

WiLink™ 8 Solutions WiLink8 - wlconf

ABSTRACT

- The wlconf tool is used to configure the WLAN device with specific behavior arguments.
- The main usage is to apply specific parameter file to be passed over to the chip.
- Main target for the wlconf.bin file is to set initial PHY system parameters based on the ini file as well as to set the HT mode system configuration parameter **BUT** it can also be **very** useful for debugging and changing miscellaneous system settings (such as allowed TX block-ack TIDs, interrupt pacing, BA window size etc)

More information is available in the README:

https://github.com/TI-OpenLink/18xx-ti-utils/blob/mc_internal/wlconf/README

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1 WiLink8 wlconf Quick Startup

- The system configuration file will be loaded to system at startup from default location:
`/lib/firmware/ti-connectivity/wl18xx-conf.bin`
- Configuration file is binary, Wlconf tool provides the parsing capability to modify default configuration and modify system parameters.
- Wlconf tool located at `/usr/sbin/wlconf`
- A default wlconf configuration file is located in `/usr/sbin/wlconf/wl18xx-conf-default.bin`
- The standard INI files (PHY system configuration) are located at `/usr/sbin/wlconf/official_inis`

2 First Time System Configuration Script

Starting from release R8.6, there is an easy configuration script for the WLAN device according to user inputs named `configure-device.sh`.

The script will be installed, as part of the release, in the target filesystem in `/usr/sbin/wlconf`

Once you boot your board for the first time you are required to use this script to configure the chip appropriately.

Running this script with the argument of the device in use (ie wl1801, wl1805, wl1807, wl1831, wl1835 or wl1837) will generate the correct **wl18xx-conf.bin** file.

Usage: `configure-device.sh <option>`

Options:

Version	Show Version
Help	Show Help
Dump	Save wl18xx-conf.bin dump to wl18xx-conf-dump.txt
<empty>	Configuration mode

NOTE: `configure-device.sh` set all the required TI module wlconf PHY configurations. In case non TI module is used the script configures number of antenna's only and the customer required to set the RF limitation parameters in order to pass regulatory certification.

3 Feature Configuration Script

Starting from R8.6 there is a new system configuration script to enable Zigbee Coexistence/Time sync features. The script will be installed, as part of the release, in the target filesystem in `/usr/share/wl18xx`

Running this script with the argument (zigbee, sync) will generate the correct **wl18xx-conf.bin** file.

Usage: `wlconf-toggle-set.sh <bin path> <feature> <mode>`

4 Wilink8 wlconf Basic Commands

Run the commands from the wlconf folder: `cd /usr/sbin/wlconf`

Example 1: Printing a dump file of the binary_name file into a text file:

```
./wlconf -i $binary_name --get > wl18xx-conf-dump.txt
```

Example 2: Set system to default file and plotting system settings:

```
cp wl18xx-conf-default.bin /lib/firmware/ti-connectivity/wl18xx-conf.bin
./wlconf -i /lib/firmware/ti-connectivity/wl18xx-conf.bin --get
```

Example 3: To set MIMO on a mimo board:

```
./wlconf -i /lib/firmware/ti-connectivity/wl18xx-conf.bin -s wl18xx.ht.mode=0x0 -o \
/lib/firmware/ti-connectivity/wl18xx-conf.bin
./wlconf -i /lib/firmware/ti-connectivity/wl18xx-conf.bin -s \
wl18xx.phy.number_of_assembled_ant2_4=0x02 -o /lib/firmware/ti-connectivity/wl18xx-conf.bin
```

Example 4: Set active configuration with a specific INI file:

(for this example, assume a modified ini file located in /usr/share/wl18xx)

```
cp /usr/share/wl18xx/my_ini_file.ini /usr/sbin/wlconf/official_inis/my_ini_file.ini
./wlconf -o /lib/firmware/ti-connectivity/wl18xx-conf.bin -I \
/usr/sbin/wlconf/official_inis/my_ini_file.ini
```

