

***RF-7800I
SOFT KEYPAD APPLICATION
(SKA) FOR WINDOWS AND
ANDROID OS***

OPERATION MANUAL

assuredcommunications™

RF-7800I

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CHAPTER 1

APPLICATION DESCRIPTION

1.1 INTRODUCTION

This manual describes the installation and operation of the Soft Keypad Application (SKA) for both the Windows and Android Operating System (OS). The SKA is an application designed to work with the RF-7800I intercom.

1.1.1 Acronyms and Terms

All acronyms used are contained in the Glossary at the back of this manual.

1.2 APPLICABLE DOCUMENTS

Refer to RF-7800I Digital Intercom System Control Center Software Manual (10515-0407-4200) for settings, options and features of the RF-7800I Digital Intercom System Control Center (DCC) software.

For assistance with specific application issues, contact Harris.

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CHAPTER 2

SKA FOR WINDOWS OPERATING SYSTEM

2.1 INTRODUCTION

The SKA allows a user on a Windows PC to communicate with the intercom, speak with the intercom operators, join conferences, operate radios, etc. Most of the SKA's functions are based on the functionality of the RF-7800I-KD type crew stations, but in most cases, are far more powerful and do not require any additional configuration.

Each asset of the RF-7800I (example, an operator or a central unit) has their own primary action assigned that is quickly accessible by double-clicking the asset's name on the screen. Other actions are available through a context menu, accessible by right clicking the asset's name.

2.2 ITEMS INCLUDED

SKA for Windows OS is available on Compact Disk (CD).

2.3 WINDOWS SKA INSTALLATION

To install:

- Insert CD, autorun feature will launch installer program. [Figure 2-1](#) will appear.
- Select **Software** and click the install button **SKA for Windows v4.0**.

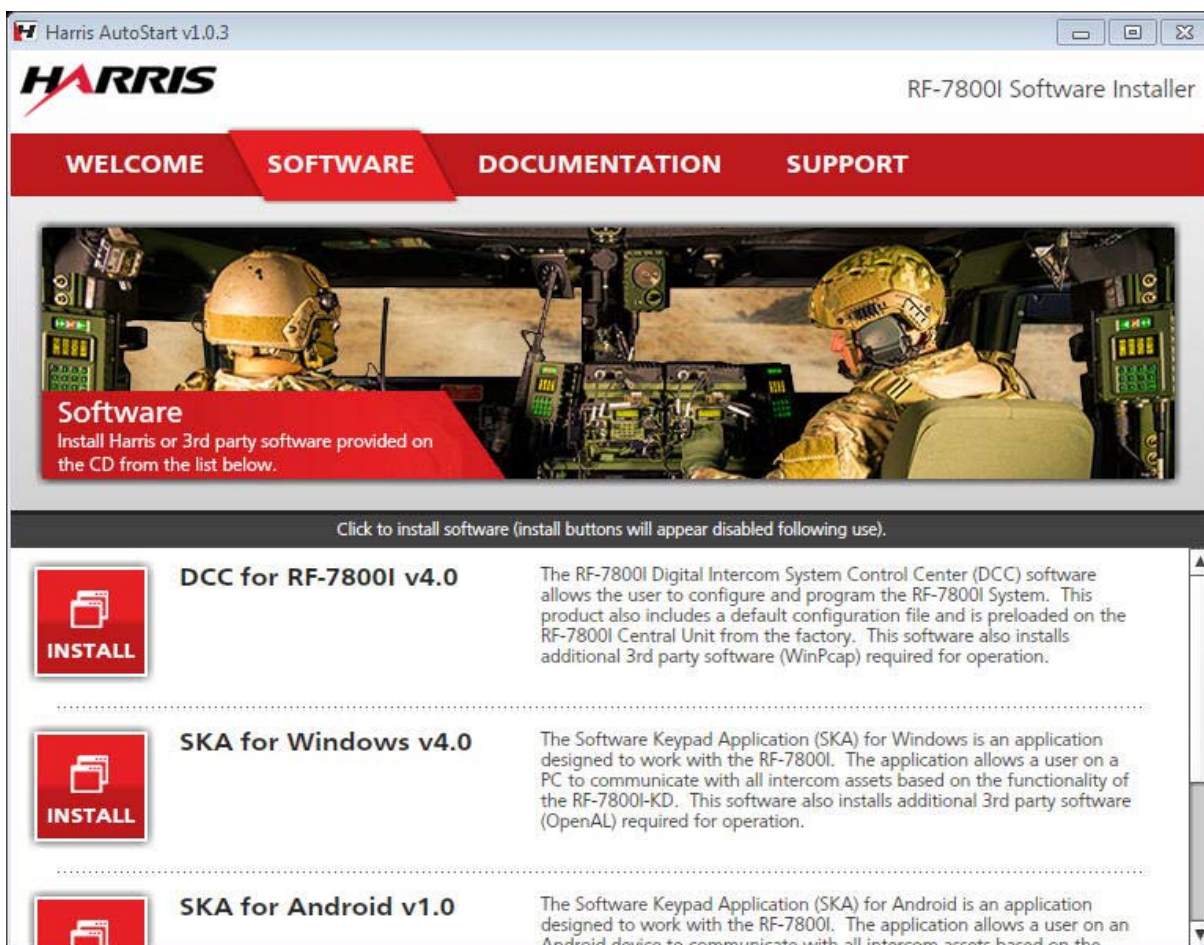


Figure 2-1. SKA Windows Software Installer

- c. OpenAL Installer and Figure 2-2 will appear. If OpenAL is already installed on your PC, the installation will skip to Figure 2-4.
- d. Read the terms and click on **OK**. Figure 2-3 will appear.



Figure 2-2. OpenAL Installer

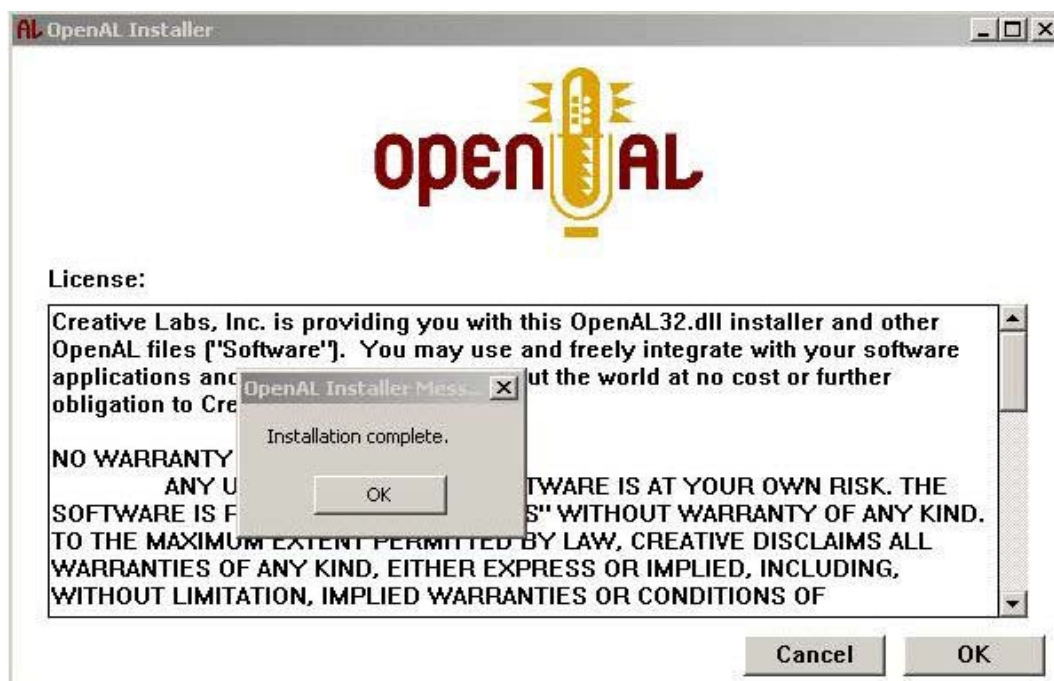


Figure 2-3. OpenAL Install Complete

- e. Click on **OK** in OpenAL installer message dialog and [Figure 2-4](#) will appear.



Figure 2-4. SKA Install Wizard

- f. Click on **Next >**. [Figure 2-5](#) will appear. Read the terms, select **I accept the terms in the license agreement** button and click on **Next >**. [Figure 2-6](#) will appear.

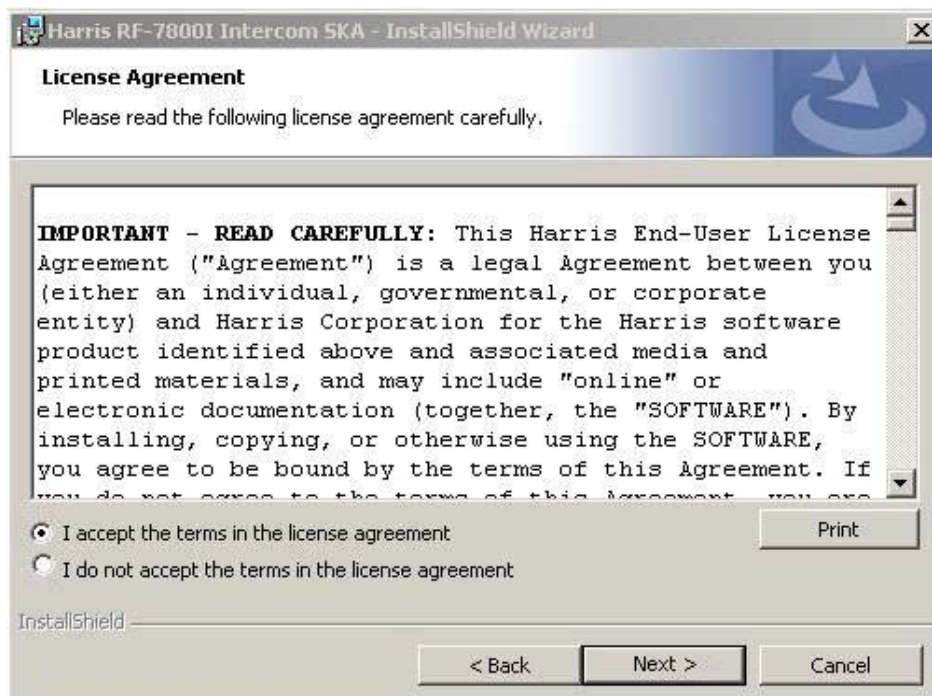


Figure 2-5. SKA License Agreement

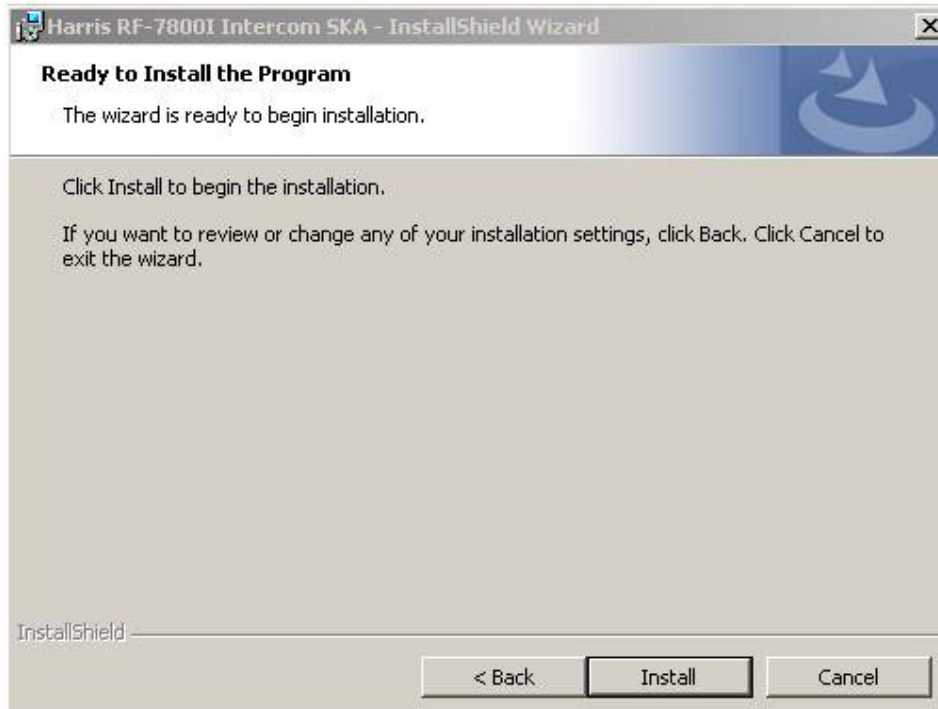


Figure 2-6. SKA Ready to Install

- g. Click on **Install**. [Figure 2-7](#) will appear.
- h. Click on **Finish**. SKA installation is complete.

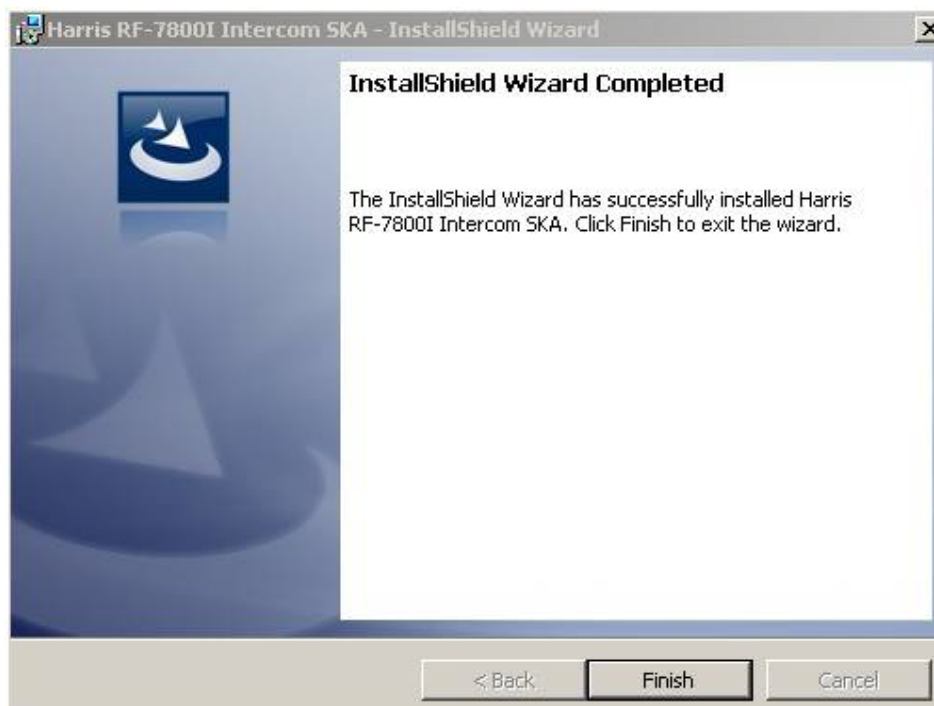


Figure 2-7. SKA Installation Complete

2.4 LAUNCHING THE APPLICATION

The RF-7800I SKA for Windows can be launched from the Desktop or from the start menu.

