

Radio Interoperability System - RIOS



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 CODAN
RADIO COMMUNICATIONS

Communications Interop problem

- Ugandan Peoples Defence Force (UPDF) Peace Keepers deploy to Kenyan Defence Force (KDF) controlled space in Somalia for joint operations.
- The UPDF use Harris VHF communications equipment .
- They Kenyans use Codan HF communications. They are not able to communicate!
- How are you going to fix this?

Solution

The Codan RIOS provides interoperability between a range of communications devices, including radios, smartphones and computers, enabling a fully integrated communications network from anywhere in the world.



Communications Interop problem

- Ethiopian Peace Keepers deploy to Burundi
Peace Keepers controlled space in Mali for joint operations.
- They both use Harris HF radios.
- Unfortunately, they use different encryption keys so are not able to communicate
- How are you going to fix this?

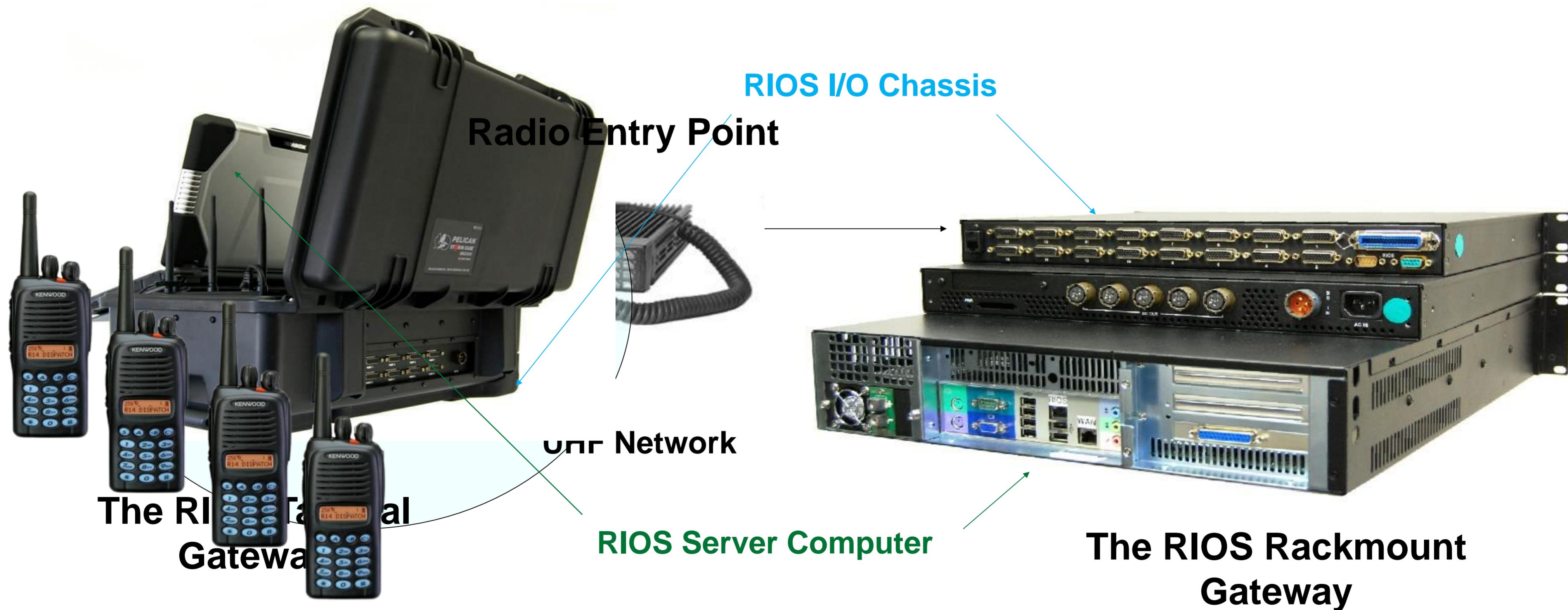
Solution

The Codan RIOS is the solution for enabling users with different vendor devices and encryption to seamlessly communicate across any platform.



RIOS: Radio Interoperability System

A processing code used for cross-banding traditionally non-compatible radio, telephone and computer networks.

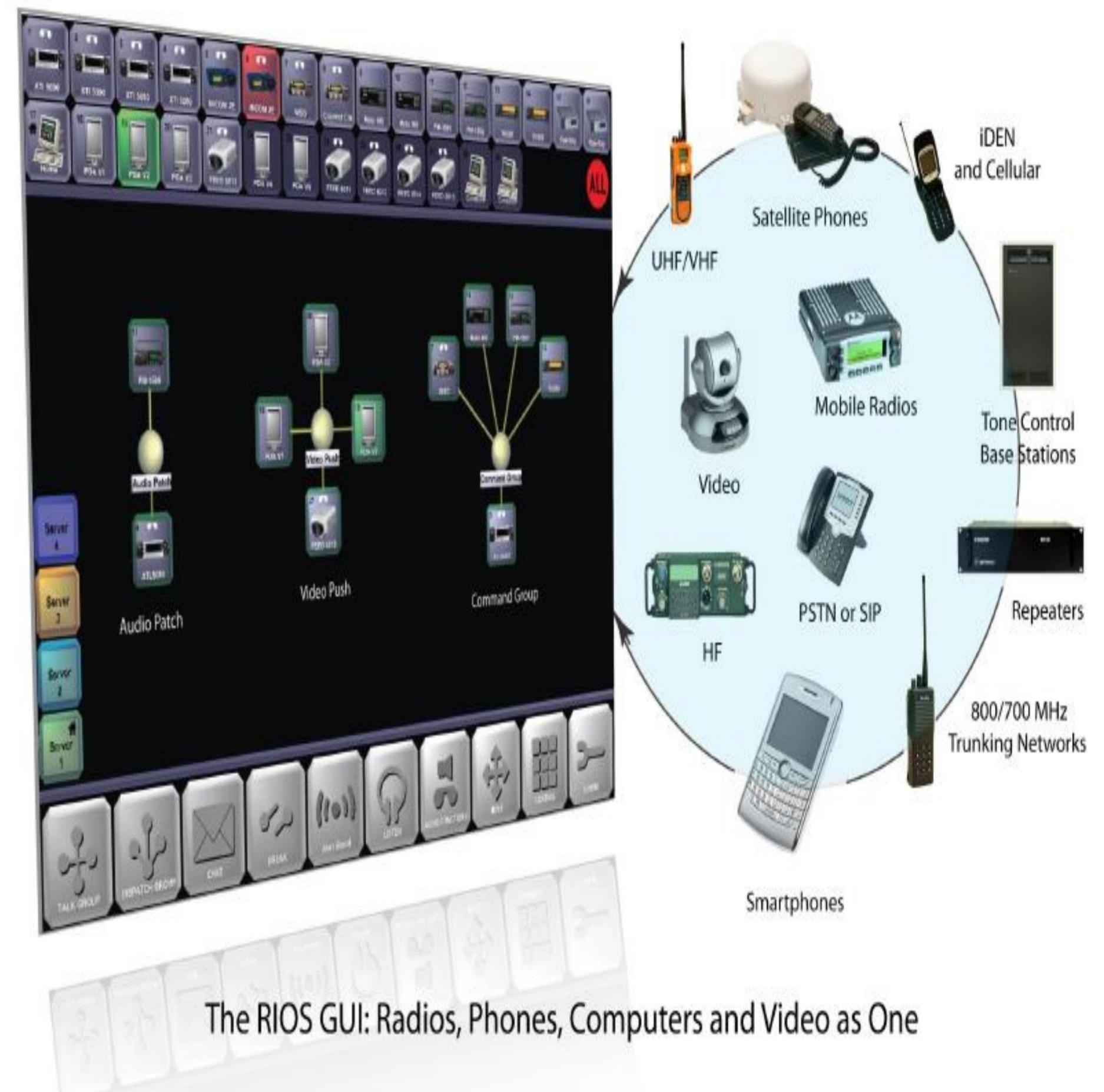


- **Transmit** to all signalling platforms, including **HF, VHF, UHF, 700/800 MHz, cellular, Intergrated Digital Enhanced Network (iDEN) and satellite phones.**
- **Access** all types of communications including radio, smartphone and IP video sources.
- **Control** the remote RIOS Server via 3G, 4G or Wifi wireless link from any wireless location on any carrier.
- **View** multiple IP video feeds connected to the RIOS Server as well as from other RIOS Lite users.

