Release Notes

MSD45N

Version 3.5.4.20 *May 2017*

This document provides release notes for version **msd45n-laird-3.5.4.20** of the MSD45N radio software as well as previously distributed release notes.

Release notes are a summary of new and enhanced features, resolved issues, and known issues that are not resolved in this version. Consult the User's Guide for details on the features of this software release.

SOFTWARE VERSION MSD45N-LAIRD-3.5.4.20

Released May 2017

Software part number: ARM architecture SD45LXLT1-170531
X86 architecture SD45LXLT2-170531

OS: Linux

- The Wi-Fi radio firmware has been updated to version 3.4.0.0098 (10536)
- lighttpd has been upgraded to version 1.4.43. (10473)
- Redesigned WebLCM for enhanced usability, security and speed. (10363)
- Enhanced UAPSD support (10536)

Resolved Issues

Firmware

- Enhanced UAPSD and CAC to prevent sending action from when disabled and pstream is created for AP with ACM bit set. Prevent re-enabling of UAPSD when pstream is deleted. (10536)

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

Sdc_cli

- Enhanced the UAPSD configuration to allow for the selection of specific access classes. (10536)

SDK

- Enhanced UAPSD support. The sdk, in conjunction with the radio driver, will handle adding and deleting pstreams as needed. (10536)

Supplicant

- Cloaked user password storage in memory to reduce the chance of disclosure due to buffer overruns or core dumps. (9747)

WebLCM

- Added the ability to enable driver and supplicant debugging through the WebLCM. (5188, 5261, 5484)
- Added the capability to generate and download a log file via the WebLCM. (5991)
- fw_update, when started from the WebLCM, is now logged to syslog. (7614)
- WebLCM now enforces strong passwords, requiring at least 8 characters, one capital, one lower case and one number. (10544)
- Added WebLCM support for the addition and configuration of IPv6 interfaces and addressing methods. (9576)
- Enhanced the UAPSD configuration to allow for the selection of specific access classes. (10536)
- Added WebLCM support for enabling Desktop Notifications. (10674)
- Support for UTF-8 characters has been added for the SSID and PSK configuration fields. (10547, 10841)
- If a firmware upgrade is interrupted, WebLCM now allows the firmware upgrade to be restarted. (10811)
- When configuring a profile, WebLCM now allows a currently installed certificate to be selected. (10750)
- Help text has been added to the WebLCM for the profile and global settings. (10748)
- WebLCM now allows WEP keys to be set as hex or ASCII characters when configuring a profile. (10481)
- WebLCM now dynamically updates to display valid credential or key options when Security or EAP types are modified while editing a profile. (10359)

Known Issues

- **Linux Kernel** – Band preference is not guaranteed in all cases with the current firmware. (2240)
- **CCX** – Currently, CCX features cannot be disabled. (4470)
- **Radio mode A/AN** – On boot, the radio may send multiple 2.4 GHz scans. (4476)
- **b or g only mode –** When in either b or g only mode and following de-authentication from an AP, the WB45 associates with either a b or g rate AP if one is available. (4478)
- **a/bg channel set –** The a/bg-channel-set set has no guard against entering channels not in a regulatory domain. (4852)
- When in WW regulatory mode with radio mode ABGN and in a 5Ghz-only environment, there may be a delay for initial connection. (5556)
- **DFS scan time** - modifying the global scan-dfs-time does not change the channel dwell time when scanning on dfs channels. (7304)

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

- **FIPS mode throughput -** when operating in FIPS mode, downstream throughput may be low when connected to certain .11n APs. To work around this issue, disable N-rates on the WB45 by configuring a non-N radio mode in the network profile. (2281)
- The SDK is not thread safe. Making calls to the SDK from multiple separate threads concurrently may result in undefined behavior. Access to the SDK should be gated by a semaphore to serialize access in a multi-threaded environment. (8864)

SOFTWARE VERSION MSD45N-LAIRD-3.5.3.14

Released March 2017

Software part number: ARM architecture SD45LXLT1-170320
X86 architecture SD45LXLT2-170320

OS: Linux

New or Enhanced Features

- The Wi-Fi radio firmware has been updated to version 3.4.0.0097 (10672)

Resolved Issues

- **SDK**
  - Resolved a buffer overflow issue in the SDK when setting long credential strings. (10420)
- **Radio Firmware**
  - Corrected the channel list for Russia (RU). (10548)
- **Sdc_cli**
  - The sdc_cli agent start/stop commands are now only available if /etc/init.d/opt/S99agent exists. (10422)
- **Supplicant**
  - Supplicant scanning is now used for initial connections. (10567)

Known Issues

- **Linux Kernel** – Band preference is not guaranteed in all cases with the current firmware. (2240)
- **CCX** – Currently, CCX features cannot be disabled. (4470)
- **Radio mode A/AN** – On boot, the radio may send multiple 2.4 GHz scans. (4476)
- **b or g only mode –** When in either b or g only mode and following de-authentication from an AP, the WB45 associates with either a b or g rate AP if one is available. (4478)
- **a/bg channel set –** The a/bg-channel-set set has no guard against entering channels not in a regulatory domain. (4852)
- When in WW regulatory mode with radio mode ABGN and in a 5Ghz-only environment, there may be a delay for initial connection. (5556)
- **DFS scan time** - modifying the global scan-dfs-time does not change the channel dwell time when scanning on dfs channels. (7304)
- **FIPS mode throughput -** when operating in FIPS mode, downstream throughput may be low when connected to certain .11n APs. To work around this issue, disable N-rates on the WB45 by configuring a non-N radio mode in the network profile. (2281)

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

- The SDK is not thread safe. Making calls to the SDK from multiple separate threads concurrently may result in undefined behavior. Access to the SDK should be gated by a semaphore to serialize access in a multi-threaded environment. (8864)

SOFTWARE VERSION MSD45N-LAIRD-3.5.3.11

Released December 2016

Software part number: ARM architecture SD45LXLT1-161215
X86 architecture SD45LXLT2-161215

OS: Linux

New or Enhanced Features

- The Wi-Fi radio firmware has been updated to version 3.4.0.0095. (10316)
- The Linux kernel on which backports is based has been updated to version 4.4 (9700).
- The OpenSSL FIPS module has been updated to version 2.0.10 (10407)

