipv6.dhcp.option39_format

This command sets the value of the format field for option 39 (to configure the Fully Qualified Domain Name or FQDN) in DHCPv6 with a wired connection. The value is a string up to 127 characters, and the default is the value set by `device.friendly_name`.

Setvar

To set the format string:

```
! U1 setvar "internal_wired.ipv6.dhcp.option39_format" "value"
```

where "value" is a string of up to 127 characters.

If the value is a source SGD command, it must be bracketed with "<" and ">", such as "<device.friendly_name>".

Getvar

To retrieve the string:

```
! U1 getvar "internal_wired.ipv6.dhcp.option39_format"
```

Example

This command sets the value to "printer2".

```
! U1 setvar "internal_wired.ipv6.dhcp.option39_format" "printer2"
```

```
! U1 getvar "internal_wired.ipv6.dhcp.option39_format"
```

Result

```
"printer2"
```

internal_wired.ipv6.dhcp.option39_fqdn

This command retrieves the fully qualified domain name (FQDN) of the printer as given by the DHCPv6 server for option 39 with a wired connection. The value is a string up to 127 characters.

Getvar

To retrieve the FQDN:

```
! U1 getvar "internal_wired.ipv6.dhcp.option39_fqdn"
```

internal_wired.ipv6.dhcp.option39_value

This command retrieves the value to be used for option 39 in DHCPv6 after processing the `internal_wired.ipv6.dhcp.option39_format` command with a wired connection. The value is a string of up to 127 characters.

Getvar

To retrieve the option 39 value:

```
! U1 getvar "internal_wired.ipv6.dhcp.option39_value"
```


internal_wired.ipv6.gateways

This command retrieves the IPv6 gateway(s) for internal wired devices in use by the printer (maximum list of 10).

Getvar

To retrieve the gateway(s):

```
! U1 getvar "internal_wired.ipv6.gateways"
```

internal_wired.ipv6.static.addresses

This command specifies the IPv6 address(es) to be used when `internal_wired.ipv6.address_type` is set to `"static"`. Up to three addresses may be set, separated by commas. The command returns `:::` when no static address has been set.

Setvar

To set the IPv6 address(es):

```
! U1 setvar "internal_wired.ipv6.static.addresses" "value"
```

where "value" is a string of up to 152 characters.

Getvar

To retrieve the list of IPv6 address(es):

```
! U1 getvar "internal_wired.ipv6.static.addresses"
```

Example

To set three addresses:

```
! U1 setvar "internal_wired.ipv6.static.addresses"
"fc04:1795::fe94:1704/32,fd04:1795::207:4dff:fe94:1704/64,fd04:1796::e0b/64"
```

```
! U1 getvar "internal_wired.ipv6.static.addresses"
```

Result

```
"fc04:1795::fe94:1704/32,fd04:1795::207:4dff:fe94:1704/64,
fd04:1796::e0b/64"
```

internal_wired.ipv6.static.gateway

This command sets the IPv6 gateway to be used when `internal_wired.ipv6.address_type` is set to "static". Only one gateway is supported. The command returns "::" when no static address has been set.

Setvar

To set the gateway:

```
! U1 setvar "internal_wired.ipv6.static.gateway" "value"
```

where "value" is a string of up to 50 characters. To clear a previously set gateway, use "" or "::".

Getvar

To retrieve the active network address type:

```
! U1 getvar "internal_wired.ipv6.static.gateway"
```

Example

To set the gateway to "fe80::202:b3ff:febf:9d18":

```
! U1 setvar "internal_wired.ipv6.static.gateway" "fe80::202:b3ff:febf:9d18"
```

```
! U1 getvar "internal_wired.ipv6.static.gateway"
```

Result

```
"fe80::202:b3ff:febf:9d18"
```

internal_wired.mac_addr

This command retrieves the MAC address of the internal wired print server.

Getvar

To instruct the printer to respond with the MAC address of the internal wired print server:

```
! U1 getvar "internal_wired.mac_addr"
```

Example

In this example, the `getvar` result is the MAC address of the internal wired print server.

```
! U1 getvar "internal_wired.mac_addr"
```

internal_wired.mac_raw

This command identifies the RAW MAC address of the internal wired print server. The raw mac address is the mac address without the colons (" : ").

Getvar

To retrieve the RAW MAC address of the internal wired print server:

```
! U1 getvar "internal_wired.mac_raw"
```

Example

In this example, the `getvar` retrieves the RAW MAC address of the internal wired print server.

```
! U1 getvar "internal_wired.mac_raw"
```

ip.active_network

This command displays if the printer is actively connected to wireless, external wired, or internal wired.

Getvar

To return the current active network the printer is connected to:

```
! U1 getvar "ip.active_network"
```

The Printer Response table below details on the potential return values.

Example

In this example, the `getvar` will return the current active network the printer is connected to.

```
! U1 getvar "ip.active_network"
```

Table 27 Printer Response

Return Values	Details
"internal wired"	This is the return value when an internal wired device is detected.
"wireless"	This is the return value when a wireless device is detected.
"external wired"	This is the return value when an external wired device is detected.
"unknown"	<p>This is the return value:</p> <ul style="list-style-type: none">• if the printer has not established a network connection on any of the devices• if you don't have any of the network devices plugged in• if the printer is still trying to establish a connection (i.e. on wireless it is going through the association process).

ip.addr

This command allows you to get or set the printer's IP address.



IMPORTANT: For a set IP address to take affect, the IP protocol must be set to permanent and the print server must be reset.

Setvar

To instruct the printer to change its current IP address upon powering the printer on:

```
! U1 setvar "ip.addr" "value"
```

Values

Any valid IP address

Default

"0.0.0.0"

Getvar

To instruct the printer to respond with its current IP address:

```
! U1 getvar "ip.addr"
```



NOTE: The `setvar` value of this command can be affected by the `ip.dhcp.enable` command.

Example

This `setvar` example shows the value set to "10.14.4.235".

```
! U1 setvar "ip.addr" "10.14.4.235"
```

What the `setvar` value is set to is the `getvar` result. In this example, the `getvar` result is "10.14.4.235".

ip.address_mode

This command sets the IP protocol value for the printer.

Setvar

To set the IP protocol:

```
! U1 setvar "ip.address_mode" "value"
```

Values

"ipv4", "ipv6", "all"

Default

"ipv4"

Getvar

To retrieve the IP protocol value:

```
! U1 getvar "ip.address_mode"
```

Example

```
! U1 setvar "ip.address_mode" "ipv6"
```

```
! U1 getvar "ip.address_mode"
```

Result

```
"ipv6"
```


ip.arp_interval

This printer setting allows you to specify the ARP (Address Resolution Protocol) interval or the ARP cache time out.

Setvar

To instruct the printer to change the ARP interval or the ARP cache time out:

```
! U1 setvar "ip.arp_interval" "value"
```

Values

"0" through "30"

Default

"0"

Getvar

To instruct the printer to respond with the ARP interval or the ARP cache time out value in seconds:

```
! U1 getvar "ip.arp_interval"
```

Example

This setvar example shows the value set to "0".

```
! U1 setvar "ip.arp_interval" "0"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "0".

ip.bootp.enable

This printer setting turns BOOTP on or off. BOOTP is a method for acquiring an IP address, netmask, and gateway automatically on printer power-up. It requires a BOOTP server on the local network.



NOTE: If you are using static IP addressing, the IP protocol must be set to permanent.

Setvar

To instruct the printer to turn BOOTP on or off:

```
! U1 setvar "ip.bootp.enable" "value"
```

Values

- "off" printer does not use BOOTP to get the IP address
- "on" printer uses BOOTP to get the IP address

Default

"on"

Getvar

To instructs the printer to respond with the current BOOTP setting:

```
! U1 getvar "ip.bootp.enable"
```

Example

This `setvar` example shows the value set to "on".

```
! U1 setvar "ip.bootp.enable" "on"
```

When the `setvar` value is set to "on", the `getvar` result is "on".

ip.dhcp.arp_verify

This command configures the print server to send out an ARP request during the DHCP address negotiation. This is used to verify if the IP address received from the DHCP server is in use.

- If an ARP reply is received, a DHCP DECLINE message is sent to the DHCP server telling it that the received address cannot be used and then the normal DHCP procedure is restarted.
- If no ARP reply is received the DHCP address is used.

Setvar

To instruct the printer to turn on ARP verify:

```
! U1 setvar "ip.dhcp.arp_verify" "value"
```

Values

- "on"
- "off"

Default

"off"

Getvar

To return whether the printer will send the ARP request during the DHCP negotiation:

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

Example

This setvar example shows the value set to "on".

```
! U1 setvar "ip.dhcp.arp_verify" "on"
```

ip.dhcp.auto_provision_enable

This command prepares the printer to receive Weblink settings from the DHCP server. These settings are used to allow the printer to connect to on-premise or web-based servers.

If DHCP receives option 43 in the format of "10642 <auto provision code> < auto provision settings>" and the Client is not already configured, the client will use the configuration to connect to the server.

Using this feature requires configuring your DHCP server to send option 43 information during address assignment. The feature allows the printer to obtain the settings used to control Cloud Connect weblink connections or Mirror events as part of receiving a DHCP assigned IP address. This requires that DHCP option 60 is not empty and that `ip.dhcp.auto_provision_enable` is set to "on".

The package of Cloud Connect/weblink information sent from the DHCP server in the Option 43 response can include the:

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

The package of Mirror information sent from the DHCP server in the Option 43 packet can include the:

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

Setvar

To enable or disable the DHCP auto provision feature of the printer:

```
! U1 setvar "ip.dhcp.auto_provision_enable" "value"
```

Values

- "on" enabled
- "off" disabled

Default

"off"

Getvar

To retrieve the current value of on or off for the DHCP auto provision feature:

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

ip.dhcp.cache_ip

This command enables or disables the IP caching.

Setvar

To set the status of the IP cache:

```
! U1 setvar "ip.dhcp.cache_ip" "value"
```

Values

- "on" enabled
- "off" disabled

Default

"off"

Getvar

To retrieve the status of the IP cache:

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

Example

This setvar example shows the value set to "off".

```
! U1 setvar "ip.dhcp.cache_ip" "off"
```

When the setvar value is set to "off", the getvar result is "off".

ip.dhcp.cid_all

This printer setting defines the entire client identifier (DHCP option 61) if the DHCP is enabled and "ip.dhcp.cid_type" is set to "0", or "2". The MAC address is used if the type is set to "1".

Setvar

To instruct the printer to change the CID prefix and suffix:

```
! U1 setvar "ip.dhcp.cid_all" "value"
```

Values

A maximum length of 60 characters if the CID type is ASCII, or 120 characters if the CID type is hexadecimal.

Default

" "

Getvar

To instruct the printer to respond with the client identifier prefix and suffix:

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

Example

This setvar example shows the value set to "printer".

```
! U1 setvar "ip.dhcp.cid_all" "printer"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "printer".

ip.dhcp.cid_enable

This command determines if DHCP (option 61) is turned on or off.

Setvar

To set the status of the client identifier:

```
! U1 setvar "ip.dhcp.cid_enable" "value"
```

Values

- "off" client identifier is turned off
- "on" client identifier is turned on

Default

"off"

Getvar

To return the current setting value:

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

Example

This setvar example shows the value set to "off".

```
! U1 setvar "ip.dhcp.cid_enable" "off"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "off".

ip.dhcp.cid_prefix

This printer setting defines the prefix to be prepended to the DHCP client identifier (option 61) when DHCP is enabled and "ip.dhcp.cid_type" is set to "0" or "2".

Setvar

To instruct the printer to change the CID prefix:

```
! U1 setvar "ip.dhcp.cid_prefix" "value"
```

Values

Any text string up to 10 characters if the CID type is ASCII, or 20 characters if the CID type is hexadecimal.

Default

" "

Getvar

To instruct the printer to respond with the client identifier prefix:

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

Example

This setvar example sets the value to "ZEB".

```
! U1 setvar "ip.dhcp.cid_prefix" "ZEB"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "ZEB".

The next time the printer sends a DHCP request, if ip.dhcp.cid_type is "0", the client identifier sent will be prefixed with the string "ZEB". For example, if ip.dhcp.cid_value is "PRT001", the actual client identifier sent will be "ZEBPRT001".

.

ip.dhcp.cid_suffix

This printer setting defines the unique suffix to be used as the client identifier (DHCP option 61) if DHCP is enabled and "ip.dhcp.cid_type" is set to "0" or "2".

Setvar

To instruct the printer to change the CID value:

```
! U1 setvar "ip.dhcp.cid_suffix" "value"
```

Values

The maximum length of a value allowed is 60 ASCII characters when the CID type is ASCII, or 120 hexadecimal values when the CID type is hexadecimal.

Default

" "

Getvar

To instruct the printer to respond with the client identifier suffix:

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

Example

This setvar example shows the value set to "printer".

```
! U1 setvar "ip.dhcp.cid_suffix" "printer"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "printer".

ip.dhcp.cid_type

This printer setting defines the type of client identifier (DHCP option 61) that will be sent if DHCP is enabled. A value of "1" means the type of "Ethernet" and the printer's MAC address will be used. A value of "0" or "2" means the client identifier sent will be "ip.dhcp.cid_prefix" concatenated with "ip.dhcp.cid_suffix".

Setvar

To instruct the printer to set the Client Identifier type:

```
! U1 setvar "ip.dhcp.cid_type" "value"
```

Values

- "0" ASCII string
- "1" MAC address of the wireless radio card
- "2" HEX value

Default

"1"

Getvar

To instruct the printer to respond with the client identifier type:

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

Example

This setvar example shows the value set to "1".

```
! U1 setvar "ip.dhcp.cid_type" "1"
```

When the setvar value is set to "1", the getvar result is "1".

ip.dhcp.cid_value

This parameter defines the unique value to be used as the client identifier (option 61) if DHCP is enabled and "ip.dhcp.cid_type" is "1".



NOTE: This parameter is only applicable if ip.dhcp.cid_enable is set to "on".

Setvar

To instruct the printer to change the CID value:

```
! U1 setvar "ip.dhcp.cid_value" "value"
```

Values

Any text string up to 20 characters in length.

Default

If ip.dhcp.cid_type is set to:

- "0" the default is the printer's friendly name.
- "1" the default is the MAC address of the printer.

Getvar

To instruct the printer to respond with the client identifier value:

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

Example

This setvar example changes the cid value to "PRT001".

```
! U1 setvar "ip.dhcp.cid_value" "PRT001"
```

The next time the printer sends a DHCP request, if ip.dhcp.cid_type is "0", the client identifier sent will be ip.dhcp.cid_prefix plus "PRT001". For example, if ip.dhcp.cid_prefix is "ZEB", the actual client identifier sent will be "ZEBPRT001".

ip.dhcp.dhcpv6_duid

This command retrieves the DHCPv6 DUID that the printer uses in DHCPv6 communication. It is listed in groups of quad hex digits separated by colons. The value is used for both wired and wireless DHCPv6.

Getvar

To retrieve the DHCPv6 DUID value:

```
! U1 getvar "ip.dhcp.dhcpv6_duid"
```

ip.dhcp.enable

This printer setting turns DHCP on or off. DHCP is a method for acquiring an IP address, netmask, and gateway automatically on printer power-up. It requires a DHCP server on the local network.



NOTE: If you are using static IP addressing, the IP protocol must be set to permanent.

Setvar

To instruct the printer to turn DHCP on or off:

```
! U1 setvar "ip.dhcp.enable" "value"
```

Values

- "off" printer does not use DHCP to get the IP address
- "on" printer uses DHCP to get the IP address

Default

"on"

Getvar

To instruct the printer to respond with the DHCP status:

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

Example

This `setvar` example shows the value set to "on".

```
! U1 setvar "ip.dhcp.enable" "on"
```

When the `setvar` value is set to "on", the `getvar` result is "on".

ip.dhcp.lease.last_attempt

This command retrieves the time from the DHCP server of when the last DHCP request was sent.

Getvar

To retrieve the last time a DHCP request was sent:

```
! U1 getvar "ip.dhcp.lease.last_attempt"
```

Example

In this example, the `getvar` retrieves the last time a DHCP request was sent to the wireless print server.

```
! U1 getvar "ip.dhcp.lease.last_attempt"
```

ip.dhcp.lease.server

This command retrieves the address of the server that provided the DHCP lease on the wireless print server.

Getvar

To retrieve the address of the server that provided the DHCP lease on the wireless print server:

```
! U1 getvar "ip.dhcp.lease.server"
```

Example

In this example, the `getvar` retrieves the server that provided the DHCP lease on the wireless print server.

```
! U1 getvar "ip.dhcp.lease.server"  
"10.3.5.1"
```

ip.dhcp.lease.time_left

This command retrieves the time left in the current DHCP lease on the wireless print server.

Getvar

To retrieve the time left in the current DHCP lease on the wireless print server:

```
! U1 getvar "ip.dhcp.lease.time_left"
```

Example

In this example, the `getvar` retrieves the time left in the current DHCP lease on the wireless print server.

```
! U1 getvar "ip.dhcp.lease.time_left"  
"1192518"
```


ip.dhcp.ntp.enable

This command controls whether or not the printer retrieves the address of a Network Time Protocol (NTP) server during DHCP address assignment.

Setvar

To set whether or not the printer retrieves the address of a Network Time Protocol (NTP) server during DHCP address assignment:

```
! U1 setvar "ip.dhcp.ntp.enable" "value"
```

Values

- "off" does not request the NTP server address
- "on" requests the NTP server address

Default

"off"

Getvar

To return the current setting value:

```
! U1 getvar "ip.dhcp.ntp.enable"
```

ip.dhcp.ntp.received_servers

Returns the list of Network Time Protocol (NTP) server IP Addresses received via DHCP.

Getvar

To return the current setting value:

```
! U1 getvar "ip.dhcp.ntp.received_servers"
```

Values

A comma-separated list of IP address. The maximum number of servers listed is three (3).

Default

" "

Example

```
"10.4.3.24,172.30.16.52"
```

ip.dhcp.option12

This command specifies if the DHCP option 12 (host name) is on or off in the discovery packet that is sent from the wireless print server.

Setvar

To instructs the printer to set the DHCP option 12 (host name) in the discovery packet that is sent from the wireless print server:

```
! U1 setvar "ip.dhcp.option12" "value"
```

Values

- "on" turns on option 12
- "off" turns off option 12

Default

"on"

Getvar

To retrieve the status of the DHCP option 12 (host name) in the discovery packet that is sent from the wireless print server:

```
! U1 getvar "ip.dhcp.option12"
```

Example

This setvar example shows the value set to "on".

```
! U1 setvar "ip.dhcp.option12" "on"
```

When the setvar value is set to "on", the getvar result is "on".

ip.dhcp.option12_format

This command specifies the value which will be used for option 12 (host name) to be used in the DHCP discovery packet of the wireless print server.

Setvar

To instruct the printer to set the value which will be used for option 12 (host name) to be used in the DHCP discovery packet of the wireless print server:

```
! U1 setvar "ip.dhcp.option12_format" "value"
```

Values

string

Default

" "

Getvar

To retrieve the value which will be used for option 12 (host name) to be used in the DHCP discovery packet of the wireless print server:

```
! U1 getvar "ip.dhcp.option12_format"
```

Example

This setvar example shows configuring the ip.dhcp.option12 format to the value contained in the device.friendly_name.

It is necessary to surround the SGD entry to be used as source for the data with the < and > characters.

```
! U1 setvar "ip.dhcp.option12_format" "<device.friendly_name>"
```

To further explain, if the above command was issued and the value currently stored in the device.friendly_name parameter was "ShipPrinter", then the response to following command would be "ShipPrinter":

```
! U1 getvar "ip.dhcp.option12_value"
```

ip.dhcp.option12_value

This command retrieves the actual value which will be used in the discovery packet of the wireless print server.

Getvar

To retrieve the actual value which will be used in the discovery packet of the wireless print server:

```
! U1 getvar "ip.dhcp.option12_value"
```

Example

This `setvar` example shows configuring the `ip.dhcp.option12_format` to the value contained in the `device.friendly_name`.

It is necessary to surround the SGD entry to be used as source for the data with the `<` and `>` characters.

```
! U1 setvar "ip.dhcp.option12_format" "<device.friendly_name>"
```

To further explain, if the above command was issued and the value currently stored in the `device.friendly_name` parameter was `"ShipPrinter"`, then the response to following command would be `"ShipPrinter"`:

```
! U1 getvar "ip.dhcp.option12_value"
```

ip.dhcp.request_timeout

This command retrieves the maximum amount of time (in seconds) for a DHCP discovery requests on the wireless print server.

Setvar

To set the amount of time (in seconds) to wait before timing out a DHCP discovery request:

```
! U1 setvar "ip.dhcp.request_timeout" "value"
```

Values

"2" through "30"

Default

"2"

Getvar

To retrieve the currently set the amount of time (in seconds) to wait before timing out a DHCP discovery request:

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

Example

This setvar example shows the value set to "2".

```
!  
U1 setvar "ip.dhcp.request_timeout" "2"
```

When the setvar value is set to "2", the getvar result is "2".

ip.dhcp.requests_per_session

This command retrieves the maximum amount of DHCP discovery requests for a single DHCP session on the wireless print server.

Setvar

To set the maximum amount of DHCP discovery requests for a single DHCP session on the wireless print server:

```
! U1 setvar "ip.dhcp.requests_per_session" "value"
```

Values

"1" through "10"

Default

"2"

Getvar

To retrieve the currently set maximum amount of DHCP discovery requests for a single DHCP session on the wireless print server:

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

Example

This setvar example shows the value set to "2".

```
! U1 setvar "ip.dhcp.requests_per_session" "2"
```

When the setvar value is set to "2", the getvar result is "2".

ip.dhcp.session_interval

This command configures the time interval (in seconds) before a new DHCP session is started on the wireless print server.

Setvar

To set the DHCP session time out value (in seconds):

```
! U1 setvar "ip.dhcp.session_interval" "value"
```

Values

"0" through "60"

Default

"10"

Getvar

To retrieve the current DHCP session time out value (in seconds):

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

Example

This setvar example shows the value set to "10".

```
! U1 setvar "ip.dhcp.session_interval" "10"
```

When the setvar value is set to "10", the getvar result is "10".

ip.dhcp.user_class_id

This command sets or retrieves the current DHCP class ID setting.

Setvar

To set the current DHCP class ID setting:

```
! U1 setvar "ip.dhcp.user_class_id" "value"
```

Values

any class ID string,

Default

" "

Getvar

To retrieve the current DHCP class ID setting:

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

Result

The current DHCP class ID setting.

ip.dhcp.vendor_class_id

This command configures the DHCP vendor class ID setting.

Setvar

To set the DHCP vendor class ID setting:

```
! U1 setvar "ip.dhcp.vendor_class_id" "value"
```

Values

Max string length of 64.

This command builds a string using the following values: (device.company_name)
(device.product_name)-(head.resolution.in_dpi) (device.pnp_option)

Default

The default varies by printer.

Getvar

To retrieve the current DHCP vendor class ID setting:

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

ip.dns.domain

This command identifies the network domain of the wireless print server.

Getvar

To retrieve the network domain of the wireless print server:

```
! U1 getvar "ip.dns.domain"
```

Example

In this example, the `getvar` retrieves the network domain of the wireless print server.

```
! U1 getvar "ip.dns.domain"
```

ip.dns.servers

This command retrieves a space delimited list of the domain name servers from a wireless print server.

Getvar

To retrieve a list of space delimited DNS wireless print servers

```
! U1 getvar "ip.dns.servers"
```

Example

In this example, the `getvar` retrieves a list of space delimited DNS wireless print servers.

```
! U1 getvar "ip.dns.servers"
```

ip.firewall.authentication.add

This command allows a user to add a single server/username/password triplet into the list of authentication entries. This authentication entry is applied before making an outgoing HTTP/HTTPS connection in case the printer must go through an authentication server beforehand. This setting is separate from the proxy setting.

The server, username, and password parameters are separated by a space, not a tab or other white space character. The server name is required. If no username is supplied, but a password is, there must be two spaces between the server and the password fields. If there is a username but no password, or simply just the server name, no space is required at the end of the entry. Both DNS names and IP addresses are acceptable for the server name.

Setvar

To add a server, username, and password to the list of authentication entries:

```
U1 setvar "ip.firewall.authentication.add" "servername[ username][ password]"
```

Values

- `servername` is required. DNS or IP address is acceptable.
- `username` is an optional value. When a username is provided, it must be separated from the server name by a space.
- `password` is an optional value. When a password is provided, it must be separated from the username by a space. If the username is omitted, the password must be separated from the servername by two spaces.

The maximum length of the authentication entry is up to 1024 characters.

ip.firewall.authentication.entries

This command retrieves a list of the server names added to the authentication entries list. The list includes only the server names, the usernames and passwords are not shown.

Getvar

To have the printer return a list of server names on the authentication entries list:

```
! U1 getvar "ip.firewall.authentication.entries"
```

Result

The list of server names on the authentication entries list. A carriage return line feed delimits server names.

ip.firewall.authentication.remove

This command allows a user to remove a single server/username/password triplet from the list of authentication entries. Only the servername is required to remove a complete entry. If an invalid entry is supplied, no action is taken.

Setvar

To remove an entry from the list of authentication entries:

```
! U1 setvar "ip.firewall.authentication.remove" "value"
```

Value

"value" is the server name. A DNS name or IP address is acceptable.

ip.firewall.proxy

Use this command when a printer must go through a proxy server before making an outgoing HTTP/HTTPS connection. This setting is not connection specific and acts as a general value.

Setvar

To specify a proxy server:

```
! U1 setvar "ip.firewall.proxy" "[http|https]://[user:password@]host[:port][/  
path]"
```

Values

- HTTP or HTTPS is a required value.
- user:password is an optional value.
- host is a required value. DNS or IP address is acceptable.
- :port is an optional value
- /path is an optional value.

The maximum length of the string is 2048 characters.

Getvar

To have the printer return the value of the proxy server setting:

```
U1 getvar "ip.firewall.proxy"
```

If the proxy value includes a user:password, the are replaced with a *.

The maximum length of the string is 2048 characters.

ip.firewall.whitelist_in

Returns a comma-separated list of IP addresses and/or IP address ranges that will be allowed to communicate with the printer. If the list is empty then the firewall will be disabled.

Setvar

To set the command:

```
! U1 setvar "ip.firewall.whitelist_in" "value"
```

Value

The value is a string of up to 256 alphanumeric characters.

Default

```
" "
```

Examples

Single IP address:

```
! U1 setvar "ip.firewall.whitelist_in" "192.168.1.20"
```

Multiple IP addresses:

```
! U1 setvar "ip.firewall.whitelist_in" "192.168.1.20,192.168.100.21"
```

IP address ranges:

```
! U1 setvar "ip.firewall.whitelist_in" "192.168.1.20-192.168.1.100"
```

IP ranges and Single/Multiple IPs

```
"ip.firewall.whitelist_in" "192.168.1.20-192.168.1.40, 192.168.1.50,
192.168.1.75"
```

Getvar

To have the printer return the current setting value:

```
! U1 getvar "ip.firewall.whitelist_in"
```

ip.ftp.enable

This printer setting refers to the FTP protocol setting. This command tells the printer to turn FTP on or off.

Setvar

To turn FTP on or off:

```
! U1 setvar "ip.ftp.enable" "value"
```

Values

"off" disables FTP

"on" enables FTP

Default

"on"

Getvar

To respond with the FTP status:

```
! U1 getvar "ip.ftp.enable"
```

Example

This setvar example shows the FTP status set to "on".

```
! U1 setvar "ip.ftp.enable" "on"
```

When the setvar value is set to "on", the getvar result is that the FTP status is "on".

ip.ftp.execute_file

This command setting controls the ability of the printer to process or not process commands received via the FTP protocol using the printers ZPL engine.

Setvar

To turn FTP processing ability on or off:

```
! U1 setvar "ip.ftp.execute_file" "value"
```

Values

"off" disables the printer's ability to process FTP commands

"on" enables the printer's ability to process FTP commands

Default

"on"

Getvar

To respond with the FTP processing ability status:

```
! U1 getvar "ip.ftp.execute_file"
```

Example

This setvar example shows the FTP processing ability set to "on".

```
! U1 setvar "ip.ftp.execute_file" "on"
```

ip.ftp.request_password

This command controls whether the ftp client will prompt the user to enter a password at the beginning of an ftp session.

Setvar

To turn on or off the ftp session password request:

```
! U1 setvar "ip.ftp.request_password" "value"
```

Values

"no"

"yes"

Default

"no"

Getvar

To return whether the ftp client is set to prompt the user for a password at the start of an ftp session:

```
! U1 getvar "ip.ftp.request_password"
```

ip.gateway

This command instructs the printer to change the gateway address.



IMPORTANT: This setting refers to the gateway address. A set value is ignored if the IP protocol is not set to permanent.

Setvar

To change the gateway address:

```
! U1 setvar "ip.gateway" "value"
```

Values

Any valid gateway address.

Default

"0.0.0.0"

Getvar

To respond with the gateway address:

```
! U1 getvar "ip.gateway"
```

Example

This setvar example shows the value set to "10.3.5.1".

```
! U1 setvar "ip.gateway" "10.3.5.1"
```

When the setvar value is set to "10.3.5.1", the getvar result is "10.3.5.1".

ip.http.admin_name

This command sets the name to be used for authentication on the print server web pages.

Setvar

To set the admin user name to the specified value:

```
! U1 setvar "ip.http.admin_name" "value"
```

Values

A string with a maximum of 25 characters.

Default

"admin"

Getvar

To respond with the admin user name:

```
! U1 getvar "ip.http.admin_name"
```

Example

This setvar example shows the value set to "useradmin101".

```
! U1 setvar "ip.http.admin_name" "useradmin101"
```

ip.http.admin_password

This command sets the password to be used for authentication on the print server web pages.

Setvar

To set print server web page password:

```
! U1 setvar "ip.http.admin_password" "value"
```

Values

A string with a maximum of 25 characters.

Default

"1234"

Getvar

To respond with the print server web page password:

```
! U1 getvar "ip.http.admin_password"
```

Example

This setvar example shows the value set to "P@ssword101".

```
! U1 setvar "ip.http.admin_password" "P@ssword101"
```

ip.http.custom_link_name

This command creates a custom link below the FAQ link on the print server settings page. Use `ip.http.custom_link_url` to define the URL for your link name.

Setvar

To set the custom link name:

```
! U1 setvar "ip.http.custom_link_name" "value"
```

Values

Any string, maximum of 25 characters.

Default

" "

Getvar

To respond with the custom link name

```
! U1 getvar "ip.http.custom_link_name"
```

Example

This setvar example shows the value set to "Click Here for Info".

```
! U1 setvar "ip.http.custom_link_name" "Click Here for Info"
```


ip.http.custom_link_url

This command creates a custom link on the printer web page for the printer's URL. Use `ip.http.custom_link_name` to define the text that will display for your link.

Setvar

To change the custom URL:

```
! U1 setvar "ip.http.custom_link_url" "value"
```

Values

A string of 64 characters or less.

Default

" "

Getvar

To respond with the custom URL:

```
! U1 getvar "ip.http.custom_link_url"
```

Example

```
! U1 setvar "ip.http.custom_link_url" "http://www.zebra.com/sdk"
```

ip.http.enable

This printer setting refers to the HTTP protocol/web server setting.

Setvar

To change HTTP to on or off:

```
! U1 setvar "ip.http.enable" "value"
```

Values

"off" disables HTTP protocol

"on" enables HTTP protocol

Default

"on"

Getvar

To respond with the HTTP status:

```
! U1 getvar "ip.http.enable"
```

Example

This setvar example shows the value set to "on".

```
! U1 setvar "ip.http.enable" "on"
```

When the setvar value is set to "on", the getvar result is "on".

ip.http.faq_url

This command sets the FAQ URL displayed on the printer web pages.

Setvar

To change the FAQ URL:

```
! U1 setvar "ip.http.faq_url" "value"
```

Values

A string of 64 characters or less.

Default

" "

Getvar

To respond with the current FAQ URL:

```
! U1 getvar "ip.http.faq_url"
```

Example

```
! U1 getvar "ip.http.faq_url"
```

ip.http.port

This command sets the port number at which the printer web pages will be served.

Setvar

To change the port setting for the printer web pages:

```
! U1 setvar "ip.http.port" "value"
```

Values

"0" to "65535"

Default

"80"

Getvar

To respond with the current port setting for the printer web pages:

```
! U1 getvar "ip.http.port"
```

Example

This setvar example shows the value set to "8080".

```
! U1 setvar "ip.http.enable" "8080"
```

ip.https.enable

Enables/disables the HTTPS web connections.



IMPORTANT: A network or printer reset is required for this setting to take effect.

Setvar

To set the command:

```
! U1 setvar "ip.https.enable" "value"
```

Values

- "off" disables HTTPS protocol
- "on" enables HTTPS protocol

Default

```
"on"
```

Getvar

To have the printer return the current setting value:

```
! U1 getvar "ip.https.enable"
```

ip.https.port

Sets the port that will listen for HTTPS connections.

Setvar

To set the command:

```
! U1 setvar "ip.https.port" "value"
```

Values

Any valid https port from 0-65535.

Default

```
"443"
```

Getvar

To have the printer return the current setting value:

```
! U1 getvar "ip.https.port"
```

ip.ipp.enable

This command sets or retrieves if the Internet Printing Protocol (IPP) feature is on. When you send this command, a network reset is required for the change to take effect.

Setvar

To enable or disable the IPP feature:

```
! U1 setvar "ip.ipp.enable" "value"
```

Values

- "on" enables IPP
- "off" disables IPP

Default

"on"

Getvar

To retrieve the current setting of the IPP feature:

```
! U1 getvar "ip.ipp.enable"
```

Example

This setvar example shows the value set to "off".

```
! U1 setvar "ip.ipp.enable" "off"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "off".

ip.ipp.mode

This command sets or retrieves the Internet Printing Protocol (IPP) setting. The printer can be set for either IPP/IPPS or IPPS (Internet Printing Protocol Secure)-only operation.

Setvar

To set the IPP mode:

```
! U1 setvar "ip.ipp.mode" "value"
```

Values

- "ipp/ipps" enables IPP/IPPS
- "ipps" enables IPPS-only

Default

"ipp/ipps"

Getvar

To retrieve the current setting of the IPP mode:

```
! U1 getvar "ip.ipp.mode"
```

Example

This setvar example shows the value set to "ipps".

```
! U1 setvar "ip.ipp.mode" "ipps"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "ipps".

ip.lpd.enable

This printer setting refers to the LPD (Line Printer Daemon) protocol setting.



IMPORTANT: LPD communications from the host should be directed to port 515.

Setvar

To turn LPD on or off:

```
! U1 setvar "ip.lpd.enable" "value"
```

Values

"off" disables LPD protocol

"on" enables LPD protocol

Default

"on"

Getvar

To respond with the LPD status:

```
! U1 getvar "ip.lpd.enable"
```

Example

This `setvar` example shows the value set to "on".

```
! U1 setvar "ip.lpd.enable" "on"
```

When the `setvar` value is set to "on", the `getvar` result is "on".

ip.mac_raw

This command specifies the RAW MAC address of the wireless print server. The raw mac address is the mac address without the colons (" : ").

Getvar

To retrieve the RAW MAC address of the wireless print server:

```
! U1 getvar "ip.mac_raw"
```

Example

In this example, the `getvar` retrieves the RAW MAC address of the wireless print server.

```
! U1 getvar "ip.mac_raw"
```

ip.mirror.appl_path

This command overrides the default location of the mirror application path ("appl" in ip.mirror.path). If the SGD is empty, the default path is used. If an error occurs retrieving application from path (i.e. path not found or application not there), the default path is NOT used. This path must be fully defined in relation to the mirror server root and is not relative to ip.mirror.path.



Setvar

To set the path to the application on the mirror server:

```
! U1 setvar "ip.mirror.appl_path" "values"
```

Values

A valid application path (location).

Default

" "

Getvar

To retrieve the path to the application on the mirror server:

```
! U1 getvar "ip.mirror.appl_path"
```

Example

If the default value is used, the application would be copied from "ip.mirror.path"\appl

If you send ! U1 setvar "ip.mirror.appl_path" "program\current" and "ip.mirror.path" has the value "c:\mirror", then the application would be copied from c:\mirror\program\current.

ip.mirror.auto

This command enables the ability to automatically perform a mirror update (fetch) command on power up.



Setvar

To perform a mirror update (fetch) command when the printer is turned on using the interval that is set for "ip.mirror.freq" or "ip.mirror.freq_hours":

```
! U1 setvar "ip.mirror.auto" "values"
```

Values

- "on" turns on the auto mirroring feature
- "off" turns off the auto mirroring feature

Default

"off"

Getvar

To report whether the printer will perform a mirror update (fetch) automatically on power up:

```
! U1 getvar "ip.mirror.auto"
```

Example

This setvar example shows the value set to "off".

```
! U1 setvar "ip.mirror.auto" "off"
```

When the setvar value is set to "off", the getvar result is "off".

ip.mirror.error_retry

This command identifies how many times mirroring is retried when an error occurs.



Setvar

To set the required times that mirroring retries when an error occurs:

```
! U1 setvar "ip.mirror.error_retry" "value"
```

Getvar

To return the current setting value:

```
! U1 getvar "ip.mirror.error_retry"
```

Example

This setvar example shows the value set to "0".

```
! U1 setvar "ip.mirror.error_retry" "0"
```

When the setvar value is set to "0", the getvar result is "0".

ip.mirror.feedback.auto

This command identifies if a feedback file is pushed to the mirroring server by the printer when a mirroring update (fetch) is complete.



Setvar

To set the mirror feedback feature to on or off:

```
! U1 setvar "ip.mirror.feedback.auto" "value"
```

Values

"on" turns on mirror feedback

"off" turns off mirror feedback

Default

"off"

Getvar

To return the current setting value:

```
! U1 getvar "ip.mirror.feedback.auto"
```

Example

This setvar example shows the value set to "off".

```
! U1 setvar "ip.mirror.feedback.auto" "off"
```

When the setvar value is set to "off", the getvar result is "off".

ip.mirror.feedback.freq

This command specifies the time interval (in minutes) between performing feedback file uploads.



Setvar

To set the number of minutes to wait between feedback file uploads:

```
! U1 setvar "ip.mirror.feedback.freq" "value"
```

Values

A numeric value (0 - 65535)

Default

"0"

Getvar

To retrieve the number of minutes set to wait between feedback file uploads:

```
! U1 getvar "ip.mirror.feedback.freq"
```

Example

This setvar example shows the value set to "0".

```
! U1 setvar "ip.mirror.feedback.freq" "0"
```

When the setvar value is set to "0", the getvar result is "0".

ip.mirror.feedback.odometer

This command instructs the printer to set the mirror feedback odometer.



Setvar

To set the odometer counter:

```
! U1 setvar "ip.mirror.feedback.odometer" "values"
```

Values

A numeric value between "0" and "4294967295".

Default

"0"

Getvar

To retrieve the mirror feedback odometer value:

```
! U1 getvar "ip.mirror.feedback.odometer"
```

Example

This setvar example shows the value set to "0".

```
! U1 setvar "ip.mirror.feedback.odometer" "0"
```

When the setvar value is set to "0", the getvar result is "0".

ip.mirror.feedback.path

This command identifies where the feedback file is stored on the mirroring server.



Setvar

To set the path on the mirroring server that stores the feedback file:

```
! U1 setvar "ip.mirror.feedback.path" "value"
```

Values

Alphanumeric text (1 to 50 characters)

Default

"Zebra/feedback"

Getvar

To retrieve the path on the mirroring sever that the printer is currently using to store the feedback file:

```
! U1 getvar "ip.mirror.feedback.path"
```

Example

This setvar example shows the value set to "Zebra/feedback".

```
! U1 setvar "ip.mirror.feedback.path" "Zebra/feedback"
```

When the setvar value is set to "Zebra/feedback", the getvar result is "Zebra/feedback".

ip.mirror.fetch

This command forces a mirroring update sequence.



Setvar

To force a mirroring update sequence:

```
! U1 setvar "ip.mirror.fetch" ""
```

Do

To force a mirroring update sequence:

```
! U1 do "ip.mirror.fetch" ""
```

Example

This setvar example forces a mirroring update sequence.

```
! U1 setvar "ip.mirror.fetch" ""
```

ip.mirror.freq

This command defines the frequency of mirroring updates (in minutes).



Setvar

To set the mirror frequency:

```
! U1 setvar "ip.mirror.freq" "value"
```

Values

"0" through "65535" (minutes)

Default

"0" (disables this feature)



IMPORTANT: When the "ip.mirror.freq" is set to a low value (other than zero) the printer will spend a lot of time performing the mirroring process.

Getvar

To retrieve the number of minutes to wait before performing another mirror update:

```
! U1 getvar "ip.mirror.freq"
```

Example

This setvar example shows the value set to "1000".

```
! U1 setvar "ip.mirror.freq" "1000"
```

When the setvar value is set to "1000", the getvar result is "1000" and mirroring will be attempted every 1000 minutes.

ip.mirror.freq_hours

This command defines the frequency of mirroring updates (in hours).



Setvar

To set the frequency of mirroring updates (in hours):

```
! U1 setvar "ip.mirror.freq_hours" "values"
```

Values

"0" through "100"

Default

"0" (disables this feature)

Getvar

To retrieve the frequency of mirroring updates (in hours) that the printer is currently using:

```
! U1 getvar "ip.mirror.freq_hours"
```

Example

This setvar example shows the value set to "8".

```
! U1 setvar "ip.mirror.freq_hours" "8"
```

When the setvar value is set to "8", the getvar result is "8" and mirroring will be attempted every 8 hours.

ip.mirror.interface

Determines the interface over which Mirror will operate.

Setvar

To set the interface over which Mirror will operate:

```
! U1 setvar "ip.mirror.interface" "value"
```

Values

"both" internal or external wired and WLAN

"wired" internal or external wired

"wireless" WLAN

Default

"both"

Getvar

To return the current setting value:

```
! U1 getvar "ip.mirror.interface"
```

ip.mirror.last_error

This command retrieves the last error encountered during a mirroring operation.



Getvar

To retrieve the error code of the last mirroring update (fetch):

```
! U1 getvar "ip.mirror.last_error"
```

Example

In this example, the `getvar` retrieves the error code of the last mirroring update.

```
! U1 getvar "ip.mirror.last_error"
```

ip.mirror.last_time

This command retrieves the timestamp, in seconds, of the last time the system attempted a mirror update (fetch).



Getvar

To retrieve the timestamp, in seconds, of the last time the system attempted a mirror update (fetch):

```
! U1 getvar "ip.mirror.last_time"
```

Example

In this example, the `getvar` retrieves the timestamp, in seconds, of the last time the system attempted a mirror update.

```
! U1 getvar "ip.mirror.last_time"
```

ip.mirror.mode

This command sets the protocol used to perform mirror tasks.



Setvar

To sets the protocol for mirror tasks:

```
! U1 setvar "ip.mirror.mode" "values"
```

Values

`ftp` means the FTP protocol will be used to perform mirror tasks

`sftp` means the SFTP protocol will be used to perform mirror tasks

Getvar

To retrieve the path to the application on the mirror server:

```
! U1 getvar "ip.mirror.mode"
```


ip.mirror.password

This command specifies the user password on the mirroring server assigned for mirroring updates (fetch).



Setvar

To specify a password for mirroring updates (fetch):

```
! U1 setvar "ip.mirror.password" "value"
```

Values

Alphanumeric text string (1 to 20 characters)

Default

"password"

Getvar

To retrieve the user password the printer is currently using for mirroring updates (fetch):

```
! U1 getvar "ip.mirror.password"
```

Example

This setvar example shows the value set to "password".

```
! U1 setvar "ip.mirror.password" "password"
```

When the setvar value is set to "password", the getvar result is "*". For security purposes, the printer does not return password information.

ip.mirror.path

This command identifies the base path on the FTP server where the mirror directory resides.



Setvar

To set the base path on the FTP server where the mirror directory resides:

```
! U1 setvar "ip.mirror.path" "value"
```

Values

Alphanumeric text string (1 to 50 characters)

Default

"zebra"

Getvar

To retrieve the base path of the FTP server where the mirror directory resides:

```
! U1 getvar "ip.mirror.path"
```

Example

This setvar example shows the value set to "zebra".

```
! U1 setvar "ip.mirror.path" "zebra"
```

When the setvar value is set to "zebra", the getvar result is "zebra".

ip.mirror.reset_delay

This command specifies the number of seconds between when the printer receives the last byte of the last file from the /commands directory and when the printer resets during a mirror event.



Setvar

To set the number of seconds between when the printer receives the last byte of the last file from the /commands directory and when the printer resets during a mirror event:

```
! U1 setvar "ip.mirror.reset_delay" "value"
```

Values

"0" to "900" (seconds)

Default

"5"



NOTE: The default setting for the `ip.mirror.reset_delay` command is 5 seconds; in some cases it may be necessary to use a longer delay to allow for full processing of longer or more complex files.

Getvar

To retrieve the number of seconds between when the printer receives the last byte of the last file from the /commands directory and when the printer resets during a mirror event:

```
! U1 getvar "ip.mirror.reset_delay"
```

Example

This `setvar` example shows the value set to "10".

```
! U1 setvar "ip.mirror.reset_delay" "10"
```

When the `setvar` value is set to "10", the `getvar` result is "10".

ip.mirror.server

This command identifies the IP address of the mirroring server.



Setvar

To set the IP address of the mirroring server:

```
! U1 setvar "ip.mirror.server" "value"
```

Values

A valid IP address

Default

"127.0.0.1"

Getvar

To retrieve the IP address of the mirroring server:

```
! U1 getvar "ip.mirror.server"
```

Example

This setvar example shows the value set to "10.3.1.1".

```
! U1 setvar "ip.mirror.server" "10.3.1.1"
```

When the setvar value is set to "10.3.1.1", the getvar result is "10.3.1.1".

ip.mirror.success

This command reports the success or failure of the last mirroring update (fetch).



Getvar

To retrieve the success or failure of the last mirroring update (fetch):

```
! U1 getvar "ip.mirror.success"
```

Values

"yes" means successful

"no" means unsuccessful

Example

In this example, the `getvar` retrieves the success or failure of the last mirroring update (fetch).

```
! U1 getvar "ip.mirror.success"
```

ip.mirror.success_time

This command provides the timestamp, in seconds, of the last time the system successfully completed a mirror update (fetch).



Getvar

To retrieve the timestamp, in seconds, of the last time the system successfully completed a mirror update (fetch):

```
! U1 getvar "ip.mirror.success_time"
```

Example

In this example, the `getvar` retrieves the timestamp of the last time the system successfully completed a mirror update.

```
! U1 getvar "ip.mirror.success_time"
```

ip.mirror.username

This command specifies the user name on the mirroring server assigned for mirroring updates (fetch).



Setvar

To set a specific user name for mirroring updates (fetch):

```
! U1 setvar "ip.mirror.username" "value"
```

Values

Alphanumeric text string (1 to 20 characters)

Default

"user"

Getvar

To retrieve the user name the printer is currently using for mirroring updates (fetch):

```
! U1 getvar "ip.mirror.username"
```

Example

This setvar example shows the value set to "user".

```
! U1 setvar "ip.mirror.username" "user"
```

When the setvar value is set to "user", the getvar result is "user".

ip.mirror.version

This command retrieves the mirror code build date.



Getvar

To retrieve the mirror code build date:

```
! U1 getvar "ip.mirror.version"
```

Example

In this example, the `getvar` retrieves the mirror code build date.

```
! U1 getvar "ip.mirror.version"
```


ip.netmask

This setting refers to the subnet mask address. This value is ignored if the IP protocol is not set to permanent.

Setvar

To instruct the printer to change the subnet mask:

```
! U1 setvar "ip.netmask" "value"
```

Values

Any valid subnet mask.

Default

"255.255.255.0"

Getvar

To respond with the subnet mask value:

```
! U1 getvar "ip.netmask"
```

Example

This setvar example shows the value set to "255.255.255.0".

```
! U1 setvar "ip.netmask" "255.255.255.0"
```

When the setvar value is set to "255.255.255.0", the getvar result is "255.255.255.0".

ip.ntp.enable

Enables or disables the Network Time Protocol (NTP) feature.

Setvar

To enable or disable the Network Time Protocol (NTP) feature:

```
! U1 setvar "ip.ntp.enable" "value"
```

Values

"on" means enabled

"off" means disabled

Default

"off"

Getvar

To return the current setting value:

```
! U1 getvar "ip.ntp.enable"
```

ip.ntp.log

Retrieves the Network Time Protocol (NTP) status and error log. If NTP is not running this will return "File Not Found" for the error log.

Getvar

To retrieve the Network Time Protocol (NTP) status and error log:

```
! U1 getvar "ip.ntp.log"
```

Default

```
"File Not Found"
```

ip.ntp.servers

Sets the list of NTP (Network Time Protocol) servers which the printer will use to set the time.

Setvar

To set the list of NTP (Network Time Protocol) servers which the printer will use to set the time:

```
! U1 setvar "ip.ntp.servers" "value"
```

Values

A comma delimited string of server name(s) or ip address(es), with a length of 0-1024 characters.

Default

" "

Example

```
! U1 setvar "ip.ntp.servers" "0.us.pool.ntp.org,10.3.17.124"
```

Getvar

To retrieve the current setting value:

```
! U1 getvar "ip.ntp.servers"
```

Result

A comma delimited string of server name(s) or ip address(es).

ip.ping_gateway_interval

Determines the interval in minutes at which to send ICMP PING packets to the default gateway.

Setvar

To set the command:

```
! U1 setvar "ip.ping_gateway_interval" "value"
```

Value

An integer from "0" to "30". "0" is disabled

Default

"0"

Getvar

To have the printer return the current setting value:

```
! U1 getvar "ip.ping_gateway_interval"
```

ip.pop3.enable

This printer setting determines if the printer queries a POP3 mailbox for mail.

Setvar

To turn POP3 on or off:

```
! U1 setvar "ip.pop3.enable" "value"
```

Values

"off" disables POP3

"on" enables POP3

Default

"on"

Getvar

To respond with the POP3 status:

```
! U1 getvar "ip.pop3.enable"
```

Example

This setvar example shows the value set to "on".

```
! U1 setvar "ip.pop3.enable" "on"
```

When the setvar value is set to "on", the getvar result is "on".

ip.pop3.password

This printer setting refers to the POP3 mailbox password. This only applies if "ip.pop3.enable" is set to on.

Setvar

To change the POP3 password:

```
! U1 setvar "ip.pop3.password" "value"
```

Values

A maximum of 20 alphanumeric characters

Default

" "

Getvar

To respond with the POP3 password:

```
! U1 getvar "ip.pop3.password"
```

For protection a single "*" prints.

Example

This setvar example shows the value set to "password".

```
! U1 setvar "ip.pop3.password" "password"
```

When the setvar value is set to "password", the getvar result is "*".

ip.pop3.poll

This printer setting refers to how frequent (in seconds) the printer queries a POP3 mailbox for new mail. This only applies if the "ip.pop3.enable" is set to on.

Setvar

To change the POP3 poll interval:

```
! U1 setvar "ip.pop3.poll" "value"
```

A value of "0" causes the printer to only query the POP3 mailbox one time, on printer power up, or following a network reset.

Values

"0" through "65535"

Default

```
"0"
```



NOTE: A poll value of less than thirty seconds is not recommended. The printer is unresponsive for several seconds when polling for email depending on data transfer time from the server to the printer.

Getvar

To respond with the POP3 poll frequency (in seconds):

```
! U1 getvar "ip.pop3.poll"
```

Example

This setvar example shows the value set to "0".

```
! U1 setvar "ip.pop3.poll" "0"
```

When the setvar value is set to "0", the getvar result is "0".

ip.pop3.print_body

Determines if the email body will be printed when the email is retrieved via POP3. This only applies if ip.pop3.enable is set to "on".

Setvar

To set the command:

```
! U1 setvar "ip.pop3.print_body" "value"
```

Value

- "on"
- "off"

Default

```
"off"
```

Getvar

To have the printer return the current setting value:

```
! U1 getvar "ip.pop3.print_body"
```

ip.pop3.print_headers

Determines if the email header will be printed when the email is retrieved via POP3. This only applies if ip.pop3.enable is set to "on".

Setvar

To set the command:

```
! U1 setvar "ip.pop3.print_headers" "value"
```

Values

- "on"
- "off"

Default

"off"

Getvar

To have the printer return the current setting value:

```
! U1 getvar "ip.pop3.print_headers"
```

ip.pop3.save_attachments

Determines if the email attachments are to be saved to the flash file system when the email is retrieved via POP3. This only applies if ip.pop3.enable is set to "on".

Setvar

To set the command:

```
! U1 setvar "ip.pop3.save_attachments" "value"
```

Values

- "on"
- "off"

Default

```
"on"
```

Getvar

To have the printer return the current setting value:

```
! U1 getvar "ip.pop3.save_attachments"
```

ip.pop3.server_addr

This printer setting refers to the POP3 server IP address that the printer contacts when checking for new mail. This only applies if "ip.pop3.enable" is set to on.

Setvar

To change the POP3 server address:

```
! U1 setvar "ip.pop3.server_addr" "value"
```

Values

Any valid POP3 server address

Default

"0.0.0.0"

Getvar

To respond with the POP3 server address:

```
! U1 getvar "ip.pop3.server_addr"
```

ip.pop3.username

This printer setting refers to the POP3 user name. This only applies if the "ip.pop3.enable" is set to on.

Setvar

To change the POP3 user name:

```
! U1 setvar "ip.pop3.username" "value"
```

Values

A maximum of 20 alphanumeric characters

Default

" "

Getvar

To respond with the POP3 user name:

```
! U1 getvar "ip.pop3.username"
```

Example

This setvar example shows the value set to "user".

```
! U1 setvar "ip.pop3.username" "user"
```

When the setvar value is set to "user", the getvar result is "user".

ip.pop3.verbose_headers

Instructs the printer to respond with the POP3 verbose header value.

Setvar

To set the command:

```
! U1 setvar "ip.pop3.verbose_headers" "value"
```

Values

- "on"
- "off"

Default

```
"off"
```

Getvar

To have the printer return the current setting value:

```
! U1 getvar "ip.pop3.verbose_headers"
```

ip.port

This printer setting refers to the port number that the TCP print service is listening on. Normal TCP communications from the host should be directed to this port.

Setvar

To set the TCP/UDP port number:

```
! U1 setvar "ip.port" "value"
```

Values

"1" through "65535" (excluding any ports currently used by other services, such as 21, 23, 80, and 515).

Default

"9100"

Getvar

To respond with the TCP/UDP port number:

```
! U1 getvar "ip.port"
```

Example

This setvar example shows the value set to "9100".

```
! U1 setvar "ip.port" "9100"
```

When the setvar value is set to "9100", the getvar result is "9100".

ip.port_altername

This command sets the port number of the alternate port.



NOTE: Print servers supporting this command will monitor both the primary port and the alternate port for connections at the same time.

Setvar

To set the alternate port for the print server:

```
! U1 setvar "ip.port_altername" "value"
```

Values

Any valid TCP port address.

Default

"9100"

Getvar

To return the current alternate port setting:

```
! U1 getvar "ip.port_altername"
```

Values

The current port setting.

Example

This setvar example shows the value set to "6101".

```
U1 setvar "ip.port_altername" "6101"
```


ip.port_json_config

This printer setting refers to the port number that the TCP print service is listening on for JSON configuration packets. JSON TCP communications from the host should be directed to this port.

Setvar

To set the JSON TCP port number:

```
! U1 setvar "ip.port_json_config" "value"
```

Values

- "0" disables the port
- "1" through "65535" (excluding any ports currently used by other services, such as 21, 23, 80, and 515).

Default

"9200"

Getvar

To respond with the JSON TCP port number:

```
! U1 getvar "ip.port_json_config"
```

Example

This setvar example shows the value set to "9200".

```
! U1 setvar "ip.port_json_config" "9200"
```

When the setvar value is set to "9200", the getvar result is "9200".

ip.port_single_conn

This command configures the port number for the single connection IP port. The single-connection IP port allows only one connection at a time.

See "ip.port_single_conn_idle_timeout" for additional information.

Setvar

To configure the port number for the single connection IP port:

```
! U1 setvar "ip.port_single_conn" "value"
```

Values

A number between "1" and "65535". This number specifies the port.

Default

"9300"

Getvar

To return the current setting value:

```
! U1 getvar "ip.port_single_conn"
```

Result

A port number between 1 and 65535.

ip.port_single_conn_idle_timeout

Sets the amount of time that must elapse with no activity for the single-connection IP port to be considered in the idle state.

When the port is idle and a new connection is requested, the currently open connection will be closed and a new connection will be opened. If the port is not in the idle state, the current connection will be maintained and the connection request will be refused with an error response.

Setvar

To set the single connection timeout time:

```
! U1 setvar "ip.port_single_conn_idle_timeout" "value"
```

Values

A number between "1" and "65535". The value is in seconds. If the value is "0", the port will be considered to be in the idle state.

Default

"180"

Getvar

To return the current setting value:

```
! U1 getvar "ip.port_single_conn_idle_timeout"
```

ip.primary_network

This command allows you to set the primary network to either wired or wireless.

Setvar

To set the primary network device:

```
! U1 setvar "ip.primary_network" "value"
```

Values

"1" means wired

"2" means wireless

Default

"1"

Getvar

To respond with the name of the current primary network device:

```
! U1 getvar "ip.primary_network"
```

Example

This setvar example shows the value set to "1".

```
! U1 setvar "ip.primary_network" "1"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "1".

ip.smtp.domain

This printer setting refers to the domain name used by the printer in sending email with respect to the SMTP server.

Setvar

To change the SMTP domain name:

```
! U1 setvar "ip.smtp.domain" "value"
```

Values

A maximum of 24 alphanumeric characters.

Default

"ZBRPrintServer"

Getvar

To return the SMTP domain name:

```
! U1 getvar "ip.smtp.domain"
```

Example

This setvar example shows the value set to "ZBRPrintServer.com".

```
! U1 setvar "ip.smtp.domain" "ZBRPrintServer.com"
```

When the setvar value is set to "ZBRPrintServer.com", the getvar result is "ZBRPrintServer.com".

ip.smtp.enable

This printer setting refers to the SMTP protocol.

Setvar

To turn SMTP on or off:

```
! U1 setvar "ip.smtp.enable" "value"
```

Values

"off" disables SMTP

"on" enables SMTP

Default

"on"

Getvar

To return the SMTP status:

```
! U1 getvar "ip.smtp.enable"
```

Example

This setvar example shows the value set to "on".

```
! U1 setvar "ip.smtp.enable" "on"
```

When the setvar value is set to "on", the getvar result is "on" .

ip.smtp.server_addr

This printer setting refers to the IP address of the SMTP server used for sending email.

Setvar

To change the SMTP server address:

```
! U1 setvar "ip.smtp.server_addr" "value"
```

Values

Any valid IP address.

Default

0.0.0.0

Getvar

To respond with the current SMTP server address:

```
! U1 getvar "ip.smtp.server_addr"
```

Example

This setvar example shows the value set to 10.10.10.10.

```
! U1 setvar "ip.smtp.server_addr" "10.10.10.10"
```

When the setvar value is set to "10.10.10.10", the getvar result is "10.10.10.10".

ip.snmp.enable

This printer setting refers to the SNMP protocol.

Setvar

To enable or disable the SNMP protocol:

```
! U1 setvar "ip.snmp.enable" "value"
```

Values

"on" enables the SNMP protocol

"off" disables the SNMP protocol

Default

"on"

Getvar

To respond with the SNMP status:

```
! U1 getvar "ip.snmp.enable"
```

Example

This setvar example shows the value set to "on".

```
! U1 setvar "ip.snmp.enable" "on"
```

When the setvar value is set to "on", the getvar result is "on".

ip.snmp.get_community_name

This printer setting is used when making SNMP queries. The SNMP client must supply the get community name that matches the printer's get community name in order to query any SNMP data.

Setvar

To set the SNMP get community name string:

```
! U1 setvar "ip.snmp.get_community_name" "value"
```

Values

A maximum of 19 alphanumeric characters.

Default

"public"

Getvar

To get the SNMP get community name string:

```
! U1 getvar "ip.snmp.get_community_name"
```

For protection a single "*" prints.

Example

This setvar example shows the value set to "public".

```
! U1 setvar "ip.snmp.get_community_name" "public"
```

When the setvar value is set to "public", the getvar result is "*".

ip.snmp.set_community_name

This printer setting is used when changing SNMP data remotely. To alter any SNMP data, the SNMP client must supply the set community name that matches the printer's set community name.

Setvar

To set the SNMP set community name string:

```
! U1 setvar "ip.snmp.set_community_name" "value"
```

Values

A maximum of 19 alphanumeric characters

Default

"public"

Getvar

To return the printer's SNMP set community name string:

```
! U1 getvar "ip.snmp.set_community_name"
```

For protection a single "*" returns.

Example

This setvar example shows the value set to "public".

```
! U1 setvar "ip.snmp.set_community_name" "public"
```

When the setvar value is set to "public", the getvar result is "*".

ip.snmp.trap_community_name

This command sets the SNMP Trap Community name of the print server.

Setvar

To set the SNMP trap community name:

```
! U1 setvar "ip.snmp.get_community_name" "value"
```

Values

A maximum of 20 alphanumeric characters.

Default

"public"

Getvar

To get the SNMP trap community name:

```
! U1 getvar "ip.snmp.trap_community_name"
```

Example

```
! U1 setvar "ip.snmp.trap_community_name" "public"
```

ip.snmpv3.admin.auth_protocol

This command returns the assigned authentication protocol to be used for the SNMPv3 admin user. The value will be either "MD5" or "SHA".

Getvar

To retrieve the assigned authentication protocol:

```
! U1 getvar "ip.snmpv3.admin.auth_protocol"
```

ip.snmpv3.admin.name

This command returns the assigned username for the SNMPv3 admin user. By default, the value is an empty string.

Getvar

To retrieve the assigned admin username:

```
! U1 getvar "ip.snmpv3.admin.name"
```

ip.snmpv3.admin.priv_protocol

This command returns the assigned privacy protocol to be used for the SNMPv3 admin user. It will report either "AES" or "DES".

Getvar

To retrieve the assigned privacy protocol:

```
! U1 getvar "ip.snmpv3.admin.priv_protocol"
```

ip.snmpv3.enable

This command returns the status of SNMPv3. If it is enabled, the command returns "on". If SNMPv3 is disabled, the command returns "off".

Getvar

To view if SNMPv3 status is enabled:

```
! U1 getvar "ip.snmpv3.enable"
```

ip.snmpv3.monitor.auth_protocol

This command returns the assigned authentication protocol to be used for the SNMPv3 monitor user. It will report either "MD5" or "SHA".

Getvar

To retrieve the assigned authentication protocol:

```
! U1 getvar "ip.snmpv3.monitor.auth_protocol"
```


ip.snmpv3.monitor.name

This command returns the assigned username for the SNMPv3 monitor user (a user with read-only access). The value is a string with up to 32 characters. By default, the value is an empty string.

Getvar

To retrieve the assigned username:

```
! U1 getvar "ip.snmpv3.monitor.name"
```

ip.snmpv3.monitor.priv_protocol

This command returns the value of the privacy protocol to be used for the SNMPv3 monitor user. It will report a value of either "AES" or "DES".

Getvar

To retrieve the privacy protocol value:

```
! U1 getvar "ip.snmpv3.monitor.priv_protocol"
```

ip.tcp.enable

This printer setting refers to the TCP socket protocol.

Setvar

To turn the TCP on or off:

```
! U1 setvar "ip.tcp.enable" "value"
```

Values

"off" disables TCP protocol

"on" enables TCP protocol

Default

"on"

Getvar

To respond with the TCP status:

```
! U1 getvar "ip.tcp.enable"
```

Example

This setvar example shows the value set to "on".

```
! U1 setvar "ip.tcp.enable" "on"
```

When the setvar value is set to "on", the getvar result is "on".

ip.tcp.nagle_algorithm

Enables or disables the use of the Nagle algorithm on TCP connections.

Setvar

To enables or disable the use of the Nagle algorithm on TCP connections:

```
! U1 setvar "ip.tcp.nagle_algorithm" "value"
```

Values

"enabled" allows the use of the Nagle algorithm

"disabled" disables use of the Nagle algorithm

Default

"enabled"

Getvar

To return the current setting value:

```
! U1 getvar "ip.tcp.nagle_algorithm"
```

ip.tls.enable

Enables the TLS connections to the encrypted channels on the printer specified by `ip.tls.port` and `ip.tls.port_json_config`.

Setvar

To set the command:

```
! U1 setvar "ip.tls.enable" "value"
```

Values

- "on"
- "off"

Default

"on"

Getvar

To have the printer return the current setting value:

```
! U1 getvar "ip.tls.enable"
```

Example

This example disables the TLS port.

```
! U1 setvar "ip.tls.enable" "off"
```

ip.tls.port

Sets the port number to which encrypted connections can be made to communicate with the printing channel.

Setvar

To set the command:

```
! U1 setvar "ip.tls.port" "value"
```

Values

Any valid https port from 0-65535.

Default

```
"9143"
```

Getvar

To have the printer return the current setting value:

```
! U1 getvar "ip.tls.port"
```

ip.tls.port_json_config

Sets the port number used to create an encrypted connection to the JSON configuration channel.

Setvar

To set the command:

```
! U1 setvar "ip.tls.port_json_config" "value"
```

Values

Any valid HTTPS port from 0-65535.

Default

```
"9243"
```

Getvar

To have the printer return the current setting value:

```
! U1 getvar "ip.tls.port_json_config"
```

ip.udp.enable

This printer setting refers to the UDP socket protocol.

Setvar

To turn UDP on or off:

```
! U1 setvar "ip.udp.enable" "value"
```

Values

"off" disables UDP protocol

"on" enables UDP protocol

Default

"off"

Getvar

To respond with the UDP status:

```
! U1 getvar "ip.udp.enable"
```

Example

This setvar example shows the value set to "on".

```
! U1 setvar "ip.udp.enable" "on"
```

When the setvar value is set to "on", the getvar result is "on".

weblink.cloud_connect.enable

Enables the CloudConnect menu feature.

Setvar

To set the command:

```
! U1 setvar "weblink.cloud_connect.enable" "value"
```

Values

- "on" enables the CloudConnect menu
- "off" disables the CloudConnect menu

Default

"on"

Getvar

To have the printer return the current setting value:

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

weblink.enable

This command indicates if one or more of the weblink connections are active.

If there is more than one connection under the weblink branch (for example, `weblink.ip.conn1`) and if any of the `.location` values are set, then this SGD will be set to `"on"`. If all connections are disabled (all connection `.location` values set to `" "`), then this value will be set to `"off"`.

`^JUF`, `^JUS`, `^JUN`, `^JUA`, and `device.restore_defaults` do not have any affect on this setting.

Getvar

To indicate if one or more of the weblink connections are active:

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

Result

- `"yes"` if any of the location values are set
- `"off"` if all connections are disabled

weblink.ip.conn[1|2].authentication.add

This command allows the user to add a single server/username/password triplet into the list of authentication entries.

When the printer attempts to connect to the server (url specified in `weblink.ip.conn[1|2].location`) the server may require HTTP authentication (e.g. digest, basic, DNS, etc.). There may be multiple authentication requests along the route to the destination (e.g. a local server first requires HTTP authentication as well as on the remote server).

For each HTTP authentication request received while attempting to connect, the printer will enumerate the authentication entries and attempt to satisfy the request with the username/password pair provided for the respective server. The server name in the entry is what determines which username/password pair should be used for which authentication request. Both DNS names and IP addresses are acceptable. The server, username, and password are separated by a single space (not a tab or other white space character). The server name is the only required field. If no username is supplied, but a password is, there must be two spaces between the server and the password fields. If there is a username but no password, or simply just the servername, no space is required at the end of the entry.

If the command is changed when the connection is enabled (`weblink.enable` is set to "on"), it will not take effect until the connection is disabled, and then re-enabled.



NOTE: This setting only be changed when `weblink.enable` is set to "off".

`^JUF`, `^JUS`, `^JUN`, `^JUA`, and `device.restore_defaults` do not have any affect on this setting.

Setvar

To add a single server/username/password triplet to the list of authentication entries:

```
! U1 setvar "weblink.ip.conn1.authentication.add" "servername[ username]
[ password]"
```

```
! U1 setvar "weblink.ip.conn2.authentication.add" "servername[ username]
[ password]"
```

Values

"servername [username][password]" has a maximum length of 2048 characters

Default

NA

Example

In this example, a username and a password is supplied:

```
! U1 setvar "weblink.ip.conn1.authentication.add" "my.server.lan johndoe
password"
```

In this example, no password is supplied

```
! U1 setvar "weblink.ip.conn1.authentication.add" "my.server.lan johndoe"
```

In this example, no username is supplied (note the double space)

```
! U1 setvar "weblink.ip.conn1.authentication.add" "my.server.lan password"
```

In this example, no username or password is supplied

```
! U1 setvar "weblink.ip.conn1.authentication.add" "my.server.lan"
```

weblink.ip.conn[1|2].authentication.entries

This command lists the server names added to the authentication entries list.

