About This Help

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REV H

CPA Platform Help

This Help is based on CPA Platform Software (10518-8400-12) Version 1.8.

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CPA Platform Help and Support

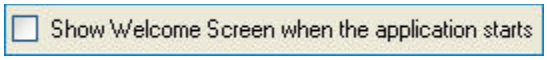
Welcome

The Communications Planning Application (CPA) is used for planning, configuration and programming of supported Harris radios. The platform help describes the overall user interface and features of CPA.

For an overview of new features, refer to What's New.

All acronyms used in the Help are defined in the Glossary.

A Welcome screen provides new users with basic information and links to tutorials, and assists with feature location. Disable the Welcome screen by unchecking the **Show Welcome Screen**... box at the bottom of the Welcome screen.



The Welcome screen can also be disabled as follows:

1. Select **Tools > Application Options** menu.
2. Select **Platform** in the left menu area.
3. Select **No** in the **Show Welcome Screen On Startup** field.

Quick Start

With CPA, a user can quickly create comprehensive communications plans. Featuring an intuitive user-interface, CPA permits a planner to create large-scale radio communications plans for distribution.

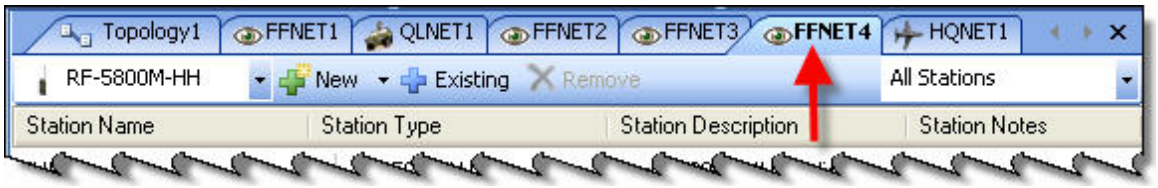
Typical steps for creating a communications plan are listed below:

> **NOTE** - The steps below do not have to be done in the order listed. Not all steps are required depending on user requirements.

1. Create a Topology.
2. Create individual Networks.

   > **NOTE** - Some CPA Products feature Wizards, which provide step-by-step instructions for network creation or other CPA activities.

3. Open an individual Network by selecting its tab in the main CPA work area (see below).



4. Add Stations and other devices to Network.
5. Connect items within a Topology (optional step, used only if a topology is being used).
6. Create (or Import) and Assign Keys.

   > **NOTE** - Only non Type-1 keys can be created or imported. Type-1 keys must be loaded into the radio via separate fill device.

7. Set the IP addresses of connected personal computers and/or laptops, if required.
8. Validate the plan.
9. Save the configuration by selecting **File > Save** or  .
10. Distribute the plan, if required.
11. Program radios.

    > **NOTE** - Each individual CPA product Help contains specific information on programming that radio type.

Help

Interface Overview

Window Layout and Options

CPA permits numerous ways of viewing Window areas, which are described below.

Window Layout

The standard window layout of the CPA is to have the views docked with the graphical work area in the center view.

In this arrangement, the **Toolbox**, **Explorer**, and **Navigator** become one tabbed view on the left.

The **Properties** view is on the right, with **Messages**, **Programming Status**, and **Plan Notes** views tabbed along the bottom portion of the screen.

Window Options

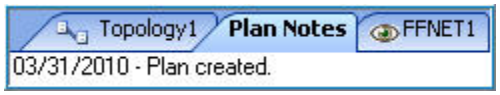
The CPA application uses window panes to view different aspects of communication planning activities and resources. The windows panes can be positioned to best meet your working requirements. Layout capabilities include:

Resizing - General ability to change the size of a window (standard window control).

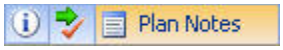
Floating - Places the window pane outside the application frame where it floats independently on the desktop and can be sized as required.

Dockable - Allows the window pane to be inside the application frame or floating. Drag the frame from its docked position to move it about the display. Double-click the frame to return it to the docked position. If a pane is set to Floating, select Dockable from the context menu and then double-click the frame. To move the docking location, double-click the view heading and use the docking arrows to place the view in a new location.

Tabbed Document - Places the window pane in the central viewing area as a tabbed document (same as Topology and Network views). See below example, where the Topology, Plan Notes, and a Fixed Frequency Net tab are shown.



Auto Hide - Minimizes a window pane or group of panes. For example, the minimized group shown below represents the **Messages**, **Programming Status**, and **Plan Notes** group.



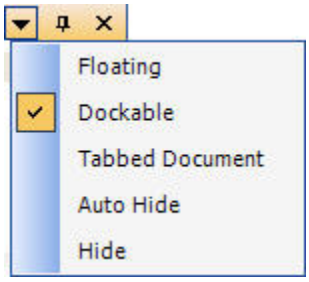
NOTE - **Window > Auto Hide All** minimizes all panes except tabbed panes.

Hide - Closes the window pane. Use the View menu to open a closed pane.

The **View** and **Window** menus are used along with the window pane control.

Manage pane layouts:

1. Select the triangle icon in the control's toolbar  to open the window pane control (see below).



NOTE - The pin icon  is Auto Hide and the X icon is Hide. When the pin is down, Auto Hide is off, when it points left, Auto Hide is on.

2. Select the layout option to change the window behavior as required.

Context Menus

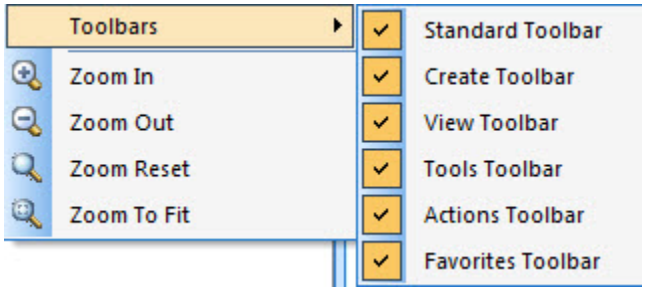
Context menus are opened using the right mouse button on a typical button layout where the left mouse button does the primary selection activities. These menus are context sensitive to the item selected and provide a range of actions to perform on the plan element.

For example, window panes can be made **Floating**, or **Dockable**; the toolbars shown or hidden, and tabbed documents closed.

Toolbars

Toolbar buttons provide ready access to commonly used menu items.

Select **View > Toolbars** or use the toolbar context menu to show (checked) or hide (not checked) available toolbars.



The following standard toolbars are available:

> **NOTE** - Other toolbar items can display depending upon other installed CPA products.

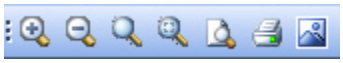
Standard Toolbar

The **Standard** buttons are **New**, **Open**, **Save**, and **Help Topics**.

Create Toolbar

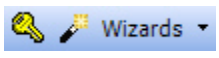
The **Create** toolbar buttons are **Create Network**, and **Create Topology**.

View Toolbar



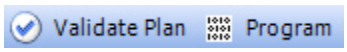
The **View** buttons are **Zoom In**, **Zoom Out**, **Zoom Reset**, **Zoom To Fit**, **Print Preview**, **Print View**, and **Save To JPEG**.

Tools Toolbar



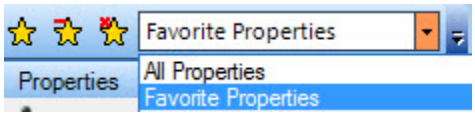
The Tools toolbar buttons are **Manage Keys** and **Wizards**.

Actions Toolbar



The **Actions** toolbar buttons are **Validate Plan** and **Program**.

Favorites Toolbar

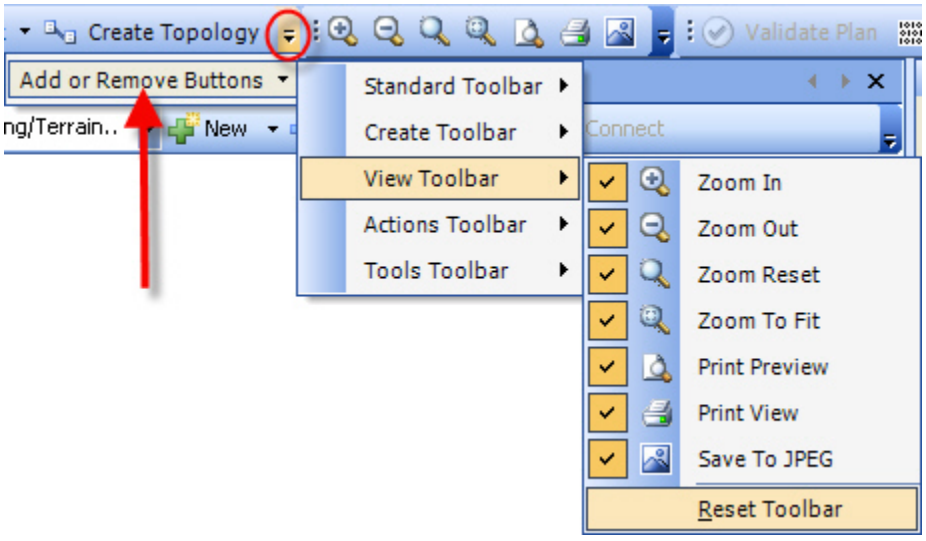


The **Favorites** toolbar contains a drop-down menu that allows you to show All Properties or Favorite Properties. In addition, three stars are available:

- Show or hide favorites in the Properties panel
- Add a currently selected property to favorites
- Clear the existing list of favorites

Customizing Buttons

The buttons which display on the toolbars can be customized by selecting the downward pointing icon in several locations on the toolbar. This displays the **Add or Remove Buttons** menu. Then, navigate to the toolbar to be customized and check/uncheck buttons as desired (see example below).



NOTE - The toolbars can also be reset to the default layout (with all selected) by pressing **Reset Toolbar**.

Menus and Buttons

Listed below is information on the menus and buttons available in CPA.

File Menu

The File menu contains those actions that are used to open and save communication plan and supporting files. Menu items and keyboard shortcuts (for example, Ctrl+N means to press and hold the Ctrl key and then the N key) are:

New (Ctrl+N) - starts a new configuration plan. Unsaved changes to an open plan can be saved before starting a new plan.

Open (Ctrl+O) - opens an existing CPA file (*. hcpa).

Save (Ctrl+S) - saves the open plan to a CPA file (*. hcpa).

Save As... - saves the open plan to a CPA file (*. hcpa) of a different name.

Configure Password - sets/removes password to open the application.

Import Plan Data - this menu item permits the importing of plan data for use by installed CPA products. Available formats may include: V-U RPA/ILOS RPA-compatible Format (*.vpd), Falcon III RPA-compatible Format (*.rnp), HF RPA-compatible Format (*.rpd), Harris RF-6705 Data File (*.csv), or an Exported Common Plan File (*.cpf). Available importable formats will vary depending upon what other CPA software products are installed. This menu will be inactive if no CPA products that support importing are installed.

Export Plan Data - this menu item permits the exporting of plan data for use by other Harris software products. Available formats may include: V-U RPA/ILOS RPA-compatible Format (*.vpd), HF RPA-compatible Format (*.rpd), Falcon III RPA-compatible Format (*.rnp), Harris RF-6705 Data File (*.csv), or Exported Common Plan File (*.cpf). Available exportable formats will vary depending upon what other CPA software products are installed.

> **NOTE** - The HF RPA-compatible Format (*.rpd) is not a Harris RPA plan file. It should only be used for importing communication plan data into the RF-6010 Network Management Application (NMA), Wireless Messaging Terminal (RF-6760W, RF-6760W-HPW) applications.

Page Setup - sets printer output paper size, source, orientation, and margins.

Print Preview - shows currently active tabbed view in a print preview using the Source JPEG output option.

Print (Ctrl+P) - prints currently active tabbed view using the Source JPEG output option.

Save to JPEG - saves currently active tabbed view as a *.jpg file.

Recent Files - select from the list of four most recently opened plans to open the plan.

Sample Plans - select from the list of sample plans to open the plan.

Exit - closes the application. Unsaved changes to an open plan can be saved before exiting.

View Menu

The View menu supports the following activities.

Plan Information - Opens the Properties window to the Plan Information configuration fields to Specify Plan Properties.

Plan Report... (Ctrl+R) - Creates a Communication Plan Report.

Select any of the following views to open the pane if it is in Hide (closed) or display the pane if it is in Auto Hide.

Properties Window

Toolbox

Plan Explorer

Plan Navigator

Messages

Programming Status

Plan Notes

Welcome Screen

Toolbars - check to enable view of each item.

Zoom Tools - Zoom can be used in either the Topology or Graphical Plan Report Views. Zoom In to see a smaller area, or Zoom Out to see a larger area. Zoom To Fit places all items on single page for easy viewing. Zoom Reset returns to the default scale.

Create Menu

The Create menu selections set up the basic network and topology structures into the tabbed document structure of the main graphical views.

Create Network - Select this item to add a network (Fixed Frequency/LOS for example) from the list of available network types (availability depends on which CPA products are installed).

Create Topology - Select this item to add a topology that contains networks and other stations.

Create Map View - Select this item to Create Map View of a topology that contains networks and other stations. This feature is currently only available for CPA for RF-7800W.

Actions Menu

Two basic actions can be performed from the Actions menu:

Validate Plan - This action performs a second-level validation on the communications plan. Information which may improve performance is provided to the planner for consideration before distributing the plan. For details, select this link.

Program [Radio Name] - This action begins the process of filling the radio configuration. Radio connection is not always required. Certain radio types support fill file generation to a location on disk. Other radios need to be connected. For further information, select this link.

Tools Menu

These tools are available for selection from the Tools menu or by using the keyboard shortcuts shown.

Application Options (Ctrl+T) - Refer to Application Options.

View Plug-ins (Ctrl+L) - Refer to View Plug-ins.

Key Management (Ctrl+K) - Refer to Working with Keys.

Radio Monitoring - [Optional Menu Item - installed by selected CPA products] Refer to Radio Monitoring.

Reset - [Optional Menu Item - installed by selected CPA products] Select to display a menu of CPA table entries that can be reset. At the **Reset Tool** dialog, check the items to be reset as required.

DSS Key Generator - [Optional Menu Item - installed by selected CPA products] In most cases, the mission plan file transfer will use the default DSS signature keys that are provided with CPA. However, the CPA also provides the option to generate custom DSS key pairs for mission file authentication. Refer to specific CPA product Help for instructions.

Wizards - [Optional Menu Item - installed by selected CPA products] Select to display Wizards dialog. This feature provides menu-driven assistance for network creation and other CPA activities.

HF Propagation Analysis - [Optional Menu Item - installed by selected CPA products] This feature provides useful information for communications managers to use when planning HF network details.

Window Menu

The Window Menu supports the following activities:

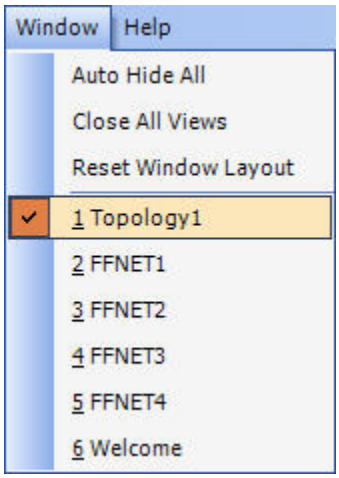
Auto Hide All - Minimizes all CPA panels leaving tabbed views open. This option maximizes the main CPA work area. Refer to Window Layout and Options.

Close All Views - Closes all tabbed views in the main CPA work area. Alternately, use the context menu to Close a particular tab or to Close All But This tab.

> **NOTE -** Use the CPA Plan Explorer to re-open tabbed views in the main work area. Select each Topology and/or Network to re-open that item as a tab.

Reset Window Layout - Returns all window panes to their default docked layout. Tabbed graphical layouts are not affected.

> **NOTE -** Also listed in the **Window** menu are each of the tabbed graphical views in the current plan. These may be selected to open that tab (see example below with **Topology1** selected).



Help Menu

The Help menu contains information on application use, version information, and Harris contact information.

Help Topics - Opens the **Harris CPA Help** which contains extensive information on all CPA products as well as specific instructions for performing many common functions within CPA. A search can be conducted which includes the CPA Platform and all installed CPA products. **How Do I** topics are also included here.

Additional Help - Provides a link to additional Help content when installed by CPA Product. This material may include PDF Help addendums or reference materials. This menu will be disabled (grayed out) if no CPA products include Additional Help material.

Supported Products - Opens dialog listing information on all installed CPA products. Each installed CPA product integrates one or more Harris radio types into the CPA application.

About - The installed application's build information along with product identification.

Toolbox

The Toolbox (**View > Toolbox**) contains Harris Radios, Networks, and Annotations that are placed into the network and topology workspace areas. A standard set of annotations is included with the CPA.

Additional installed CPA products and Networks determine what items can be added to the communications plan. This can include devices such as the RF-6010, SIP Server, or the RF-7800I.

The toolbox is organized by:

Harris Radios - Includes Harris VHF, UHF, HF, Multiband, and HCLOS radios supported by installed CPA products. Once a radio (station) is configured, the Plan Explorer or Plan Navigator can be used to add the same radio to another net.

Devices - Includes Computers, RF-6010 stations, RF-7800I-CU stations, and SIP-Servers supported by installed CPA products.

Networks (Waveforms) - Includes networks for use with specific radios. Network types available based upon installed CPA products.

> **NOTE -** The Wizards icon  is shown to the right of Network/Waveform types which include wizard support providing step-by-step assistance with network or waveform creation.

Annotations - Includes passive graphical elements used to record representation/comments within the Topology view. Annotations are grouped as follows:

Building/Terrain - Building, Depot, Desert, Mountain, River or Tent/Shelter - just drag and drop to add.

Comment - Drag and drop to add comment text box, then type in required information.

Device - Phone, Camera, Computer, Sensor, and many other commonly used devices - just drag and drop to add.

Vehicle - Helicopter, Naval Vessel, Plane, Satellite or Ground Vehicle - just drag and drop to add.

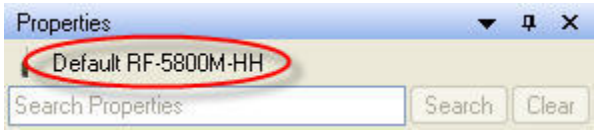
> **NOTE** - Annotations are only used in Topology views. Select this link for instructions on using CPA-provided annotations.