Resolved Issues

- **SDK**
  - Profiles found in /etc/summit/defaults.conf are now copied over into a new profiles.conf. Previously only template defaults were copied over. (9176)
  - A connected device will no longer disconnect and reconnect to the wireless network when a non-active network profile is deleted, if auto-profile is not enabled. (9180)
  - LRD_WF_GetSuppLevel() now validates the input parameter to prevent a segfault if called with a NULL pointer. (9233)
  - Resolved an issue where profiles exist, but are not displayed when using the **sdc_cli profile list** command. (9390)
- **Radio Firmware**
  - Corrected the supported channels when adopting the KR county code via 802.11d. (7557)
  - Modified the noise floor update algorithm to consistently pass the ETSI EN300 328 v1.9.1 requirement for short control signalling transmissions during the adaptivity tests. (9540)
  - The 45 series radio will now adjust the transmit power as a result of receiving a transmit power control value from an AP, each time it connects to a new AP. (7147)
  - Added optimizations to the country IE tracking capabilities.
- **Sdc_cli**
  - The BT Coexist option has been removed from the sdc_cli global settings since BT coexistence is enabled at driver load time. (9163)
  - Attempting to add a 21st profile via the sdc_cli application now results in an error message indicating that the maximum number of profiles is already present rather than a message that the profile already exists. (9174)
  - The sdc_cli scan output now displays the security type for a WPA2/AES PSK network as WPA2-PSK rather than WPA2-PSK-AES to be consistent with the sdc_cli profile configuration options. (9454)
- **WebLCM**
  - FIPS mode can now be enabled/disabled using the WebLCM. (9692)
  - WebLCM now checks that the profile name is unique before attempting to add a new profile. (9741)
  - WebLCM no longer accepts multiple words for the profile name when creating a new profile. (9742)

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

- **Supplicant**
  - The supplicant now uses "sdcsupp" to prefix syslog entries. (8792)
  - In FIPS mode, the negotiated EAP-TLS ciphers are now limited to those supported ciphers that are listed in NIST SP800-52r1 clause 3.3.1. (9333)
  - Added work-arounds for APs which send WPA2/TKIP EAPOL-Key packets with the key field un-encapsulated or with incorrect AES-WRAP padding in the key data field. (9475)
  - Disabled TLSv1.2 for EAP-TTLS due to incorrect operation by some authentication servers. Specifically this addresses incorrect operation with freeradius version 2.2.8 and earlier versions that also support TLSv1.2. (9554)
  - Resolved an issue that would cause TLS middle certificate validation to fail. (9598)
  - When FIPS mode is enabled, the device will only use AES, so the device will no longer attempt to connect to an AP that is using a group cipher of TKIP or WEP. (9502)
  - PEAP-GTC and PEAP-TLS are now allowed EAP types in FIPS mode. PEAP-MSCHAPv2 is still disallowed in FIPS mode. (10321)

Known Issues

- **Linux Kernel**
  - Band preference is not guaranteed in all cases with the current firmware. (2240)
- **CCX** – Currently, CCX features cannot be disabled. (4470)
- **Radio mode A/AN** – On boot, the radio may send multiple 2.4 GHz scans. (4476)
- **b or g only mode –** When in either b or g only mode and following de-authentication from an AP, the WB45 associates with either a b or g rate AP if one is available. (4478)
- **a/bg channel set –** The a/bg-channel-set set has no guard against entering channels not in a regulatory domain. (4852)
- When in WW regulatory mode with radio mode ABGN and in a 5Ghz-only environment, there may be a delay for initial connection. (5556)
- **DFS scan time** - modifying the global scan-dfs-time does not change the channel dwell time when scanning on dfs channels. (7304)
- **FIPS mode throughput -** when operating in FIPS mode, downstream throughput may be low when connected to certain .11n APs. To work around this issue, disable N-rates on the WB45 by configuring a non-N radio mode in the network profile. (2281)
- The SDK is not thread safe. Making calls to the SDK from multiple separate threads concurrently may result in undefined behavior. Access to the SDK should be gated by a semaphore to serialize access in a multi-threaded environment. (8864)

SOFTWARE VERSION MSD45N-LAIRD-3.5.2.21

Released Aug 2016

Software part number: ARM architecture SD45LXLT1-160811
X86 architecture SD45LXLT2-160811

OS: Linux

New or Enhanced Features

- The Wi-Fi radio firmware has been updated to version 3.4.0.0094.
- The Linux kernel on which backports is based has been updated to version 4.1 (8542).

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

- The Buildroot environment has been upgraded to 2015.05. All binaries are now based on this environment. (6692)

Resolved Issues

- The msd45n-binaries package has been renamed to **msd_binaries** to provide alignment across the 45 series and 50 series platforms. (8652)
- It is now possible to generate a log_dump.txt compilation file of the various log files when working with the msd package. (8378)
- A symlink to /usr/lib/libsdc_sdk.so symlink has been included in the msd package removing the possibility of linker errors which may have been encountered in previous releases. (8153)
- It is now possible to configure which GPIO pin is used to reset the Wi-Fi radio. (6109)
- **SDK**
  - Added an SDK event to inform of a failure while checking the date of a certificate. (9052)
  - Added the ability to output messages to syslog. (7357)
  - A profile created prior to the first reboot after a system comes up for the first time is no longer lost. (8983)
  - Changed the reported roam reason from SDC_E_REASON_LOW_RSSI to SDC_E_REASON_UNSPECIFIED for cases where the roam reason is not specified. (6898)
- **Radio Firmware**
  - The firmware no longer calculates the TCP checksum. (8011)
  - Channel 1 (2412) is no longer missing from the channel list after certain host initiated scans. (8807)
  - The board data file has been updated to align power levels with certification data. (9194)
- **Sdc_cli**
  - Added the option to configure the pspdelay value in a wireless network profile. (6843)
- **WebLCM**
  - Radio mode BGN is now configurable in a wireless profile via the WebLCM. (9205)
- **Supplicant**
  - Device is now able to detect and use an un-encapsulated TKIP key sent by some APs during broadcast key rotation. (8191)

Known Issues

- **Linux Kernel**
  - Band preference is not guaranteed in all cases with the current firmware. (2240)
- **CCX** – Currently, CCX features cannot be disabled. (4470)
- **Radio mode A/AN** – On boot, the radio may send multiple 2.4 GHz scans. (4476)
- **b or g only mode –** When in either b or g only mode and following de-authentication from an AP, the WB45 associates with either a b or g rate AP if one is available. (4478)
- **a/bg channel set –** The a/bg-channel-set set has no guard against entering channels not in a regulatory domain. (4852)
- **WebLCM** – attempting to enable/disable FIPS mode using the WebLCM will fail. As a workaround, FIPS mode can be enabled/disabled using sdc_cli. (9692)
- **DFS scan time** - modifying the global scan-dfs-time does not change the channel dwell time when scanning on dfs channels. (7304)

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

SOFTWARE VERSION MSD45N-LAIRD-3.5.1.43

Released Dec 2015

Software part number: ARM architecture SD45LXLT1-151211
X86 architecture SD45LXLT2-151211

OS: Linux

New or Enhanced Features

- **SDK**
  - UAPSD enable/disable supported (4861)
  - Add ability to change supplicant log level (7026, 7160)
  - Add LRD_WF_GetRadioChipSet API (7558)
  - Add LRD_WF_System_ID API (6192)
  - Add LRD_WF_ClearCredentialFieldsAPI (7739)
  - Add LRD_WF_GetIpV6Address API (8179)
- **Linux Kernel Driver**
  - Add UAPSD support vis create/delete pstream(4861)
- **Sdc_cli**
  - UAPSD on/off support (4861)
  - new command dumpall, dumps all the profiles and there settings for debug logging (6108)
  - Add ability to change/show the supplicant log level (7160)
  - Add ability to set global max beacon timeout (7506)
  - Add ability to create/modify/show profile template for future profile creation (7102)

