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ASTi SYNAPSE
Voisus Server
Manual

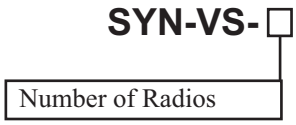
Document: DOC-01-SYN4-VS-1

Advanced Simulation Technology inc. 500A Huntmar Park Drive, Herndon, Virginia, 20170 USA
Revision F1 (May, 2012)

Product Name: ASTi Synapse Voisus Server

Description: Network Voice Communications System

Part Number:



ASTi Synapse Voisus Server Manual

ASTi

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1.0. INTRODUCTION

1.1. Overview

Synapse Voisus Server is an affordable, client-server based simulated radio and intercom communications solution. The server is dedicated to heavy simulation processes and extends the powerful ASTi Radio environment to Voisus thin clients running on customers' PCs. Voisus clients conserve CPU resources, maximize reliability and minimize maintenance (server-centralized software updates). The Synapse Voisus Server has elegant administration, simply download the client application from the server, remotely configure, and operate.

The server is a Telestra with the full-fidelity ASTi Radio environment. Server also features a DIS Interface (HLA optional) and a network link to Voisus clients. Voisus Server is configured using Studio.

The Voisus client is a communication operator GUI panel with remote IP audio. The client application is downloadable using the Remote Management System web interface.

Configuration and operation is easy with three simple steps:

1. Point your web browser at the Telestra to access the Remote Management System and download the client.
2. Use Studio to remotely configure the network and clients' access to ASTi radios.
3. Communicate using the client GUI.

Synapse Voisus Server features:

- Voisus Client supports single-user ASTi operator
- Remote configuration using Studio
- Variety of client GUIs available: Voisus standard, SINCGARS and other MIL radios, and VBS2 overlay, Custom GUIs available, contact ASTi for details.
- Client includes a GUI comm panel providing access to multiple ASTi radios and intercoms
- Voisus Server is inter-operable with Synapse Workstation (integrating hardware-based operator stations) and Synapse Radio Bridge (integrating live radio traffic).

Here is a live-virtual-constructive (L-V-C) application example for an ASTi Synapse Voisus Server integrated with a Synapse Workstation, Radio Bridge, Telestra-based flight simulator and an ACE Studio master control station. Capabilities realized:

- Links geographically disperse facilities
- Provides interoperable voice comms by linking diverse environments (simulators, computers, live-field comms)
- Provides centralized exercise management

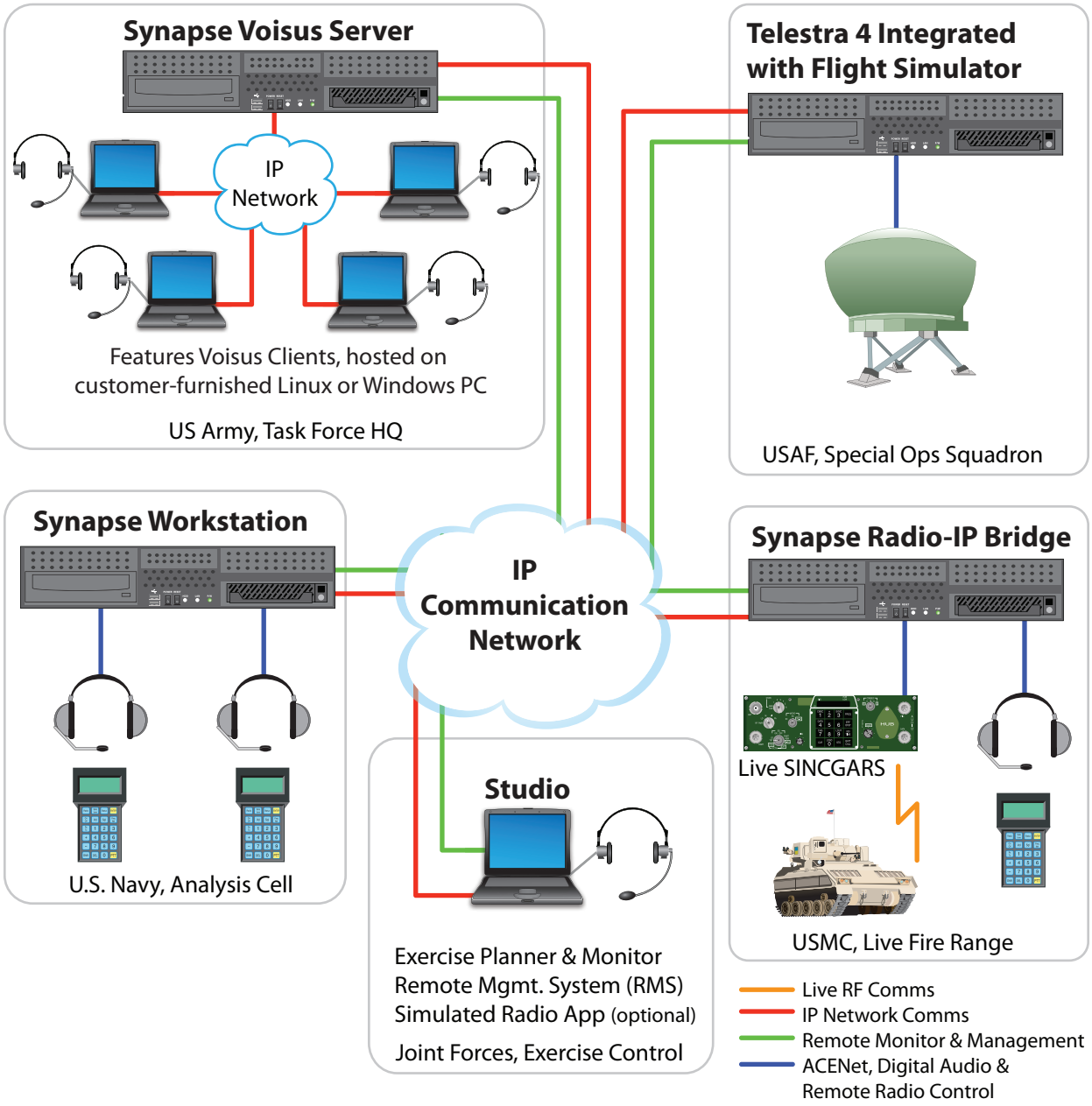


Figure 1: Synapse Application Example

Voisus Server's network-centric architecture is highly scalable; simply connect more client positions to the IP network and centrally manage using the Voisus Server. Client-based operators can be located wherever there is access to the network.

Voisus Server features:

- **Flexible and Scalable Architecture**: Configure server modules to meet custom requirements.
- **Interoperable**: Inter-operates with full fidelity radio simulations.
- **Deployable out-of-the-box**: Connect, configure, operate.
- **DIS/ HLA Compliant:** Synapse is inter-operable with a vast array of simulators, data analysis and data logging tools.
- **Simple to Install**: Modular/ click-together, all-Ethernet installation.
- **Simple to Run**: Even novice users can exploit the capabilities of ASTi's powerful and intuitive ACE software.
- **Robust and Reliable**: Industrial hardware, Intel Quad Core CPU, Realtime Linux™ OS.

2.0. GETTING STARTED

2.1. System Hardware

The standard Synapse Voisus Server includes the following components.

Description	SYN-0S	Standard Feature
Telestra	1	Yes
ACE-RIU	1	Yes
Operator headsets, USB adapters and PTT ancillaries	various	Available Separately

2.2. USB Adapters and Headsets

Voisus clients are compatible with the following USB adapters and headsets. All of the listed USB adapters provide built-in sidetone. Sidetone is a critical feature that provides the client operator with an audible indication that they are actively transmitting.

USB Adapters

ASTi Part Number	Manufacturer	Built-In PTT	Compatible Headsets
USB-RADIUS-010	ASTi	Yes	Specific Telex (see list)
USB-P-DA40	Plantronics	No	All Plantronics H-Series (see list*)
USB-P-SHS2355	Plantronics	Yes	All Plantronics H-Series (see list*)

Headsets

Note: Some headsets require USB adapters.The logitech (HS-LG-G35) does not require an adapter.

ASTi Part Number	Manufacturer	Stereo** Mono	Ear Cups
HS-TX-PH-44R5	Telex	Stereo	Dual, light weight
HS-TX-HR-2R5	Telex	Stereo	Dual, noise isolation, medium weight
HS-P-H251	Plantronics	Mono	Single, light weight
HS-P-HW261N	Plantronics	Mono	Dual, light weight
HS-P-SHR2083-01	Plantronics	Mono	Dual, noise isolation, medium weight
HS-LG-G35	Logitech	Stereo	Dual, noise isolation, heavy weight

** Stereo headsets are recommended for use with Voisus-VBS2 plugin.

Speakerphones

ASTi Part Number	Manufacturer	Features
USB-P-P420	Plantronics	Mic mute and volume controls, active echo cancellation, and auxiliary headphone jack

Note: Plantronics sales literature states that Plantronics USB adapters are compatible with all Plantronics H-Series headsets. ASTi has tested and validated Voisus clients using the listed Plantronics headsets.

Plantronics® is a registered trademark of Plantronics, Inc.

Telex™ is a trademark of Telex Communications, Inc.

2.3. System Hardware Installation

2.3.1. Network Configurations

Voisus Server utilizes three application network traffic links:

- Studio: Central management station
- DIS*: Inter-Server (or inter-simulator) communications
- Voisus: Server-Client communications

*Distributed Interactive Simulation (DIS), IEEE-1278 standard

Figure 2 shows the most basic network configuration for the Voisus Server system. All three application links share a common IP network. The benefit of this configuration is simplicity.

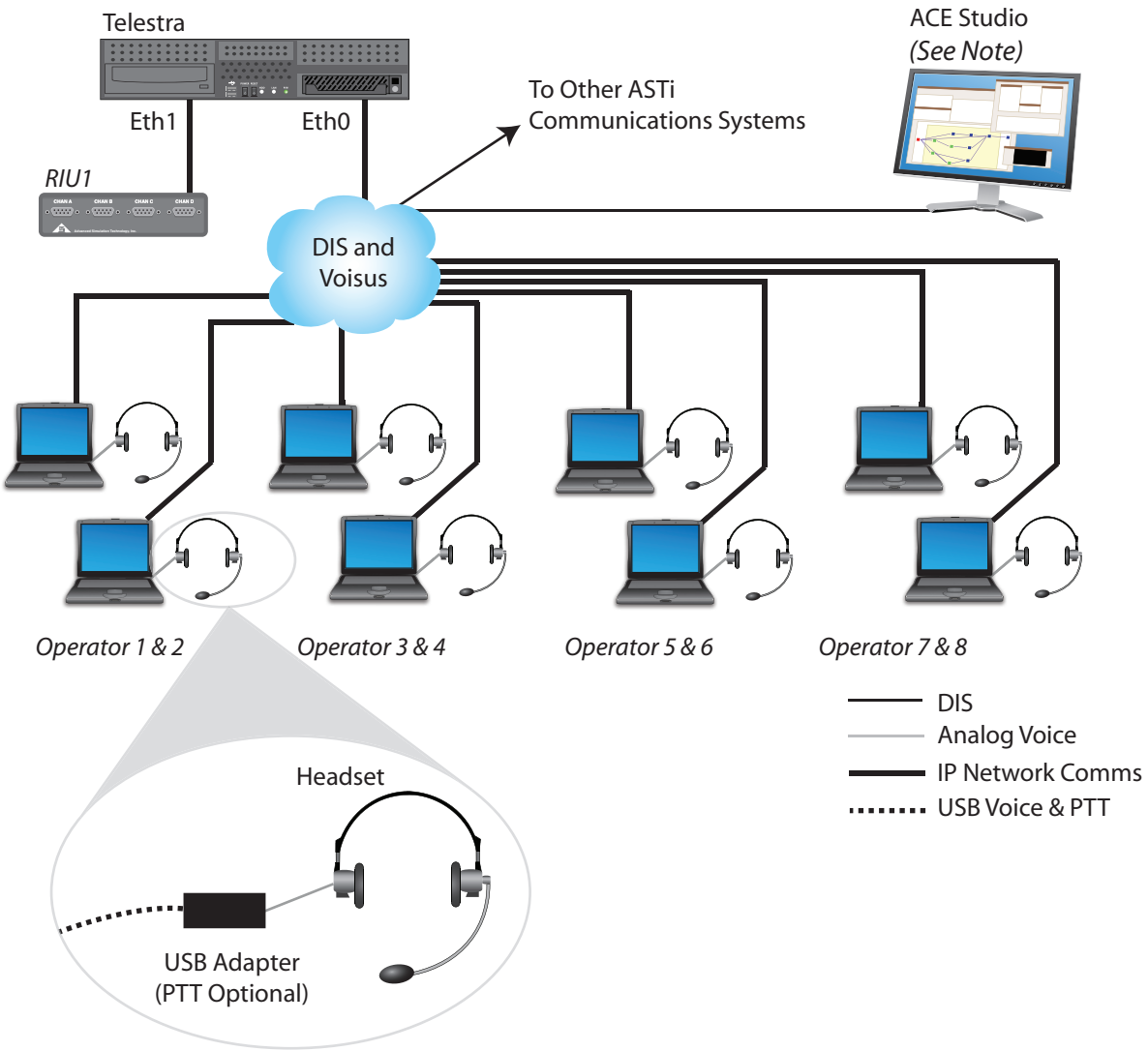


Figure 2: Common Network Configuration

See note on following page.

Note: ACE Studio provides centralized, network-based tools that are used to configure and manage Synapse systems. There are two Studio packages available:

- Studio VM (virtual machine) is provided with every Synapse system. Studio VM is a software-only product that installs on customer-furnished Windows® or Linux™ computers.
- Studio integrated on a Telestra platform. This preconfigured system is available separately.

One ACE-RIU is required for each Synapse Voisus Server to provide system synchronization.

Figure 3 shows a separate network configuration, with Studio and DIS application traffic on one IP network (DIS) and Voisus application traffic on another network (Voisus). The benefit of this configuration is network traffic management. Using this configuration, traffic segregation eases congestion on each network. Also, computers on each network are isolated from superfluous traffic (for example, Voisus client computers are not subjected to DIS traffic), which conserves processing resources.

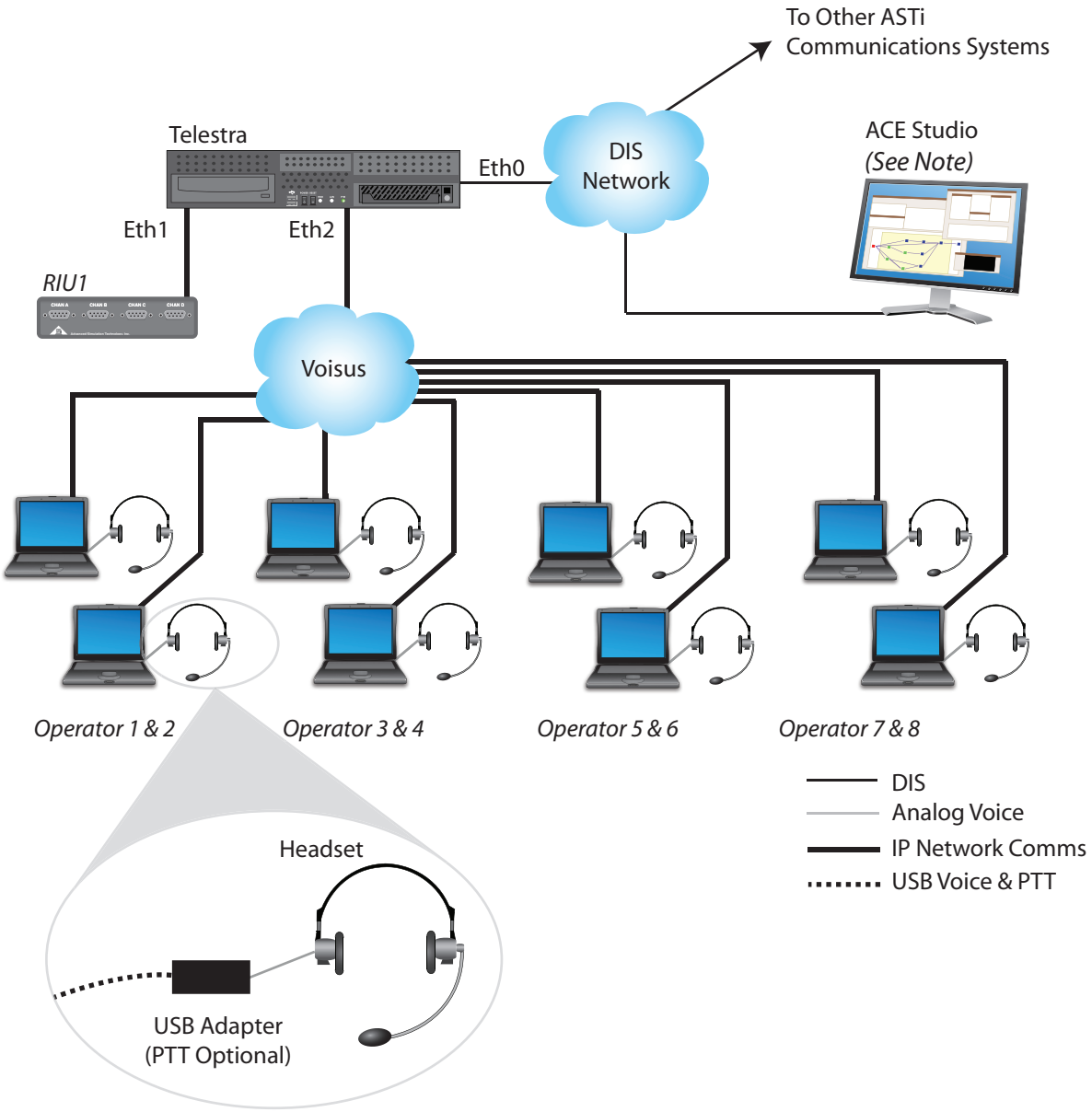


Figure 3: Separate Network Configuration

2.2.2. ACE Studio Installation

There are two Studio packages available:

- Studio VM (virtual machine) is provided with every Synapse system. Studio VM is a software-only product that installs on customer-furnished Windows® or Linux™ computers.
- Studio integrated on a Telestra platform. This preconfigured system is available separately.

In addition to the ACE Studio platform, you will need the following items:

- Monitor
- Keyboard
- Mouse
- Power Supply
- CAT5 or CAT6 cable
- Network connection

Follow these steps to install the ACE Studio platform:

1. Connect to a monitor, keyboard and mouse.
2. Connect ethernet port to an IP network (common with all of the Synapse systems that will be remotely managed by the ACE Studio). See section 2.2.1. for network configuration guidance.
3. Connect to power.

2.2.3. Telestra Installation

The Synapse Voisus Server is hosted on the Telestra platform. In addition to the Telestra chassis, you will need the following items:

- Monitor
- Keyboard
- Power cord
- CAT5 or CAT6 cable
- Network connection

Ethernet Port Connections

Port	Connection
Eth0	DIS (Inter-Telestra Comms) Voisus (Telestra - Client Computer Comms)
Eth1	ACENet (ACE-RIU)
Eth2	Voisus (Telestra - Client Computer Comms, Alternate Configuration)

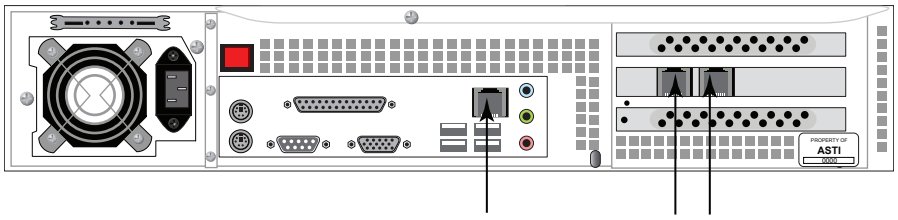


Figure 4: Network Ports

Please read the Eth0, Eth1, and Eth2 labels on your system to verify the Ethernet locations.

Follow these steps to install the Telestra platform:

1. Connect Telestra platform to a monitor and keyboard. Note that a monitor and keyboard are only necessary for initial software configuration.
2. Connect the Telestra's Ethernet interface(s) to the Studio management system, the Voisus client computers and the DIS network (linking to other Telestras). See section 2.2.1. for network configuration guidance.
3. Connect to power.

2.2.4. ACE-RIU Installation

One ACE-RIU is required for each Synapse Voisus Server to provide system synchronization.

Important: The ACE-RIU in the Voisus Server configuration is not used to produce audio. Do not connect headsets to the device.

Refer to Figure 2 for top level system installation guidance.

