

Innovative Systems

APmax User Manual

APmax User Manual - Release 4.3

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**Innovative
Systems**

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Preface

Throughout this manual the term APmax will be used in reference to the Innovative Systems APmax product, including one or more physical APmax units and systems. The term APmax UI will be used in reference to the APmax User Interface software that is used to administer the APmax systems. See Part 1 - "Introduction to APmax" in this manual for more information on these terms.

The following sections describe the sources provided for Innovative Systems APmax product information in addition to the APmax User Manual.

Online Help

The APmax UI software comes with extensive online help. The online help can be accessed by pressing the F1 key when the focus is on any interface within the APmax UI software.

Screenshots

The appearance of some of your APmax UI windows, including common control windows (e.g., Printer Setup, Message Boxes, File Selection) may differ from the samples included in this manual and the APmax online help due to software updates, hardware updates and local PC differences in Windows or other third-party software versions.

Innovative Systems Technical Support

If you have a question or problem concerning APmax that is not answered in this document, please contact our APmax Technical Support department using one of the following methods:

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Part 1 - Introduction to APmax

General Description

The APmax is a next generation IP Multimedia Subsystem (IMS) Application Server (AS), created to provide advanced TDM and IP telephony features. It acts as a Service Control Point (SCP) in the SS7 Network and meets North American Public Switching Telephone Network (PSTN) industry standards for operations and reliability. This manual is intended to provide the general information needed to setup and operate the APmax.

New users of this product should review most of the contents of Part 1 - "Introduction to APmax". Part 1 provides instructions for installing the APmax hardware (see Chapter 1 - "Hardware Installation"), the APmax UI software (Chapter 2 - "Installing the APmax UI"), and an overview of the APmax UI software (see Chapter 3 - "Getting Started"). A more in-depth discussion of configuring communications, time, and other features for APmax systems is provided in Part 2 - "System Configuration".

System Requirements

A personal computer (PC) is required for the APmax UI. The APmax UI is used to manage one or more APmax systems. The APmax UI PC should, **at a minimum**, meet the following requirements:

- Windows® 7 Professional, Windows® 7 Enterprise, Windows® 7 Ultimate, Windows® 8 Pro, or Windows® 8 Enterprise.
- Microsoft .NET Framework 4.5
- 1.5 GHz Intel® Core™2 Duo or faster processor
- 4 GB RAM
- 40 GB free space on hard disk drive
- Gigabit Network card
- Internet connection

In general, a PC exceeding the above requirements in processor, RAM, and disk drive capacities is strongly recommended. Increasing the capacity of any or all of these elements will result in faster APmax UI software response, thereby increasing user productivity and satisfaction.

In addition to the above requirements, the APmax UI PC must be able to connect to the network(s) on which the APmax systems reside. See Chapter 4 - "Network Configuration" for more information on configuring communications with APmax systems.

The APmax UI has been developed using the latest Microsoft .NET technology and must run under the Microsoft .NET environment. Therefore the computer on which APmax UI software is installed must be running one of the Microsoft operating systems that support the .NET environment (see the System Requirements listed above). The .NET Framework version 4.5 must also be installed on the computer. If the appropriate runtime environment is not available on the computer when APmax UI is installed, a prompt to install the correct .NET Framework will be displayed. The installation procedure is outlined in Chapter 2 - "Installing the APmax UI".

Chapter 1 - Hardware Installation

1.1 General Information

The APmax is suitable for installation in network telecommunication facilities and in locations where the NEC applies. It is intended to provide many features. Each APmax unit provides:

- T1 communication channels
- SS7 interfaces
- Serial ports - RS232/RS449/V.35 capable
- Ethernet ports - for connection to the LAN, WAN, VoIP, and for inter-unit communication

The T1 trunks can be used to provide Announcements such as CLASS announcements. They also allow MF detection, DTMF detection, and voice feedback for some features. The T1 trunks are also used as an SS7 interface providing SS7 over T1. The APmax also supports ISUP signalling over the SS7 network, which is used to implement call-based services. Call-based services use T1 trunks to play announcements and carry telephone conversations. The SS7 interface can also be used for controlling the message waiting indicator (MWI) function.

The Ethernet channels are used for inter-unit communication in a system, and allow placing the APmax on a local area network (LAN). The LAN connection can be used for maintenance and control and OPM reporting. The VoIP connection supports Session Initiation Protocol (SIP) for call setup and Real-time Transport Protocol (RTP) for audio data.

1.1.1 Parts List

Each APmax kit is shipped with:

- 2-APmax units
- 2-Ethernet cables (for inter-unit communication)
- 2-sets mounting brackets (for mounting in a 19" rack) with screws
- APmax User Interface Software (on CD-ROM)
- APmax Operating Software (pre-loaded)
- APmax User Manual (Softcopy PDF provided on APmax User Interface CD-ROM)

Required items not supplied with the kit:

- 2-T1 cable assemblies
- CAT5 or similar cable to connect the APmax System to the computer network

- Fuse - 3A is recommended

Optional items not supplied with the kit:

- APmax Spare
- APmax User Manual, Printed

Depending on the type of APmax system configuration specified or the particular application(s) purchased with the system, other parts may be included and other software may be pre-loaded, in addition to what is specified here.

1.1.2 Specifications

The specifications listed in **Table 1-1 - "Specifications"** are per APmax unit.

Table 1-1 Specifications

Description	Specification
Physical Size (width x depth x height)	1.75"H x 17"W x 14.25"D
Weight	10.5 lbs
Physical Location	Install in the Central Office (CO).
Mounting	Brackets available for mounting in 19", 23", and 26" racks. 1 U space above and below the APmax system is strongly recommended.
Environmental Operating Temperature Range Relative Humidity	65 to 110 °F (18 to 43°C) 10-90%, non-condensing
Power Requirement Voltage Current Recommended External Fuse	-42 to -56 VDC 2.0A 3.0A
Front Panel LEDs/Indicators Power Minor (alarm) Major (alarm) Critical (alarm)	Green Amber Amber Red

Description	Specification
Connections	
Power and Alarm	8 Position Terminal Block
Serial Ports	Two 25-Pin Female D-sub Connectors. (RS232/RS449/V.35 capable)
Ethernet	Six RJ-45 Connectors
T1	One 37-Pin Female Connector Providing Eight DS-1's, Two BNC Connectors (one Tx and one Rx Providing One DS-3)

NOTE: For power and alarms connections, 18 AWG wire which meets UL 60950-1 requirements should be used (Belden 8899 or equivalent). For wire terminations, ring or spade terminals such as AMP 34144 or AMP 320665 should be used.

WARNING: The intra-building port(s) of the equipment or subassembly is suitable for connection to intrabuilding or unexposed wiring or cabling only. The intra-building port(s) of the equipment or subassembly **MUST NOT** be metalically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 4) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metalically to OSP wiring.

1.1.3 Rear and Front Views

The rear and front views of an APmax unit are shown in **Figure 1-1 - "Rear and Front Views"**.

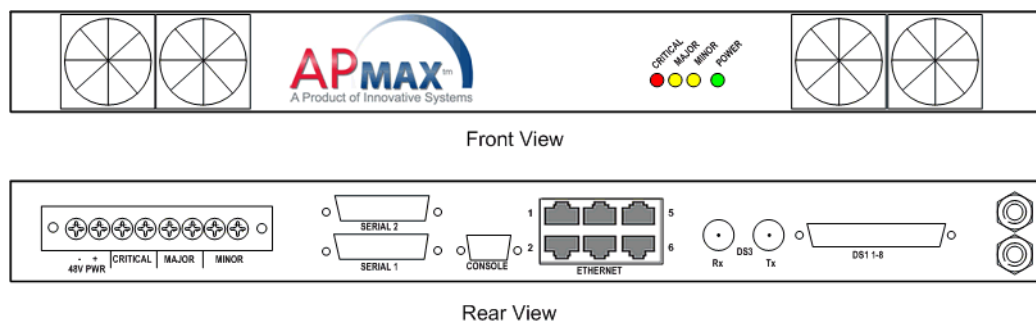


Figure 1-1 Rear and Front Views

1.1.4 Redundancy

An APmax system consists of a pair of units in order to provide the redundancy necessary for telecommunications applications.

Each system contains a site-specific database. For true redundancy, the databases in each of the system's two units are identical under normal operation conditions. If either unit should be unable to perform its function, either because of unit failure, a power failure, an SS7 link failure, or a T1 failure, the other unit will maintain service. In many cases, if one unit is removed and replaced, it will obtain the correct database from the mate unit when power is reapplied.

1.1.5 System Requirements

Each unit must be supplied with -48 VDC power. The two sets of power input connections should be tied to independent sources in order to provide redundant powering.

Each unit may be configured for SS7 communication over a T1 channel.

A personal computer running the APmax User Interface Software is required for configuration, administration, and maintenance of the APmax system.

1.1.6 Network Configuration

Each APmax system ships with a set of default Administration and Call Processing IPs. The Digital Signal Processors (DSPs) reside on the Call Processing network and their IPs are also defaulted before shipment.

It is required that the OAM&P (Administration) and VoIP (Call Processing) networks be located on separate physical networks. By keeping the VoIP network private quality of service is assured.

Improper configuration of the network, cabling, and IP assignment could result in loss of call processing, inability to administer the system, and subsequent loss of service.

1.1.7 Ethernet Cabling

The OAM&P (Administration) network connects to the APmax via the OAM&P port, port 1, on the APmax Ethernet switch.

The tielines are used to maintain redundant databases between the units. There are two tielines,

and they connect from port 5 to port 5 and port 6 to port 6.

If APmax web services such as Web Portal are to be used, the system's Internet IPs must be configured accordingly and the WAN port, port 2, on each unit must be connected to the Internet.

The VoIP network connects to the APmax via the VoIP port, port 4. Whether or not the APmax will be used for VoIP will determine how the system should be cabled.

In addition to properly cabling the system, the Administration, Call Processing IPs, and DSP IPs must be configured accordingly. If the networks on which the APmax resides do not support the default IP ranges preconfigured before shipment, then the system IPs will need to be updated (see Chapter 4 - "Network Configuration" for more information.)

NOTE: Setting the IPs on the APmax is done by sending a broadcast query from the UI to all units within the system. When changing the APmax IPs, the PC on which the UI runs must be on the same network as the APmax Administration network.

If VoIP is utilized, meaning the APmax will be hosting external VoIP traffic, the VoIP port, port 4, on each unit must be connected to the Call Processing network on which the APmax resides.

It is required that the OAM&P (Administration) and VoIP (Call Processing) networks be located on separate physical networks.

1.2 Procedure

1. Mount the APmax into the desired equipment rack using four # 10 panel bolts per unit. The APmax should be mounted in a location such that cables and wiring reach the proper connections.
2. Connect one end of the chassis grounding wire to a ground bus. Connect the other end to a two hole connector and then bolt one ground connection to each unit, see **Figure 1-2 - "Ground Connection"** below.



Figure 1-2 Ground Connection

3. Connect the -48 VDC and RTN to the APmax using the appropriate terminals, **Figure 1-3 - "Terminal Connector"**. **NOTE:** Do not insert the fuse until installation is complete



Figure 1-3 Terminal Connector

4. Connect the alarm wires to the terminal strips, **Figure 1-3 - "Terminal Connector"**.
5. Connect the APmax to the OAM&P network by connecting a LAN cable to Port 1 of each unit, **Figure 1-4 - "Ethernet Switch"**. **NOTE:** If the networks on which the APmax resides do not support the default IP ranges preconfigured before shipment, then the system IPs will need to be updated (see Chapter 4 - "Network Configuration" for more information.)

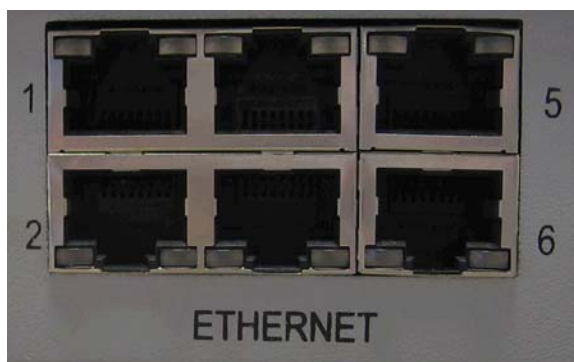


Figure 1-4 Ethernet Switch

6. Connect the tielines from unit 1 to unit 2 using the Ethernet cables provided in the kit. Connect Port 5 of unit 1 to Port 5 of unit 2. Connect Port 6 of unit 1 to Port 6 of unit 2.
7. If VoIP **will be** used connect Port 4 on each unit to the VoIP network. **NOTE: The VoIP network must be physically separate from the OAM&P network.**
8. Connect one T1 cable to the 37 pin connector on unit 1, **Figure 1-5 - "DS1 Connector"**. Reference **Table 1-2 - "T1 Pin Out Table for 600632 Rev A"** when wiring to the APmax with T1 cable part number 600632 Rev A or, if using T1 cable part number 600632 Rev A0 or 600634 Rev A0, then reference **Table 1-3 - "T1 Pin Out Table for 600632/600634 Revs A0 and A1"**. Repeat, connecting another T1 cable to unit 2. Connecting one T1 cable to each unit and configuring them appropriately will ensure redundancy.



Figure 1-5 DS1 Connector

Table 1-2 T1 Pin Out Table for 600632 Rev A

DS1	PIN	WIRE COLOR	SIGNAL NAME
DSI-1	37	ORG/WHT	RECEIVE - RING
DS1-1	36	BLU/WHT	TRANSMIT - RING
DS1-1	18	WHT/ORG	RECEIVE - TIP
DS1-1	17	WHT/BLU	TRANSMIT - TIP
DS1-2	34	BRN/WHT	RECEIVE - RING
DS1-2	35	GRN/WHT	TRANSMIT - RING
DS1-2	15	WHT/BRN	RECEIVE - TIP
DS1-2	16	WHT/GRN	TRANSMIT - TIP
DS1-3	14	BLU/RED	RECEIVE - RING
DS1-3	13	SLT/WHT	TRANSMIT - RING
DS1-3	32	RED/BLU	RECEIVE - TIP
DS1-3	31	WHT/SLT	TRANSMIT - TIP
DS1-4	29	GRN/RED	RECEIVE - TIP

DS1-4	30	ORG/RED	TRANSMIT - TIP
DS1-4	11	RED/GRN	RECEIVE - RING
DS1-4	12	RED/ORG	TRANSMIT - RING
DS1-5	28	SLT/RED	RECEIVE - RING
DS1-5	27	BRN/RED	TRANSMIT - RING
DS1-5	9	RED/SLT	RECEIVE - TIP
DS1-5	8	RED/BRN	TRANSMIT - TIP
DS1-6	6	ORG/BLK	RECEIVE - TIP
DS1-6	7	BLU/BLK	TRANSMIT - TIP
DS1-6	25	BLK/ORG	RECEIVE - RING
DS1-6	26	BLK/BLU	TRANSMIT - RING
DS1-7	5	BRN/BLK	RECEIVE - RING
DS1-7	4	GRN/BLK	TRANSMIT - RING
DS1-7	23	BLK/BRN	RECEIVE - TIP
DS1-7	22	BLK/GRN	TRANSMIT - TIP
DS1-8	2	BLU/YEL	RECEIVE - RING
DS1-8	3	SLT/BLK	TRANSMIT - RING
DS1-8	20	YEL/BLU	RECEIVE - TIP
DS1-8	21	BLK/SLT	TRANSMIT - TIP
-	1	DRAIN	CHASSIS - GROUND
-	10	JUMPER	CHASSIS - GROUND
-	19	JUMPER	CHASSIS - GROUND
-	24	JUMPER	CHASSIS - GROUND
-	33	JUMPER	CHASSIS - GROUND

Table 1-3 T1 Pin Out Table for 600632/600634 Revs A0 and A1

DS1	Cable	PIN	WIRE COLOR	SIGNAL NAME
DS1-1	1	37	BLU/WHT	RECEIVE - RING
DS1-1	2	36	BLU/WHT	TRANSMIT - RING
DS1-1	1	18	WHT/BLU	RECEIVE - TIP
DS1-1	2	17	WHT/BLU	TRANSMIT - TIP

DS1-2	1	34	ORG/WHT	RECEIVE - RING
DS1-2	2	35	ORG/WHT	TRANSMIT - RING
DS1-2	1	15	WHT/ORG	RECEIVE - TIP
DS1-2	2	16	WHT/ORG	TRANSMIT - TIP
DS1-3	1	14	WHT/GRN	RECEIVE - RING
DS1-3	2	13	WHT/GRN	TRANSMIT - RING
DS1-3	1	32	GRN/WHT	RECEIVE - TIP
DS1-3	2	31	GRN/WHT	TRANSMIT - TIP
DS1-4	1	29	BRN/WHT	RECEIVE - TIP
DS1-4	2	30	BRN/WHT	TRANSMIT - TIP
DS1-4	1	11	WHT/BRN	RECEIVE - RING
DS1-4	2	12	WHT/BRN	TRANSMIT - RING
DS1-5	1	28	SLT/WHT	RECEIVE - RING
DS1-5	2	27	SLT/WHT	TRANSMIT - RING
DS1-5	1	9	WHT/SLT	RECEIVE - TIP
DS1-5	2	8	WHT/SLT	TRANSMIT - TIP
DS1-6	1	6	RED/BLU	RECEIVE - TIP
DS1-6	2	7	RED/BLU	TRANSMIT - TIP
DS1-6	1	25	BLU/RED	RECEIVE - RING
DS1-6	2	26	BLU/RED	TRANSMIT - RING
DS1-7	1	5	RED/ORG	RECEIVE - RING
DS1-7	2	4	RED/ORG	TRANSMIT - RING
DS1-7	1	23	ORG/RED	RECEIVE - TIP
DS1-7	2	22	ORG/RED	TRANSMIT - TIP
DS1-8	1	2	RED/GRN	RECEIVE - RING
DS1-8	2	3	RED/GRN	TRANSMIT - RING
DS1-8	1	20	GRN/RED	RECEIVE - TIP
DS1-8	2	21	GRN/RED	TRANSMIT - TIP
-	1	1	DRAIN	CHASSIS - GROUND
-		10	JUMPER	CHASSIS - GROUND
-	2	19	DRAIN	CHASSIS - GROUND
-		24	JUMPER	CHASSIS - GROUND

-		33	JUMPER	CHASSIS - GROUND
---	--	----	--------	------------------

9. Apply power to the APmax system.
10. Go to **Chapter 2 - "Installing the APmax UI"** and follow the steps to install the software on the PC.
11. Go to **Section 3.4 - "APmax System Administration"** and follow the instructions to add the APmax to the UI.
12. Go to **Chapter 5 - "System Time Manager"** and set the time in the APmax. The time must be set for the system to complete boot up. Allow 5 minutes for boot up.
13. Go to **Chapter 4 - "Network Configuration"** and follow the instructions to configure the ethernet interfaces on the APmax.
14. Go to **Chapter 7 - "Digital Carrier Configuration"** and configure the DS1s on the APmax.
15. Hardware Installation is complete.

Chapter 2 - Installing the APmax UI

2.1 Installation Procedure

NOTES:

- Before you begin the APmax UI (User Interface) software installation, it is strongly recommended that you exit all Windows programs and disable any anti-virus software for the duration of the installation. Otherwise, the APmax UI installation may fail.
- The full APmax UI software package consists of one CD-ROM disc and requires one of the following operating systems: Windows® 7 Professional, Windows® 7 Enterprise, Windows® 7 Ultimate, Windows® 8 Pro, or Windows® 8 Enterprise.

This section contains step-by-step instructions for new installations of APmax UI on a single computer. Instructions for upgrading an existing installation of the APmax UI can be found in Section 2.2 - "Upgrade Procedure".

Install APmax User Interface:

1. Locate the APmax UI installation CD.
2. Insert the CD-ROM into the CD-ROM drive. The CD contains an Autorun file, which will automatically initiate the APmax UI installation procedure when the CD is inserted into the CD-ROM drive. To ensure that the Autorun file is activated, you should be logged into Windows before you insert the CD.

If you already have the CD inserted in your CD-ROM drive, or the Autorun feature does not activate, press the *Start* button in the lower-left corner of the screen and select the *Run* command. A dialog box will appear. Enter the following path in the dialog box and click the *OK* button to begin loading the software onto the PC.

<CD drive letter>:\APmax\setup.exe

3. The APmax UI has been developed using Microsoft .NET technology and therefore the .NET Framework version 4.5 must be installed on the computer. If the appropriate run-time environment is not available on the computer, then a prompt to install the correct .NET Framework (see Figure 2-1) will be displayed. If the correct .NET Framework is already installed, then the APmax UI installation Welcome screen (see Figure 2-7) will be displayed. **If the APmax UI Welcome screen (Figure 2-7) is displayed, continue to the next step in this procedure.**

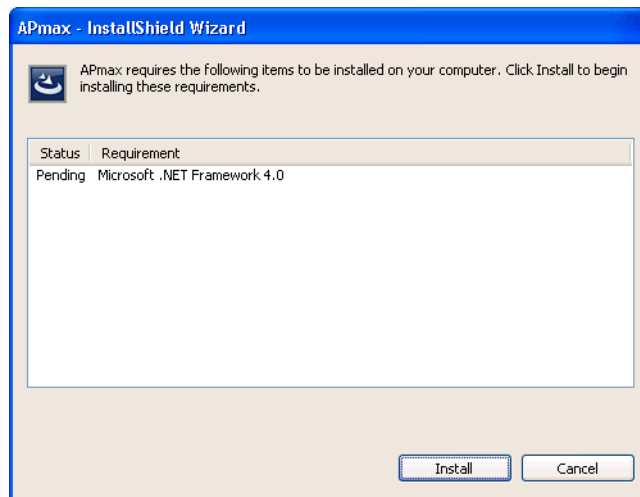


Figure 2-1 .NET Framework Requirement Screen

If the prompt to install the .NET Framework is displayed (see Figure 2-1), then press the *Install* button. The APmax UI will begin downloading the .NET Framework install file if the necessary files are not already downloaded. A progress screen similar to Figure 2-2 will be displayed while the file is being downloaded.

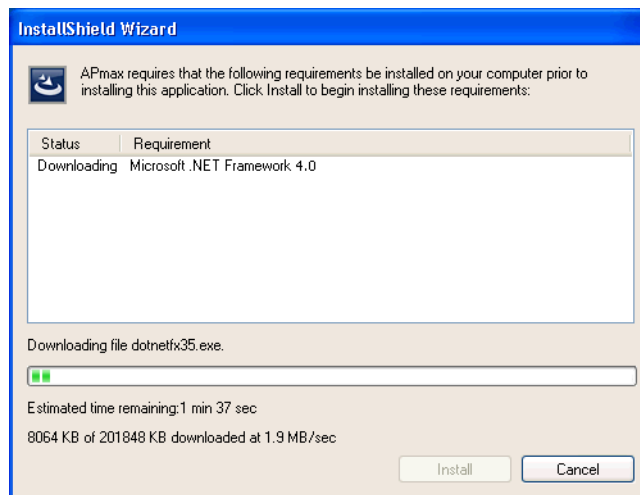


Figure 2-2 .NET Framework Downloading Screen

After the file is downloaded, the setup program will automatically begin unpacking the downloaded file and will load the installation components, as shown in Figure 2-3.

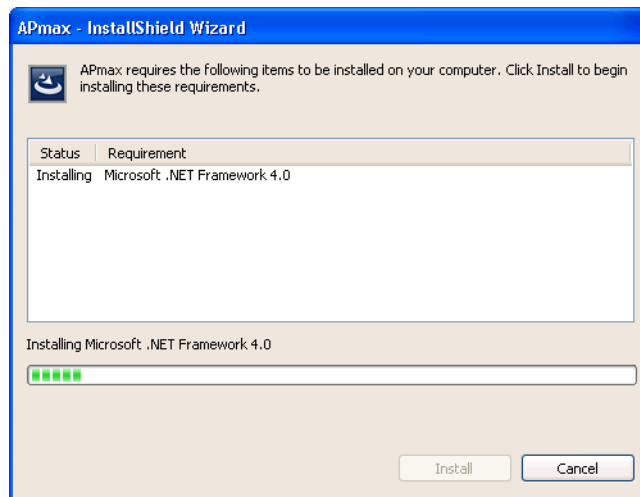


Figure 2-3 .NET Framework Installing Screen

Once the installation components are loaded, a screen with the .NET Framework license terms may be shown (see Figure 2-4), depending on which version of the .NET Framework is currently installed. Complete the instructions in the screen and press the *Install* button to continue the installation.

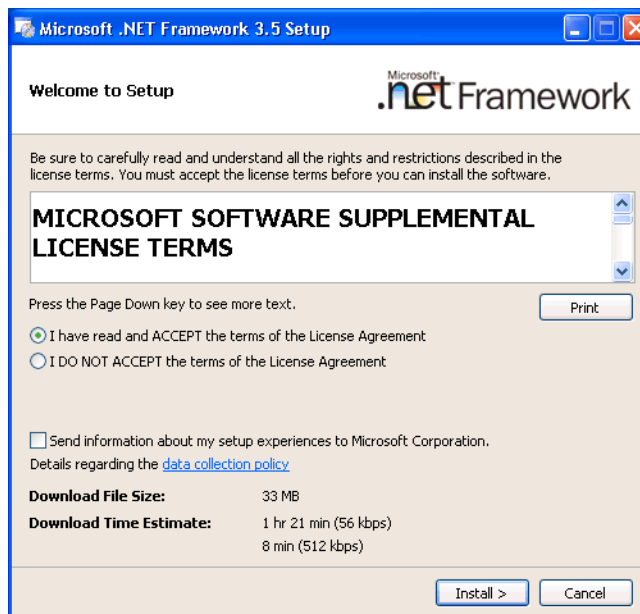


Figure 2-4 .NET Framework License Terms

Wait while the .NET Framework is configured and installed in the appropriate locations on the computer. The status of the configuration and installation will be illustrated by the Download and Install Progress screen (Figure 2-5).

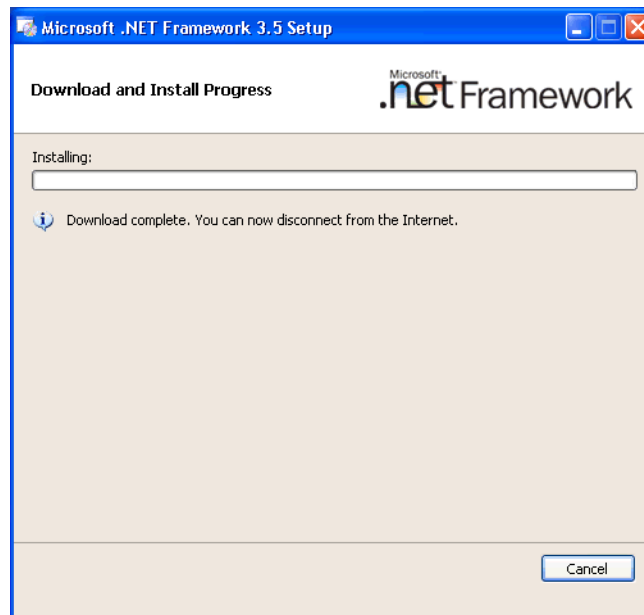


Figure 2-5 .NET Framework Install Progress Screen

When the .NET Framework installation is complete, the screen in Figure 2-6 will be displayed. Press the *Exit* button to close this screen and continue to the next step.

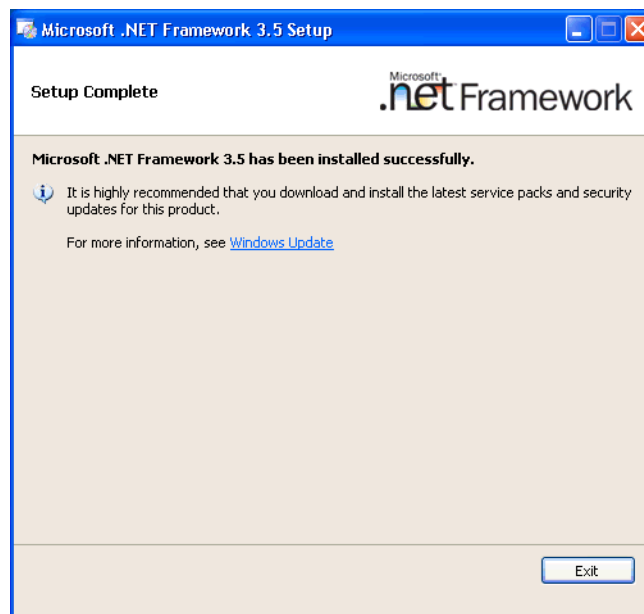


Figure 2-6 .NET Framework Setup Complete

4. The APmax UI installation Welcome screen (see Figure 2-7) is shown once the setup program verifies the required runtime environments are loaded on the PC.

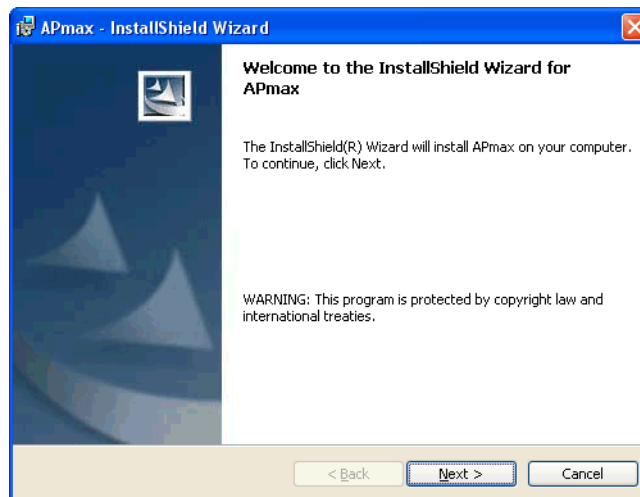


Figure 2-7 APmax UI Installation Welcome Screen

Press the *Next* button when you are ready to begin the APmax UI installation.