Only the server names will be shown. The username and passwords will not be shown. The server names are separated by a \r\n so that each shows up on its own line.

^JUF, ^JUS, ^JUN, ^JUA, and device.restore_defaults do not have any affect on this setting.

Getvar

To list the server names for the specified connection:

```
! U1 getvar "weblink.ip.conn1.authentication.entries"
```

```
! U1 getvar "weblink.ip.conn2.authentication.entries"
```

weblink.ip.conn[1|2].authentication.remove

This command allows the user to remove a single server/username/password triplet from the list of authentication entries.

To remove an entry only the server name is supplied. If an invalid entry is supplied no action is taken. If the SGD is changed when the connection is enabled (`weblink.ip.conn[1|2].enable`), it will not take effect until the connection is disabled, and then re-enabled. It is therefore recommended that this setting only be changed when `weblink.ip.conn[1|2].enable` is set to "off".

`^JUF`, `^JUS`, `^JUN`, `^JUA`, and `device.restore_defaults` do not have any affect on this setting.

Setvar

To remove a single server/username/password triplet from the list of authentication entries:

```
! U1 setvar "weblink.ip.conn1.authentication.remove" "servername"
```

```
! U1 setvar "weblink.ip.conn2.authentication.remove" "servername"
```

Values

"servername" has a maximum length of string is 2048 characters.

Default

NA

Example

In this example, a username and a password is supplied

```
! U1 setvar "weblink.ip.conn1.authentication.remove" "my.server.lan"
```

weblink.ip.conn[1|2].location

This command assigns the URL of the server for this connection. The URL must follow the URL rules for the HTTP[S] protocol outlined in RFC2396 (<http://www.ietf.org/rfc/rfc2396.txt>).

The setting will not take effect until the printer is reset. Changing this setting will set weblink.printer_reset_required to "yes".

^JUF, ^JUS, ^JUN, ^JUA, and device.restore_defaults do not have any affect on this setting.

Setvar

To set the server URL for the specified connection:

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

```
! U1 setvar "weblink.ip.conn2.location" "value"
```

Values

Any HTTPS URL up to 2048 characters

Default

" "

Getvar

To return the server URL currently assigned to the connection:

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

```
! U1 getvar "weblink.ip.conn2.location"
```

Example

```
! U1 setvar "weblink.ip.conn2.location"
```

```
"https://my.linkos.server.com:8080/link/os"
```

weblink.ip.conn[1|2].num_connections

This command reports the number of established connections on conn1 and conn2. Once the connection is established, this number will be incremented. When a channel is closed or the connection times out, the number is decremented.

Getvar

To retrieve the number of active connections on conn1 and conn2:

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

```
! U1 getvar "weblink.ip.conn2.num_connections"
```


weblink.ip.conn[1|2].maximum_simultaneous_connections

This command indicates the maximum number of simultaneous connections that can be initiated by the printer.

Via the main connection (the original connection initiated by the printer to the remote server), the remote server can request that additional connections from the printer be initiated (e.g. a connection that supports only JSON SGDs, one that behaves similar to the RAW TCP port).

The server is free to request as many as it thinks it needs, but the printer will prevent more than N number of connections, where N is the value of this command.

^JUF, ^JUS, ^JUN, ^JUA, and device.restore_defaults do not have any affect on this setting.

Setvar

To set the maximum number of connections:

```
! U1 setvar "weblink.ip.conn1.maximum_simultaneous_connections" "value"
```

```
! U1 setvar "weblink.ip.conn2.maximum_simultaneous_connections" "value"
```

Values

Any integer from 1-100

Default

"10"

Getvar

To retrieve the maximum set number of connections:

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

```
! U1 getvar "weblink.ip.conn2.maximum_simultaneous_connections"
```

Example

This example sets the conn1 maximum connections to 3.

```
! U1 setvar "weblink.ip.conn1.maximum_simultaneous_connections" "3"
```

weblink.ip.conn[1|2].proxy

This command assigns the URL of the proxy for the connection.

The proxy server protocol, port, domain, username, and password are all encoded into the URL via the format outlined in RFC2396 (<http://www.ietf.org/rfc/rfc2396.txt>).

The username and password must avoid the invalid characters listed in RFC2396 (e.g. ':', '@', '/', etc). If an invalid character must be used it needs to be escaped using '%' as described in RFC2396.

^JUF, ^JUS, ^JUN, ^JUA, and `device.restore_defaults` do not have any affect on this setting.

Setvar

To assign the URL of the connection proxy:

```
! U1 setvar "weblink.ip.conn1.proxy" "url"
```

```
! U1 setvar "weblink.ip.conn2.proxy" "url"
```

Values

- Any valid URL up to 2048 characters
- Expected URL format: `[httphttps]://[user:pass@]domain[:port]/[path]`
- The URL will need to be built according to the server/proxy environment the printer is running within.

Default

" "

- The user:pass, port, and path are all optional.
- The default scheme must be either HTTPS or HTTP. The default is HTTP.
- The default port is 1080.
- The default is to omit the username and password.

Getvar

To retrieve the URL of the connection proxy:

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

```
! U1 getvar "weblink.ip.conn2.proxy"
```

Do

To assign the URL of the connection proxy:

```
! U1 do "weblink.ip.conn1.proxy" "url"
```

```
! U1 do "weblink.ip.conn2.proxy" "url"
```

Values

- Any valid URL up to 2048 characters
- Expected URL format: [http|https]://[user:pass@]domain[:port]/[path]
- The URL will need to be built according to the server/proxy environment the printer is running within.

Default

" "

- The user:pass, port, and path are all optional.
- The default scheme must be either HTTPS or HTTP. The default is HTTP.
- The default port is 1080.
- The default is to omit the username and password.

Example

Examples of how to connect to various proxy servers:

```
http://username:password@mydomain.com:3128/
```

```
http://mydomain.com/
```

weblink.ip.conn[1|2].retry_interval

This command sets the number of seconds between attempts to connect to the server URL provided in `weblink.ip.conn1.location`. If an attempt is unsuccessful or the connection is lost, the printer will wait 'retry_interval' seconds before attempting to connect again.

`^JUF`, `^JUS`, `^JUN`, `^JUA`, and `device.restore_defaults` do not have any affect on this setting.

Setvar

To set the number of seconds to wait before attempting to reconnect to the server:

```
! U1 setvar "weblink.ip.conn1.retry_interval" "value"
```

```
! U1 setvar "weblink.ip.conn2.retry_interval" "value"
```

Values

"1" through "600"

Default

"10"

Getvar

To return the number of seconds to wait between connection attempts:

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

```
! U1 getvar "weblink.ip.conn2.retry_interval"
```

Do

To set the number of seconds to wait before attempting to reconnect to the server:

```
! U1 do "weblink.ip.conn1.retry_interval" "value"
```

```
! U1 do "weblink.ip.conn2.retry_interval" "value"
```

Values

1 - 600

Default

"10"

weblink.ip.conn1.test.location

This command holds the URL for testing a connection to the internet. This is meant to assist users in debugging their printer's connection to remote servers when there are issues with the main weblink connection (conn1 or conn2).

The URL must follow the URL rules for the HTTP[S] protocol outlined in RFC2396 (<http://www.ietf.org/rfc/rfc2396.txt>).

^JUF, ^JUS, ^JUN, ^JUA, and `device.restore_defaults` do not have any affect on this setting.

Setvar

To set the URL to hold for testing a connection:

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

```
! U1 setvar "weblink.ip.conn2.test.location" "url"
```

Values

Any HTTPS URL up to 2048 characters

Default

```
"http://www.zebra.com/apps/linktest"
```

Getvar

To retrieve the printer's test connection URL:

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

```
! U1 getvar "weblink.ip.conn2.test.location"
```

Do

To set the URL to hold for testing a connection:

```
! U1 do "weblink.ip.conn1.test.location" "url"
```

```
! U1 do "weblink.ip.conn2.test.location" "url"
```

Values

Any HTTPS URL up to 2048 characters

Default

```
"http://www.zebra.com/apps/linktest"
```

Example

The test connection can assist the user in several ways/scenarios:

If the `test.test_on` value is set to "failure", any time the main weblink (`conn[1|2].location`) connection fails to connect then the `test.location` URL will be used. In this situation, an attempt will be made to contact the remote URL in `test.location`, using authentication and proxy configuration that is specified by the main connection.

If the `test.test_on` value is set to "interval" an attempt will be made to contact the remote URL in `test.location` every `test.retry_interval` seconds, using authentication and proxy configuration that is specified by the main connection.

If the `test.test_on` value is set to "both", then scenario 1 and 2 will both occur. This is useful for users who will use an HTTP connection to move through their firewall - and thereafter frequently refresh the connection to indicate to their firewall that there is still activity for the purpose of keeping the connection alive.

weblink.ip.conn[1|2].test.retry_interval

This command determines how often, in seconds, a connection to the test.location URL should be attempted. This setting is only applicable when the `test.test_on` SGD is set to "interval" or "both".

`^JUF`, `^JUS`, `^JUN`, `^JUA`, and `device.restore_defaults` do not have any affect on this setting.

Setvar

To set the interval for how often a connection to the test.location URL should be attempted:

```
! U1 setvar "weblink.ip.conn1.test.retry_interval" "value"
```

```
! U1 setvar "weblink.ip.conn2.test.retry_interval" "value"
```

Values

0-1800 (in seconds, providing 0 second - 30 minute interval)

Default

"900"

Getvar

To retrieve the retry interval:

```
! U1 getvar "weblink.ip.conn1.test.retry_interval"
```

```
! U1 getvar "weblink.ip.conn2.test.retry_interval"
```

Do

To set the interval for how often a connection to the test.location URL should be attempted:

```
! U1 do "weblink.ip.conn1.test.retry_interval" "value"
```

```
! U1 do "weblink.ip.conn2.test.retry_interval" "value"
```

Values

0-1800 (in seconds, providing 0 second - 30 minute interval)

Default

"900"

weblink.ip.conn1.retry_interval_random_max

Specifies the maximum random wait time in seconds for weblink connection retries.

^JUF, ^JUS, ^JUN, ^JUA, and device.restore_defaults do not have any affect on this setting.

Setvar

To set the command:

```
! U1 setvar "weblink.ip.conn[1|2].retry_interval_random_max" "value"
```

Values

"0" through "600"

Default

"120"

Examples

```
! U1 setvar "weblink.ip.conn[1].retry_interval_random_max" "120"
```

```
! U1 setvar "weblink.ip.conn[2].retry_interval_random_max" "60"
```

Getvar

To have the printer return the current setting value:

```
! U1 getvar "weblink.ip.conn[1|2].retry_interval_random_max"
```


weblink.ip.conn1.test.test_on

This command determines when the test connection should be attempted. This assists in debugging the printer's connection to remote servers when there are issues with the main weblink connection (conn1 or conn2).

^JUF, ^JUS, ^JUN, ^JUA, and `device.restore_defaults` do not have any affect on this setting.

Setvar

To indicate when the test connection should be attempted:

```
! U1 setvar "weblink.ip.conn1.test.test_on" "value"
```

```
! U1 setvar "weblink.ip.conn2.test.test_on" "value"
```

Values

off,failure,interval,both

Default

"failure"

Getvar

To retrieve the test connection setting:

```
! U1 getvar "weblink.ip.conn1.test.test_on"
```

```
! U1 getvar "weblink.ip.conn2.test.test_on"
```

Do

To set when the test connection should be attempted:

```
! U1 do "weblink.ip.conn1.test.test_on" "value"
```

```
! U1 do "weblink.ip.conn2.test.test_on" "value"
```

Values

off,failure,interval,both

Default

"failure"

Example

The test connection can assist the user is several ways/scenarios:

If the `test.test_on` value is set to "failure", any time the main weblink (`conn[1|2].location`) connection fails to connect then the `test.location` URL will be used. An attempt will be made to

contact the remote URL in `test.location`, using authentication and proxy configuration that is specified by the main connection.

If the `test.test_on` value is set to "interval" an attempt will be made to contact the remote URL in `test.location` every `test.retry_interval` seconds, using authentication and proxy configuration that is specified by the main connection.

If the `test.test_on` value is set to "both", then scenario 1 and 2 will both occur. This is useful for users who will use an HTTP connection to move through their firewall - and thereafter frequently refresh the connection to indicate to their firewall that there is still activity for the purpose of keeping the connection alive.

weblink.logging.clear

This command clears the weblink log. Setting this value to anything will clear it, including an empty string.

^JUF, ^JUS, ^JUN, ^JUA, and device.restore_defaults do not have any affect on this setting.

Setvar

To clear the weblink log entries:

```
! U1 setvar "weblink.logging.clear" "value"
```

Values

Any string value, including an empty string.

Default

NA

Do

To clear the weblink log entries:

```
! U1 do "weblink.logging.clear" "value"
```

Values

Any string value, including an empty string.

Default

NA

Example

This example clears the weblink log entries with an empty string value.

```
! U1 setvar "weblink.logging.clear" ""
```

weblink.logging.entries

This command returns the N number of entries in the weblink log, where N has a maximum value that is set by `weblink.logging.max_entries`.

The weblink log is a collection of events related to connecting to a remote Link-OS™ server. The log entries range anywhere from general status to errors that prevented a successful connection. The log contains entries from all connections and are labeled so that it is clear which log entries are for which connection. Each log entry also contains a timestamp for when it was logged by the system. The newest events will appear at the bottom of the list.

`^JUF`, `^JUS`, `^JUN`, `^JUA`, and `device.restore_defaults` do not have any affect on this setting.

Getvar

To return a lists of entries in the weblink log:

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

Values

NA

Default

" "

Example

This example shows the result from `weblink.logging.entries`:

```
[01-04-2013 08:40:45.655] [conn1.1] HTTP/1.1 404 Not Found
[01-04-2013 08:40:45.659] [conn1.1] Received HTTP code 404 from proxy after
CONNECT
[01-04-2013 08:40:45.660] [conn1.1] Closing connection
[01-04-2013 08:40:45.662] [conn1.1] Failed to connect (SP = 0, CU = 0, UW =
0, AC = 0, PC = 0)
```

weblink.logging.max_entries

This command specifies the maximum number of individual log entries that will be stored in the `weblink.logging.entries` command.



NOTE: Changes to this command are immediate and may result in some log entries being lost. If there are N log entries currently in the log, the user sets the `max_entries` to M, where M is less than N, the oldest (N-M) log entries will be removed.

`^JUF`, `^JUS`, `^JUN`, `^JUA`, and `device.restore_defaults` do not have any affect on this setting.

Setvar

To set the maximum number of log entries that will be stored:

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

Values

"0" through "10000"

Setting the value to "0" disables logging.

Getvar

To return the setting for the maximum number of log entries that will be stored:

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

Do

To set the maximum number of log entries that will be stored:

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

Values

"0" through "10000"

Setting the value to "0" disables logging.

Default

"0"

Example

In this example, `weblink.logging.max_entries` is set to 3:

```
[01-04-2013 08:40:45.659] [conn1.1] Received HTTP code 404 from proxy after
CONNECT
[01-04-2013 08:40:45.660] [conn1.1] Closing connection
[01-04-2013 08:40:45.662] [conn1.1] Failed to connect (SP = 0, CU = 0, UW =
0, AC = 0, PC = 0)
```

In this example, `weblink.logging.max_entries` is set to 2: `weblink.logging.entries` becomes:

```
[01-04-2013 08:40:45.660] [conn1.1] Closing connection  
[01-04-2013 08:40:45.662] [conn1.1] Failed to connect (SP = 0, CU = 0, UW =  
0, AC = 0, PC = 0)
```

weblink.printer_reset_required

This command retrieves a "yes" or "no" value indicating whether any of the weblink settings have been modified.

^JUF, ^JUS, ^JUN, ^JUA, and `device.restore_defaults` do not have any affect on this setting.

Getvar

To retrieve whether any of the weblink settings are modified:

```
! U1 getvar "weblink.printer_reset_required"
```

Values

- "yes"
- "no"

Default

"no"

weblink.restore_defaults

This command defaults, and saves, the weblink branch settings. Any value, including an empty string, will default the weblink branch settings.



NOTE: The entire weblink branch of settings will be defaulted and the settings are saved; however, the weblink connections will not use the new settings until the printer is restarted (e.g. the `weblink.printer_reset_required` SGD will be "yes" after a default).

`^JUF`, `^JUS`, `^JUN`, `^JUA`, and `device.restore_defaults` do not have any affect on this setting.

Setvar

To default the weblink branch settings:

```
! U1 setvar "weblink.restore_defaults" "value"
```

Values

Any value, including an empty string, will default the branch

Default

NA

Do

To default the weblink branch settings:

```
! U1 do "weblink.restore_defaults" "value"
```

Values

Any value, including an empty string, will default the branch

Default

NA

Example

These all default the branch:

```
! U1 setvar "weblink.restore_defaults" ""
! U1 setvar "weblink.restore_defaults" "foo"
! U1 do "weblink.restore_defaults" ""
! U1 do "weblink.restore_defaults" "foo"
```


weblink.zebra_connector.authentication.add

This command allows the user to add a single server/username/password triplet into the list of authentication entries.

When the printer attempts to connect to the Zebra Printer Connector, the local server may require HTTP authentication (e.g. digest, basic, DNS, etc.). There may be multiple authentication requests along the route to the destination (e.g. a local server first requires HTTP authentication as well as on the remote server).

For each HTTP authentication request received while attempting to connect, the printer will enumerate the authentication entries and attempt to satisfy the request with the username/password pair provided for the respective server. The server name in the entry is what determines which username/password pair should be used for which authentication request. Both DNS names and IP addresses are acceptable. The server, username, and password are separated by a single space (not a tab or other white space character). The server name is the only required field. If no username is supplied, but a password is, there must be two spaces between the server and the password fields. If there is a username but no password, or simply just the servername, no space is required at the end of the entry.

If the command is changed while the Visibility Agent is enabled, it will not take effect until the connection is disabled, and then re-enabled.



IMPORTANT: This setting can only be changed when weblink.zebra_connector.enable is set to "off".

^JUF, ^JUS, ^JUN, ^JUA, and device.restore_defaults do not have any affect on this setting.

Setvar

To allow the user to add a single server/username/password triplet into the list of authentication entries:

```
! U1 setvar "weblink.zebra_connector.authentication.add" "server username
password"
```

Values

- "server" is the IP address or a DNS name
- "username" is the user name on this server
- "password" is the password for this username on this server

Default

" "

Result

```
! U1 setvar "weblink.zebra_connector.authentication.add"
```

```
"10.3.5.70 jsmith LedZepR0cks!"
```

weblink.zebra_connector.authentication.entries

This command lists the server names added to the authentication entries list.

Only the server names will be shown. The username and passwords will not be shown. The server names are separated by a \r\n so that each shows up on its own line.

^JUF, ^JUS, ^JUN, ^JUA, and device.restore_defaults do not have any affect on this setting.

Getvar

To list the server names added to the authentication entries list:

```
! U1 getvar "weblink.zebra_connector.authentication.entries"
```

Result

Returns the list of servers with authentication entries. It does not return the username or passwords for those servers.

Default

" "

weblink.zebra_connector.authentication.remove

Removes a single server/username/password triplet from the list of authentication entries.

To remove an entry only the server name is supplied, however the entire entry will be removed. If an invalid entry is supplied no action is taken.

^JUF, ^JUS, ^JUN, ^JUA, and device.restore_defaults do not have any affect on this setting.

Setvar

To remove a single server/username/password triplet from the list of authentication entries:

```
! U1 setvar "weblink.zebra_connector.authentication.remove" "server"
```

Values

"server" an IP address or a DNS name of the server to remove

Default

NA

Example

```
! U1 setvar "weblink.zebra_connector.authentication.remove" "10.3.5.70"
```

weblink.zebra_connector.enable

Enables the Visibility Agent feature.

Setvar

To enable or disable the Visibility Agent feature:

```
! U1 setvar "weblink.zebra_connector.enable" "value"
```

Values

- "on" enables Visibility Agent
- "off" disables Visibility Agent

Default

"on"

Example

```
! U1 setvar "weblink.zebra_connector.enable" "enable"
```

Getvar

To return the current setting value:

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

Result

"on" or "off"

weblink.zebra_connector.proxy

This command assigns the URL for the proxy used to connect to the Zebra connector.

The proxy server protocol, port, domain, username, and password are all encoded into the URL via the format outlined in RFC2396 (<http://www.ietf.org/rfc/rfc2396.txt>).

The username and password must avoid the invalid characters listed in RFC2396 (e.g. ':', '@', '/', etc). If an invalid character must be used it needs to be escaped using '%' as described in RFC2396.

^JUF, ^JUS, ^JUN, ^JUA, and device.restore_defaults do not have any affect on this setting.

Setvar

To assign the URL for the proxy used to connect to the Zebra connector:

```
! U1 setvar "weblink.zebra_connector.proxy" "url "
```

Values

Any valid URL up to 2048 characters

Expected URL format: [http|https]://[user:pass@]domain[:port]/[path]

The URL will need to be built according to the server/proxy environment the printer is running where:

- "user" username
- "password" password
- "host" either the hostname or IP address
- "port" port number
- "other" anything else needed in the path

Default

" "

- The user:pass, port, and path are all optional.
- The default scheme must be either HTTPS or HTTP. The default is HTTP.
- The default port is 1080.

The default is to omit the username and password.

Example

```
! U1 setvar "weblink.zebra_connector.proxy"
"https://user:pass@my.internal.proxy:7840/init "
```

Getvar

To return the current setting value:

```
! U1 getvar "weblink.zebra_connector.proxy"
```

Result

```
"https://user:pass@my.internal.proxy:7840/init"
```

weblink.zebra_connector.version

Displays the current version of the Zebra Connector.

Getvar

To display the current version of the Zebra connector:

```
! U1 getvar "weblink.zebra_connector.version"
```

Values

A version number in the form of xx.yy.

Default

" "

Example

```
! U1 getvar "weblink.zebra_connector.version" "0.04"
```

wlan.11ac.80mhz_enable

Enables the 80MHz wide channel support for the 802.11AC radio.

Setvar

To enable or disable the 80MHz wide channel support for the 802.11 AC radio:

```
! U1 setvar "wlan.11ac.80mhz_enable" "value"
```

Values

- "on" enables the 80MHz wide channel support
- "off" disables the 80MHz wide channel support

Default

""

Getvar

To return the current setting value:

```
! U1 getvar "wlan.11ac.80mhz_enable"
```


wlan.11d.enable

Allows the client to automatically configure themselves to their local regulatory domain.

Setvar

To set the command:

```
! U1 setvar "wlan.11d.enable" "value"
```

Values

- "off"
- "on"

Default

"off"

Getvar

To have the printer return the current setting value:

```
! U1 getvar "wlan.11d.enable"
```

wlan.11n.20mhz_only

This command forces 20 MHz operation only in printers with 802.11n radios.

Setvar

To force 20 MHz operation only in printers with 802.11n radios:

```
! U1 setvar "wlan.11n.20mhz_only" "value"
```

Values

- "on"
- "off"

Default

"off"

Getvar

To return the current setting for 20 MHz operation only:

```
! U1 getvar "wlan.11n.20mhz_only"
```

Example

```
U1 setvar "wlan.11n.20mhz_only" "on"
```

wlan.11n.aggregation

This command enable or disables Aggregation MAC Service Data Unit (A-MSDU) in 802.11n radio communications.

Setvar

To enable or disable A-MSDU in 802.11n radio communications:

```
! U1 setvar "wlan.11n.aggregation" "value"
```

Values

- "on"
- "off"

Default

"off"

Getvar

To return the current setting for A-MSDU:

```
! U1 getvar "wlan.11n.aggregation"
```

Example

```
! U1 setvar "wlan.11n.aggregation" "on"
```

wlan.11n.greenfield

This command will enable or disable greenfield mode in 802.11n radio communications.

Setvar

To enable or disable the greenfield mode:

```
! U1 setvar "wlan.11n.greenfield" "value"
```

Values

- "on"
- "off"

Default

"off"

Getvar

To return the current setting for greenfield mode:

```
! U1 getvar "wlan.11n.greenfield"
```

Example

```
! U1 setvar "wlan.11n.greenfield" "on"
```

wlan.11n.rifs

This command enable/disables Reduced Interframe Space (RIFS) in 802.11n radio communications.

Setvar

To enable or disable RIFS in 802.11n:

```
! U1 setvar "wlan.11n.rifs" "value"
```

Values

- "on"
- "off"

Default

"off"

Getvar

To return the current setting for RIFS:

```
! U1 getvar "wlan.11n.rifs"
```

Example

```
! U1 setvar "wlan.11n.rifs" "on"
```

wlan.11n.short_gi_40mhz

This command enables/disables short Guard Interval in 40 mhz mode.

Setvar

To enable or disable short Guard Interval in 40 mhz mode:

```
! U1 setvar "wlan.11n.short_gi_40mhz" "value"
```

Values

- "on"
- "off"

Default

"off"

Getvar

To return the current setting for short Guard Interval 40mhz operation:

```
! U1 getvar "wlan.11n.short_gi_40mhz"
```

Example

```
! U1 setvar "wlan.11n.short_gi_40mhz" "on"
```

wlan.11n.short_gi_20mhz

This command enables/disables short Guard Interval (GI) in 20 mhz mode.

Setvar

To enable or disable short Guard Interval in 20 mhz mode:

```
! U1 setvar "wlan.11n.short_gi_20mhz" "value"
```

Values

- "on"
- "off"

Default

"off"

Getvar

To return the current setting value:

```
! U1 getvar "wlan.11n.short_gi_20mhz"
```

Example

```
! U1 setvar "wlan.11n.short_gi_20mhz" "on"
```

wlan.8021x.enable

Enables or disables the 802.1x security protocol, with the option to set it to WPA security protocol.

Setvar

To set the command:

```
! U1 setvar "wlan.8021x.enable" "value"
```

Values

- "off" 802.1x security protocol is disabled.
- "on" 802.1x security protocol is enabled.
- "wpa" 802.1x security protocol is enabled and uses WPA.

Default

"off"

Getvar

To have the printer return the current setting value:

```
! U1 getvar "wlan.8021x.enable"
```


wlan.8021x.validate_peap_server_certificate

This command determines if the printer will validate the PEAP server certificate.

Setvar

To determine if the printer will validate the PEAP server certificate:

```
! U1 setvar "wlan.8021x.validate_peap_server_certificate" "value"
```

Values

- "on"
- "off"

Default

"on"

Getvar

To return the current setting:

```
! U1 getvar "wlan.8021x.validate_peap_server_certificate"
```

Example

```
! U1 setvar "wlan.8021x.validate_peap_server_certificate"
```



IMPORTANT: When using certificate files, the time on the printer must be set correctly for the websocket connection to succeed, as the time is used in the certificate validation.

wlan.8021x.peap.anonymous_identity

This command is used to specify the phase 1 ID when using PEAP to authenticate with the wireless network.

Setvar

To specify the phase 1 ID to be used during peap authentication:

```
! U1 setvar "wlan.8021x.peap.anonymous_identity" "<value>"
```

Values

"<value>" is less than or equal to 32 characters

Default

" "

Getvar

To retrieve the current value:

```
! U1 getvar "wlan.8021x.peap.anonymous_identity"
```

wlan.8021x.authentication

Sets the authentication type used in the 802.1x security protocol.

Setvar

To set the authentication type:

```
! U1 setvar "wlan.8021x.authentication" "value"
```

Values

"psk"	Pre-Shared Key
"leap"	Lightweight Extensible Authentication Protocol
"eap-tls"	EAP-Transport Layer Security
"peap"	Protected Extensible Authentication Protocol
"ttls"	Tunneled Transport Layer Security
"fast"	Flexible Authentication via Secure Tunneling

Default

"psk"

Getvar

To return the current setting value:

```
! U1 getvar "wlan.8021x.authentication"
```

wlan.8021x.eap.password

Sets the EAP authentication password.

Setvar

To set the EAP authentication password:

```
! U1 setvar "wlan.8021x.eap.password" "password"
```

Values

32 characters or less representing the EAP password.

Default

" "

Getvar

To return the current setting value:

```
! U1 getvar "wlan.8021x.eap.password"
```

Result

" * "

Password is not readable. Printer reports "*" in response to this command.

wlan.8021x.eap.username

Sets or returns the user name associated with the EAP authentication protocol.

Setvar

To set the EAP user name:

```
! U1 setvar "wlan.8021x.eap.username" "username"
```

Values

32 characters or less representing the EAP user name.

Default

" "

Getvar

To return the current setting value:

```
! U1 getvar "wlan.8021x.eap.username"
```

Result

"username"

wlan.8021x.eap.privkey_password

Sets the EAP private key password to the specified password.

Setvar

To set the EAP private key password:

```
! U1 setvar "wlan.8021x.eap.privkey_password" "password"
```

Values

32 characters or less representing the EAP private key password.

Default

" "

Getvar

To return the current setting value:

```
! U1 getvar "wlan.8021x.eap.privkey_password"
```

Result

" * "

Printer always retrieves " * " regardless of the length of the stored EAP authentication private key password, and does not reveal the actual password.

wlan.8021x.peap.peap_password

Sets the password associated with the PEAP authentication protocol.

Setvar

To set the PEAP password:

```
! U1 setvar "wlan.8021x.peap.peap_password" "password"
```

Values

32 characters or less representing the PEAP password.

Default

"password"

Getvar

To return the current setting value:

```
! U1 setvar "wlan.8021x.peap.peap_password"
```

Result

" * "

Printer reports one " * " regardless of the length of the stored PEAP authentication password, and does not reveal the actual password.

wlan.8021x.peap.privkey_password

Sets or returns the PEAP authentication private key password.

Setvar

To set the PEAP authentication password:

```
! U1 setvar "wlan.8021x.peap.privkey_password" "password"
```

Values

32 characters or less representing the PEAP private key password.

Default

" * "

Getvar

To return the current setting value:

```
! U1 getvar "wlan.8021x.peap.privkey_password"
```

Result

" * "

Printer reports one " * " regardless of the length of the stored PEAP private key password, and does not reveal the actual password.

wlan.8021x.peap.peap_username

Sets the user name associated with the PEAP authentication protocol.

Setvar

To set the user name associated with the PEAP authentication protocol:

```
! U1 getvar "wlan.8021x.peap.peap_username" "username"
```

Values

32 characters or less representing the PEAP username.

Default

"username"

Getvar

To return the current setting value:

```
! U1 getvar "wlan.8021x.peap.peap_username"
```

Result

"username"

wlan.8021x.ttls_anonymous_identity

This command returns the anonymous identity string for EAP-TTLS that is used as the unencrypted identity for a WLAN. The value of the identity string can be up to 32 characters.

Getvar

To return the anonymous identity string:

```
! U1 getvar "wlan.8021x.ttls_anonymous_identity"
```

Default

NA

wlan.active_channels

This command returns list of current active channels defined by `wlan.allowed_band` and `wlan.user_channel_list`.

Getvar

To return the list of current active channels:

```
! U1 getvar "wlan.active_channels"
```

Result

One or more of the following channels:

1,2,3,4,5,6,7,8,9,10,11,36,40,44,48,52,56,60,64,100,104,108,
112,116,132,136,140,149,153,157,161,165,all

wlan.adhoc_last_channel

Reports the last channel used for Wi-Fi ad hoc communication.

Getvar

To return the last channel used for Wi-Fi ad hoc communication:

```
! U1 getvar "wlan.adhoc_last_channel"
```

Values

A numeric value between "1" and "11".

Default

"1"

wlan.authenticated

Returns the authentication state of the wireless interface.

Getvar

To return the authentication state of the wireless interface:

```
! U1 getvar "wlan.authenticated"
```

Values

- "yes" the printer WLAN connection has been authenticated
- "no" the printer WLAN connection has not been authenticated

wlan.authentication_error

Reports the last error that occurred during the WLAN authentication process.

Getvar

To report the last error that occurred during the WLAN authentication process:

```
! U1 getvar "wlan.authentication_error"
```

Values

- "none" the authentication was successful.
- "timed out" the authentication did not succeed in the allotted time.

wlan.available

Determines if a WLAN radio has been installed in the printer.

Getvar

To determine if a WLAN radio has been installed in the printer:

```
! U1 getvar "wlan.available"
```

Values

- "yes" a WLAN radio is installed
- "no" a WLAN radio is not installed

wlan.allowed_band

This command provides a method to restrict the 802.11n radio to either the 2.4 GHz or 5 GHz band.

Use this option when it is beneficial to have the radio use only one frequency band. Setting the 802.11n radio to one band will reduce roaming and radio association times since the radio will not scan as many channels.

Setvar

To restrict the 802.11n radio to either the 2.4 GHz or 5 GHz band:

```
! U1 setvar "wlan.allowed_band" "value"
```

Values

"2.4", "5", or "all"

Default

"all"

If both bands are desired, use "all"

Getvar

To return the current setting for allowed bands:

```
! U1 getvar "wlan.allowed_band"
```

Example

This example sets the allowed band to only the 2.4 GHz band.

```
! U1 setvar "wlan.allowed_band" "2.4"
```


wlan.adhocautomode

This printer setting refers to enabling or disabling the adhoc auto mode.

Setvar

To instruct the printer to set the adhoc auto mode:

```
! U1 setvar "wlan.adhocautomode" "value"
```

Values

- "on" adhoc auto mode enabled
- "off" adhoc auto mode disabled

Default

"off"

Getvar

To instruct the printer to respond with the adhoc auto mode status:

```
! U1 getvar "wlan.adhocautomode"
```

Example

This setvar example shows the value set to "on".

```
! U1 setvar "wlan.adhocautomode" "on"
```

When the setvar value is set to "on", the getvar result is "on".

wlan.adhocchannel

This printer setting refers to specifying the wireless channel for adhoc channel.

Setvar

To set the printer's wireless channel for adhoc channel mode:

```
! U1 setvar "wlan.adhocchannel" "value"
```

Values

Decimal value between 1 and 16 inclusive

Default

"1"

Getvar

To respond with the printer's wireless channel for adhoc channel mode:

```
! U1 getvar "wlan.adhocchannel"
```

Example

This setvar example shows the value set to "1".

```
! U1 setvar "wlan.adhocchannel" "1"
```

When the setvar value is set to "1", the getvar result is "1".

wlan.associated

This command refers to if the printer is or is not associated with an access point (AP).

Getvar

To instruct the printer to respond with yes or no, which identifies if it is associated with the AP:

```
! U1 getvar "wlan.associated"
```

Example

In this example, the `getvar` result is "yes".

```
! U1 getvar "wlan.associated"
```

wlan.auth_type

This parameter selects the authentication service to be used between the printer and the Access Point. Open System and Shared Key are the two types of authentication services.

Setvar

To instruct the printer to set the authentication type to the specified value:

```
! U1 setvar "wlan.auth_type" "value"
```

Values

- "open"
- "shared"

Default

"open"

Getvar

To instruct the printer to retrieve the current authentication type:

```
! U1 getvar "wlan.auth_type"
```

Example

This example instructs the printer to set the authentication type to Shared Key.

```
! U1 setvar "wlan.auth_type" "shared"
```

The authentication type will be set to Shared Key after power cycle.

wlan.band_preference

This command sets a preferred band to connect with using Wi-Fi.

Setvar

To specify the WLAN band preference:

```
! U1 getvar "wlan.band_preference" "none"
```

Values

- "2.4"
- "5"
- "none"

Default

"none"

Getvar

To return the current WLAN band preference value:

```
! U1 getvar "wlan.band_preference"
```

Example

In the setvar example below, the WLAN band preference is set to "5".

```
! U1 getvar "wlan.band_preference" "5"
```

wlan.bssid

This command returns the MAC address of the access point (AP) with which the printer is associated.

Getvar

To retrieve the MAC address of the access point (AP):

```
! U1 getvar "wlan.bssid"
```

Example

In this example, the `getvar` result is the MAC address of the access point.

```
! U1 getvar "wlan.bssid"
```

wlan.channel

This command retrieves the current Wi-Fi channel the printer is using.

Getvar

To retrieve the current Wi-Fi channel the printer is using:

```
! U1 getvar "wlan.channel"
```

Example

In this example, the `getvar` retrieves the current Wi-Fi channel the printer is using.

```
! U1 getvar "wlan.channel"
```

wlan.channel_mask

This command specifies the wireless channel masks for enabling and disabling various channels. This controls which b/g radio channels can be used by the radio for network connections.

The value for this command is a bit field where a 0 disables a channel and a 1 enables the channel. Starting from the right, bit 0 is for channel 1, bit 1 for channel 2, etc. This can be used to limit the channels scanned for networks, which may slightly improve connection and roaming speed. It also used to ensure compliance with the regulatory domains of your location.

Commonly Used Channel Mask Settings		
Region	Channels	Channel Mask
United States, Canada, Latin America	1 - 11	0x7FF
Europe, Middle East, Africa, other	1 - 13	0x1FFF
Japan	1 - 14	0x3FFF



NOTE: This command is not supported by all radios. Ensure the channel masks are set in accordance with the regulatory domains of your country.

Setvar

To instruct the printer to set the wireless channel mask value:

```
! U1 setvar "wlan.channel_mask" "value"
```

Values

"0x0000" to "0xFFFF" (4 hexadecimal digits preceded by "0x")

Default

"0x7FF"

Getvar

To instruct the printer to set the wireless channel mask value:

```
! U1 getvar "wlan.channel_mask"
```

Example 1

This setvar example shows the value set to "0x7FF" for common North American channels.

```
! U1 setvar "wlan.channel_mask" "0x7FF"
```

Example 2

This setvar example sets the channel mask to use only channels 1,6,11.

```
! U1 setvar "wlan.channel_mask" "0x421"
```

Only channels 1, 6, and 11 will be used by the radio.

wlan.country_code

This command defines the regulatory country for which the radio is currently configured.

Setvar

To set the country code for which the radio is to be configured:

```
! U1 setvar "wlan.country_code" "value"
```



IMPORTANT: The list of country codes is specific to each printer and depends on the printer model and its wireless radio configuration. The list is subject to change, addition, or deletion with any firmware update, at any time, without notice.

To determine the country codes available on your printer, issue the `! U1 getvar "wlan"` command to return all commands related to WLAN settings. Locate the `wlan.country_code` command in the results and view the country codes available for your printer.

Getvar

To retrieve the country code for which the radio is currently configured:

```
! U1 getvar "wlan.country_code"
```

Example

In this example, the `setvar` sets the country code to USA/Canada.

```
! U1 setvar "wlan.country_code" "usa/canada"
```

wlan.current_tx_rate

This command retrieves the transmission rate of the wireless print server.

Getvar

To retrieve the current transmit rate of the wireless print server:

```
! U1 getvar "wlan.current_tx_rate"
```

Example

In this example, the `getvar` retrieves the transmission rate of the wireless print server.

```
! U1 getvar "wlan.current_tx_rate"
```

wlan.enable

This parameter can be used to enable or disable the Wireless LAN functionality of the printer.

Setvar

To enable or disable printer's Wireless LAN functionality:

```
! U1 setvar "wlan.enable" "value"
```

Values

- "on" Wireless LAN functionality is enabled
- "off" Wireless LAN functionality is disabled

Default

"off"

Getvar

To return the current setting value:

```
! U1 getvar "wlan.enable"
```

wlan.encryption_index

This parameter refers to the WEP (Wired Equivalent Privacy) encryption key index. It determines which one of the four encryption keys is to be used by the client (printer).

Setvar

To set the encryption key index to the specified value:

```
! U1 setvar "wlan.encryption_index" "value"
```

Values

- "1"
- "2"
- "3"
- "4"

Default

"1"

Getvar

To retrieve the current encryption key setting:

```
! U1 getvar "wlan.encryption_index"
```

Example

In this example, the `setvar` command instructs the printer to set the encryption key index to 1.

```
! U1 setvar "encryption_index" "1"
```

wlan.encryption_key

These parameters refer to the first, second, third, and fourth indexed WEP encryption keys. The WEP encryption keys are hexadecimal strings that are either 10 or 26 characters long depending on the encryption method (40-bit or 128 bit). The keys should match the wireless network WEP encryption keys.

Setvar

To set the encryption key value:

```
! U1 setvar "wlan.encryption_key[1|2|3|4]" "value"
```

Values

10 hexadecimal characters for 40-bit encryption and 26 hexadecimal characters for 128-bit encryption.

Default

All zeroes (10 or 26, depending on encryption setting)

Getvar

To instruct the printer respond with the encryption key value:

```
! U1 getvar "wlan.encryption_key1"
```

Example 1

In these examples, the getvar results assume that the printer is using 40-bit encryption with the default settings.

```
! U1 getvar "wlan.encryption_key1"
```

```
! U1 getvar "wlan.encryption_key2"
```

```
! U1 getvar "wlan.encryption_key3"
```

```
! U1 getvar "wlan.encryption_key4"
```

Results for each key: "0000000000"

Example 2

In these examples, the setvar command instructs the printer to set the encryption key value. This example assumes that the printer is using 40-bit encryption.

```
! U1 setvar "wlan.encryption_key1" "A1B2C3D4F5"
```

```
! U1 setvar "wlan.encryption_key2" "G1H2J3K4L5"
```

```
! U1 setvar "wlan.encryption_key3" "M1N2P3Q4R5"
```

```
! U1 setvar "wlan.encryption_key4" "S1T2V3W4X5"
```

wlan.encryption_mode

This parameter refers to WEP (Wired Equivalent Privacy) encryption. This parameter enables and disables the printer's WEP encryption. When using WEP encryption make sure that the encryption key matches the wireless network WEP encryption key.

Setvar

To instruct the printer to turn the LEAP mode "on" or "off" :

```
! U1 setvar "wlan.encryption_mode" "value"
```

Values

- "off"
- "40-bit"
- "128-bit"

Default

"off"

Getvar

To return the type of encryption that is currently being used by the printer:

```
! U1 getvar "wlan.encryption_mode"
```

Example 1

This example instructs the printer to set encryption to 40-bit.

```
! U1 setvar "wlan.encryption_mode" "40-bit"
```

Example 2

This example instructs the printer to turn encryption off.

```
! U1 setvar "wlan.encryption_mode" "off"
```

wlan.essid

This printer setting refers to the printer's stored ESSID.

Setvar

To instruct the printer to change the ESSID:

```
! U1 setvar "wlan.essid" "value"
```

Values

32 character alphanumeric string

Default

"125" (Printers running Link-OS v5.3 or earlier versions)

" " (For Printers running Link-OS 6 or later versions)

Getvar

To instruct the printer to respond with the stored ESSID value:

```
! U1 getvar "wlan.essid"
```

Example

This setvar example shows the value set to "125".

```
! U1 setvar "wlan.essid" "125"
```

When the setvar value is set to "125", the getvar result is "125".



NOTE: For Link-OS Firmware earlier than 6.0, setting ESSID to "" allows the printer to attempt to connect to an AP with any ESSID. For Link-OS Firmware of 6.0 or later, setting ESSID to "" means that the printer will not attempt a Wi-Fi connection.

wlan.firmware_version

This command refers to the firmware version of the wireless radio card.

Getvar

To instruct the printer to respond with the current version of the wireless radio card firmware:

```
! U1 getvar "wlan.firmware_version"
```

Example

In this example, the `getvar` result is the version of Symbol 4137 card (for example, "F3.91-69").

```
! U1 getvar "wlan.firmware_version"
```

wlan.ip.addr

This command allows you to get or set the wireless print servers IP address.



IMPORTANT: For a set IP address to take affect, the IP protocol must be set to permanent and the print server must be reset.

Setvar

To instruct the printer to change its current wireless print server IP address upon powering the printer on:

```
! U1 setvar "wlan.ip.addr" "value"
```

Values

Any valid IP address

Default

"0.0.0.0"

Getvar

To respond with the current wireless print server IP address:

```
! U1 getvar "wlan.ip.addr"
```

Example

This setvar example shows the value set to "10.14.4.235".

```
! U1 setvar "wlan.ip.addr" "10.14.4.235"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "10.14.4.235".

wlan.ip.arp_interval

This print server setting allows you to specify the ARP (Address Resolution Protocol) interval or the ARP cache time out for the wireless print server.

Setvar

To instruct the printer to respond with the ARP interval or the ARP cache time out value for the wireless print server:

```
! U1 setvar "wlan.ip.arp_interval" "value"
```

Values

"0" to "30" seconds

Default

"0"

Getvar

To respond with the ARP interval or the ARP cache time out value (in seconds) for the wireless print server:

```
! U1 getvar "wlan.ip.arp_interval"
```

Example

This setvar example shows the value set to "0".

```
! U1 setvar "wlan.ip.arp_interval" "0"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "0".

wlan.ip.default_addr_enable

This command allows you to default the wireless print server's IP address.



IMPORTANT: For a set IP address to take affect, the IP protocol must be set to permanent and the print server must be reset.

Setvar

To enable or disable te printer to use its default IP address, if no address is provided through DHCP or BOOTP:

```
! U1 setvar "wlan.ip.default_addr_enable" "value"
```

If you do not assign an IP address after 2 minutes, the 10/100 Internal PS defaults to IP address 192.168.254.254.

Values

- "on" enabled
- "off" disabled

Default

"on"

Getvar

To instruct the printer to show the status of the setting of the wireless print server's default IP address feature:

```
! U1 getvar "wlan.ip.default_addr_enable"
```

Example

This setvar example shows the value set to "on".

```
! U1 setvar "wlan.ip.default_addr_enable" "on"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "on".

wlan.ip.dhcp.arp_verify

Specifies whether an ARP broadcast will be sent out to verify that the IP address received from the DHCP server is not already in use.

Setvar

To set the ARP broadcast feature:

```
! U1 setvar "wlan.ip.dhcp.arp_verify" "value"
```

Values

- "on" means an ARP broadcast will be sent out
- "off" means an ARP broadcast will not be sent out

Getvar

To return the current setting value:

```
! U1 getvar "wlan.ip.dhcp.arp_verify"
```

wlan.ip.dhcp.cache_ip

This command enables or disables the IP cache of the wireless print server.

Setvar

To set the status of the IP cache:

```
! U1 setvar "ip.dhcp.cache_ip" "value"
```

Values

- "on" means enabled
- "off" means disabled

Default

"off"

Getvar

To retrieve the status of the IP cache:

```
! U1 getvar "wlan.ip.dhcp.cache_ip"
```

Example

This setvar example shows the value set to "off".

```
! U1 setvar "wlan.ip.dhcp.cache_ip" "off"
```

When the setvar value is set to "off", the getvar result is "off".

wlan.ip.dhcp.cid_all

This printer setting defines the entire client identifier (DHCP option 61) if DHCP is enabled on the wireless print server and "wlan.ip.dhcp.cid_type" is set to "0", or "2". The MAC address is used if the type is set to "1".

Setvar

To change the client identifier prefix and suffix of the wireless print server:

```
! U1 setvar "wlan.ip.dhcp.cid_all" "value"
```

Values

A maximum length of 60 characters if the CID type is ASCII, or 120 characters if the CID type is hexadecimal.

Default

" "

Getvar

To instruct the printer to respond with the client identifier prefix and suffix of the wireless print server:

```
! U1 getvar "wlan.ip.dhcp.cid_all"
```

Example

This setvar example shows the value set to "printer".

```
! U1 setvar "wlan.ip.dhcp.cid_all" "printer"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "printer".

wlan.ip.dhcp.cid_enable

This command determines if DHCP (option 61) is turned on or off of the wireless print server.

Setvar

To instruct the printer to set the status of the client identifier of the wireless print server:

```
! U1 setvar "wlan.ip.dhcp.cid_enable" "value"
```

Values

- "off" means the client identifier is turned off
- "on" means the client identifier is turned on

Default

"off"

Getvar

To instruct the printer to respond with the status of the client identifier of the wireless print server:

```
! U1 getvar "wlan.ip.dhcp.cid_enable"
```

Example

This setvar example shows the value set to "off".

```
! U1 setvar "wlan.ip.dhcp.cid_enable" "off"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "off".

wlan.ip.dhcp.cid_prefix

This printer setting defines the prefix to be prepended to the DHCP client identifier (option 61) when DHCP is enabled on the wireless print server and "wlan.ip.dhcp.cid_type" is set to "0" or "2".

Setvar

To instruct the printer to change the CID prefix of the wireless print server:

```
! U1 setvar "wlan.ip.dhcp.cid_prefix" "value"
```

Values

Any text string up to 10 characters if the CID type is ASCII, or 20 characters if the CID type is hexadecimal.

Default

" "

Getvar

To instruct the printer to respond with the client identifier prefix of the wireless print server:

```
! U1 getvar "wlan.ip.dhcp.cid_prefix"
```

Example

This setvar example shows the value set to "PRT001".

```
! U1 setvar "wlan.ip.dhcp.cid_prefix" "PRT001"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "PRT001".

wlan.ip.dhcp.cid_suffix

This printer setting defines the unique suffix to be used as the client identifier (DHCP option 61) if DHCP is enabled on the wireless print server and "wlan.ip.dhcp.cid_type" is set to "0" or "2".

Setvar

To instruct the printer to change the client identifier suffix value on the wireless print server:

```
! U1 setvar "wlan.ip.dhcp.cid_suffix" "value"
```

Values

The maximum length of a value allowed is 60 ASCII characters when the CID type is ASCII, or 120 hexadecimal values when the CID type is hexadecimal.

Default

" "

Getvar

To instruct the printer to respond with the client identifier suffix on the wireless print server:

```
! U1 getvar "wlan.ip.dhcp.cid_suffix"
```

Example

This setvar example shows the value set to "printer".

```
! U1 setvar "wlan.ip.dhcp.cid_suffix" "printer"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "printer".

wlan.ip.dhcp.cid_type

This printer setting defines the type of client identifier (DHCP option 61) that will be sent if DHCP is enabled on the wireless print server. A value of "1" means the type of Ethernet and the printer's MAC address will be used. A value of "0" or "2" means the client identifier sent will be "wlan.ip.dhcp.cid_prefix" concatenated with "wlan.ip.dhcp.cid_suffix".

Setvar

To instruct the printer to enable "synthetic" client identifier for the wireless print server:

```
! U1 setvar "wlan.ip.dhcp.cid_type" "value"
```

Values

- "0" means ASCII string
- "1" means MAC address of the wireless radio card
- "2" means HEX value

Default

"1"

Getvar

To instruct the printer to respond with the client identifier type for the wireless print server:

```
! U1 getvar "wlan.ip.dhcp.cid_type"
```

Example

This setvar example shows the value set to "1".

```
! U1 setvar "wlan.ip.dhcp.cid_type" "1"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "1".

wlan.ip.dhcp.lease.last_attempt

This command retrieves the last time a DHCP request was sent from the wireless print server.

Getvar

To retrieve the last time a DHCP request was sent from the wireless print server:

```
! U1 getvar "wlan.ip.dhcp.lease.last_attempt"
```

Example

In this example, the `getvar` retrieves the last time a DHCP request was sent from the wireless print server.

```
! U1 getvar "wlan.ip.dhcp.lease.last_attempt"
```

wlan.ip.dhcp.lease.length

This command retrieves the original length (in seconds) of the DHCP lease on the wireless print server.

Getvar

To retrieve the original length (in seconds) of the DHCP lease on the wireless print server:

```
! U1 getvar "wlan.ip.dhcp.lease.length"
```

Example

This command retrieves the original length of the DHCP lease on the wireless print server.

```
! U1 getvar "wlan.ip.dhcp.lease.length"
```

wlan.ip.dhcp.lease.server

This command retrieves the address of the print server that provided the DHCP lease on the wireless print server.

Getvar

To retrieve the address of the print server that provided the DHCP lease on the wireless print server:

```
! U1 getvar "wlan.ip.dhcp.lease.server"
```

Example

In this example, the `getvar` retrieves the server that provided the DHCP lease on the wireless print server.

```
! U1 getvar "wlan.ip.dhcp.lease.server"
```

wlan.ip.dhcp.lease.time_left

This command retrieves the time (in seconds) left in the current DHCP lease on the wireless print server.

Getvar

To retrieve the time (in seconds) left in the current DHCP lease on the wireless print server:

```
! U1 getvar "wlan.ip.dhcp.lease.time_left"
```

Example

In this example, the `getvar` retrieves the time left in the current DHCP lease on the wireless print server.

```
! U1 getvar "wlan.ip.dhcp.lease.time_left"
```

wlan.ip.dhcp.option12

This command specifies if the DHCP option 12 (host name) is on or off in the discovery packet that is sent from the wireless print server.

Setvar

To enable or disable the DHCP option 12:

```
! U1 setvar "wlan.ip.dhcp.option12" "value"
```

Values

- "on" turns on option 12
- "off" turns off option 12

Default

"on"

Getvar

To return the current setting value:

```
! U1 getvar "wlan.ip.dhcp.option12"
```

Example

This setvar example shows the value set to "on".

```
! U1 setvar "wlan.ip.dhcp.option12" "on"
```

When the setvar value is set to "on", the getvar result is "on".

wlan.ip.dhcp.option12_format

This command specifies the format of the option 12 value to be used in the discovery packet of the wireless print server.

Setvar

To set the format of option 12 value to be used in the discovery packet of the wireless print server:

```
! U1 setvar "wlan.ip.dhcp.option12_format" "value"
```

Values

String

Default

" "

Getvar

To retrieve the format of option 12 value to be used in the discovery packet of the wireless print server:

```
! U1 getvar "wlan.ip.dhcp.option12_format"
```

Example

This setvar example shows configuring the wlan.ip.dhcp.option12_format to the value contained in the device.friendly_name.

It is necessary to surround the SGD entry to be used as source for the data with the < and > characters.

```
! U1 setvar "wlan.ip.dhcp.option12_format" "<device.friendly_name>"
```

To further explain, if the above command was issued and the value currently stored in the device.friendly_name parameter was "ShipPrinter", then the response to the following command would be "ShipPrinter":

```
! U1 getvar "wlan.ip.dhcp.option12_value"
```

wlan.ip.dhcp.option12_value

This command retrieves the actual value which will be used in the discovery packet of the wireless print server.

Getvar

To return the actual value which will be used in the discovery packet of the wireless print server:

```
! U1 getvar "wlan.ip.dhcp.option12_value"
```

Example

This setvar example shows configuring the wlan.ip.dhcp.option12_format to the value contained in the device.friendly_name.

It is necessary to surround the SGD entry to be used as source for the data with the < and > characters.

```
! U1 setvar "wlan.ip.dhcp.option12_format" "<device.friendly_name>"
```

To further explain, if the above command was issued and the value currently stored in the device.friendly_name parameter was "ShipPrinter", then the response to following command would be "ShipPrinter":

```
! U1 getvar "wlan.ip.dhcp.option12_value"
```

wlan.ip.dhcp.request_timeout

This command sets the maximum time (in seconds) to wait for a response to a DHCP discovery request on the wireless print server.

Setvar

To set the maximum time (in seconds) to wait for a response to a DHCP discovery request on the wireless print server:

```
! U1 setvar "wlan.ip.dhcp.request_timeout" "value"
```

Values

"2" through "30"

Default

"2"

Getvar

To retrieve the maximum time (in seconds) to wait for a response to a DHCP discovery request on the wireless print server:

```
! U1 getvar "wlan.ip.dhcp.request_timeout"
```

Example

This setvar example shows the value set to "2".

```
! U1 setvar "wlan.ip.dhcp.request_timeout" "2"
```

When the setvar value is set to "2", the getvar result is "2".

wlan.ip.dhcp.requests_per_session

This command retrieves the maximum amount of DHCP discover requests for a single DHCP session on the wireless print server.

Setvar

To set the maximum amount of DHCP discover requests for a single DHCP session on the wireless print server:

```
! U1 setvar "wlan.ip.dhcp.requests_per_session" "value"
```

Values

"1" through "10"

Default

"2"

Getvar

To retrieve the currently set maximum amount of DHCP discover requests for a single DHCP session on the wireless print server:

```
! U1 getvar "wlan.ip.dhcp.requests_per_session"
```

Example

This setvar example shows the value set to "2".

```
! U1 setvar "wlan.ip.dhcp.requests_per_session" "2"
```

When the setvar value is set to "2", the getvar result is "2".

wlan.ip.dhcp.session_interval

This command retrieves how long it will take for a DHCP session to time out before a new DHCP session begins on the wireless print server.

Setvar

To set the DHCP session time out:

```
! U1 setvar "wlan.ip.dhcp.session_interval" "value"
```

Values

"0" through "60"

Default

"10"

Getvar

To return the current setting value:

```
! U1 getvar "wlan.ip.dhcp.session_interval"
```

Example

This setvar example shows the value set to "10".

```
! U1 setvar "wlan.ip.dhcp.session_interval" "10"
```

When the setvar value is set to "10", the getvar result is "10".

wlan.ip.dns.domain

This command sets the value for DNS domains in a WLAN network. Up to five domains are allowed to be set.

Setvar

To set values to be used by the device as DNS domains when `wlan.ipv6.address_type` is "static" (IPv6) or `wlan.ip.protocol` is "permanent" (IPv4):

```
! U1 setvar "wlan.ip.dns.domain" "zebra.com zebra-lab.lan.com"
```

Getvar

To retrieve a space-delimited list of domains currently in use by the device, up to five domains. The list will contain a mixture of domains received from DHCPv4, DHCPv6, and user-set values depending upon address acquisition settings, using the following rules:

- IPv4 sources are the priority.
- If IPv4 the source provides five domains, there will only be IPv4-sourced domains.
- If there are slots to fit more domains, they will be filled with IPv6 sources.

```
! U1 getvar "wlan.ip.dns.domain"
```



NOTE: Retrieved values are always the values currently in use, which may not match values that were just set, depending on if you are using a static or auto address type.

Example

The following example sets `wlan.ip.dns.domain` to the domains `zebra.com` and `zebra-lab.lan.com`.

These values will be retrieved immediately if `internal_wired.ipv6.address_type` is "static" (IPv6) or `wlan.ip.protocol` is "permanent" (IPv4).

```
! U1 setvar "wlan.ip.dns.domain" "zebra.com zebra-lab.lan.com"
```

```
! U1 getvar "wlan.ip.dns.domain"
```

Result

```
"zebra.com zebra-lab.lan.com"
```

wlan.ip.dns.domain_user_value

This command displays the value that the user has set for `wlan.ip.dns.domain` with static (IPv6)/permanent (IPv4) acquisition mode with a WLAN connection.

Getvar

To retrieve the value:

```
! U1 getvar "wlan.ip.dns.domain_user_value"
```

wlan.ip.dns.servers

This command sets a space-delimited list of the domain name servers from a WLAN print server. Up to three addresses may be set. Both IPv4 and IPv6 are supported.

Setvar

To set the list of DNS WLAN print servers, specify a list of space-delimited IP addresses, separated by spaces, to be used as DNS servers when `wlan.ipv6.address_type` is "static" (IPv6) or `wlan.ip.protocol` is "permanent" (IPv4).

```
! U1 setvar "wlan.ip.dns.servers" "value"
```

Getvar

To retrieve a space-delimited list IP address(es) of DNS server(s), up to three, that are currently in use by the device. The values to be used are a combination of addresses received from DHCPv4, DHCPv6, and user-set values using the following rules:

- At least one spot will be allocated to any enabled IP version.
- IPv4 addresses will take at least two slots if at least two IPv4 addresses are provided.
- User-set values will be included if static/permanent addresses are used.



NOTE: Retrieved values are always the values currently in use, which may not match values that were just set, depending on if you are using a static or auto address type.

```
! U1 getvar "wlan.ip.dns.servers"
```

Example

The following example sets `wlan.dns.servers` to `2001::123:4567:89ab:0:cdef` .

This value will be retrieved immediately if `wlan.ipv6.address_type` is "static" (IPv6) or `wlan.ip.protocol` is "permanent" (IPv4).

```
! U1 setvar "wlan.ip.dns.servers" "2001::123:4567:89ab:0:cdef"
```

```
! U1 getvar "wlan.ip.dns.servers"
```

Result

```
"2001::123:4567:89ab:0:cdef"
```


wlan.ip.dns.servers_user_value

This command displays the value that the user has set for wlan.ip.dns.servers with static (IPv6)/permanent (IPv4) acquisition mode with a WLAN connection.

Getvar

To retrieve the value:

```
! U1 getvar "wlan.ip.dns.servers_user_value"
```

wlan.ip.gateway

This command instructs the printer to change the wireless print server's gateway address.



IMPORTANT: This setting refers to the gateway address. A set value is ignored if the IP protocol is not set to permanent.

Setvar

To change the wireless printer server's gateway address:

```
! U1 setvar "wlan.ip.gateway" "value"
```

Values

Any valid gateway address

Default

"0.0.0.0"

Getvar

To respond with the wireless printer server's gateway address:

```
! U1 getvar "wlan.ip.gateway"
```

Example

This setvar example shows the value set to "10.3.5.1".

```
! U1 setvar "wlan.ip.gateway" "10.3.5.1"
```

When the setvar value is set to "10.3.5.1", the getvar result is "10.3.5.1".

wlan.ip.netmask

This setting refers to the wireless print server's subnet mask address. This value is ignored if the IP protocol is not set to permanent.

Setvar

To change the wireless print servers subnet mask:

```
! U1 setvar "wlan.ip.netmask" "value"
```

Values

Any valid subnet mask.

Default

"255.255.255.0"

Getvar

To return the current setting value:

```
! U1 getvar "wlan.ip.netmask"
```

Example

This setvar example shows the value set to "255.255.255.0".

```
! U1 setvar "wlan.ip.netmask" "255.255.255.0"
```

When the setvar value is set to "255.255.255.0", the getvar result is "255.255.255.0"

wlan.ip.port

This printer setting refers to the wireless print server's port number that the TCP print service is listening on. Normal TCP communications from the host should be directed to this port.

Setvar

To set the wireless print server's TCP/UDP port number:

```
! U1 setvar "wlan.ip.port" "value"
```

Values

"1" through "65535" (excluding any ports currently used by other services, such as 21, 23, 80, and 515).

Default

"9100"

Getvar

To respond with the wireless printer server's TCP/UDP port number:

```
! U1 getvar "wlan.ip.port"
```

Example

This setvar example shows the value set to "9100".

```
! U1 setvar "wlan.ip.port" "9100"
```

When the setvar value is set to "9100", the getvar result is "9100".

wlan.ip.port_alterate

This command sets the port number of the alternate wlan port.



NOTE: Print servers supporting this command will monitor both the primary port and the alternate port for connections at the same time.

Setvar

To set the alternate wlan port for the print server:

```
! U1 setvar "wlan.ip.port_alterate" "6101"
```

Values

Any valid TCP port address

Default

"9100"

Getvar

To return the current alternate wlan port setting:

```
! U1 getvar "wlan.ip.port_alterate"
```

Values

The current port setting.

Example 1

This setvar example shows the value set to "6101".

```
U1 setvar "wlan.ip.port_alterate" "6101"
```

Example 2

This setvar example sets the channel mask to use only channels 1,6,11.

```
! U1 setvar "wlan.channel_mask" "0x421"
```

Only channels 1, 6, and 11 will be used by the radio.

wlan.ip.port_json_config

This command determines the TCP port number to listen on for JSON configuration packets.

Setvar

To determine the TCP port number on which to listen for JSON configuration packets:

```
! U1 setvar "wlan.ip.port_json_config" "value"
```

Values

"0" disables the port

"1" through "65535" for port number to listen on

Default

"9200"

Getvar

To retrieve the TCP port number which is listening for JSON configuration packets:

```
! U1 getvar "wlan.ip.port_json_config"
```

Example

In this example, the `getvar` command causes the printer to get the TCP port number which is listening for JSON configuration packets.

```
! U1 getvar "wlan.ip.port_json_config"
```

In this example, the `getvar` command causes the printer to get the TCP port number which is listening for JSON configuration packets.

```
! U1 getvar "wlan.ip.port_json_config"
```

wlan.ip.protocol

This command configures the IP addressing method used by the wireless print server.

Setvar

To configure the IP addressing method used by the wireless print server:

```
! U1 setvar "wlan.ip.protocol" "value"
```

Values

- "bootp" uses the standard BOOTP addressing method to obtain an IP address and configuration
- "dhcp" uses the standard DHCP addressing method to obtain an IP address and configuration for a server specified period of time
- "rarp" uses the standard RARP addressing method to obtain an IP address
- "glean only" uses the IP address from a PING packet that is sent to its hardware address (unicast address)
- "permanent" uses static values assigned through other commands
- "all" tries all of the dynamic addressing methods, not permanent, to obtain an IP address

Default

"all"

Getvar

To return the value of the currently selected IP protocol used by the wireless print server:

```
! U1 getvar "wlan.ip.protocol"
```

Example

In this example, the `setvar` result is the current programming language that the printer is using.

```
! U1 setvar "wlan.ip.protocol" "bootp"
```

What the `setvar` value is set to is the `getvar` result. In this example, the `getvar` result is "bootp".

wlan.ip.timeout.enable

Use this command to enable the connection timeout on the wireless print server. For this to take effect, the print server must be reset.

Setvar

To enable or disable the timeout checking on the wireless print server:

```
! U1 setvar "wlan.ip.timeout.enable" "value"
```

Values

"off" turns off the connection checking

"on" turns on the connection checking

Default

"on"

Getvar

To return whether the timeout checking is enabled on the wireless print server:

```
! U1 getvar "wlan.ip.timeout.enable"
```

Example

This setvar example shows the value set to "on".

```
! U1 setvar "wlan.ip.timeout.enable" "on"
```

When the setvar value is set to "on", the getvar result is "on".

wlan.ip.timeout.value

This network setting refers to the number of seconds before the connection times out for the wireless print server. For this to take effect, the print server must be reset.

Setvar

To set the time value of the wireless print server:

```
! U1 setvar "wlan.ip.timeout.value" "value"
```

Values

"1" through "3600"

Default

"300"

Getvar

To respond with the current setting value:

```
! U1 getvar "wlan.ip.timeout.value"
```

Example

This setvar example shows the value set to "300".

```
! U1 setvar "wlan.ip.timeout.value" "300"
```

When the setvar value is set to "300", the getvar result is "300".

wlan.ip.wins.addr

Specifies the WINS server address. If WINS Addressing is done via DHCP, then this value will automatically be filled by the DHCP server.

Setvar

To set the WINS server address:

```
! U1 setvar "wlan.ip.wins.addr" "value"
```

Values

A valid IP address

Default

"0.0.0.0"

Getvar

To return the current setting value:

```
! U1 getvar "wlan.ip.wins.addr"
```

wlan.ip.wins.permanent_source

Specifies if the source of the WINS address is DHCP or if it is set manually.

Setvar

To set the source of the WINS address:

```
! U1 setvar "wlan.ip.wins.permanent_source" "value"
```

Values

"off" : uses DHCP assigned WINS address

"on" : manually sets WINS address (set via wlan.ip.wins.addr)

Default

"off"

Getvar

To return the current setting value:

```
! U1 getvar "wlan.ip.wins.permanent_source"
```

wlan.ipv6.addresses

This command returns a list of up to ten IPv6 addresses in use by the printer with a WLAN connection when `wlan.ipv6.address_type` is set to `auto`. The command returns " : : " when no address has been set.

Getvar

To retrieve the IPv6 addresses:

```
! U1 getvar "wlan.ipv6.addresses"
```

wlan.ipv6.address_type

This command controls how the interface gets IPv6 address(es). When set to "auto", the Router Advertisement packets determine the usage of SLAAC and/or DHCP.

Setvar

To set the active network address type:

```
! U1 setvar "wlan.ipv6.address_type" "value"
```

Values

"static" or "auto"

Default

"auto"

Getvar

To retrieve the address type:

```
! U1 getvar "wlan.ipv6.address_type"
```

Example

This example changes the address type to "static".

```
! U1 setvar "wlan.ipv6.address_type" "static"
```

```
! U1 getvar "wlan.ipv6.address_type"
```

Result

```
"static"
```

wlan.ipv6.dhcp.lease.last_attempt

This command retrieves the value of the Unix timestamp of the last attempt to obtain a DHCPv6 lease with a WLAN connection. The value is a whole number up to 4,294,967,295 in seconds.

Getvar

To retrieve the time of the last attempt:

```
! U1 getvar "wlan.ipv6.dhcp.lease.last_attempt"
```

wlan.ipv6.dhcp.lease.length

This command retrieves the value of the lease duration for an IP address provided by the DHCPv6 in seconds with a WLAN connection. The value is a whole number up to 4,294,967,295 in seconds.

Getvar

To retrieve the lease length:

```
! U1 getvar "wlan.ipv6.dhcp.lease.length"
```

wlan.ipv6.dhcp.lease.time_left

This command retrieves the value of the remaining lease duration for an IP address provided by the DHCPv6 in seconds with a WLAN connection. The value is a whole number up to 4,294,967,295 in seconds.