- **Send** video and pictures to with RIOS Lite Push-To-Send Video and Camera capabilities.
- **Message** RIOS Client and RIOS Lite users with internal chat messaging.
- **Track** users via the RIOS GPS Mapping Module within an integrated mapcentric PTT interface- GSM users only

RIOS – An introduction

- The RIOS interoperates dissimilar communication networks by collecting and converting local communication signals into digital IP packets.
- RIOS accepts signal from variety of sources and consolidates their capabilities into a unified operating platform.
- Control the system is accomplished via the RIOS Graphical User Interface (GUI).



RIOS Application

- Fixed Site for Dispatch (RIOS Rackmount)
- Command Vehicles (RIOS Rackmount)
- Field Operations (RIOS TAC2)



RIOS TAC2 Physical Interfaces

Codan Radio with RIOS
Interface Cable



Radio Interface (8)

DC Power In



USB Interface

RIOS LiTE Mission Critical Smartphone Systems



RIOS LiTE Mission Critical Smartphone Systems

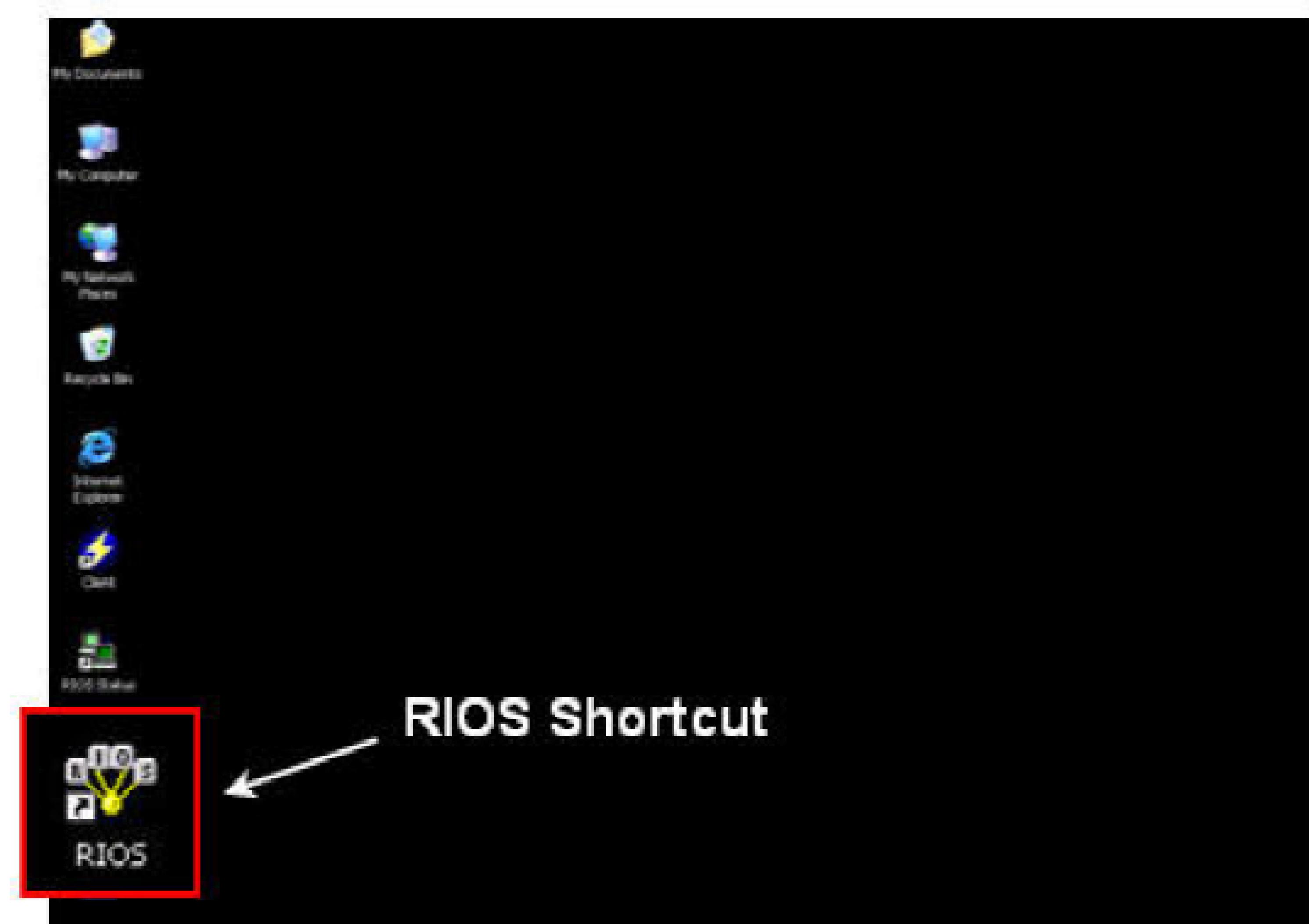
For agencies who want to provide:

SECURE SSL smartphone capabilities:

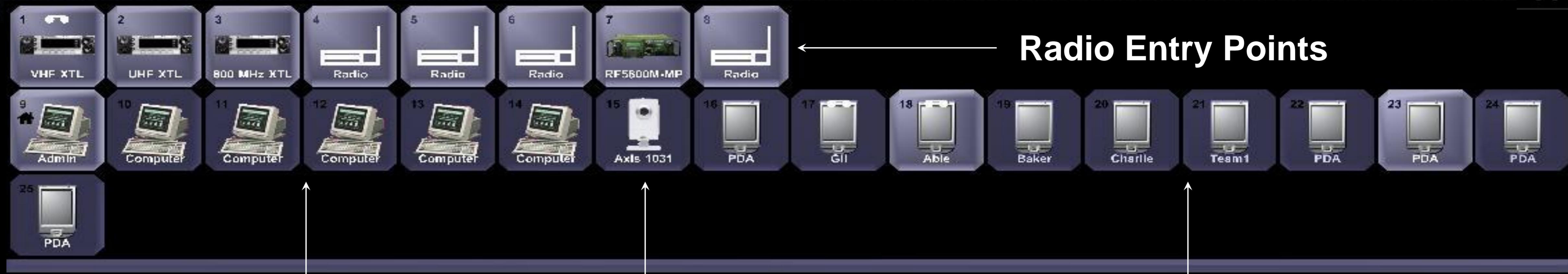
- Private PTT Conversations
- Group PTT Communications
- Text Messaging
- File Sharing
- Video Streaming
- Interactive GPS Mapping

RIOS Setup

- 1. Start RIOS GUI from the Windows Desktop by double clicking the **RIOS Shortcut**.
- 2. RIOS Login screen appears. Input default User Name “admin” with Password “admin”.