Resolved Issues

- **SDK**
  - The RECONFIGURE command may generate errors while in transitional states. (2230)
  - Default bLRS value returned to 0x0000ffff (5918)
  - Connection state no longer stored in profiles.conf (6590)
  - Correct PIL set domain function (7296)
  - no longer accept global values outside of limits (5623)
  - Deleting profiles outside of Autoprofile could corrupt profile set (6817)
  - GetRadioStatus() no longer returns an error when no IP address (6281)
  - Change global value from # of missed beacons to beacon miss time (7508)
  - beacon miss time in TU units (8166)
- **Radio Firmware**
  - On an initial connect, the radio will no longer connect to an AP with a signal strength below the roam threshold unless there are no better APs available. (5784)
  - User defined channel sets, configured via the global a-channel-set, bg-channel-set and dfs-channels options, now take effect before the initial radio connect. (7806)
  - When configured for WW mode and initially adopting a regulatory domain via 802.11d, the radio will now periodically check the country codes being advertised in beacons in its environment and update the regulatory domain as needed. (7804)
- **Sdc_cli**
  - If the user field is changed or cleared, the password field should also be cleared. (4637)

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

  - Indicate radio is disabled when attempting to scan while disabled. (5489)
  - Global set now enforces range checking. (4666)
  - Global set commands now ignore case of input text. (6190)
  - tx-max removed from available settings. (6191)
  - In order to be clear as to which version is supported, the eap type PEAP-MSCHAP is now output as PEAP-MSCHAPV2. Input of ether string is accepted as input, but are treated as version 2. (6382)
  - Removed bitrate set feature (5478)
  - Allow single quote in input strings(6897)
  - stop printing "OK" by default. Can be restored if environment has LAIRD_SDK_OK=yes(7273)
  - Default EAP changed to mschap for new configurations (7525)
  - activating profile will now disable autoprofile (6865)
  - enable uppercase WEP keys (7651)
  - Some output was being set to standard error. Now all uses standard out (7675)
  - output standardized to lower case (except acronyms) (7676)
  - global show|set output standardized (7600)
  - changing username now clears password (4637)
  - changing eap types clears associated fields (4637)
  - setting user cert when configured for EAP-TLS no longer returns invalid configuration (7776)
- **Supplicant**
  - no longer store connection state variables in profiles.conf(6590)
  - added support set/report log level to the SDK/CLI(7027)
  - Some EAP types (EAP-FAST/PEAP-GTC/PEAP-MSCHAPv2) would wait for authentication timeout before reattempting the connection(7438)

Known Issues

- **Linux Kernel**
  - Band preference is not guaranteed in all cases with the current firmware. (2240)
- **CCX** – Currently, CCX features cannot be disabled. (4470)
- **Radio mode A/AN** – On boot, the radio may send multiple 2.4 GHz scans. (4476)
- **b or g only mode –** When in either b or g only mode and following de-authentication from an AP, the WB45 associates with either a b or g rate AP if one is available. (4478)
- **a/bg channel set –** The a/bg-channel-set set has no guard against entering channels not in a regulatory domain. (4852)
- **DFS scan time** - modifying the global scan-dfs-time does not change the channel dwell time when scanning on dfs channels. (7304)

SOFTWARE VERSION MSD45N-LAIRD- 3.5.0.36

Released August 2015

Software part number: ARM architecture SD45LXLT1-150825
X86 architecture SD45LXLT2-150825

OS: Linux

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

New or Enhanced Features

- **Regulatory domain support –** the ability to configure China, Russia and Brazil regulatory domains has been added. (7288)
- **PIL -** lrd_sdk_pil.h header has been added to the MSD45 build package. (7646)

Resolved Issues

- **Error when setting weptype "auto" on a new profile –** setting the weptype to "auto" when creating a new profile no longer results in an "invalid configuration" error. (4919)
- **tcmd.sh won't enable testmode –** tcmd.sh has been modified so that testmode can now be enabled with the current firmware. (7293)
- **tcmd.sh exits after failing to detect wireless interface –** tcmd.sh has been modified so that it now reliably detects the wireless interface. (7903)
- **ar6003 firmware updated to 3.4.0.90 –** the updated firmware addresses the following issues:
  - allow host to disable channels when setting channel parameters. (7034)
  - fixed the link map to prevent the software from allocating past the end of RAM and potentially causing an assert. (7488)
  - corrected the handling of an unsupported channel received in a CCX RM request. (7542)
- **TELEC supported channels** – 5 GHz channels 100 – 140 are now supported when configured for the TELEC regulatory domain. (7793)
- **KCC supported channels** – 5 GHz channels 100 – 124 are now supported when configured for the KCC regulatory domain. (7794)
- **event_mon –** event_mon is no longer limited to only running when the supplicant is running. This now allows event_mon to run when hostapd is active. (7945, 7990)

Known Issues

- **SDK**
  - The RECONFIGURE command may generate errors while in transitional states. (2230)
- **Linux Kernel**
  - Band preference is not guaranteed in all cases with the current firmware. (2240)
- **Sdc_cli**
  - If the user field is changed or cleared, the password field should also be cleared. This is currently not occurring. (4637)
- **CCX** – Currently, CCX features cannot be disabled. (4470)
- **Radio mode A/AN** – On boot, the radio may send multiple 2.4 GHz scans. (4476)
- **b or g only mode –** When in either b or g only mode and following de-authentication from an AP, the MSD45 associates with either a b or g rate AP if one is available. (4478)
- **a/bg channel set –** The a/bg-channel-set set has no guard against entering channels not in a regulatory domain. (4852)

SOFTWARE VERSION MSD45N-LAIRD- 3.5.0.33

Released May 2015

Software part number: ARM architecture SD45LXLT1-150512
X86 architecture SD45LXLT2-150512

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

OS: Linux

Resolved Issues

- **RTS Threshold –** Configuration of the RTS Threshold is now supported. (4572)
- **Firmware assert after CCX RM beacon measurement –** A firmware assert which could occur when returning to the home channel following a CCX RM beacon measurement has been resolved. (5887)
- **Improved roaming performance**
  - The scan and roam thresholds are now tied to the roam trigger setting in order to properly work with the radio firmware. (6032)
  - Increased the number of max beacon misses from 15 to 30. (6032)
  - ar6003 firmware updated to 3.4.0.88
    - The ar6003 firmware no longer roams from a good AP to an AP with a signal strength less than -96 dBm. (7363)
    - Doesn't mark an AP as bad if connected and receive a deauth from the bss. (7107)
    - RSSI values of roam candidates are now weighted heavier than the RSSI average when the roam table is updated from Ack packets (in response to our probe request) and beacons/probe responses heard during scans(background and foreground). (7141)
    - No longer allows beacons received on the side channels to update the roam table RSSI values in the 2.4GHz band. (7141)
- **Firmware recovery –** event_mon now has radio state manager mode to restore previous radio global settings on firmware recovery. (6574)
- **CCKM memory leak –** A memory leak due to an allocated nl80211 message not being freed when discarding the CCKM BTK has been resolved. (6685)
- **Low power in the presence of .11h power constraint IE –** Modified the ar6003 firmware to correct low Tx power in the presence of an 802.11h power constraint IE. (6901)
- **Sdc_cli –** Roam Delta is now displayed as *unsupported* in the global configuration. (7103)
- **Radio Mode** – The connection status of the MSD45, when joined to an ad-hoc cell, now indicates *associated* rather than *not associated*. (5045)