2.4.1 Desktop

From the desktop, double-click  to run the RF-7800I SKA.

2.4.2 Start Menu

When using Windows XP, use **Start > Programs > Harris RF Communications > RF-7800I Intercom > SKA** to run the RF-7800I SKA application.

When using Windows 7, use **Start > All Programs > Harris RF Communications > RF-7800I Intercom > SKA** to run the RF-7800I SKA application.

2.4.3 QUICK START SUMMARY

Once the Digital Intercom System Control Center (DCC) software and SKA are launched, you can proceed through the following SKA menu options.

Software Keypad Application - SKA

- Main Window toolbar options - Mute intercom, radio silence, push-to-talk (PTT), broadcast to Central Unit (CU).
- Settings Menu options - User, sound, microphone.
- Central Units - Add CU with name, password, Internet Protocol (IP) address, inactivity timeout.
- Monitoring - Monitored connections are a one-way connection between any two entities (except central units) in the system.
- Operators - Interact with the operators in roughly the same way as is possible for a RF-7800I-KD crew station operator.
- Conferences - Allow all participants (operators and SKA users) to simultaneously communicate with each other. Other than on demand conferences, the conferences use the names given in the configuration of the intercom.
- Radios - Allow interaction with radios to the same extent as when using an RF-7800I-KD crew station. The default action is connect/disconnect.
- Field Phone/PABX - Interact with field phones and Private Automatic Branch Exchange (PABX) phones in the same manner as with RF-7800I-KD crew stations. The primary action for telephones is connect/disconnect.
- Speaker - Connect or disconnect to/from a speaker. When the SKA user connects to a speaker, the user can be heard through the speaker.
- Alarms - Observe all alarms active on a central unit.
- Routes - Create data routes between any endpoint configured in each central unit. Endpoints are sources and destinations of data and may represent physical devices such as a Global Positioning System (GPS) or serial recording device or an Ethernet interface.
- GPS - Get information from a GPS device if it is properly installed and configured in the intercom.

2.5 WINDOWS SKA DESCRIPTION

The following subsections describe the functionality of the SKA for Windows.

2.5.1 Main Window

See [Figure 2-8](#).

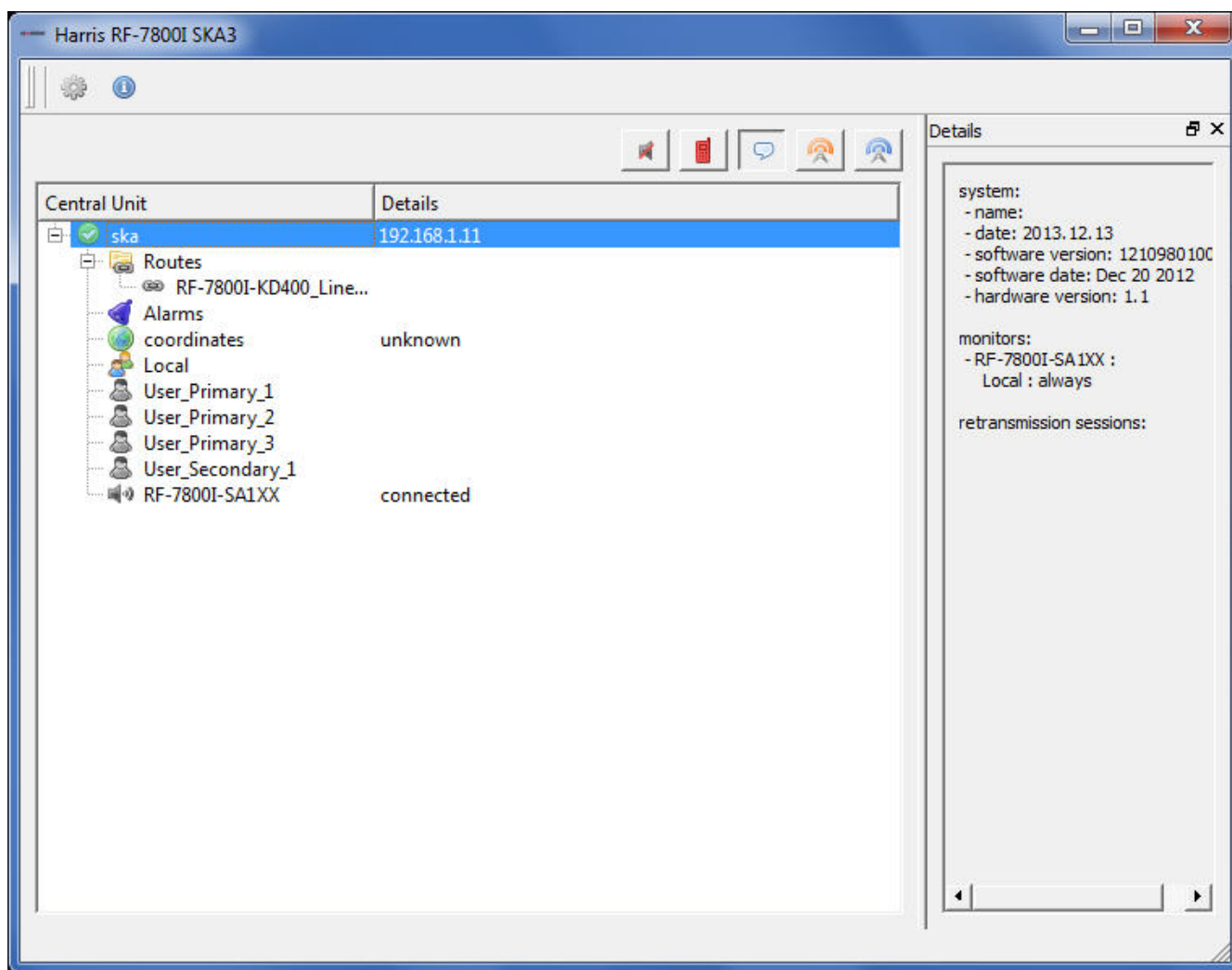










Figure 2-8. SKA - Main Screen

Options available in the toolbar include:


- Mute intercom () – When turned on, microphone input is muted and SKA user cannot be heard in the RF-7800I. Mute intercom is turned off by default.
- Radio silence () - Allows the SKA user to enable radio silence for the selected central unit, blocking all operators from transmitting through radios. If no central unit is selected, the button is not functional. If radio silence is active on any given central unit, the names of all radios associated with that central unit are colored red.

- PTT () - Push-To-Talk (PTT) is used when Voice Operated Transmit (VOX) is inactive and needs to be pressed and held to initiate and maintain transmission. When released, the transmission is terminated. PTT is only needed when connected to radios.
- Broadcast to one central unit () - This button causes the selected central unit to enter broadcast mode. When broadcast mode is active, the central unit overrides all current communications in the intercom and all operators only hear the voice of the person who initiated the broadcast. Broadcast mode is active as long as the button is held. When the button is released, broadcast mode is terminated and all operators of the affected central unit return to their previous connections.
- Broadcast to all central units () - This button causes all central units the SKA is logged into to enter broadcast mode. When broadcast mode is active, the central units override all current communications in the intercom and all operators only hear the voice of the person who initiated the broadcast. Broadcast mode is active as long as the button is held. When the button is released, broadcast mode is terminated and all operators of the central units return to their previous connections.

Options available in the menu include settings () and about ().

Clicking on settings () causes a settings pop-up window to appear which is organized into three tabs:

- User – See [Figure 2-9](#). This tab allows you to change your username (as recognized in the RF-7800I -CU) as well as the automatic call timeout value:
 - Username – This editable field allows you to change your username. The username is virtually unlimited in length and no characters are restricted. It is not advisable to use special characters, especially the vertical bar (|), the colon, and the semicolon, as these characters are unacceptable to the RF-7800I software. If the username matches a name given to an operator in the RF-7800I configuration, the intercom operators may be able to initiate calls to the SKA user. Otherwise, they are only able to accept incoming calls from the SKA user. Using the same SKA username for more than one instance of the application in the same subnet, can cause conflicts and may cause all of the SKA users to be unable to communicate with the RF-7800I.
 - Call timeout – This field allows the user to specify the desired automatic call timeout such as the time after which an unanswered call is terminated. Range is 0 - 60 seconds, with 15 as the default. If set to 0, the timeout is disabled and the call attempt is maintained indefinitely, unless the call is accepted or rejected.
- Sound – See [Figure 2-10](#). This tab displays all of the playback (speakers, headphones) and sound capture (microphone) devices recognized by the program.
- Microphone – See [Figure 2-11](#). This tab displays VOX Threshold, VOX Timeout, and VOX status (active or inactive) that allows the SKA user to modify the settings of their microphone. Once the operator's microphone is made active by receiving an audio signal, it will stay active for the duration specified in milliseconds, unless the operator keeps their voice above a certain loudness threshold.) If VOX timeout is left at the default of 0, then the microphone will always be active and any audio including noise will be passed to the intercom.

Clicking on about () causes a small information pop-up window to appear, giving the user the abbreviated name of the application (SKA), the version of the application, and the date this particular version was compiled on.