The RIOS Graphical User Interface

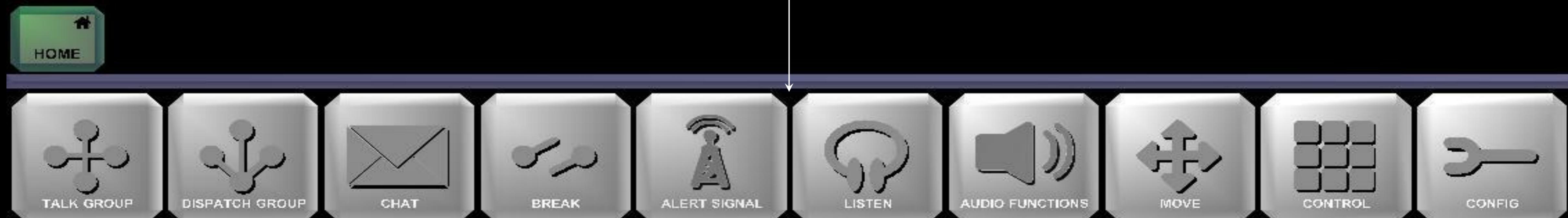


Computer Assets

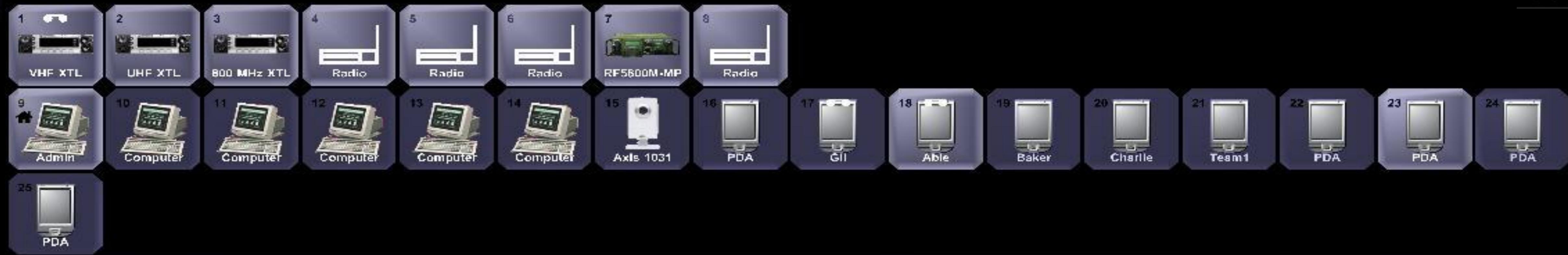
Video Assets

Smartphone Assets

Functions



The RIOS Graphical User Interface



- The Functions of RIOS are displayed at the bottom of the RIOS GUI interface.
- Functions for specific action. They are the starting point for creating interoperability between Physical and Virtual Ports.

Functions



The RIOS Graphical User Interface

- › Connecting Gateway Ports within RIOS follows a logical three-step process.
 1. **SELECT** the gateway/gateways
 2. **ACTIVE** the function
 3. **CONFIRM** the function
- › RIOS GUI offers Push-To-Talk for operator transmission. The operator can transmit to a single gateway by selecting the gateway or an entire group by selecting the centre node of a Talk Group. Similar to industry standards, Gateway Ports highlighted in **RED** are in transmit mode while Gateway Ports highlighted in **GREEN** are in receive mode.

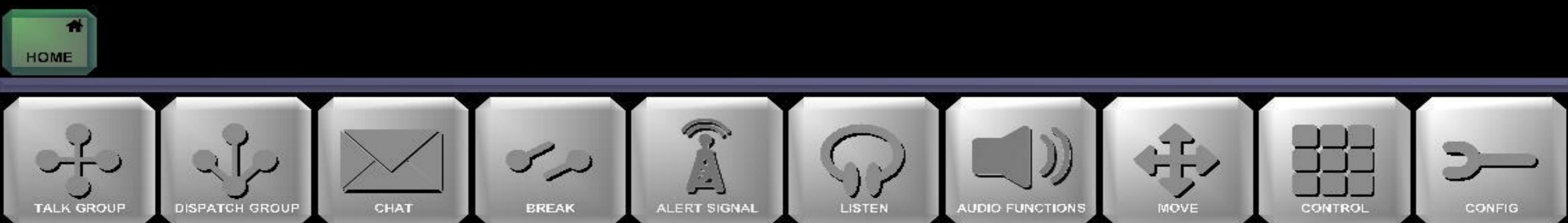
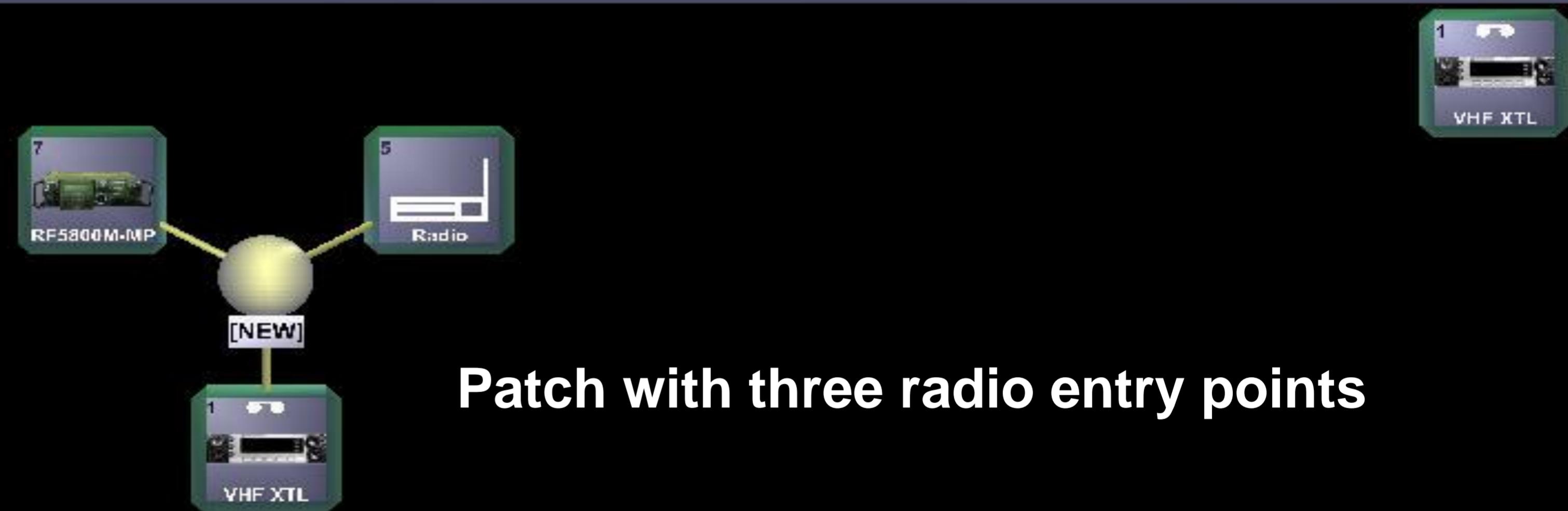
The RIOS Graphical User Interface



