APX Family Radios CPS/RM R32.00.00 Release

What's New in CPS/RM (R32.00.00):

- Added a new checkbox field at Trunking Configuration -> Trunking System -> Features -> **Enable Intermediate Hunt**, which makes use of frequencies from the Intermediate Hunt List while searching for a valid control channel.
- Added a new field at Radio Ergonomics Configuration -> Display -> **Lock Menu Item**, which allows the user to configure a menu item at the selected index in the Selected Menu Items list to be locked at the same position on every menu frame. This locked menu item depends on the current signaling type.
- Added new fields to configure Radio Inhibit Revert at Conventional Configuration -> Conventional Wide -> Features:
  - ➔ **Radio Inhibit Revert Enable**: When enabled, allows a Trunking System to inhibit the radio while in Conventional operation.
  - ➔ **Radio Inhibit Revert Zone**: Selects the zone on which the radio shall receive inhibit status.
  - ➔ **Radio Inhibit Revert Channel**: Selects the Trunking Channel on which the radio shall receive inhibit status.

    Note: When **Radio Inhibit Revert Enable** is Enabled, a **Radio Inhibit Revert Zone** and **Radio Inhibit Revert Channel** must be selected. The duration of the inhibit status check is based on the value set at Scan Configuration -> Scan Wide -> **System Search Time (sec)** plus an additional 4 seconds.
- Added a new checkbox field at Radio Wide -> Audio Options -> **ICUA Power Up Muted**, which enables Voice Mute upon radio power up.
- Added a new filter in RM's System View called **Duplicate Radio IDs**, which reports (if any) the distinct radios that have duplicate Radio IDs configured for the same conventional System ID and System Name or trunked System ID and System Name.
- Added support for the following features for APX NEXT and N70:
  - ○ **POP25 Programming**: This feature can be configured at Conventional/ Trunking System -> Features -> **POP25 Enabled**.

    *Note***:** A Data Profile Selection must be configured to make use of this feature.

  - ○ **Dynamic Zone Programming**: This feature can be configured at Zone Channel Assignment -> Zone -> **Dynamic Zone Enable**. A new menu item has also been added at Radio Ergonomics Configuration -> Controls -> Menu Items -> Conventional/ Trunking Selected Menu Items -> **ZNPR**.

  - ○ **Intelligent Priority Scan**: This feature can be configured at Scan Configuration -> Scan List -> Scan Type -> **Intelligent Priority**. *(This feature is now also supported for APX N30/N50)*

○ **DVR NAC Linking** and **Persistent Talkaround**: These features can be configured at Conventional Configuration -> Conventional System -> DVRS:
  ➔ **DVR Sync NAC Matching**
  ➔ **Prefer Talkaround in NoComms**
  ➔ **Talkaround Audio Mode**

  Note: The Conventional System's type must be DVRS to make use of these features. When **TA After DVRS No Communication Attempts** is Disabled, **Prefer Talkaround in NoComms** and **Talkaround Audio Mode** are hidden but visible otherwise.
  (This feature is now also supported for APX N30/N50)

○ **Multi PL**: This feature can be configured at Conventional Configuration -> MPL Configuration. The following items were newly added:
  ■ A new field at Conventional Configuration -> Conventional Wide -> **Permanent MPL Alias Display**, which displays the current MPL selection on the radio's front display.
  ■ A menu item at Radio Ergonomics Configuration -> Controls -> Conventional Selected Menu Items -> **MPL**.
  ■ Buttons and accessory buttons at Radio Ergonomics Configuration -> Controls -> Button/ Accessory Buttons -> Conventional/ Trunking Feature -> **MPL**.

○ **Front Panel Programming (FPP)**: This feature can be configured globally at Radio Wide -> Features -> **FPP Enabled** and on a zone basis at Zone Channel Assignment -> FPP/Protection -> **FPP Enabled**. A new menu item has also been added at Radio Ergonomics Configuration -> Controls -> Conventional Selected Menu Items -> **FPP**.

○ **Zone Cloning**: This feature can be configured globally at Radio Wide -> Features -> **Zone Clone Enable** and on a zone basis at Zone Channel Assignment -> Zone -> **Clone Enable**. A new menu item has also been added at Radio Ergonomics Configuration -> Controls -> Conventional Selected Menu Items -> **CLON**.