Known Issues

- **SDK**
  - The RECONFIGURE command may generate errors while in transitional states. (2230)
- **Linux Kernel**
  - Band preference is not guaranteed in all cases with the current firmware. (2240)
- **Sdc_cli**
  - Currently, Tx Max (global setting) accepts any value. (4213)
  - If the user field is changed or cleared, the password field should also be cleared. This is currently not occurring. (4637)
- **CCX** – Currently, CCX features cannot be disabled. (4470)
- **Radio mode A/AN** – On boot, the radio may send multiple 2.4 GHz scans. (4476)
- **b or g only mode –** When in either b or g only mode and following de-authentication from an AP, the MSD45 associates with either a b or g rate AP if one is available. (4478)
- **a/bg channel set –** The a/bg-channel-set set has no guard against entering channels not in a regulatory domain. (4852)

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

SOFTWARE VERSION MSD45N-LAIRD- 3.5.0.19

Released September 2014

Software part number: ARM architecture SD45LXLT1-140905

X86 architecture SD45LXLT1-140904

OS: Linux

New or Enhanced Features

- Added x86 support for the MSD45N on Linux
- MSD45 backports driver version 3.5.16.0 for MSD45N release 3.5.0.19 is available at https://github.com/LairdCP/laird-linux-backports/releases/tag/rel-GA3.2
- With this release, fast powersave mode is now supported. (4472)
- Event Monitor can now log to syslog by using the **--output logging** or **--output both** arguments. (5526)

Resolved Issues

- **Power Save mode** – Fast powersave mode is now supported. (4472)
- **sdc_cli (CLI)** –
  - The TTLS Inner method (global setting) value now displays as a text string instead of an enum value. (4646)
  - Powersave – Powersave **OFF** and **MAX** are now functional and can be set using sdc_cli. (4672)
  - In sdc_cli global show output, the auth-server-type was changed from acs/sbr to type 1/type 2. (5220)
  - The sdc_cli now has the ability to enable/disable hostapd mode. (5528)
- **LRD_WF_GetDHCPLease() function** – The LRD_WF_GetDHCPLease() function was added to support getting the current DHCP lease. This allows SDK Events to determine if the IP has changed. For the MSD45N, you must use LRD_WF_PIL_GetDHCPLease in the PIL to implement it. (4720)
- **EAP-FAST configuration –** The MSD45N now has the ability to configure an EAP-FAST anonymous identity. (4832)

> **Note:** Refer to the Laird Command Line Interface (CLI) Guide for instructions on how to configure anonymous identities.

- **EAP initialization failure –** With this release, a supplicant event is now added when EAP initialization fails. (4923)
- **Aggressive scan –** sdc_cli now reflects that the global configuration Aggressive Scan parameter is not supported on the MSD45N. (4961)
- **Roam Period ms setting issue –** Settings applied to Roam Period ms were not previously adhered to with the MSD45N. (4966)
- **GetRadioStatus issue –** Prior to this release, the GetRadioStatus would incorrectly return zero (0) in the txpower field. (4967)
- **Supplicant scanning –** Supplicant scanning is now similar to driver scanning. Previously, when the MSD45 was disconnected, the scan back-off that was configured by probe delay was not obeyed when the supplicant was scanning. (5020)
- **Supplicant update –** The supplicant has been updated from code base wpa_supplicant-1.0 to wpa_supplicant-2.0. (5129)

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

- **Auto-recover –** MSD45 now auto-recovers from a firmware crash. (5157)
- **sdc_events.h –** Because sdc_event.h is only supported in Linux, the header (#include sdc_events.h) was moved inside the Linux-only code section in sdc_sdk.h. (5181)
- **Global setting inputs –** Global settings that are On/Off now accept the following inputs: 1, on, enable, enabled, 0, off, disable, disabled. (5207)
- **Roam settings –** Roam Delta, Roam Trigger, and Roam Period can now be set in increments of one. (5235)
- **SetEAP functions –** When SETEAPInfo is called for TLS functions, the usercert is no longer being saved as the password. (5291)
- **Deauthenticating –** The MSD45 no longer sends a deauth immediately following a successful connection. (5413)
- **Scanning issue –** The MSD45N no longer stops scanning. This issue has been fixed. (5430)
- **Scan output error –** Scan output now displays an accepted WEP type. (5492)
- SIGTERM – On SIGTERM, event_mon now outputs historic bitmask and a message about quitting. (5638)
- **open-ssl upgrade –** Upgraded to openssl v 1.0.1h to address security vulnerabilities (CVE-2014-0224). See http://www.openssl.org/news/secadv_20140605.txt for more information. (5706)
- **dhcp_injector program –** dhcp_injector program was added to allow the firing of DHCP events into any SDK events user. (5710)
- **Status commands –** The SDK now returns CARDSTATE_AP_MODE when querying status and in AP mode. The sdc_cli app now reflects this by displaying **AP mode** in the Status field of the status command. (5735)
- **SDK DHCP event status –** When the SDK DHCP event with BOUND status is reported, it now correctly reports reason IP_ADDRESS_DIFFERENT and IP_ADDRESS_SAME. Previously, it would only report IP_ADDRESS_DIFFERENT. (5742)
- **Scanning error –** The MSD45N now scans all channels after activating a new profile. Prior to this release, it would scan limited channels. (5888)

Known Issues

- **SDK –**
  - The RECONFIGURE command may generate errors while in transitional states. (2230)
- **sdc_cli –**
  - Currently, Tx Max (global setting) accepts any value. (4213)
  - If the user field is changed or cleared, the password field should also be cleared. This is currently not occurring. (4637)
- **CCX** – Currently, CCX features cannot be disabled. (4470)
- **Radio mode A/AN** – On boot, the radio may send multiple 2.4 GHz scans. (4476)
- **b or g only mode –** When in either b or g only mode and following de-authentication from an AP, the MSD45 associates with either a b or g rate AP if one is available. (4478)
- **wmiconfig's help output –** wmiconfig's help output does not match its capabilities (the supported commands are a subset of the displayed set of commands). (4521)
- **RTS Threshold –** RTS Threshold is not currently configurable. (4572)
- **a/bg channel set –** The a/bg-channel-set set has no guard against entering channels not in a regulatory domain. (4852)