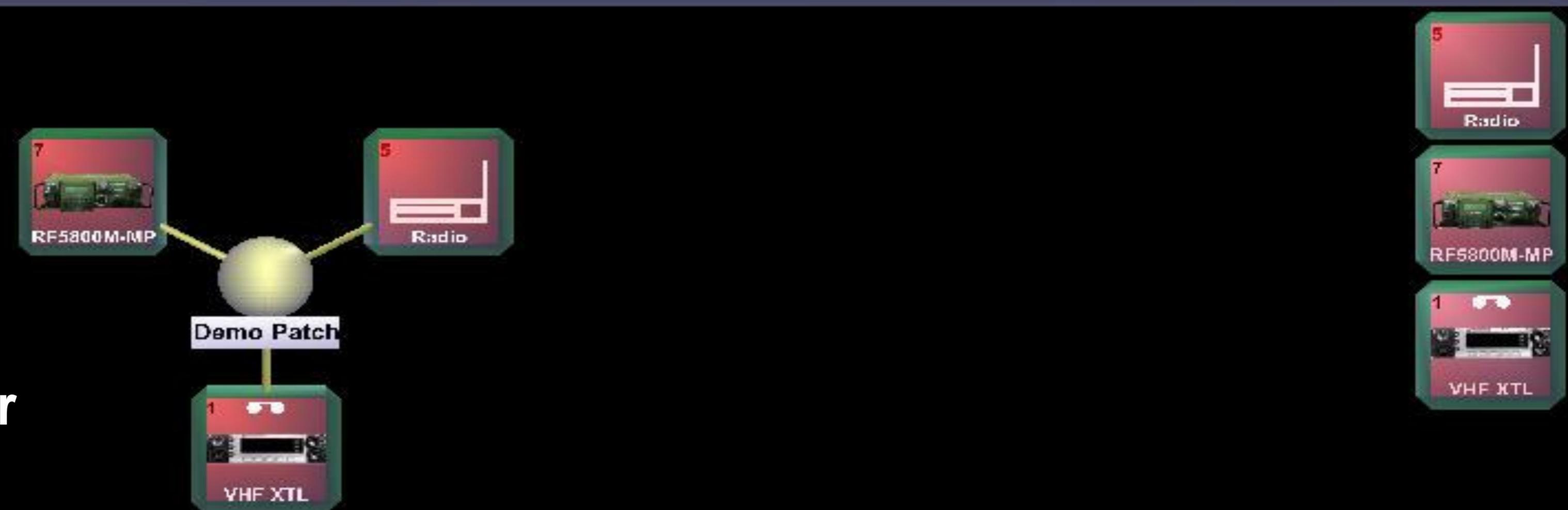
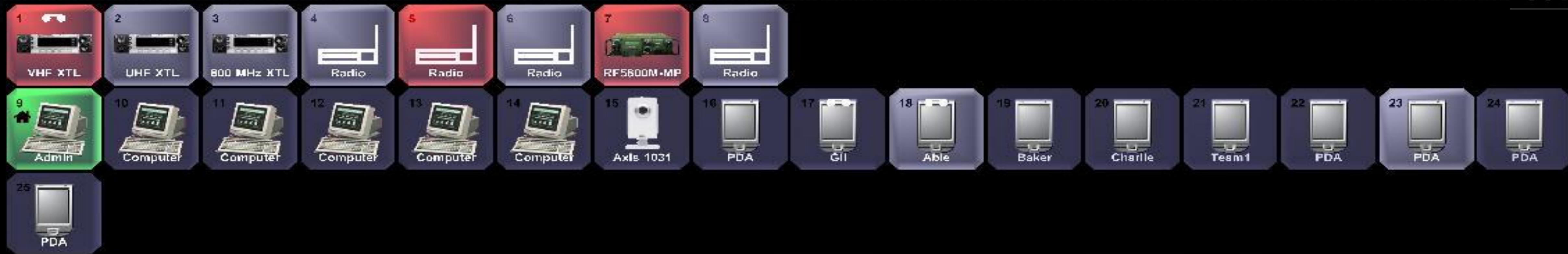
Transmitting from a Computer to a Radio Asset



The RIOS Graphical User Interface



The RIOS Graphical User Interface



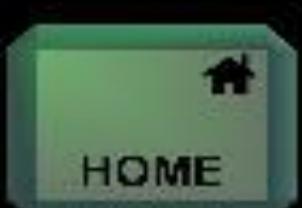
Transmitting from the Computer



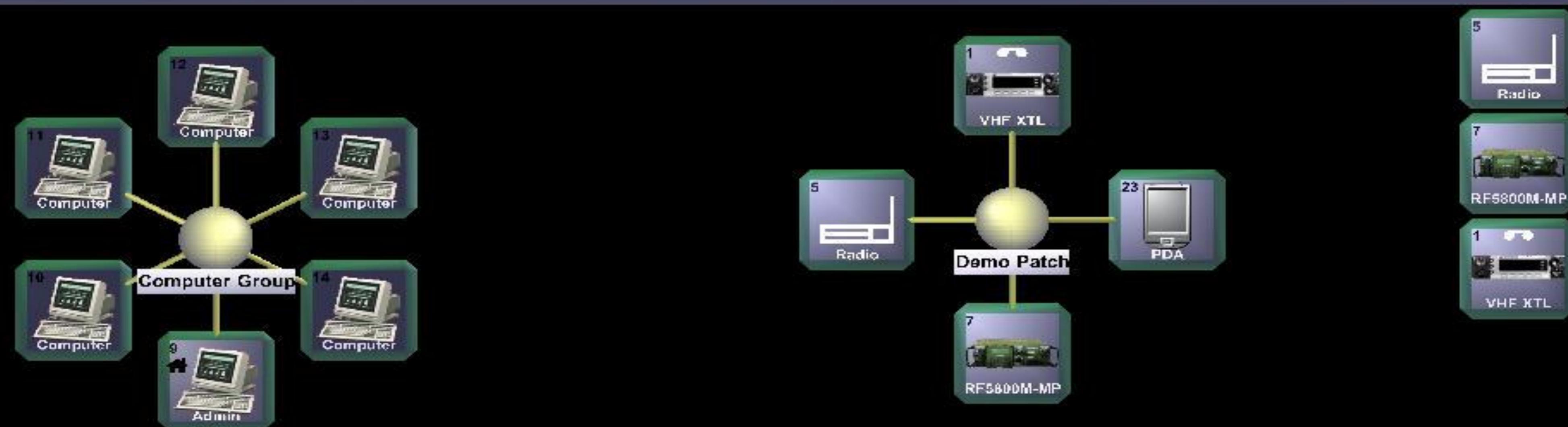
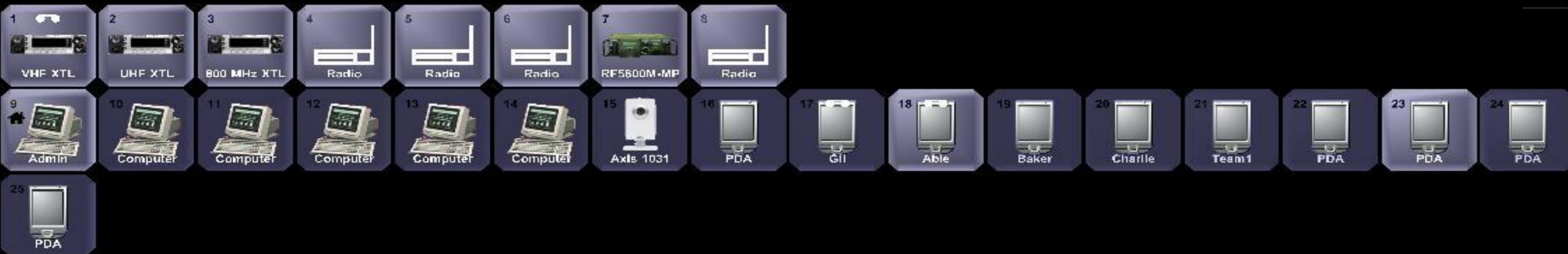
The RIOS Graphical User Interface



