

Release Notes – Firmware v2.2.1.1923

1. Overview

This document summarizes the major updates for the AP firmware from v2.2.0.1919 to v2.2.1.1923.

The firmware update is applicable to the below products.

| AP Product Series | H/W version |
|---------------------|-------------|
| C1n/C1xn/C1ni/C1xn+ | >= 1.3 |
| C1an/C1xan/C1ani | >= 1.2 |
| C2s | All |
| A2c | All |
| A2/A2e/A2Ei | >= 2.0 |
| A2x | All |
| A3c/A3w/A3Ei | All |
| A8n/A8n(ac) Series | All |
| VX200 | All |

Below are the release notes for the firmware versions from v2.2.0.1919 to v2.2.1.1923:

- [v2.2.1.1214](#)
- [v2.2.1.1410](#)
- [v2.2.1.1615](#)
- [v2.2.1.1923 \(GA\)](#)

2. What's New in v2.2.1.1214

2.1. New Features

| Item | Product | Description |
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| 1 | All | Support AGV (Automatic Guided Vehicle) optimization feature which provides an additional self-healing mechanism for the AGV wireless connection by monitoring the heartbeat communication between the AGV clients and its backend server. In case the AP finds the heartbeat packets missing which is supposed to be received periodically from the AGV clients, it will proactively disconnect the client for its re-association in an attempt to resume the communication and service promptly. The feature is by default disabled and hidden in WebUI. To enable it, modification work on the default configuration customization file is required. |
| 2 | All | Support IP announcement feature which is used for notifying an external host of the IP address that the AP/CPE device acquires. The feature is by default disabled and hidden in WebUI. To enable it, modification work on the default configuration customization file is required. |
| 3 | VX200 | Support remote console connection feature for VX200, through which a network host can make a console connection to the VX200's attached serial device over TCP/IP. |
| 4 | All | Support 802.1p Priority Code Point (PCP) for QoS implementation. It can be used together with DSCP (Differentiated Services Code Points) to prioritize traffic in different Access Categories (ACs) for wireless transmission. |
| 5 | All | Support Minimum Data Rate feature, which allows the AP to proactively disconnect a client when the data rate of its connection drops to a level below a user-defined threshold for a certain number of packets in a certain period of time. |
| 6 | All | Simplify the configuration for minimum client SNR threshold, and add support of minimum SNR sensitivity configuration which controls how sensitive the AP kicks those clients of weak SNR. |
| 7 | C1n/C1an Series | Update C1n uboot version to 1.2. |
| 8 | All | Support EAP-TLS authentication on station and repeater modes. |
| 9 | All | Support configuration to enable/disable the secondary IP address for AP access, i.e. 192.168.99.x/24 for Ethernet, and 192.168.88.x/24 for radio. |
| 10 | All | Support speed test feature on the WebUI association list page to measure throughput performance of a bridge link in either static bridge mode or AP- |

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| | | Station bridge mode. |
| 11 | All | Support manual configuration for system time. |
| 12 | All | Support configuration backup by CLI command "config_backup", which generates and puts the backup file in /tmp/. |
| 13 | All | Support button-less factory reset for AP with a software tool. |
| 14 | All | Support configuration to allow/disallow DFS channels for operation. If disallowed, all the DFS channels will be removed from the channel list. |
| 15 | All | Support "Proxy ARP" feature allowing AP to answer ARP requests on behalf of another host to reduce the broadcast-based ARP request traffic traversing the wired and wireless networks, hence improving the overall network performance. |
| 16 | All | Support WLAN number customization. To improve performance, the number of WLAN interfaces available for configuration is reduced from 16 to 10 as default. If necessary, the number of WLAN interfaces can be customized up to 16 by using default configuration customization. |
| 17 | All | Support country code customization. Once customized, the country code will become non-configurable on the Web UI. |
| 18 | All | Support default configuration customization uninstall. |
| 19 | All | Support "PPPoE Intermediate Agent". When enabled, AP intercepts the PADR packets (PPPoE Active Discovery Request) during the discovery phase and inserts the vendor-specific PPPoE tags of "Circuit ID" and "Remote ID". |
| 20 | All | Support "802.11r FT Roaming" configuration (enable/disable) for station and repeater modes. Previously it is enabled by default and not configurable. |
| 21 | All | Support configurable Tx/Rx antenna chains. |
| 22 | All | Support SSH configuration, i.e., enable/disable SSH and SSH port modification |

2.2. Changes and Enhancements

| Item | Product | Description |
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| 1 | All | Allow AP to synchronize time with an NTP server, even not marked as a reliable time source. |
| 2 | All | Move the AP-initiated client association/disassociation event logs from wifi log file to syslog file for easier troubleshooting when WiFi syslog is enabled. Those events include AP kicking clients out due to low SNR, and AP denying client association due to blacklist/rogue station list. |
| 3 | All | Remove the promiscuous mode option in packet capture tool when the radio is off or in bridge mode; in either case the promiscuous mode is not applicable. |