5. The Customer Information screen will now be displayed. This screen is shown in Figure 2-8.

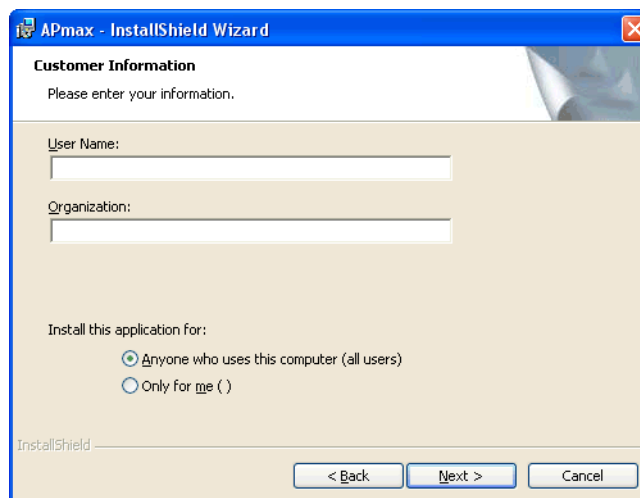


Figure 2-8 Enter Customer Information

Enter your user name and organization name, select the scope of users who should be allowed to use the APmax UI software on this computer, and then click the *Next* button to continue the installation.

- The Setup Type screen will now be displayed. Your choices will be Complete and Custom. The Complete installation will install everything. The Custom installation will let you choose which components to install. This screen is displayed in Figure 2-9.

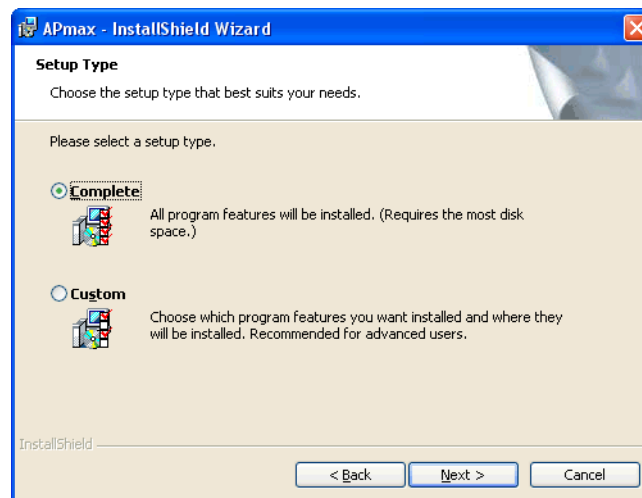


Figure 2-9 Choose the Setup Type

Select either Complete or Custom and click the *Next* button to continue the installation.

- The next window will give you the option of reviewing or changing your installation settings before the installation begins. This is illustrated in Figure 2-10. Press the *Install* button to confirm the installation.

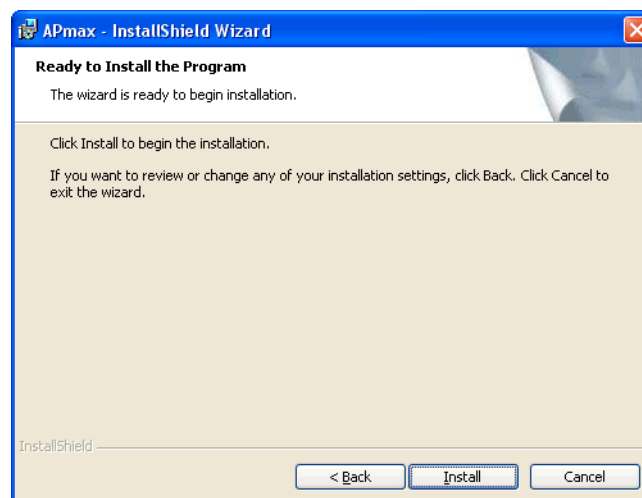


Figure 2-10 Ready to Install Screen

- The installation will now copy the program files to the appropriate locations on the target computer. The status of the installation will be illustrated by the progress bar displayed in Figure 2-11.

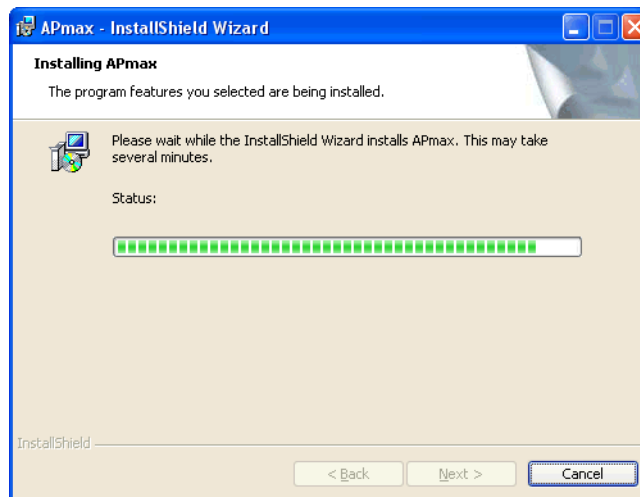


Figure 2-11 Installation Progress Screen

9. Now that the APmax UI and .NET Framework installations are complete, the screen in Figure 2-12 will be displayed. If you wish to automatically start the APmax UI after the installation procedure is completed, check the *Launch APmax* box in this screen. Press the *Finish* button to close this screen and exit the installation program. At the end of the installation you may be presented with a screen (see Figure 2-13) prompting you to restart your PC for the APmax UI configuration to take effect. Make sure that you know the username and password to log back onto the PC after the restart, and then either select **Yes** to restart now or **remember to restart your PC later before starting the APmax UI application**.

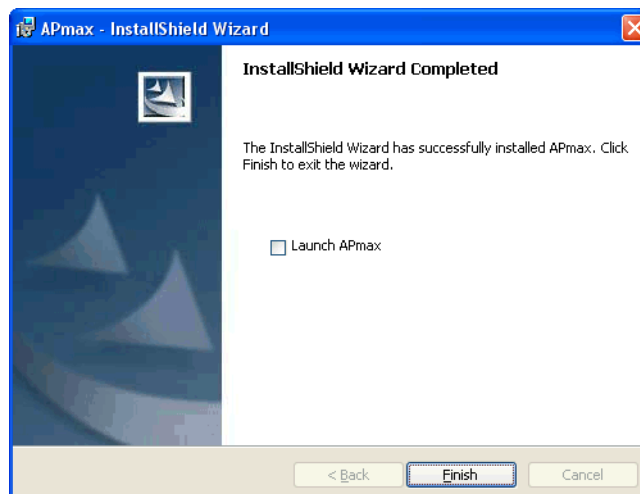


Figure 2-12 APmax UI Installation Complete Screen

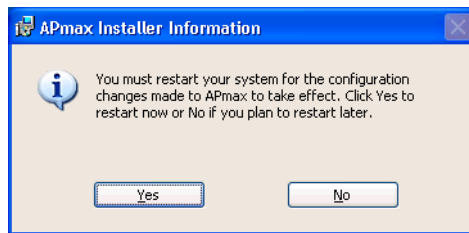


Figure 2-13 Restart Prompt

Once you are back at the Windows desktop, continue to Chapter 3 - "Getting Started" for instructions on using the APmax UI application.

2.2 Upgrade Procedure

This section contains step-by-step instructions for upgrading an existing installation of the APmax UI. Instructions for new installations of the APmax UI can be found in Section 2.1 - "Installation Procedure".

Upgrade APmax UI:

1. Locate the APmax UI installation CD that contains the most current version of the APmax UI application.
2. Insert the CD-ROM into the CD-ROM drive. The CD contains an Autorun file, which will automatically invoke a prompt to upgrade the APmax UI (see Figure 2-14) when the CD is inserted into the CD-ROM drive. To ensure that the Autorun file is activated, you should be logged into Windows before you insert the CD.

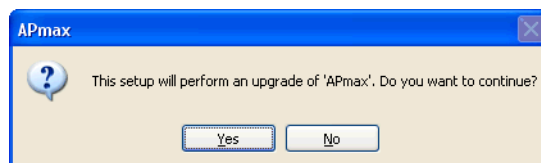


Figure 2-14 APmax UI Upgrade Prompt

If you already have the CD inserted in your CD-ROM drive, or the Autorun feature does not activate, press the *Start* button in the lower-left corner of the screen and select the *Run* command. A dialog box will appear. Enter the following path in the dialog box and click the *OK* button to begin loading the software onto the PC.

<CD drive letter>:\APmax\setup.exe

Press the *Yes* button when you are ready to begin the upgrade process.

3. The APmax UI has been developed using Microsoft .NET technology and therefore the .NET Framework version 4.5 must be installed on the computer. If the appropriate run-time environment is not available on the computer, then a prompt to install the correct .NET Framework will be displayed (see Figure 2-1). If this prompt is displayed, then follow the instructions below Figure 2-1 in Section 2.1 - "Installation Procedure" to complete the .NET Framework installation and then continue with this upgrade procedure.
4. The APmax UI setup program will now validate the existing installation and prepare for the upgrade process. While this is in progress, a screen similar to Figure 2-15 will be displayed.

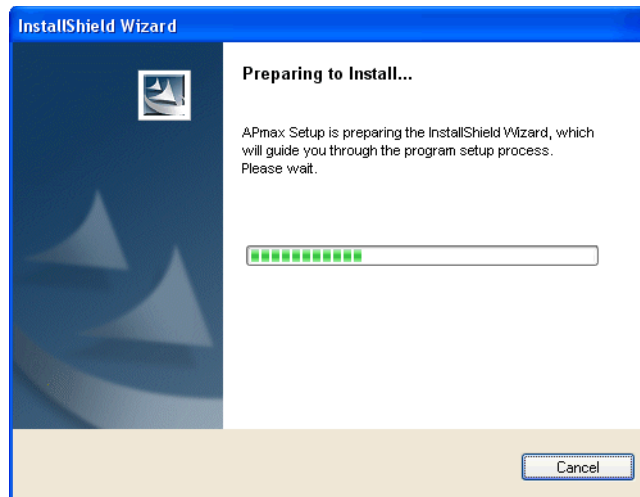


Figure 2-15 Installation Setup Screen

When the installation is ready to begin, the following screen will be displayed. Press the *Next* button to continue the installation.

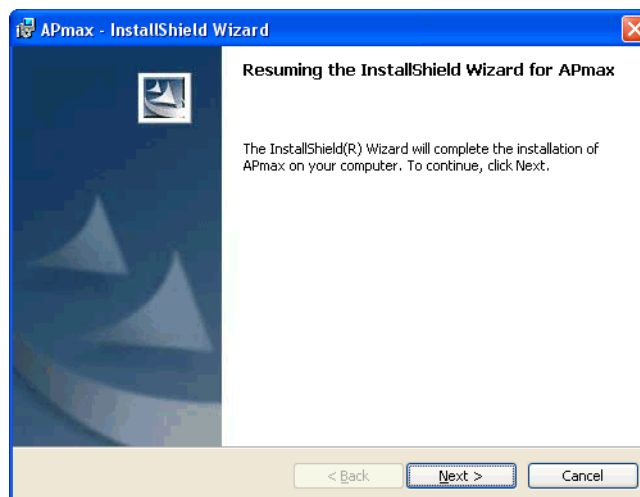


Figure 2-16 Resume Installation Screen

5. The installation will now copy the program files to the appropriate locations on the target computer. The status of the installation will be illustrated by the progress bar displayed in Figure 2-17.

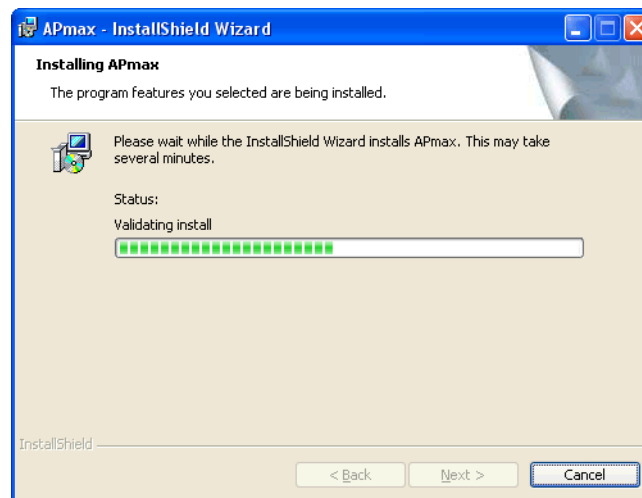


Figure 2-17 Installation Progress Screen

6. When the installation of the new version of the APmax UI is complete, the APmax UI Installation Complete screen (see Figure 2-18) will be displayed. Press the *Finish* button to close this screen and exit the installation program. At the end of the installation you may be presented with a screen (see Figure 2-19) prompting you to restart your PC for the APmax UI changes to take effect. Make sure that you know the username and password to log back onto the PC after the restart, and then either select **Yes** to restart now or **remember to restart your PC later before starting the APmax UI application**.

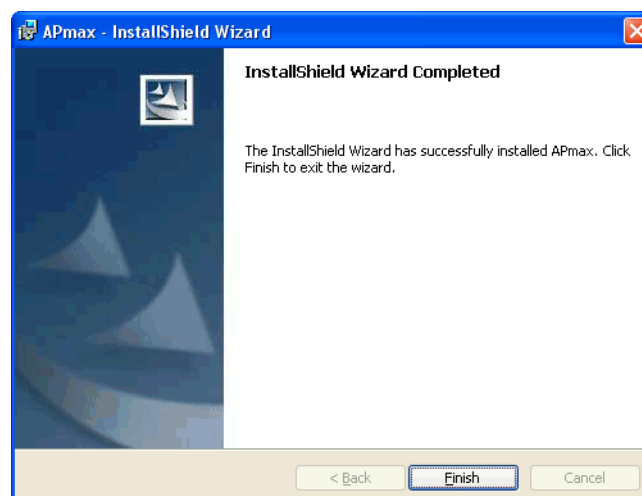


Figure 2-18 Installation Complete Screen

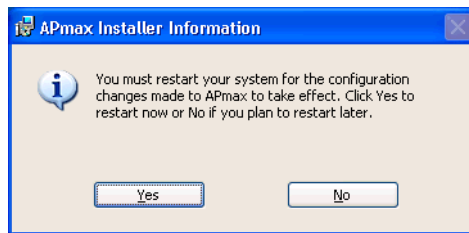


Figure 2-19 Restart Prompt

2.3 APmax UI Update

There are three ways the files of an existing APmax UI installation can be updated:

- Install an updated version of the APmax UI installation CD (see Section 2.2).
- Start the APmax UI, which initiates an automatic check for updates. Subsequent update checks will occur automatically every 24 hours after startup. See Section 2.3.1 - "Automatic Updates" for more information.
- Manually check for updates from within the APmax UI (see Section 2.3.2 - "On-Demand Updates").

Note: The APmax UI must have access to the Internet to update without an installation CD.

2.3.1 Automatic Updates

Upon startup of the APmax UI, the Innovative Systems FTP site is checked for updated APmax UI files. If one or more updates are found then a prompt to download and install the updated files will be displayed (see Figure 2-20). The prompt contains a list of the files that will be updated along with release notes for the new file versions.

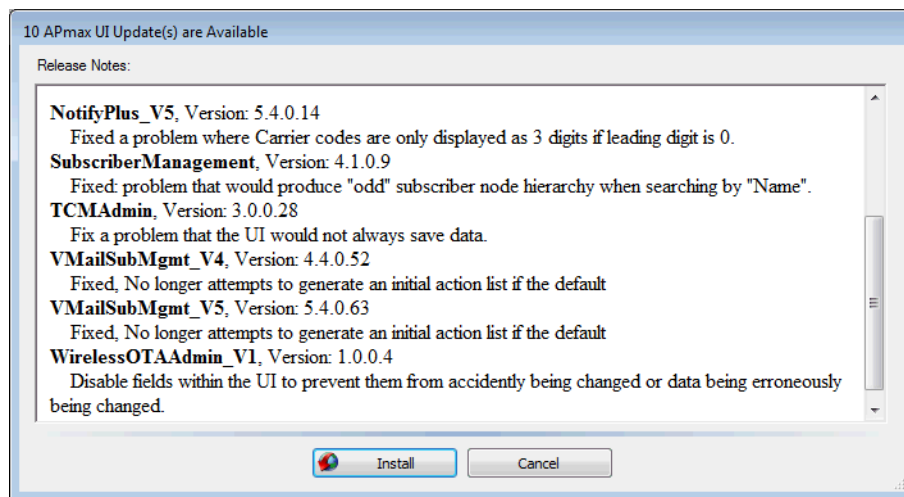


Figure 2-20 Update(s) Available

Choosing *Cancel* in the prompt will display a warning message (Figure 2-21), prompting once again to update the APmax UI.

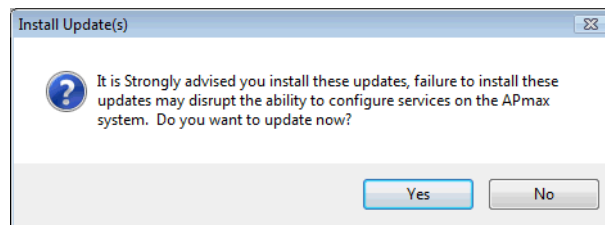


Figure 2-21 Update Warning

Agreeing to either of the above prompts will display a Downloading and Installing Updates progress window similar to Figure 2-22. The window will remain open until all updates are downloaded and installed, and then it will close, allowing the APmax UI to resume startup.

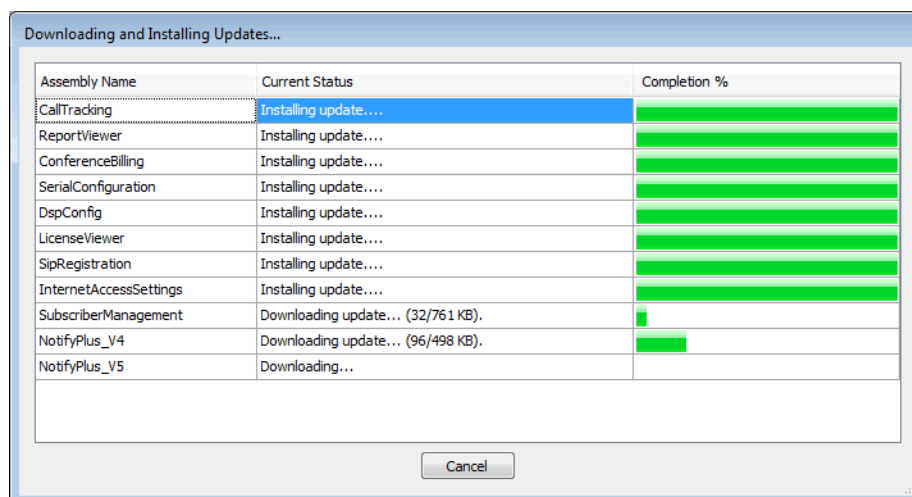


Figure 2-22 Downloading and Installing Updates

If no updates are found when the APmax UI is started, or if *Cancel* is selected in the download and install prompt (Figure 2-20), then the APmax UI will automatically check for updates every twenty-four hours after startup. If updates are found during the automatic 24-hour checkup then a prompt with a 2-hour timer will be displayed (see the *Install* button in Figure 2-23). The APmax UI will be restarted and the updates will be installed when the timer reaches zero unless the *Cancel* button is pressed.

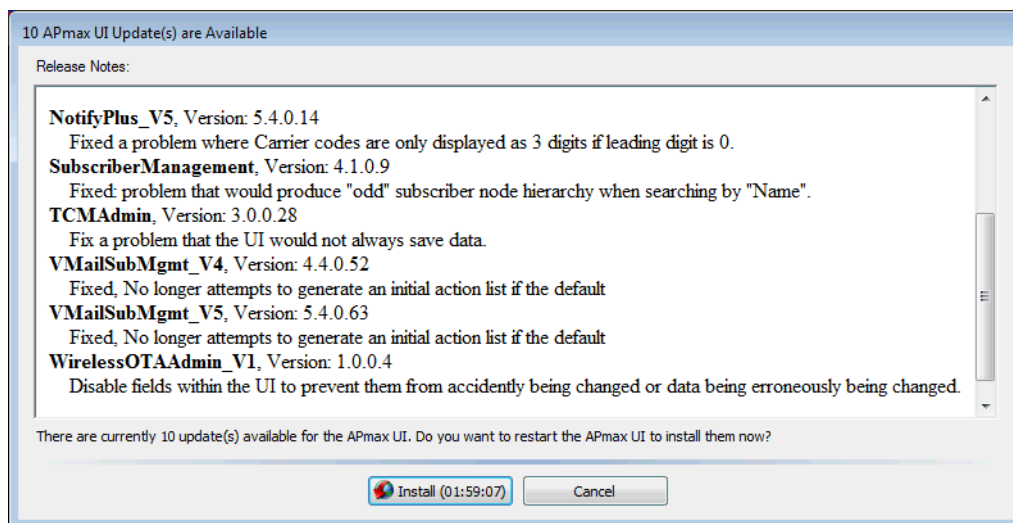


Figure 2-23 Restart Prompt

2.3.2 On-Demand Updates

The Innovative Systems FTP site can be checked at any time for updated APmax UI files by selecting the *Help / Check for Updates* command in the menu bar, as illustrated in Figure 2-24.

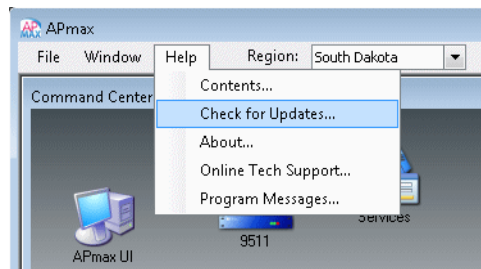


Figure 2-24 Check for Updates Menu Command

If one or more updates are found then a prompt with a 2-hour timer will be displayed (see Figure 2-25). The APmax UI will be restarted and the updates will be installed when the timer reaches zero unless the *Cancel* button is pressed. Choosing *Install* in the prompt will restart the APmax UI. Upon startup the Downloading and Installing Updates progress window will be shown (see Figure 2-22). The window will remain open until all updates are downloaded and installed, and then it will close, allowing the APmax UI to resume startup.

If no updates are found then a No Updates Found message will be displayed (Figure 2-26).

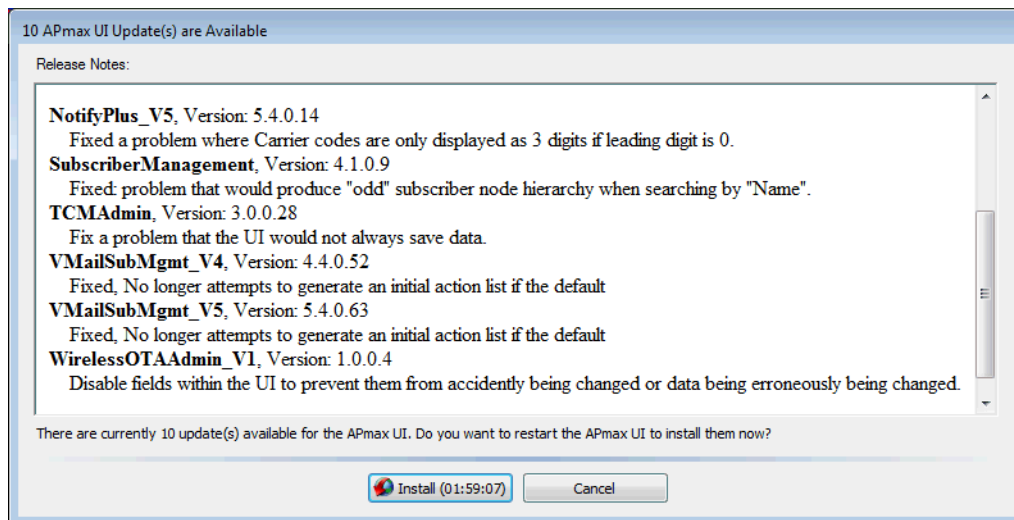


Figure 2-25 Restart Prompt

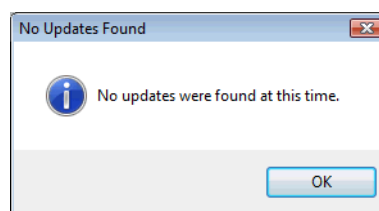



Figure 2-26 No Updates Found

Chapter 3 - Getting Started

3.1 Logging Into the APmax UI

At this point, the APmax UI software should be installed. Run the program by clicking on the *Start* button in the lower-left corner of the screen, selecting *Programs*, selecting the *Innovative Systems* group and clicking on the  **APmax** command. If desired, a shortcut may be placed on the Windows desktop to allow quicker access to the software.

The following figure depicts the login window for the APmax UI software:




Figure 3-1 APmax UI Sign In Window

The first time the software is run, a master Login ID (user name) and password must be used to access the software. The initial login and password is:

Login ID: MASTER	→Use all capital letters.
Password: STRT	→Use all capital letters.


To login, do the following:

1. Enter the user name in the *Login ID* field. (Type MASTER if you are running the APmax UI for the first time.)
 2. Enter the *Password*. (Type STRT if you are running the APmax UI for the first time.)
 3. Optionally, a master APmax system may be designated at this time by expanding the *Advanced* section (click on the expand  symbol) and doing one of the following:
 - a. Select a *Master APmax* system that has been previously added to the APmax UI and has been designated as a master system.
 - b. Enter into the *Master APmax* combobox the IP address of a master system's Unit 1, Administration CPU.
- See Section 3.4.3 - "Master APmax Management" for information about using a master APmax.
4. Click on the *Sign In* button or press the <ENTER> key to complete the login procedure.

The **MASTER / STRT** login ID and password allows user administration functions only. Therefore, after logging in, access will be given only to the *User Administration* interface. See Section 3.2 - "User Administration" for detailed information on defining new users with access to more functions.

3.2 User Administration

The User Administration interface is used to add users, delete users, and define the login ID, password, and access privileges for each user. The access privileges define what APmax UI functions the user will be allowed to access and perform. To access the User Administration interface,

right-click on the APmax UI icon  in the Command Center window (see Section 3.3 for detailed information on using the Command Center window) to invoke a popup menu, and select the *User Administration* command (as illustrated in Figure 3-2). The User Administration window (see Figure 3-3) will be displayed.

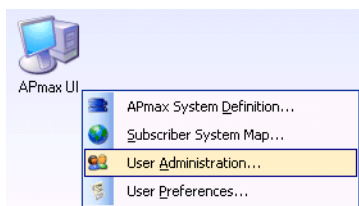


Figure 3-2 User Administration Menu Command

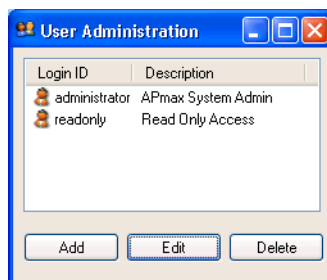


Figure 3-3 User Administration Window

A list of currently defined users will be displayed in the User Administration window. If no users have been defined the list will be blank.

3.2.1 Adding a User

To define a new APmax UI user, follow these steps:

1. Press the *Add* button in the User Administration window (see Figure 3-3). The User Information window (Figure 3-4) will be displayed.

A screenshot of the 'User Information' dialog box. It has a blue title bar with the text 'User Information' and a red close button. The dialog contains four text input fields: 'Login ID:' with the value 'administrator', 'Description:' with the value 'APmax System Admin', 'Password:' with masked characters 'xxxxxx', and 'Confirm Password:' with masked characters 'xxxxxx'. Below these fields is an 'Access Rights' button. At the bottom are 'OK' and 'Cancel' buttons.

Figure 3-4 User Information Window

2. Populate the following fields in the User Information window:

Login ID Enter the new user name. The Login ID may consist of up to 30 characters. The case of the characters does **not** matter. When logging on, the Login ID is **not** case-sensitive.

Description Enter a short description of the user to help identify the purpose of the user in the User Administration list. This field is not required.

Password Enter the user password. The password may consist of up to 30 characters. The case of the characters **does** matter. When logging on, the Password **is** case-sensitive.

Confirm Password Enter the password again.

3. Press the *Access Rights* button in the User Information window to display the User Access Rights window (see Figure 3-5). See Section 3.2.4 - "User Access Rights Details" for detailed information on selecting the appropriate access rights for this user. If there are currently no other users defined in the User Information window, it is recommended that you define an administrator user with access privileges to all functions.
4. Once the access rights have been selected for the new user, press the *OK* button in the User Access Rights window to return to the User Information window.
5. Press the *OK* button in the User Information window. The new user has now been successfully created and will be displayed in the list of users in the User Administration window.

Additional users may be added at this time, or they can be added later by the system administrator (or anyone else with the access privileges to add new users).

To login with the new user, exit the APmax UI program and login using the Login ID and Password that you defined for the new user. See Section 3.1 - "Logging Into the APmax UI" for more information on logging in.

3.2.2 Editing a User

To modify the settings (Login ID, Description, Password, Access Rights) of an existing APmax UI user, select the user in the User Administration window (see Figure 3-3) and press the *Edit* button. A User Information window (see Figure 3-4) populated with the current settings of the selected user will be displayed. Make any desired changes to the settings and press the *OK* button in the User Information window to save the changes.

3.2.3 Deleting a User

To delete an APmax UI user, select the user in the User Administration window (see Figure 3-3) and press the *Delete* button. A delete confirmation prompt will be displayed. Select the *Yes* button to complete the deletion.

3.2.4 User Access Rights Details

The User Access Rights window (see Figure 3-5) is used to define what APmax UI functions the user will be allowed to access and perform. This window is accessed for individual users by pressing the *Access Rights* button in the User Information window (Figure 3-4) while adding or editing a user.