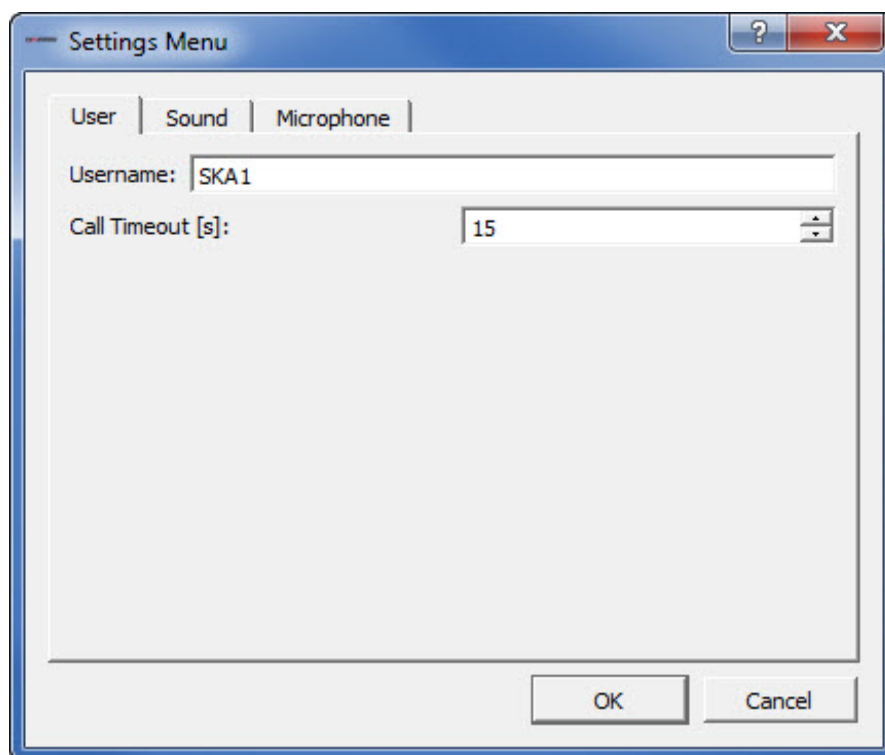


Figure 2-9. SKA Settings Menu - User

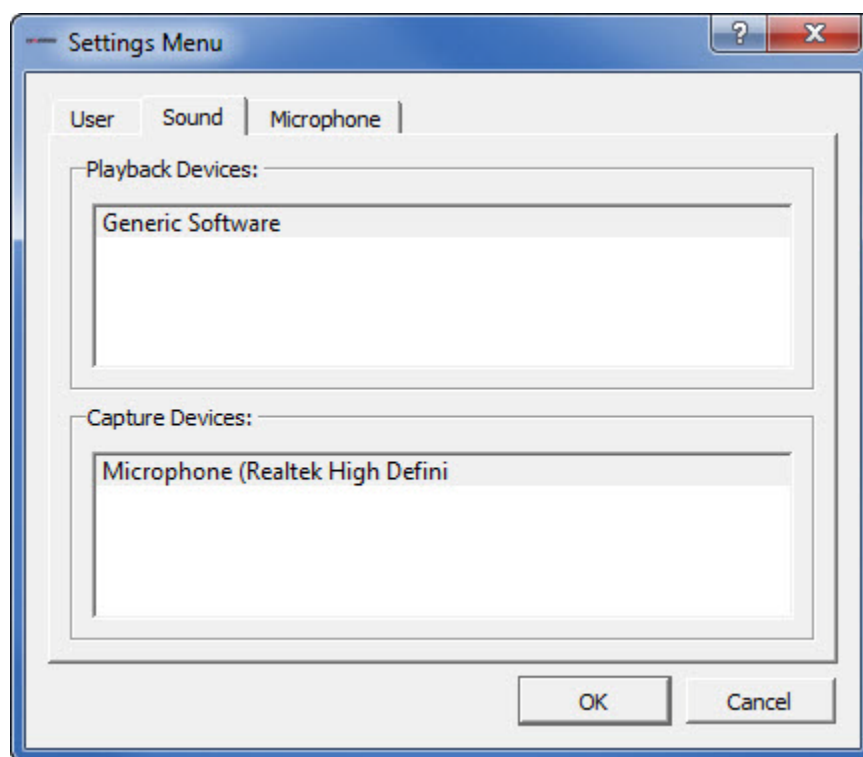


Figure 2-10. SKA Settings Menu - Sound

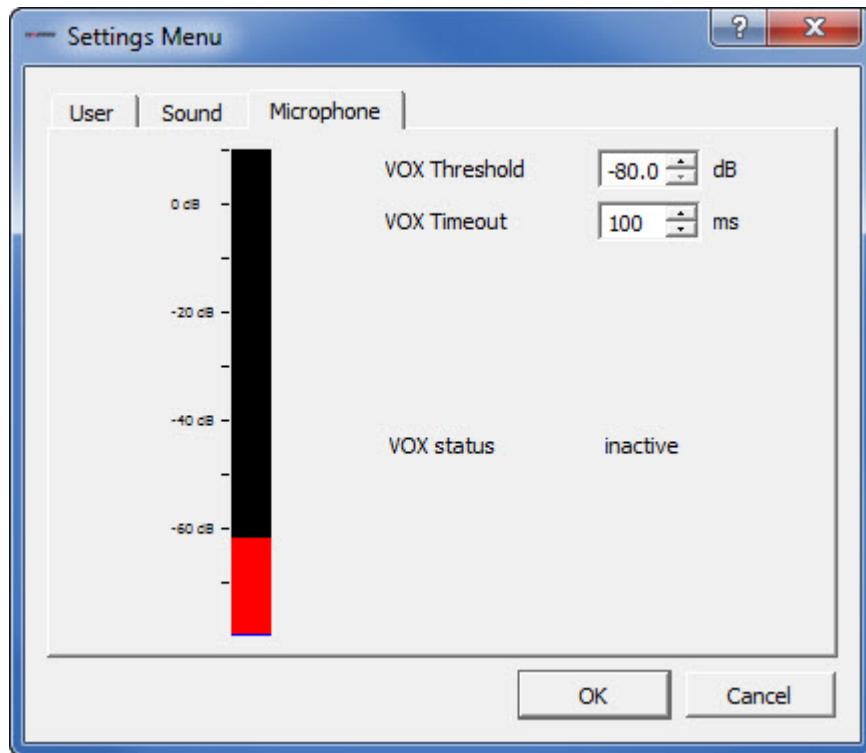


Figure 2-11. SKA Settings Menu - Microphone

2.5.2 Central Units

When the SKA is first started, no intercom elements are visible in the item list. To populate the list, you need to add a central unit to the list. This is done by right-clicking anywhere on the white background and selecting **Add Central Unit**. This opens a new window, allowing you to specify the following (see [Figure 2-12](#)):

- Name – This is the name of the central unit as it will be displayed for the SKA user.
- Password – This is the SKA access password, as specified in the central unit configuration. If no password was given in the intercom configuration, leave this blank.
- IP Address – This is the IP address of the central unit. It needs to match the IP address given to a central unit in the intercom configuration. The IP address needs to be unique. If a central unit with the given IP address was already added to the list in the SKA, the user is unable to add a duplicate.
- Inactivity timeout – This is the time period between the moment that communication with a central unit is lost and the moment that the central unit changes status to unavailable on the central unit list.

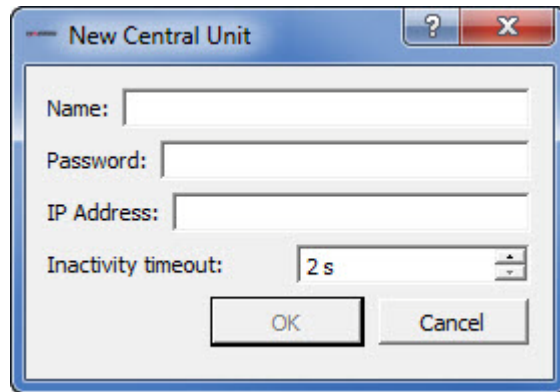


Figure 2-12. SKA - Add New Central Unit

Once a central unit is added to the list, you can click on the central unit name to highlight. With the selected central unit highlighted, the following information is displayed in the details section (right pane):

- System:
 - Name - This is the name of the Central Unit Bridging (CUB) network to which the central unit belongs.
 - Date - This is the date of the last modification of the system configuration.
 - Software version - This is the version of the software installed on the central unit.
 - Software date - This is the date of the central unit software compilation.
 - Hardware version - This is the Field Programmable Gate Array (FPGA) matrix version of the Central Unit.
- Monitors - This is a list of monitoring sessions active on the selected central unit.
- Retransmission sessions - This is a list of currently active retransmission sessions on the selected central unit.

The same information set can be displayed in a tooltip that becomes visible when hovering the mouse cursor over the operator's name.

Double clicking on the central unit name activates the default action, which is connect or disconnect. An SKA user who disconnects from the central unit is unable to interact with the central unit in any way until reconnect.

When right-clicking on a central unit, you can:

- Create conference - This creates a conference on demand on the selected central unit. Once the conference is created, you can invite the RF-7800I operators on that central unit to the conference.
- Connect/disconnect <central unit name> - This works exactly the same as the default, double-click action.
- Add Central Unit - This works exactly the same as the procedure described at the beginning of this section.
- Remove <Central Unit name> - This removes the central unit from the list in the SKA.
- Audio Gain <Central Unit name> - This allows adjustment of audio gain settings.

To the left of a central unit's name is a +. Clicking on the + expands the list of items that are connected to that central unit. These items and their relevant functions are described in the sections that follow.

2.6 MONITORING

Monitoring connections are a one-way connection between any two entities (except central units) in the system. When a monitoring connection is established, one entity is allowed to act as a source of an audio signal, and the other entity is allowed to act as the destination of that audio signal. Audio will not be transferred to the source.

Depending on the type of the source, monitoring behaves differently:

- Operator - The monitored audio is the voice of the operator, not what is heard in their headset.
- Conference - The monitored audio is all audio incoming to the conference.
- Radio - The monitored audio is the audio received by the radio, unless radio mode is selected. In radio mode, both the received and transmitted audio are monitored.
- Telephone - The monitored audio is the voice of the external telephone user. If a local echo effect occurs, then the voice from the other end of the phone line can also be heard. The other end of the line is significantly quieter than the voice of the telephone user.

The Monitor mode defines when the audio signal is monitored and heard by the operator. See [Figure 2-13](#). The following modes are available:

- Mode, When free - Mode is available for operators and radios.
 - For operators, when free mode means the operator is monitored when they are not connected to another operator, conference or telephone.
 - For radios, when free mode means the audio received from the radio is monitored when an operator is connected to the radio in shared mode, or no operator is connected to the radio.
- Mode, When busy - Mode is available for operators and radios.
 - For operators, when busy mode means the operator is monitored when connected to another operator, conference or telephone.
 - For radios, when busy mode means the audio received from the radio is monitored when an operator is connected to radio in exclusive mode.
- Mode, Always - Mode is available for operators, conferences, radios and telephones.
 - For Operators, always mode means the operator is monitored regardless of their current connections.
 - For Conferences, always mode means the conference is monitored at all times. The conference is heard by the operator whenever any audio signal is incoming to the conference.
 - For Radios, always mode means the received audio from the radio is monitored at all times.
 - For Telephone, always mode means the external telephone is monitored at all times.

2.6.1 Operators

Operators are displayed with the names they were given in the intercom configuration. Using the SKA, it is possible to interact with the operators in roughly the same way as is possible for a RF-7800I-KD crew station operator.

The following actions are available by right-clicking on the operator's name, depending on the current status:

- Initiate call – This is available when the SKA user and the operator are not connected to each other. When a call is initiated, the operator receives a prompt to answer the call.

- End call - This is available when the SKA user and the operator are connected to each other. This will cause the connection to be terminated.
- Accept call - This is available when a call is incoming from an operator. When a call is incoming, the operator's name is flashing, and double clicking on that name accepts the call.
- Cancel call - This is available when the SKA user started a call to an operator but wants to terminate the call before it is accepted.

An Operator can be in one of the two states:

- Free - There are no connections to that operator - the operator's icon is colored.
- Busy - The operator is connected to another asset - the operator's icon is grayed out. SKA user is grayed out if connected to a conference.

Additionally, the operator can be in one of the following relationships with the SKA user. The operators current status with the SKA is indicated to the right of the operator's name:

- Connected – The SKA user is currently connected to that operator.
- Trying – The SKA user has initiated a call to the operator but the call has not been answered yet.
- Calling – The operator has initiated a call to the operator.
- Rejected – The operator has rejected the SKA user's call.

The following functions are available through the context menu:

- Monitor <operator name> - When highlighted, the following options become available, as described in [Paragraph 2.6](#):
 - Always
 - When busy
 - When freeSelecting any of these options causes the SKA user to become a monitoring destination and the selected operator a monitoring source.
- Add monitor source – When highlighted, all locally (within the same central unit) available monitoring sources are listed. See [Figure 2-13](#). When highlighted, depending on the source type, the following options become available in a new list:
 - Always (for conferences, operators, radios and telephones)
 - When busy (for operators and radios)
 - When free (for operators and radios)
 - Radio (for radios only)Selecting any of these causes the given operator to become the monitoring destination for the selected monitoring source.

- Remove monitor source – This allows the SKA user to remove a monitoring connection from the given operator by clicking the appropriate monitoring source on the list. The source becomes visible when the option is highlighted.
- Monitor Gain Settings – This allows the SKA user to monitor the radio input/output gain settings.
- Connect Radio – This allows the SKA user to remotely connect the selected operator to one of the locally available radio assets. The connection mode is shared, with priority 0, and crosstalk is disabled by default.
- Disconnect Radio – This allows the SKA user to remotely disconnect the selected operator from any of the radio assets the operator is connected to.
- Create Conference - This allows the SKA user to create a conference.
- Invite to <conference on demand> - This allows the SKA user to send an invitation to the on demand conference created by the SKA user.
- Cancel invitation to <conference on demand> - This allows the SKA user to cancel an invitation to the on demand conference if it was not yet accepted.
- Kick out from <conference on demand> - This allows the SKA user to remove the participating operator from the on demand conference.

When an Operator is highlighted, the following information is displayed in the details section:

- Connected to – All current bidirectional connections maintained by the operator.
- Monitoring – All monitoring sources the operator is listening to.
- Monitored by – All monitoring destinations the operator's voice is being sent to.

The same information can be displayed in a tooltip that is visible when hovering the mouse cursor over the operator's name.

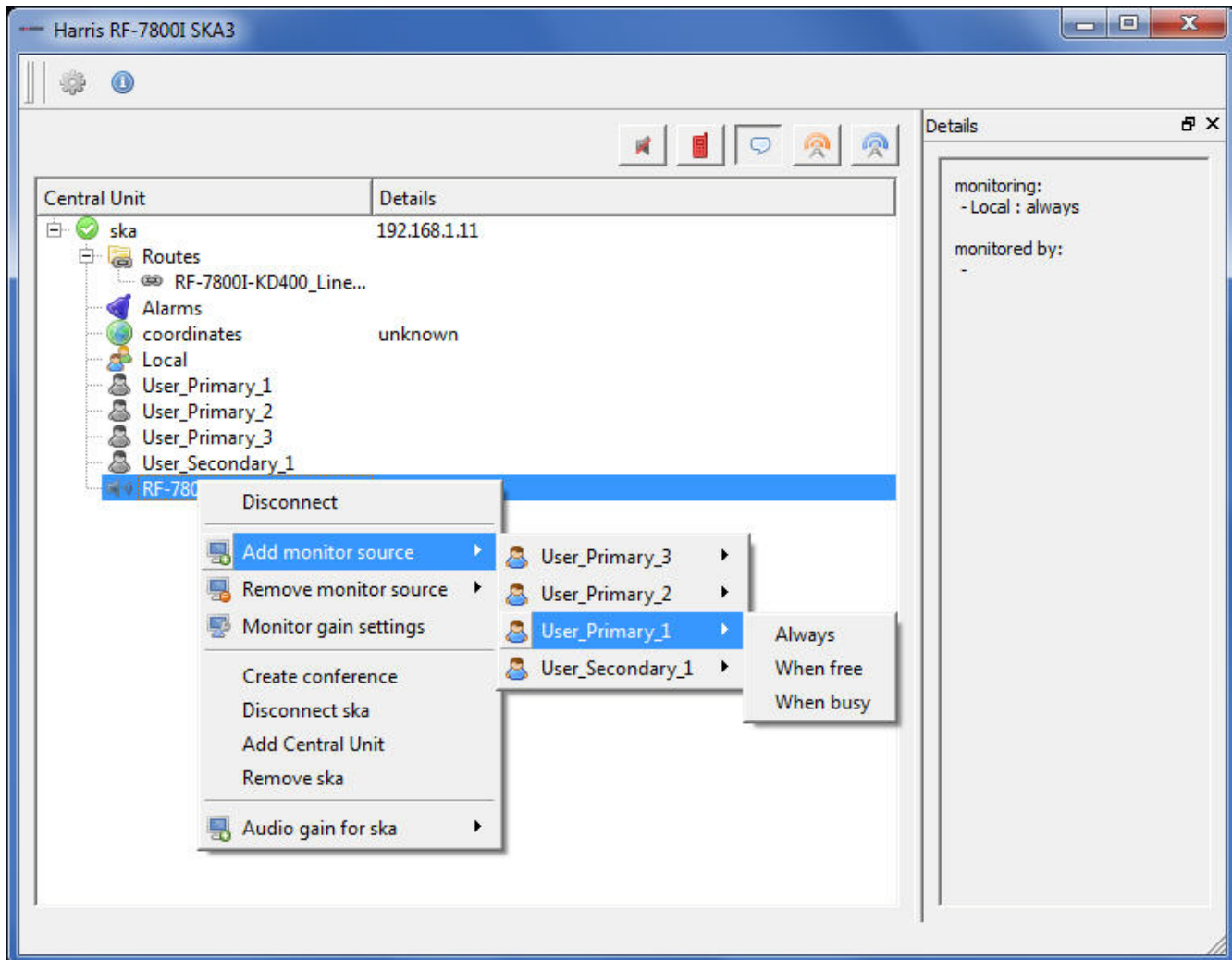


Figure 2-13. SKA - Add Monitor Source

2.6.2 Conferences

Conferences allow all participants (operators and SKA users) to simultaneously communicate with each other. See [Figure 2-14](#). Other than on demand conferences, the conferences use the names given in the configuration of the intercom. (See

Double-clicking on the conference name allows the SKA user to join or leave the conference.