How to Define Different Station Default Configurations

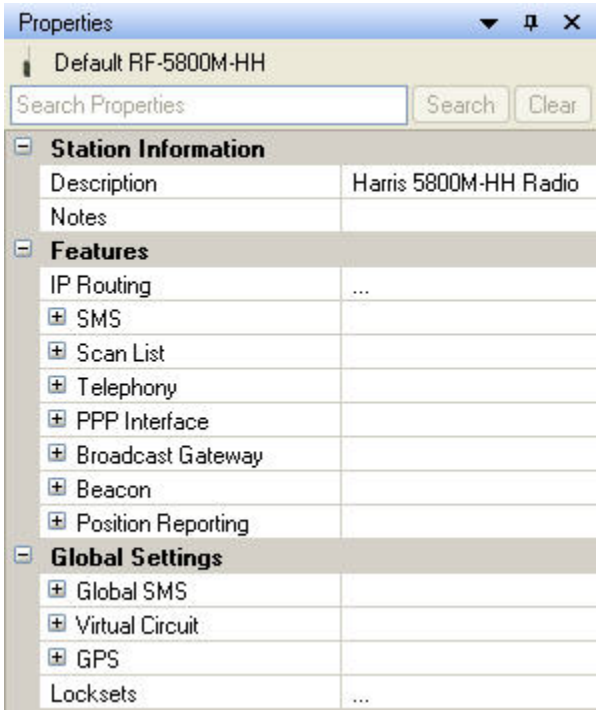
More than one Default of a station type at the same time is not supported. However, adding multiple stations with differing configuration can be done using the below process:

1. Open the Toolbox and select the desired radio type.

2. Confirm that the **Default <radio type>** text is displayed at the top of the Properties menu (this indicates that the properties listed below will apply to the Default radio type, and all future radios of this type will have these same properties).



3. Ensure required default settings in the properties displayed.



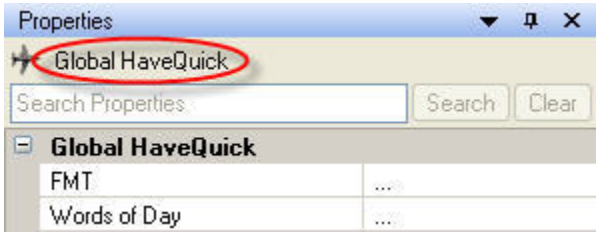
4. Select the Toolbox to create all new required stations by dragging and dropping as required.
5. Perform station creation until all required radios have been created with the first set of features.
6. Access the Toolbox and select the radio type being configured.
7. Confirm that the **Default <radio type>** is displayed at the top of the **Properties** menu.
8. Select to make any required changes to the properties; this action changes the configuration settings for all future radio types created from the Toolbox.
9. Access the Toolbox to create all new required stations by dragging and dropping as required.
10. Perform station creation until all required radios have been created with the second set of features.

11. Perform the steps above as required until all radio assets have been added to your Communications Plan.

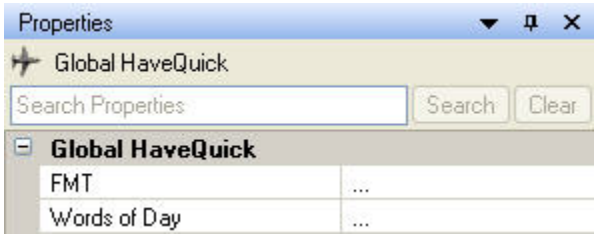
How to Set Global Network Settings

Follow the steps below:

1. Open the Toolbox and select the network type.
2. Confirm that the **Global <network type>** text is displayed at the top of the Properties menu (see example below); this indicates that the properties listed below will apply to the Default radio type, and all future networks of this type will have these same properties.



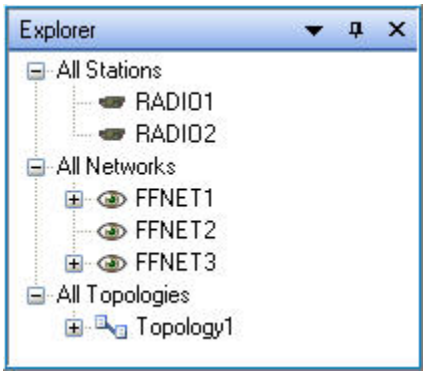
3. Select to make required global settings in the properties displayed; the displayed properties can have global configuration settings established from the Toolbox (see example below).



4. Access the Toolbox to create all required new networks by dragging and dropping as required. Continue until all required networks have been created with the required global features.

Plan Explorer

The Plan Explorer (see below) provides a structured list of items used in the communications plan.



This list is organized into the following:

All Stations - Lists all defined Stations in the plan.

All Networks - Lists all defined Networks in the plan.

All Topologies - Lists all defined Topologies in the plan.

All Maps - Optional menu item (CPA for RF-7800W only) that lists all defined Maps in the plan.

Adding Defined Stations

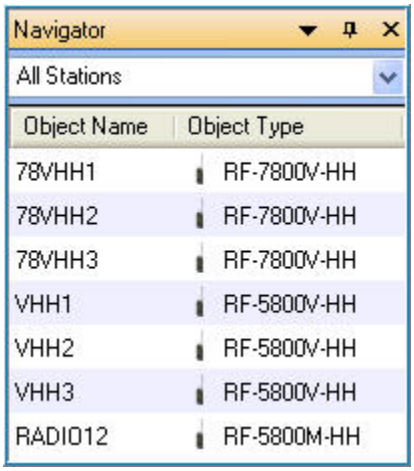
Once a Station is defined, it can easily be added to other Networks or to a Topology. Simply drag the radio from any portion of Plan Explorer where radio types appear (**All Stations**, **All Networks**, or **All Topologies**) into the desired Network or Topology.

Adding Defined Networks

Once a Network is defined, it can easily be added to a Topology. Simply drag the Network from the **All Networks** part of the Plan Explorer into the desired Topology.

Plan Navigator

The Plan Navigator (see below) provides a user-selectable list of All Stations, Networks, or Topologies in use in the communications plan. This versatile menu permits a large number of operations to be performed as detailed below.



The drop-down area may be used to filter displayed contents using the **All Stations**, **All Networks**, or **All Topologies**. Further filtering can be accomplished by selecting items within the All Stations, All Networks, or All Topologies lists. (For example, a listing displaying all of one particular radio type can be displayed.)

Items can be deleted directly from the keyboard using the **[Delete]** key. Multiple items may be selected by holding down the keyboard **[Ctrl]** key. Items can also be added to Networks or Topologies by using drag and drop.

Using the context menu, all items in the Plan Navigator may also be deleted, radios can be programmed, networks and topologies may be opened.

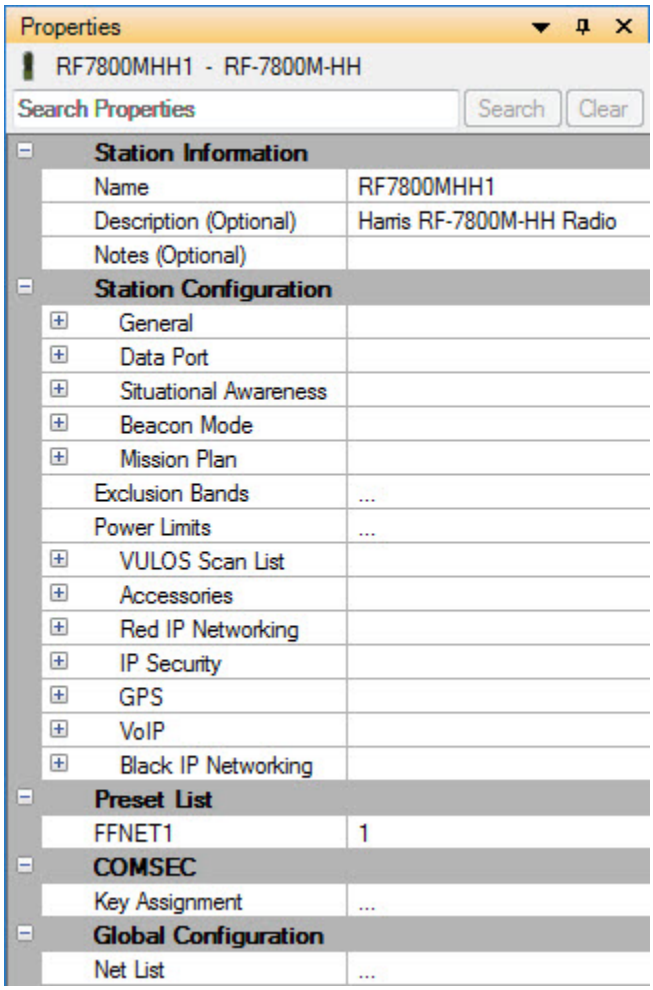
Properties

The **Properties** menu displays configuration fields based on what plan element or plan elements (mission plan, radio, device, or annotation) is/are currently selected.

When multiple plan elements are selected, only those fields shared in common can be configured. Validation checks are made and notification given if a property value is not valid.

For Help on the properties of a particular plan element, refer to the specific Help for that CPA product.

A typical **Properties** menu is shown below:



Property fields can use the following context menu selections:

Undo (Ctrl+Z)

Cut (Ctrl+X)

Copy (Ctrl+C)

Paste (Ctrl+V)

Delete (Delete Key)

Select All (Ctrl+A)

Detail Dialogs (...)

Typically, information is entered directly into the field, or a selection is made using the pull-down menu.

When a field with an ellipsis button  is selected, it will open a more detailed dialog for extended editing.

Expand All, Collapse All Buttons

Properties can include additional levels of configurable items. These Levels can be opened individually (select +) or closed (select -). Select **Expand All** to open all + fields. Select **Collapse All** to close all - fields.

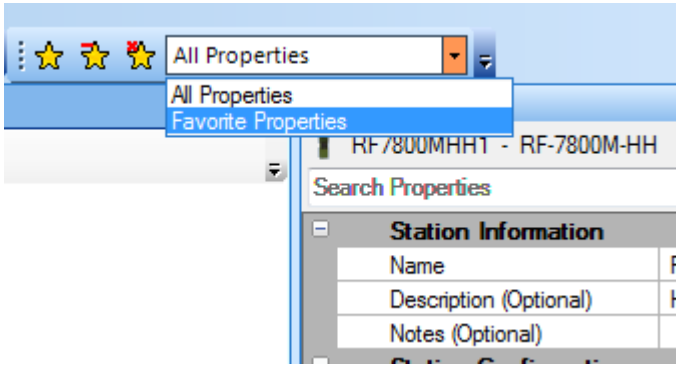
Add Properties as Favorites

Individual properties can be added in the following ways.

1. Select **Add "<property>" Property to Favorites** after right-clicking on a property you want to add.
2. Select the  icon to add a property.

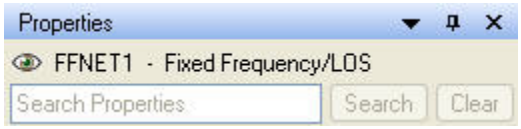
Once favorite properties are added, you may view them in the following ways.

1. Navigate to the toolbar and choose **Favorite Properties** from the drop-down.
2. Select the stars located in the toolbar to view, add, or remove favorite properties as desired.



Search Properties

The properties of a selected station or network can be easily searched by using the **Search Properties** feature located at the top of the **Properties** menu (see below).



Perform a search:

1. Select what to search:
    - Select the desired station or network within CPA to search an individual station or network.
    - Select and hold **[Ctrl]** to make required selections (or use other methods of multiple selection) to search across multiple plan elements.
    - Select the desired plan element from the Toolbox to search Default (used for station) or Global (used for network) settings for a particular station or network type.

- Select the desired plan element from the Toolbox to search across all instances of an Annotation type (Building/Terrain, Comment, Device, or Vehicle).

2. Enter the desired search term within the **Search Properties** field.

   NOTE - Search term is limited to 25 characters and is not case sensitive.

3. Select **Search** or press the keyboard **[Enter]** key (select **Clear** to erase text).

4. Observe that all properties which match your search term will be displayed in the **Properties** menu area below.

5. Observe that any property changes made will be applied to all selected plan elements.

Messages

The Messages Pane displays informational error messages and their source such as:

Initialization of services

Version information

Addition and deletion events

Validation errors

Delete a Single Message:

1. Select the message to be deleted in the Message Pane.
2. Select **Delete Selection** from the context menu, or press **[Delete]**.

Delete All Messages:

1. Select any message in the Message Pane.
2. Select **Delete All** from the context menu.

Programming Status

The Programming Status view becomes active when **Actions > Program** is selected or when the **Program** context menu is selected on one or a group of radios. The programming status messages report on the progress of the file transfer and the file source. Example status messages for fill file-based programming are listed below:

> Generating fill file for Radio1
>
> Signing file for Radio1
>
> Fill file created for Radio1
>
> Mission plan created

Use the context menu to **Delete Selection** for a single message, or **Delete All** to clear all messages.

Plan Notes

Use the **Plan Notes** view to document important information about your plan such as any changes and the date they were made. This information could be recorded in another application and then pasted into this view. The standard keyboard shortcuts for copy (Ctrl+C) and paste (Ctrl+V) can be used.

> **NOTE** - Only text will be saved. (Pasting formatted text will remove the formatting.)

For example, if a range of spreadsheet cells gets pasted into the **Plan Notes** area and some cells have graphic elements, the graphic content will not display or be saved.

Graphical Layout Tools

When viewing a CPA Topology, plan elements can be manually moved (dragged) around the screen to achieve the desired plan layout.

Selected plan elements in a Topology can be moved around by using the keyboard arrow keys.

Many PCs include a mouse with a mousewheel. Press the keyboard **[Ctrl]** key while using the mousewheel to zoom in/out to resize plan elements in topologies as desired.

There are also several layout tools available from the context menu to help place plan elements. Context menu items that are available when one plan element is selected include:

Remove - removes selected plan element from the main CPA work area.

Delete - deletes the selected plan element from the plan.

Bring To Front - brings selected plan element to the front of the main CPA work area.

Send To Back - sends selected plan element to the back of the main CPA work area.

Context menu items that are available when multiple plan elements are selected include:

Align Left - lines up selected content so that left sides align.

Space Even Vertically - applies even spacing to selected content up-and-down.

Align Top - lines up selected content so that element tops align.

Space Even Horizontally - applies even spacing to selected content side-to-side.

Making Multiple Selections

Select multiple plan elements:

1. Select **[Ctrl]**.
2. Select multiple plan elements by holding down the left mouse button and dragging a boxed area around the elements, or use the left mouse button to click on individual elements while holding down **[Ctrl]**.
3. Select **All Stations** using the drop-down in the Network view.
4. Select 

to quickly remove all Stations from that Network.

   NOTE - This action does not delete the Stations from the entire Communications plan, just from that Network. This is by design so that radios may be reassigned to other Networks.

Tooltips

A tooltip is a feature that provides information about a menu or toolbar item when the item is hovered over with the mouse. An example tooltip is shown below when the mouse is placed over the **Save to JPEG** Toolbar item.

Tooltips can be helpful, especially for new users of an application. If desired, tooltips can be disabled within CPA by setting the related Application Options accordingly.

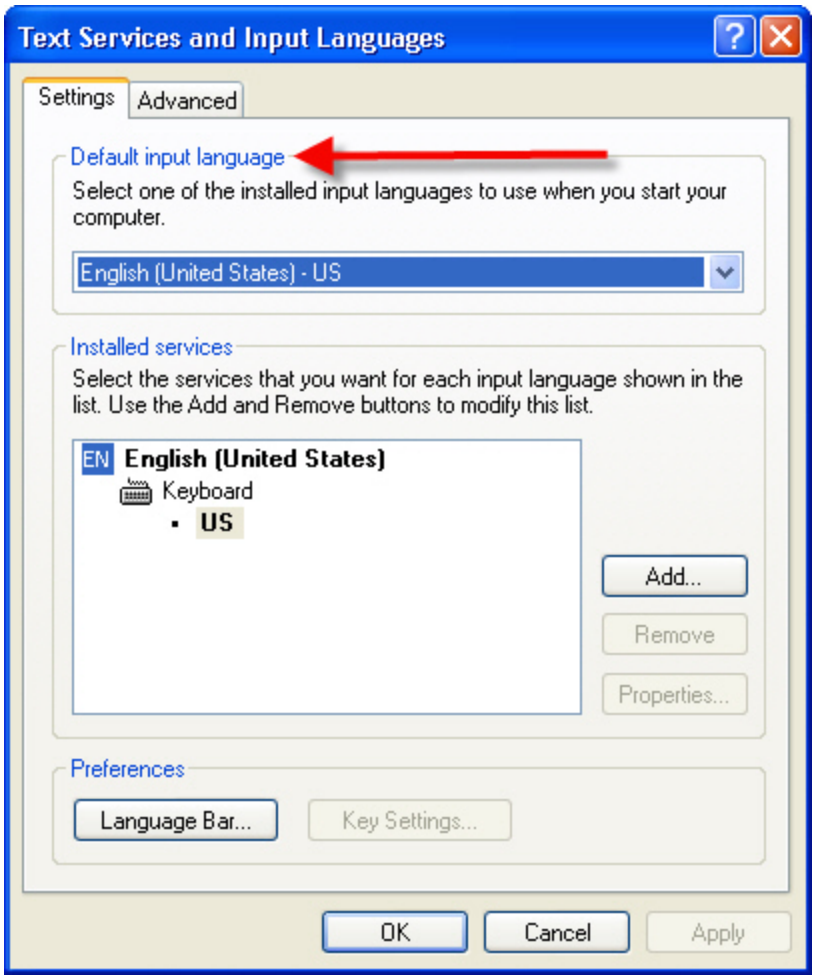
Language Considerations

Normally, the application accepts only English language input characters from the user interface controls. Non-English entry is allowed into the following fields: File Dialog Input, Author, Organization, and Plan Description. Non-English entry requires the computer to be configured for the proper language option. Refer to the steps below.

Set up Windows PC to use a different default display language as follows.

1. Select **Start > Settings > Control Panel u**sing the Windows Start menu.
2. Select **Regional and Language Options**.
3. Select the **Languages** tab, then **Details**.
4. Observe that the **Text Services and Input Languages** settings are displayed (see figure below).
5. Select the desired default input language using the drop-down on the **Settings** tab.
6. Select **OK**.

> **NOTE** - Most typical languages are installed during a Windows Operating System installation. However, if the required language does not appear in the drop-down menu, then the Windows Operating System installation disks will be required to enable the desired language.


Text Services and Input Languages
Settings
Advanced
Default input language
Select one of the installed input languages to use when you start your computer.
English (United States) - US
Installed services
Select the services that you want for each input language shown in the list. Use the Add and Remove buttons to modify this list.
EN English (United States)
Keyboard
US
Add...
Remove
Properties...
Preferences
Language Bar...
Key Settings...
OK
Cancel
Apply

Planning

Planning Overview

The CPA allows a communication plan to be constructed without a connection to a radio. Specific planning steps depend on the scenario being implemented and user preferences.