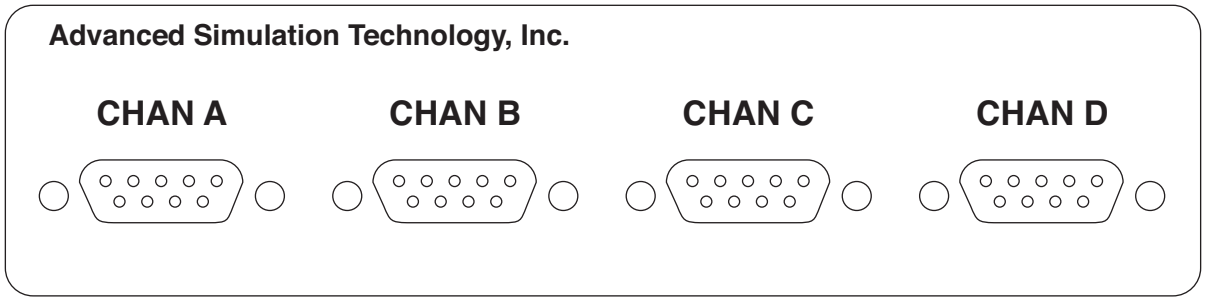


Figure 5: ACE-RIU Front Panel

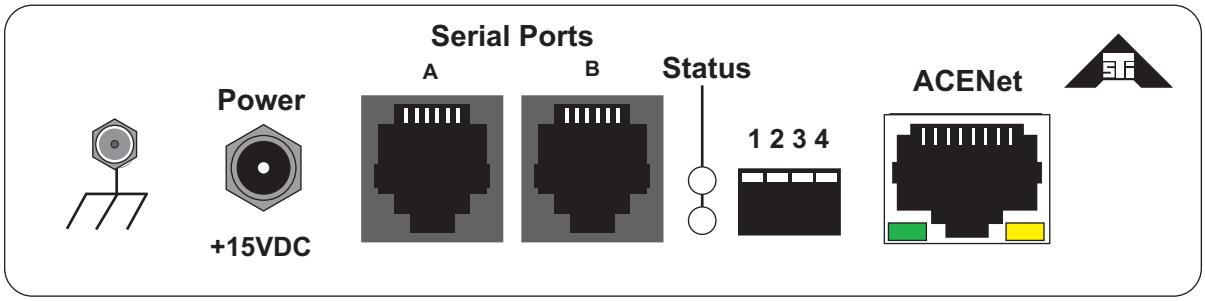


Figure 6: ACE-RIU Rear Panel

In addition to the ACE-RIU, you will need the following items:

- ACE-RIU Power Supply
- CAT5 or CAT6 cable

Follow these steps to install the ACE-RIUs:

1. Connect the ACE-RIU Ethernet port (ACENet) to Eth1 on the Telestra, using a CAT5 cross-over cable or a switch and CAT5 patch cable.
2. Connect to a furnished 15 volt power supply. ***IMPORTANT***: Use only the ASTi furnished power supplies for this purpose. Use of other power supplies may result in equipment damage not covered by the product warranty or degraded product performance.

3.0. SYSTEM SETUP

3.1. ACE Studio Setup

ACE Studio provides centralized, network-based tools that are used to configure and manage Synapse systems. There are two Studio packages available:

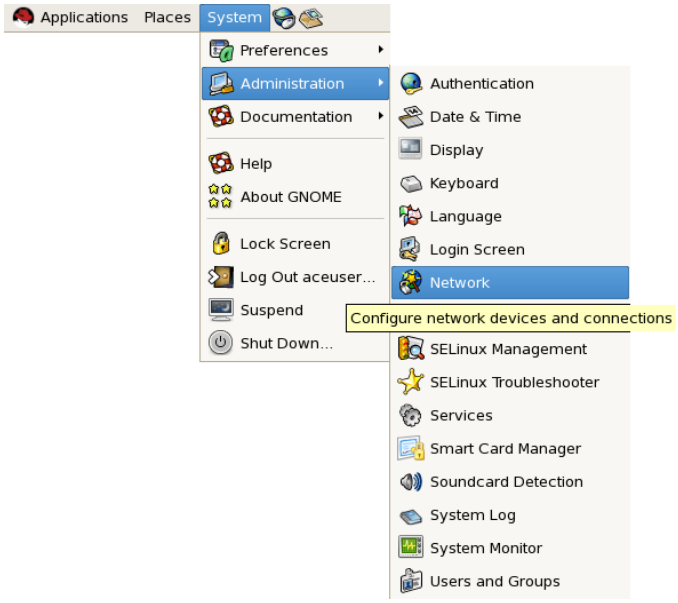
- Studio VM (virtual machine) is provided with every Synapse system. Studio VM is a software-only product that installs on customer-furnished Windows® or Linux™ computers.
- Studio integrated on a Telestra platform. This preconfigured, ready-to-use system is available separately.

The following instructions apply to both Studio VM and integrated Studio products.

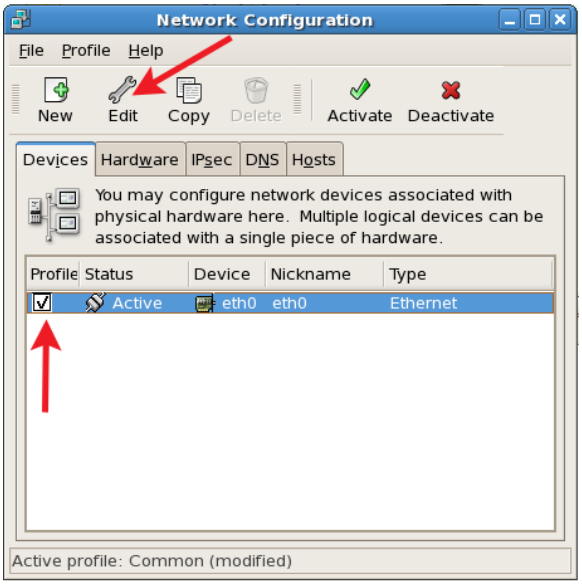
1. Power on the ACE Studio and allow it to boot.
2. Log into the ACE Studio:

   `Username: aceuser Password: aceuser`

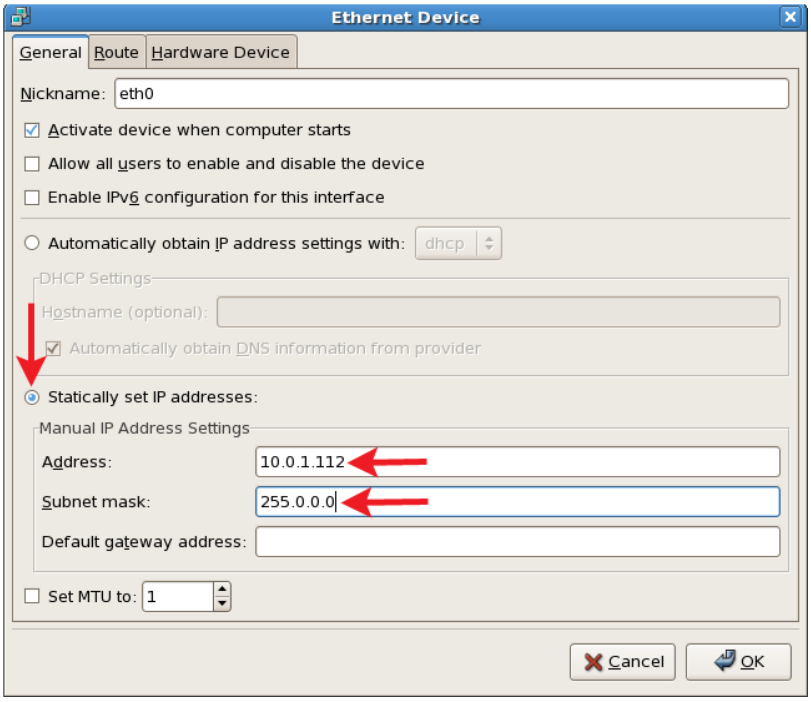
3. In the top left corner select **System > Administration > Networks**.



4. Check the '**Profile**' box and then select '**Edit**.'



5. Select the '**Statically set IP addresses**' fill button.
6. Enter the IP address and Subnet mask.



Contact your network administrator for valid IP addresses and subnet masks for the network(s) where the Telestra platform and ACE Studio will be integrated.

3.2. Telestra Setup

1. Power on the Telestra and allow it to boot.
2. Login with

   `Username: root Password: abcd1234`
3. At the prompt type:

   `ace-net-config -a xxx.xxx.xxx.xxx -n yyy.yyy.yyy.yyy`

   where "`xxx.xxx.xxx.xxx`" is the IP address and "`yyy.yyy.yyy.yyy`" is the netmask.

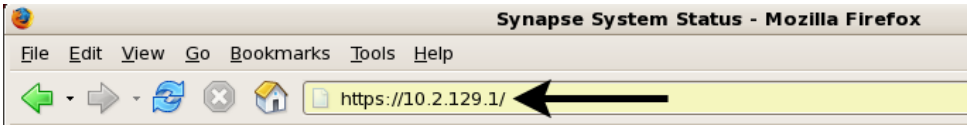
   This sets the IP address and netmask for **Eth0** which is used to access the Remote Management System (RMS) via a browser to complete the network setup.
4. *Optional*: For more network setup options type:

   `ace-net-config -h`
5. Reboot the Telestra to activate the changes.

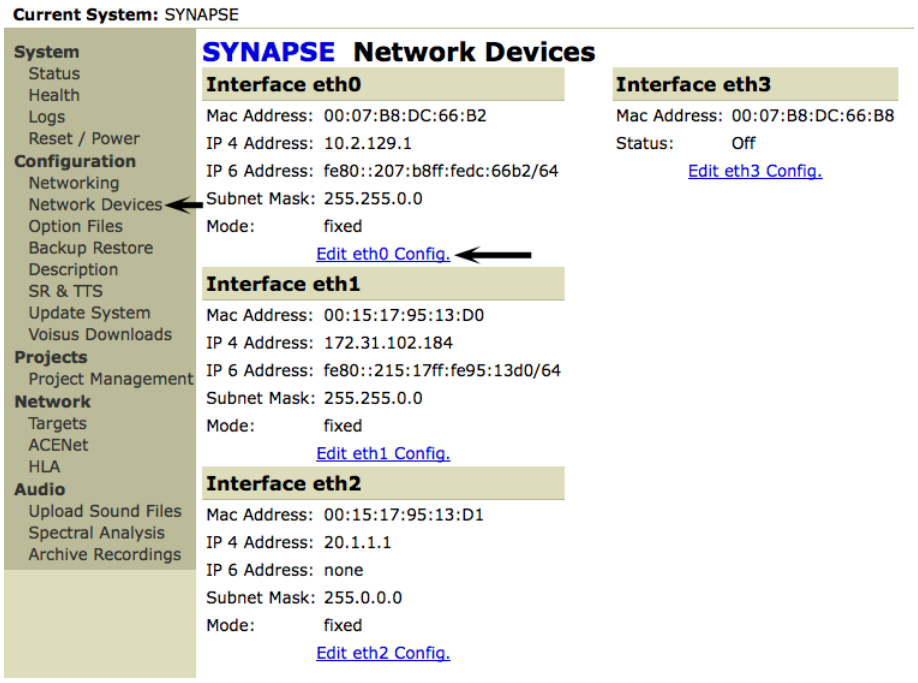
Once you have configured the Telestra IP address, you can use ASTi's web-browser based Remote Management System (RMS) interface to make subsequent changes to the Telestra network settings.

3.2.1. Remote Management System

1. On the ACE Studio or any computer on the network, open RMS by opening the web browser and typing the Telestra IP address in the address bar.



2. In RMS, navigate to the **Configuration** > **Network Devices** page and select the '**Edit Eth0 Config**' link.



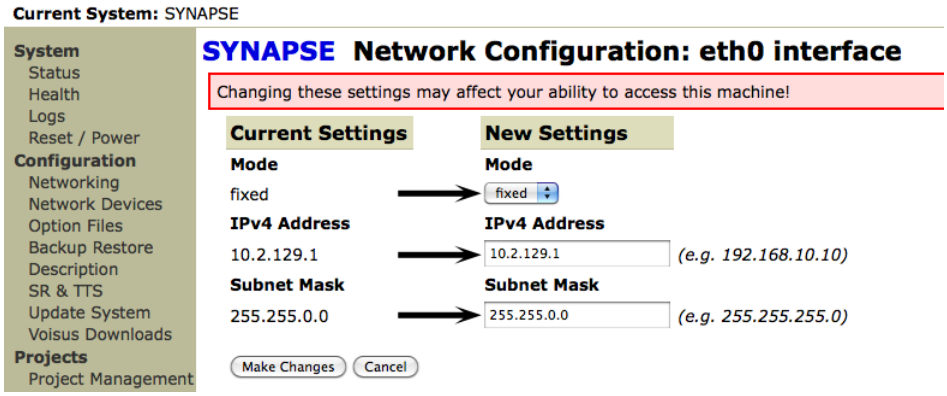
3. Login with

   `Default Username:` **`admin`** `Password:` **`astirules`**

Note: There are two modes to choose from either DHCP or Fixed. If you have a DHCP server and select DHCP, an IP address and subnet mask are automatically assigned. Continue with the following steps for fixed mode.

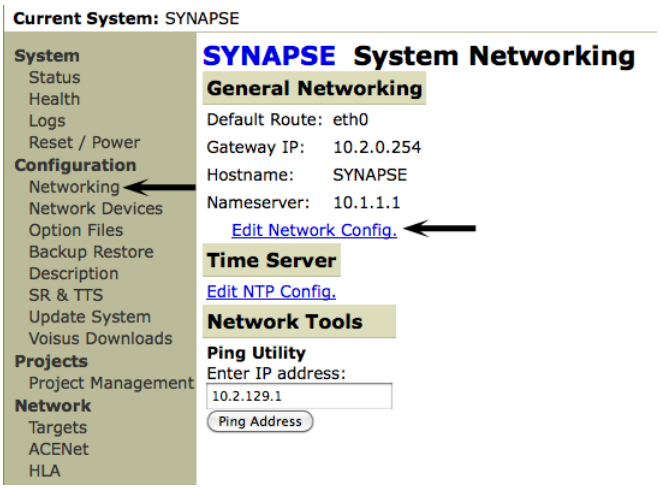
4. Enter the Telestra IP address that was previously entered in the Telestra's command line.
5. Set the mode to '**fixed**.'
6. Enter the subnet mask.

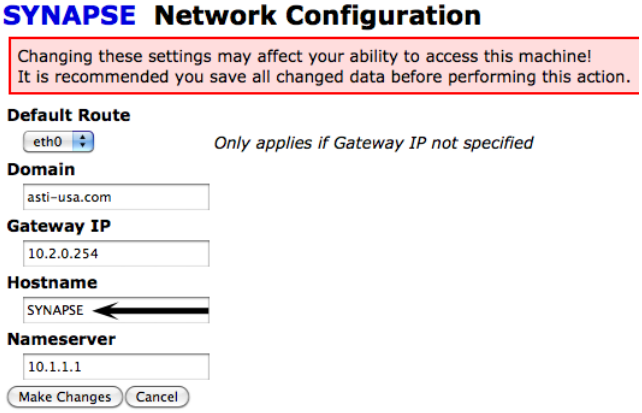
7. Select the '**Make Changes**' button to apply the IP address and subnet mask.



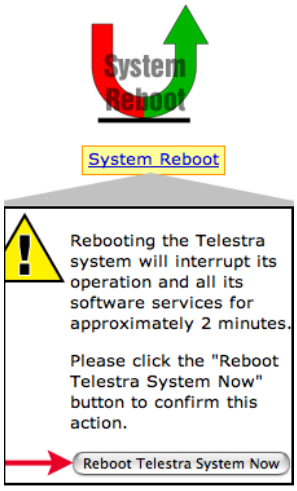
8. Eth1 and Eth2 should remain at the factory default settings. Do not change Eth1 or Eth2.

9. *Optional*: Change the network hostname of the Synapse. Navigate to the **Configuration > Networking** page, and select the '**Edit Network Config**' link. Change the hostname and select '**Make Changes**.'





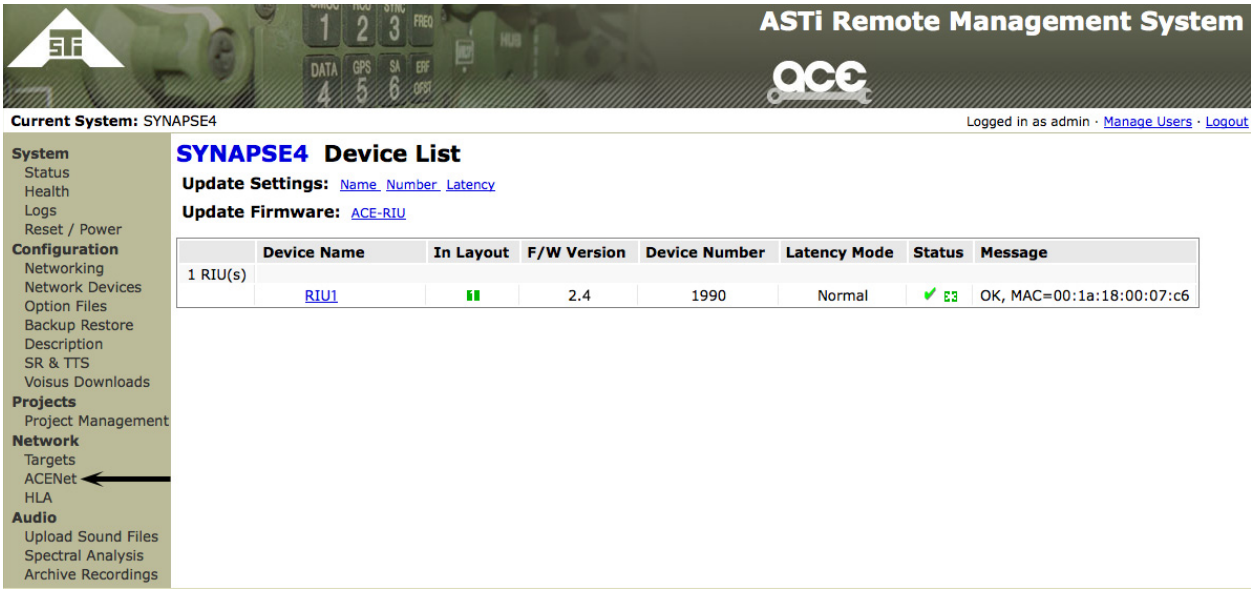
10. Navigate to the '**System Actions**' page (System > Reset/Power) and select '**System Reboot**.' The reboot process will take approximately 2 minutes, select the '**Reboot Telestra System Now**' button.



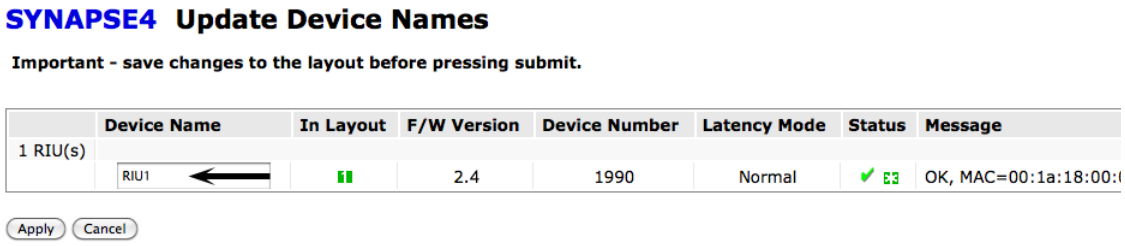
3.3. ACE-RIU Setup

1. Complete ACE-RIU installation, as described in section 2.2.3.
2. Power on the ACE-RIU.
3. In RMS, navigate to **Network > ACE-RIUs**.

   The connected ACE-RIU is listed on this page and has a green check mark under the 'Status' column, if there is a red '**X**' under the 'Status' column there is a problem with the ACE-RIU.

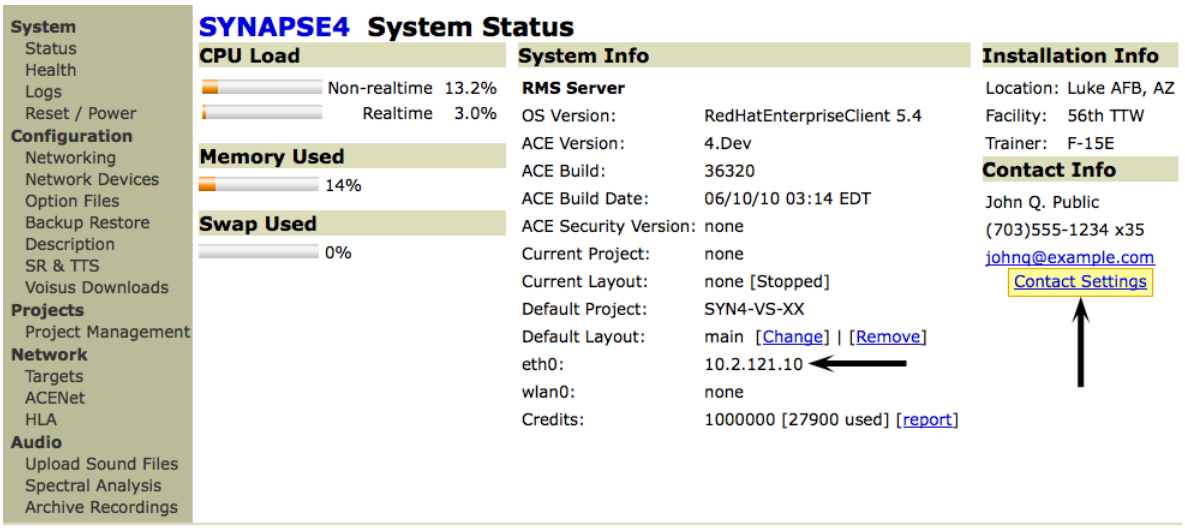


4. Select '**Name**.' Rename the device to "RIU1" as shown below. Please note that the device name is case sensitive and must match the name in the ACE software.



