INCIDENT COMMAND SYSTEM PUBLICATION

Radio Communications Guidelines Job Aid
Motorola APX Portable Cloning Tool
ICS 1302

October 2025

This document contains information relative to the Incident Command System (ICS) component of the National Interagency Incident Management System (NIIMS). This is the same Incident Command System developed by FIRESCOPE.

Additional information and documentation can be obtained from the following resources:

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The information contained in this document has been approved by the Fire and Rescue Service Advisory Committee/FIRESCOPE Board of Directors for application in the statewide California Fire and Rescue Mutual Aid System. This material is a development of the FIRESCOPE Program.

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MOTOROLA APX PORTABLE RADIO CLONING TOOL

To facilitate cloning support for Motorola APX portable radio support at Incidents the following guidelines must be followed. Incidents that are supported by Cal-OES Public Safety Communications Technicians will have cloning capabilities for Motorola APX portable radios that meet the guidelines outlined below. Support for cloning will also be available at incidents that have Communications Technicians that have the training and tools needed for cloning.

The following is from Motorola Solutions APX Radio Zone Cloning Requirements. Supported Radios; APX 4000, 6000, 8000, NEXT, N70. Full keypad Models 3 or 3.5 type only. APX Zone Cloning Tool Version Requirements
        APX Zone Cloning Tool: R1.0.0.2
        APX FW Version: R34.00.00 (or later)
        APX NEXT FW Version: R07.02.00 (or later)
        ASTRO CPS Versi0on: R34.00.00 (or later)

The radio feature set requires either the **Q52** or **Q53** (FPP and Zone Cloning) option.

Zone Clone Enable must be enabled Radio Wide (**Radio Wide -> Features**)
        MPL Clone Configuration List populated with CA/NIFC CTCSS
        Tones 1-32 A protected zone password must be set.
        A cloneable zone must be present.

Under **Zone Channel Assignment,** check **Clone Enable** for a recommended **4 Zones**.

Add zone cloning (**CLON**) as a menu item in **Radio Ergon**omics -> **Menu Items** ->

Conventional Items. Set **"Protected Zone Password"** to "**000000**", six zeros.

*NOTE: Due to time constraints and the high possibility of negative effects on home agency programming, Communications personnel will NOT be updating firmware at the incident. Radios with a Firmware version earlier than the recommended minimum from Motorola will not be cloned.

For additional information regarding APX Zone Cloning refer to Motorola Radio Zone Cloning Requirements and Motorola Zone Cloning Tool Release Notes.

Attachments

Portable Radio Cloning Tool Guideline

Motorola Zone APX Radio Cloning Requirements

Motorola Zone Cloning Tool Release Notes

MOTOROLA ZONE APX RADIO CLONING REQUIREMENTS

APX RADIO ZONE CLONING

REQUIREMENTS

November 20, 2024

MOTOROLA SOLUTIONS

SUPPORTED RADIO MODELS

APX PORTABLE RADIO

Radio Zone Cloning is only supported on full keypad models (Model 3 or 3.5 type).

APX PRODUCT LINE

APX 8000

ALL-BAND HAZLOC	ALL-BAND
MISSION CRITICAL	

APX 8000H
APX 8000HXE

APX 8000
APX 8000XE

APX 6000

SINGLE-BAND
HIGH TIER

APX 6000
APX 6000XE
SRX 2200

APX 4000

SINGLE-BAND
STANDARD

APX 4000
APX 4000XH

APX N PRODUCT LINE

APX NEXT

ALL-BAND | SINGLE BAND
SMART RADIO

APX NEXT
APX NEXT XE
APX NEXT XN

APX N70

SINGLE BAND
HIGH TIER

APX N70

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FIRMWARE VERSION REQUIREMENTS

RADIO TO RADIO CLONING VERSION REQUIREMENTS

- [ ] APX FW Version: R32.00.00 (or later)
- [ ] APX NEXT FW Version: R05.03.00 (or later)
- [ ] ASTRO CPS Version: R32.00.00 (or later)

APX ZONE CLONING TOOL VERSION REQUIREMENTS

- [ ] APX Zone Cloning Tool: R1.0.0.2
- [ ] APX FW Version: R34.00.00 (or later)
- [ ] APX NEXT FW Version: R07.02.00 (or later)
- [ ] ASTRO CPS Version: R34.00.00 (or later)

RADIO ZONE CLONING REQUIREMENTS

FEATURE CONFIGURATION

❏ The radio codeplug requires either the **Q52** or **Q53** (FPP and Zone Cloning) option.

❏ **Zone Clone Enable** must be enabled Radio Wide (**Radio Wide -> Features**).

  ❏ A protected zone password must be set.
  ❏ A cloneable zone must be present.