Getvar

To retrieve the lease time left:

```
! U1 getvar "wlan.ipv6.dhcp.lease.time_left"
```


wlan.ipv6.dhcp.option39_enable

This command enables option 39 (to configure the Fully Qualified Domain Name or FQDN) in DHCPv6 communication with a WLAN connection.

Setvar

To enable or disable option 39:

```
! U1 setvar "wlan.ipv6.dhcp.option39_enable" "value"
```

Values

"on" or "off"

Default

"on"

Getvar

To retrieve the option 39 status:

```
! U1 getvar "wlan.ipv6.dhcp.option39_enable"
```

Example

```
! U1 setvar "wlan.ipv6.dhcp.option39_enable" "off"
```

```
! U1 getvar "wlan.ipv6.dhcp.option39_enable"
```

Result

```
"off"
```

wlan.ipv6.dhcp.option39_format

This command sets the value of the format field for option 39 (to configure the Fully Qualified Domain Name or FQDN) in DHCPv6 with a WLAN connection. The value is a string up to 127 characters, and the default is the value set by `device.friendly_name`.

Setvar

To set the format string:

```
! U1 setvar "wlan.ipv6.dhcp.option39_format" "value"
```

where "value" is a string of up to 127 characters.

If the value is a source SGD command, it must be bracketed with "<" and ">", such as "<device.friendly_name>".

Getvar

To retrieve the string:

```
! U1 getvar "wlan.ipv6.dhcp.option39_format"
```

Example

This command sets the value to "printer2".

```
! U1 setvar "wlan.ipv6.dhcp.option39_format" "printer2"
```

```
! U1 getvar "wlan.ipv6.dhcp.option39_format"
```

Result

```
"printer2"
```

wlan.ipv6.dhcp.option39_fqdn

This command retrieves the fully qualified domain name (FQDN) of the printer as given by the DHCPv6 server for option 39 with a WLAN connection. The value is a string up to 127 characters.

Getvar

To retrieve the FQDN:

```
! U1 getvar "wlan.ipv6.dhcp.option39_fqdn"
```

wlan.ipv6.dhcp.option39_value

This command retrieves the value to be used for option 39 in DHCPv6 after processing the `internal_wired.ipv6.dhcp.option39_format` command with a WLAN connection. The value is a string of up to 127 characters.

Getvar

To retrieve the option 39 value:

```
! U1 getvar "wlan.ipv6.dhcp.option39_value"
```

wlan.ipv6 gateways

This command retrieves the IPv6 gateway(s) for WLAN devices in use by the printer (maximum list of 10).

Getvar

To retrieve the gateway(s):

```
! U1 getvar "wlan.ipv6.gateways"
```

wlan.ipv6.static.addresses

This command specifies the IPv6 address(es) to be used when `wlan.ipv6.address_type` is set to `"static"`. Up to three addresses may be set, separated by commas. The command returns `": : "` when no static address has been set.

Setvar

To set the IPv6 address(es):

```
! U1 setvar "wlan.ipv6.static.addresses" "value"
```

where "value" is a string of up to 152 characters.

Getvar

To retrieve the list of IPv6 address(es):

```
! U1 getvar "wlan.ipv6.static.addresses"
```

Example

To set three addresses:

```
! U1 setvar "wlan.ipv6.static.addresses"
"fc04:1795::fe94:1704/32,fd04:1795::207:4dff:fe94:1704/64,fd04:1796::e0b/64"
```

```
! U1 getvar "wlan.ipv6.static.addresses"
```

Result

```
"fc04:1795::fe94:1704/32,fd04:1795::207:4dff:fe94:1704/64,fd04:1796::e0b/64"
```

wlan.ipv6.static.gateways

This command sets the IPv6 gateway to be used when `wlan.ipv6.address_type` is set to "static". Only one gateway is supported. The command returns " : : " when no static address has been set.

Setvar

To set the gateway:

```
! U1 setvar "wlan.ipv6.static.gateways" "value"
```

where "value" is a string of up to 50 characters. To clear a previously set gateway, use " " or " : : ".

Getvar

To retrieve the active network address type:

```
! U1 getvar "wlan.ipv6.static.gateways"
```

Example

To set the gateway to "fe80::202:b3ff:febf:9d18":

```
! U1 setvar "wlan.ipv6.static.gateways" "fe80::202:b3ff:febf:9d18"
```

```
! U1 getvar "wlan.ipv6.static.gateways"
```

Result

```
"fe80::202:b3ff:febf:9d18"
```

wlan.keep_alive.enable

This setting controls the printers ability to send a LSAP (link service access point) packet to the access point on an user controllable interval. This feature is included to accommodate access points that require a regular confirmation that wireless clients are still active.

Setvar

To enable or disable the keep alive printer setting:

```
! U1 setvar "wlan.keep_alive.enable" "value"
```

Values

"on" turns on keep_alive

"off" turns off keep_alive

Default

"on"

Getvar

To return with the current value of the wlan.keep_alive.enable setting:

```
! U1 getvar "wlan.keep_alive.enable"
```

Example

This setvar example shows the value set to "on".

```
! U1 setvar "wlan.keep_alive.enable" "on"
```

When the setvar value is set to "on", the getvar result is "on"

wlan.keep_alive.timeout

This printer setting manages the interval at which the LSAP (link service access point) packet is sent.

Setvar

To configure the frequency at which the printer sends the wlan.keep_alive packet:

```
! U1 setvar "wlan.keep_alive.timeout" "value"
```

Values

"5" to "300" seconds

Default

"15"

Getvar

To respond with the wlan.keep_alive.timeout interval value:

```
! U1 getvar "wlan.keep_alive.timeout"
```

Example

This setvar example shows the value set to "15".

```
! U1 setvar "wlan.keep_alive.timeout" "15"
```

When the setvar value is set to "15", the getvar result is "15".

wlan.kerberos.kdc

This printer setting refers to the Kerberos Key Distribution Center (KDC). The KDC is a trusted server which maintains a database with account information for all security principals (users) for a particular site or administrative domain (realm).

Setvar

To change the Kerberos KDC:

```
! U1 setvar "wlan.kerberos.kdc" "value"
```

Values

"0" to "32" ASCII characters

Default

"krbtgt"

Getvar

To respond with the current Kerberos KDC:

```
! U1 getvar "wlan.kerberos.kdc"
```

Example

This setvar example shows the value set to "krbtgt".

```
! U1 setvar "wlan.kerberos.kdc" "krbtgt"
```

When the setvar value is set to "krbtgt", the getvar result is "krbtgt"

wlan.kerberos.mode

This printer setting refers to the Kerberos network authentication protocol. Kerberos provides secure mutual authentication for a wireless client through a Symbol Access Point, based on user information stored on a Kerberos KDC (Key Distribution Center) server.

Setvar

To enable or disable the Kerberos mode:

```
! U1 setvar "wlan.kerberos.mode" "values"
```

Values

"off" disables Kerberos mode

"on" enables Kerberos mode

Default

"off"

Getvar

To respond with the current Kerberos mode:

```
! U1 getvar "wlan.kerberos.mode"
```

Example

This setvar example shows the value set to "on".

```
! U1 setvar "wlan.kerberos.mode" "on"
```

When the setvar value is set to "on", the getvar result is "on".

wlan.kerberos.password

This printer setting refers to the Kerberos password. The password must correspond to a user profile established on the Kerberos KDC server in use.

Setvar

To set the Kerberos password:

```
! U1 setvar "wlan.kerberos.password" "value"
```

Values

"0" through "32" alphanumeric characters

Default

"password"

Getvar

To respond with the current Kerberos password:

```
! U1 getvar "wlan.kerberos.password"
```

For protection a single "*" prints.

Example

This setvar example shows the value set to "password".

```
! U1 setvar "wlan.kerberos.password" "password"
```

When the setvar value is set to "password", the getvar result is "*".

wlan.kerberos.realm

This printer setting refers to the Kerberos realm, an administrative domain with its own Kerberos server (KDC).



IMPORTANT: If you are using a Windows 2000 Server the realm must be all upper-case. For details, see example below.

Setvar

To change the Kerberos realm:

```
! U1 setvar "wlan.kerberos.realm" "value"
```

Values

"0" through "64" alphanumeric characters

Default

"kerberos"

Getvar

To respond with the current Kerberos realm:

```
! U1 getvar "wlan.kerberos.realm"
```

Example

This setvar example shows the value set to "zebra".

```
! U1 setvar "wlan.kerberos.realm" "zebra"
```

When the setvar value is set to "zebra", the getvar result is "zebra".

This setvar example shows the value set to "ZEBRA" on a Windows 2000 server.

```
! U1 setvar "wlan.kerberos.realm" "ZEBRA"
```

When the setvar value is set to "ZEBRA", the getvar result is "ZEBRA".

wlan.kerberos.username

This printer setting refers to the Kerberos user name. The user name must correspond to a user profile established on the Kerberos KDC server in use.

Setvar

To change the Kerberos user name:

```
! U1 setvar "wlan.kerberos.username" "value"
```

Values

"0" to "32" alphanumeric characters

Default

"user"

Getvar

To respond with the current Kerberos user name:

```
! U1 getvar "wlan.kerberos.username"
```

Example

This setvar example shows the value set to "user".

```
! U1 setvar "wlan.kerberos.username" "user"
```

When the setvar value is set to "user", the getvar result is "user".

wlan.leap_mode

This printer setting refers to Cisco LEAP (Lightweight Extensible Authentication Protocol). LEAP provides secure mutual authentication for a wireless client through a Cisco Aironet Access Point, based on user information stored on a backend RADIUS (Remote Authentication in Dial-Up User Service) /AAA (Authentication, Authorization, and Accounting) server.



NOTE:

- This command is only supported on printers using firmware Vxx.18.xx or earlier.
- This command is not supported on units with a Frequency Hopping Spread Spectrum (FHSS) radio.

Setvar

To turn the LEAP mode "on" or "off" :

```
! U1 setvar "wlan.leap_mode" "values"
```

Values

"off" disables LEAP mode

"on" enables LEAP mode

Default

"off"

Getvar

To respond with the LEAP mode:

```
! U1 getvar "wlan.leap_mode"
```

Example

This setvar example shows the value set to "on".

```
! U1 setvar "wlan.leap_mode" "on"
```

When the setvar value is set to "on", the getvar result is "on".

wlan.leap_password

This printer setting refers to the LEAP password. The password must correspond to a user profile established on the RADIUS/AAA server in use.



NOTE: This parameter is not supported on units with a Frequency Hopping Spread Spectrum (FHSS) radio.

Setvar

This command instructs the printer to change the LEAP password.

```
! U1 setvar "wlan.leap_password" "values"
```

Values

0 to 32 ASCII characters

Default

"password"

Getvar

This command instructs the printer to respond with the LEAP password.

```
! U1 getvar "wlan.leap_password"
```

For protection, a single "*" prints.

Example

This setvar example shows the value set to "password".

```
! U1 setvar "wlan.leap_password" "password"
```

When the setvar value is set to "password", the getvar result is "*".

wlan.leap_username

This printer setting refers to the LEAP user name. The user name must correspond to a user profile established on the RADIUS/AAA server in use.



NOTE: This parameter is not supported on units with a Frequency Hopping Spread Spectrum (FHSS) radio.

Setvar

To change the LEAP user name:

```
! U1 setvar "wlan.leap_username" "values"
```

Values

0 to 32 alphanumeric ASCII characters.

Default

"user"

Getvar

To respond with the LEAP user name:

```
! U1 getvar "wlan.leap_username"
```

Example

This setvar example shows the value set to "user".

```
! U1 setvar "wlan.leap_username" "user"
```

When the setvar value is set to "user", the getvar result is "user".

wlan.mac_addr

This command retrieves the MAC address of the wireless print server.

Getvar

To respond with the MAC address of the wireless print server:

```
! U1 getvar "wlan.mac_addr"
```

Example

In this example, the `getvar` result is the MAC address for the wireless print server.

```
! U1 getvar "wlan.mac_addr"
```

wlan.mac_raw

This command specifies the RAW MAC address of the wireless print server. The raw mac address is the mac address without the colons (" : ").

Getvar

To retrieve the RAW MAC address of the wireless print server:

```
! U1 getvar "wlan.mac_raw"
```

Example

In this example, the `getvar` retrieves the RAW MAC address of the wireless print server.

```
! U1 getvar "wlan.mac_raw"
```

wlan.operating_mode

This printer setting refers to the network operating mode. Infrastructure mode means that the printer will try to associate with an access point. Ad hoc mode means that the printer will try to associate with a device other than an access point and join a standalone network.

To use "ad hoc" mode, configure the printer as follows:

- Set the ESSID to the new network's ESSID.
- Turn off the DHCP and assign an IP Address to the printer.
- Set the subnet mask on the printer to the new network's subnet mask.
- Change the operating mode on the printer to "ad hoc".

Setvar

To set the network operating mode:

```
! U1 setvar "wlan.operating_mode" "value"
```

Values

- "adhoc" means the printer will try to associate with a network device
- "infrastructure" means the printer will try to associate with an access point

Getvar

To respond with the network-mode value:

```
! U1 getvar "wlan.operating_mode"
```

Example

This setvar example shows the value set to "infrastructure".

```
! U1 setvar "wlan.operating_mode" "infrastructure"
```

When the setvar value is set to "infrastructure", the getvar result is "infrastructure".

wlan.password

This printer setting refers to the generic password that is used by the wireless securities that need a password.



IMPORTANT: Kerberos has its own password field.

Setvar

To set a generic password for the wireless securities that need a password:

```
! U1 setvar "wlan.password" "value"
```

Values

A maximum of 32 alphanumeric characters.

Default

"password"

Getvar

To respond with a generic password for wireless securities:

```
! U1 getvar "wlan.password"
```

For protection a single "*" prints.

Example

This setvar example shows the value set to "password".

```
! U1 setvar "wlan.password" "password"
```

When the setvar value is set to "password", the getvar result is "*".

wlan.permitted_channels

This command returns the list of permitted channels.

Getvar

To return the list of permitted channels within the defined country or region:

```
! U1 getvar "wlan.permitted_channels"
```

Result

One or more of the following channels:

1,2,3,4,5,6,7,8,9,10,11,36,40,44,48,52,56,60,64,100,104,108,
112,116,132,136,140

wlan.pmf

This command allows the user to configure the 802.11 Protected Management Frame settings. This is only applicable for printers having the 802.11ac radio feature.

Setvar

To configure the protected management feature setting:

```
! U1 setvar "wlan.pmf" "value"
```

Values

"disabled" means Protected Management Frame is disabled

"enabled" means Protected Management Frame is enabled

"required" means Printer must support PMF.

Default

"enabled"

Getvar

To return the current setting value:

```
! U1 getvar "wlan.pmf"
```

wlan.poor_signal_threshold

Sets or returns the poor signal threshold value. The poor signal threshold is a percentage of the signal strength.

Setvar

```
! U1 setvar "wlan.poor_signal_threshold" "value"
```

Values

"0" to "100"

Default

"0"

Getvar

```
! U1 getvar "wlan.poor_signal_threshold"
```


wlan.preamble

This printer setting selects the radio preamble length to be used.

Setvar

This command instructs the printer to set the preamble length.

```
! U1 setvar "wlan.preamble" "value"
```

Values

"long" enables long preamble

"short" enables short preamble

Default

"long"

Getvar

This command instructs the printer to respond with the current preamble length.

```
! U1 getvar "wlan.preamble"
```

Example

This setvar example shows the value set to "long".

```
! U1 setvar "wlan.preamble" "long"
```

When the setvar value is set to "long", the getvar result is "long".

wlan.private_key_password

This printer setting allows the setting of the optional private key password.

Setvar

This command instructs the printer to set the private key password.

```
! U1 setvar "wlan.private_key_password" "value"
```

Values

A maximum of 32 alphanumeric characters

Default

" "

Getvar

This command instructs the printer to respond with the value of the private key password.

```
! U1 getvar "wlan.private_key_password"
```

For protection a single " *" prints.

Example

This setvar example shows the value set to "password".

```
! U1 setvar "wlan.private_key_password" "password"
```

When the setvar value is set to "password", the getvar result is " * ".

wlan.region_code

This command defines the regulatory country for which the radio is currently configured.

Setvar

This command sets the region code for which the radio is to be configured.

```
! U1 setvar "wlan.region_code" "value"
```

Values

- "not available"
- "usa/canada"
- "japan"
- "rest of world" #

Getvar

This command retrieves the region code for which the radio is currently configured.

```
! U1 getvar "wlan.country_code"
```

wlan.roam.interchannel_delay

This command sets how long of a delay before scanning the next channel when roaming.

Setvar

This command sets how long of a delay before scanning the next channel when roaming. The values are in milliseconds.

```
! U1 setvar "wlan.roam.interchannel_delay" "value"
```

Values

"0" to "30000"

Default

"400"

Getvar

This command retrieves the current set delay time before scanning the next channel when roaming.

```
! U1 getvar "wlan.roam.interchannel_delay"
```

Example

This setvar example shows the value set to "400".

```
! U1 setvar "wlan.roam.interchannel_delay" "400"
```

The getvar result returns the current setvar value. In this example, the getvar result is "400".

wlan.roam.interval

This printer setting refers to specifying the wireless roam interval.

Setvar

This command instructs the printer to set the wireless roam interval.

```
! U1 setvar "wlan.roam.interval"
```

Values

Decimal values between "5" and "255" inclusive

Default

"20"

Getvar

This command instructs the printer to respond with the specified roam interval.

```
! U1 getvar "wlan.roam.interval"
```

Example

This setvar example shows the value set to "20".

```
! U1 setvar "wlan.roam.interval" "20"
```

When the setvar value is set to "20", the getvar result is "20".

wlan.roam.max_chan_scan_time

This command sets how long the radio waits on a channel looking for probe responses.

Setvar

This command sets how long the radio waits on a channel looking for probe responses. The values are in milliseconds.

```
! U1 setvar "wlan.roam.max_chan_scan_time" "value"
```

Values

"10" to "500"

Default

"100"

Getvar

This command retrieves the current setting for how long the radio waits on a channel looking for probe responses.

```
! U1 getvar "wlan.roam.max_chan_scan_time"
```

Example

This setvar example shows the value set to "100".

```
! U1 setvar "wlan.roam.max_chan_scan_time" "100"
```

The getvar result returns the current setvar value. In this example, the getvar result is "100".

wlan.roam.max_fail

This command determines the number of consecutive tx packet failures, at which point the radio should start its roaming algorithm.

Setvar

This command sets the max_fail threshold value.

```
! U1 setvar "wlan.roam.max_fail" "value"
```

Values

"2" to "75" inclusive

Default

"10"

Getvar

This command returns the number for the max_fail threshold.

```
! U1 getvar "wlan.roam.max_fail"
```

Example

In this example, the setvar sets the max_fail threshold value to 30 packets.

```
! U1 setvar "wlan.roam.max_fail" "30"
```

wlan.roam.monitor

This command sets the wireless LAN roam monitoring event messages.

Setvar

To instruct the printer to turn off or print the roam event messages:

```
! U1 setvar "wlan.roam.monitor" "value"
```

Values

"off"	roam monitor event messages are turned off
"print"	roam monitor event messages are printed.
"serial"	roam monitor event messages are output to the serial port.
"file"	roam monitor event messages are stored in the roam.log file on the E: drive.

Default

"off"

Getvar

To return the current setting value:

```
! U1 getvar "wlan.roam.monitor"
```


wlan.roam.neighbor_assist

This command supports 802.11k roaming. When enabled and connected to a network, the printer will query the neighbor list from the Access Point (AP) and use the neighbor AP channel list to reduce the number of channels needed to scan during roaming attempts.

Setvar

To enable wlan.roam.neighbor_assist:

```
! U1 setvar "wlan.roam.neighbor_assist" "on"
```

Values

- `on` enables the neighbor query.
- `off` disables the neighbor query.

Default

`off`

Getvar

To return the value of wlan.roam.neighbor_assist:

```
! U1 getvar "wlan.roam.neighbor_assist " "on"
```

Values

- `on` the neighbor query is enabled.
- `off` the neighbor query is disabled.

wlan.roam.rssi

This command allows you to specify the absolute value of the negative dBm for the RSSI threshold, which is the point at which the radio will start the roaming algorithm.

Setvar

This command sets the RSSI threshold value.

```
! U1 setvar "wlan.roam.rssi" "value"
```

Values

"60" to "125"

Default

"74"

Getvar

This command retrieves the absolute value of the negative dBm for the RSSI threshold.

```
! U1 getvar "wlan.roam.rssi"
```

Example

In this example, the `setvar` sets the RSSI threshold value to -80 dBm.

```
! U1 setvar "wlan.roam.rssid" "80"
```

wlan.roam.signal

This printer setting refers to specifying the wireless roam signal.

Setvar

To set the wireless roam signal:

```
! U1 setvar "wlan.roam.signal" "value"
```

Values

Decimal values between 1 and 75 inclusive.

Default

"50"

Getvar

To respond with the specified wireless roam signal:

```
! U1 getvar "wlan.roam.signal"
```

Example

This setvar example shows the value set to "50".

```
! U1 setvar "wlan.roam.signal" "50"
```

When the setvar value is set to "50", the getvar result is "50".

wlan.rts_cts_enabled

Enables the RTS/CTS HT protection frames when configuring a WLAN connection, preventing interference with other nearby 802.11 signals. If the protection frames are not enabled, the WLAN radio will use CTS-to-self.

Setvar

```
! U1 setvar "wlan.rts_cts_enabled" "value"
```

Values

- "on"
- "off"

Default

"off"

Getvar

```
! U1 getvar "wlan.rts_cts_enabled"
```

Values

- "on"
- "off"

wlan.security

This printer setting allows you to specify both the wireless encryption type and authentication type in one command.



NOTE: The supporting parameters that are required vary based on the security type that you select. See Supporting SGDs for Different Security Types on page 3 for instructions for each security type.

When using certificate files, Zebra printers support:

- using Privacy Enhanced Mail (PEM) formatted certificate files.
- using the client certificate and private key as two files, each downloaded separately.
- using exportable PAC files for EAP-FAST.

These certificate files can only be sent using ZPL, not SGD. The ZPL command to use when sending these certificate files is the ~DY command.

Configuring the printer for WPA also allows the printer to be used in WPA2 environments.



NOTE: When using certificate files, the time on the printer must be set correctly for the WebSocket connection to succeed, as the time is used in the certificate validation.

Setvar

To set the wireless security value:

```
! U1 setvar "wlan.security" "value"
```

Values

- "1" No wireless security or "none"
- "2" WEP 40-bit or "wep 40-bit"
- "3" WEP 128-bit or "wep 128-bit"
- "4" EAP-TLS or "eap-tls"
- "5" EAP-TTLS or "eap-ttls"
- "6" EAP-FAST or "eap-fast"
- "7" PEAP or "peap"
- "8" LEAP or "leap"
- "9" WPA PSK or "wpa psk" (Key rotation for WPA2 PSK is supported in firmware versions V53.15.8Z , V60.15.8Z, and later.)
- "10" WPA EAP-TLS or "wpa eap-tls"
- "11" WPA EAP-TTLS or "wpa eap-ttls"
- "12" WPA EAP-FAST or "wpa eap-fast"
- "13" WPA PEAP or "wpa peap"
- "14" WPA LEAP or "wpa leap"
- "15" Kerberos or "kerberos"
- "17" WPA SAE or "wpa sae"

Default

"1"

Getvar

To return the name and not the type:

```
! U1 getvar "wlan.security" "value"
```

If an invalid security mode is entered the printer returns "Invalid Mode".

Examples

This setvar example shows the value set to "1".

```
! U1 setvar "wlan.security" "1"
```

When the setvar value is set to "1", the getvar result is "none".

Supporting SGDs for Different Security Types

The supporting SGD commands required for `wlan.security` vary based on the security type that you select. You must send the additional commands for your printer to be able to work on your wireless network. Follow the example and format for your specific security type in this section, substituting your own wireless network data.

Security Type 1: No Wireless Security Active

Additional parameters that need to be set: none

Example

This example turns off all wireless securities controlled under this command, but it does not reset the printer's wireless settings to their defaults.

```
! U1 setvar "wlan.security" "1"
```

Security Type 2: WEP 40-Bit

Additional parameters that need to be set and the SGD commands to use:

- WEP encryption index (see `wlan.wep.index`)
- WEP authentication type (see `wlan.wep.auth_type`)
- WEP key type (see `wlan.wep.key_format`)
- the actual values of any WEP encryption keys to be used (see `wlan.wep.key1`, `wlan.wep.key2`, `wlan.wep.key3`, or `wlan.wep.key4`)

Example

This example configures the printer for WEP 40-bit encryption using index key 1, open authentication, and a hexadecimal WEP key with a value of "A1B2C3D4F5".

```
! U1 setvar "wlan.security" "2"
```

```
! U1 setvar "wlan.wep.index" "1"
```

```
! U1 setvar "wlan.wep.auth_type" "open"
```

```
! U1 setvar "wlan.wep.key_format" "hex"
```

```
! U1 setvar "wlan.wep.key1" "A1B2C3D4F5"
```

Security Type 3: WEP 128-Bit

Additional parameters that need to be set and the SGD commands to use:

- WEP encryption index (see `wlan.wep.index`)

- WEP authentication type (see `wlan.wep.auth_type`)
- WEP key type (see `wlan.wep.key_format`)
- the actual values of any WEP encryption keys to be used (see `wlan.wep.key1`, `wlan.wep.key2`, `wlan.wep.key3`, or `wlan.wep.key4`)

Example

This example configures the printer for WEP 128-bit encryption using index key 2, open authentication, and four hexadecimal WEP keys.

```
! U1 setvar "wlan.security" "3"
```

```
! U1 setvar "wlan.wep.index" "2"
```

```
! U1 setvar "wlan.wep.auth_type" "open"
```

```
! U1 setvar "wlan.wep.key_format" "hex"
```

```
! U1 setvar "wlan.wep.key1" "001122334455667788"
```

```
! U1 setvar "wlan.wep.key2" "112233445566778899"
```

```
! U1 setvar "wlan.wep.key3" "223344556677889900"
```

```
! U1 setvar "wlan.wep.key4" "334455667788990011"
```

Security Type 4: EAP-TLS

Additional parameters that need to be set and the SGD commands to use:

- optional private key password (see `wlan.private_key_password`)

Example

This example configures the printer for EAP-TLS authentication with an optional private key password with a value of "private."

```
! U1 setvar "wlan.security" "4"
```

```
! U1 setvar "wlan.private_key_password" "private"
```


Security Type 5: EAP-TTLS

Additional parameters that need to be set and the SGD commands to use:

- user ID (see wlan.username)
- password (see wlan.password)

Example

With a value of "user" and a password with a value of "password".

```
! U1 setvar "wlan.security" "5"
```

```
! U1 setvar "wlan.username" "user"
```

```
! U1 setvar "wlan.password" "password"
```

Security Type 6: EAP-FAST

Additional parameters that need to be set and the SGD commands to use:

- user ID (see wlan.username)
- password (see wlan.password)
- optional private key password (see wlan.private_key_password)

Example

This example configures the printer for EAP-FAST authentication, including a user ID of "user", a password of "password", and an optional private key of "private".

```
! U1 setvar "wlan.security" "6"
```

```
! U1 setvar "wlan.username" "user"
```

```
! U1 setvar "wlan.password" "password"
```

```
! U1 setvar "wlan.private_key_password" "private"
```

Security Type 7: PEAP

Additional parameters that need to be set and the SGD commands to use:

- user ID (see wlan.username)
- password (see wlan.password)

Example

This example configures the printer for PEAP authentication, including a user ID with a value of "user" and a password with a value of "password".

```
! U1 setvar "wlan.security" "7"
```

```
! U1 setvar "wlan.username" "user"
```

```
! U1 setvar "wlan.password" "password"
```

Security Type 8: LEAP

Additional parameters that need to be set and the SGD commands to use:

- user ID (see wlan.username)
- password (see wlan.password)

Example

This example configures the printer for LEAP authentication, including a user ID with a value of "user" and a password with a value of "password".

```
! U1 setvar "wlan.security" "8"
```

```
! U1 setvar "wlan.username" "user"
```

```
! U1 setvar "wlan.password" "password"
```

Security Type 9: WPA PSK

NOTE: Configuring the printer for WPA also allows the printer to be used in WPA2 environments. Key rotation for WPA2 PSK is supported in firmware version 60.15.8Z and later and in firmware version 53.15.8Z and later.

Additional parameters that need to be set and the SGD commands to use:

- Pre-Shared Key (PSK) value (see wlan.wpa.psk)

Example

This example configures the printer for WPA PSK authentication with a PSK value of all zeroes (64 hexadecimal digits).

```
! U1 setvar "wlan.security" "9"
```

```
! U1 setvar "wlan.wpa.psk" "00000000..."
```

Security Type 10: WPA EAP-TLS

NOTE: Configuring the printer for WPA also allows the printer to be used in WPA2 environments.

Additional parameters that need to be set and the SGD commands to use:

- optional private key password (see wlan.private_key_password)

Example

This example configures the printer for WPA EAP-TLS authentication with an optional private key password with a value of "private".

```
! U1 setvar "wlan.security" "10"
```

```
! U1 setvar "wlan.private_key_password" "private"
```

Security Type 11: WPA EAP-TTLS

NOTE: Configuring the printer for WPA also allows the printer to be used in WPA2 environments.

Additional parameters that need to be set and the SGD commands to use:

- user ID (see wlan.username)
- password (see wlan.password)

Example

This example configures the printer for WPA EAP-TTLS authentication, including a user ID with a value of "user" and a password with a value of "password".

```
! U1 setvar "wlan.security" "11"
```

```
! U1 setvar "wlan.username" "user"
```

```
! U1 setvar "wlan.password" "password"
```

Security Type 12: WPA EAP-FAST

NOTE: Configuring the printer for WPA also allows the printer to be used in WPA2 environments.

Additional parameters that need to be set and the SGD commands to use:

- user ID (see wlan.username)
- password (see wlan.password)
- optional private key password (see wlan.private_key_password)

Example

This example configures the printer for WPA EAP-FAST authentication, including a user ID of "user", a password of "password", and an optional private key of "private".

```
! U1 setvar "wlan.security" "12"
```

```
! U1 setvar "wlan.username" "user"
```

```
! U1 setvar "wlan.password" "password"
```

```
! U1 setvar "wlan.private_key_password" "private"
```

Security Type 13: WPA PEAP

NOTE: Configuring the printer for WPA also allows the printer to be used in WPA2 environments.

Additional parameters that need to be set and the SGD commands to use:

- user ID (see wlan.username)
- password (see wlan.password)

Example

This example configures the printer for WPA PEAP authentication, including a user ID with a value of "user" and a password with a value of "password".

```
! U1 setvar "wlan.security" "13"
```

```
! U1 setvar "wlan.username" "user"
```

```
! U1 setvar "wlan.password" "password"
```

Security Type 14: WPA LEAP

NOTE: Configuring the printer for WPA also allows the printer to be used in WPA2 environments.

Additional parameters that need to be set and the SGD commands to use:

- user ID (see wlan.username)
- password (see wlan.password)

Example

This example configures the printer for WPA LEAP authentication, including a user ID with a value of "user" and a password with a value of "password".

```
! U1 setvar "wlan.security" "14"
```

```
! U1 setvar "wlan.username" "user"
```

```
! U1 setvar "wlan.password" "password"
```

Security Type 15: Kerberos

Additional parameters that need to be set and the SGD commands to use:

- Kerberos user ID (see wlan.kerberos.username)
- Kerberos password (see wlan.kerberos.password)
- realm (see wlan.kerberos.realm)
- Key Distribution Center (KDC) (see wlan.kerberos.kdc)

Example

This example configures the printer for Kerberos encryption, including a Kerberos user ID with a value of "user", a Kerberos password with a value of "password", a realm of "zebra", and a KDC of "krbtgt".

```
! U1 setvar "wlan.security" "15"
```

```
! U1 setvar "wlan.kerberos.username" "user"
```

```
! U1 setvar "wlan.kerberos.password" "password"
```

```
! U1 setvar "wlan.kerberos.realm" "zebra"
```

```
! U1 setvar "wlan.kerberos.kdc" "krbtgt"
```

wlan.signal_noise

This command returns the signal noise on the wireless network. Values above 40% represent a very significant noise, and radio communication is not reliable.

Getvar

To return the current signal noise on the wireless network:

```
! U1 getvar "wlan.signal_noise"
```

Example

In this example, the `getvar` result is the current `signal_noise` value.

```
! U1 getvar "wlan.signal_noise"
```

wlan.signal_quality

This command instructs the printer to return the current signal quality of the wireless network. Values below 40% represent a very poor signal quality, and radio communication is not reliable.

Getvar

To return the current signal quality of the wireless network:

```
! U1 getvar "wlan.signal_quality"
```

Example

In this example, the `getvar` result is the current `signal_quality` value.

```
! U1 getvar "wlan.signal_quality"
```

wlan.signal_strength

This command returns the signal strength of the connection to the access point as a percentage value between zero (not connected) and 100 (strongest signal). Values below 40% represent a very poor signal and radio communication is not reliable.

Getvar

To respond with the current signal strength:

```
! U1 getvar "wlan.signal_strength"
```

Example

In this example, the `getvar` result is "93".

```
! U1 getvar "wlan.signal_strength"
```


wlan.station_name

This printer setting refers to the station name.

Setvar

To set the station name:

```
! U1 setvar "wlan.station_name" "value"
```

Values

A maximum of 32 alphanumeric characters

Default

"ZEBRA"

Getvar

To respond with the station name value:

```
! U1 getvar "wlan.station_name"
```

Example

This setvar example shows the value set to "ZEBRA".

```
! U1 setvar "wlan.station_name" "ZEBRA"
```

When the setvar value is set to "ZEBRA", the getvar result is "ZEBRA".

wlan.translation_disable_clear

This command clears the Transition Disable setting value saved in the printer.

Setvar

To clear the Transition Disable setting in the printer:

```
! U1 setvar "wlan.transition_disable_clear" ""
```

wlan.tx_power

Use this command to specify the wireless transmit power.

Setvar

To set the wireless transmit power:

```
! U1 setvar "wlan.tx_power" "value"
```

Values

Decimal values of "1", "5", "20", "30", "50", "100"

Default

"100"

Getvar

To return with the wireless transmit power value:

```
! U1 getvar "wlan.tx_power"
```

Example

This setvar example shows the value set to "100".

```
! U1 setvar "wlan.tx_power" "100"
```

When the setvar value is set to "100", the getvar result is "100".

wlan.tx_rate

Use this command to specify the wireless transmit rate.

Setvar

To set the wireless transmit rate:

```
! U1 setvar "wlan.tx_rate" "value"
```

Values

"1", "2", "5.5", "11", "all"

Default

"all"

Getvar

To respond with the wireless transmit rate:

```
! U1 getvar "wlan.tx_rate"
```

Example

This setvar example shows the value set to "all".

```
! U1 setvar "wlan.tx_rate" "all"
```

When the setvar value is set to "all", the getvar result is "all".

wlan.user_channel_list

This command sets the list of available channels.

Setvar

To set the list of available channels:

```
! U1 setvar "wlan.user_channel_list" "value"
```

Values

One or more of the following:

"1,2,3,4,5,6,7,8,9,10,11,36,40,44,48,52,56,60,64,100,104,108,112,116,132,136,140"
"all"

Default

"all"

Getvar

To retrieve the currently set list of available channels:

```
! U1 getvar wlan.user_channel_list"
```

Example

This example sets the available channel list to channels 1-9.

```
! U1 setvar "wlan.user_channel_list" "1,2,3,4,5,6,7,8,9"
```

wlan.username

This printer setting refers to the generic user name that is used by the wireless securities that need a user name.



IMPORTANT: Kerberos has its own user name field.

Setvar

To set a generic user name for wireless securities that need a user name:

```
! U1 setvar "wlan.username" "value"
```

Values

A maximum of 32 alphanumeric characters

Default

"user"

Getvar

To respond with a generic user name for the wireless securities that need a user name:

```
! U1 getvar "wlan.username"
```

Example

This setvar example shows the value set to "user".

```
! U1 setvar "wlan.username" "user"
```

When the setvar value is set to "user", the getvar result is "user".

wlan.wep.auth_type

For the WEP security type, this printer setting selects the authentication type to be used between the printer and the access point. The authentication types are open system and shared key.



NOTE: This command is not supported for printers running Link-OS 6 or later versions.

Setvar

To set the WEP authentication type:

```
! U1 setvar "wlan.wep.auth_type" "value"
```

Values

"open" enables the open authentication type

"shared" enables the shared authentication type

Getvar

To retrieve the current WEP authentication type:

```
! U1 getvar "wlan.wep.auth_type"
```

Example

This setvar example shows the value set to "open".

```
! U1 setvar "wlan.wep.auth_type" "open"
```

When the setvar value is set to "open", the getvar result is "open".

wlan.wep.index

This command sets the WEP (Wired Equivalent Privacy) encryption key index. This printer setting determines which one of the four encryption keys is to be used by the client (printer).



NOTE: This command is not supported for printers running Link-OS 6 or later versions.

Setvar

To set the encryption key index:

```
! U1 setvar "wlan.wep.index" "value"
```

Values

- "1" enables encryption key 1
- "2" enables encryption key 2
- "3" enables encryption key 3
- "4" enables encryption key 4

Default

"1"

Getvar

To respond with the encryption key index:

```
! U1 getvar "wlan.wep.index"
```

Example

This setvar example shows the value set to "1".

```
! U1 setvar "wlan.wep.index" "1"
```

When the setvar value is set to "1", the getvar result is "1".

wlan.wep.key1

Use this command to set the first indexed WEP encryption key. The WEP encryption key is a hexadecimal or string value. This key should match the wireless network WEP encryption key 1.



NOTE: This command is not supported for printers running Link-OS 6 or later versions.

Setvar

To set the encryption key:

```
! U1 setvar "wlan.wep.key1" "value"
```

Values

- 10 hexadecimal characters for 40-bit encryption
- 26 hexadecimal characters for 128-bit encryption

Default

All zeros

Getvar

To instruct the printer to respond with the encryption key:

```
! U1 getvar "wlan.wep.key1"
```

For protection a single "*" prints.

Example

This setvar example shows the value set to "A1B2C3D4F5".

```
! U1 setvar "wlan.wep.key1" "A1B2C3D4F5"
```

When the setvar value is set to "A1B2C3D4F5", the getvar result is "*".

wlan.wep.key2

Use this command to set the second indexed WEP encryption key. The WEP encryption key is a hexadecimal string value. This key should match the wireless network WEP encryption key 2.



NOTE: This command is not supported for printers running Link-OS 6 or later versions.

Setvar

To set the encryption key:

```
! U1 setvar "wlan.wep.key2" "value"
```

Values

- 10 hexadecimal characters for 40-bit encryption
- 26 hexadecimal characters for 128-bit encryption

Default

All zeros

Getvar

To instruct the printer to respond with the encryption key:

```
! U1 getvar "wlan.wep.key2"
```

For protection a single "*" prints.

Example

This setvar example shows the value set to "A1B2C3D4F5".

```
! U1 setvar "wlan.wep.key2" "A1B2C3D4F5"
```

When the setvar value is set to "A1B2C3D4F5", the getvar result is "*".

wlan.wep.key3

Use this command to set the third indexed WEP encryption key. The WEP encryption key is a hexadecimal string value. This key should match the wireless network WEP encryption key 3.



NOTE: This command is not supported for printers running Link-OS 6 or later versions.

Setvar

To set the encryption key:

```
! U1 setvar "wlan.wep.key3" "value"
```

Values

- 10 hexadecimal characters for 40-bit encryption
- 26 hexadecimal characters for 128-bit encryption

Default

All zeros

Getvar

To instruct the printer to respond with the encryption key:

```
! U1 getvar "wlan.wep.key3"
```

For protection a single "*" prints.

Example

This setvar example shows the value set to "A1B2C3D4F5".

```
! U1 setvar "wlan.wep.key3" "A1B2C3D4F5"
```

When the setvar value is set to "A1B2C3D4F5", the getvar result is "*".

wlan.wep.key4

Use this command to set the fourth indexed WEP encryption key. The WEP encryption key is a hexadecimal string value. This key should match the wireless network WEP encryption key 4.



NOTE: This command is not supported for printers running Link OS 6 or later versions.

Setvar

To set the encryption key:

```
! U1 setvar "wlan.wep.key4" "value"
```

Values

10 hexadecimal characters for 40-bit encryption

26 hexadecimal characters for 128-bit encryption

Default

All zeros

Getvar

To respond with the encryption key:

```
! U1 getvar "wlan.wep.key4"
```

For protection a single "*" prints.

Example

This setvar example shows the value set to "A1B2C3D4F5".

```
! U1 setvar "wlan.wep.key4" "A1B2C3D4F5"
```

When the setvar value is set to "A1B2C3D4F5", the getvar result is "*".

wlan.wpa.psk

This printer setting specifies the pre-shared key (PSK) value to use when the WPA authentication is set to PSK.

Setvar

To set the pre-shared key:

```
! U1 setvar "wlan.wpa.psk" "value"
```

Values

64 hexadecimal digits

Default

64 zeros (00000000...)

Getvar

To return the pre-shared key value:

```
! U1 getvar "wlan.wpa.psk"
```

For protection a single "*" prints.

Example

This setvar example shows the value set to "00000000...".

```
! U1 setvar "wlan.wpa.psk" "00000000..."
```

When the setvar value is set to "00000000...", the getvar result is "*".

wlan.wep.key_format

This printer setting specifies the format for the WEP key.

This command is disabled for Link OS 6 printers and later versions.



NOTE: This printer setting should proceed any of the `wep.key` settings if you select a non-default value.

Setvar

To set the WEP key format:

```
! U1 setvar "wlan.wep.key_format" "value"
```

Values

- "ascii" the WEP key is set by ASCII string
- "hex" the WEP key is a Hex string

Default

"hex"

Getvar

To respond with the WEP key format:

```
! U1 getvar "wep.key_format"
```

Example

This setvar example shows the value set to "ascii".

```
! U1 setvar "wlan.wep.key_format" "ascii"
```

When the setvar value is set to "ascii", the getvar result is "ascii".

wlan.wpa.groupkey_ciphersuite

This command returns the encryption method currently used for unicast packets.

Getvar

To return the current encryption method value:

```
! U1 getvar "wlan.wpa.groupkey_ciphersuite"
```

Result

"NONE "	No encryption being used.
"WEP40 "	WEP40 encryption being used.
"TKIP "	TKIP encryption being used.
"AES "	AES being used.
"WEP104 "	WEP104 encryption being used.
"WPA2 "	WEP104 encryption being used.
" "	Reported if printer is not yet associated with the wireless LAN.

wlan.wpa.pairwise_ciphersuite

This command returns the encryption method currently used for unicast packets.

Getvar

To return the value of the current encryption methods:

```
! U1 getvar "wlan.wpa.pairwise_ciphersuite"
```

Result

"NONE "	No encryption being used.
"WEP40 "	WEP40 encryption being used.
"TKIP "	TKIP encryption being used
"AES "	AES being used.
"WEP104 "	WEP104 encryption being used.
"WPA2 "	WPA2 encryption being used.
" "	Reported if printer is not yet associated with the wireless LAN.

wlan.wpa.timecheck

Allows the user to disable the certificate timestamp check that is performed during a WPA TLS handshake.

Setvar

To enable or disable the certificate timestamp check that is performed during a WPA TLS handshake:

```
! U1 setvar "wlan.wpa.timecheck" "value"
```

Values

- "yes" means the timecheck during the handshake will be performed
- "no" means the timecheck during the handshake will not be performed

Default

"yes"

Getvar

To return the current setting value:

```
! U1 getvar "wlan.wpa.timecheck"
```

wlan.wpa.wpa_version

Returns the currently active WPA version.

Getvar

To return the currently active WPA version:

```
! U1 getvar "wlan.wpa.wpa_version"
```

Values

"WPA" indicates WPA is being used.

"WPA2" indicates WPA2 is being used.

"WPA3" indicates that WPA3 is being used.

" " reported if the WLAN is not connected or WPA is not enabled.

SGD RFID Commands

This section contains the SGD commands for RFID-specific applications.

rfid.antenna_sweep

This command enables/disables the antenna sweep feature.

If the RFID media loaded in the printer is known to be in range of an antenna at the F0 programming position, you can avoid RFID calibration by using the RFID antenna sweep feature. With this feature enabled, when the first RFID format is sent after a printer powerup or printhead close, the printer scans through the antennas to find the optimal antenna element.

**NOTE:**

- This command is valid only on ZT400 and ZT600 series RFID printers.
- The label length must be 2 in. (51 mm) or greater, and the programming position must be F0.

Setvar

To enable or disable the antenna sweep feature:

```
! U1 setvar "rfid.antenna_sweep" "value"
```

Values

- "on"
- "off"

Default

"off"

Getvar

To retrieve the current antenna sweep setting:

```
! U1 getvar "rfid.adaptive_sweep"
```

rfid.country_code

This command sets or returns the RFID reader country code. The country code is restricted based on the region code assigned to the reader and, in some instances, cannot be modified. You can check the countries available for your region through the control panel menu items on your printer.

Setvar

To set the RFID reader's current country code

```
! U1 setvar "rfid.country_code" "value"
```

Values

The country code choices available vary depending on the region for which your printer is configured.

Getvar

To retrieve the RFID reader's current country code:

```
! U1 getvar "rfid.country_code"
```

Example

In this example, the `setvar` sets the country code to USA/Canada.

```
! U1 setvar "rfid.country_code" "usa/canada"
```

rfid.enable

This command instructs an RFID printer to enable or disable RFID functionality. You must restart the printer for the command to take effect.



NOTE: When this function is set to "on", changes are made to normal printer functionality. Loading printer defaults does NOT:

- Default the sensor select setting
- Default media tracking sensor settings
- Default label length
- Perform an auto calibration

Setvar

To enable or disable RFID functionality:

```
! U1 setvar "rfid.enable" "value"
```

Values

"on" enables RFID functionality

"off" disables RFID functionality

Default

"on"

rfid.error.response

This command can be used to retrieve the RFID status, including any error codes or messages.

Getvar

To retrieve any active RFID error messages:

```
! U1 getvar "rfid.error.response"
```

Example

This `getvar` example shows responses that you may get in different situations:

```
! U1 getvar "rfid.error.response"
```

If no RFID tag is present, you get the following response:

```
"NO TAG FOUND"
```

If an RFID tag is present and there are no errors, you get the following response:

```
"RFID OK"
```

rfid.hop_table_version

This command retrieves the RFID reader's hop table version.

Getvar

To retrieve the RFID reader's hop table version:

```
! U1 getvar "rfid.hop_table_version"
```


rfid.position.program

This command sets the read/write position of the RFID tag (programming position).



IMPORTANT: If this command is used to specify a value for the programming position, this value will be used for the programming position for all labels until a new position is specified or until the tag calibration procedure is run.

Setvar

This command instructs the printer to set the read/write position of the RFID tag.

```
! U1 setvar "rfid.position.program" "value"
```

Values

- "F0" to "Fxxx" (where xxx is the label length in millimeters or "999", whichever is less)
The printer prints the first part of a label until it reaches the specified distance and then begins programming. After programming, the printer prints the remainder of the label.
- "B0" to "B30"
The printer backfeeds the label for the specified distance and then begins programming. To account for the backfeed, allow empty media liner to extend out of the front of the printer when using a backward programming position.
- "up" move to the next value
- "down" move to the previous value

Absolute Mode (all firmware versions)

- xxxx=0 to label length (in dot rows). Move the media to the specified position xxxx on the label, measured in dot rows from the label top, before encoding. Set to 0 (no movement) if the tag is already in the effective area without moving the media.

Relative Mode (firmware versions V53.17.6 and later)

- "F0" to "Fxxx" (where xxx is the label length in millimeters or 999, whichever is less)
The printer prints the first part of a label until it reaches the specified distance and then begins programming. After programming, the printer prints the remainder of the label.
- "B0" to "B30" (Does not apply to the RP4T printer.)
The printer backfeeds the label for the specified distance and then begins programming. To account for the backfeed, allow empty media liner to extend out of the front of the printer when using a backward programming position.

Default

- For printers using V53.17.7 and later: "F0" (which moves the leading edge of the label to the print line)
- For the R2844-Z and RPAX: "0" (no movement)
- For all other printers or firmware: label length minus 1 mm (1/16 in.)

Getvar

This command instructs the printer to respond with the current programming position.

```
! U1 getvar "rfid.position.program"
```

Example

This example shows the programming position being set at 15 mm from the leading edge of the label.

```
! U1 setvar "rfid.position.program" "F15"
```

When the setvar value is set to "F15", the getvar result is "F15".

rfid.profile_save

This command is for users to create and save the RFID calibration profile onto the E: drive when needed.

Setvar

To set the IPP mode:

```
! U1 setvar "ip.ipp.mode" "value"
```

Values

Maximum of 8-byte filename length

Example

This setvar example shows the value set to "RFIDCAL1.RPF".

```
! U1 setvar "rfid.profile_save" "RFIDCAL1.RPF"
```

rfid.reader_1.antenna_port

This command specifies the RFID antenna to be used for RFID operation.



NOTE:

- This applies only to ZT400 and ZT600 series RFID printers, which have multiple antenna elements. Other printers, which only have one antenna element, always use an antenna element value of A1.
- Printers automatically select the best antenna element and read/write power levels for the media during RFID transponder calibration. The ZT400 and ZT600 series printers also may set the levels during an adaptive antenna sweep. Use ^HL or ~HL on page 412 to view the antenna element and power settings being used.

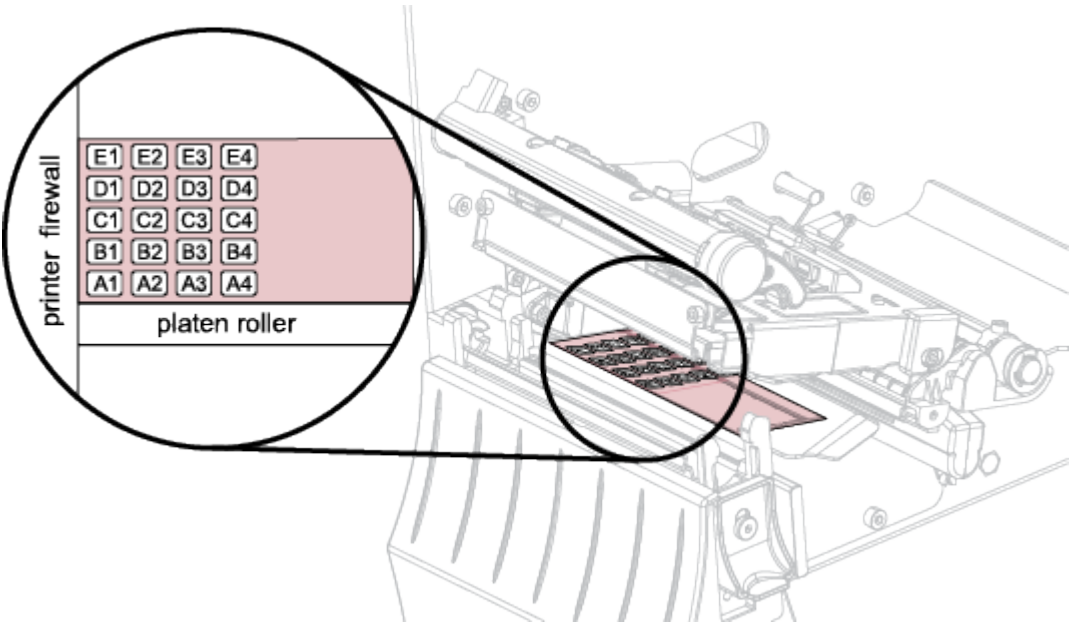
Setvar

Sets the antenna port.

```
! U1 setvar "rfid.reader_1.antenna_port" "value"
```

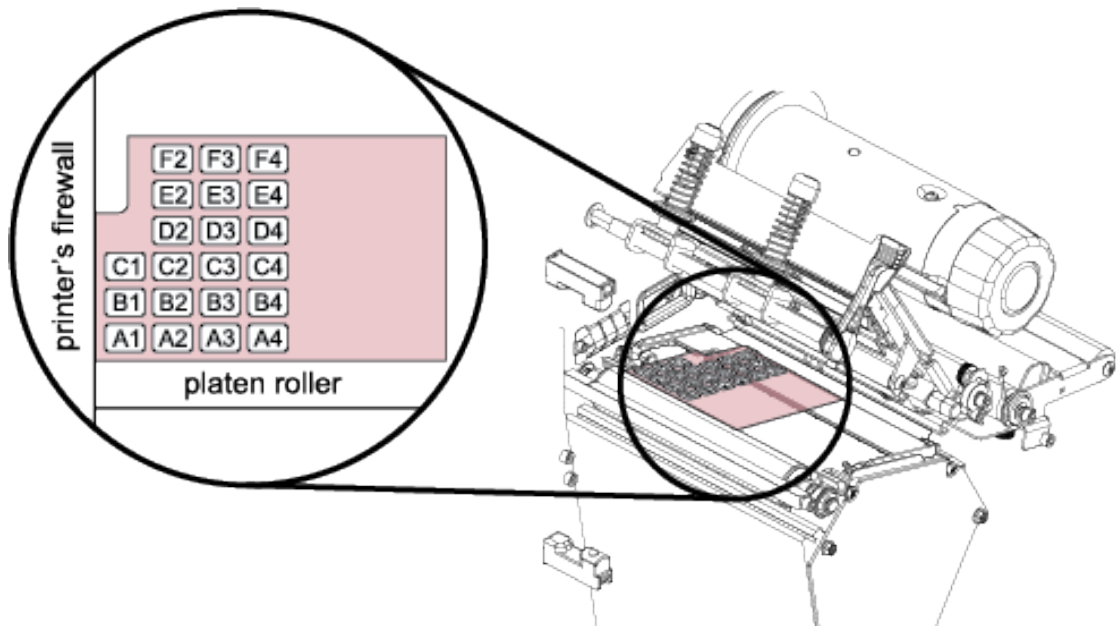
Values (ZT400 and ZT600 Series only)

E1	E2	E3	E4
D1	D2	D3	D4
C1	C2	C3	C4
B1	B2	B3	B4
A1	A2	A3	A4



Values (R110Xi4 only)

NA	F2	F3	F4
NA	E2	E3	E4
NA	D2	D3	D4
C1	C2	C3	C4
A1	A2	A3	A4



Default

"A4"

Getvar

Retrieves the current antenna port.

```
! U1 getvar "rfid.reader_1.antenna_port"
```

Example

This setvar example shows the selection of antenna port D3.

```
! U1 setvar "rfid.reader_1.antenna_port" "D3"
```

When the setvar value is set to "D3", the getvar result is "D3".

rfid.reader_1.power.read

This command sets the RFID reader power level for reading RFID tags.



NOTE: NOTE: Printers automatically select the best antenna element and read/write power levels for the media during RFID transponder calibration. The ZT400 and ZT600 series printers also may set the levels during an adaptive antenna sweep. Use [^HL](#) or [~HL](#) on page 412 to view the antenna element and power settings being used.

Setvar

Instructs the printer to set the read power level of the antenna.

```
! U1 setvar "rfid.reader_1.power.read" "value"
```

Values

RP4T (all firmware versions), R53.16.4Z, V53.17.7, V74.19.6Z, and all Link-OS printers:

- "0" to "30"
- "up" Increase the current value by 1
- "down" Decrease the current value by 1

R53.16.3Z

"0" to "30"

R60.16.x, R62.16.x, R63.16.x, R65.16.x, SP994Q, SP999G, SP1027G, SP1056F, SP1082G, and later

- "0" to "30"
- "high"
- "medium"
- "low"

Older firmware

- "high"
- "medium"
- "low"

Default

RP4T (all firmware versions), R53.16.4Z, V53.17.7, V74.19.6Z, and all Link-OS printers

"16"

R53.16.3Z

"16"

R60.16.x, R62.16.x, R63.16.x, R65.16.x, SP994Q, SP999G, SP1027G, SP1056F, SP1082G, and later

"low"

Older firmware

"low"

Getvar

To return the antenna's read power level:

```
! U1 getvar "rfid.reader_1.power.read"
```

Example

This setvar example sets the antenna to power setting 16 for reading RFID tags.

```
! U1 setvar "rfid.reader_1.power.read" "16"
```

When the setvar value is set to "16", the getvar result is 16.

rfid.reader_1.power.write

Use this command to set the RFID write power levels if the desired levels are not achieved through RFID tag calibration. If not enough power is applied, the tag may not have sufficient power for programming, and tag data will fail to encode. If too much power is applied, the extra power may cause data communication errors or may cause the wrong tag to be programmed.



NOTE: Printers automatically select the best antenna element and read/write power levels for the media during RFID transponder calibration. The ZT400 and ZT600 series printers also may set the levels during an adaptive antenna sweep.



NOTE: This parameter is ignored on the R110Xi HF printer because read and write powers cannot be specified separately. See to set the power level for the R110Xi HF printer.

Setvar

Instructs the printer to set the antenna's write power level.

```
! U1 setvar "rfid.reader_1.power.write" "value"
```

Values

RP4T (all firmware versions), R53.16.4Z, V53.17.7, V74.19.6Z, and all Link-OS printers

- "0" to "30"
- "up" Increase the current value by 1
- "down" Decrease the current value by 1

R53.16.3Z

"0" to "30"

R60.16.x, R62.16.x, R63.16.x, R65.16.x, SP994Q, SP999G, SP1027G, SP1056F, SP1082G, and later

- "0" to "30"
- "high"
- "medium"
- "low"

Older firmware

- "high"
- "medium"
- "low"

Default

RP4T (all firmware versions), R53.16.4Z, V53.17.7, V74.19.6Z, and all Link-OS printers

"16"

R53.16.3Z

"16"

R60.16.x, R62.16.x, R63.16.x, R65.16.x, SP994Q, SP999G, SP1027G, SP1056F, SP1082G, and later

"low"

Older firmware

"low"

Getvar

To return the antenna's write power level:

```
! U1 getvar "rfid.reader_1.power.write"
```

Example

This setvar example sets the antenna to power setting 16 for writing RFID tags.

```
! U1 setvar "rfid.reader_1.power.write" "16"
```

When the setvar value is set to "16", the getvar result is "16".

rfid.reader_1.power.single_power

This command sets the RFID reader power level for reading and writing to RFID tags for readers with a single power level.



NOTE: This command applies only to the R110Xi HF printer, firmware version R65.X.

Setvar

To set the power level for reading and writing:

```
! U1 setvar "rfid.reader_1.power.single_power" "value"
```

Values

- "high"
- "medium"
- "low"

Default

"low"

Getvar

To respond with the current power level:

```
! U1 getvar "rfid.reader_1.power.single_power"
```

This setvar example sets the antenna to high power for writing to RFID tags.

Example

```
! U1 setvar "rfid.reader_1.power.single_power" "high"
```

When the setvar value is set to "high", the getvar result is "high".

rfid.reader_1.firmware_version

This command returns the RFID reader firmware version.

Getvar

To return the RFID reader firmware version:

```
! U1 getvar "rfid.reader_1.firmware_version"
```

Example

This example shows the response you receive when an RFID reader is attached:

```
! U1 getvar "rfid.reader_1.firmware_version"
```

If an RFID reader is present and connected, you get the firmware version in the following format:

```
"xx.xx.xx.xx"
```

If there is no RFID reader or if the reader is not connected correctly, the response is blank.

rfid.reader_1.hardware_version

This command returns the RFID reader hardware version.

Getvar

To return the RFID reader hardware version:

```
! U1 getvar "rfid.reader_1.hardware_version"
```

Example

This example shows the response you receive when an RFID reader is attached:

```
! U1 getvar "rfid.reader_1.hardware_version"
```

If an RFID reader is present and connected, you get the hardware version in the following format:

```
"xx.xx.xx.xx"
```

If there is no RFID reader or if the reader is not connected correctly, the response is blank.

rfid.reader_1.model

This command returns the printer's RFID reader model number.

Getvar

To return the printer's RFID reader model number:

```
! U1 getvar "rfid.reader_1.model"
```

rfid.recipe_version

The RFID recipe file controls how the printer manages RFID tag encoding, according to the type of tag in use.

This command returns the version number of the RFID recipe file currently in use. The RFID recipe file is named RFIDRCPE.XML. The default location for this file is Z:RFIDRCPE.XML. If a file using the same name is stored in the E: memory location, it will be used instead of the file stored in the Z: memory location.

Getvar

To return the version number of the RFID recipe file currently in use:

```
! U1 getvar "rfid.recipe_version"
```

rfid.region_code

This command returns the region code assigned to the printer's RFID device.

Getvar

To retrieve the RFID region code:

```
! U1 getvar "rfid.region_code"
```

Values

- "not available"
- "usa/canada"
- "japan"
- "rest of world"

rfid.tag.calibrate

Use this command to initiate tag calibration for RFID media. During the process, the printer moves the media, calibrates the RFID tag position, and determines the optimal settings for the RFID media being used. Depending on the printer, these settings include the programming position, the antenna element to use, and the read/write power level to use.



NOTE: For more information about RFID tag calibration, refer to the RFID Programming Guide for your printer. A copy is available online at www.zebra.com/manuals.

Setvar

To initiate tag calibration for RFID media:

```
! U1 setvar "rfid.tag.calibrate" "value"
```

Values

"restore"

"run"

Example

This setvar example restores the programming position back to the printer's default value.

```
! U1 setvar "rfid.tag.calibrate" "restore"
```

This setvar example performs RFID tag calibration.

```
! U1 setvar "rfid.tag.calibrate" "run"
```


rfid.tag.data

This command tells the RFID reader to attempt to read a tag over the RFID antenna, even if the printhead is open. Results are returned to the host.

Before running this command, position an RFID label over the printer's RFID antenna.

Getvar

To return the current tag's data:

```
! U1 getvar "rfid.tag.data"
```

For more information about this option and for the location of the RFID antenna, refer to the RFID Programming Guide for your printer. A copy is available online at www.zebra.com/manuals.

Examples

This example gets data from the current tag, assuming that an RFID label with data "0123456789ABCDEF12345678" is in place over the antenna.

```
! U1 setvar "rfid.tag.data"
```

The printer responds with "0123456789ABCDEF12345678".

This example gets data from the current tag, assuming that no tag data can be read or that no tag is present.

```
! U1 setvar "rfid.tag.data"
```

The printer responds with "NO DATA".

rfid.tag.read.content

This command instructs the printer which data to read from the tag with the `rfid.tag.read.execute` command.

See [rfid.tag.read.execute](#) on page 1531.

Setvar

To instruct the printer which data to read from the tag with the `rfid.tag.read.execute` command:

```
! U1 setvar "rfid.tag.read.content" "value"
```

Values

- "epc" reads the EPC data based on the EPC size specified in the RFID tag's protocol bits, up to 160 bits
- "tid information" reads the first 32 bits of the TID (Tag ID)
- "password status" reads the tag's access and kill passwords
- "protocol bits" reads the protocol bits from the EPC memory banks and converts that value to the EPC size
- "memory bank sizes" reads the EPC, TID, and user memory banks sizes
- "up" sets the command to the previous test
- "down" sets the command to the next test

Default

"epc"

Getvar

To retrieve the current setting:

```
! U1 getvar "rfid.tag.read.content"
```

rfid.tag.read.execute

This command reads the data specified by the `rfid.tag.read.content` command.

See [rfid.tag.read.content](#) on page 1530.

Setvar

To read the specified data:

```
! U1 setvar "rfid.tag.read.execute"
```

rfid.tag.read.result_line1

This command reports the results of the `rfid.tag.read.execute` command.

Getvar

To retrieve the results of the `rfid.tag.read.execute` command:

```
! U1 getvar "rfid.tag.read.result_line1"
```

rfid.tag.read.result_line2

This command reports the results of the `rfid.tag.read.execute` command.

Getvar

To retrieve the results of the `rfid.tag.read.execute` command:

```
! U1 setvar "rfid.tag.read.result_line2"
```

rfid.tag.read.result_line1_alternate

This command reports the results of the `rfid.tag.read.execute` command.

Getvar

To retrieve the results of the `rfid.tag.read.execute` command:

```
! U1 setvar "rfid.tag.read.result_line1_alternate"
```

rfid.tag.read.result_line2_alternate

This command reports the results of the `rfid.tag.read.execute` command.

Getvar

To retrieve the results of the `rfid.tag.read.execute` command:

```
! U1 getvar "rfid.tag.read.result_line2_alternate"
```

rfid.tag.test

This command performs an RFID test. In the RFID test, the printer attempts to read and write to a transponder that you place over the RFID antenna. Results are displayed on the printer's control panel display.

For more information about the RFID antenna location, refer to the RFID Programming Guide for your printer. A copy is available online at www.zebra.com/manuals.

In the slow version of the RFID test, the printer first displays the hardware version, the reader firmware version, and the program position.



NOTE: This command is valid only on RP4T printers.

Setvar

To set the programming position:

```
! U1 setvar "rfid.tag.test" "value"
```

Values

"quick"

"slow"

Example

This setvar example performs a quick RFID test, which shows a pass or fail message.

```
! U1 setvar "rfid.tag.test" "quick"
```

This setvar example performs a slow RFID test, which shows the success or failure of each read or write tag operation.

```
! U1 setvar "rfid.tag.test" "slow"
```


rfid.tag.test.content

This command instructs the printer which test to perform on the tag with the `rfid.tag.test.execute` command.

See [rfid.tag.test.execute](#) on page 1538.

Setvar

To instruct the printer which test to perform on the tag with the `rfid.tag.test.execute` command:

```
! U1 setvar "rfid.tag.test.content" "value"
```

Values

- "quick" performs a read EPC test and a write EPC test (using random data)
- "read" performs a read EPC test
- "write" performs a write EPC test (using random data)
- "up" sets the command to the previous test
- "down" sets the command to the next test

Default

"quick"

Getvar

To retrieve the current setting:

```
! U1 getvar "rfid.tag.test.content"
```

rfid.tag.test.execute

This command tests the data specified by the `rfid.tag.test.content` command.

See [rfid.tag.test.content](#) on page 1537.

Setvar

To test the specified data:

```
! U1 setvar "rfid.tag.test.execute"
```

rfid.tag.test.result_line1

This command reports the results of the `rfid.tag.test.execute` command.

Getvar

To retrieve the results of the `rfid.tag.test.execute` command:

```
! U1 setvar "rfid.tag.test.result_line1"
```

rfid.tag.test.result_line2

This command reports the results of the `rfid.tag.test.execute` command.

Getvar

To retrieve the results of the `rfid.tag.test.execute` command:

```
! U1 setvar "rfid.tag.test.result_line2"
```

rfid.tag.type

This command sets the reader's RFID tag type.

Setvar

To set the reader's tag type:

```
! U1 setvar "rfid.tag.type" "value"
```

Values

UHF Printers

Value	Definition
none	None
class0	EPC Class 0
class0+	EPC Class 0 Plus
class1_64bit	EPC Class 1 64-bit
class1_96bit	EPC Class 1 96-bit
ucode_epc_1_19	UCODE EPC 1.19
class0+_impinj	mpinj Class 0 Plus
ISO18000A	ISO 18000-06A
gen2	EPC Class 1, Generation 2 (Gen 2)
ISO18000B	ISO18000B

HF Printers

Value	Definition
none	None
detect	Auto detect (query tag to determine)
tagit	Tag*It (Texas Instruments Tagit tags)
icode	I*code (Phillips Icode tags)
pico	Pico Tag (Inside Technology's)
ISO15693	ISO 15693
EPC	EPC tag (13.56 MHz)
UIC	UID Tag
mifare_ultralight	Mifare UltraLight

Getvar

To respond with the reader's current tag type:

```
! U1 getvar "rfid.tag.type"
```

Example

This setvar example shows the reader's tag type being set to Gen 2.

```
! U1 setvar "rfid.tag.type" "gen2"
```

For tag types supported by older printers, refer to the original RFID Programming Guide, part number 58978L-xxx).

rfid.log.enabled

This command enables or disables the RFID host log.

Setvar

To set the command:

```
! U1 setvar "rfid.log.enabled" "value"
```

Values

"yes" Enables the RFID host log

"no" Disables the RFID host log

Default

"no"

Example

In this example, the setvar enables the RFID host log.

```
! U1 setvar "rfid.log.enabled" "yes"
```

Getvar

To view the current setting value:

```
! U1 getvar "rfid.log.enabled"
```

rfid.log.entries

This command returns the RFID host log. This command is equivalent to the ^HL and ~HL command. Host logs are not displayed during an ALLCV.

Getvar

To get the RFID host logs:

```
! U1 getvar "rfid.log.entries"
```

Result

```
[0x02]<start>  
Nov-13-2017 23:31:30,R,F0,A1,16,00000000,E200905962180075209038CD  
...  
<end>[0x03]
```

In this example, "..." can be more entries.

