Service Release Notes for WiNG 5.9.2.3-003R

Please Note: Service releases are made available to fix specific customer reported issues in a timely manner. Service releases are not as extensively tested as main releases (such as 5.9.2.0-032R). The next maintenance or manufacturing release will incorporate all qualifying and preceding service releases.

This document is an addendum to the release notes for the main release 5.9.2.0-032R.

Contents

1. Resolved Issues

This release provides support for VMM on AP 7662 platform with following limitations:
- Feature is Beta ready – limited testing was done as part of 5.9.2.3 release. Full release expected in WiNG 5.9.3 release.
- AP 7662 VMM can only be supported on 1x1 mode currently.
- Please review section 5 below for guidelines on VMM configuration.

This service release 5.9.2.3-003R contains important fixes for reported issues.

Following is a list of SPRs/CRs fixed in this release:

SPR/CQ	Description
SPR-3461	AP 7612/AP 7632 Client Bridge scan loop issue post radio reset or config push
SPR-3483	AP 7632 Client Bridge: probe request sent with invalid supported rates and WMM IE element
SPR-3492	AP 7612 iBeacon broadcast not waking up mobile devices

SPR/CQ	Description
WING-37165	"l2-tunnel-forward-additional-packet-types wnmp" does not forward the packets to L2TP tunnels as expected
WING-37183	AP7532/Ap7522: CB is not sending VHT IE in the association request
WING-37239	Open DFS channels on AP 7612 for Korea country code

2. Important Notes

- Radio capture functionality on AP 7612/7632/7662 has been updated to include data traffic sourced by the AP.

- WING-37077 - BLE: The current default power is set such that user can detect BLE beacons at distance up to 30'. The user may have to reduce the TX power for their use-case, e.g. micro-locationing. Note that the TX power setting is not the power in dBm, but only an index that follows a logarithmic relation to the output power in dBm.

- Due to upgrade of radius module in WiNG 5.9.2 – if you have Onboard-Radius Server with LDAP Authentication, please note the following:
  Configurations using "(sAMAccountName=%{Stripped-User-Name})" need to be updated to "(sAMAccountName=%{Stripped-User-Name:-%{User-Name}})" prior to performing the upgrade process.

  For WiNG 5.7.1 till WiNG 5.9.1 when running Onboard-Radius Server with LDAP Authentication configured, following was required:
  Configurations using "(sAMAccountName=%{Stripped-User-Name:-%{User-Name}})" need to be updated to "(sAMAccountName=%{Stripped-User-Name})" prior to performing the upgrade process.

- Chrome v67 and above, automatically redirects traffic sent to 1.1.1.1 to Cloudflare, which is a new service offering DNS over HTTPS.

  Many captive portal vendors, including WiNG, use 1.1.1.1 as an internal redirection IP/hostname for guest network splash pages. It's best practices to update Captive Portal Server hostname to make sure that process is working correctly.

3. Platforms Supported

This release applies to all platforms released with WiNG 5.9.2.0-032R.

Reminder:
Dependent AP platforms: AP 621, 622, 650 are EOL and engineering support has ended.

Independent AP platforms: AP 6511, AP 6511E, AP 6521, AP 6532, AP 7131, AP 7181, AP 8122, AP 8132, AP 8222, AP 8232, ES 6510 are EOL and engineering support has ended.
Controller platforms: RFS 4011, RFS 6000, RFS 7000, NX 9000, NX 45XX and NX 65XX platforms are EOL and engineering has ended.

4. Firmware Upgrade/Downgrade Procedure

The method described in this section uses the Command Line Interface (CLI) procedures. To log into the CLI, either SSH, Telnet or serial access can be used.

For detailed upgrade procedure – please refer to WiNG 5.9.2 release notes.

Upgrade from WiNG v5.x.x.x to WiNG v5.9.2.x

1. Copy the controller image to your tftp/ftp server.

2. Use the ―**upgrade ftp://<username>:<password>@<ip address of server>/<name of file>**‖, or ―**upgrade tftp://<ip address of server>/<name of file>** command from CLI or **Switch->Firmware->Update Firmware** option from the GUI. You may need to specify the username and password for your ftp server.