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| 4 | All | Support MAC address filter in the packet capture tool. |
| 5 | All | Add a warning message to remind users to connect the station to a remote AP first so as to use the packet capture tool. |
| 6 | All | Hide the device type detection page when the device type distribution feature is disabled. |
| 7 | All | Update Reverse SSH default server to rssh.altaitكنولوجيات.com. |
| 8 | All | Show a warning message and forbid "save and apply" when the field of reverse SSH server address is left empty. |
| 9 | All | Allow setting "0" as the minimum transmit power when modifying power range for each channel in the "channel_custom" file for default configuration customization. |
| 10 | All | Support CPE (Station) to send I2uf (Layer 2 Update Frame) on behalf of the clients behind it when roaming to a new AP. The I2uf helps update the switches' forwarding tables so as to get the CPE and the clients behind recover the network connectivity quickly after the CPE roams. |
| 11 | All | Improve roaming algorithm and simplify the settings for station or repeater modes. |
| 12 | All | Hide sampling frequency item when historical statistics is disabled. |
| 13 | All | Revamp quick WLAN configuration page UI by removing access traffic right column, adding cipher mode and passphrase columns, and changing auth mode column to editable. |
| 14 | All | Standardize the name of auth mode for WPA/WPA2 Personal and WPA/WPA2 Enterprise on both WLAN configuration and AP association list pages. |
| 15 | All | Reduce syslog message amount when AP loses its connection with AltaiCare. |
| 16 | All | Rename "Tunnel address" to "Remote address" for the WLAN tunnel setting. |
| 17 | All | Add health check and memory usage monitor for snmpd process. |
| 18 | All | Include client SNR in association-related message in wifilog. |
| 19 | All | Support hotchange for AltaiCare/AltaiGate WLAN scheduler (WLAN on/off) instead of full radio reload. |
| 20 | All | Rename WLAN status from "Suspended" to "Off" when the WLAN is turned off by AltaiCare/AltaiGate WLAN scheduler. |
| 21 | All | Support hotchange for channel list customization. |
| 22 | All | Hide "Mobility Domain ID" setting when the WLAN is not WPA2 enabled. |

2.3. Bug Fixes

| Item | Product | Description |
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| 1 | All | Fix an issue of being unable to configure firewall in gateway mode after network mode change from switch mode to gateway mode while keeping firewall enabled and its configuration unchanged. |
| 2 | All | Fix excessive AMSDU-related messages showing up in the syslog. Those messages are used for debugging purposes and should be categorized into "debug" level of severity. In normal cases, i.e. "information" level, they should not be written to the syslog file. |
| 3 | VX200 | Fix an issue where more than 64 characters long of portal secret is allowed in VX200. An input restriction should be in place to avoid misconfiguration. |
| 4 | All | Fix the interface field going blank in the drop-down list for the packet capture tool after a VLAN interface is removed |
| 5 | All | Fix hostname occasionally displaying as "NA" on the association list for DHCP clients. |
| 6 | All | Fix bug where firewall policy names can be left empty, which should not be allowed. |
| 7 | All | Fix historical statistics switch not working. Data sampling and logging still runs even when the function is disabled |
| 8 | All | Fix bug where invalid IP can be configured for firewall policies, which should not be allowed. |
| 9 | C2s | Fix unexpected LED behavior found for C2s when switching between normal indicator mode and signal indicator mode, or between AP and STA/Bridge/Repeater modes. |
| 10 | All except for C1n/C1an series and A2n series | Fix 5G radio mode displaying as AP mode when the actual configuration is set to bridge mode with RSSI Reporting enabled. The issue is limited to 802.11ac-capable AP devices. |
| 11 | All | Fix user admin configuration issue where using RADIUS or RADIUS+Local Authentication allows "save and apply" null value for either primary RADIUS server IP address or secret without giving a warning. The primary RADIUS information is mandatory for both RADIUS and RADIUS+Local authentication types. |
| 12 | All | Fix an issue where clients of different WLANs but under the same VLAN are not able to communicate with each other. |
| 13 | All | Fix AP being unable to detect device type and OS for those 2.4GHz clients connecting to portal-enabled WLAN. |
| 14 | All | Fix "Management Trust IP" not working for IPv6 addresses without CIDR |

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| | | (Classless Inter-Domain Routing) notation. |
| 15 | All | Fix a networking issue occasionally found when changing network setting from switch mode to gateway mode, or changing NAT state from enabled to disabled or vice versa under gateway mode. |
| 16 | All | Fix DCS not functioning as expected and not triggering channel switch when the busy% gets high. |
| 17 | All | Fix firewall configuration page still showing policies when those become invalid after the radio is turned off. |
| 18 | All | Fix empty or invalid passwords allowed for WEP cipher of open/share authentications on the quick WLAN configuration page. A warning message has been added for such a case to avoid misconfiguration. |
| 19 | All | Fix "Access Traffic Right" feature not working as expected in IPv6-enabled network environment. |
| 20 | All | Fix occasional login attempt failures when users are authenticated with the secondary RADIUS server. |
| 21 | All | Fix 2.4GHz client SNR occasionally displayed as zero on A8n/A8n(ac) association list. |
| 22 | All | Fix Profinet packets with VLAN tag "0" being dropped at Ethernet interface. |
| 23 | All | Fix AP failed to work with Access Controller when there is an invalid ACL file applied. |
| 24 | All | Fix bridge pair being unable to connect to each other in static bridge mode |
| 25 | All | Fix AP rolling reload for the wireless module after applying configuration via AltaiCare on-Premises |
| 26 | VX200 | Fix VX200 as DHCP client displaying two identical AP IPv6 addresses on the status page. |
| 27 | All | Fix file handling error when fetching system log via AltaiCare |
| 28 | All | Fix portal ACL files being emptied after restoring configuration with a backup file. |
| 29 | VX200 | Fix channel switching taking a long time on STA/Repeater mode. |
| 30 | VX200 | Fix 5GHz ACS fatal error resulting in warm reboot. |
| 31 | VX200 | Fix panic issues upon wireless reload. |
| 32 | | Fix HTTPS SSL certificate update failure. |
| 33 | C1n/C1an Series | Fix EoIP tunnel issue where clients are unable to obtain IP addresses and access the Internet through the tunnel. |
| 34 | All | Clear AltaiCare portal configuration after disabling remote management. |
| 35 | All | Fix invalid portal URL format being able to be submitted, saved and applied. |
| 36 | All | Fix random panic issues about "Assertion failed". |