The following functions are available through the context menu:

- Join/Leave - This works exactly the same as the double-clicking.
- Monitor <conference name> - When highlighted, the menu expands and allows the user to select the single available monitoring mode, always. Selecting always causes the SKA user to become a monitoring destination and the selected conference becomes a monitoring source.
- Call conference - When the SKA user is part of the conference, the call conference sends a call signal to all operators that are able to join this conference.

Additional options are available for on demand conferences created by the SKA user:

- Remove - Removes the on demand conference and removes all participants from the system.
- Invite - Allows the SKA user to send an invitation to any operator. An operator that accepts can join the conference.
- Kick out - Allows the SKA user to remove any participant from the on demand conference.
- Create conference - Allows the SKA user to create a conference.
- Disconnect SKA - Allows the SKA user to disconnect from a conference.
- Add Central Unit - Allows the SKA user to add a new Central Unit.
- Audio gain for ska - Allows the SKA user to adjust audio gain settings in increments of 3 dB (9 dB, 6 dB, 3 dB, 0, -3 dB, -6 dB, -9 dB).

If the conference's icon is grayed out, it means that there are no participants of that conference. Otherwise, the icon is shown in full color.

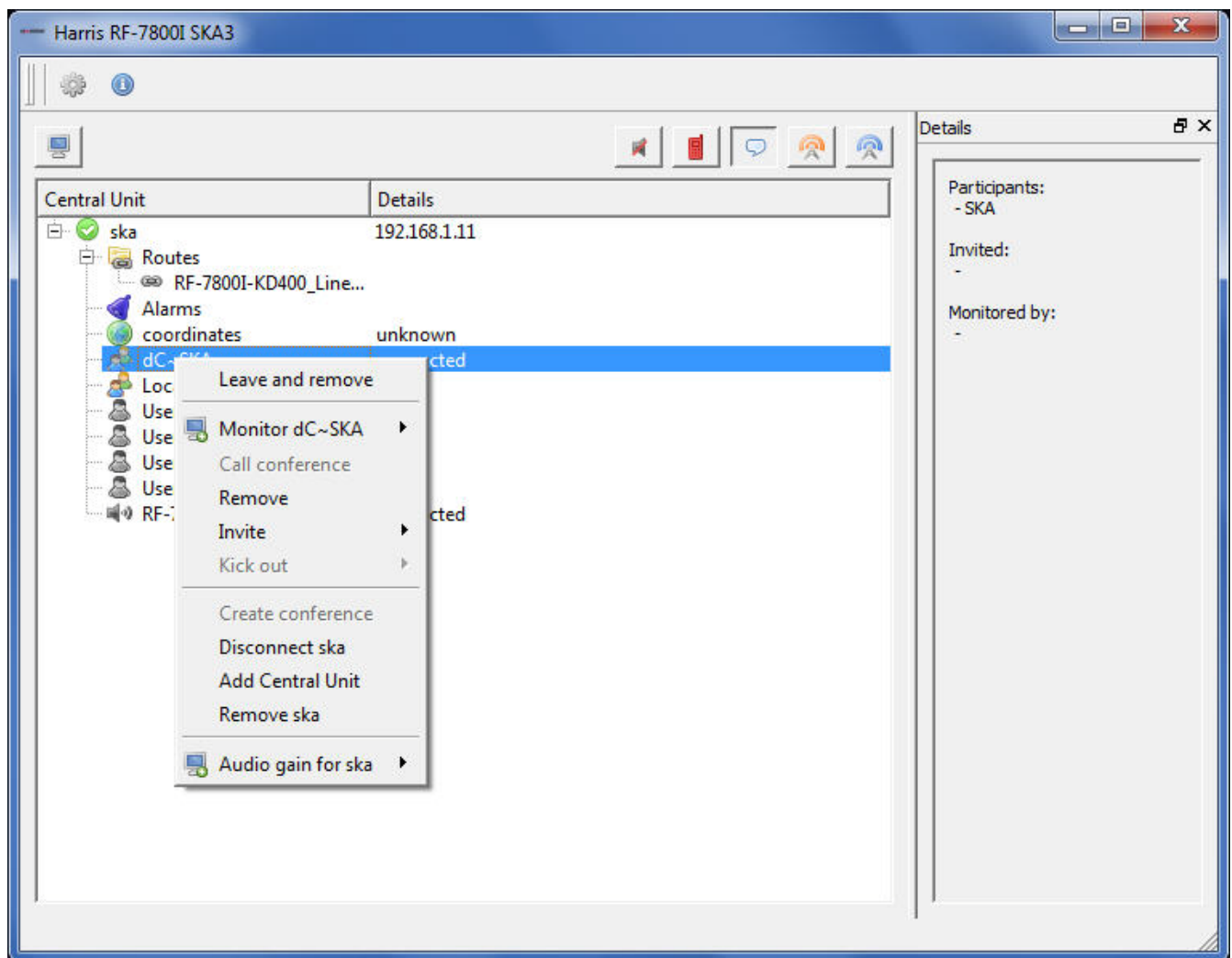


Figure 2-14. SKA - Conference

2.6.3 Radios

The SKA allows interaction with radios to the same extent as when using an RF-7800I-KD crew station. The default action is connect/disconnect. The way default action works depends on the settings given in the connection settings option of the context menu.

When the SKA user connects, it is not necessary to have VOX active to initiate transmission. The PTT button on the toolbar can be used.

The following actions are available through the context menu:

- Connect/disconnect - This works exactly the same as the default action.
- Monitor <radio name> - When highlighted, the menu expands and allows the user to select the single available monitoring mode: always. Selecting it will cause the SKA user to become a monitoring destination, and the selected radio - a monitoring source.
- Add monitor source - When highlighted, all locally (within the same central unit) available monitoring sources are listed. When any are highlighted, depending on the source type, the following options become available in a new list:
 - Always (for conferences, operators, radios and telephones)
 - When busy (for operators and radios)
 - When free (for operators and radios)
 - Radio (for radios only)Selecting any of these causes the given radio to become the monitoring destination for the selected monitoring source. The Radio device needs to be keyed manually for the monitored signal to be sent through the system.
- Remove monitor source - Allows the SKA user to remove a monitoring connection from the given radio by clicking the appropriate monitoring source on the list that becomes visible when the option is highlighted.
- Start retransmission - Allows the SKA user to select another radio to form a pair of radios to work in a retransmission session. This works like an ad-hoc radio relay.
- End retransmission - Allows the SKA user to select another radio that is forming a retransmission pair with the given radio and terminate the retransmission session for that radio pair.
- Remote Control - Allows the SKA user to observe the radio's virtual front panel.
- Connection Settings - Allows the SKA user to select available radio connection settings of Use Default, Exclusive, Priority (scale -100 to 101), or Crosstalk.

2.6.4 Field Phone/PABX

The SKA user is able to interact with field phones and Private Automatic Branch Exchange (PABX) phones in the same manner as with RF-7800I-KD crew stations. The primary action for telephones is connect/disconnect.

The following actions are available through the context menu:

- Monitor <Field phone/PABX name> - When highlighted, the menu expands and allows the user to select the single available monitoring mode: always. Selecting it will cause the SKA user to become a monitoring destination, and the selected phone - a monitoring source.

- Add monitor source – When highlighted, all locally (within the same central unit) available monitoring sources are listed. When any of the monitoring sources are highlighted, the following options become available in a new list, depending on the source type:
 - Always (for conferences, operators, radios and telephones)
 - When busy (for operators and radios)
 - When free (for operators and radios)
 - Radio (for radios only)Selecting any of these causes the given telephone to become the monitoring destination for the selected monitoring source.
- Remove monitor source - Allows the SKA user to remove a monitoring connection from the given phone by clicking the appropriate monitoring source on the list that becomes visible when the option is highlighted.
- Call – This is available only for field phones. A call allows an SKA user to send a single call signal to a field phone. Call does not establish a connection.

2.6.5 Speaker

The SKA user is able to connect or disconnect to/from a speaker. This is the primary function available through double-clicking the speaker name. When the SKA user connects to a speaker, the user can be heard through the speaker.

The following actions are available through the context menu:

- Add monitor source – when highlighted, all locally (within the same central unit) available monitoring sources are listed (See [Figure 2-13](#)). When any of the monitored sources are highlighted, the following options become available in a new list, depending on the source type:
 - Always (for conferences, operators, radios and telephones)
 - When busy (for operators and radios)
 - When free (for operators and radios)
 - Radio (for radios only)
- Remove monitor source – Allows the SKA user to remove a monitoring connection from the given radio. This is done by clicking the appropriate monitoring source on the list that becomes visible when removed source is highlighted.

2.7 ALARMS

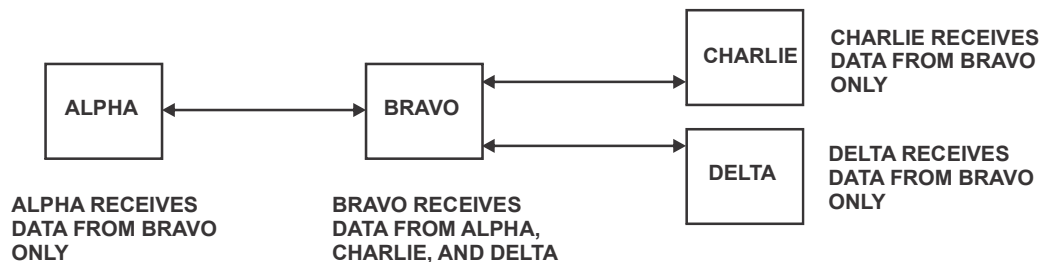
All alarms active on a central unit can be seen in the alarms branch. If an alarm is active, the central unit's icon flashes red and the branch can be expanded to see the active alarms. The SKA user can dismiss the alarms by double-clicking on the selected alarm.

2.8 ROUTES

The SKA user can create data routes between any endpoint configured in each central unit. Endpoints are sources and destinations of data and may represent physical devices such as a GPS or serial recording device or Ethernet interfaces. Once two endpoints have a route between them, a bidirectional connection is established. All Endpoints can be connected to all other Endpoints regardless of their type. Every endpoint may be connected to any number of other endpoints.

In the example shown in [Figure 2-15](#), endpoint Alpha is connected to endpoint Bravo, and endpoint Bravo is also connected to endpoints Charlie and Delta. All data on endpoint Alpha is sent to endpoint Bravo but not sent further on to endpoints Charlie and Delta. Data on endpoint Bravo is sent to endpoints Alpha, Charlie, and Delta.

For ease and clarity of configuration, endpoints are labeled as Source and Destination, but whether an endpoint is a source or destination is irrelevant for any pair of two endpoints because data is transferred both ways (bidirectional).



CL-0407-4100-001

Figure 2-15. Endpoint Example

2.9 GPS

The SKA user is able to get information from a Global Positioning System (GPS) device if it is properly installed and configured in the intercom. When the user selects the coordinates item, all the available GPS information appear in the details section of the workspace. The following information is given:

- Status: Status of the GPS device. If not configured or not connected, the status is unknown.
- Time
- Latitude
- Longitude
- Height
- Satellites: The number of satellites in range of which the GPS device is.

CHAPTER 3

SKA FOR ANDROID OPERATING SYSTEM

3.1 INTRODUCTION

The SKA for Android OS provides the same options and features as the SKA for Windows OS, however, it uses a different interface.

The Android SKA allows the user to interface with the Digital Intercom System via a network interface. If the Central Units used in the system are configured to work with the SKA, they will allow the SKA user to access all of their resources, including Operators, Radios, Conferences, Telephones and Data Routes and interact with them using all available options and functions.

3.2 ITEMS INCLUDED

SKA for Android OS is available on Compact Disk (CD). The SKA.apk file can be installed on any android tablet with a 7-inch screen or larger.

- Insert CD, autorun feature will launch installer program. [Figure 3-1](#) will appear.
- Select **Software** and click the install button **SKA for Android v1.0**. A window will appear to allow the user to put the SKA.apk file and software manual on a their computer in a location they select.

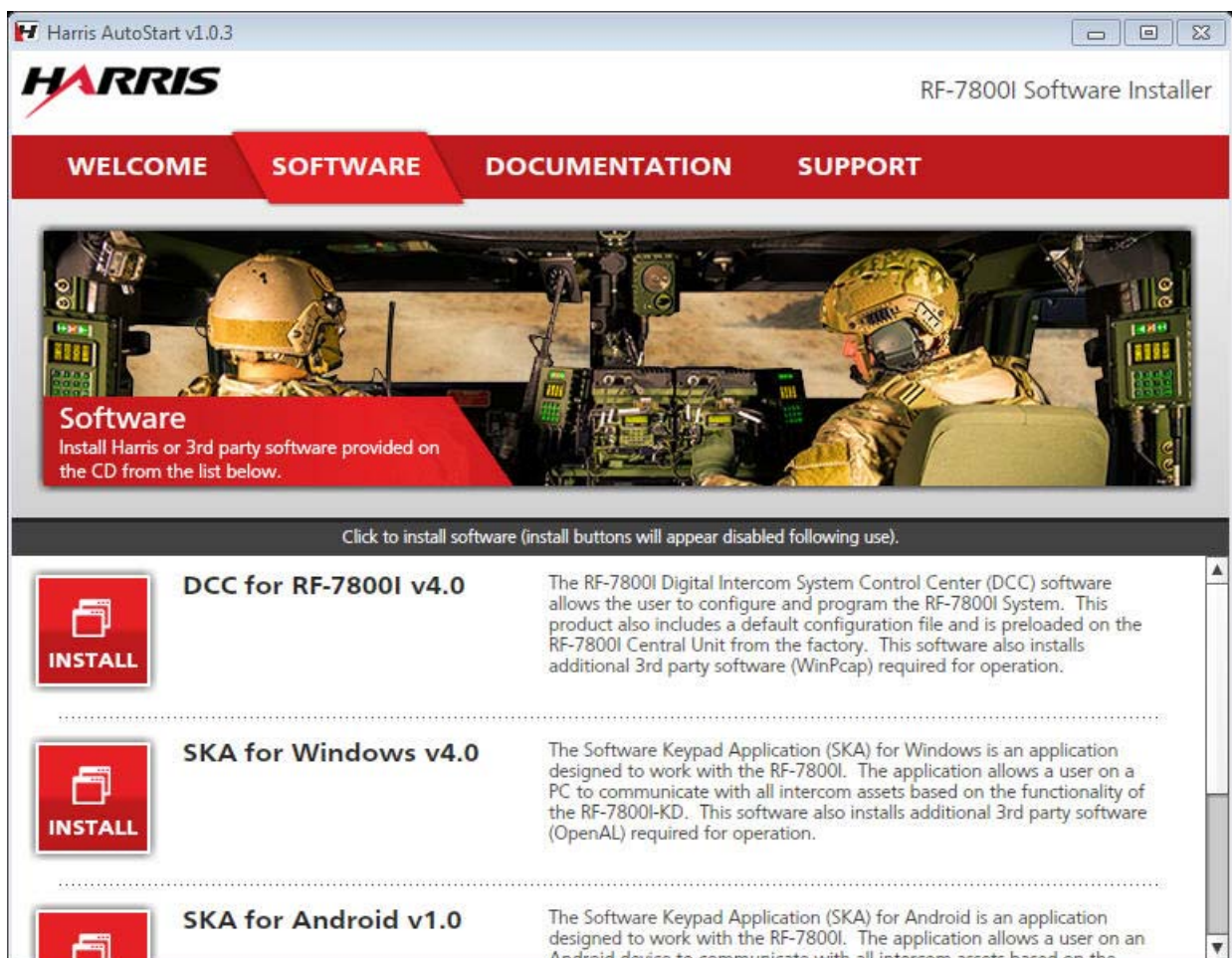


Figure 3-1. SKA Android Software Installer



3.3 ANDROID SKA INSTALLATION

To install:

- a. Place XXXX.apk on external drive (where XXXX is the filename):
 - Secure Digital (SD) card or Universal Serial Bus (USB) thumb drive (Insert into Harris Ruggedized Tablet.)