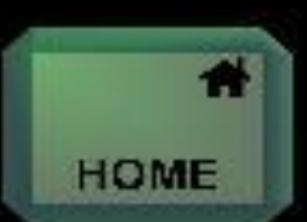
Computers arranged in a Talkgroup



The RIOS Graphical User Interface



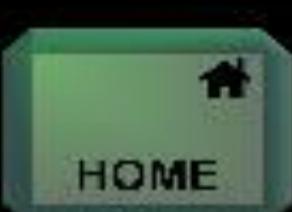
RIOS LiTE added to the patch



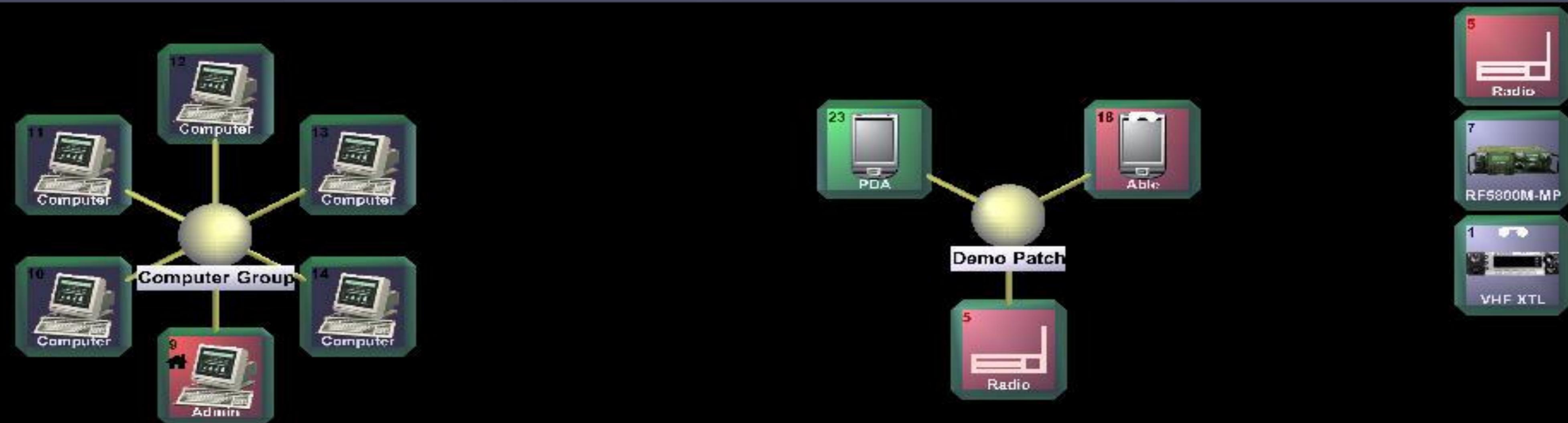
The RIOS Graphical User Interface



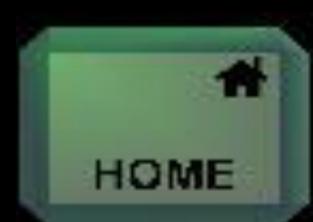
RIOS LiTE transmitting to a radio



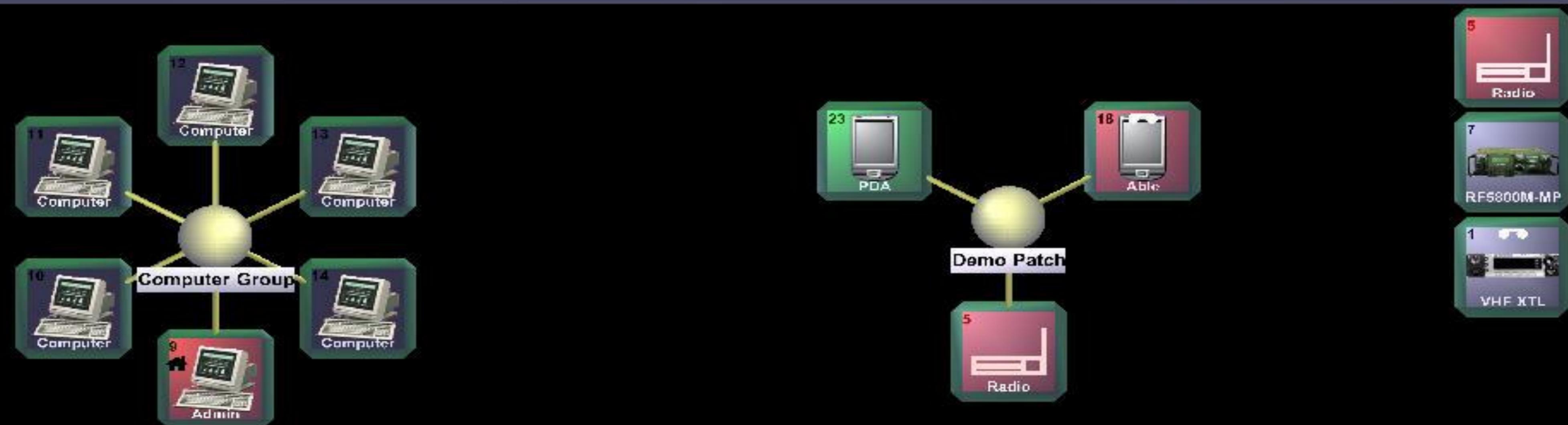
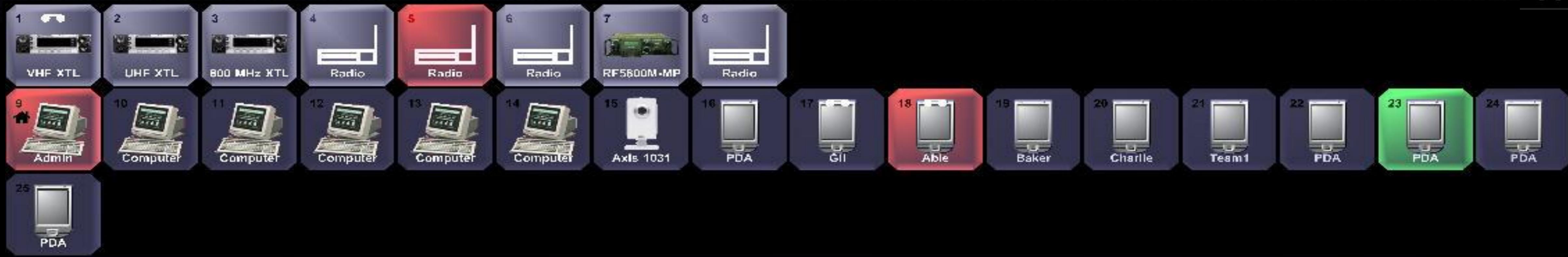
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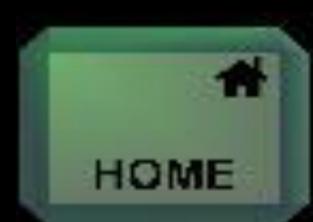
Adding a RIOS LiTE user remotely from RIOS LiTE