SOFTWARE VERSION MSD45N-LAIRD-3.4.1.106

Released May 2014

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

Resolved Issues

- **Throughput** – The average throughput for MSD45 radios is no longer limited to approximately 15 Mbps. (2278)
- **Linux Kernel –**
  - The following rate preferences are now adhered to under all conditions:
    - Radio mode B no longer functions like BG. (2241)
    - Radio mode GN no longer functions like ABGN. (2243)
    - Radio mode G no longer functions like ABGN (2247)
  - DFS channels cannot be enabled without a wireless restart or reboot. (4503)
- **Radio malfunction on specific channels –** The radio would previously not function on channels 157, 161, and 165 when DFS was turned off (FCC domain). This is no longer an issue. (4619)
- **Date-check not displayed in the sdc_cli global list –** With this release, Date-Check now displays as a sdc_cli global option. (4647)
- **Assertion failure –** Prior to this release, an initial failure would cause an assertion failure. This failure no longer occurs and this issue has been resolved. (4656)
- **WEP type –** On multiple versions of code when setting the weptype WEP_AUTO, the EAP type would previously change to LEAP automatically. With this release, this issue has been resolved. (4714)
- **DTIM display issue –** With this release, DTIM now properly displays at end of status output (sdc_cli status). (4722)
- **N-Rate/Data receiving issue –** Previously, the MSD45 would stop receiving data after 10-15 seconds when using N-Rates with post .69 firmware. With this release, the new firmware addresses the 10-second problem with 802.11n APs. (4723)
- **Unused Linux patches –** With this release, unused patches for Linux v3.7 no longer appear in MSD45N packages. (4760)
- **Supplicant support for higher encrypted certificates –** The MSD45 supplicant now supports higher encrypted certificates. (4770)
- **GetBSSIDList buffer overrun –** Due to a memory corruption bug in the SDK, the GetBSSIDList() function would overwrite the list buffer. This problem has been fixed with this release. (4792)
- **BG and A channel sets –** Bg-channel set and a-channel set are now enabled. (4853)
- **CA cert clears password –** Setting CaCert no longer clears password or user cert password buffer. (4880)
- **Radio Mode** – With this release, ad-hoc radio mode is now operational. (2329)
- **WPA only profile –** As of January 2014, *WPA only* profile is no longer allowed by the Wi-Fi Alliance. With this release, a profile configured for WPA TKIP connects using the best available encryption/key-management combination advertised by the AP. (4617)
- **Events/monitoring system –** This release includes a more robust events/monitoring system. (4702)
- **sdc_cli**
  - The sdc_cli auto-profile syntax has been moved to match the new LCM (previously SCU). (4609)
  - **sdc_cli status reporting Tx Power –** If set to Auto, the sdc_cli status output of Tx power now displays Auto rather than 0 mw. (4623)
  - The sdc_cli global now indicates if a reboot is required to activate/deactivate FIPS mode. (4850)
  - The sdc_cli app now outputs a message when the driver is not loaded for both status and version commands. (4938)
  - SSID is now included in the sdc_cli status output. (4972)
  - Auto-profile now remains enabled when a profile is removed from the auto-profile list. (5222)
- **NULL SSIDs –** NULL SSIDs now display as **“”** in manual scan results. (4715)

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

- **TELEC –** The TELEC (MIC) regulatory domain now functions properly in regards to channel selection. (4507)
- **KCC regulatory domain –** When using smu_cli to set the regulatory domain to KCC, the MSD45 would previously incorrectly connect on the intermediate band (channels 100-140). This is no longer an issue. (4508)
- **Default settings –** On new installs, the device no longer connects to an open AP (by default) when no SSID is configured. This default setting can be controlled via the global **ignore-null-ssid** option in sdc_cli. (4927)
- **SDK –**
  - The issue with mismatched EAP types and WEP types has been resolved with this release. (4645)
  - The device name now displays with Cisco devices when they are available. (2251)
  - Available AP names are now reported. (2252)
  - The AP's IP addresses are now reported. (2253)
  - C++ guard has been added to the public header file lrd_sdk_pil.h. (4939)
  - Prior to this release, SDK Events would leave behind socket file lrd_evt_listen.*. Because only ten of these files could exist for SDK events, this issue would return an error on SDCRegisterForEvents indicating that each thread is not exiting correctly. This issue has been resolved. (4968)
  - Previously with the MSD45, the MAC address was not always populated in SDK Events. The BSSID/MAC address is no longer missing from the Connection State event.(4969)
  - With this release, SDK events now receive an internal error message when an event thread stops. (4970)
  - Prior to this release, when the MSD45 used weptype wpa2-aes, it would not connect to a mixed mode AP. This issue has been resolved. (5014)
  - The Events API no longer uses up to 100% of available CPU. (5121)
- **Wi-Fi certification requirements –** To meet new WFA requirements, WPA2 TKIP and WPA2 PSK TKIP have been removed. Without their removal, the radio would not pass WFA certification. (5067)
- **Memory leak –** The memory leak in libnl's genl_ctrl_resolve() function has been fixed. (5073)
- **Security types –** GetBSSIDList now lists security types. (4981)
- **FIPs mode authentication failure –** Prior to this release, FIPs mode authentication failures would occur when roaming back to the same AP due to authentication packets being incorrectly encrypted. The supplicant has been modified to ensure encryption keys were cleared when roaming to the same AP.(5265)
- **Default keep alive value –** The default value for *keep alive* has been changed from 60 seconds to 9 seconds. (5279)
- **Heartbleed security bug – OpenSSL upgrade –** OpenSSL is now upgraded to resolve the heartbleed security bug. (5373)

Known Issues

- **SDK**
  - The RECONFIGURE command may generate errors while in transitional states. (2230)
  - There is a command mismatch in the global settings. To turn N-mode off, a command of "disabled" is entered. To turn it back on, a command of "0" is used. (3917)
- **CCX** – Currently, CCX features cannot be disabled. (4470)
- **Power Save mode** – Currently, Fast powersave mode is not supported. (4472)
- **Radio mode A/AN** – On boot, the radio may send multiple 2.4 GHz scans. (4476)
- **b or g only mode –** When in either b or g only mode and following de-authentication from an AP, the MSD45 associates with either a b or g rate AP if one is available. (4478)
- **Wmiconfig –** The help output for wmiconfig must be fixed to match it capabilities. (4521)
- **RTS Threshold –** RTS Threshold is not currently configurable. (4572)

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

- **sdc_cli –**
  - If the user field is changed or cleared, the password field should also be cleared. This is currently not occurring. (4637)
  - Currently, Tx Max (global setting) accepts any value. (4213)
- **Scanning issue –** While connected to an AP, the MSD45 occasionally stops scanning. When this occurs, the MSD45 may remain connected to the current AP when the signal strength drops below the roam trigger rather than scanning for a better AP. The MSD45 scans and connects to a new AP once it loses connection to the current AP. (5430)

SOFTWARE VERSION MSD45N-LAIRD-3.4.1.5

Released November 25, 2013

Resolved Issues

- **MSD FIPs Support**– Provide kernel patches to allow msd45n users to use Laird FIPS modules. (4560)