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| 37 | All | Fix high latency issue when CPE is performing channel scan for roaming. |
| 38 | All | Fix the preferred AP list issue where 5G CPE fails to connect with the first preferred AP whenever the AP is available. |
| 39 | All | Fix 5G channel scan failing to complete. |
| 40 | All | Fix NAT not updating issue after a CPE, as a DHCP client running on gateway mode, changes its WAN IP address during roaming between two subnets. |
| 41 | All | Fix "Auth mode" display consistency issue on the association list and station details. |
| 42 | VX200 | Fix CPE Tx data rate staying low unexpectedly when SNR is good. |
| 43 | All | Fix wireless mode turning to 802.11a for STA/Repeater mode when connected to 802.11ac-enabled AP. |
| 44 | VX200 | Fix 5G repeater mode panic during firmware update. |
| 45 | VX200 | Fix an issue where VX200 fails to achieve the highest data rate (MCS 8/9) when running in station/repeater mode. |
| 46 | All | Fix 5G AP-CPE connectivity issue due to full WDS table. |
| 47 | | Fix display issue of AP WLAN info detail page and Station info detail page. |
| 48 | All | Fix unusual 5G connectivity issue where some clients but not all fail to connect to AP. |
| 49 | All | Fix the radio0 (promiscuous mode) interface missing for the packet capture tool when the radio0 WLAN0 is disabled even with other WLANs enabled. |
| 50 | All | Fix user admin config error when changing login authentication type from RADIUS authentication to local authentication. |
| 51 | All | Fix firewall policies not functioning properly where same rules are applied to multiple WLANs but with different results. |
| 52 | All | Fix incomplete scan result for 2.4G STA mode when the radio is not connecting to any WLAN. |
| 53 | All | Fix missing SNMP trap notifications: Cold start, Warm start, link up and link down. |
| 54 | All | Fix performance degradation related to AMSDU bug fix. |
| 55 | All | Fix CPE failing to renew IP upon roaming between different IP segments. |
| 56 | VX200 | Fix incorrect 5G transmit power configurable range. |
| 57 | All | Fix PVST+ packet passthrough issue, resulting in network loop. |
| 58 | All | Fix roaming delay problem for 5G CPE when roaming criteria are met. |
| 59 | Vx200 | Fix unexpectedly low noise floor for 5G radio. |
| 60 | All | Fix communication issue when enabling Dynamic VLAN and Proxy ARP. |
| 61 | All | Fix CPE failing to connect to any AP using WPA2-PSK in the presence of large number of AP/SSID nearby. |
| 62 | VX200 | Fix distance setting not functioning. |

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| 63 | All | Fix excessive heartbeat miss issue when CPE scanning is in progress. |
| 64 | All | Fix AP channel scan causing all clients to disconnect. |
| 65 | A8n(ac) Series, A3 Series, A2(ac) Series, C2s | Fix VLAN passthrough issue where AP drops VLAN tag for packets passing through within a WLAN configured as VLAN trunk interface, resulting in communication problem between clients. |
| 66 | All | Fix channel field showing an empty drop-down list in a specific scenario. |
| 67 | All | Fix an issue where a device sitting behind a CPE fails to communicate with AP-end network after CPE roaming. |
| 68 | VX200 | Fix roaming feature not working as configured. |
| 69 | All | Fix CPU and display issue on the status page when there are many WPA2-enabled SSIDs nearby. |
| 70 | A2c | Fix panic related to the Ethernet driver. |
| 71 | All | Fix "Online Time" missing in the client association details box. |
| 72 | A3 Series | Fix high retransmission rate and packet loss in a high user density environment |
| 73 | A3 Series | Fix high packet loss when pinging AP with large packet size |
| 74 | All | Fix unexpected warmboot caused by conflict between WLAN scheduler and ACS |
| 75 | A8n/ A8n(ac) Series | Fix unexpectedly low Tx power issue. |
| 76 | A8n/ A8n(ac) Series | Fix frequent client disconnection issue causing packet loss. |
| 77 | All | Fix "Mobility Domain ID" configuration error after switching between WPA2-PSK and open mode. |
| 78 | A8n/ A8n(ac) Series | Fix the issue where the overview table shows nothing after a successful scan with the channel scan tool. |
| 79 | All | Fix CPE packet loss via AP – CPE link due to CPE bridge MAC address change. |
| 80 | All | Fix WLAN status displaying "ON" when it is turned off by AltaiCare/AltaiGate WLAN scheduler. |
| 81 | All | Fix an issue where unsaved changes appear on Web UI after clicking a submit button on the Network > General page but without actual configuration change. |
| 82 | All | Fix an issue where CPE fails to reconnect with any AP once disconnected. |

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| 83 | All | Fix false triggering of "CW Interference detected" event at DFS channel when ACS is enabled with DFS channel list, resulting in a rolling ACS until landing on a non-DFS channel. |
| 84 | All | Fix an issue where NAT cannot be enabled due to configuration conflict with VLAN. |
| 85 | All | Fix an issue where CPE, using WPA/WPA2, fails to reconnect with a remote AP in a certain condition. |
| 86 | All | Review syslog level for some syslog messages. |
| 87 | A8n/ A8n(ac) Series | Fix panic due to false trigger of protection against CCMP replay attack under high user density environment. |
| 88 | VX200 | Fix high latency issue due to power save when MAT is enabled on the VX200 CPE. |
| 89 | All | Fix frequent reconnection for a wireless bridge using bridge mode with certain VLAN configuration |
| 90 | All | Fix cipher mode being not in effect for bridge mode when DFS channel is used, resulting in no encryption for traffic passing through. |
| 91 | A8n(ac) Series, A3 Series, A2(ac) Series, C2s | Fix distance setting not in effect for long-distance 5G bridge (> 2km) when running on auto channel mode, resulting in poor wireless performance. |
| 92 | VX200 | Fix panic issue when VX200 is joining AltaiGate. |
| 93 | All | Fix the issue where the channel scan tool shows an empty result for the overview table when the scan duration is set to 1000ms. The setting is now restricted up to 400ms max. |
| 94 | All | Fix "Port Forward" configuration which allows the configurable range for "Local Port" and "Global Port" to be from 1 – 40000. It should be expanded to 1 – 65535. |