Standard configurations can be saved as Sample Plans.

Your communication plan is implemented using:

Network (refer to Create Network)

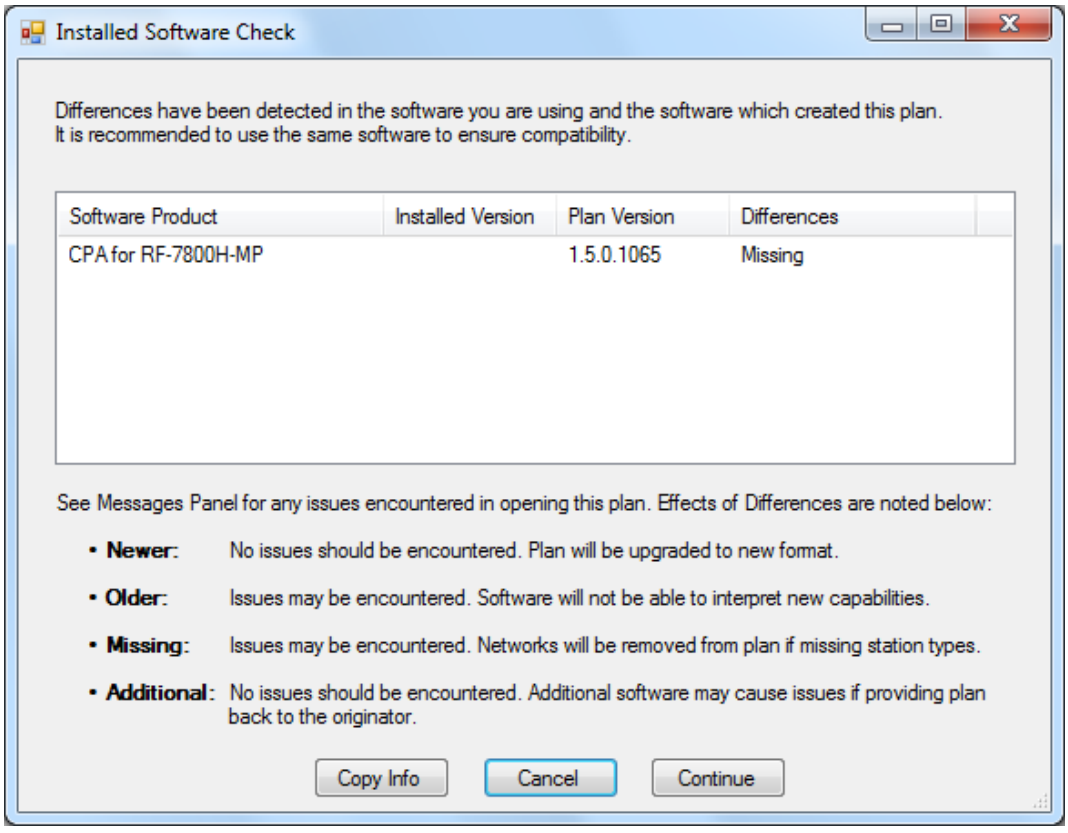
Topology (refer to Create Topology)

Map (refer to Create Map View)

> **NOTE -** The optional map view application is only available when the Map View plug-in is installed. Currently the Map View plug-in is only installed with the CPA for RF-7800W product.

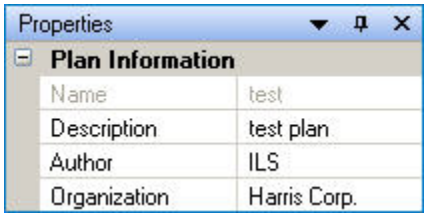
Installed Software Version Check

When opening a plan, CPA compares the CPA version previously used to save the plan with the CPA version you currently have installed. This feature informs you whether you should upgrade your CPA installation for optimal performance.



Plan Information

Select **View > Plan Information** to view/edit the properties of the plan.



Plan Information includes the following fields:

Name - This is the filename of the plan.

Description - This field allows an extended description to be entered. A small display window is opened using the pull down.

Author - This is the Name of the planner.

Organization - This is the Name of group.

Using Sample Plans

Harris-provided Sample Plans provide working examples of different types of networks. Sample Plans may be used as "starting points" for customers to use when designing their own communications plans.

Sample plans are installed in the following location:

C:\Program Files\Harris RF Communications\Sample Plans.

CPA Product Sample Plans

Refer to the CPA product Help for the sample plans provided with the package. Harris recommends that you make a copy of the sample plan file, rename it, and work using the copy. This will permit saving a revised plan without affecting or overwriting the original sample plan file.

User Sample Plans

Any user-created configuration can be saved as a sample plan by placing the *. hcpa file in the Sample Plans directory.

Constructing a Plan

Working with Topologies

Creating a Topology

A Topology is a large-scale view available within CPA which can be used to allow graphical planning showing deployment and communication relationships including stations and networks.

Select **Create > Create Topology** or select the **Create Topology** button to create a topology.

The system topology contains one or more member networks and stations and defines the relationships between these parts. Multiple topologies can be created. Each topology name must be unique. The default is Topology1, Topology2, and so forth.

Two views of a Topology are available. Use the Topology Mode selection drop-down (see below) or the Property Editor **Mode** drop-down to switch between each view:

> **NOTE** - The default Topology view is Connectivity view. When using Connectivity view, each radio can only be a member of one network at a time. Refer to Using Open View.

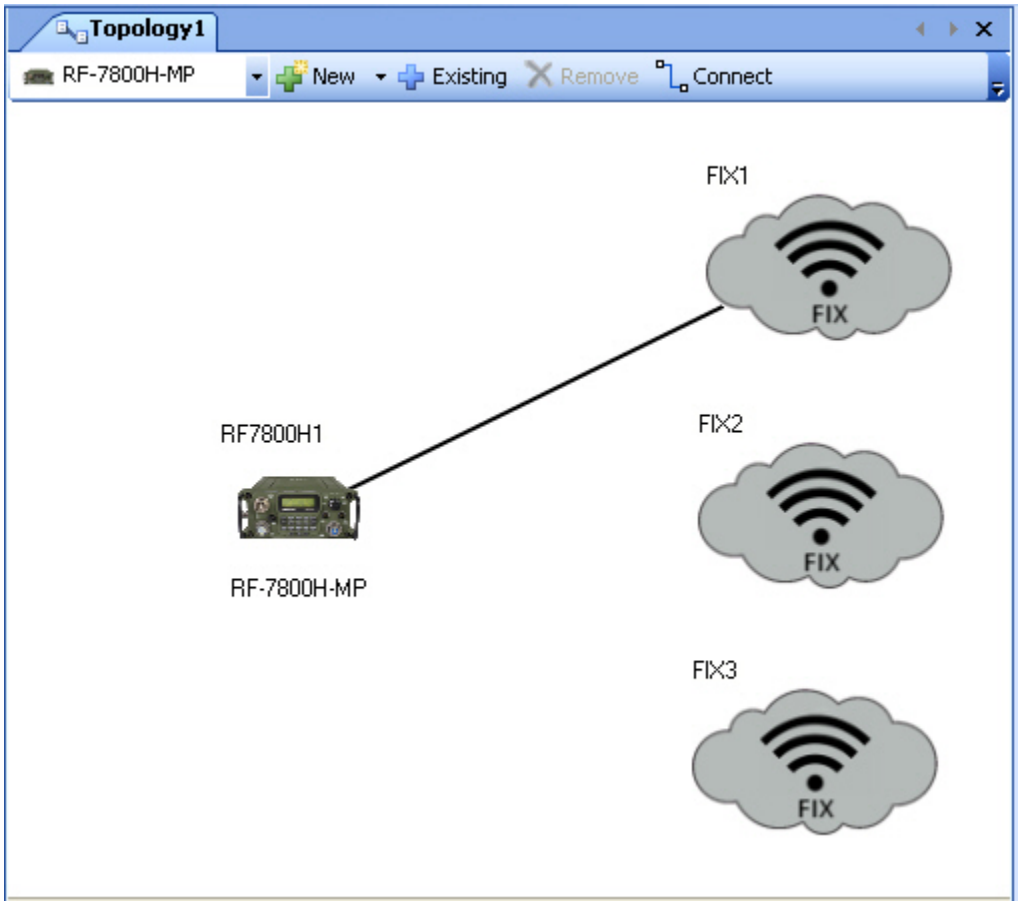
- **Connectivity View** - For network/scenario planning, use Connectivity Topology to define complex communication routing. CPA will automatically configure routing tables ensuring communication. Connectivity View shows a communication path among elements with a solid line.
- **Open View** - For system planning, use an Open Topology to define optional communication paths. Open View shows network memberships with a dashed line.

Graphical views will be saved and provided in plan reports, documenting both the property configuration within the plan as well as the diagrams illustrating the deployment.

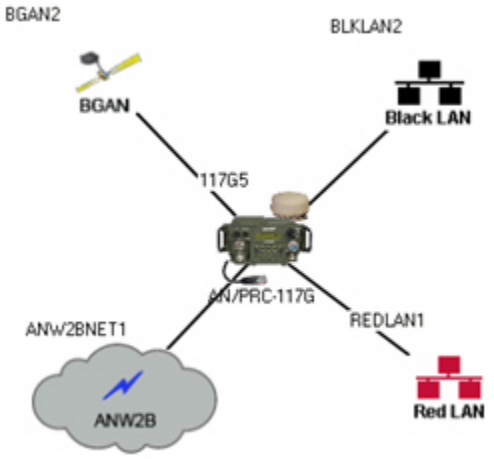
> **NOTE** - The maximum number of topologies permitted within a single Communications Plan is 1000.

Using Connectivity View

This view represents the connectivity path between radios. This view is restricted based upon radio preset (see example below).

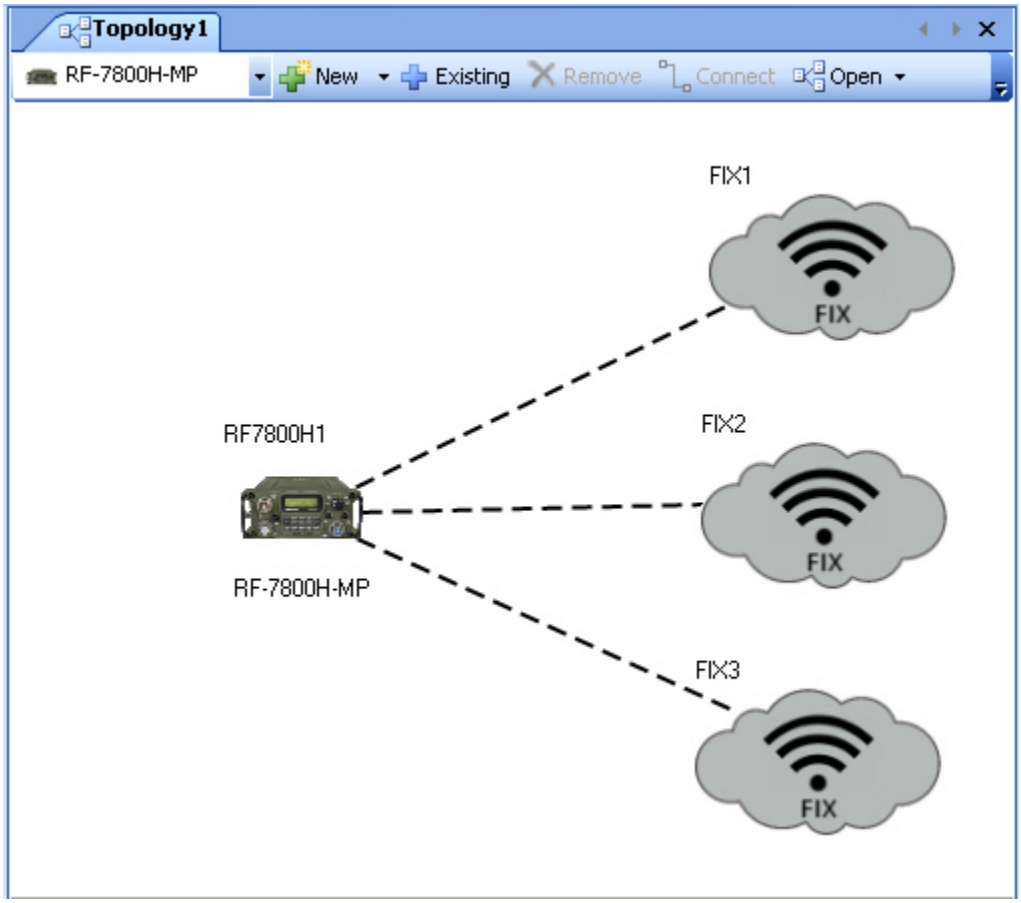


In most cases, each radio can only be a member of one network at a time in this view. Exceptions to this include multi-hop networking, which can be illustrated in Connectivity mode in some CPA products, in the network types listed below.



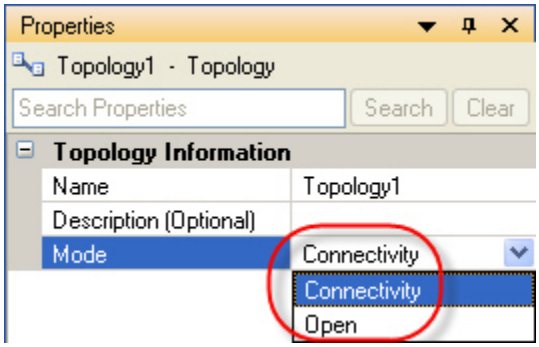
Using Open View

Open View represents potential network membership based upon radio preset setting. There are no restrictions in this type of view. In this view, a radio can be shown to be a member of several networks at once, with the radio's preset switch setting determining actual network membership at any given time.



Switching Topology Views

1. Select any area of a Topology.
2. Select next to the **Mode** property in the Property Grid and use the drop-down to choose the required view (either **Connectivity** or **Open**).

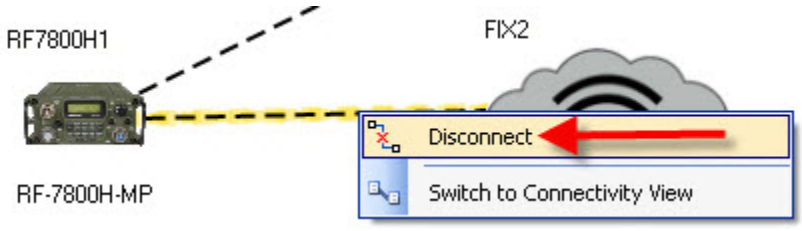


NOTE - When attempting to switch between Open View to Connectivity View, you may be presented with one or more error messages if a radio is shown with membership in more than one network. Messages similar to the below may display:

Connectivity topology does not allow simultaneous membership in different presets.

One or more of the links in this topology are not supported in Connectivity mode.

Right-click on all of the links except one, and select **Disconnect** (see example below). You will then be able to switch between Modes successfully.



Adding Networks

Networks are added in any of the following ways:

- Drag and drop onto a Topology from the **Networks (Waveforms)** section of the **Toolbox** view. This creates a network plan element in the Topology. Double-click this network plan element to enter the Network View (network tab gets added to views).
- Select **Create Network** and then select the network to be added. This opens the Network View as a tabbed view.

Add a Network to a topology:

1. Open Plan Explorer.
2. Select **All Networks**.
3. Open Topology where network is to be placed.
4. Select Network from the list of **All Networks** and drag and drop into the Topology.

Networks (along with Stations and Annotations) can also be created directly from the Topology View toolbar (see below).

Add a Network using the Toolbar:

1. Select the desired network type using the left-hand drop-down.
2. Select the **New** drop-down and choose single or multiple as required.
3. Enter the number of new networks and choose **OK** If multiple was selected; the new networks will be added with new tabs for each.

NOTE - Items on a Topology can be moved around by using the keyboard arrow keys.

Working with Items within Topology

When connecting (linking) items within a topology, the radio or device being connected gets added to the network.

Connect items within a Topology:

1. Select the first item to be linked (network or radio).
2. Select **[Ctrl]** and choose additional items to be linked (or use other methods for multiple selection).

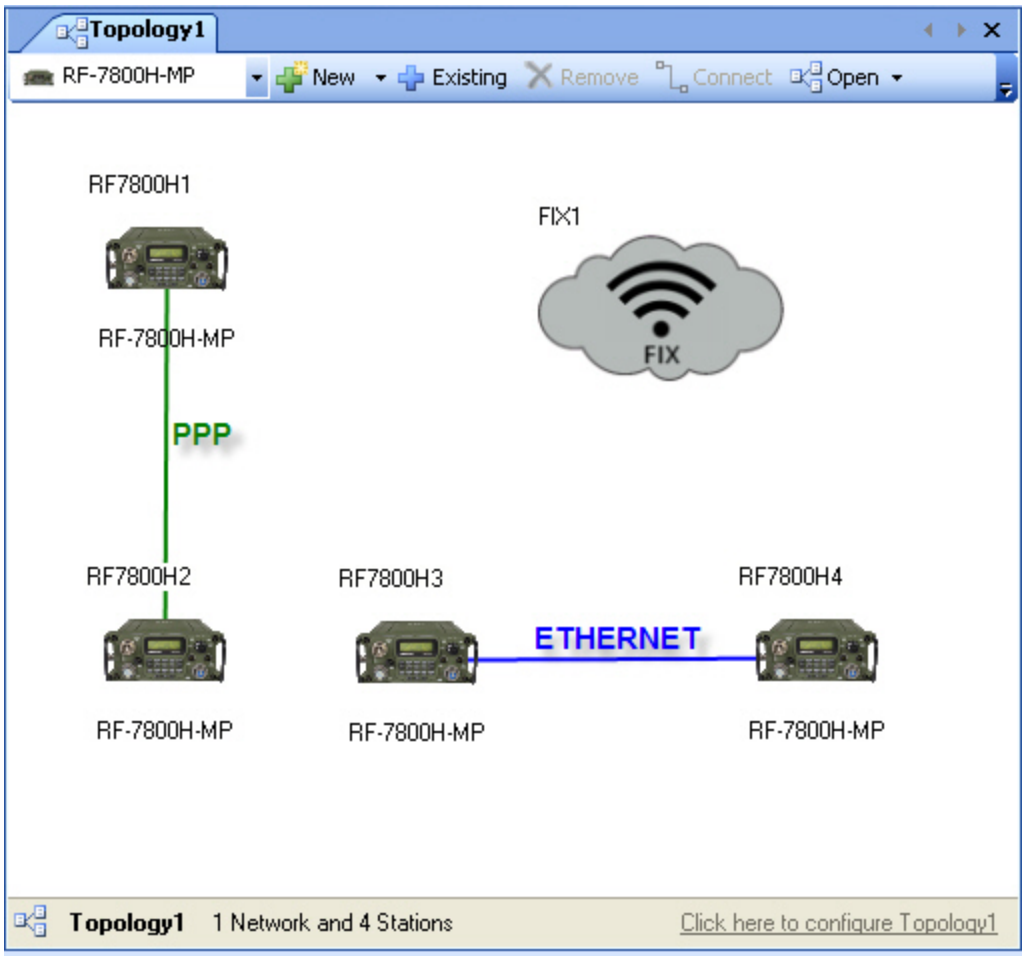
   NOTE - Notice that the **Connect** tool 

   becomes active. If this does not happen, it is because the link being attempted is not allowed (refer to **Messages** window for detail).

