Airborne Enterprise Class Embedded Wireless Device Servers & Ethernet Bridge Modules
DP550 ("Enzo") Series
Firmware Release Notes

Release 2.10 (September 2011)

Changes to DP55x Firmware since V2.00:

- (new) The "**wl-type m**" mode has been implemented to support **Access Point ("master") functionality**. When in Access Point mode, the Enzo can support up to **8 simultaneous clients**. The clients can either be in CAM (constantly active) or PSP (powersave) operation.
- (new) The module can be configured with a distinct "AP" Device Type (numeric 29). This affects the default factory configuration (AP with no security, Ethernet in "router" role), "**name-manuf**", "**wl-device**", "**device-type**", personality change, web pages, AMC displays, etc.
- (new) When "**wl-type m**" is configured, "**wl-security**" must be one of "**disable**", "**wep64**", "**wep128**", "**wpa-psk**", or "**wpa2-psk**". No migration modes such as "**wpa-psk64**", "**wpa-psk128**", "**wpa-psk128-tkip**", or "**wpa2-psk-tkip**" are supported by the Atheros radio firmware when in AP mode. The Enzo requires the "**hostapd**" service to implement the protocol exchanges necessary for "**wpa-psk**" or "**wpa2-psk**" security; this requires more memory on the Enzo than do the more "lightweight" security modes.
- (new) When "**wl-type m**" is configured, the "**eth-mode**" can be either "**router**" (default) or "**bridge**". "Router" mode is more like a common "wireless home DSL router"; "Bridge" mode is more like a classic Enterprise-level AP. Note that "router" mode results in a "behavior reversal" of several of the IP Filtering and Forwarding CLI commands and web pages. Also note that when in AP mode and "**eth-role bridge**" is *not* configured, the IP address of the AP's radio is specified through use of the "**wl-gateway**" command, not the **"wl-ip**" command. This makes the behavior more consistent (i.e. less confusing) with that of the Direct Ethernet products.
- (new) When "**wl-type m**" is configured, the new CLI command "**wl-deauth *macAddress***" is available to deauthenticate an Associated client. The ***macAddress*** parameter is the MAC address of the client to be deauthenticated. For example, **'wl-deauth 000B6B112233'** will deauthenticate the client with MAC address 00:0B:6B:11:22:33.
- (new) When "**wl-type m**" is configured, the CLI command "**wl-clients**" shows the list of associated clients, their Powersave states, and their IP addresses (if discernable). Similarly, the "Display Associated Clients" link from the web interface's "Status" tab shows the same list, as well as providing **<Deauth>** (identical in function to "**wl-deauth**") and **<Ping>** buttons. On the web version, the displayed IP address is actually a link to the associated client's web server, if available.
- (new) The "**wl-chan**" command applies to both Adhoc and AP modes ("**wl-type [p | u | m]**").
- (new) The new CLI command "**wl-tx-power *integer***" controls the radio transmit output power (for all values of "**wl-type**") in dBm. Range is 5-15 dBm, with default 15.
- (new) The new CLI command "**wl-beacon-int *integer***" controls the Beacon Interval for both Adhoc and AP modes ("**wl-type [p | u | m]**"). Range is 10-65535 milliseconds, with the default 100 (msec).
- (new) When "**wl-type m**" is configured, the CLI command "**wl-dtim-int**" can now be used to specify the AP-mode DTIM interval (in units of Beacon Counts). The default value is "**2**". Note that a value of "**5**" is high enough to exhibit instability for some client applications and protocols (since it induces up to a half-second delay in getting responses back for some protocols).
- (new) When "**wl-type m**" is configured, the new CLI command "**wl-hide-ssid [disable | enable]**" controls whether or not the SSID is shown or hidden in Beacons. The default, "**disable**", shows the SSID in Beacons.
- (new) When "**wl-type m**" is configured, the new CLI commands "**wl-acl-policy [disable | allow | deny]**" and "**wl-acl-mac *matchString***" implement a limited MAC-address filtering/authenticating capability. When "**wl-acl-policy disable**" is configured (the default), MAC-address filtering is disabled. For policy