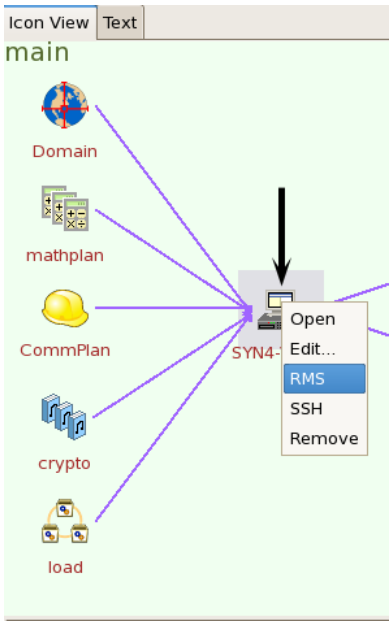
5. Return to the **System > Status** page and confirm the information for Eth0.

   Optional: This page provides a system information section for user contact settings including description, contact email, installation facility, installation location, contact name, contact phone, and installation trainer. If desired, fill in the contact settings to identify your system.



6. Close the browser.

Hint: To open RMS from ACE Studio, right-click on the SYN4-VS-XX icon and select RMS.



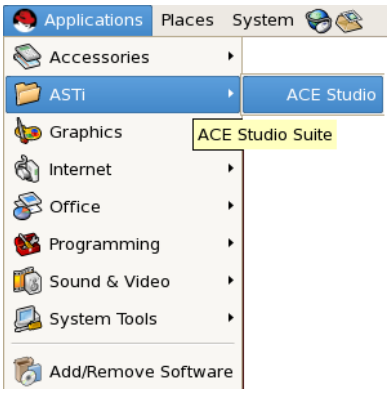
4.0. SYSTEM SOFTWARE CONFIGURATION

The first step toward successful setup and integration of a Synapse system is coordination between all Synapse sites to ensure that critical communications parameters are defined. Follow the steps in this section to ensure proper configuration.

All software is pre-installed during factory system integration. Should you need to re-install the system software, please refer Appendix A: Cold Start.

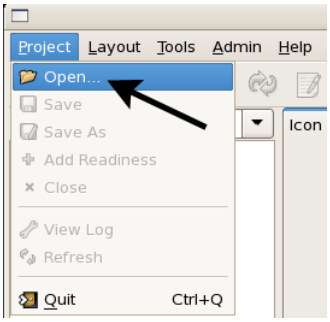
4.1. Creating a Layout in ACE Studio

Navigate to **Accessories > ASTi > ACE Studio** to open ACE Studio.

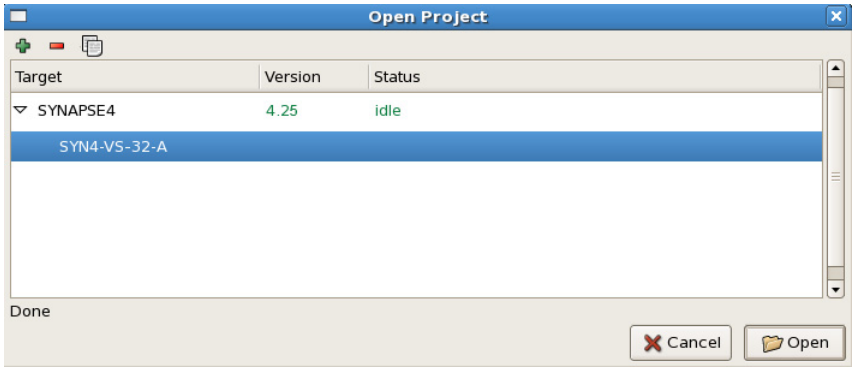


Step 1: Open Project

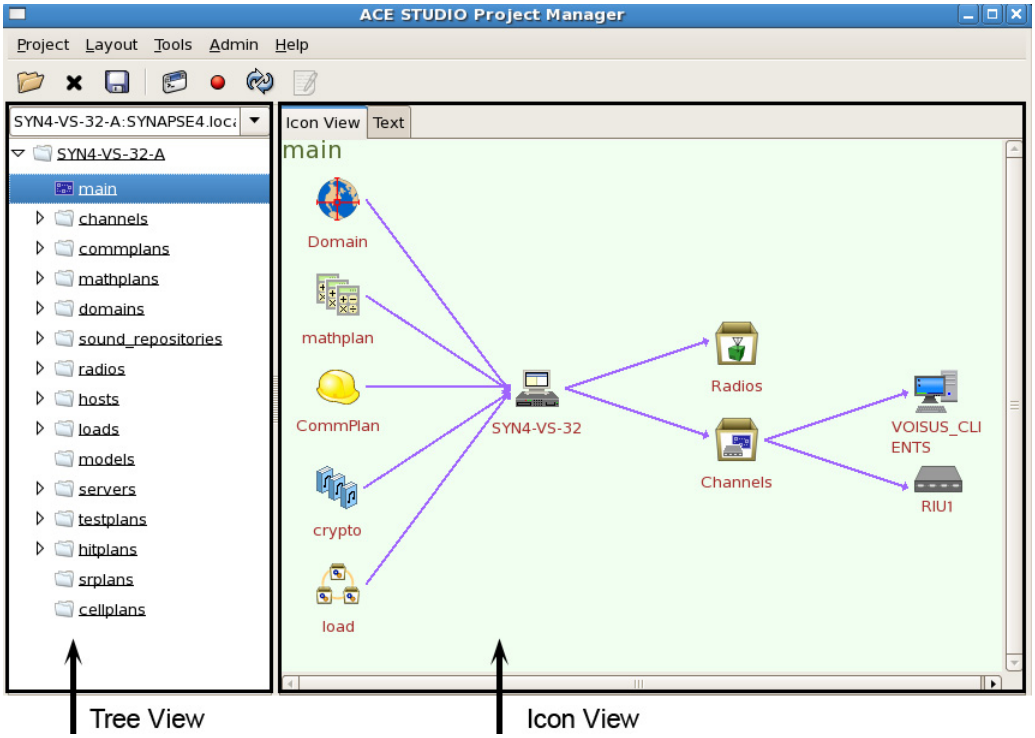
1. In the top left corner of the window, select **Project > Open**.



2. Expand the name of your system (`SYNAPSE4`) by selecting the side arrow. This displays all the projects located on the system.

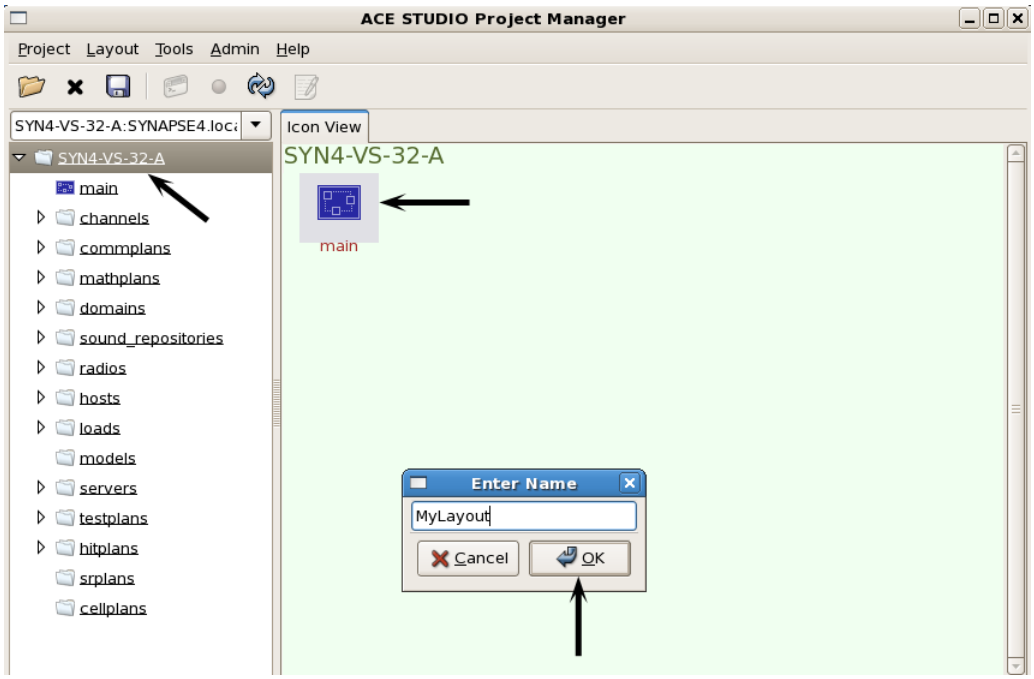


3. Select the project called `SYN4-VS-32`. This will open the Project.

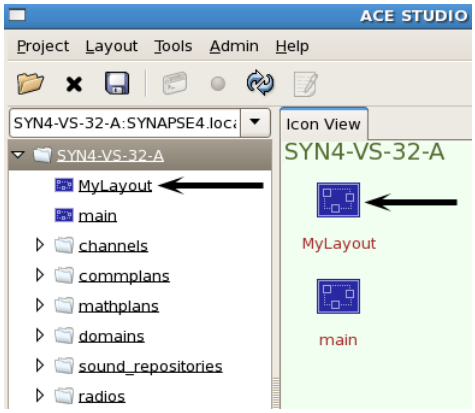


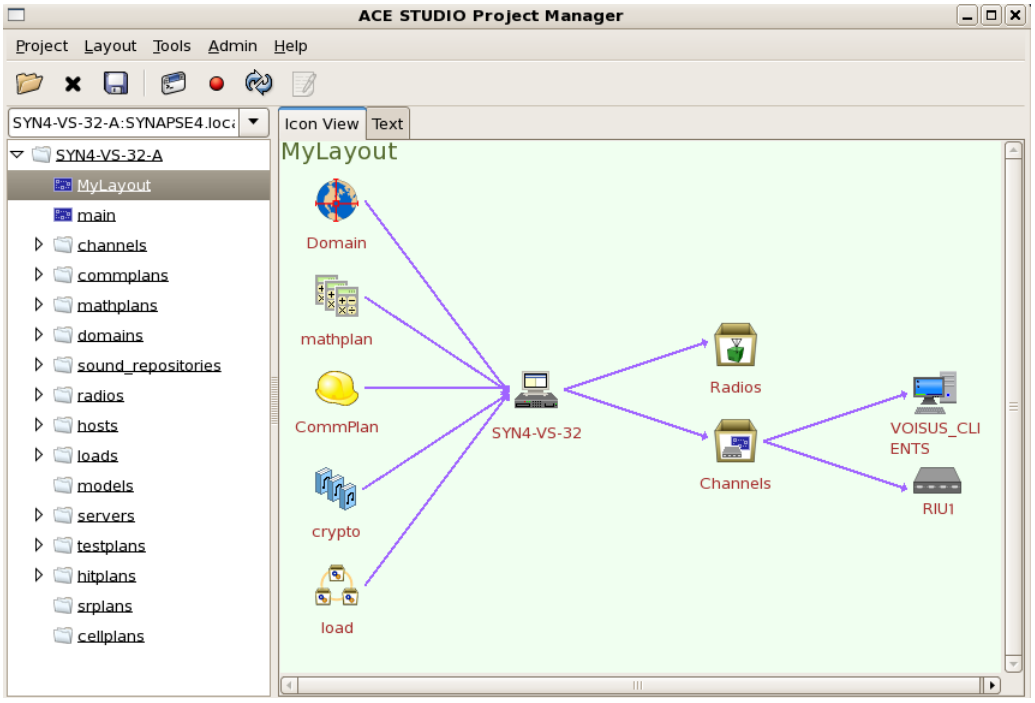
Note: In the remainder of this document the left column of folders is referred to as the 'Tree View.' The graphical layout view is referred to as the 'Icon View.'

4. In the Tree view, click on the '**SYN4-VS-32**' folder. In the Icon view, right-click on 'main' layout and select '**Clone**'. Rename the project accordingly. This will keep your factory layout intact for future reference.



5. In the tree view, click on the new layout that was cloned from ‘main’.

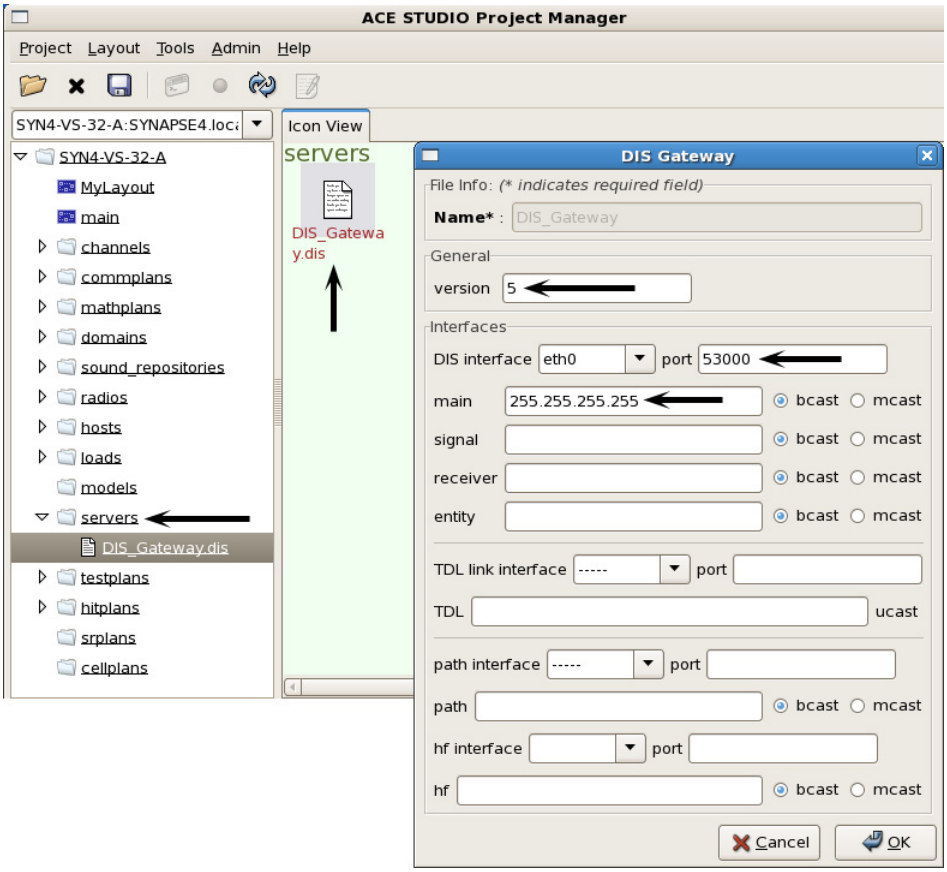




Step 2: Set DIS Gateway

1. In the Tree view, select the **Servers** folder.
2. In the Icon view, double-click the DIS Gateway. This opens the DIS Gateway window.
3. Fill in the DIS version number: 4, 5, or 6.
4. Select Eth0 for the interface and fill in a port number. The default port number is 53000.

   Note: All of the Synapse systems on the DIS network must share a common DIS UDP Port number.
5. Next to '**main**' enter the multicast or broadcast address. This sets the outgoing destination address for packets on the DIS port.
6. Then select '**Ok**'.



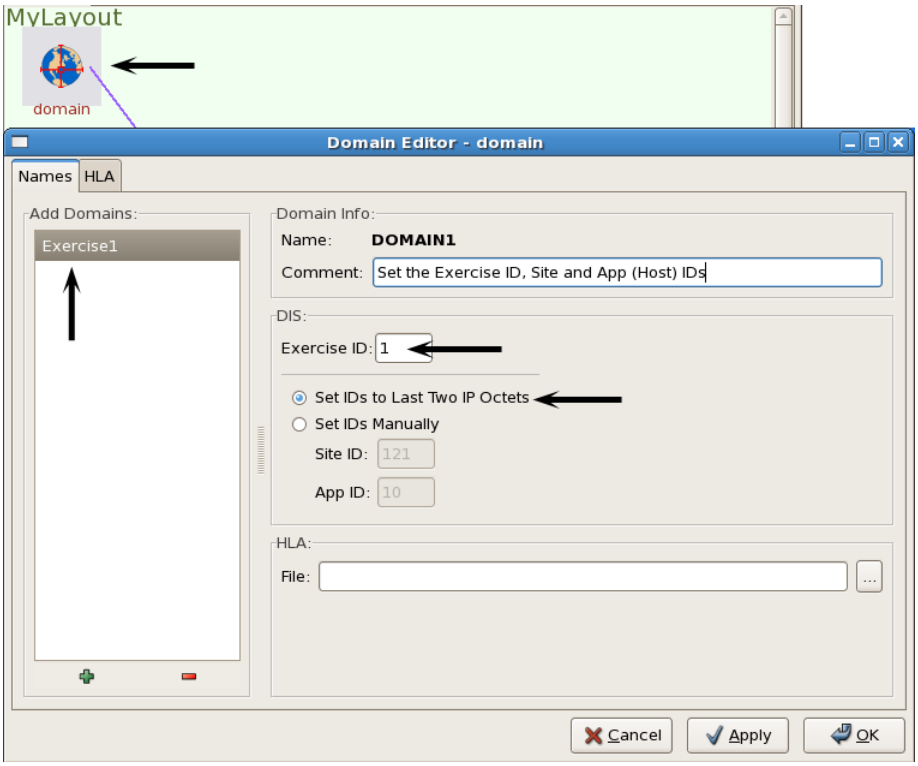
Step 3: Set the Domain

Important: Although the original 'main' layout was cloned and replaced, the Helper/Builder icons (Domain, CommPlan, Operators, Radios, etc.) in the new layout are still connected to the 'main' layout. If you make changes to any of the Helper/Builder icons in the new layout, the 'main' icons will also have these changes. In order to maintain the original layout, it is important to clone and replace the new layout Helper/Builder icons.

1. In the Icon View, right-click the Domain icon and select '**Clone and Replace**' and rename it.
2. Double-click the **Domain** icon.
3. Under '**Add Domains**' select '**DIS**' and enter the DIS Exercise ID number.

   Note that Synapse sites can only inter-communicate if they share the same DIS exercise ID.
4. Select to '**Set IDs to Last Two IP Octets**' to automatically set the Site and App IDs.

   Each Telestra on the network must have a unique set of DIS IDs.



Step 4: Set up the Comm Plan

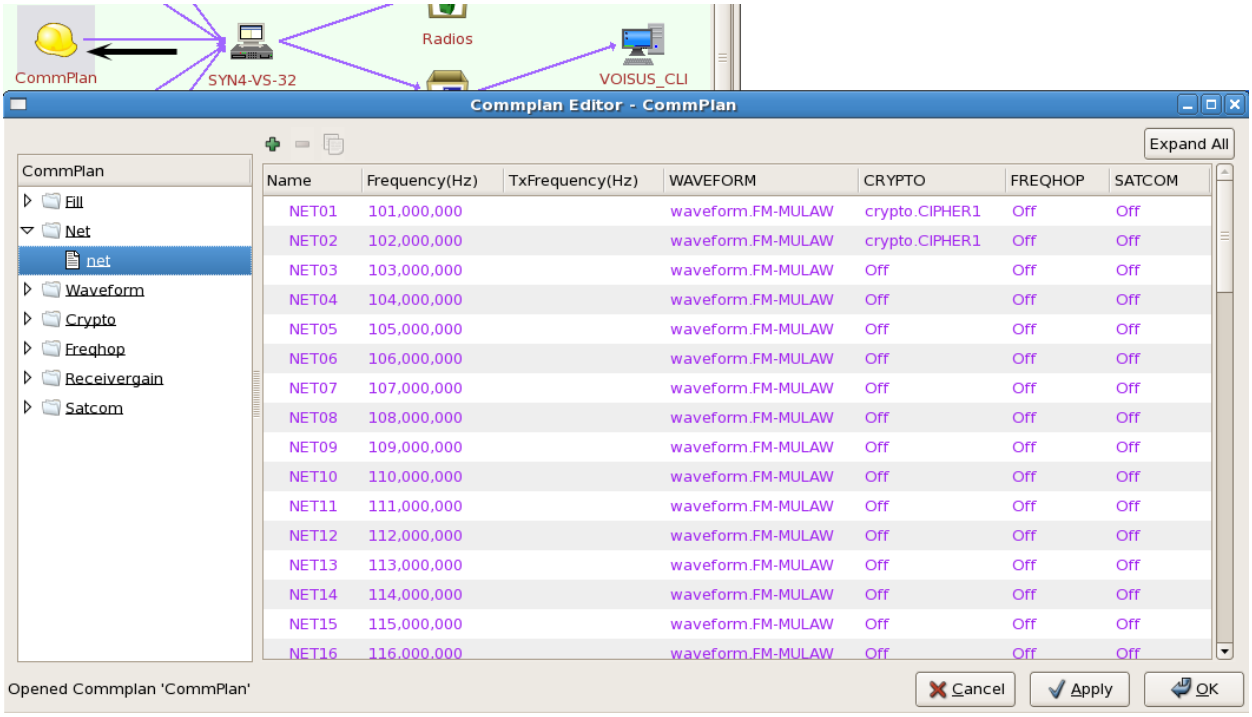
Note: Comm plan will have pre-filled libraries for customer ease.