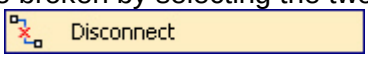
3. Select the active **Connect** tool 

.
4. Select **PPP** or **Ethernet** as required if connecting radios.

   NOTE - PPP links appear with a green colored interconnecting line, while Ethernet connections display with a blue interconnecting line (see example below; radios 1 and 2 are connected via PPP, while radios 3 and 4 are connected via Ethernet).

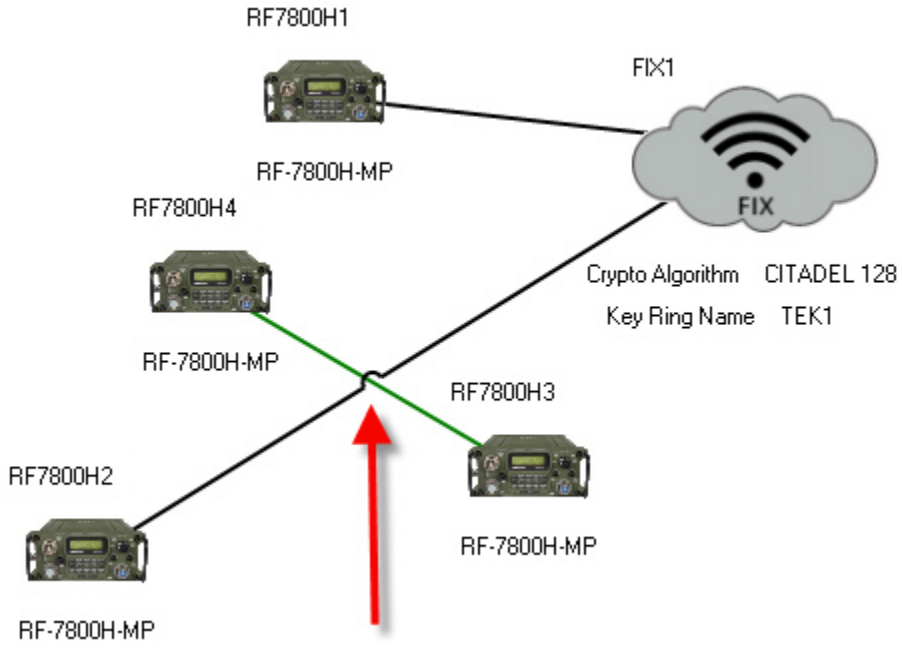

Topology1
RF-7800H-MP
New
Existing
Remove
Connect
Open
RF7800H1
RF-7800H-MP
FIX1
FIX
PPP
RF7800H2
RF-7800H-MP
RF7800H3
RF-7800H-MP
ETHERNET
RF7800H4
RF-7800H-MP
Topology1
1 Network and 4 Stations
Click here to configure Topology1

Break the link by selecting the interconnecting line and choosing **Disconnect** after right-clicking.

NOTE - Links can also be broken by selecting the two endpoint items and then selecting 

or by selecting Delete on the keyboard.

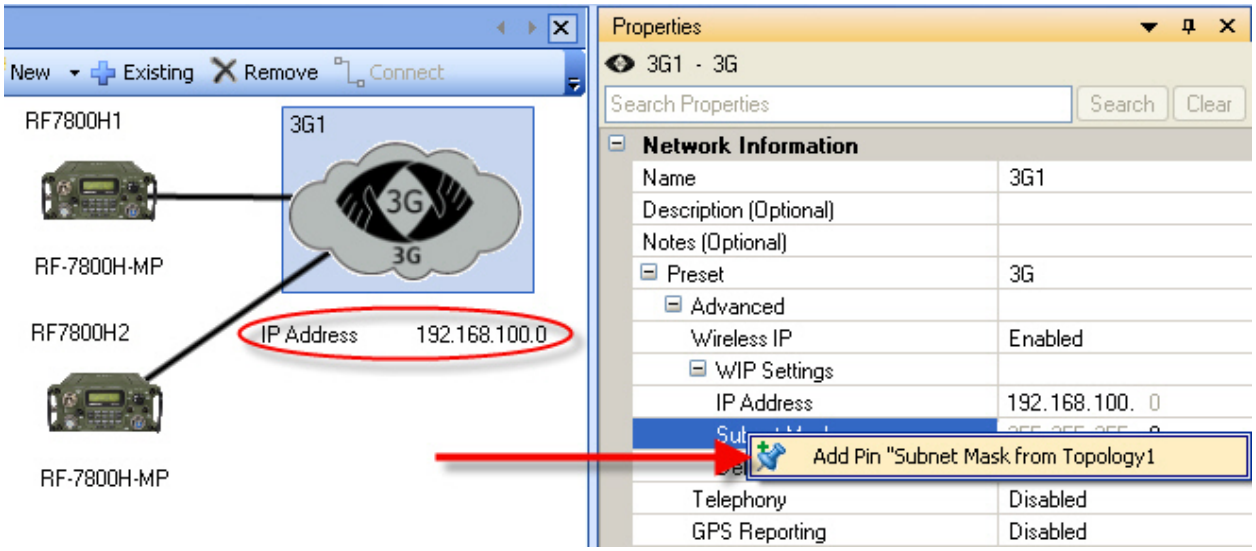
NOTE - If link paths intersect within a Topology, they will automatically "jump" at the point of crossing for more clear representation (see example below).



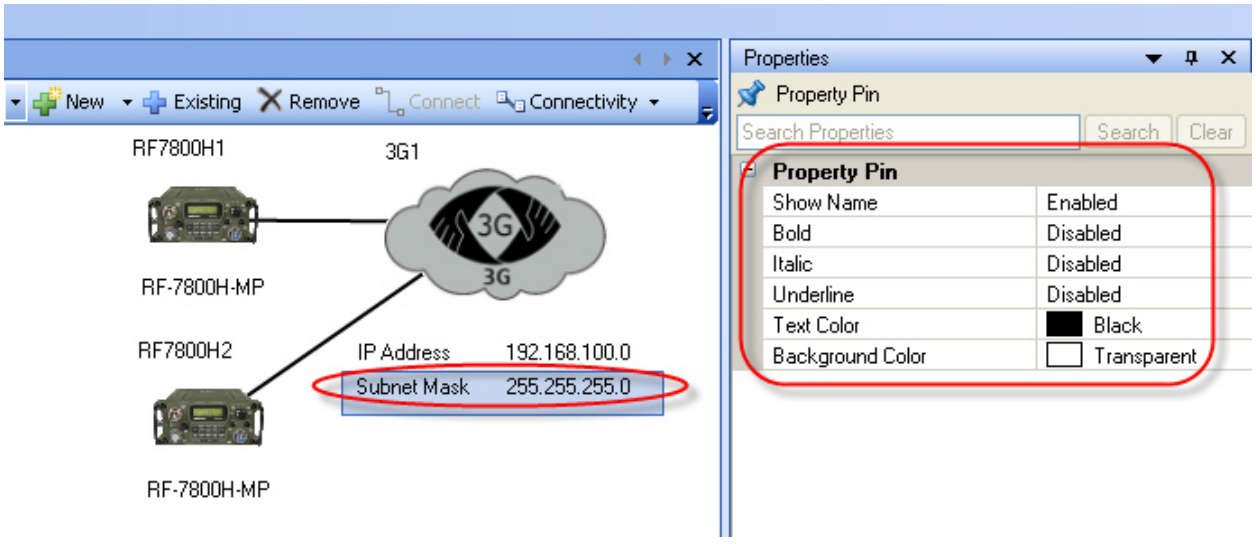
Property Pinning

Property pinning is the ability for the user to “pin” a property from the property grid onto a Topology.

Create a Topology, add a station/network. Select the station/network in the property grid. Either right-click on the property name, or select the pin icon that appears in the description area. A new annotation will appear on the topology that displays the property name and value. This value on the topology will refresh whenever the property updates (see example below - **IP Address** property previously added, and **Subnet Mask** property is being added via right-click option).



Also, the user can modify the font style and color by right-clicking on the annotation on the topology, or using the property grid when the annotation is selected (see editing options below).

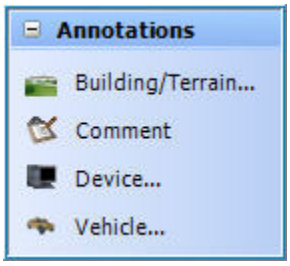


The annotation will maintain relative positioning to the station/network it is related to whenever the station/network moves. When the annotation moves, the relative positioning will be adjusted.

Adding Annotations

Annotations can be added to the topology configuration as a way to include comments and make representations about various aspects of the project.

The **Annotations** window is located at the bottom of the left-hand side of CPA (see below).



NOTE - Comment annotations display text fields.

Add an annotation:

1. Select and drag one of the above sets of annotations onto a network or topology.
2. Select a specific type from the set and modify the Text field as desired.
3. Select **OK**.

The annotation text can also be changed in the **Properties** editor. While many characters can be entered if desired, best use of the graphical annotation is typically limited to a short name.

Removing a Topology

Remove a topology:

1. Select the Network to be removed In the **Plan Explorer** using the context menu.
2. Select **Delete from Plan** (or use the keyboard **Delete** key) and if prompted, choose **Yes**.
3. Select the Network to be removed in the **Plan Navigator** using the context menu.
4. Select **Delete from Plan** and if prompted, choose **Yes**.

> **NOTE** - These actions do not delete or remove either the Networks or Stations that were in the Topology from the Communications Plan. This is by design, so that items can be reassigned as required.

Working with Networks

Creating Networks

A Network contains one or more member stations and defines the relationships between these stations and other network parts. Connectivity within the network ensures end to end communications.

Wizard Network Creation

Some CPA products contain wizards, which provide step-by-step instructions for network creation or other CPA activities.

Wizards are accessible from the Tools Toolbar, if a CPA product is installed that contains a wizard. For information on wizards, refer to the specific CPA product Help containing the wizard.

> **NOTE** - Networks created using a Wizard display differently on the workspace tabs from Networks created manually, as shown below.

Manual Network Creation

Manually create a network:

1. Select **Create > Create Network** and make network selection, or
2. Select the **Create Network** button and make network selection, or
3. Select and drag a selected network from the **Toolbox** onto a Topology.

Multiple networks can be created. Each network name must be unique. The default depends on the type of network and follows a sequential naming pattern such as Network1, Network2, and so forth.

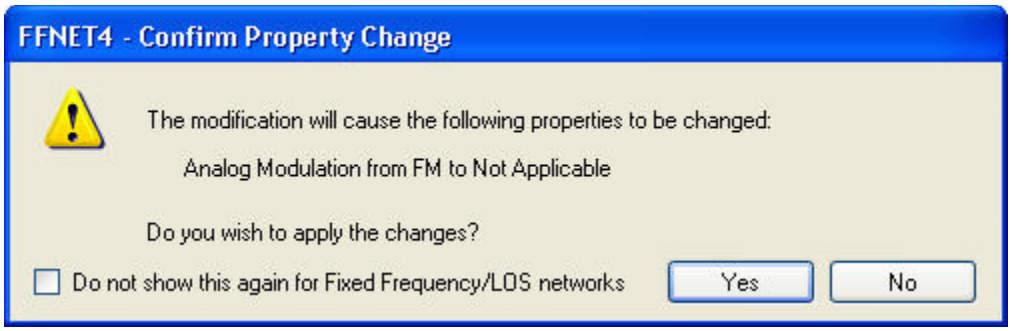
> **NOTE** - Some CPA products may prevent certain words from being used for a network name.

Configurable Network Information includes:

- Name
- Description
- Notes
- Preset

Preset type cannot be changed for an existing network. Stations that are added must be compatible with the network type.

An indication is provided whenever a network property or membership change causes other dependent properties to change. This indication includes all dependent properties modified as well as their new values (see below example).



Setting Network Properties

Configure the properties of a network:

1. Select the Network to be configured.
2. Select the Property field in the Properties view to be edited.
3. Set up the value as required.

Some property values require selection from a list (such as True, False, High, Medium, Low, User). Others use keyboard entry (such as Description, Name, Notes).

Help on the individual setting is displayed at the bottom of the Properties area. For additional information, refer to the Help for the specific CPA product.

Removing a Network

Remove a Network:

1. Select the Network to be removed with a Topology selected in the main CPA working area.
2. Select the 

button or right-click and choose **Remove**.
3. Select the Network to be removed in the **Plan Explorer**.
4. Select **Delete from Plan** and if prompted, choose **Yes**.
5. Select the Network to be removed in the **Plan Navigator.**
6. Select **Delete from Plan** and if prompted, choose **Yes**.

> **NOTE** - Each method of network removal can use multiple selection.
>
> **NOTE** - These actions do not delete or remove the Stations that were in the network from the communications plan. This is by design, so that items can be reassigned as required.

Working with Stations

Adding Stations

Add a new station to a network or a topology:

1. Select a new station and drag it from the Toolbox.
2. Select multiple new stations at the same time from Toolbox [right-click, select **Create Multiple**].
3. Select an existing station and drag it from the Plan Navigator.
4. Select a station from the Network or Topology Toolbar [select radio type in drop-down, then select **New** or **Existing** as required].

Setting Station Properties

Set the properties of stations:

1. Select the radio(s) to be worked with in the main CPA work area.
2. Select the property field in the Properties view to be edited.
3. Set up the value as required.

Some property values require selection from a list (such as True, False or High, Medium, Low, User). Others use keyboard entry (such as Description, Name, Notes).

> **NOTE** - Some Properties use custom dialogs, which are identified by a … button to the right of the Property text. Select this button to make settings.

Help on the individual setting is displayed at the bottom of the Properties area. For additional information, refer to the Help for the specific CPA product.

Removing Stations

Remove a station from a network or a topology:

1. Select the station or stations to be removed and press **[Delete]**.

2. Select a station from the main CPA work area and press the **Remove** button 

, or right-click and choose **Remove**.

   NOTE - This action does not delete or remove the Station from the communications plan. This is by design, so that items can be reassigned as required.

3. Select a station in the **Plan Explorer**, right-click, and choose **Delete from Plan**.

   NOTE - This action does remove the Station from the communications plan. (Notice the different prompt - **Delete from Plan** instead of just **Remove.**)

   NOTE - Other removal options are displayed depending upon context.

Working with Keys

Encryption keys provide a method for increasing the security of information being transmitted and received over a communications network. The specific method of working with keys varies by both radio and network type.

> **NOTE** - Overviews are provided below regarding working with keys. Specific information is provided within each CPA product Help for that radio and its supported network types.

CPA is capable of generating several different types of encryption keys.

> **NOTE** - The Key Generation feature is an optional component of CPA. This feature may not have been installed.

The **Manage Keys** feature is accessed by selecting the  Toolbar icon, or by selecting **Tools > Key Management** from application menu. This feature allows the following actions:

Import Keys/CAM

Delete Imported CAM

Enable Unrestricted Key Operation

Change Key Generation Passphrase

After keys are created or imported, key assignment in a network is done using the Properties menu area. CPA supports the following types of keys:

- **Unrestricted Keys** - Either generated by CPA, or imported from *.csv file. Unrestricted keys can come from HF RPA Plan file (*.rpd), VULOS Plan file (*.vpd), CPA Plan File (*.hcpa), or a CPA Key Import file (*.csv).
- **Protected Keys** - Imported comma-delimited files with the protected keys defined or read/imported from .hcpa files. Protected Keys can come from a CPA Plan file (*.hcpa), or a CPA Key Import file (*.csv).
- **Restricted Keys** - Generated by Harris KGA and imported into CPA. Restricted Keys can come from an HF RPA Plan file (*.rpd), VULOS Plan file (*.vpd), CPA Plan file (*.hcpa), an imported Key Distribution file (*.kdf).

The CPA can import restricted keys generated by the Key Generation Application (KGA) or it can use unrestricted keys generated by CPA.

> **NOTE** - There are three types of keys: Unrestricted, Restricted, and Protected. All keys in a plan must be the same type (for example, Unrestricted keys and restricted keys cannot be used together).

Unrestricted Key Operation

Unrestricted key operation can be password protected. The prefix for each key type can be set by the user if desired.

1. Select the Manage Keys icon  in the CPA Toolbar area.
2. Observe that the Key Manager dialog displays.
3. Select **Enable Key Generation (Unrestricted Key Operation)**.
4. Select **Yes** or **No** at the **No Key Generation Password** prompt (this prompt can be disabled in Application Options).
   - If **Yes** is selected, **Set Key Generation Password**. Enter New Password, confirm and select **OK**.

     NOTE - If a password is assigned, the Set Recovery Password button can be used to establish a Question and Answer to enable password recovery. This feature should be set-up, if desired, at the same time as password assignment.

   - If **No** is selected, no password is set.

     NOTE - A password can be assigned later using the **Change Key Passphrase** button.

5. Select to delete restricted keys if they are in the plan and select **OK** to proceed.

   NOTE - A plan can only contain either all Restricted, all Unrestricted, or all Protected keys. Different key types cannot be mixed within a plan.

   NOTE - All Restricted or Protected Keys, along with the CAM Variable, will be deleted automatically whenever switching to Unrestricted Mode.

6. Select **Generate**.
7. Observe that the **Generate Keys** dialog opens.

   NOTE - The **Generate** button will not be available unless at least one supported Key Type has been enabled in Application Options.

8. Select to make the required settings for each column: Type, # (number) of Keys, Prefix, Expires, Exp. (expiration) Date, Description as required.

   NOTE - The Prefix for each key type can be customized by the user if required by typing the desired prefix in the **Prefix** field.