"**allow**", only MAC addresses which match ***matchString*** will be allowed to Associate. For policy "**deny**", only MAC addresses which match ***matchString*** will be prevented from Associating. The format of ***matchString*** should be **xx:xx:xx:xx:xx:xx**, where the **xx**'s are hexadecimal byte values composing a valid MAC address. If desired, the wildcard ('*****') character can be used as one or more of the **xx**'s. For example, to allow only clients with a MAC address starting with the prefix "**00:0B:28**" to associate, "**wl-acl-policy allow**" and "**wl-acl-mac 00:0B:28:*:*:***" should be configured.

- (new) Module web pages have been enhanced to "gray-out" options which are limited by other aspects of the module's configuration. For example, "**TLS**" is now grayed-out as a "**wl-security**" option when the radio is in AP mode.
- (usability) When "**wl-tunnel-mode{-p2} sds**" is configured, the web interface no longer displays the CLI Default, Bit Rate, Parity, Stop Bits, Flow Control, Serial Assert, Input Buffer Size, Serial Escape Mode, Network Escape Mode, or Escape String, since those are controlled by the workstation which manages the SDS virtual serial port.
- (new) The CLI command "**wl-dhcp-server [disable | enable]**" has been implemented to provide DHCP support for clients Associated to the module's AP-mode radio. Default is "**disable**". This DHCP server functions both for "**eth-role bridge**" and "**eth-role router**"; if "**bridge**", the same DHCP server assigns addresses to both the radio and Ethernet interfaces. Note that, in this configuration, the web interface link for "Wireless DHCP Clients" changes to "Bridge DHCP Clients". *When both "**eth-role bridge**" and "**wl-type m**" are configured, "**eth-dhcp-server**" is ignored.*
- (new) The CLI command "**wl-dhcp-clients**" has been implemented to show the list of addresses assigned to wireless clients by the module's DHCP server (this includes wired clients if in Bridge role).
- (new) The CLI command "**modelname**" now displays the manufacturing u-Boot environment variable "**uboot_modelname**", or a default value based on the Device Type if that environment variable is not configured. The **modelname** is also saved as a comment in the module's User Configuration File during a "**commit**".
- (new) The CLI command "**put-web**" transfers a user-defined web page to the module via XMODEM, where it is saved with the specified filename. No path information should be included. A "**save**" command must be issued for the file to be saved in flash.
- (new) The CLI command "**get-web**" uses FTP to get a user-defined web page from an FTP server. It uses the "**ftp-server-address**", "**ftp-server-path**", "**ftp-user**", and "**ftp-password**" to get the specified file. The filename should not include any path information. A "**save**" command must be issued for the file to be saved in flash.
- (new) When "**wl-type m**" is configured, the CLI command "**wl-mode {b | g | gonly}**" has been added to control the 802.11 data rate compatibility of the Atheros radio. If "**wl-mode b**" is configured, the AP will support only 802.11b data rates. If "**wl-mode gonly**" is configured, the AP will support only 802.11g-specific data rates. If "**wl-mode g**" is configured, both rate sets are supported. In any mode which supports 802.11b data rates, be aware that multicasts are transmitted by the Atheros at only 1Mbps -- very slow. In 11g-only mode, however, multicasts are transmitted by the Atheros at 6Mbps -- not speedy, but far better than 1Mbps. *This control can be critical for customers which rely heavily on multicast data*. Default is "**g**".
- (bugfix) Added watchdog which automatically re-initializes the Second Serial Port CLI handler process if it is detected to have faulted. This watchdog inspects the liveness of the Second Serial Port once per second.
- (bugfix) The command "**wl-telnet-timeout**" now functions as specified. Previously, this configuration parameter had no effect.
- (bugfix) Enable the radio to Bridge packets while in Adhoc mode. This only affects use of "**eth-role bridge**" (such as for the BR product series).