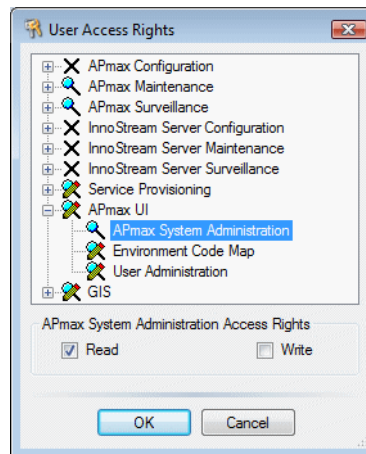



Figure 3-5 User Access Rights Window



There are several major categories of functions in the APmax UI. Documentation for these categories is found in the following locations:

- **APmax Configuration** - See Part 2 - "System Configuration"
- **APmax Maintenance** - See Part 3 - "System Maintenance"
- **APmax Surveillance** - See Part 4 - "System Surveillance"
- **InnoStream Server Configuration** - This category is only applicable if the APmax UI is being used to manage an InnoStream Server. See the InnoStream Server User Manual for more information.
- **InnoStream Server Maintenance** - This category is only applicable if the APmax UI is being used to manage an InnoStream Server. See the InnoStream Server User Manual for more information.
- **InnoStream Server Surveillance** - This category is only applicable if the APmax UI is being used to manage an InnoStream Server. See the InnoStream Server User Manual for more information.
- **Service Provisioning** - See Part 5 - "Services"
- **APmax UI** - See sub-sections in Chapter 3 - "Getting Started"
- **GIS** - This category is only applicable if the Innovative Systems GIS (Geographic Information System) application is installed on the computer running the APmax UI software. See the Innovative Systems GIS support documentation for more information.

These categories and the functions in each category are shown in a tree structure in the User Access Rights window. Branch items in the tree (items that have sub-items) are indicated by a  symbol. Clicking on this symbol alternately expands and contracts the sub-item list.

Each APmax UI category and function in the tree will have one of the following graphic symbols indicating the user access status for that function.

- **X** indicates the user does not have read or write access to the associated function.

-  indicates the user has read-only access to the function.
-  indicates the user has read and write access to the function.

Below the tree of functions are the *Read* and *Write* boxes. Selecting a function and checking the *Read* box will enable read access to that function. Similarly, checking the *Write* box will enable write access to the function. Unchecking either box will disable the associated type of access to the selected function. Alternatively, you may right-click on a function to invoke a popup menu (see Figure 3-6) and select the command you wish to perform.

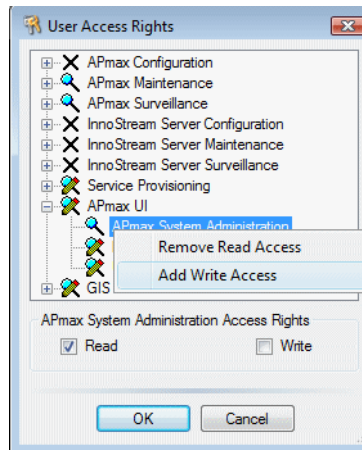


Figure 3-6 User Access Rights Popup Menu

To quickly set access rights to all sub-items in a category, click on the category (e.g., System Configuration) in the tree and enable or disable read or write access using the same methods described above for individual functions. A prompt (see Figure 3-7) will be displayed, asking if you would like to apply the rights change to all services beneath the selected node. Choose *Yes* to confirm applying the change to the sub-items or *No* to decline it.

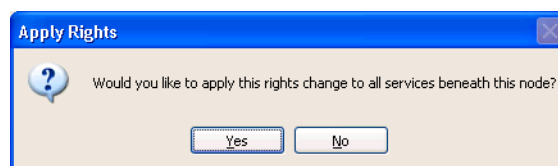


Figure 3-7 Apply Rights Prompt

3.3 The Command Center

The purpose of this section is to familiarize you with the APmax UI Command Center and to provide basic instructions for using the APmax UI (User Interface) for the first time.

- Section 3.3.1 - "Command Center Overview"

- Section 3.3.2 - "Command Center Items & Commands"
- Section 3.3.3 - "Menu Bar Commands"
- Section 3.3.4 - "User Preferences"

3.3.1 Command Center Overview

The Command Center window is intended to provide a visual representation of the APmax UI and the systems it administers. The Command Center window is automatically displayed when the APmax UI is started. The following figure depicts an example of the APmax UI Command Center window after APmax systems have been defined. Initially, the only icon in the Command Center window will be the APmax UI icon. See Section 3.4.2.1 - "Adding a System" for more information on defining new systems.

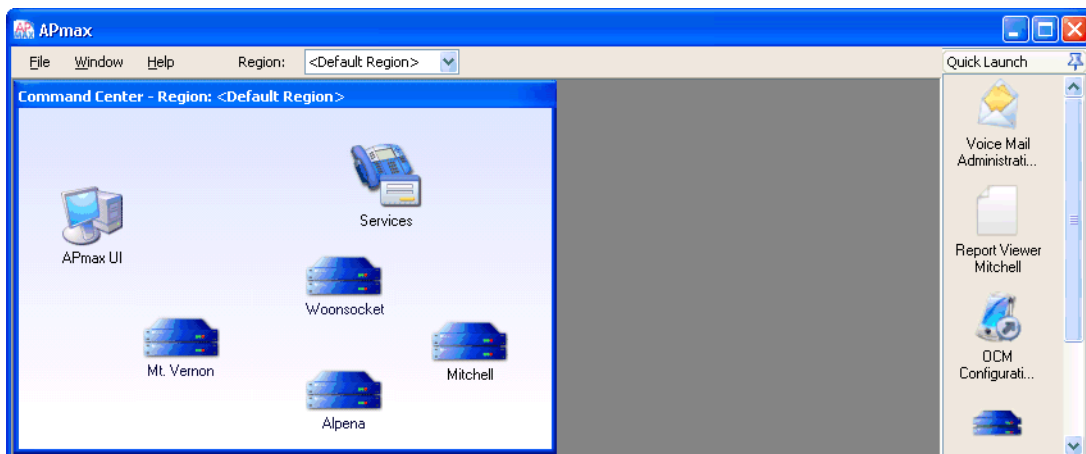


Figure 3-8 APmax UI Command Center

The Command Center window can be sized and positioned just like any other Windows display. In addition, the icons within the Command Center window can be independently positioned. To move an icon in the Command Center:

1. Move the mouse cursor onto the item to be moved.
2. Press down and hold down the left-hand mouse button.
3. Drag the item to a new position by moving the mouse in the desired direction.
4. When the item is in the desired position, release the left-hand mouse button.

The Command Center window will retain its last size between APmax UI sessions. Also, the items within the Command Center window will maintain their position between APmax UI sessions.

3.3.2 Command Center Items & Commands

Icons in the Command Center window will display a popup menu when the **right-hand** mouse button is clicked while the mouse pointer is positioned over the icon. The popup menu will contain commands specific to the selected icon. The items found in the Command Center and all of their associated commands are described below:

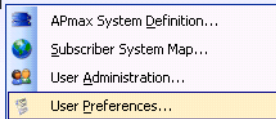


APmax UI

APmax UI Icon - This icon represents APmax UI administration. From this icon you can access commands that affect the configuration of the APmax UI itself (e.g., change user preferences) and define APmax systems. The available commands are listed below.



APmax UI



APmax System Definition - See Section 3.4 - "APmax System Administration"

Subscriber System Map - See Section 3.5 - "Subscriber System Map"



User Administration - See Section 3.2 - "User Administration"

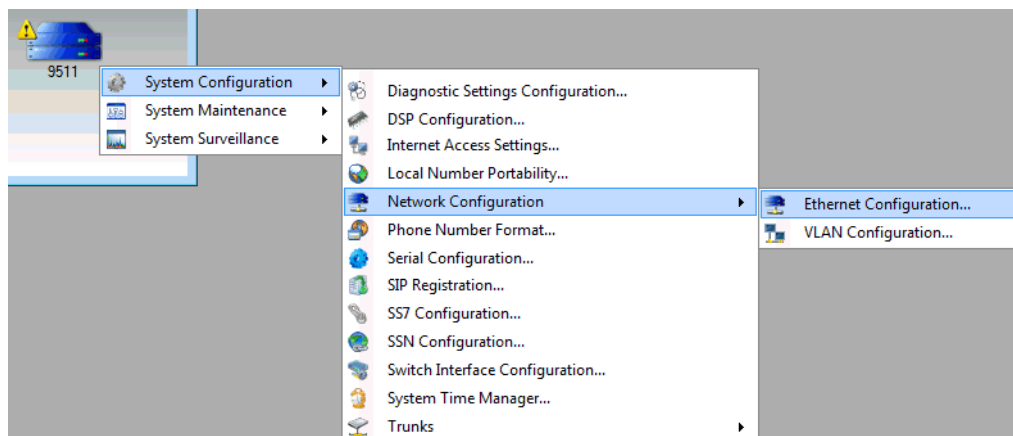
User Preferences - See Section 3.3.4 - "User Preferences"



Mitchell

System Icon - This icon represents an APmax system being managed by the APmax UI. There will be one of these icons for each system that has been defined in the APmax UI (see Section 3.4.2.1 - "Adding a System"). The name of the system will be shown in the label below the system icon. Right-clicking on the system icon will allow you to access the commands used to configure the system.

If an alarm is present on an APmax system, then the system's icon will have an alarm symbol  in the upper left-hand corner of the icon. For more information on alarms, see Chapter 19 - "Alarm Status". If an error occurs that causes the APmax UI to be disconnected from the system, then a disconnect symbol  will be shown in the upper left-hand corner of the system icon. Hovering the mouse pointer over either of these symbols will display a tooltip with information about the alarm or error.



System Configuration - Part 2

Elation Messenger Configuration - Section 4.3

Internet Access Settings - Chapter 11

Network Configuration

 Ethernet Configuration - Section 4.1

 VLAN Configuration - Section 4.2

Phone Number Format - Chapter 12

Serial Configuration - Chapter 6

Service Configuration - Section 8.7

SIP Registration - Chapter 10

SS7 Configuration - Chapter 8

System Time Manager - Chapter 5

Trunks

 Digital Carrier Configuration - Chapter 7

 Trunk Configuration - Chapter 9

System Maintenance - Part 3

Announcement Manager - Chapter 14

FTP Transfer Service - Chapter 15

Package Management - Chapter 16

Report Viewer - Chapter 17

System Upgrade Manager - Chapter 18

System Surveillance - Part 4

Alarm Status - Chapter 19


Digital Carrier Status - Chapter 20

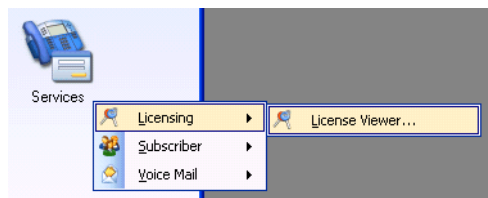
Ethernet Switch Information - Chapter 21

Log Reader - Chapter 22

SS7 Status - Chapter 23



Services Icon - This icon represents the licensing and system-wide service data (e.g., Voice Mail Administration) of all APmax systems being administered by the APmax UI. System-specific service settings are found in the menus under the appropriate system icon . The menu options listed below are found under the Services icon in all installations of the APmax UI. Additional menu options may be displayed as other services are installed on APmax systems. The interfaces for additional services are not discussed in the APmax User Manual. Documentation for each additional service (e.g., APmax Voice Mail) is packaged with that service. See Part 5 - "Services" for more information about APmax services.

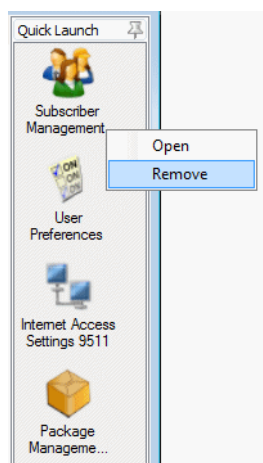


Services - See Part 5

License Viewer - See Chapter 25

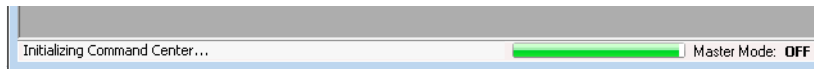
Subscriber Management - See Chapter 26

Note: The availability of the Subscriber Management menu command depends on the APmax UI Preferences (see Section 3.3.4).



Quick Launch Bar - The Quick Launch bar is located on the right-hand side of the APmax UI window (see Figure 3-8). It tracks the most frequently used interfaces and displays the icons that represent the interfaces. Users can start the programs listed in the Quick Launch bar with a single left-click on the appropriate icon. Right-clicking on an icon will display a popup menu with an *Open* option that will start the program and a *Remove* option that will reset the counter for the selected program to zero, effectively removing it from the list until the program is started again. The Quick Launch bar can be turned on or off using the Command History

setting in the User Preferences interface (see Section 3.3.4). All of the counters for the most-used interfaces can be cleared by pressing the *Reset* button in the *Advanced* tab of the User Preferences interface (see Section 3.3.4.2).



Status Bar - The status bar is located along the bottom of the APmax UI window and provides information such as the initialization status of add-ons and the current Master Mode of the APmax, which will display “ON” if a master APmax is being used (see Section 3.4.3 - "Master APmax Management"), or “OFF” if a master APmax is not being used.

3.3.3 Menu Bar Commands

The menu bar (Figure 3-9) at the top of the APmax UI window contains drop-down menus which provide access to a variety of functions such as displaying help documentation, managing user preferences, or updating the user interface.

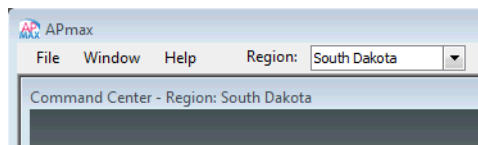


Figure 3-9 APmax UI Menu Bar

The commands found in the menu bar are described below:

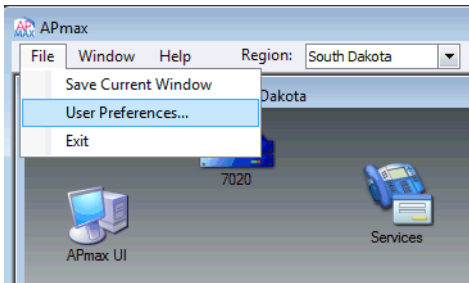
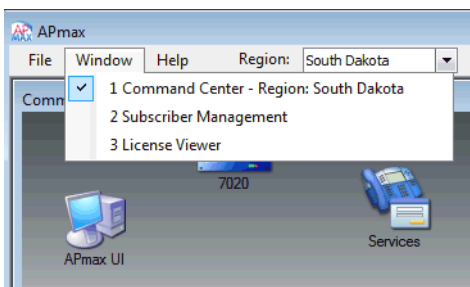
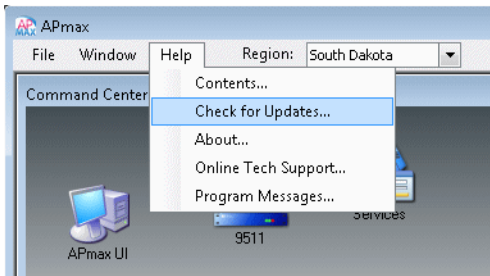
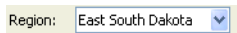
Menu	Command	Description
<u>File</u> 	<i>Save Current Window</i>	Saves settings in the selected window. Typically settings in the APmax UI are saved when a window is closed. This command allows settings to be saved without closing the window.
	<i>User Preferences</i>	Opens the APmax UI Preferences interface described in Section 3.3.4.
	<i>Exit</i>	Closes the APmax UI.

Figure 3-10 File Menu

Menu	Command	Description
<p><u>Window</u></p>  <p>Figure 3-11 Window Menu</p>		Displays a list of windows that are open in the APmax UI. Selecting a window in the list will bring it to the foreground.
<p><u>Help</u></p>  <p>Figure 3-12 Help Menu</p>	Contents	Displays the table of contents of the APmax UI online help documentation. See Figure 3-14.
	Check for Updates	Checks the Innovative Systems FTP site for updated APmax UI files and gives a prompt to download and install any updates that are found. See Section 2.3 - "APmax UI Update" for more information.
	About	Displays the APmax UI version and also a list of the add-ons that are installed with the APmax UI. See Figure 3-15.
	Online Tech Support	Opens the online technical support page on the Innovative Systems website (http://www.innovsys.com/registered/TechSupport.htm). See Figure 3-16.
	Program Messages	Opens the Program Messages interface (see Figure 3-17) and displays a standard file selection window that allows a trace file to be viewed and emailed using the <i>File / Send</i> menu command.

Menu	Command	Description
<u>Region</u>  Figure 3-13 Region Menu		Used to display and change the active region, as described in Section 3.4.1.4.

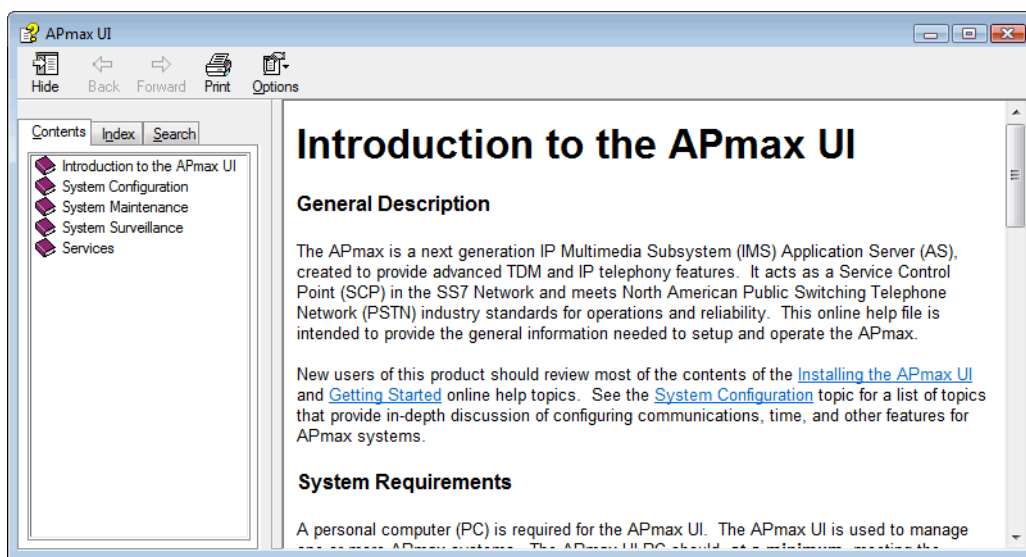


Figure 3-14 Online Help Contents

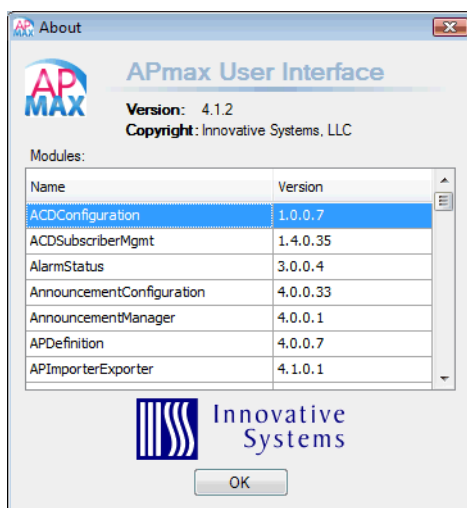
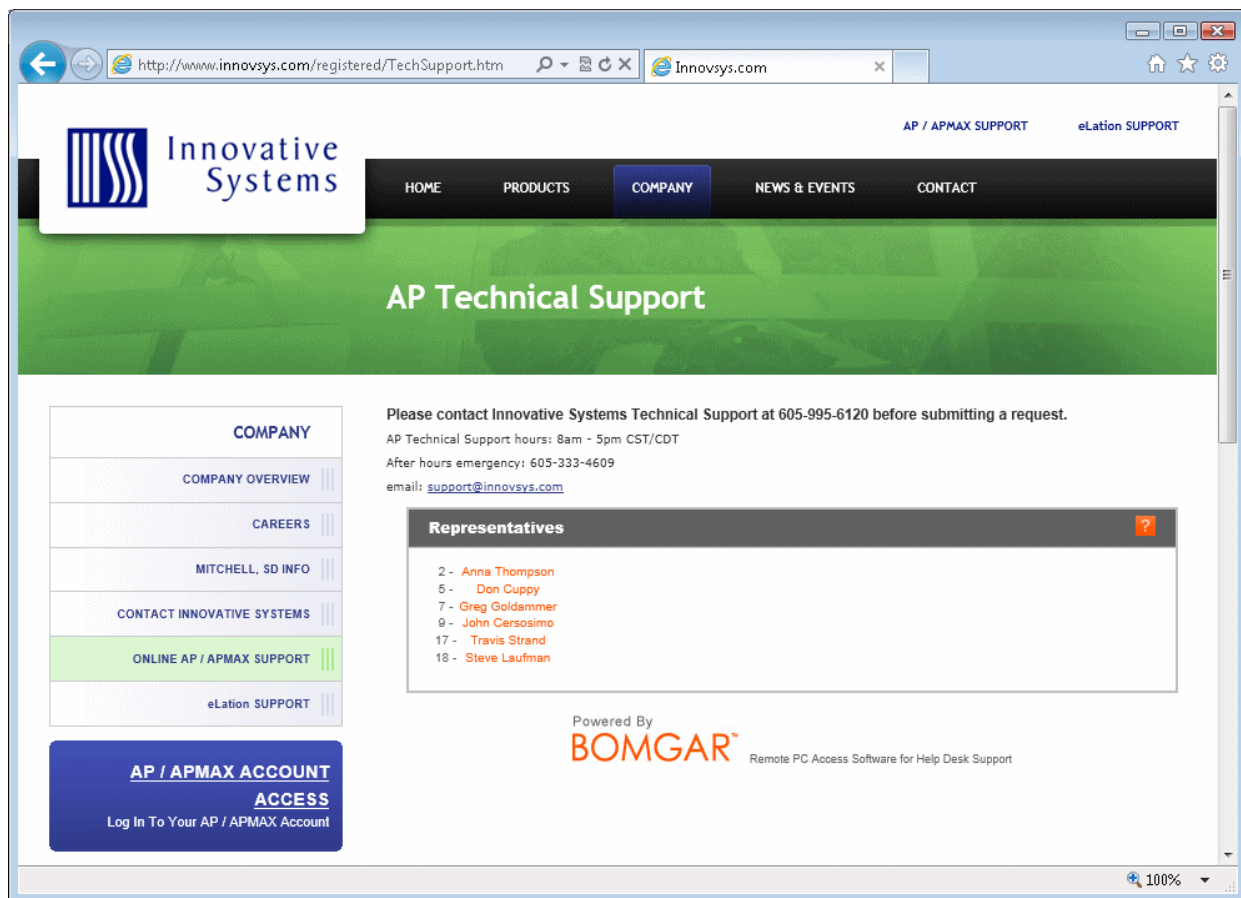
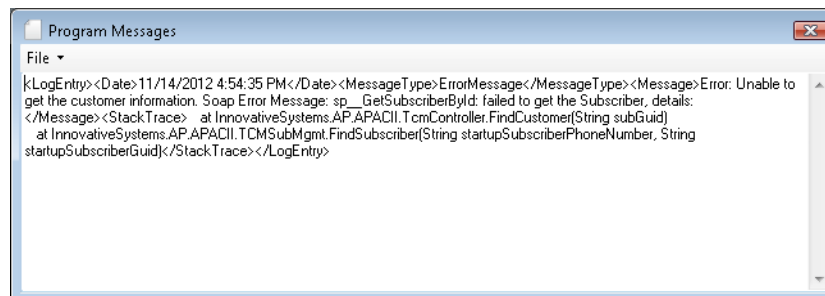



Figure 3-15 About Window

**Figure 3-16 Online Technical Support****Figure 3-17 Program Messages**

3.3.4 User Preferences

The APmax UI Preferences interface allows users to change options that affect the display and usage of the Command Center, and also to configure the Central Reporting Server address. To

access the APmax UI Preferences interface, right-click on the APmax UI icon  to invoke a popup menu, and select the *User Preferences* command (as illustrated in Figure 3-18). The APmax UI Preferences window (see Figure 3-19) will be displayed.

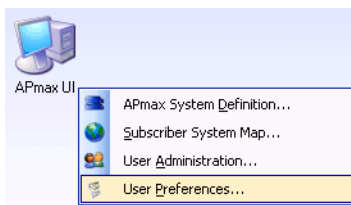


Figure 3-18 User Preferences Menu Command

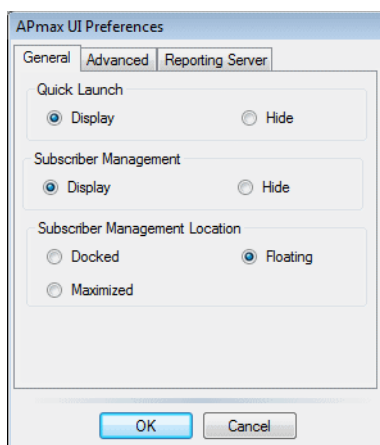


Figure 3-19 APmax UI Preferences - General Tab

The APmax UI window is partitioned into three tabs: *General*, *Advanced* and *Reporting Server*. The *General* tab is displayed by default when the window is opened. The configuration settings available in each of these tabs are described in the following sections.

- Section 3.3.4.1 - "General Settings"
- Section 3.3.4.2 - "Advanced Settings"
- Section 3.3.4.3 - "Reporting Server Settings"

3.3.4.1 General Settings

The *General* tab (Figure 3-19) in the APmax UI Preferences window contains the following settings:

Quick Launch

Select whether or not the Quick Launch bar will be displayed. The Quick Launch bar displays the most frequently used menu commands. Options include:

Display - The Quick Launch bar will be shown docked on the right-hand side of the APmax UI window (see Figure 3-8). This option is selected by default.


Hide - The Quick Launch bar will not be displayed.

Subscriber Management

Select whether or not the Subscriber Management interface (see Section 26.1) will be automatically displayed when the APmax UI is started. Options include:

Display - The Subscriber Management interface (either as a floating window or docked panel) will be shown in the APmax UI window by default. This option is selected by default.

Hide - The Subscriber Management interface will not be automatically displayed when the APmax UI is started, but can be accessed by right-

clicking on the Services icon  in the Command Center window to invoke a popup menu, and then selecting the *Subscriber | Management* command (as illustrated in Figure 3-20).

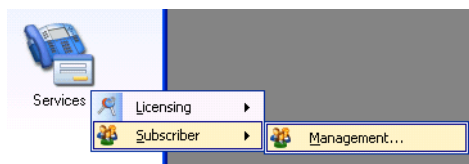


Figure 3-20 Subscriber Management Menu Command

Changes to this setting will not take effect until the APmax UI is restarted.

Subscriber Management Location

Choose how the Subscriber Management interface (see Section 26.1) will be displayed in the APmax UI window. Options include:

Docked - The Subscriber Management panel will be docked to the bottom of the APmax UI window.

Floating - The Subscriber Management interface will be displayed as a free-standing window and may be resized, closed, and opened (using the menu command described above Figure 3-20). This option is selected by default.

Maximized - The Subscriber Management interface will fill the entire APmax UI window by default when the APmax UI is started.

Changes to this setting will not take effect until the APmax UI is restarted.

After selecting the desired options, press the *OK* button to save any changes to the APmax UI Preferences. To exit the APmax UI Preferences window without saving any changes, press the *Cancel* button.

3.3.4.2 Advanced Settings

The *Advanced* tab (Figure 3-21) in the APmax UI Preferences window contains the following functions.

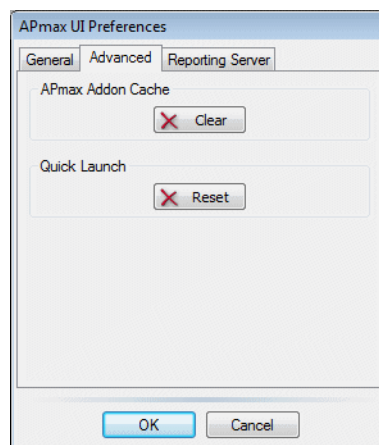


Figure 3-21 APmax UI Preferences - Advanced Tab

APmax Addon Cache

The purpose of the addon cache is to decrease the startup time of the APmax UI. Over time, new services and service upgrades may increase the startup time. Clearing the addon cache by pressing the *Clear* button will force the cache to be recreated the next time the APmax UI is started, which will result in decreased startup times in the future.

Quick Launch The Quick Launch bar (described in Section 3.3.2 - "Command Center Items & Commands") tracks the most frequently used interfaces in the APmax UI. Pressing the *Reset* button in the *Advanced* tab of the APmax UI Preferences window will clear the contents of the Quick Launch bar and reset all of the interface counters to zero.

3.3.4.3 Reporting Server Settings

The *Reporting Server* tab (Figure 3-22) in the APmax UI Preferences window contains the following functions.

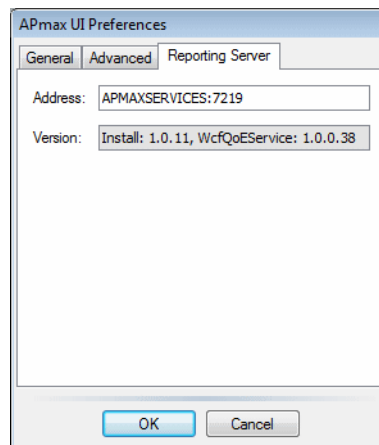


Figure 3-22 APmax UI Preferences - Reporting Server Tab

Address This optional field is used to set the address of a server that will be used as a common database repository for the APmax system. This allows APmax UI features such as Report Viewer (see Chapter 17) to retrieve APmax database records from a server other than the APmax system. For more information about this feature, see the Central Reporting Server Service Description document.

The Reporting Server Address consists of the IP address or DNS name of the server, followed by a colon and port number (e.g. apmaxservices:7219).


After entering a server address, press the *OK* button. The APmax UI will attempt to connect to the entered address. If the connection fails then an error message will be displayed and the new address will not be saved. To exit the APmax UI Preferences window without saving any changes, press the *Cancel* button.

Note: If a Master APmax (see Section 3.4.3) is set then this address setting will be shared with other APmax UI installations that have the same Master APmax.

Version The version of APmax Central Reporting Server software that this APmax UI is connected to.