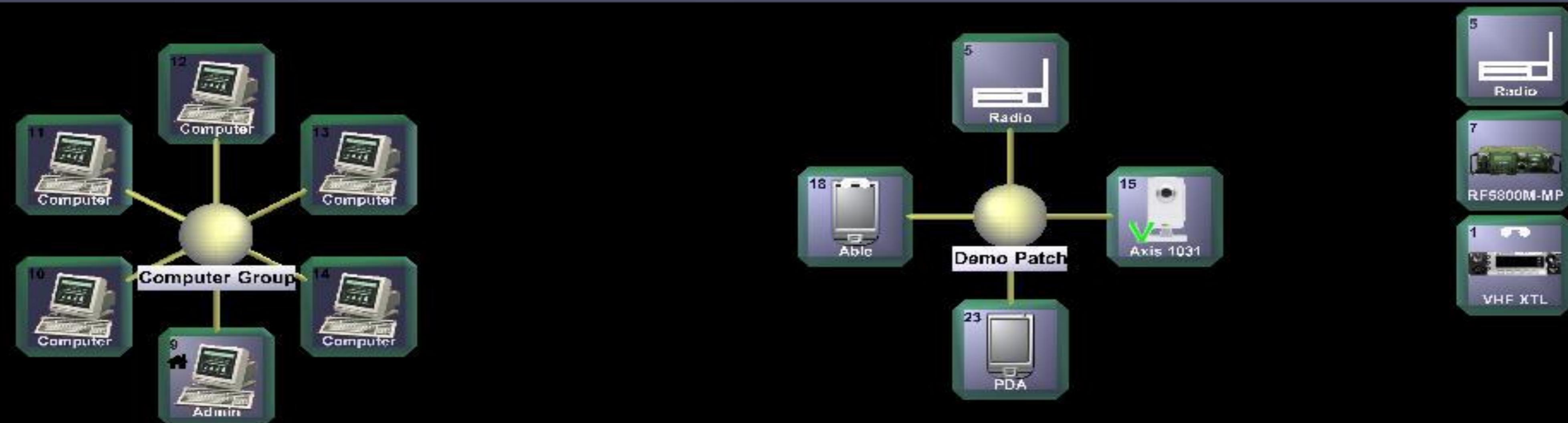
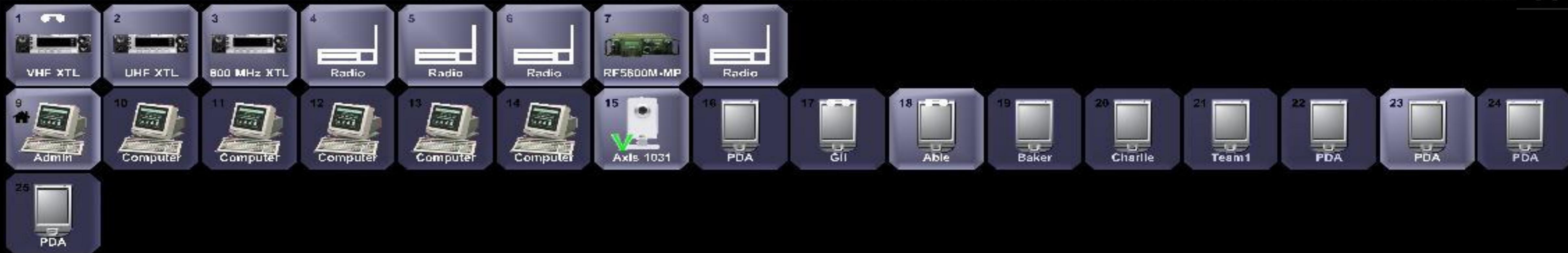
The RIOS Graphical User Interface



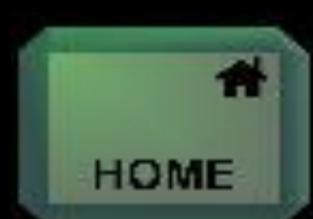
Adding a RIOS LiTE user remotely from RIOS LiTE



The RIOS Graphical User Interface



Adding a Video Asset to RIOS LiTE



The RIOS Graphical User Interface



The RIOS Graphical User Interface displays a central video viewer window showing a live feed of a parking lot. The interface includes a top menu bar with icons for various assets (1-26) and a bottom menu bar with functional buttons.

Top Asset Menu:

- 1 VHF XTL
- 2 UHF XTL
- 3 800 MHz XTL
- 4 Radio
- 5 Radio
- 6 Radio
- 7 RF5800M-MP
- 8 Radio
- 9 Admin
- 10 Computer
- 11 Computer
- 12 Computer
- 13 Computer
- 14 Computer
- 15 Axis 1031
- 16 PDA
- 17 GII
- 18 Able
- 19 Baker
- 20 Charlie
- 21 Team1
- 22 PDA
- 23 PDA
- 24 PDA
- 25 PDA

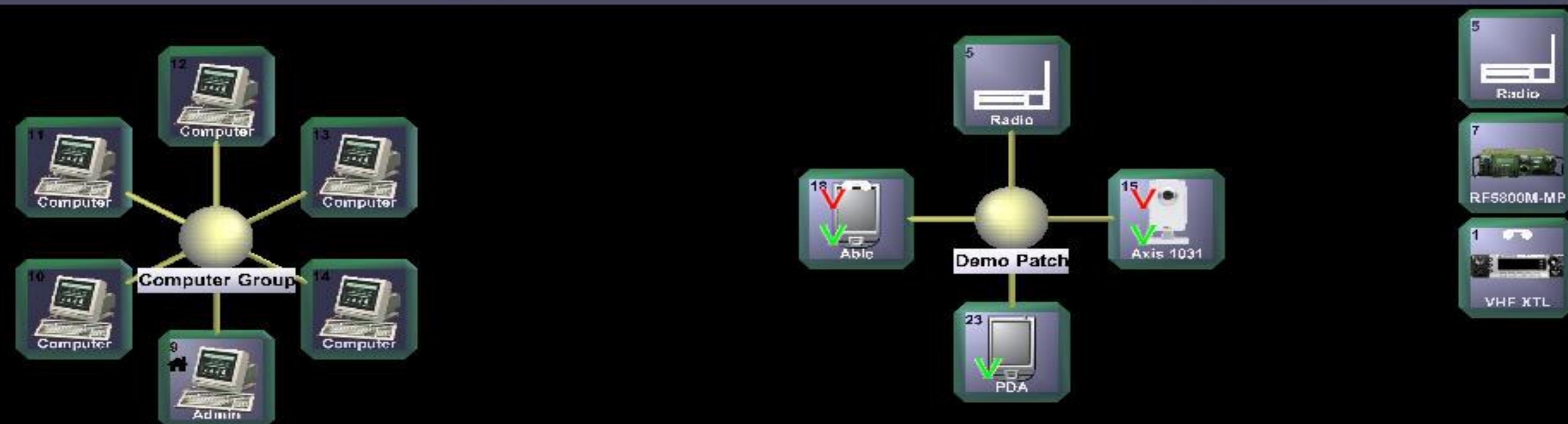
Video Viewer: The central window is titled "Video Viewer" and shows a live video feed of a parking lot with several cars and buildings in the background. It includes controls for "Add/Remove Assets", a search icon, and a grid icon.