- (bugfix) Bridge role now works with WEP security settings.
- (bugfix) Bridge role is now maintained across radio restarts. This affected some "**apply-cfg radio**" operations, sequences of "**radio-off**" then "**radio-on**", liveness-test restarts, etc.
- (bugfix) Enable configuration of MAC Cloning via the web interface when "**eth-role bridge**" is already configured.
- (bugfix) When "**eth-role bridge**" is configured for single-client Ethernet bridging, the DHCP Broadcast Response flag in the DHCP Discover and Request packets is forced to be set so that most DHCP servers (which are only IP-level-aware) can Offer in response to a Discover from the module's Ethernet Client, but relayed through the module's radio MAC address. Without the module's modification of the DHCP Discover and Request, either the Ethernet Client had to set the Broadcast Flag itself, or the DHCP server had to be MAC-level-aware in order to send the Offer directly to the module's MAC.
- (bugfix) Correct parsing of the current radio bit rate when in Adhoc mode.
- (bugfix) The built-in DHCP server no longer responds with a DHCP NAK if it receives a packet destined for a different server. This could potentially cause problems for networks with multiple DHCP servers enabled.
- (compatibility) Delay enabling CLI echo as late as possible in order to avoid echoing "trash" characters on the serial port if a customer's application sends data before the POST LED is asserted.
- (reliability) Once a second, the radio is explicitly checked for host-communications liveness (i.e. direct module-to-radio). If this fails, the radio is fully restarted. If the restart fails to restore communication with the radio, the entire module is restarted.
- (reliability) If any restart of the radio (such as from a sequence of "**radio-off**" then "**radio-on**" CLI commands) fails twice in a row to restore communications with the radio, the entire module is restarted.
- (bugfix) For static IP configurations, the module will not attempt to set a (mis)configured gateway address (either "**eth-gateway**" or "**wl-gateway**") if it is incompatible with the IP address of either network interface.
- (bugfix) Additional error checking has been added to the firmware update process.
- (bugfix) The CLI "**sh**" and "**spawn-shell**" commands now function when invoked from TELNET or SSH, and when the Debug Port is disabled.
- (bugfix) Corrected a fatal flow-control problem in the Atheros radio driver's packet-transmit logic. Corrected a lack of error-status return from the Atheros radio driver's command handler.
- (bugfix) File upload over the web server is now *much* more reliable when the Veyron or Enzo is short on memory. This affects firmware, configuration file, and certificate upload operations.
- (bugfix) When changing the module's personality via the web interface, do not utterly disable future use of the Debug Port whenever it is deselected in the current configuration (i.e. only turn it off in **hwcapuser**, not **hwcap**).
- (reliability) If the Atheros radio is having trouble keeping up with the rate of packets needing to be forwarded from the Ethernet, the Ethernet driver will begin to drop non-ARP multicast packets instead of filling up the module's memory with an impossible-to-handle number of packets. This significantly helps to maintain liveness of the Enzo even when faced with an effective "multicast storm". The change primarily affects AP mode (in which multicasts are transmitted at a mere 1Mbps or 6Mbps rate instead of the full 54Mbps rate possible), but can also affect normal "client" mode.
- (reliability) The "**qtperiodic**" watchdog task now recognizes radio "**ar6000_target_failure**" events and restarts the radio whenever such a fatal error occurs. If this takes place, the system uptime (in seconds) is saved to the file "**/var/tmp/wlan_reconfig_initiated**".
- (bugfix-Enzo) Updated Atheros radio firmware from version 2.2.1.83 to 2.2.146.10. This fixes the following issues:
    - (bugfix-Atheros) Fixed watchdog timer not reliably being reset.

  - (bugfix-Atheros) Disabled background scanning in adhoc mode.
  - (bugfix-Atheros) Fix to pass Japanese Telec certification - disconnects from AP if a packet not transmitted after 30s.
  - (bugfix-Atheros) Roaming candidate selection enhancements.
  - (bugfix-Atheros) Low RSSI scan triggering improvements.
  - (bugfix-Atheros) Better rejection of invalid RSSI values from the hardware.
  - (bugfix-Atheros) Fixed crashes when CCX location measurement is used. *This could potentially affect all Cisco-based wireless network deployments.*
  - (bugfix-Atheros) Fixed rare crash requeuing transmit buffer.
  - (bugfix-Atheros) Fixed problem unable to connect when only channel 11 is enabled.
- (change-manufacturing) WLNG-EK-DP551 modules now come pre-configured with an "**oem_config.txt**" file which forces "**radio-startup on**", overriding the factory default of any configured Device Type for the module (specifically, overriding the default "**radio-startup off**" for an Industrial Serial module).