Known Issues

- **SDK**
  - The RECONFIGURE command may generate errors while in transitional states. (2230)
  - The device name does not display with Cisco devices even when they are available. (2251 and 2254)
  - Available AP names are not reported. (2252)
  - The AP's IP addresses are not reported. (2253)
  - There is a command mismatch in the global settings. To turn N-mode off, a command of "disabled" is entered. To turn it back on, a command of "0" is used. (3917)
- **Linux Kernel**
  - Band preference is not guaranteed in all cases with the current firmware. (2240)
  - Rate preferences are not adhered to under all conditions:
    - Radio mode B functions like BG. (2241)
    - Radio mode GN functions like ABGN. (2243)
    - Radio mode G functions like ABGN (2247)
  - Powersave mode causes a timeout during EAP authentication. (4468)
  - DFS channels cannot be enabled without a wireless restart or reboot. (4503)
- **Throughput** – Currently, the average throughput for these radios is limited to approximately 15 Mbps. (2278)
- **Radio Mode** – With this release, ad-hoc radio mode is not operational. (2329)
- **CCX** – Currently, CCX features cannot be disabled. (4470)
- **Radio disable state** – If the radio is disabled, a reboot re-enables the radio. (4471)
- **Power Save mode** – Currently, Fast powersave mode is not supported. (4472)
- **Radio mode A/AN** – On boot, the radio may send multiple 2.5 GHz scans. (4476)
- **TELEC –** The TELEC (MIC) regulatory domain is not functioning properly in regards to channel selection. (4507)
- **Wmiconfig –** The help output for wmiconfig must be fixed to match it capabilities. (4521)
- **RTS Threshold –** RTS Threshold is not currently configurable. (4572)
- **Radio malfunction on specific channels –** The radio does not function on channels 157, 161, and 165 when DFS was turned off (FCC domain). (4619)

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

SOFTWARE VERSION MSD45N-LAIRD-3.4.1.2

Released November 5, 2013

Resolved Issues

- **Linux Kernel –**
  - Powersave mode no longer causes a timeout during EAP authentication. (4468)
- **RSSI –** RSSI is now only reported when the card is associated or authenticated. (2292)
- **Radio Mode** – With this release, ad-hoc radio mode is now operational. (2329)
- **SDK –**
  - The issue with sdc_cli status Tx power has been resolved. (2277)
  - Prior to the fix, manual scan would not always complete. (2295)
  - Previously, an sdc_cli scan would always report the channel as zero (0). The method of retrieval from IE has been modified to correctly report the channel in all circumstances. (2307)
  - RECONFIGURE timeout no longer occurs with the MSD45 auto-profile. (4522)
  - GetBSSIDList previously failed to return the SSID of APs operating on the 5 GHz band. (4695)
- **Removing profiles –** Previously, deleting a profile and using CTRL+C to exit did not remove the profile. This issue has been resolved. (4236)
- **Multiple associations/disassociations –** The cause of multiple associations and disassociations prior to a successful connection has been removed. (4479)
- **Events bit mask –** Bit mask for events now operates correctly. (4502 and 4614)
- **Linux CLI –** With this release, the option to set TTLS inner method has been added. (4515)
- **Roam delta –** Previously, the Roam Delta setting was not obeyed. This issue has been fixed. (4519)
- **Out of Range–Scan Suspension –** Prior to the fix, an out-of-range module would continue to aggressively scan for an AP rather than suspending the scan. (4602)
- **Supplicant –** Supplicant terminates twice in a row on first boot. (4603)
- **Radio malfunction on specific channels –** The radio would previously not function on channels 157, 161, and 165 when DFS was turned off (FCC domain). This is no longer an issue. (4619)
- **Profile –** When a profile is activated or the active profile is modified, a printf statement "SetProbeDelay entry" would display. This issue has been fixed. (4638)
- **Tx Power setting –** Prior to the fix, the Txpower value using sdc_cli would return an error. This no longer occurs. (4694)
- **Client name –** Client name debug would previously display when CCX features were enabled. (4698)

Known Issues

- **SDK –**
  - The RECONFIGURE command may generate errors while in transitional states. (2230)
  - The device name does not display with Cisco devices even when they are available. (2251)
  - Available AP names are not reported. (2252)
  - The AP's IP addresses are not reported. (2253)
  - There is a command mismatch in the global settings. To turn N-mode off, a command of "disabled" is entered. To turn it back on, a command of "0" is used. (3917)
- **Linux Kernel –**
  - Band preference is not guaranteed in all cases with the current firmware. (2240)
  - Rate preferences are not adhered to under all conditions:

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

        - Radio mode B functions like BG. (2241)
        - Radio mode GN functions like ABGN. (2243)
        - Radio mode G functions like ABGN (2247)
    - DFS channels cannot be enabled without a wireless restart or reboot. (4503)
- **Throughput** – Currently, the average throughput for these radios is limited to approximately 15 Mbps. (2278)
- **CCX** – Currently, CCX features cannot be disabled. (4470)
- **Radio disable state** – If the radio is disabled, a reboot re-enables the radio. (4471)
- **Power Save mode** – Currently, Fast powersave mode is not supported. (4472)
- **Radio mode A/AN** – On boot, the radio may send multiple 2.5 GHz scans. (4476)
- **TELEC –** The TELEC (MIC) regulatory domain is not functioning properly in regards to channel selection. (4507)
- **Wmiconfig –** The help output for wmiconfig must be fixed to match it capabilities. (4521)
- **RTS Threshold –** RTS Threshold is not currently configurable. (4572)

SOFTWARE VERSION MSD45N-LAIRD-3.4.0.7

Released September 5, 2013

Resolved Issues

- **Association/Disassociation issue** – Previously, multiple associations and disassociations occurred prior to a successful connection. This issue has been resolved. (BZ4479)
- **Linux CLI** – The option to set TTLS inner method has been added to the software. (BZ4515)
- **RSSI issue** – Previously, sdc_cli status was reporting RSSI from the prior connection when disconnected. With this release, RSSI is now only reported when the card is associated or authenticated. (BZ2292)
- **Sdk_cli scanning issue** – Previously, a sdc_cli scan would always report the channel as zero (0). With this release, a modified method of retrieval from IE is available to correctly report channels in all circumstances. (BZ2307)
- **U-APSD –** Currently U-APSD is not enabled on the MSD45N.

Known Issues

- **Throughput** – Currently, the average throughput for these radios is limited to approximately 15 Mbps. (BZ2278)
- **Linux Kernel** –
    - Band preference is not guaranteed in all cases with the current firmware. (BZ2240)
    - Rate preferences are not adhered to under all conditions:
        - Radio mode B functions like BG. (BZ2241)
        - Radio mode GN functions like ABGN. (BZ2243)
        - Radio mode G functions like ABGN (BZ2247)
    - DFS channels cannot be enabled without a wireless restart or reboot. (BZ4503)
- SDK (sdc_cli status) –
    - The auto-profile RECONFIGURE command sometimes generates errors in transitional states. (BZ2230)
    - The device name does not display with Cisco devices even when they are available. (BZ2251)
    - Available AP names are not reported. (BZ2252)

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

  - The AP's IP addresses are not reported. (BZ2253)
  - Tx power level is not currently reported. (BZ2277)
  - Powersave mode may cause a timeout during EAP authentication. (BZ4468)
  - RECONFIGURE timeout may occur under certain circumstances. (BZ4522)
- **Client Name** – Currently, client names are not reported by APs. (BZ2254)
- **Scan** – Manual scan sometimes gets hung up and does not complete. (BZ2295)
- **Radio Mode** – Currently, ad-hoc radio mode is not operational. (BZ2329)
- **CCX** – Currently, CCX features cannot be disabled. (BZ4470)
- **Radio disable state** – If the radio is disabled, a reboot re-enables the radio. (BZ4471)
- **Power Save mode** – Currently, Fast powersave mode is not supported. (BZ4472)
- **Radio mode A/AN** – On boot, the radio may send multiple 2.5 GHz scans. (BZ4476)
- **Regulatory domain** –The MSD45N incorrectly connects on intermediate band channels when configured for the MIC (TELEC) regulatory domains.
- **Roam delta** – Currently, the roam delta setting is not obeyed by the radio. (BZ4519)

SOFTWARE VERSION MSD45N-LAIRD-3.4.0.6

Released August 14, 2013

Resolved Issues

- **Linux Kernel**
  - at6kl – Fixed firmware crash caused by uninitialized data in Laird-specific channel list data.