[0x02] and [0x03] are the STX and ETX binary characters.

rfid.log.clear

This command clears the RFID host log.

Setvar

To set the command:

```
! U1 setvar "rfid.log.clear" ""
```

Values

NA

Do

To clear the RFID host logs:

```
! U1 do "rfid.log.clear" ""
```

Values

NA

Zebra Code Pages

This section lists the various character code pages.

Zebra Code Page 850 — Latin Character Set

This is the Zebra Code Page 850:



NOTE: For hex 5C, a cent sign prints for all printer resident fonts. A backslash prints for downloaded fonts.

CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC
	20	32	0	30	48	@	40	64	P	50	80	'	60	96	p	70	112
!	21	33	1	31	49	A	41	65	Q	51	81	a	61	97	q	71	113
"	22	34	2	32	50	B	42	66	R	52	82	b	62	98	r	72	114
#	23	35	3	33	51	C	43	67	S	53	83	c	63	99	s	73	115
\$	24	36	4	34	52	D	44	68	T	54	84	d	64	100	t	74	116
%	25	37	5	35	53	E	45	69	U	55	85	e	65	101	u	75	117
&	26	38	6	36	54	F	46	70	V	56	86	f	66	102	v	76	118
'	27	39	7	37	55	G	47	71	W	57	87	g	67	103	w	77	119
(	28	40	8	38	56	H	48	72	X	58	88	h	68	104	x	78	120
)	29	41	9	39	57	I	49	73	Y	59	89	i	69	105	y	79	121
*	2a	42	:	3a	58	J	4a	74	Z	5a	90	j	6a	106	z	7a	122
+	2b	43	;	3b	59	K	4b	75	[	5b	91	k	6b	107	{	7b	123
,	2c	44	<	3c	60	L	4c	76	€	5c	92	l	6c	108	|	7c	124
-	2d	45	=	3d	61	M	4d	77	]	5d	93	m	6d	109	}	7d	125
.	2e	46	>	3e	62	N	4e	78	^	5e	94	n	6e	110	~	7e	126
/	2f	47	?	3f	63	O	4f	79	_	5f	95	o	6f	111	△	7f	127

CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC
É	90	144	á	a0	160	⋮	b0	176	┐	c0	192	ô	d0	208	Ó	e0	224
æ	91	145	í	a1	161	⋈	b1	177	└	c1	193	ø	d1	209	Ø	e1	225
Æ	92	146	ó	a2	162	⋈	b2	178	┘	c2	194	ē	d2	210	ō	e2	226
ô	93	147	ú	a3	163	|	b3	179	┐	c3	195	Ē	d3	211	Ò	e3	227
õ	94	148	ñ	a4	164	└	b4	180	—	c4	196	Ē	d4	212	ō	e4	228
ò	95	149	Ñ	a5	165	Á	b5	181	+	c5	197	ı	d5	213	Õ	e5	229
û	96	150	ª	a6	166	Â	b6	182	ã	c6	198	İ	d6	214	μ	e6	230
ù	97	151	º	a7	167	Ã	b7	183	Ä	c7	199	İ	d7	215	þ	e7	231
ÿ	98	152	¿	a8	168	⊕	b8	184	ℒ	c8	200	İ	d8	216	þ	e8	232
Ö	99	153	⊕	a9	169	⌋	b9	185	ℓ	c9	201	┘	d9	217	Ú	e9	233
Ü	9a	154	┐	aa	170	||	ba	186	ℓ	ca	202	┐	da	218	Û	ea	234
ø	9b	155	½	ab	171	┐	bb	187	ℓ	cb	203	■	db	219	Ü	eb	235
£	9c	156	¼	ac	172	┘	bc	188	ℓ	cc	204	■	dc	220	ý	ec	236
Ø	9d	157	ı	ad	173	Ç	bd	189	=	cd	205	|	dd	221	Ý	ed	237
×	9e	158	«	ae	174	Ÿ	be	190	≡	ce	206	İ	de	222	˘	ee	238
/	9f	159	»	af	175	┐	bf	191	α	cf	207	■	df	223	'	ef	239
																ff	255

Zebra Code Page 1250 — Central and Eastern European Latin Character Set

This is the Zebra Code Page 1250 that supports scalable/downloaded TTF fonts:



NOTE: Font 0 (zero) was used to display this chart.

CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC
	20	32	0	30	48	@	40	64	P	50	80	'	60	96	p	70	112
!	21	33	1	31	49	A	41	65	Q	51	81	a	61	97	q	71	113
"	22	34	2	32	50	B	42	66	R	52	82	b	62	98	r	72	114
#	23	35	3	33	51	C	43	67	S	53	83	c	63	99	s	73	115
\$	24	36	4	34	52	D	44	68	T	54	84	d	64	100	t	74	116
%	25	37	5	35	53	E	45	69	U	55	85	e	65	101	u	75	117
&	26	38	6	36	54	F	46	70	V	56	86	f	66	102	v	76	118
'	27	39	7	37	55	G	47	71	W	57	87	g	67	103	w	77	119
(	28	40	8	38	56	H	48	72	X	58	88	h	68	104	x	78	120
)	29	41	9	39	57	I	49	73	Y	59	89	i	69	105	y	79	121
*	2a	42	:	3a	58	J	4a	74	Z	5a	90	j	6a	106	z	7a	122
+	2b	43	;	3b	59	K	4b	75	[	5b	91	k	6b	107	{	7b	123
,	2c	44	<	3c	60	L	4c	76	\	5c	92	l	6c	108	|	7c	124
-	2d	45	=	3d	61	M	4d	77	]	5d	93	m	6d	109	}	7d	125
.	2e	46	>	3e	62	N	4e	78	^	5e	94	n	6e	110	~	7e	126
/	2f	47	?	3f	63	O	4f	79	_	5f	95	o	6f	111		7f	127

CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC
	90	144		a0	160	°	b0	176	Ř	c0	192	Đ	d0	208	í	e0	224
'	91	145	˘	a1	161	±	b1	177	Á	c1	193	Ñ	d1	209	á	e1	225
'	92	146	˘	a2	162	˘	b2	178	À	c2	194	Ń	d2	210	â	e2	226
“	93	147	Ł	a3	163	†	b3	179	Ǻ	c3	195	Ó	d3	211	ǻ	e3	227
”	94	148	Ǻ	a4	164	’	b4	180	ǻ	c4	196	Ô	d4	212	Ǽ	e4	228
•	95	149	Ą	a5	165	μ	b5	181	Ĺ	c5	197	Õ	d5	213	Í	e5	229
—	96	150	|	a6	166	¶	b6	182	Ć	c6	198	Ö	d6	214	Ĉ	e6	230
—	97	151	§	a7	167	•	b7	183	Ç	c7	199	×	d7	215	ç	e7	231
	98	152	”	a8	168	•	b8	184	Ĉ	c8	200	Ř	d8	216	č	e8	232
™	99	153	©	a9	169	ą	b9	185	É	c9	201	Ú	d9	217	é	e9	233
š	9a	154	§	aa	170	š	ba	186	Ė	ca	202	Ú	da	218	ę	ea	234
>	9b	155	«	ab	171	»	bb	187	Ė	cb	203	Ů	db	219	ě	eb	235
š	9c	156	¬	ac	172	Ĺ	bc	188	Ė	cc	204	Ů	dc	220	ě	ec	236
í	9d	157	-	ad	173	”	bd	189	Í	cd	205	Ý	dd	221	í	ed	237
ž	9e	158	®	ae	174	í	be	190	İ	ce	206	Ť	de	222	î	ee	238
ž	9f	159	Ž	af	175	ž	bf	191	Đ	cf	207	ß	df	223	đ	ef	239

Zebra Code Page 1252— Latin Character Set

This is the Zebra Code Page 1252:

CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC
	20	32	0	30	48	@	40	64	P	50	80	`	60	96	p	70	112
!	21	33	1	31	49	A	41	65	Q	51	81	a	61	97	q	71	113
"	22	34	2	32	50	B	42	66	R	52	82	b	62	98	r	72	114
#	23	35	3	33	51	C	43	67	S	53	83	c	63	99	s	73	115
\$	24	36	4	34	52	D	44	68	T	54	84	d	64	100	t	74	116
%	25	37	5	35	53	E	45	69	U	55	85	e	65	101	u	75	117
&	26	38	6	36	54	F	46	70	V	56	86	f	66	102	v	76	118
'	27	39	7	37	55	G	47	71	W	57	87	g	67	103	w	77	119
(	28	40	8	38	56	H	48	72	X	58	88	h	68	104	x	78	120
)	29	41	9	39	57	I	49	73	Y	59	89	i	69	105	y	79	121
*	2a	42	:	3a	58	J	4a	74	Z	5a	90	j	6a	106	z	7a	122
+	2b	43	;	3b	59	K	4b	75	[	5b	91	k	6b	107	{	7b	123
,	2c	44	<	3c	60	L	4c	76	\	5c	92	l	6c	108	|	7c	124
-	2d	45	=	3d	61	M	4d	77	]	5d	93	m	6d	109	}	7d	125
.	2e	46	>	3e	62	N	4e	78	^	5e	94	n	6e	110	~	7e	126
/	2f	47	?	3f	63	O	4f	79	_	5f	95	o	6f	111		7f	127

CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC	CHR	HEX	DEC
	90	144		a0	160	°	b0	176	À	c0	192	Đ	d0	208	à	e0	224
'	91	145	ì	a1	161	±	b1	177	Á	c1	193	Ñ	d1	209	á	e1	225
°	92	146	ç	a2	162	²	b2	178	Â	c2	194	Ò	d2	210	â	e2	226
“	93	147	£	a3	163	³	b3	179	Ã	c3	195	Ó	d3	211	ã	e3	227
”	94	148	¤	a4	164	´	b4	180	Ä	c4	196	Ô	d4	212	ä	e4	228
•	95	149	¥	a5	165	µ	b5	181	Å	c5	197	Õ	d5	213	å	e5	229
—	96	150	¦	a6	166	¶	b6	182	Æ	c6	198	Ö	d6	214	æ	e6	230
—	97	151	§	a7	167	·	b7	183	Ç	c7	199	×	d7	215	ç	e7	231
˘	98	152	¨	a8	168	¸	b8	184	È	c8	200	Ø	d8	216	è	e8	232
™	99	153	©	a9	169	¹	b9	185	É	c9	201	Ù	d9	217	é	e9	233
š	9a	154	ª	aa	170	º	ba	186	Ê	ca	202	Ú	da	218	ê	ea	234
›	9b	155	«	ab	171	»	bb	187	Ë	cb	203	Û	db	219	ë	eb	235
œ	9c	156	¬	ac	172	¼	bc	188	Ì	cc	204	Ü	dc	220	ì	ec	236
	9d	157	-	ad	173	½	bd	189	Í	cd	205	Ý	dd	221	í	ed	237
ž	9e	158	®	ae	174	¾	be	190	Î	ce	206	Þ	de	222	î	ee	238
ÿ	9f	159	™	af	175	¿	bf	191	Ï	cf	207	ß	df	223	ï	ef	239

Zebra Code Page 1253 — Modern Greek Character Set

This is the Zebra Code Page 1253:

0 0	1 1	20 32	0 30 48	@ 40 64	P 50 80	' 60 96	p 70 112
2 2	3 3	! 21 33	1 31 49	A 41 65	Q 51 81	a 61 97	q 71 113
4 4	5 5	" 22 34	2 32 50	B 42 66	R 52 82	b 62 98	r 72 114
6 6	7 7	# 23 35	3 33 51	C 43 67	S 53 83	c 63 99	s 73 115
8 8	9 9	\$ 24 36	4 34 52	D 44 68	T 54 84	d 64 100	t 74 116
a 10	b 11	% 25 37	5 35 53	E 45 69	U 55 85	e 65 101	u 75 117
c 12	d 13	& 26 38	6 36 54	F 46 70	V 56 86	f 66 102	v 76 118
e 14	f 15	' 27 39	7 37 55	G 47 71	W 57 87	g 67 103	w 77 119
10 16	11 17	(28 40	8 38 56	H 48 72	X 58 88	h 68 104	x 78 120
12 18	13 19	) 29 41	9 39 57	I 49 73	Y 59 89	i 69 105	y 79 121
14 20	15 21	* 2a 42	: 3a 58	J 4a 74	Z 5a 90	j 6a 106	z 7a 122
16 22	17 23	+ 2b 43	; 3b 59	K 4b 75	[5b 91	k 6b 107	{ 7b 123
18 24	19 25	, 2c 44	< 3c 60	L 4c 76	\ 5c 92	l 6c 108	| 7c 124
1a 26	1b 27	- 2d 45	= 3d 61	M 4d 77	] 5d 93	m 6d 109	} 7d 125
1c 28	1d 29	. 2e 46	> 3e 62	N 4e 78	^ 5e 94	n 6e 110	~ 7e 126
1e 30	1f 31	/ 2f 47	? 3f 63	O 4f 79	_ 5f 95	o 6f 111	7f 127

€	80	128		90	144		a0	160	°	b0	176	ı	c0	192	Π	d0	208	Ů	e0	224	Π	f0	240
	81	129	'	91	145	"	a1	161	±	b1	177	À	c1	193	Ɔ	d1	209	ɑ	e1	225	ρ	f1	241
,	82	130		92	146	À	a2	162	²	b2	178	Β	c2	194		d2	210	β	e2	226	ζ	f2	242
/	83	131	"	93	147	£	a3	163	³	b3	179	Γ	c3	195	Σ	d3	211	γ	e3	227	σ	f3	243
„	84	132	"	94	148	□	a4	164		b4	180	Δ	c4	196	Τ	d4	212	δ	e4	228	τ	f4	244
...	85	133	*	95	149	Υ	a5	165	μ	b5	181	Ε	c5	197	Υ	d5	213	ε	e5	229	υ	f5	245
†	86	134	—	96	150	|	a6	166	‘	b6	182	Ζ	c6	198	Φ	d6	214	ζ	e6	230	Φ	f6	246
‡	87	135	—	97	151	\$	a7	167	’	b7	183	Η	c7	199	Χ	d7	215	η	e7	231	Χ	f7	247
	88	136		98	152	"	a8	168	Ε	b8	184	Θ	c8	200	Ψ	d8	216	θ	e8	232	Ψ	f8	248
0/00	89	137	™	99	153	©	a9	169	Η	b9	185	Ι	c9	201	Ω	d9	217	ι	e9	233	ω	f9	249
	8a	138		9a	154		sa	170	Ι	ba	186	Κ	ca	202	Ι	da	218	κ	ea	234	ι	fa	250
‘	8b	139	'	9b	155	"	ab	171	”	bb	187	Λ	cb	203	Υ	db	219	λ	eb	235	Ů	fb	251
	8c	140		9c	156	┐	ac	172	Ο	bc	188	Μ	cc	204	ά	dc	220	μ	ec	236	ό	fc	252
	8d	141		9d	157	*	ad	173	½	bd	189	Ν	cd	205	Έ	ed	221	ν	ed	237	ύ	fd	253
	8e	142		9e	158	†	ae	174	Υ	be	190	Ξ	ce	206	ή	de	222	ξ	ee	238	ώ	fe	254
	8f	143		9f	159	—	af	175	Ω	bf	191	Ο	cf	207	Ι	df	223	ο	ef	239		ff	255

Zebra Code Page 1254 — Turkish Character Set

This is the Zebra Code Page 1254.

0	0	1	1	20	32	0	30	48	@	40	64	P	50	80	°	80	96	p	70	112	
2	2	3	3	!	21	33	1	31	49	A	41	65	Q	51	81	a	61	97	q	71	113
4	4	5	5	"	22	34	2	32	50	B	42	66	R	52	82	b	62	98	r	72	114
6	6	7	7	#	23	35	3	33	51	C	43	67	S	53	83	c	63	99	s	73	115
8	8	9	9	\$	24	36	4	34	52	D	44	68	T	54	84	d	64	100	t	74	116
a	10	b	11	%	25	37	5	35	53	E	45	69	U	55	85	e	65	101	u	75	117
c	12	d	13	&	26	38	6	36	54	F	46	70	V	56	86	f	66	102	v	76	118
e	14	f	15	'	27	39	7	37	55	G	47	71	W	57	87	g	67	103	w	77	119
10	16	11	17	(	28	40	8	38	56	H	48	72	X	58	88	h	68	104	x	78	120
12	18	13	19	)	29	41	9	39	57	I	49	73	Y	59	89	i	69	105	y	79	121
14	20	15	21	*	2a	42	:	3a	58	J	4a	74	Z	5a	90	!	6a	106	z	7a	122
16	22	17	23	+	2b	43	;	3b	59	K	4b	75	[	5b	91	k	6b	107	{	7b	123
18	24	19	25	,	2c	44	<	3c	60	L	4c	76	\	5c	92	l	6c	108	|	7c	124
1a	26	1b	27	-	2d	45	=	3d	61	M	4d	77	]	5d	93	m	6d	109	}	7d	125
1c	28	1d	29	.	2e	46	>	3e	62	N	4e	78	^	5e	94	n	6e	110	~	7e	126
1e	30	1f	31	/	2f	47	?	3f	63	O	4f	79	_	5f	95	o	6f	111		7f	127

€	80	128		90	144		80	160	°	b0	176	A	c0	192	G	d0	208	ä	e0	224	ö	f0	240
	91	129		91	145	i	a1	161	±	b1	177	À	c1	193	N	d1	209	á	e1	225	ñ	f1	241
,	82	130		92	146	ç	a2	162	²	b2	178	Á	c2	194	Ó	d2	210	â	e2	226	ô	f2	242
f	93	131		93	147	š	a3	163	³	b3	179	Â	c3	195	Ô	d3	211	ã	e3	227	ó	f3	243
„	84	132		94	148	□	a4	164		b4	180	Ã	c4	196	Õ	d4	212	ä	e4	228	õ	f4	244
...	85	133		95	149	¥	a5	165	μ	b5	181	Ä	c5	197	Ö	d5	213	å	e5	229	ö	f5	245
†	86	134	—	96	150	|	a6	166	¶	b6	182	Æ	c6	198	Ø	d6	214	æ	e6	230	ø	f6	246
‡	87	135	—	97	151	§	a7	167	•	b7	183	Ç	c7	199	X	d7	215	ç	e7	231	÷	f7	247
^	88	136	~	98	152		a8	168	,	b8	184	E	c8	200	Ø	d8	216	é	e8	232	ø	f8	248
1/10	89	137	™	99	153	©	a9	169	¹	b9	185	É	c9	201	Ú	d9	217	ê	e9	233	ù	f9	249
§	8a	138	§	9a	154	ª	aa	170	º	ba	186	Ê	ca	202	Û	da	218	ë	ea	234	ú	fa	250
‘	8b	139	’	9b	155	«	ab	171	»	bb	187	Ë	cb	203	Ü	db	219	ê	eb	235	û	fb	251
Œ	8c	140	œ	9c	156	¬	ac	172	¼	bc	188	Ì	cc	204	U	dc	220	í	ec	236	ü	fc	252
	8d	141		9d	157	•	ad	173	½	bd	189	Í	cd	205	Í	dd	221	î	ed	237	í	fd	253
	8e	142		9e	158	©	ae	174	¾	be	190	Î	ce	206	Ş	de	222	ï	ee	238	ş	fe	254
	8f	143	Y	9f	159		af	175	¿	bf	191	Ï	cf	207	ß	df	223	ï	ef	239	ÿ	ff	255

Zebra Code Page 1255 — Hebrew Character Set

This is the Zebra Code Page 1255:

0	0	1	1	20	32	0	30	40	@	40	64	P	50	80	'	60	96	p	70	112	
2	2	3	3	!	21	33	1	31	49	A	41	65	Q	51	81	a	61	97	q	71	113
4	4	5	5	"	22	34	2	32	50	B	42	66	R	52	82	b	62	98	r	72	114
6	6	7	7	#	23	35	3	33	51	C	43	67	S	53	83	c	63	99	s	73	115
8	8	9	9	\$	24	36	4	34	52	D	44	68	T	54	84	d	64	100	t	74	116
a	10	b	11	%	25	37	5	35	53	E	45	69	U	55	85	e	65	101	u	75	117
c	12	d	13	&	26	38	6	36	54	F	46	70	V	56	86	f	66	102	v	76	118
e	14	f	15	'	27	39	7	37	55	G	47	71	W	57	87	g	67	103	w	77	119
10	16	11	17	(	28	40	8	38	56	H	48	72	X	58	88	h	68	104	x	78	120
12	18	13	19	)	29	41	9	39	57	I	49	73	Y	59	89	i	69	105	y	79	121
14	20	15	21	*	2a	42	:	3a	58	J	4a	74	Z	5a	90	j	6a	106	z	7a	122
16	22	17	23	+	2b	43	;	3b	59	K	4b	75	[	5b	91	k	6b	107	{	7b	123
18	24	19	25	,	2c	44	<	3c	60	L	4c	76	\	5c	92	l	6c	108	|	7c	124
1a	26	1b	27	-	2d	45	=	3d	61	M	4d	77	]	5d	93	m	6d	109	}	7d	125
1c	28	1d	29	.	2e	46	>	3e	62	N	4e	78	^	5e	94	n	6e	110	~	7e	126
1e	30	1f	31	/	2f	47	?	3f	63	O	4f	79	_	5f	95	o	6f	111		7f	127

Zebra Code Pages

€	80	128		90	144		a0	160	°	b0	176	,	c0	192	|	d0	208	κ	e0	224	ı	f0	240
	81	129	'	91	145	i	a1	161	±	b1	177	„	c1	193		d1	209	ı	e1	225	ı	f1	241
ı	82	130	'	92	146	ı	a2	162	²	b2	178	„	c2	194		d2	210	λ	e2	226	ı	f2	242
f	83	131	"	93	147	ı	a3	163	³	b3	179	„	c3	195	:	d3	211	ı	e3	227	ı	f3	243
*	84	132	"	94	148	ı	a4	164		b4	180		c4	196	ı	d4	212	ı	e4	228	ı	f4	244
...	85	133	'	95	149	ı	a5	165	μ	b5	181	„	c5	197	ı	d5	213	ı	e5	229	ı	f5	245
†	86	134	—	96	150	ı	a6	166	ı	b6	182	„	c6	198	"	d6	214	ı	e6	230	ı	f6	246
‡	87	135	—	97	151	ı	a7	167	ı	b7	183	„	c7	199	"	d7	215	ı	e7	231	ı	f7	247
^	88	136	~	98	152	ı	a8	168	ı	b8	184	„	c8	200	"	d8	216	ı	e8	232	ı	f8	248
0/00	89	137	™	99	153	ı	a9	169	ı	b9	185	„	c9	201		d9	217	ı	e9	233	ı	f9	249
	8a	138		9a	154	X	aa	170	÷	ba	186		ca	202		da	218	ı	ea	234	ı	fa	250
ı	8b	139	'	9b	155	ı	ab	171	ı	bb	187	„	cb	203		db	219	ı	eb	235		fb	251
	8c	140		9c	156	ı	ac	172	¼	bc	188	„	cc	204		dc	220	ı	ec	236		fc	252
	8d	141		9d	157	ı	ad	173	½	bd	189	„	cd	205		dd	221	ı	ed	237		fd	253
	8e	142		9e	158	ı	ae	174	¾	be	190	„	ce	206		de	222	ı	ee	238		fe	254
	8f	143		9f	159	ı	af	175	ı	bf	191	„	cf	207		df	223	ı	ef	239		ff	255

ASCII

This section shows the American Standard Code for Information Interchange (ASCII) code used by Zebra printers.

Shaded areas in the table below indicate characters not recommended for command prefix, format prefix, or delimiter characters.

Table 28 ASCII Code Chart

HEX	Character	HEX	Character	HEX	Character	HEX	Character
00	NUL	20	Space	40	@	60	'
01	SOH	21	!	41	A	61	a
02	STX	22	"	42	B	62	b
03	ETX	23	#	43	C	63	c
04	EOT	24	\$	44	D	64	d
05	ENQ	25	%	45	E	65	e
06	ACK	26	&	46	F	66	f
07	BEL	27	'	47	G	67	g
08	BS	28	(	48	H	68	h
09	HT	29	)	49	I	69	i
0A	LF	2A	*	4A	J	6A	j
0B	VT	2B	+	4B	K	6B	k
0C	FF	2C	,	4C	L	6C	l
0D	CR	2D	-	4D	M	6D	m
0E	SO	2E	.	4E	N	6E	n
0F	SI	2F	/	4F	O	6F	o
10	DLE	30	0	50	P	70	p
11	DC1	31	1	51	Q	71	q
12	DC2	32	2	52	R	72	r
13	DC3	33	3	53	S	73	s
14	DC4	34	4	54	T	74	t

Table 28 ASCII Code Chart (Continued)

HEX	Character	HEX	Character	HEX	Character	HEX	Character
15	NAK	35	5	55	U	75	u
16	SYN	36	6	56	V	76	v
17	ETB	37	7	57	W	77	w
18	CAN	38	8	58	X	78	x
19	EM	39	9	59	Y	79	y
1A	SUB	3A	:	5A	Z	7A	z
1B	ESC	3B	;	5B	[	7B	{
1C	FS	3C	<	5C	\	7C	|
1D	GS	3D	=	5D	]	7D	}
1E	RS	3E	>	5E	^	7E	~
1F	US	3F	?	5F	_	7F	DEL

Fonts and Barcodes

This section provides information about different fonts (type faces) and barcodes that can be used with the printer.

Standard Printer Fonts

Most Zebra printers come standard with 15 bitmapped fonts and one scalable font.

Additional downloadable bitmapped and scalable fonts are also available. Character size and density (how dark it appears) depend on the density of the printhead and the media used.

Figure 22 Examples of the Standard Printer Fonts

FONT A -- ABCDxyz 12345
FONT B -- ABCDXYZ 12345 UPPER CASE ONLY
FONT D -- ABCDxyz 12345
FONT E -- (OCR-B) ABCDxyz 12345
FONT F -- ABCDxyz 12345
FONT G -- ABz 12
FONT H -- (OCR-A) UPPER CASE ONLY
FONT O -- (Scaleable) ABCDxyz 12345
FONT GS -- © ® ™ ®
FONT P -- ABCDxyz 12345
FONT Q -- ABCDxyz 12345
FONT R -- ABCDxyz 12345
FONT S -- ABCDxyz 12345
FONT T -- ABCDxyz 12345
FONT U -- ABCDxyz 12345
FONT V -- ABCDxyz 12345

To use one of these fonts, you must either use the change alphanumeric default font command (^CF) or specify an alphanumeric field command (^A).

The standard Zebra character set is Code 850 for character values greater than 20 HEX. There are six HEX character values below 20 HEX that are also recognized. The figure below shows how these character values are printed.



NOTE: Unidentified characters should default to a space.

Figure 23 Recognized HEX Values below 20 HEX

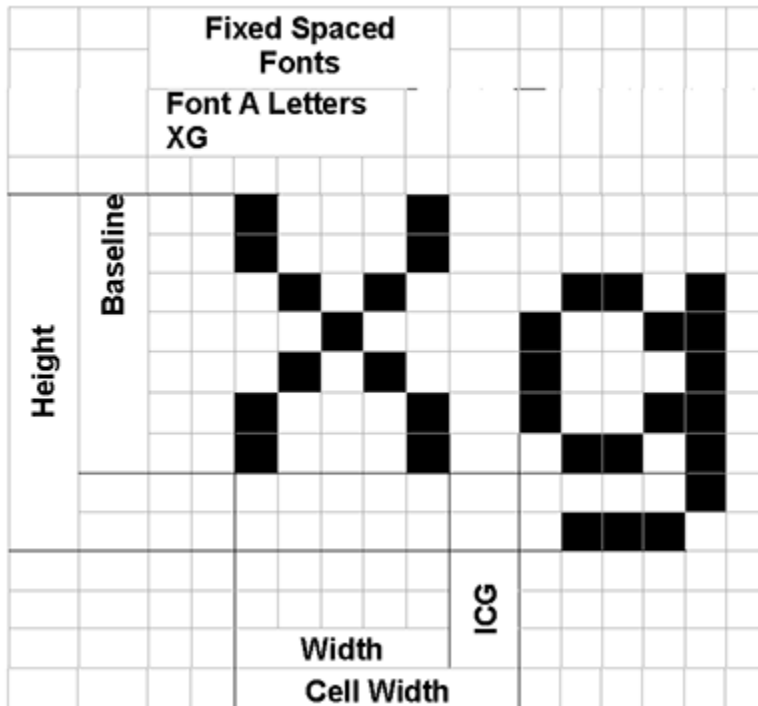
A HEX	1a	will print a	0 (numeric)
A HEX	1b	will print a	¼
A HEX	1c	will print a	½
A HEX	1d	will print a	¼
A HEX	1e	will print a	ij
A HEX	1f	will print a	\

Proportional and Fixed Spacing

Proportional spacing is different than fixed spacing. In [Table 29 Intercharacter Gap and Baseline Parameters](#) on page 1563, the intercharacter gap (ICG), the space between characters, is constant for

fonts A through H, which means that the spacing between all characters is the same. For example, the spacing between the letters MW is the same as between the letters IE.

Figure 24 Fixed Space Fonts Proportion Example



The baseline is the imaginary line on which the bottom (base) of all characters (except any descenders) rest. The area between the baseline and the bottom of the matrix is used for any character “descenders.” Baseline numbers define where the baseline is located in relationship to the top of the matrix. For example, the baseline for font “E” is 23 dots down from the top of the matrix.

Table 29 Intercharacter Gap and Baseline Parameters

Font	H x W (in dots)	Type	Intercharacter Gap (in dots)	Baseline(in dots)
A	9 x 5	U-L-D	1	7
B	11 x 7	U	2	11
C,D	18 x 10	U-L-D	2	14
E	28 x 15	OCR-B	5	23
F	26 x 13	U-L-D	3	21
G	60 x 40	U-L-D	8	48
H	21 x 13	OCR-A	6	21
GS	24 x 24	SYMBOL	PROPORTIONAL	3 x HEIGHT/4
O	DEFAULT: 15 x 12		PROPORTIONAL	3 x HEIGHT/4

Scalable Versus Bitmapped Fonts

For scalable fonts, setting the height and width equally produces characters that appear the most balanced. Balanced characters are pleasing to the eye because actual height and width are approximately equal to each other. This is achieved through the use of a smooth-scaling algorithm in the printer.

For bitmapped fonts, this balancing is built into the font. In actuality, the height of a bitmap font is slightly larger than the width. Bitmap fonts are always at the maximum size of the character's cell.

Font Matrices

This section lists the font matrices.

Type Key

U = Uppercase, L = Lowercase, D = Descenders

Table 30 6 dot/mm Printhead

Font	Matrix	Type	Character Size			
	HxW (in dots)		HxW (in in.)	Char./in.	HxW (in mm)	Char. /mm
A	9 x 5	U-L-D	0.059 x 0.039	25.4	1.50 x 0.99	1.01
B	11 x 7	U	0.072 x 0.059	16.9	1.82 x 1.50	0.066
C, D	18 x 10	U-L-D	0.118 x 0.079	12.7	2.99 x 2.00	0.05
E	21 x 10	OCR-B	0.138 x 0.085	11.7	3.50 x 2.16	0.46
F	26 x 13	U-L-D	0.170 x 0.105	9.53	4.32 x 2.67	0.37
G	60 x 40	U-L-D	0.394 x 0.315	3.18	10.0 x 8.00	0.125
H	17 x 11	OCR-A	0.111 x 0.098	10.2	2.81 x 2.48	0.40
GS	24 x 24	SYMBOL	0.157 x 0.157	6.35	3.98 x 3.98	0.251
0	Default: 15 x 12					

Table 31 8 dot/mm (203 dpi) Printhead

Font	Matrix	Type	Character Size			
	HxW (in dots)		HxW (in in.)	Char./in.	HxW (in mm)	Char. /mm
A	9 X 5	U-L-D	0.044 x 0.030	33.3	1.12 x 0.76	1.31
B	11 X 7	U	0.054 x 0.044	22.7	1.37 x 1.12	0.89
C, D	18 X 10	U-L-D	0.089 x 0.059	16.9	2.26 x 1.12	0.66
E	28 x 15	OCR-B	0.138 x 0.098	10.2	3.50 x 2.49	0.40
F	26 x 13	U-L-D	0.128 x 0.079	12.7	3.25 x 2.00	0.50
G	60 x 40	U-L-D	0.295 x 0.197	4.2	7.49 x 5.00	0.167
H	21 x 13	OCR-A	0.103 x 0.093	10.8	2.61 x 2.36	0.423
GS	24 x 24	SYMBOL	0.118 x 0.118	8.5	2.99 x 2.99	0.334

Table 31 8 dot/mm (203 dpi) Printhead (Continued)

Font	Matrix	Type	Character Size			
	HxW (in dots)		HxW (in in.)	Char./in.	HxW (in mm)	Char. /mm
P	20 x 18	U-L-D	0.098 x 0.089	N/A	2.50 x 2.25	N/A
Q	28 x 24	U-L-D	0.138 x 0.118	N/A	3.50 x 3.00	N/A
R	35 x 31	U-L-D	0.172 x 0.153	N/A	4.38 x 3.88	N/A
S	40 x 35	U-L-D	0.197 x 0.172	N/A	5.00 x 4.38	N/A
T	48 x 42	U-L-D	0.236 x 0.207	N/A	6.00 x 5.25	N/A
U	59 x 53	U-L-D	0.290 x 0.261	N/A	7.38 x 6.63	N/A
V	80 x 71	U-L-D	0.394 x 0.349	N/A	10.00 x 8.88	N/A
0	Default: 15 x 12	U-L-D	Scalable		Scalable	

Table 32 12 dot/mm (300 dpi) Printhead

Font	Matrix	Type	Character Size			
	HxW (in dots)		HxW (in in.)	Char./in.	HxW (in mm)	Char. /mm
A	9 X 5	U-L-D	0.030 x 0.020	50.8	0.75 x 0.50	2.02
B	11 X 7	U	0.036 x 0.030	33.8	0.91 x 0.75	1.32
C, D	18 X 10	U-L-D	0.059 x 0.040	25.4	1.50 x 1.00	1.00
E	42 x 20	OCR-B	0.138 x 0.085	23.4	1.75 x 1.08	0.92
F	26 x 13	U-L-D	0.085 x 0.053	19.06	2.16 x 1.34	0.74
G	60 x 40	U-L-D	0.197 x 0.158	6.36	5.00 x 4.00	0.25
H	34 x 22	OCR-A	0.111 x 0.098	10.20	2.81 x 2.48	0.40
GS	24 x 24	SYMBOL	0.079 x 0.079	12.70	1.99 x 1.99	0.52
P	20 x 18	U-L-D	0.067 x 0.060	N/A	1.69 x 1.52	N/A
Q	28 x 24	U-L-D	0.093 x 0.080	N/A	2.37 x 2.03	N/A
R	35 x 31	U-L-D	0.117 x 0.103	N/A	2.96 x 2.62	N/A
S	40 x 35	U-L-D	0.133 x 0.177	N/A	3.39 x 2.96	N/A
T	48 x 42	U-L-D	0.160 x 0.140	N/A	4.06 x 3.56	N/A
U	59 x 53	U-L-D	0.197 x 0.177	N/A	5.00 x 4.49	N/A
V	80 x 71	U-L-D	0.267 x 0.237	N/A	6.77 x 6.01	N/A
0	Default: 15 x 12	U-L-D	Scalable		Scalable	

Table 33 24 dot/mm (600 dpi) Printhead

Font	Matrix	Type	Character Size			
	HxW (in dots)		HxW (in in.)	Char./in.	HxW (in mm)	Char. /mm
A	9 X 5	U-L-D	0.015 x 0.010	100.00	0.38 x 0.25	4.00
B	11 X 7	U	0.018 x 0.015	66.66	0.46 x 0.38	2.60
C, D	18 X 10	U-L-D	0.030 x 0.020	50.00	0.77 x 0.51	2.0
E	42 x 20	OCR-B	0.137 x 0.087	11.54	3.47 x 2.20	0.45
F	26 x 13	U-L-D	0.043 x 0.027	37.5	1.10 x 0.68	1.50
G	60 x 40	U-L-D	0.100 x 0.080	12.50	2.54 x 2.04	0.50
H	34 x 22	OCR-A	0.100 x 0.093	10.71	2.54 x 2.37	0.42
GS	24 x 24	SYMBOL	0.040 x 0.040	25.00	1.02 x 1.02	1.00
P	20 x 18	U-L-D	0.067 x 0.060	N/A	1.69 x 1.52	N/A
Q	28 x 24	U-L-D	0.093 x 0.080	N/A	2.37 x 2.03	N/A
R	35 x 31	U-L-D	0.117 x 0.103	N/A	2.96 x 2.62	N/A
S	40 x 35	U-L-D	0.133 x 0.117	N/A	3.39 x 2.96	N/A
T	48 x 42	U-L-D	0.160 x 0.140	N/A	4.06 x 3.56	N/A
U	59 x 53	U-L-D	0.197 x 0.177	N/A	5.00 x 4.49	N/A
V	80 x 71	U-L-D	0.267 x 0.237	N/A	6.77 x 6.01	N/A
O	Default: 15 x 12	U-L-D	Scalable		Scalable	

Barcodes

Every barcode contains data made up of a sequence of light spaces and dark bars that represent letters, numbers, or other graphic characters. -

The usable characters differ among the various kinds of bar codes. Each barcode section in the [ZPL Commands](#) provides a table of applicable characters. Start and stop characters and check digits are used by many, but not all, barcodes. These will be indicated in the specific barcode explanations.

Zebra printers can print the following kinds of barcodes:

Barcode modulus “X” dimensions <ul style="list-style-type: none"> Picket fence (non-rotated) orientation: <ul style="list-style-type: none"> 203 dpi = 0.0049 in. mil to 0.049 in. 300 dpi = 0.0033 in. mil to 0.033 in. Ladder (rotated) orientation: <ul style="list-style-type: none"> 203 dpi = 0.0049 in. mil to 0.049 in. 300 dpi = 0.0039 in. mil to 0.039 in. 	Linear barcodes <ul style="list-style-type: none"> Codabar Code 11 Code 39 Code 93 Code 128 with subsets A/B C and UCC Case Codes ISBT-128 UPC-A UPC-E EAN-8 EAN-13 UPC and EAN 2 or 5 digit extensions Planet Code Plessey Postnet Standard 2 of 5 Industrial 2 of 5 Interleaved 2 of 5 LOGMARS MSI GS1 DataBar Omnidirectional
Two-dimensional barcodes <ul style="list-style-type: none"> Aztec Code 49 Maxi Code TLC39 PDF-417 QR Code Codablock DataMatrix Micro-PDF417 	
Barcode ratios <ul style="list-style-type: none"> 2:1 7:3 5:2 3:1 	

Basic Format for Bar Codes

The basic format for bar codes is quiet zone, start character, data, check digit, stop character, and quiet zone. Not all bar codes require each of these elements.

Every bar code requires a quiet zone. A quiet zone (sometimes called a “clear area”) is an area adjacent to the machine-readable symbols that ensure proper reading (decoding) of the symbols. No printing is permissible within this area. Preprinted characters, borders, and background color are acceptable if they are invisible to the reading device; these are used in some applications but restrict the type of reading device that can be used. The size of the quiet zone depends on the size of bar widths (usually 10 times the width of the narrow bar).

Figure 25 Quiet Zone in a Bar Code



Barcode Field Instructions

To create a barcode, a barcode field command must be contained in the label format.

[Table 34 Barcode Field Commands](#) on page 1568 shows the barcode field commands. The number in brackets denotes the print ratio. Each command produces a unique barcode.



IMPORTANT: (*) for Fixed Printing Ratio means that the ratio between the width of the bars in the code is a fixed standard and cannot be changed.

As another reference to the barcode field commands ratio, see [Table 6 Module Width Ratios in Dots](#) on page 148.

Table 34 Barcode Field Commands

ZPL Command	Command Description	Ratio
^B0	Aztec Barcode Parameters	[Fixed]
^B1	Code 11 (USD-8)	[2.0 - 3.0]
^B2	Interleaved 2 of 5	[2.0 - 3.0]
^B3	Code 39 (USD-3 and 3 of 9)	[2.0 - 3.0]
^B4	Code 49 (*)	[Fixed]
^B5	Planet Code Barcode	[Fixed]
^B7	PDF417 (*)	[Fixed]
^B8	EAN-8 (*)	[Fixed]
^B9	UPC-E	[Fixed]
^BA	Code 93 (USS-93)(*)	[Fixed]
^BB	CODABLOCK A, E, F (*)	[Fixed]
^BC	Code 128 (USD-6) (*)	[Fixed]
^BD	UPS MaxiCode (*)	[Fixed]
^BE	EAN-13	[Fixed]
^BF	Micro-PDF417	[Fixed]

Table 34 Barcode Field Commands (Continued)

ZPL Command	Command Description	Ratio
^BI	Industrial 2 of 5	[2.0 - 3.0]
^BJ	Standard 2 of 5	[2.0 - 3.0]
^BK	ANSI Codabar (USD-4 and 2 of 7)	[2.0 - 3.0]
^BL	LOGMARS	[2.0 - 3.0]
^BM	MSI	[2.0 - 3.0]
^BO	Aztec Barcode Parameters	[Fixed]
^BP	Plessey	[2.0 - 3.0]
^BQ	QR Code (*)	[Fixed]
^BR	GS1 Databar (formerly RSS)	[Fixed]
^BS	UPC/EAN Extensions (*)	[Fixed]
^BU	UPC-A (*)	[Fixed]
^BX	Data Matrix (*)	[Fixed]
^BZ	PostNet (*), USPS Intelligent Mail, and Planet barcodes	[Fixed]

Additionally, each barcode field command can be issued with a definition parameter string. The parameter string defines field rotation, height, and interpretation line status for all barcodes. For some barcodes, the parameter string also sets a check digit, start character, and/or stop character. Use the definition parameter string to command the printer to print barcodes of appropriate heights and densities that conform to the specifications of the application.

The use of the parameter string is optional because all parameters have default values. If the default values for all of the barcode parameters suit the application, then only the barcode command needs to be entered.

Parameters in barcode field commands are “position specific.” If a value (other than the default value) is manually entered for one parameter the ZPL II delimiter character (a comma) must be used to mark the position of the preceding parameters in the string.

To change just the third parameter, enter two commas and then the value for the third parameter. The default values will be automatically used for the first and second parameters.

Bar Code Command Groups

Bar code commands are organized into four groups.

Each group represents a type of bar code. The following tables identify the groups and the bar codes they contain:

Table 35 Numeric Only Bar Codes

ZPL Command	Command Description
^B0	Aztec Bar Code Parameters
^B1	Code 11

Table 35 Numeric Only Bar Codes (Continued)

ZPL Command	Command Description
^B5	Planet Code Bar Code
^BI	Industrial 2 of 5
^BJ	Standard 2 of 5
^BK	ANSI Codabar (or NW-7)
^BM	MSI
^BO	Aztec Bar Code Parameters
^BP	Plessey
^BZ	PostNet (*), USPS Intelligent Mail, and Planet bar codes

Table 36 Retail Labeling Bar Codes

ZPL Command	Command Description
^B0	Aztec Bar Code Parameters
^B8	EAN-8
^B9	UPC-E
^BE	EAN-13
^B0	Aztec Bar Code Parameters
^BS	UPC/EAN extensions
^BU	UPC-A

Table 37 Alphanumeric Bar Codes

ZPL Command	Command Description
^B0	Aztec Bar Code Parameters
^B3	Code 39
^BA	Code 93
^BC	Code 128
^BL	LOGMARS
^B0	Aztec Bar Code Parameters

Table 38 Two-Dimensional Bar Codes

ZPL Command	Command Description
^B0	Aztec Bar Code Parameters
^B4	Code 49
^B7	PDF417

Table 38 Two-Dimensional Bar Codes (Continued)

ZPL Command	Command Description
^BB	CODABLOCK
^BD	UPS MaxiCode
^BF	MicroPDF417
^BQ	QR Code
^BO	Aztec Bar Code Parameters
^BR	GS1 Databar (formerly RSS)
^BT	TLC39
^BX	Data Matrix

Mod 10 and Mod 43 Check Digits

This section provides information about Mod 10 and Mod 43 check digits.

Mod 10 Check Digit

This section lists the calculations for determining the Mod 10 Check Digit character.

The calculations for determining the Mod 10 Check Digit character are as follows:

1. Start at the first position and add the value of every other position together.

$$0 + 2 + 4 + 6 + 8 + 0 = 20$$

2. The result of Step 1 is multiplied by 3.

$$20 \times 3 = 60$$

3. Start at the second position and add the value of every other position together.

$$1 + 3 + 5 + 7 + 9 = 25$$

4. The results of steps 2 and 3 are added together.

$$60 + 25 = 85$$

5. The check character (12th character) is the smallest number which, when added to the result in step 4, produces a multiple of 10.

$$85 + X = 90 \text{ (next higher multiple of 10)}$$

$$X = 5 \text{ Check Character}$$

This bar code illustrates the above example. The digit on the right (5) is the check digit.



Mod 43 Check Digit

This section lists the calculations for determining the Mod 43 check Digit character.

The calculations for determining the Mod 43 check Digit character are as follows:

Each character in the Code 39 character set has a specific value, as follows:

0=0	B=11	X=33
1=1	C=12	Y=34
2=2	D=13	Z=35
3=3	E=14	- =36
4=4	F=15	. =37
5=5	G=16	Space = 38
6=6	H=17	\$=39
7=7	I=18	/=40
8=8	J=19	+ =41
9=9	K=20	%=42
A=10	L=21	

Example

Data string 2345ABCDE/

1. Add the sum of all the character values in the data string. Using the chart above, the sum of the character values is as follows:

$$1 + 2 + 3 + 4 + 5 + 10 + 11 + 12 + 13 + 14 + 40 = 115$$

2. Divide the total by 43. Keep track of the remainder.

$$115/43 = 2 \text{ Remainder is } 29$$

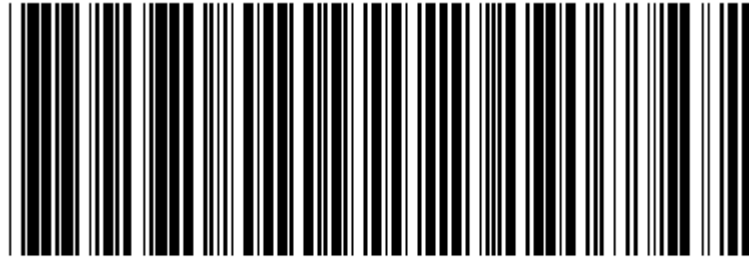
3. The “check digit” is the character that corresponds to the value of the remainder.

Remainder = 29

29 is the value for the letter T.

T is the check digit.

Below is a bar code that illustrates the example. The character on the right, T, is the check digit.



12345ABCDE/T

^F0125,100^B3N,Y:150,Y,N^FD12345ABCDE/^FS

Error Detection Protocol

This section explains the Zebra protocol that has been supplanted in TCP/IP based applications because of the error detection compatibility inherent in the TCP/IP protocol.

Introduction

There are many instances when it is vitally important that the information sent to the Zebra printer is received completely Error-Free. ZPL II supports an error detection protocol called Zebra Packet Response Protocol to meet this need.



NOTE: This protocol only works when using serial interface. It does not function when using parallel interface.

What is a Protocol?

A protocol is a precisely defined set of rules. In the case of data communications, a Protocol defines how data is transmitted, received, and acknowledged between two devices.

The sole purpose of the Packet Response Protocol is to ensure that the information sent from a Host computer to the Zebra printer is received accurately. Remember, the protocol cannot insure the accuracy of the data that is actually sent from the Host computer. The commands and data needed to make a label (ZPL II Format) are encapsulated within the information sent from the Host computer.

How Protocols Work

The basic unit of data transfer in the Packet Response Protocol is called a “Transaction.” A Transaction is a two-way communication procedure that consists of information being sent from the Host computer to the Zebra printer, and the printer sending back a response to the Host computer. This response is an indication that the Zebra printer has either accepted or rejected the information sent from the Host computer.

Information is sent in the form of “Packets.” Packets sent from the Host computer are called Request Packets.

When a Request Packet is received, the Zebra printer analyzes the information in the Packet. If the Request Packet is accepted, the Zebra printer will send a positive response back to the Host computer. The Host computer can then send the next Request Packet. If the information is rejected, the Zebra printer will send a negative response back to the Host computer. The Host computer then sends the same Request Packet again.

The Zebra Packet Response Protocol can be used in both single-printer applications, where there is only one Zebra printer connected to the Host computer, and multi-drop systems in which several Zebra printers are connected to the same Host computer.

Request Packet Formats from the Host Computer

The first part of each data transfer Transaction is the sending of a Request Packet by the Host computer. The Request Packet contains a fixed length “Header” block and a variable length “Data” block. Each Packet sent from the Host computer to the Zebra printer must always use the following format.

The Request Packet Header Block is comprised of five fixed-length fields. The Request Packet Data Block is comprised of four fixed-length fields and one variable-length field. These fields are defined as follows.

Header Block					Data Block				
SOH	DST. Z-ID	SRC. Z-ID	TYPE	SEQ. #	STX	FORMAT	EXT	CRC	EOT
1	3	3	1	1	1	≤1024	1	2	1

Header Block Fields

This section provides a list of header block fields.

- SOH (start of header character)

The Zebra printer interprets this character as the beginning of a new Request Packet. The ASCII Control Code character SOH (01H) is used as the Start of Header Character.

- DST. Z-ID (destination Zebra-ID)

This is the three-digit ASCII I.D. number used to identify which Zebra printer is to receive the Request Packet. The Zebra printer compares this number to the Network ID number assigned to it during Printer Configuration. The Zebra printer will act on the Request Packet only if these numbers match.

- SRC. Z-ID (source Zebra-ID)

This is a three-digit ASCII number used to identify the Host computer. This number is determined by the user.

- TYPE (packet type)

This field is used to define the type of Request Packet being sent by the Host. Only two characters are valid in this field:

- ‘P’ indicates a Print Request Packet
- ‘I’ indicates an Initialize Request Packet

Most of the Packets sent by the Host to the Zebra printer will be of the ‘P’ variety, requesting a label to be printed.

The ‘I’ character tells the Zebra printer to initialize the packet sequence numbering. It is required in the first packet of a new printing session, after starting up the Host computer or the Zebra printer.

- SEQ. # (the sequence number of the request packet)

This block contains a single digit number used to denote the current Transaction Number. The Host computer must increment this number by “1” for each new Request/Response Transaction pair, i.e. 0, 1, 2,..., 9. The numbers repeat after every 10 Transactions.

Data Block Fields

This section provides a list of data block fields.

- STX (Start of Text)

The Zebra printer interprets this character as the beginning of the variable-length Data Format portion of the Request Packet. The ASCII Control Code character STX (02H) is used as the Start of Text Character.

- DATA FORMAT (Label Information)

A variable-length portion of the Request Packet that contains the complete or partial ZPL II label format, or partial data string (such as a downloaded graphic).

This field can contain from 0 to 1024 characters. If the Format of a label is longer than 1024 characters, the Data Format fields from consecutive packets will be concatenated together in the printer's Receive Data Buffer as if they were sent as one long direct transmission.

Special consideration has been given to the possible requirement to include ASCII Control Characters (values less than 20H) in the Data Format portion of a Request Packet. Characters such as EOT (04H), STX (02H), SOH (01H), and ETX (03H), are part of the Error Detection Protocol and could interrupt normal communication procedures if received at the wrong time.

- ETX (End of Text)

The Zebra printer interprets this character as the end of the variable length Data Format portion of the Request Packet. The ASCII Control Code character ETX (03H) is used as the End of Text Character.

- CRC (Cyclic Redundancy Check)

The CRC is a 2 character field. A Cyclic Redundancy Check is a type of error checking used to maintain the validity and integrity of the information transmitted between the Host computer and the Zebra printer. This Protocol uses the 16-bit CCITT method of producing a CRC.

The CRC is a two-byte value derived from the contents of the packet between, but not including, the SOH character and the CRC code itself. The Zebra printer will calculate a CRC of the Request Packet received and compare the value with the CRC Value in this field. The CRC of the Request Packet must match the CRC calculated by the Zebra printer in order for the Request Packet to be valid.

- EOT (End of Transmission)

The Zebra printer interprets this character as the end of the Request Packet. The ASCII Control Code character EOT (04H) is used as the End of Transmission Character.

Response From the Zebra Printer

When the Zebra printer receives the EOT character, it will begin acting on the Request Packet received. The printer will compare certain characters and numeric values within the received Request Packet and send a response back to the Host computer.

Zebra Packet Response

The Packet Response protocol provides the highest degree of error checking and is well suited to the Host-Multiple Printer application. The Response Packet from the Zebra printer will always use the following format.

The Request Packet Header Block is comprised of five fixed-length fields. The Request Packet Data Block is comprised of four fixed-length fields and one variable-length field. These fields are defined as follows.

Header Block					Data Block				
SOH	DST. Z-ID	SRC. Z-ID	TYPE	SEQ. #	STX	FORMAT	EXT	CRC	EOT
1	3	3	1	1	1	≤1024	1	2	1

Header Block Fields

This section provides descriptions for the header block fields.

- SOH (Start of Header Character)

The Zebra printer sends this character as the beginning of a new Response Packet. The ASCII Control Code character SOH (01H) is used as the Start of Header Character.

- DST. Z-ID (Destination Zebra-ID)

This is the same three-digit ASCII number used to identify the Host Computer that was contained in the SRC. Z-ID field of the Request Packet that initiated this Response Packet. The Host compares this number to its known value to insure it is the proper destination.

- SRC. Z-ID (Source Zebra-ID)

This is the three character ASCII Network I.D. of the Zebra printer that is sending the Response Packet.

- TYPE (Packet Type)

This block is used to define the type of Response Packet being sent to the Host. Only three characters are valid in this field.

- 'A' This is a Positive Acknowledgment to the Host computer. It indicates that the Request Packet was received without a CRC error. The Host computer may send the next Request Packet.
- 'N' This is the Negative Acknowledgment to the Host computer. It indicates that an error was detected in the packet sent from the Host computer. The Host computer must retransmit the same Request Packet again.
- 'S' This character indicates that the Response Packet contains the Zebra Printer Status requested by a ~HS (Host Status) command received from the Host.
- SEQ. # (Used to denote the current message sequence number)

This number is identical to the message sequence number in the Request Packet. It denotes the message sequence number to which the Response Packet is replying.

Data Block Fields

This section provides descriptions for the data block fields.

- STX (Start of Text)

The Zebra printer sends this character as the beginning of the variable length Data Format portion of the Response Packet. The ASCII Control Code character STX (02H) is used as the Start of Text Character.

- DATA FORMAT (Label Information)

The 'variable length' portion of the Response Packet. If the Packet Type field in the Response Header contains an 'A' or an 'N', no data will appear in this field. If the Packet Type field contains an 'S', this field will contain the Printer Status Message.

- ETX (End of Text)

The Zebra printer sends this character as the end of the variable length Data Format portion of the Request Packet. The ASCII Control Code character ETX (03H) is used as the End of Text Character.

- CRC (Cyclic Redundancy Check)

This is the CRC of the Response Packet as calculated by the Zebra printer. This Cyclic Redundancy Check maintains the validity and integrity of the information transmitted between the Zebra printer and the Host computer.

This CRC is a two Byte value derived from the contents of the packet between, but not including, the SOH character and the CRC code itself. The Host computer will calculate a CRC of the received Response Packet and compare it to the CRC value in this field. The CRC of the Response Packet must match the CRC calculated by the Host computer in order for the Response Packet to be valid.

- EOT (End of Transmission)

The Zebra printer sends this character as the end of the Response Packet. The ASCII Control Code character EOT (04H) is used as the End of Transmission Character.

Disguising Control Code Characters

There may be occasions when ASCII Control Codes (00H - 19H) must be included as part of the Data Format block of a Request Packet. To eliminate any problems, these characters must be disguised so that the communication protocol does not act on them.

This procedure must be used to disguise each Control Code.

- A SUB (1AH) character must precede each Control Code placed in the Data Format block.
- The value of 40H must be added to the Hex value of the Control Code.
- The ASCII Character corresponding to the total value produced in step 2 must be entered in the Data Format right after the SUB character.

The Zebra printer automatically converts the modified control character back to its correct value by discarding the SUB (1AH) character and subtracting 40H from the next character.

To include a DLE (10H) character in the Data Format block:

1. Enter a SUB (1AH) character into the Data Format.
2. Add 40H to the DLE value of 10H for a resulting value of 50H.
3. Enter the ASCII character "P" (50H) in the Data Format after the SUB character.



NOTE: This technique is counted as two characters of the 1024 allowed in the Data Format block.

Rules for Transactions

This section lists the rules for transactions.

- Every Transaction is independent of every other Transaction and can only be initiated by the Host computer.
- A valid Response Packet must be received by the Host computer to complete a Transaction before the next Request Packet is sent.
- If an error is encountered during a Transaction, the entire Transaction (i.e., Request Packet and Response Packet) must be repeated.

- The Zebra printer does not provide for system time-outs and has no responsibility for insuring that its Response Packets are received by the Host computer.
- The Host computer must provide time-outs for all of the Transactions and insure that communication continues.
- If any part of a Transaction is lost or received incorrectly, it is the responsibility of the Host computer to retry the whole Transaction.

Error Detection Protocol Application

The following are the basic requirements for setting up the Zebra printer to use the Error Detection Protocol.

Activating the Protocol

Protocol is a front panel selection, or can be done with the ZPL command ^SC.

Setting Up Communications

Insure that the Host computer and the Zebra printer are characterized with the same communication parameters; i.e., Parity, Baud Rate, etc. The communications must be set up for 8 data bits.

Setting the Printer ID Number

The Protocol uses the printer's Network ID number to insure communication with the proper unit. The Network ID is programmed into the printer by sending the printer a ^NI (Network ID Number) command or done through the front panel.

If there is only one printer connected to the Host computer, the Network ID number should be set to all zeros (default).

If there is more than one printer, such as in a broadcast or multi-drop environment, each printer should be assigned its own unique ID number. Printers in this environment, with an ID of all zeros, will receive ALL label formats regardless of the actual printer ID number in the DST. Z-ID block of the Request Packet.

Error Conditions and System Faults

This section describes error conditions and system faults that might occur.

Restarting a Transmission

If a break in communication occurs, the Host must restart the transmission of the current label format with an Initialization Request Packet. The Zebra printer will not respond to Request Packets sent out of sequence. However, the Zebra printer will respond to an Initialization Request Packet and restart its internal counting with the sequence number of the Request Packet.

CRC Error Conditions and Responses

A CRC error condition can be detected when the printer receives a Request Packet or when the Host computer receives a Response Packet. The following list defines these errors and how the Host computer should respond to them.

Error	Response
The CRC calculated by the Zebra printer does not match the one received as part of the Request Packet.	The Zebra printer will return a Negative Acknowledgment Response Packet. The Host computer should retry the same Transaction with the same Sequence Number.

Error	Response
The CRC calculated by the Host computer does not match the one received as part of the Response Packet.	The Host computer should retry the same Transaction with the same Sequence Number.

Time-Out Error Conditions and Responses

There are certain conditions at the Zebra printer that might cause the Host computer to time-out while processing a Transaction. The following list illustrates these conditions and how the Host computer should respond to them.

Error	Response
A Request Packet from the Host computer is not received by the Zebra printer.	The Host computer times out and resends the Request Packet of the same Transaction with the same Sequence Number.
A Request Packet from the Host computer is partially received by the Zebra printer.	The Host computer times out and resends the Request Packet of the same Transaction with the same Sequence Number.
A Response Packet from the Zebra printer is not received by the Host computer.	The Host computer times out and resends the Request Packet of the same Transaction with the same Sequence Number.
A Response Packet from the Zebra printer is partially received by the Host computer.	The Host computer times out and resends the Request Packet of the same Transaction with the same Sequence Number.

How the Zebra Printer Processes a Request Packet

The following describes the steps taken at the Zebra printer to process a Request Packet.

1. The Zebra printer looks for a SOH (Start of Header) character. As soon as it finds one, it places the SOH and all the data after it into its Receive Data Buffer. This process continues until the printer receives an EOT (End of Transmission) character.



NOTE: If a second SOH is received before an EOT is detected, the contents of the Receive Buffer will be discarded. All of the data after the second SOH will be placed in the Receive Data Buffer.

2. After detecting the EOT, the printer checks for the following:

- * The DST. Z-ID matches the printer's Network I.D.



NOTE: If the Network ID at the printer is all zeros, the printer will accept all Request Packets regardless of the DST. Z-ID received. If a Request Packet is received with the DST. Z-ID all zeros, it is accepted by all printers regardless of their Network ID setting.

- *The Data Format begins with STX and ends with ETX.

- *The Sequence Number has not been used before.

If the check is satisfactory, proceed to Step 3 on the following page.

If any part of the check is unsatisfactory, the printer discards the data in its Receive Data Buffer and waits for another SOH. No response is sent to the computer.

Exceptions

It is possible that the printer will send a response to the host that the host does not receive. Therefore, the host will send the same request packet to the printer again. If this happens, the printer will not use the data if it already used it before. However, the printer will send a response back to the host.

The printer calculates the CRC and compares it with the one received in the Request Packet. If the CRC is valid, the printer sends a Positive Response Packet to the Host computer. It then transfers the 'Variable Length' data from the Receive Buffer to its memory for processing. If the CRC does not match, and the printer is set up to return a Negative Response Packet, the following will take place:

1. The printer assumes that the DST. Z-ID, SRC. Z-ID, and Sequence Number are correct and that the error was in the variable data.
2. The same DST. Z-ID, printers SRC. Z-ID, and Sequence Number will be returned back to the host in the Negative Response Packet.
3. If the assumption in (a) is incorrect, the Host computer can time-out and retransmit the original Request Packet.

How the Zebra Printer Responds to Host Status

The following describes how the Zebra printer to responds to host status command.

If a ~HS (Host Status) command is received by the Zebra printer, the printer will send back an acknowledgment for the receipt of the packet. It then sends an additional packet that includes the Host Status information in the Variable Length portion of the packet.

ZB64 Encoding and Compression

This section describes the Base 64 MIME (ZB64) encoding and compression.

This is the same type of MIME encoding that is used in e-mail.

For more information on ZB64 Encoding and Compression, contact your Reseller or Zebra Representative.

Introduction to B64 and Z64

The first encoding, known as B64, encodes the data using the MIME Base64 scheme. Base64 is used to encode e-mail attachments and is specifically designed to address communications path limitations, such as control characters and 7-bit data links.

It encodes the data using only the printable ASCII characters:

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u v w x y z
0 1 2 3 4 5 6 7 8 9 + / =

With the use of ZPL, this has the added benefit of avoiding the caret (^) and tilde (~) characters. Base64 encodes six bits to the byte, for an expansion of 33 percent over the un-encoded data. This is much better than the 100 percent expansion given by the existing ASCII hexadecimal encoding.

The second encoding, known as Z64, first compresses the data using the LZ77 algorithm to reduce its size. (This algorithm is used by the PKWARE® compression program PKZIP™ and is integral to the PNG graphics format.) The compressed data is then encoded using the MIME Base64 scheme as described above.

A CRC is calculated across the Base64-encoded data. If the CRC-check fails or the download is aborted, the object can be invalidated by the printer.

The robust encodings can be piggybacked on the existing download commands with full backward compatibility. This is done by prefacing the new encodings with a header that uniquely identifies them. The download routines in the printer firmware can key-off the header to determine whether the data is in the old ASCII hexadecimal encoding or one of the new encodings. This allows existing downloadable objects to be used in their present format, while new objects can be created using the same download commands with the new encodings for increased integrity and reduced download times.

For easy reference, B64 and Z64 are referred to as ZB64. In any reference to the ZB64 encoding, assume that both Base64-only (B64) and LZ77/Base64 (Z64) encodings are accepted.

The following is an example of an existing download command using the new encoding:

```
~DTARIAL,59494,:Z64:H4sICMB8+DMAC0FSSUFMLlRURgDsmnd8VEW7x5+ZOedsyibZNNJhly
WhbEJIwYSwJDGNkmwghJIgJYEEehQIPsggKAjEAiIiVaSoIJYNBAkIGgGxUBVUUCGU0JQSC0WFnPvbe
+SF18+9H+
8f973X+3Jm93umzzNznvnNSSFGRJ6ARAVZvXK7XDaXLyTiR5B7ontuZPQ824I5RKIa6ew
+aba8+pUlrVDZiciv
```

[multiple lines deleted]

```
/O6DU5wZ7ie2+g4xzDPwCpwm3nqW2GAPcdclxF4fIP66jHjncmKvKzh/ZUNCx19/QQx2HXHYB4m/
PkQcdCdx2G7OY
t+mszkMh4iZxoifvkh89BFipo87kwD/Bf/dOcyCAAEEA:a1b2
```

The parameters are identical to the existing ~DT command:

Parameter	Details
<code>o</code> = font name	<p>Values: any valid TrueType name, up to 8 characters</p> <p>Default: if a name is not specified, UNKNOWN is used</p> <p>In this example, Arial is the specified font.</p>
<code>s</code> = font size	<p>Values: the number of memory bytes required to hold the Zebra-downloadable format of the font</p> <p>Default: if an incorrect value or no value is entered, the command is ignored</p> <p>In this example, 59494 is the size.</p> <p>To maintain compatibility with the existing ASCII hexadecimal encoding, this field must contain the size of the un-enclosed and uncompressed object — the number of bytes that are finally placed into the printer's memory, not the number of bytes downloaded.</p>
<code>data</code> = data string	<p>Values: a string of ASCII hexadecimal values (two hexadecimal digits/byte). The total number of two-digit values must match parameter <code>s</code>.</p> <p>Default: if no data is entered, the command is ignored</p> <p>Everything following the size field is data. The new encoding imposes a header with a unique signature. The new encoding must start with the characters :B64: (data encoded in Base-64 only) or :Z64: (data compressed with LZ77, then encoded in Base-64) followed by the encoded data.</p> <p>After the data is presented, another colon (:) and four hexadecimal digits comprise the CRC. The Base64 standard allows new-line characters (carriage returns and line feeds) to be inserted into the encoded data for clarity. These characters are ignored by the printer.</p>

When downloading graphics, the colon is used in the current ASCII hexadecimal encoding indicate “repeat the previous dot row.” Since this shorthand is invalid for the first character of data (no previous dot row has been downloaded), it is safe for the printer to detect the leading colon character as the lead-in for the new encodings.

B64 and Z64 Encoding

These download encodings, B64 and Z64, are created as drop-in replacements for the existing ASCII hexadecimal encoding.

B64 encoding do the following:

- Encode the compressed data using the MIME Base64 algorithm.
- Calculate a CRC across the encoded data.
- Add a unique header to differentiate the new format from the existing ASCII hex encoding.

Z64 encoding do the following:

- Compress the data using the LZ77 algorithm.
- Encode the compressed data using the MIME Base64 algorithm.
- Calculate a CRC across the encoded data.
- Add a unique header to differentiate the new format from the existing ASCII hexadecimal encoding.

The data field have this format:

```
:id:encoded_data:crc
```

Parameter	Details
:id	The identifying string B64 or Z64.
:encoded_data	Data to download, compressed with LZ77 (if the id parameter is set to Z64) and encoded with Base64.
:crc	Four hexadecimal digits representing the CRC calculated over the :encoded_data field.

The printer calculates a CRC across the received data bytes and compare this to the CRC in the header. A CRC mismatch is treated as an aborted download.

The B64 and Z64 encodings can be used in place of the ASCII hexadecimal encoding in any download command. The commands are:

~DB	Download Bitmap Font
~DE	Download Encoding
~DG	Download Graphic
~DL	Download Unicode Bitmap Font
~DS	Download Scalable Font
~DT	Download TrueType Font
~DU	Download Unbounded TrueType Font
^GF	Graphic Field (with compression type set to “ASCII hex”)




The ~DB (Download Bitmap Font) command can use the new encodings in place of the ASCII hexadecimal encoding in data sub-fields. Each character is encoded individually. However, for small amounts of data, the identifying B64 or Z64 header and trailing CRC may negate any gains made by using the new format.

For backward compatibility, the ^HG (Host Graphic) command uses the ASCII hexadecimal encoding. It does not use the new encodings.

Field Interactions

This section provides you with examples that show how commands interact with various justification parameters. These charts are designed so that you can identify the location of the field origin and interactions between the rotation, formatting and justification commands.