Known issues for Firmware build 2.10:

- None.

Release 2.00 (May 2011)

Changes to Firmware since V1.50:

- (bugfix:Enzo) Several ARP issues surrounding Bridge role have been resolved.
- (bugfix:Enzo) The AMC-based "Set Ethernet IP" configuration command now works for a module in Bridge role.
- (bugfix:Enzo) The commands "ftp-server", "telnet-port", "http-port", and "ssh-port" are now fully recognized in Bridge role and disable all intercepts of the corresponding TCP ports by the Bridge.
- (bugfix:Enzo) The "br-client-mac" is now saved in the user configuration only when the user explicitly sets it, instead of automatically with any "commit". This allows a Bridge to be used (one at a time!) with multiple clients.
- (change) Text referring to "DirectEthernet" has, in most places, been replaced with text referring to "Ethernet Router".
- (change) The name "Ethernet Client Bridge" has been adopted as the official description of the Enzo "BR" products. Text has been changed accordingly.
- (enhancement) The "wl-dhcp-rel" and "eth-dhcp-rel" commands now release Auto-IP addresses as well as DHCP addresses. Previously, if a module "fell back" to Auto-IP, it would have to be "restart"ed switch back into DHCP.
- (bugfix) The "Device Type:" text in the top blue menu bar of the web interface now "floats" with the width of the browser window.
- (bugfix) The correct "telnet-echo" setting is now applied when the "telnet-port" is not the default value of 23.

- (bugfix) The maximum displayed edit-field length on the web interface has been limited (generally) to 32 characters. Longer strings will scroll within the text box. This prevents the browser window from being excessively wide on many pages.
- (bugfix) The SSH server no longer unnecessarily ties up the primary serial port. This could have blocked PPP use on that port.
- (bugfix:Enzo) The "Maintenance | Change Module Personality" web page and "device-type" CLI commands now support changing a module into an "Ethernet Client Bridge" and "bridge", respectively.
- (new-debug) A kernel-configurable Netfilter module is available which can be used to "sniff" and intercept UDAP packets. This is enabled via CONFIG_NF_CONNTRACK_UDAP_DISCOVERY".

Known issues for Firmware build 2.00:

- None.

Release 1.50, with new u-boot 1.31 (February 2011)

(IMPORTANT) Release 1.50 is the minimum firmware version required for Enzo (DP551) based products.

Changes to Firmware since V1.40 and Uboot since V1.30:

- (new) Added an **"Express Setup"** web page. This page lists the most-critical parameters for establishing device connectivity, all on one page. It is concerned with IP-level connectivity for the purpose of further device configuration, not with COM-port-level configuration. This page is the module's "home" page out-of-box (instead of the "wl-info" display), and is always available as the first option on the web interface's "Configuration" tab. Unused and fixed-value (due to some other configuration option) fields on this page are automatically hidden so as to provide a much easier-to-read and use out-of-box setup, due to the far less cluttered page.
- (new) Like the "Express Setup" page, all other web-interface pages (especially the "WLAN Security Settings" page) now hide unused and fixed-value (due to some other configuration option) fields in order to simplify configuration and de-clutter the web pages.
- (new) Added Ethernet DHCP commands "**eth-dhcp-rel**" and "**eth-dhcp-renew**" for consistency with the "wl-dhcp-*" command set. Behavior is identical with the corresponding "wl-dhcp-*" commands.
- (new) When running in **AutoIP** mode (i.e. when DHCP is enabled, there is no server, and fallback is enabled), the assigned AutoIP address is automatically assigned to be the default gateway. The result of this action is that packets to *any* address are actually sent over the local LAN segment (physical subnet), thus allowing communication with an "incompatible" IP address even when no true gateway is available. The critical use for this feature is when the module must be directly configured from a workstation which is assigned an incompatible IP address. Now, the module can be configured via TELNET or its web interface before its IP address is even "properly" configured for a site -- web directly launched from Locator out-of-box!
- (new/improved/bugfix) The Veyron and Enzo modules now respond to the Airborne Discovery protocol (utilized by the standard Ubicom "Locator" and other management tools) over (potentially) both network interfaces, no matter how they are presently configured. Standard Ubicom "Locator" can now be used to change the configuration of either the Ethernet or Wireless network interface, even if they are currently both on an "incompatible" IP subnet, so long as such configuration would not violate security on the