3.4 APmax System Administration

This section explains the concepts of System Regions (Section 3.4.1), Master APmax Mode (Section 3.4.3), and Single Web Portal (Section 3.4.4). It also contains instructions for adding (Section 3.4.2.1), editing (Section 3.4.2.2), and deleting (Section 3.4.2.3) systems within the APmax UI. The interface for performing these functions is the APmax System Administration window (see Figure 3-24).

To access the APmax System Administration window, right-click on the APmax UI icon  in the Command Center window to invoke a popup menu, and select the *APmax System Definition* command (as illustrated in Figure 3-23). A window similar to Figure 3-24 will be displayed.

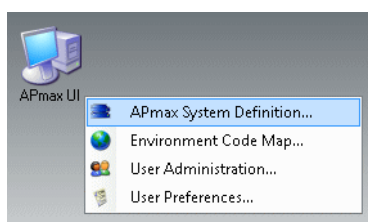


Figure 3-23 APmax System Definition Menu Command

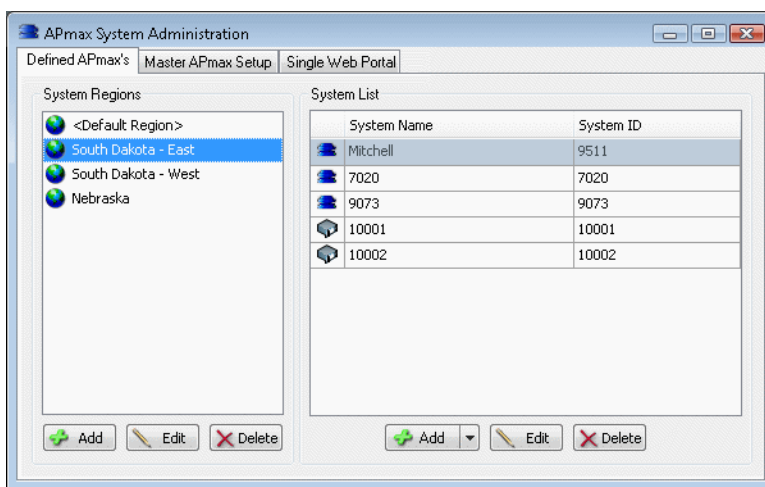


Figure 3-24 APmax System Administration Window

The APmax System Administration window is partitioned into two tabs: *Defined APmax's* and *Master APmax Setup*.

The *Defined APmax's* tab has two sections: System Regions (see Section 3.4.1) and System List (see Section 3.4.2). The System Regions section contains a list of the regions that have been defined within this installation of the APmax UI. The System List section contains a list of all the systems that have been defined for the region currently selected in the System Regions section.

The *Master APmax Setup* tab is used to designate a master APmax system and is discussed in Section 3.4.3.

3.4.1 System Regions

The System Regions feature allows APmax systems to be partitioned into regions. This feature is intended to help with the management of a large number of APmax systems in a single APmax UI installation and is not necessary when managing a small number of systems in the APmax UI.

System regions are defined in the left pane of the *Defined APmax's* tab in the APmax System Administration window. If no system regions have been defined, then the only item in the left pane will be the <Default Region> system region (see Figure 3-25). An example of this window with multiple regions defined can be seen in Figure 3-24.

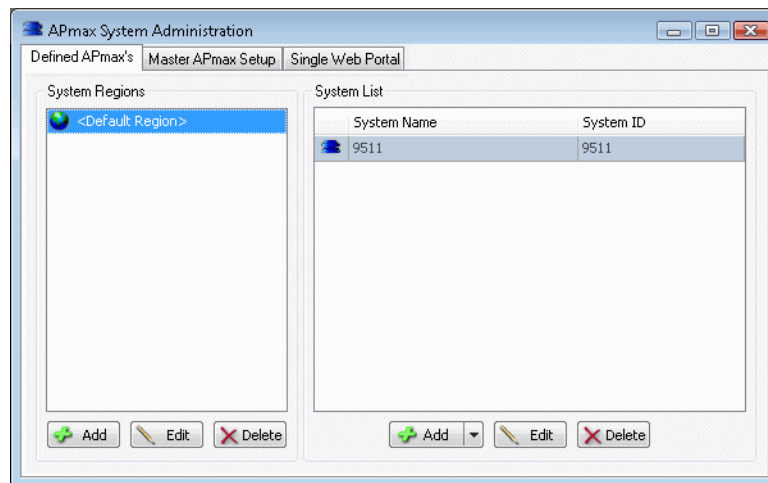


Figure 3-25 Default System Regions List

Instructions for adding regions, deleting regions, and renaming regions are given below. See Section 3.4.1.4 for details of how using system regions affects the display of the APmax UI Command Center.

3.4.1.1 Adding a System Region

To create a new system region, press the *Add* button below the System Regions section in the APmax System Administration window (see Figure 3-25). An Add Region window will be displayed (see Figure 3-26). Enter the name of the new region and press the *OK* button. APmax systems can now be added to the new region (see Section 3.4.2.1 - "Adding a System").

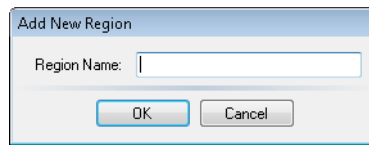


Figure 3-26 Adding a Region

3.4.1.2 Editing a System Region Name

To change the name of a region, click on the region name and press the *Edit* button below the System Regions section in the APmax System Administration window (see Figure 3-25). An Edit Region window will be displayed, with the current name of the region highlighted (see Figure 3-27). Enter the name of the new region and press the *OK* button to accept the changed name.

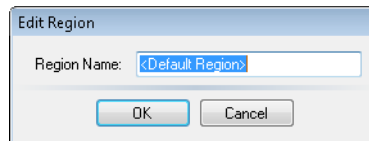


Figure 3-27 Editing a Region Name

3.4.1.3 Deleting a System Region

WARNING! Use this command with EXTREME CAUTION. Deleting an APmax system region will NOT affect the configuration on the systems in the region, however, the configuration for ALL systems in the deleted region will not be accessible from the APmax UI until the systems are re-added.

To delete a system region, first click on the region name in the System Regions section of the APmax System Administration window (see Figure 3-24). Note that any systems displayed in System List section of the window will also be removed from the APmax UI if the selected region is deleted.

Next, press the *Delete* button below the System Regions section. If there are no systems in the selected region then a delete confirmation prompt similar to Figure 3-28 will be displayed. If systems have been assigned to the selected region then a delete confirmation prompt similar to Figure 3-29 will be displayed. Press the *Yes* button in either prompt to complete the deletion or press the *No* button to cancel the deletion.

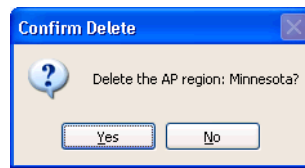


Figure 3-28 Prompt to Delete an Empty Region

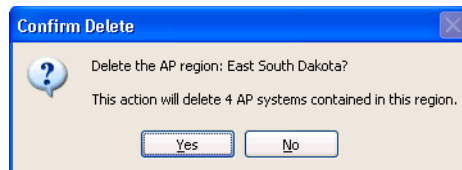
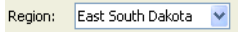



Figure 3-29 Prompt to Delete a Region with Systems

3.4.1.4 System Regions in the Command Center

When the APmax systems administered by the APmax UI have been partitioned into regions, the following changes will occur in the display of the Command Center window.

- The *Regions* drop-down box  in the menu bar at the top of the APmax UI window will contain a list of regions that have been defined, and the active region will be selected.
- The name of the active region will be displayed in the Command Center window caption.
- The Command Center will only display system icons  for the active region.

All of these changes to the display of the Command Center window are illustrated in Figure 3-30 below.

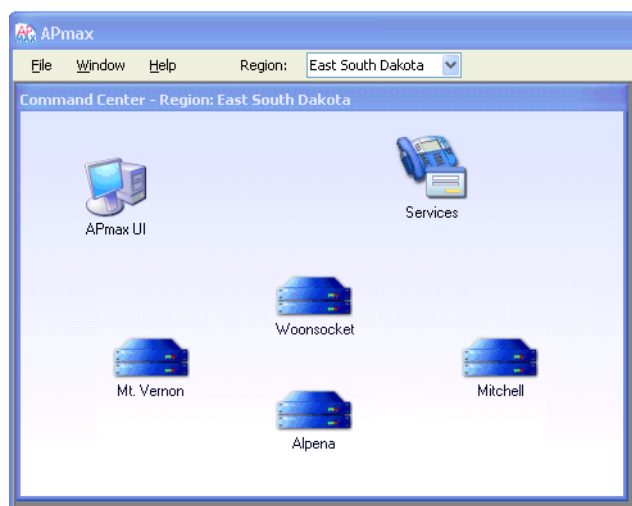
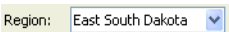



Figure 3-30 Selecting a Region in the Command Center

To change the active region, click in the *Regions* drop-down box  to display a list of regions and select the region to activate from the list. The positions of APmax system icons in the Command Center will be preserved when switching from region to region.

3.4.2 System Management

The *Defined APmax's* tab in the APmax System Administration window (see Figure 3-31) is used to manage APmax regions and systems. The left-hand pane of the *Defined APmax's* tab contains a list of system regions that have been added to the APmax UI (see Section 3.4.1). Selecting a system region in the left-hand pane will display in the right-hand pane the systems that have been defined for that region.

The system list has two columns, *System Name* and *System ID*. The *System Name* column contains a short description of each system, and the *System ID* column contains the unique number assigned to the system. Each item in this list will correspond to a System icon  in the Command Center window with the same name. If no systems have been defined in the selected region, then the contents of both columns will be empty.

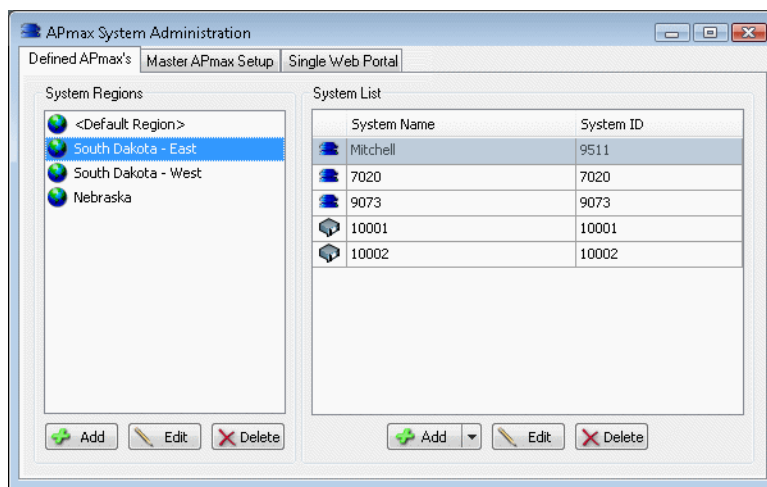



Figure 3-31 APmax System Administration Window

The *Add*, *Edit*, and *Delete* buttons located below the system list, and their associated functions, are described in the following sections:

- *Add* button - Section 3.4.2.1 - "Adding a System"
- *Edit* button - Section 3.4.2.2 - "Editing a System Name"
- *Delete* button - Section 3.4.2.3 - "Deleting a System"

3.4.2.1 Adding a System

To add an APmax system to this installation of the APmax UI, follow these steps:

1. Right-click on the APmax UI icon  in the Command Center window to invoke a popup menu, and select the *APmax System Definition* command (as illustrated in Figure 3-23). The APmax System Administration window (see Figure 3-31) will be displayed.
2. In the left-hand pane of the *Defined APmax's* tab, select the region to which the new system should be added.
3. Press the *Add* button located at the bottom of the System List section of the window and select *Add APMax* from the drop-down menu (Figure 3-32). An empty System Information window will be displayed (see Figure 3-33).

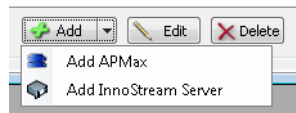


Figure 3-32 Add Button Menu

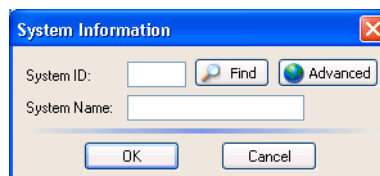


Figure 3-33 Adding a System

4. The System Information window contains the following fields:


System ID

A unique number that identifies this system. The number entered here must be the ID assigned to the system hardware on the local network. See your system administrator for help finding this number. (The System ID number should be found on a label on the left side at the rear of the APmax unit).

System Name

Enter the desired name for the system in this field. Each system is typically identified by a site name. This name will be displayed with the associated system icon in the Command Center window and in the captions of any configuration windows that are associated specifically with this system. This name defaults to the system ID.

If you know the ID of the system you wish to add, then enter it in the System ID field (the System Name field is optional) and press the *OK* button. The System Information window will attempt to find the entered System ID on the network. If it is not found a warning will be displayed and the system will not be added.

Immediately after a system is successfully added, a system icon  representing the new system will appear in the Command Center window.

If you do not know the ID of the system you wish to add, you can use the *Find* and *Advanced* buttons to locate the system. Pressing the *Find* button while the System ID field is empty will display all of the systems found on the network in the APmax Systems window (see Figure 3-35). Pressing the *Advanced* button will display the Direct Unit Query window (see Figure 3-34).

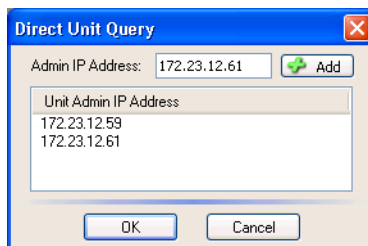


Figure 3-34 Direct Unit Query Window

The Direct Unit Query window allows you to find a system by entering the IP address of the Admin CPU. To do this, fill out the Admin IP Address field, press the *Add* button, and then press the *OK* button. The Direct Unit Query window will attempt to find the entered IP address on the network. If a system is found that matches the entered IP address, it will be displayed in the APmax Systems window (see Figure 3-35).

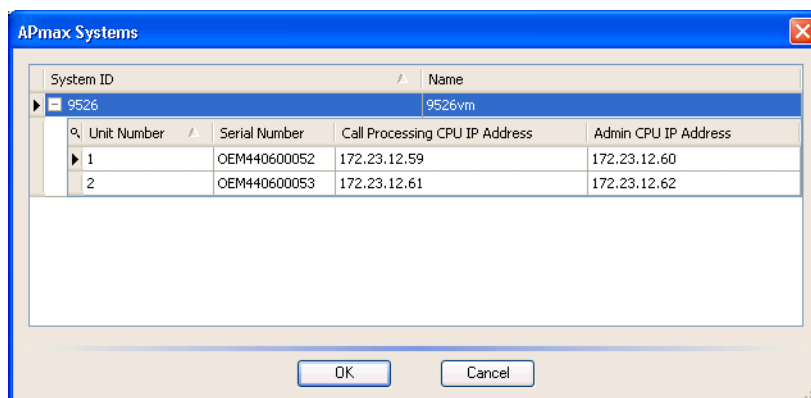



Figure 3-35 APmax Systems Window

The APmax Systems window is displayed when systems are found on the network using the *Find* or *Advanced* button functions in the System Information window. Systems found using these methods are displayed in a list within the window. To the left of each system row is a tree symbol  that can be clicked on to display more details about the system (as illustrated in Figure 3-35). These details include the Unit Number, Serial Number, Call Processing CPU IP Address, and Admin CPU IP Address of each unit in the system. If the

system you are trying to add is listed here, select it and press the *OK* button. You will be returned to the System Information window where the *System ID* and *System Name* fields will be populated with the values from the selected system (similar to Figure 3-36).

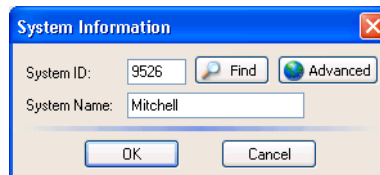



Figure 3-36 System Information Window

Press the *OK* button in the System Information window to finish adding the system.

5. Configure the communications settings for the new system. The APmax UI PC must be connected directly to the system through a Local Area Network using IP-based protocols. See Chapter 4 - "Network Configuration" for information about configuring communication settings.
6. Set the time and time zone for the new system. See Chapter 5 - "System Time Manager" for information about configuring time settings.

3.4.2.2 Editing a System Name

To change the name associated with a system, follow these steps:

1. Right-click on the APmax UI icon  in the Command Center window to invoke a popup menu, and select the *APmax System Definition* command (as illustrated in Figure 3-23). The APmax System Administration window (see Figure 3-24) will be displayed.
2. In the left-hand pane of the *Defined APmax's* tab, select the region of the system you wish to edit.
3. Click on the system you wish to edit in the System List in the right-hand pane of the window, and press the *Edit* button. A System Information window populated with the current *System ID* and *System Name* values will be displayed (see Figure 3-37).

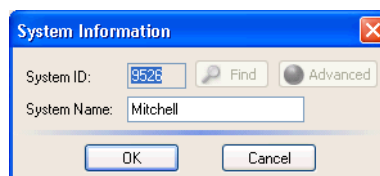



Figure 3-37 Editing a System

4. Only the name can be edited for existing systems. Enter the new name in the System Name field and press the *OK* button to apply the changes to the system, or press the *Cancel* button to exit the window without saving any changes. If the name is changed, the new name will be displayed with the associated system icon in the Command Center window and in the captions of any configuration windows that display the system name.

3.4.2.3 Deleting a System

WARNING! Use this command with EXTREME CAUTION. Deleting an APmax system will NOT affect the configuration on the APmax system, however, the configuration will not be accessible from the APmax UI.

Follow these steps to delete a APmax system from the APmax UI:

1. Right-click on the APmax UI icon  in the Command Center window to invoke a popup menu, and select the *APmax System Definition* command (as illustrated in Figure 3-23). The APmax System Administration window (see Figure 3-24) will be displayed.
2. In the left-hand pane of the *Defined APmax's* tab, select the region of the system you wish to delete.
3. Click on the system you wish to delete in the System List in the right-hand pane of the window, and press the *Delete* button located below the System List. A delete confirmation prompt (see Figure 3-38) will be displayed.

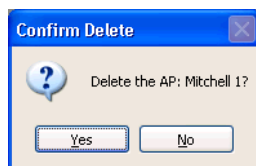


Figure 3-38 Delete Confirmation Prompt

4. Press the *Yes* button to complete the deletion and remove all of the configurations associated with the system from the APmax UI, or press the *No* button to cancel the deletion.

3.4.3 Master APmax Management

The *Master APmax Setup* tab in the APmax System Administration window (see Figure 3-39) is used to share APmax UI configuration settings (e.g. regions, users) between multiple APmax UI installations (see Section 3.4.3.1).

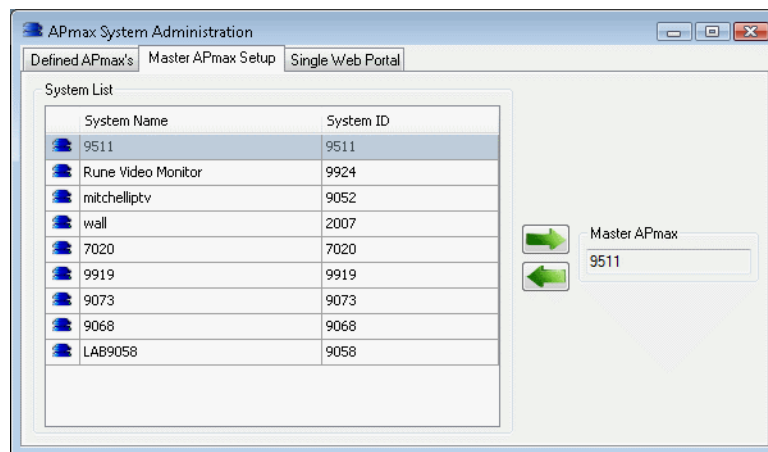


Figure 3-39 Master APmax Setup Tab

The APmax UI status bar (Figure 3-40) will display Master Mode: **ON** if a master APmax is configured, and Master Mode: **OFF** if a master APmax is not configured.

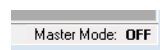




Figure 3-40 Master Mode in Status Bar

3.4.3.1 Master APmax Setup


Settings are shared between multiple APmax UI installations by designating an APmax system as the “Master APmax” on which APmax UI configuration changes will be saved. If an APmax UI installation is configured with a Master APmax then upon startup it will receive from the Master APmax any APmax UI configuration changes made with other APmax UI installations that share the same Master APmax.

NOTE: A Master APmax system should only be designated one time (instructions are provided below) on one APmax UI installation. Subsequent APmax UI installations should use the APmax Sign In screen (Figure 3-41) to choose the Master APmax from which they will get their APmax UI configuration settings.

Initial Master APmax Setup

When setting up a Master APmax for the first time, go to the *Master APmax Setup* tab in the APmax System Administration window (see Figure 3-39). The left-hand side of the *Master APmax Setup* tab has a list with two columns, *System Name* and *System ID*. The *System Name* column contains a short description of each system defined in the APmax UI, and the *System ID* column contains the unique number assigned to the system. To assign a system as the Master APmax, select the system in the list and press the right arrow  button. To unassign the Master APmax system, press the left  arrow button next to the *Master APmax* field.

Secondary Master APmax Setup

After a Master APmax has been configured, subsequent APmax UI installations that intend to use the data stored on the Master APmax should choose a Master APmax from within the APmax Sign In screen (Figure 3-41). This is done by expanding the *Advanced* section (click on the expand  symbol) in the APmax Sign In screen and performing one of the following actions:

- a. Select a *Master APmax* system that has been previously added to the APmax UI and has been designated as a master system.
- b. Enter into the *Master APmax* combobox the IP address of a master system's Unit 1, Administration CPU.



Figure 3-41 Master APmax Sign In

If the chosen system is a valid Master APmax then the user will be able to login with any user account previously defined in the Master APmax database. More information about logging into the APmax UI is available in Section 3.1. Section 3.2 - "User Administration" provides instructions for creating user accounts.

3.4.4 Single Web Portal Setup

The *Single Web Portal* tab in the APmax System Administration window (see Figure 3-42) is used to transfer service subscribers from multiple APmax systems to a single APmax system. This allows a single IP address or domain name to be used as the service provider for all of the APmax systems defined in the APmax UI.

WARNINGS: Setting up a Single Web Portal host system will apply to ALL systems defined in the APmax UI. Also, using Single Web Portal on sites with only one defined APmax system may have unintended consequences.



Figure 3-42 Single Web Portal

Follow these steps to setup a Single Web Portal system:

1. Open the Internet Access Settings interface of the APmax system that will be the Single Web Portal host. See Chapter 11 for information on the Internet Access Settings interface.
2. In the *General* tab of the Internet Access Settings interface (see Section 11.1), set the *External Address* setting to the IP address or domain name that someone on the Internet would use to access this service provider.
3. Close the Internet Access Settings interface.
4. Open the APmax System Administration interface (Section 3.4).
5. Select the *Single Web Portal* tab.
6. Use the *Host System* selection box to choose the Single Web Portal host.
7. Press the *Send Data* button. This will send a message to all APmax systems in the APmax UI and set their Single Web Portal to the selected *Host System*. When this step is complete a confirmation message similar to Figure 3-43 will be displayed.

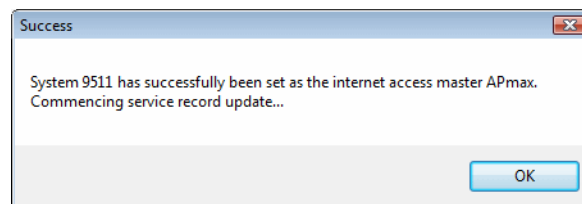
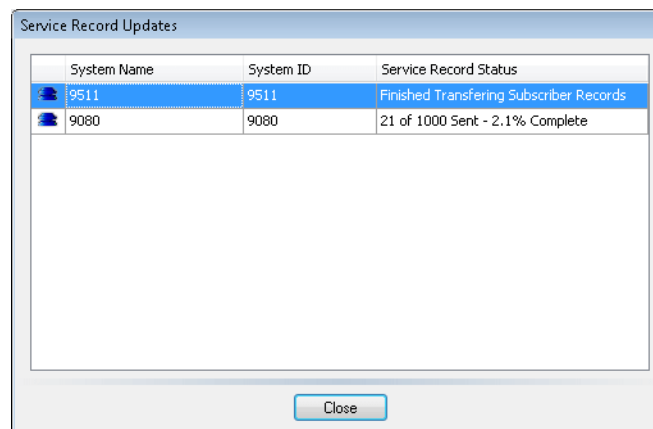


Figure 3-43 Internet Access Master Set

8. Press the *OK* button to close the confirmation message (Figure 3-43). This will begin the process of sending all subscribers on all listed systems to the Single Web Portal host system. A progress window similar to Figure 3-44 will be displayed while the subscriber records are being transferred. The *Close* button in the Service Record Updates window may be pressed at any time, and if records are still be transferred then a prompt to continue transferring in the background will be displayed.

A screenshot of a 'Service Record Updates' dialog box. It features a table with three columns: 'System Name', 'System ID', and 'Service Record Status'. The first row is highlighted in blue and shows '9511' for both System Name and System ID, with the status 'Finished Transferring Subscriber Records'. The second row shows '9080' for both System Name and System ID, with the status '21 of 1000 Sent - 2.1% Complete'. Below the table is a 'Close' button.


System Name	System ID	Service Record Status
9511	9511	Finished Transferring Subscriber Records
9080	9080	21 of 1000 Sent - 2.1% Complete

Figure 3-44 Service Record Update Status

3.5 Subscriber System Map

Note: The Subscriber System Map interface is only used for administering APmax systems with software releases less than version 4.0.

The Subscriber System Map interface is used to define relationships between NPA-NXXs, services, and APmax systems. Service management windows (e.g., Voice Mail Mailbox Management) use this mapping to support “enterprise-wide” service management. Enterprise-wide service management allows the APmax UI user to provision service subscribers without concern for the APmax location of the subscribers. This mapping is how the service management windows determine on which APmax system the service subscribers are located. Users will not be able to add a subscriber to a service if the NPA-NXX of the subscriber is not mapped to that service within the Subscriber System Map window.

To access the Subscriber System Map interface, right-click on the APmax UI icon  in the Command Center window (see Section 3.3 for detailed information on using the Command Center window) to invoke a popup menu, and select the *Subscriber System Map* command (as illustrated in Figure 3-45). The Subscriber System Map window (see Figure 3-46) will be displayed.

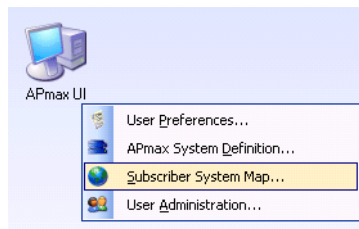


Figure 3-45 Subscriber System Map Menu Command

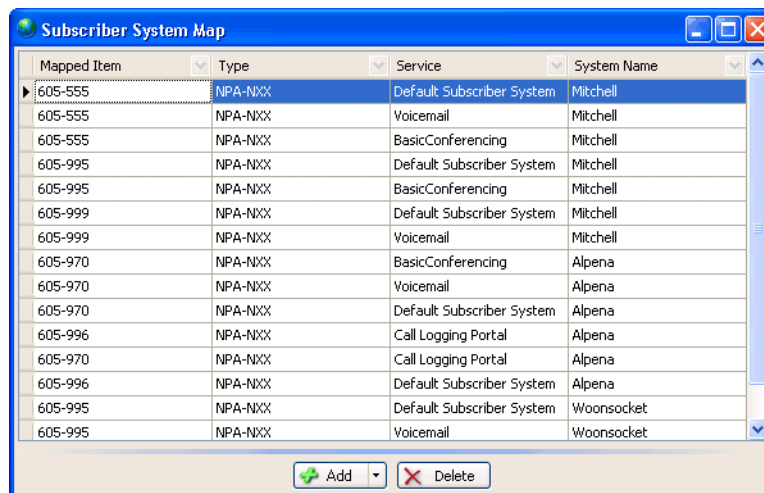


Figure 3-46 Subscriber System Map Window

The Subscriber System Map window contains a list of all the NPA-NXX/service/system mappings defined for the APmax systems being administered in the APmax UI. The list has the following four columns:

Mapped Item	The value of the item being mapped to the associated service and system. For example, if the Type is "NPA-NXX" then this value will be a 6-digit NPA-NXX.
Type	The only Type of mapping available at this time is "NPA-NXX."
Service	The APmax service mapped to this NPA-NXX and system.
System Name	The APmax system mapped to this service and NPA-NXX.

To enter one new item into the Subscriber System Map, press the *Add* button. A window similar to Figure 3-47 will be displayed.

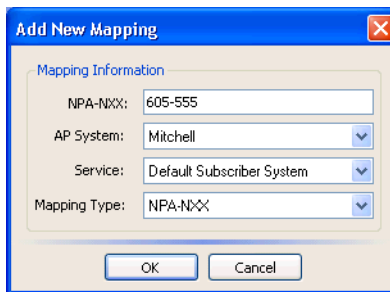


Figure 3-47 Add New Mapping Window

Enter the 6-digit NPA-NXX you wish to add, select the APmax system being mapped, select the service being mapped, and press the *OK* button. The new entry will be displayed in the Subscriber System Map window.

Multiple items may be imported from a user-created text file that contains a list of NPA-NXXs, with one NPA-NXX per line. The hyphens in the text file's NPA-NXXs are optional. To import a text file of NPA-NXXs, click the dropdown arrow on the *Add* button and select the *Import* menu command, as illustrated in Figure 3-48. A standard file selection window will be displayed, allowing you to choose the text file containing the list of NPA-NXXs.

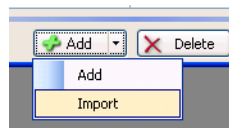


Figure 3-48 Import Menu Command

Once the text file is chosen, an Add New Mapping List window (see Figure 3-49) will be displayed. The fields in the Add New Mapping List window function the same as those described for the Add New Mapping window (Figure 3-48). Select the APmax system being mapped, select the service being mapped, and press the *OK* button. A new entry for each imported NPA-NXX will be displayed in the Subscriber System Map window.