  Note: A protected zone password must be set at Radio Wide -> User Information and Passwords -> Zone Protection -> **Protected Zone Password** in order to enable Zone Clone.

The following customer reported issues have been fixed in this release (R32.00.00):
- In CPS, when performing a FLASHport Upgrade or Radio Refresh for APX NEXT, *.bbf* is a selectable file type.
- In CPS, under certain circumstances, performing a top node drag and drop transfers over incorrect values.
- In Radio Management, When performing FWDL using POP25, the progress displayed in Radio View stops at a variable percent and does not progress further despite the job completing successfully on the radio side.
- In CPS, a write job fails when the number of Secure Keys in a given codeplug exceeds 85 keys.

Trainings on new features for this release and CPS/RM usage:
- ASTRO 25 Subscriber Release 2023.3 Training for APX is available through Motorola's Learning Management System / LXP (https://learning.motorolasolutions.com), course AST0165
- Training on the APX CPS and Radio Management is available through Motorola's Learning Management System / LXP (https://learning.motorolasolutions.com), courses RDS2017 and AST2003.
- If you have generic questions about Radio Management installation, deployment, supported OS and troubleshooting you can refer to the **Radio Management System Planner** available through Motorola's Learning Management System (https://learning.motorolasolutions.com/reference-guide/18714enus) for more details.

IMPORTANT PROGRAMMING NOTES:
- The .BBF file format is meant to replace the legacy .CVN file format used to upgrade the radio firmware. Additionally, it simplifies the upgrade process by including firmware upgrade components for both portable and mobile radios into one combined .BBF file. It also includes the firmware upgrade file for the APX 8000 and the APX 8500 All-Band radios. In order to use the new .BBF file format, be sure to select the .BBF file when browsing for a FLASHport file. Please note that .CVN files are still supported.
- Even though the radio may be disconnected from the PC when the CPS programming is done, DO NOT TURN THE RADIO OFF if the updating process on the radio is still in progress. If an update is in progress, the radio will present the words: "Updating…" on the front and/or top display. This update can take up to 90 seconds after the CPS programming session has completed.
- Always complete the current programming job session triggered by the programming tool (CPS, RM, or RC) before going to use the same or different programming tools (CPS, RM, or RC) to update the same radio(s) with a new job session, otherwise unexpected behavior may occur.
- If you are upgrading the APX NEXT/N70 device firmware, please DO NOT unzip the firmware package file after you download it from MyView. Use the APX NEXT/N70 .zip file in CPS and for importing firmware into the RM database.
- When using RM with APX NEXT/N70 devices and scheduling write jobs that change the device TLS-PSK, you should wait at least 15 seconds before scheduling any follow up jobs for the same device. Scheduling back to back jobs for the same device too quickly after changing PSK can result in a failure due to PSK mismatch.

IMPORTANT INSTALLATION NOTES FOR CPS AND RADIO MANAGEMENT USERS:
- Internet Explorer is no longer supported in CPS and RM applications.
- Please uninstall Microsoft Edge WebView2 Runtime application if it's not used by other applications in your system.
- Please note: CPS no longer supports Tutorials that require Flash Player. KB4577586 upgrade needs to be installed with Windows 10 to remove the Flash Player.

IMPORTANT INSTALLATION NOTES FOR RADIO MANAGEMENT USERS:

- Before upgrading to a new version of Radio Management, please make sure to backup your database. RM Server Utility -> Database Settings -> Database Backup
- Before upgrading, it is recommended to complete or cancel all the pending jobs before upgrading the RM Server. Pending jobs in the RM Server can, sometimes, cause undesirable behaviors.
- Radio Management (RM) now supports HTTPS transport protocol. RM clients (RM Client, Device Programmer and Job Processor) are now required to connect to the server over HTTPS on port 443. Please ensure that 443 is added to the exception list on the Windows firewall and on any other firewall used within your organization.
- If you are upgrading from R14.01.00 or earlier, please be aware:
  - All pending jobs will be canceled.
  - Any pending modifications (radios with change flags) will get discarded and are not recoverable.
  - Additional database migration procedures will be needed. See the **Radio Management System Planner** available through Motorola's Learning Management System (https://learning.motorolasolutions.com/reference-guide/18714enus) for more details.
  - "One-time password" for the different RM components will need to be reset.
  - All authorized computers (including the server) will need to be re-added to the list of all authorized computers when using "Enable Computer Authorization".
- If you have previously migrated to R15.00.01 from a previous release and NOT upgraded to R15.00.02, you MUST upgrade to R15.00.02 BEFORE upgrading to this version.
- User Authorization might need to be set up for RMC to communicate with the RM server. Additional information can be found in the Help under the Radio Management Server Utility.
- After upgrading to a new version of RM, it is recommended to perform the "Rebuild Indexes" operation in RM Server Utility to improve performance.
- If changing radio's language outside Radio Management (with CPS), it is recommended to schedule a read job from Radio Management to update the template in the database.
- If moving the Radio Management database, please make sure that the target location is accessible by "NETWORK SERVICE".
- Additional information about Radio Management deployment and installation can be found in the **Radio Management System Planner** available through Motorola's Learning Management System. (https://learning.motorolasolutions.com/reference-guide/18714enus)

To configure Radio Management to support the IMW Interface Improvements (Parallel OTAP programming):

- Upgrade to IMW 5.2 and install the ASTRO® POP25 RM Device Programmer in order to realize both the multiple programming sessions and improve efficiency of programming.
- To install the ASTRO® POP25 RM Device Programmer, double-click to launch MotorolaAstroPOP25RMDeviceProgrammer.exe from the installation media, or download and unzip the ASTRO POP25 Device Programmer for Radio Management file from Motorola On-Line or MyView.

- Please review the Online Help topic titled "APX POP25 RM Device Programmer" for more information.

Radio Management Security Reminder:
Enabling and configuring Machine Authorization to secure the connections from the Radio Management Server to Device and Job Programmers is the most secure way to deploy your Radio Management system. Search for "Machine Authorization" in the Radio Management help for more details.

System Requirements:
For System Requirements, please refer to the **Radio Management System Planner** available through Motorola's Learning Management System
(https://learning.motorolasolutions.com/reference-guide/18714enus)

NOTE: Touch screen functionality is not supported. If using the CPS/RM on a touch-screen monitor and experiencing performance issues, disable the touch screen and/or touch-pen capability.

Supported APX Radios:
- ☐ APX 8500HP
- ☐ APX 8500
- ☐ APX 8000
- ☐ APX 8000H
- ☐ APX 8000XE
- ☐ APX 8000HXE
- ☐ APX 7500
- ☐ APX 7000
- ☐ APX 7000XE
- ☐ APX 6500
- ☐ APX 6500Li
- ☐ APX 6000
- ☐ APX 6000XE
- ☐ APX 6000Li
- ☐ APX 4500
- ☐ APX 4500Li
- ☐ APX 4000
- ☐ APX 4000 (2 knob)
- ☐ APX 4000Li
- ☐ APX 4000XH
- ☐ APX 4000 900 MHz
- ☐ APX 4000 900 MHz (2 knob)
- ☐ APX 3000

- ☐ APX 2500
- ☐ SRX 2200
- ☐ APX 2000
- ☐ APX 2000 (2 knob)
- ☐ APX 1500
- ☐ APX 1000
- ☐ APX1000i
- ☐ APX 1000 900 MHz
- ☐ APX 1000 900 MHz (2 knob)
- ☐ APX 900
- ☐ TXM 2000 VHF
- ☐ VX-P949
- ☐ ATS 2500p
- ☐ TXM3000
- ☐ APX NEXT
- ☐ APX N30
- ☐ APX N50
- ☐ APX N70

Special FCC Regulation Note:

FCC NARROWBANDING MANDATE FOR ASTRO RADIOS

- Per the FCC Rule Part 90 requirements on narrowbanding, VHF and UHF radios imported or manufactured after 12/31/2012 are no longer authorized to operate on 25 kHz channel bandwidth. The exception to Rule Part 90 narrowbanding requirements are for radios operating only within 470-512 MHz frequencies (T-Band), which will continue to support 25 kHz channel bandwidth functionality. The FCC requires that a radio is authorized to operate within the specified bandwidth and that the user is required to have a FCC license to operate in that mode.
- NOTE: Specific frequencies in VHF and UHF are still allowed to operate at 25 kHz. Examples of VHF and UHF services that are not subject to Part 90 narrowband include: Part 80 marine frequencies, Part 87 aviation frequencies, Part 95, FRS/GMRS and MURS, Part 97 amateur frequencies, and NOAA weather channels.