module. If a network interface is already configured for an IP subnet which is compatible with the workstation running the Locator protocol, only that network interface will respond to Locator (in case both are compatible, the Wireless interface has priority to respond). If neither network interface is configured for a compatible IP subnet, both interfaces will respond to Locator. This practice allows the the administrator the choice of which of the module's interfaces to configure (or both, if desired).

- (new) The CLI command "**eth-udap**" has been added to provide control over support of the Airborne / Ubicom Discovery (UDAP) protocol over the Ethernet interface. If "1", UDAP is enabled (default for all device types); if "0", the module will not respond to UDAP over the Ethernet. This command is also available over the web interface.
- (new) All CLI "wl-*" commands are now supported for the **Atheros radio** on Enzo modules. Runtime change of the radio MAC address ("wl-mac"), regulatory domain ("wl-region"), or WEP keys ("wl-key-*") requires a radio restart which is not necessary for the Veyron's Marvell radio (this does not affect the radio if no change is made after boot).
- (new) The "**wl-ant**" command actually works as specified for the Enzo's Atheros radio. The default is "Ant2" for both transmit and receive, and can specify "Ant1" for both transmit and receive, or "d" for receive diversity. The Veyron's Marvell radio still ignores this command.
- (new) The CLI command "**spi-mode**" has been implemented in order to control the polarity and phase of the module's SPI interface. SPI modes 0-3 are supported. This command is also available from the web interface.
- (new) The CLI command "**wl-wpa-proto**" has been implemented to facilitate faster roaming with the Enzo's Atheros radio, and tighter security with all radios. Formerly (and still with the default "auto"), when configured for advanced security modes, the module searches for a WPA2 ("rsn", AES/CCMP) network first, then, if not available, searches for a WPA1 ("wpa", TKIP) network as a fallback. When "wl-wpa-proto" is explicitly set for "rsn" or "wpa", fallback is disabled and the module will only associate to a network with the specified security protocol. As an added bonus, with an Atheros radio, this explicit specification (i.e not "auto") enables the radio to control roaming instead of always involving wpa_supplicant. This results in significantly faster wireless roaming. This command is also available from the web interface.
- (new) Added the "**ttcp**" TCP performance-testing utility to all builds. This is only available from the Linux shell.
- (improved) "**wl-gateway**" now has priority over "**eth-gateway**" whenever it is configured. Specifically, if DHCP is enabled on either interface, DHCP controls the gateway. If neither interface has DHCP enabled and they both have a gateway configured and they both are "live", the gateway is set up when the radio is configured. If the radio isn't live, "wl-gateway", if configured, is set up on the Ethernet even if "eth-gateway" is configured. If the Ethernet isn't live and "wl-gateway" isn't configured, "eth-gateway", if configured, is set up on the radio. All such configurations are verified for subnet compatibility before being applied.
- (improved) The **default configuration for the Industrial Serial products** has been improved for out-of-box configuration. The radio starts "off", Ethernet has DHCP enabled with acquisition limit 30 seconds (after which AutoIP is initiated), and the serial ports all start in "cli" mode.
- (improved) **Radio-startup mode is now configurable** as the first item under "Configuration | WLAN Settings", as well as under "Configuration | Advanced Settings".
- (improved) If a module's newly-"commit"ed configuration is incompatible with its saved "user hardware capabilities", upon the next "restart", the hardware capabilities will be updated and the module automatically "restart"ed a second time to automatically apply the potential device-driver changes.