1. In the Icon View, right-click the Comm Plan icon and select '**Clone and Replace**' and rename it.

1. Double-click the Comm Plan icon to open it.
2. Select the **Net** folder and then select the '**net**' list.

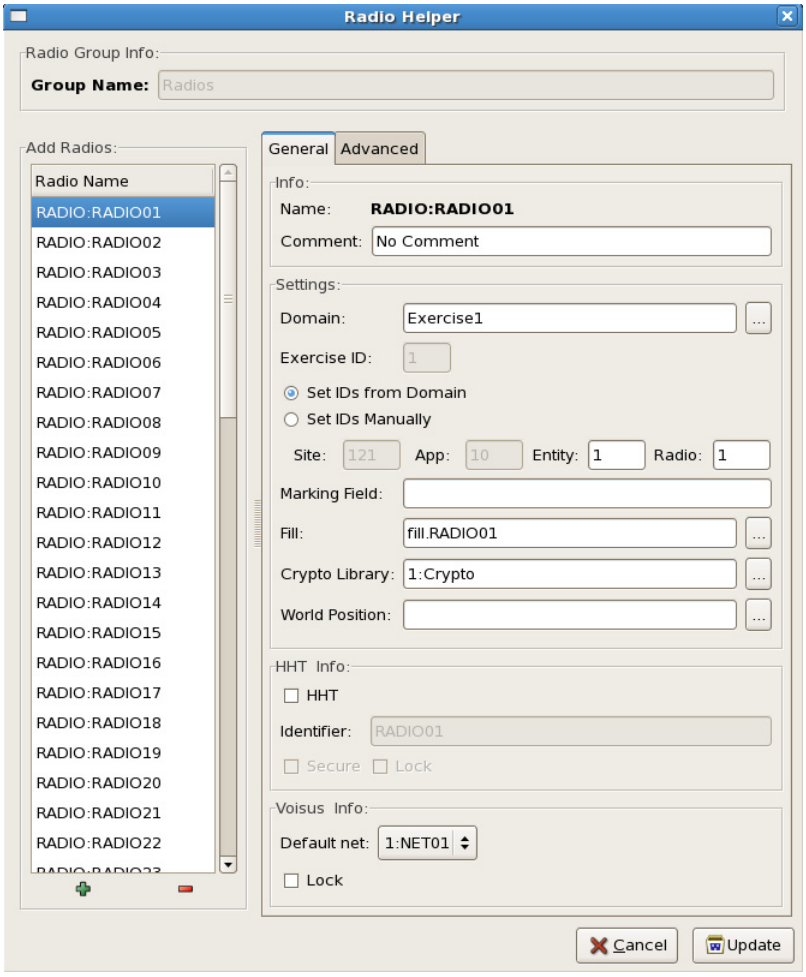
   Important: Do not change the Net names in the list.

3. Configure each Radio Net with a Frequency, Waveform, Crypto, Frequency Hop, and Satcom.
4. Configure each Net with a Frequency and Waveform.
5. Select '**Ok**.'



Step 5: Set Up the Radios

1. In the Icon View, right-click the Radios icon and select “Clone and Replace” and rename it.
2. Double-click the Radios icon to open it.
3. Under ‘**Radio Name**’ select “Radio: XXX” where “XXX” is the radio name. Under Settings set the Domain by selecting the ‘...’ box, select the Domain from the drop down list.
4. Under Exercise ID select ‘**Set IDs from Domain**.’
5. Set the Entity ID and Radio ID.
6. Select the Fill, Crypto Library, and World Position.
7. Under Voisus Info., check the ‘**Lock**’ box if you would like to disable the Voisus client’s ability to change the radio state.

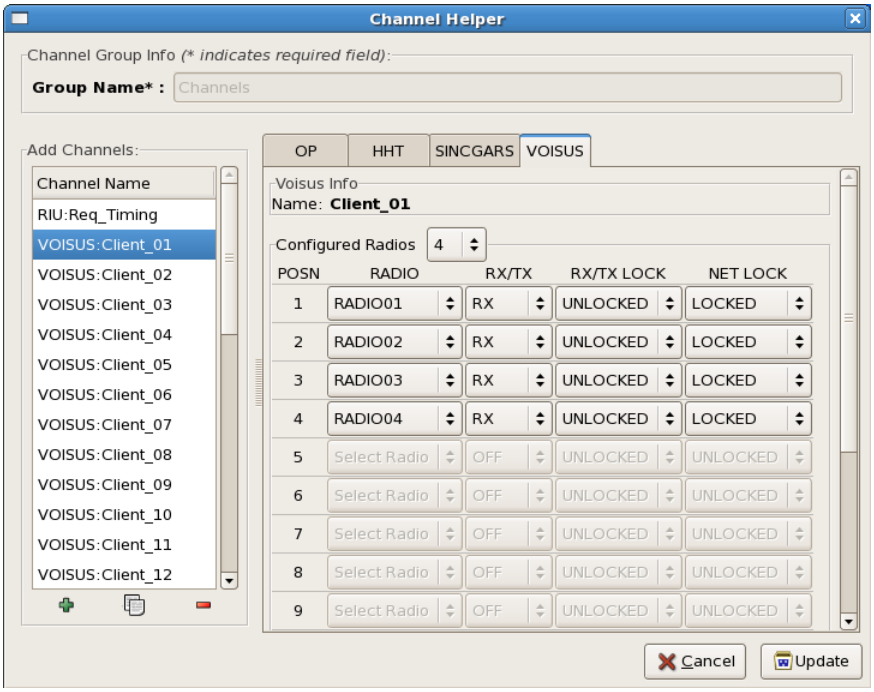


Step 6: Set up the Voisus Channels

1. In the Icon View, right-click the Channels icon and select '**Clone and Replace**' and rename it.
2. Double-click the Channels icon to open it.
3. Select an Client under '**Channel Name**.'
4. Set the **Configured Radios** number. This sets the number of radios the operator will have access to. Voisus clients can have a maximum of 16 radios and VBS2 clients can have up to 8 radios maximum.
5. Select the Radios that were configured previously in the Radio Helper.
6. Set the **Rx/Tx**. ASTi recommends setting most radios to Rx, multiple radios set to Rx/Tx may cause confusion.
7. Set the **RX/TX Lock**. Lock prohibits the operators ability to change the Rx/Tx status.

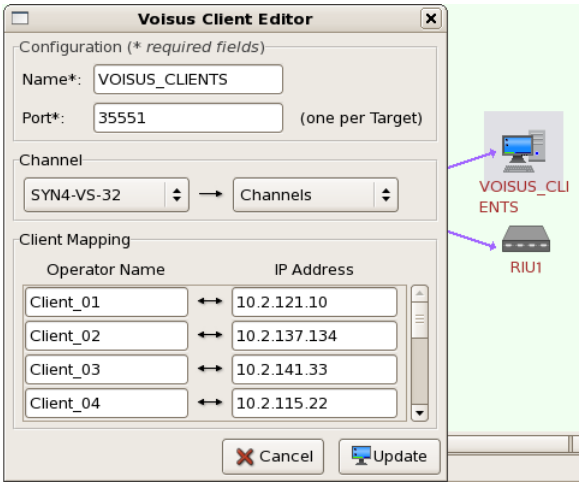
   For example, Operator 1 has access to 3 radios. Two of those radios are Rx only and are locked. The operator cannot transmit on these two radios. The third radio is unlocked, therefore the operator can change the Rx/Tx settings, if desired.
8. Set the **Net Lock**. Lock prohibits the operators ability to change the Net for that position.

Only Client_01 is configured with 4 radios in the default project, complete the configuration of the other clients.



Step 7: Map the Clients

1. Double-click the Voisus PC icon to open the Voisus Client Editor.



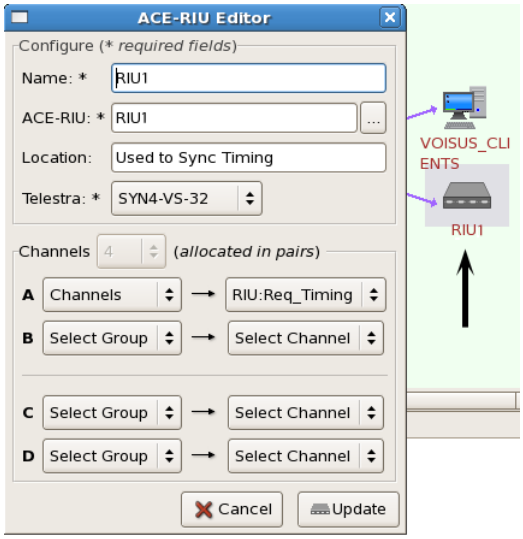
2. Set the **Name** such as "Voisus_Clients."
3. Set the **Port** number. Default port is 35551.

   Note: ASTi recommends using the default port number unless a different one is required.
4. In the **Channel** box, select the Project and Channels Helper name.
5. In the **Client Mapping** box, add each client PC's IP address.

   Note: IP addresses are optional, a blank IP field represents an "open" slot that any "unlocked" client can connect to over the network. Only one client at a time can connect to a slot.
6. Select "**Update**."

Step 8: Map the ACE-RIU

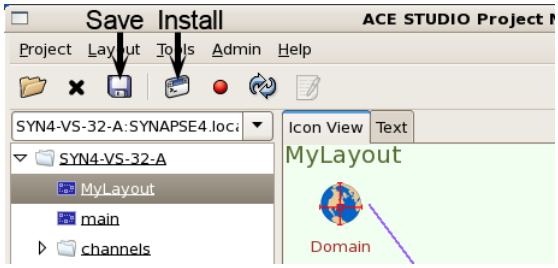
1. Double-click the ACE-RIU icon to open the ACE-RIU Editor.



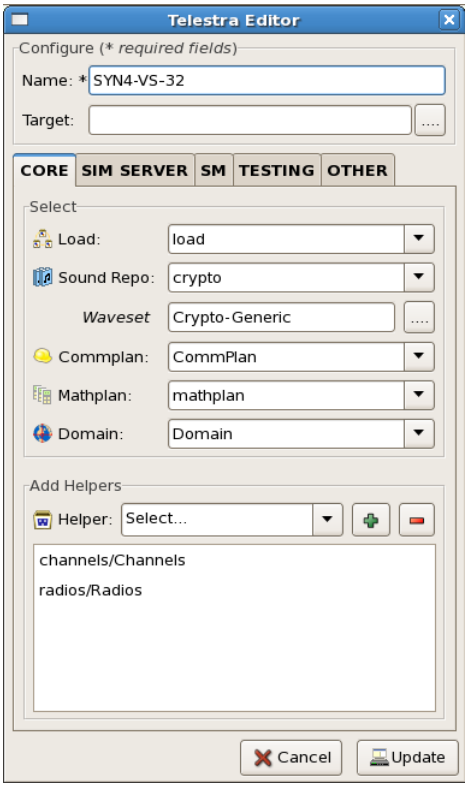
2. Set the **Name** to "RIU1." Please note that the device name is case sensitive and must match the name set in RMS.
3. Select the **ACE_RIU** present on the network.
4. *Optional*: Set the location of the ACE-RIU.
5. Select the Telestra the ACE-RIU is mapped to.
6. In the **Channel** box, select the Channels Helper name and the corresponding operator for each channel.
7. Select "**Update**."

Step 9: Save and Install

1. Select to **Save** and **Install** the layout and start using it immediately.



Hint: If for some reason the Domain or Commplan are not attached to your Telestra in the Layout, you can reassign them to the Telestra under the '**Telestra Edit**' as shown below.



2. For VBS2 only, proceed to Appendix D for the Voisus-VBS2 Plugin installation.

5.0. VOISUS CLIENT

Voisus client is a communication operator GUI panel with remote IP audio. The client application is downloadable using the Remote Management System web interface.

Voisus client software features the following:

- Select up to 16 radios per operator
- Remote configuration and management of all clients using ACE Studio
- Runs on RedHat® Enterprise Linux® or Windows® workstations
- Includes a GUI comm panel providing access to multiple ASTi radios and intercoms
- Support for a variety of headsets and PTTs
- Built-in test for headset and microphone
- Variety of client GUIs available: Voisus standard, SINCGARS and other MIL radios, and VBS2 overlay, Custom GUIs available, contact ASTi for details.

5.1. Client System Requirements

The Voisus software runs on a computer with an Ethernet network connection. See the table below for supported operating systems.

Operating System	Requirements
RedHat® Enterprise Linux® 5.3 or 5.4 (32 bit)	GTK, ALSA, libusb and libprotobuf
CentOS 5	
Windows® XP (32 bit)	SP2 and SP3 with .NET Framework 2.0 or 3.5 installed
Windows® Vista	.NET Framework 2.0 or 3.5 installed
Windows® 7	.NET Framework 2.0 or 3.5 installed

The minimum system requirements include:

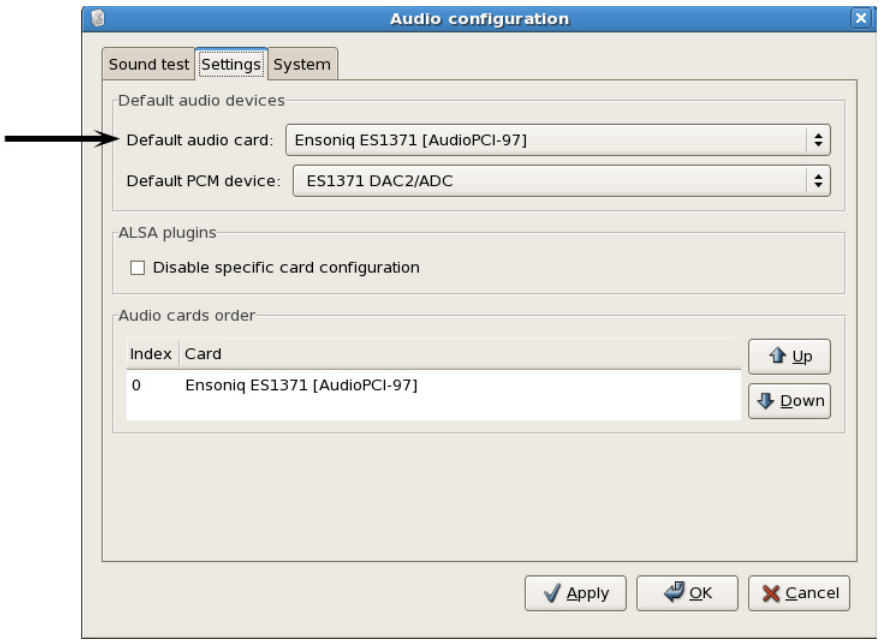
- Intel Pentium 4 1.3 GHz or better
- 1 GB RAM
- 10/100 Ethernet card (client side only)
- mouse
- USB 2.0 port (available for connection to USB adapters and headsets)
- keyboard
- monitor (recommended minimum resolution of 1280 x 800)
- Telestra on the network with simulated radios or intercoms

5.2. Choosing an Audio Device on the Client

On the client PC you must select the audio device that Voisus should utilize. This will vary depending on the operating system. Plantronics devices will show up as “DA40 Adapter” and the radius device as “ASTi Radius”.

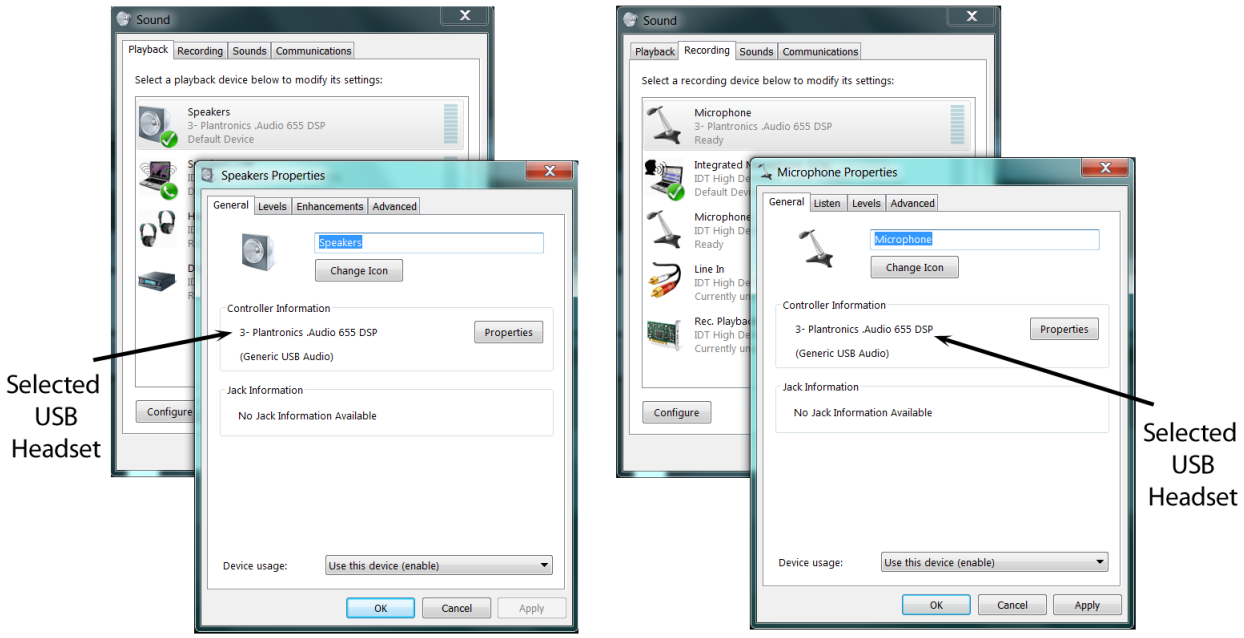
5.2.1. Linux Default Audio Device

If you are using a Linux OS navigate to System > Administration > Sound card Detection and ensure that the proper audio device is selected as the “**Default audio card**.”



5.2.2. Windows Default Audio Device

If you are using a Windows OS, navigate to the Control Panel > Sounds and ensure that the proper audio device is selected as the default Windows **"Playback"** and the default **"Recording"** device for the microphone and the speaker.



6.0. CLIENT SOFTWARE INSTALLATION

Download the Voisus client software on the workstation using ASTi's Remote Management System (RMS). Navigate to RMS using a standard web browser on any workstation with the same network (LAN/WAN) as the Telestra. Open the web browser and in the address field type:

```
http://xxx.xxx.xxx.xxx/
```

where "xxx.xxx.xxx.xxx" is the IP address assigned to the Telestra's Eth0 interface.

After pointing the browser to the Telestra, RMS will respond by displaying the System Status screen. Navigate to the Configuration > Voisus Downloads page and select the Voisus link that corresponds to your system, either Linux or Windows. Follow the installation section below that corresponds to your operating system.

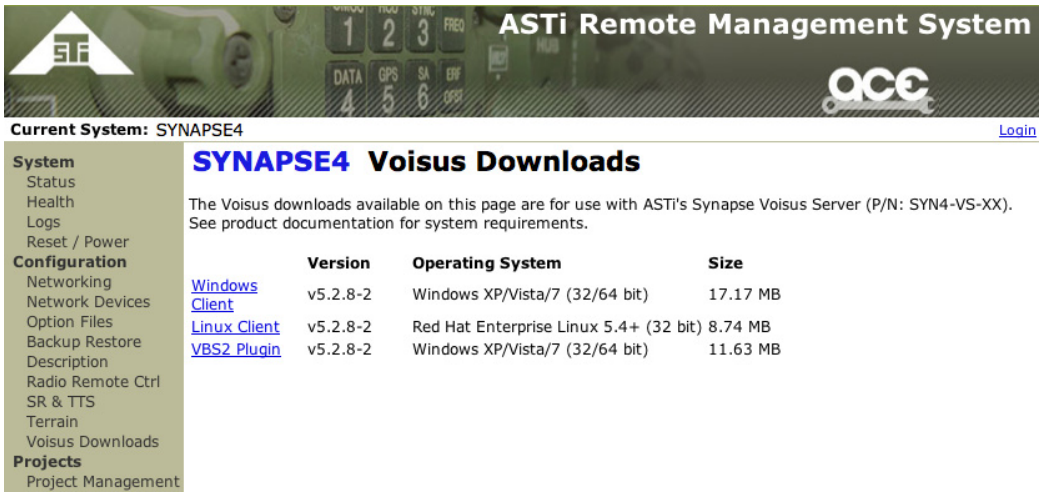


Figure 7: RMS Voisus Downloads

6.1. Linux Installation

First download the Voisus client for Linux from RMS as described in the previous section to the desktop.