Known Issues:

- When needed to perform Drag and Drop and you have Voice Announcement files, Customers either have to upload the Voice Announcements or Drag and Drop Voice Announcement node prior to Drag and Drop a zone.
- There may be issues using USB 3.0 ports (marked as SS on the ports) where Read/Write operations may fail intermittently. To work around this issue, use a USB 2.0 port or USB 2.0 hub on USB 3.0 port.

- In rare instances, it is possible that a radio may fail to be detected by the Device Programmer. If this occurs, disconnect and power down the radio, then re-connect and power the radio on. If this does not correct the issue, restart the Device Programmer PC.
- The "In-Use (Radios)" count reflects the number of radios referencing a specific template, and also includes those radios that were previously referencing the template prior to being changed to a different template, where the changes are still pending. Once those pending changes have been written to the radio, the reference count will decrease.
- If a Read/Write job is imported into an online Device Programmer (DP) that has the radio connected and that DP was also used to export the same job through offline programming, a problem may be encountered where the job is not performed in the DP. In this scenario, the user should not use offline programming. Instead, the Read/Write job should be performed directly through updates from the RM Server, since the DP is now online. If this problem is encountered, restarting the DP Service will allow the job to be completed.
- In rare instances the radio may not be recognized as a USB device after it gets connected once the CPS is installed and this message gets displayed "Could not find a radio connected to a USB port ", please make sure that under Device Manager-> Network adapters, the radio is added as "Motorola APX Series Radio", if not, please contact customer service for directions.
- In rare instances the ASK (Advanced System Key) cannot be accessed after installing the CPS/RM, please disable the driver from the Device Manager->1-Wire and re-install it again by inserting the key in the USB port.
- When migrating from R14.00.01 or earlier and enabling "Enable Computer Authorization" in the RM server Utility -> Machine Authorization, please re-enter the list of all authorized computers including the server. After turning on "Enable computer authorization", please restart all the RM services listed in the RM Server Utility's Status screen as well as the Job Processor and Device Programmer services in each of the authorized computers in the list.
- When importing a .xls or .xlsx file into Radio Management, the header must be listed twice in order for the file to get imported correctly.
- Radio Management/CPS for Firmware Changes over LMR:
  - In order to configure POP25 via Radio Management to upgrade radio software (firmware) over the air, it is necessary for the Device Programmer host machine to have connectivity to the Group Data Gateway (GDG) and the Provisioning Manager (PM), in addition to the Presence Notifier (PN, aka UNS, aka, ARS, aka IMW) and the Packet Data Gateway (PDEG). In order for the Device Programmer to be able to communicate with the GDG and the PM, the source TCP port must be configured using the following command:

```
"netsh int ipv4 set dynamicport tcp start=[range1] num=[range2]"

where range1 is greater than 52152 and range2 is equal to (64510-range1)

For example: "netsh int ipv4 set dynamicport tcp start=52153 num=12357"
```

- If your OTA Firmware Download job execution is stuck on 99%, cancel the job, schedule read operation and repeat job again.
- If your OTAP job execution is stuck on 99%, please cancel the job and start again.
- In CPS, a non-Bluetooth audio device's volume may be lower than expected.
- In CPS, a duplicated TTS Zone Voice Control Name remains invalid even after its duplicate is deleted. If this occurs, please rename the remaining duplication to fix its validity.
- In CPS, when performing a Clone after 30 seconds of Reading Radio IDs, the job will fail for APX NEXT and N70.
- In CPS, sometimes the application fails to load past the splash screen. The workaround is to create a new Windows user profile and transfer over documents and preferences.
- In Radio Management, after updating a radio's codeplug version RM does not reflect this updated version number.

Installation:
Please refer to the **Radio Management System Planner** available through Motorola's Learning Management System / LXP (https://learning.motorolasolutions.com/reference-guide/18714enus) for Installation and Deployment information.