3. What's New in v2.2.1.1410

3.1. New Features

| Item | Product | Description |
|------|---------|---|
| 1 | All | Support HTTPS certificate uninstall feature, which allows users to reset the certificate to the default one. |
| 2 | All | Support Altai's proprietary CPE heartbeat feature, which provides an additional self-healing mechanism for the CPE's connection by sending heartbeats between Altai AP and CPE to keep track of the real connection status. In case of no data frames or heartbeats received from the AP in a pre-defined period (in milli-seconds to seconds, depending on configuration), the CPE will proactively disconnect with the AP trying to make a new connection to resume the wireless link promptly. This feature is particularly useful for those time-sensitive applications running on high mobility clients that keep moving from one AP to another, or for solving the sticky client cases. |

3.2. Changes and Enhancements

| Item | Product | Description |
|------|---------|--|
| 1 | All | The proxy ARP feature should now serve for immediate associated clients only and should not proxy for devices behind any WDS clients (CPEs). This is to avoid messing up mac address table of a switch when it is placed behind a CPE. The configuration is also changed to a per-WLAN basis. |
| 2 | All | Support error notification upon incorrect format of MAC input when setting filter by MAC address in the packet capture tool. |
| 3 | All | Hide 802.11r FT Roaming option for station when the authentication mode is set to non-WPA2 ones to reduce confusion to the users. Also, the 802.11r FT Roaming should always be set to enabled by default for station whenever the authentication mode is configured to WPA2. |

3.3. Bug Fixes

| Item | Product | Description |
|------|--------------------------|-----------------------------------|
| 1 | A3c/ A2(ac) Series | Fix the system clock drift issue. |

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| 2 | A2n/C1n Series | Fix the issue where 5G transmit power drops to 5dBm when DFS channels are used. |
| 3 | All | Fix the issue that the DSCP to WMM mapping does not work as expected when a VALN-tagged packet is traversing an AP from one wireless client to another under the same WLAN. |
| 4 | All | Fix the issue where CPE, when being set to DHCP client, will try to renew its IP for multiple times after roaming. |
| 5 | All | Fix the issue where the 5G scan result returns nothing when manually attempting to find out neighboring APs for CPE's connection, i.e. Configuration > Wireless > 5G Radio > Station > More... > WLAN General > Scan |
| 6 | A8n/A8n(ac) Series | Fix a panic reboot issue which is triggered by a network loop, where a CPE is connecting to the AP via a tunneled WLAN to the AC/AG, and at the same time connecting to the wired network via Ethernet port to the AC/AG. |
| 7 | All | Fix the scenario where kick AP recovery mechanism triggered by heartbeat miss might result in the CPE kicking AP multiple times, hence causing a long disconnection. |
| 8 | All | Fix the issue where the scan result returns a truncated list or even nothing when the scan is performed on a CPE in the state of searching/making connection with WPA/WPA2-enabled SSID. |
| 9 | All | Fix a panic reboot issue which happens when performing packet capture (tcpdump) on a wireless interface. |
| 10 | All | Fix the issue where CPE may experience a sudden disconnection from AP on 2.4G radio when running high throughput of traffic. |
| 11 | All | Fix the issue where the AP fails to reboot when verification code input times out on the reset tool. |
| 12 | All | Fix the issue where the overview table occasionally shows nothing in the channel scan tool. |
| 13 | All | Fix the issue where the hidden SSIDs which are scanned out in the channel scan tool are displayed as "Superwifi Network 0". It should be displayed as "<hidden SSID>" instead. This fix is applied to the Nearby AP list as well. |
| 14 | All | Fix the scenario where the scan result is still able to display the actual SSID name after the other AP's SSID is changed from "Non-hidden" state to "hidden". |
| 15 | All | Fix the issue where the 5G nearby AP list fails to display hidden SSIDs. |
| 16 | All | Fix the situation where Tx data rate drops to a low level, e.g. 6-12Mbps even at |

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| | | good SNR when more than 5 CPE running high ping traffic |
| 17 | All | Fix the issue where AP of having channel customization fails to connect with AltaiCare. |
| 18 | All | Fix the issue where the feature "Obtain RTS/CTS Threshold from AP" does not work as expected when the device is running on Station mode. |
| 19 | All | Fix the issue where syslog messages are missing when DCS is triggered. |
| 20 | All | Fix the issue about interface list for packet capture tool. When radio 0 is turned off and radio 1 on, the pull-down list shows radio0(Promiscuous Mode) instead of radio1 (Promiscuous Mode) for selection. |
| 21 | All | Fix the issue that the ACS report is only partially written to syslog, resulting in some of the channel scan results missing. |
| 22 | All | Fix a bug found in the management IP feature. When SSH port is changed to a non-default one, you can access the AP via that port from a source IP that is not on the trust IP list. |
| 23 | All | Fix the case where the AP fails to join AltaiCare/AltaiGate when remote management is enabled right before the AP successfully gets IP address from a DHCP server. |
| 24 | All | Fix the issue where the "Lock AP MAC" cannot be enabled (remained in greyed-out state) while configuring station connecting to a WPA2 enabled SSID. |
| 25 | All | Fix the IP/TCP connection issue where a PC sitting behind a CPE, when associating with a hidden and WPA-enabled SSID, fails to get IP address for communication. |
| 26 | All | Fix the case where a CPE, with MAC clone enabled for a PC behind, does not send gratuitous ARP for the PC after wireless module reload, resulting in the AP not performing proxy ARP for the PC. |
| 27 | All | Fix the issue where pre-selected channel feature is not working under ACS. |