1. Open a command prompt by selecting Applications > Accessories > Terminal.
2. Follow the RMS instructions as shown below.

How to install the Linux (self-extracting) file

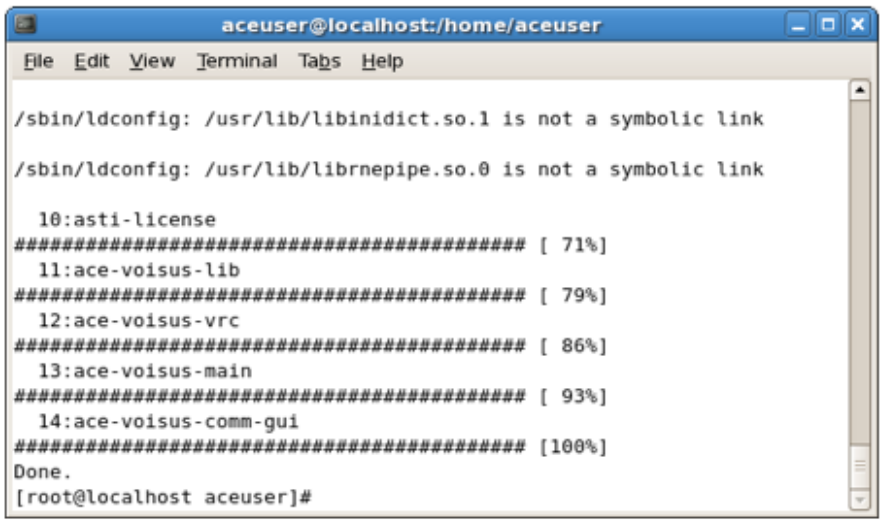
Follow these instructions:

1. **Change the permission of the file you downloaded to be executable.** Type:
   `chmod a+x voisus-comm-<version>.bin`
   <version> refers to Voisus client version you just downloaded.

   For Example: To install voisus-comm-v5.2.8, above command will become
   `chmod a+x voisus-comm-v5.2.8.bin`

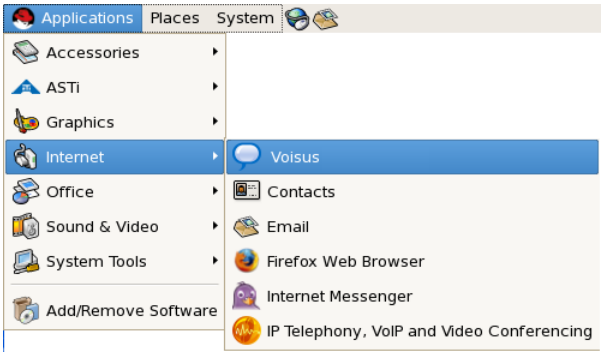
2. **Become the root user** by running the su command and entering the root password.
   At the terminal: Type:
   `su`
   Enter the root password and press enter.

3. **Run the self-extracting binary** Type:
   `./voisus-comm-<version>.bin`
   When the installation has completed, you will see the word **Done**.

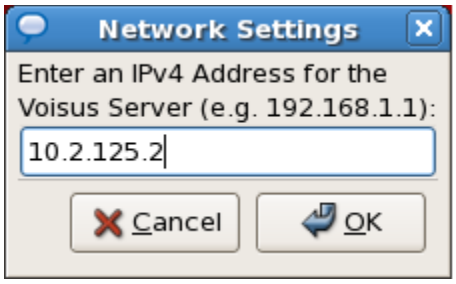


4. The installation is now complete. Please **reboot** your computer so settings can take effect.

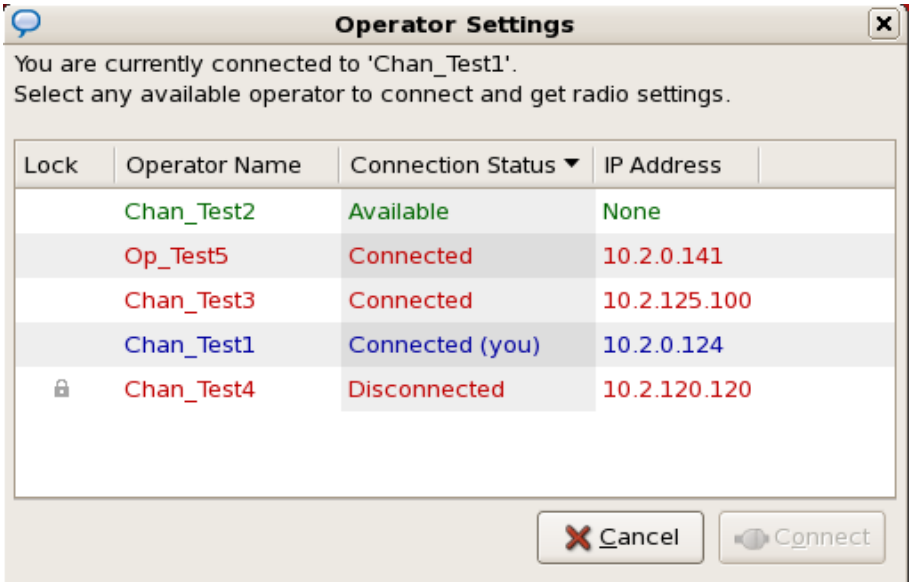
3. Navigate to Applications > Internet > Voisus.



4. Set the network settings for the Telestra. Set the IP address of the Telestra.



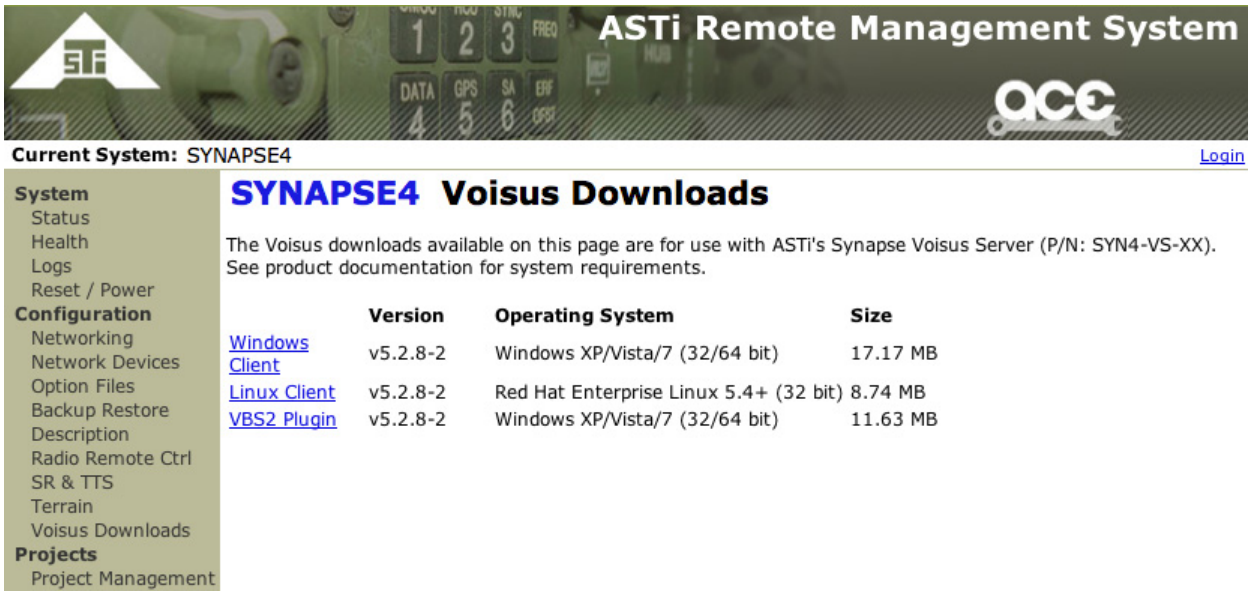
Depending on the Voisus configuration in ACE Studio, the operators settings window may open to select an operator. If the IP Address field shows “None” then the user may select that Operator Name. If an operator is selected it will show a lock icon. Locked operators are not available. The only exception is the designated Voisus Client system.



6.2. Windows Installation

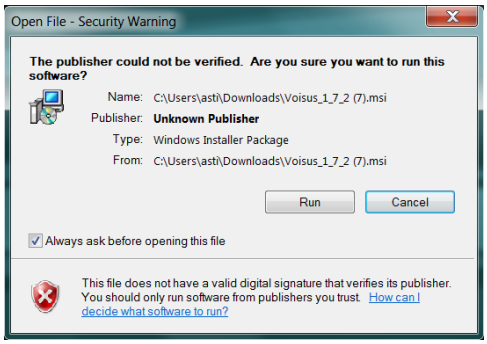
Install .NET Framework 2.0 or 3.5 if using a Windows® XP system before installing the Voisus client software. Refer to the Microsoft website (http://www.microsoft.com) for information and downloads.

1. Download the Voisus client for Windows from RMS as described in section 6.0 of this document.

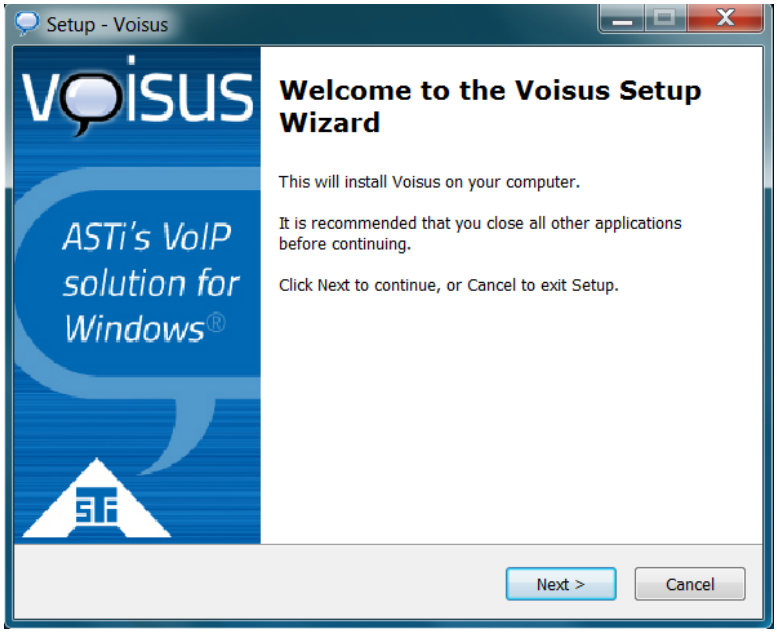


2. Navigate to the “VoisusSetup_x_y_z.exe” file where x.y.z represents the software revision. Double-click it to begin the installation.

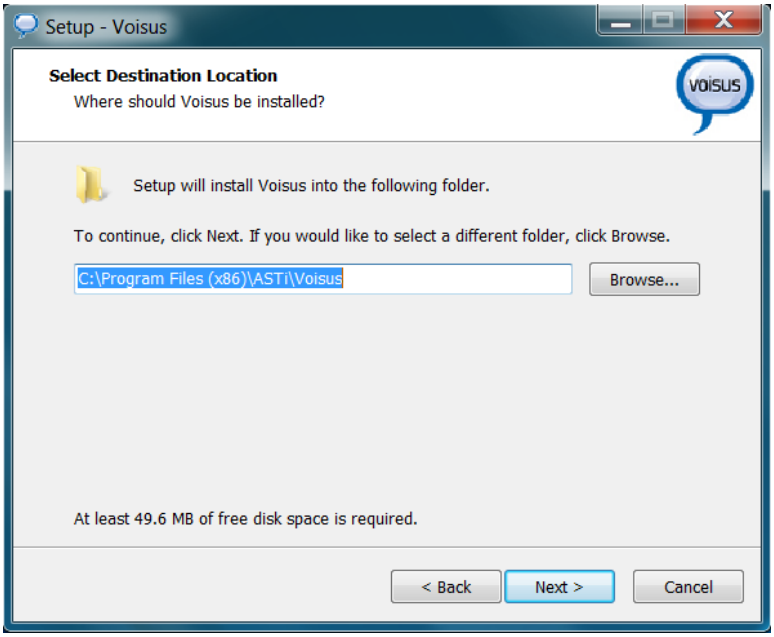
3. The Security Warning window may appear, select “Run” to install the software.



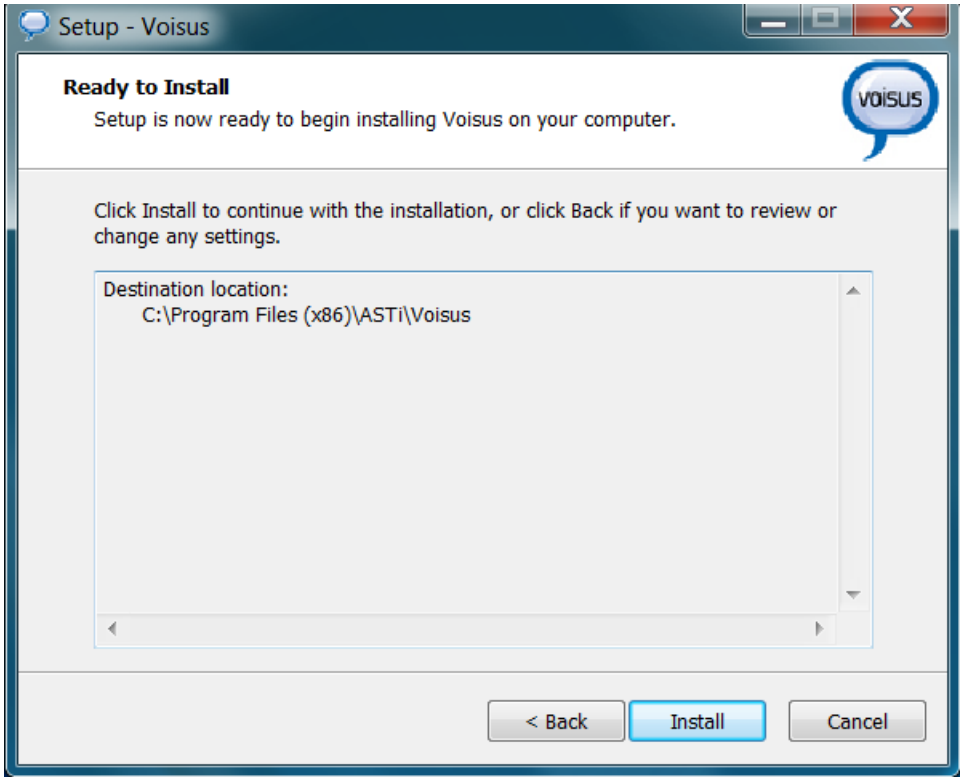
4. The Voisus setup will begin, select “Next” to begin software installation.



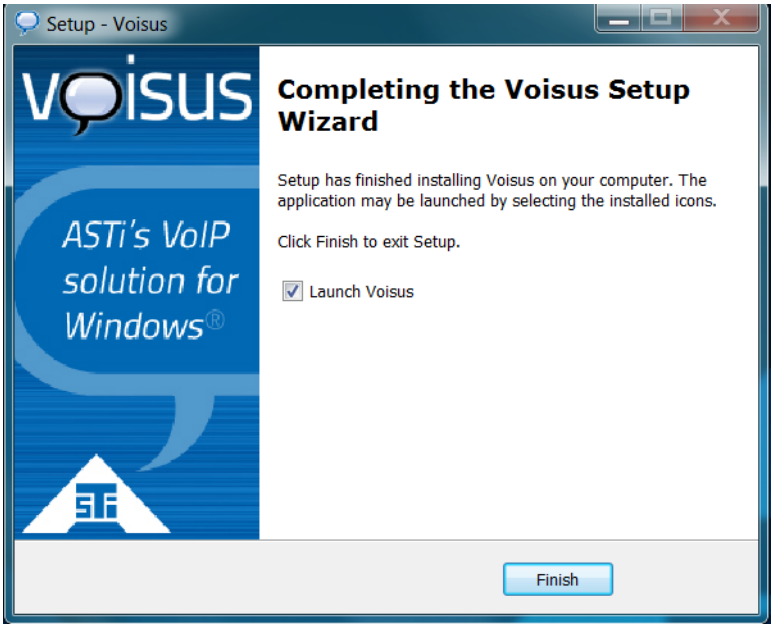
5. Select the file location for the Voisus folder and select “Next.”



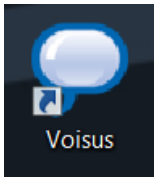
6. Select “Install” to begin the installation.



7. Select “Finish” to end setup.If “Launch Voisus” is checked, Voisus will automatically open after selecting finish.

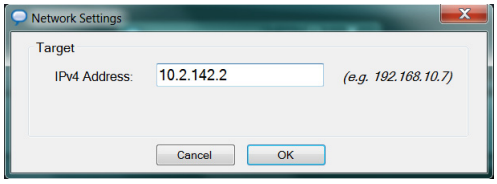


8. Otherwise, double-click the “Voisus.exe” icon on the desktop to open Voisus.

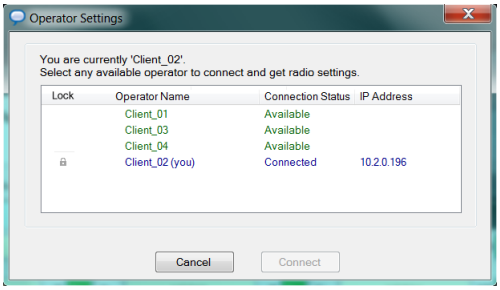


9. Set the IP address of the Telestra. The port number must match the port number set in the Voisus Client Editor as shown in Step 7 of Creating a Layout in ACE Studio. If you are unsure of these settings, contact your network administrator.

   Note: ASTi recommends using the default port number unless a different one is required.



   Depending on the Voisus configuration in ACE Studio, the operators settings window may open to select an operator.



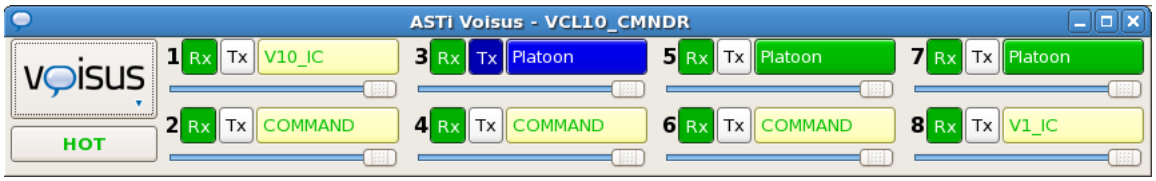
7.0. STANDARD CLIENT GUI

The Client features audio and control devices that provide a complete operator interface to the DIS network communications environment. The standard Synapse Voisus Server system connects to customer provided Windows or Linux PCs hosting the clients. Client stations may include optional headsets, mics, and PTTs.

The Voisus interface provides runtime communications control settings (volume, sidetone, receive and transmit access) for each net available on the network.

The Voisus Operator settings configured in Studio provide the pre-set values for the Voisus interface. At system startup, these values are automatically loaded into the software application. These settings include:

- **Operator**: The operator name for the client station.
- **Radio**: Defines the radio or intercoms available to the operator.
- **RX/TX**: Sets comms status for Receive Only, Transmit and Receive or Off, for each radio.
- **RX/TX Lock**: Grants comms status change privileges to the Client. If locked, it disables the operator's ability to change the comms status (receive, transmit or off) for each DIS radio. This means that the presets loaded from the software configuration cannot be changed by the operator.
- **Net Lock**: Lock prohibits the operators ability to change the Net for that position. This means that the preset nets loaded from the software configuration cannot be changed by the operator.



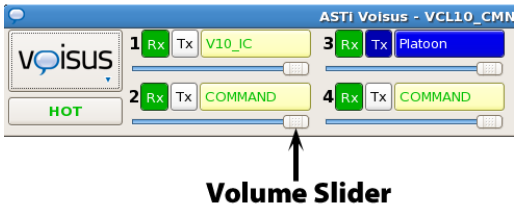
Once the system starts, the Voisus display shows the operator's communications status, as loaded from the software configuration.