3. Restart the controller. From CLI the command is ―**reload**.

5. Guidelines for AP 7662 VMM configuration and interoperability

General

- For best performance, the network should be designed such that VMMs are no more than 1 hop to a Root.
- Create a separate profile for VMMs:
  - VMM profile will have meshpoint-device settings different than infrastructure APs
- Channelization:
  - Use fixed channels on Root Aps
  Same channel
  - For best roaming performance, use the fixed channel on VMMs (i.e. all roots and VMM use the same channel).
    - When roots and VMM are on the same channel, VMM will not perform excessive scan, which allows fast and seamless roaming
  Auto Channel Selection
  - When the roots are on different channels and no fixed channel is configured on VMM, ACS (Auto Channel Selection) will be enabled. To allow efficiency in
    - Configure channel list in rf-domain
      - Pare down channel list. Only include the necessary channels in the list. The more channels in the channel list, the longer it takes for VMM to complete one set of scan.
      - The country code setting determines the channels available for scanning and DFS requirements
    - Configure signal threshold

- This signal threshold (CLI command "acs signal-threshold") determines when the VMM starts to scan for a new root. When the average received signal level form the current root is lower than this signal threshold, the VMM will start the scan. The high signal threshold would cause VMM to scan prematurely.

Configuration

- Meshpoint Settings
  - Configure mesh-id
    - meshid <1-32 characters>
  - Configure allowed VLANs
    - allowed-vlans < **VLAN-ID The List of the VLAN IDs e.g. 10-20,25,30-35**>
  - Configure security
    - Security-mode **none** for open security
    - Security-mode **psk** for psk
      - Configure psk passphrase
        - wpa2 psk 0 <**passphrase between 8 and 63 ASCII characters long**>
  - Configure no root
    - **no root**
- Meshpoint-qos-policy
  - For VMM applications which require the timely delivery of multicast traffic accelerated multicast can be used.
    - Select this option to have bridged multicast packets converted to unicast to provide better overall airtime utilization and performance.
    - The administrator can either have the system automatically detect multicast streams and convert all detected multicast streams to unicast, or specify which multicast streams are to be converted to unicast.
    - When the stream is converted and being queued up for transmission, a number of classification mechanisms can be applied to the stream. The administrator can choose from the following classification types: Trust, Voice, Video, Best Effort, and Background.
      - Accelerated-multicast autodetect
      - Accelerated-multicast autodetect classification < **best-effort |trust| video|voice|background**>
- Rf-domain
  - VMMs configured for Mesh Auto Channel Selection configure the channel list
    - Channel-list dynamic
    - Channel-list 5GHz < **channels** >
      - Note when using 4.9 GHz VMMs the configure 4.9 GHz channels using the command channel-list 5GHz < **4.9 GHz channels**>
- VMM Profile
  - Interface radio
    - When configuring a 4.9 GHz VMM you will need to configure the rf-mode under interface radio 2.

- Rf-mode < **4.9GHz-wlan** >
- Note: Radio 1 has rf-mode 2.4 GHz by default and radio 2 uses rf-mode 5 GHz by default.
  - Map meshpoint to single radio (2.4 GHz | 4.9 GHz | 5 GHz)
    - Meshpoint should be on bss 1.
  - Aggregation should be disabled
    - aggregation ampdu none
    - aggregation amsdu rx-only
  - Configure channel when using fixed channels. A fixed channel allows for faster roaming performance.
    - For example: channel **149**
  - For Mesh Auto Channel Selection channel **smart** is configured
    - channel <**smar**t>
  - For congested environments impeding broadcast traffic configure the broadcast rate to the lowest basic rate
    - non-unicast tx-rate lowest basic
  - Dynamic chain selection should be disabled
    - no dynamic-chain-selection
  - Use long guard interval
    - guard-interval long
  - Use antenna mode 1x1 (for AP7662)
    - Antenna-mode 1x1
    - This is a special case for AP7662 (please refer to "Special Cases" section)
  - Use opportunistic rate selection (AP7161 only)
    - Rate-selection opportunistic
    - This is a special case for AP7161 (please refer to "Special Cases" section)

- o Meshpoint-device
  - Path Method
    - Configure path **method mobile-snr-leaf**
  - For fixed channel VMM
    - Hysteresis settings
      - o hysteresis snr-delta <1-100> delta in dBm
        - The default is 5 dB. Use a value of 5 or higher
        - Upon detecting an alternative root, VMM would roam to the new root only if the received signal strength from the new root is X dB better than the current root. X is the value of hysteresis snr-delta.
      - o hysteresis period < 0 – 600 seconds>
        - The default value is 1
        - The received signal strength from the new root should be better than the current root for at least Y seconds. Y is the value of hysteresis period