> **NOTE** - If required, an expiration date can be set for keys by checking the **Expires** box and manually entering the required expiration date. Selecting the down arrow in the **Exp. Date** field provides a calendar for use when setting the expiration date.

9. Select **Generate Keys**.
10. Observe that key values are generated for the selected keys and displayed in the list of keys.

The **Manage Keys** dialog indicates the number of keys in the lower left corner and the fact that they are Unrestricted in the lower right corner (see example below).

> **NOTE** - Key values can be manually typed in, if necessary, by selecting the **Value** field and typing in the desired key. The user is restricted to the number of valid characters based upon the key type in use (32 or 64 characters).

> **NOTE** - Some types of keys require odd parity. If user modified keys have the incorrect parity, the user will be prompted (see info below).

Parity

Parity is calculated by counting the binary bits within each byte of data. For odd parity, this number of bits must be odd. DES keys require each byte within the key to have odd parity. If CPA is used to generate DES keys, the required parity is automatically assigned.

For user-generated/edited keys, the parity can be determined by using the Microsoft Calculator in Scientific view to convert hexadecimal numbers to binary.

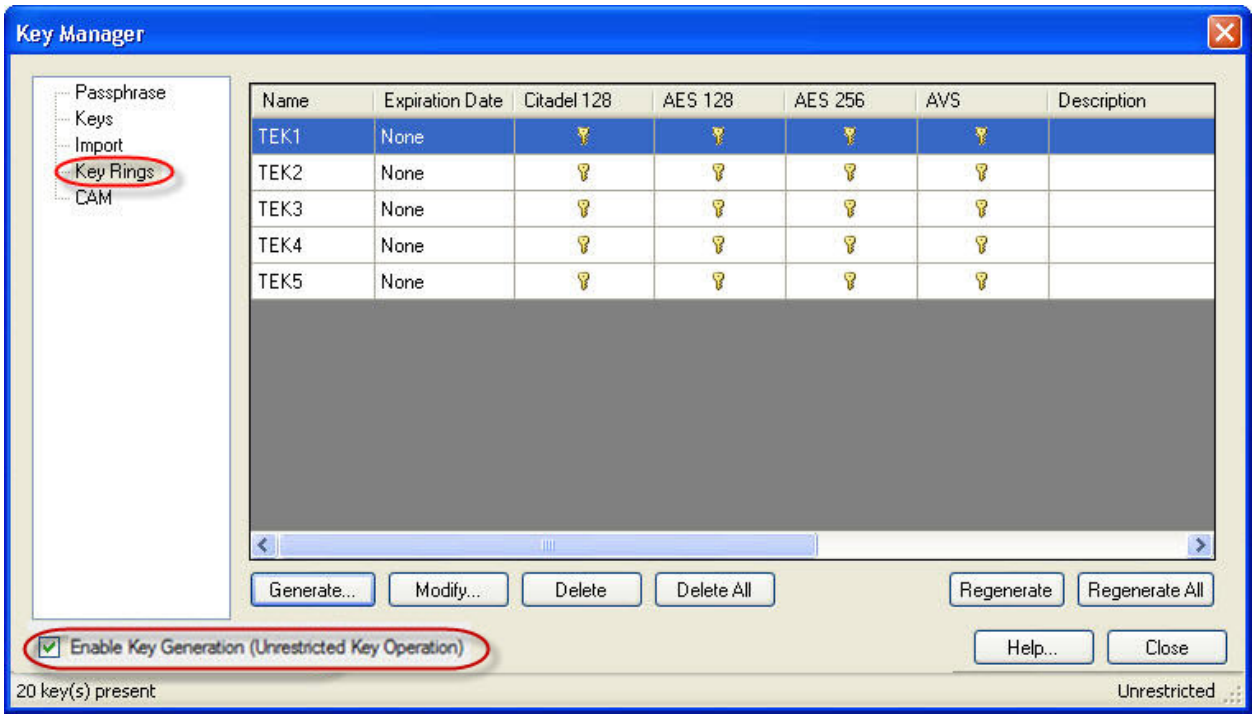
To have a valid parity, each byte of the DES key must have odd parity (each pair of hexadecimal numbers in the key value make up a byte and there are 8 pairs total in a DES key).

To figure out parity, convert each hex pair into binary (using the M/S Calculator in Scientific view) and count the number of 1s. If the number of 1s is odd, the parity is odd. If all bytes in the key value have odd parity, the key is valid.

For example, 3E hex equals 0011 1110 in binary, has 5 ones and has the required odd parity. If a user enters CC (1100 1100), that key has 4 ones, has even parity, and is therefore invalid. If a 310MHH station uses that key, it will be flagged at Validation.

Unrestricted Key Ring Generation

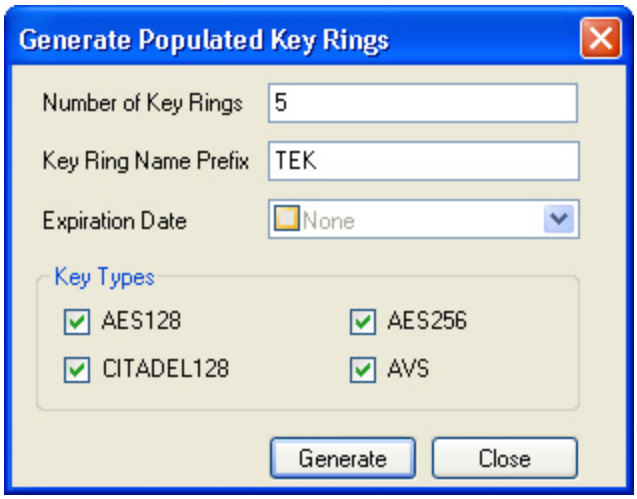
HF Networks use Key Rings for encryption. These are set up using the Key Manager and selecting **Key Rings** from the menu on the left-hand side of the Key Manager Dialog. See example below with five key rings previously generated.



NOTE - In order for CPA for RF-7800H-MP to be able to perform Key Ring Generation, the application must have been installed with the Key Generation feature enabled.

It is advised to set up Key Rings prior to setting up Networks and system presets so that keys are available to assign to the presets:

1. Select the **Manage Keys** icon in the CPA Toolbar.
2. Ensure the **Enable Key Generation (Unrestricted Key Operation)** box is checked.
3. Select **Generate**.
4. Observe that the **Generate Populated Key Rings** dialog displays.



5. Enter the **Number of Key Rings**, **Key Ring Name Prefix**, and **Expiration Date** as required (for the Expiration Date, either accept the **None** default, or select the drop-down to enter the required expiration date in the calendar that displays).
6. Select **Generate**.
7. Observe that the required number of Key Rings, along with the underlying keys, are generated.

> **NOTE** - Do not leave the computer unattended with the Key Manager dialog open. Although entry into this dialog can be protected by a password, once it is open a user is free to view, change or delete any of the keys.

Although Keys (which are used by non-HF products) can also be configured in CPA for RF-7800H-MP, they are for non-HF network types, and can be used in conjunction with Key Rings to synchronize crypto between HF and non-HF networks.

Import Keys

The keys generated by these applications can be imported into CPA:

KGA Key Distribution Files (*.kdf)

VHF-UHF/ILOS RPA Plan Files (*.vpd)

HF RPA Plan Files (*.rpd)

Comma-Delimited Key Files (*.csv)

CPA Files (*.hcpa)

> **NOTE** - Keys can be imported over existing keys. If a key is assigned, it can be changed using the import if the key name and type are the same. In this case, the key will show in the import screen in a "muted yellow" color. If a key is not assigned, it can be changed using the import if the key name is the same. All values

(type/value/expiration) will be updated from the key import line selected.

Import keys:

1. Select **Import...** to open the Import Keys dialog.
2. Select **Browse**.
3. Select the Key Based Algorithm.
4. Enter the Key Encryption Key, if required (not all import types require this).
5. Select **OK**. This opens the **Import Keys** dialog.
6. Select the keys to be imported and choose **Import**.
7. Select **Close**.

The following password encryption algorithms are used by CPA:

- Default KEK (128 bit) - Key Encryption Key entry is not required.
- AES Passphrase (256 bit)

  NOTE - AES Passphrase is not supported on FIPS-complaint PCs.

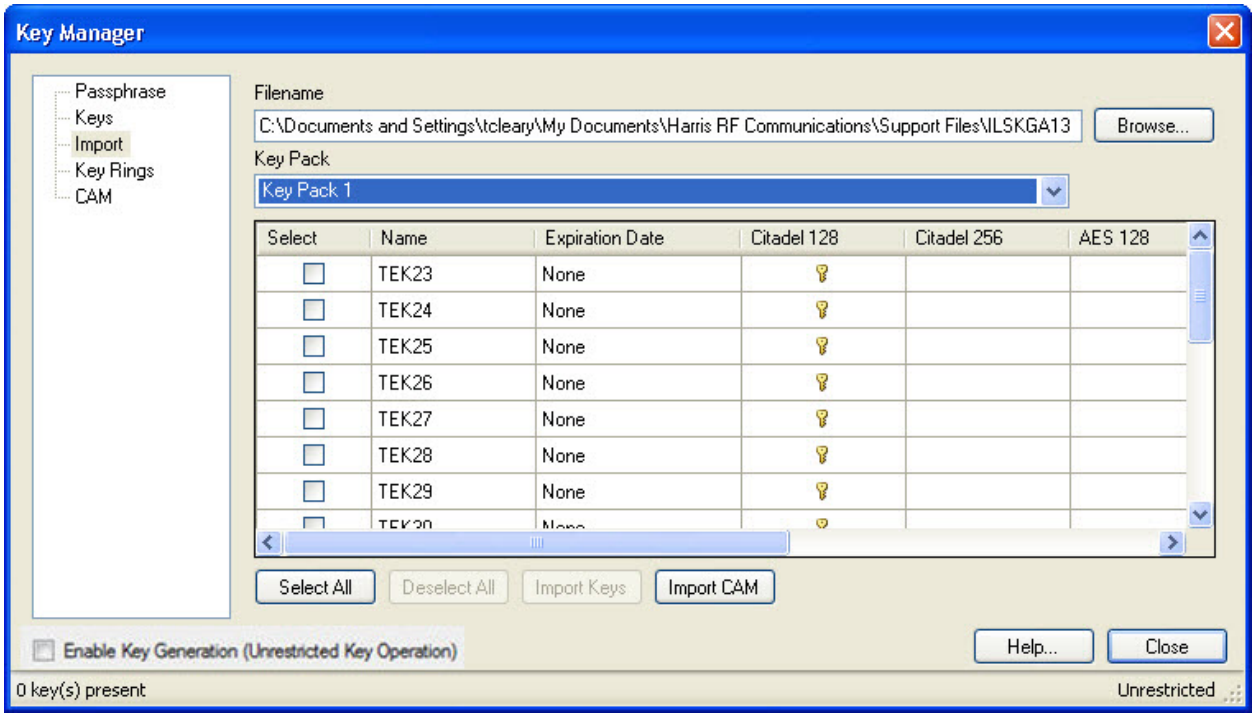
- AES (128 bit) - requires 32 characters.
- AES (256 bit) - requires 64 characters.

Restricted Key Operation

Harris offers the Key Generation Application software product which can generate restricted keys. Restricted Keys cannot be generated, edited, or viewed within CPA. Restricted Keys must be imported into CPA after having been generated with the Key Generation Application.

NOTE - Restricted Keys can also be present in HF RPA Plan file (*.rpd), VULOS Plan file (*.vpd), and CPA Plan File (*.hcpa) plan files.

Restricted Keys offer increased security for radio communications. After Restricted Keys have been imported into CPA, they can be assigned to networks, but are not visible in the Manage Keys dialog. Note the absence of the **Key Value** cell.



Protected Keys

Protected keys can only be read from comma-delimited files with the protected keys defined. They can also be read/imported from .hcpa files that contained protected keys when saved.

A template Excel file which can be used for Protected Key importing can be found at the following location:

C:\Program Files\Harris RF Communications\Sample Plans**CPA Key Import Template.xls**

SMT Keyloader

The **SMT Keyloader** feature (if installed only for RF-7800W CPA) is accessed by selecting **Tools > SMT Keyloader**.

The RF-7800W Keyloader application allows the following actions:

Add or Discover Device

Certificate Authority (CA) Management

Private Key/Certificate Generation (HTTPS, SSH, X.509 Authentication)

Certificate Request

Private Key/Certificate Loading (loaded by CPA)

Wireless Pre-shared Key Management

Setting IP Addresses

When a wireless IP network is established, the individual IP address of each PC and radio must be set to the proper values to permit communication. PC and Radio IP addresses must be determined for each station in the network.

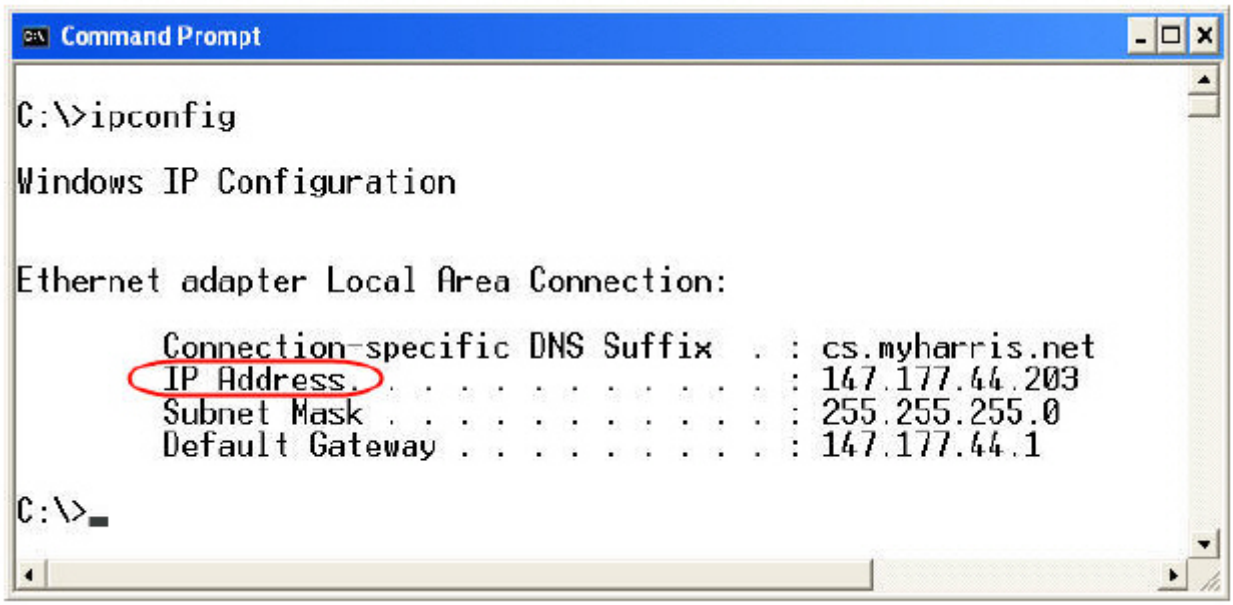
> **NOTE** - Programming IP addresses into CPA software requires use of the **IP Routing** menu. Refer to CPA product Help for instructions.

PC IP Addresses

All PCs have a default IP address. In order to set up wireless communications, the default IP address of the PC will need to be changed to the PC IP Address that is required for the wireless IP net. This section provides instructions for identifying and modifying the IP address of a PC. These steps are for a PC running Windows 7. The process for modifying an IP address on other Windows operating systems is similar.

Identify a PC IP address:

1. Select **Start** > **All Programs** > **Accessories** > **Command Prompt**; alternatively, you may select **Start** > **Run**, type in ***cmd***, and choose **OK**.
2. Enter ***ipconfig*** at the command prompt and press **Enter**.
3. Observe that the IP addressing information for the PC should display as shown below. This is sample data; your specific addresses will differ from those shown.



> **Caution** - Before proceeding, write down the details for your PC. This will enable you to return to the original settings after using CPA, if required.

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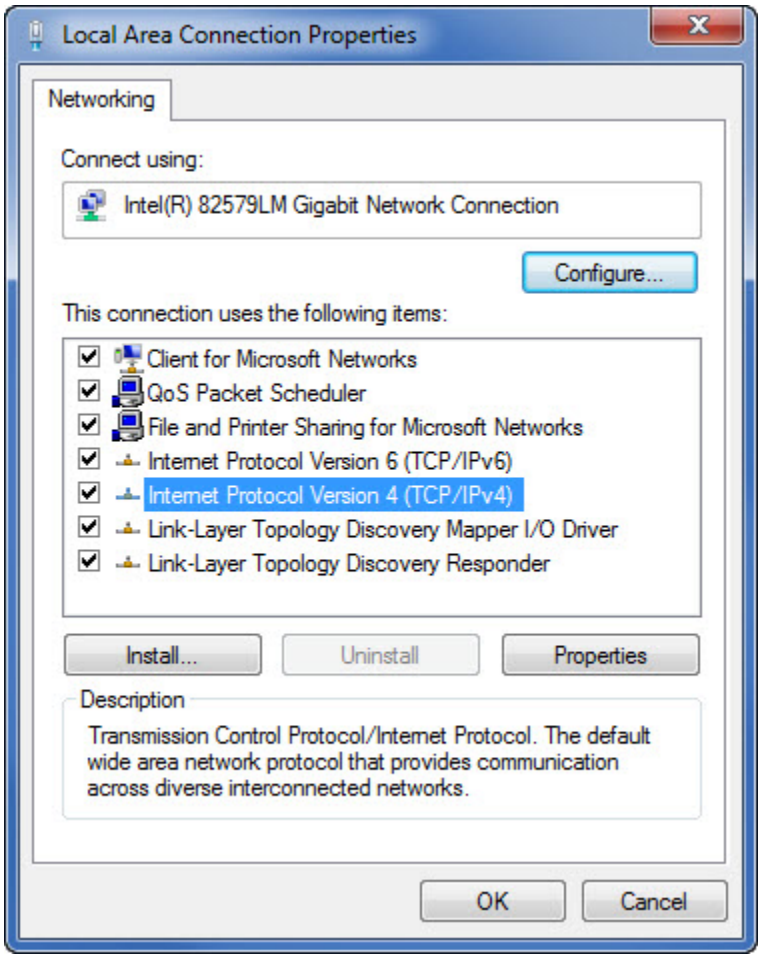
Modify the IP address of a PC:

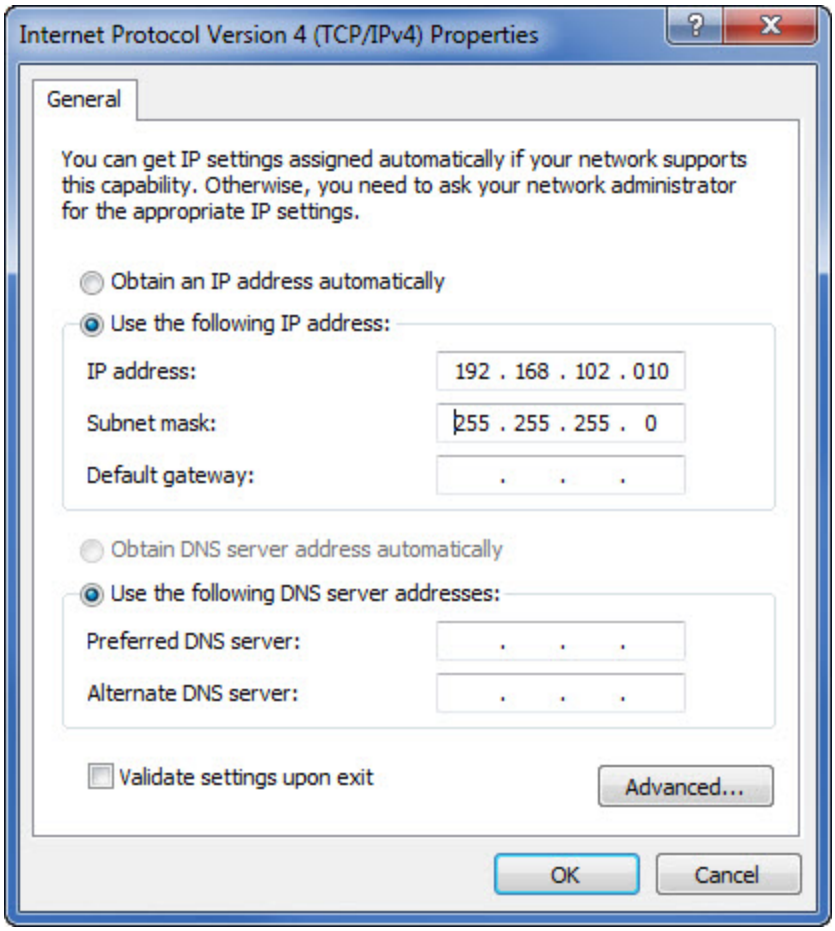
1. Select **Start** > **Control Panel** > **Network and Sharing Center** to open the Network Connections dialog.
2. Select **Local Area Connection** to open the Local Area Connection Status dialog.
3. Select **Properties**.
4. Observe that the Local Area Connection Properties dialog displays.