Select each net. Click on the net number to cycle through Receive Only (green), Transmit and Receive (blue), and none (gray).

Receive Only allows the operator to hear audio received on the radio. When a transmission from another radio is received, the entire radio name turns Green. The radio name is illuminated in light green when the audio is active, but the operator isn't actively listening.

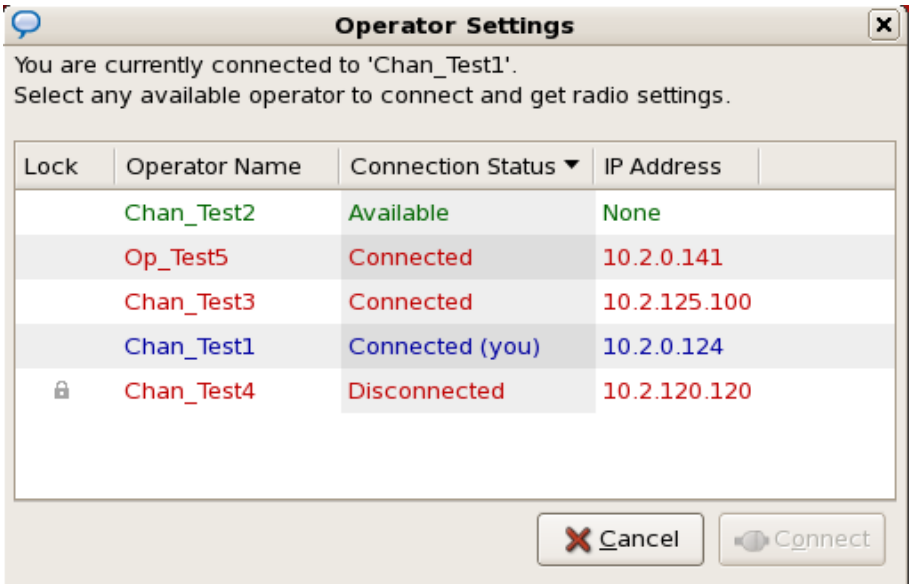
Transmit and Receive allows the operator to receive and transmit on the selected radio when the PTT is pressed. Notice when the PTT is pressed, the entire radio name turns blue; this indicates the operator is currently transmitting. The radio name is illuminated in light blue when a shared radio is transmitting but the operator is not transmitting on that radio.

Each operator may individually set the volume of each radio. The sliding bars below each radio control the received audio volume. Slide to the right to increase volume, slide to the left to decrease volume.



7.1. Operator Settings

The Operator Settings allow the user to select any available operator and retrieve radio settings. Operators may be locked by the administrator in the ACE Studio configuration.



7.2. Headset Settings

Embedded functionality allows operators to set radio settings such as volume, sidetone and vox levels. There are headset presets for the Plantronics USB headset and a preset for the ASTi Radius. Select the preset for your headset and select “Set Values” then adjust the settings as necessary. Adjust the Earphone, Mic, Vox, and Sidetone settings to a comfortable level using the microphone test.

Vox mode allows for automatic transmission of voice without having to push a PTT button. The Vox is voice activated and is dependent upon the threshold level. The higher the vox level, the louder the voice must be to transmit, i.e. output is active only when the voice level exceeds the threshold. The lower the vox level, the voice is easily transmitted, i.e. output is active at a lower level.

Sidetone volume sets the level for hearing your own voice feedback during net transmissions. Note: In order to hear sidetone, a radio must be enabled, and your headset device must support sidetone (see supported USB Adapters and Headsets).

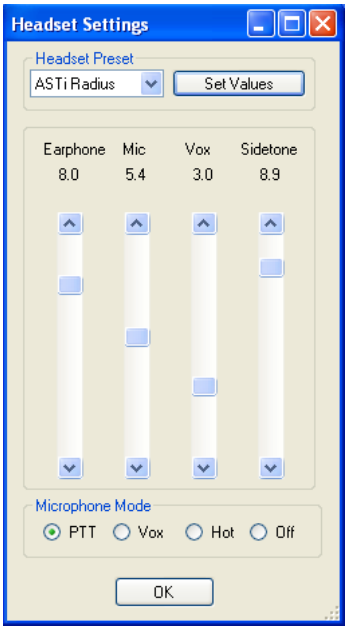


Figure 8: Headset Settings

To test the headset use the earphone test which plays a sinewave to check the sound device. Run the microphone test to turn the microphone on and verify that it is working properly.

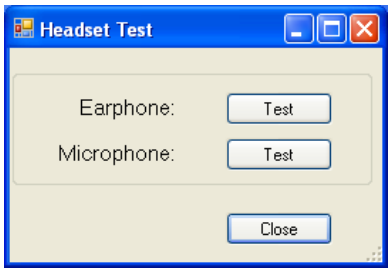
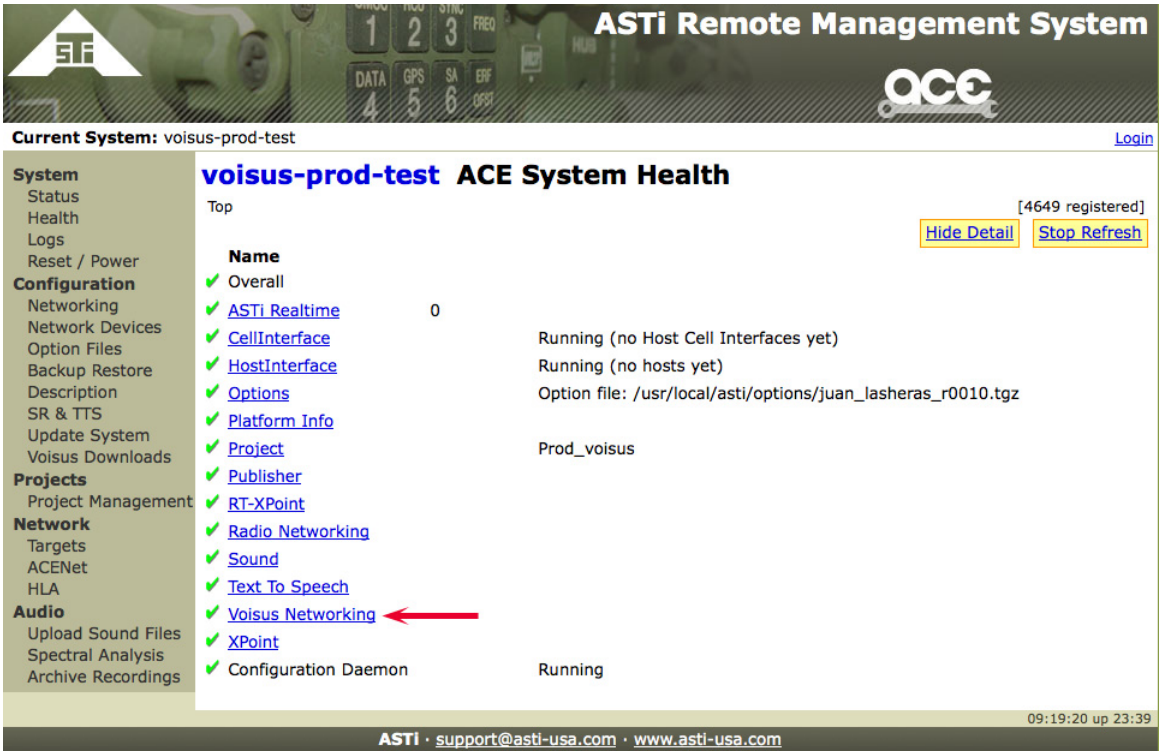


Figure 9: Headset Tests

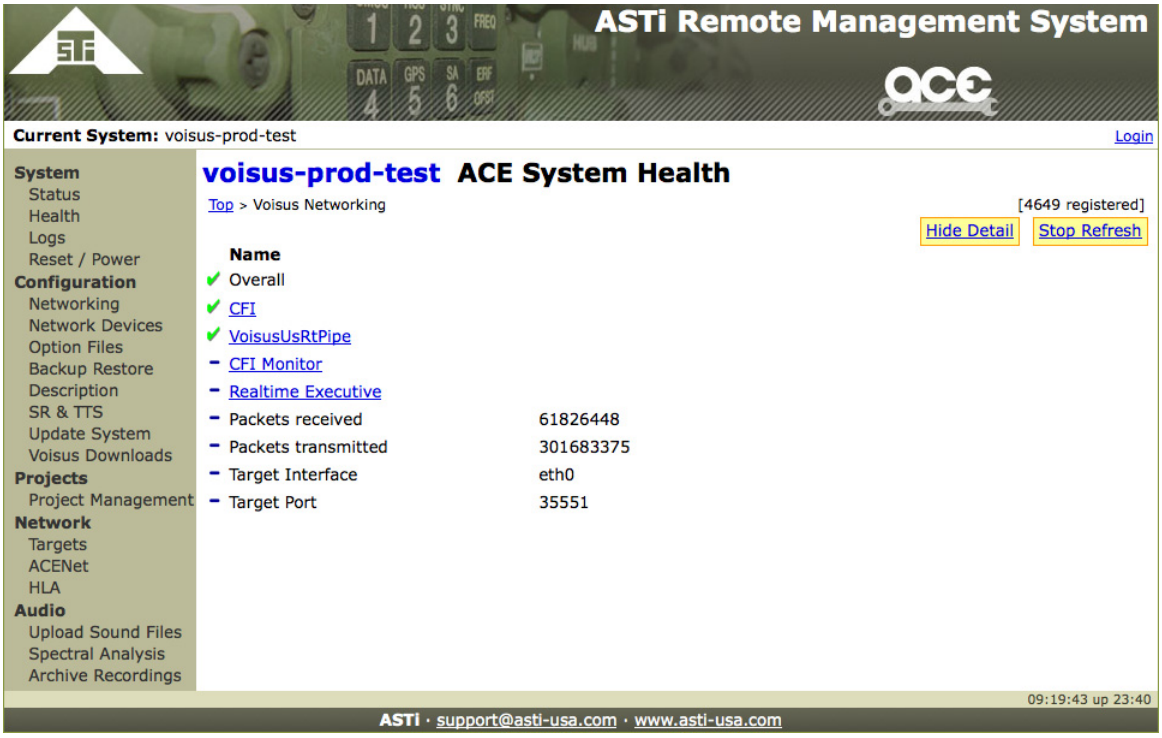
8.0. TROUBLESHOOTING

On the Voisus client, under the Voisus options, select the “Log...” to view the status of the Voisus client, specifically the headset status, headset audio and Telestra connection.

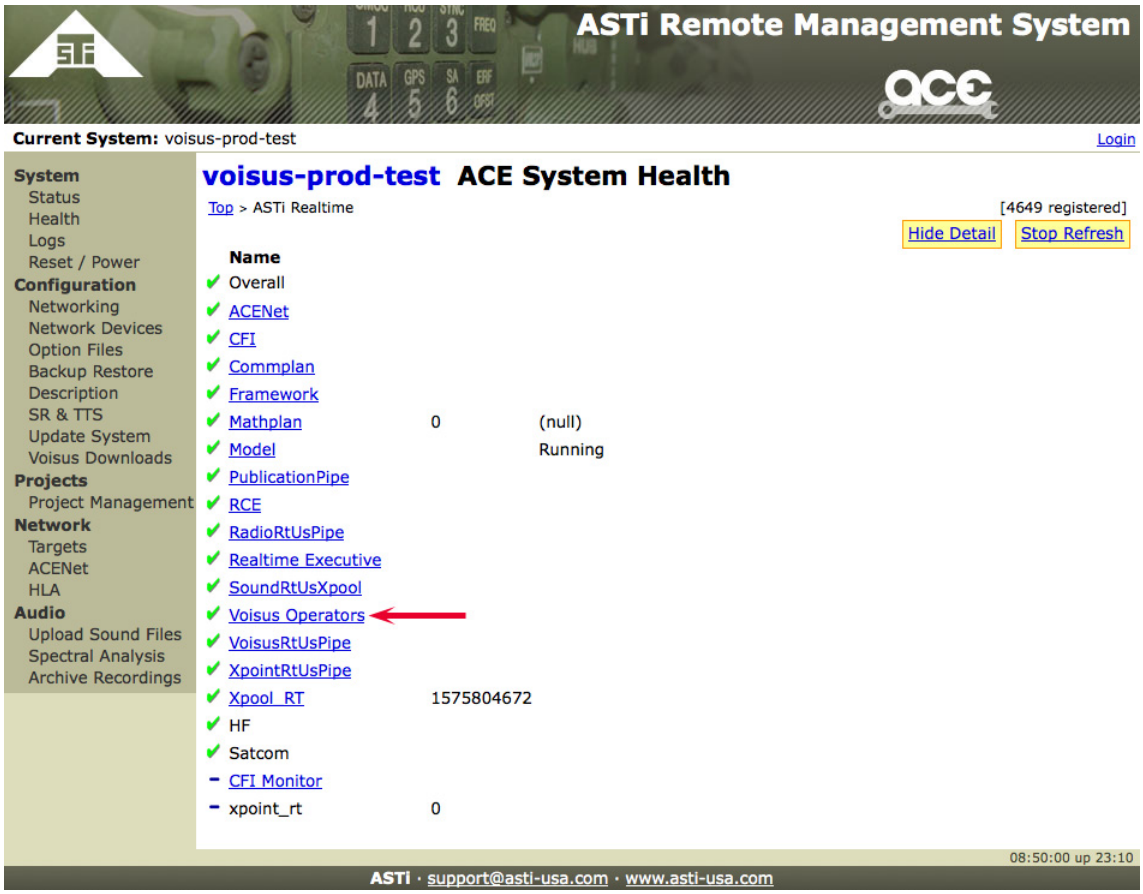
There are several RMS Health pages to verify the Voisus software is working properly. Select the Voisus Networking link to view the networking details.



The RMS Voisus Networking page displays the system's overall receive and transmit packets.



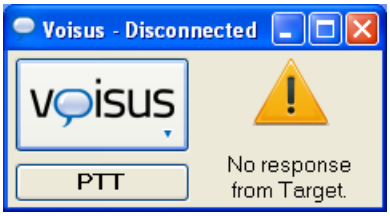
In RMS, view the RMS Health page for troubleshooting information under ASTi Realtime > “Voisus Operators”.



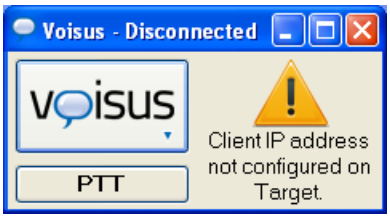
The RMS Voisus Operator page displays operator details including the connection, number of radios, and the IP address. Select an operator to view operator statistics, these are typically used for ASTi internal debugging.

8.1. Voisus Networking Error Messages

If an incorrect Telestra IP address or Telestra port is entered, you will get the following message.



If the client tries to connect to a Telestra that is not configured for the client, you will get the following message.



9.0. FAQs

Q: Can client radios interact with all other DIS radios on the network?

A: Yes, including all ASTi systems (Telestra ACE, Telestra 3 MBV, DACS, and PC'ver) and third party radios. Voisus Technology supports all radio types that are supported in ACE software, including AM, FM, VoIP, network intercoms, SATCOM, SINCGARS, and Havequick.

Q: How many client operators can connect to one Telestra?

A: The limitations are determined by the model size and loading on the Telestra. Contact ASTi to discuss your specific requirements.

Q: Do I have to connect my headset to my workstation before starting the Voisus client software?

A: Yes and the default sound device must also be selected.

Q: What is the Voisus software loading on the client and Telestra?

A: The software loading on the client workstation will vary depending on the client PC hardware and the number of active radios, but typically CPU utilization will be between 1-10 percent. The loading on the Telestra with 16 radios/operators is 35 percent.

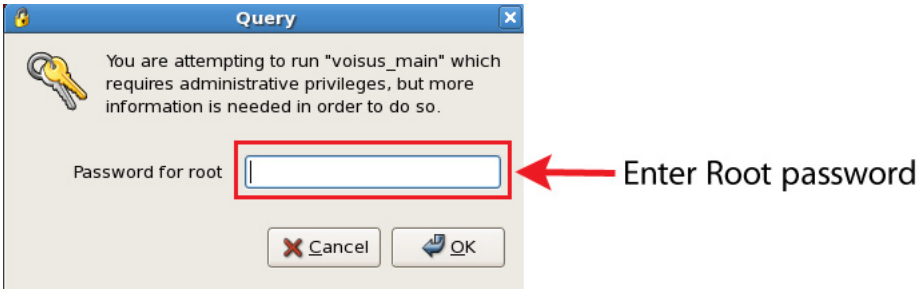
10.0. CLIENT SECURITY FIREWALL CONFIGURATION

10.1. RedHat Enterprise Linux

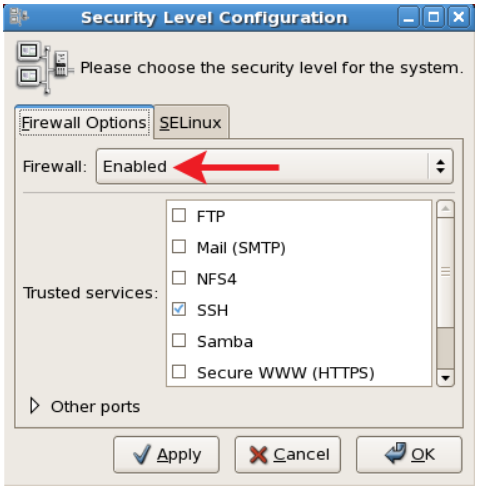
If security standards require enabling the firewall, follow the steps below to create a path for the network.

1. Navigate to **System > Administration > Security Level and Firewall**.

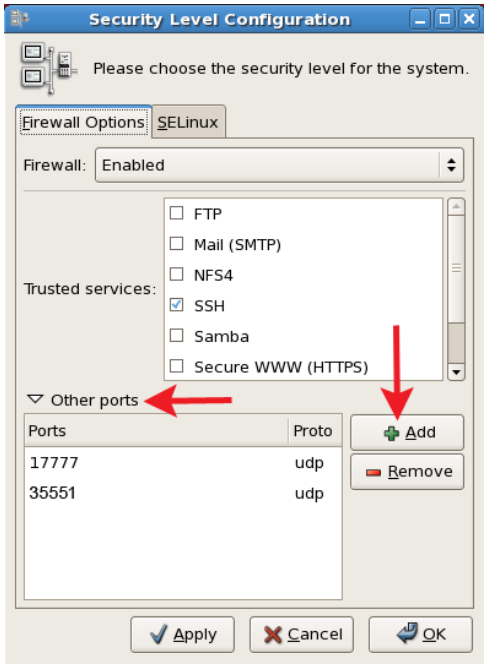
2. The prompt will ask for the 'root' user password. Enter the root password.



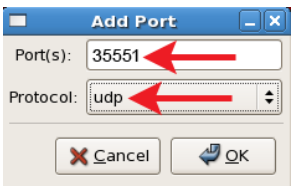
3. The Security Level Configuration screen will open. Select **Firewall > Enabled**.



4. Select the arrow to expand '**Other ports'**. Select the '**Add**' button to add a port. The default port is 35551.



5. Set the port and the protocol to the port used on the Telestra. This is the same port number set during the client installation.



6. Save changes and close window.

10.2. Microsoft Windows

Firewalls in Windows may vary depending on system requirements, see your system administrator.

During software installation select to “Unblock” ASTi Voisus in the “Windows Security Alert” window.

APPENDIX A: COLD START

Refer to the ASTi Synapse Cold Start and Installation Manual (DOC-01-SYN4-CSI-1), available at:

`www.asti-usa.com/support/document/synapse.html`

APPENDIX B: SAFETY and HANDLING

This section must be read completely and understood before using the Synapse Workstation. If you are unsure of any information presented please contact ASTi.

The following safety precautions must be observed when performing any operation and maintenance tasks associated with the ASTi Synapse Workstation. These safety precautions are necessary to prevent injury to personnel and damage to equipment.

Warning: Potentially fatal voltages are present in the Synapse Workstation. Before removing, or replacing any component, ensure that ALL electrical supplies have been turned off and electrical power cords disconnected from the platform.

The following disclaimer is provided regarding use of the Synapse Workstation. The disclaimer applies to all parties using the system in any situation or configuration. This disclaimer should be read and understood completely before using the system.

Disclaimer: The Synapse Workstation is a sound production device. The user, by the act of installing and using the Synapse Workstation and any associated equipment such as external amplifiers, headsets, speakers, etc., warrants and represents that he/she is aware that excessive audio levels can cause permanent hearing impairment and that he/she assumes full responsibility for configuring all equipment including hardware and software to achieve safe operating sound pressure levels under all conditions.

Equipment Handling: All platform circuit boards and modules are sensitive to electrostatic discharge (ESD). To avoid damage to system equipment, proper ESD procedures should be followed when handling all equipment. Ensure that all work is performed at a properly grounded ESD work station. In addition, all personnel handling equipment should be properly grounded.