  - For VMMs using Mesh Auto Channel Selection

- Hysteresis settings
  - hysteresis snr-delta <1-100> delta in dBm
    - The default is 5 dB. Use a value of 5 or higher
    - Used for the same channel roaming. When VMM detects better root on the same channel, VMM would roam to the new root only if the received signal strength from the new root is X dB better than the current root. X is the value of hysteresis snr-delta.
  - hysteresis period < 0 – 600 seconds>
    - The default value is 1
    - Used for same channel roaming. The received signal strength from the new root on the same channel should be better than the current root for at least Y seconds. Y is the value of hysteresis period
    - The hysteresis period partially determined how long VMM would stay in an unconnected stay before VMM restarts its radio
- ACS channel width
  - Acs-channel-width 2.4GHz <**20MHz/40MHz/80MHz**>
    - ACS supports configuration of 20MHz/40MHz/80MHz, however the channel is selected based on primary channel statistics
  - Acs-channel-width 5GHz <**20MHz**>
    - ACS supports configuration of 20MHz/40MHz/80MHz, however the channel is selected based on primary channel statistics
- ACS signal threshold
  - Acs signal-threshold 2.4GHz <-100-0 dBm>
    - Default value is -65 dBm
    - When the average received signal level form the current root is lower than X dbm, the VMM will start the scan. X is the value of o   Acs signal-threshold
    - Start with the default and tune accordingly
  - Acs signal-threshold 5GHz <-100-0 dBm>
    - Default value is -65 dBm
    - When the average received signal level form the current root is lower than X dbm, the VMM will start the scan. X is the value of o   Acs signal-threshold
    - Start with the default and tune accordingly

- ACS snr delta
  - Acs snr-delta 2.4GHz <1-100 dB>
    - The default is 5 dB
    - During the scan, the VMM would select a root on different channel only if the average received signal level from the

> > root is X dB better than the current root. X is the value of acs snr-delta
> > - Start with the default and tune accordingly
> - Acs snr-delta 5GHz <1-100 dB>
>   - The default is 5 dB
>   - During the scan, the VMM would select a root on different channel only if the average received signal level from the root is X dB better than the current root. X is the value of acs snr-delta
>   - Start with the default and tune accordingly

Special Cases

The VMM can be enabled on AP7161, AP7562 and AP7662. Depending on different AP models, the behavior and configuration on VMM might be slightly different. Due to the radio constraint on AP7662, at this point "antenna-mode 1x1" should be set on AP7662 especially in the mixed scenario, where VMM and roots are different AP models. For example, AP7662 VMM is connected to AP7161 root or vice versa.

Since AP7161 supports intelligent rate selection, opportunistic rate-selection should be enabled on AP7161 VMM. Besides, AP7161 also supports intelligent aggregation. So aggregation could be allowed on AP7161 VMM/Root.

Examples

1. Meshpoint
   meshpoint mesh
         meshid VMM
         beacon-format mesh-point
         control-vlan 1
         allowed-vlans 1
         security-mode psk
         wpa2 psk 0 extrememesh
         no root
2. Rf-domain
   rf-domain 49GHz-JP
         country-code jp
         channel-list 5GHz 184,188,192,196
         controller-managed
3. Meshpoint-device (profile)
   meshpoint-device mesh
         no root
         path-method mobile-snr-leaf
         hysteresis period 2
         hysteresis snr-delta 5GHz 5

```
        acs channel-width 5GHz 20MHz
        acs signal-threshold 5GHz -60
        acs snr-delta 5GHz 5


4.  Interface radio 2
    1)  AP7161 VMM
        <Interface radio 2>
        rf-mode 4.9GHz-wlan
        placement outdoor
        meshpoint mesh bss 1
        rate-selection opportunistic
        guard-interval long
        no dynamic-chain-selection
        Note: by default, aggregation is enabled on AP7161
    2)  AP7662 VMM
        <Interface radio 2>
        rf-mode 4.9GHz-wlan
        placement outdoor
        meshpoint mesh bss 1
        aggregation ampdu none
        aggregation amsdu rx-only
        guard-interval long
        no dynamic-chain-selection
        antenna-mode 1x1
```