4. What's New in v2.2.1.1615

4.1. New Features

| Item | Product | Description |
|------|---------|--|
| 1 | All | Support customization to disable/enable configuration for radios (2.4G/5G) and radio modes (AP/STA/Repeater/Bridge). If a radio is disabled, the status page and configuration page of that radio will be removed from the Web UI. If a radio mode is disabled, it will be taken out of the pull-down menu and therefore no longer be available for configuration. By default, all radios and radio modes are available for configuration, i.e. enabled |
| 2 | All | Support VLAN priority configuration for WLAN QoS. If checked, 802.1p Priority Code Point (PCP) will be taken into consideration for packet prioritization. If both DSCP and PCP values are both specified in a packet, AP will take the one of higher priority for traffic classification and prioritization. |
| 3 | All | Support configurable client inactivity timeout for each WLAN. Default value is 150 seconds, and it is configurable from 30 to 300 seconds. If a client has no tx/rx activity for more than the configured value, the AP will kick it out and remove the client entry from the association table. |
| 4 | All | Enhance the proxy ARP feature allowing the AP to answer ARP requests on behalf of any hosts including those sitting on the DS side of AP and those sitting behind a CPE in an attempt to reduce the broadcast-based ARP request traffic traversing a wired or wireless network. |
| 5 | A2x | Support new access point model: A2x |

4.2. Changes and Enhancements

| Item | Product | Description |
|------|---------|--|
| 1 | All | Upgrade lighttpd from v1.4.28 to v1.4.45 to resolve security loopholes. |
| 2 | All | Upgrade dnsmasq version from v2.55 to v2.79 to resolve security loopholes. |
| 3 | All | Disable weak algorithm: hmac-md5 for SSH server. |
| 4 | All | Disable TLS/SSL support for static key cipher suites |
| 5 | All | Disable HTTP options method |
| 6 | All | Disable SSLv2, SSLv3 and TLSv1.0. |
| 7 | All | Disable TLS/SSL support for 3DES cipher suite |
| 8 | All | Improve CPE (in STA/Repeater modes) roaming performance on DFS channels, |

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| | | especially when connecting to a hidden SSID. |
| 9 | All | Expand FDB (Forwarding database) for a WDS bridge to cater for a large number of source-destination pairs of connection, i.e. 300 connection pairs for downlink, and 80 pairs for uplink. |
| 10 | All | Enhance wifi event log by adding information such as timestamp/system uptime, radio/WLAN interface name, client address and reason code for each message. |
| 11 | All | Reorganize WLAN configuration layout in Web UI. |
| 12 | All | Optimize fast roaming by improving PMK handling for WPA/WPA2 personal authentication. |
| 13 | All | Rename the parameter "Multicast to Unicast" to "Multicast Enhance", and allow to enable or disable "IGMP snooping", as one of the configurable options. |

4.3. Bug Fixes

| Item | Product | Description |
|------|---------|---|
| 1 | All | Fix channel selection issue out of a user-defined channel pool for auto operation. |
| 2 | All | Fix proxy ARP issue where AP does not respond to ARP requests for the devices sitting behind a MAC-clone-enabled CPE after the CPE reloads its wireless module, e.g. wireless config change. |
| 3 | All | Fix heartbeat communication issue where AP does not respond to heartbeats of the CPE with MAT or MAC-clone enabled, causing the CPE to disconnect from the AP. |
| 4 | VX200 | Fix roaming issue where VX200 CPE is not able to roam to a new AP that has its SSID hidden running on a DFS channel. |
| 5 | All | Fix HTTPS certificate and key upload issue where a message "Missing the key file!" pops up after a click on "upload" button of either one. To install the certificate and key successfully, upload them one by one instead of both at a time, and finally click "Install" button. |
| 6 | VX200 | Fix the issue in which VX200 CPE fails to receive broadcast messages from AP after a high frequency of roaming. |
| 7 | All | Fixed the issue where VLAN priority (802.1p PCP) is not in effect for wireless transmission of non-IP protocol packets, e.g. profinet |
| 8 | All | Fix the issue where an error page pops up when clicking "Show" right after the box "Device Type Distribution" is unchecked without save & apply. |