Known Issues

- **Regulatory Domain**
  - The MSD45N incorrectly connects on intermediate band channels when configured for the KCC or MIC (TELEC) regulatory domains.
- **Power Save**
  - Setting power save mode to *Fast* configures the MSD45N for Max Power Save.
- **U-APSD**
  - Currently U-APSD is not enabled on the MSD45N.

SOFTWARE VERSION MSD45N-LAIRD-3.4.0.5

Released August 13, 2013

Note: Software version 3.4.0.4 was not released. Changes are rolled into this release.

New and Enhanced Features

- **Linux Kernel –**
  - ath6kl - A new setting is added for DFS enable/disable.
  - ath6kl – A new set regdomain command is added.
- **Build System and Rootfs -**
  - In the file system, added the binary tool *athtestcmd* to all builds.

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

- **Atheros Tools -**
  - Added --set_regdomain
  - Added --get_channel_list
- **SDK –**
  - Now allows ability to set the regulatory domain.
  - Created setting to enable or disable DFS.

Resolved Issues

- **Linux Kernel**
  - ath6kl - Community patches are applied to fix minor ath6kl driver bugs.
  - ath6kl – Bug fixed for scenario where nl_put_failure wasn't called when nla_put failed.
  - ath6kl - Code is added to make wmiconfig --get-channel-list retrieve channel list.
  - ath6kl - Phy modes (radio modes) are now all set before each connection attempt.
- **Build System and Rootfs**
  - Atheros 6003 firmware is updated to version 3.4.0.69 which fixes the shared WEP problem and restores Bluetooth coexistence code.
- **SDK**
  - Event bitmask is fixed, now allowing REGDOMAIN and SCAN events to fire.
- **Supplicant**
  - In the BZ4469, EAP-FAST Phase 2 failures are now fixed.

Known Issues

- **Linux Kernel**
  - ath6kl - Once DFS channels are disabled, only a wireless restart or reboot re-enables those channels.
  - ath6kl - Driver crashes the wifi firmware. BZ4488

SOFTWARE VERSION MSD45N-LAIRD-3.4.0.3

Released August 5, 2013

Resolved Issues

The following issues have been fixed in the msd45n-laird-3.4.0.3 release:

- **SDK –**
  - BG, A, AN, BGN, ABGN/BGAN, and ABG/BGA radio modes are now properly supported. (BZ2239, BZ2240, BZ2242, BZ2244, BZ2245, BZ2246, BZ2248)

Known Issues

The following are known issues in the **msd45n-laird-3.4.0.3** release:

- **SDK –**
  - There is an issue with radio modes where the G rates sometimes activate on *B only* and B rates activate on *G only/GN*.
  - Currently, DFS channels are always enabled.

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

SOFTWARE VERSION MSD45N-LAIRD-3.4.0.2

Released August 2, 2013

New and Enhanced Features

The following features in **msd45n-laird-3.4.0.2** were not supported in previous versions of MSD45N software.

- **Atheros Tools –**
  - wmiconfig now supports the following: --settxselrates, --set_ht_cap, --wmode

Resolved Issues

The following issues have been fixed in the **msd45n-laird-3.4.0.2** release:

- **Linux Kernel –** Support has been added to allow the SDK to properly support radio modules.
- **Wi-Fi Firmware** –
  - FIPS now restricts all OUIs except the Laird OUI (00:17:23).
  - One unified firmware now supports all CCKM and FIPS features; older firmware has been removed.
- **Atheros Tools –**
  - Fixes were made in the generation of channel lists in the following: --startscan and argument parsing in –scan
- **SDK –**
  - A fix was made to roam trigger which increases throughput and reduces overly aggressive scanning. (BZ2278, BZ2324)
  - **#** is now a valid character for SSIDs.
  - Throughput has been significantly improved with this release.
- **Supplicant –**
  - The supplicant version was updated to 3.4.7.7
  - Previously, there was a large delay after disconnect. This issue has been resolved. (BZ2335)
  - The supplicant now allows WPA2-PSK in FIPS mode. (BZ2328)
  - The issue with CCKM fast roam failures has now been resolved. (BZ2313)

Known Issues

The following are known issues in the **msd45n-laird-3.4.0.2** release:

- **General –** Some issues with throughput still exist, mainly the sudden drops that causes average throughput to decrease.
- **SDK –**
  - All radio modes enable ABGN.

SOFTWARE VERSION MSD45N-LAIRD-3.4.0.1

Released July 22, 2013

New and Enhanced Features

The following features in **msd45n-laird-3.4.0.1** were not supported in previous versions of MSD45N software.

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

General

- Patches are now in place for the ath6kl wmiconfig interface.
- Ath6kl now handles the following commands from SDK: version, channel params, and powersave.
- MSD45N support for CCKM has been added although there remains an issue with fast roaming.

SDK

The following have been added to this version of the SDK:

- Version and channel setting commands
- Track RADIOCHIPSET in profiles.conf
- Association, disassociation, authentication, and roam events

CLI

- The MSD45 CLI now has the ability to determine chipset.

Ath6kl Devkit

- Libtcmd, tcmd, and wmiconfig now use libnl-3.
- Wmiconfig has now been added to the current Laird build.

Resolved Issues

The following issues have been fixed in the **msd45n-laird-3.4.0.1** release:

General

- Modified the filter for enable/disable of FIPS mode. (BZ2293)

SDK

- Radio enable and disable now check interface flags before changing them.
- This version includes sdc_sdk.h.
- C++ guards have been added to config_strings.h.
- Improved comments have been added to lrd_platspec.h.
- With this release, RSSI no longer displays when disconnected.
- Powersave mode is now enabled on the MSD45.

CLI

- The non-functioning WAPI option has been removed.
- When a specific platform does not support a feature, an indication of 'unsupported' is provided.
- The fragmentation threshold option for the MSD45 platform has been removed.

Supplicant

- Updated the version to 3.4.7.6.
- MSD/Linux change date/time may cause the supplicant timers to behave in unexpected ways. (BZ2310)
- The MSD45N now offers support for CCKM. (BZ2236)

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

FIPS

- Because it supports FIPS, version 3.4.0.62 (fw_v3.4.0.62.bin) is the default firmware. This firmware is located in **/lib/firmware/ath6k/AR6003/hw2.1.1**.