When transporting or shipping individual modules, equipment should be fully enclosed in an antistatic bag. ***ASTi is not responsible for equipment damage due to improper handling.***

APPENDIX C: WARRANTY AND CUSTOMER SUPPORT

Warranty

ASTi provides a one year limited warranty on all ASTi equipment covering all parts and labor.

In the case of equipment upgrades, warranty applies to original date of shipment of individual components.

Other commercial equipment purchased or provided such as monitors, amplifiers, speakers, fiber optic links, etc. are also covered under the one year warranty unless otherwise stated.

The warranty does not cover improper equipment handling or improperly packaged returns.

Extended warranties are available. Contact ASTi for details (703) 471-2104.

Repairs and Returns

If it becomes necessary to return equipment to ASTi, please observe the following instructions:

Obtain an RMA number through ASTi's website: http://www.asti-usa.com/support/

When packaging the equipment in question, make sure it is well protected. The device should be properly enclosed in an antistatic bag to prevent possible ESD damage. Failure to properly package the equipment during shipping could void the warranty.

Do not include accessory pieces such as rackmount kids, power supplies or software. Only send items that do not work.

The shipping label must include the RMA number.

Include a description of the problem, point of contact, phone number, return address and unit serial number(s). Failure to include this information could extensively delay the return of the equipment.

Evaluation of equipment is performed free of charge. No work will be done without prior customer approval. Customer is responsible for shipping charges to ASTi for warranty and non-warranty repairs.

If an RMA number is not used within thirty (30) days of issuing date, the request data and number issued will be closed and designated as unused.

Any items received from customers without RMA numbers or appropriate contact information included with shipment will not be tested. After sixty (60) days, ASTi reserves the right to scrap all hardware received in this condition.

If the equipment is not under warranty a Purchase Order will be required to cover the cost of any repairs. ASTi will provide a quote for all non-warranty repair items.

Equipment will be shipped back using Federal Express, unless otherwise directed. If the repair is non-warranty then shipping charges will be billed.

International customers must include the correct product value on all shipping documents. Contact ASTi for proper harmonized tariff codes. The customer is responsible for all duties, taxes and fees incurred in shipment of the equipment.

APPENDIX D: VOISUS-VBS2 PLUGIN INSTALLATION

Virtual Battlespace™ 2 (VBS2) users can employ ASTi's full-fidelity radio simulation and communications capabilities within VBS2's interactive, three-dimensional training system. Users will gain the enhanced training benefits of a highly realistic simulated radio environment with the introduction of ASTi radios into VBS2. The Voisus-VBS2 Plugin integrates the Voisus client directly into the VBS2 infrastructure.

Each VBS2 player is configured with one or more communication assets such as radios or intercoms. When in a VBS2 mission the player has a Heads Up Display (HUD) showing all the necessary information about their radios including current net selections and transmit/receive status.

The ASTi Voisus-VBS2 Plugin requires a Telestra system and a USB headset. See the table below for the Voisus-VBS2 Plugin supported operating systems.

Operating System	Requirements
Windows® XP (32 bit)	SP2 and SP3 with .NET Framework 2.0 or 3.5 installed
Windows® Vista	.NET Framework 2.0 or 3.5 installed
Windows® 7	.NET Framework 2.0 or 3.5 installed

The Voisus-VBS2 plugin operates with VBS2 versions 1.23, 1.3, 1.4 and 1.5.

Step 1: Install Virtual Battlespace 2

Install Bohemia Interactive's Virtual Battlespace 2. For more information see http://www.bisimulations.com.

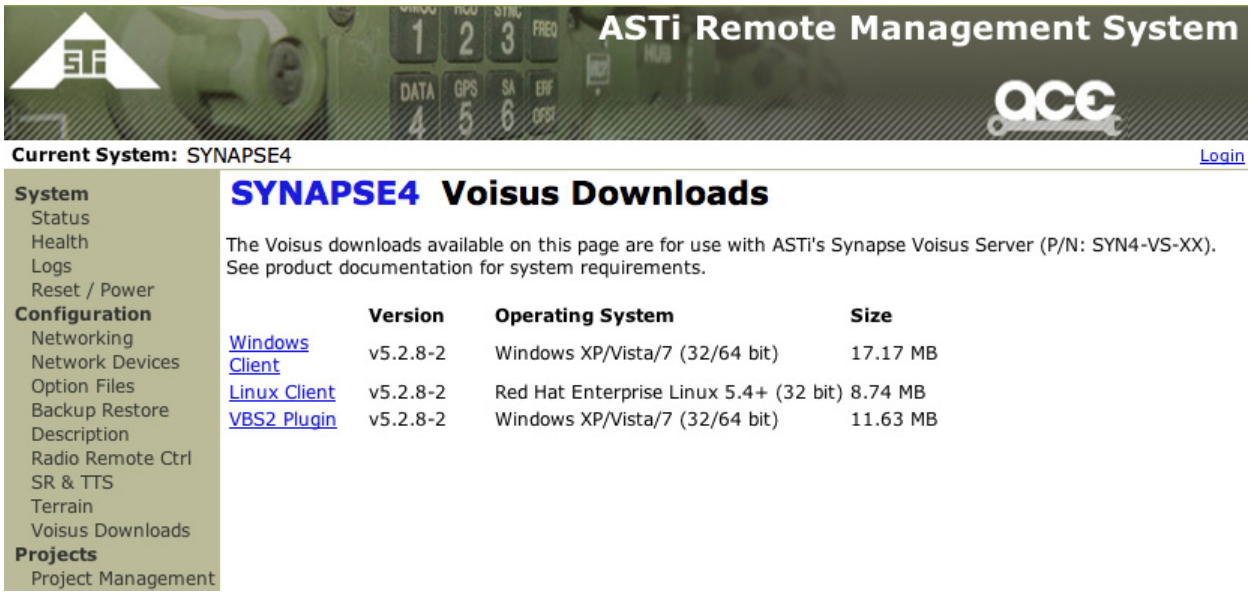
Step 2: Install Voisus Client

Install the Voisus client by following the installation instructions in section 6.0. Client Software Installation in this document.

Step 3: Install Voisus-VBS2 Plugin

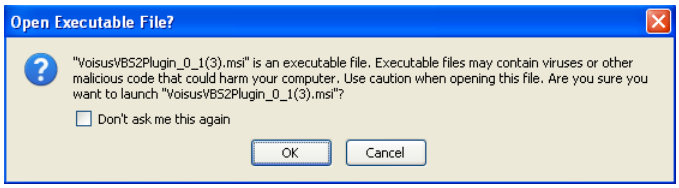
Follow the steps below to install the Voisus-VBS2 Plugin on a Windows® OS.

1. Open RMS and navigate to the Voisus Downloads screen. Select the VBS2 plugin.

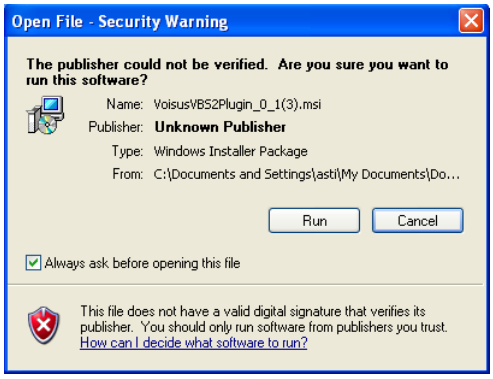


2. Select to save the file. Double-click the downloaded file (VoisusVBS2ManagerSetup_x_y.exe where x_y is the version number).

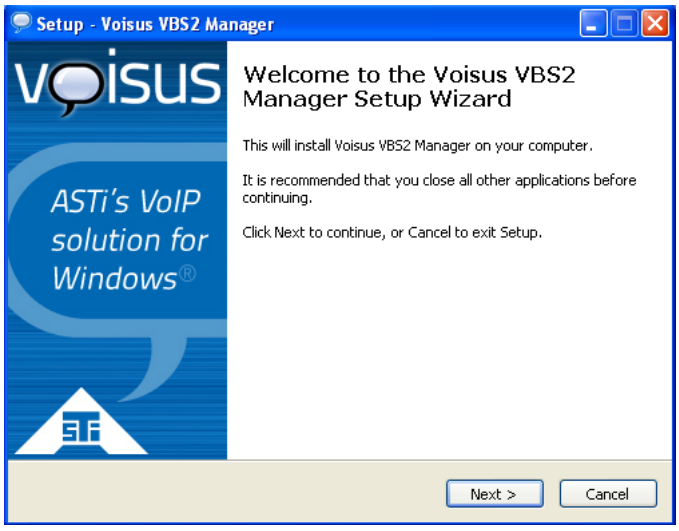
   You may get a warning similar to the screen below depending on your Windows® version.



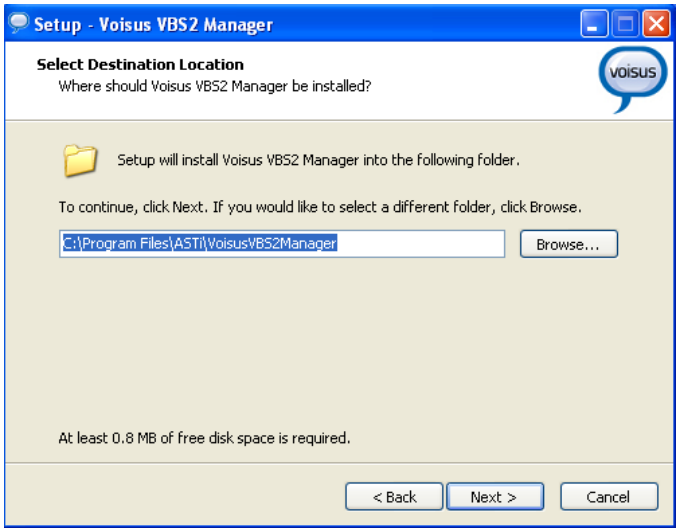
3. Select to run the file.



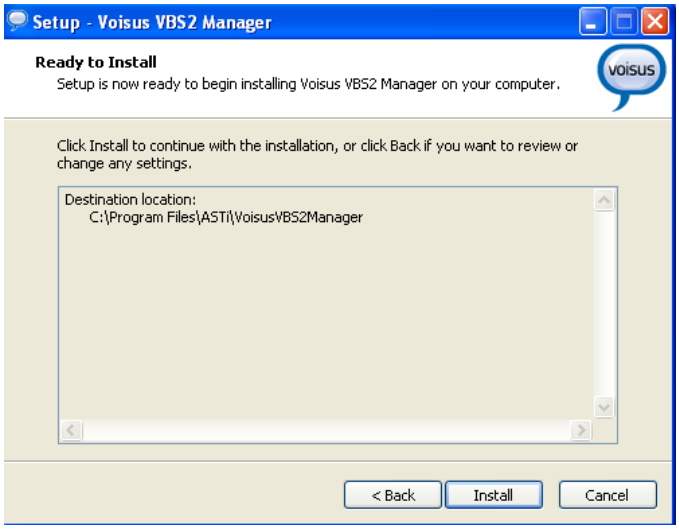
4. Follow the Voisus VBS2 Manager installer. Select 'Next'.



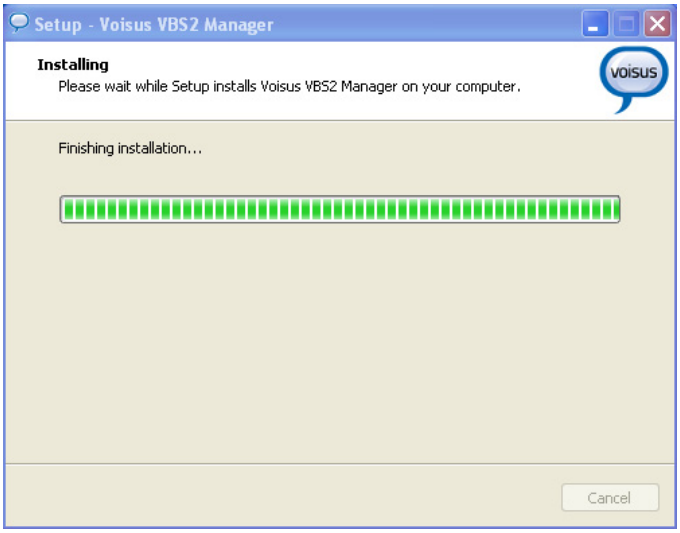
5. Select the location. The default installation path is shown below.



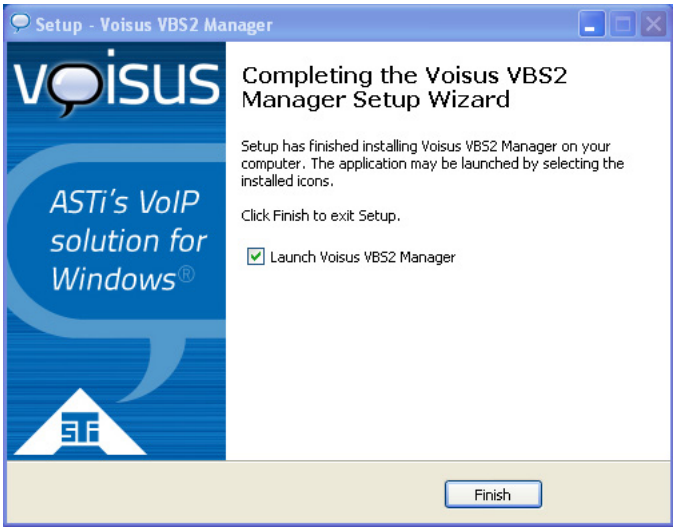
6. Select ‘Install.’



7. Wait as the Voisus VBS2 Manager installs.



8. Select ‘Finish’ and launch the Voisus VBS2 Manager.

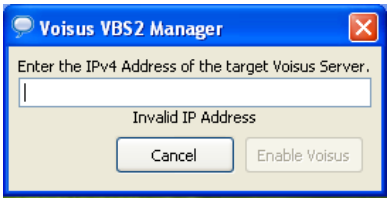


9. The Voisus VBS2 Manager finds all of the VBS2 installations and missions on the computer. Select to ‘Enable Voisus for *X* installations and *Y* missions’ if you would like Voisus installed on all VBS2 installations and missions found.

   To install Voisus on specific installations and missions select ‘Manage installations and missions’ and continue to step 10.

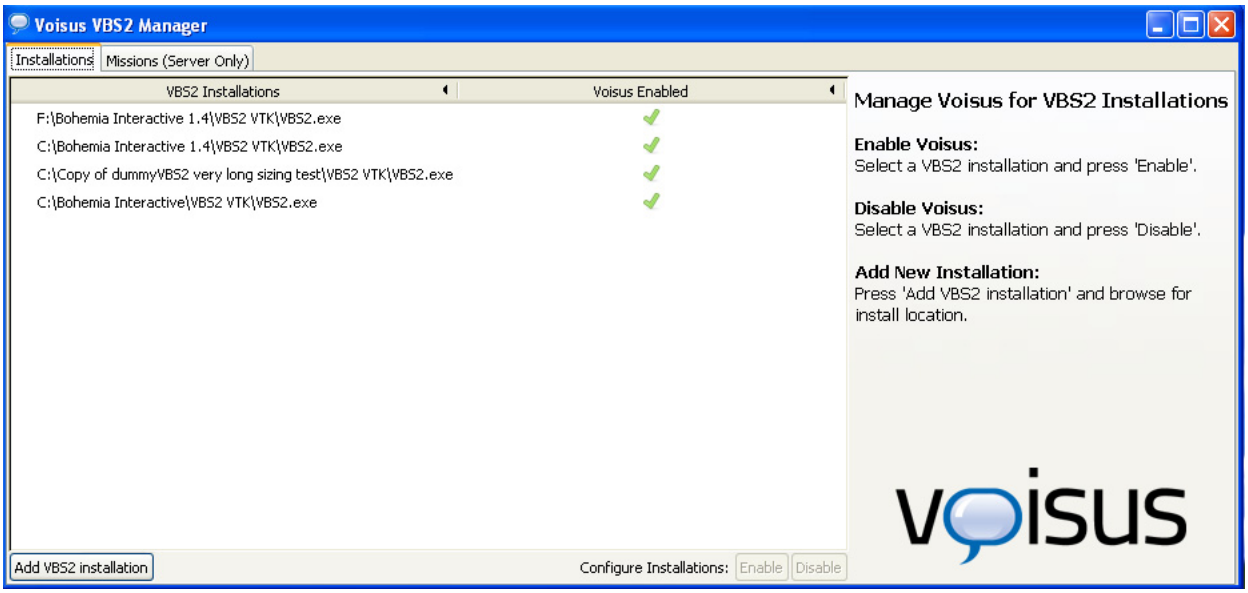
   To enable Voisus you must first enter the IPv4 address of the Voisus Server.

   Note: If you do not know the IP address you may enter a placeholder address and relaunch the manager at a later time to enter the Voisus Server IP address. The IP address is **required** for communications.

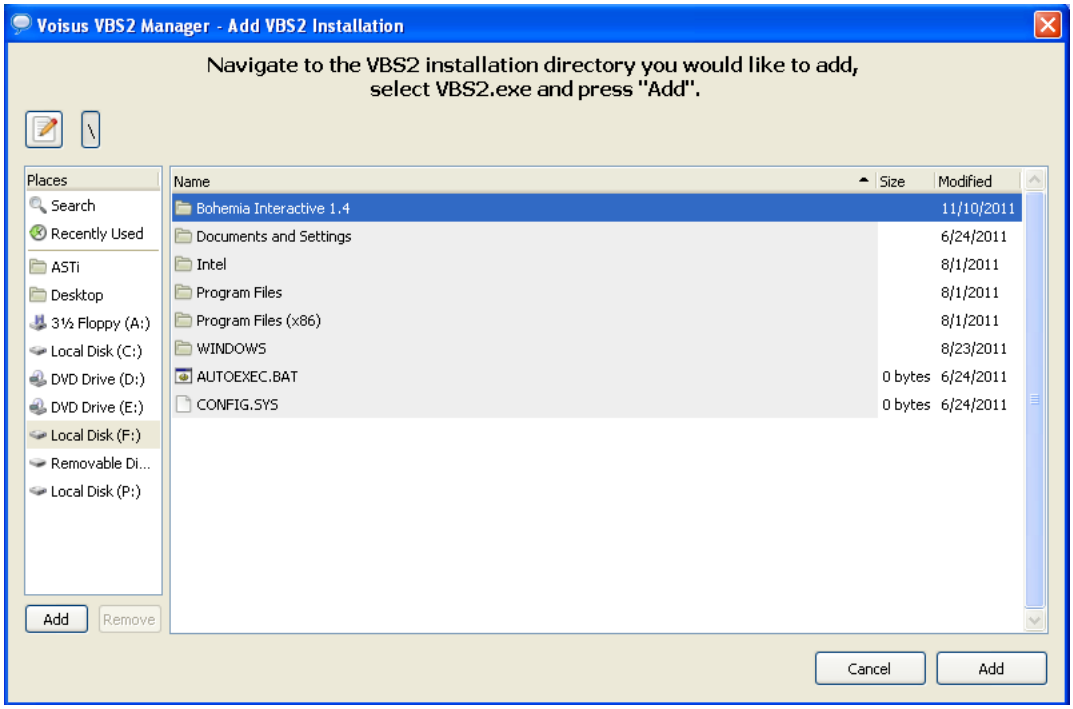


10. To install Voisus on specific installations or missions select ‘Add VBS2 Installation.’ You can also do this to confirm the Voisus VBS2 plugin was installed into the proper VBS2 installation directory.