Connecting the PC to the Radio:
- Only use the following direct PC to radio cables:
  - PMKN4013C for the portable radios
  - HKN6184A for the mobile radios
- When using the USB cable, be sure to click "Yes" on the Digital Signature window whenever it is displayed by the operating system. Wait until the radio enumerates on the PC before attempting to read or program the radio (5-7 seconds on Window 7). Not waiting for enumeration will cause the read or write to fail.
- Communication issues between the CPS and the radio might be encountered due to firewall settings. Certain aspects of Proventia Desktop, BlackICE, and any other software that affects networking capability may need to be disabled. These programs can interfere with the APX CPS's ability to read from and write to the radio. If BlackICE is installed and required for the PC, the BlackICE service may need to be stopped in order to successfully communicate with the radio.
- To prevent intermittent Blue Screen Windows crashes when attaching or detaching an APX radio to a PC using USB, verify that the Nortel Connectivity VPN Client Software is not installed on the PC. If it is installed and required for the PC, ensure that the EACFILT.sys driver is disabled on the "Motorola APX Series Radio" connection by performing the following steps:
  1. Open Network connections (Start->Settings->Network Connections)
  2. Under LAN, right click on the "Motorola APX Series Radio" connection and select properties
  3. Uncheck the Eacfilt check box.
- If the wireless Internet connection on the laptop/PC gets disabled when attaching the Motorola APX radio to the Laptop/PC or if OTAP fails during wired read/write/clone, follow these troubleshooting steps shown below to address the problem:

Windows 10/ Windows 11:
1. Go to Control Panel->Network and Internet->Network and Sharing Center
2. Click on the Change Adapter settings in the left side of the window.
3. Click on the Local Area Connection associated with the "Motorola APX Series Radio" device (example: Local Area Connection 7)
4. Click on Properties
5. Select Internet Protocol Version 4, Click on Properties
6. Click on Advanced, uncheck Automatic metric and set Interface metric to be greater than any other network connection
7. Click on OK, OK, Close, and Close

NOTE: To check the metric used by other network connections
1. Click Start->All Programs->Accessories
2. Right click Command Prompt and select Run as administrator
3. In the cmd window type route print
4. Look for network destination 0.0.0.0 and Interface ip of the other network card(s)
5. The last column is Metric, set the radio metric higher than any other network connection

NOTE: This issue may also occur if the wireless driver utility is configured to disable Wi-Fi until all wired network connections are disconnected. Ensure that any such a setting is disabled, so that the wireless connection stays active even when a wired link is present.

● Disable "Netbios over TCP/IP". This will help reduce unnecessary traffic sent to the radio by the PC. Follow these steps:
  1. Open Network Connections explorer window: Start->Settings->Control Panel->Network Connections (right click and select Open)
  2. Right-click on the LAN connection associated with "Motorola APX Series Radio" and select properties
  3. Select "Internet Protocol (TCP/IP)" and click Properties
  4. Click Advanced button on the General page (bottom right)
  5. Select the WINS tab
  6. Select "Disable Netbios over TCP/IP"
  7. Click OK on the pages opened for the setting to take effect

● On the Motorola APX Series Radio LAN connection, uncheck unused items. The LAN connection on the PC only requires the Internet Protocol to communicate with the Radio. This ensures the other unused items don't create any undesirable effects when communicating with the radio device. Follow these steps:
  1. Open Network Connections explorer window: Start->Settings->Control Panel->Network Connections (right click and select Open)
  2. Right-click on the LAN connection associated with "Motorola APX Series Radio" and select properties
  3. On the General Tab, under the section "This Connection uses the following items" uncheck all items except for Internet Protocol (TCP/IP).
  4. If the PC supports both IPv4 and IPv6, keep both IPv4 and IPv6 checked

- NetMotion wireless LAN software will interfere with radio programming. When the radio registers on the system with an IP Address, the NetMotion software detects it and tries to manage it as a network. Please disable this software in order to program radios with the CPS.