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| 9 | All | Fix the situation where the original AP does not remove CPE entry from its association list even after the CPE has roamed to another AP. |
| 10 | C1an | Fix the issue where the transmit power would turn down to the minimum whenever the data rate is changed from the default value "best" to other data rates. |
| 11 | All | Fix compatibility issue of customization on country code for different versions. Using an old customization profile with a newer firmware could result in radio wireless parameters turning in blank once the country code is changed. |
| 12 | All | Remove inapplicable wireless modes from the pull-down menu when the customized channel list does not contain those channels that the wireless mode supports. |
| 13 | All | Fix proxy ARP issue where AP does not respond to ARP requests from its Ethernet interface in VLAN environment for wireless clients using static IP address while connecting to WLANs that has isolation enabled. |
| 14 | All | Fix ping loss and connectivity issue which happens for a period right after CPE makes frequent roaming between AP using fast roaming feature. |
| 15 | All | Fix connectivity issue for those CPEs which are disabled with fast roaming where they connect to a network with other CPEs that are configured with fast roaming. The CPEs without fast roaming configuration are found disconnected with the AP after a period of time. |
| 16 | All | Fix the issue which CPE kicks AP twice upon heartbeat miss with AP. |
| 17 | All | Fix the issue where repeater with multiple preferred APs configured remains connected to the 1 st preferred AP even though the AP is unavailable, e.g. reboot. The repeater should connect to the 2 nd preferred AP instead during the absence of the 1 st preferred AP. |
| 18 | All | Fix the issue where station (CPE) incorrectly displays transmit power as 31 dBm on status page when 802.11a is used and particular channels are selected on the scan channel list. |
| 19 | C1an | Fix handover time issue which is unexpectedly long for C1an roaming when using WPA/WPA2 authentication. |
| 20 | A2n, C1an | Fix Tx power mismatch issue where the actual Tx power in operation is 5 dBm for some conditions regardless of the configured power on AltaiCare On-Premises. |
| 21 | All | Fix minimum data rate issue which does not function as expected for 2.4G radio. Normally, associated devices with a data rate lower than the minimum data rate should be kicked out of the AP after a period of time. |
| 22 | VX200 | Improve connection issue where VX200, as a TCP client via the serial port, stops reconnecting to server after being rejected by the server for a number of times, |

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| | | e.g., during the time the server is not in service for operation needs. |
| 23 | All | Fix the issue where station might not be able to scan SSIDs and make connection with target AP after frequent roaming. |
| 24 | All | Harden distance-related code to get a more stable bridge link over a long distance especially when channel scan is in progress. |
| 25 | All | Remove background channel scan when station is enabled with lock AP MAC because there is no need to do so when the STA is in connection with a target AP already. |

5. What's New in v2.2.1.1923

5.1. New Features

| Item | Product | Description |
|------|------------|---|
| 1 | All | Support long press (more than 7 seconds) of reset button during bootup time for factory reset. (#21888) |
| 2 | VX200 | Support "KeepAlive" and "Reconnect timeout" configuration for TCP client mode for the serial port. (#22079) |
| 3 | C1xn+ | Support new access point model: C1xn+. (#22220) |
| 4 | C1n series | Update bootrom U-Boot version to v1.4 for C1n series. (#23445) |
| 5 | All | Support configurable "Minimum Data Rate Trigger Time", which determines how long a low data rate station would remain connected to the AP before it is kicked by AP. (#22894) |
| 6 | All | Support installation of custom-built scripts to facilitate debugging when needed. (#23331) |
| 7 | All | Support configurable "Low-Rate Packet Count Threshold". AP would kick a client device when its threshold is exceeded. (#23442) |
| 8 | All | Support Profinet passthrough for all AP models. This feature should be always-on and therefore removed from the configuration for simplicity's sake. (#23637, #23612) |

5.2. Changes and Enhancements

| Item | Product | Description |
|------|-------------------------|--|
| 1 | A3/ A2(ac) series | Disable AMSDU as default value for 5G radio to improve stability. (#22030) |
| 2 | All | Disable SNMP as default state to avoid any vulnerability issue if the feature is not used intentionally. (#23348) |
| 3 | All | Modify configuration hints for some parameters on the AP WebUI. (#21959) |
| 4 | All | Hide "Mobility Domain ID" configuration when 802.11r FT Roaming is disabled. (#21960) |
| 5 | All | Remove inapplicable warning in the "Nearby AP List". (#21981) |
| 6 | All | Rewrite STA wifi log messages when failed to connect with a remote AP due to being blocked by the rogue station list. (#22124) |
| 7 | All | Remove Wireless Mode Weighting configuration in CPE for the sake of simplicity. (#19674) |

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| 8 | All | Support 802.11r fast roaming between 2.4GHz and 5GHz radios on the same AP. (#21453) |
| 9 | All | Support AirFi mode in 5GHz radio for all AP models. (#22609) |
| 10 | All | Support passing RADIUS attributes to new AP for FT-roamed clients. (#22887) |
| 11 | All | Support AP flash usage watchdog and alert. (#22733) |
| 12 | All | Improves stability of the speed test tool. (#22911) |
| 13 | VX200 | Update default self-signed SSL certificate for VX200. (#23306) |
| 14 | All | Support compressing wifi log into multiple archive files. (#23464) |
| 15 | All | Change the parameter name from "Default VLAN Tagging" to "PVID Tagging" for the sake of clarity. (#17927) |
| 16 | All | Move "Allow DFS Channels" and "Scan Channel List" under General Setting of WLAN General page for station or repeater mode. (#19945) |
| 17 | All | Support Group Management Cipher suite for 802.11w to protect broadcast and multicast management frames. (#23094) |
| 18 | A8n(ac) Series, A3 Series, A2ac Series, A2c, C2s | Display a message for "RTS/CTS Threshold" on Web UI, reminding users that the RTS/CTS Threshold does not take effect when the 5G radio is using 802.11ac HT20 of wireless mode due to the QCA chipset's restriction. (#21796, #22047) |
| 19 | All | Remove the "RSSI reporting setting" from the Web UI. (#21837) |
| 20 | All | Update dropbear (SSH server) and openSSL to resolve security loophole. (#21816) |

5.3. Bug Fixes

| Item | Product | Description |
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| 1 | All excluding C1n/C1an | Fix "Obtain RTS/CTS Threshold from AP" bug for 5GHz CPE which uses its own configured RTS/CTS threshold instead of the AP's one. (#12157) |
| 2 | All | Fix panic issue due to proxy ARP feature. (#21648) |
| 3 | All | Fix varying aging time issue of proxy ARP table. (#18862) |
| 4 | All | Fix value change of "Multicast Enhance" after changing wireless mode back and forth. (#21791) |
| 5 | All | Fix unexpectedly high ping loss during fast roaming. (#21048, #21480, #20960) |
| 6 | All | Fix communication failure after a CPE, configured with WPA2 personal, roams between two APs, both configured with WPA-personal-auto. (#21394) |