Example 5:

Searching for specific parameter after making a txt file can be done by using "grep" command, for example:

```
grep wl18xx.phy.number_of_assembled_ant5 wl18xx-conf-dump.txt
```

Example 6:

Adding parameters from "example.conf" into the wl18xx-conf.bin.

```
./wlconf -i /lib/firmware/ti-connectivity/wl18xx-conf.bin \
-o /lib/firmware/ti-connectivity/wl18xx-conf.bin -C /usr/bin/wlconf/example.conf
```

Example 7:

For debug only - Preventing the driver from running recoveries.

```
./wlconf -i /lib/firmware/ti-connectivity/wl18xx-conf.bin \
-o /lib/firmware/ti-connectivity/wl18xx-conf.bin -s core.recovery.no_recovery=1
```

Example 8:

Get the value of ht_mode inside wl18xx struct from the default binary configuration file (wl18xx-conf-default.bin):

```
./wlconf -g wl18xx.ht.mode
```

5 WiLink8 wlconf Usage

wlconf [OPTIONS] [COMMANDS]

OPTIONS

-S, --source-struct	use the structure specified in a C header file
-b, --binary-struct	specify the binary file where the structure is defined
-i, --input-config	location of the input binary configuration file
-o, --output-config	location of the output binary configuration file
-X, --ignore-checksum	ignore file checksum error detection

COMMANDS

-D, --create-default	create default configuration bin file (wl18xx-conf- default.bin)
-g, --get	get the value of the specified element (element[.element...]) or print the entire tree if no element is specified
-s, --set	set the value of the specified element (element[.element...])
-G, --generate-struct	generate the binary structure file from the specified source file
-C, --parse-text-conf	parse the specified text config and set the values accordingly
-I, --parse-ini	parse the specified INI file and set the values accordingly in the output binary configuration file
-p, --print-struct	print out the structure
-h, --help	print this help

6 WiLink8 wlconf - Configuration Files

- You should run wlconf under its metadata folder, for example:


```
# cd /usr/sbin/wlconf
# wlconf -help
```
- Make sure the content of the following folders is by the latest TI release (<http://www.ti.com/tool/WILINK8-WIFI-NLCP>):
 - /usr/sbin/wlconf
 - /usr/sbin/wlconf/official_inis/
 - /usr/share/wl18xx
- Mapping of ht_mode:


```
MIMO: use wl18xx.ht.mode=0
SISO40: use wl18xx.ht.mode=1 (default)
SISO20: use wl18xx.ht.mode=2
```
- Location of configuration bin file: `/lib/firmware/ti-connectivity/wl18xx-conf.bin`

NOTE: If file does not exist driver will fall-back to default values (SISO40).

7 WiLink8 wlconf Parameters

The below table details a few useful parameters:

Parameter Name	Meaning (/units)	Values	Comments
core.rx.rts_threshold	RTS threshold (bytes)	0-2346	
core.rx.irq_pkt_threshold	RX Data interrupt pacing counter	0-xxxxx	0 = disabled
core.rx.irq_timeout	RX Data interrupt pacing timeout (µsec)	0-xxxxx	
core.tx.tx_compl_threshold	TX Complete interrupt pacing counter	0-xxxxx	0 = disabled
core.tx.tx_compl_timeout	TX Complete interrupt pacing timeout (µsec)	0-xxxxx	
core.ht.rx_ba_win_size	RX Block-ack window size (frames)	0-xxxxx	
core.ht.tx_ba_tid_bitmap	TX allowed TID for block ACK (bitmap)	0-0x3f	each bit represents a TID

For more parameters, the conf file is generated from the following header file, comments included.
<https://git.ti.com/wilink8-wlan/18xx-ti-utils/blobs/master/wlconf/conf.h>.

For additional information please refer to the .INI guide ([SWRU422](#)).

Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

DATE	REVISION	NOTES
August 2015	*	Initial Release

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