POP25 Operations:
- TCP Retransmissions values on the PC need to be set higher in order for POP25 programming to work effectively. Motorola recommends that the following registry keys are created if they do not already exist on the PC and set to the following values:

  - HKEY_LOCAL_MACHINE
  \SYSTEM
  \CurrentControlSet
  \Services
  \Tcpip
  \Parameters
  \TcpMaxDataRetransmissions - 5 or more

  - HKEY_LOCAL_MACHINE
  \SYSTEM
  \CurrentControlSet
  \Services
  \Tcpip
  \Parameters
  \TcpMaxConnectRetransmissions - 3 or more

  These values should be created as DWORD (32-bit) Values.
  Navigate to the registry path (using Regedit application), right mouse-click and select New -> DWORD (32-bit) Value.
  Type the correct entry name as shown above
  Right mouse-click on the entry and select Modify... and type the value in the Value data field
  For help on editing registry values, read Microsoft online support:
  https://docs.microsoft.com/en-US/troubleshoot/windows-server/performance/windows-registry-advanced-users

- While the POP25 operation is in progress, do NOT attempt to start a second session until the first session is done.
- It is recommended to use batch programming if more than 16 radios need to be programmed in a single session.
- If using Windows Firewall, it may prevent the CPS from connecting to the ARS (PN Server). In order to allow the CPS to work through Windows Firewall if it is turned on, follow these steps:
  1. Go to the Control Panel -> System and Security
  2. Select "Allow a program through Windows Firewall" under Windows Firewall selection
  3. Select Change Settings to enable "Allow another program" button
  4. Click "Allow another program" button and add the CPS

Conventional POP25 Operations:
- Please note that Conventional POP25 requires the MTU size to be set to 512 bytes. The Maximum Transfer Unit (MTU) size of an over-the-air datagram is 512 bytes plus a 13 byte encryption header if secure messaging is being used, resulting in an overall total datagram size of 525 bytes.
- If excessive failures occur when doing Conventional POP25 on Windows Vista, Windows 7 and Windows 10 Operating Systems please do the following:
    1. Open a command line window as an Administrator (ie. right click on **All Programs > Accessories > <u>Command Prompt</u>** and select **Run as administrator**)…
    2. Type the command **netsh** and wait for prompt
    3. Type the command **interface** and wait for prompt
    4. Type the command **ipv4** and wait for prompt
    5. Type the command **set global minmtu=512** (Windows 10 only)
    6. Type the command **show subinterfaces** from the ipv4 prompt and <Enter> to see a list of interfaces.
    7. The connection interface being used should be listed under the Interface heading in the result list:
    8. Type the command set **subinterface "<name of the network connection being used>" mtu=512 store=persistent**
- For example, **set subinterface "Local Area Connection 3" mtu=512 store=persistent from** the ipv4 prompt and <Enter> to set the MTU size.

Long Cable Configuration:
The following steps will need to be completed to change to a Long Cable Configuration.
1. A Flash Upgrade with the existing radio configuration will need to be completed using the standard cable.
2. Within the CPS, set the field "Aggregate Cable Length" to "Greater than 40 m".
3. Program the radio (use standard cable).
4. On the Control Head, change the control head ID to A or B:
5. Cycle power on the control head and immediately hold down the following keys Orange Button (Emergency) and the left-most menu button. A number (example: "1") will be displayed, indicating the control head ID. Change the control head ID by rotating the Mode Button from number 1 to A or B.
6. Cycle power on the radio and ensure that it restarts without errors.
7. Remove power from the radio.
8. Exchange the standard cable for the long cable.
9. Apply power to the radio and ensure that it restarts without errors.

Programming Hints:

- To get help on a field, open the Field Information window (on the right of the CPS screen) while focus is on the field. Pin the Field Information window by clicking on the thumbtack icon at the top right of the Field Information window.
- View the "What's New" information on the Home Mode screen and view the Help Tutorials to learn about productivity enhancing features, such as Codeplug Comparison, Undo/Redo, and Restore to Default.
- The APX CPS does not support Federal Information Processing Standards (FIPS).
- Do not remove the ASK while the computer is in sleep mode.
- When using concurrent programming via RM, each radio must have a unique IP address.
- To view any System Keys that are loaded during startup, click on the System Key Report window under the Windows menu.

Legal Notices:

This media, or Motorola Product, may include Publicly Available Software (Open Source Software, Freeware, Shareware).

Please reference the Motorola Publicly Available Software Legal Notices File, MOTOROLA_OSS_LEGAL_NOTICES_FILE-CPS.txt, located in the Legal folder found in the CPS installation directory, for the Publicly Available Software licensing terms, attributions, acknowledgements, and other software information details.

For Customer service support, please call 1-800-927-2744.