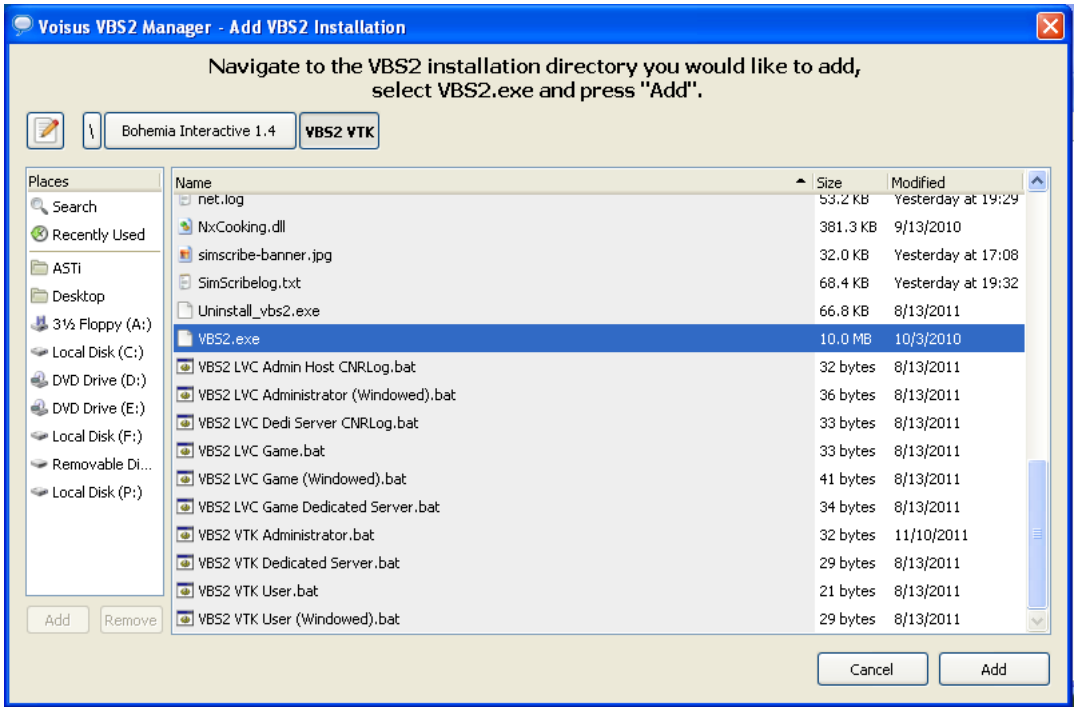
    Confirm your VBS2 installation has active Voisus comms indicated by a green check mark. If there is not a green check, highlight the item and select ‘Enable.’



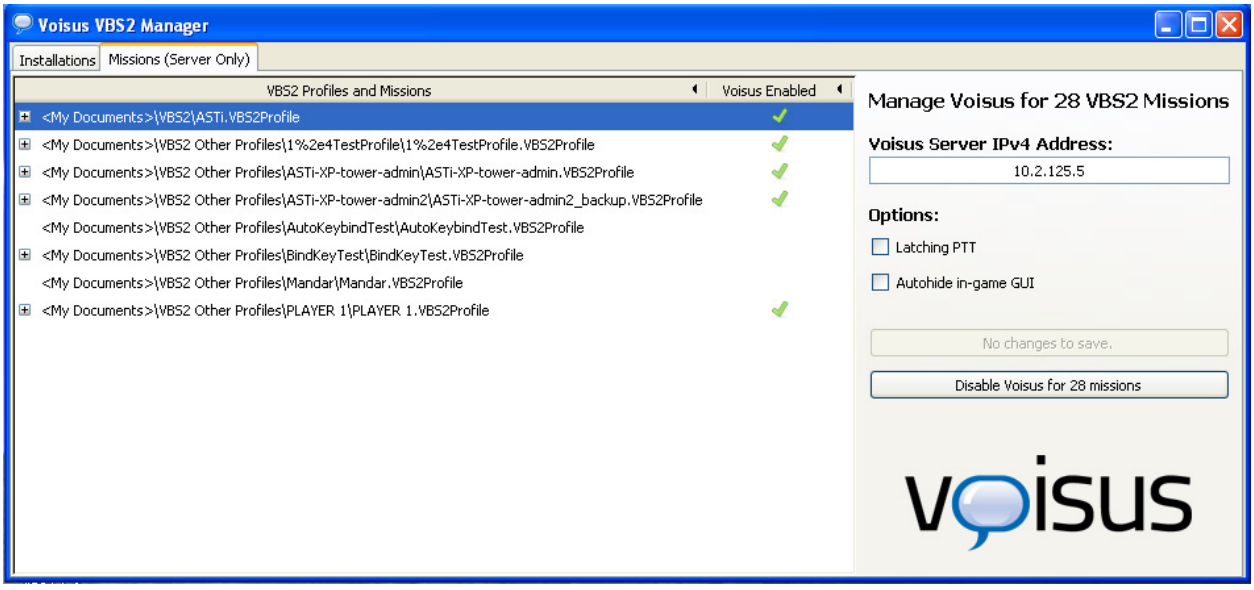
11. To add a VBS2 installation select, ‘Add VBS2 Installation’ and navigate to the VBS2 installation directory you would like to add.



12. Select the ‘vbs2.exe’ and select ‘Add.’



13. Navigate to the ‘Missions (Server Only)’ tab. Select the VBS2 missions that you would like to setup with Voisus communications.



14. Set the Voisus Server IP address and select to activate the Voisus communications.

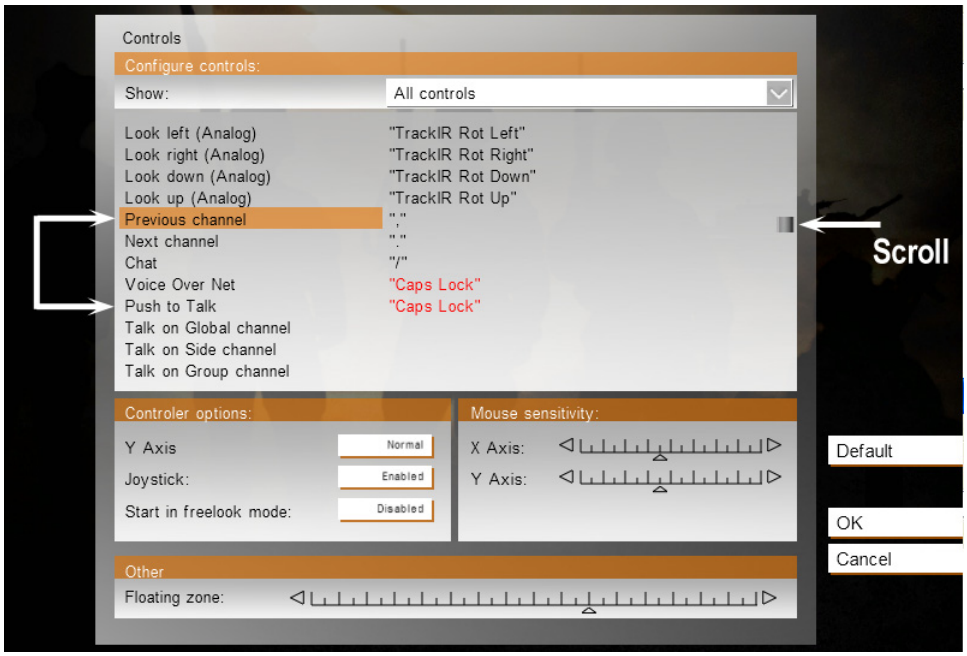
Step 4: Disable VBS2 Keybindings Required for Voisus Control

In this step, you will disable the keys that are necessary for Voisus control. You must do this for each VBS2 profile used. This is not for all VBS2 keybindings, only a small subset is required for Voisus.

Important: Disabling the VBS2 keybindings is imperative to the audio quality of the Voisus software.

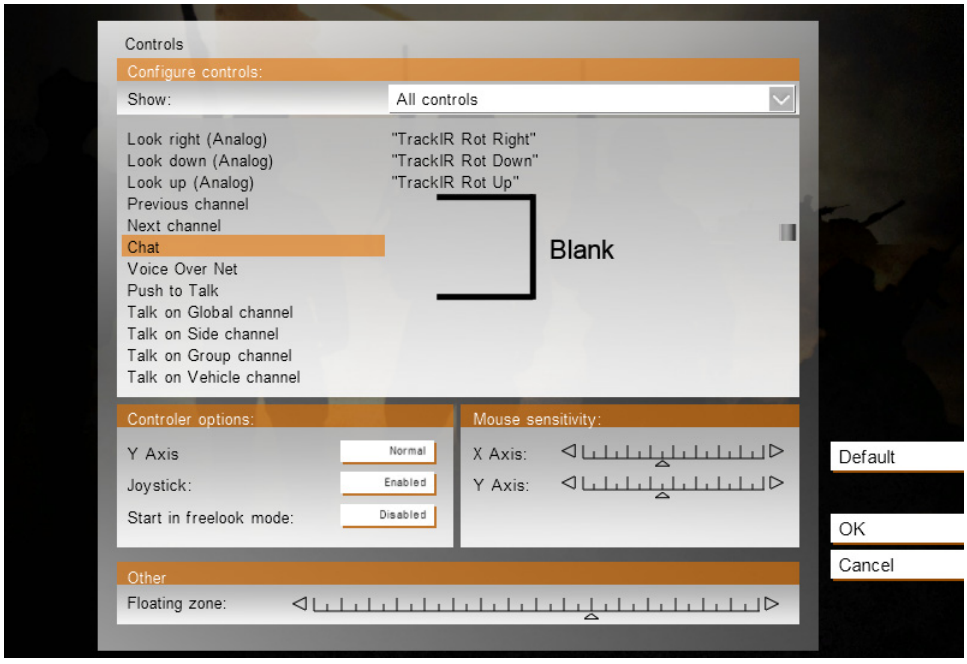
1. Open VBS2 and navigate to Options > Controls.

2. Scroll down the list until you see the following:
   - Previous Channel
   - Next Channel
   - Chat
   - Voice Over Net
   - Push to Talk



3. Select “Previous channel” which opens the “Configuring Actions” screen for Previous channel’s keybindings.
4. Highlight the comma (“,”) and select “Delete.”

5. Select “Next Channel” and repeat the two steps above for **Next channel, Chat, Voice over Net, and Push to Talk**. You may choose to map these actions to a different key such as “\”.
6. After disabling the keys, the key control fields should appear blank as shown below.



7. Select “OK” when you are finished.
8. Continue with step 8a or 8b below depending on your system.

   8a. If you are on the host computer or dedicated server close VBS2 and continue with Step 5.

   8b. If you are not on the host computer, continue to Step 6.

Step 5: Set up the Dedicated Server

This step is for **dedicated servers only**. Ensure that **Step 3: Install Voisus-VBS2 plugin** is complete with the Voisus comms activated for the mission(s) and VBS2 installation before following the steps below.

1. Open VBS2 Admin and open the Mission Editor on the left side of the screen.
2. Select the terrain on which the mission is based and open the editor. You must export the mission to networked scenarios and ensure the resulting .pbo file (now with active Voisus comms) is in the proper place.
3. Once the terrain is loaded, choose File > Load and select the mission. Once loaded, you should see the mission units overlaid on the terrain.
4. Choose File > Save. In the dialog box, enter a mission name, title and description (or leave them as they were). In the Export option, select “Export to Network Scenarios”. Once chosen, click “Ok.” By default, Export to Network Scenarios will create a packaged mission .pbo file in the following directory:

   C:\Bohemia Interactive\VBS2\mpmissions
5. Close VBS2.
6. By default, a dedicated server will make all .pbo files located in this file available to clients.

   C:\Bohemia Interactive\VBS2\mpmissions

   However, VBS2 administrators are able to limit which missions are available to play. Check with your VBS2 administrator to ensure that the new .pbo mission file you created in step 4 is in the proper directory and that the dedicated server is configured to allow your mission to be available to clients.
7. Launch the VBS2 dedicated server and use one or more clients to connect to the mission you just created.

Continue to **Step 6: Selecting an Operator**.

Step 6: Selecting an Operator

The Operator contains the radio assets that are previously assigned in the Voisus Server comm plan configuration, see the '**System Software Configuration**' section in this document for more information.

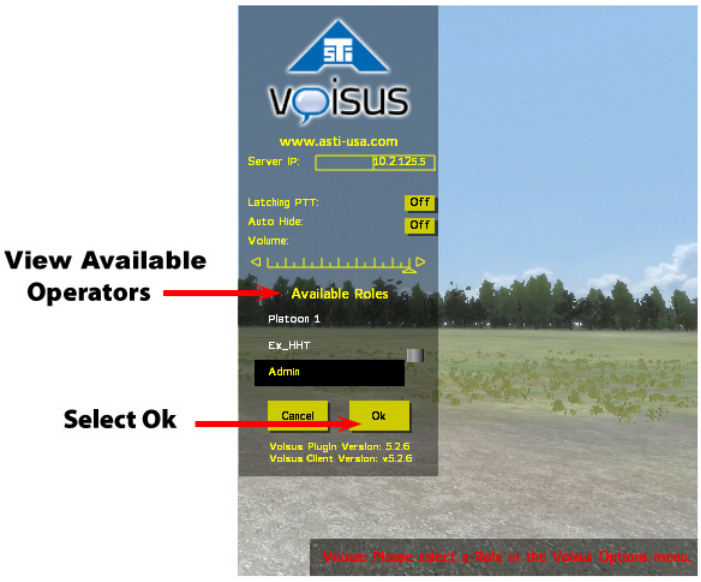
This step must be performed by all VBS2 operators upon opening VBS2 and every time an operator needs to change radio assets. Once selected, an operator will remain active until changed by the user.

1. To open the Voisus options page, press 'Alt +O'. Note: This is the default key combination. However, VBS2 administrators are capable of changing this key combo.

   In the Voisus options page the user can:

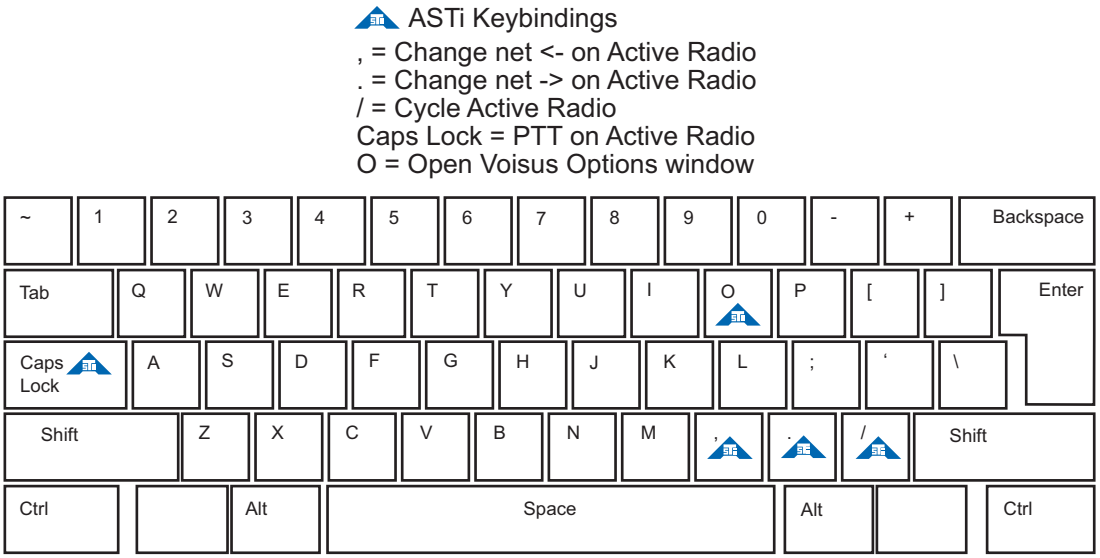
   - View and select available operators
   - Change Voisus Server IP address
   - Change radio and GUI settings

2. Select an operator.
3. Press the Ok button.



ASTi Keybinding Map

See Step 4: Disable VBS2 Keybindings for details on how to set up the ASTi keybindings.



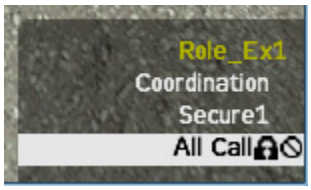
VBS2 Client Radio Key

Yellow = Client GUI Name
Orange = Actively Tx
Blue = Actively Rx
White = Idle Net

Nets

Nets are configured in the comm plan by system administrators. Some nets may be locked to prevent users from switching radios. Nets may also be set to receive-only mode. When a radio is in receive-only mode the user is unable to mute or transmit on the radio.

In the example below, “All Call” is locked and also is in receive-only mode.



Voisus-VBS2 Plugin Troubleshooting Procedures

If you are experiencing issues relating to the Voisus-VBS2 plugin, perform the following procedures to determine the source of the problem and find a remedy.

A. General Voisus-VBS2 Plugin Troubleshooting

1. If the Voisus-VBS2 GUI reports “No Response from Server”, check your mission init.sqf file and make sure that the listed ‘Server_IP’ matches the network configuration for your Target.
2. When upgrading or re-installing VBS2, you will need to un-install and reinstall the Voisus-VBS2 Plugin. To un-install the Voisus BS2 plugin:

    a. Deactivate all of the missions and installations via Voisus VBS2 Manager.

    b. Hand edit the init.sqf files to remove the code between

    /**** START ASTi VBS2 GUI CODE ****/

    and

    /**** END ASTi VBS2 GUI CODE ****/

    c. Use the Windows control panel Program and Features (for Windows Vista and 7) or Add Remove Programs (for Windows XP) to remove the Voisus VBS2 Manager.
3. The Voisus-VBS2 Plugin installer includes four important elements that are required for proper functionality.

    a. Voisus VBS2 Manager

    b. *[VBS2 install directory]* \ plugins \ ASTiVoisus.dll

    c. *[VBS2 install directory]* \ My Content \ Add ons \ astivoisus.pbo

    d. C:\Documents and Settings \ <username> \ Voisus \ VBS2 init. file

B. USB/Headset Troubleshooting

1. If you experience any audio problems the first step is to check your audio device settings. For complete details see section **5.2. Choosing an Audio Device on the Client** in this document.

    a. Ensure that the proper audio device is selected for both sound playback and sound recording.

    b. Ensure that the Microphone > Advanced audio setting is set to 48 kHz.

2. If the headset was unplugged from the USB port:

    a. Close the client and VBS2. Then plug the headset back in.

    Note: It is good practice to plug the headset back into the same plug or you may have to reset the audio devices.

    b. Reopen the client and VBS2.

    c. If issues persist, check audio settings as described in section **5.2. Choosing an Audio Device on the Client** in this document.

C. Keybindings Troubleshooting

1. If you experience the following symptoms, the ASTi keybindings are not set correctly.

    a. The microphone icon or chat symbol shows up during the VBS2 game.

    b. The user hears echoing voices.

2. Refer to **Step 4: Disable VBS2 Keybindings** in this appendix to reset the keybindings for all VBS2 user profiles that use Voisus.

D. Roles

If there are no operators listed in the Voisus “Available Roles” list continue below.

1. All operators are in use.

    a. If trying to connect your client to an operator on the server, and every operator says “Connected” then the user can not connect unless another operator disconnects.

2. All operators are “Locked.”

    a. If your client is unable to select an operator position in the “Operator Settings” window, check to see if there is a lock symbol in the left column. If a lock is present, then that operator position has been locked down to a certain IP address in the Project Configuration in ACE-Studio. See Step 5: Set Up the Radios in section 4.1. of this document for more information.

E. Dedicated Server Mode

1. The Voisus-VBS2 Plugin interface is not showing up in the VBS2 display.

    a. Ensure Voisus client is installed on each VBS2 client computer and the VBS2 server.

    b. Ensure the ASTi init.sqf files was added to the proper mission folder and it was exported to Network Scenarios as described in Step 5 sub-step 3.

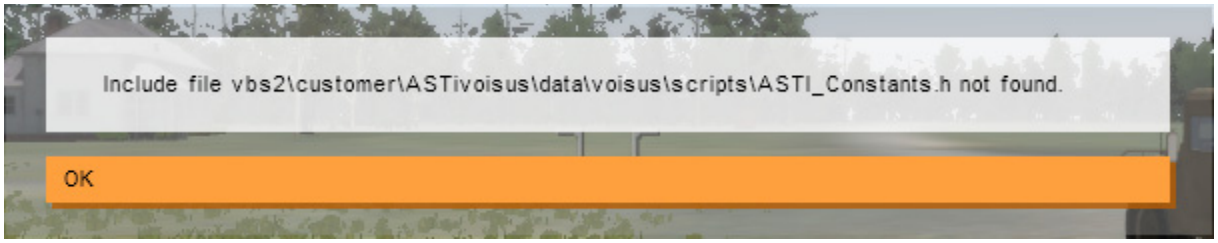
F. VBS2 Missions

This section applies to software version 4.36 and above.

1. When starting a VBS2 mission, users are presented with the following error message (see message below).

    a. Ensure that Voisus has been activated for the VBS2 installation that is currently running.

    b. Quit VBS2 and use the Voisus VBS2 Manager to activate the VBS2 installation you are currently using. See the installation steps in this appendix for more information on the Voisus VBS2 Manager. Restart VBS2 and relaunch your mission.



Audio Troubleshooting

Problem: You are experiencing audio breakup specifically deep sounding voice effects and possible client issues.

Solution: Set the audio device advance settings to 48kHz.

This solution is for software versions prior to 4.33 and excludes the 4.31 Information Assurance software version.

Navigate to Properties > Microphone > Advanced and set the audio to 48 kHz. This audio setting is required for record and playback. This is required for microphone and speakers. If it is not set to the proper audio setting you may experience deep sounding voice, audio breakup, and client issues.

Be sure to select the default audio device as well.

If the audio setting for 48kHz is not available, you may need to switch to a different headset, refer to the ASTi recommended list in **section 2.2. USB Adapters and Headsets** of this document. Or contact ASTi to upgrade your software to version 4.33 or above.