- (improved) If a module's wireless interface is disabled (now the out-of-box default for Industrial Serial products), the module's "nickname" shown in its web-browser title bar will be taken from its Ethernet interface, instead (specifically, from "eth-dhcp-client" instead of from "wl-dhcp-client").
- (improved) The module's firmware version, device type, and hardware capabilities now appear as comments in the header of its configuration files. This places critical information for Quatech technical support into every "cfg-dump" provided to Support.
- (improved) The order of the configuration parameters on the web interface Advanced Configuration page has been re-ordered to be more intuitive.
- (improved) RAMDisk space utilization in "/tmp" has been improved so that larger module configurations can be stored.
- (improved) CLI power-on startup time has been improved.
- (cosmetic) All web-interface instances of "Reboot" have been changed to "Restart".
- (improved) Many {x}HTML warnings have been resolved in the web interface in order to improve compatibility with the numerous "embedded" browsers now in use (i.e. cell phone, tablet, etc. browsers).
- (improved) Formatting of the web interface "popup help text" has been improved for Firefox users.
- (update) Update of the Linux kernel from 2.6.31.12 to 2.6.32.25. Even though the "latest and greatest" Linux kernel is 2.6.37, the 2.6.32 series of kernels is the series on which Android 2.2 (Google's latest Production release) is based, and is the latest kernel series on which a Production release of Enzo's Atheros radio driver is available. Our goal with this update was Production-level stability, not "bleeding edge".
- (bugfix) A CRITICAL authentication issue with the CLI has been resolved. In firmware version 1.40 (only), the default authentication level for an un-auth'ed user on the serial port CLI was "manuf" instead of "console". This has been corrected.
- (bugfix) The **CLI input-buffer size** has been increased from 256 to the 1460 (the same size as with the Ubicom modules).
- (bugfix) The **CLI input-buffer's behavior** has been modified to not auto-backspace any characters over its maximum size, but rather to allow manual backspacing (if desired) to remove any such characters. This behavior is much more compatible with the programmed CLI handlers used by some customers.
- (bugfix) Some **XON / XOFF behavior** on the CLI console has been corrected.
- (bugfix) If DHCP is enabled on the Ethernet and the cable is unplugged then re-plugged to a second jack, DHCP (then AutoIP, if no DHCP server is found) is re-issued. Previously, this was only initiated once, which could result in a loss of connectivity if the "second" jack was not on the same subnet as the first.
- (bugfix) "**eth-mode 10auto**" now works as documented.
- (bugfix) Removed acceptance of unsupported "**serial-default loop**" option and mention of it in the "help" text.
- (bugfix) The "**eth-info**" command now works properly over an SSH CLI connection. Previously, numerous warnings were displayed.
- (bugfix) It is no longer the case that some invocations of "commit"ing a set of new parameters resulted in alteration of the set a module's enabled ports.
- (bugfix) Early-boot use of LEDs now correctly follows the configuration saved in the "user hardware capabilities".
- (bugfix) CLI source-buffer alignment presumptions which were legal with the older Linux kernel were found to be illegal with the new Linux kernel. This fatal issue has been corrected.
- (bugfix) The "**device-type**" CLI command now properly recognizes "**industr-ethernet**" and "**industr-serial**" products, and distinguishes Veyron from Enzo modules. This bug could result in immediate failure of personality changes initiated from the CLI and "next-restart" failures of personality changes initiated from the web interface.