NOTE

Set USB maintenance mode to Off for mounting a radio or thumb drive or for using the USB/Ethernet interfaces on the Harris Ruggedized Tablet.

- b. Go to applications. 
- c. Select Harris Apk Mgr. 
- d. Navigate to directory where file is located:
 - External SD Card - /mnt/ext_sdcard
 - External Mass Storage - /mnt/usb_mass_storage
 - Android Download Directory - /mnt/sdcard/Download (This is the default download directory using the default Android browser.)
- e. Select XXXX.apk. (Check mark appears on the icon.)
- f. Select **Install** from choices.
- g. You may get a message (shown in [Figure 3-2](#)) that your tablet is set to block installation of applications not obtained from the Android market. If so, select **Settings**.

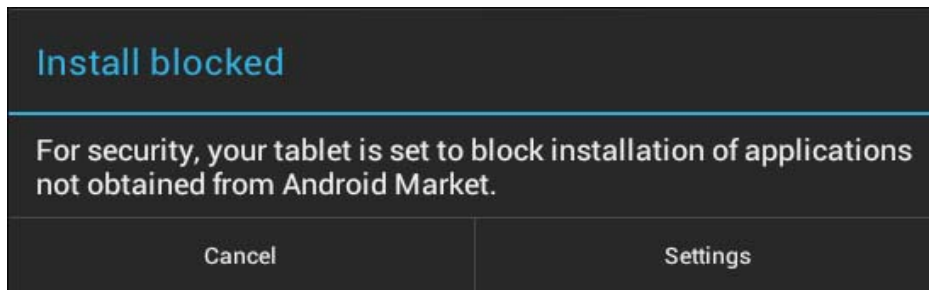



Figure 3-2. Android Tablet - Install Blocked Message

- h. You will be taken to **Settings > Security**. Check **Unknown sources**.
- i. A dialog appears for you to confirm that you really want to enable installation from unknown sources. Select **OK**.
- j. Exit settings.
- k. Back at the installation, select **Install** to accept application's access notifications.
- l. Exit Harris application manager.

3.4 LAUNCHING THE APPLICATION

The RF-7800I SKA for Android can be launched from the menu. 

3.5 ANDROID SKA DESCRIPTION

The Android SKA allows the user to interface with the Digital Intercom System via a network interface. If the Central Units used in the system are configured to work with the SKA, they will allow the SKA user to access all of their resources, including Operators, Radios, Conferences, Telephones and Data Routes and interact with them using all available screen options and functions. See [Figure 3-3](#) for Android OS SKA workspace.

- Top bar - allows Central Unit management and access to various settings as well as exiting the application.
- Left side bar - allows the user to filter which Central Unit resources are visible.
- Middle workspace - displays all available and unfiltered resources for a given Central Unit.
- Right side bar - displays and allows use of context and resource-dependent features.
- Bottom bar (collapsible) - allows use of general functions.

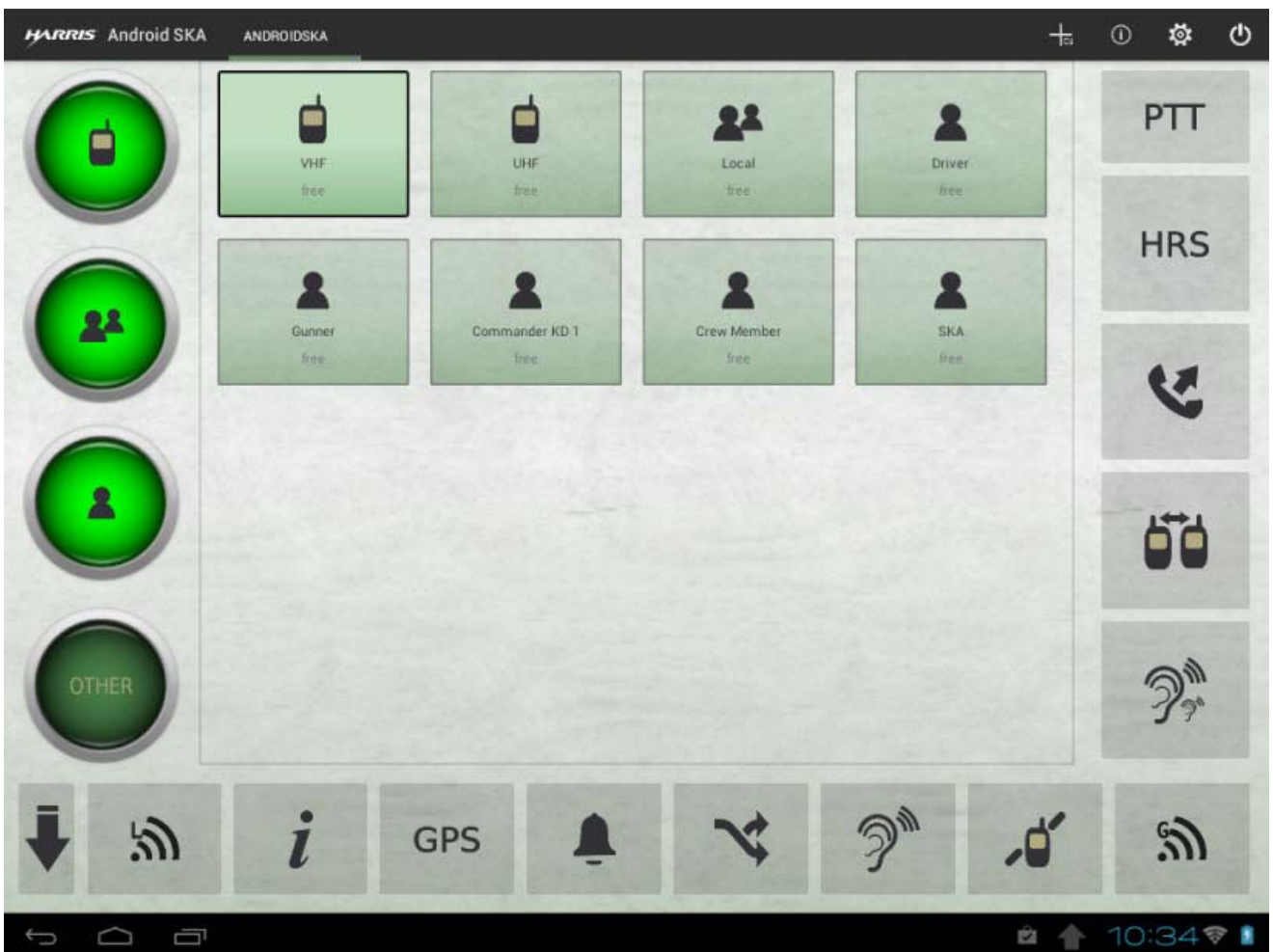


Figure 3-3. SKA Workspace - Android OS

3.6 CENTRAL UNITS AND SETTINGS BAR

The following subsections describe the central units and settings bar.

3.6.1 Central Units

The Android SKA connects to those Central Units it has been configured to search for. All configured Central Units are visible at the top bar, and can be selected by selecting their respective names.

If a Central Unit name has a line through it, then the Central Unit cannot be reached either due to connectivity issues or to wrong password settings. Otherwise, the Central Unit is available and can be selected.

3.6.1.1 Adding Central Units

To add a Central Unit, the user needs to select the +CU button () on the top settings bar. See [Figure 3-4](#).

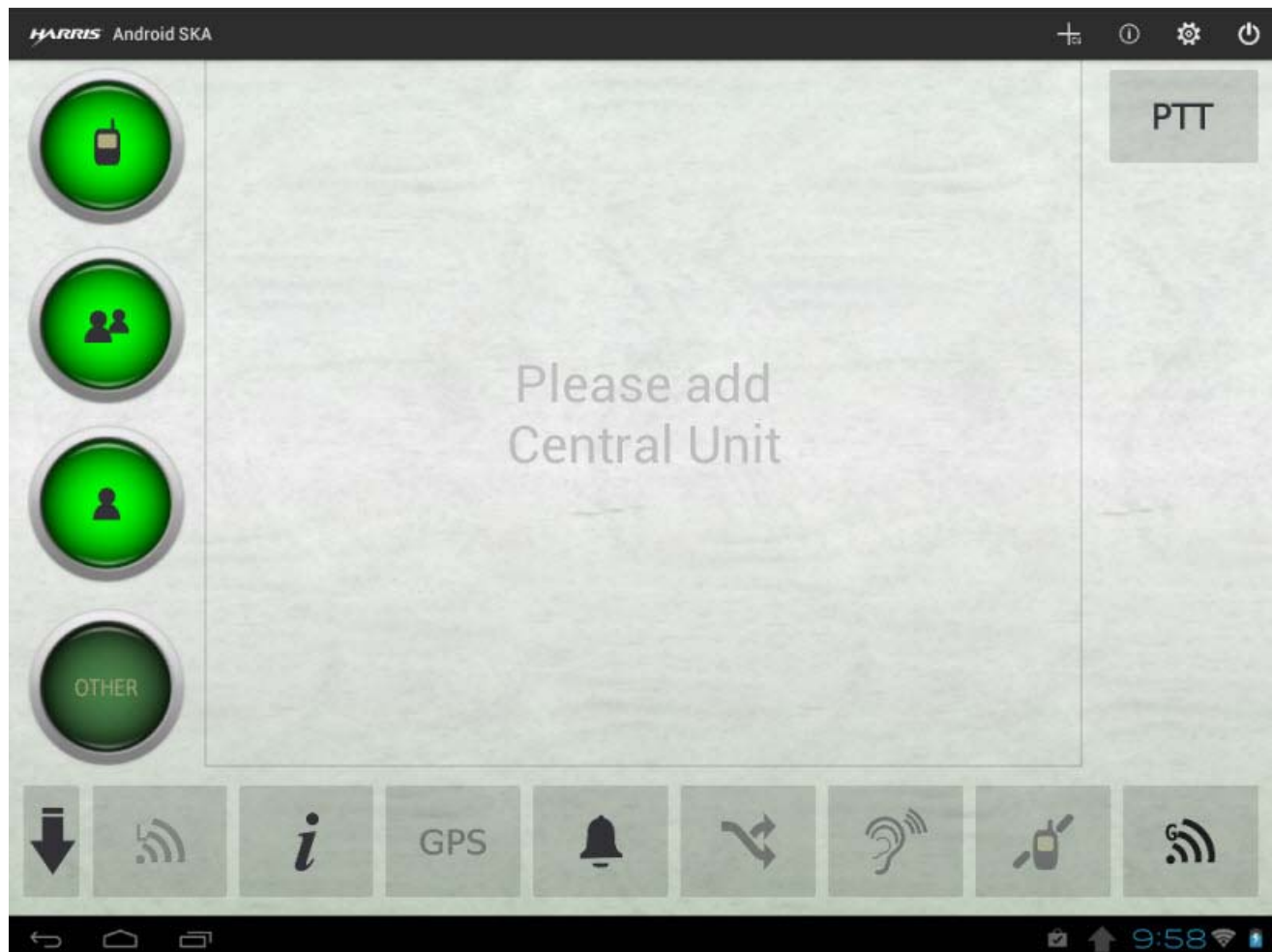


Figure 3-4. Add Central Unit - Android OS

A new window appears that allows the user to configure the following parameters as shown in [Figure 3-5](#).

- Name - this is the name of the central Unit as it will appear in the SKA; this name can be different from the name or role that was configured in the DCC for the Central Unit. A name should be added that is convenient and easily recognizable for the SKA user. Note the maximum length of the name is 63 characters.
- Password - this is the password that is required to access the Central Unit. It must match the password in the Central Unit configuration (consult the Digital Intercom System Control Center Operation Manual for more information).
- IP address - the IP address of the Central Unit. It needs to match the IP address specified in the Central Unit configuration.
- Inactivity timeout - the amount of time after last communication with the Central Unit before the Android SKA recognizes the Central Unit to be inaccessible. The default value is 2 seconds with a scale of 1 - 10 seconds with a step of 1 second (only whole seconds can be used as a value).