Normal Orientation







	^FPH	^FPV	^FPR
^FO Left Justified	 ABCDE	 A B C D E	 EDCBA

	^FPH	^FPV	^FPR
^FT Left Justified	<div>ABCDE</div>	<div>A B C D E</div>	<div>EDCBA</div>
^FO Right Justified	<div>ABCDE</div>	<div>A B C D E</div>	<div>EDCBA</div>




	^FPH	^FPV	^FPR
^FT Right Justified	ABCDE|	A| B| C| D| E|	EDCBA|

Rotated Orientation

	^FPH	^FPV	^FPR
^FO Left Justified	|ABCDE	|E D C B A	EDCBA|
^FT Left Justified	|ABCDE	E D C B|A	EDCBA|







	^FPH	^FPV	^FPR
^FO Right Justified			
^FT Right Justified			

Bottom Up Orientation

	^FPH	^FPV	^FPR
^FO Left Justified			

	^FPH	^FPV	^FPR
^FT Left Justified	ABCDE	A B C D E	EDCBA
^FO Right Justified	ABCDE	A B C D E	EDCBA
^FT Right Justified	ABCDE	A B C D E	EDCBA

Inverted Orientation

	^FPH	^FPV	^FPR
^FO Left Justified			
^FT Left Justified			

	^FPH	^FPV	^FPR
^FO Right Justified	ABCDE+	E D C B A+	EDCBA+
^FT Right Justified	ABCDE-	E D C B A-	EDCBA-

Real Time Clock

This appendix contains the information needed to install, program, and operate the Real Time Clock (RTC) option. This hardware option is available as either a factory-installed or field-installable option in specific printer products manufactured and sold by Zebra Technologies Corporation.

The Real Time Clock option is currently available for following printers, and requires that the firmware version shown is installed on that printer.

Supported Zebra Printer and Print Engine Models		Requires this Firmware Version or Later
105SL printers that meet any one of the following criteria: <ul style="list-style-type: none"> if the printer was manufactured after April 2006 if the RTC Date and the RTC Time fields are printed on the configuration label if the RTC Date and the RTC Time appear on the LCD display 		60.13.0.13Z
DA402 & T402 printers		32.8.4
LP2844-Z, TPL2844-Z, and TPL3844-Z printers		45.10.x
PAX Series print engines	170PAX2 print engines	29.9.x or 31.9.x
	110PAX3 print engines using Standard Font	34.10.x
	110PAX3 print engines using TT Font	49.10.x
	116PAX3 print engines using TT Font	35.10.x
	170PAX3 print engines using Standard Font	37.10.x
	170PAX3 print engines using TT Font	38.10.x
	110PAX4 and 170PAX4 print engines	60.13.0.12
S4M printers (field-installable kit)		50.13.x
S600 printers		27.10.3
Xi Series printers	90XiII, 140XiII, 170XiII & 220XiII printers	18.9.x
	90XiIII, 96XiIII, 140XiIII, 170XiIII, and 220XiIII printers	33.10.0
	90XiIIIPlus, 96XiIIIPlus, 140XiIIIPlus, 170XiIIIPlus, and 220XiIIIPlus printers	60.13.0.12
Z4Mplus and Z6Mplus printers		60.13.0.12
ZM400/ZM600/RZ400/RZ600 printers		53.15.xZ

Control Panel Programming

New parameters for the Real Time Clock have been added to the Control Panel Configuration. These parameters are located immediately following the **FORMAT CONVERT** prompt. Refer to the printer/print engine User Guide for complete configuration information.

- X.9.x firmware added the parameters to Xill printers and 170PAX/170PAX2 print engines.
- X.10.x firmware added the parameters to Xill printers and PAX3 print engines.
- X.13.x firmware added the parameters to XillPlus printers, PAX4 print engines.
- X.13.0.13Z firmware added the parameters to 105SL printers.

Real Time Clock Parameters

The parameters listed on the following pages are added to the Control Panel Configuration prompts only when both the Real Time Clock hardware option and the appropriate version of firmware are installed.

- X.9.x or later firmware installed in the Xill series printers or the 170PAX/170PAX2 series print engines.
- X.10.x or later firmware installed in the Xill series printers or the PAX3 series print engines.
- X.13.0.13Z or later firmware installed in the 105SL printers
- X.13.x or later firmware installed in the XillPlus series printers, the PAX4 series print engines, or the S4M printers.

The RTC ZPL II commands apply to all printers/print engines with the Real Time Clock hardware option and proper firmware.

Idle Display

Selects the printer/print engine Idle Display format and the method of displaying the time/date information.

This parameter also affects the Configuration Label printout and the RTC DATE and RTC TIME formats.

Selections

- FW VERSION
- MM/DD/YY 24HR
- MM/DD/YY 12HR
- DD/MM/YY 24HR
- DD/MM/YY 12HR

If FW VERSION is selected, the format on the Configuration Label and on the RTC DATE and RTC TIME parameters is MM/DD/YY 24HR.

RTC Date

Allows entry of the RTC date in the format selected by the **IDLE DISPLAY** parameter.



NOTE: The RTC parameters are password-protected. Refer to your printer's user guide for specific instructions on accessing and modifying printer parameters.

Printer Model	Action
PAX Series print engines, Xi Series printers, and 105SL printers	Use the LEFT oval key to select the position to be adjusted Then, use the RIGHT oval key to select the correct value for that position.
Z4Mplus and Z6Mplus printers	Press SELECT to select the parameter. Use the MINUS (-) key to select the position to be adjusted Then, use the PLUS (+) key to select the correct value for that position. Press SELECT to accept any changes and deselect the parameter.
S4M printer	Press ENTER. The printer displays the current RTC date. Modify the values as follows: <ul style="list-style-type: none"> • Press the right arrow to move to the next digit position. • To increase the value, press the up arrow. • To decrease the value, press the down arrow. Press ENTER to accept the value shown.



NOTE: Invalid dates, such as 2/30/1999, may be entered, but they will not be saved.

RTC Time

Allows entry of the RTC time in the format selected by the **IDLE DISPLAY** parameter.



NOTE: The RTC parameters are password-protected. Refer to your printer's user guide for specific instructions on accessing and modifying printer parameters.

Printer Model	Action
PAX Series print engines, Xi Series printers, and 105SL printers	Use the LEFT oval key to select the position to be adjusted Use the RIGHT oval key to select the correct value for that position.
Z4Mplus and Z6Mplus printers	Press SELECT to select the parameter. Use the MINUS (-) key to select the position to be adjusted. Use the PLUS (+) key to select the correct value for that position. Press SELECT to accept any changes and deselect the parameter.
S4M printer	Press ENTER. The printer displays the current RTC date. Modify the values as follows: <ul style="list-style-type: none"> • Press the right arrow to move to the next digit position. • To increase the value, press the up arrow. • To decrease the value, press the down arrow. Press ENTER to accept the value shown.

RTC General Information

The Real Time Clock commands are only applicable if the Real Time Clock option is installed in the printer. For those printers with an LCD control panel display, additional control panel configuration parameters are also included.

The ZPL II Field Clock `^FC` command is used to specify the clock-indicator character for the primary, secondary, and third clocks. This command must be included within each label field command string whenever the date or time clock values are required within the field. No date or time clock information can be printed in a label field unless this command is included. The `^FC` command can now be combined with the `^SN` command in V60.13.0.10 and later.

A clock-indicator can be any printable character except the ZPL II Format Prefix, Control Prefix, or Delimiter characters. The default value for the primary clock-indicator is the percent sign `%`. The secondary and third clock-indicators have no defaults and must be specified in order for that clock to be used.

The Field Data `^FD` command has been expanded to recognize the clock-indicators and associated command characters, and to replace them during the printing process with the corresponding time or date parameter. For example, if the primary clock-indicator is the percent sign `%`, then during printing, the character sequence `%H` in the `^FD` statement would be replaced by the 2-digit current hour.



NOTE: If the Real Time Clock is not installed, or the `^FC` command has not preceded the `^FD` statement, no replacement would occur. In this case, the characters `%H` would print as text on the label.

The name of the day of the week, the name of the month, and the AM or PM designation can also be inserted in place of a specific clock-indicator/command character sequence. This table lists command characters and their functions.

Table 39 Command Characters

Command Character	Function
<code>%a</code>	is replaced by the abbreviated weekday name
<code>%A</code>	is replaced by the weekday name
<code>%b</code>	is replaced by the abbreviated month name
<code>%B</code>	is replaced by the month name
<code>%d</code>	is replaced by the day of the month number, 01 to 31
<code>%H</code>	is replaced by the hour of the day (military), 00 to 23
<code>%I</code>	is replaced by the hour of the day (civilian), 01 to 12
<code>%j</code>	is replaced by the day of the year, 001 to 366
<code>%m</code>	is replaced by the month number, 01 to 12
<code>%M</code>	is replaced by the minute, 00 to 59
<code>%p</code>	is replaced by the AM or PM designation
<code>%S</code>	is replaced by the seconds, 00 to 59
<code>%U</code>	is replaced by the week# of the year, 00 to 53, Sunday is 1st day ¹
<code>%W</code>	is replaced by the week# of the year, 00 to 53, Monday is 1st day ²
<code>%w</code>	is replaced by the day# of the week, 00 (Sunday) to 06 (Saturday)

Table 39 Command Characters (Continued)

Command Character	Function
%Y	is replaced by the 2 digits of the year, 00 to 99
%Y	is replaced by the full 4 digit year number—where% is the specified clock-indicator character

1. %U establishes Sunday as the first day of the year.

2. %W establishes Monday as the first day of the year.

The Set Offset ^SO command permits the printing of specific times and dates relative to the primary clock. The secondary (or third) clock is enabled when secondary (or third) offsets are entered using this command. The secondary (or third) clock time and date are determined by adding the offsets to the current clock reading.

One ^SO command is required to set the secondary offset; an additional ^SO command is required for a third offset. The offsets remain until changed or until the printer is either powered down or reset.



NOTE: Only dates from January 1, 1998 to December 31, 2097 are supported. Setting the offsets to values that result in dates outside this range is not recommended and may have unexpected results.

The Set Mode/Language (see ^SL) command is used to select the language the days of the week and the months are printed in. This command also sets the printing mode, which can be S for START TIME, T for TIME NOW, or a Numeric Value for the time accuracy. In START TIME mode, the time printed on the label is the time that is read from the Real Time Clock when the label formatting begins (when the ^XA command is received by the printer). In TIME NOW mode, the time printed on the label is the time that is read from the Real Time Clock when the label is placed in the queue to be printed. In Numeric Value mode, a time accuracy tolerance can be specified.

First Day of the Week Affects Calendar Week

The %U and %W commands set the first day of the week. The week numbering starts at the beginning of the year with Week 01 representing the first full week of the year. Any day(s) before that established first day of the week are part of the Week 00. The following examples show how setting different days as the first day of the week affect the calendar week.



IMPORTANT: The %U and %W commands determine the numbering for all weeks in the year.

January, 2005 with Week 00

Set Sunday as the first day of the week using the %U command. In this example, notice that Saturday, January 1st is Week 00 and Sunday, January 2nd begins Week 01.

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	
							1	← Week 00
First Day of the Week →	2	3	4	5	6	7	8	← Week 01
	9	10	11	12	13	14	15	
	16	17	18	19	20	21	22	
	23	24	25	26	27	28	29	
	30	31						

January, 2005 with Week 00

Set Monday as the first day of the week using the %W command. In this example, notice that Saturday, January 1st and Sunday, January 2nd are Week 00 and Monday, January 3rd begins Week 01.

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	
						1	2	← Week 00
First Day of the Week →	3	4	5	6	7	8	9	← Week 01
	10	11	12	13	14	15	16	
	17	18	19	20	21	22	23	
	24	25	26	27	28	29	30	
	31							

January, 2006 without Week 00

Set Sunday as the first day of the week using the %U command. Since 2006 begins on a Sunday, there is no Week 00 in this example.

Time and Date Precision

As of V60.13.0.1 firmware, the ^CO command is now ignored. While the S4M printer has a lower firmware version number (V50.x), its firmware was recently released and follows the rule to ignore the ^CO command.

The time and date placed in a label field is determined at the time the label bitmap is created by the printer (start time mode). If a batch of labels is formatted, the date and time will be the same for all labels in the batch. If the printer is paused during the printing process and remains in that state for a period of time, when printing resumes, the time and date will still be the same as when the batch was first started.

If more precise time and date stamps are required on versions prior to V60, follow the process below. For versions after V60, use the Numeric Value mode as shown in [^SL](#).

Cycle the printer/print engine power Off (O) and On (I) to clear the memory before performing the steps below.

1. Print a Memory Usage Label (^XA^WD*:*.*^XZ) and note the following value: Available RAM (in BYTES)	(A)	_____
2. Print a Configuration Label and note these values: Printer "Print Width" (in DOTS) (NOT the Label Width)	(B)	_____
Label Length (in DOTS)	(C)	_____

3. Determine the desired maximum number of queued labels with the same Time (D) _____ and Date value.



NOTE: Increasing the number of queued labels will improve throughput performance, but Real Time Clock values will be less accurate. Two is usually a good compromise.

4. Substitute the values for B through D from the previous page into the following (E) _____ formula:

The "label queue" memory required (in BYTES) $(B \times C \times D)/8 =$

5. Substitute the values for A and E into the following formula: The ^CO command (F) _____ memory required (in KBYTES) $(A-E)/1024-5=$



NOTE: If the value of (F) is less than zero, then no ^CO command is needed. If the value of (F) is greater than zero, use the integer portion in the ^CO command.

Available RAM (A) = 71478 BYTES

Print Width (B) = 832 DOTS

Label Length (C) = 1000 DOTS

Max Labels Queued (D) = 2

Then —

The label queue memory required (E) $= (B \times C \times D)/8 = 208000$ BYTES

And —

The ^CO command memory required (F) $= (71478-208000)/1024-5=489.87$ KBYTES

Therefore, the correct ^CO command string to add to the label format would be:

^XA^COY,489^XZ

This command string will cause 489 KBYTES to be set aside as Font Memory and make it unavailable as label format memory. The memory remaining will only allow two labels to be formatted at one time, and the time and date will be more precise for those two labels.

ZPL II Samples

The ZPL II scripts shown on this page establish the initial settings for the date and time clock. The script below then references these settings to provide the output shown in [Figure 26 Printed Result of the Above ZPL II Script](#) on page 1601.

Setting the date and time for the Real Time Clock only needs to be done once. The date and time are maintained by an on-board battery when the printer is reset or the printer is turned Off (O).

To set the date and time to April 23, 2005 at 2:30pm, the following command string should be sent to the printer:

```
^XA
^ST04,23,2005,02,30,0,P^FS
^XZ
```

To initialize the Real Time Clock and set up two offset values (offset #2 set to 3 months and 1 hour in the future, offset #3 set to 1 year in the past), the following command sequence should be sent to the printer:


```

^XA
^SL
^SO2,3,0,0,1,0,0^FS
^SO3,0,0,-1,0,0,0^FS
^XZ

```

The above ZPL II scripts initialize the RTC date and time and must be sent to a printer to provide proper date and time parameters for the ZPL II script below.

The following ZPL II script illustrates the various methods of printing the date and time initialized in the script above within separate fields on continuous media. [Figure 26 Printed Result of the Above ZPL II Script](#) on page 1601 illustrates the printout of this script on a label.

For the below example, the ^FC command delimiters are:

% Primary clock indicator { Secondary clock indicator # Third clock indicator

```

^XA
^LL175
^FO10,025^AD^FC%,{,#{^FD1: Mil: %H:%M:%S Civ: %I:%M:%S %p^FS
^FO10,050^AD^FC%,{,#{^FD2: Mil: {H:{M:{S Civ: {I:{M:{S {p^FS
^FO10,075^AD^FC%,{,#{^FD3: Mil: #H:#M:#S Civ: #I:#M:#S #p^FS
^FO10,100^AD^FC%,{,#{^FD1: On %A, %B %d
, %Y (%a, %m/%d/%Y, %d %b %Y).^FS
^FO10,125^AD^FC%,{,#{^FD2: On {A, {B {d, {Y (
{a, {m/{d/{Y, {d {b {Y).^FS
^FO10,150^AD^FC%,{,#{^FD3: On #A, #B #d, #Y (
#a, #m/#d/#Y, #d #b #Y).^FS
^XZ

```

Figure 26 Printed Result of the Above ZPL II Script

```

1: Mil: 14:30:00 Civ: 02:30:00 PM
2: Mil: 15:30:00 Civ: 03:30:00 PM
3: Mil: 14:30:00 Civ: 02:30:00 PM

1: On Wed, April 23, 2005 (Fri, 04/23/05, 23 Apr 2005)
2: On Saturday, July 23, 2005 (Sat, 07/23/05, 23 Jul 2005)
3: On Friday, April 23, 2004 (Fri, 04/23/04, 23 Apr 2004)

```

The following are examples of the time stamp using the ^SL1 and ^SL5 at 2 ips and 10 ips for the Enhanced Real Time Clock (V60.13.0.10 and later).



NOTE: They show the variation of time due to print speed and label complexity.

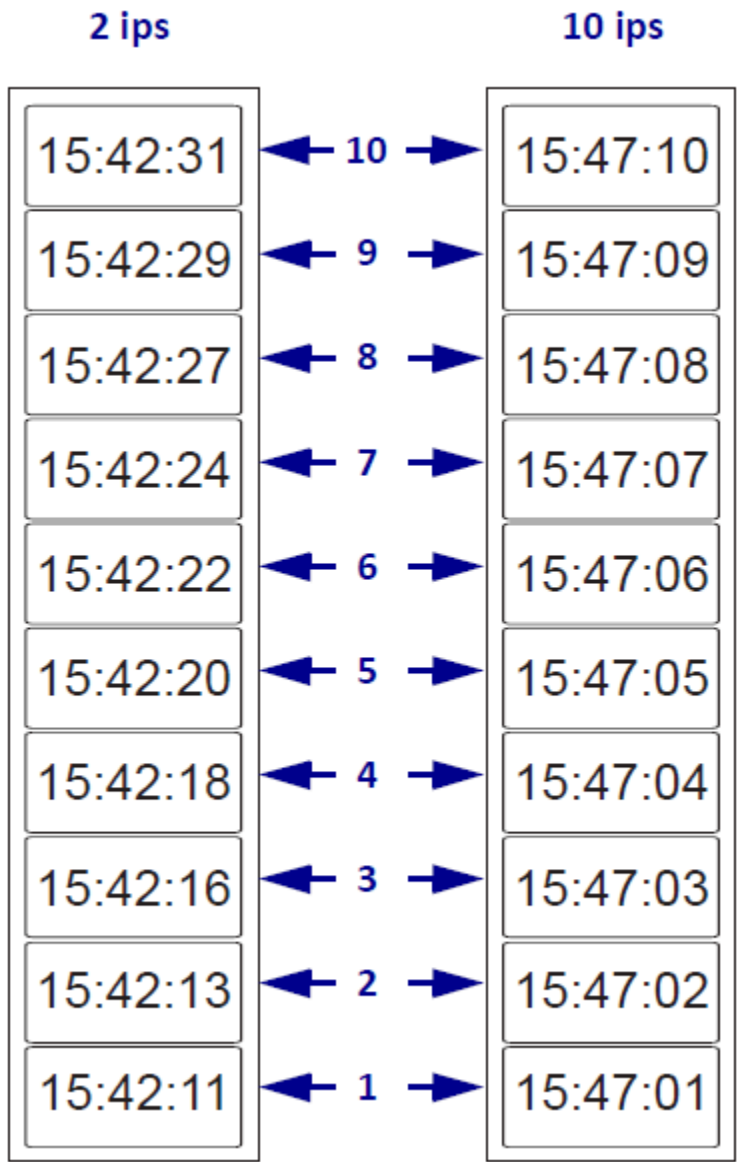
```

^XA
^SL1^FS

```

^FO187,184^A0N,101,121^FC%^FD%H:%M:%S^FS
^PQ10
^XZ

Figure 27 Example of ^SL1, 2 ips and 10 ips

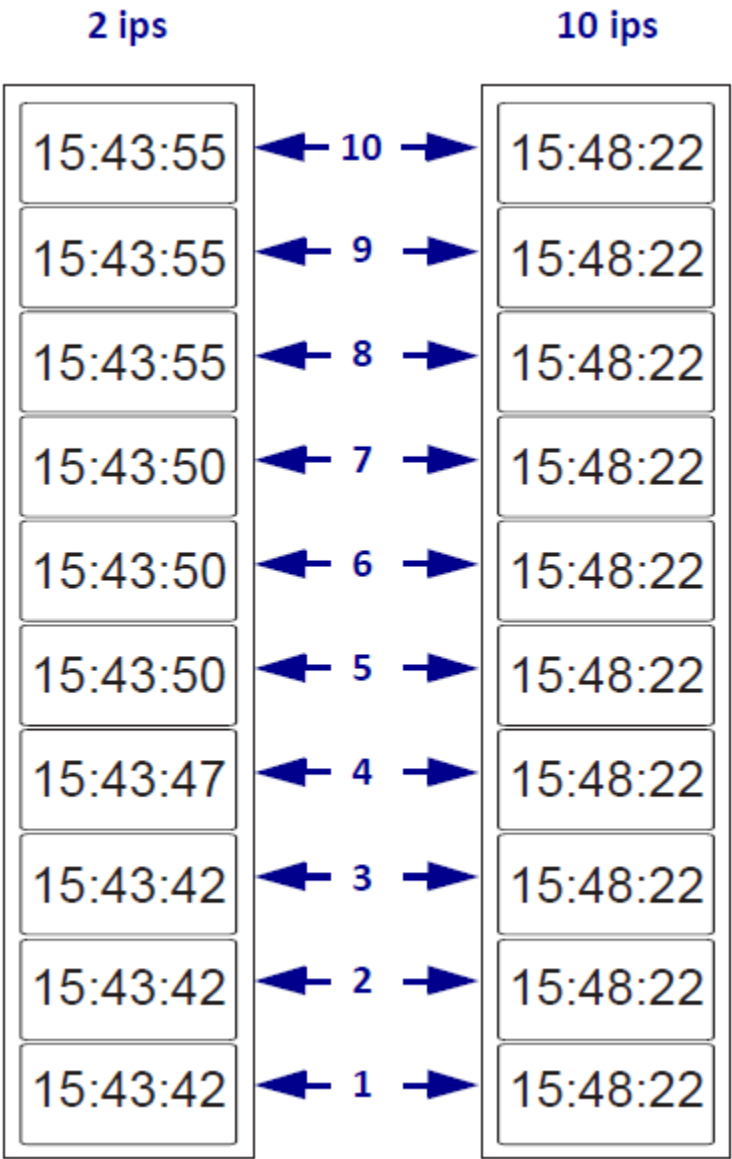


1	Label 1	6	Label 6
2	Label 2	7	Label 7
3	Label 3	8	Label 8
4	Label 4	9	Label 9
5	Label 5	10	Label 10

^XA

^SL5^FS
^FO187,184^A0N,101,121^FC%^FD%H:%M:%S^FS
^PQ10
^XZ

Figure 28 Example of ^SL5, 2 ips and 10 ips



1	Label 1	6	Label 6
2	Label 2	7	Label 7
3	Label 3	8	Label 8
4	Label 4	9	Label 9
5	Label 5	10	Label 10

ZBI Character Set

This section provides you with the set of characters that are supported on the front panel of the following Zebra printers with ZBI 2.0: XiIIIPlus, 105SL, Z4M/Z6M, ZM400/ZM600, RZ400/RZ600, PAX4 and S4M when V60.16.0Z or V53.16.0Z, or later firmware are loaded. These characters can be used in ZBI programs to display content on the LCD.

These are the supported characters for these Zebra printers:

- XiIIIPlus
- 105SL
- Z4M/Z6M
- PAX4
- S4M

Char. code															
	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	0	0	0	1	1	1	1	0	0	1	1	1	1	1	1
	0	1	1	0	0	1	1	1	1	0	0	1	1	1	1
	0	0	1	0	1	0	1	0	1	0	1	0	1	0	1
XXXX0000			Ø	Q	P	`	P		-	9	Ξ	α	ρ		
XXXX0001		!	1	A	Q	a	q	°	7	ç	4	ä	q		
XXXX0010		"	2	B	R	b	r	「	イ	ツ	×	β	θ		
XXXX0011		#	3	C	S	c	s	」	ウ	τ	ε	ω			
XXXX0100		\$	4	D	T	d	t	、	エ	ト	μ	Ω			
XXXX0101		%	5	E	U	e	u	・	オ	ナ	1	ö	Ü		
XXXX0110		&	6	F	V	f	v	ヲ	カ	ニ	ヨ	ρ	Σ		
XXXX0111		'	7	G	W	g	w	7	キ	ヌ	ラ	q	π		
XXXX1000		(	8	H	X	h	x	イ	ク	ネ	リ	フ	Σ		
XXXX1001		)	9	I	Y	i	y	ウ	ツ	ル	リ	ウ			
XXXX1010		*	:	J	Z	j	z	エ	コ	ン	レ	i	チ		
XXXX1011		+	;	K	[	k	[	オ	サ	ヒ	ロ	*	斤		
XXXX1100		,	<	L	¥	l	l	カ	シ	フ	ワ	Φ	円		
XXXX1101		-	=	M	]	m	]	ユ	ズ	ヘ	ン	モ	÷		
XXXX1110		.	>	N	^	n	^	ヨ	セ	ホ	°	斤			
XXXX1111		/	?	O	_	o	_	ッ	ソ	マ	°	ö	■		

These are the supported characters for these Zebra printers:

- ZM400/ZM600
- RZ400/RZ600
- Xi4
- RXi4

ZBI Character Set

space 0020	" 0022	% 0025	& 0026	(0028	) 0029	+ 002B	- 002D	. 002E	/ 002F
0 0030	1 0031	2 0032	3 0033	4 0034	6 0035	7 0037	8 0038	9 0039	: 003A
> 003E	? 003F	A 0041	B 0042	C 0043	D 0044	E 0045	F 0046	G 0047	H 0048
I 0049	J 004A	K 004B	L 004C	M 004D	N 004E	O 004F	P 0050	Q 0051	R 0052
S 0053	T 0054	U 0055	V 0056	W 0057	X 0058	Y 0059	Z 005A	_ 005F	

SGD Command Support

This appendix provides you with details identifying which SGD commands can be used with different printers.

SGDs Supported for Industrial Printers

This table provides details of the list of SGDs supported for Industrial Printers.

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
alerts.add				X	X	X	X
alerts.conditions				X	X	X	X
alerts.configured				X	X	X	X
alerts.destinations				X	X	X	X
alerts.http.authentication.add				X	X	X	X
alerts.http.authentication.entries				X	X	X	X
alerts.http.authentication.remove				X	X	X	X
alerts.http.logging.clear				X	X	X	X
alerts.http.logging.entries				X	X	X	X
alerts.http.logging.max_entries				X	X	X	X
alerts.http.proxy				X	X	X	X
alerts.tracked_settings.clear_log				X	X	X	X
alerts.tracked_settings.log_tracked				X	X	X	X
alerts.tracked_settings.max_log_entries				X	X	X	X
alerts.tracked_settings.zbi_notified				X	X	X	X
apl.enable				X	X	X	X
apl.framework_version				X	X	X	X
apl.version				X	X	X	X

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
appl.bootblock	X	X	X	X	X	X	X
appl.date	X	X	X	X	X	X	X
appl.link_os_version				X	X	X	X
appl.name	X	X	X	X	X	X	X
bluetooth.address					X	X	X
bluetooth.authentication							
bluetooth.bluetooth_pin					X	X	X
bluetooth.clear_bonding_cache					X	X	X
bluetooth.discoverable				X	X	X	X
bluetooth.enable					X	X	X
bluetooth.enable_reconnect					X	X	X
bluetooth.friendly_name				X	X	X	X
bluetooth.json_config_channel_enable					X	X	X
bluetooth.le.controller_mode						X	X
bluetooth.le.minimum_security						X	X
bluetooth.le.power_class						X	X
bluetooth.local_name					X	X	X
bluetooth.minimum_security_mode					X	X	X
bluetooth.page_scan_window					X	X	X
bluetooth.radio_version					X	X	X
bluetooth.short_address					X	X	X
bluetooth.version					X	X	X
capture.channel1.count				X	X	X	X
capture.channel1.data.mime				X	X	X	X
capture.channel1.data.raw				X	X	X	X
capture.channel1.delimiter				X	X	X	X
capture.channel1.max_length				X	X	X	X
capture.channel1.port				X	X	X	X
comm.baud	X	X	X	X	X	X	X
comm.halt							
comm.parity	X	X	X	X	X	X	X
comm.stop_bits	X	X		X	X	X	X

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
comm.type							
cradle.comm.baud							
cradle.comm.handshake							
cutter.clean_cutter	X	X	X	X	X	X	X
device.allow_firmware_downloads				X	X	X	X
device.applicator.data_ready							X
device.applicator.data_ready_activation							X
device.applicator.end_print							X
device.applicator.error_on_pause							X
device.applicator.feed							X
device.applicator.media_out						X	X
device.applicator.pause						X	X
device.applicator.reprint						X	X
device.applicator.rfid_void						X	X
device.applicator.ribbon_low						X	X
device.applicator.ribbon_out						X	X
device.applicator.service_required						X	X
device.applicator.start_print							X
device.applicator.start_print_mode							X
device.applicator.voltage							X
device.bluetooth_installed					X	X	X
device.command_override.active				X	X	X	X
device.command_override.add				X	X	X	X
device.command_override.clear				X	X	X	X
device.command_override.list				X	X	X	X
device.company_contact				X	X	X	X
device.configuration_number							X
device.cpcl_synchronous_mode				X	X	X	X
device.cutter_installed				X	X	X	X
device.download_connection_timeout	X	X	X	X	X	X	X
device.download_interactive_mode							
device.epl_legacy_mode				X	X	X	X

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
device.feature.802_11ac				X	X	X	X
device.feature.bluetooth_le					X	X	X
device.feature.head_element_test					X	X	X
device.feature.lighted_arrows				X	X	X	X
device.feature.mcr				X	X	X	X
device.feature.nfc				X	X	X	X
device.feature.ribbon_cartridge				X	X		X
device.friendly_name	X	X	X	X	X	X	X
device.frontpanel.key_press				X	X	X	X
device.frontpanel.line1	X	X	X	X	X	X	X
device.frontpanel.line2	X	X	X	X	X	X	X
device.frontpanel.wml_menus	X	X	X				
device.frontpanel.xml	X	X	X	X	X	X	X
device.host_identification				X	X	X	X
device.host_status				X	X	X	X
device.idle_display_format				X	X	X	X
device.idle_display_value				X	X	X	X
device.internal_wired_setting_location				X	X	X	X
device.job_log.total_jobs				X	X	X	X
device.jobs_print	X	X	X	X	X	X	X
device.languages	X	X	X	X	X	X	X
device.light.cover_open_brightness					X	X	X
device.light.head_open_brightness					X		
device.light.media_path_brightness						X	X
device.light.ribbon_path_brightness						X	X
device.ltu_installed				X	X	X	X
device.pause				X	X	X	X
device.pmcu.revision						X	X
device.pnp_option	X	X	X	X	X	X	X
device.position.accuracy				X	X	X	X
device.position.altitude				X	X	X	X
device.position.latitude				X	X	X	X

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
device.position.longitude				X	X	X	X
device.print_2key							
device.print_reprogram_2key				X	X	X	X
device.printhead.odometer						X	X
device.printhead.resolution				X	X	X	X
device.printhead.test.summary							
device.product_name_submodel				X	X	X	X
device.reset				X	X	X	X
device.restore_defaults				X	X	X	X
device.rewinder_installed				X	X	X	X
device.save_2key							
device.sensor_profile				X	X	X	X
device.sensor_select				X	X	X	X
device.serial_numbers.applicator_option_board						X	X
device.serial_numbers.applicator_option_board_date							X
device.serial_numbers.control_panel_date				X	X	X	X
device.serial_numbers.cutter				X	X	X	X
device.serial_numbers.cutter_date				X	X	X	X
device.serial_numbers.mlb_date				X	X	X	X
device.serial_numbers.parallel_option_board						X	X
device.serial_numbers.parallel_option_board_date							X
device.serial_numbers.printhead				X	X	X	X
device.serial_numbers.printhead_date				X	X	X	X
device.serial_numbers.usb_host_option_board						X	X
device.serial_numbers.usb_host_option_board_date						X	X
device.serial_numbers.wired_ethernet_option_board				X	X	X	X
device.serial_numbers.wired_ethernet_option_board_date							X
device.set_clock_to_build_date				X	X		X
device.slot_1				X	X	X	X
device.slot_2					X	X	X
device.super_host_status				X	X	X	X
device.syslog.clear_log				X	X	X	X

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
device.syslog.configuration				X	X	X	X
device.syslog.enable				X	X	X	X
device.syslog.entries				X	X	X	X
device.syslog.log_max_file_size				X	X	X	X
device.syslog.save_local_file				X	X	X	X
device.unique_id	X	X	X	X	X	X	X
device.unpause				X	X	X	X
device.uptime	X	X	X	X	X	X	X
device.user_p1	X	X	X	X	X	X	X
device.user_p2	X	X	X	X	X	X	X
device.user_vars.create				X	X	X	X
device.user_vars.set_range				X	X	X	X
device.xml.enable	X	X	X	X	X	X	X
display.backlight				X	X	X	X
display.backlight_on_time				X	X	X	X
display.batch_counter				X	X	X	X
display.bluetooth.mac							
display.language				X	X	X	X
display.load_card				X	X	X	X
display.password.level				X	X	X	X
display.root_wml				X	X	X	X
display.status_bar_suppress				X	X	X	X
display.suppress_all_alerts				X	X	X	X
display.text	X	X	X		X	X	X
external_wired.check	X	X	X				
external_wired.ip.addr	X	X	X				
external_wired.ip.arp_interval	X	X	X				
external_wired.ip.default_addr_enable	X	X	X				
external_wired.ip.gateway	X	X	X				
external_wired.ip.netmask	X	X	X				
external_wired.ip.port	X	X	X				
external_wired.ip.protocol	X	X	X				

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
external_wired.ip.timeout.enable	X	X	X				
external_wired.ip.timeout.value	X	X	X				
external_wired.ip.v6.addr	X	X	X				
external_wired.ip.v6.gateway	X	X	X				
external_wired.ip.v6.prefix_length	X	X	X				
external_wired.mac_addr	X	X	X				
external_wired.mac_raw	X	X	X	X	X	X	X
ezpl.head_close_action				X	X	X	X
ezpl.label_length_max				X	X	X	X
ezpl.label_sensor				X	X	X	X
ezpl.manual_calibration				X	X	X	X
ezpl.media_type				X	X	X	X
ezpl.power_up_action				X	X	X	X
ezpl.print_method				X	X	X	X
ezpl.print_width				X	X	X	X
ezpl.reprint_mode				X	X	X	X
ezpl.restore_defaults				X	X	X	X
ezpl.take_label				X	X	X	X
ezpl.take_label_calibration					X		
ezpl.tear_off				X	X	X	X
file.capture_response.destination				X	X	X	X
file.cert.expiration				X	X	X	X
file.cert.supported_curves				X	X	X	X
file.delete				X	X	X	X
file.dir	X	X	X	X	X	X	X
file.dir_format				X	X	X	X
file.run				X	X	X	X
file.type				X	X	X	X
formats.cancel_all				X	X	X	X
head.authenticated						X	X
head.darkness_switch							
head.darkness_switch_enable							

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
head.element_test							
head.latch	X	X	X	X	X	X	X
head.resolution.in_dpi				X	X	X	X
input.capture				X	X	X	X
interface.network.active.arp_interval				X	X	X	X
interface.network.active.cable_type				X	X	X	X
interface.network.active.dhcp_received_host_name				X	X	X	X
interface.network.active.gateway	X	X	X	X	X	X	X
interface.network.active.ip_addr	X	X	X	X	X	X	X
interface.network.active.mac_addr	X	X	X	X	X	X	X
interface.network.active.mac_raw	X	X	X	X	X	X	X
interface.network.active.netmask	X	X	X	X	X	X	X
interface.network.active.printserver	X	X	X	X	X	X	X
interface.network.active.protocol	X	X	X	X	X	X	X
interface.network.active.protocol_error				X	X	X	X
interface.network.active.rx_errors				X	X	X	X
interface.network.active.rx_packets				X	X	X	X
interface.network.active.server_address				X	X	X	X
interface.network.active.speed				X	X	X	X
interface.network.active.tx_errors				X	X	X	X
interface.network.active.tx_packets				X	X	X	X
interface.network.active.wins_addr				X	X	X	X
interface.network.settings_require_reset				X	X	X	X
internal_wired.8021x.password				X	X		X
internal_wired.8021x.peap.anonymous_identity				X	X	X	X
internal_wired.8021x.peap.validate_server_certificate				X	X	X	X
internal_wired.8021x.security				X	X		X
internal_wired.8021x.ttls_tunnel				X	X	X	X
internal_wired.8021x.username				X	X		X
internal_wired.activity_led				X	X	X	X
internal_wired.auto_switchover	X	X	X	X	X	X	X
internal_wired.enable				X	X		X

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
internal_wired.installed				X	X	X	X
internal_wired.ip.addr	X	X	X	X	X	X	X
internal_wired.ip.arp_interval	X	X	X	X	X	X	X
internal_wired.ip.default_addr_enable	X	X	X	X	X	X	X
internal_wired.ip.dhcp.arp_verify				X	X	X	X
internal_wired.ip.dhcp.cache_ip	X	X	X	X	X	X	X
internal_wired.ip.dhcp.cid_all	X	X	X	X	X	X	X
internal_wired.ip.dhcp.cid_enable	X	X	X	X	X	X	X
internal_wired.ip.dhcp.cid_prefix	X	X	X	X	X	X	X
internal_wired.ip.dhcp.cid_suffix	X	X	X	X	X	X	X
internal_wired.ip.dhcp.cid_type	X	X	X	X	X	X	X
internal_wired.ip.dhcp.lease.last_attempt	X	X	X	X	X	X	X
internal_wired.ip.dhcp.lease.length	X	X	X	X	X	X	X
internal_wired.ip.dhcp.lease.server	X	X	X	X	X	X	X
internal_wired.ip.dhcp.lease.time_left	X	X	X	X	X	X	X
internal_wired.ip.dhcp.option12	X	X	X	X	X	X	X
internal_wired.ip.dhcp.option12_format	X	X	X	X	X	X	X
internal_wired.ip.dhcp.option12_value	X	X	X	X	X	X	X
internal_wired.ip.dhcp.requests_per_session	X	X	X	X	X	X	X
internal_wired.ip.dns.servers				X	X	X	X
internal_wired.ip.gateway	X	X	X	X	X	X	X
internal_wired.ip.netmask	X	X	X	X	X	X	X
internal_wired.ip.port	X	X	X	X	X	X	X
internal_wired.ip.port_alterate				X	X	X	X
internal_wired.ip.port_json_config				X	X	X	X
internal_wired.ip.protocol	X	X	X	X	X	X	X
internal_wired.ip.timeout.enable	X	X	X	X	X	X	X
internal_wired.ip.timeout.value	X	X	X	X	X	X	X
internal_wired.ip.wins.addr	X	X	X	X	X	X	X
internal_wired.ip.wins.permanent_source	X	X	X	X	X	X	X
internal_wired.mac_addr	X	X	X	X	X	X	X
internal_wired.mac_raw	X	X	X	X	X	X	X

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
ip.active_network	X	X	X	X	X	X	X
ip.addr	X	X	X	X	X	X	X
ip.arp_interval	X	X	X	X	X	X	X
ip.bootp.enable	X	X	X	X	X	X	X
ip.dhcp.arp_verify				X	X	X	X
ip.dhcp.auto_provision_enable				X	X	X	X
ip.dhcp.cache_ip	X	X	X	X	X	X	X
ip.dhcp.cid_all	X	X	X	X	X	X	X
ip.dhcp.cid_enable	X	X	X	X	X	X	X
ip.dhcp.cid_prefix	X	X	X	X	X	X	X
ip.dhcp.cid_suffix	X	X	X	X	X	X	X
ip.dhcp.cid_type	X	X	X	X	X	X	X
ip.dhcp.cid_value	X	X	X	X	X	X	X
ip.dhcp.enable	X	X	X	X	X	X	X
ip.dhcp.lease.last_attempt	X	X	X	X	X	X	X
ip.dhcp.lease.server	X	X	X	X	X	X	X
ip.dhcp.lease.time_left	X	X	X	X	X	X	X
ip.dhcp.ntp.enable				X	X	X	X
ip.dhcp.ntp.received_servers				X	X	X	X
ip.dhcp.option12	X	X	X	X	X	X	X
ip.dhcp.option12_format	X	X	X	X	X	X	X
ip.dhcp.option12_value	X	X	X	X	X	X	X
ip.dhcp.request_timeout	X	X	X	X	X	X	X
ip.dhcp.requests_per_session	X	X	X	X	X	X	X
ip.dhcp.session_interval	X	X	X	X	X	X	X
ip.dhcp.user_class_id				X	X	X	X
ip.dhcp.vendor_class_id				X	X	X	X
ip.dns.servers	X	X	X	X	X	X	X
ip.firewall.whitelist_in				X	X	X	X
ip.ftp.enable	X	X	X	X	X	X	X
ip.ftp.execute_file	X	X	X	X	X	X	X
ip.ftp.request_password				X	X	X	X

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
ip.gateway	X	X	X	X	X	X	X
ip.http.admin_name				X	X	X	X
ip.http.admin_password				X	X	X	X
ip.http.custom_link_name				X	X	X	X
ip.http.custom_link_url				X	X	X	X
ip.http.enable	X	X	X	X	X	X	X
ip.http.faq_url				X	X	X	X
ip.http.port				X	X	X	X
ip.https.enable				X	X	X	X
ip.https.port				X	X	X	X
ip.lpd.enable	X	X	X	X	X	X	X
ip.mirror.appl_path				X	X	X	X
ip.mirror.auto	X	X	X	X	X	X	X
ip.mirror.error_retry	X	X	X	X	X	X	X
ip.mirror.feedback.auto	X	X	X	X	X	X	X
ip.mirror.feedback.freq	X	X	X	X	X	X	X
ip.mirror.feedback.odometer	X	X	X	X	X	X	X
ip.mirror.feedback.path	X	X	X	X	X	X	X
ip.mirror.fetch				X	X	X	X
ip.mirror.freq	X	X	X	X	X	X	X
ip.mirror.freq_hours	X	X	X	X	X	X	X
ip.mirror.interface				X	X	X	X
ip.mirror.last_error	X	X	X	X	X	X	X
ip.mirror.last_time	X	X	X	X	X	X	X
ip.mirror.mode				X	X	X	X
ip.mirror.password	X	X	X	X	X	X	X
ip.mirror.path	X	X	X	X	X	X	X
ip.mirror.reset_delay				X	X	X	X
ip.mirror.server	X	X	X	X	X	X	X
ip.mirror.success	X	X	X	X	X	X	X
ip.mirror.success_time	X	X	X	X	X	X	X
ip.mirror.username	X	X	X	X	X	X	X

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
ip.mirror.version	X	X	X	X	X	X	X
ip.netmask	X	X	X	X	X	X	X
ip.ntp.enable				X	X	X	X
ip.ntp.log				X	X	X	X
ip.ntp.servers				X	X	X	X
ip.ping_gateway_interval				X	X	X	X
ip.ping_remote				X	X	X	X
ip.pop3.enable	X	X	X	X	X	X	X
ip.pop3.password	X	X	X	X	X	X	X
ip.pop3.poll	X	X	X	X	X	X	X
ip.pop3.print_body				X	X	X	X
ip.pop3.print_headers				X	X	X	X
ip.pop3.save_attachments				X	X	X	X
ip.pop3.server_addr	X	X	X	X	X	X	X
ip.pop3.username	X	X	X	X	X	X	X
ip.pop3.verbose_headers				X	X	X	X
ip.port	X	X	X	X	X	X	X
ip.port_alternate				X	X	X	X
ip.port_json_config				X	X	X	X
ip.port_single_conn				X	X	X	X
ip.port_single_conn_idle_timeout				X	X	X	X
ip.primary_network	X	X	X	X	X	X	X
ip.smtp.domain	X	X	X	X	X	X	X
ip.smtp.enable	X	X	X	X	X	X	X
ip.smtp.server_addr	X	X	X	X	X	X	X
ip.snmp.enable	X	X	X	X	X	X	X
ip.snmp.get_community_name				X	X	X	X
ip.snmp.set_community_name				X	X	X	X
ip.snmp.trap_community_name				X	X	X	X
ip.tcp.enable	X	X	X	X	X	X	X
ip.tcp.nagle_algorithm				X	X	X	X
ip.telnet.enable	X	X	X	X	X	X	X

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
ip.tls.enable				X	X	X	X
ip.tls.port				X	X	X	X
ip.tls.port_json_config				X	X	X	X
ip.udp.enable	X	X	X	X	X	X	X
log.reboot.code				X	X	X	X
log.reboot.codes				X	X	X	X
log.reboot.reason				X	X	X	X
log.reboot.report				X	X	X	X
mcr.cancel							
mcr.crypt.algorithm							
mcr.crypt.enabled							
mcr.crypt.key_mgmt							
mcr.out							
mcr.query							
mcr.revision							
media.bar_location				X	X	X	X
media.cartridge.darkness							
media.cartridge.inserted							
media.cartridge.labels_remaining							
media.cartridge.length							
media.cartridge.part_number							
media.cartridge.serial_number							
media.cartridge.speed							
media.cartridge.total_label_cnt							
media.cartridge.width							
media.cut_now				X	X	X	X
media.darkness_mode	X	X	X				
media.draft_mode							
media.dynamic_length_calibration				X	X	X	X
media.extended_presentation					X		
media.feed_skip							
media.linerless_offset				X	X	X	X

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
media.media_low.external							
media.media_low.warning	X	X	X				
media.part_number				X	X	X	X
media.present.cut_amount							
media.present.cut_margin							
media.present.eject							
media.present.length_addition							
media.present.loop_length							
media.present.loop_length_max							
media.present.present_timeout							
media.present.present_type							
media.printmode	X	X	X	X	X	X	X
media.serial_number				X	X	X	X
media.speed	X	X	X	X	X	X	X
memory.flash_free	X	X	X	X	X	X	X
memory.flash_size	X	X	X	X	X	X	X
memory.ram_free	X	X	X	X	X	X	X
memory.ram_size	X	X	X	X	X	X	X
memory.types	X	X	X				
netmanage.avalanche.agent_addr				X	X	X	X
netmanage.avalanche.available_agent				X	X	X	X
netmanage.avalanche.available_port				X	X	X	X
netmanage.avalanche.encryption_type				X	X	X	X
netmanage.avalanche.interval				X	X	X	X
netmanage.avalanche.interval_update				X	X	X	X
netmanage.avalanche.model_name				X	X	X	X
netmanage.avalanche.set_property				X	X	X	X
netmanage.avalanche.startup_update				X	X	X	X
netmanage.avalanche.tcp_connection_timeout				X	X	X	X
netmanage.avalanche.terminal_id				X	X	X	X
netmanage.avalanche.text_msg.beep				X	X	X	X
netmanage.avalanche.text_msg.display				X	X	X	X

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
netmanage.avalanche.text_msg.print				X	X	X	X
netmanage.avalanche.udp_timeout				X	X	X	X
netmanage.error_code	X	X	X	X	X	X	X
netmanage.state_code	X	X	X	X	X	X	X
netmanage.status_code	X	X	X	X	X	X	X
odometer.headclean				X	X	X	X
odometer.headnew				X	X	X	X
odometer.label_dot_length	X	X	X	X	X	X	X
odometer.latch_open_count				X	X	X	X
odometer.media_marker_count	X	X	X	X	X	X	X
odometer.media_marker_count1	X	X	X	X	X	X	X
odometer.media_marker_count2	X	X	X	X	X	X	X
odometer.retracts_count							
odometer.rfid.valid_resetable					X	X	X
odometer.rfid.void_resetable					X	X	X
odometer.total_cuts				X	X	X	X
odometer.total_label_count				X	X	X	X
odometer.total_print_length	X	X	X	X	X	X	X
odometer.user_label_count				X	X	X	X
odometer.user_label_count1				X	X	X	X
odometer.user_label_count2				X	X	X	X
odometer.user_total_cuts				X	X	X	X
power.average_current				X	X		
power.battery_led_blink_rate							
power.battery_led_enable							
power.battery_led_off_duration							
power.battery_led_on_duration							
power.battery_replacement_cyclecount_threshold							
power.battery_type							
power.current							
power.cycle_count							
power.dtr_power_off				X	X	X	X

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
power.energy_star.enable						X	X
power.energy_star.timeout						X	X
power.label_queue.shutdown							
power.part_number							
power.percent_health							
power.power_on_mode							
power.remaining_capacity							
power.sleep.cradle							
power.temperature							
power.voltage							
power.wake.radio							
print.legacy_compatibility							X
print.tone	X	X	X	X	X	X	X
print.troubleshooting_label_print						X	X
rfid.adaptive_antenna					X	X	X
rfid.antenna_sweep					X	X	X
rfid.country_code					X	X	X
rfid.enable					X	X	X
rfid.error.response					X	X	X
rfid.hop_table_version					X	X	X
rfid.log.clear					X		
rfid.log.enabled					X		
rfid.log.entries					X		
rfid.position.program					X	X	X
rfid.reader_1.antenna_port					X	X	X
rfid.reader_1.firmware_version					X	X	X
rfid.reader_1.hardware_version					X	X	X
rfid.reader_1.model					X	X	X
rfid.reader_1.power.read					X	X	X
rfid.reader_1.power.write					X	X	X
rfid.recipe_version					X	X	X
rfid.region_code					X	X	X

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
rfid.tag.calibrate					X	X	X
rfid.tag.read.content					X	X	X
rfid.tag.read.execute					X	X	X
rfid.tag.read.result_line1					X	X	X
rfid.tag.read.result_line1_alternate					X	X	X
rfid.tag.read.result_line2					X	X	X
rfid.tag.read.result_line2_alternate					X	X	X
rfid.tag.result_line1							
rfid.tag.test.content					X	X	X
rfid.tag.test.execute					X	X	X
rfid.tag.test.result_line1					X	X	X
rfid.tag.test.result_line2					X	X	X
ribbon.cartridge.authenticated							
ribbon.cartridge.inserted							
ribbon.cartridge.length							
ribbon.cartridge.length_remaining							
ribbon.cartridge.part_number							
rtc.timezone				X	X	X	X
rtc.unix_timestamp				X			
sensor.back_bar.brightness						X	X
sensor.back_bar.cur				X	X	X	X
sensor.back_bar.gain						X	X
sensor.back_bar.offset					X	X	X
sensor.back_bar.ppr_out_thold				X	X	X	X
sensor.back_bar.thold				X	X	X	X
sensor.battery.in_volts							
sensor.cover_open					X	X	X
sensor.front_bar.brightness				X	X		
sensor.front_bar.cur				X	X		
sensor.front_bar.gain				X	X		
sensor.front_bar.offset				X	X		
sensor.front_bar.ppr_out_thold				X	X		

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
sensor.front_bar.thold				X	X		
sensor.gap.brightness							
sensor.gap.cur				X	X	X	X
sensor.gap.gain							
sensor.gap.offset							
sensor.gap.thold				X	X	X	X
sensor.head.temp				X	X	X	X
sensor.head.temp_avg				X	X	X	X
sensor.head.temp_celsius				X	X	X	X
sensor.peel.brightness							
sensor.peel.cur				X	X	X	X
sensor.peel.gain							
sensor.peel.thold				X	X		
sensor.peeler				X	X	X	X
sensor.width.cur							
sensor.width.in_dots							
usb.device.device_id_string				X	X	X	X
usb.device.device_unique_id				X	X	X	X
usb.device.device_version				X	X	X	X
usb.device.manufacturer_string				X	X	X	X
usb.device.product_id				X	X	X	X
usb.device.product_string				X	X	X	X
usb.device.serial_string				X	X	X	X
usb.device.vendor_id				X	X	X	X
usb.halt							
usb.host.config_info_to_usb						X	X
usb.host.fn_field_data					X	X	X
usb.host.fn_last_field					X	X	X
usb.host.hid_count					X	X	X
usb.host.keyboard_input					X	X	X
usb.host.lock_out					X	X	X
usb.host.mass_storage_count					X	X	X

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
usb.host.read_list					X	X	X
usb.host.read_list_print_delay					X	X	X
usb.host.template_list					X	X	X
usb.host.template_print_amount					X	X	X
usb.host.write_list					X	X	X
usb.mirror.appl_path					X	X	X
usb.mirror.auto					X	X	X
usb.mirror.enable					X	X	X
usb.mirror.error_retry					X	X	X
usb.mirror.feedback.auto					X	X	X
usb.mirror.feedback.odometer					X	X	X
usb.mirror.feedback.path					X	X	X
usb.mirror.fetch					X	X	X
usb.mirror.last_error					X	X	X
usb.mirror.last_time					X	X	X
usb.mirror.path					X	X	X
usb.mirror.reset_delay					X	X	X
usb.mirror.success					X	X	X
usb.mirror.success_time					X	X	X
weblink.cloud_connect.enable				X	X	X	X
weblink.enable				X	X	X	X
weblink.ip.conn1.authentication.add				X	X	X	X
weblink.ip.conn1.authentication.entries				X	X	X	X
weblink.ip.conn1.authentication.remove				X	X	X	X
weblink.ip.conn1.location				X	X	X	X
weblink.ip.conn1.maximum_simultaneous_connections				X	X	X	X
weblink.ip.conn1.num_connections				X	X	X	X
weblink.ip.conn1.proxy				X	X	X	X
weblink.ip.conn1.retry_interval				X	X	X	X
weblink.ip.conn1.retry_interval_random_max					X		X
weblink.ip.conn1.test.location				X	X	X	X
weblink.ip.conn1.test.retry_interval				X	X	X	X

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
weblink.ip.conn1.test.test_on				X	X	X	X
weblink.ip.conn2.authentication.add				X	X	X	X
weblink.ip.conn2.authentication.entries				X	X	X	X
weblink.ip.conn2.authentication.remove				X	X	X	X
weblink.ip.conn2.location				X	X	X	X
weblink.ip.conn2.maximum_simultaneous_connections				X	X	X	X
weblink.ip.conn2.num_connections				X	X	X	X
weblink.ip.conn2.proxy				X	X	X	X
weblink.ip.conn2.retry_interval				X	X	X	X
weblink.ip.conn2.retry_interval_random_max					X		X
weblink.ip.conn2.test.location				X	X	X	X
weblink.ip.conn2.test.retry_interval				X	X	X	X
weblink.ip.conn2.test.test_on				X	X	X	X
weblink.logging.clear				X	X	X	X
weblink.logging.entries				X	X	X	X
weblink.logging.max_entries				X	X	X	X
weblink.printer_reset_required				X	X	X	X
weblink.restore_defaults				X	X	X	X
weblink.zebra_connector.authentication.add				X	X	X	X
weblink.zebra_connector.authentication.entries				X	X	X	X
weblink.zebra_connector.authentication.remove				X	X	X	X
weblink.zebra_connector.enable				X	X	X	X
weblink.zebra_connector.proxy				X	X	X	X
weblink.zebra_connector.version				X	X	X	X
wlan.11ac.80mhz_enable							X
wlan.11d.enable				X	X	X	X
wlan.11n.20mhz_only				X	X	X	X
wlan.11n.greenfield				X	X	X	X
wlan.11n.rifs				X	X	X	X
wlan.11n.short_gi_20mhz				X	X	X	X
wlan.11n.short_gi_40mhz				X	X	X	X
wlan.8021x.authentication	X	X	X	X	X	X	X

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
wlan.8021x.eap.password				X	X	X	X
wlan.8021x.eap.privkey_password				X	X	X	X
wlan.8021x.eap.username	X	X	X	X	X	X	X
wlan.8021x.enable	X	X	X	X	X	X	X
wlan.8021x.peap.anonymous_identity				X	X		X
wlan.8021x.peap.peap_password				X	X	X	X
wlan.8021x.peap.peap_username	X	X	X	X	X	X	X
wlan.8021x.peap.privkey_password				X	X	X	X
wlan.8021x.ttls_tunnel				X	X	X	X
wlan.active_channels				X	X	X	X
wlan.adhoc_last_channel							
wlan.adhocautomode	X	X	X	X	X	X	X
wlan.adhocchannel	X	X	X	X	X	X	X
wlan.allowed_band				X	X	X	X
wlan.associated	X	X	X	X	X	X	X
wlan.auth_type	X	X	X	X	X	X	X
wlan.authenticated				X	X	X	X
wlan.authentication_error				X	X	X	X
wlan.available				X	X	X	X
wlan.band_preference				X	X	X	X
wlan.bssid	X	X	X	X	X	X	X
wlan.channel	X	X	X	X	X	X	X
wlan.channel_mask				X	X	X	X
wlan.country_code				X	X	X	X
wlan.current_tx_rate	X	X	X	X	X	X	X
wlan.enable				X	X	X	X
wlan.encryption_index	X	X	X				
wlan.encryption_key1							
wlan.encryption_key2							
wlan.encryption_key3							
wlan.encryption_key4							
wlan.encryption_mode	X	X	X				

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
wlan.essid	X	X	X	X	X	X	X
wlan.firmware_version	X	X	X	X	X	X	X
wlan.ip.addr	X	X	X	X	X	X	X
wlan.ip.arp_interval	X	X	X	X	X	X	X
wlan.ip.default_addr_enable	X	X	X	X	X	X	X
wlan.ip.dhcp.arp_verify				X	X	X	X
wlan.ip.dhcp.cache_ip	X	X	X	X	X	X	X
wlan.ip.dhcp.cid_all				X	X	X	X
wlan.ip.dhcp.cid_enable	X	X	X	X	X	X	X
wlan.ip.dhcp.cid_prefix				X	X	X	X
wlan.ip.dhcp.cid_suffix				X	X	X	X
wlan.ip.dhcp.cid_type	X	X	X	X	X	X	X
wlan.ip.dhcp.lease.last_attempt	X	X	X	X	X	X	X
wlan.ip.dhcp.lease.length	X	X	X	X	X	X	X
wlan.ip.dhcp.lease.server	X	X	X	X	X	X	X
wlan.ip.dhcp.lease.time_left	X	X	X	X	X	X	X
wlan.ip.dhcp.option12	X	X	X	X	X	X	X
wlan.ip.dhcp.option12_format	X	X	X	X	X	X	X
wlan.ip.dhcp.option12_value				X	X	X	X
wlan.ip.dhcp.request_timeout	X	X	X	X	X	X	X
wlan.ip.dhcp.requests_per_session	X	X	X	X	X	X	X
wlan.ip.dhcp.session_interval	X	X	X	X	X	X	X
wlan.ip.dns.domain				X	X	X	X
wlan.ip.dns.servers				X	X	X	X
wlan.ip.gateway	X	X	X	X	X	X	X
wlan.ip.netmask	X	X	X	X	X	X	X
wlan.ip.port	X	X	X	X	X	X	X
wlan.ip.port_alterate				X	X	X	X
wlan.ip.port_json_config				X	X	X	X
wlan.ip.protocol	X	X	X	X	X	X	X
wlan.ip.timeout.enable	X	X	X	X	X	X	X
wlan.ip.timeout.value	X	X	X	X	X	X	X

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
wlan.ip.wins.addr	X	X	X	X	X	X	X
wlan.ip.wins.permanent_source	X	X	X	X	X	X	X
wlan.keep_alive.enable	X	X	X	X	X	X	X
wlan.keep_alive.timeout	X	X	X	X	X	X	X
wlan.kerberos.kdc	X	X	X				
wlan.kerberos.mode	X	X	X				
wlan.kerberos.password	X	X	X				
wlan.kerberos.realm	X	X	X				
wlan.kerberos.username	X	X	X				
wlan.leap_mode	X	X	X	X	X	X	X
wlan.leap_password				X	X	X	X
wlan.leap_username	X	X	X	X	X	X	X
wlan.mac_addr	X	X	X	X	X	X	X
wlan.mac_raw	X	X	X	X	X	X	X
wlan.operating_mode	X	X	X	X	X	X	X
wlan.password				X	X	X	X
wlan.permitted_channels				X	X	X	X
wlan.pmf				X	X	X	X
wlan.poor_signal_threshold				X	X	X	X
wlan.preamble	X	X	X	X	X	X	X
wlan.private_key_password				X	X	X	X
wlan.region_code				X	X	X	X
wlan.roam.interchannel_delay				X	X	X	X
wlan.roam.interval	X	X	X	X	X	X	X
wlan.roam.max_chan_scan_time				X	X	X	X
wlan.roam.max_fail				X	X	X	X
wlan.roam.monitor				X	X	X	X
wlan.roam.rssi				X	X	X	X
wlan.roam.signal	X	X	X	X	X	X	X
wlan.rts_cts_enabled				X	X		
wlan.scrambler							
wlan.secure_ssid				X	X	X	X

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
wlan.security				X	X	X	X
wlan.signal_noise	X	X	X				
wlan.signal_quality	X	X	X				
wlan.signal_strength	X	X	X	X	X	X	X
wlan.station_name	X	X	X	X	X	X	X
wlan.tx_power	X	X	X				
wlan.tx_rate	X	X	X				
wlan.user_channel_list				X	X	X	X
wlan.username	X	X	X	X	X	X	X
wlan.wep.auth_type	X	X	X				
wlan.wep.index	X	X	X				
wlan.wep.key_format	X	X	X				
wlan.wep.key1							
wlan.wep.key2							
wlan.wep.key3							
wlan.wep.key4							
wlan.wpa.groupkey_ciphersuite				X	X	X	X
wlan.wpa.pairwise_ciphersuite				X	X	X	X
wlan.wpa.psk				X	X	X	X
wlan.wpa.timecheck				X	X	X	X
wlan.wpa.wpa_version				X	X	X	X
zbi.control.add_breakpoint				X	X	X	X
zbi.control.break				X	X	X	X
zbi.control.clear_breakpoints				X	X	X	X
zbi.control.delete_breakpoint				X	X	X	X
zbi.control.line_number				X	X	X	X
zbi.control.restart				X	X	X	X
zbi.control.run				X	X	X	X
zbi.control.step				X	X	X	X
zbi.control.terminate				X	X	X	X
zbi.control.variable_name				X	X	X	X
zbi.control.variable_value				X	X	X	X

Command Name	Industrial						
	105SL	110Xi4/ 140Xi4/ 170Xi4/ 220Xi4/	ZM400/ ZM600	ZT210/ ZT220/ ZT230	ZT410/ ZT420	ZT510	ZT610/ ZT620
zbi.enable				X	X	X	X
zbi.key	X	X	X	X	X	X	X
zbi.last_error				X	X	X	X
zbi.program_list				X	X	X	X
zbi.reseller_key				X	X	X	X
zbi.revision	X	X	X	X	X	X	X
zbi.running_program_name				X	X	X	X
zbi.start_info.execute				X	X	X	X
zbi.start_info.file_name				X	X	X	X
zbi.start_info.memory_alloc				X	X	X	X
zbi.state	X	X	X	X	X	X	X
zpl.calibrate				X	X	X	X
zpl.command_prefix				X	X	X	X
zpl.format_prefix				X	X	X	X
zpl.label_length	X	X		X	X	X	X
zpl.label_orientation							
zpl.left_position				X	X	X	X
zpl.relative_darkness				X	X	X	X
zpl.system_error				X	X	X	X
zpl.system_status				X	X	X	X
zpl.zpl_mode				X	X	X	X
zpl.zpl_override							
An X indicates that the SGD is supported for the particular device.							
This table indicates support based on the most recent Link-OS system release.							

SGDs Supported for Desktop Printers

This table provides details of the list of SGDs supported for Desktop Printers.