- (bugfix) The CLI no longer recognizes the never-implemented "**eapfast-pac-filename**" command (it turned out to not be necessary).
- (bugfix) Warnings about the "**radio not being recognized**" no longer appear on TELNET nor SSH whenever the radio driver is not loaded (i.e. "radio-off") or the radio driver is loaded but not configured (i.e. "radio-startup off"). Warnings appearing over the Debug port are also substantially reduced. This bug affected Hobart.
- (bugfix) A concurrency error has been resolved which could prevent correct module initialization when a very long User or OEM configuration file is present. This bug affected Crown.
- (bugfix) A PowerSave Protocol error has been corrected which could result in effective loss of Veyron radio connectivity (up to a couple of minutes) after roaming while in "**pm-mode doze**". Specifically, the radio re-entered 802.11 PSP immediately after a roam was completed, which could be too fast for 802.1x Authentication or DHCP to complete without lengthy retries.
- (bugfix) A PowerSave Protocol error has been corrected which could result in excessive power consumption of the Enzo radio after roaming while in "**pm-mode doze**". Specifically, the Atheros radio's "fast roam" capability was so fast that the module's radio-status monitor could miss detection of the roam and therefore never place the radio back into 802.11 PSP after the roam was completed.
- (bugfix) An Ethernet-side TELNET or SSH CLI session would not always be able to issue "radio-on" successfully if the radio was disabled prior to establishing the TELNET or SSH CLI session (either through "radio-off" or "radio-startup off").
- (bugfix) The "wl-info" command no longer displays "Link Status: Connected" when the radio driver is loaded but not configured (i.e. during "radio-off").
- (bugfix) The "**pw-wpa-psk**" command now accepts spaces within the WPA passphrase.
- (bugfix) The "**device-type**" command is now readable by a UDP-level authenticated user, but is only writable by a CFG-level authenticated user.
- (bugfix) The "**reset**" command would incorrectly "apply-cfg" immediately, potentially resulting in a loss of administrator connectivity. Now, the "apply-cfg" must be explicitly issued by the administrator.
- (bugfix) The Enzo radio would not associate to an Access Point when any LEAP-based "wl-security" option was selected.
- (bugfix) Diagnostic messages for a TELNET or SSH CLI session now appear on the Debug port instead of mixed within the CLI dialog.
- (bugfix) The web interface "**Upload Certificate**" and "**Upload Configuration File**" dialogs now recognize the "Content-Type:application/base64" sometimes inserted by Microsoft IE8. This affected some users of Encrypted Configuration Files.
- (bugfix) The module is now insensitive, when using an Encrypted Configuration file, to extra spaces and empty lines inserted by some browsers when uploading that configuration to the module. Specifically, Chrome and IE8 insert leading blank lines into the file.
- (bugfix) Restarting a module from the web interface is now much more reliable across browsers and different system configurations.
- (bugfix) The CLI command "**wl-dhcp-interval**" is now fully supported.
- (bugfix) When changing a module's "personality" over the web interface, changing to an Industrial Serial device now automatically enables the Ethernet port (for configuration purposes -- out-of-box condition of an Industrial Serial device is to have the radio disabled until configured).
- (bugfix) The "**write authentication level requirement**" for all CLI commands which alter stored configuration has been increased to "cfg" level, since that is the level necessary to issue the "commit" or "apply-cfg" commands. Previously, one could issue a "configuration change" for some commands which could never be applied or committed.

- (bugfix) The "**read authentication level requirement**" for all CLI commands which display configuration has been lowered to "cfg" level, since any user could find out their values by issuing the "cfg"-level "cfg-dump" command, anyway.
- (new) Added new CLI command "**speedlink**" to enable or disable the fast-roaming feature on DP55x systems. A user might want to configure "speedlink disable" if the AP-blacklist-avoidance logic in the DP55x radio firmware results in too-hesitant association to a network (the software-selected association logic is more aggressive for the first power-on association). Although the command is supported in DP50x systems for compatibility of configuration files, it doesn't do anything
- (bugfix) Security certificates uploaded via the Web interface now set the file permissions correctly. These permission issues could be a nuisance for those users who have already installed certificates. Use of the Airborne Management Center should automatically correct the problem upon the first "apply all configuration files" to an Airborne device.
- (bugfix) For "**wl-security wpa-psk**" and "**wl-security wpa2-psk**", the "have we calculated the right pre-shared key" flag "is-psk-calc" was not getting cleared for a change in "wl-ssid" made through the web interface.

Known issues for Firmware build 1.50:

- None.