❏ Under **Zone Channel Assignment**, check **Clone Enable** for at least 1 zone, up to a maximum of 15 cloneable zones.

❏ Add zone cloning (**CLON**) as a menu item in **Radio Ergonomics -> Menu Items -> Conventional Items.**

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MPL CLONING

CONFIGURATION

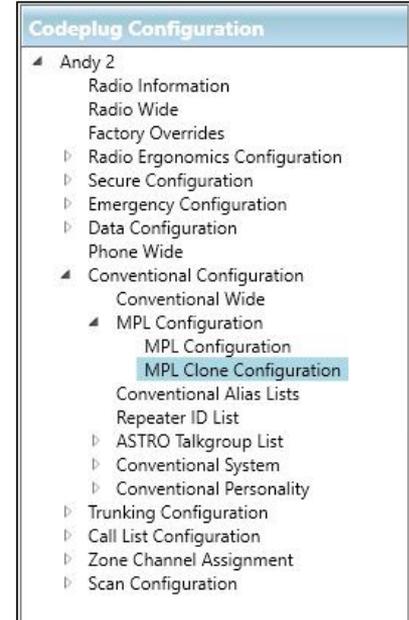❏ When Zone Cloning is enabled, CPS will creates a new cloneable MPL Configuration table (**MPL Clone Configuration**).

❏ When cloning to a target radio, only the source MPL Clone Configuration is cloned to target radio MPL Clone Configuration. The target radio MPL Configuration is intact and not cloned or modified.

This capability is available _ONLY_ with ASTRO CPS Version R32.00.00 (or later)

ADDITIONAL CONSIDERATIONS

RADIO TO RADIO CLONING

❏ If the selected zones in the **Source Radio** has at least one cloneable personality which is using MPL list, then the MPL from the **Source Radio** can be cloned to the **Target Radio** and overwrite the MPL value in the **Target Radio**.

❏ If the selected zones in the **Source Radio** has no personality that is using MPL, then no MPL will be cloned to the **Target Radio**. Therefore the MPL list in the **Target Radio** remains unchanged.

❏ If the clonable MPL in the **Source Radio** has MPL entries that are greater than or equal to the number of entries in the **Target Radio's** clonable MPL list, then the **Target Radio's** clonable MPL list will be successfully overwritten.

❏ If the Clonable MPL in the **Source Radio** has MPL entries that are less than the entries in the **Target Radio's** clonable MPL list, the list will not be copied.

ADDITIONAL CONSIDERATIONS

PC TO RADIO CLONING USING APX ZONE CLONING TOOL

❏ To copy the clonable MPL list from the **Source Radio** to the **Target Radio**, one of the source zones must have at least one MPL-enabled channel.

❏ If the clonable MPL in the **Source Radio** has MPL entries that are greater than or equal to the number of entries in the **Target Radio's** clonable MPL list, then the **Target Radio's** clonable MPL list will be successfully overwritten.

❏ If the clonable MPL in the **Source Radio** has MPL entries that are less than the entries in the **Target Radio's** clonable MPL list, the tool will merge the **Source Radio's** clonable MPL list into the **Target Radio's** clonable MPL list.

MOTOROLA ZONE CLONING TOOL RELEASE NOTES

MOTOROLA *SOLUTIONS*

APX Zone Cloning Tool Release Notes

R1.0.0.2 Release

There is a growing need for an enhanced cloning capability via a PC-to-Radio tool to facilitate the mass cloning of radios on the incident scene.

Value provided to customers

- The tool enables cloneable zones to be stored on the PC and edited by the user. However, only the edits permitted by the radio during Front Panel Programming (FPP) are allowed. All radio operations will be managed via a USB connection.

- The tool significantly reduces errors (with the ability to create a zone clone template in the PC tool), and facilitates faster cloning on the incident scene.

FEATURES	
Edit	The user can edit a zone using the tool's Edit functionality. They will see a table with all the editable fields and can manipulate values at the zone or channel level. The editing constraints will be similar to those in the radio during FPP. Users can save their changes by overwriting the .xml file or saving as a separate .xml file using the *Save As* option.
Clone	The Clone functionality allows users to clone source zones stored on their PC to a target radio. Users are directed to a screen displaying a list of all the source zones stored on their PC. From there, they can read a target radio they want to perform clone operations on. The radio communications performed by the Read functionality are also carried out in the Clone functionality, showing a second list containing the cloneable "target zones." Users can "drag-and-drop" a source zone over a target zone to clone it onto their radio. If they "drag-and-drop" a source zone over a protected target zone, they must provide the Protected Zone Password for the tool to accept the changes. The tool will also indicate if the source zone contains channels with out-of-band frequencies. Users will need to either "force allow" the source zone or revert to the default target zone. Once selections are made, the radio will enter "Clone Mode," where the zones will be written to the radio, and upon successful completion, the radio will exit "Clone Mode." Users can then attach a new radio and repeat the clone process, with the tool attempting to "auto-map" the source zones to the new target zones.
Read	The tool will communicate with the radio to retrieve its cloneable information (e.g. clone enabled, number of cloneable zones, etc.). It will then present the user with a list of the cloneable zones stored in the radio. The protected cloneable zones will be shown and if the user would like to save one of those zones to their PC the user will need to provide the Protected Zone Password. Once the user selects the zones to save, each zone will be read from the radio to acquire all of the fields. The zones will be saved as an .xml file in a directory specified in the tool's settings.