Command Name	Desktop									
	GK42GK88G	T80G	X420	HC100	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD620	ZD888	
alerts.add					X	X	X	X	X	
alerts.conditions					X	X	X	X	X	

Command Name	Desktop									
	GK42	GK88	GT80	GX42	HC10	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD62	ZD88
alerts.configured						X	X	X	X	X
alerts.destinations						X	X	X	X	X
alerts.http.authentication.add						X	X	X	X	X
alerts.http.authentication.entries						X	X	X	X	X
alerts.http.authentication.remove						X	X	X	X	X
alerts.http.logging.clear						X	X	X	X	X
alerts.http.logging.entries						X	X	X	X	X
alerts.http.logging.max_entries						X	X	X	X	X
alerts.http.proxy						X	X	X	X	X
alerts.tracked_settings.clear_log						X	X	X	X	X
alerts.tracked_settings.log_tracked						X	X	X	X	X
alerts.tracked_settings.max_log_entries						X	X	X	X	X
alerts.tracked_settings.zbi_notified						X	X	X	X	X
apl.enable						X	X	X	X	X
apl.framework_version						X	X	X	X	X
apl.version						X	X	X	X	X
appl.bootblock	X	X	X	X	X	X	X	X	X	X
appl.date	X	X	X	X	X	X	X	X	X	X
appl.link_os_version						X	X	X	X	X
appl.name	X	X	X		X	X	X	X	X	X
bluetooth.address				X		X	X	X	X	X
bluetooth.authentication				X						
bluetooth.bluetooth_pin						X	X	X	X	X
bluetooth.clear_bonding_cache						X	X	X	X	X
bluetooth.discoverable				X		X	X	X	X	X
bluetooth.enable				X		X	X	X	X	X
bluetooth.enable_reconnect						X	X	X	X	X
bluetooth.friendly_name				X		X	X	X	X	X
bluetooth.json_config_channel_enable						X	X	X	X	X
bluetooth.le.controller_mode						X	X		X	X
bluetooth.le.minimum_security						X	X		X	X
bluetooth.le.power_class										
bluetooth.local_name				X		X	X	X	X	X
bluetooth.minimum_security_mode						X	X	X	X	X

Command Name	Desktop									
	GK42	GK88	GT80	GX42	HC10	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD62	ZD88
bluetooth.page_scan_window						X	X	X	X	X
bluetooth.radio_version				X		X	X	X	X	X
bluetooth.short_address				X		X	X	X	X	X
bluetooth.version				X		X	X	X	X	X
capture.channel1.count						X	X	X	X	X
capture.channel1.data.mime						X	X	X	X	X
capture.channel1.data.raw						X	X	X	X	X
capture.channel1.delimiter						X	X	X	X	X
capture.channel1.max_length						X	X	X	X	X
capture.channel1.port						X	X	X	X	X
comm.baud	X	X	X	X	X	X	X	X	X	X
comm.halt										
comm.parity	X	X	X	X	X	X	X	X	X	X
comm.stop_bits	X	X	X		X	X	X	X	X	X
comm.type						X	X	X	X	X
cradle.comm.baud										
cradle.comm.handshake										
cutter.clean_cutter	X	X	X	X	X	X	X	X	X	X
device.allow_firmware_downloads						X	X	X	X	X
device.applicator.data_ready										
device.applicator.data_ready_activation										
device.applicator.end_print										
device.applicator.error_on_pause										
device.applicator.feed										
device.applicator.media_out										
device.applicator.pause										
device.applicator.reprint										
device.applicator.rfid_void										
device.applicator.ribbon_low										
device.applicator.ribbon_out										
device.applicator.service_required										
device.applicator.start_print										
device.applicator.start_print_mode										
device.applicator.voltage										

Command Name	Desktop									
	GK42G	K88G	T80G	X420	HC100	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD620	ZD880
device.bluetooth_installed						X	X	X	X	X
device.command_override.active						X	X	X	X	X
device.command_override.add						X	X	X	X	X
device.command_override.clear						X	X	X	X	X
device.command_override.list						X	X	X	X	X
device.company_contact						X	X	X	X	X
device.configuration_number						X	X		X	X
device.cpcl_synchronous_mode						X	X	X	X	X
device.cutter_installed						X	X	X	X	X
device.download_connection_timeout	X	X	X	X	X	X	X	X	X	X
device.download_interactive_mode						X				
device.epl_legacy_mode						X	X	X	X	X
device.feature.802_11ac						X	X	X	X	X
device.feature.bluetooth_le						X	X	X	X	X
device.feature.head_element_test						X	X	X	X	X
device.feature.lighted_arrows						X	X	X	X	X
device.feature.mcr						X	X	X	X	X
device.feature.nfc						X	X	X	X	X
device.feature.ribbon_cartridge						X	X	X	X	X
device.friendly_name	X	X	X	X	X	X	X	X	X	X
device.frontpanel.key_press						X	X	X	X	X
device.frontpanel.line1	X	X		X		X	X	X	X	X
device.frontpanel.line2	X	X		X		X	X	X	X	X
device.frontpanel.xml	X	X	X	X	X	X	X	X	X	X
device.host_identification						X	X	X	X	X
device.host_status						X	X	X	X	X
device.idle_display_format						X	X	X	X	X
device.idle_display_value						X	X	X	X	X
device.internal_wired_setting_location						X	X	X	X	X
device.job_log.total_jobs						X	X	X	X	X
device.jobs_print	X	X	X	X	X	X	X	X	X	X
device.languages	X	X	X	X	X	X	X	X	X	X
device.light.cover_open_brightness										
device.light.head_open_brightness										

Command Name	Desktop									
	GK42	GK88	GT80	GX42	HC10	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD620	ZD880
device.light.media_path_brightness										
device.light.ribbon_path_brightness										
device.locked						X	X		X	X
device.ltu_installed										
device.pause						X	X	X	X	X
device.pmcu.revision						X	X		X	X
device.pnp_option	X	X	X	X	X	X	X	X	X	X
device.position.accuracy						X	X	X	X	X
device.position.altitude						X	X	X	X	X
device.position.latitude						X	X	X	X	X
device.position.longitude						X	X	X	X	X
device.print_2key										
device.print_reprogram_2key						X	X	X	X	X
device.printhead.odometer										
device.printhead.resolution						X	X	X	X	X
device.printhead.test.summary										
device.product_name_submodel						X	X	X	X	X
device.reset						X	X	X	X	X
device.restore_defaults						X	X	X	X	X
device.rewinder_installed										
device.save_2key										
device.sensor_profile							X	X	X	
device.sensor_select						X	X	X	X	X
device.serial_numbers.applicator_option_board										
device.serial_numbers.applicator_option_board_date										
device.serial_numbers.control_panel_date						X	X	X	X	X
device.serial_numbers.cutter						X	X	X	X	X
device.serial_numbers.cutter_date						X	X	X	X	X
device.serial_numbers.mlb_date						X	X	X	X	X
device.serial_numbers.parallel_option_board										
device.serial_numbers.parallel_option_board_date										
device.serial_numbers.printhead										
device.serial_numbers.printhead_date										
device.serial_numbers.usb_host_option_board										

Command Name	Desktop									
	GK42G	K888G	T80G	X420H	C100	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD620	ZD888
device.serial_numbers.usb_host_option_board_date										
device.serial_numbers.wired_ethernet_option_board										
device.serial_numbers.wired_ethernet_option_board_date										
device.set_clock_to_build_date						X	X	X	X	X
device.slot_1						X	X		X	X
device.slot_2										
device.super_host_status						X	X	X	X	X
device.syslog.clear_log						X	X	X	X	X
device.syslog.configuration						X	X	X	X	X
device.syslog.enable						X	X	X	X	X
device.syslog.entries						X	X	X	X	X
device.syslog.log_max_file_size						X	X	X	X	X
device.syslog.save_local_file						X	X	X	X	X
device.unique_id	X	X	X	X	X	X	X	X	X	X
device.unpause						X	X	X	X	X
device.uptime	X	X	X	X	X	X	X	X	X	X
device.user_p1	X	X	X	X	X	X	X	X	X	X
device.user_p2	X	X	X	X	X	X	X	X	X	X
device.user_vars.create						X	X	X	X	X
device.user_vars.set_range						X	X	X	X	X
device.xml.enable	X	X	X	X	X	X	X	X	X	X
display.backlight						X	X	X	X	X
display.backlight_on_time						X	X	X	X	X
display.batch_counter								X		
display.bluetooth.mac										
display.language						X	X	X	X	X
display.load_card								X		
display.password.level								X		
display.root_wml								X		
display.text	X	X	X	X						
external_wired.check	X	X	X	X	X					
external_wired.ip.addr	X	X	X	X	X					
external_wired.ip.arp_interval	X	X	X	X	X					

Command Name	Desktop									
	GK42G	K888G	T80G	X420H	C100	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD620	ZD888
external_wired.ip.default_addr_enable	X	X	X	X	X					
external_wired.ip.gateway	X	X	X	X	X					
external_wired.ip.netmask	X	X	X	X	X					
external_wired.ip.port	X	X	X	X	X					
external_wired.ip.protocol	X	X	X	X	X					
external_wired.ip.timeout.enable	X	X	X	X	X					
external_wired.ip.timeout.value	X	X	X	X	X					
external_wired.ip.v6.addr	X	X	X							
external_wired.ip.v6.gateway	X	X	X							
external_wired.ip.v6.prefix_length	X	X	X							
external_wired.mac_addr	X	X	X	X	X					
external_wired.mac_raw	X	X	X	X	X	X	X	X	X	X
ezpl.head_close_action						X	X	X	X	X
ezpl.label_length_max						X	X	X	X	X
ezpl.label_sensor						X	X	X	X	X
ezpl.manual_calibration						X	X	X	X	X
ezpl.media_type						X	X	X	X	X
ezpl.power_up_action						X	X	X	X	X
ezpl.print_method						X	X	X	X	X
ezpl.print_width						X	X	X	X	X
ezpl.reprint_mode						X	X	X	X	X
ezpl.restore_defaults						X	X	X	X	X
ezpl.take_label						X	X	X	X	X
ezpl.take_label_calibration										
ezpl.tear_off						X	X	X	X	X
file.capture_response.destination						X	X	X	X	X
file.cert.expiration							X	X	X	
file.cert.supported_curves							X	X	X	
file.delete						X	X	X	X	X
file.dir	X	X	X		X	X	X	X	X	X
file.dir_format						X	X	X	X	X
file.run						X	X	X	X	X
file.type						X	X	X	X	X
formats.cancel_all						X	X	X	X	X

Command Name	Desktop									
	GK42G	K88G	T80G	X420	HC100	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD620	ZD880
head.authenticated										
head.darkness_switch						X	X		X	X
head.darkness_switch_enable						X	X		X	X
head.element_test										
head.latch	X	X	X	X	X	X	X	X	X	X
head.resolution.in_dpi						X	X	X	X	X
input.capture						X	X	X	X	X
interface.network.active.arp_interval						X	X	X	X	X
interface.network.active.cable_type						X	X	X	X	X
interface.network.active.dhcp_received_host_name						X	X	X	X	X
interface.network.active.gateway	X	X	X	X	X	X	X	X	X	X
interface.network.active.ip_addr	X	X	X	X	X	X	X	X	X	X
interface.network.active.mac_addr	X	X	X	X	X	X	X	X	X	X
interface.network.active.mac_raw	X	X	X	X	X	X	X	X	X	X
interface.network.active.netmask	X	X	X	X	X	X	X	X	X	X
interface.network.active.printserver	X	X	X	X	X	X	X	X	X	X
interface.network.active.protocol	X	X	X	X	X	X	X	X	X	X
interface.network.active.protocol_error						X	X	X	X	X
interface.network.active.rx_errors						X	X	X	X	X
interface.network.active.rx_packets						X	X	X	X	X
interface.network.active.server_address						X	X	X	X	X
interface.network.active.speed						X	X	X	X	X
interface.network.active.tx_errors						X	X	X	X	X
interface.network.active.tx_packets						X	X	X	X	X
interface.network.active.wins_addr						X	X	X	X	X
interface.network.settings_require_reset						X	X	X	X	X
internal_wired.8021x.password						X	X	X	X	X
internal_wired.8021x.peap.anonymous_identity						X	X	X	X	X
internal_wired.8021x.peap.validate_server_certificate						X	X	X	X	X
internal_wired.8021x.security								X		
internal_wired.8021x.ttls_tunnel						X	X	X	X	X
internal_wired.8021x.username						X	X	X	X	X
internal_wired.activity_led						X	X	X	X	X
internal_wired.auto_switchover	X	X	X	X	X	X	X	X	X	X

Command Name	Desktop									
	GK42G	K88G	T80G	X420	HC100	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD620	ZD880
internal_wired.enable								X		
internal_wired.installed						X	X	X	X	X
internal_wired.ip.addr	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.arp_interval	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.default_addr_enable	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.dhcp.arp_verify						X	X	X	X	X
internal_wired.ip.dhcp.cache_ip	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.dhcp.cid_all	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.dhcp.cid_enable	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.dhcp.cid_prefix	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.dhcp.cid_suffix	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.dhcp.cid_type	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.dhcp.lease.last_attempt	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.dhcp.lease.length	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.dhcp.lease.server	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.dhcp.lease.time_left	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.dhcp.option12	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.dhcp.option12_format	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.dhcp.option12_value	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.dhcp.requests_per_session	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.dns.servers						X	X	X	X	X
internal_wired.ip.gateway	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.netmask	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.port	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.port_alternate						X	X	X	X	X
internal_wired.ip.port_json_config						X	X	X	X	X
internal_wired.ip.protocol	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.timeout.enable	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.timeout.value	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.wins.addr	X	X	X	X	X	X	X	X	X	X
internal_wired.ip.wins.permanent_source	X	X	X	X	X	X	X	X	X	X
internal_wired.mac_addr	X	X	X	X	X	X	X	X	X	X
internal_wired.mac_raw	X	X	X	X	X	X	X	X	X	X
ip.active_network	X	X	X	X	X	X	X	X	X	X

Command Name	Desktop									
	GK42G	K88G	T80G	X420	HC100	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD620	ZD880
ip.addr	X	X	X	X	X	X	X	X	X	X
ip.arp_interval	X	X	X	X	X	X	X	X	X	X
ip.bootp.enable	X	X	X	X	X	X	X	X	X	X
ip.dhcp.arp_verify						X	X	X	X	X
ip.dhcp.auto_provision_enable						X	X	X	X	X
ip.dhcp.cache_ip	X	X	X	X	X	X	X	X	X	X
ip.dhcp.cid_all	X	X	X	X	X	X	X	X	X	X
ip.dhcp.cid_enable	X	X	X	X	X	X	X	X	X	X
ip.dhcp.cid_prefix	X	X	X	X	X	X	X	X	X	X
ip.dhcp.cid_suffix	X	X	X	X	X	X	X	X	X	X
ip.dhcp.cid_type	X	X	X	X	X	X	X	X	X	X
ip.dhcp.cid_value	X	X	X	X	X	X	X	X	X	X
ip.dhcp.enable	X	X	X	X	X	X	X	X	X	X
ip.dhcp.lease.last_attempt	X	X	X	X	X	X	X	X	X	X
ip.dhcp.lease.server	X	X	X	X	X	X	X	X	X	X
ip.dhcp.lease.time_left	X	X	X	X	X	X	X	X	X	X
ip.dhcp.ntp.enable						X	X	X	X	X
ip.dhcp.ntp.received_servers						X	X	X	X	X
ip.dhcp.option12	X	X	X	X	X	X	X	X	X	X
ip.dhcp.option12_format	X	X	X	X	X	X	X	X	X	X
ip.dhcp.option12_value	X	X	X	X	X	X	X	X	X	X
ip.dhcp.request_timeout	X	X	X	X	X	X	X	X	X	X
ip.dhcp.requests_per_session	X	X	X	X	X	X	X	X	X	X
ip.dhcp.session_interval	X	X	X	X	X	X	X	X	X	X
ip.dhcp.user_class_id						X	X	X	X	X
ip.dhcp.vendor_class_id						X	X	X	X	X
ip.dns.servers	X	X	X	X	X	X	X	X	X	X
ip.firewall.whitelist_in						X	X	X	X	X
ip.ftp.enable	X	X	X	X	X	X	X	X	X	X
ip.ftp.execute_file	X	X	X	X	X	X	X	X	X	X
ip.ftp.request_password						X	X	X	X	X
ip.gateway	X	X	X	X	X	X	X	X	X	X
ip.http.admin_name						X	X	X	X	X
ip.http.admin_password						X	X	X	X	X

SGD Command Support

Command Name	Desktop									
	GK42G	K88G	T80G	X420	HC100	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD620	ZD880
ip.http.custom_link_name						X	X	X	X	X
ip.http.custom_link_url						X	X	X	X	X
ip.http.enable	X	X	X	X	X	X	X	X	X	X
ip.http.faq_url						X	X	X	X	X
ip.http.port						X	X	X	X	X
ip.https.enable						X	X	X	X	X
ip.https.port						X	X	X	X	X
ip.lpd.enable	X	X	X	X	X	X	X	X	X	X
ip.mirror.appl_path						X	X	X	X	X
ip.mirror.auto	X	X	X	X	X	X	X	X	X	X
ip.mirror.error_retry	X	X	X	X	X	X	X	X	X	X
ip.mirror.feedback.auto	X	X	X	X	X	X	X	X	X	X
ip.mirror.feedback.freq	X	X	X	X	X	X	X	X	X	X
ip.mirror.feedback.odometer	X	X	X	X	X	X	X	X	X	X
ip.mirror.feedback.path	X	X	X	X	X	X	X	X	X	X
ip.mirror.fetch						X	X	X	X	X
ip.mirror.freq	X	X	X	X	X	X	X	X	X	X
ip.mirror.freq_hours	X	X	X	X	X	X	X	X	X	X
ip.mirror.interface						X	X	X	X	X
ip.mirror.last_error	X	X	X	X	X	X	X	X	X	X
ip.mirror.last_time	X	X	X	X	X	X	X	X	X	X
ip.mirror.mode						X	X	X	X	X
ip.mirror.password	X	X	X	X		X	X	X	X	X
ip.mirror.path	X	X	X	X	X	X	X	X	X	X
ip.mirror.reset_delay						X	X	X	X	X
ip.mirror.server	X	X	X	X	X	X	X	X	X	X
ip.mirror.success	X	X	X	X	X	X	X	X	X	X
ip.mirror.success_time	X	X	X	X	X	X	X	X	X	X
ip.mirror.username	X	X	X	X	X	X	X	X	X	X
ip.mirror.version	X	X	X	X	X	X	X	X	X	X
ip.netmask	X	X	X	X	X	X	X	X	X	X
ip.ntp.enable						X	X	X	X	X
ip.ntp.log						X	X	X	X	X
ip.ntp.servers						X	X	X	X	X

Command Name	Desktop									
	GK42G	K88G	T80G	X420	HC100	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD620	ZD880
ip.ping_gateway_interval						X	X	X	X	X
ip.ping_remote						X	X	X	X	X
ip.pop3.enable	X	X	X	X	X	X	X	X	X	X
ip.pop3.password	X	X	X	X		X	X	X	X	X
ip.pop3.poll	X	X	X	X	X	X	X	X	X	X
ip.pop3.print_body						X	X	X	X	X
ip.pop3.print_headers						X	X	X	X	X
ip.pop3.save_attachments						X	X	X	X	X
ip.pop3.server_addr	X	X	X	X	X	X	X	X	X	X
ip.pop3.username	X	X	X	X	X	X	X	X	X	X
ip.pop3.verbose_headers						X	X	X	X	X
ip.port	X	X	X	X	X	X	X	X	X	X
ip.port_alternate						X	X	X	X	X
ip.port_json_config						X	X	X	X	X
ip.port_single_conn						X	X	X	X	X
ip.port_single_conn_idle_timeout						X	X	X	X	X
ip.primary_network	X	X	X	X	X	X	X	X	X	X
ip.smtp.domain	X	X	X	X	X	X	X	X	X	X
ip.smtp.enable	X	X	X	X	X	X	X	X	X	X
ip.smtp.server_addr	X	X	X	X	X	X	X	X	X	X
ip.snmp.enable	X	X	X	X	X	X	X	X	X	X
ip.snmp.get_community_name						X	X	X	X	X
ip.snmp.set_community_name						X	X	X	X	X
ip.snmp.trap_community_name						X	X	X	X	X
ip.tcp.enable	X	X	X	X	X	X	X	X	X	X
ip.tcp.nagle_algorithm						X	X	X	X	X
ip.telnet.enable	X	X	X	X	X	X	X	X	X	X
ip.tls.enable						X	X	X	X	X
ip.tls.port						X	X	X	X	X
ip.tls.port_json_config						X	X	X	X	X
ip.udp.enable	X	X	X	X	X	X	X	X	X	X
log.reboot.code						X	X	X	X	X
log.reboot.codes						X	X	X	X	X
log.reboot.reason						X	X	X	X	X

Command Name	Desktop									
	GK42	GK88	GT80	GX42	HC100	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD620	ZD888
log.reboot.report						X	X	X	X	X
mcr.cancel										
mcr.crypt.algorithm										
mcr.crypt.enabled										
mcr.crypt.key_mgmt										
mcr.out										
mcr.query										
mcr.revision										
media.bar_location						X	X	X	X	X
media.cartridge.darkness										
media.cartridge.inserted										
media.cartridge.labels_remaining										
media.cartridge.length										
media.cartridge.part_number					X					
media.cartridge.serial_number										
media.cartridge.speed					X					
media.cartridge.total_label_cnt										
media.cartridge.width										
media.cut_now						X	X	X	X	X
media.darkness_mode	X	X	X	X	X					
media.draft_mode										
media.dynamic_length_calibration						X	X	X	X	X
media.extended_presentation										
media.feed_skip										
media.media_low.external										
media.media_low.warning	X	X		X	X					
media.part_number						X	X	X	X	X
media.present.cut_amount										
media.present.cut_margin										
media.present.eject										
media.present.length_addition										
media.present.loop_length										
media.present.loop_length_max										
media.present.present_timeout										

SGD Command Support

Command Name	Desktop									
	GK42G	K88G	T80G	X420	HC100	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD620	ZD880
media.present.present_type										
media.printmode	X	X	X	X	X	X	X	X	X	X
media.serial_number						X	X	X	X	X
media.speed	X	X	X	X	X	X	X	X	X	X
memory.flash_free	X	X	X	X	X	X	X	X	X	X
memory.flash_size	X	X	X	X	X	X	X	X	X	X
memory.ram_free	X	X	X	X	X	X	X	X	X	X
memory.ram_size	X	X	X	X	X	X	X	X	X	X
memory.types	X	X	X	X	X					
netmanage.avalanche.agent_addr						X	X	X	X	X
netmanage.avalanche.available_agent						X	X	X	X	X
netmanage.avalanche.available_port						X	X	X	X	X
netmanage.avalanche.encryption_type						X	X	X	X	X
netmanage.avalanche.interval						X	X	X	X	X
netmanage.avalanche.interval_update						X	X	X	X	X
netmanage.avalanche.model_name						X	X	X	X	X
netmanage.avalanche.set_property						X	X	X	X	X
netmanage.avalanche.startup_update						X	X	X	X	X
netmanage.avalanche.tcp_connection_timeout						X	X	X	X	X
netmanage.avalanche.terminal_id						X	X	X	X	X
netmanage.avalanche.text_msg.beep						X	X	X	X	X
netmanage.avalanche.text_msg.display						X	X	X	X	X
netmanage.avalanche.text_msg.print						X	X	X	X	X
netmanage.avalanche.udp_timeout						X	X	X	X	X
netmanage.error_code	X	X	X	X	X	X	X	X	X	X
netmanage.state_code	X	X	X	X	X	X	X	X	X	X
netmanage.status_code	X	X	X	X	X	X	X	X	X	X
odometer.headclean						X	X	X	X	X
odometer.headnew						X	X	X	X	X
odometer.label_dot_length	X	X	X	X	X	X	X	X	X	X
odometer.latch_open_count						X	X	X	X	X
odometer.media_marker_count	X	X	X	X	X	X	X	X	X	X
odometer.media_marker_count1	X	X	X	X	X	X	X	X	X	X
odometer.media_marker_count2	X	X	X	X	X	X	X	X	X	X

SGD Command Support

Command Name	Desktop									
	GK42	GK88	GT80	GX42	HC10	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD62	ZD88
odometer.retracts_count										
odometer.rfid.valid_resetable								X		
odometer.rfid.void_resetable								X		
odometer.total_cuts						X	X	X	X	X
odometer.total_label_count						X	X	X	X	X
odometer.total_print_length	X	X	X	X	X	X	X	X	X	X
odometer.user_label_count						X	X	X	X	X
odometer.user_label_count1						X	X	X	X	X
odometer.user_label_count2						X	X	X	X	X
odometer.user_total_cuts						X	X	X	X	X
power.average_current						X	X	X	X	X
power.battery_led_blink_rate										
power.battery_led_enable										
power.battery_led_off_duration										
power.battery_led_on_duration										
power.battery_replacement_cyclecount_threshold										
power.battery_type										
power.current										
power.cycle_count										
power.dtr_power_off										
power.energy_star.enable										
power.energy_star.timeout										
power.label_queue.shutdown										
power.part_number										
power.percent_health										
power.power_on_mode							X		X	X
power.remaining_capacity										
power.sleep.cradle										
power.temperature										
power.voltage										
power.wake.radio						X	X		X	X
print.legacy_compatibility										
print.tone	X	X	X	X	X	X	X	X	X	X
print.troubleshooting_label_print										

Command Name	Desktop									
	GK42	GK88	GT80	GX42	HC10	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD62	ZD88
rfid.adaptive_antenna								X		
rfid.antenna_sweep								X		
rfid.country_code								X		
rfid.enable								X		
rfid.error.response								X		
rfid.hop_table_version								X		
rfid.log.clear								X		
rfid.log.enabled								X		
rfid.log.entries								X		
rfid.position.program								X		
rfid.reader_1.antenna_port								X		
rfid.reader_1.firmware_version								X		
rfid.reader_1.hardware_version								X		
rfid.reader_1.model								X		
rfid.reader_1.power.read								X		
rfid.reader_1.power.write								X		
rfid.recipe_version								X		
rfid.region_code								X		
rfid.tag.calibrate								X		
rfid.tag.read.content								X		
rfid.tag.read.execute								X		
rfid.tag.read.result_line1								X		
rfid.tag.read.result_line1_alternate								X		
rfid.tag.read.result_line2								X		
rfid.tag.read.result_line2_alternate								X		
rfid.tag.result_line1										
rfid.tag.test.content								X		
rfid.tag.test.execute								X		
rfid.tag.test.result_line1								X		
rfid.tag.test.result_line2								X		
ribbon.cartridge.authenticated ^a						X	X		X	X
ribbon.cartridge.inserteda						X	X		X	X
ribbon.cartridge.lengtha						X	X		X	X

Command Name	Desktop									
	GK42G	K88G	T80G	X420	HC100	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD620	ZD888
ribbon.cartridge.length_remaininga						X	X		X	X
ribbon.cartridge.part_numbera						X	X		X	X
rtc.timezone						X	X	X	X	X
rtc.unix_timestamp										
sensor.back_bar.brightness										
sensor.back_bar.cur						X	X	X	X	X
sensor.back_bar.gain										
sensor.back_bar.offset										
sensor.back_bar.ppr_out_thold						X	X	X	X	X
sensor.back_bar.thold						X	X	X	X	X
sensor.battery.in_volts										
sensor.cover_open										
sensor.front_bar.brightness										
sensor.front_bar.cur										
sensor.front_bar.gain										
sensor.front_bar.offset										
sensor.front_bar.ppr_out_thold										
sensor.front_bar.thold										
sensor.gap.brightness										
sensor.gap.cur						X	X	X	X	X
sensor.gap.gain										
sensor.gap.offset										
sensor.gap.thold						X	X	X	X	X
sensor.head.temp						X	X	X	X	X
sensor.head.temp_avg						X	X	X	X	X
sensor.head.temp_celsius						X	X	X	X	X
sensor.peel.brightness										
sensor.peel.cur						X	X	X	X	X
sensor.peel.gain										
sensor.peel.thold						X	X	X	X	X
sensor.peeler						X	X	X	X	X
sensor.width.cur										
sensor.width.in_dots										
usb.device.device_id_string						X	X	X	X	X

Command Name	Desktop									
	GK42	GK88	GT80	GX42	HC10	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD620	ZD888
usb.device.device_unique_id						X	X	X	X	X
usb.device.device_version						X	X	X	X	X
usb.device.manufacturer_string						X	X	X	X	X
usb.device.product_id						X	X	X	X	X
usb.device.product_string						X	X	X	X	X
usb.device.serial_string						X	X	X	X	X
usb.device.vendor_id						X	X	X	X	X
usb.halt							X			
usb.host.config_info_to_usb									X	
usb.host.fn_field_data										
usb.host.fn_last_field										
usb.host.hid_count						X	X		X	X
usb.host.keyboard_input										
usb.host.lock_out						X	X		X	X
usb.host.mass_storage_count						X	X		X	X
usb.host.read_list						X	X		X	X
usb.host.read_list_print_delay						X	X		X	X
usb.host.template_list										
usb.host.template_print_amount										
usb.host.write_list						X	X		X	X
usb.mirror.appl_path						X	X		X	X
usb.mirror.auto						X	X		X	X
usb.mirror.enable						X	X		X	X
usb.mirror.error_retry						X	X		X	X
usb.mirror.feedback.auto						X	X		X	X
usb.mirror.feedback.odometer						X	X		X	X
usb.mirror.feedback.path						X	X		X	X
usb.mirror.fetch						X	X		X	X
usb.mirror.last_error						X	X		X	X
usb.mirror.last_time						X	X		X	X
usb.mirror.path						X	X		X	X
usb.mirror.reset_delay						X	X		X	X
usb.mirror.success						X	X		X	X
usb.mirror.success_time						X	X		X	X

Command Name	Desktop									
	GK42	GK88	GT80	GX42	HC10	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD62	ZD88
weblink.cloud_connect.enable						X	X	X	X	X
weblink.enable						X	X	X	X	X
weblink.ip.conn1.authentication.add						X	X	X	X	X
weblink.ip.conn1.authentication.entries						X	X	X	X	X
weblink.ip.conn1.authentication.remove						X	X	X	X	X
weblink.ip.conn1.location						X	X	X	X	X
weblink.ip.conn1.maximum_simultaneous_connections						X	X	X	X	X
weblink.ip.conn1.num_connections						X	X	X	X	X
weblink.ip.conn1.proxy						X	X	X	X	X
weblink.ip.conn1.retry_interval						X	X	X	X	X
weblink.ip.conn1.retry_interval_random_max								X		
weblink.ip.conn1.test.location						X	X	X	X	X
weblink.ip.conn1.test.retry_interval						X	X	X	X	X
weblink.ip.conn1.test.test_on						X	X	X	X	X
weblink.ip.conn2.authentication.add						X	X	X	X	X
weblink.ip.conn2.authentication.entries						X	X	X	X	X
weblink.ip.conn2.authentication.remove						X	X	X	X	X
weblink.ip.conn2.location						X	X	X	X	X
weblink.ip.conn2.maximum_simultaneous_connections						X	X	X	X	X
weblink.ip.conn2.num_connections						X	X	X	X	X
weblink.ip.conn2.proxy						X	X	X	X	X
weblink.ip.conn2.retry_interval						X	X	X	X	X
weblink.ip.conn2.retry_interval_random_max								X		
weblink.ip.conn2.test.location						X	X	X	X	X
weblink.ip.conn2.test.retry_interval						X	X	X	X	X
weblink.ip.conn2.test.test_on						X	X	X	X	X
weblink.logging.clear						X	X	X	X	X
weblink.logging.entries						X	X	X	X	X
weblink.logging.max_entries						X	X	X	X	X
weblink.printer_reset_required						X	X	X	X	X
weblink.restore_defaults						X	X	X	X	X
weblink.zebra_connector.authentication.add						X	X	X	X	X
weblink.zebra_connector.authentication.entries						X	X	X	X	X
weblink.zebra_connector.authentication.remove						X	X	X	X	X

Command Name	Desktop									
	GK42G	K88G	T80G	X420	HC100	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD620	ZD880
weblink.zebra_connector.enable						X	X	X	X	X
weblink.zebra_connector.proxy						X	X	X	X	X
weblink.zebra_connector.version						X	X	X	X	X
wlan.11ac.80mhz_enable						X	X		X	X
wlan.11d.enable						X	X	X	X	X
wlan.11n.20mhz_only						X	X	X	X	X
wlan.11n.greenfield						X	X	X	X	X
wlan.11n.rifs						X	X	X	X	X
wlan.11n.short_gi_20mhz						X	X	X	X	X
wlan.11n.short_gi_40mhz						X	X	X	X	X
wlan.8021x.authentication	X	X	X	X	X	X	X	X	X	X
wlan.8021x.eap.password						X	X	X	X	X
wlan.8021x.eap.privkey_password						X	X	X	X	X
wlan.8021x.eap.username	X	X	X	X	X	X	X	X	X	X
wlan.8021x.enable	X	X	X	X	X	X	X	X	X	X
wlan.8021x.peap.anonymous_identity						X		X		X
wlan.8021x.peap.peap_password						X	X	X	X	X
wlan.8021x.peap.peap_username	X	X	X	X	X	X	X	X	X	X
wlan.8021x.peap.privkey_password						X	X	X	X	X
wlan.active_channels						X	X	X	X	X
wlan.adhoc_last_channel										
wlan.adhocautomode	X	X	X	X	X	X	X	X	X	X
wlan.adhocchannel	X	X	X	X	X	X	X	X	X	X
wlan.allowed_band						X	X	X	X	X
wlan.associated	X	X	X	X	X	X	X	X	X	X
wlan.auth_type	X	X	X	X	X	X	X	X	X	X
wlan.authenticated						X	X	X	X	X
wlan.authentication_error						X	X	X	X	X
wlan.available						X	X	X	X	X
wlan.band_preference						X	X	X	X	X
wlan.bssid	X	X	X	X	X	X	X	X	X	X
wlan.channel	X	X	X	X	X	X	X	X	X	X
wlan.channel_mask						X	X	X	X	X
wlan.country_code						X	X	X	X	X

Command Name	Desktop									
	GK42G	K88G	T80G	X420	HC100	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD620	ZD880
wlan.current_tx_rate	X	X	X	X	X	X	X	X	X	X
wlan.enable						X	X	X	X	X
wlan.encryption_index	X	X	X	X	X		X			
wlan.encryption_key1							X			
wlan.encryption_key2							X			
wlan.encryption_key3							X			
wlan.encryption_key4							X			
wlan.encryption_mode	X	X	X	X	X		X			
wlan.essid	X	X	X	X	X	X	X	X	X	X
wlan.firmware_version	X	X	X	X	X	X	X	X	X	X
wlan.ip.addr	X	X	X	X	X	X	X	X	X	X
wlan.ip.arp_interval	X	X	X	X	X	X	X	X	X	X
wlan.ip.default_addr_enable	X	X	X	X	X	X	X	X	X	X
wlan.ip.dhcp.arp_verify						X	X	X	X	X
wlan.ip.dhcp.cache_ip	X	X	X	X	X	X	X	X	X	X
wlan.ip.dhcp.cid_all						X	X	X	X	X
wlan.ip.dhcp.cid_enable	X	X	X	X	X	X	X	X	X	X
wlan.ip.dhcp.cid_prefix						X	X	X	X	X
wlan.ip.dhcp.cid_suffix						X	X	X	X	X
wlan.ip.dhcp.cid_type	X	X	X	X	X	X	X	X	X	X
wlan.ip.dhcp.lease.last_attempt	X	X	X	X	X	X	X	X	X	X
wlan.ip.dhcp.lease.length	X	X	X	X	X	X	X	X	X	X
wlan.ip.dhcp.lease.server	X	X	X	X	X	X	X	X	X	X
wlan.ip.dhcp.lease.time_left	X	X	X	X	X	X	X	X	X	X
wlan.ip.dhcp.option12	X	X	X	X	X	X	X	X	X	X
wlan.ip.dhcp.option12_format	X	X	X	X	X	X	X	X	X	X
wlan.ip.dhcp.option12_value						X	X	X	X	X
wlan.ip.dhcp.request_timeout	X	X	X	X	X	X	X	X	X	X
wlan.ip.dhcp.requests_per_session	X	X	X	X	X	X	X	X	X	X
wlan.ip.dhcp.session_interval	X	X	X	X	X	X	X	X	X	X
wlan.ip.dns.domain						X	X	X	X	X
wlan.ip.dns.servers						X	X	X	X	X
wlan.ip.gateway	X	X	X	X	X	X	X	X	X	X
wlan.ip.netmask	X	X	X	X	X	X	X	X	X	X

Command Name	Desktop									
	GK42G	K88G	T80G	X420	HC100	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD620	ZD880
wlan.ip.port	X	X	X	X	X	X	X	X	X	X
wlan.ip.port_alternate						X	X	X	X	X
wlan.ip.port_json_config						X	X	X	X	X
wlan.ip.protocol	X	X	X	X	X	X	X	X	X	X
wlan.ip.timeout.enable	X	X	X	X	X	X	X	X	X	X
wlan.ip.timeout.value	X	X	X	X	X	X	X	X	X	X
wlan.ip.wins.addr	X	X	X	X	X	X	X	X	X	X
wlan.ip.wins.permanent_source	X	X	X	X	X	X	X	X	X	X
wlan.keep_alive.enable	X	X	X	X	X	X	X	X	X	X
wlan.keep_alive.timeout	X	X	X	X	X	X	X	X	X	X
wlan.kerberos.kdc	X	X	X	X	X					
wlan.kerberos.mode	X	X	X	X	X					
wlan.kerberos.password	X	X	X		X					
wlan.kerberos.realm	X	X	X	X	X					
wlan.kerberos.username	X	X	X	X	X					
wlan.leap_mode	X	X	X	X	X	X	X	X	X	X
wlan.leap_password						X	X	X	X	X
wlan.leap_username	X	X	X	X	X	X	X	X	X	X
wlan.mac_addr	X	X	X	X	X	X	X	X	X	X
wlan.mac_raw	X	X	X	X	X	X	X	X	X	X
wlan.operating_mode	X	X	X	X	X	X	X	X	X	X
wlan.password						X	X	X	X	X
wlan.permitted_channels						X	X	X	X	X
wlan.pmf						X	X	X	X	X
wlan.poor_signal_threshold						X	X	X	X	X
wlan.preamble	X	X	X	X	X	X	X	X	X	X
wlan.private_key_password						X	X	X	X	X
wlan.region_code						X	X	X	X	X
wlan.roam.interchannel_delay						X	X	X	X	X
wlan.roam.interval	X	X	X	X	X	X	X	X	X	X
wlan.roam.max_chan_scan_time						X	X	X	X	X
wlan.roam.max_fail						X	X	X	X	X
wlan.roam.monitor						X	X	X	X	X
wlan.roam.rssi						X	X	X	X	X

Command Name	Desktop									
	GK42GK888GT80GX420HC100	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD620/ ZD630	ZD888/ ZD890				
wlan.roam.signal	X	X	X	X	X	X	X	X	X	X
wlan.rts_cts_enabled						X	X	X	X	X
wlan.secure_ssid						X	X	X	X	X
wlan.security						X	X	X	X	X
wlan.signal_noise	X	X	X	X						
wlan.signal_quality	X	X	X	X						
wlan.signal_strength	X	X	X	X	X	X	X	X	X	X
wlan.station_name	X	X	X	X	X	X	X	X	X	X
wlan.tx_power	X	X	X	X	X					
wlan.tx_rate	X	X	X	X	X					
wlan.user_channel_list						X	X	X	X	X
wlan.username	X	X	X	X	X	X	X	X	X	X
wlan.wep.auth_type	X	X	X	X	X		X			
wlan.wep.index	X	X	X	X	X		X			
wlan.wep.key_format	X	X	X	X	X		X			
wlan.wep.key1							X			
wlan.wep.key2							X			
wlan.wep.key3							X			
wlan.wep.key4							X			
wlan.wpa.groupkey_ciphersuite						X	X	X	X	X
wlan.wpa.pairwise_ciphersuite						X	X	X	X	X
wlan.wpa.psk						X	X	X	X	X
wlan.wpa.timecheck						X	X	X	X	X
wlan.wpa.wpa_version						X	X	X	X	X
zbi.control.add_breakpoint						X	X	X	X	X
zbi.control.break						X	X	X	X	X
zbi.control.clear_breakpoints						X	X	X	X	X
zbi.control.delete_breakpoint						X	X	X	X	X
zbi.control.line_number						X	X	X	X	X
zbi.control.restart						X	X	X	X	X
zbi.control.run						X	X	X	X	X
zbi.control.step						X	X	X	X	X
zbi.control.terminate						X	X	X	X	X
zbi.control.variable_name						X	X	X	X	X

SGD Command Support

Command Name	Desktop									
	GK42G	K88G	T80G	X420	HC100	ZD220/ ZD230	ZD410/ ZD420	ZD500/ ZD510	ZD620	ZD880
zbi.control.variable_value						X	X	X	X	X
zbi.enable						X	X	X	X	X
zbi.key	X	X	X	X	X	X	X	X	X	X
zbi.last_error						X	X	X	X	X
zbi.program_list						X	X	X	X	X
zbi.reseller_key						X	X	X	X	X
zbi.revision	X	X	X	X	X	X	X	X	X	X
zbi.running_program_name						X	X	X	X	X
zbi.start_info.execute						X	X	X	X	X
zbi.start_info.file_name						X	X	X	X	X
zbi.start_info.memory_alloc						X	X	X	X	X
zbi.state	X	X	X	X	X	X	X	X	X	X
zpl.calibrate						X	X	X	X	X
zpl.command_prefix						X	X	X	X	X
zpl.format_prefix						X	X	X	X	X
zpl.label_length	X	X	X		X	X	X	X	X	X
zpl.label_orientation							X		X	
zpl.left_position						X	X	X	X	X
zpl.relative_darkness						X	X	X	X	X
zpl.system_error						X	X	X	X	X
zpl.system_status						X	X	X	X	X
zpl.zpl_mode						X	X	X	X	X
zpl.zpl_override										
An X indicates that the SGD is supported for the particular device. This table indicates support based on the most recent Link-OS system release.										

SGDs Supported for Mobile Printers

This table provides details of the list of SGDs supported for Mobile Printers.

Command Name	Mobile								
	iMZ220/ iMZ320	QR400/ QLn320/ QLn420	QLn220/ ZQ120/ ZQ220	ZQ112/ ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668
alerts.add	X		X		X	X	X		X
alerts.conditions	X		X		X	X	X		X
alerts.configured	X		X		X	X	X		X
alerts.destinations	X		X		X	X	X		X
alerts.http.authentication.add	X		X		X	X	X		X
alerts.http.authentication.entries	X		X		X	X	X		X
alerts.http.authentication.remove	X		X		X	X	X		X
alerts.http.logging.clear	X		X		X	X	X		X
alerts.http.logging.entries	X		X		X	X	X		X
alerts.http.logging.max_entries	X		X		X	X	X		X
alerts.http.proxy	X		X		X	X	X		X
alerts.tracked_settings.clear_log	X		X		X	X	X		X
alerts.tracked_settings.log_tracked	X		X		X	X	X		X
alerts.tracked_settings.max_log_entries	X		X		X	X	X		X
alerts.tracked_settings.zbi_notified	X		X		X	X	X		X
apl.enable	X		X		X	X	X		X
apl.framework_version	X		X		X	X	X		X
apl.version	X		X		X	X	X		X
appl.bootblock	X	X	X	X	X	X	X	X	X
appl.date	X	X	X	X	X	X	X	X	X
appl.link_os_version	X		X		X	X	X		X
appl.name	X	X	X	X	X	X	X	X	X
bluetooth.address	X		X	X	X	X	X	X	X
bluetooth.authentication									
bluetooth.bluetooth_pin	X		X	X	X	X	X	X	X
bluetooth.clear_bonding_cache	X		X	X	X	X	X	X	X
bluetooth.discoverable	X		X	X	X	X	X	X	X
bluetooth.enable	X		X	X	X	X	X	X	X
bluetooth.enable_reconnect	X		X	X	X	X	X	X	X
bluetooth.friendly_name	X		X	X	X	X	X	X	X

Command Name	Mobile									
	iM220/ iM320	QR400/ QLn320/ QLn420	ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668	
bluetooth.json_config_channel_enable	X	X		X	X	X		X	X	
bluetooth.le.controller_mode					X	X		X	X	
bluetooth.le.minimum_security					X					
bluetooth.le.power_class						X				
bluetooth.local_name	X	X	X	X	X	X	X	X	X	
bluetooth.minimum_security_mode	X	X	X	X	X	X	X	X	X	
bluetooth.page_scan_window	X	X	X	X	X	X	X	X	X	
bluetooth.radio_version	X	X	X	X	X	X	X	X	X	
bluetooth.short_address	X	X	X	X	X	X	X	X	X	
bluetooth.version	X	X	X	X	X	X	X	X	X	
capture.channel1.count	X	X		X	X	X		X	X	
capture.channel1.data.mime	X	X		X	X	X		X	X	
capture.channel1.data.raw	X	X		X	X	X		X	X	
capture.channel1.delimiter	X	X		X	X	X		X	X	
capture.channel1.max_length	X	X		X	X	X		X	X	
capture.channel1.port	X	X		X	X	X		X	X	
comm.baud		X	X			X			X	
comm.halt			X			X			X	
comm.parity		X	X			X			X	
comm.stop_bits		X	X			X			X	
comm.type										
cradle.comm.baud					X					
cradle.comm.handshake					X					
cutter.clean_cutter		X								
device.allow_firmware_downloads	X	X	X	X	X	X	X			
device.applicator.data_ready										
device.applicator.data_ready_activation										
device.applicator.end_print										
device.applicator.error_on_pause										
device.applicator.feed										
device.applicator.media_out										
device.applicator.pause										

Command Name	Mobile									
	iMZ220/ iMZ320	QR400/ QLn320/ QLn420	ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668	
device.applicator.reprint										
device.applicator.rfid_void										
device.applicator.ribbon_low										
device.applicator.ribbon_out										
device.applicator.service_required										
device.applicator.start_print										
device.applicator.start_print_mode										
device.applicator.supplies_low_selection										
device.applicator.voltage										
device.bluetooth_installed	X	X		X	X	X		X	X	
device.command_override.active	X	X		X	X	X		X	X	
device.command_override.add	X	X		X	X	X		X	X	
device.command_override.clear	X	X		X	X	X		X	X	
device.command_override.list	X	X		X	X	X		X	X	
device.company_contact	X	X		X	X	X		X	X	
device.configuration_number	X	X		X	X	X		X		
device.cpcl_synchronous_mode	X	X		X	X	X		X	X	
device.cutter_installed	X	X		X	X	X		X	X	
device.download_connection_timeout	X	X	X	X	X	X		X	X	
device.download_interactive_mode										
device.epl_legacy_modea	X	X		X	X	X		X		
device.feature.802_11aca	X	X		X	X	X		X		
device.feature.bluetooth_lea	X	X		X	X	X		X		
device.feature.head_element_testa	X	X		X	X	X		X		
device.feature.lighted_arrowsa	X	X		X	X	X		X		
device.feature.mcr	X	X		X	X	X		X	X	
device.feature.nfc	X	X		X	X	X		X	X	
device.feature.ribbon_cartridge	X	X		X	X	X		X	X	
device.friendly_name	X	X	X	X	X	X	X	X	X	
device.frontpanel.key_press		X			X	X			X	
device.frontpanel.line1		X	X			X			X	
device.frontpanel.line2		X	X			X			X	

Command Name	Mobile									
	iM220/ iM320	QR400	QLn220/ QLn320/ QLn420	ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668
device.frontpanel.xml		X	X			X	X			X
device.host_identification	X		X		X	X	X		X	X
device.host_status	X		X		X	X	X		X	X
device.idle_display_format			X			X	X			X
device.idle_display_value			X			X	X			X
device.internal_wired_setting_location			X				X			X
device.job_log.total_jobs	X		X		X	X	X		X	X
device.jobs_printa	X	X	X	X	X	X	X	X	X	
device.languages	X	X	X	X	X	X	X	X	X	X
device.light.cover_open_brightness										
device.light.head_open_brightness										
device.light.media_path_brightness										
device.light.ribbon_path_brightness										
device.locked										
device.ltu_installed	X		X		X	X	X		X	X
device.pause	X		X		X	X	X		X	X
device.pmcu.revisiona						X	X			
device.pnp_option	X	X	X		X	X	X		X	X
device.position.accuracy	X		X		X	X	X		X	X
device.position.altitude	X		X		X	X	X		X	X
device.position.latitude	X		X		X	X	X		X	X
device.position.longitude	X		X		X	X	X		X	X
device.print_2key	X		X		X	X	X		X	X
device.print_reprogram_2key	X		X		X	X	X		X	X
device.printhead.odometer										
device.printhead.resolution	X		X		X	X	X		X	X
device.printhead.test.summary										
device.product_name_submodel	X		X		X	X	X		X	X
device.reset	X		X	X	X	X	X	X	X	X
device.restore_defaults	X		X	X	X	X	X	X	X	X
device.rewinder_installed	X		X		X	X	X		X	X
device.save_2key	X		X	X	X	X	X	X	X	X

Command Name	Mobile								
	iM220/ iM320	R400/ QLn320/ QLn420	Q1220/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668
device.sensor_profile	X	X		X	X	X		X	X
device.sensor_selecta						X			
device.serial_numbers.applicator_option_board									
device.serial_numbers.applicator_option_board_date									
device.serial_numbers.control_panel_datea	X	X		X	X	X		X	
device.serial_numbers.cuttera	X	X		X	X	X		X	
device.serial_numbers.cutter_datea	X	X		X	X	X		X	
device.serial_numbers.mlb_date	X	X		X	X	X		X	
device.serial_numbers.option_board	X	X		X	X	X		X	X
device.serial_numbers.option_board_datea	X	X		X	X	X		X	
device.serial_numbers.parallel_option_board									
device.serial_numbers.parallel_option_board_date									
device.serial_numbers.printhead									
device.serial_numbers.printhead_date									
device.serial_numbers.usb_host_option_board									
device.serial_numbers.usb_host_option_board_date									
device.serial_numbers.wired_ethernet_option_board									
device.serial_numbers.wired_ethernet_option_board_date									
device.set_clock_to_build_datea	X	X				X			
device.slot_1									
device.slot_2									
device.super_host_statusa	X			X		X		X	
device.syslog.clear_log	X	X		X	X	X		X	X
device.syslog.configuration	X	X		X	X	X		X	X
device.syslog.enable	X	X		X	X	X		X	X
device.syslog.entriresa	X	X		X	X	X		X	
device.syslog.log_max_file_size	X	X		X	X	X		X	X
device.syslog.save_local_file	X	X		X	X	X		X	X
device.unique_id	X	X	X	X	X	X		X	X
device.unpause	X	X		X	X	X		X	X
device.uptime	X	X	X	X	X	X	X	X	X
device.user_p1	X	X	X	X	X	X	X	X	X

Command Name	Mobile									
	iM220/ iM320	XR400	QLn220/ QLn320/ QLn420	ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668
device.user_p2	X	X	X	X	X	X	X	X	X	X
device.user_vars.create	X		X		X	X	X		X	X
device.user_vars.set_range	X		X		X	X	X		X	X
device.xml.enable	X	X	X		X	X	X		X	X
display.backlight			X			X	X			X
display.backlight_on_time			X			X	X			X
display.batch_counters			X			X	X			
display.bluetooth.mac				X				X		
display.language			X	X		X	X	X		X
display.load_cards			X				X			
display.password.level			X				X			
display.root_wml			X				X			X
display.text		X	X			X	X			X
external_wired.check		X								
external_wired.ip.addr		X								
external_wired.ip.arp_interval		X								
external_wired.ip.default_addr_enable		X								
external_wired.ip.gateway		X								
external_wired.ip.netmask		X								
external_wired.ip.port		X								
external_wired.ip.protocol		X								
external_wired.ip.timeout.enable		X								
external_wired.ip.timeout.value		X								
external_wired.ip.v6.addr										
external_wired.ip.v6.gateway										
external_wired.ip.v6.prefix_length										
external_wired.mac_addr		X								
external_wired.mac_raw		X								
ezpl.head_close_action	X		X	X	X	X	X	X	X	X
ezpl.label_length_max	X		X		X	X	X		X	X
ezpl.label_sensor	X		X		X	X	X		X	X
ezpl.manual_calibration	X		X		X	X	X		X	X

Command Name	Mobile								
	iM220/ iM320	QR400/ QLn320/ QLn420	ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR138/ ZR328/ ZR338	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668
ezpl.media_type	X	X		X	X	X		X	X
ezpl.power_up_action	X	X	X	X	X	X	X	X	X
ezpl.print_method	X	X		X	X	X		X	X
ezpl.print_width	X	X		X	X	X		X	X
ezpl.reprint_mode	X	X		X	X	X		X	X
ezpl.restore_defaults	X	X		X	X	X		X	X
ezpl.take_label	X	X		X	X	X		X	X
ezpl.take_label_calibration									
ezpl.tear_off	X	X		X	X	X		X	X
file.capture_response.destinationa	X	X		X	X	X		X	
file.capture_response.enda	X	X		X	X	X		X	
file.cert.expiration				X	X	X			
file.cert.supported_curvesa				X	X	X		X	
file.delete	X	X	X	X	X	X	X	X	X
file.dir	X	X	X	X	X	X	X	X	X
file.dir_format	X	X		X	X	X		X	X
file.run	X	X	X	X	X	X	X	X	X
file.type	X	X	X	X	X	X	X	X	X
formats.cancel_all	X	X		X	X	X		X	X
head.authenticated									
head.darkness_switch									
head.darkness_switch_enable									
head.element_test					X	X			X
head.latch	X	X	X	X	X	X	X	X	X
head.resolution.in_dpia	X	X		X	X	X		X	
input.capture	X	X	X	X	X	X	X	X	X
interface.network.active.arp_interval	X	X		X	X	X		X	X
interface.network.active.cable_type	X	X		X	X	X		X	X
interface.network.active.dhcp_received_host_name	X	X		X	X	X		X	X
interface.network.active.gateway	X	X	X	X	X	X		X	X
interface.network.active.ip_addr	X	X	X	X	X	X		X	X
interface.network.active.mac_addr	X	X	X	X	X	X		X	X

Command Name	Mobile									
	iM220/ iM320	QR40	QLn220/ QLn320/ QLn420	ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668
interface.network.active.mac_raw	X	X	X		X	X	X		X	X
interface.network.active.netmask	X	X	X		X	X	X		X	X
interface.network.active.printserver	X	X	X		X	X	X		X	X
interface.network.active.protocol	X	X	X		X	X	X		X	X
interface.network.active.protocol_error	X		X		X	X	X		X	X
interface.network.active.rx_errors	X		X		X	X	X		X	X
interface.network.active.rx_packets	X		X		X	X	X		X	X
interface.network.active.server_address	X		X		X	X	X		X	X
interface.network.active.speed	X		X		X	X	X		X	X
interface.network.active.tx_errors	X		X		X	X	X		X	X
interface.network.active.tx_packets	X		X		X	X	X		X	X
interface.network.active.wins_addr	X		X		X	X	X		X	X
interface.network.settings_require_reset	X		X		X	X	X		X	X
internal_wired.8021x.passworda			X				X			
internal_wired.8021x.peap.anonymous_identitya			X				X			
internal_wired.8021x.peap.validate_server_certificatea			X				X			
internal_wired.8021x.securitya			X				X			
internal_wired.8021x.ttls.tunnela			X				X			
internal_wired.8021x.usernamea			X				X			
internal_wired.activity_led			X				X			X
internal_wired.auto_switchover	X	X	X		X	X	X		X	X
internal_wired.enablea			X				X			
internal_wired.installed	X		X		X	X	X		X	X
internal_wired.ip.addr	X	X	X		X	X	X		X	X
internal_wired.ip.arp_interval	X	X	X		X	X	X		X	X
internal_wired.ip.default_addr_enable	X	X	X		X	X	X		X	X
internal_wired.ip.dhcp.arp_verify	X		X		X	X	X		X	X
internal_wired.ip.dhcp.cache_ip	X	X	X		X	X	X		X	X
internal_wired.ip.dhcp.cid_all		X	X				X			X
internal_wired.ip.dhcp.cid_enable	X	X	X		X	X	X		X	X
internal_wired.ip.dhcp.cid_prefix		X	X				X			X
internal_wired.ip.dhcp.cid_suffix		X	X				X			X

Command Name	Mobile									
	iM220/ iM320	XR400	QLn220/ QLn320/ QLn420	ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668
internal_wired.ip.dhcp.cid_type	X	X	X		X	X	X		X	X
internal_wired.ip.dhcp.lease.last_attempt	X	X	X		X	X	X		X	X
internal_wired.ip.dhcp.lease.length	X	X	X		X	X	X		X	X
internal_wired.ip.dhcp.lease.server	X	X	X		X	X	X		X	X
internal_wired.ip.dhcp.lease.time_left	X	X	X		X	X	X		X	X
internal_wired.ip.dhcp.option12	X	X	X		X	X	X		X	X
internal_wired.ip.dhcp.option12_format	X	X	X		X	X	X		X	X
internal_wired.ip.dhcp.option12_value		X	X				X			X
internal_wired.ip.dhcp.requests_per_session	X	X	X		X	X	X		X	X
internal_wired.ip.dns.servers			X				X			X
internal_wired.ip.gateway	X	X	X		X	X	X		X	X
internal_wired.ip.netmask	X	X	X		X	X	X		X	X
internal_wired.ip.port	X	X	X		X	X	X		X	X
internal_wired.ip.port_alternate	X		X		X	X	X		X	X
internal_wired.ip.port_json_config			X				X			X
internal_wired.ip.protocol	X	X	X		X	X	X		X	X
internal_wired.ip.timeout.enable	X	X	X		X	X	X		X	X
internal_wired.ip.timeout.value	X	X	X		X	X	X		X	X
internal_wired.ip.wins.addr	X	X	X		X	X	X		X	X
internal_wired.ip.wins.permanent_source	X	X	X		X	X	X		X	X
ip.active_network	X	X	X		X	X	X		X	X
ip.addr	X		X		X	X	X		X	X
ip.arp_interval	X		X		X	X	X		X	X
ip.bootp.enable	X		X		X	X	X		X	X
ip.dhcp.arp_verify	X		X		X	X	X		X	X
ip.dhcp.auto_provision_enable	X		X		X	X	X		X	X
ip.dhcp.cache_ip	X		X		X	X	X		X	X
ip.dhcp.cid_all	X		X		X	X	X		X	X
ip.dhcp.cid_enable	X		X		X	X	X		X	X
ip.dhcp.cid_prefix	X		X		X	X	X		X	X
ip.dhcp.cid_suffix	X		X		X	X	X		X	X
ip.dhcp.cid_type	X		X		X	X	X		X	X

Command Name	Mobile								
	iM220/ iM320	NR40/ NR50	QLn220/ QLn320/ QLn420	ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668
ip.dhcp.cid_value	X		X		X	X	X	X	X
ip.dhcp.enable	X		X		X	X	X	X	X
ip.dhcp.lease.last_attempt	X		X		X	X	X	X	X
ip.dhcp.lease.server	X		X		X	X	X	X	X
ip.dhcp.lease.time_left	X		X		X	X	X	X	X
ip.dhcp.ntp.enable	X		X		X	X	X	X	X
ip.dhcp.ntp.received_servers	X		X		X	X	X	X	X
ip.dhcp.option12	X		X		X	X	X	X	X
ip.dhcp.option12_format	X		X		X	X	X	X	X
ip.dhcp.option12_value	X		X		X	X	X	X	X
ip.dhcp.request_timeout	X		X		X	X	X	X	X
ip.dhcp.requests_per_session	X		X		X	X	X	X	X
ip.dhcp.session_interval	X		X		X	X	X	X	X
ip.dhcp.user_class_id	X		X		X	X	X	X	X
ip.dhcp.vendor_class_id	X		X		X	X	X	X	X
ip.dns.servers	X	X	X		X	X	X	X	X
ip.firewall.whitelist_ina	X		X		X	X	X		
ip.ftp.enable	X	X	X		X	X	X	X	X
ip.ftp.execute_file	X	X	X		X	X	X	X	X
ip.ftp.request_password	X		X		X	X	X	X	X
ip.gateway	X		X		X	X	X	X	X
ip.http.admin_name	X		X		X	X	X	X	X
ip.http.admin_password	X		X		X	X	X	X	X
ip.http.custom_link_name	X		X		X	X	X	X	X
ip.http.custom_link_url	X		X		X	X	X	X	X
ip.http.enable	X	X	X		X	X	X	X	X
ip.http.faq_url	X		X		X	X	X	X	X
ip.http.port	X		X		X	X	X	X	X
ip.https.enable	X		X		X	X	X		
ip.https.port	X		X		X	X	X		
ip.lpd.enable	X	X	X		X	X	X	X	X
ip.mirror.appl_path	X		X		X	X	X	X	X

Command Name	Mobile									
	iM220/ iM320	NR400	QLn220/ QLn320/ QLn420	ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668
ip.mirror.auto	X	X	X		X	X	X		X	X
ip.mirror.error_retry	X	X	X		X	X	X		X	X
ip.mirror.feedback.auto	X	X	X		X	X	X		X	X
ip.mirror.feedback.freq	X	X	X		X	X	X		X	X
ip.mirror.feedback.odometer	X	X	X		X	X	X		X	X
ip.mirror.feedback.path	X	X	X		X	X	X		X	X
ip.mirror.fetch	X		X		X	X	X		X	X
ip.mirror.freq	X	X	X		X	X	X		X	X
ip.mirror.freq_hours	X	X	X		X	X	X		X	X
ip.mirror.interface	X		X		X	X	X		X	X
ip.mirror.last_error	X	X	X		X	X	X		X	X
ip.mirror.last_time	X	X	X		X	X	X		X	X
ip.mirror.mode	X		X		X	X	X		X	X
ip.mirror.password	X		X		X	X	X		X	X
ip.mirror.path	X	X	X		X	X	X		X	X
ip.mirror.reset_delay	X		X		X	X	X		X	X
ip.mirror.server	X	X	X		X	X	X		X	X
ip.mirror.success	X	X	X		X	X	X		X	X
ip.mirror.success_time	X	X	X		X	X	X		X	X
ip.mirror.username	X	X	X		X	X	X		X	X
ip.mirror.version	X	X	X		X	X	X		X	X
ip.netmask	X		X		X	X	X		X	X
ip.ntp.enable	X		X		X	X	X		X	X
ip.ntp.log	X		X		X	X	X		X	X
ip.ntp.servers	X		X		X	X	X		X	X
ip.ping_gateway_interval	X		X		X	X	X		X	X
ip.ping_remote	X		X		X	X	X		X	X
ip.pop3.enable	X	X	X		X	X	X		X	X
ip.pop3.password	X		X		X	X	X		X	X
ip.pop3.poll	X	X	X		X	X	X		X	X
ip.pop3.print_body	X		X		X	X	X		X	X
ip.pop3.print_headers	X		X		X	X	X		X	X

Command Name	Mobile								
	iM220/ iM320	NR40/ QLn220/ QLn320/ QLn420	ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668
ip.pop3.save_attachments	X	X		X	X	X		X	X
ip.pop3.server_addr	X	X	X	X	X	X		X	X
ip.pop3.username	X	X	X	X	X	X		X	X
ip.pop3.verbose_headers	X	X		X	X	X		X	X
ip.port	X	X		X	X	X		X	X
ip.port_alternate	X	X		X	X	X		X	X
ip.port_json_config	X	X		X	X	X		X	X
ip.port_single_conn	X	X		X	X	X		X	X
ip.port_single_conn_idle_timeout	X	X		X	X	X		X	X
ip.primary_network	X	X	X	X	X	X		X	X
ip.smtp.domain	X	X	X	X	X	X		X	X
ip.smtp.enable	X	X	X	X	X	X		X	X
ip.smtp.server_addr	X	X	X	X	X	X		X	X
ip.snmp.enable	X	X	X	X	X	X		X	X
ip.snmp.get_community_name	X	X		X	X	X		X	X
ip.snmp.set_community_name	X	X		X	X	X		X	X
ip.snmp.trap_community_name	X	X		X	X	X		X	X
ip.tcp.enable	X	X	X	X	X	X		X	X
ip.tcp.nagle_algorithm	X	X		X	X	X		X	X
ip.telnet.enable	X	X	X	X	X	X		X	X
ip.tls.enable	X	X		X	X	X			
ip.tls.port	X	X		X	X	X			
ip.tls.port_json_config	X	X		X	X	X			
ip.udp.enable	X	X	X	X	X	X		X	X
log.reboot.code	X	X	X	X	X	X	X	X	X
log.reboot.codes	X	X	X	X	X	X	X	X	X
log.reboot.reason	X	X	X	X	X	X	X	X	X
log.reboot.report	X	X	X	X	X	X	X	X	X
mcr.cancel					X				
mcr.crypt.algorithm					X				
mcr.crypt.enabled					X				
mcr.crypt.key_mgmt					X				

Command Name	Mobile									
	iMZ220/ iMZ320	R40/ QLn320/ QLn420	QLn220/ ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668	
mcr.out					X					
mcr.query					X					
mcr.revision					X					
media.bar_locationa	X	X	X	X	X	X	X	X		
media.cartridge.darkness										
media.cartridge.inserted										
media.cartridge.labels_remaining										
media.cartridge.length										
media.cartridge.part_number										
media.cartridge.serial_number										
media.cartridge.speed										
media.cartridge.total_label_cnt										
media.cartridge.width										
media.cut_now										
media.darkness_mode		X								
media.draft_modea	X	X		X	X	X		X		
media.dynamic_length_calibration										
media.extended_presentation										
media.feed_skip	X	X		X	X	X		X	X	
media.linerless_offset										
media.media_low.external		X								
media.media_low.warning		X								
media.part_numbera	X	X		X	X	X		X		
media.present.cut_amount		X								
media.present.cut_margin		X								
media.present.eject		X								
media.present.length_addition		X								
media.present.loop_length		X								
media.present.loop_length_max		X								
media.present.present_timeout		X								
media.present.present_type		X								
media.printmode	X	X	X		X	X	X	X	X	

Command Name	Mobile									
	iM220/ iM320	R40	QLn220/ QLn320/ QLn420	ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668
media.serial_numbera	X		X		X	X	X		X	
media.speed	X	X	X		X	X	X		X	X
memory.flash_free	X	X	X	X	X	X	X	X	X	X
memory.flash_size	X	X	X	X	X	X	X	X	X	X
memory.ram_free	X	X	X	X	X	X	X	X	X	X
memory.ram_size	X	X	X	X	X	X	X	X	X	X
memory.types		X								
netmanage.avalanche.agent_addr	X		X		X	X	X		X	X
netmanage.avalanche.available_agent	X		X		X	X	X		X	X
netmanage.avalanche.available_port	X		X		X	X	X		X	X
netmanage.avalanche.encryption_type	X		X		X	X	X		X	X
netmanage.avalanche.interval	X		X		X	X	X		X	X
netmanage.avalanche.interval_update	X		X		X	X	X		X	X
netmanage.avalanche.model_name	X		X		X	X	X		X	X
netmanage.avalanche.set_property	X		X		X	X	X		X	X
netmanage.avalanche.startup_update	X		X		X	X	X		X	X
netmanage.avalanche.tcp_connection_timeout	X		X		X	X	X		X	X
netmanage.avalanche.terminal_id	X		X		X	X	X		X	X
netmanage.avalanche.text_msg.beep	X		X		X	X	X		X	X
netmanage.avalanche.text_msg.display	X		X		X	X	X		X	X
netmanage.avalanche.text_msg.print	X		X		X	X	X		X	X
netmanage.avalanche.udp_timeout	X		X		X	X	X		X	X
netmanage.error_code	X	X	X		X	X	X		X	X
netmanage.state_code	X	X	X		X	X	X		X	X
netmanage.status_code	X	X	X		X	X	X		X	X
odometer.headclean	X		X		X	X	X		X	X
odometer.headnew	X		X		X	X	X		X	X
odometer.label_dot_length	X	X	X	X	X	X	X	X	X	X
odometer.latch_open_count	X		X	X	X	X	X	X	X	X
odometer.media_marker_count	X	X	X	X	X	X	X	X	X	X
odometer.media_marker_count1	X	X	X		X	X	X		X	X
odometer.media_marker_count2	X	X	X		X	X	X		X	X

Command Name	Mobile									
	iM220/ iM320	QR400/ QLn320/ QLn420	ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668	
odometer.retracts_count		X								
odometer.rfid.valid_resettable										
odometer.rfid.void_resettable										
odometer.total_cuts										
odometer.total_label_count	X		X	X	X	X	X	X	X	
odometer.total_print_length	X	X	X	X	X	X	X	X	X	
odometer.user_label_count	X		X	X	X	X	X	X	X	
odometer.user_label_count1	X		X		X	X	X	X	X	
odometer.user_label_count2	X		X		X	X	X	X	X	
odometer.user_total_cuts										
power.average_current	X		X		X	X	X	X	X	
power.battery_led_blink_ratea			X		X	X				
power.battery_led_enablea			X		X	X				
power.battery_led_off_durationa			X		X	X				
power.battery_led_on_durationa			X		X	X				
power.battery_replacement_cyclecount_thresholda			X		X	X				
power.battery_replacement_stateofcharge_thresholda			X		X	X				
power.battery_typea	X		X		X	X	X			
power.currenta					X		X	X		
power.cycle_count			X		X	X	X	X	X	
power.dtr_power_off	X		X		X	X	X	X	X	
power.energy_star.enable										
power.energy_star.timeout										
power.label_queue.shutdown	X		X		X	X	X	X	X	
power.part_numbera					X		X	X		
power.percent_healtha					X		X	X		
power.power_on_mode										
power.remaining_capacitya					X		X	X		
power.serial_number			X		X	X	X	X	X	
power.sleep.cradle						X	X		X	
power.temperaturea			X		X		X	X		
power.voltage	X		X	X	X	X	X	X	X	

Command Name	Mobile									
	iM220/ iM320	XR400	QLn220/ QLn320/ QLn420	ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668
power.wake.radio						X	X		X	X
print.legacy_compatibilitya							X			
print.tone	X	X	X	X	X	X	X	X	X	X
print.troubleshooting_label_printa							X			
rfid.adaptive_antenna										
rfid.antenna_sweep										
rfid.country_code										
rfid.enable										
rfid.error.response										
rfid.hop_table_version										
rfid.log.clear										
rfid.log.enabled										
rfid.log.entries										
rfid.position.program										
rfid.reader_1.antenna_port										
rfid.reader_1.firmware_version										
rfid.reader_1.hardware_version										
rfid.reader_1.model										
rfid.reader_1.power.read										
rfid.reader_1.power.write										
rfid.recipe_version										
rfid.region_code										
rfid.tag.calibrate										
rfid.tag.read.content										
rfid.tag.read.execute										
rfid.tag.read.result_line1										
rfid.tag.read.result_line1_alternate										
rfid.tag.read.result_line2										
rfid.tag.read.result_line2_alternate										
rfid.tag.result_line1										
rfid.tag.test.content										
rfid.tag.test.execute										

Command Name	Mobile									
	iM220/ iM320	QR400	QLn220/ QLn320/ QLn420	ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668
rfid.tag.test.result_line1										
rfid.tag.test.result_line2										
ribbon.cartridge.authenticated										
ribbon.cartridge.inserted										
ribbon.cartridge.length										
ribbon.cartridge.length_remaining										
ribbon.cartridge.part_number										
rtc.timezone	X		X		X	X	X		X	X
rtc.unix_timestamp										
sensor.back_bar.brightnessa	X		X			X	X			
sensor.back_bar.cura	X		X		X	X	X			
sensor.back_bar.gaina	X		X			X	X			
sensor.back_bar.offseta	X		X			X	X			
sensor.back_bar.ppr_out_tholda	X		X		X	X	X			
sensor.back_bar.tholda	X		X		X	X	X			
sensor.battery.in_voltsa	X		X			X	X			
sensor.cover_open										
sensor.front_bar.brightness	X									
sensor.front_bar.cur	X									
sensor.front_bar.gain	X									
sensor.front_bar.offset	X									
sensor.front_bar.ppr_out_thold	X									
sensor.front_bar.thold	X									
sensor.gap.brightnessa	X		X			X	X			
sensor.gap.cura	X		X		X	X	X			
sensor.gap.gaina	X		X				X			
sensor.gap.offseta	X		X			X	X			
sensor.gap.tholda	X		X		X	X	X			
sensor.head.tempa	X		X		X	X	X			
sensor.head.temp_avga	X		X		X	X	X			
sensor.head.temp_celsiusa	X		X		X	X	X			
sensor.peel.brightnessa	X		X			X	X			

Command Name	Mobile								
	iM220/ iM320	QR40/ QLn320/ QLn420	ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668
sensor.peel.cura	X	X		X	X	X			
sensor.peel.gaina	X	X			X	X			
sensor.peel.thold	X	X		X	X	X		X	X
sensor.peeler	X	X		X	X	X		X	X
sensor.width.cura	X	X		X	X	X		X	
sensor.width.in_dotsa	X	X		X	X	X		X	
test.enable									
test.newdemo									
testdemo.enable									
usb.device.device_id_string	X	X	X	X	X	X	X	X	X
usb.device.device_unique_id	X	X	X	X	X	X	X	X	X
usb.device.device_version	X	X	X	X	X	X	X	X	X
usb.device.manufacturer_string	X	X	X	X	X	X	X	X	X
usb.device.product_id	X	X	X	X	X	X	X	X	X
usb.device.product_string	X	X	X	X	X	X	X	X	X
usb.device.serial_string	X	X	X	X	X	X	X	X	X
usb.device.vendor_id	X	X	X	X	X	X	X	X	X
usb.halt	X	X						X	X
usb.host.config_info_to_usb									
usb.host.fn_field_data									
usb.host.fn_last_field									
usb.host.hid_count					X				
usb.host.keyboard_input									
usb.host.lock_out					X				
usb.host.mass_storage_count					X				
usb.host.read_list									
usb.host.read_list_print_delay									
usb.host.template_list									
usb.host.template_print_amount									
usb.host.write_list									
usb.mirror.appl_path					X				
usb.mirror.auto					X				