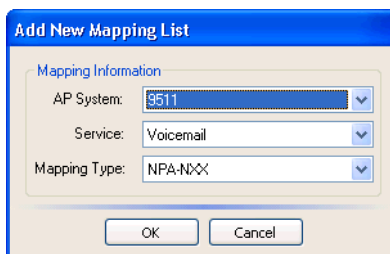


Figure 3-49 Add New Mapping List Window

To delete a Subscriber System Map entry, select the row of the entry you wish to delete and press the *Delete* button.

Part 2 - System Configuration

Overview

Part 2 provides instructions for configuring communications, time, and other features for APmax systems. For information on installing the APmax hardware or APmax UI software, or an overview of the APmax UI, see Part 1 - "Introduction to APmax".

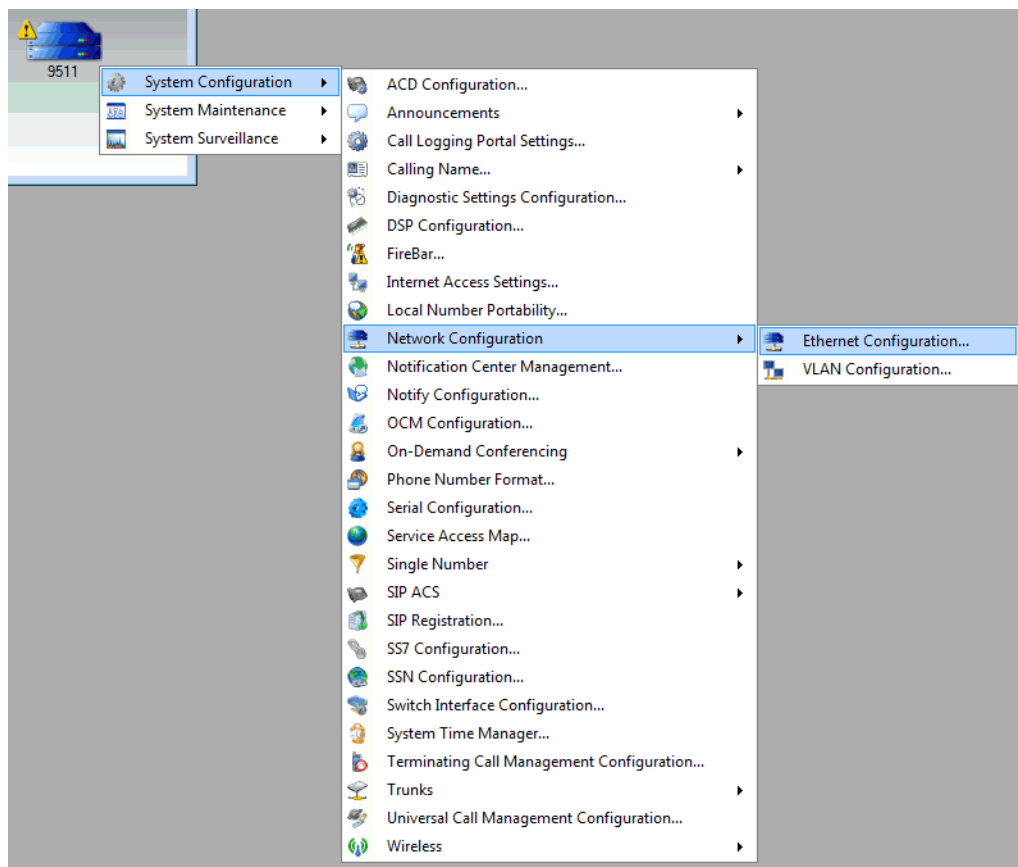
The following chapters are found in System Configuration:

- Chapter 4 - "Network Configuration"
- Chapter 5 - "System Time Manager"
- Chapter 6 - "Serial Configuration"
- Chapter 7 - "Digital Carrier Configuration"
- Chapter 8 - "SS7 Configuration"
- Chapter 9 - "Trunk Configuration"
- Chapter 10 - "SIP Registration"
- Chapter 11 - "Internet Access Settings"
- Chapter 12 - "Phone Number Format"

To access the configuration interfaces for an APmax system, right-click on the system's icon



in the Command Center window to invoke a popup menu. Select the *System Configuration* command to expand the popup menu, as illustrated in the figure below. The expanded menu will display all of the available configuration interfaces for this system. Select a command from the expanded menu to display the associated interface.



System Configuration Menu

NOTE: The name of the APmax system being configured will be displayed in the caption of any window that is opened using the *System Configuration* command. If the system name that is displayed in the caption is not the system you want to configure, then close the window and right-click on the icon of the system you want to configure.

Chapter 4 - Network Configuration

When a new system is defined in the APmax UI (see Section 3.4.2.1 - "Adding a System"), it is necessary to establish a direct connection from the PC running the APmax UI software to the APmax hardware through a Local Area Network (LAN) using IP-based protocols. Communication with the new system must be established before any other features associated with the new system can be configured.

The diagram in Figure 4-1 illustrates a configuration where the APmax hardware has communication established with the APmax UI and the Internet.

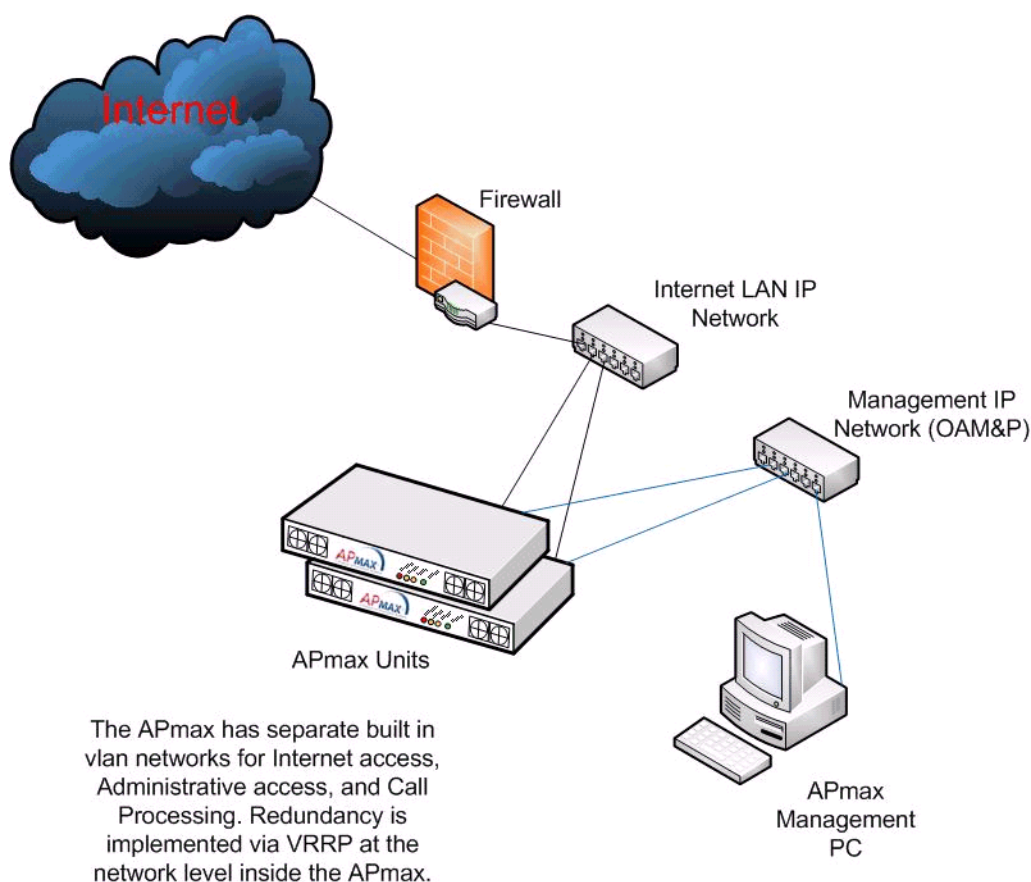


Figure 4-1 Connecting the APmax to the Internet

Firewall Rules

The inbound and outbound port rules that should be enforced by the network to which the APmax connects are as follows:

**Inbound Ports to Admin or LAN
Interface of CPU2:**

UDP	53	(DNS)
UDP	123	(NTP)
UDP	5060	(SIP)
UDP	25015	(APmax UI Auto-Discovery)
UDP	25021	(APmax TimeSync)
UDP	32567	(Call Logging Portal)
TCP	20	(APmax UI)
TCP	21	(APmax UI)
TCP	80	(APmax UI, Web Portal)
TCP	443	(APmax UI, Web Portal)
TCP	943	(APmax UI, Web Portal)
TCP	4530	(APmax UI, Web Portal)
TCP	48256	(APmax UI)
TCP	57301	(APmax UI)

**Inbound Ports to Internet
Interface of CPU2:**

UDP	53	(DNS)
UDP	123	(NTP)
TCP	80	(APmax UI, Web Portal)
TCP	443	(APmax UI, Web Portal)
TCP	943	(APmax UI, Web Portal)
TCP	4530	(APmax UI, Web Portal)
TCP	48256	(APmax UI)

Outbound Ports:


UDP	123	(NTP)
TCP	20	(FTP for APmax Packages, see note below)
TCP	21	(FTP for APmax Packages, see note below)
TCP	23	(Telnet - Switch Interface)
TCP	25	(Email)
TCP	80	(Various APmax Services)
TCP	443	(Voice Transcription, etc.)

Note: The APmax has the ability to download newer versions of package files (see Chapter 16 - "Package Management") from the Innovative Systems FTP site. This feature requires an FTP-aware firewall, or a firewall that allows all outbound connections, as FTP uses one known and one random port per connection. Passive FTP is used so both connections are outbound from the APmax. This requires TCP ports 20 and 21 to be open into the APmax for "Pre-staged Packages" to function.

The configuration interfaces for APmax system communications are described in the following sections.

- Section 4.1 - "Ethernet Configuration"
- Section 4.2 - "VLAN Configuration"
- Section 4.3 - "Elation Messenger Configuration"
- Section 4.4 - "Test DSP Access"

4.1 Ethernet Configuration

To configure communications for an APmax system, right-click on the system's icon  in the Command Center window to invoke a popup menu, and select the *System Configuration / Network Configuration / Ethernet Configuration* command (as illustrated in Figure 4-2). The Ethernet Configuration window (Figure 4-3) will be displayed. The name of the system for which you are configuring communications will be displayed at the top of the Ethernet Configuration window.

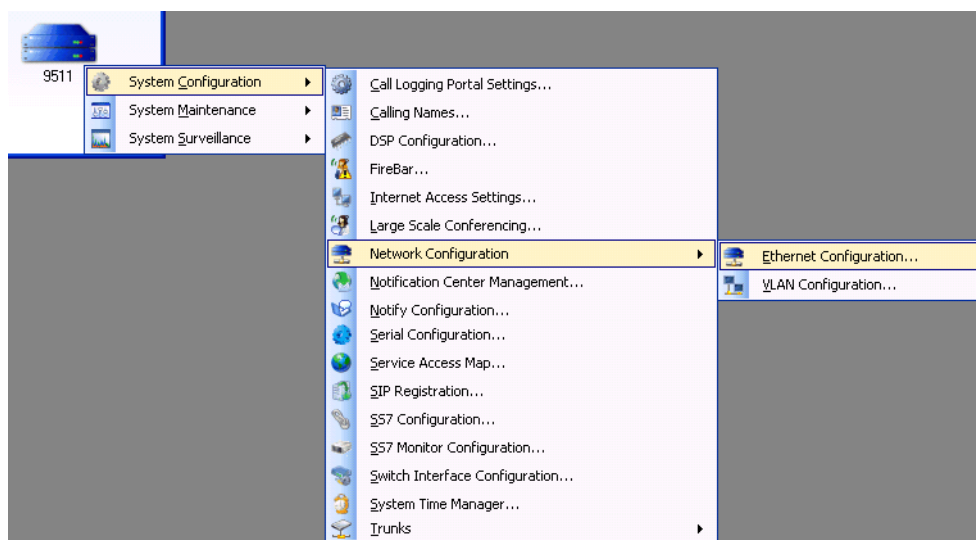


Figure 4-2 Ethernet Configuration Menu Command

If this is the first time communications have been configured for this system, it is recommended that you use the Ethernet Configuration Wizard described in Section 4.1.2. The Ethernet Configuration Wizard can be accessed by pressing the *Wizard* button at the bottom of the Ethernet Configuration window.

4.1.1 Ethernet Configuration Interface

The Ethernet Configuration window is partitioned into five tabs: *General*, *DSP*, *VRRP*, *Static Routes*, and *Tie Line*. The *General* tab is displayed by default when the Ethernet Configuration interface is opened. The configuration settings available in each of these tabs are described in the following sections.

4.1.1.1 General Settings

The *General* tab (Figure 4-3) allows viewing and editing of the primary Ethernet configuration settings. The settings in this tab are described below.

Ethernet Configuration (APmax: Mitchell)

General | DSP | VRRP | Static Routes | Tie Line

Host Name: 9528 Name Server (DNS) Address: 172.23.8.5
 Domain Search: innsys.innovsys.com Name Server (DNS) Address: 172.23.8.7

☐ Unit: 1

	Internet	Administration	Call Processing	Inter-Unit
Address	192.168.5.100	172.23.11.78	172.23.11.77	
Subnet	255.255.255.0	255.255.248.0	255.255.248.0	
Gateway	192.168.5.2	172.23.8.1	172.23.8.1	

☐ Unit: 2

	Internet	Administration	Call Processing	Inter-Unit
Address	192.168.5.101	172.23.12.104	172.23.12.103	
Subnet	255.255.255.0	255.255.248.0	255.255.248.0	
Gateway	192.168.5.2	172.23.8.1	172.23.8.1	

Wizard...

Figure 4-3 Ethernet Configuration Window - General Settings

The *General* tab contains the following fields:

Host Name	The local host name of the system.
Domain Search	A space-separated list of domains to use during DNS look-ups when no domain is specified.

Name Server (DNS) Address IP address of the Name Server (DNS) that should be used by this system. There are two Name Server (DNS) Address fields. The second field is optional and will be queried after the address in the first Name Server (DNS) field is queried. The values of these fields can be any valid IP address in dotted notation (i.e. 172.23.8.5).

The columns and cells in the *General* tab grid are described in the table below. Click in each cell and enter the appropriate IP address.

Table 1: Ethernet General Settings

	Internet	Administration	Call Processing
Address	The WAN IP address for the selected network interface. The WAN IP address can be any valid IP address in dotted notation (i.e. 192.168.5.100).	The IP address for the Administration CPU network interface. (In a multiunit system, if Unit 1's Administration Address is being used as the NTP server for the additional units, then any changes to Unit 1's Administration Address must also be reflected in the NTP server settings for those additional units. See Chapter 5.2 - "Network Time Protocol" for more information.)	The IP address for the Call Processing CPU network interface.
Subnet	The subnet mask for the selected network interface. The subnet mask is used to determine what IP addresses are on the same local network as this system interface. The Subnet can be any valid subnet mask in dotted notation (i.e. 255.255.255.0).	The subnet mask for the Administration CPU network interface.	The subnet mask for the Call Processing CPU network interface.
Gateway	The IP address of the gateway to be used by this system. The gateway is used when the system needs to send an IP message to a destination that is not on the local network. The Gateway can be any valid IP address in dotted notation (i.e. 192.168.5.2).	The IP address of the gateway to be used by the Administration CPU network interface.	The IP address of the gateway to be used by the Call Processing CPU network interface.

4.1.1.2 DSP Settings

The *DSP* tab (Figure 4-4) is used to view and edit network settings for the DSPs on each APmax unit. The fields in the *DSP* tab are described in the table below Figure 4-4.

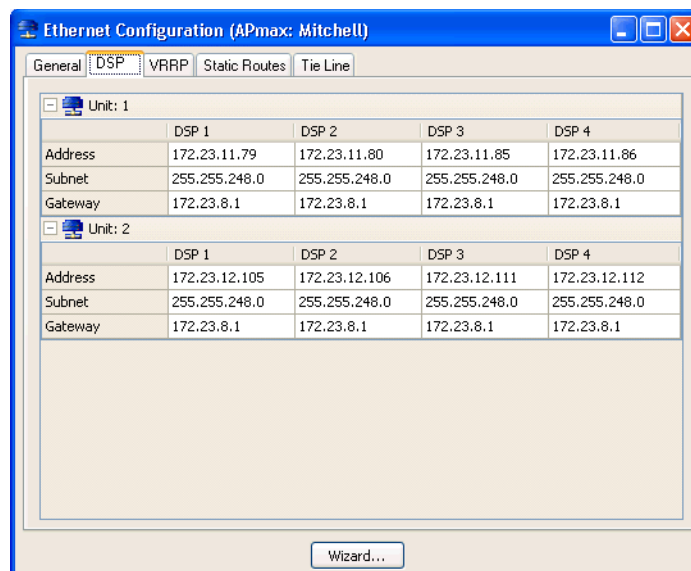


Figure 4-4 DSP Settings

The fields in the *DSP* grid are described in the table below. Click in each cell and enter the appropriate IP address.

Table 2: Ethernet DSP Settings

DSP 1 - 4	
Address	The IP addresses for DSPs 1 through 4 on the selected APmax unit. The IP address can be any valid IP address in dotted notation (i.e. 172.23.11.79). Changing a DSP IP address will require the associated unit to be restarted for the change to take effect.
Subnet	The subnet mask for the selected network interface. The subnet mask is used to determine what IP addresses are on the same local network as this system interface. The Subnet can be any valid subnet mask in dotted notation (i.e. 255.255.248.0).
Gateway	The IP address of the gateway to be used by this DSP. The gateway is used when the system needs to send an IP message to a destination that is not on the local network. The Gateway can be any valid IP address in dotted notation (i.e. 172.23.8.1) and does not need to be in the same subnet as the DSP's IP address.

4.1.1.3 VRRP Settings

VRRP (Virtual Router Redundancy Protocol) is designed to increase the reliability of the default gateway services. The *VRRP* tab (Figure 4-5) allows VRRP addresses to be specified for the WAN subnetwork, Administration CPU network interface, and Call Processing CPU network interface.

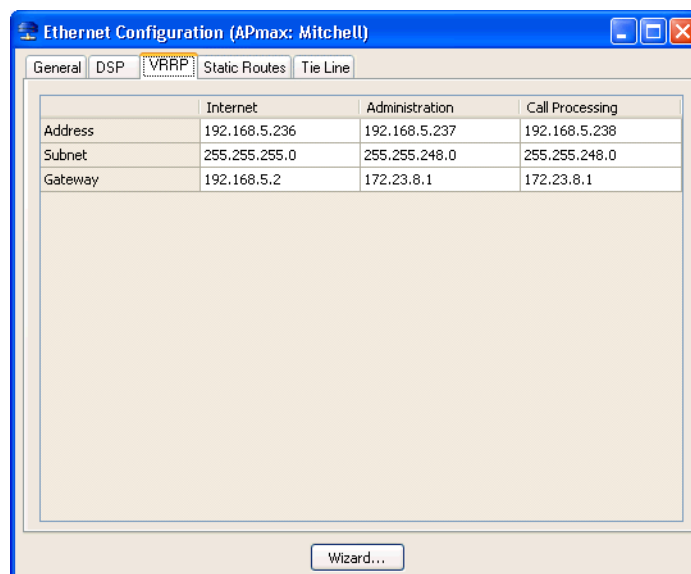


Figure 4-5 VRRP Settings

The fields in the *VRRP* grid are described in the table below. Click in each cell and enter the appropriate IP address.

Table 3: Ethernet VRRP Settings

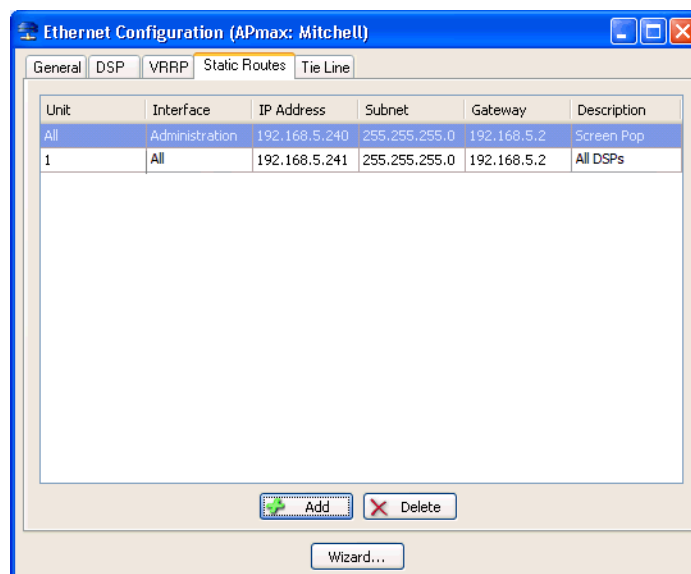
	Internet	Administration	Call Processing
Address	The VRRP address for the system's WAN interface. It can be any valid IP address in dotted notation (i.e. 192.168.5.236).	The VRRP address for the Administration CPU network interface.	The VRRP address for the Call Processing CPU network interface.
Subnet	The subnet mask for the WAN interface. The subnet mask is used to determine what IP addresses are on the same local network as this system interface. The Subnet can be any valid subnet mask in dotted notation (i.e. 255.255.255.0).	The subnet mask for the Administration CPU network interface.	The subnet mask for the Call Processing CPU network interface.

Table 3: Ethernet VRRP Settings

	Internet	Administration	Call Processing
Gateway	The IP address of the gateway to be used by this system. The gateway is used when the system needs to send an IP message to a destination that is not on the local network. The Gateway can be any valid IP address in dotted notation (i.e. 192.168.5.2).	The IP address of the gateway to be used by the Administration CPU network interface.	The IP address of the gateway to be used by the Call Processing CPU network interface.

4.1.1.4 Static Routes

The *Static Routes* tab (Figure 4-6) is used to specify a route to a destination that is outside of the subnet, without going to the default route (or gateway). This is useful when it is necessary to map IP addresses to go out of a specific Ethernet interface and not go to the gateway device. Normally, when a device has to send a message to an address that is not in its subnet, it looks to see if there is a route specified for that address. If a route has not been specified, it sends the message to the gateway for handling. If there is a static route specified, then the device sends the message out on the Ethernet interface specified by the route.

**Figure 4-6 Static Routes Tab**

Static routes can be configured for the APmax system by pressing the *Add* button located at the bottom of the *Static Routes* tab, filling out the settings in the Add Static Route window (see Figure 4-7), and pressing the *OK* button. The settings in the Add Static Route window are described below Figure 4-7.

Figure 4-7 Add Static Route**Table 4: Static Route Settings**

DSP 1 - 4	
Unit	Select which units on the currently selected APmax system will be configured with the new static route.
Interface	Select the network interface from which the static route originates. Options include: Call Processing, Administration, All DSPs, DSP 1, DSP 2, DSP 3, and DSP 4.
IP Address	The IP address of the static route. The IP address must be in dotted notation (i.e. 172.23.11.79) and must be in the subnet.
Subnet	The subnet mask for the selected network interface. The Subnet can be any valid subnet mask in dotted notation (i.e. 255.255.248.0).
Gateway	The IP address of the gateway to be used by this static route. The gateway is used when the system needs to send an IP message to a destination that is not on the local network. The Gateway can be any valid IP address in dotted notation (i.e. 172.23.8.1) and does not need to be in the same subnet as the IP address.
Description	A short description used to identify the static route.

To delete a static route from this APmax system, select the route in the list and press the *Delete* button located at the bottom of the *Static Routes* tab.

4.1.1.5 Tie Line Configuration

Tie lines are used to maintain redundancy between APmax units. The *Tie Line* tab (Figure 4-8) in the Ethernet Configuration window is used to designate two Ethernet switch ports to be tie lines. One of the designated ports is also allowed to be shared, meaning the tie line can connect to an external switch rather than a cable connecting two ports on the back of the APmax hardware.

WARNING: Read the entire contents of Section 4.1.1.5 - "Tie Line Configuration" before making changes to the default tie line switch ports. In a default APmax configuration, port 5 of the first unit will be connected to port 5 of the second unit, and port 6 of the first unit will be connected to port 6 of the second unit. This interface should not be used except under the direction of vendor technical support personnel or a vendor-documented procedure. Any mistakes made using this interface could have **serious** ramifications.

Any external switch port can be designated as a shared tie line except for port 2, which is the WAN port for the Administration CPU. Ports 1, 3 and 4 **must be shared** if they are used as a tie line, so that they will remain available for their original purposes (OAM&P, IPTV, SIP). Ports 5 and 6 are the default tie line ports and should remain so unless special circumstances require one to be used for other purposes. Only one port is allowed to be shared at a time, so one of the two tie line ports must be port 5 or port 6.

Tie line configuration changes will not take effect until the Call Processing CPU and Administration CPU on each APmax unit has been restarted.

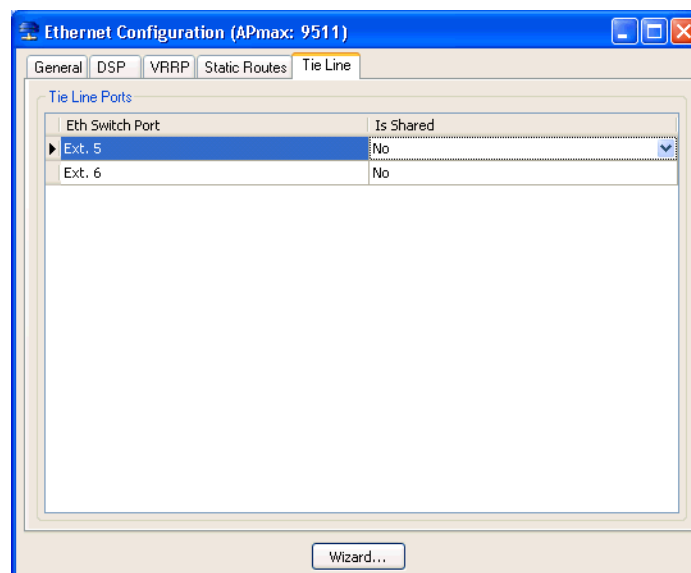


Figure 4-8 Tie Line Tab

To change a tie line port, click in a cell in the *Eth Switch Port* column and select the new port from the drop-down list. If a tie line port is to be shared, then click in the *Is Shared* cell for the port and change the status to Yes.

4.1.2 Ethernet Configuration Wizard

The Ethernet Configuration Wizard (see Figure 4-9) is a series of screens that provide step-by-step configuration of communications for the selected APmax system. This interface is accessed by pressing the *Wizard* button at the bottom of the Ethernet Configuration window. To advance to the next screen, select the *Next* button. To go back a screen and make changes, use the *Back* button. The wizard may be exited at any time by pressing the *Cancel* button at the bottom of the screen.

1. The first screen (Figure 4-9) of the Ethernet Configuration Wizard contains settings related to the Internet subnetwork. As with other screens in the wizard, the Internet settings screen contains a list of units found in the selected APmax system. The WAN IP address for each unit can be changed by clicking in the *Address* cell next to the unit's row and entering a valid IP address in dotted notation (i.e. 192.168.5.100).

Unit #	Address
1	192.168.5.100
2	192.168.5.101

Subnet: 255.255.255.0
 Gateway: 192.168.5.2
 VRRP: 192.168.5.236

< Back Next > Cancel

Figure 4-9 Internet Settings Screen

Below the list of units are the following fields:

- | | |
|----------------|--|
| Subnet | Enter the subnet mask for the selected network interface. The subnet mask is used to determine what IP addresses are on the same local network as this system interface. The Subnet can be any valid subnet mask in dotted notation (i.e. 255.255.255.0). |
| Gateway | Enter the IP address of the gateway to be used by this system. The gateway is used when the system needs to send an IP message to a destination that is not on the local network. The Gateway can be any valid IP address in dotted notation (i.e. 192.168.5.2). |
| VRRP | The VRRP address for the system's WAN interface. |

Press the *Next* button to advance to the next screen in the wizard.

- The second screen (Figure 4-10) of the Ethernet Configuration Wizard contains settings pertaining to the APmax's Administration CPU network interface.

Unit	Address
1	172.23.11.78
2	172.23.12.104

Subnet: 255.255.248.0
 Gateway: 172.23.8.1
 VRRP: 192.168.5.237

Figure 4-10 Administration Settings Screen

The *Address*, *Subnet*, *Gateway*, and *VRRP* fields in the screen above provide the same function for the Administration CPU network as the fields in Step 1 provide for the Internet subnetwork. Enter IP address values into the fields and press the *Next* button to continue.

- The third screen (Figure 4-11) of the Ethernet Configuration Wizard contains settings pertaining to the APmax's Call Processing CPU network interface.

Unit	Address
1	172.23.11.77
2	172.23.12.103

Subnet: 255.255.248.0
 Gateway: 172.23.8.1
 VRRP: 192.168.5.238

Figure 4-11 Call Processing Settings Screen

The *Address*, *Subnet*, *Gateway*, and *VRRP* fields in the screen above provide the same function for the Administration CPU network as the fields in Step 1 provide for the Internet subnetwork. Enter IP address values into the fields and press the *Next* button to continue.

- The fourth screen (Figure 4-12) of the Ethernet Configuration Wizard contains settings pertaining to the APmax's DSP network.

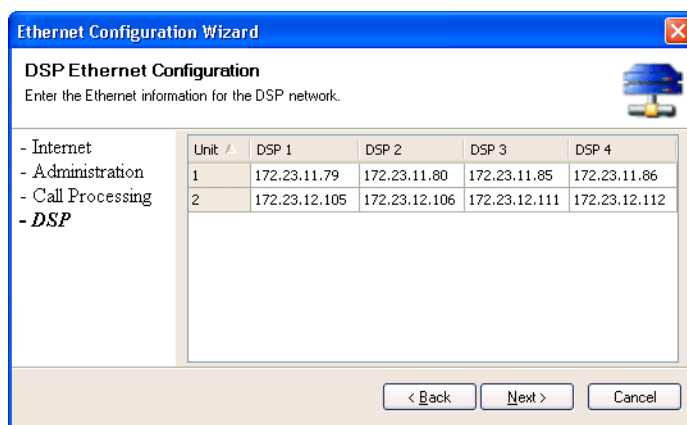


Figure 4-12 DSP Settings Screen

As with previous screens in the wizard, the DSP settings screen has a list that contains a row for each unit in the APmax system. Next to the *Unit* number for each row are four cells representing the four DSPs on that unit. Enter the IP addresses for DSPs 1 through 4 for each unit and press the *Next* button to go to the final screen of the wizard. Once the *Next* button is pressed you cannot return to this screen unless the wizard is started again.