The components listed on your system may vary. Contact your network administrator if you do not see the Internet Protocol menu item. Select **Internet Protocol Version 4 (TCP/IPv4)** or **Internet Protocol Version 6 (TCP/IPv6)** and select **Properties** to open the Local Area Connection Properties dialog, as shown below.



5. Select the **Use the following IP address:** button and type the PC **IP address, Subnet mask,** and **Default gateway** (if applicable) needed for the wireless IP network.
6. Select **OK.**

The above example uses the addresses for the base station.



Radio IP Addresses

The designated radio IP address will be automatically loaded into the radio when CPA is used to program the radio.

Validating a Plan

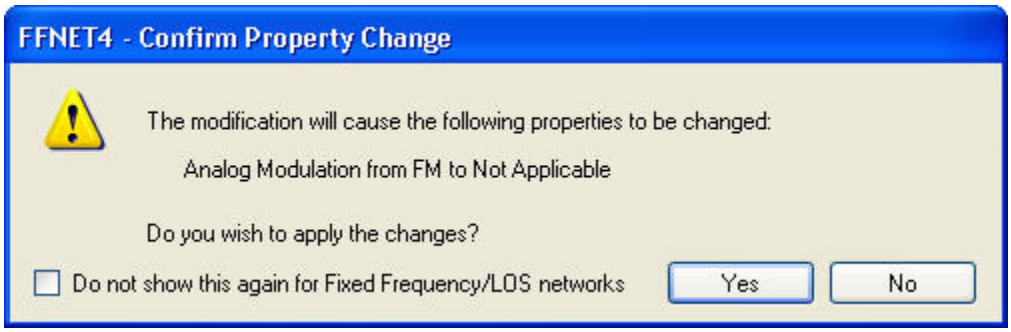
CPA performs an automatic check of programmed settings referred to as validation. This occurs automatically as the communications plan is being constructed and then can be performed as a final check when the plan is finished.

> **NOTE** - Plans are also automatically validated prior to programming.

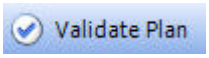
CPA performs a first-level validation automatically as a communications plan is being constructed. As a plan is being created, users are notified by pop-up windows when modifications are required.

> **NOTE** - Messages may also be output to the Messages window.

The example below occurs when a new radio type is added to an existing Fixed Frequency Network. CPA will make all required changes automatically, but does provide the user an opportunity to make revisions if required.



After a communications plan is fully completed, the planner should perform a second-level validation before distributing the plan.

1. Ensure that all required additions and features have been incorporated in the plan.
2. Select **Validate Plan** 

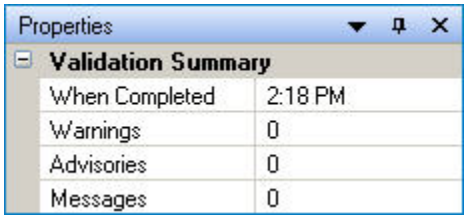
. CPA performs a second-level validation of the plan.

   > **NOTE** - If your CPA installation includes CPA products released with CPA Platform v1.0, the Validate Plan feature will be disabled (grayed out).

   > **NOTE** - Validation can be canceled if needed by selecting **Cancel**.

3. Observe that when Validation is completed, a 'Validation Passed' indication will be added as a tab to the main CPA work area (this tab may be closed by right-clicking on the **Plan Validation Results** tab and selecting **Close**).

4. Observe that a Validation Summary is also displayed on the Properties area of CPA (see example below).



5. Observe that a breakdown of any Warnings, Advisories, or Messages is also shown. These indicate the following:

    - **Warnings** - Current configuration contains settings which should be corrected for a plan to be completely functional.
    - **Advisories** - Current configuration settings could impact performance.
    - **Messages** - Contains general information regarding settings only.

      NOTE - The communications plan can still be used if desired despite any Warning, Advisory, or Message. However, it is recommended that any issue noted during validation be considered and corrected if possible.

Following Validation, the plan may be safely used and/or distributed.

Programming Radios

Before beginning radio programming, if required, make sure your radio is connected as described in the radio documentation.

> **NOTE** - Plans are automatically validated prior to programming.

Once connected to the CPA application, do the following:

1. Select one or more Harris Radios.
2. Perform one of the following to launch the **Program** dialog:
   - Select **Action > Program [Radio Name]**.
   - Select Radio context menu and select **Program.**
   - Select **Program** 

 from the Actions Toolbar.
3. Observe the selected stations to be included in the output file in the Programming Dialog, and then set the Programming Parameters (File Name, Transfer Location, and/or IP Address) and Programming Options.
4. Select **Start Programming** to start.
5. Observe that if multiple stations are selected to be programmed, each radio type will be processed individually.
6. Ensure the radio is properly connected as described in the associated CPA product.

   > **NOTE** - If supported by the CPA product, radio programming file may also be transferred to a logical drive as described below. At least one transfer location must be specified.

7. Monitor the Programming Status view for programming status messages and their source and refer to Programming Status for messages associated with programming.
8. Observe that progress is shown during file transfer, and the ability to stop the transfer is included.
9. Observe that a notification is provided if any additional steps are needed to complete programming of the radio at the end of fill file transfer.
10. Observe that a success message is provided when there are no errors in the transfer.

    > **NOTE** - Any parameters that are not programmed into the radio because of an unsupported feature are reported at the end of programming. Additionally, programming errors or warnings are also reported and the radio is taken out of programming mode. A programming log file is available for review.

11. Select a location, such as the Desktop, to write the file if it is able to be transferred to a logical drive and complete the radio programming by transferring the file to the radio as described in the radio documentation.

    NOTE - Some Harris radios are programmed via a direct cable connection from the PC to the radio. Refer to the radio documentation for details.

Support Tasks

Configure Password

The ability to password protect the application is provided. When a password is used, it must be entered to open the application.

1. Select **File > Configure Password...**.
2. Enter a New Password.
3. Confirm New Password.
4. Select **OK**.

Password considerations are:

- The password can be a minimum of six and a maximum of 15 alphanumeric characters.
- Only users running under Windows Non-Restricted User mode can access and modify the application password.
- Three attempts at logon are allowed. Otherwise, application will need to be installed again.

Remove Password

Remove password protection:

1. Select **File > Configure Password...**.
2. Enter Existing Password.
3. Select **Remove password protection**.
4. Select **OK**.

Export Plan Data

CPA can export plan data in several file formats which are detailed below.

> **NOTE** - Interchange File (*.int) export may not be available depending upon the installed CPA products.

Select **File > Export Plan Data** to save the plan data into the following formats:

Harris-compatible Import format (*.vpd) - Used for VHF-UHF/ILOS RPA Plan Files.

> **NOTE** - This does not export the actual plan in a form that can be opened in the VU/ILOS RPA, but instead contains pertinent information to support import into other Harris applications only.

Harris RF-6705 Data File (*.csv) - this file format can be imported into TacChat IP.

Exported Common Plan Files (*.cpf) - An XML-type file format which can be imported into RF-6760W / RF-6760W-HPW Wireless Messaging Terminal software and the RF-6010 Network Management Application.

Interchange File (*.int) - Used for the exporting of configuration data between Harris RF-5800M-MP units and Rockwell Collins RT-8100 radios (refer to Rockwell Collins documentation for instructions).

Save to JPEG

The current tabbed view or set of plan elements in the tabbed view can be saved to a JPEG file that can be opened in Microsoft Paint for example. Select **File > Save To JPEG...**. The output options (Choose Image Size) are:

> **Screen** - fits the images on the tabbed view into a fixed width and height 1280 by 996 pixel image area.
>
> **Source** - keeps the images at 100% scale and only saves area where images are located. The width and height are fixed by the layout.
>
> **Custom** - fits the images into an area entered into the Width and Height (default is current actual image area). Only integer values can be entered. The key to using this is to keep the image proportional to the current actual image area. So, if the source image is 600 by 300, a proportional scale is 60 by 30 (smaller image) or 6000 by 3000 (larger image).

After making your selection, select **OK** and save the file. Note that 13 pixels are added to the height at the top for the title (the name of the tabbed view). Also, images that are out of the current zoom area of the tabbed view will have a gray border around the plan element. If the orientation of the image area (select Source and look at the values in the custom width and height boxes to see actual size) is the opposite of the default 1280 by 996, then the image will rotate to achieve a best fit.

Create Reports

Select **View > Plan Report** to produce a summary report of the currently opened plan file. This report has the following sections (see example below):

Plan Information

Station Summary

Station Details

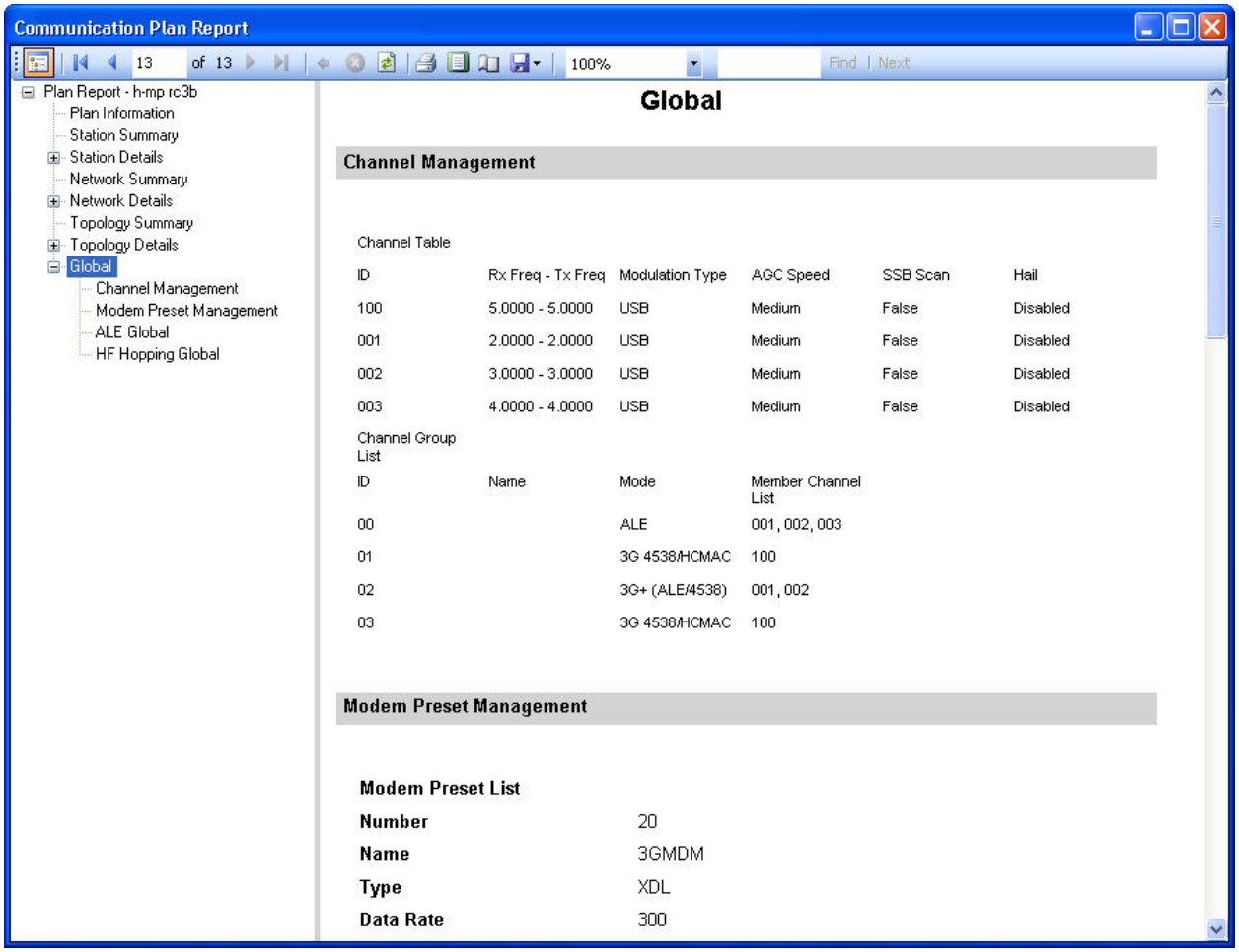
Network Summary

Network Details

Topology Summary

Topology Details

Global



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The output can be saved to the default location (C:\Documents and Settings*User*\My Documents\Harris RF Communications\CPA) or any other location as:

Portable Document Format (PDF)

Microsoft Excel format (*.XLS)

Microsoft Word format (*.docx) available starting in Platform v1.6

Communication Plan Report Toolbar

Use this toolbar to do the following:

	Show or Hide Document Map (left pane)
	go to pages in the report
	refresh the report
	print the report
	view print layout
	configure page setup
	export to file
	view page options (Whole Page, 500%, 100%, etc.)
	find text in report

Application Options

Use **Tools > Applications Options...** to set default names, values, and behavior of the installed radios and features. **Restore Factory Defaults** applies to the currently selected set of options. **Restore All Factory Defaults** applies to all installed options. After setting options, select **OK** to accept or **Cancel** to discard the changes.

> **NOTE** - Radio and Waveform options are described in their associated CPA product Help.

Platform / **General User Options** are:

Default Topology Name Prefix (type in as required or accept default)

Default Topology Mode (select **Connectivity** or **Open**)

Prompt Before Removing Station (**Yes** or **No** as desired)

Prompt Before Removing Network (**Yes** or **No** as desired)

Prompt Before Removing Annotations (**Yes** or **No** as desired)

Prompt Before Removing Topology (**Yes** or **No** as desired)

Show Welcome Screen On Startup (**Yes** or **No** as desired)

Show Tooltips in Menus and Toolbars (**Yes** or **No** as desired)

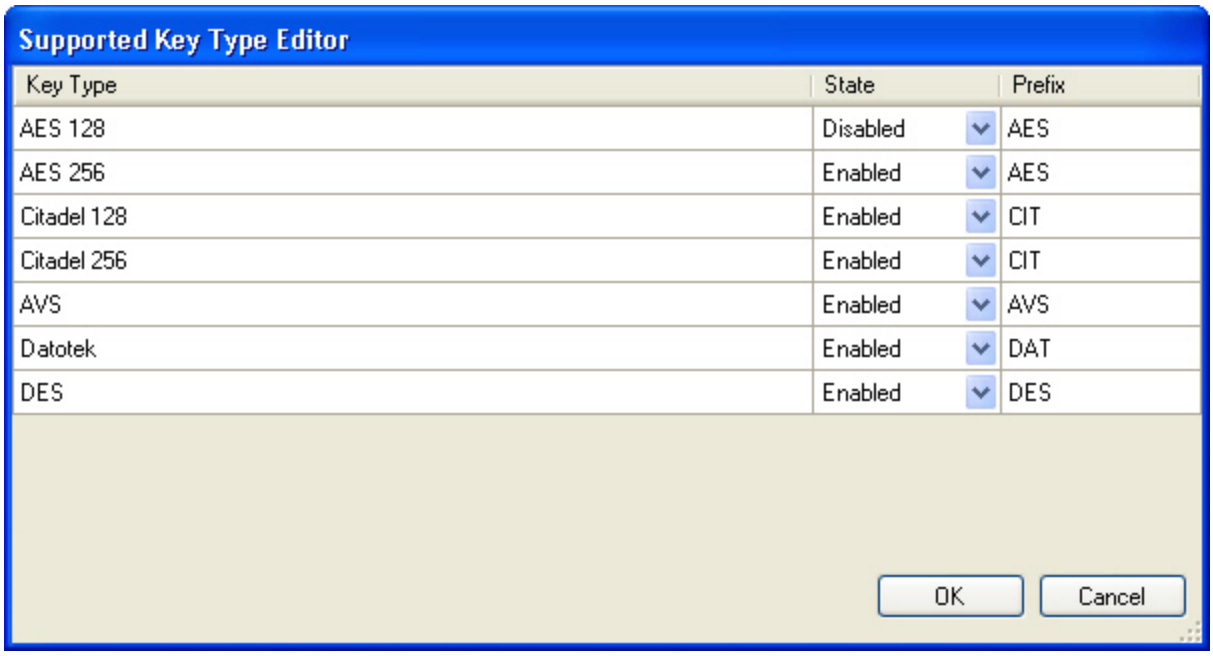
Show Tooltips for Plan Elements (**Yes** or **No** as desired)

Save Properties Panel Width (**Yes** or **No** as desired)

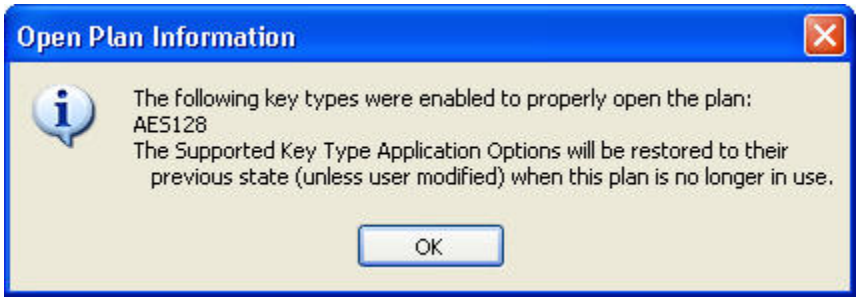
Key Manager options are:

Prompt to Set Password for Key Generation (**Yes** or **No** as desired)

Supported Key Types (**Enabled** or **Disabled** as required / Type in desired prefix or accept default) - example screen below.