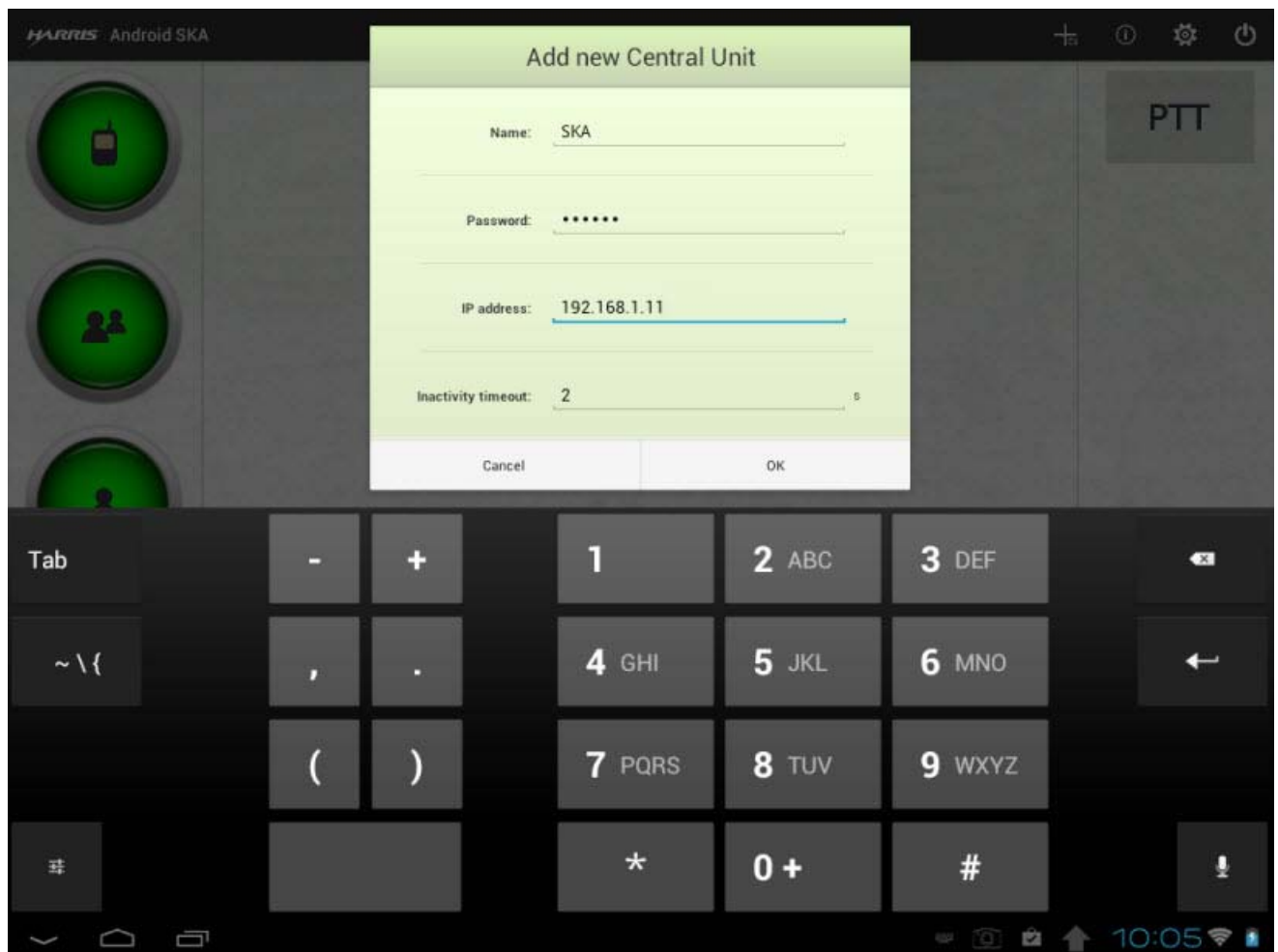



Figure 3-5. Add New Central Unit Parameters - Android OS


To confirm the settings and add the Central Unit, select the **OK** button.

To discard the settings and cancel, select the **Cancel** button.

3.6.2 Info Screen

The button with the “i” character in a circle () allows the user to open an information screen that displays the version of the application.

3.6.3 Settings Menu

The button with the gear () allows the user to open the settings screen that provides the following preferences:

- Animation (Appearance)
 - Scroll long names - toggle this on or off to enable or disable all scrolling effects - disabling this will cause all names that do not fit on their allotted space to be cut off. This will also cause the Radio remote control interface and the bottom interface bar to appear and disappear instantly. It is advisable to disable this feature when using devices with low computing power as it will improve performance somewhat.
 - Night Mode - toggle this on or off to enable or disable Night mode. [Figure 3-6](#) shows optional Night mode view of the SKA workspace.

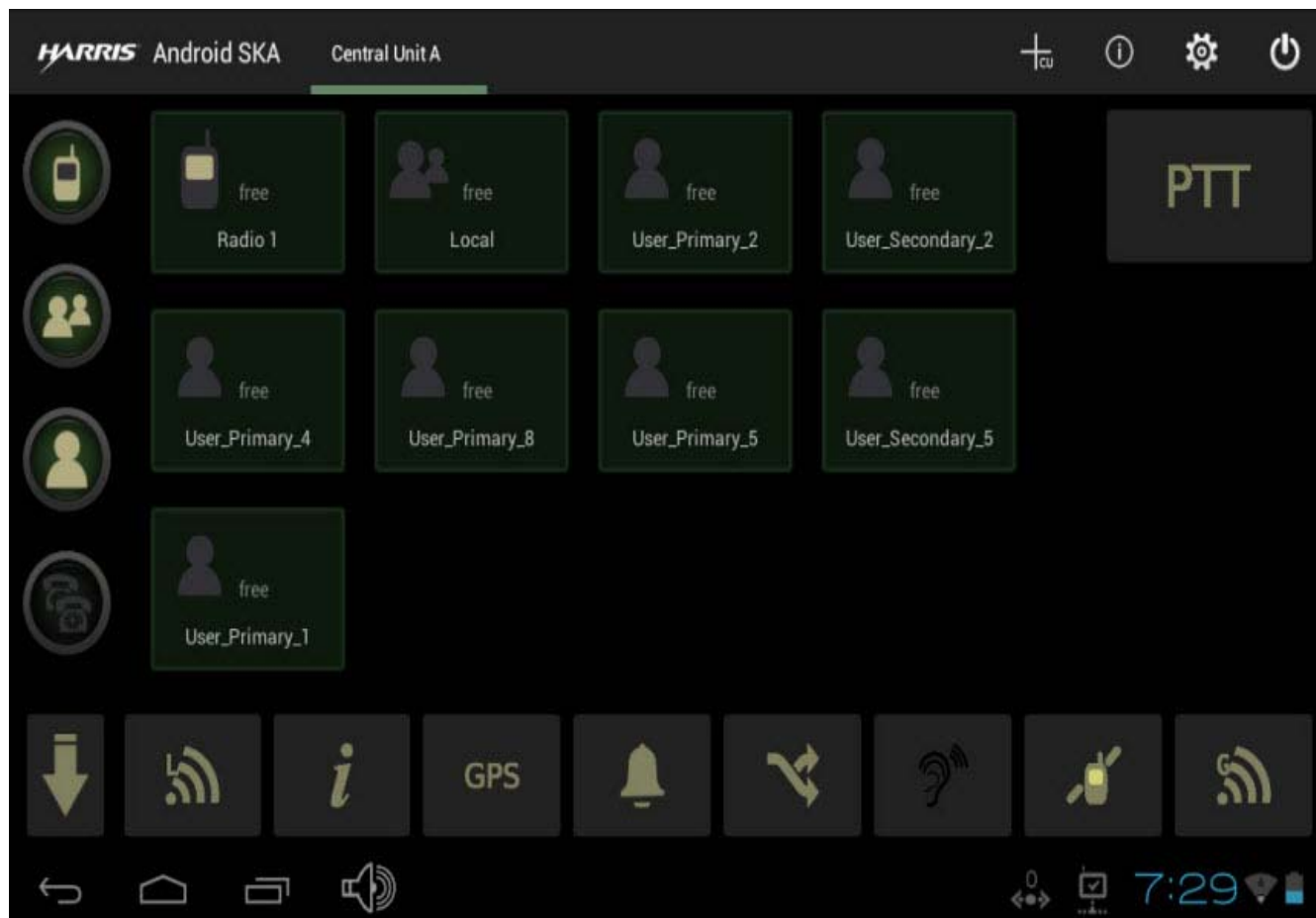


Figure 3-6. SKA Workspace (Night Mode View) - Android OS

- User
 - Username - the name by which the User can be recognized in the system by Operators and other SKA users. Selecting this option will open a new dialog box and allow the user to change their name. After changing the name, select **OK** to confirm or **Cancel** to discard changes. See [Figure 3-7](#).

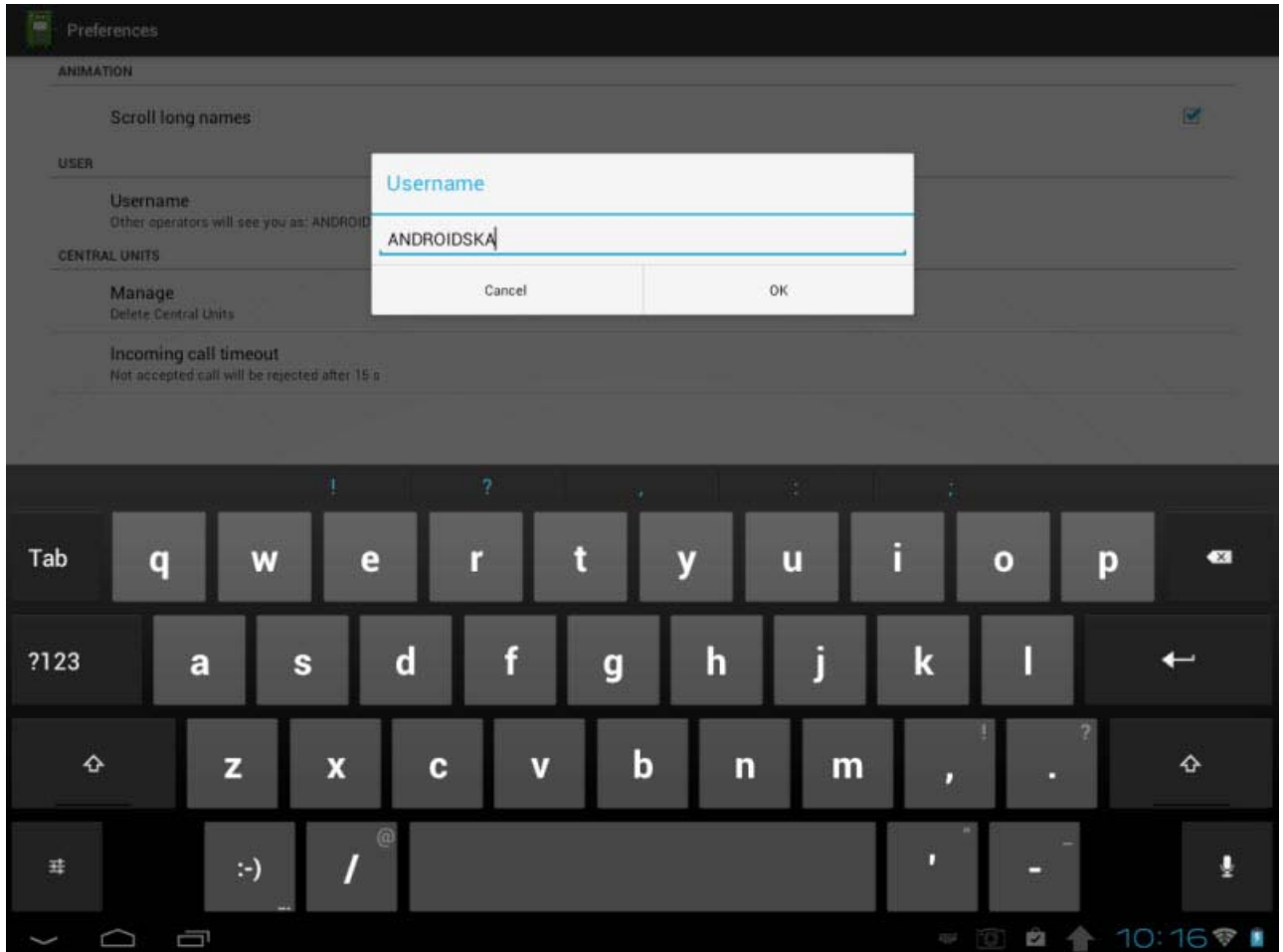


Figure 3-7. SKA Settings Preferences - Android OS

- Central Units
 - Manage - this allows the user to delete any of the currently configured Central Units. Selecting the option will open a new dialog with a list of all Central Units. Selecting a Central Unit name will open a new dialog which allows the user to confirm the deletion of a Central Unit or cancel the operation. See [Figure 3-8](#).
 - Incoming call timeout - this allows the user to set the incoming call timeout. This is the time between the moment that the SKA receives a call signal and the moment it is automatically rejected if it was not accepted before the timeout. The default value is 15 seconds, with a scale of 5 - 60 seconds with a step of 1 second. Only whole seconds can be used as a value.