Command Name	Mobile									
	iMZ220/ iMZ320	QR400/ QLn320/ QLn420	QLn220/ ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668	
usb.mirror.enable					X					
usb.mirror.error_retry					X					
usb.mirror.feedback.auto					X					
usb.mirror.feedback.odometer					X					
usb.mirror.feedback.path					X					
usb.mirror.fetch					X					
usb.mirror.last_error					X					
usb.mirror.last_time					X					
usb.mirror.path					X					
usb.mirror.reset_delay					X					
usb.mirror.success					X					
usb.mirror.success_time					X					
weblink.cloud_connect.enable	X	X		X	X	X		X	X	
weblink.enable	X	X		X	X	X		X	X	
weblink.ip.conn1.authentication.add	X	X		X	X	X		X	X	
weblink.ip.conn1.authentication.entries	X	X		X	X	X		X	X	
weblink.ip.conn1.authentication.remove	X	X		X	X	X		X	X	
weblink.ip.conn1.location	X	X		X	X	X		X	X	
weblink.ip.conn1.maximum_simultaneous_connections	X	X		X	X	X		X	X	
weblink.ip.conn1.num_connections	X	X		X	X	X		X	X	
weblink.ip.conn1.proxy	X	X		X	X	X		X	X	
weblink.ip.conn1.retry_interval	X	X		X	X	X		X	X	
weblink.ip.conn1.retry_interval_random_max	X	X			X	X				
weblink.ip.conn1.test.location	X	X		X	X	X		X	X	
weblink.ip.conn1.test.retry_interval	X	X		X	X	X		X	X	
weblink.ip.conn1.test.test_on	X	X		X	X	X		X	X	
weblink.ip.conn2.authentication.add	X	X		X	X	X		X	X	
weblink.ip.conn2.authentication.entries	X	X		X	X	X		X	X	
weblink.ip.conn2.authentication.remove	X	X		X	X	X		X	X	
weblink.ip.conn2.location	X	X		X	X	X		X	X	
weblink.ip.conn2.maximum_simultaneous_connections	X	X		X	X	X		X	X	
weblink.ip.conn2.num_connections	X	X		X	X	X		X	X	

Command Name	Mobile									
	iM220/ iM320	R40	QLn220/ QLn320/ QLn420	ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610Z/ ZQ620/ ZQ630	ZR13	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668
weblink.ip.conn2.proxy	X		X		X	X	X		X	X
weblink.ip.conn2.retry_interval	X		X		X	X	X		X	X
weblink.ip.conn2.retry_interval_random_max	X		X			X	X			
weblink.ip.conn2.test.location	X		X		X	X	X		X	X
weblink.ip.conn2.test.retry_interval	X		X		X	X	X		X	X
weblink.ip.conn2.test.test_on	X		X		X	X	X		X	X
weblink.logging.clear	X		X		X	X	X		X	X
weblink.logging.entries	X		X		X	X	X		X	X
weblink.logging.max_entries	X		X		X	X	X		X	X
weblink.printer_reset_required	X		X		X	X	X		X	X
weblink.restore_defaults	X		X		X	X	X		X	X
weblink.zebra_connector.authentication.add	X		X		X	X	X		X	X
weblink.zebra_connector.authentication.entries	X		X		X	X	X		X	X
weblink.zebra_connector.authentication.remove	X		X		X	X	X		X	X
weblink.zebra_connector.enable	X		X		X	X	X		X	X
weblink.zebra_connector.proxy	X		X		X	X	X		X	X
weblink.zebra_connector.version	X		X		X	X	X		X	X
wlan.11ac.80mhz_enable							X			
wlan.11d.enable	X		X		X	X	X		X	X
wlan.11n.20mhz_only	X		X		X	X	X		X	X
wlan.11n.greenfield	X		X		X	X	X		X	X
wlan.11n.rifs	X		X		X	X	X		X	X
wlan.11n.short_gi_20mhz	X		X		X	X	X		X	X
wlan.11n.short_gi_40mhz	X		X		X	X	X		X	X
wlan.8021x.authentication	X	X	X		X	X	X		X	X
wlan.8021x.eap.password	X		X		X	X	X		X	X
wlan.8021x.eap.privkey_password	X		X		X	X	X		X	X
wlan.8021x.eap.username	X	X	X		X	X	X		X	X
wlan.8021x.enable	X	X	X		X	X	X		X	X
wlan.8021x.peap.anonymous_identity	X		X			X	X			
wlan.8021x.peap.peap_password	X		X		X	X	X		X	X
wlan.8021x.peap.peap_username	X	X	X		X	X	X		X	X

Command Name	Mobile								
	iM220/ iM320	NR40/ QLn320/ QLn420	QLn220/ QLn320/ QLn420	ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13/ ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668
wlan.8021x.peap.privkey_password	X		X		X	X	X		X
wlan.active_channels	X		X		X	X	X		X
wlan.adhoc_last_channel									
wlan.adhocautomode	X	X	X		X	X	X		X
wlan.adhocchannel	X	X	X		X	X	X		X
wlan.allowed_band	X		X		X	X	X		X
wlan.associated	X	X	X		X	X	X		X
wlan.auth_type	X	X	X		X	X			X
wlan.authenticated	X		X		X	X	X		X
wlan.authentication_error	X		X		X	X	X		X
wlan.available	X		X		X	X	X		X
wlan.band_preference			X		X	X	X		
wlan.bssid	X	X	X		X	X	X		X
wlan.channel	X	X	X		X	X	X		X
wlan.channel_mask	X		X		X	X	X		X
wlan.country_code	X		X		X	X	X		X
wlan.current_tx_rate	X	X	X		X	X	X		X
wlan.enable	X		X		X	X	X		X
wlan.encryption_index		X							X
wlan.encryption_key1									X
wlan.encryption_key2									X
wlan.encryption_key3									X
wlan.encryption_key4									X
wlan.encryption_mode		X							X
wlan.essid	X	X	X		X	X	X		X
wlan.firmware_version	X	X	X		X	X	X		X
wlan.ip.addr	X	X	X		X	X	X		X
wlan.ip.arp_interval	X	X	X		X	X	X		X
wlan.ip.default_addr_enable	X	X	X		X	X	X		X
wlan.ip.dhcp.arp_verify	X		X		X	X	X		X
wlan.ip.dhcp.cache_ip	X	X	X		X	X	X		X
wlan.ip.dhcp.cid_all	X		X		X	X	X		X

Command Name	Mobile									
	iM220/ iM320	NR400	QLn220/ QLn320/ QLn420	ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668
wlan.ip.dhcp.cid_enable	X	X	X		X	X	X		X	X
wlan.ip.dhcp.cid_prefix	X		X		X	X	X		X	X
wlan.ip.dhcp.cid_suffix	X		X		X	X	X		X	X
wlan.ip.dhcp.cid_type	X	X	X		X	X	X		X	X
wlan.ip.dhcp.lease.last_attempt	X	X	X		X	X	X		X	X
wlan.ip.dhcp.lease.length	X	X	X		X	X	X		X	X
wlan.ip.dhcp.lease.server	X	X	X		X	X	X		X	X
wlan.ip.dhcp.lease.time_left	X	X	X		X	X	X		X	X
wlan.ip.dhcp.option12	X	X	X		X	X	X		X	X
wlan.ip.dhcp.option12_format	X	X	X		X	X	X		X	X
wlan.ip.dhcp.option12_value	X		X		X	X	X		X	X
wlan.ip.dhcp.request_timeout	X	X	X		X	X	X		X	X
wlan.ip.dhcp.requests_per_session	X	X	X		X	X	X		X	X
wlan.ip.dhcp.session_interval	X	X	X		X	X	X		X	X
wlan.ip.dns.domain	X		X		X	X	X		X	X
wlan.ip.dns.servers	X		X		X	X	X		X	X
wlan.ip.gateway	X	X	X		X	X	X		X	X
wlan.ip.netmask	X	X	X		X	X	X		X	X
wlan.ip.port	X	X	X		X	X	X		X	X
wlan.ip.port_alternate	X		X		X	X	X		X	X
wlan.ip.port_json_config	X		X		X	X	X		X	X
wlan.ip.protocol	X	X	X		X	X	X		X	X
wlan.ip.timeout.enable	X	X	X		X	X	X		X	X
wlan.ip.timeout.value	X	X	X		X	X	X		X	X
wlan.ip.wins.addr	X	X	X		X	X	X		X	X
wlan.ip.wins.permanent_source	X	X	X		X	X	X		X	X
wlan.keep_alive.enable	X	X	X		X	X	X		X	X
wlan.keep_alive.timeout	X	X	X		X	X	X		X	X
wlan.kerberos.kdc		X								
wlan.kerberos.mode		X								
wlan.kerberos.password										
wlan.kerberos.realm		X								

Command Name	Mobile									
	iM220/ iM320	NR40	QLn220/ QLn320/ QLn420	ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668
wlan.kerberos.username		X								
wlan.leap_mode	X	X	X		X	X	X		X	X
wlan.leap_password	X		X		X	X	X		X	X
wlan.leap_username	X	X	X		X	X	X		X	X
wlan.mac_addr	X	X	X		X	X	X		X	X
wlan.mac_raw	X	X	X		X	X	X		X	X
wlan.operating_mode	X	X	X		X	X	X		X	X
wlan.password	X		X		X	X	X		X	X
wlan.permitted_channels	X		X		X	X	X		X	X
wlan.pmfa	X		X		X	X	X		X	
wlan.poor_signal_thresholda	X		X		X	X	X		X	
wlan.power_save	X		X		X	X	X		X	X
wlan.preamble	X	X	X		X	X	X		X	X
wlan.private_key_password	X		X		X	X	X		X	X
wlan.region_code	X		X		X	X	X		X	X
wlan.roam.interchannel_delay	X		X		X	X	X		X	X
wlan.roam.interval	X	X	X		X	X	X		X	X
wlan.roam.max_chan_scan_time	X		X		X	X	X		X	X
wlan.roam.max_fail	X		X		X	X	X		X	X
wlan.roam.monitor	X		X		X	X	X		X	X
wlan.roam.rssi	X		X		X	X	X		X	X
wlan.roam.signal	X	X	X		X	X	X		X	X
wlan.rts_cts_enabled	X		X		X	X	X		X	X
wlan.secure_ssid	X		X		X	X	X		X	X
wlan.security	X		X		X	X	X		X	X
wlan.signal_noise		X								
wlan.signal_quality		X								
wlan.signal_strength	X	X	X		X	X	X		X	X
wlan.station_name	X	X	X		X	X	X		X	X
wlan.tx_power		X								
wlan.tx_rate		X								
wlan.user_channel_list	X		X		X	X	X		X	X

Command Name	Mobile									
	iM220/ iM320	XR400	QLn220/ QLn320/ QLn420	ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668
wlan.username	X	X	X		X	X	X		X	X
wlan.wep.auth_typeb		X							X	X
wlan.wep.indexb		X							X	X
wlan.wep.key_formatb		X							X	X
wlan.wep.key1b									X	X
wlan.wep.key2b									X	X
wlan.wep.key3b									X	X
wlan.wep.key4 ^a									X	X
wlan.wpa.groupkey_ciphersuite	X		X		X	X	X		X	X
wlan.wpa.pairwise_ciphersuite	X		X		X	X	X		X	X
wlan.wpa.psk	X		X		X	X	X		X	X
wlan.wpa.timechecka	X		X		X	X	X		X	
wlan.wpa.wpa_version	X		X		X	X	X		X	X
zbi.control.add_breakpoint	X		X		X	X	X		X	X
zbi.control.break	X		X		X	X	X		X	X
zbi.control.clear_breakpoints	X		X		X	X	X		X	X
zbi.control.delete_breakpoint	X		X		X	X	X		X	X
zbi.control.line_number	X		X		X	X	X		X	X
zbi.control.restart	X		X		X	X	X		X	X
zbi.control.run	X		X		X	X	X		X	X
zbi.control.step	X		X		X	X	X		X	X
zbi.control.terminate	X		X		X	X	X		X	X
zbi.control.variable_name	X		X		X	X	X		X	X
zbi.control.variable_value	X		X		X	X	X		X	X
zbi.enablea	X		X		X	X	X			
zbi.key	X	X	X		X	X	X		X	X
zbi.last_error	X		X		X	X	X		X	X
zbi.program_list	X		X		X	X	X		X	X
zbi.reseller_key	X		X		X	X	X		X	X
zbi.revision	X	X	X		X	X	X		X	X
zbi.running_program_name	X		X		X	X	X		X	X
zbi.start_info.execute	X		X		X	X	X		X	X

Command Name	Mobile									
	iMZ220/ iMZ320	XR400	QLn220/ QLn320/ QLn420	ZQ112/ ZQ120/ ZQ220	ZQ310/ ZQ320	ZQ510/ ZQ520	ZQ610/ ZQ620/ ZQ630	ZR13	ZR318/ ZR328/ ZR338	ZR628/ ZR638/ ZR658/ ZR668
zbi.start_info.file_name	X		X		X	X	X		X	X
zbi.start_info.memory_alloc	X		X		X	X	X		X	X
zbi.state	X	X	X		X	X	X		X	X
zpl.calibrate	X		X		X	X	X		X	X
zpl.command_prefix	X		X		X	X	X		X	X
zpl.format_prefix	X		X		X	X	X		X	X
zpl.label_length	X	X	X		X	X	X		X	X
zpl.label_orientation					X	X	X			
zpl.left_position	X		X		X	X	X		X	X
zpl.relative_darknessa	X		X		X	X	X		X	
zpl.system_error	X		X		X	X	X		X	X
zpl.system_status	X		X		X	X	X		X	X
zpl.zpl_mode	X		X		X	X	X		X	X
zpl.zpl_override										
An X indicates that the SGD is supported for the particular device. This table indicates support based on the most recent Link-OS system release.										

Mirror

This section provides an overview of Mirror, details on how to use it, and configuration examples.

Mirror Overview

Mirror is a feature that gives you the ability to:

- Centrally manage and monitor the deployment of your Zebra printers
- Centrally configure and maintain your Zebra printers through remote updates
- Remotely monitor printer updates - via the "Feedback" feature

There are several Set/Get/Do (SGD) commands that are used to configure and initiate Mirror. For details see, [Mirror Printer Configuration](#).

Benefits

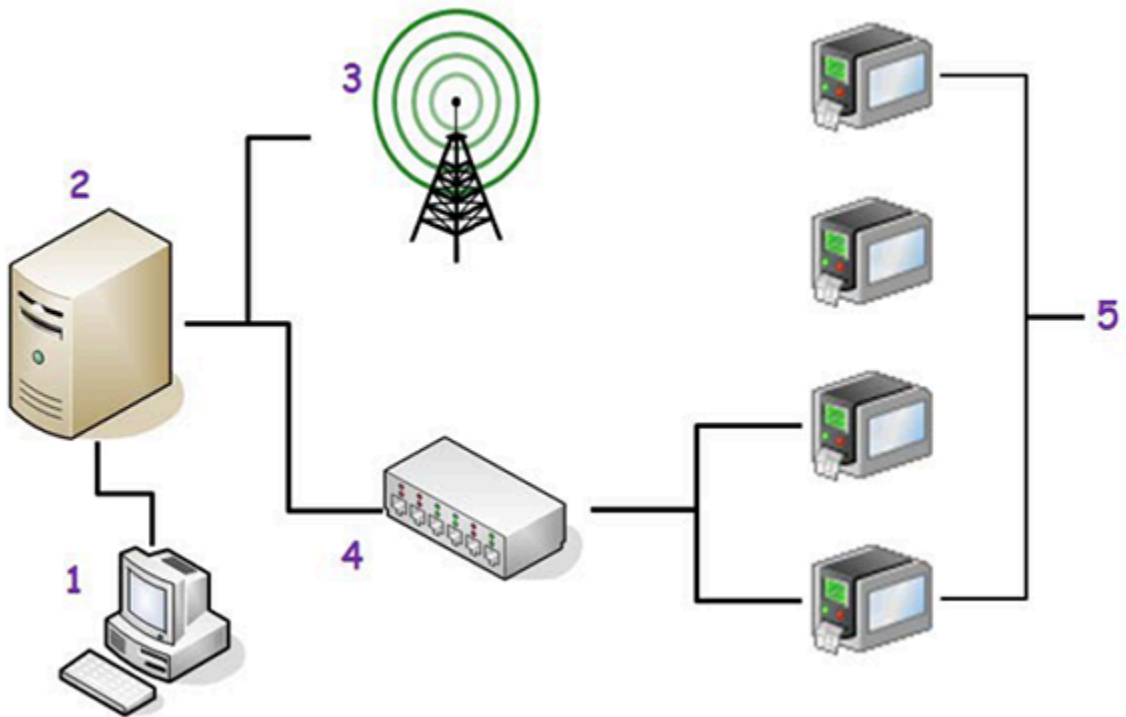
When using Mirror, updating the configuration and firmware on the printer is remotely managed from a centralized FTP server. Configurations can be uniformly deployed to individual printers or to groups of printers. Unique Configurations can also be targeted to printers as needed.

Through the "Feedback" feature, Administrators can easily log and monitor configuration updates on a printer-by-printer basis.

Typical uses of Mirror include:

- configuring printers as they are first received
- performing scheduled maintenance updates, sending firmware, fonts, graphics and other objects to the printer as needed
- changing printer Configurations in order to move printers from one role to another

This figure provides an illustration of Mirroring.

Figure 29 Mirror Illustration

1	Workstation — sends SGD commands to the printer to configure it for Mirror use.
2	FTP Server — Stores configuration files and responds to Mirror requests from the printer. Receives and stores “Feedback” content.
3	Access Point — wireless network infrastructure
4	Hub — wired network infrastructure
5	Zebra Printer(s) — Configured using SGD commands. Sends Mirror requests to the FTP server to receive files. Transmits “Feedback” content to the FTP server to log Mirror event transactions and resulting printer settings.

Professional Services for Mirror Configuration

Zebra offers a Professional Services group that can help with the configuring the Mirror feature. To inquire about Zebra's Professional Services, contact your Zebra account representative.

Requirements

These are the requirements for Mirror:

- Zebra printer loaded with Mirror capable firmware and Print Server. For details, see [Mirror Printer Configuration](#).

- FTP server (with UNIX-style directory listings), configured with the following directories:
 - "`<update-root>/appl`" - This directory is used for printer firmware updates. During an update operation, the printer will first check the "`<update-root>/appl`" directory for new printer firmware
 - "`<update-root>/files`" - This directory is used for printer-resident files. Files in this directory will be stored locally on the printer's file system. Files are not processed by the printer; they are only stored.
 - "`<update-root>/commands`" - This directory is used for a limited number of printer executable commands. The contents of files in this directory will be sent to the printer's command interpreter for execution.
 - "`<feedback-root>`" - This optional directory is used to receive Mirror feedback content from the printer. The content sent to this directory is defined by the "`feedback.get`" template file stored on the printer.
- A client account (user name and password) on the FTP server for the printer to use.
- A Terminal Emulation program, used to send SGD commands to the printer to configure Mirror.

Supported Printers and Print Server Types

These are the Zebra printers, firmware versions, and Zebra print servers that support Mirror.

Table 40 Supported Printers and Print Server Types

Printer	Firmware	Print Servers
ZT400	V75.19.7Z (or later)	<ul style="list-style-type: none"> • ZebraNet a/b/g/n Print Server • Internal Wireless Plus • Wireless Plus
ZE500	V53.17.15Z (or later)	<ul style="list-style-type: none"> • ZebraNet a/b/g/n Print Server • Internal Wireless Plus • Wireless Plus
ZT200	V72.18.2Z (or later)	<ul style="list-style-type: none"> • ZebraNet a/b/g/n Print Server • Internal Wireless Plus • Wireless Plus
105SLPlus	V53.17.15Z (or later)	<ul style="list-style-type: none"> • ZebraNet b/g Print Server • Internal Wireless Plus • Wireless Plus
Xi4™ series	V53.17.5Z (or later)	<ul style="list-style-type: none"> • Internal, Integrated 10/100 IPV4 wired • Internal Wireless Plus
XIIIPlus™ series	V60.17.5Z (or later)	<ul style="list-style-type: none"> • Internal Wireless Plus • Wireless Plus
105SL™	V60.17.5Z (or later)	<ul style="list-style-type: none"> • Internal Wireless Plus • Wireless Plus
PAX4™	V60.17.5Z (or later)	<ul style="list-style-type: none"> • Internal Wireless Plus • Wireless Plus
ZM400™	V53.17.5Z (or later)	<ul style="list-style-type: none"> • Internal 10/100 wired\ • Internal Wireless Plus • Wireless Plus
ZM600™	V53.17.5Z (or later)	<ul style="list-style-type: none"> • Internal 10/100 wired\ • Internal Wireless Plus • Wireless Plus

Table 40 Supported Printers and Print Server Types (Continued)

Printer	Firmware	Print Servers
S4M™	V53.17.5Z (or later)	<ul style="list-style-type: none"> Internal Wireless Plus Wireless Plus
G™ -series	V56.17.5ZV61.17.5Z (or later)	<ul style="list-style-type: none"> Internal 10/100 wired\ Internal Wireless Plus Wireless Plus
LP 2824 Plus TLP 2824 Plus	V61.17.3Z (or later)	<ul style="list-style-type: none"> Internal 10/100 wired\ Internal Wireless Plus Wireless Plus



NOTE: Print Servers connected to the parallel port, either externally or internally, are not supported for Mirror use.

How Mirror Works

Mirror utilizes a network connection and FTP communications to perform remote updates and feedback operations. At printer startup and/or at regular intervals, the printer will establish a FTP connection back to a central FTP server and check for updates. During an update operation, the printer will check for updated files in specific directories at the FTP server.

These are the specific FTP server directories that will be checked:

- "`<update-root>/appl`" - This directory is used for printer firmware updates. During an update operation, the printer will first check the "`<update-root>/appl`" directory for new printer firmware
- "`<update-root>/files`" - This directory is used for printer-resident files. Files in this directory will be stored locally on the printer's file system. Files are not processed by the printer; they are only stored.
- "`<update-root>/commands`" - This directory is used for a limited number of printer executable commands. The contents of files in this directory will be sent to the printer's command interpreter for execution.
- "`<feedback-root>`" - This optional directory is used to receive Mirror feedback content from the printer. The content sent to this directory is defined by the "feedback.get" template file stored on the printer.



NOTE: "`<update-root>`" refers to the value of the "`ip.mirror.path`" configuration parameter. Files in the `<update-root>/files` directory should not have download headers in them. They should be in the exact format they will be in when stored on the printer's file system. Examples of download headers are: `~DY`, `~DG`, `! CISDFCRC16` or `~DF`.



IMPORTANT:

When the printer is in the Mirror process:

- It is unavailable for other tasks.
- The LCD will indicate that it is performing a Mirror function, showing when the printer is downloading firmware and the names of the object files as they are transferred to the printer.

Mirror Process Summary

The Mirror process follows a specific series of steps:

1. After power-up, the printer will first check the `<update-root>/appl` directory on the FTP server for new printer firmware and update the printer if necessary
2. If the printer did not find new firmware to download, it will then check in the `<update-root>/files` and `<update-root>/commands` directories for updated files - and download them as needed.
3. As a final Mirror step, the printer can perform an optional Feedback operation, transmitting a file of user-defined printer configuration information to `<feedback-root>` directory on the FTP server.
4. Finally, if any files or commands were downloaded during Step 2, the printer will automatically reset itself.

Mirror Process Details

The following items are important to be aware of when configuring the FTP server to support Firmware updated via Mirror.

- Firmware files must be named using the following format: `<firmware version>.zpl`, where `<firmware version>` is the exact Firmware revision contained in the file. For example, for Firmware version "V53.17.5Z", the filename stored on the FTP server must be "V53.17.5Z.ZPL". If the file name and Firmware version do not match, the update will not succeed.
- The firmware filename stored on the FTP server is not case sensitive. This means that "V53.17.5Z.ZPL" and "v53.17.5Z.zpl" will be processed in the exact same way.
- The `/appl` directory can contain only one (1) file at a time. If there is more than 1 file in this directory, the printer will not download anything and will skip the firmware update.

During a Mirror event, the printer will use `<firmware version>` part of the filename contained in the `/appl` directory on the FTP server to check if the Firmware stored on the FTP server is different than the firmware the printer is currently using. If the `<firmware version>` part of the Firmware file name in the `/appl` directory on the FTP server does not exactly match the printer's Firmware version, the file on the FTP server will be downloaded and used to update the printer. Once the printer is updated with the new Firmware, the printer will reset and being using the new Firmware.



NOTE: Performing the Firmware update first is important because it is possible that the files or commands to be downloaded via Mirror will be dependent on the new firmware.

After the printer has completed the Firmware portion of an update operation, it will check the "`<update-root>/files`" directory and "`<update-root>/commands`" directory (in that order) for updated files that need to be retrieved. If a file exists on the FTP server and the server timestamp for the file does not match the printer's archived timestamp for the file, the printer will re-download the file and update its timestamp info. Files that are on the Mirror FTP server but not currently present on the printer will be sent to the printer. The supported file types are the standard files supported on ZPL printers.

If any files are downloaded during this portion of an update operation, the printer will reboot after the file downloads have completed. At this point, the update operation is complete.



IMPORTANT:

- Files in the `<update-root>/files` directory should not have download headers in them. They should be in the exact format they will be in when stored on the printer's file system. Examples of download headers are: `~DY`, `~DG`, `! CISDFCRC16` or `~DF`.

- ZPL files in the `<update-root>/files` directory must use the printers internal characters for the Format Command Prefix (^), Delimiter Character (,) and Control Command Character (~). This means that the caret (^) should be replaced with a HEX 1E, the comma (,) should be replaced with a HEX 1F and the tilde (~) should be replaced with a HEX 10.

After an update operation is complete, a printer will perform a feedback operation, if configured to do so. During a feedback operation, the printer will open its feedback template file (named `feedback.get`), populate it based on its contents, and upload the resulting contents file to the FTP server, in the `"<feedback-root>"` directory.



NOTE: `"<feedback-root>"` refers to the value of the `"ip.mirror.feedback.path"` configuration parameter

Creating ZPL Files for Use in the `<update-root>/files` Directory

When creating ZPL formats that will be stored in the `"<update-root>/files"` directory it is necessary to edit the files using the following guidelines:

1. Files must contain only one format. This means that if a file contains multiple `^XA` and `^XZ` commands, those sections of the file must be split into separate formats, or combined as one format.
2. The characters used for the Format Command Prefix (^), Delimiter Character (,) and Control Command Characters (~) must be substituted for their Hexadecimal equivalents.
3. The `^XA` and `^XZ` commands must be removed from the formats.
4. The `^DF` command should be removed.

One Format per File

Files must contain only one format. This means that if a file contains multiple `^XA` and `^XZ` commands, those sections of the file must be split into separate formats, or combined as one format. For example, if a ZPL file contains both an initialization string and a format, the two sections must be either split into two files, or combined into one format.

For example, given the following formats:

```
^XA
^LT0^MNW^MTT^PON^PMN^LH0,0^JMA^PR2,2^LRN^CI0
^XZ
^XA
^FO20,100^IME:ZEBRA.BMP^FS
^A@N,75,75,TT0003M_.TTF
^FO20,400^FDZebra Technologies^FS
^XZ
```

The following file should be created, which includes all of the command in one file:

```
^XA
^LT0^MNW^MTT^PON^PMN^LH0,0^JMA^PR2,2^LRN^CI0
^FO20,100^IME:ZEBRA.BMP^FS
^A@N,75,75,TT0003M_.TTF
^FO20,400^FDZebra Technologies^FS
^XZ
```

Character Substitution

The characters used for the Format Command Prefix (^), Delimiter Character (,) and Control Command Characters (~) must be substituted for their Hexadecimal equivalents. During normal operation, this is how the printer works with ZPL formats. For example, when a ZPL format is sent to the printer via a telnet, RS-232 or Ethernet connection and stored for later use, it automatically processes the file and makes these character substitutions.

When ZPL formats are sent to the printer from the "<update-root>/files" directory they are stored on the printers memory, but not processed. For this reason, it is necessary to preprocess the files so that they are ready for use.

The following character substitutions must be made to files sent from the "<update-root>/files" directory:

Original Character	Substitute Character
Command PrefixThe default is the Caret (^)	HEX 1E
Delimiter PrefixThe default is the comma (,)	HEX 1F
Control PrefixThe default is the tilde (~)	HEX 10

For example, given the following format:

```
^XA
^FO20,100^IME:ZEBRA.BMP^FS
^A@N,75,75,TT0003M_.TTF
^FO20,400^FDZebra Technologies^FS^XZ
```

It would be necessary to replace the ^ characters with a HEX 1E and the , characters with a HEX 1F. This can be done using a Text Editor. See [Example Files](#) for more information.

Removing the ^XA and ^XZ commands

Additionally, the ^XA and ^XZ commands should be removed from the format. The printer will automatically add these commands back in to process the file. See [Example Files](#) for more information.

Removing the ^DF command

In some cases, you might have been using files that contain the ^DF command. The purpose of the ^DF command is to instruct the printer to store everything that comes after it in a ZPL file. For example, you might have a file that contains the following:

```
^XA
^DFE:STOREFMT.ZPL^FS
^FO25,25^AD,36,20^FN1^FS
^FO165,25^AD,36,20^FN2^FS
^FO25,75^AB,22,14^FDBUILT BY^FS
^FO25,125^AE,28,15^FN1
^XZ
```

The purpose of the above format - when sent to a printer - would be to store a file called "STOREFMT" to the E memory location on the printer. In production, the goal would be to recall and print the "STOREFMT" file using the following ZPL commands:

```

^XA
^XFE:STOREFMT.ZPL^FS
^FN1^FDZEBRA^FS
^FN2^FDPRINTER^FS
^XZ

```

When this is done using Mirror, the format being sent to the printer must be altered. The line with the ^DF command must be removed - this is because the Mirror process is taking care of storing the format to the E memory location. In this scenario, the original format would be edited to look like this:

```

^FO25,25^AD,36,20^FN1^FS
^FO165,25^AD,36,20^FN2^FS
^FO25,75^AB,22,14^FDBUILT BY^FS
^FO25,125^AE,28,15^FN1

```

The character substitution described above must also be done on the file before it is stored in the "<update-root>/files" directory.

The "recall" format - using the ^XFE:STOREFMT.ZPL command - does not need to be altered or edited. It can be used as it was previously.

Example Files

Example of files that have already been altered in the manner described above are available as "Mirror File Examples" at www.zebra.com.

To see an example file, right-click the paper-clip icon and select **Open File** or **Save Embedded File to Disk**.

File Naming Recommendations

Provides information on file naming recommendations

- Files in the "<update-root>/files" directory and "<update-root>/commands" directory should not have the same name.
- Files in the "<update-root>/files" should not contain multiple label formats. If you need to Mirror multiple formats, the recommended method is to split the formats into separate files.

Command Use Recommendations

Files in the <update-root>/commands directory should use only SGD commands or the following ZPL commands.

- ~CC
- ~CD
- ~CT
- ~JA
- ~JL
- ~JS
- ~JX
- ~RO

Do not add `adevice.resetSGD` command to the end of a file in the `<update-root>/commands` directory. Mirror will reset itself automatically after performing an update, so there is no need for this command.

Configuration

This section provides detail on the configuring the printer and FTP server for Mirror.

Mirror FTP Server Configuration

For a Zebra printer to successfully use Mirror, the Mirror FTP server must have the following:

For a Zebra printer to successfully use Mirror, the Mirror FTP server must have the following:

- A client account (user name and password) for the printer to use
- A root (base) directory for Mirror updates. This root directory must have the following subdirectories:

```
/appl
```

```
/files
```

```
/commands
```

- A Mirror feedback folder (optional)



IMPORTANT: The printer's FTP user account must have the necessary permissions to read/write files in the update and feedback root directories. The `/appl`, `/files`, and `/commands` subdirectories are read only; the Mirror feedback folder is read/write. If these permissions are not properly set, the Mirror update and feedback processes will be unsuccessful.

Mirror Printer Configuration

The following SGD commands are used to configure Mirror on the printer.

- `ip.mirror.auto`
- `ip.mirror.error_retry`
- `ip.mirror.feedback.auto`
- `ip.mirror.feedback.freq`
- `ip.mirror.feedback.odometer`
- `ip.mirror.feedback.path`
- `ip.mirror.fetch`
- `ip.mirror.freq`
- `ip.mirror.freq_hours`
- `ip.mirror.last_error`
- `ip.mirror.last_time`

- [ip.mirror.password](#)
- [ip.mirror.path](#)
- [ip.mirror.reset_delay](#)
- [ip.mirror.server](#)
- [ip.mirror.success](#)
- [ip.mirror.success_time](#) on page 1286
- [ip.mirror.username](#)
- [ip.mirror.version](#)

The Feedback.get File

The Feedback feature is one of the key benefits of the Mirror process. During a Mirror operation, the printer can upload a file to the FTP Server that contains information about the configuration of the printer. This information can then be leveraged by the Administrator to monitor the printer's setup. Using the Feedback feature is optional.

The "feedback.get" file is a template file stored on the printer. It controls what content is uploaded to the "<feedback-root>" directory on the FTP server. The directory on the FTP server where the printer will send Feedback content to is controlled by the "ip.mirror.feedback.path" command.

Within the feedback.get file it is possible to leverage SGD commands to insert current printer status and configuration strings into the file. This feature can help make the Feedback file on the FTP server more unique and useful to the Administrator.

Additionally, the first line of the feedback.get file is used to control the name of the file that will be uploaded and stored on the FTP server.

For example, if first line of the "feedback.get" file was:

```
"zebra.<wlan.mac_raw>.<ip.mirror.feedback.odometer>"
```

That line would be evaluated by the printer and used as the Feedback destination file name to create on the FTP server.

Using the example above, if the MAC address of the wireless print server was "00a0f8ae56d7" and the Feedback odometer was currently at "33", the Feedback file created the FTP server would be named:

```
"zebra.00a0f8ae56d7.33.txt"
```

The "feedback.get" file can be sent to the printer using the !CISDFCRC16 command. For additional information, see [CISDFCRC16 Download Files](#) on page 648.



NOTE: The first line of the feedback.get file is not included when the Feedback data is written to FTP server.

Example Feedback.get file

Here is an example of a "feedback.get" file and its resulting uploaded file:

```
zebra.<wlan.mac_raw>.<ip.mirror.feedback.odometer>
```

```

Application Name = <appl.name>
Serial Number = <device.friendly_name>

Mirror Success = <ip.mirror.success>
Mirror Auto = <ip.mirror.auto>
Mirror Path = <ip.mirror.path>
Mirror Last Update = <ip.mirror.success_time>

Bootp Enable = <ip.bootp.enable>
DHCP Enable = <ip.dhcp.enable>
Data Port = <ip.port>
Associated AP = <wlan.bssid>
RF ESSID = <wlan.essid>
RF Firmware = <wlan.firmware_version>
RF Signal Strength = <wlan.signal_strength>
RF Channel Mask = <wlan.channel_mask>

Label Length = <odometer.total_print_length>
Print Length = <odometer.label_dot_length>
When this file is processed by the printer and uploaded to the FTP server,
  the resulting upload file on the FTP server would contain data similar to
  this:
Application Name = V53.17.2Z
Serial Number = ZBR123456

Mirror Success = Yes
Mirror Auto = on
Mirror Path = /update-root/ZM400/
Mirror Last Update = 12345678

Bootp Enable = on
DHCP Enable = on
Data Port = 9100
Associated AP = 124
RF ESSID = MyEssid
RF Firmware = 5.2.1
RF Signal Strength = 98
RF Channel Mask = FF

Label Length = 100
Print Length = 200

```

How to Set Up and Use Mirror

This section provides multiple scenarios which include specific examples that demonstrate how to set up and use Mirror.

Scenario One

In this scenario, the printer is configured to perform a Mirror update operation ("ip.mirror.auto = on") and feedback operation ("ip.mirror.feedback.auto = on") every time the printer restarts.

On startup, after a network connection has been established, the printer will attempt to make a FTP connection to the server address 10.14.5.133, using the “user name” and “password” of the printer.

If the connection is successful, the printer will attempt to perform an update operation using the root directory `"/all_printers/s4m/role1"`. After the update operation is complete, the printer will attempt a Feedback operation, uploading the resulting Feedback file to the `"/all_feedback"` directory on the server.

Using the command set in the example below, the printer will not attempt any periodic Mirror Update or Feedback operations. It will only perform Mirror operations on startup or when explicitly instructed to using the `"ip.mirror.fetch"` command.



NOTE: If a file starts with `"/"` it signifies the base directory of that file system. If a file is contained in the user's account, they do not start with a `"/"`.

This example shows a Mirror configuration command set. Each line item of the command set is identified with a number. For details on each line item, see the table below.

```
10 ! U1 SETVAR "ip.mirror.auto" "on"
20 ! U1 SETVAR "ip.mirror.username" "printer"
30 ! U1 SETVAR "ip.mirror.password" "printer"
40 ! U1 SETVAR "ip.mirror.server" "10.14.5.133"
50 ! U1 SETVAR "ip.mirror.path" "/all_printers/s4m/role1"
60 ! U1 SETVAR "ip.mirror.feedback.auto" "on"
70 ! U1 SETVAR "ip.mirror.feedback.path" "/all_feedback"
80 ! U1 SETVAR "ip.mirror.feedback.freq" "0"
```

10	Configures the printer to perform a Mirror Update operation at power-up.
20	Configures the FTP Server "user name" for the printer to use
30	Configures the FTP Server "password" for the printer to use
40	Configures the FTP server address the printer should make a FTP connection to.
50	If the FTP connection is successful, the printer should attempt to perform an Update operation using this root directory.
60	Configures a printer to automatically perform a Mirror Feedback operation at start-up.
70	Configures the printer to upload the resulting Feedback file to the designated directory on the server.
80	Configures a printer to repeat the Feedback operation zero times.

Scenario Two

In this scenario, the printer is configured to not perform a Mirror Update function at start-up. It is configured to perform a Mirror Feedback operation at start-up and thereafter at every 60 minutes.

When the 60 minutes elapses, the printer will attempt to make a FTP connection to the server address 10.14.5.133. If the FTP connection is successful, the printer will attempt a Feedback operation, uploading the resulting Feedback file to the `"/all_feedback"` directory on the server. After the initial Feedback operation, subsequent Feedback operations will occur at an interval of 60 minutes.



IMPORTANT: Using the command set in the example below, for the printer to attempt any Mirror Update operation unless the `"ip.mirror.fetch"` command is sent to the printer.

This example shows a Mirror configuration command set. Each line item of the command set is identified with a number. For details on each line item, see the table below.

```
10 ! U1 SETVAR "ip.mirror.auto" "off"
20 ! U1 SETVAR "ip.mirror.username" "printer"
30 ! U1 SETVAR "ip.mirror.password" "printer"
40 ! U1 SETVAR "ip.mirror.server" "10.14.5.133"
50 ! U1 SETVAR "ip.mirror.path" "/all_printers/s4m/role1"
60 ! U1 SETVAR "ip.mirror.feedback.auto" "on"
70 ! U1 SETVAR "ip.mirror.feedback.path" "/all_feedback"
80 ! U1 SETVAR "ip.mirror.feedback.freq" "60"
```

10	Configures the printer to not perform a Mirror Update operation at start-up
20	Configures the FTP Server "user name" for the printer to use
30	Configures the FTP Server "password" for the printer to use
40	Configures the FTP server address the printer should make a FTP connection to.
50	If the FTP connection is successful, the printer should attempt to perform an Update operation using this root directory.
60	Configures a printer to automatically perform a Mirror Feedback operation at start-up.
70	Configures the printer to upload the resulting Feedback file to the designated directory on the server.
80	Configures the printer to attempt a Feedback operation every 60 minutes.

Troubleshooting

If a Mirror process completes unsuccessfully, troubleshooting information can be retrieved by sending this command to the printer:

```
! U1 GETVAR "ip.mirror.last_error"
```

[Table 41 Printer Response Troubleshooting](#) on page 1694 lists possible printer responses, an explanation of each, and resolutions. [Table 42 Problem Scenario Troubleshooting](#) on page 1696 provides problem scenarios and solutions.



IMPORTANT: A mirror path can have up to 50 characters.

Table 41 Printer Response Troubleshooting

Printer Response	Explanation	Resolution
"connection failed"	The network connection to the Mirror FTP server failed while attempting to perform a printer update.	<ul style="list-style-type: none"> Check the user name, password, and server address for the Mirror FTP server and ensure that these values are set correctly in the printer. Ensure that the user name assigned to the printer has the proper permission to log into the Mirror FTP server. Check that the printer has a successful network connection and is able to send and receive network data.
"Failed to get File: [filename]"	During an update operation, the printer's attempt to retrieve the file [filename] failed.	<ul style="list-style-type: none"> Ensure that the printer's network connection has not been interrupted. If it has, re-establish network connectivity and retry the update. Check the server's access permissions for the user name assigned to the printer. Make sure the user name is granted access to read [filename] from the server.
"feedback connection failed"	The network connection to the Mirror FTP server failed while attempting to send printer feedback.	<ul style="list-style-type: none"> Check the user name, password, and server address for the Mirror FTP server and ensure that these values are set correctly in the printer. Ensure that the user name assigned to the printer have the proper permission to log into the Mirror FTP server. Check that the printer has a successful network connection and is able to send and receive network data.

Table 41 Printer Response Troubleshooting (Continued)

Printer Response	Explanation	Resolution
"Failed getting file to parser : [filename]"	During an update operation, the printer's attempt to retrieve a file [filename] in the <mirror_path>/appl directory failed.	<ul style="list-style-type: none"> Ensure that the printer's network connection has not been interrupted. If it has, re-establish network connectivity and retry the update. Check the server's access permissions for the user name assigned to the printer. Make sure the user name is granted access to read [filename] from the server.
"Failed to send feedback file: <feedback_path>/<feedback_filename>"	During a feedback operation, the printer's attempt to store the feedback file in the <feedback_path> directory failed.	<ul style="list-style-type: none"> Ensure that the printer's network connection has not been interrupted. If it has, re-establish network connectivity and retry the update. Check the server's access permissions for the user name assigned to the printer. Make sure the user name is granted access to write to the <feedback_path> directory. Ensure that the <feedback_path> directory exists on the remote server.
"Too many files in the firmware download directory"	The Mirror FTP server has more than one file in the <mirror_path>/appl directory.	Ensure that there is only one (1) firmware file in the <mirror_path>/appl directory.

Table 42 Problem Scenario Troubleshooting

Problem Scenario	Solution
I performed a Mirror Update and now my printer is continuously reprogramming.	<p>Ensure that the name of the firmware file in <code><mirror_path>/appl</code> matches the version of firmware contained in that file.</p> <p>For firmware version V53.17.2Z, the name of the file in the <code><mirror_path>/appl</code> directory must be <code>V53.17.2Z.ZPL</code> to prevent the continuous reprogramming cycle.</p>
Every time a Mirror Update is run, a file is fetched even though no changes have been made to the files on the server.	<ul style="list-style-type: none"> • Check the names of the files in the <code><mirror_path>/files</code> and <code><mirror_path>/commands</code> directories. If the names are longer than 16 characters (minus extensions), then the printer will truncate them to 16 characters when downloading. If two filenames truncate to the same 16 characters, the printer will not be able to tell the difference between them and will re-download one of the two files during every update operation. • Check the names of the files in the <code><mirror_path>/files</code> and <code><mirror_path>/commands</code> directories. If any of the names are the same, then the printer will not be able to tell the difference. Therefore it will get the one in the files directory, update the timestamp file, and then it will get the one in the commands directory and update the timestamp file. Then, the next time through the one in the files directory will have a different timestamp, so it will get that file again and then check the commands directory, and so on. • Check the server's access permissions for the user name assigned to the printer. Make sure the user name is granted access to read all files in the <code><mirror_path>/files</code> and <code><mirror_path>/commands</code> directories.
The printer is continually rebooting.	<ul style="list-style-type: none"> • Check the <code>/commands</code> directory. If a <code>file.delete</code> command resides, then you need to remove <code>file.delete</code> or modify your script.

Wireless Markup Language (WML)

Wireless Markup Language (WML) offers a text-based method of designing a menu structure for the display screen of selected printers. By leveraging Set/Get/Do (SGD) and files containing Zebra Programming Language (ZPL) commands, customized menus can be created.

WML Overview

Wireless Markup Language (WML) offers a text-based method of designing customized menus on the LCD front panel of selected printers.

By leveraging Set-Get-Do (SGD) and Zebra Programming Language (ZPL) commands, menus that feature both display and command features can be created. The WML “card” structure makes it possible to link from one menu screen to another, creating menus that are as many levels “deep” as desired or reduced to only those options needed by the printer operator.

For details on SGD commands, see [SGD Command Support](#). For details on ZPL commands, see [ZPL Commands](#).

WML Details

A WML file is made up of tags, which are similar to HTML tags. For a list of the supported WML tags, see [WML Tags](#).

Using WML on the printer is dependent on the presence of a single `index.wml` file, stored in the printer's E: memory. The `index.wml` file can contain one or more “cards”, with each card defining the content of a single menu. Everything within the card tag (`<card> </card>`) constitutes one complete front panel menu. Cards can also contain hyperlinks to other menus. If the `index.wml` has three cards, with links between the cards, that means there are three front panel menus. It is also possible to create multiple `.wml` files, with links between them and the `index.wml` file. In cases where multiple `.wml` files are used, it is recommended that each file should be structured to provide a link back to the main menu as described in the `index.wml` card.



NOTE: Only one `index.wml` file can reside on a printer at any time

WML defined menus can use Set-Get-Do (SGD) commands to retrieve or set printer settings. For example, a menu might display the printer's current baud rate, while also offering other potential baud rate settings for the printer selection. In more advanced uses, WML defined menus can cause ZPL command files, stored in the printer E: memory, to be injected into the printers command engine – where they will be read in and acted upon. In this use, the ZPL command file files are known as `.nrd` files.

For example, a WML defined menu could call an .nrd file that contains a customized set of printer configuration commands. In this way, different profiles can be created for the printer - making it possible for the printer operator to select the appropriate configuration profile needed for the task the printer is being used in.

An important concept to consider is that the WML menu completely defines what is displayed on the printers screen. If an item is not included in the WML menu definition it will not be displayed to the user.



NOTE: The `index.wml` file must reside on the printer's `E:` drive for the WML menu to display. If the `index.wml` file is on a drive other than `E:`, then the standard front panel menus display. 3



NOTE: When a WML menu is resident on the printer, the standard menu system can be easily be accessed by holding down the Cancel and Setup/Exit buttons (on the ZM400) or the Cancel and Setup/Exit buttons (on Xi4) or the Select button (on GX) on the front panel while the printer powers up. Hold the buttons down until the PRINT READY message displays on the front panel. To return to the WML defined menu, reset the printer again.3

Supported Printers

WML is supported on the following printers, using the indicated firmware. The buttons on the printers' front panel that are used for Navigating WML defined menus are noted.



NOTE: When a WML defined menu is in use, the stripes pattern found at the top of selected printers is not displayed.

Table 43 WML-Supported Printers

Printer	Firmware	Number of "lines" available	Menu Navigation Buttons	Keys to Access Standard Menu System
105SLPlus	V53.17.15Z (or later)	5	Select + (PLUS) - (MINUS)	Hold down CANCEL & SETUP/EXIT during power-up
Xi4 series	V53.17.5Z (or later)	5	Select + (PLUS) - (MINUS)	Hold down CANCEL & SETUP/EXIT during power-up
ZE500	V53.17.15Z (or later)	5	Select + (PLUS) - (MINUS)	Hold down CANCEL & SETUP/EXIT during power-up
ZM400	V53.17.5Z (or later)	5	Select + (PLUS) - (MINUS)	Hold down CANCEL & SETUP/EXIT during power-up
ZM600	V53.17.5Z (or later)	5	NEXT/SAVE + (PLUS) - (MINUS)	Hold down CANCEL & SETUP/EXIT during power-up
G series	V53.17.5Z (or later)	4	SELECT SCROLL	Hold down SELECT during power-up

Professional Services for WML Content Creation

Zebra offers a Professional Services group that can help with the creation of WML content. To inquire about Zebra's Professional Services, contact your Zebra account representative.

WML Tags

This section lists the WML tags and tag parameters that can be used to create a menu system.

Table 1 shows the WML tags and tag parameters that can be used to create a menu system. As with other tag-based languages, such as HTML and XML, ending tags should be used to indicate the end of a structure. An example of an ending tag would be `</wml>`, which indicates the end of a WML script.



IMPORTANT: Using end tags is required to create well formed and functional WML scripts.

Table 44 WML Tag Descriptions

<code><wml> </wml></code>	indicates the beginning/end of the WML script
<code><display> </display></code>	indicates the beginning/end of the content to display on-screen
<code><card> </card></code>	indicates the beginning/end of a card
<code><p> </p></code>	indicates the beginning/end of a Paragraph
<code>
</code>	Line break
<code>Menu</code>	Hyperlink to another card
<code><timer value="xx"> </timer></code>	Controls display timer in 10th of a second increments
<code>" ontimer="#main"</code>	Controls action to take at timer end
<code>alerts="on"</code>	Controls display of on-screen alerts
<code>\$(command.command)</code>	\$ executes a SGD "get" command
<code><do .....><setvar .....></do></code>	Controls execution of do and setvar commands

Using WML

This section provides you with the necessary steps to prepare and transmit WML content to the printer. There are two methods to send WML content to the printer - via the FTP protocol or using the "CISDFCRC16" command. Both methods are detailed below.



IMPORTANT: The & (ampersand) character should not be used within the body of any Paragraph tag (`<p>`). If an ampersand is present within the body of a Paragraph tag, a WML-based menu may not function as expected. The ampersand character should NEVER be used within a paragraph tag for any of the printer's soft keys (P1, P2, etc.); doing so can render the menu inoperable.

Create a Sample index.wml File

This procedure shows how to create an index.xml file.

1. Open a text editor.

2. Type (or copy/paste) the following text:

```
<wml>
<display>
<card>
<p>Hello World!!</p>
</card>
</display>
</wml>
```

Save this file with this name: `index.wml`.

3. To confirm these commands are correctly set, send the `getvar` command to check the settings. To do this, send these commands to the printer:

Prepare the Printer to Receive WML Content via FTP

NEED

WML files – and any .nrd files used by a WML menu structure – must be stored in the printers E: memory location. While the files are first being transmitted to the printer, they should not be processed by the printers ZPL formatting engine. This can be done by configuring the SGD settings `"ip.ftp.enable"` and `"ip.ftp.execute_file"`.

The `"ip.ftp.enable"` setting allows the printer to receive content via the FTP protocol. The `"ip.ftp.execute_file"` setting controls the printers' ability to process or not process commands received via the FTP protocol using the printers ZPL engine. By default, both settings are enabled.

Set `"ip.ftp.enable"` to `"on"` and `"ip.ftp.execute_file"` to `"off"`.

To do this, send these commands to the printer:

```
! U1 setvar "ip.ftp.enable" "on"
! U1 setvar "ip.ftp.execute_file" "off"
! U1 getvar "ip.ftp.enable"
! U1 getvar "ip.ftp.execute_file"
```

To confirm these commands are correctly set, send the `getvar` command to check the settings. To do this, send these commands to the printer:

```
! U1 getvar "ip.ftp.enable"
! U1 getvar "ip.ftp.execute_file"
```

If a terminal emulation program is being used, the following response should be returned from the printer.

```
"on" "off"
```



NOTE: Only printers using the Internal 10/100 wired or Internal Wireless Plus & Wireless Plus print server can use the `! U1 setvar "ip.ftp.execute_file" "off"` command. For other print servers, use the `"CISDFCRC16"` command method detailed below.

Send WML Content to the Printer via FTP

Use these steps to send WML content to the printer via FTP.

Go to a command prompt.

At the command line prompt, type "`ftp xxx.xxx.xxx.xxx`", where `xxx.xxx.xxx.xxx` is the IP Address of the printer. For example, if the IP Address of the printer is 10.3.5.34, the command would be:

```
ftp 10.3.5.34
```

1. Press Enter to connect to the printer.
2. Press Enter to log in to the printer.
3. At the FTP prompt, type "`put index.wml`" and press Enter. The `index.wml` file will be transferred to the printer's E: memory.
4. Type "`quit`" to disconnect from the printer and exit FTP.
5. Power cycle the printer.

Once the printer completes the power cycle the display should look similar to this:



For additional `index.wml` examples, see [WML Examples](#).



NOTE: When a WML menu is resident on the printer, the standard menu system can be easily be accessed by holding down the Cancel and Setup/Exit buttons (on the ZM400) or the Cancel and Setup/Exit buttons (on Xi4) or the Select button (on GX) on the front panel while the printer powers up. Hold the buttons down until the PRINT READY message displays on the front panel. To return to the WML defined menu, reset the printer again.



IMPORTANT: When using the "`ip.ftp.execute_file`" command, be sure to reset the command back to "`on`" for use in production processes. If the setting is left in the "`off`" configuration, when label formats or firmware are sent to the printer via FTP they will not be processed as intended – and the E: memory location can quickly become full.

Resetting the ip.ftp.execute_file Setting

Use this procedure to reset the `ip.ftp.execute_file` setting.

To reset the "`ip.ftp.execute_file`" setting to the default state, send the following command to the printer.

```
! U1 setvar "ip.ftp.execute_file" "on"
```

Sending WML Content to the Printer via the CISDFCRC16 Command

Use these step to send WML content to the printer via the CISDFCRC16 command.

WML files – and any .nrd files used by a WML menu structure – must be stored in the printers E: memory location. While the files are first being transmitted to the printer, they should not be processed by the printers ZPL formatting engine. This can be done by using the CISDFCRC16 command. This command allows content to be written directly to the E: memory location, without being processed by the printers ZPL formatting engine. By using the CISDFCRC16 command, WML content can be transmitted to the printer via the Serial, USB or Parallel ports.

For additional information on the CISDFCRC16 command, see .

1. To send the sample `index.wml` shown earlier, send the following commands to the printer:

```
! CISDFCRC16
0000
INDEX.WML
0000004E
0000
<wml>
<display>
<card>
<p>Hello World!!</p>
</card>
</display>
</wml>
```

2. Power cycle the printer.

Once the printer completes the power cycle the display should look similar to this:



For additional index.wml examples, see [WML Examples](#).



NOTE: When a WML menu is resident on the printer, the standard menu system can be easily be accessed by holding down the Cancel and Setup/Exit buttons (on the ZM400) or Cancel and Setup/Exit buttons (on Xi4) on the front panel while the printer powers up. Hold the buttons down until the PRINT READY message displays on the front panel. To return to the WML defined menu, reset the printer again.

Retrieving WML Content from the Printer using the file.type Command

Use this procedure to retrieve content from the printer using the file.type command.

It is possible to retrieve .wml file content from the printer using the "file.type" SGD command. To do this, open a terminal emulation connection to the printer and issue the command. For example, to retrieve the contents of the INDEX.WML file, use the following command:

```
! U1 setvar "file.type" "E:INDEX.WML"
```



NOTE: The file.type command is case sensitive – if the file is stored on the printer as INDEX.WML, the command must use that same case. Additionally, you should note that .nrd files are treated as confidential – they cannot be retrieved from the printer.

Using .nrd Files from WML Menus

This section provides information on using .nrd files.

It is possible to have a WML menu send the contents of a ZPL or SGD file to the printer to be processed. In this way, the WML menu can leverage complex command scripts in response to the user pressing a single button on the printer. One possible use for this capability would be to create a series of “profile” files that contain all the settings necessary to reconfigure the printer for different uses.

The command files are known as “.nrd” files and are stored directly on the printers E: memory location. The .nrd files can be created using a standard text editor and sent to the printer via FTP or using the CISDFCRC16 command. Files should have an “.nrd” extension.

Removing WML or .nrd Files from the Printer using the file.delete Command

Use this procedure to delete WML or .nrd files from the printer using the file.delete command.

It is possible to remove .wml files from the printer using the file.delete SGD command. To do this, open a terminal emulation connection to the printer and issue the command. For example, to remove the INDEX.WML file, use the following command:

```
! U1 do "file.delete" "E:INDEX.WML"
```

WML Examples

The examples shown below “build” from a simple, display-only, WML menu to a more complex interactive example that uses .nrd files containing ZPL commands. In the initial examples, all lines are explained in detail, in the later examples only the new concepts are covered in detail.

Indenting is used in the examples below to improve readability, it is not necessary in actual use.

Example 1

This example shows a basic WML menu structure that uses only fixed text. The content below shows the WML script plus numbered callouts and a table that identify the function of each of the WML tags.

```
1 →      <wml>
2 →      <display>
3 →          <card>
4 →              <p>Hello World!!</p>
5 →          </card>
6 →      </display>
7 →      </wml>
```

1	Beginning of the WML file.
2	Beginning of the content to be displayed.
3	The <card> tag begins the definition of this menu.
4	The <p> beings a paragraph, here displaying Hello World! The </p> ends the paragraph.
5	The </card> tag ends the definition of this menu.
6	End of the content to be displayed.
7	End of the WML file.

In use, this WML menu looks similar to this:



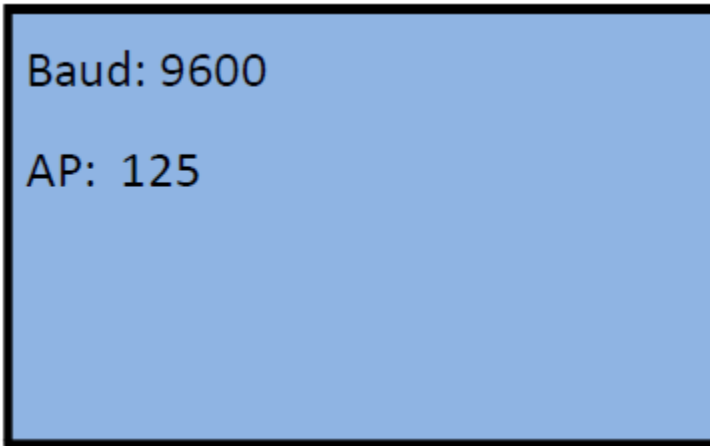
Example 2

This example demonstrates a WML menu structure that uses fixed text, plus two SGD commands to display the current printer settings for the Baud rate and ESSID settings on the printer.

```
1 →      <wml>
2 →      <display>
3 →      <card>
4 →      <p>Baud: $(comm.baud)</p>
5 →      <br/>
6 →      <p>AP: $(wlan.essid)</p>
7 →      </card>
8 →      </display>
9 →      </wml>
```

1	Beginning of the WML file.
2	Beginning of the content to be displayed.
3	The <card> tag begins the definition of this menu.
4	The <p> begins a paragraph.‘Baud:’ displays the text Baud:\$(comm.baud) retrieves and displays the printers’ current baud rate. The </p> ends the paragraph.
5	A line break
6	The <p> begins a paragraph.“AP:” displays the text AP:\$(wlan.essid) retrieves and displays the printers’ current ESSID setting. The </p> ends the paragraph.
7	The </card> tag ends the definition of this menu.
8	End of the content to be displayed.
9	End of the WML file

In use, this WML menu looks similar to this:



Example 3

This example demonstrates a WML menu structure with two menus.

Fixed text and SGD commands are used to display the current printer settings for the Baud rate and ESSID settings on menu one and the Firmware version and ZBI State on menu two. Through use of the 'timer' setting, the menu will automatically return to a defined WML card if no buttons are pressed after a set time period. The menu is configured to allow printer alerts (such as HEAD OPEN) to be displayed.

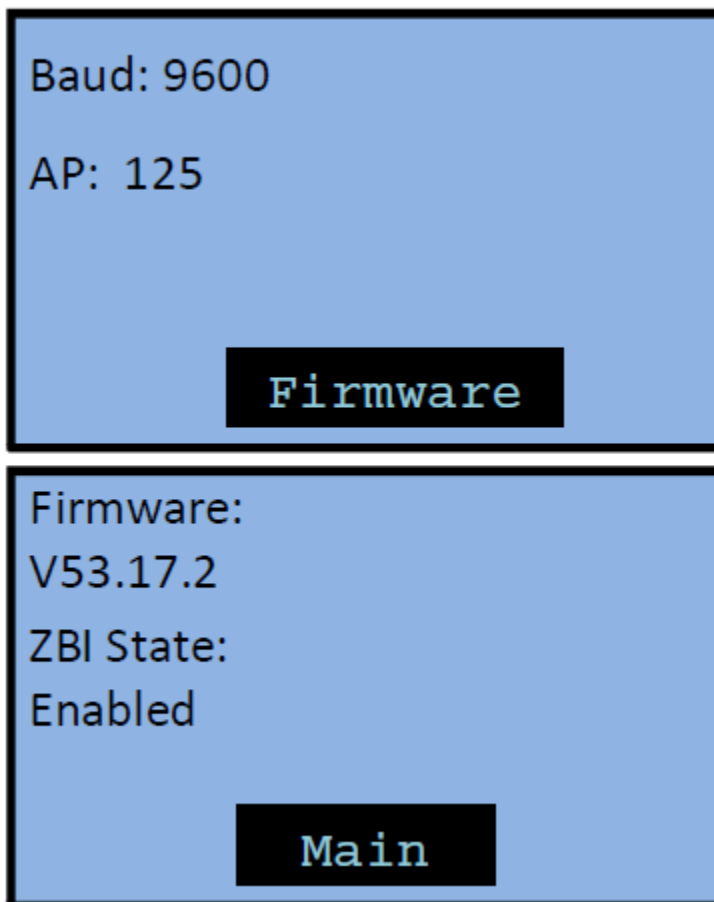
```

1→      <wml>
2→      <display>
3→          <card id="main" title="" ontimer="#main" alerts="on">
4→              <timer value="50"></timer>
5→              <p>Baud: $(comm.baud)</p>
6→              <br/>
7→              <p>AP: $(wlan.essid)</p>
8→              <p> </p><br/>
9→              <p> </p><br/>
10→             <p> <a href="#system">Firmware</a></p>
11→          </card>
12→          <card id="system" title="" ontimer="#main" alerts="on">
13→              <timer value="50"></timer>
14→              <p>Firmware:</p><br/>
15→              <p>$(appl.name)</p><br/>
16→              <p>ZBI State:</p><br/>
17→              <p>$(zbi.key)</p><br/>
18→              <p> <a href="#main">Main</a></p>
19→          </card>
20→      </display>
21→  </wml>

```

3	<code><card id="main" – defines the card's id – "main".title="" – defines the title (not displayed on screen).ontimer="#main" – defines the WML card to display when the timer runs out.alerts="on"> – enables the alerts display feature.</code>
4	<code><timer value="50"></timer> – sets the timer to 50 (in 10th of a second increments).</code>
10	<code><p> Firmware</p> – defines a link to the “system” card.</code>
12	<code><card id="system" – defines the card's id – "system".title="" – defines the title (not displayed on screen).ontimer="#main" – defines the WML card to display when the timer runs out.alerts="on"> – enables the alerts display feature.</code>
13	<code><timer value="50"></timer> – sets the timer to 50 (in 10th of a second increments).</code>
18	<code><p> Main</p> – defines a link to the “main” card.</code>

In use, these two WML menus look similar to this:



NOTE: GX series printers can display four lines of text. If you are using a GX series printer, remove one line of text from each “card” to use this example.

Example 4

This example demonstrates a WML menu structure that creates two menu screens and a link to a command file – “config.nrd” – that contains a ZPL command that will cause the unit to print a configuration label.

```

1→      <wml>
2→      <display>
3→      <card id="main" title="" ontimer="#main" alerts="on">
4→      <timer value="50"></timer>
5→      <p>Baud: $(comm.baud)</p>
6→      <br/>
7→      <p>AP: $(wlan.essid)</p>
8→      <p> </p><br/>
9→      <p> </p><br/>
10→     <p> <a href="#system">Firmware</a></p>
11→     </card>
12→     <card id="system" title="" ontimer="#main" alerts="on">
13→     <timer value="50"></timer>
14→     <p>Firmware:</p><br/>
15→     <p>$(appl.name)</p><br/>
16→     <p>ZBI State:</p><br/>
17→     <p>$(zbi.key)</p><br/>
18→     <p><a href="#main">Main</a>
19→     <a href="#config">Config</a></p>
20→     </card>
21→     <card id="config" title="" ontimer="#main" alerts="on">
22→     <timer value="50"></timer>
23→     <p>Printing </p><br/>
24→     <p> Config Label...</p><br/>
25→     <p></p><br/>
26→     <p>Please wait...</p><br/>
27→     <setvar name="file.run" value="e:config.nrd"/>
28→     </card>
29→     </display>
30→     </wml>

```

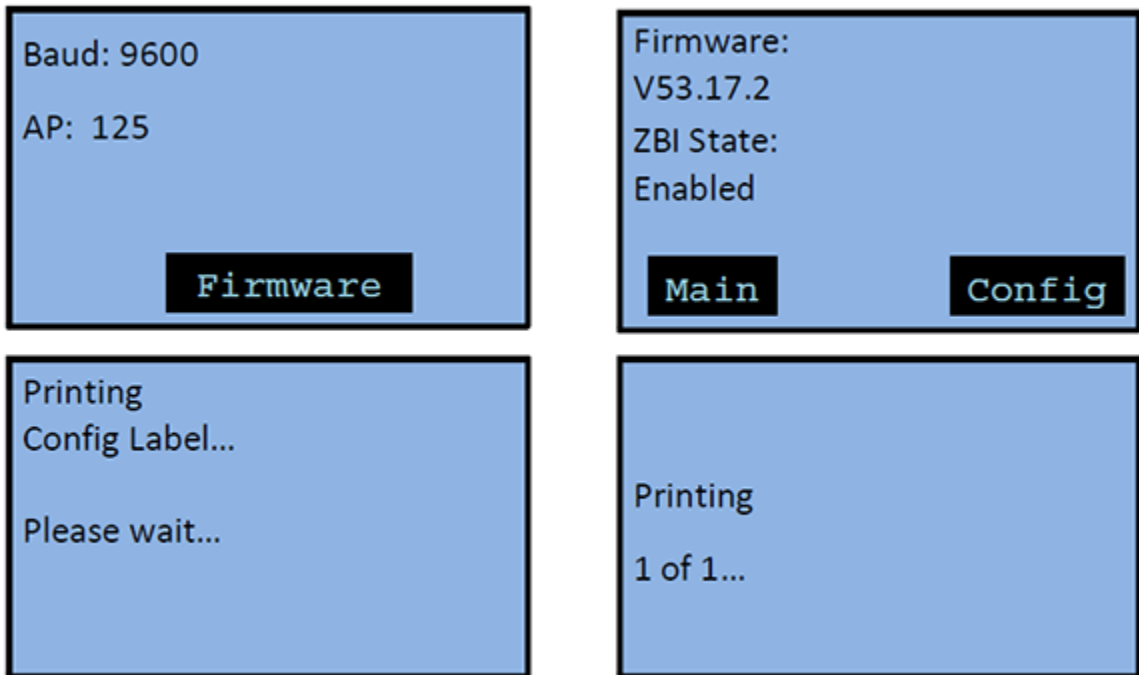
18 <p>Main

19 Config</p>

- Defines two links, positioned next to each other - to the "main" and "config" WML cards

27	<pre><setvar name="file.run" value="e:config.nrd"/></pre> <ul style="list-style-type: none"> • Defines that the SGD command "file.run" should be used on the "e:config.nrd" file. • In this instance, the "e:config.nrd" file contains a single ZPL command - "~wc".
----	--

In use, these WML menus look similar to this:



NOTE: GX series printers can display four lines of text. If you are using a GX series printer, remove one line of text from each "card" to use this example.

Example 5

This example demonstrates a WML menu structure with three cards. The "darkness" card leverages WML and the SGD "print.tone" command to allow the user to both view and configure a setting.