> **Note:** Although firmware version 3.4.0.66 (fw_v3.4.0.66.bin) supports CCKM, there are still unresolved issues in this release with CCKM (fast roaming).

Known Issues

The following are known issues in the **msd45n-laird-3.4.0.1** release:

General

- Currently, there are two mutually exclusive firmwares on the system. One supports CCKM and the other supports FIPS. These will be merged at a later date. Both are located at:
in /lib/firmware/ath6k/AR6003/hw2.1.1

md5sum	Name	Note
ab21a732c2de4d21b293ba339fad84b5	fw_v3.4.0.62.bin	FIPS works with this one.
0aad7b5c42248f0a9af3871d875cf319	fw_v3.4.0.66.bin	FIPS does NOT work with this one.

They can be switched on a live-running system via:

```
# tcmd.sh normal fw_v3.4.0.66.bin
# wireless start
# dmesg -c |grep ath6kl
ath6kl: INIT GENERIC NETLINK ATHEROS COM
ath6kl: ar6003 hw 2.1.1 sdio fw 3.4.0.0061\x01 api 4
```

> **Note:** The FIPS version (3.4.0.62) is the default.

- Firmware version 3.4.0.62 reports a different version number (v3.4.0.61) when running:

```
# tcmd.sh normal fw_v3.4.0.62.bin
# wireless start
# dmesg -c |grep ath6kl
ath6kl: INIT GENERIC NETLINK ATHEROS COM
ath6kl: ar6003 hw 2.1.1 sdio fw 3.4.0.0061\x01 api 4
```

To see the firmware related files and detail, do the following:

```
# tcmd.sh check
```

- With this release, there are still Radio Mode issues.
- The MSD45 does not connect while using Shared WEP. (BZ2228)
- Client name is not currently reported by the AP. (BZ2254)
- Global DFS on/off does not currently function. (BZ2255)
- The RECONFIGURE command times out when the radio mode is set incorrectly. (BZ2270)

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

- The MSD45 currently has low throughput. (BZ2278)
- QOS is not currently functioning (or set) properly. (BZ2309)
- The MSD45 manual scanning function hangs. (BZ2295)
  Related: The Get Scan feature currently fails. (37323)

The following issues should be resolved with the fix for bug 2272 (Kernel Panic).

- Some instances of firmware crashes while roaming. (36770)
- The driver crashes while sending and config packets. (36917)

SDK

- No current support for enabling/disabling DFS channels.
- No current support for enabling/disabling a specific channel.

Supplicant

- There are currently CCKM-AES Fast Roaming failures with this release.

SOFTWARE VERSION BETA V0.1

Released June 10, 2013

New and Enhanced Features

The following features in **beta v0.1** were not supported in previous versions of MSD45N software.

General

- FIPS support
- Upgraded version of Atheros firmware

SDCSUPP

- New auto-profile corrections

libsdc_sdk

- Introduction of platform-specific library lrd_platspec. This currently implements DHCP event handling
- Enabled global roam settings.
- Added basic Atheros wireless events to SDK.
- Introduced a hardware abstration layer.
- Added filelocks for access to profiles.conf.
- Changed the declaration of UAPSD from unsigned char to unsigned long.
- Functions are added to set the country code in the nl80211 header file.

CLI

- Support suppInfo for setting/reporting FIPS and reporting WAPI

Resolved Issues

The following issues have been fixed in the **Beta v0.1** release:

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

Known Issues

The following are known issues with the **Beta v0.1** release:

- SDK events do not work

SOFTWARE VERSION ALPHA V0.2

Released April 11, 2013

New and Enhanced Features

The following features in **Alpha v0.2** were not supported in previous versions of MSD45N software.

CLI

- Integrated nmode into profiles (previously under global).
- Added more RADIOMODEs.

SDK

- Replaced internal calls to RadioEnable/Disable with RadioUo/Down.
- Added support for more country codes: CA, FR, GB, AU, NZ. REG_FCC is mapped to TT.
- Integrated nmode into profiles (previously under global).
- Implemented most of the functionality of GetCurrentStatus on MSD45N.
- Added more RADIOMODEs.
- Added event handling on MSD45N. Three events supported: connect, roam, disconnect.
- Changed default RADIOMODE to ABGN.
- Added function LRD_InjectEvent.

Resolved Issues

The following issues have been fixed in the **Alpha v0.2** release:

Supplicant

- Work-around radio firmware issue for band restricted profiles.
- FB1969: PEAP to no longer use anonymous identity by default.

CLI

- Fixed MAC address to display correctly when first byte is zero.

SDK

- Removed delays (one second) at startup and shutdown.
- Fixed bug in SetUserCertPassword.
- Removed GetDHCPInfo(), DHCP event and related code.
- SDK now informs supplicant of RadioDisable request.

Known Issues

- GetBSSIDList() is only partly working. The following attributes are returned correctly: SSID, BSSID, FREQ.

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

- Certificates must be placed in /etc/ssl and referenced relative to /etc/ssl. E.g. a certficate in /etc/ssl/certs/ca.pem is referenced as "certs/ca.pem". Setting a different certpath (e.g. sdc_cli global set certpath <path>) does not work yet.
- The SDK doesn't yet support finer WiFi adjustments such as channel selection, power setting, band setting, powersave, etc. These are currently running on default values.
- RSSI field should supply current signal quality in dBm. The current implementation is dBm*100. The user must divide the RSSI value by 100 to obtain the correct signal quality reading in dBm.

SOFTWARE VERSION 20130309V1

Released March 9, 2013

Package

The release package consists of:

- .Zip file containing the .tar balls and patches required to build all the images for the MSD45.
- Header files required to use the SDK (Future releases will distribute these header files differently)
- Two example sdc_cli scripts:
  - eap-tls.cfg
  - peap-mschapv2.cfg

Features

The SDK functions supported by this release are:

- GetConfig()
- GetPSK()
- SetPSK()
- SetEAPTLSCred()
- GetEAPTLSCred()
- SetEAPTTLSCred()
- GetEAPTTLSCred()
- GetPEAPTLSCred()
- SetPEAPMSCHAPCred()
- GetPEAPMSCHAPCred()
- SetPEAPGTCCred()
- GetPEAPGTCCred()
- SetUserCertPassword()
- GetBSSIDList()
- GetDHCPInfo()
- GetSDKVersion()

Known Issues

These are the known issues with the currently operational SDK functions:

- GetBSSIDList() is only partly working. The following attributes are returned correctly:
  - SSID

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610

  - BSSID
  - FREQ
- GetDHCPInfo() requires you to create the following link in order to work:
  - ln -s /var/lib/dhcp/dhclient.leases /var/lib/dhcp/dhclient.wlan0.leases
- Certificates must be placed in /etc/ssl and referenced relative to /etc/ssl.
  E.g. a certficate in /etc/ssl/certs/ca.pem is referenced as "certs/ca.pem".
  Setting a different certpath (e.g. sdc_cli global set certpath <path>) does not work yet.
  - PEM certificates are supported in all occasions.
  - DER format is also accepted for a CA cert.
  - PKCS12 is also accepted for client side certs.

Americas: +1-800-492-2320
Europe: +44-1628-858-940
Hong Kong: +852 2923 0610