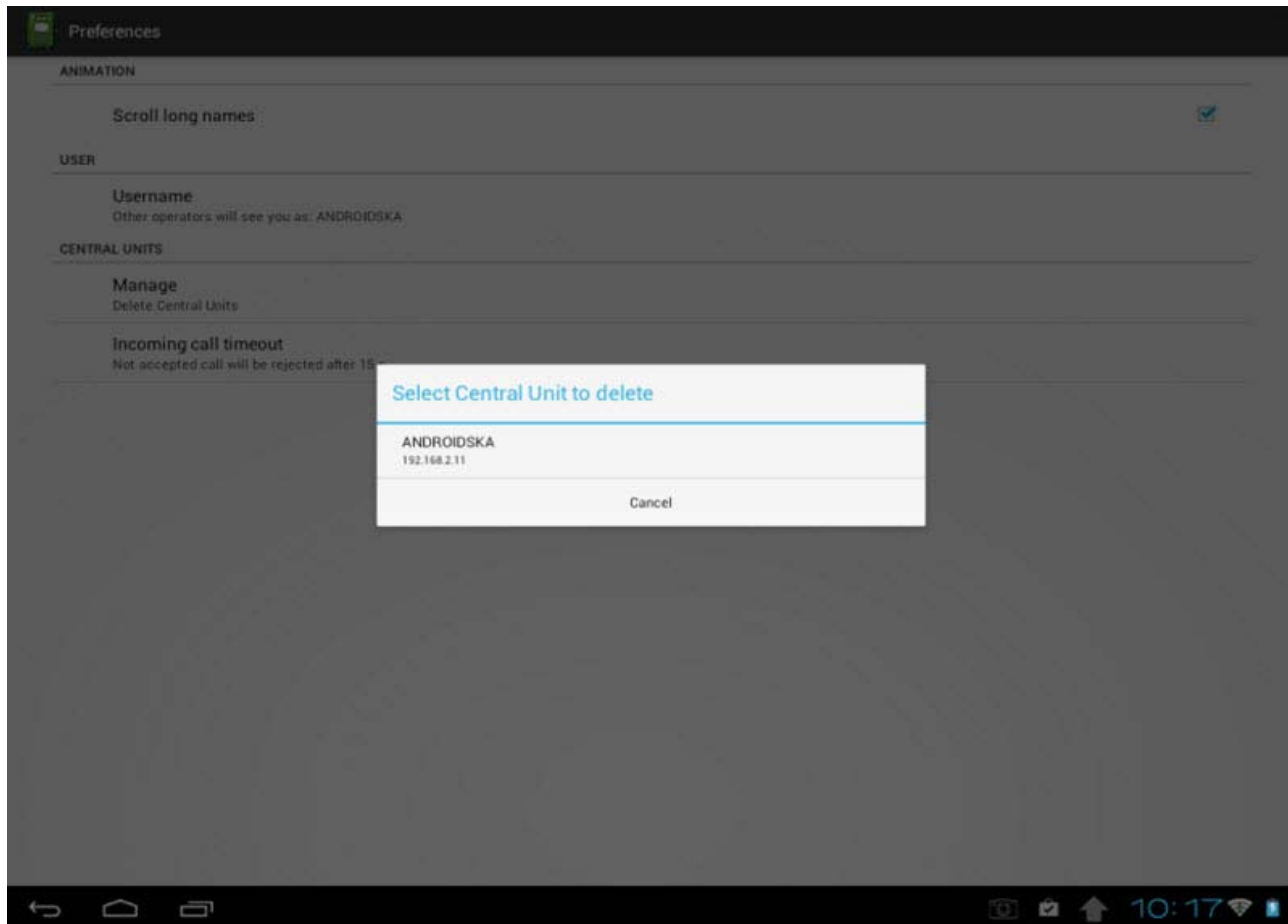


Figure 3-8. Delete Central Unit - Android OS

To leave the settings menu, press the **back** button that is the standard part of the device interface.

3.6.4 Exit Button

Pressing this button will close the application. A confirmation prompt will appear before exiting.

3.7 FILTER BAR

The buttons on left bar allow the user to select what types of assets are visible. The top button toggles displaying or filtering of radios, the second one toggles displaying or filtering of conferences, the third one toggles displaying or filtering of operators and the fourth toggles displaying or filtering of other assets, including telephones and speakers.

3.8 WORKSPACE AND CONTEXT FEATURES

The following subsections describe the workspace and content features.

3.8.1 Using the Workspace

The workspace displays all assets of a Central Unit (selected on the top bar) that are not filtered (toggled on the filter bar). Selecting an asset will select it, and allow the user to use any of the context features displayed at the right side of the screen. See [Figure 3-9](#).

The available assets are as follows:

- Radios - represented by a radio icon
- Conference - represented by a double operator icon
- Operators - represented by an operator icon
- Speakers - represented by speakers
- Telephones (field phones and PABX) - represented by a phone icon

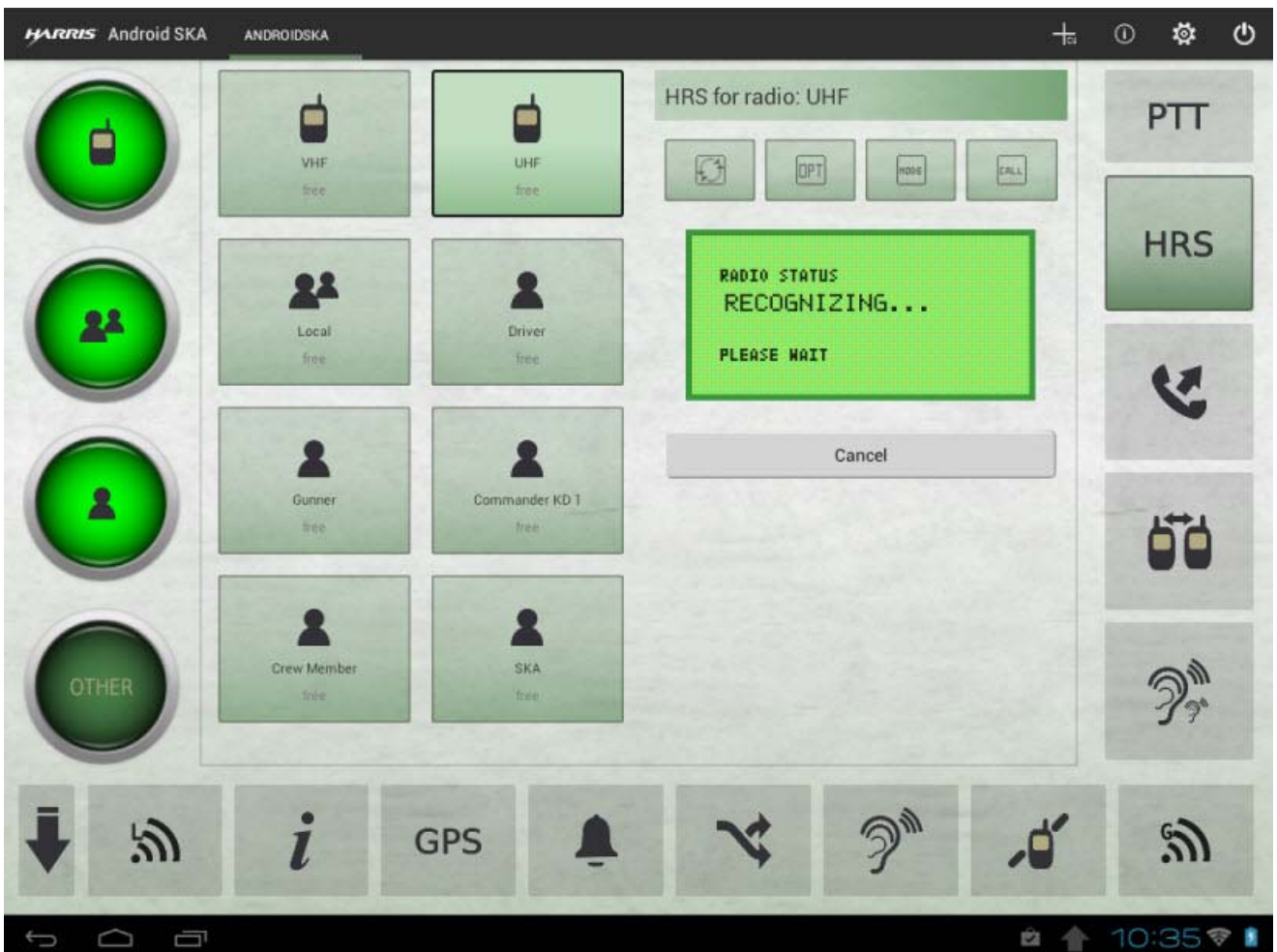


Figure 3-9. SKA Workspace and Context Features - Android OS

3.8.2 PTT

The PTT button in the context features bar is always available, as it can be used globally to trigger communication through all active radio connections at the same time. This means that whenever the user is connected to any number of Radios, pressing the PTT button will cause the user to transmit through all selected Radios.

3.8.3 Radios

When selecting and holding a Radio button, it is possible to set the connection options, which will be used when initiating connections to the Radio. See [Figure 3-10](#). The following options are available:

- Shared - if this radio button is filled/selected, then the user will connect to the Radio in shared mode, meaning that it is locked for use by them only when pressing the PTT switch in the SKA. The Radio lock can be overridden by a User or Operator with a higher priority (see below) or using the exclusive mode (at any priority).
- Exclusive - if this radio button is filled, then the User will connect to the Radio in exclusive mode, meaning that it is locked for use by them only whenever they are connected (not necessarily transmitting) to it. The Radio lock can be overridden only by a User or Operator that is also connecting to the radio in exclusive mode, but at a higher priority (see below).
- Priority - this value defines an User's priority to use the Radio connection. The higher the value, the higher the priority. The scale is from -100 to 101.
 - When the priority value of two users or operators wanting to use the same Radio is equal, then the Operator who first started transmission through the Radio (in shared mode) or connected to the Radio (in exclusive mode) will continue transmission, and the other Operator will be unable to use the Radio until the first Operator either terminates transmission (in shared mode) or terminates the connection (in exclusive mode).
 - When one of the Users or Operators has a higher priority value, then they will be able to override the transmission (in shared mode) or connection (in exclusive mode) of any User or Operator with a lower priority level.
 - When a User attempts to use a Radio that is currently being used by an Operator or User with a higher priority (transmitting in shared mode, connected in exclusive mode) then they will receive a "Radio locked" voice message.
 - A User connecting to a Radio in exclusive mode will always override a connection or an ongoing transmission in shared mode regardless of the priority value. A User connecting to a Radio in shared mode will never be able to override a connection made in exclusive mode, regardless of the priority value.
- Crosstalk - toggle this option on and off to enable or disable crosstalk. When crosstalk is disabled, and an Operator is connected to a Radio and another Operator, Conference or Telephone, pressing the PTT switch will cause the Operator to transmit through the Radio only; they will not be heard within the Intercom or through the Telephone. When crosstalk is enabled, and a User is connected to a Radio and another Operator, Conference or Telephone, pressing the PTT switch will cause the Operator to transmit through the Radio and speak to the Intercom or Telephone simultaneously.
- Default values - if this option is selected, the connection mode is Shared with priority 0 and no Crosstalk.

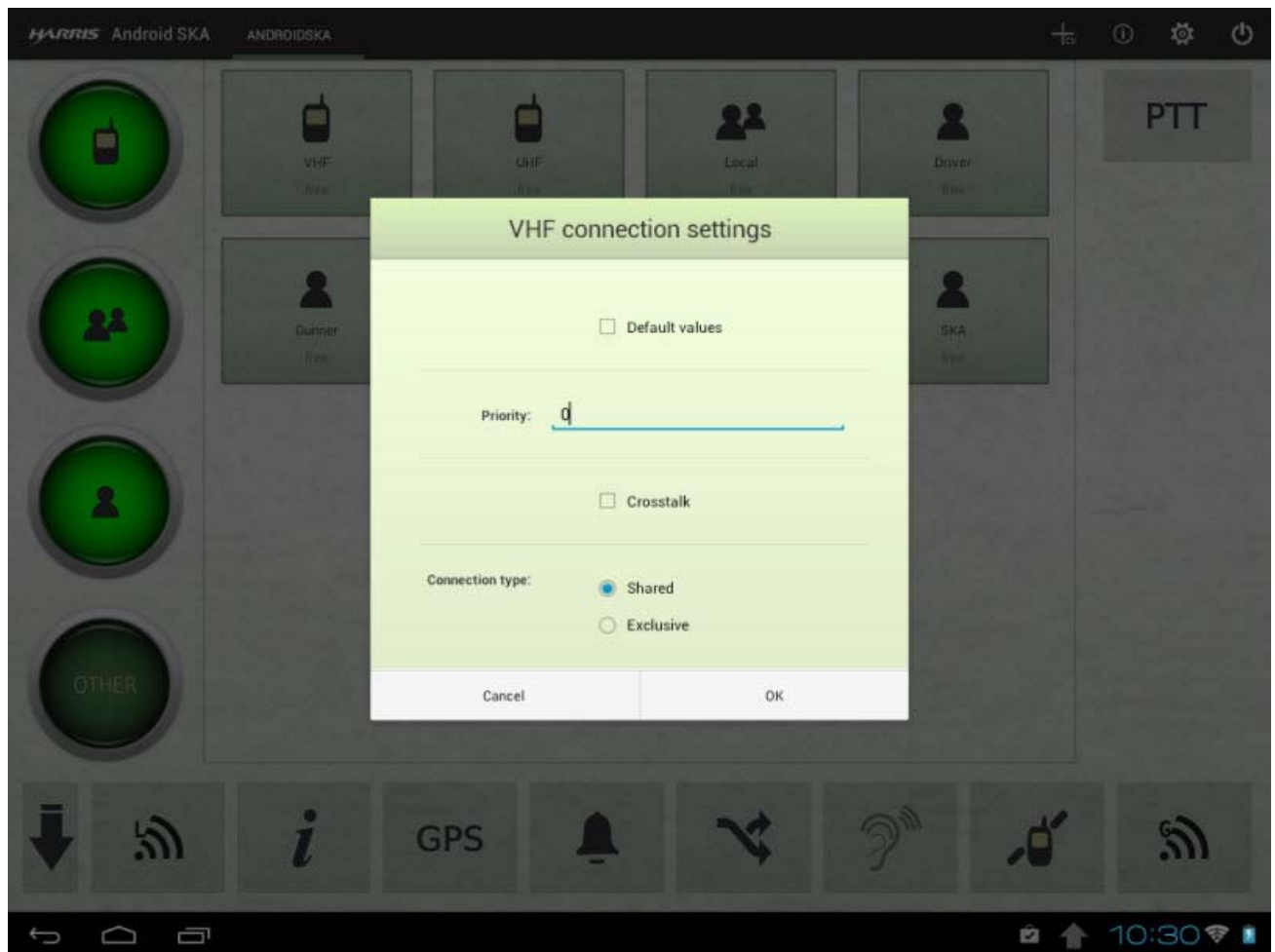


Figure 3-10. Radio Connection Settings - Android OS

When a radio is selected, the following context options are available:

- Remote Control (Harris Radio Server), represented by an “HRS” sign - selecting this button allows the User to access the Remote Control interface for a Radio that is configured to accept Remote Control commands from the Intercom. Note this requires a proper configuration on both the Intercom and the Radio. The interface itself emulates the layout of a Radio front panel.
- Connect/disconnect, represented by handset - selecting this button allows the User to initiate or terminate a connection with a Radio. To transmit, select and hold the PTT button.
- Retransmission, represented by two radios - selecting this button allows the User to create a retransmission session between the currently selected Radio and any other Radio available on the current Central Unit. This allows a pair of Radios to work as an ad-hoc Retransmission relay, with all signals received by one Radio to be transmitted by the other. The connection works both ways, so it is functionally irrelevant which Radio is selected first.
- Add monitoring source, represented by two ears - selecting this button allows the User to add a monitoring source to the Radio, with the following options. For the Radio to hear any incoming monitoring signals, it needs to be keyed. The monitoring connection does not perform this function.