NOTE - If a key type is disabled using the setting shown above, but then a Communications Plan is opened which uses one of the disabled Key Types, CPA will automatically enable that Key Type while the plan is in use. In this instance, a message similar to the following will display.



NOTE - The change discussed in the dialog above is only made while the opened plan is in use. When this plan is closed, the Supported Key Types are returned to prior values.

NOTE - A similar situation occurs when new key types are imported, except that the new imported key types stay enabled to permit use.

Enable Key Rings - (**Yes** or **No** as desired)

NOTE - Key Rings are used only by the RF-7800H-MP.

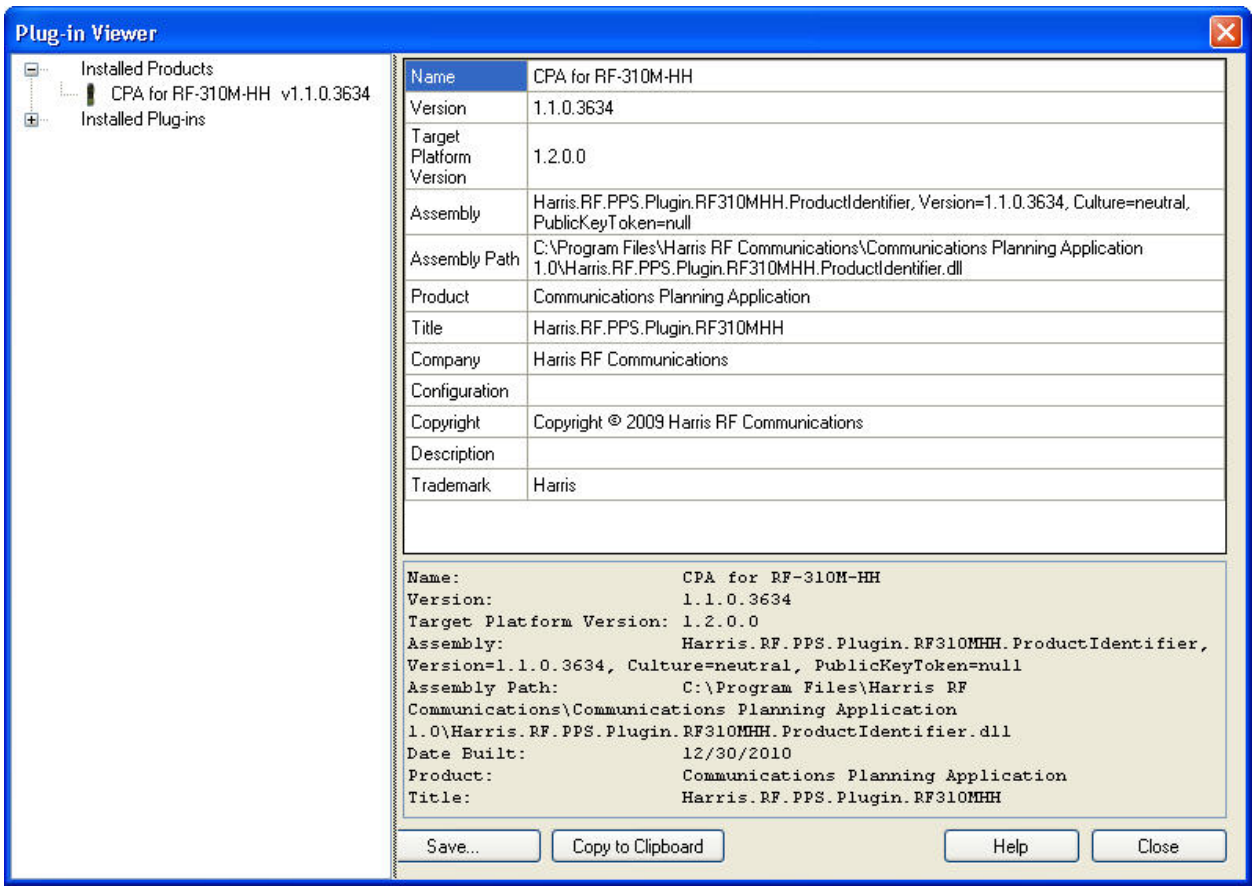
Default Key Ring Prefix - leave at default of TEK, or select within field and overtype to revise.

Property Pin options are:

Show Warnings - (**Yes** or **No** as desired)

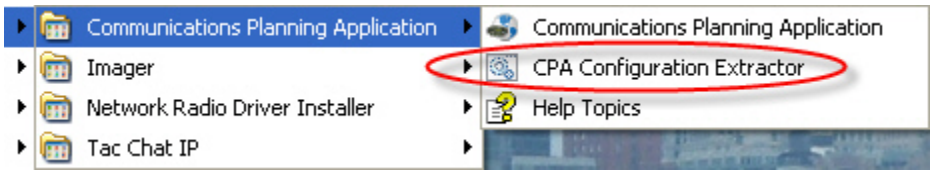
View Plug-ins

Select **Tools > View Plug-ins** to open the Plug-in Viewer. The plug-in viewer includes detailed information for installed plug-ins. Select the **Save...** button to save all plugin information to a file or the **Copy to Clipboard** button to paste the information into another destination. See below for an example Plug-in Viewer display.



Configuration Extractor

Installed along with the CPA Platform is the CPA Configuration Extractor tool. This is accessible from the Start Menu in the Communications Planning Application folder (see below).



This tool can be used to provide useful information on any CPA Plan. It provides detailed information on the CPA Software products used to create and edit the plan being analyzed. This information can be helpful if compatibility issues are ever encountered.

Below is an example of this tool viewing the contents of a previously created CPA Plan.

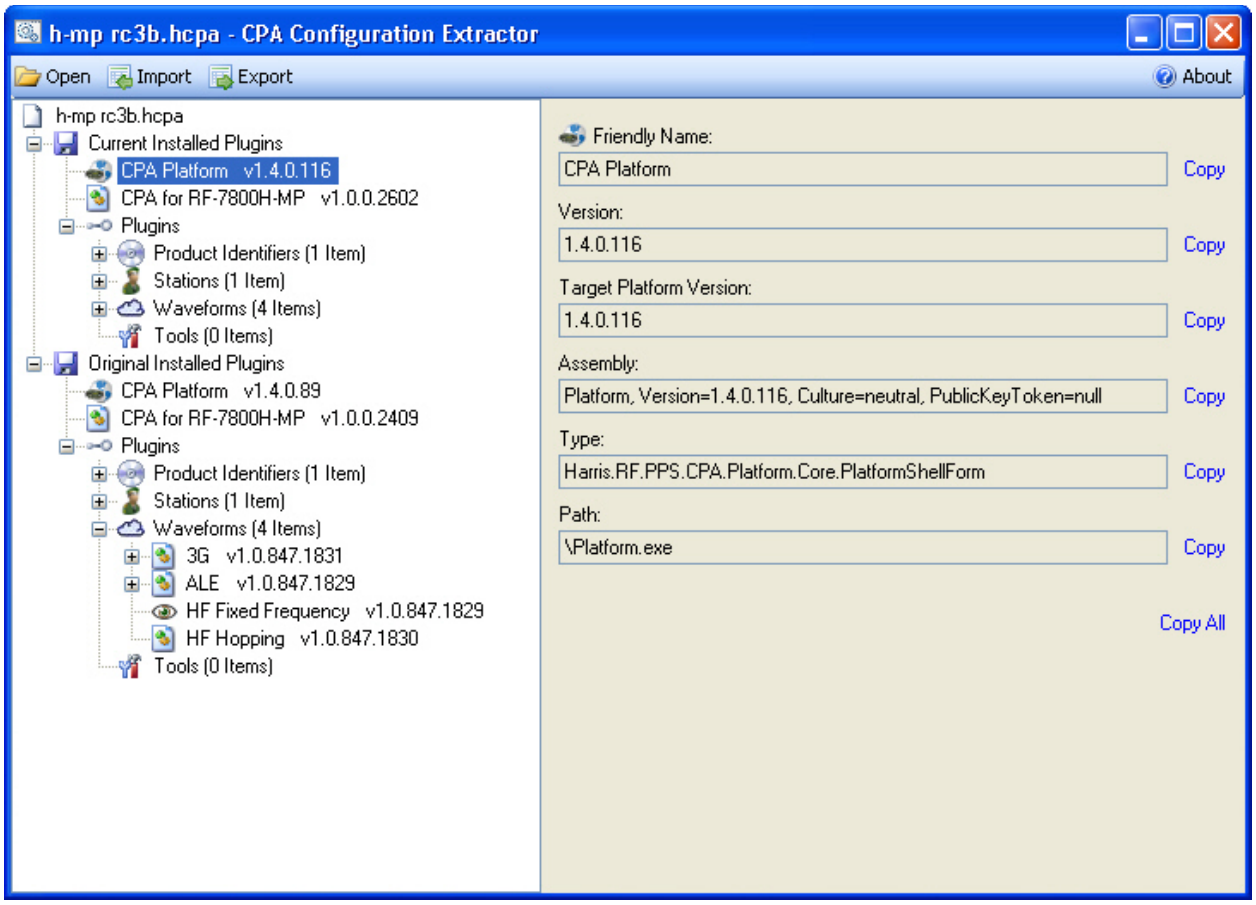
Use the CPA Configuration Extractor:

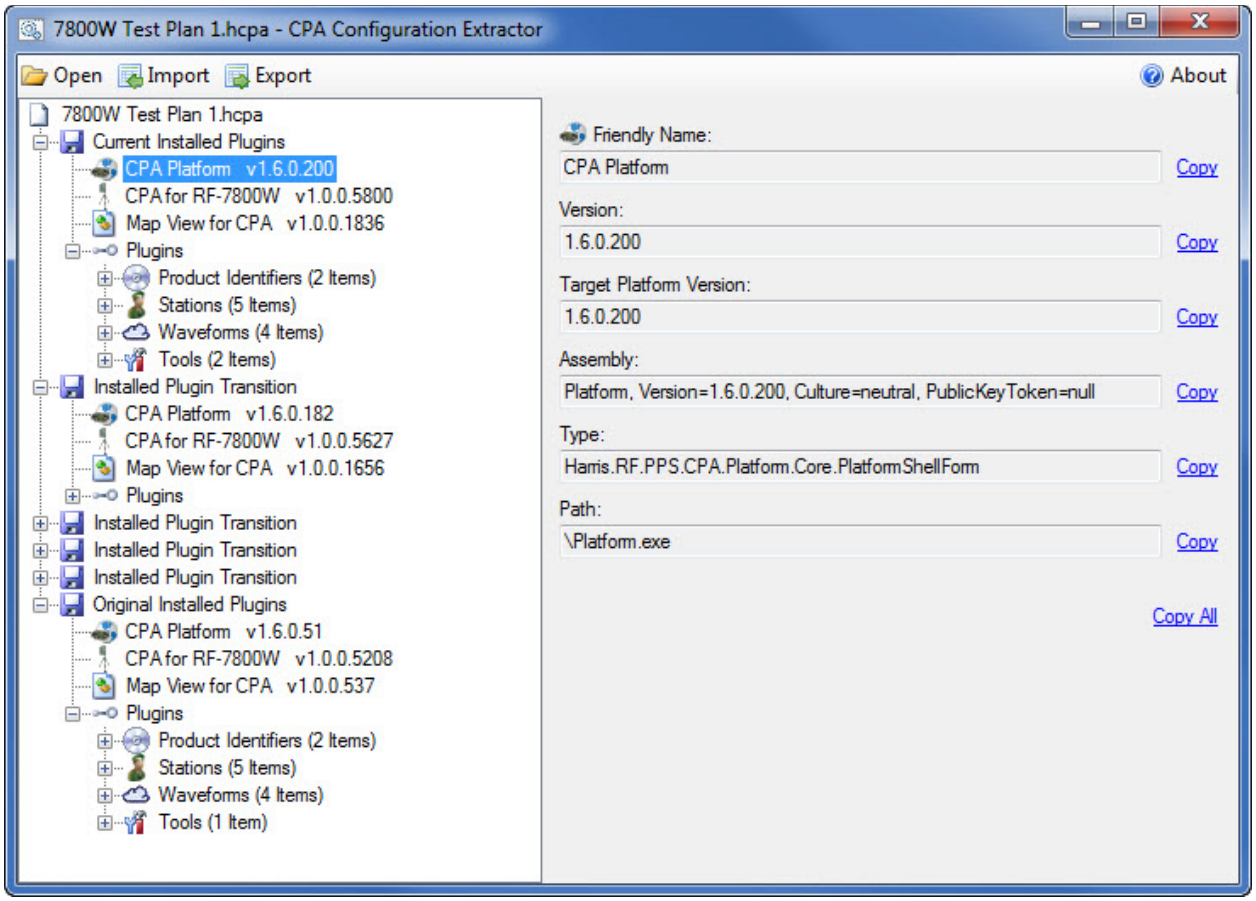
1. Open the tool from the Start Menu.
2. Select **Open** from the CPA Configuration Extractor's menu bar and navigate to the location of any *.hcpa file.

   NOTE - Information can also be imported into the CPA Configuration Extractor using the menu bar's Import button.

3. Select the desired *.hcpa file and select **Open** (see below).

   NOTE - The second sample is from CPA for RF-7800W plan installed (Windows 7 style screen).

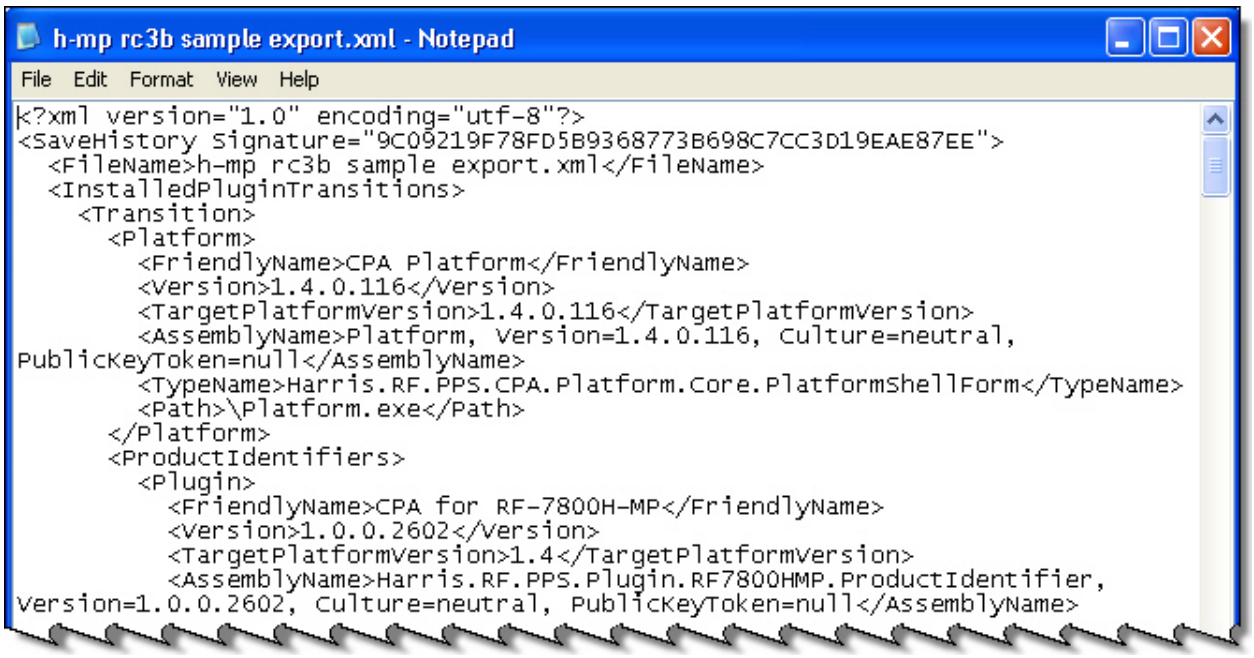

h-mp rc3b.hcpa - CPA Configuration Extractor
Open
Import
Export
About
h-mp rc3b.hcpa
Current Installed Plugins
CPA Platform v1.4.0.116
CPA for RF-7800H-MP v1.0.0.2602
Plugins
Product Identifiers (1 Item)
Stations (1 Item)
Waveforms (4 Items)
Tools (0 Items)
Original Installed Plugins
CPA Platform v1.4.0.89
CPA for RF-7800H-MP v1.0.0.2409
Plugins
Product Identifiers (1 Item)
Stations (1 Item)
Waveforms (4 Items)
3G v1.0.847.1831
ALE v1.0.847.1829
HF Fixed Frequency v1.0.847.1829
HF Hopping v1.0.847.1830
Tools (0 Items)
Friendly Name:
CPA Platform
Copy
Version:
1.4.0.116
Copy
Target Platform Version:
1.4.0.116
Copy
Assembly:
Platform, Version=1.4.0.116, Culture=neutral, PublicKeyToken=null
Copy
Type:
Harris.RF.PPS.CPA.Platform.Core.PlatformShellForm
Copy
Path:
\Platform.exe
Copy
Copy All



4. Observe the information on the left-hand side of the dialog and copy information about individual fields as required by selecting Copy or by using Copy All to capture everything from the visible menu.

   NOTE - This information can then be pasted into a text editor such as Microsoft Notepad.