Network Diagram: A diagram titled "Demo Patch" shows a central yellow circle connected to four devices: a "Radio" (asset 5), an "Able" PDA (asset 18), an "Axis 1031" camera (asset 15), and a "PDA" (asset 23).

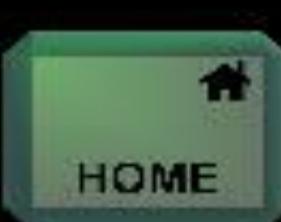
Bottom Menu Bar:

- HOME
- TALK GROUP
- DISPATCH GROUP
- CHAT
- BREAK
- ALERT SIGNAL
- LISTEN
- AUDIO FUNCTIONS
- MOVE
- CONTROL
- CONFIG

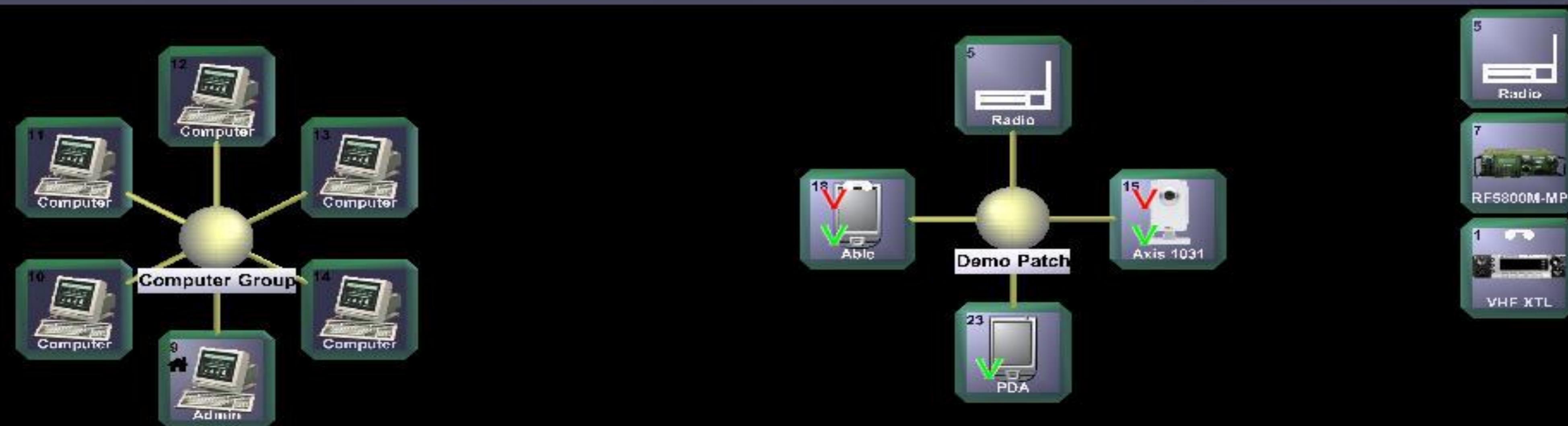
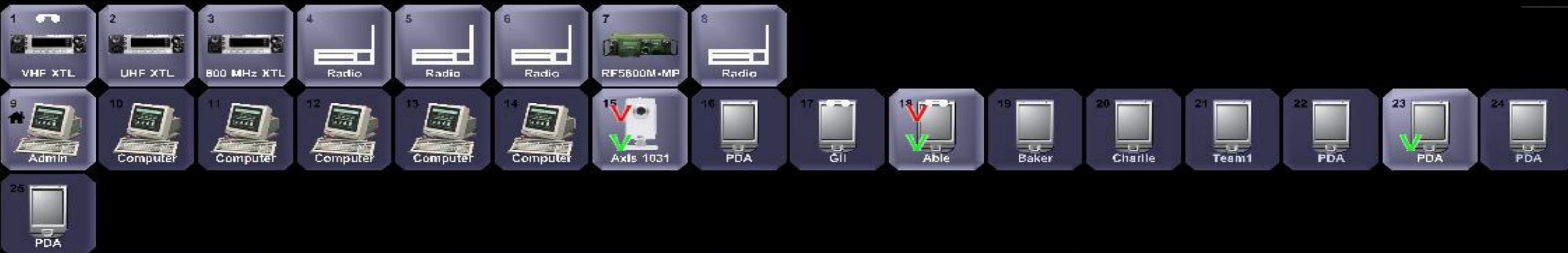
The RIOS Graphical User Interface



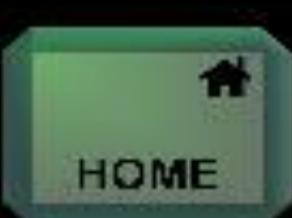
Streaming Video from RIOS LiTE



The RIOS Graphical User Interface



Streaming Video from RIOS LiTE



The RIOS Graphical User Interface



The screenshot displays the RIOS Graphical User Interface with a central Chat Room window and a network diagram.

Chat Room:

- Topic:** Demo Chat Room
- Messages:**
 - Admin:** This is an example 1/25/2015 1:02:11 PM of Chat.
 - Able:** This is a response 1/25/2015 1:03:37 PM from Able. Do you copy?
 - Admin:** Yes 1/25/2015 1:03:34 PM