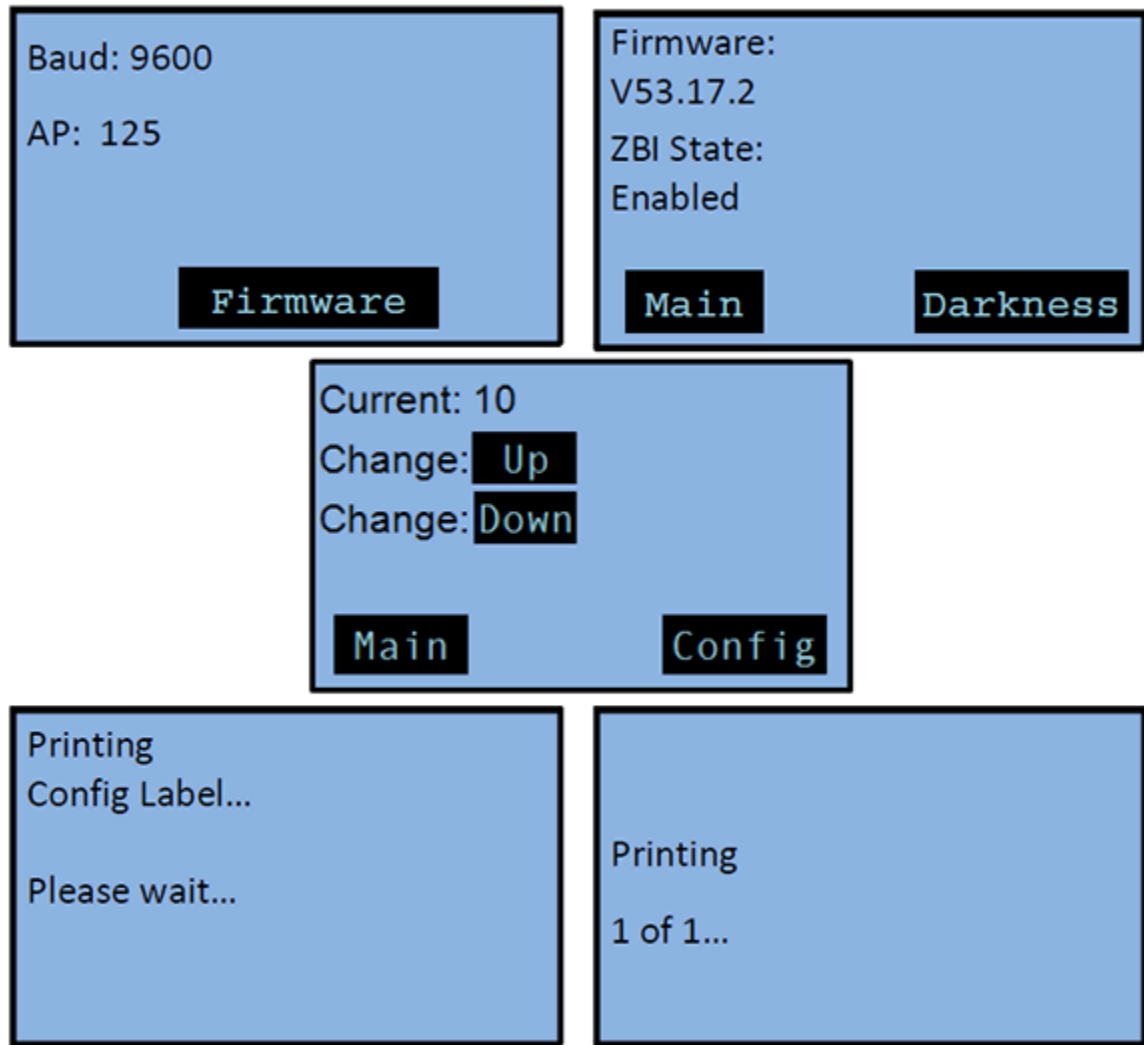
```

1→      <wml>
2→      <display>
3→      <card id="main" title="" ontimer="#main" alerts="on">
4→      <timer value="50"></timer>
5→      <p>Baud: $(comm.baud)</p>
6→      <br/>
7→      <p>AP: $(wlan.essid)</p>
8→      <p> </p><br/>
9→      <p> </p><br/>
10→     <p> <a href="#system">Firmware</a></p>
11→     </card>
12→     <card id="system" title="" ontimer="#main" alerts="on">
13→     <timer value="50"></timer>
14→     <p>Firmware:</p><br/>
15→     <p>$(appl.name)</p><br/>
16→     <p>ZBI State:</p><br/>
17→     <p>$(zbi.key)</p><br/>
18→     <p><a href="#main">Main</a> <a href="#darkness">Darkness</a></p>
19→     </card>
20→     <card id="darkness" title="" ontimer="#main" alerts="on">
21→     <timer value="50"></timer>
22→     <p>Current: $(print.tone)</p><br/>
23→     <p>Change: </p><do type="accept" label="Up"><setvar
24→     name="print.tone" value="+1.0"/></do><br/>
25→     <p>Change: </p><do type="accept" label="Down"><setvar
26→     name="print.tone" value="-1.0"/></do><br/>
27→     <p> </p><br/>
28→     <p><a href="#main">Main</a> <a href="#config">Config</a></p>
29→     </card>
30→     <card id="config" title="" ontimer="#main" alerts="on">
31→     <timer value="50"></timer>
32→     <p>Printing </p><br/>
33→     <p> Config Label...</p><br/>
34→     <p></p><br/>
35→     <p>Please wait...</p><br/>
36→     <setvar name="file.run" value="e:config.nrd"/>
37→     </card>
      </display>
    </wml>

```

23	<p><p>Change: </p></p> <ul style="list-style-type: none">• Defines the fixed text "Change: " <pre><do type="accept" label="Up"><setvar name="print.tone" value="+1.0" /></do>
</pre> <ul style="list-style-type: none">• Defines selecting the word "Up" as equal to sending the value "+1.0" for the SGD command "print.tone". In this case, this increases the setting by 1.0.
24	<p><p>Change: </p></p> <ul style="list-style-type: none">• Defines the fixed text "Change: " <pre>do type="accept" label="Down"><setvar name="print.tone" value="-1.0" /></do>
</pre> <ul style="list-style-type: none">• Defines selecting the word "Down" as equal to sending the value "-1.0" for the SGD command "print.tone". In this case, this decreases the setting by 1.0.

In use, these WML menus look similar to this:





NOTE: GX series printers can display four lines of text. If you are using a GX series printer, remove one line of text from each “card” to use this example.

Troubleshooting Scenarios

Problem Scenario	Corrective Actions
I loaded a WML menu structure on the printer, but the Factory menu structure is displaying.	<ul style="list-style-type: none"> The WML files may have syntax errors. Reconfirm that the correct syntax has been used. When creating WML files it is recommended to start with a simple structure, validate that it's functional and build additional content onto the "known good" example. Power cycle the printer and watch the start-up sequence - if a "WML ERROR" message displays during the start-up, the <code>index.wml</code> file has a syntax error that needs to be corrected. The <code>index.wml</code> file may not have been successfully transferred to the printer. Use a terminal emulation program and the following command to retrieve the <code>index.wml</code> file to the PC for examination: <pre>! U1 setvar "file.type" "E:INDEX.WML"</pre> The <code>index.wml</code> file may not be present in the E: memory location. Validate that the file is present and correctly named. Confirm that straight quotes were used in all instances where the quote character was used (use the " character - not " or ?). SGD commands require the use of the straight quote. Confirm that the "WML Menu Cancel" buttons, (Setup and Cancel or Cancel and Setup/Exit or Select) were not held down during start up. These actions will cause the standard menu to display.
Some characters in the menu are cut off or some lines are not displaying at all.	<ul style="list-style-type: none"> Characters that extend past the width of the display are truncated, reposition the field as needed. Check that you have not exceeded that maximum number of lines the display allows (5 lines on ZM and Xi4 series units, 4 lines on the GX series).
My WML menu structure is displaying, but one of the "cards" is not displaying or is unreachable.	<ul style="list-style-type: none"> The missing "card" may not have been linked to from any of the visible "cards". Review you WML content to ensure that the correct links exist. The WML files may have syntax errors, reconfirm that the correct syntax has been used. When creating WML files it is recommended to start with a simple structure, validate that it's functional and build additional content onto a known good example. If the missing card content is contained in a separate <code>.wml</code> file, confirm that the necessary <code>.wml</code> files have been transferred to the printer.

Problem Scenario	Corrective Actions
My WML menu structure uses SGD commands to display current settings, but the settings are not displaying.	<ul style="list-style-type: none"> • Validate that the correct syntax was used for the SGD command. • Check the manual page for the command being used. Confirm that the command is supported by the printer & firmware. Use a terminal emulation program to send just the command being used to validate it functions outside the WML menu structure. • Confirm that straight quotes were used in all instances where the quote character was used (use the " character – not “ or ”). SGD commands require the use of the straight quote. • Characters that extend past the width of the display are truncated, reposition the field as needed. • Check that you have not exceeded that maximum number of lines the display allows (5 on ZM and Xi4 series units).
My WML menu structure used SGD commands to allow the user to alter printer settings, but the settings are not getting changed as expected.	<ul style="list-style-type: none"> • Validate that the value being used in the value= parameter of the <do> tag is supported by the SGD command. • Validate that the correct syntax was used for the SGD command. • Check the manual page for the command being used. Confirm that the command is supported by the printer & firmware. Use a terminal emulation program to send just the command being used to validate it functions outside the WML menu structure. • Confirm that straight quotes were used in all instances where the quote character was used (use the " character – not “ or ”). SGD commands require the use of the straight quote.
My WML menu structure uses .nrd files to send commands to the printers ZPL or SGD engine, but the commands don't seem to be getting sent when the user selects the on-screen link for the action.	<ul style="list-style-type: none"> • Confirm that the .nrd files are present in E: memory and named as expected. Resend or rename the files if necessary. • Confirm that the WML menu structure is using the correct file name(s). • Confirm that the commands in the files work as expected, independently of the WML menu or .nrd file. • Validate that ZPL and SGD commands have not been interlaced.
I am using the CISDFCRC16 command to transfer files, but the files are either not being transferred to the printer or are showing up with a zero (0) byte size.	<ul style="list-style-type: none"> • Confirm that the Hexadecimal value used for the File Size parameter is correct. This value must be an eight digit file size specified in hexadecimal which indicates the number of bytes in the <data> section of the command. See the full manual page on the CISDFCRC16 command for additional details. • Validate that the CRC and Checksum parameters are correct (using the "0000" value for these parameters is recommended). • Confirm that the WML file name and extension are in upper case characters. • Confirm that the exclamation mark (!) was included before the command name (" ! CISDFCRC16 ").

Using Weblink

Weblink is a feature of Zebra Link-OS™ printers.

Using a secure connection, the Weblink feature allows the printer to directly connect to an internet based server, for the purpose of either sending information to the server or receiving from the server. Weblink can transport data securely through a firewall.

When Should Weblink be Used?

Weblink can transport any information related to device management, transactional data and information to be processed at a later time. It can be used as part of an overall cost reduction solution that leverages web technologies.

Typically, an application called a 'servlet' is created and run on the internet based server, waiting for printers to connect and interact with the servlet. These servlet applications can provide a variety of functions – from sending operating system updates to the printer, to receiving data from the printer and, in turn, using that data to trigger events in other systems.

For example, a solution could be created that would feature the printer consuming data from a Bluetooth® scanner connected to the printer – with that scanned data then being sent from the printer to the internet-based servlet. The servlet would then seek out additional details related to the scanned data, format a document, and then send it to the printer for printing.

Configuring Weblink

When any Weblink setting (with the exception of the logging settings) is adjusted either via SNMP, SGD, or JSON it is required that the printer be reset before the new value takes effect.

The `weblink.printer_reset_required` setting will be set to "yes" if there are any settings that have been modified that require a printer reset.

Basic Configuration

To determine how much configuration is necessary the following questions should be considered:

1. Is the remote server the printer is attempting to connect to outside the corporate firewall?
2. Does the firewall require a username and password to access the remote server?
3. Does the printer require a proxy server to access the remote server?

4. Does the firewall permit HTTPS connections initially or does the printer need to connect via HTTP first?

If the answer to any of these questions is 'yes', then more than the basic configuration may be necessary. Depending upon the network environment that the printer is in, accessing the remote server may only require that a few settings be set.

The minimum requirement is that the URL for the remote server be set. For simplicity, assume that only conn1 is being used (this is the typical scenario). See also [Difference Between Conn1 and Conn2](#).

To configure the printer to connect to the remote server:

- i. Set `weblink.ip.conn1.location` to the URL of the remote server.

The URL must conform to the standards described in RFC3986 (<http://www.ietf.org/rfc/rfc3986.txt>). For example, if the remote servlet's full URL is

```
https://www.examplecorpinc.com/zebra/weblink/
```

Configure the location setting as follows:

```
! U1 setvar "weblink.ip.conn1.location"
           "https://www.examplecorpinc.com/zebra/weblink/"
```

- ii. Reset the printer.

When the printer has an IP address, it will attempt to connect to the remote server. In the event that the remote server does not indicate that the printer has connected, logging may need to be enabled in order to determine the failure.

When a Proxy Server is Part of the Network Configuration

If a proxy server must be used to access the remote server, the printer's proxy setting must be set to connect to the server.

There are typically four properties associated with a proxy server:

- The proxy server scheme: HTTP or HTTPS
- The proxy server address
- The proxy server port (optional)
- The username and password for the proxy (optional)

To supply the address of the proxy server (assuming a default port and no username/password), configure the proxy setting as follows:

```
! U1 setvar "weblink.ip.conn1.proxy" "https://my.internal.proxy/"
```

In this scenario the proxy address is `my.internal.proxy` and the scheme is HTTPS. The default port (1080) will be used. No username or password will be used to authenticate with the proxy.

To specify an alternate port configure the proxy as follows:

```
! U1 setvar "weblink.ip.conn1.proxy" "https://my.internal.proxy:3128/"
```

To specify a username and password configure the proxy as follows:

```
! U1 setvar "weblink.ip.conn1.proxy" "https://user:pass@my.internal.proxy/"
```

The proxy username, password, and the rest of the URL must follow the rules specified in RFC3986 (<http://www.ietf.org/rfc/rfc3986.txt>).

When HTTP Authentication is Necessary

Use this configuration when, for example, a firewall requires a username and/or password.

It may be necessary to specify a username and password to various routers and servers along the path to the remote server. Typically when using a browser to access the server the authentication request will be presented in the form of a dialog window that asks for the username and password.

Since the printer's connection to the remote server is headless and non-interactive, the Weblink configuration allows a user to enter in a server name/username/password triplet. The triplet will be used in the event that the printer is presented with an authentication request (for example, this typically is requested via the HTTP/1.1 401 Unauthorized request).

To specify authentication credentials, issue the following:

```
! U1 setvar "weblink.ip.conn1.authentication.add" "servername.com username password"
```

In this scenario the server requesting authentication is servername.com. The username and password to be supplied are 'username' and 'password'. The server name can be either a DNS name or an IP address. The username and password cannot be retrieved from SGD, SNMP, or JSON once added. Only the server name will be returned.

More than one set of authentication triplets can be added. The printer will only use the credentials as they are needed. In other words, the printer will only use the credentials for servername.com if it receives a HTTP/1.1 401 Unauthorized request from servername.com.

To see what authentication triplets are specified issue:

```
! U1 getvar "weblink.ip.conn1.authentication.entries"
```

To remove authentication credentials issue the following:

```
! U1 setvar "weblink.ip.conn1.authentication.remove" "servername.com"
```

Additional Firewall Configuration

Some firewalls do not allow the first connection attempt for a device to be HTTPS or require new connections periodically to keep the initial connections intact. The weblink test branch was provided to address issues that typically arise because the printer is an unattended device.

To configure the printer to attempt an HTTP connection anytime the HTTPS connection drops :

```
! U1 setvar "weblink.ip.conn1.test.location" "http://www.zebra.com/apps/linktest"
! U1 setvar "weblink.ip.conn1.test.test_on" "failure"
```

The `weblink.ip.conn1.test.location` can be any valid HTTP address. The default uses a link provided by Zebra that exists for no other purpose than to help developers test their connections to the internet. Setting `weblink.ip.conn1.test.test_on` to `interval` or `both` will force the printer to attempt a connection to the URL in location every `weblink.ip.conn1.test.retry_interval` seconds (default is 900 seconds/15 minutes).

To configure the printer to try an HTTP connection periodically, independent of the HTTPS success:

```
! U1 setvar "weblink.ip.conn1.test.location" "http://www.zebra.com/apps/linktest"
! U1 setvar "weblink.ip.conn1.test.test_on" "interval"
! U1 setvar "weblink.ip.conn1.test.retry_interval" "900"
```

Difference Between Conn1 and Conn2

The printer has the ability to connect to two different servers.

Connection 1 (`conn1`) and Connection 2 (`conn2`) are identical in every way in terms of their configuration. It is expected that `conn2` will typically be left unmodified unless a user has an alternate server that they wish to use to configure the printer.

A typical scenario in which both connections would be used is if a user wishes to have the printer connect to both a configuration server and a data source.

Enable Logging

If your printer has trouble connecting, you may wish to enable logging.

By default logging is not enabled in order to reduce the amount of memory consumed when the Weblink feature is enabled. It is recommended that once the Weblink feature is configured properly and is performing as expected that the logging be disabled or that a very small (less than 100) number of logging entries be permitted.

To enable logging, `weblink.logging.max_entries` needs to be modified. By default it is set to 0, which indicates that no messages are logged. When attempting to troubleshoot connection issues it is recommended that `max_entries` be set to at least 100 entries. Setting `max_entries` to 100 means that the 100 newest logging entries will be present in `weblink.logging.entries` as older entries are discarded once the maximum number of entries is reached.

```
! U1 setvar "weblink.logging.max_entries" "100"
```

The logging settings are atypical to the Weblink settings as they do not require the printer to be reset before taking effect. This does not mean that previous logging message that would have been logged will appear when the `max_entries` setting is changed from 0 to a greater value. It means that any new logging messages will be logged from that point forward.

Issue the following command to clear any log entries currently in the `weblink.logging.entries` buffer.

```
! U1 do "weblink.logging.clear" ""
```

Navigating the Log Output

The log will contain useful information, even in the scenario where the printer successfully connects to the remote server. This section explains how to read the log and highlights some of the key entries that will help to determine if the connection was successful.

A typical log entry looks as follows:

```
[12-04-2012 14:57:10.625] [conn1.1] Attempting connection to https://
www.examplecorpinc.com/zebra/weblink/
```

The first column is the date and time that the event occurred. The format of the date and time matches the format of `rtc.date` and `rtc.time`. The time, however, also includes the milliseconds to aid in troubleshooting network latency concerns.



NOTE: For printers that do not have a battery to store the Real Time Clock (RTC) value, the date will be restored to the default value upon a power cycle. The default value depends upon how the `rtc.date` SGD is managed. If it has never been set then it will default to the firmware build date (the value in `appl.date`). Otherwise, the value in `rtc.date` will default to the value that it was last set to. This does not mean the value of the `rtc.date` when it was power cycled. It means that when a user sets `rtc.date` that becomes the new default value.

If the printer has a battery then the `rtc.date` is never default and continues to track the date as expected.

The second column indicates the connection name and channel that the entries are associated with. The connection name will match the weblink branch that was configured with the respective URL (for example, `conn1` or `conn2`). The channel number indicates which channel on the respective connection the entries corresponds to.



NOTE: Channels are additional connections that are requested by the server when the server needs to perform a specific operation that cannot be done on the channel(s) currently open. Typically only the RAW channel is open which operates similar to the RAW TCP port. It is typical to see two channels opened, the main channel and the RAW channel.





The third column is the actual message that contains information about what occurred in the printer at the corresponding time in column one. In the above example the printer was initiating the connection to the URL specified in `weblink.ip.conn1.location`.



Review the section titled [SSL/TLS Certificate Errors](#) to understand what it means when certain logging messages/errors appear in the log.

SSL/TLS Certificate Errors

Secure connections to the remote server present the opportunity for several errors when attempting to connect.

The errors typically involve the certificates used when connecting via SSL or TLS. This section highlights some of the most common issues involving the certificates.


Error	Cause / Solution
"SSL certificate problem: self signed certificate in certificate chain"	<p>One of the situations that prevent a successful connection is not having the correct Certificate Authority certificates installed on the remote server. Zebra requires that the Zebra Root Certificate Authority and the Zebra Subordinate Certificate Authority be installed on the remote server. This error typically indicates that only one of the Zebra Certificate Authority certificates is installed on the remote server.</p> <p> IMPORTANT: When using certificate files, the time on the printer must be set correctly for the websocket connection to succeed, as the time is used in the certificate validation.</p>
"SSL certificate problem: unable to get local issuer certificate"	<p>One of the situations that prevent a successful connection is not having the correct Certificate Authority certificates installed on the remote server. Zebra requires that the Zebra Root Certificate Authority and the Zebra Subordinate Certificate Authority be installed on the remote server. This error typically indicates that neither of the Zebra Certificate Authority certificates are installed on the remote server.</p> <p> IMPORTANT: When using certificate files, the time on the printer must be set correctly for the websocket connection to succeed, as the time is used in the certificate validation.</p>
"SSL certificate problem: certificate has expired"	<p>This error indicates that the remote server's certificate has expired. This is typically an indication that the printer's date and/or time are incorrect as the Zebra certificates are typically issued for long durations. Check that <code>rtc.date</code> and <code>rtc.time</code> are set correctly.</p> <p> NOTE: For printers that do not have a battery to store the Real Time Clock (RTC) value, the date will be restored to the default value upon a power cycle. The default value depends upon how the <code>rtc.date</code> SGD is managed. If it has never been set then it will default to the firmware build date (the value in <code>appl.date</code>). Otherwise, the value in <code>rtc.date</code> will default to the value that it was last set to. This does not mean the value of the <code>rtc.date</code> when it was power cycled. It means that when a user sets <code>rtc.date</code> that becomes the new default value.</p> <p>If the printer has a battery then the <code>rtc.date</code> is never default and continues to track the date as expected.</p> <p> IMPORTANT: When using certificate files, the time on the printer must be set correctly for the websocket connection to succeed, as the time is used in the certificate validation.</p>

Error	Cause / Solution
"SSL certificate problem: certificate is not yet valid"	<p>This error indicates that the remote server's certificate was incorrectly issued or that the printer's date and/or time are incorrect. Check that the printer's date and time (<code>rtc.date</code> and <code>rtc.time</code>) are set correctly and that the certificate's start and expiration date are valid.</p> <p> NOTE: For printers that do not have a battery to store the Real Time Clock (RTC) value, the date will be restored to the default value upon a power cycle. The default value depends upon how the <code>rtc.date</code> SGD is managed. If it has never been set then it will default to the firmware build date (the value in <code>appl.date</code>). Otherwise, the value in <code>rtc.date</code> will default to the value that it was last set to. This does not mean the value of the <code>rtc.date</code> when it was power cycled. It means that when a user sets <code>rtc.date</code> that becomes the new default value.</p> <p>If the printer has a battery then the <code>rtc.date</code> is never default and continues to track the date as expected.</p>
"subjectAltName does not match 1.2.3.4"	<p>Part of the certificate validation process involves making sure that the remote server is who it claims to be. A certificate can be created to validate against several aliases/DNS names. Typically the certificate will not contain the IP address of the server as IP addresses are subject to change. When specifying the remote server's URL via <code>weblink.ip.conn1.location</code> be sure to specify one of the DNS aliases listed in the certificate. The valid names will be listed either under the Common Name (CN) field and/or the subjectAltName (SAN or Subject Alternate Name) field within the certificate. For example, the certificate may have the CN set to 'examplecorpinc' and the SAN set to 'examplecorpinc.com' or 'alias.for.examplecorpinc.com'. Any of the CN or SAN names can be used, but, as the IP address is not listed in the CN or SAN it cannot. It is not recommended that the IP address be part of the SAN if a DNS name is available to avoid connection issues that may arise due to subnet change or DHCP lease expirations, etc.</p> <p> IMPORTANT: When using certificate files, the time on the printer must be set correctly for the websocket connection to succeed, as the time is used in the certificate validation.</p>
"SSL certificate subject name 'examplecorpinc.com' does not match target host name '1.2.3.4'"	
"Unknown SSL protocol error in connection to ..."	<p>When this message is seen it means that the remote server's SSL/TLS configuration is incorrect. Refer to Troubleshooting to ensure the server and printer are both configured correctly.</p>
I do not see any of these errors, but the printer still does not connect.	<p>Refer to Troubleshooting to ensure the server and printer are both configured correctly.</p>

Other Typical Errors

While SSL/TLS connection errors are the most common, there are issues that can arise that prevent a successful connection.

This section highlights the most common issues.

Error	Cause / Solution
"Read failed with an unexpected error"	<p>This message typically indicates that connection to the remote server was lost. The connection can either be lost due to the server powering off or resetting, the firewall or proxy server shutting down the connection, or because the remote server gracefully requests that the connection be discontinued.</p> <p> NOTE: After 60 seconds of inactivity on the connection the printer will attempt to contact the server via a TCP Keepalive. If the connection is still present the server will respond and the connection will remain open. After 10 successive failed attempts to contact the remote the printer will assume the connection is severed and close the connection. The printer will resume it's attempt to connect to the remote server so that when the server comes back online the printer will re-establish communication.</p>
"Failed to connect (SP = #, CI = #, UW = #, AC = #, PC = #)"	<p>If this error is seen one or more of the '#' values will be set to 0. This is an indication of an incorrect configuration of the remote server. Ensure that the remote server is setup according to the Servlet configuration in the Zebra Link-OS SDK documentation. This typically indicates an incorrect version of the remote Application Server (for example, Apache/Tomcat version may be incorrect). If this issue persists contact Zebra Technical Support.. Provide the output of the following command (ensure that logging is enabled and that this error appears within the entries).! U1 getvar "weblink"</p>

Troubleshooting

Whenever troubleshooting a connection issue, the following questions should be answered to ensure the configuration is correct.

1. Is the printer connected correctly via Wireless or Ethernet?
2. Does the printer have a valid IP address?
3. Can I ping the printer's IP address from a device on the same network as the printer?
4. Is the remote server URL in `weblink.ip.conn1.location` correct and does it point to the remote server that is configured for weblink functionality?
5. Can you connect to the location defined in the `weblink.ip.conn1.location` setting via a browser?
6. Is the remote server I am attempting to connect to outside the corporate firewall?
7. Can the URL specified in `weblink.ip.conn1.test.location` be accessed?
If this is the case, talk with your administrator about altering restrictions for accessing HTTPS connections.
8. Does the firewall require a username and password to access the remote server?
9. Do I require a proxy server to access the remote server?

10. Is the proxy server port the default (1080) or another port (for example, 3128 for the Linux Squid proxy)?



NOTE: If using the Linux Proxy Server Squid, and you are having trouble connecting, note that it may be configured to:

- disallow POST messages
- only operate in HTTP/1.0 mode 3
- disallow SSL connections.

Refer to your Linux Squid documentation for complete details.

11. Does the firewall permit HTTPS connections initially or do I need to connect via HTTP first?
12. Is the remote server configured to use a supported version of TLS?
Zebra currently supports TLS 1.2 and recommends using the most recent version whenever possible. Earlier versions may not be supported in the future.
13. Are the Zebra Certificate Authority Certificates correctly installed on the remote server?
14. Was the server's certificate issued by Zebra and is it signed by the Zebra Certificate Authority?
15. Has the server's certificate expired?
16. Is the printer's date and time within the issue and expired period of the server's certificate?
17. Does the value in `weblink.ip.conn1.location` match either the Common Name or one of the names listed in the Subject Alternate Name of the remote server's certificate?
18. Is the proxy server configured correctly and does the respective proxy server allow HTTPS connections via the HTTP CONNECT method?
19. Are there any HTTP authentication attempts when trying to connect that fail?
20. Are there any HTTP/1.1 4xx messages in the log?

If your connection issues persist and the solutions in this document do not help, contact Zebra Tech Support and provide the output of the following command. Ensure that logging is enabled and that the error(s) appear within the entries)

```
! U1 getvar "weblink"
```

HTTP Messages

List of HTTP messages.

Message	Cause / Solution
HTTP/1.1 100 Continue	This indicates that the server and printer have begun communicating and is often seen in place of HTTP/1.1 200 OK.
HTTP/1.1 101 Switching Protocols	This indicates that the basic connection to the server worked and the protocol is being switched to a more efficient protocol for data transfer.
HTTP/1.1 200 OK	This indicates that an HTTP GET or HTTP POST was successful.
HTTP/1.1 30x Moved/Redirect/etc	This indicates that the URL specified has moved or that the firewall redirected the printer to another location (typically this is done to authenticate a user in a transparent proxy configuration).

Message	Cause / Solution
HTTP/1.1 401 Unauthorized	This indicates that the printer either needs to authenticate with the server or failed to authenticate with the remote server (or server/router along the route to the server).
HTTP/1.1 403 Forbidden	This typically means that the authentication was provided and valid, however, the user does not have access to the requested resource.
HTTP/1.1 404 Not Found	This indicates that the remote URL provided points to an invalid location on the server. This does indicate, however, that the server name is valid. Just the path after the domain name is invalid.

HTTP POST Alerts

Link-OS printers can issue alerts to a web server that is listening for HTTP POST requests. The advantage of an HTTP POST alert over the other destinations available (for example, TCP, UDP, SNMP) is that HTTP is firewall friendly.

Configuring Alerts Where the Alert Destination is HTTP POST

Any setting in the `alerts.http` branch that is set will take effect for any HTTP POST alerts that occur from that point forward. A printer reset is not required for the settings to take effect.

If the server is configured to accept and process HTTP POST messages either via a CGI script or a server-side script such as PHP or ASP then the alert can be forwarded to that server from the printer. The printer will send the alert using the multipart/form-data Content-Type. This allows any type of data, including binary data, to be sent via the POST.

The POST will support two variables within the body of the POST:

- `alertMsg` – This is the alert details and the content follows the format of a standard alert when it is issued over one of the other alert destinations (for example, serial, USB, TCP, etc.).
- `uniqueId` – The unique id of the printer. This matches the value in `device.unique_id`.

The HTTP POST request will look as follows (sent when the printer was paused)

```
POST /http_post/alert.php HTTP/1.1
Host: 10.3.4.58
Accept: */*
Connection: close
Content-Length: 281
Expect: 100-continue
Content-Type: multipart/form-data;
    boundary=-----350c75835f46

-----350c75835f46
Content-Disposition: form-data; name="alertMsg"

ALERT%3A%20PRINTER%20PAUSED
-----350c75835f46
Content-Disposition: form-data; name="uniqueId"

XXQLJ120900310
-----350c75835f46--
```



IMPORTANT: The message is using HTTP/1.1 and therefore HTTP/1.1 header fields. This is important because some older proxy servers do not handle these fields gracefully and may block the POST message.

It is important to note that the message is using HTTP/1.1 and therefore HTTP/1.1 header fields. This is important because some older proxy servers do not handle these fields gracefully and may block the POST message.

How to Parse via PHP

The following example shows how to parse the POST message.

It does not, however, show how to use this information on other pages, store the results in a database, report this to another device on the domain, etc. The response in this example will be sent back to the printer, but it will be ignored by the printer. If you wish to see the response you can use a packet sniffing tool such as Wireshark.

```
<?php

    $alertMsg = urldecode($_POST["alertMsg"]);
    if (preg_match("/(\\w+(\\s+\\w+)?):\\s+(((SGD SET)\\s+([\\w\\d\\.\\_]+)\\s+\\->\\s+(.
+))|([\\w|\\s]+))/", $alertMsg, $matches)== 1) {

        $alertType = $matches[1];

        if ($matches[5] === "SGD SET") {
            $alertCondition = $matches[5];
            $alertSgdName = htmlspecialchars($matches[6]);
            $alertSgdData = htmlspecialchars($matches[7]);
        } else {
            $alertCondition = $matches[3];
        }
    }

    echo "<H1>Alert Received</H1><br/>\\r\\n";
    echo "<h2>Original Message = $alertMsg</h2><br/>\\r\\n";
    echo "<h2>Alert Type = $alertType</h2><br/>\\r\\n";
    echo "<h2>Alert Condition = $alertCondition</h2><br/>\\r\\n";
    echo "<h2>SGD Name = $alertSgdName</h2><br/>\\r\\n";
    echo "<h2>SGD Value = $alertSgdData</h2><br/>\\r\\n";

?>
```

Basic Configuration

To determine how much configuration is necessary, consider the following questions:

- Is the remote server that the printer is attempting to connect to outside of the corporate firewall?
- Does the firewall require a username and password to access the remote server?
- Does the printer require a proxy server to access the remote server?

If the answer to any of these questions is 'yes', then more than the basic configuration may be necessary. Depending upon the network environment that the printer is in access the remote server may only require that a few settings be set.

To configure an alert to be sent via HTTP POST to a remote server, issue the following command:

```
! U1 setvar "alerts.add" "PRINTER PAUSED,HTTP POST,Y,Y,  
http://www.examplecorpinc.com/alerts.php,0,N,"
```

The above command will issue an HTTP POST alert to the remote server (<http://www.examplecorpinc.com/alerts.php>) when the printer is paused or un-paused.

- The first parameter indicates the condition to monitor. A list of available alert conditions can be viewed by issuing:

```
! U1 getvar "alerts.conditions"
```

- The second parameter indicates the alert destination. For the purposes of this section HTTP-POST is the preferred destination. A list of available alert destinations can be viewed by issuing:

```
! U1 getvar "alerts.destinations"
```

- The third and fourth parameters are 'Send on Set' and 'Send on Clear', respectively. They can be either "Y" for monitor the alert or "N" for don't monitor the alert. If both are set to "N" then the alert will not be added or it will be deleted if the alert already existed. To view which alerts already exist issue:

```
! U1 getvar "alerts.configured"
```

- The fifth parameter holds the URL for the server that will be sent the HTTP POST. It holds a maximum of 255 characters for the URL and it must conform to the URI standards described in RFC3986 (<http://www.ietf.org/rfc/rfc3986.txt>).
- The sixth parameter should be set to 0 for HTTP POST alerts.
- The seventh parameter and eighth parameter will not be covered in this section and should be set as indicated in the description above. See the SGD documentation for details on these two parameters.

When a Proxy Server is Part of the Network Configuration

If a proxy server must be used to access the remote server, the printer's proxy setting must be set to connect to the server.

There are typically four properties associated with a proxy server:

- The proxy server scheme: HTTP or HTTPS
- The proxy server address
- The proxy server port (optional)
- The username and password for the proxy (optional)

To supply the address of the proxy server (assuming a default port and no username/password), configure the proxy setting as follows:


```
! U1 setvar "weblink.ip.conn1.proxy" "https://my.internal.proxy/"
```

In this scenario the proxy address is `my.internal.proxy` and the scheme is HTTPS. The default port (1080) will be used. No username or password will be used to authenticate with the proxy.

To specify an alternate port configure the proxy as follows:

```
! U1 setvar "weblink.ip.conn1.proxy" "https://my.internal.proxy:3128/"
```

To specify a username and password configure the proxy as follows:

```
! U1 setvar "weblink.ip.conn1.proxy" "https://user:pass@my.internal.proxy/"
```

The proxy username, password, and the rest of the URL must follow the rules specified in RFC3986 (<http://www.ietf.org/rfc/rfc3986.txt>).

When HTTP Authentication is Necessary

Use this configuration when, for example, a firewall requires a username and/or password.

It may be necessary to specify a username and password to various routers and servers along the path to the remote server. Typically when using a browser to access the server the authentication request will be presented in the form of a dialog window that asks for the username and password.

Since the printer's connection to the remote server is headless and non-interactive, the Weblink configuration allows a user to enter in a server name/username/password triplet. The triplet will be used in the event that the printer is presented with an authentication request (for example, this typically is requested via the HTTP/1.1 401 Unauthorized request).

To specify authentication credentials, issue the following:

```
! U1 setvar "weblink.ip.conn1.authentication.add" "servername.com username password"
```

In this scenario the server requesting authentication is `servername.com`. The username and password to be supplied are 'username' and 'password'. The server name can be either a DNS name or an IP address. The username and password cannot be retrieved from SGD, SNMP, or JSON once added. Only the server name will be returned.

More than one set of authentication triplets can be added. The printer will only use the credentials as they are needed. In other words, the printer will only use the credentials for `servername.com` if it receives a HTTP/1.1 401 Unauthorized request from `servername.com`.

To see what authentication triplets are specified issue:

```
! U1 getvar "weblink.ip.conn1.authentication.entries"
```

To remove authentication credentials issue the following:

```
! U1 setvar "weblink.ip.conn1.authentication.remove" "servername.com"
```

Enabling Logging

If your printer has trouble connecting, you may wish to enable logging.

By default, logging is not enabled in order to reduce the amount of memory consumed when the HTTP alert feature is enabled. It is recommended that once the alert HTTP feature is configured properly and is performing as expected that the logging be disabled or that a very small (less than 100) number of logging entries be permitted.

To enable logging, `alerts.http.logging.max_entries` needs to be modified. By default it is set to 0, which indicates that no messages are logged. When attempting to troubleshoot connection issues it is recommended that `max_entries` be set to at least 100 entries. Setting `max_entries` to 100 means that the 100 newest logging entries will be present in `alerts.http.logging.entries` as older entries are discarded once the maximum number of entries is reached.

```
! U1 setvar "alerts.http.logging.max_entries" "100"
```

The logging settings do not require the printer to be reset before taking effect. This does not mean that previous logging message that would have been logged will appear when the `max_entries` setting is changed from 0 to a greater value. It means that any new logging messages will be logged from that point forward.

Issue the following command to clear any log entries currently in the `alerts.http.logging.entries` buffer.

```
! U1 do "alerts.http.logging.clear" ""
```

Navigating the Log Output

The log can contain much information, even in the scenario where the printer successfully connects to the remote server. This section explains how to read the log and highlights some of the key entries that will help to determine if the connection was successful.

A typical log entry looks as follows:

```
[12-04-2012 14:57:10.625] [http] Attempting connection to http://
www.examplecorpinc.com/alerts.php
```

The first column is the date and time that the event occurred. The format of the date and time matches the format of `rtc.date` and `rtc.time`. The time, however, also includes the milliseconds to aid in troubleshooting network latency concerns.

The second column indicates the connection name, which is currently always set to `'http'`.

The third column is the actual message that contains information about what occurred in the printer at the corresponding time in column one. In the above example the printer was attempting to POST the alert to the connection to the URL specified in the configured alert.

Review [Understanding Errors in the Alerts HTTP Log](#) to understand what it means when certain logging messages/errors appear in the log.

Understanding Errors in the Alerts HTTP Log

Errors in the Alerts HTTP log.

Error	Cause / Solution
Couldn't connect to host	<p>This could mean any number of things occurred that prevented the printer from connecting. This message is always present when the connection to the remote failed and is typically accompanied by an HTTP Response Code. See HTTP Messages for the possible HTTP Response Codes and their meaning. If this issue persists contact Zebra Technical Support and provide the output of the following command (ensure that logging is enabled and that this error appears within the entries).</p> <pre>! U1 getvar "alerts"</pre>

Troubleshooting

Whenever troubleshooting a connection issue, the following questions should be answered to ensure the configuration is correct.

1. Is the printer connected correctly via Wireless or Ethernet?
2. Does the printer have a valid IP address?
3. Can I ping the printer's IP address from a device on the same network as the printer?
4. Is the remote server URL in `weblink.ip.conn1.location` correct and does it point to the remote server that is configured for weblink functionality?
5. Can you connect to the location defined in the `weblink.ip.conn1.location` setting via a browser?
6. Is the remote server I am attempting to connect to outside the corporate firewall?
7. Can the URL specified in `weblink.ip.conn1.test.location` be accessed?
If this is the case, talk with your administrator about altering restrictions for accessing HTTPS connections.
8. Does the firewall require a username and password to access the remote server?
9. Do I require a proxy server to access the remote server?
10. Is the proxy server port the default (1080) or another port (for example, 3128 for the Linux Squid proxy)?



NOTE: If using the Linux Proxy Server Squid, and you are having trouble connecting, note that it may be configured to:

- disallow POST messages
- only operate in HTTP/1.0 mode 3
- disallow SSL connections.

Refer to your Linux Squid documentation for complete details.

11. Does the firewall permit HTTPS connections initially or do I need to connect via HTTP first?

12. Is the remote server configured to use a supported version of TLS?
Zebra currently supports TLS 1.2 and recommends using the most recent version whenever possible. Earlier versions may not be supported in the future.
13. Are the Zebra Certificate Authority Certificates correctly installed on the remote server?
14. Was the server's certificate issued by Zebra and is it signed by the Zebra Certificate Authority?
15. Has the server's certificate expired?
16. Is the printer's date and time within the issue and expired period of the server's certificate?
17. Does the value in `weblink.ip.conn1.location` match either the Common Name or one of the names listed in the Subject Alternate Name of the remote server's certificate?
18. Is the proxy server configured correctly and does the respective proxy server allow HTTPS connections via the HTTP CONNECT method?
19. Are there any HTTP authentication attempts when trying to connect that fail?
20. Are there any HTTP/1.1 4xx messages in the log?
If your connection issues persist and the solutions in this document do not help, contact Zebra Tech Support and provide the output of the following command. Ensure that logging is enabled and that the error(s) appear within the entries)

! U1 getvar "weblink"

HTTP Messages

List of HTTP messages.

Message	Cause / Solution
HTTP/1.1 100 Continue	This indicates that the server and printer have begun communicating and is often seen in place of HTTP/1.1 200 OK.
HTTP/1.1 200 OK	This indicates that the HTTP POST was successful.
HTTP/1.1 30x Moved/Redirect/etc	This indicates that the URL specified has moved or that the firewall redirected the printer to another location (typically this is done to authenticate a user in a transparent proxy configuration).
HTTP/1.1 401 Unauthorized	This indicates that the printer either needs to authenticate with the server or failed to authenticate with the remote server (or server/router along the route to the server).
HTTP/1.1 403 Forbidden	This typically means that the authentication was provided and valid, however, the user does not have access to the requested resource.
HTTP/1.1 404 Not Found	This indicates that the remote URL provided points to an invalid location on the server. This does indicate, however, that the server name is valid. Just the path after the domain name is invalid.

Advanced Techniques

This section presents information and commands for using advanced techniques, such as special effects, serialized data fields, control commands, program delimiters, communications, and memory cards.

Special Effects for Print Fields

This section lists some special effect for print fields.

- Reverse Printing a Field - The `^FR` (Field Reverse Print) command allows a field to appear as white over black or black over white. When printing a field, the `^FR` command indicates that it will print the field the opposite of its background color.
- Reverse Printing a Label - The `^LR` (Label Reverse Print) command reverses the printing of all fields in the label format. It allows a field to appear as white over black or black over white. `^LR` functions like `^FR`, but it applies to all fields in a label. The `^LR` command remains active until turned off.
- Printing a Mirror Image - The `^PM` (Print Mirror Image of Label) command prints the entire printable area of the label as a mirror image. This command flips the image from left to right.
- Printing a Label Inverted 180 Degrees - The `^PO` (Print Orientation) command inverts the label format 180 degrees. In essence, the label is printed upside down.

Serialized Data

The `^SN` (Serialization Data) command allows the printer to index data fields by a selected increment or decrement value (that is, make the data fields increase or decrease by a specified value) each time a label is printed.

This can be performed on up to 100 to 150 fields in a given format and can be performed on both alphanumeric and bar code fields. A maximum of 12 of the right-most integers are subject to indexing. The first integer found when scanning from right to left starts the indexing portion of the data field.

If the alphanumeric field to be indexed ends with an alpha character, the data will be scanned, character-by-character, from right to left until a numeric character is encountered. Serialization will take place using the value of the first number found.

Variable Data

To increase throughput, you can set up a program that uses variable data fields. Then, instead of formatting the whole label each time a label is printed, the printer will have to format only the changed data field. To use this capability, you must use the `^MC` and `^FV` commands.

Stored Formats

You can create formats and save them in the printers memory. A stored format can then be recalled and merged with downloaded data to form a complete label. This process saves data transmission time but not formatting time.

To create a format, complete these steps:

1. Design the label.
2. Replace variable data fields with field numbers.
3. Allocate space for the size of the field.
4. Give the format a name.
5. Save the format on the printer to a memory location (R, E, B, A).

You can store multiple formats on the printer, limited only by available memory. If you try to save a format that would overload memory you can confirm that the format has been successfully stored on the printer by printing the LIST FORMATS from the front panel, or by using the `^HW` command to return the directory listing to the host. For details see, [^HW](#).

If the power is turned off, all stored formats in volatile memory (R:) will be lost.

Initialize/Erase Stored Formats

Stored formats can be selectively erased using the `^ID` command.

Download Format Command

The `^DF` (Download Format) command saves the ZPL II format commands as text strings to be later merged using `^XF` with variable data. The format to be stored may contain Field Number (`^FN`) commands to be referenced when recalled.

While use of stored formats will reduce transmission time, no formatting time is saved since this command saves the ZPL II as text strings which need to be formatted at print time.

Field Number Command

The `^FN` (Field Number) command is used to number the data fields. This command is used in both Store Format and Recall Format operations.

When storing a format, the `^FN` command is used where you would normally use the `^FD` (Field Data) command. When recalling the stored format, use `^FN` in conjunction with the `^FD`(Field Data) command.

Recall Stored Format Command

The `^XF` (Recall Format) command recalls a stored format to be merged with variable data. There can be multiple `^XF` commands and they can be located anywhere in the label format.

When recalling a stored format and merging data utilizing the `^FN` (Field Number) function, the calling format must contain the `^FN` command to merge the data properly.

While the use of stored formats will reduce transmission time, no formatting time is saved because the format being recalled was saved as text strings that need to be formatted at print time.

These are examples of using the stored format:

Working with Stored Format commands involves designing and saving a stored format, then recalling and merging the format with some variable data.

The following is an example of how to use the various Stored Format commands. First, enter the following format and send it to the printer. Notice that no label is printed. (DATA Indicator went On and Off.)

```
^XA^DFFORMAT^FS
^LH30,30
^BY2,3,100
^F0120,100^CFD^FN1^FS
^F0120,160^B3^FN2^FS
^XZ
```

Second, enter the following format and send it to the printer. The label shown will be printed.

```
^XA^XFFORMAT^FS
^FN1^FDLABEL ONE^FS
^FN2^FDAAA001^FS
^XZ
```

LABEL ONE



Control Commands

Control commands may be sent from the host at any time to elicit an immediate response from the printer. Control commands may be sent in a group or separately.

A control command is acted upon when received to perform a variety of actions, such as:

- clearing the memory
- physical action
- a combination of the above such as feeding a label and calculating and storing its length.

The basic format for using all of the control commands is:

~(2-letter command)

For example: ~DG

Test and Setup Commands


The following commands, presented in alphabetical order, are used to test various elements of the printer and its status.

Table 45 Test and Setup Commands

Command	Function
~HM (Memory Status)	Sending this command to the printer immediately returns a memory status message to host. Use this command whenever you need to know the status of the memory.
~HS (Host Status)	Sending this command to the printer immediately returns a three-line printer status message to the host. Use this command whenever you need to know the status of the printer.
~JR (Power On Reset)	This command resets all of the printer's internal software, performs a power-on self-test, clears the buffer and DRAM, and resets communication parameters and default values. ~JR performs the same function as a manual power-on reset.
~JN (Head Test Fatal)	This command resets the printhead element error override, acting as a toggle for ~JO. The printer then goes into fault status (turns head indicator on steadily) if any subsequent execution of the printing element test detects bad printing elements. This command is only functional on certain printer platforms.
~JO (Head Test Non-Fatal)	This command overrides a failure of head element status check and allows printing to continue. The override is canceled when the printer is turned off or receives a ~JR or ~JN command. The printhead test will not produce an error if the ~JO override is active. This command is only functional on certain printer platforms.
^JT (Head Test Interval)	This command lets you change the printhead test interval from 100 to any desired interval. The printer automatically performs an internal printhead element test, which occurs every 100 labels. This takes place during formatting which minimizes a delay in printing. Therefore, the test may be performed while the printer is in PAUSE. This command is only functional on certain printer platforms.
~WC (Print Configuration Label)	The ~WC command is used to generate a printer configuration label. The printer configuration label contains information about the printer setup, such as sensor type, network ID, ZPL mode, firmware version, and descriptive data on the R:, E:, B:, and A: devices.
~HQ (Host Query)	The ~HQ command group causes the printer to send information back to the host.

Calibration and Media Feed Commands

The following commands, presented in alphabetical order, are used to perform various media and ribbon calibrations and also set the media feed mode for the printer.

Command	Function
~JC (Set Media Sensor Calibration)	Forces a label length measurement and recalibrates the media and ribbon sensors.  NOTE: In continuous mode, only the media and ribbon sensors are recalibrated.
~JG (Graphing Sensor Calibration)	Forces a label length measurement, recalibrates the media and ribbon sensors, and prints a graph (media sensor profile) of the sensor values.
~JL (Set Label Length)	Sets the label length. Depending on the size of the label, the printer will feed one or more blank labels.
^MF (Media Feed)	Dictates what happens to the media at power up and after an error is cleared.

Cancel/Clear Commands

The following command controls the contents of the Zebra input buffer.

Command	Function
~JA (Cancel All)	Cancels all format commands in the buffer. It also cancels any batches that may be printing. The printer stops printing after the current label (if one is printing) is finished printing. All internal buffers are cleared of data. The DATA LED turns off.

Printer Control Commands

The following commands control various printer operations:

Command	Function
^PF (Slew Given Number of Dot Rows)	Causes the printer to slew labels (move labels at a high speed without printing) a specified number of dot rows, at the bottom of the label. This allows faster printing when the bottom portion of a label is blank.
~PH or ^PH (Slew to Home Position)	Causes the printer to feed one blank label. <ul style="list-style-type: none"> The ~PH command feeds one label after the format currently being printing is done or when the printer is placed in pause. The ^PH command feeds one blank label after the format it is in prints.
~PP (Programmable Pause)	Stops printing after the current label is printed (if one is printing) and places the printer in the Pause mode. The operation is identical to pressing the PAUSE button on the front panel of the printer. The printer will remain paused until the PAUSE button is pressed or a ~PS command is sent to the printer.

Command	Function
<code>^PP</code> (Programmable Pause)	This command pauses the printer after the format it is in prints. Because this command is not executed immediately, several labels may be printed before the printer is paused. The operation is identical to pressing the PAUSE button on the front panel of the printer. The printer will remain paused until the PAUSE button is pressed or a <code>~PS</code> command is sent to the printer.
<code>^PQ</code> (Print Quantity)	This command gives control over several printing operations. It controls the number of labels to print, the number of labels printed before the printer pauses, and the number of replications of each serial number.
<code>^PR</code> (Print Rate)	<p>Determines the media speed during printing and the slew speed (feeding a blank label). The printer will operate with the selected speeds until the setting is resent in a subsequent format or the printer is turned off.</p> <p>Limitations of Higher Print Speeds</p> <p>Print speed is application specific. Because print quality is affected by media and ribbon, printing speeds, and printer operating modes, it is very important to run tests for your applications.</p> <ul style="list-style-type: none"> • With high print speeds, use thermal transfer mode only. • Horizontal bar codes with a minimum x dimension of 5 mil may be printed at print speeds of 2 in. (51mm) per second. • Rotated bar codes are limited to a minimum x dimension of 10 mil (modulus 2) at higher print speeds. At x dimension of 5 mil (modulus 1), they may be printed at 2 in. per second. • At high print speeds, Font A at a magnification of 1 is not recommended; all other fonts are acceptable.
<code>~PS</code> (Print Start)	Causes a printer in the Pause mode to resume printing. The operation is identical to pressing the PAUSE button on the front panel of the printer when the printer is already in the Pause mode.

Set Dots/Millimeter

The following commands change the number of dots per millimeter.

Command	Function
<code>^JM</code> (Set Dots/Millimeter)	<p>Changes the number of dots printed per millimeter. Depending on the printhead, normal dots per millimeter on a Zebra printer are the following:</p> <ul style="list-style-type: none"> • 24 dots/mm (609.6 dots/inch) • 12 dots/mm (304.8 dots/inch) • 8 dots/mm (203.2 dots/inch) • 6 dots/mm (152.4 dots/inch) <p>In some applications, these high densities are not required. For these applications, a lower density of 4 dots/mm (102 dots/inch) or 3 dots/mm (77 dots/inch) can be selected. If used, this command must be entered before the first <code>^FS</code> command.</p>

Host Status Commands

The following commands control the host device.

Table 46 Host Status Commands

Command	Function
~HI (Host Identification)	This command is designed to be sent from the Host to the Zebra printer to find out the type of Zebra printer. Upon receipt, the Zebra printer will respond to the Host with a character string that gives information about the printer such as the version of firmware, dots per inch, memory, and printer options.
^SP (Start Print)	<p>This command allows a label to start printing at a specified point before the entire label has been completely formatted. On extremely complex labels, this command can increase the overall throughput of the printer.</p> <p>The command works as follows: you specify the dot row at which the ^SP command is to take affect. This then creates a label 'segment.' Once the ^SP command is processed, all information in that segment will be printed. During the printing process, all of the commands after the ^SP will continue to be received and processed by the printer.</p> <p>If the segment after the ^SP command (or the remainder of the label) is ready for printing, media motion does not stop. If the next segment is not ready, the printer will stop "mid-label" and wait for the next segment to be completed. Precise positioning of the ^SP command is somewhat of a trial-and-error process as it depends primarily on print speed and label complexity.</p> <p>The ^SP command can be effectively used to determine the worst-case print quality. You can determine if using the ^SP command is appropriate for the particular application by using the following procedure. If you send the label format up to the first ^SP command and then wait for printing to stop before sending the next segment, the printed label will be a sample of the worst case print quality. It will also drop any field that is out of order.</p>
~WC (Print Configuration Label)	This command is used to generate a printer configuration label. This command only works when the printer is idle.
~WL Print Network Configuration Label	This command is used to generate a network configuration label. This command only works when the printer is idle.

Changing Delimiters and Command Prefixes

For some applications, you may need to change the ZPL II default delimiter (,) the format command default prefix (^), and/or the control command default prefix (~). Any ASCII character may be set as the delimiter.



IMPORTANT: The delimiters used in the incoming ZPL script must match the delimiters set on the printer. If you change the delimiters on the printer, any ZPL script that uses the default delimiters will not work.

You might change these characters if you are using a hand-held terminal that does not have a comma to enter the ZPL II commands, if you are working with a mainframe that has trouble processing the caret, or if you find some other character(s) easier to use.

Reasons to set an alternate delimiter include, but are not limited to:

- you are using a hand-held terminal that does not have a comma to enter the ZPL II commands;
- you are working with a host system that does not easily output the default delimiter (for example, AS/400)
- you find some other character(s) easier to use.

Communication Diagnostics Commands

Zebra printers support communication diagnostics through both hardware and software control. You can use these diagnostics to troubleshoot programs.

Command	Function
~JD (Enable Communications Diagnostics)	Initiates a diagnostic mode that produces an ASCII printout (using current label length and full width of printer) of all characters received by the printer. This printout includes the ASCII Characters, the HEX value and any communication errors.
~JE (Disable Diagnostics)	Cancels the diagnostic mode and returns the printer to normal label printing.

Graphic Commands

In addition to text and bar codes, multiple types of graphics can be printed on a Zebra printer:

- boxes and lines (^GB), circles (^GC), diagonal lines (^GD), and ellipses (^GE)
- ZPL II label formats saved as graphics images
- graphic images in Hexadecimal format
- graphic symbols (^GS)

Table 47 Boxes, Lines, Circles, Diagonal Lines, and Ellipses

Command	Function
^GB (Graphic Box)	The ^GB command is used to draw boxes and lines as part of a label format. Boxes and lines are used to highlight important information, divide labels into distinct areas, or to improve the appearance of the label. The same format command is used for drawing either boxes or lines.
^GC (Graphic Circle)	The ^GC command produces a circle on the printed label. The command parameters specify the diameter (width) of the circle, outline thickness, and color. Thickness extends inward from the outline.
^GD (Graphic Diagonal Line)	The ^GC command produces a circle on the printed label. The command parameters specify the diameter (width) of the circle, outline thickness, and color. Thickness extends inward from the outline.
^GE (Graphic Ellipse)	The ^GE command produces an ellipse in the label format.
^GS (Graphic Symbol)	The ^GS command enables you to generate the registered trademark, copyright symbol, and other symbols.

These label formats can also be stored as graphic images and data can be merged with them at print time. Additionally, ZPL II will permit the printing of graphic images from other sources that have been created in (or converted to) hexadecimal (HEX) format. Such graphic images can come from a variety of sources, including CAD programs, draw and paint programs, and scanned images.

Image Move

The ^IM (Image Move) command performs a direct move of an image from a storage area into the bitmap. The command is identical to the Recall Graphic command except that there are no sizing parameters.

Working with Label Formats as Graphics

The ^IS (Image Save) and ^IL (Image Load) commands are used to save a ZPL label format (including text and/or bar codes) in the printer's DRAM, FLASH, or PCMCIA as a special graphic image.

The ^IS (Image Save) and ^IL (Image Load) commands are used to save a ZPL label format (including text and/or bar codes) in the printer's DRAM, FLASH, PCMCIA, or battery backed up SRAM, as a special graphic image. This increases the throughput of a series of similar but not identical labels.

Instead of formatting each individual label completely, store the constant fields as an image (known as creating a template). Then, in subsequent label formats, commands are issued to recall that graphic image format and merge it with variable data.

Working with Hex Graphic Images

ZPL II can be used to save graphic images in HEX format in DRAM, FLASH, or PCMCIA, depending on the type of memory installed in your printer.

ZPL II can be used to save graphic images in HEX format in DRAM, FLASH, PCMCIA, or battery backed up SRAM, depending on the type of memory installed in your printer. The image might be created using a CAD program, a draw or paint program, or a scanner. These images can then be printed on the label. Graphic images may be created using a program that creates files in the .PCX format. These files must then be converted to ZPL II graphic format .GRF (pure hexadecimal data without headers or other extraneous information) for use as part of a label format.

You can use ZebraDesigner or ZebraNet Bridge Enterprise to convert the .PCX graphic format into the pure hexadecimal .GRF graphic format. Hexadecimal data may also be directly input as part of a ZPL II program. Manually preparing a string of HEX code is possible but usually impractical.

Alternative Data Compression Scheme for ~DG and ~DB Commands

There is an alternative data compression scheme recognized by the Zebra printer. This scheme further reduces the actual number of data bytes and the amount of time required to download graphic images and bitmapped fonts with the ~DG and ~DB commands.

The following represent the repeat counts 1, 2, 3, 4, 5, ..., 19 on a subsequent Hexadecimal value. Values start with G since 0 through 9 and A through F are already used for HEX values.)

G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

These numbers represent the repeat counts 20, 40, 60, 80,....400 on a subsequent hexadecimal value.

g	h	i	j	k	l	m	n	o	p
20	40	60	80	100	120	140	160	180	200
r	s	t	u	v	w	x	y	z	
240	260	280	300	320	340	360	380	400	

Sending M6 to the printer is identical to sending the following hexadecimal data:

```
6666666
```

The M has the value of 7. Therefore M6 sends seven (7) hexadecimal 6's.

Sending hB to the printer is identical to sending the following hexadecimal data:

```
BBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBB
```

The h has a value of 40. Therefore, hB sends 40 Hexadecimal B's.

Repeat Values

Several repeat values can be used together to achieve any desired value.

Several repeat values can be used together to achieve any value desired. vMB or MvB will send 327 hexadecimal B's to the printer.

- a comma (,) fills the line, to the right, with zeros (0) until the specified line byte is filled.
- an exclamation mark (!) fills the line, to the right, with ones (1) until the specified line byte is filled.
- a colon (:) denotes repetition of the previous line.

Recalling a Hexadecimal Graphic Image

The ^XG (Recall Graphic) command is used to recall one or more graphic images for printing. This command is used in a label format to merge pictures such as company logos and piece parts, with text data to form a complete label.

An image may be recalled and resized as many times per format as needed. Other images and data may be added to the format.

Reducing Download Time of Graphic Images

There is a method of reducing the actual number of data bytes sent to the printer when using the ~DG command.

If the HEX string ends in an even number of zeros (0's), a single comma (,) can be substituted for ALL of the zeros. If the HEX string ends in an odd number of zeros, one zero and a single comma is required. The exclamation mark (!) and the colon (:) described under [Repeat Values](#) can also be used.



NOTE: The text rows in your editor may not be the same as the dot rows used by ZPL II. The editor may word wrap or truncate the dot rows. ZPL II ignores the end of a text line (carriage returns and line feed characters).

Transferring Object Between Storage Devices

The ^TO (Transfer Object) command is used to copy an object or group of objects from one storage device to another. It is quite similar to the copy function used in personal computers.

Source and destination devices must be supplied and must be different and valid for the action specified. Invalid parameters will cause the command to be ignored.

There are no defaults associated with this command. However, the asterisk (*) may be used as a wild card for Object names and extensions. For instance, ZEBRA.* or *.GRF would be acceptable forms for use with ^TO command.

The Asterisk (*) can be used to transfer multiple object files (except *.FNT) from the DRAM to the Memory Card. For example, you have several object files that contain logos. These files are named LOGO1 .GRF, LOGO2 .GRF, and LOGO3 .GRF.

You want to transfer all of these files to the Memory Card using the name NEW instead of LOGO. By placing an Asterisk (*) after both LOGO and NEW in the transfer command, you can copy all of these files with one command. The format for this would be as follows:

```
^XA
^TOR:LOGO* .GRF , B:NEW* .GRF
^XZ
```



NOTE: If, during a multiple transfer, a file is too big to be stored on the Memory Card, it will be skipped. All remaining files will be checked to see if they can be stored. Those that can be stored, will be stored.

Deleting Graphics from Memory

The ^ID (Item Delete) command deletes objects, images, fonts, and formats from storage areas selectively or in groups. This command can be used within a printing format to delete objects just prior to saving new ones or can be in a stand-alone type format simply to delete objects.

The object name and extension support the use of the asterisk (*) as a wildcard. This allows for easy deletion of selected groups of objects.

The following are various examples of using the ^ID command.

To delete just stored formats from DRAM:

```
^XA^IDR:*.ZPL^XZ
```

To delete formats and images named SAMPLE from DRAM regardless of the extension:

```
^XA^IDR:SAMPLE.*^XZ
```

To delete the image SAMPLE1.GRF prior to storing SAMPLE2.GRF:

```

^XA
^FO25,25^AD,18,10^FDDelete^FS
^FO25,45^AD,18,10^FDthen Save^FS
^IDR:SAMPLE1.GRF^FS
^ISR:SAMPLE2.GRF^FS
^XZ

```

To delete everything from DRAM:

```
^XA^IDR:*.*^XZ
```

Defining and Using the AUTOEXEC.ZPL Function

An AUTOEXEC.ZPL file function is supported by the printer. It functions in much the same way as the AUTOEXEC.BAT file in MS-DOS.

The AUTOEXEC.ZPL file function can be used for setting up various parameters at the time the printer is powered up (such as ^COY, ^LL, ^CWf). The function can also be recalled at any time after power up.

This file must initially be in the extra EPROM, FLASH, or PCMCIA memory. When the printer is powered on, it looks to the extra memory site for the stored format called AUTOEXEC.ZPL. If found, the contents of the file are automatically executed as a stored format.

This is an example of an autoexe.zpl file:

```

^XA
^DFE:AUTOEXEC.ZPL^FS
^SEE:JIS.DAT^FS
^CW1,E:ANMDJ.TTF^FS
^XZ

```

Memory, Flash Cards, and Font Cards

Zebra printers come with a variety of memory device, including DRAM, EPROM, PCMCIA, Flash, socket Flash, and battery backed-up RAM.



NOTE: Not all memory options are available on all printers.

Most Zebra printers allow you to print a printer configuration label, which will show the letter designation assigned to your printer memory options. For printer models that do not support this feature, use the table below to see how the memory IDs are assigned. Memory IDs default to these values when the printer is reset to factory defaults.

Table 48 Letter Designations for Different Memory Options



Memory Option	Default Letter Designation
EPROM	E:
PCMCIA	B:
Flash	E:

Table 48 Letter Designations for Different Memory Options (Continued)

Memory Option	Default Letter Designation
DRAM	R:
Battery backed-up RAM	B: or E:
Socket Flash	B:
Compact Flash	A:

A few ZPL II commands directly affect the types of memory available to Zebra printers. These commands are ~JB, ^JB and ~HM

Table 49 Commands that Affect Available Memory Types

Command	Function
~JB (Reset Battery Dead)	<p>This command is sent to the printer if either of these conditions exist:</p> <ul style="list-style-type: none"> If the B: memory card is intentionally cleared (reinitialized). If the battery supplying power to the Battery Powered Font Card fails and is replaced. (A bad battery would show a “battery dead” condition on the printer configuration label.) <p> NOTE: If you replace the battery but do not send this command to the printer, the Battery Powered Font Card will not function.</p>
^JB (Initialize Flash Memory)	<p>This command is used to initialize the two types of Flash Memory available in the Zebra printers.</p> <p> NOTE: Link-OS printers use an automatic memory management system that eliminates the need to manually initialize the Flash Memory system.</p>
~HM (Host Memory Status)	<p>Sending this command to the printer immediately returns a memory status message to the host. Use this command whenever you need to know the status of the memory. When the Host Memory Status Command, ~HM, is sent to the Zebra printer, a line of data containing three numbers is sent back to the Host. The following is an example:</p> <pre>1024,0780,0780</pre> <ul style="list-style-type: none"> The first value is the total amount of RAM (Random Access Memory) installed in the printer. This number is in Kilobytes. The second value is the maximum amount of RAM available to the user. This number is in Kilobytes. The third value is the amount of RAM currently available to the user. This number is in Kilobytes.

Shortcuts and Alternate Schemes for Writing ZPL II Scripts

ZPL II programming scripts can be written in a variety of ways. There are, however, more efficient ways to write a ZPL II script depending on the application and the commands used. The following are certain ways to write the same ZPL II script, each yielding the same result.

The Code 39 bar code shows the ZPL II script written like this:

```
^XA^FO100,75^BY3
^B3N,N,100,Y,N
^FD123ABC^XZ
```

Since it is only one field, however, the entire command can be written as a one line entry:

```
^XA^FO100,75^BY3^B3N,N,100,Y,N^FD123ABC^XZ
```

Finally, this script can be further simplified by writing it on one line, using the comma (,) delimiter to reduce the default parameters in the ^B3 command and eliminating the default parameters at the end of the ^B3 command:

```
^XA^FO100,75^BY3^B3,,100^FD123ABC^XZ
```

You might write your ZPL II scripts in any way that makes sense to you. Some programmers prefer to write out each format command and field on a line by line basis like this:

```
^XA
^PR2^FS
^LL935^FS
^LH30,30^FS
^FO20,10^AF^FDZEBRA^FS
^FO20,60^B3,,40^FDAA001^FS
^FO20,180^AF^SNSERIAL NUMBER 00000000111,1,Y^FS
^PQ10^FS
^XZ
```

Although this script will print with no problems, it contains unnecessary ^FS (Field Separator) commands which have been placed after the format commands. Some programmers feel it is required to place a ^FS command at the end of each line, but the ^FS command is only needed to separate specific fields. Therefore, the script would transmit more quickly written like this:

```
^XA
^PR2
^LL935
^LH30,30
^FO20,10^AF^FDZEBRA^FS
^FO20,60^B3,,40^FDAA001^FS
^FO20,180^AF^SNSERIAL NUMBER 00000000111,1,Y^FS
^PQ10
^XZ
```

Other programmers prefer to keep the format commands on one line as an organizational preference, like this:

```
^XA^PR2^LL935^LH30,30
^FO20,10^AF^FDZEBRA^FS
^FO20,60^B3,,40^FDAA001^FS
^FO20,180^AF^SNSERIAL NUMBER 00000000111,1,Y^FS
^PQ10^XZ
```

The label will print out the same so you should develop a scripting pattern that suits your own organizational style but one which is efficient and is concerned with keeping transmission times to a minimum.

Font Shortcuts

There are times when you might include a specific font into your script and use it repeatedly within different fields.

The following is an example of one way to write this script:

```
^XA
^FO120,108^A0N,89^FDA Guide to^FS
^FO120,207^A0N,89^FDZPL II^FS
^FO120,306^A0N,89^FDProgramming^FS
^FO120,405^A0N,89^FDLanguage^FS
^XZ
```

Notice that the ^FS command is used on the second to last line to close the field. Actually, it is unnecessary because the ^XZ will accomplish the same thing, so we can remove it from our script. Also, since the font and font size are not changing within the fields, this script can be simplified for quicker transmission by removing the unnecessary font entries and listing the font information once using the ^CF command (see [^CF](#)):

```
^XA
^CF0,89
^FO120,108^FDA Guide to^FS
^FO120,207^FDZPL II^FS
^FO120,306^FDProgramming^FS
^FO120,405^FDLanguage
^XZ
```

This script can be made even more efficient by including the ^FB command to identify the left origin of the text which occurs at the same place each time. For details, see [^FB](#):

```
^XA
^CF0,89
^FO120,108
^FB800,6
^FDA Guide to\&ZPL II\&Programming\&Language
^XZ
```



NOTE: The entries “\&” within the text indicate a carriage return/line feed as allowed by the ^FB command. For details, see [^FB](#).

If you wanted to change the font type or size within the script, however, you would need to include the specific font parameters within the field where the change occurs. In this case, you would not want to use the ^FB command because the change in font size (in our example below) will affect the y-axis (up and down) position of the text.

You can still use the ^CF command, but you will need to include the specific font information on the line where the change in the field occurs:

```
^XA
^CF0,89
^FO120,108^FDA Guide to^FS
^FO120,207^FDZPL II^FS
^FO120,306^A0N,110^FDProgramming^FS
^FO120,426^FDLanguage
^XZ
```

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