5. Press the *OK* button in the final screen of the wizard to close the wizard and apply the entered settings to the tabs in the Ethernet Configuration window (Section 4.1.1). The Ethernet Configuration window must be closed before all of the entered settings will be applied to the APmax system.




Figure 4-13 Wizard Finished Screen

4.2 VLAN Configuration

Each unit in an APmax system has a 16-port internal Ethernet switch. The Virtual Local Area Network (VLAN) feature of the APmax allows these Ethernet switch ports to be provisioned into separate VLANs. The VLANs along with the APmax Firewall rules provide a way to control network access to the system and protect the call processing network from network storms and attacks.

WARNING: This interface should not be used except under the direction of vendor technical support personnel or a vendor-documented procedure. Any mistakes made using this interface could have **serious** ramifications. VLAN configuration changes will not take effect until the Call Processing CPU and Administration CPU on each APmax unit has been restarted.

To configure VLAN communications for an APmax system, right-click on the system's icon

 in the Command Center window to invoke a popup menu, and select the *System Configuration / Network Configuration / VLAN Configuration* command (as illustrated in Figure 4-14). The VLAN Configuration window (Figure 4-15) will be displayed. The name of the system you are configuring will be displayed at the top of the VLAN Configuration window.

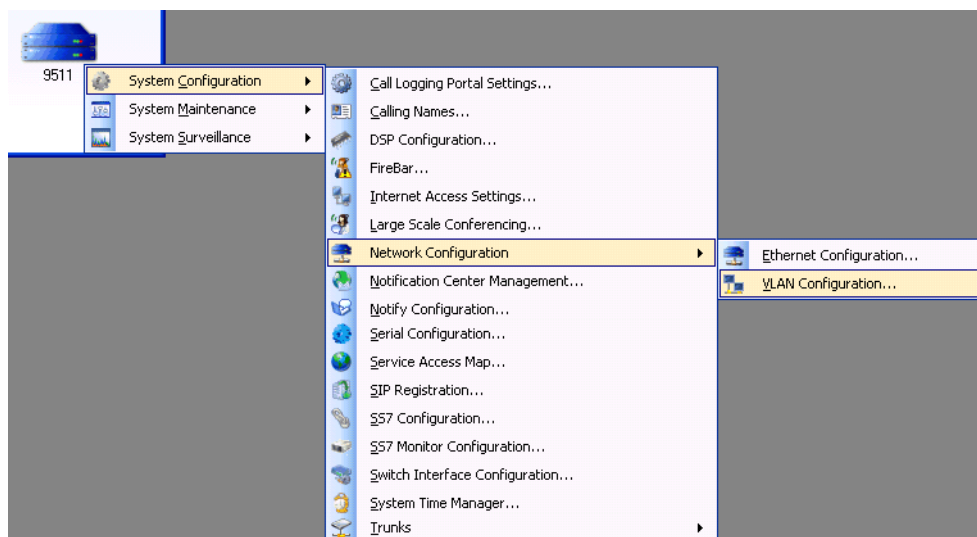


Figure 4-14 VLAN Configuration Menu Command

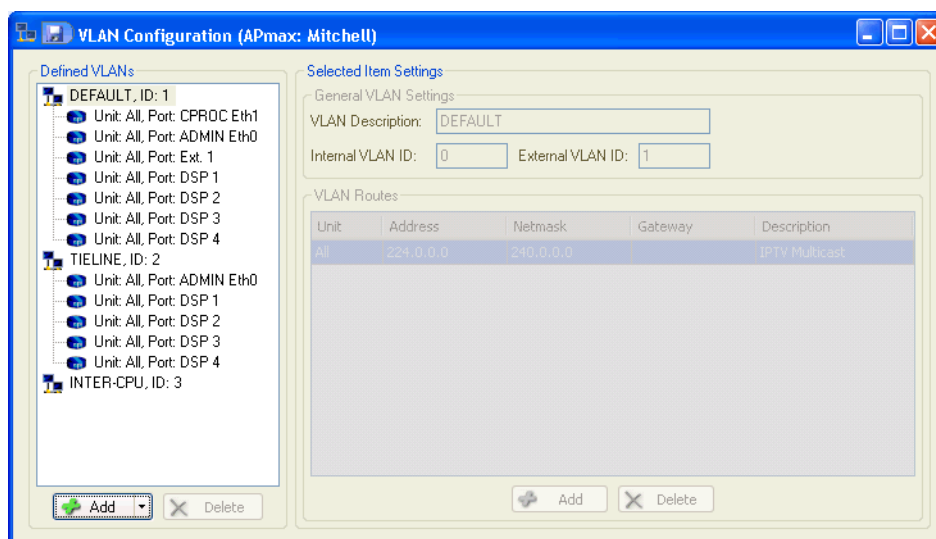


Figure 4-15 VLAN Configuration Window

The VLAN Configuration window is divided into two sections: *Defined VLANs* and *Selected Item Settings*. The *Defined VLANs* section on the left-hand side of the window contains a treeview of all VLANs that are defined on the APmax system. The first three VLANs (DEFAULT, TIELINE, and INTER-CPU) are installed by default and are read-only. Each VLAN node in the *Defined VLANs* section can be double-clicked to display and hide the ports that are associated with the VLAN.

NOTE: When the APmax is configured with VLAN support the Port 3 adaptor is designated to provide IPTV services. By default the APmax assigns IP addresses in the 192.168.100.xxx range which may conflict with other devices on the network. The APmax default IP configuration may need to be changed during the installation process to avoid IP address conflicts.

The *Selected Item Settings* section on the right-hand side of the VLAN Configuration window is used to view and edit settings for the VLAN or port node currently selected in the *Defined VLANs* treeview. Settings that cannot be edited will be grayed out.

To define a custom VLAN and configure the routes and ports for the VLAN, follow these steps:

1. Press the *Add* button at the bottom of the *Defined VLANs* section. The Add VLAN window (see Figure 4-16) will be displayed.

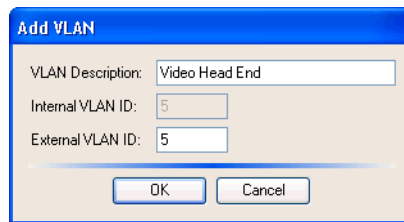


Figure 4-16 Add VLAN Window

2. Enter a name for the new VLAN into the *VLAN Description* field. Also enter an unused one to four-digit *External VLAN ID*, and then press the *OK* button. The new VLAN will be displayed in the *Defined VLANs* section of the VLAN Configuration window.
3. Click on the new VLAN in the *Defined VLANs* section to display its settings in the right-hand side of the window (illustrated in Figure 4-17). The *VLAN Description* and *External VLAN ID* that were used when adding the VLAN can be edited at any time in the *General VLAN Settings* section of the window. The *VLAN Routes* section of the window is used to manage the routes for the selected VLAN.

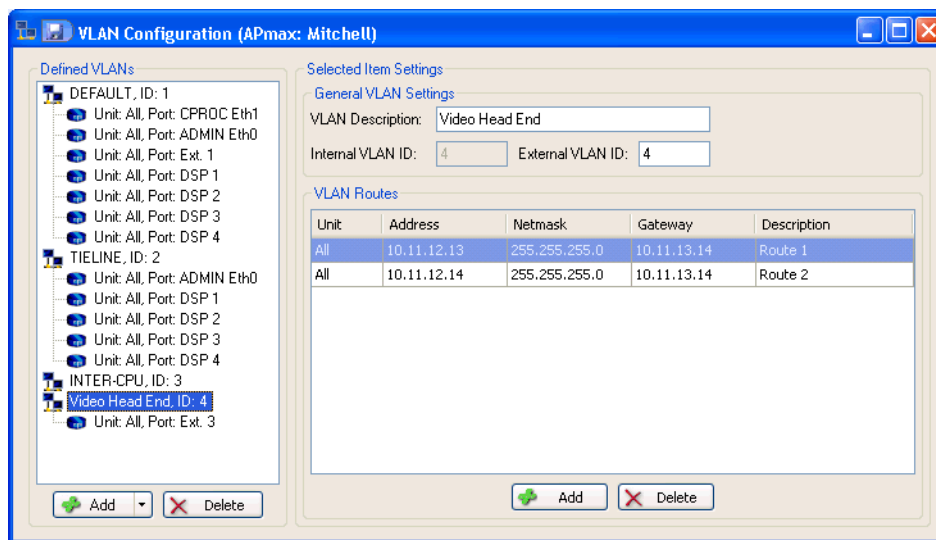
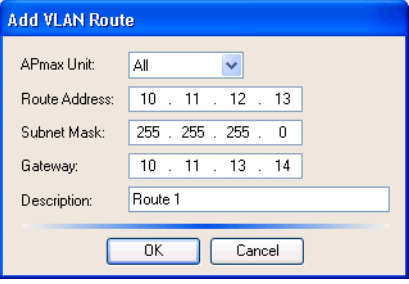


Figure 4-17 VLAN Settings

4. To add a route to the selected VLAN, press the *Add* button below the *VLAN Routes* section. The Add VLAN Route window (see Figure 4-18) will be displayed. The *APmax Unit* field is used to designate which units in the currently selected APmax system will be configured with the new route. Populate the *Route Address*, *Subnet Mask*, and *Gateway* fields, enter a short description of the route and press the *OK* button to complete the addition. The new route will be shown in the *VLAN Routes* section of the VLAN Configuration window. Repeat this step to add additional VLAN routes. Routes can also be deleted by selecting them in the *VLAN Routes* section and pressing the *Delete* button below the section.

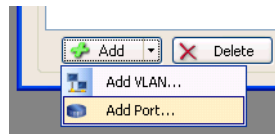
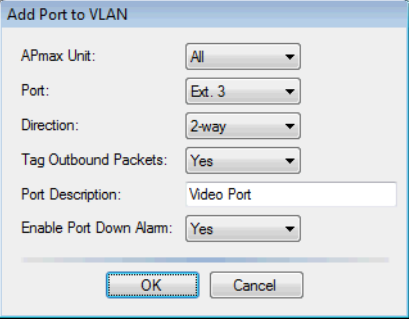


The 'Add VLAN Route' dialog box contains the following fields:

- APmax Unit: All (dropdown)
- Route Address: 10 . 11 . 12 . 13
- Subnet Mask: 255 . 255 . 255 . 0
- Gateway: 10 . 11 . 13 . 14
- Description: Route 1
- Buttons: OK, Cancel

Figure 4-18 Add VLAN Route

- To add a port to the selected VLAN, click the dropdown arrow on the *Add* button that is located below the *Defined VLANs* section, and then select the *Add Port* command from the dropdown menu, as illustrated in Figure 4-19. The Add Port to VLAN window (see Figure 4-20) will be displayed.

**Figure 4-19 Add Button Dropdown Menu**


The 'Add Port to VLAN' dialog box contains the following fields:

- APmax Unit: All (dropdown)
- Port: Ext. 3 (dropdown)
- Direction: 2-way (dropdown)
- Tag Outbound Packets: Yes (dropdown)
- Port Description: Video Port
- Enable Port Down Alarm: Yes (dropdown)
- Buttons: OK, Cancel

Figure 4-20 Add Port to VLAN

Populate the following fields in the Add Port to VLAN window and press the *OK* button.

APmax Unit	Select which units on the currently selected APmax system will be configured with the new VLAN port.
Port	Select the new port. Options may include ADMIN Eth0, CPROC Eth1, External Ports 1-6, and DSPs 1-4, depending on which ports have already been configured for this VLAN.
Direction	Select the direction of the new port: In, Out, or 2-way.

Tag Outbound Packets	Should outgoing packets be tagged for the new port? Yes or No.
Port Description	Enter a short description of the port.
Enable Port Down Alarm	Should this port set an alarm if the port is down? Yes or No. This option is available for External Ports 1 and 3-6.

The new port will be shown in the *Defined VLANs* section beneath the VLAN for which it was configured. Select the port to display its settings in the right-hand side of the VLAN Configuration window (see Figure 4-21).

If the port is ADMIN Eth0, CPROC Eth1 or a DSP, and *Tag Outbound Packets* is set to Yes, then the *IP Address*, *Subnet Mask*, and *Gateway* fields in the *Port IP Settings* section on the right-hand side of the VLAN Configuration window must be filled out before the new port can be saved. The *VRRP Address* field in the *Port IP Settings* section is available only if the port is ADMIN Eth0, and is not required.

If the port is External Port 1-6, or *Tag Outbound Packets* is set to No, then the fields in the *Port IP Settings* section will be disabled. The *Enable Port Down Alarm* field will only be enabled for External Ports 1 and 3-6.

Repeat this step to add additional VLAN ports. Ports can also be deleted by selecting them in the *Defined VLANs* section and pressing the *Delete* button below the section.

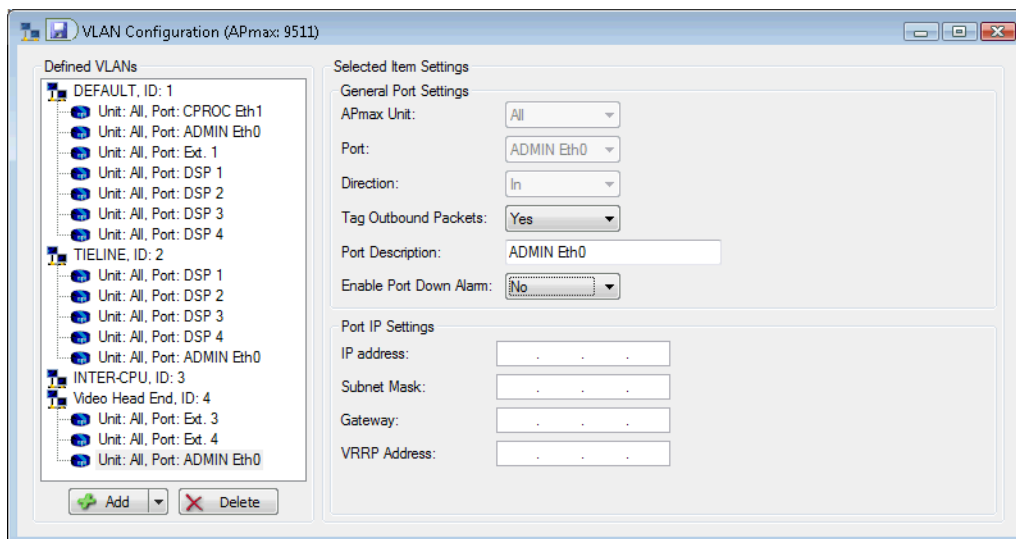



Figure 4-21 VLAN Port Settings

4.3 Elation Messenger Configuration

The Elation Messenger Configuration interface is used to set the address and port that connects the APmax system to eLation, the Innovative Systems OSS product (see <http://www.innovsys.com/Products/eLation/eLation.html>). This allows APmax services to add records to the eLation Subscriber Activity Log. The Service Description documents associated with each service will provide more details on eLation interaction with that particular service.

Note: The Elation Messenger Configuration interface is only available for APmax systems with the Elation Messenger package installed.

To access the Elation Messenger Configuration interface, right-click on the system's icon

 in the Command Center window to invoke a popup menu, and select the *System Configuration / Elation Messenger Configuration* command (as illustrated in Figure 4-22). The name of the system you are configuring will be displayed at the top of the Elation Messenger Configuration window (Figure 4-23).

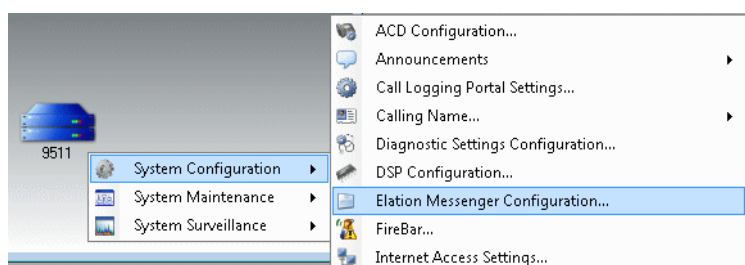


Figure 4-22 Elation Messenger Configuration Menu Command

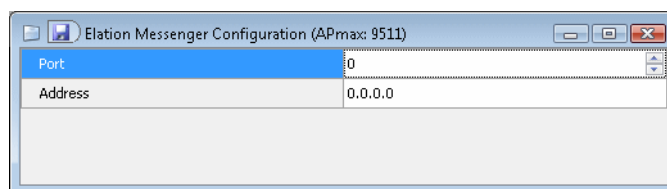


Figure 4-23 Elation Messenger Configuration Window

The *Port* and *Address* settings in the Elation Messenger Configuration window are described below. Enter the eLation connection information and close the window to save the settings.


Port

The eLation TCP server port number.

Address	The eLation TCP IP address. Setting this address to 0.0.0.0 will disable the service, stop connection attempt error message output, and clear the connection alarm (the next time it tries to connect).
----------------	---

4.4 Test DSP Access

The Test DSP Access tool is used to initiate a communication test with available DSPs using the “echo server” command-link message.

To open the Test DSP Access interface, right-click on the system’s icon  in the Command Center window to invoke a popup menu, and select the *System Configuration / Network Configuration / Test DSP Access* command (as illustrated in Figure 4-24). The name of the system you are configuring will be displayed at the top of the Test DSP Access window (Figure 4-25).

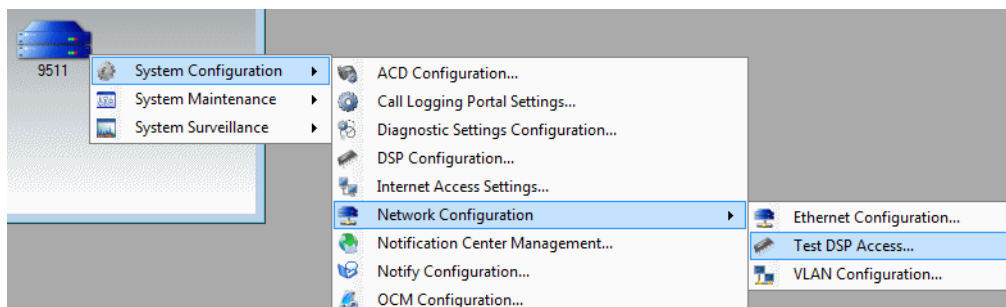


Figure 4-24 Test DSP Access Menu Command

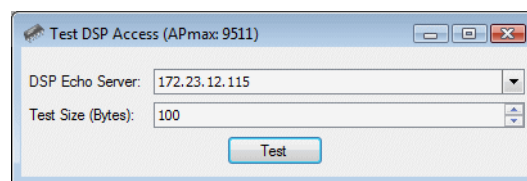


Figure 4-25 Test DSP Access Window

The *DSP Echo Server* selection box in the Test DSP Access window lists the address and unit number of each DSP on the selected APmax system. See Section 4.1.1.2 - "DSP Settings" for information on configuring DSP addresses on the APmax. The *Test Size (Bytes)* field is used to set the size of the test packet. Select a DSP, set the test packet size, and press the *Test* button to initiate the communication test. The test results will be displayed in a Test Complete window (Figure 4-26).

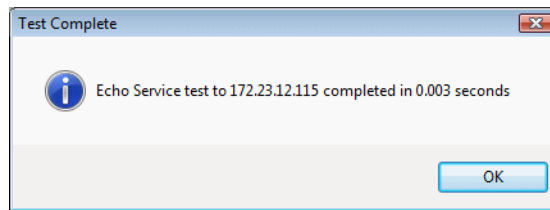


Figure 4-26 DSP Test Complete

Chapter 5 - System Time Manager

The clock in an APmax system, by itself, is not extremely accurate. There are two methods described in this chapter that may be used to ensure the system time is correct. They are as follows:

- **Manually Setting the System Time** (Section 5.1) - The system time may be manually set to the current PC time using the interface accessed through the *System Configuration / System Time Manager* menu command from the system popup menu.
- **Network Time Protocol** (Section 5.2) - Systems may use Network Time Protocol (NTP) to periodically synchronize the system time with the clocks of computers over the Internet. In a multiunit configuration, Unit 1 should be configured as an NTP server for each additional unit in the APmax system configuration.


Systems also use T1 synchronization to maintain accurate system time. T1 synchronization occurs (autonomously) when one or more T1's are connected to a system. The system uses the very stable and accurate T1 signals to regulate its internal clock. Therefore, once the system time is set (manually), the system will continue to keep accurate time as long as the T1(s) stay in service.

NOTE: If there are no T1 circuits connected to the system to provide clock synchronization, and the Network Time Protocol method is not being used to periodically update the system time, then the time should be set manually (see Section 5.1) on at least a weekly basis to ensure the system is keeping accurate time.

5.1 Manually Setting the System Time

Network Time Protocol (see Section 5.2) is the recommended mechanism to update the system time. If the system time is set manually, and there are no T1 circuits connected to the system to provide clock synchronization, then you should perform this function weekly to ensure the system is keeping accurate time.

To manually set the time of a system based on the current PC time, complete the following steps:

1. Right-click on the system's icon  in the Command Center window to invoke a popup menu, and select the *System Configuration / System Time Manager* command (as illustrated in Figure 5-1). The System Time Manager window (Figure 5-2) will be displayed. The name of the system for which you are managing time will be displayed at the top of the System Time Manager window.

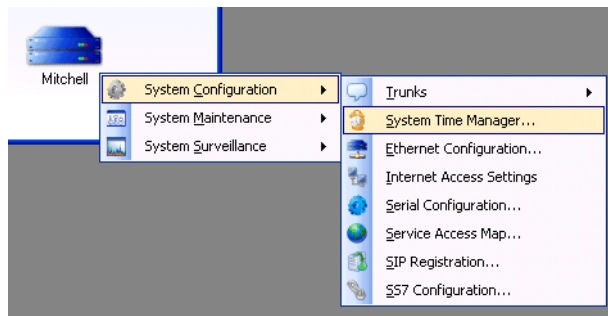


Figure 5-1 System Time Manager Menu Command

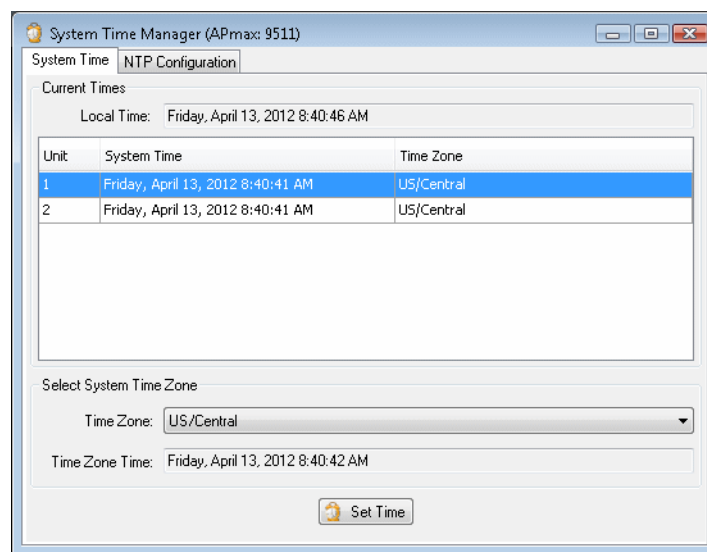



Figure 5-2 System Time Manager Window

The System Time Manager window contains the following information:

- Local Time** This shows the APmax UI PC's current time.
- Unit List** Between the Local Time and Time Zone fields is a list of the units in this system and the current time read from each unit.
- Time Zone** This setting allows you to select the time zone in which the system resides.
- Time Zone Time** Time at the selected time zone. This time is calculated based on the current computer time and the selected time zone. The system time will be set to this time when the *Set Time* button is pressed.

If this is the first time you have used this function, the *Time Zone* setting will default to the time zone currently set on the APmax UI PC. If you have previously used this function to set the system time, the *Time Zone* setting will show the time zone selected at the last use of this function.

- To select the time zone in which the system resides, click the  with the left mouse button to access the drop-down menu. Use the scroll bars on the right side of the drop-down menu to examine the entire list of time zones.

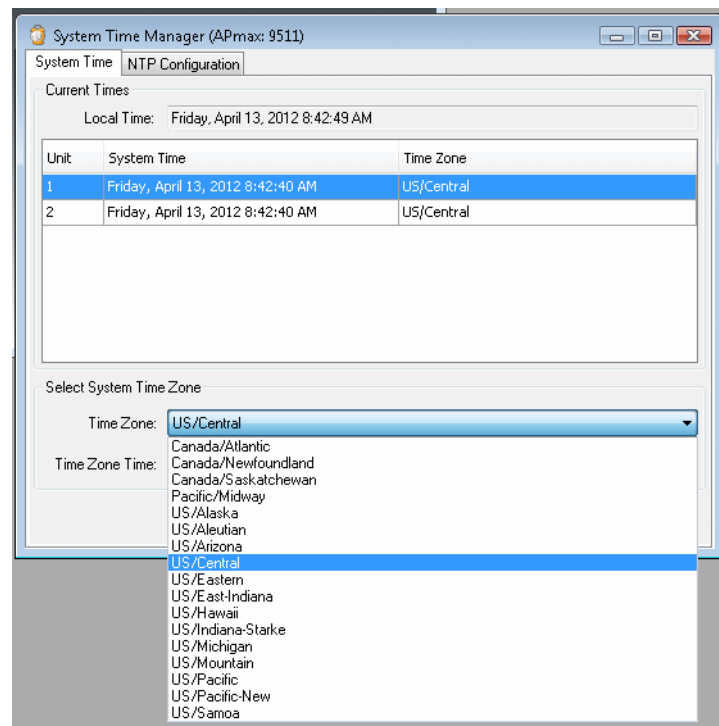


Figure 5-3 Selecting the Time Zone

- From the drop-down list, select the time zone where the system is located. The *Time Zone Time* will change to display the time according to the selected time zone.
- Press the *Set Time* button to set the time on the system to the time displayed in the *Time Zone Time* field. A confirmation message (see Figure 5-4) will be displayed when the time is successfully set. Press the *OK* button to close the message.

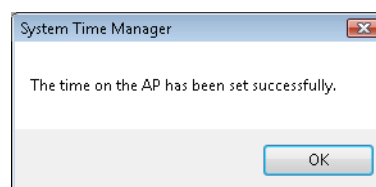



Figure 5-4 Time Set Successfully Message

This change will be immediately transferred to the selected system.

5.2 Network Time Protocol

Network Time Protocol (NTP) allows systems to periodically synchronize their system time with the clocks of computers (time servers) over the Internet. These time servers maintain more accurate time than the system hardware. See <http://www.ntp.org> for more information about NTP and public NTP servers.

To configure NTP for a system, complete the following steps:

1. Right-click on the system's icon  in the Command Center window to invoke a popup menu, and select the *System Time Manager* command (as illustrated in Figure 5-5). The System Time Manager window (Figure 5-6) will be displayed. The name of the system for which you are managing time will be displayed at the top of the System Time Manager window.

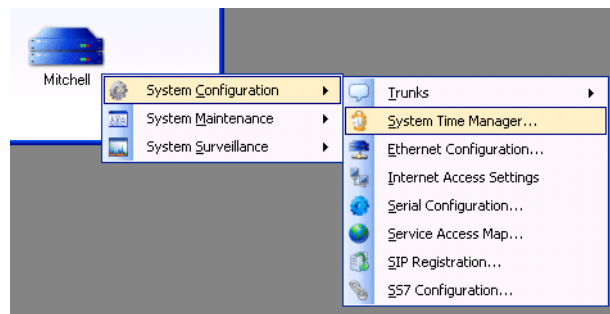


Figure 5-5 System Time Manager Menu Command

2. Select the *NTP Configuration* tab (see Figure 5-6) in the System Time Manager window.

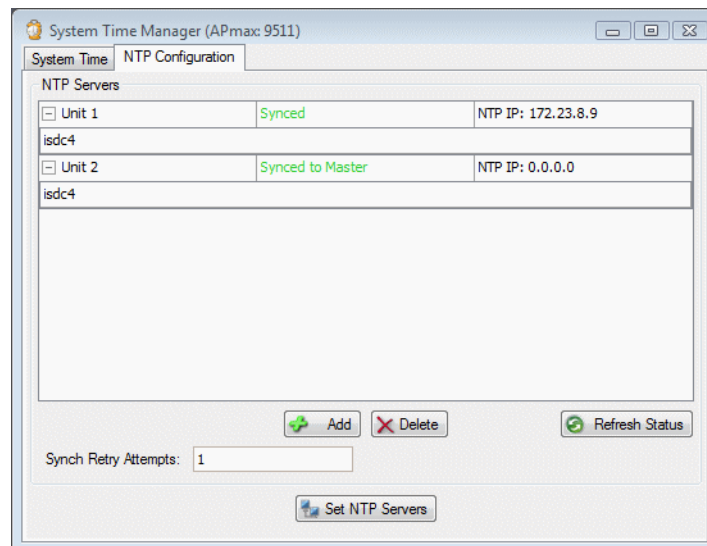


Figure 5-6 System Time Manager - NTP Configuration Tab

The *NTP Configuration* tab displays each unit in the system (e.g. Unit 1, Unit 2) along with the host name (e.g. isdc4) and/or IP address of each time server configured for the unit. The sync status and NTP IP address displayed next to each unit shows the status and IP of the time server that responded first. The *Refresh Status* button can be pressed to retrieve the current NTP sync status.

On system startup, each unit will send a broadcast query to the other units in the system once a second for five seconds. Responses are used to synchronize the local time and elect a NTP sync master.