Network Diagram:

```

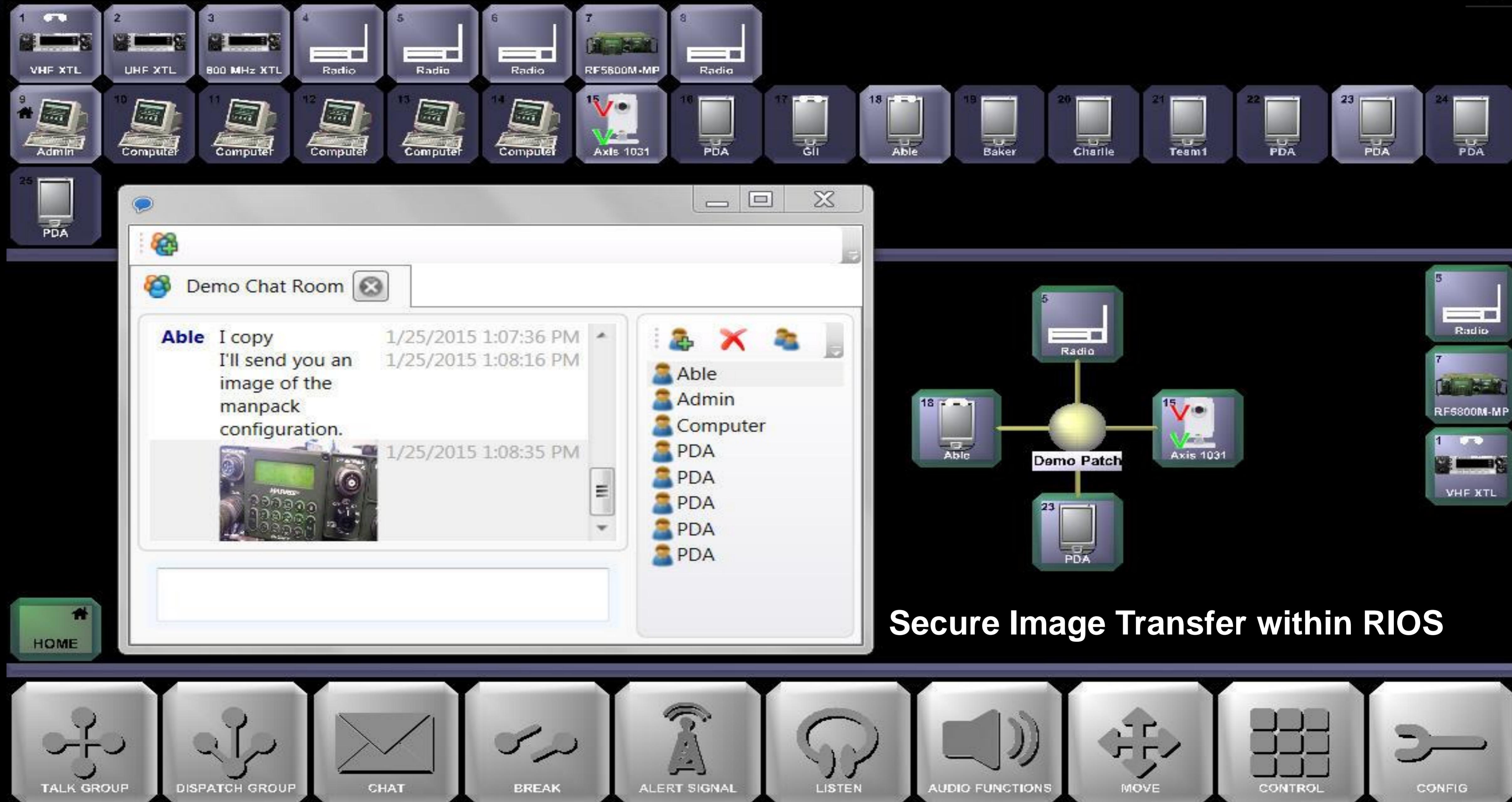
graph TD
    Radio[Radio 5] --- DemoPatch((Demo Patch))
    Able[PDA 18] --- DemoPatch
    Axis1031[Axis 1031 15] --- DemoPatch
    PDA23[PDA 23] --- DemoPatch
  
```

Bottom Navigation Bar:

- HOME
- TALK GROUP
- DISPATCH GROUP
- CHAT
- BREAK
- ALERT SIGNAL
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- AUDIO FUNCTIONS
- MOVE
- CONTROL
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Secure Chat Session within RIOS

The RIOS Graphical User Interface

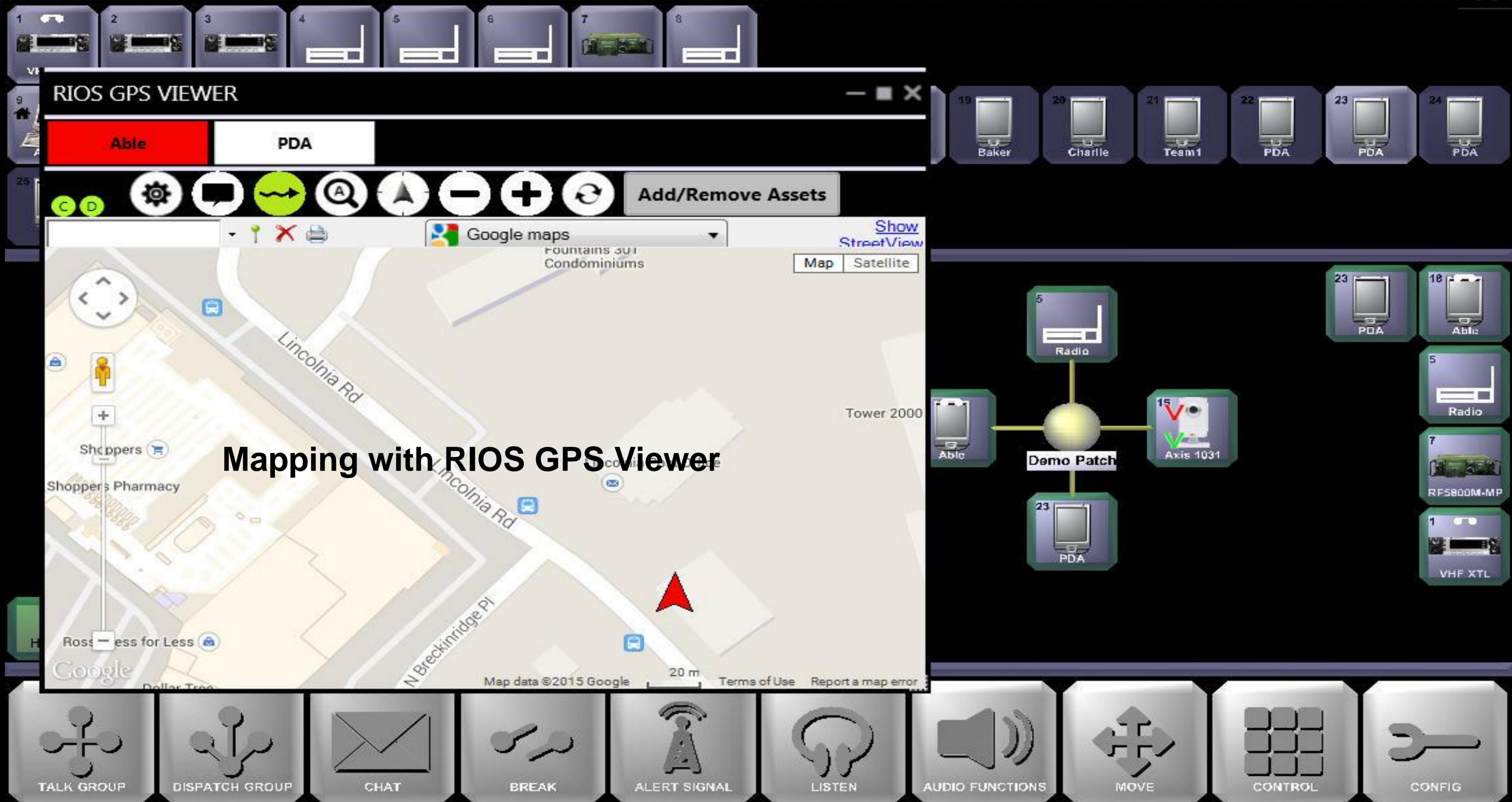


The screenshot displays the RIOS Graphical User Interface with the following components:

- Top Bar:** A grid of 25 icons representing various devices and users, numbered 1 to 25. Icons include VHF/UHF radios, computers, PDAs, and specific units like RF5800M-MP and Axis 1031.
- Central Chat Window:** A window titled "Demo Chat Room" showing a conversation between "Able" and "Able". Able sends a message: "I copy I'll send you an image of the manpack configuration." Able also sends a file attachment, which is a photograph of a radio unit.
- Network Topology:** A diagram showing a "Demo Patch" node connected to four other nodes: "Radio" (node 5), "Able" (node 18), "Axis 1031" (node 15), and "PDA" (node 23).
- Bottom Toolbar:** A row of ten icons with labels: HOME, TALK GROUP, DISPATCH GROUP, CHAT, BREAK, ALERT SIGNAL, LISTEN, AUDIO FUNCTIONS, MOVE, CONTROL, and CONFIG.

Secure Image Transfer within RIOS

The RIOS Graphical User Interface



Questions?