System Requirements

- A computer with Windows 10 or above, as the tool will be available only for the Windows OS and is made using net8.0-windows.
- The user is expected to be familiar with the English language, as the tool will be developed in English only with no preparation for future localization.
- A clone-enabled radio that the tool can use to perform radio communications that contains cloneable zones.
- The user is expected to have basic knowledge of all the editable fields found in a cloneable zone, as there will be no context sensitive help and the help will be application level only.
- The user is expected to have basic knowledge of establishing a connection from a PC to a radio via a USB cable.
- The application is optimized for a screen resolution of 1920 x 1080. Other resolutions may result in scroll bars appearing in the application to help assist with navigation.

Supported Radios

All radios with FED Front Panel Programming (Q52) or Non-FED Front Panel Programming (Q53), and Zone Cloning capabilities.

Installation Notes

The APX Zone Cloning Tool requires the drivers to detect a Motorola radio to be installed:

1. Navigate to the Drivers folder found in the tool's installed location.
2. Right-click on *MotorolaRadioRNDISWin7.inf*
3. Click Install

Ensure that the APX Zone Cloning Tool is not already installed prior to attempting the installation process. To update to a newer version, uninstall any existing versions of the APX Zone Cloning Tool.

Important Programming Notes

DO NOT TURN THE RADIO OFF while the updating process on the radio is still in progress. During an update, the radio will reboot and display: "*Updating…*" on the front and/or top display. This update can take up to 90 seconds after the programming session has completed.

Always complete the current programming job session triggered by the programming tool before reusing the same or different programming tools (CPS, RM, or RC) to update the same radio(s). Otherwise, unexpected behavior may occur.

The APX Zone Cloning Tool supports the cloning of the MPL Clone Configuration list to a target radio containing an MPL Configuration List of up to 59 entries.

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 the 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 the 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.

Connecting your APX Radio to the PC

Only use the following direct PC to radio cables:

- PMKN4013C for the portable radios

The following describes troubleshooting procedures that may resolve issues concerning your APX device's wired or wireless connection to the PC.

Disable software that affects networking capabilities
Communication issues between the APX Zone Cloning Tool 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 Zone Cloning Tool'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.

Disable the *EACFILT.sys* driver
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: - Go to Start → Control Panel → Network and Internet → Network and Sharing Center → Change adapter settings.   - Right-click on the LAN connection associated with the "Motorola APX Series Radio" connection and select Properties.   - Uncheck the Eacfilt check box.

Set the interface metric

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/Clone, users should follow these troubleshooting steps shown below to address the problem:

1. Go to Start → Control Panel → Network and Internet → Network and Sharing Center → Change adapter settings.
2. Right-click on the LAN connection associated with the "Motorola APX Series Radio" device (ex. Network 7) and open Properties.
3. Under the subheading *"This connection uses the following items:"* , select Internet Protocol Version 4 (TCP/IPv4) and open Properties.
4. Click on Advanced…
5. Uncheck *Automatic metric* and set *Interface metric* to be greater than any other network connection.
6. Click OK to preserve changes.

    Note: In order to check the metric used by other network connections:

    1. Go to Start → Command Prompt and right-click the app and select *Run as administrator*.
    2. In the cmd window type *'route print'*.
    3. Look for network destination 0.0.0.0 and Interface IP of the other network card(s).
    4. 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. Go to Start → Control Panel → Network and Internet → Network and Sharing Center → Change adapter settings.
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 on Advanced…
5. Go to the WINS tab and under the subheading *"NetBIOS setting"* select "Disable Netbios over TCP/IP".
6. Click OK on the pages opened for the setting to take effect.

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. In the Networking tab, under the subheading *"This connection uses the following items:"* uncheck all items except for Internet Protocol (TCP/IP).
    Note: If the PC supports both IPv4 and IPv6, keep both IPv4 and IPv6 checked.

NetMotion wireless LAN software may 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. Disable this software for programming radios with the APX Zone Cloning Tool.

Legal Notices

For assistance with this tool, contact your MSI Technical Support Center at https://motorolasolutions.com/support.