The NTP sync master is always the lowest numbered unit in the system. The synch master will send a broadcast query to each configured time server once every five seconds. Once an NTP server responds to the request with a valid time, subsequent requests for time are sent to the time server that responded at a rate of once every five seconds. For every successful reply, the time lengthens by five seconds, not to exceed a request interval of five minutes. Each failed reply reduces the request interval by half, with a minimum request interval of five seconds. A timeout on a query resets the time to five seconds, and results in a broadcast query to all configured time servers. Loss of the connection to a time server after time has been set, will result in a major alarm.

Systems actively running APmax Release 4.0 or greater will write the current time to a sync file every five minutes. On startup, the system will wait for a response a maximum of 240 seconds before timing out. If a timeout occurs, or NTP is disabled or not found, then the system will throw a critical alarm and the system time will be set to 30 seconds later than the time in the sync file.

If a startup timeout occurs on a system with an APmax release less than 4.0 then startup will be halted until the time is set. If this occurs, the time may be set by either a successful synch to a configured NTP server or by setting the time manually from the UI using System Time Manager (see Section 5.1). Once the time has been set, the system will resume startup.

Any major time change detected by the NTP synch master will be broadcasted to all units in the system. This includes any changes made from the UI.

Please note, if NTP is not utilized and a time synch alarm is not desired on the system, then the NTP server on each unit may be set to "DISABLED".

3. Add or delete NTP servers from the list using the corresponding buttons.

To add an NTP server, select any unit in the *NTP Servers* list and click the *Add* button. An Add NTP Server window similar to Figure 5-7 will be displayed.

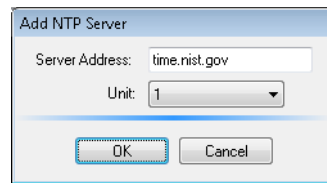


Figure 5-7 Add an NTP Server

In the *Server Address* field, enter a host name (i.e., time.nist.gov) or an IP address (i.e., 192.43.244.18) of an NTP server, select a unit on the APmax system, and press the *OK* button. System Time Manager will attempt to resolve the supplied address, and a warning will appear if the resolution fails. To exit the Add NTP Server window without entering a new server, press the *Cancel* button.

To delete an NTP server, select the time server address beneath its unit node in the *NTP Configuration* tab and press the *Delete* button located below the list of servers.

When setting up a multi-unit system, Unit 1 should be configured as an NTP server for each additional unit in the APmax system configuration. The IP to specify as the NTP server when setting up each additional unit should be the Administration Address for Unit 1, see Chapter 4 - "Network Configuration", Section 4.1.1.1 - "General Settings" for more information.

4. Set the number of synch retries the system should attempt before throwing a time alarm indicating it could not synch to an NTP server. This is done by entering a value between 1 and 100 into the *Synch Retry Attempts* field. The default value is 1.
5. When all additions, deletions, and settings are finished in the *NTP Configuration* tab, press the *Set NTP Servers* button to save the changes. If the System Time Manager is closed without the *Set NTP Servers* button being pressed, all changes will be lost. Saved changes will be immediately transferred to all units in the selected system. A confirmation message (see Figure 5-8) will be displayed when the NTP servers are successfully saved. Press the *OK* button to close the message.

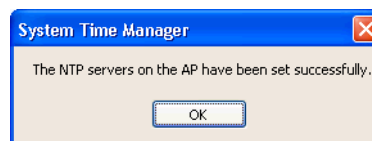



Figure 5-8 NTP Servers Set Successfully Message

Chapter 6 - Serial Configuration

This chapter describes how to configure serial ports for APmax system units. To access the Serial Port Configuration interface, right-click on the system's icon  in the Command Center window to invoke a popup menu, and select the *System Configuration / Serial Configuration* command (as illustrated in Figure 6-1). The name of the system for which you are configuring settings will be displayed at the top of the Serial Port Configuration window (Figure 6-2).

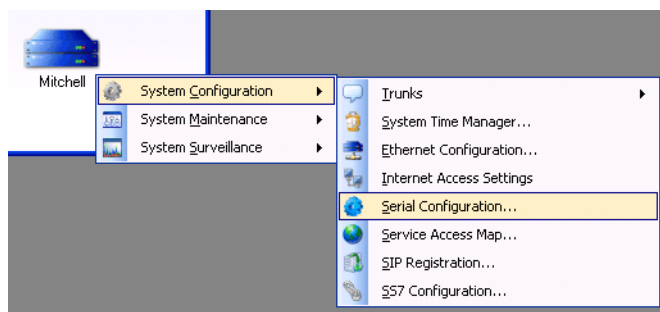


Figure 6-1 Serial Configuration Menu Command

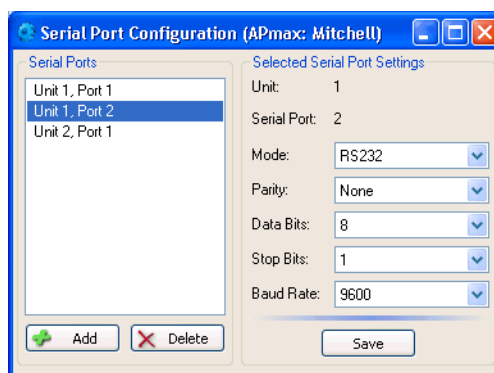


Figure 6-2 Serial Port Configuration Window

The left-hand side of the Serial Port Configuration window contains a list of APmax system units and serial ports that have already been configured. Selecting a unit/port combination in the list will display its serial port settings in the right-hand side of the window, where the serial port signaling values may be modified. The settings in the *Selected Serial Port Settings* section are described below Figure 6-3.

To delete a serial port from the configuration, select the unit/port combination you wish to delete in the *Serial Ports* list and press the *Delete* button below the list.

To add a serial port to the configuration, press the *Add* button below the *Serial Ports* list. An Add Serial Port window similar to Figure 6-3 will be displayed. If all serial ports for all APmax units have already been defined, the *Add* button will be disabled.

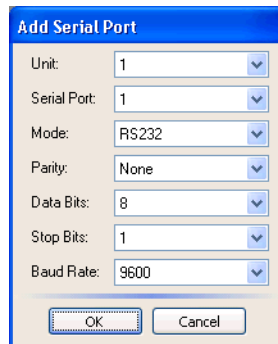


Figure 6-3 Add Serial Port Window

Specify the following settings in the Add Serial Port window and press the *OK* button to complete the addition of the serial port.

Unit	The unit on the APmax system for which this serial port is being configured. If all of the serial ports (1 and 2) of a unit have already been defined in the Serial Port Configuration interface, that unit number will not be available when adding new serial ports.
Serial Port	The serial port (1 or 2) that is being configured on the selected APmax unit. If a serial port has already been defined for the selected APmax unit in the Serial Port Configuration interface, it will not be available as an option when adding new serial ports.
Mode	The mode the selected serial port uses to connect to the APmax unit. The options are listed in the drop-down control: None, RS232, and RS449. The default mode is RS232.
Parity	Parity checking is used to detect transmission errors in the serial link's data stream. The Parity field indicates the type of parity checking used in the data transmission. The valid values are listed in the drop-down control: Even, Mark, None, Odd, and Space. The default value is no parity (None).
Data Bits	The Data Bits field specifies the number of bits that represent a single character transmitted over the serial link. The valid values are listed in the drop-down control: 5, 6, 7 or 8 bits. The default value is 8 data bits.

Stop Bits

The Stop Bits field specifies the number of stop bits used to indicate the end of a transmitted character. The valid values are listed in the drop-down control: 0, 1, or 2 bits. The default value is 1 stop bit.


Baud Rate

The Baud Rate specifies the signaling speed, in bits-per-second (bps). The valid values are listed in the drop-down control: 9600bps, 19200bps, 38400bps, 57600bps, 115200bps. The default value is 9600bps.

Closing the Serial Port Configuration window will save any changes to the serial port settings. To apply any changes to a serial port's settings to the APmax system without closing the window, press the *Save* button in the *Selected Serial Port Settings* section of the window.

Chapter 7 - Digital Carrier Configuration

This chapter describes how to configure Digital Signalling Level 1 (DS1) ports, Digital Signalling Level 3 (DS3) ports, and Primary Rate Interface (PRI) ports for APmax systems. To access the

Digital Carrier Configuration interface, right-click on the system's icon  in the Command Center window to invoke a popup menu, and select the *System Configuration / Trunks / Digital Carrier Configuration* command (as illustrated in Figure 7-1). The name of the system for which you are configuring ports will be displayed at the top of the Digital Carrier Configuration window (Figure 7-2).

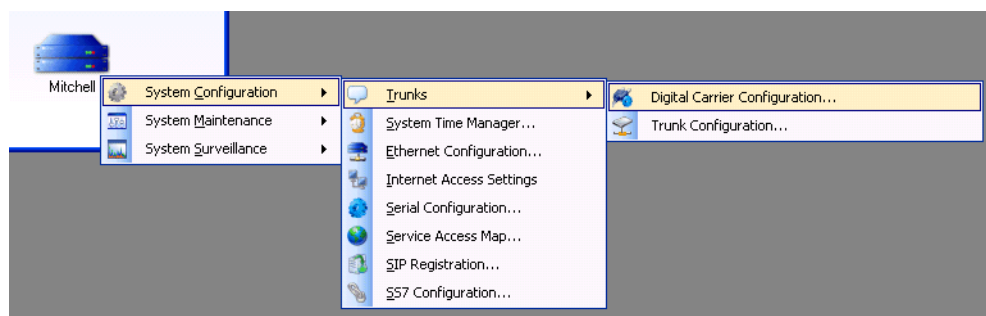


Figure 7-1 Digital Carrier Configuration Menu Command

Section 7.1 - "Digital Carrier Setup" provides instructions for configuring DS1 and DS3 ports.
Section 7.2 - "PRI Setup" provides instructions for configuring PRI ports.

7.1 Digital Carrier Setup

Select the *Digital Carrier Setup* tab (Figure 7-2) in the Digital Carrier Configuration window to configure DS1 and DS3 ports for the APmax system.

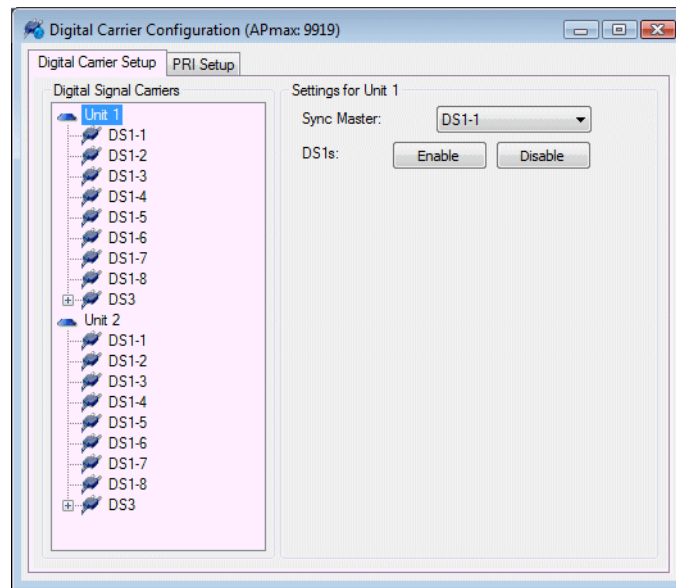


Figure 7-2 Digital Carrier Configuration Window

The *Digital Carrier Setup* tab is partitioned into two panes. The left-hand pane contains a tree structure of each unit in the selected APmax system, and the DS1 and DS3 ports beneath that unit. The right-hand pane displays the settings that can be configured for the unit, DS1, or DS3 that is selected in the left-hand pane. These settings are described in the following sections:

- Section 7.1.1 - "Unit Settings"
- Section 7.1.2 - "DS1 Settings"
- Section 7.1.3 - "DS3 Settings"

7.1.1 Unit Settings

When an APmax unit is selected in the left-hand pane of the *Digital Carrier Setup* tab (see Figure 7-2), the *Sync Master* setting and DS1 *Enable* and *Disable* buttons will be displayed in the right-hand pane. The functions associated with these controls are described below:

Sync Master The sync master port is the preferred source of external clock synchronization, and is used to synchronize all internal clocks to the network or BITS clock.

By default the Sync Master for a unit is set to "Free Run." Any port that is enabled on this unit can be the sync master by selecting the port in the Sync Master drop-down list.

DS1s

Note: This function is only available for systems with APmax Release 4.3 or greater.

The *Enable* and *Disable* buttons are used to activate and deactivate all DS1 ports on the selected unit. This is done in a non-volatile manner so the state is preserved if the unit is rebooted. Note that the *DS1 Status* setting for individual ports will not change when these buttons are pressed. This allows all DS1 ports to be easily disabled when upgrading a system and then re-enabled, and returned to their previous status, when the upgrade is complete.

7.1.2 DS1 Settings

When any of the DS1-1 to DS1-8 ports are selected in the left-hand pane of the *Digital Carrier Setup* tab (see Figure 7-3), the settings for the selected port will be displayed in the right-hand pane. These settings are described below Figure 7-3.

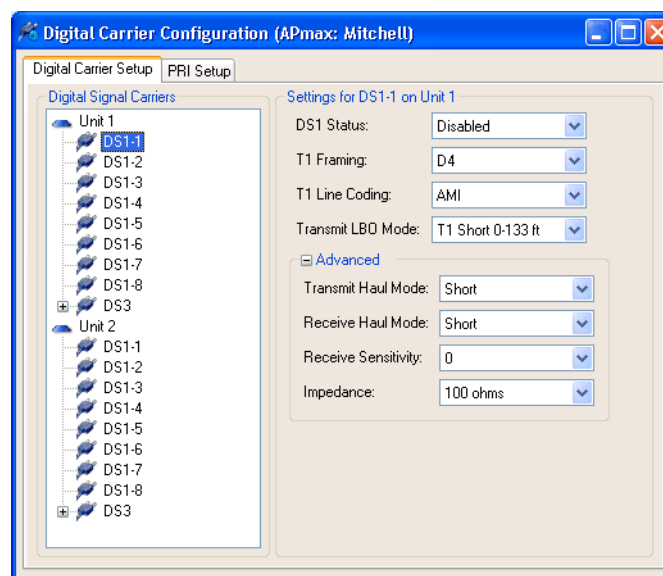



Figure 7-3 DS1 Settings

The top four settings below are displayed by default. Click the  tree symbol next to the Advanced label to display the bottom four settings.

DS1 Status

Select whether the port should be Enabled or Disabled.

T1 Framing

Specify the T1 framing format that the switch should be using. Options include D4 and ESF (Extended Superframe Format). ESF is less susceptible to false Yellow alarms caused by repetitive patterns in audio channels.

T1 Line Coding	Specify the T1 line coding that the switch should be using. Options include AMI or B8ZS.
Transmit LBO Mode	Select the T1 cable length, T3 dB, or E1 ohms.
Transmit Haul Mode	Options include Short and Long.
Receive Haul Mode	Used in conjunction with Receive Sensitivity to set the overall sensitivity on the DS1 port. Options include: <ul style="list-style-type: none">• Short - Select for cable lengths less than 655 feet.• Long - Select for cable stretches longer than 655 feet.• Monitor - Select for listening on a monitor port (up to -46dB attenuation in resistive bridge and cable). This option should be selected if using the monitor port on the patch panel.
Receive Sensitivity	If Receive Haul Mode is set to Long, this setting will be used to indicate the dB of attenuation on long haul signals that can be tolerated (i.e., amplified). This setting is ignored if Receive Haul Mode is set to Short or Monitor. The available range is from -32 to 0.
Impedance	Specify the impedance to use, in ohms. Options include 100, 110, or 120. The selected value should be 100 for T1s.

7.1.3 DS3 Settings

When the DS3 tree item is selected in the left-hand pane of the *Digital Carrier Setup* tab (see Figure 7-4), the DS3 settings for a unit will be displayed in the right-hand pane. These settings are described below Figure 7-4.

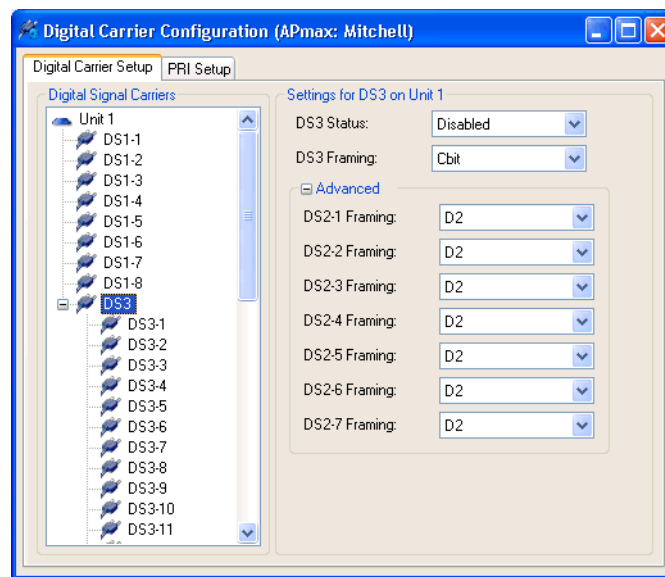



Figure 7-4 DS3 Settings

The DS3 Status and DS3 Framing settings below are displayed by default. Click the  tree symbol next to the Advanced label to display the DS2-1 to DS2-7 settings.

DS3 Status	Select whether the DS3 should be Enabled or Disabled.
DS3 Framing	Specify the framing format that should be used for the DS3. Options include Cbit and M13.
DS2-1 Framing to DS2-7 Framing	Specify the framing for each of the DS2-1 to DS2-7 ports for the DS3. Options include D2 and G747.

When any of the DS3-1 to DS3-28 ports are selected in the left-hand pane of the *Digital Carrier Setup* tab (see Figure 7-5), the settings for the selected port will be displayed in the right-hand pane. These settings are described below Figure 7-5.

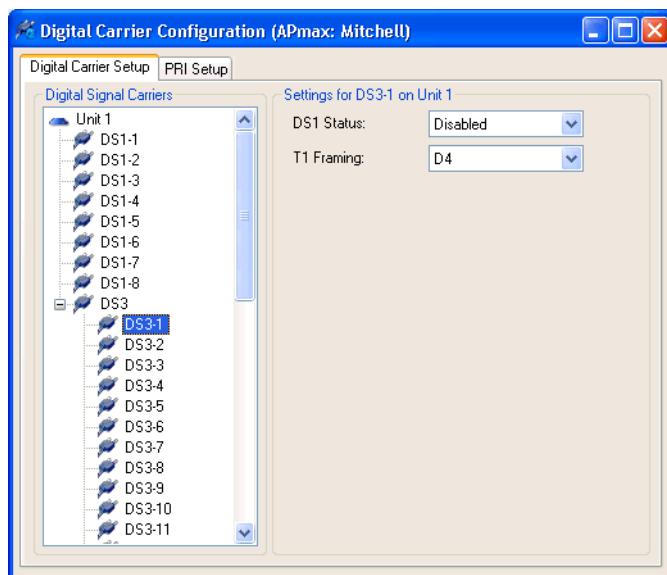


Figure 7-5 DS3-1 to DS3-28 Settings

DS1 Status	Select whether the port should be Enabled or Disabled.
T1 Framing	Specify the T1 framing format that the switch should be using. Options include D4 and ESF (Extended Superframe Format). ESF is less susceptible to false Yellow alarms caused by repetitive patterns in audio channels.

7.2 PRI Setup

Select the *PRI Setup* tab (Figure 7-6) in the Digital Carrier Configuration window to view a list of PRI ports which have been configured for the APmax system.

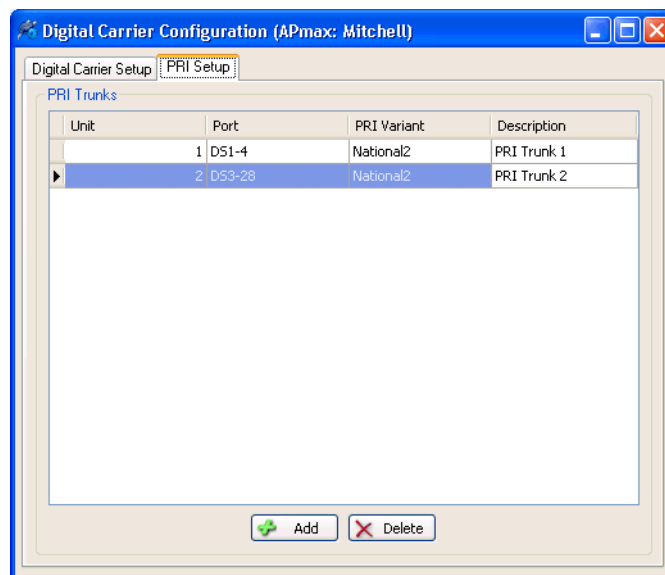


Figure 7-6 PRI Setup Tab

PRI ports can be configured for the APmax system by pressing the *Add* button located at the bottom of the *PRI Setup* tab, filling out the settings in the Add PRI Trunk window (see Figure 7-7), and pressing the *OK* button. The settings in the Add PRI Trunk window are described below Figure 7-7.



Figure 7-7 Add PRI Trunk

- Unit** Select the unit on the APmax system which will be configured with the new PRI port entry.
- TDM Interface** Select the Time Division Multiplexed Audio Interface (TDM Interface) port for this entry.
- PRI Type** Select the type of PRI switch associated with this entry.

Description


Enter a short description to help identify this entry in the user interface.

To delete a PRI port entry from this APmax system, select the entry in the list and press the *Delete* button located at the bottom of the *PRI Setup* tab.

Chapter 8 - SS7 Configuration

This chapter primarily describes how to configure SS7 for APmax systems. SS7, also known as Signaling System #7, is an out-of-band signaling system used to provide basic routing information, call set-up, and other call termination functions. Signaling is removed from the voice channel itself and put on a separate data network. The APmax uses the SS7 network to transfer data related to many of the services provided by the APmax. The SS7 Configuration interface in the APmax UI allows for the configuration of local point code, linksets, combined linksets, SS7 routing, Global Title Translation (GTT) information, and AIN settings.

This chapter also describes the Service Configuration interface (see Section 8.7), which is used to service settings (e.g. subsystem numbers, access numbers) of APmax applications that do not have an independent configuration interface.

To access the SS7 Configuration interface, right-click on the system's icon  in the Command Center window to invoke a popup menu, and select the *System Configuration / SS7 Configuration* command (as illustrated in Figure 8-1). The name of the system for which you are configuring ports will be displayed at the top of the SS7 Configuration window (Figure 8-2).

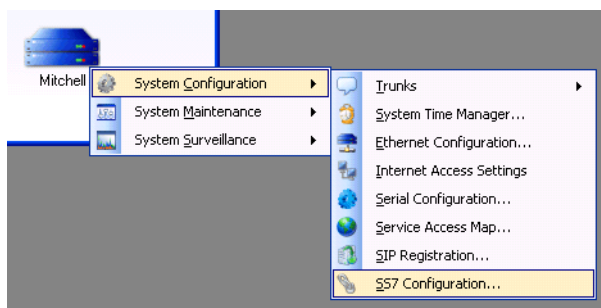


Figure 8-1 SS7 Configuration Menu Command

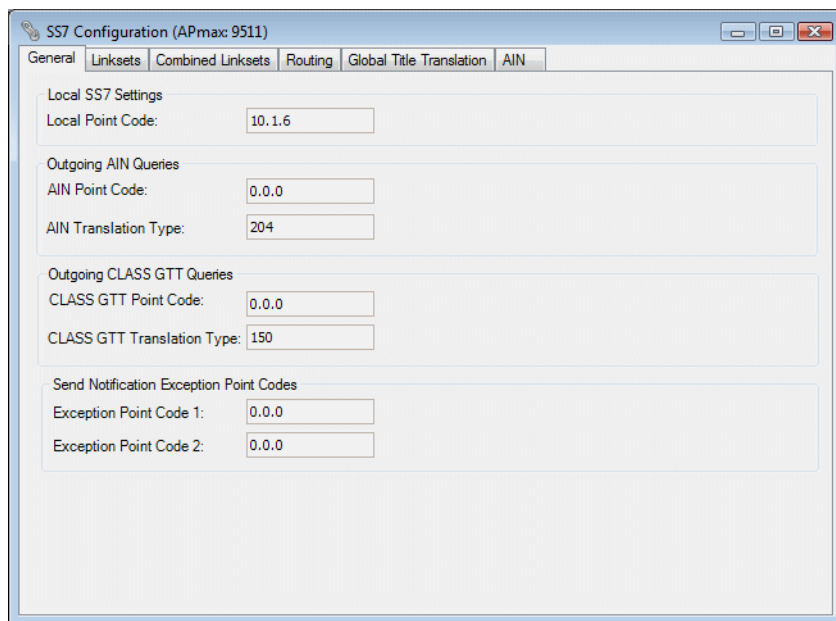


Figure 8-2 SS7 Configuration Window

The SS7 Configuration window is partitioned into six tabs: *General*, *Linksets*, *Combined Linksets*, *Routing*, *Global Title Translation*, and *AIN*. The progression through the tabs from left to right provides a general order to setting up the SS7 interface within the APmax system. For instance, the local point code in the *General* tab should be defined before any linksets are defined, and the linksets must be defined before any combined linksets can be created. Changes to the configuration are sent to the APmax system and saved as they are performed.

The functions available within the tabs are described in the following sections:

- General Tab - Section 8.1 - "General SS7 Settings"
- Linksets Tab - Section 8.2 - "Linkset Configuration"
- Combined Linksets Tab - Section 8.3 - "Combined Linksets"
- Routing Tab - Section 8.4 - "Linkset Route Management"
- Global Title Translation Tab - Section 8.5 - "Global Title Translation"
- AIN Tab - Section 8.6 - "AIN Settings"

8.1 General SS7 Settings

The *General* tab (see Figure 8-2) is displayed when the SS7 Configuration window is initially opened and contains the following settings:

Local Point Code	The SS7 address assigned to this APmax system. If a point code has not already been defined, 0.0.0 will be displayed in this field. SS7 point codes are partitioned into 3-digit sections: network, cluster, and member. The value of each portion of the point code must be in range of 1-255.
AIN Point Code	The point code used when the APmax originates an AIN query.
AIN Translation Type	The translation type used when the APmax originates an AIN query. The default value for this field is 204.
CLASS GTT Point Code	The point code used when the APmax originates a CLASS GTT query.
CLASS GTT Translation Type	The translation type used when the APmax originates a CLASS GTT query. The default value for this field is 150.
Exception Point Code 1	The first point code for which the send notification parameter will be removed.
Exception Point Code 2	The second point code for which the send notification parameter will be removed.

The values in the *General* tab fields will be saved immediately upon leaving the *General* tab. It is recommended that a valid point code be entered before any linksets are created for this system.

8.2 Linkset Configuration

An SS7 linkset is a group of SS7 links that are all physically connected to the same far-end device. An SS7 link is an individual signaling path between the APmax and the specified far-end device. The *Linksets* tab (see Figure 8-3) is where linksets are added (see Section 8.2.1) or removed (Section 8.2.2) from the system, and where channels (i.e. SS7 links) are added (see Section 8.2.3) or removed (see Section 8.2.4) from linksets.

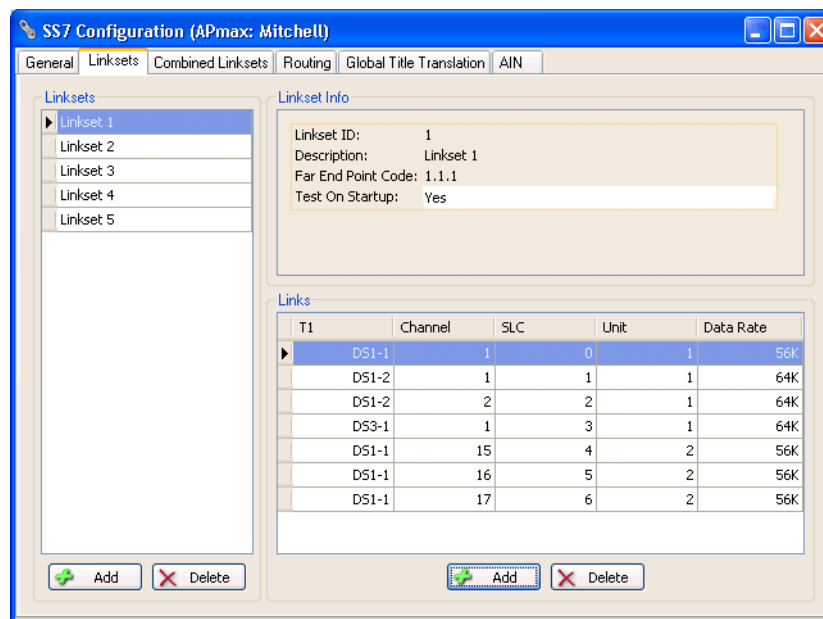


Figure 8-3 Linksets Tab

The *Linksets* tab is partitioned into three sections: *Linksets*, *Linkset Info*, and *Links*. The *Linksets* section contains a list of the linksets that have been defined.

The *Linkset Info* section contains the properties of the currently selected linkset. Linkset properties are described in Section 8.2.1 - "Adding a Linkset". The only property that can be changed for an existing linkset is *Test On Startup*. Clicking in this property will display a drop-down menu as illustrated in Figure 8-4 below.

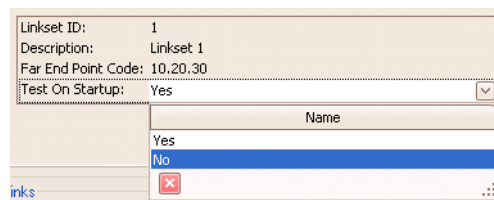


Figure 8-4 Test On Startup Drop-down Menu

Select Yes or No in the drop-down to enable or disable testing on startup.

The *Links* section contains a list of the SS7 links that have been defined for the selected linkset. Link properties are described in Section 8.2.3 - "Adding a Link to a Linkset".

8.2.1 Adding a Linkset

To add a linkset to the SS7 interface, press the *Add* button below the list of linksets on the left-hand side of the SS7 Configuration window. An Add Linkset window similar to Figure 8-5 will be displayed.