5. Select **Export** from the menu bar to copy all the detail from the entire plan in *.xml format; an excerpt from a sample export file (opened with Notepad) is shown below:


h-mp rc3b sample export.xml - Notepad
File Edit Format View Help
<?xml version="1.0" encoding="utf-8"?>
<SaveHistory Signature="9C09219F78FD5B9368773B698C7CC3D19EAE87EE">
<FileName>h-mp rc3b sample export.xml</FileName>
<InstalledPluginTransitions>
<Transition>
<Platform>
<FriendlyName>CPA Platform</FriendlyName>
<Version>1.4.0.116</Version>
<TargetPlatformVersion>1.4.0.116</TargetPlatformVersion>
<AssemblyName>Platform, Version=1.4.0.116, Culture=neutral,
PublicKeyToken=null</AssemblyName>
<TypeName>Harris.RF.PPS.CPA.Platform.Core.PlatformShellForm</TypeName>
<Path>\Platform.exe</Path>
</Platform>
<ProductIdentifiers>
<Plugin>
<FriendlyName>CPA for RF-7800H-MP</FriendlyName>
<Version>1.0.0.2602</Version>
<TargetPlatformVersion>1.4</TargetPlatformVersion>
<AssemblyName>Harris.RF.PPS.Plugin.RF7800HMP.ProductIdentifier,
Version=1.0.0.2602, Culture=neutral, PublicKeyToken=null</AssemblyName>

Create Map View

Create Map View (Option for only CPA for RF-7800W)

CPA Platform supports an optional mapping view application that is only available when the Map View plug-in is installed. Currently the Map View plug-in is only installed with the CPA for RF-7800W product. The map view contains a world map (default map view) and support for GeoTiff, Digital Topographic Elevation Data (DTED), Shuttle Radar Topography Mission (SRTM), and ShapeFile map file types.

The mapping view application is launched from the task bar by selecting **Create Map View > Create Layered Map**. The GPS coordinate system for mapping supports Decimal Degrees (dd), Degrees Decimal Minutes (dd mm), Degrees Decimal Minutes Seconds (dd mm ss) or Military Grid Reference System (MGRS). The default setting is Decimal Degrees.

The user can configure the unit of length to be Imperial (miles, feet, etc.) or Metric (kilometers, meters, etc.). Stations and network elements can be dragged/dropped/moved on the map for use in the plan or removed from the map.

The map view displays the GPS coordinates and altitude information (if elevation data is loaded). Select, pan, and zoom functions are available on the toolbar.

The following line characteristics are represented on the map for differentiation of network elements and link connections:

- Black Lines - drawn between all networks and member stations
- Green Lines - drawn between all items connected by a PPP link
- Blue Lines - drawn between all items connected by an Ethernet link
- Red Lines - drawn between all items connected by a RS-232 link
- Orange Lines - drawn between all items connected by a SNMP link

Supported map type file extensions consist of:

- Geo Tiff (*.tif)
- DTED (*.dt0, *dt1, *.dt2)
- SRTM (*.hgt)
- ShapeFile (*.shp)

NOTE - Users can also import their own maps for use in a plan. Refer to CPA for RF-7800W for details on using the mapping view application.

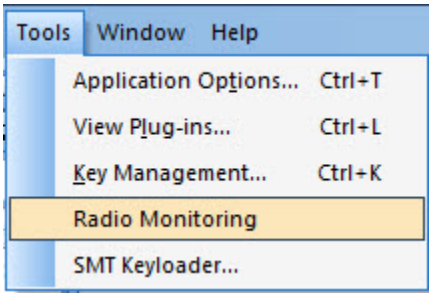
Radio Monitoring

Radio Monitoring (CPA for RF-7800W only)

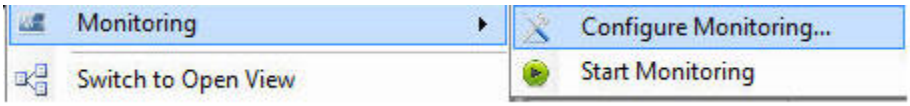
CPA Platform supports a Radio Monitoring property that provides status monitoring of all connected RF-7800W radios. Monitoring can be done on a single radio using the property grid or on multiple radios by pinning the desired properties onto a topology.

> **NOTE -** Radio Monitoring is accomplished using SNMP. In RF-7800W CPA, make sure to enable SNMP by choosing either v2c or v3 for the SNMP mode on the radio(s) you monitor.

From the task bar, select **Tools** > **Radio Monitoring**. The Monitoring Configuration dialog is displayed. You can also right-click on a station (in Topology or Map view) that you wish to monitor and select **Monitoring > Configure Monitoring**. Select **Monitoring > Start Monitoring** for radio(s) that have been previously configured.



OR



> **NOTE -** Refer to CPA for RF-7800W for details on the Radio Monitoring property.

Technical Support

Support Overview

We recognize that continued success in our business requires an on-going commitment to customer support. We offer this support not only through our sales and service facilities in nearly 120 countries around the world but also through our Field Engineering Department. This department can assist our customers in the specification, installation, operation, and maintenance of all of our products.

In addition, further help is available via direct communications with our main facility in Rochester, New York using any method shown below:

Mail

Harris Corporation
Communication Systems
1680 University Avenue
Rochester, NY 14610
USA

Telephone

1-866-264-8040 (toll-free)
1-585-242-3561

Fax

1-585-242-4483

E-mail

TAC@harris.com

What's New

The CPA Platform v1.8 includes the following updates and features:

- Support for Property Favorites feature, which allows users to designate individual properties as favorites
- Support for Property Panel Width feature
- Support for Version Check feature
- Usability improvements to Help

Supported Operating Systems

The supported operating systems for CPA Platform are:

- Windows 8 (32 and 64-bit)
- Windows 8.1 (32 and 64-bit)
- Windows 7 (32 and 64-bit)
- Windows Vista (32 and 64-bit)
- Windows Server 2012 (32 and 64-bit)
- Windows Server 2012 R2 (64-bit)
- Windows Server 2008 R2 (32 and 64-bit)
- Windows Server 2008 (32 and 64-bit)
- Windows Server 2003 (32 and 64-bit)
- Windows XP Pro (32-bit)

Other OS Info

- CPA Platform is compatible with foreign language Operating Systems when non-English localization is enabled.
- CPA Platform is compatible with FIPS-compliance enabled OS.

> **NOTE** - Information on Supported Radio Products, including part numbers and firmware information, are obtained by selecting **Help > Supported Products**.

Compatibility

This listing shows software that inter-operates with CPA Platform v1.7:

Import Keys

- KGA Key Distribution Files (*.kdf)
- VHF-UHF/ILOS RPA Plan Files (*.vpd)
- HF RPA Plan Files (*.rpd)
- Comma-delimited Key Files (*.csv)
- CPA Files (*.hcpa)

Export Plan Data

- RF-6760W / RF-6760W-HPW Wireless Messaging Terminal software
- RF-6010 Network Management Application

Other File Formats

- Export graphical views as images (*.JPG)
- Export plan reports to spreadsheet (*.XLS)
- Export plan reports to Adobe Reader (*.PDF)
- Export plan reports to Microsoft Word (*.docx)

Troubleshooting

This section provides information on troubleshooting questions. Questions are grouped by activity types (Installation, Configuration, Operation, and Programming).

Installation

Why does my installation take so long?	The CPA software may require Microsoft support software. The CPA installs this software when not yet installed. This may take significant time and/or require reboot prior to installing the CPA software itself. For example, the .NET 3.5 installation also includes service packs for previous versions of the framework. The amount of time that the installation will take depends on what versions of the .NET Framework and what service packs are already present on the target machine.
Is there any third-party software known to be incompatible with CPA?	No known support issues exist.
While attempting to install the CPA, the “Files in Use” dialog opens up. What should I do?	Close all applications listed in the Files in Use dialog, and then continue the CPA installation process. If the “CD Browser” is listed in the Files in Use dialog, you must copy all files from the installation CD to a folder on your hard drive, and run the PPS_IntroProgram.exe from your hard drive instead of installing the CPA directly from the installation CD.
When I open a large CPA plan file by double-clicking on the icon of the plan file, the CPA application does not appear for a long time. Can anything be done to speed this up?	When opening a file by double-clicking on the data file, the entire file is first read by the application before the User Interface is shown. Loading a large (2 MB or over) plan file takes a few minutes depending on how much and how complex the data in the plan is. Instead, launch the CPA application first and then open the file using the **File > Open** command.

How do I set up my Windows PC to use a different default display language (for non-English localization)?	Refer to the Language Considerations topic.

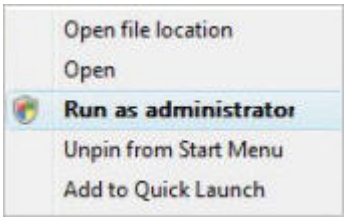
Configuration

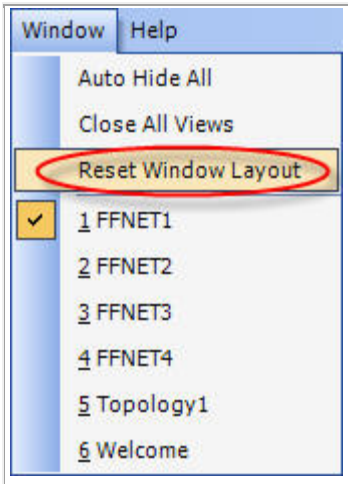
Where is the plan validity feature which allows me to set dates for the plan to be considered valid?	This feature from the Radio Programming Application (RPA) products is not provided by the CPA. Consider using the Plan Notes area to store this type of information.
Can I use the Toolbox to define different Station Default configurations?	Refer to How to define different Station Default configurations.
When opening a plan file I received a message that I am missing software. What does this mean and what do I do?	The original plan was created by an installation of CPA with additional CPA products installed. When this happens, the plan will open partially, and provide access to radios and support matching only your installed products. Networks that contained any radio types not supported in your version of CPA will be removed. If you require the full plan to be opened, you need to install the missing CPA product software. Following the required software update, the original CPA plan will open with all its original contents.
Why can't I open an exported plan (*.vpd) file using either CPA, VHF-UHF RPA or ILOS RPA? When I double-click a plan exported by CPA, it opens the RPA product but the plan itself fails to open.	The *.vpd format used by the CPA to export is not identical to the plan format used by the VHF-UHF RPA and ILOS RPA products. This format cannot be directly opened by any Harris application, including CPA, and is only designed to provide station information for other Harris applications. The side-effect of using the *.vpd file extension for interoperability as part of the "Harris-compatible import format (*.vpd)" option provided by CPA is that the RPA product will launch and then try to open the file but will fail.
I need to create numerous radio stations with	Refer to How to define different Station Default

similar configuration settings. Does CPA provide the capability to create a default radio with settings that can be re-used?	configurations.
I need to create numerous networks with similar configuration settings. Does CPA provide the capability to make global network settings that can be used to create networks that have the same global settings?	Refer to How to Set Global Network Settings.
When attempting to open, save, or import a CPA plan, I am receiving an error dialog reading either **FIPS Compliant PC** or **FIPS Error**. What is the problem and what can be done about it?	Certain encryption types and waveforms will experience errors when open, save, or import operations are attempted on a FIPS compliant personal computer. These include the use of AES Passphrase (256 bit) and TALON-based Products. **NOTE** - AES (128) and AES (256) encryption types can be used without experiencing these types of error dialogs. If an error dialog is displayed, the text within the error dialog should be carefully read, and the changes suggested within this error dialog should be implemented. **Background** - Federal Information Processing Standard (FIPS) Publication 140-2 is a computer security standard issued by the National Institute of Standards and Technology (NIST) to accredit cryptographic modules for government computing platforms. FIPS standards provide an increased level of network security. Contact your organization's IT department for information on FIPS compliance requirements.
Why can't I connect the same station to two or more networks in the Topology view?	Refer to Using Open View and Switching Topology Views.
I dragged two existing stations, already connected via a station-to-station link, to a new Topology. However, on the new Topology I don't see the link between the two stations. Is this a problem?	No, it's not a problem. The stations are still linked in the plan, but the connecting link will not be redrawn in a different Topology.
If the Encryption Keys password gets lost, what	There is no way to recover a lost password. If a

can be done to recover it?	password becomes lost, you must do a full application uninstall and then reinstall the application. You may then create new passwords for encryption keys.

Operation

Why is the Property Editor not showing all the text in the property fields?	The Property Editor does not wrap text, and some property names require more space than is provided by default. Adjust the default size and location as desired. Settings are saved across sessions.
Why is **File > Configure Password...** not accessible? 	To configure the CPA password, a user must log-in with Administrator access. Applications may be launched by default with Non-Administrative privileges even if the user is logged in as an administrator. To run the CPA application as an administrator, right-click on the CPA desktop shortcut and select **Run as administrator** (see figure at left).
Why is **File > Save To JPEG...** showing some elements with gray border or rotating image?	A gray border appears around elements that are in the view being captured but are not fully visible on the screen. Images may be rotated by the **Save to JPEG** feature when necessary to achieve a best fit.
Why do "How Do I" links not playback?	In order to play "How Do I" multimedia clips, you must install Adobe Flash Player. This software is provided on your CPA product CD and is accessible from the autorun application.
I cannot see some of my application panels. Is there a way to reset CPA window positions and sizes after items have been moved, docked, or resized?	CPA includes the capability to customize your work environment in many ways, including changing the default window layout, resizing, docking and hiding of user interface panels/toolbars. Installing additional CPA products may also affect the visibility and positioning of some

	CPA elements. If it becomes necessary to revert all application window layout to factory defaults, this can be done from the CPA menu by selecting **Window > Reset Window Layout** (see figure at left).
Why am I seeing unusual characters when I type data into fields using a Windows Foreign Language package (non-English)?	This software uses standard English language characters in most input fields because these characters are programmed directly into the radio. Some CPA fields allow foreign language characters. Fields that accept non-English entry are: File Name in **File > Save** and **File > Open** dialogs Author Organization Plan Description Annotation Text
I don't have a mouse for my computer, just a keyboard. Can I still use the CPA?	The Microsoft Accessibility MouseKey options can be set up to use the keyboard to emulate a mouse. Select **Start > Settings > Control Panel > Accessibility Options** and then select the Mouse tab to access MouseKey options. Refer to the Microsoft Windows Help application for additional details. **NOTE** - CPA also partially supports keyboard navigation.
Can I change my Microsoft Windows appearance while CPA is running?	Yes.

What is the difference between CPA's Connectivity View and Open View, and how do I switch between the two views?	Refer to Using Connectivity View, Using Open View, and Switching Topology Views.
Are multiple instances of the CPA application allowed to run simultaneously?	Yes.

Programming

Does the CPA support reading the mission plan from the radio?	The CPA does not support this feature at this time.
After programming the radio with imported keys, the order appears differently. Is this a problem?	No, this is not a problem. The CPA sorts the key display by key name alphabetically. For example, if there are 5 keys numbered 1, 2, 8, 10, and 15, they will be displayed in this order: 1, 10, 15, 2, 8. This ordering is only in the display; the radio is always programmed correctly.
I programmed my radio from a CPA plan but not all the features are active. What happened?	The radio that was programmed may have different system firmware installed that does not accept all features available in CPA. If the user programs a different radio firmware configuration, some settings may not program or may program differently. It is recommended to update the radio's firmware on a regular basis. Contact Harris for firmware update files and more information. **Additional Information**: A radio may be available with either a Standard (SW001) or Advanced (SW002) feature set.

Glossary

-A- / -B- / -C-

AES	Advanced Encryption Standard
ANW2	Adaptive Networking Wideband Waveform
BGAN	Broadband Global Area Network
CAM	Customer Algorithm Modification
CD	Compact Disk
CPA	Communications Planning Application
***.cpf**	Exported Common Plan File, a format used in CPA export
***.csv**	Comma separated variable, file format used in Microsoft Excel (also used for Harris RF-6705 Data File compatibility)
Ctrl	Control (key on keyboard)

-D- / -E- / -F- / -G- / -H-

DES	Data Encryption Standard
***.docx**	Exported plan file format (MS Word)
DSS	Digital Signature Standard

***.dt0, *dt1, *.dt2**	Map type file format (DTED)
DTED	Digital Topographic Elevation Data
Exp	Expiration
FIPS	Federal Information Processing Standard
GPS	Global Positioning System
HCLOS	High Capacity Line Of Sight
***.hcpa**	File format used for CPA plans
hex	Hexadecimal (a base-16 numbering format using 0-9, and A-F)
HF	High Frequency
***.hgt**	Map type file format (SRTM)
http	Hyper text transfer protocol
HPW	High Performance Waveform

-I-

ILOS	International Line Of Sight (RPA)

***.int**	Interchange file format (used in Rockwell Collins radios)
IP	Internet Protocol
IT	Information Technology
ITAR	International Traffic In Arms Regulations

-J-

JPEG	Joint Photographic Experts Group (an image format)

-K-

***.kdf**	Key Distribution Files
KEK	Key Encryption Key
KGA	Key Generation Application

-L-

LOS	Line of Sight

-M- / -N-

MGRS	Military Grid Reference System
MP	Manpack

NIST	National Institute of Standards and Technology
NMA	Network Management Application
NRDI	Network Radio Driver Installer
NY	New York

-O- / -P- / -Q-

OS	Operating System
Parity	Parity is calculated by counting the binary bits within each byte of data.
PC	Personal Computer
PDF	Portable Document Format
Plan Element	Name given to any CPA component (mission plan, radio, device, or annotation).
PNRDI	Pocket Network Radio Driver Installer
PPP	Point-to-Point Protocol

-R-

RF	Radio Frequency

***.rnp**	Falcon III RPA-compatible Format
RPA	Radio Programming Application
***.rpd**	HF RPA plan file format
RSSI	Received Signal Strength Indication

-S- / -T-

***.shp**	Map type file format (Shape)
SINADR	Signal-to-Noise and Distortion Ratio
SIP	Session Initiation Protocol
SNMP	Simple Network Management Protocol
SRTM	Shuttle Radar Topography Mission
TCP/IP	Transmission Control Protocol/Internet Protocol
TEK	Transmission Encryption Key
***.tif**	Map type file format (GeoTiff)

-U-

UHF	Ultra High Frequency

USA	United States of America

-V- / -W-

***.vpd**	V-U RPA/ILOS RPA-compatible Format
VHF	Very High Frequency
VULOS	VHF UHF Line of Sight
WMT	Wireless Messaging Terminal

-X- /-Y- / -Z-

***.xls**	Microsoft Excel file format
***.xml**	Extensible Markup Language file format

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