



GE MDS *PRODUCT RELEASE NOTE*

RELEASE NOTE: RCL220 AP Firmware Version 4.0.7
RELEASE DATE: December 20, 2021

FIRMWARE

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MDS RCL220 AP FIRMWARE – VERSION 4.0.7

Overview

This section describes Software/Firmware updates for the MDS RCL220 AP product.

Product: MDS RCL220 AP
Version: 4.0.7
Release Date: 20-DEC-2021

Package Element	Version
Bootloader	0.0.3
Kernel	0.0.5
RootFS	4.0.7*
APPs	4.1.4 APP1/2
MCU	3.5.2
DSP	4.1.3

* = updated

Important Notes:

- This release note lists changes since the most recent production release, 4.0.5.
- Release 4.0.7 supports all RCL AP devices: HGW, LCU AP, and Repeater/RCS.
- Release file sln-kroomd-4_0_7.mpk SHA256 sum:
ae4714bfe4d1a034ab8b421068fc5cc10203324ea15c8660de0eb140325e6977

New Features

1. Add HGW setting 'Class D Ignore Dup Msg #'. When enabled, the HGW deviates from the Class D spec and keeps the HGW-HCU link up on non-zero sequence errors. (The link will still close if a message sequence number is 0.)
2. Add RCS user-initiated LCU drop. The user may drop an LCU from the RCS Slot Group Allocation screen by pressing 'd' and entering the slotgroup number at the 'Drop SG' prompt. The LCU will drop from both the RCL and HCO slotgroup.
3. Check for mismatched system addresses between the HCO and RCL slotgroups every 60 seconds. Drop the HCO slotgroup if there is no matching RCL system address.
4. Check RTC battery at bootup. If the battery has failed, the event log will record 'RTC Battery Failed' and the Device Information menu will display "* BATTERY FAILED * RTC will not stay up-to-date".
5. Add 'Running' event to log the firmware version, active firmware image, and system mode.

Changes to Existing Features

1. Authcode login account removed. The Maintenance, Authorization Codes menu may be used instead.
2. Restrict guest logins from generating a new SSH key.
3. The Current Alarms screen now identifies which radio(s) have an alarm, previously only noted in the event log.

4. RCS strict age out: Age out only the slotgroup with no traffic rather than all slotgroups with a matching LCU.
5. RCS foreign packets: Drop HCO packets from LCUs with no matching RCL slotgroup. Accept data into the LCU database only from matching LCUs.
6. RCS routing: Continue to use the last "Best Repeater" for an OCU when no messages are received from the OCU. Previously, the RCS would go into "Hunt Mode", routing messages to all Repeaters in a round-robin fashion.
7. Change RCS Slot Group Allocation screen HCO rows to include the destination device and age since last message and remove RSSI. Refresh only the rows that change to reduce screen painting artifacts.
8. Change 'Valid Unit Associated' and 'Disassociated' event text to 'Unit Added' and 'Removed' so additional data may be logged. Add LCU system address, timeslot, and slotgroup to both events and include a reason in the 'Unit Removed' events.
9. 'Telnet/SSH User' login events now combine the originating address and user in one event log entry.
10. Accept USB flash logging trigger file 'dologging.txt' as well as 'dologging' to simplify flash drive preparation.
11. Change the time sync from RTC at bootup to avoid a three-minute timeout when the RTC battery is dead.
12. Debugging: Change RCS packet debug log format (logged when param rcsPktDebug is set) from:

```
RCS_handle_packet: srclp 0a78d9c0, ts 36, priRx 0, src 4, dst 3, alodat; local tx
```

to:

```
rxSat 0a78d9c0, ts 46 alodat, 1212211200 L, 1212209152 O; sat tx
```

and include HCU and Yard circuit payload hex bytes.

13. Debugging: Append 'from <RCL_system_address>' after the message number in HGW CFBP debug log entries. This complements the destination address logged as 'for <RCL_system_address>'.

Defect Fixes

1. RCS slotgroup timeout: Move slotgroup timeout out of the receive packet handler to process it independently. When a timeout occurs, call the drop function with the correct value to prevent retaining the slotgroup.
2. Enforce inactivity timeout from menu input prompts. Previously, selecting a setting but never pressing <ENTER> to submit the value would leave the login session active. (Once you do hit <ENTER>, the inactivity timer resets so the session still remained active.)
3. Support importing pre-HCO config scripts that specify Slot Group Status as 'enabled' rather than 'RCL'.
4. Prevent config script import failure when TABs are between the value and comment.
5. Prevent Security Configuration, 'SSH key created' updating on every reboot.
6. Restore showing IP Address at bootup for LCU APs, it was removed prior to releasing 4.0.0.
7. Debugging: Correct crc flag for HGW Route Associations screen. Previously, setting param cfbpDebug to log descrambled hex bytes caused the screen to show 'crc', indicating a CRC error.

Known Errata

1. None

Operational Notes and Limitations

1. Compatibility with RCL220 AP releases before 4.0.0
 - This release is over-the-air compatible with releases prior to 4.0.0 for all flat operations.
 - The repeater coordination server (RCS) must be running release 4.0.0 or later for integrated hump control operations (HCO) with locomotives in the hump yard.
 - Locomotives with an HCO release running in HUMP mode can pass hump messages only over satellite repeaters running release 4.0.0 or later.
2. For each RCS slot group (SG) configured for HCO traffic, there are 4 other SGs blocked for RCL traffic by HUMP locomotives. These SGs may still be used by flat locomotives. To minimize the impact of blocked SGs, flat

locomotives will allocate their RCL SGs from the pool of blocked SGs first, leaving the unblocked SGs available for the HUMP locomotives. See documents **HCL-016_RCL_Hump_Control_Slot_Group_Usage_Rev1_0.pdf** and **HCL-017_RCL_Hump_Control_Slot_Group_Usage_Rev1_0.pdf** for details. The table below shows which SGs are blocked for RCL (in the columns) when a SG is configured for HCO (the rows).

Slot Groups (SGs) blocked for RCL allocation by HUMP locomotives

SG	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
0	H						B	B	B	B					
1		H						B	B	B	B				
2			H						B	B	B	B			
3				H						B	B	B	B		
4					H						B	B	B	B	
5						H						B	B	B	B
6	B						H						B	B	B
7	B	B						H						B	B
8	B	B	B						H						B
9	B	B	B	B						H					
10		B	B	B	B						H				
11			B	B	B	B						H			
12				B	B	B	B						H		
13					B	B	B	B						H	
14						B	B	B	B						H

3. After upgrading, the Starting Information screen may show Device Status "Initializing" for up to five minutes.
4. The ethernet port operates in 10Mb half-duplex mode.