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| 7 | All | Fix four-ways handshake failure for CPE after 802.11r fast roaming fails. (#21507, #21529) |
| 8 | VX200 | Fix bug in VX200 on STA mode using WPA2 which sends corrupted unicast packets when it performs fast roaming between APs with WPA/WPA2 auto. (#21649) |
| 9 | All | Fix unencrypted traffic from AP to a WPA/WPA2 client when the AP updates the GTK and at the same time, the client roams away and back. (#21653) |
| 10 | All | Fix various bugs on buttonless factory reset operation. (#18942, #21974, #19011) |
| 11 | All | Fix bug where multicast traffic was forwarded unexpectedly to WLAN when there is no client joining the multicast group, even with IGMP snooping enabled. (#21738, #21792) |
| 12 | C2s | Fix DHCP failing to assign IP address through the Ethernet interfaces when they are assigned to LAN interfaces under gateway mode. (#21102) |
| 13 | All | Fix DHCP server down under gateway mode after reboot, resulting in clients being unable to obtain IP addresses from the AP. (#21800) |
| 14 | All | Fix rolling reboots during startup where an STA gets WPA/WPA2 module initialization interrupted while performing a channel scan. (#21847) |
| 15 | All | Fix ACL not working properly in repeater mode if the blacklist/whitelist is enabled by file upload. (#21877) |
| 16 | All | Fix occasional high packet loss issue during FT roaming. (#21718) |
| 17 | All | Fix passcode timeout and mismatch handling during button-less reset, resulting in AP failing to exit the fail-safe mode and reboot. (#20022, #22002, #21946) |
| 18 | All | Fix multicast traffic not passing through under bridge mode. (#21790) |
| 19 | All | Fix high packet loss after FT roaming. (#21538) |
| 20 | All | Fix ACL and rogue station list where 2.4GHz CPE can bypass the access control policy when performing 802.11r fast roaming. (#21900) |
| 21 | All | Fix an issue where clients, connecting with gateway mode, fail to resolve DNS and access the Internet after firmware update from v2.2.1.1410 to v2.2.1.1621. (#21968) |
| 22 | All | Fix bug that caused non-target APs with the same SSID to respond to fast roaming reassociation requests from CPE. (#21979) |
| 23 | A2c/A2n /A3c | Fixed 5G STA being unable to associate with an AP when there is no channel selected in the scan channel list. (#21982) |
| 24 | All | Fix HTTPS port configuration bug. (#21987) |
| 25 | All | Fix verification code bug for the button-less reset software. (#22001, #21945, #21971, #21784, #21785) |
| 26 | All | Fix AMSDU bug where the configuration does not apply to the actual value in |

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| | | the ADDBA request/response frames. (#21488) |
| 27 | C1n | Fix disconnection issue of C1n CPE with A8n AP due to heartbeat miss when running high throughput of traffic. (#22058) |
| 28 | All | Fix WDS entry aging issue, causing excessive WDS-related log messages for 5GHz bridge mode. (#22016) |
| 29 | A8n(ac) | Fix lighttpd config file missing resulting in WebUI access failure. (#22051) |
| 30 | All | Fix reversed Tx/Rx throughput results in the speed test tool. (#22072) |
| 31 | A8n(ac) | Fix 2.4GHz radio not being able to operate normally when running on HT40 wireless mode with WPA enabled to an SSID. (22092) |
| 32 | C2s | Fixed PPPoE-enabled AP rebooting twice after manual reboot. (#22031) |
| 33 | All | Fix QCA driver bug resulting in panics. (#22113) |
| 34 | All | Fix recurring but irrelevant wifi log messages when one end of 5GHz bridge is disconnected. (#22161) |
| 35 | All | Fix a roaming issue where CPE, with WPA2-PSK enabled, fails to roam between two APs, one using WPA-PSK-Auto and the other one using WPA2-PSK. (#22215, #22249) |
| 36 | All | Lower the scanning threshold to 20dB for STA to avoid unnecessary scanning under generic configuration, e.g., roaming and preferred AP disabled. (#22246) |
| 37 | A8n | Fix file storage handling and memory leak, causing unexpected reboots, Web UI and SSH access problems, etc. (#22208) |
| 38 | VX200 | Fix Tx power being unexpectedly low after reboot due to fast channel switching algorithm, resulting in connection failure to the original AP. (#22296) |
| 39 | All | Fix third-party CPE device displaying IP: 0.0.0.0 on the AP association list. (#22369) |
| 40 | All | Fix communication issue for a device sitting behind a CPE after roaming to a new AP. (#22392) |
| 41 | All | Fix bug causing CPE panic occasionally during roaming between APs. (#22469) |
| 42 | All | Fix bug in repeater mode with MAT enabled, where a device on the Ethernet side cannot communicate with another device on the WLAN side. (#22470) |
| 43 | All | Fix WebUI and SSH servers being stopped after executing system module reload via SSH. (#22473) |
| 44 | All excluding A2n and A8n | Fix MAC clone setting missing when WDS is disabled in station mode. (#22486) |
| 45 | All | Remove association and disassociation logs from alarm log. (#22556) |