- Mode - the mode defines when the audio signal is monitored and heard by the destination Radio. The following modes are available:
 - When free - this mode is available for Operators and Radios.
 - For Operators, the when free mode means that the Operator will be monitored when they are not connected to another Operator, Conference or Telephone.
 - For Radios, the when free mode means that the signal received by the Radio will be monitored when an Operator is connected to it in “shared” mode or no Operator is connected to the Radio.
 - When busy - this mode is available for Operators and Radios.
 - For Operators, the when busy mode means that the Operator will be monitored when they are connected to another Operator, Conference or Telephone.
 - For Radios, the when busy mode means that the signal received by the Radio will be monitored when an Operator is connected to it in “exclusive” mode.
 - Always - this mode is available for Operators, Conferences, Radios and Telephones.
 - For Operators, the always mode means that the Operator will be monitored regardless of their current connections.
 - For Conferences, the always mode means that the Conference will be monitored at all times. Effectively, the Conference will be heard by the Radio whenever any audio signal is incoming to the Conference.
 - For Radios, the always mode means that the incoming signal from the radio will be monitored at all times.
 - For Telephones, the always mode means that the Telephone will be monitored at all times.
 - Radio - this mode is available only for Radios.
 - This mode causes the Radio to be heard at all times (like in “Always” mode), but both received and transmitted audio will be heard by the Radio (as opposed to other modes where only audio received from the Radio is heard).
 - Gain - increases or decreases the audio level received by the destination Radio in decibels (on a scale from -30 dB to 30 dB.)

3.8.4 Conferences

The only context option available when selecting conferences is connect/disconnect.

- Connect/disconnect, represented by handset - selecting this button allows the User to initiate or terminate a connection with a Conference.

3.8.5 Operators

The following context options are available when selecting Operators:

- Connect/disconnect, represented by handset - selecting this button allows the User to initiate or terminate a connection with an Operator.
- Connect to Radio remotely, represented by Operator and Radio icons - selecting this button allows the User to assign a Radio to an Operator by selecting a Radio - available Radios are highlighted in bright green,

currently connected Radios are highlighted in bright orange. If the User selects a Radio that is not connected, a new screen will appear with connection settings:

- Shared - if this radio button is filled/selected, then the User will connect to the Radio in shared mode, meaning that it is locked for use by them only when pressing the PTT switch in the SKA. The Radio lock can be overridden by a User or Operator with a higher priority (see below) or using the exclusive mode (at any priority).
 - Exclusive - if this radio button is filled, then the Operator will connect to the Radio in exclusive mode, meaning that it is locked for use by them only whenever they are connected (not necessarily transmitting) to it. The Radio lock can be overridden only by an Operator that is also connecting to the radio in exclusive mode, but at a higher priority (see below).
 - Priority - this value defines an Operator's priority to use the Radio connection. The higher the value, the higher the priority. The scale is from -100 to 101.
 - When the priority value of two Operators wanting to use the same Radio is equal, then the Operator who first started transmission through the Radio (in shared mode) or connected to the Radio (in exclusive mode) will continue transmission, and the other Operator will be unable to use the Radio until the first Operator either terminates transmission (in shared mode) or terminates the connection (in exclusive mode).
 - When one of the Operators has a higher priority value, then they will be able to override the transmission (in shared mode) or connection (in exclusive mode) of any Operator with a lower priority level.
 - When an Operator attempts to use a Radio that is currently being used by an Operator with a higher priority (transmitting in shared mode, connected in exclusive mode), then they will receive a "Radio locked" voice message.
 - An Operator connecting to a Radio in exclusive mode will always override a connection or an ongoing transmission in shared mode regardless of the priority value. An Operator connecting to a Radio in shared mode will never be able to override a connection made in exclusive mode, regardless of the priority value.
 - Crosstalk - toggle this option on and off to enable or disable crosstalk. When crosstalk is disabled, and an Operator is connected to a Radio and another Operator, Conference or Telephone, selecting the PTT button will cause the Operator to transmit through the Radio only; they will not be heard within the Intercom or through the Telephone. When crosstalk is enabled, and an Operator is connected to a Radio and another Operator, Conference or Telephone, pressing the PTT button will cause the Operator to transmit through the Radio and speak to the Intercom or Telephone simultaneously.
 - Default values - if this option is selected, the connection mode is Shared with priority 0 and no Crosstalk.
- Add monitoring source, represented by two ears - selecting this button allows the User to add a monitoring source to the Operator, with the following options:

Mode - the mode defines when the audio signal is monitored and heard by the destination Operator. The following modes are available:

 - When free - this mode is available for Operators and Radios.
 - For Operators, the when free mode means that the Operator will be monitored when they are not connected to another Operator, Conference or Telephone.

- For Radios, the when free mode means that the signal received by the Radio will be monitored when an Operator is connected to it in “shared” mode or no Operator is connected to the Radio.
- When busy - this mode is available for Operators and Radios.
 - For Operators, the when busy mode means that the Operator will be monitored when they are connected to another Operator, Conference or Telephone.
 - For Radios, the when busy mode means that the signal received by the Radio will be monitored when an Operator is connected to it in “exclusive” mode.
- Always - this mode is available for Operators, Conferences, Radios and Telephones.
 - For Operators, the always mode means that the Operator will be monitored regardless of their current connections.
 - For Conferences, the always mode means that the Conference will be monitored at all times. Effectively, the Conference will be heard by the Operator whenever any audio signal is incoming to the Conference.
 - For Radios, the always mode means that the incoming signal from the radio will be monitored at all times.
 - For Telephones, the always mode means that the Telephone will be monitored at all times.
- Radio - this mode is available only for Radios.
 - This mode causes the Radio to be heard at all times (like in “Always” mode), but both received and transmitted audio will be heard by the Operator (as opposed to other modes where only audio received from the Radio is heard).
- Gain - increases or decreases the audio level received by the destination Operator in decibels (on a scale from -30 dB to 30 dB.)

3.8.6 Speakers

The following context options are available when selecting Speakers:

- Connect/disconnect, represented by handset - selecting this button allows the User to initiate or terminate a connection with a Speaker (note this is a one way connection, only allowing the User to have their voice heard over the Speaker).
- Add monitoring source, represented by two ears - selecting this button allows the User to add a monitoring source to the Speaker, with the following options:

Mode - the mode defines when the audio signal is monitored and heard by the destination Speaker. The following modes are available:

- When free - this mode is available for Operators and Radios.
 - For Operators, the when free mode means that the Operator will be monitored when they are not connected to another Operator, Conference or Telephone.
 - For Radios, the when free mode means that the signal received by the Radio will be monitored when an Operator is connected to it in “shared” mode or no Operator is connected to the Radio.

- When busy - this mode is available for Operators and Radios.
 - For Operators, the when busy mode means that the Operator will be monitored when they are connected to another Operator, Conference or Telephone.
 - For Radios, the when busy mode means that the signal received by the Radio will be monitored when an Operator is connected to it in “exclusive” mode.
- Always - this mode is available for Operators, Conferences, Radios and Telephones.
 - For Operators, the always mode means that the Operator will be monitored regardless of their current connections.
 - For Conferences, the always mode means that the Conference will be monitored at all times. Effectively, the Conference will be heard over the Speaker whenever any audio signal is incoming to the Conference.
 - For Radios, the always mode means that the incoming signal from the radio will be monitored at all times.
 - For Telephones, the always mode means that the Telephone will be monitored at all times.
- Radio - this mode is available only for Radios
 - This mode causes the Radio to be heard at all times (like in “Always” mode) but both received and transmitted audio will be heard over the Speaker (as opposed to other modes where only audio received from the Radio is heard).

3.8.7 Telephones

The following context options are available when selecting Telephones:

- Connect/disconnect, represented by handset - selecting this button allows the User to initiate or terminate a connection with a Telephone.
- Add monitoring source, represented by two ears - selecting this button allows the User to add a monitoring source to the Telephone, with the following options:

Mode - the mode defines when the audio signal is monitored and heard by the destination Telephone. The following modes are available:

- When free - this mode is available for Operators and Radios.
 - For Operators, the when free mode means that the Operator will be monitored when they are not connected to another Operator, Conference or Telephone.
 - For Radios, the when free mode means that the signal received by the Radio will be monitored when an Operator is connected to it in “shared” mode or no Operator is connected to the Radio.
- When busy - this mode is available for Operators and Radios.
 - For Operators, the when busy mode means that the Operator will be monitored when they are connected to another Operator, Conference or Telephone.
 - For Radios, the when busy mode means that the signal received by the Radio will be monitored when an Operator is connected to it in “exclusive” mode.
- Always - this mode is available for Operators, Conferences, Radios and Telephones.

- For Operators, the always mode means that the Operator will be monitored regardless of their current connections.
- For Conferences, the always mode means that the Conference will be monitored at all times. Effectively, the Conference will be heard over the Telephone whenever any audio signal is incoming to the Conference.
- For Radios, the always mode means that the incoming signal from the radio will be monitored at all times.
- For Telephones, the always mode means that the Telephone will be monitored at all times.
- Radio - this mode is available only for Radios.
 - This mode causes the Radio to be heard at all times (like in “Always” mode) but both received and transmitted audio will be heard by the Telephone (as opposed to other modes where only audio received from the Radio is heard).

3.9 OTHER FEATURES

The bottom bar allows the User to access and use other functions. The arrow at the bottom left corner of the screen allows the User to hide or display the bottom bar. When the bar is hidden, the workspace expands, displaying more items on the screen without the need to scroll.

The following features can be accessed through the bottom bar:

- Local broadcast, represented by waves with the letter “L” - selecting and holding this button allows the User to initiate and maintain a broadcast. A local broadcast overrides all currently active connections in the currently selected system, allowing the User to be heard by all Operators simultaneously without interruption. Once the User finishes their broadcast by releasing the button, all connections are resumed. A local broadcast is heard only in the currently selected system.
- Info, represented by the letter “i” - this button allows the User to view information about any other button in the application, as well as all assets on a given Central Unit. To use it, the User first needs to select the information button, then select any other item on the screen that they desire more information about.
- GPS, represented by the sign “GPS” - selecting this button allows the User to view GPS information from the intercom, if available. Note this requires the appropriate external devices and proper configuration of the system.
- Alarms, represented by a bell - selecting this button allows the User to view and dismiss any alarms active in the system. Whenever alarms are active, a prompt appears over the alarms icon with the number of active alarms. When selected, a new window appears allowing the User to select which alarms to dismiss. If no alarms are active, a window with the appropriate information appears.
- Data routes, represented by a diverging route - selecting this button opens a new interface window, allowing the User to view and manage all existing data Endpoints and Routes. The upper half of the screen displays Endpoints while the lower one displays Routes. Routes allow for data to be transferred between software and hardware Endpoints.

To create a new Route, the User needs to select an Endpoint from the upper list and any Endpoint it is meant to be paired with next. Selecting the “+” button will cause the Route to be created.

To delete a Route, the User needs to select a Route from the lower list and select the “-” button.

To leave the Routes menu, press the “back” button that is the standard part of the device interface.

- Add monitor, represented by an ear and waves - this is a context-sensitive option, available only when an asset is currently selected. Selecting this button will allow the User to monitor the currently selected asset. A configuration window will appear, with the following options:
 - Mode - the mode defines when the audio signal is monitored and heard by the User. The following modes are available:
 - When free - this mode is available for Operators and Radios.
 - For Operators, the when free mode means that the Operator will be monitored when they are not connected to another Operator, Conference or Telephone.
 - For Radios, the when free mode means that the signal received by the Radio will be monitored when an Operator is connected to it in “shared” mode or no Operator is connected to the Radio.
 - When busy - this mode is available for Operators and Radios.
 - For Operators, the when busy mode means that the Operator will be monitored when they are connected to another Operator, Conference or Telephone.
 - For Radios, the when busy mode means that the signal received by the Radio will be monitored when an Operator is connected to it in “exclusive” mode.
 - Always - this mode is available for Operators, Conferences, Radios and Telephones.
 - For Operators, the always mode means that the Operator will be monitored regardless of their current connections.
 - For Conferences, the always mode means that the Conference will be monitored at all times. Effectively, the Conference will be heard over the Telephone whenever any audio signal is incoming to the Conference.
 - For Radios, the always mode means that the incoming signal from the radio will be monitored at all times.
 - For Telephones, the always mode means that the Telephone will be monitored at all times.
 - Radio - this mode is available only for Radios.
 - This mode causes the Radio to be heard at all times (like in “Always” mode) but both received and transmitted audio will be heard by the User (as opposed to other modes where only audio received from the Radio is heard).
- Radio Silence, represented by a crossed out Radio - this allows the User to enforce Radio silence on the system, blocking all Operators from transmitting through Radios. This does not affect incoming transmissions.
- Global broadcast, represented by waves with the letter “G” - selecting and holding this button allows the User to initiate and maintain a global broadcast. A global broadcast overrides all currently active connections across all systems to which the User is connected, allowing the User to be heard by all Operators in those systems simultaneously without interruption. Once the User finishes their broadcast, by releasing the button, all connections are resumed. A global broadcast is heard across all connected systems.

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GLOSSARY**-A-****-B-****-C-**

CD	Compact Disk
CU	Central Unit
CUB	Central Unit Bridging

-D-

dB	Decibel
DCC	Digital Intercom System Control Center

-E-**-F-**

FPGA	Field Programmable Gate Array
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-G-

GPS	Global Positioning System
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-H-

HRS	Harris Radio Server
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-I-

IP	Internet Protocol
ITAR	International Traffic In Arms Regulations

-J-**-K-**

KD	Keypad Display (RF-7800I-KD unit)
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-L-**-M-****-N-****-O-**

OS	Operating System
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-P-

PABX	Private Automatic Branch Exchange
PC	Personal Computer
PTT	Push-To-Talk

-Q-

-R-

RF	Radio Frequency
-----------	-----------------

-S-

SD	Secure Digital
SKA	Soft Keypad Application

-T-

-U-

USB	Universal Serial Bus
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-V-

VOX	Voice Operated Transmit
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-W-

-X-

-Y-

-Z-



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OPERATION MANUAL

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