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| 46 | All | Fix bug causing AP radio malfunction after the AP is changed from repeater mode to AP mode. (#20405) |
| 47 | A8n series | Fix an IPv6 DHCP issue where A8n fails to obtain an IPv6 address when set as an IPv6 DHCP client. (#20439) |
| 48 | All | Fix bug on WDS table update issue for bridge mode which causes potential connectivity issue between devices across the bridge. (#21793) |
| 49 | All | Fix bug displaying two Ethernet interfaces on the Web UI under gateway mode for single-Ethernet-interface AP models after configuration restore from a backup file. (#22258) |
| 50 | All | Fix sudo security vulnerability (CVE-2012-2337). (#22455) |
| 51 | All | Fix a display issue on the association list when there is a device using a hostname consisting of some special or Unicode characters to connect with an AP. (#22456) |
| 52 | All | Fix bug in station mode with WPA2 enterprise and MAT enabled, where the STA fails to reconnect to AP once disconnected. (#22468) |
| 53 | All | Fix bug in 2.4GHz station mode with MAT enabled, where the STA cannot connect to a target AP. (#22588) |
| 54 | All | Improve DHCP process so that an AP can update its IP address via DHCP more efficiently once changed to another subnet. (#22602) |
| 55 | VX200 | Fix 5GHz radio down occasionally after rebooting the VX200 CPE. (#22672) |
| 56 | All | Fix dynamic VLAN not working properly with bandwidth control enabled. (#22813) |
| 57 | All | Fix bug where CPE fails to communicate with the AP-end network when its wireless interface is configured as VLAN access connecting to an SSID that is also configured as VLAN access. (#22726) |
| 58 | All | Fix bug where a new RADIUS accounting session fails to start for a client after FT roaming between 2.4G and 5G radios on the same AP using built-in RADIUS service (AltaiCare/AltaiGate). (#22688) |
| 59 | All | Fix a scenario where a device sitting behind CPE fails to communicate with others in its VLAN across an AP-CPE link when the CPE is enabled with MAC clone and a different VLAN for management traffic. (#22643) |
| 60 | All | Fix inaccessible AP WebUI issue due to flash memory running low. (#16337) |
| 61 | All | Fix WPA/WPA2 authentication-related process crash due to PMK R0/R1 cache aging for an 802.11r fast roaming client. (#22948) |
| 62 | All | Fix speed test failure when not finished in 30 seconds. (#22671) |
| 63 | All | Disable the block ack mechanism when AMPDU is disabled. (#23081, #23079) |
| 64 | All | Fix a roaming issue where CPE, with WPA-Enterprise or WPA2-Enterprise |

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| | | enabled, fails to roam between two APs, both using WPA-PSK-Auto. (#22994) |
| 65 | All | Fix a roaming issue where a MAC-clone enabled CPE with a PC attached cannot roam to a new AP together. (#22969) |
| 66 | VX200 | Fix VX200 CPE panic in VHT40 wireless mode. (#22114) |
| 67 | All | Fix BE queue issue resulting in communication failure. (#23157) |
| 68 | All | Fix fast roaming compatibility between two APs of different platforms when using WPA-Enterprise. The bug causes failures of fast roaming for the CPE and subsequent connection to a new AP. (#23192) |
| 69 | All | Fix occasional AP firmware update failure under certain conditions and configurations. (#23168) |
| 70 | All | Fix NTP time synchronization for DHCP client mode. (#22674) |
| 71 | All | Fix a display issue for AirFi level custom configuration. (#23248) |
| 72 | All | Fix bug causing CPE to disconnect when there was overwhelming retransmission of block ack requests and responses between AP and CPE. (#23085) |
| 73 | All | Fix an issue where wireless mode and channel list become an empty field on the 5GHz wireless configuration page after the 5GHz radio is disabled. (#22967) |
| 74 | All | Fix AP panic when there are IPv6 multicast frames on the network. (#22787) |
| 75 | A2e | Fix identifying iOS device as "Other" for the device type. (#23185) |
| 76 | C1n series | Fix bug related to bootrom causing some C1n to reboot and panic. (#22959, #20497) |
| 77 | VX200 | Fix bug where VX200 is unable to achieve max data rate of 433Mbps when configured to use a single chain for 5GHz transmission. (#19493) |
| 78 | All | Fix a panic issue that happens after AP joining to AltaiCare on-premises, followed by firmware update and configuration propagation. (#15861) |
| 79 | All | Fix secondary RADIUS server configuration not working properly. (#23573) |
| 80 | All | Fix excessive heartbeat misses between AP and CPE when high traffic running through. (#23581) |
| 81 | All | Fix CPE reconnection issue during speed test due to heartbeat miss. (#23467) |
| 82 | All | Fix recurring "snmp failed to start" logs in syslog when SNMP is disabled. (#23607) |
| 83 | All | Fix CPE failing to perform 802.11r FT roaming between two APs, one enabled with 802.11w and the other one is not. (#23569) |
| 84 | All | Fix CPE not responding to EAP requests for normal association after it failed to perform 802.11r fast roaming, resulting in momentary connectivity loss. (#23557) |
| 85 | C2s | Fix 5GHz Rx% channel usage not reflecting the actual channel utilization when there is high traffic running on the same channel from nearby APs. (#23204) |

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| 86 | VX200 | Fix VX200 CPE panic when it is connected to WiFi6 AP running heavy traffic. (#20254) |
| 87 | VX200 | Fix zero busy percentage in all 5GHz channels from a manual scan result. (#18119) |
| 88 | All | Fix incorrect statistics of VLAN-enabled Ethernet interface. (#23713) |
| 89 | All | Fix a bug in WPA2 enterprise where AP sends three RADIUS accounting interim packets instead of one when connected to a secondary RADIUS accounting server. (#23688) |
| 90 | All | Fix bug in RADIUS where the RADIUS shared secret is not updated for accounting interim updates after the AP is switching over to the secondary server, resulting in the server to drop the interim update packets. (#23699) |