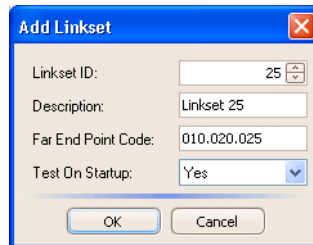


Figure 8-5 Add Linkset Window

Populate the following fields in the Add Linkset window and press the *OK* button to create the new linkset.

Linkset ID	Select an ID number between 1 and 16 for the new linkset. This number must be unique within this APmax system.
Description	Enter a short description of this linkset.
Far End Point Code	Enter a far-end point code for this linkset that is unique within this system.
Test On Startup	Select Yes to enable testing of this linkset on startup or No to disable testing. This is the only linkset property that can be changed after the linkset is created.

8.2.2 Deleting a Linkset

To remove a linkset from the SS7 interface, select the linkset to delete in the list on the left-hand side of the *Linksets* tab (see Figure 8-3) and press the *Delete* button located below the list.

If links are assigned to the linkset you are attempting to delete, a warning (see Figure 8-6) will be displayed and you will have to delete all of the links (see Section 8.2.4 - "Deleting a Link from a Linkset") from the linkset before it can be deleted.

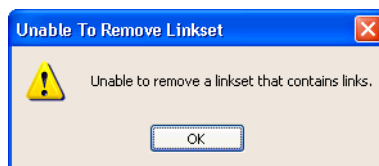


Figure 8-6 Unable To Remove Linkset Warning

If the linkset you are attempting to delete is part of a combined linkset, you will have to uncombine it before it can be deleted (see Section 8.3 - "Combined Linksets").

8.2.3 Adding a Link to a Linkset

To add one or more links to a linkset, select the linkset in the list on the left-hand side of the *Linksets* tab (see Figure 8-3) and press the *Add* button in the *Links* section (lower-right corner) of the tab. The Add Links window (see Figure 8-7 below) will be displayed.

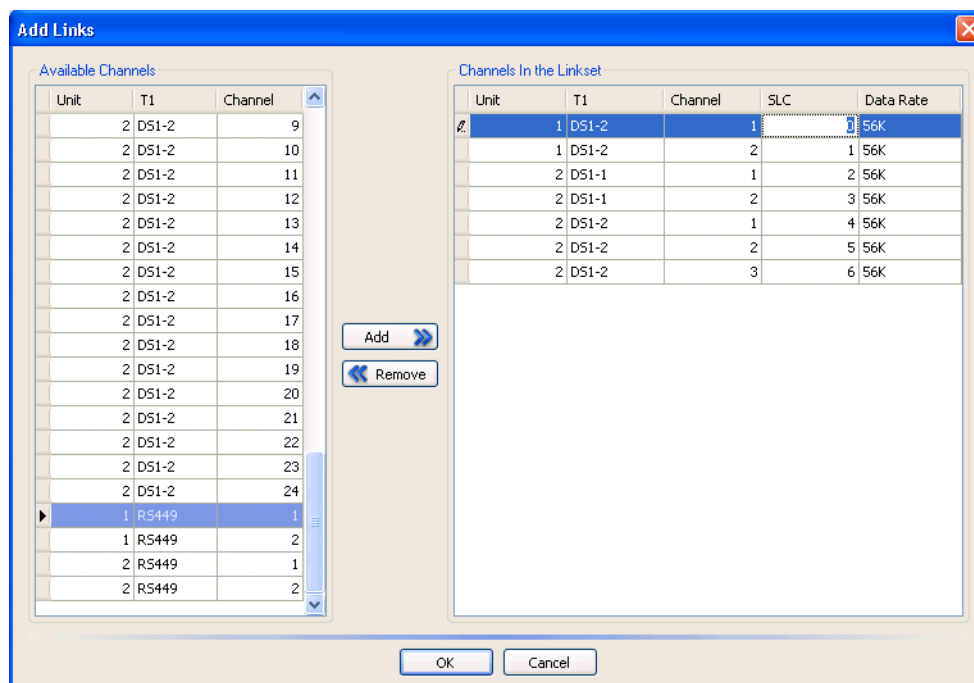


Figure 8-7 Add Links Window

A list of available channels is displayed on the left side of the window, and a list of the channels that are going to be added to the linkset is on the right side. The channels in the *Available Channels* list are retrieved from the APmax system each time this window is opened. To be considered “available,” a T1 channel must belong to a T1 interface that has been enabled in the Digital Carrier Configuration interface (see Chapter 7), and the channel must not be used for another purpose

(e.g., used as a member of a voice trunk group). In addition to DS channels, both RS449 ports for each unit in the selected system are also available to be assigned as channels in a linkset, if they have not already been assigned.

WARNING: Assigning an RS449 port to a linkset will set the mode of that port to RS449, overriding any previous settings of that port that were made using other interfaces. For example, if port 1 on unit 1 is configured as RS232 in the Serial Configuration interface (see Chapter 6), and port 1 on unit 1 is then assigned to a linkset in the SS7 Configuration interface, the port will now be RS449. It is recommended that a port already in use by another interface not be added as a channel to a linkset.

To add channels to the linkset, select up to eight channels from the *Available Channels* list and press the *Add* button in the middle of the window. The selected channels will be moved to the *Channels In the Linkset* list.

To remove channels that have been assigned to the linkset during this Add Links session, select the channels in the *Channels In the Linkset* list and press the *Remove* button in the middle of the window. The selected channels will be moved to the bottom of the *Available Channels* list.

The SLC for each channel must be specified before exiting the Add Links window. To specify an SLC for a channel, click in the *SLC* cell as illustrated in Figure 8-8 and enter a number between 0 and 15 that is not already in use by channels assigned to this linkset.

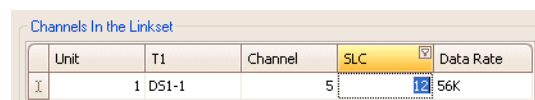


Figure 8-8 Changing the SLC for a Link

The data rate for each channel can also be specified before exiting the Add Links window. To specify the data rate for a channel, click in the *Data Rate* cell as illustrated in Figure 8-9 and select either 56k or 64k in the drop-down menu.

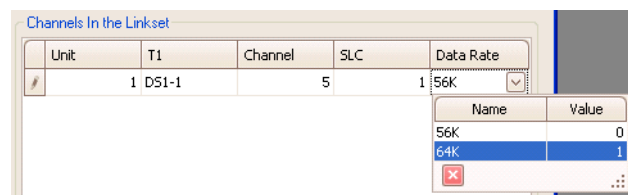


Figure 8-9 Changing the Data Rate for a Link

The SLC and data rate for channels cannot be changed once the *OK* button is pressed, unless they are deleted and re-added to the linkset.

A maximum of eight channels can exist in a single linkset. Also, the total of all channels in all linksets for each unit in the APmax system may not exceed eight. If channels already exist in the linkset and the number of channels added to the linkset would make the total over eight, an error will be displayed when the *OK* button is pressed in the Add Links window. Press the *OK* button to complete the addition of the channels in the *Channels In the Linkset* list to the linkset.

8.2.4 Deleting a Link from a Linkset

To delete a link from a linkset, select the linkset in the list on the left-hand side of the *Linksets* tab (see Figure 8-3). The links assigned to the linkset will be displayed in the *Links* section (lower-right corner) of the tab. Select the link to delete and press the *Delete* button in the *Links* section. The link has now been deleted.

8.3 Combined Linksets

A combined linkset is the logical grouping of two linksets into a single entity that can be used to transmit messages to given destinations. Typically a combined linkset is created when two linksets exist where each linkset is connected to one STP in a “mated” STP pair. A mated STP pair provides redundant message routing to other SS7 point codes. Therefore, any link in a combined linkset can be used to transmit a message to these far-end point codes.

The *Combined Linksets* tab (Figure 8-10) allows for the configuration and display of the combined linksets on the APmax system.

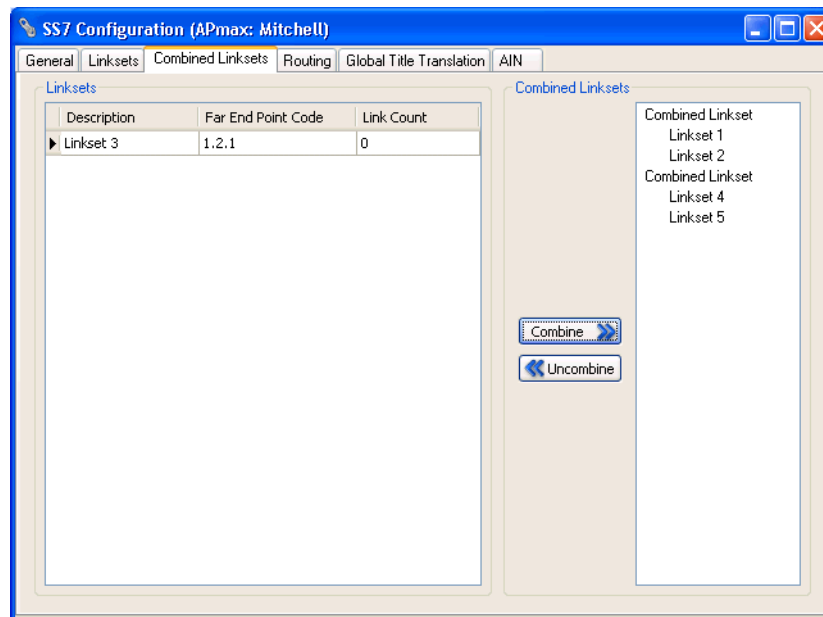


Figure 8-10 Combined Linksets Tab

The list on the left-hand side of the *Combined Linksets* tab displays all of the defined linksets currently not combined. The list on the right-hand side of the tab displays any existing combined linksets.

To create a combined linkset, select two linksets from the list on the left and press the *Combine* button. The selected linksets will be removed from the left-hand list and will be displayed as a combined linkset in the right-hand list.

To remove a combined linkset, select the combined linkset from the list on the right and press the *Uncombine* button. The linksets that were combined will be separated and moved to the list on the left-hand side of the tab, where they can be assigned to new combined linksets.

8.4 Linkset Route Management

If linksets are being used, assigning point codes to linksets or combined linksets is necessary for the APmax system to determine the SS7 link to use when transmitting SS7 messages. The *Routing* tab (see Figure 8-11) is used to assign point codes to linksets (collections of SS7 data links that may use the same point code).

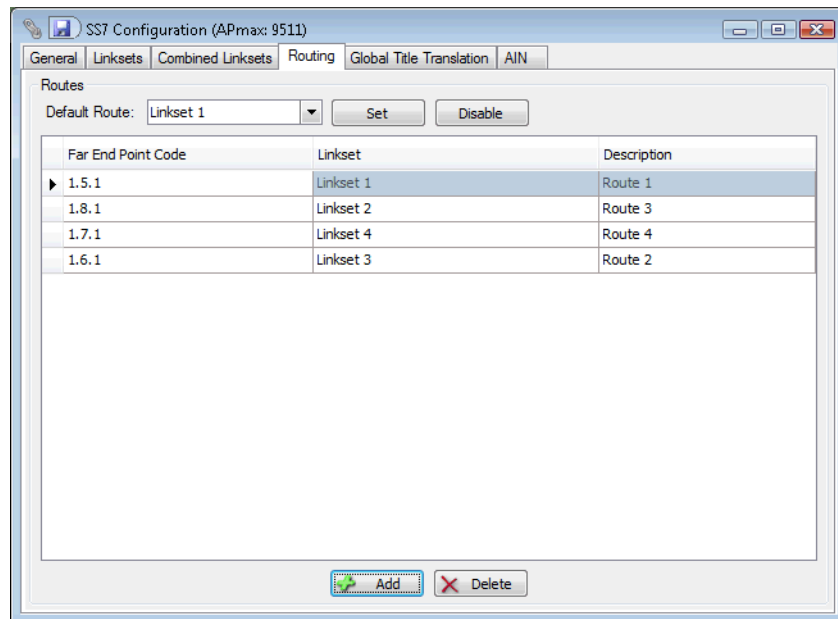


Figure 8-11 Routing Tab

The *Routes* list in the *Routing* tab displays a list of far-end point codes that have been defined and the linkset that will be used to reach each far-end point code. The APmax cannot send an SS7 message to a point code until that point code is added to this list and is assigned to a linkset. If the specified linkset is part of a combined linkset, then message routing to the point code can use either linkset in the combined linkset.

Routes can be added using the *Add* button (see Section 8.4.2) or removed by selecting the route in the *Routes* list and pressing the *Delete* button.

8.4.1 Default Routing

The default route is used when no specific route is found for a given point code. Using a default route allows multiple switches to use a linkset without requiring each switch's point code to be entered into the route table. A default route can be designated by using the *Default Route Linkset* selection box (see Figure 8-12) to choose the route and then pressing the *Set* button. Pressing the *Disable* button will unassign the default route.

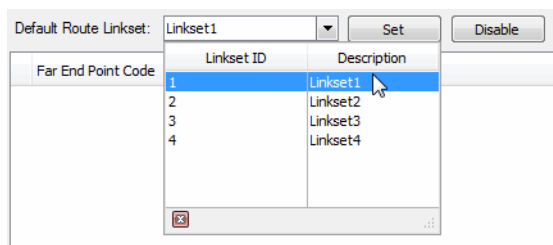


Figure 8-12 Selecting a Default Route

8.4.2 Adding a Route

To add a route to the SS7 configuration, press the *Add* button located below the *Routes* list in the *Routing* tab (Figure 8-11) of the SS7 Configuration window. An Add New Route window similar to Figure 8-13 will be displayed.

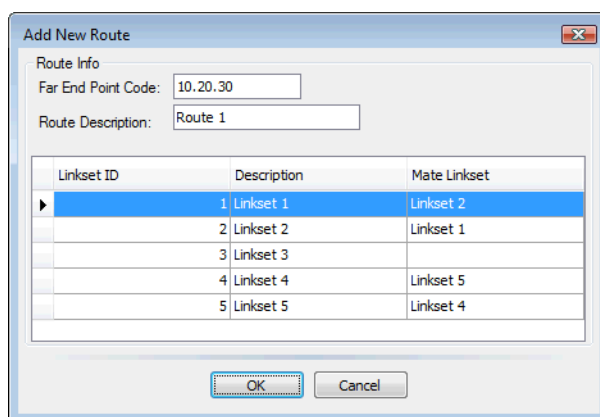


Figure 8-13 Add New Route Window

The Add New Route window contains the *Far End Point Code* field, the *Route Description* field, and a list of linksets that have been defined in the SS7 configuration. If a linkset in the list is part of a combined linkset, the *Mate Linkset* column in the list will display the description of the mate.

Enter the far-end point code and a description of the route, select which linkset the route is associated with from the list, and press the *OK* button to add the route to the SS7 configuration.

8.5 Global Title Translation

Global Title Translation (GTT) is an SS7 standard operation that uses telephone network-related information in an SS7 message in order to determine the destination address of that SS7 message. It allows SS7 message originators to send messages without knowing the final destination of the

SS7 message. SS7 messages are routed to network elements, such as the APmax, where the Global Title Address is translated to a destination SS7 point code. Once the translation is performed, the message is forwarded to that SS7 Signaling Point. This section describes how to provision the APmax so that it can properly translate received SS7 messages that require Global Title Translation.

The GTT user interface (see Figure 8-14) can be accessed by selecting the *Global Title Translation* tab in the SS7 Configuration window. Instructions for opening the SS7 Configuration window are given at the beginning of Chapter 8.

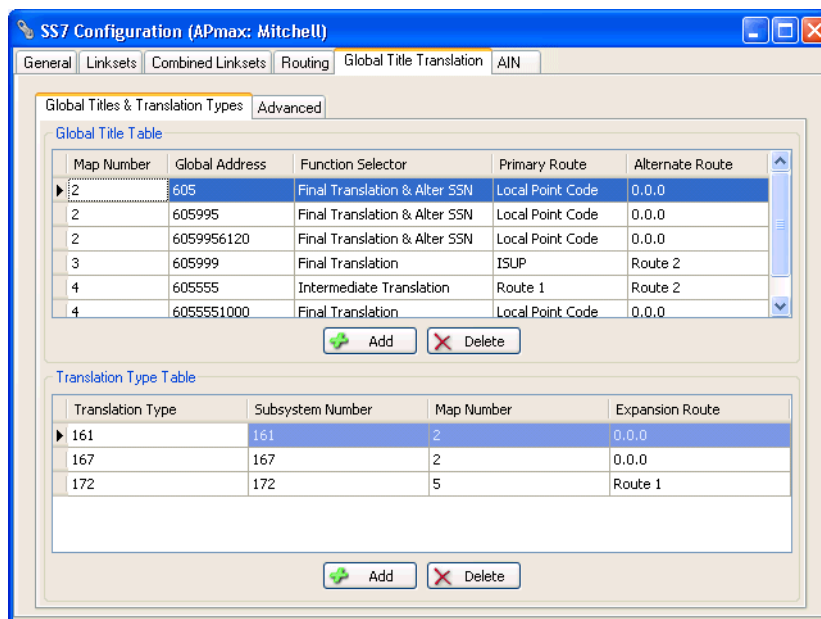


Figure 8-14 Global Titles & Translation Types

The *Global Title Translation* tab contains two sub-tabs, *Global Titles & Translation Types*, and *Advanced*. The *Global Titles & Translation Types* tab is used to manage GTTs (see Section 8.5.1) and translation types (see Section 8.5.2). The *Advanced* tab (see Section 8.5.3) is used to customize the number of digits allowed in global addresses defined for a map number. This customization must take place in the *Advanced* tab prior to defining GTTs that will use the map number.

8.5.1 Defining a GTT

Complete the following steps to define a GTT for the selected APmax system:

1. Press the *Add* button in the *Global Title Table* section. A new row with the default GTT values will be added to the table.

2. Click in each of the following cells in the new row and enter the appropriate data:

Map Number	<p>The Map Number is a number, from 0-19, that associates translations of the same nature under one map number. There may be multiple entries in this table that use the same map number. All Global Title Values that translate to a destination of some type (e.g., Service Switching Point (SSP), Service Control Point (SCP), etc.) may use the same map number. This map number is used in one or more Translation Type To Subsystem Number Translations table entries, so that those types of messages are translated to the same addresses.</p>
Global Address	<p>One through 10-digit Global Address number. This is the Global Title information in the SS7 message to convert to the SS7 address specified in the Primary Route. This value is typically an NPA, NPA-NXX, or 10-digit phone number.</p> <p>Typically, three different lengths (3, 6, or 10 digits) of Global Address entries may be made for each map number from within the <i>Global Title Table</i> section. For example, GT entries for map number 2 may contain the Global Addresses: 605, 605-995, 605-996, 605-995-6120. These entries would constitute the allowed 3 different lengths of Global Address, 3-digit, 6-digit, and 10-digit Global Addresses. A subsequent attempt to enter a Global Address that was not 3, 6, or 10 digits will result in an error message. However, up to four different lengths (from 0 to 10 digits) of Global Address entries may be made for a map number if the map number is entered in the <i>Advanced</i> tab (see Section 8.5.3) and set up with custom map key lengths prior to entering the map number in the <i>Global Title Table</i> section.</p>
Function Selector	<p>This field indicates what actions will be performed by this translation and in what state the SS7 message will be after translation. The default action is Final Translation. Other options are available through the drop-down menu:</p> <ul style="list-style-type: none"> • Final Translation – no further Global Title Translation will need to be performed on the SS7 message after this translation. • Final Translation & Alter SSN – no further Global Title Translation will need to be performed on the SS7 message after this translation. Set the called SSN in the message to the value specified in the Subsystem Number field from the Translation Type to Subsystem Number Translation table. • Intermediate Translation – the translation performed here does not result in the final destination address of the message. Perform the translation specified in these tables and mark the SS7 message as requiring additional global title translations at the point code specified in the Primary Route field.

Primary Route

The primary 9-digit SS7 physical network address. This is the SS7 address to use when the associated Global Address is found in the SS7 message's Global Title information.

The value of this field is set by clicking in the Primary Route cell and selecting a destination point code from the drop-down list, as illustrated in Figure 8-15. The destination point codes available in the drop-down list include the Local Point Code defined in the *General* tab (see Section 8.1) of the SS7 Configuration window, and the Far End Point Codes of the routes defined in the *Routing* tab (see Section 8.4) of the SS7 Configuration window.

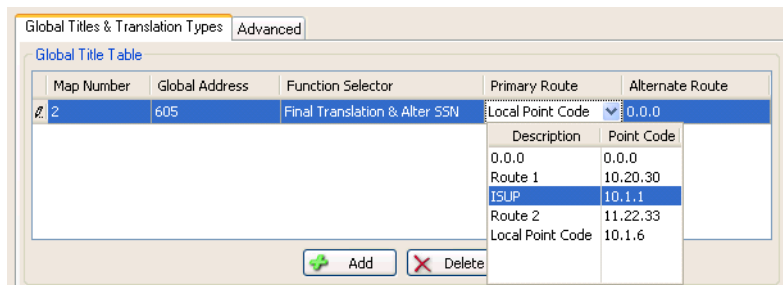


Figure 8-15 Selecting a Destination Point Code

Alternate Route

An optional, secondary 9-digit SS7 physical network address. If the Primary Route cannot be found, the APmax will try the Alternate Route. The value of this field is set by clicking in the Alternate Route cell and selecting a destination point code from the drop-down list, similar to the procedure described above for setting the Primary Route.

3. Click a location in the window other than the new row to save the new row.
4. To delete a GTT entry, select the row to remove and press the *Delete* button in the *Global Title Table* section.

8.5.2 Defining a Translation Type

Complete the following steps to define a Translation Type for the selected APmax system:

1. Press the *Add* button in the *Translation Type Table* section. A new row with the default Translation Type values will be added to the table.
2. Click in each of the following cells in the new row and enter the appropriate data:

Translation Type

The Translation Type value received in the SS7 message that requires Global Title Translation. The valid range is 1-254.

Subsystem Number The value to place in the called party subsystem number field if Alter SSN is one of the actions specified in the Function Selector field. The valid range is 0-254. Subsystem number 0 should not be used if the Function Selector is set to "Final Translation & Alter SSN". Also, subsystem number 1 is reserved and cannot be used in this field.

Map Number The Map Number is a number, from 0-19. The value in this field corresponds to map numbers in the *Global Title Table* section. This map number indicates how the Global Address should be translated for SS7 messages containing this Translation Type value.

The value of this field is set by clicking in the Map Number cell and selecting a map number from the drop-down list, as illustrated in Figure 8-16. The values available in the drop-down list are the map numbers that have been defined for GTT entries in the *Global Title Table* section.

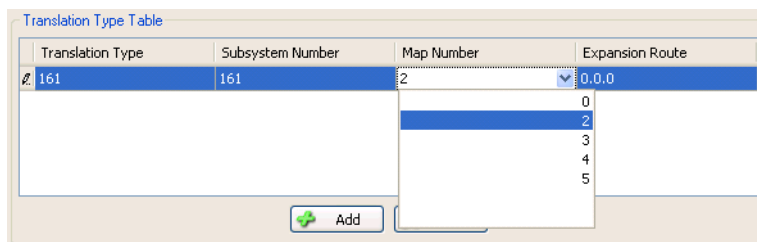


Figure 8-16 Selecting a Map Number

Expansion Route The expansion 9-digit SS7 physical network address. The SS7 message is forwarded to this SS7 address if no Global Address in the corresponding map entries in the *Global Title Table* section matches the Global Title information in the received SS7 message.

The value of this field is set by clicking in the Expansion Route cell and selecting a destination point code from the drop-down list, as illustrated in Figure 8-17. The destination point codes available in the drop-down list include the Far End Point Codes of the routes defined in the *Routing* tab (see Section 8.4) of the SS7 Configuration window.

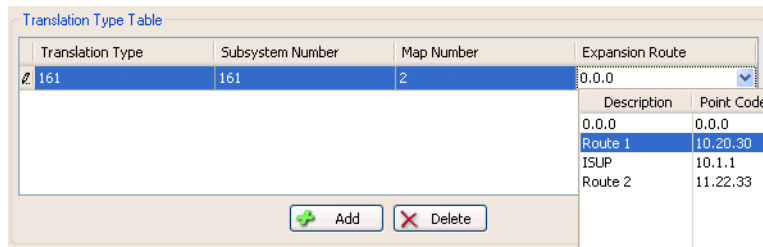


Figure 8-17 Selecting an Expansion Point Code

3. Click a location in the window other than the new row to save the new row.
4. To delete a Translation Type entry, select the row to remove and press the *Delete* button in the *Translation Type Table* section.

8.5.3 GTT Advanced Settings

The *Advanced* tab (see Figure 8-18) allows the editing of map keys, so that four global addresses of any length from 0 to 10 digits can be defined for a map number. For example, map number 2 could be configured to allow global addresses with 4, 5, 7, and 8-digit lengths. This editing of map keys is not allowed if there are any existing GTT entries that use the map number. If a GTT entry is made in the *Global Titles & Translation Types* tab, and its map number is not pre-defined in the *Advanced* tab, then an entry for that map number (with map key lengths of 3, 6, 10, and 0) will be automatically inserted into the *Advanced* tab.

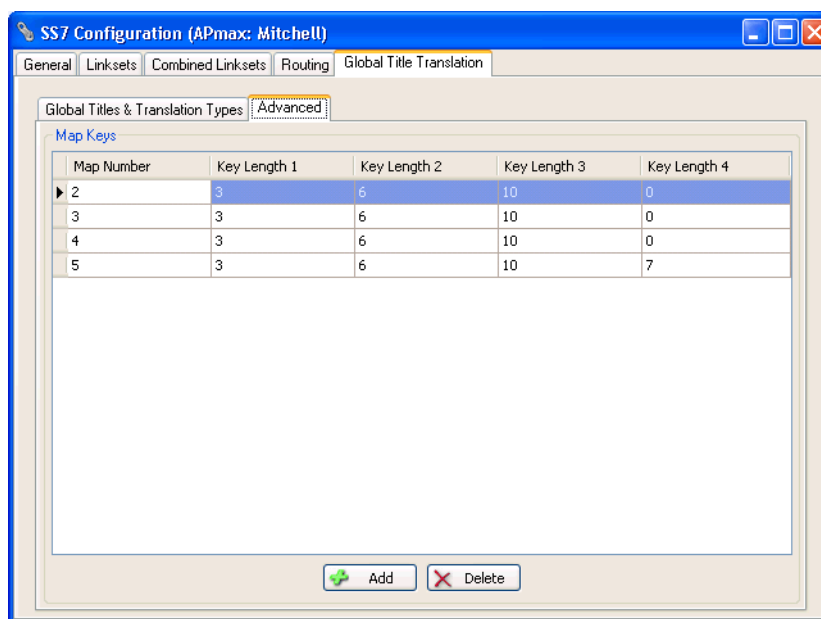


Figure 8-18 GTT Advanced Tab

To make a new entry in the *Advanced* tab, press the *Add* button. A new row with the default map key values will be added to the table. Click in each cell of the new row and enter the desired map number (from 0 to 19) and key lengths (from 0 to 10). Now GTT entries may be made in the *Global Titles & Translation Types* tab for the map number entered in the new row. The global addresses of those GTT entries may contain the number of digits found in any of the four key lengths specified for the entered map number.

To delete an entry, select the row and press the *Delete* button.

8.6 AIN Settings

The *AIN* tab in the SS7 Configuration window (see Figure 8-19) contains the interfaces used to configure AIN (Advanced Intelligent Network)-related settings on the selected APmax system.

The settings in the *AIN* tab are partitioned into three tabs that are described in the following sections:

- Section 8.6.1 - "Seven-To-Ten Mapping"
- Section 8.6.2 - "Destination Addresses"
- Section 8.6.3 - "Toll Call Management"

8.6.1 Seven-To-Ten Mapping

The *Seven To Ten Mapping* tab (Figure 8-19) is used to define combinations of NXXs, point codes, and NPAs that will be used by the APmax to expand 7-digit numbers received from a switch into 10-digit numbers that can be used in responses.

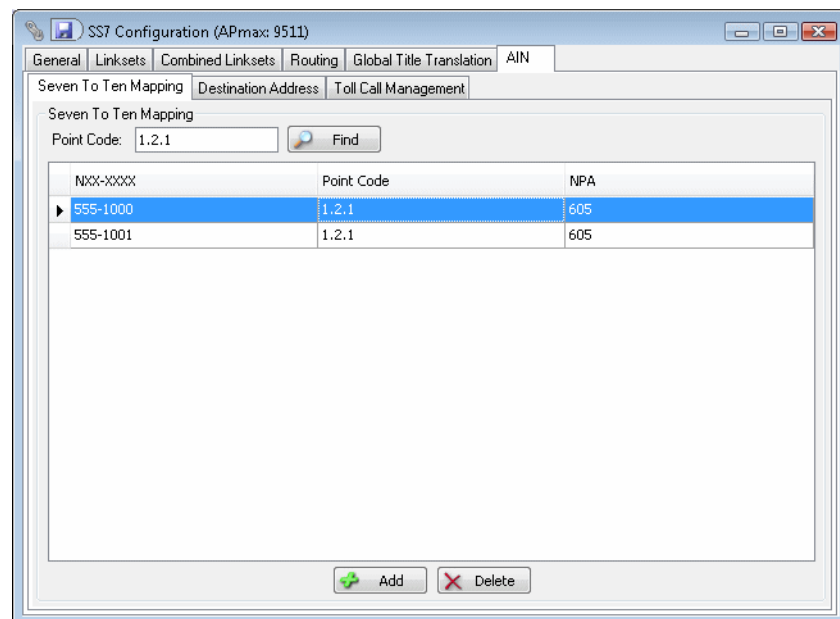


Figure 8-19 Seven To Ten Mapping Tab

Existing combinations are retrieved from the APmax by entering the point code of the combination into the *Point Code* field and then pressing the *Find* button.

To add a new AIN seven-to-ten mapping entry, press the *Add* button in the *Seven To Ten Mapping* section. An Add Seven To Ten window (see Figure 8-20) will be displayed.

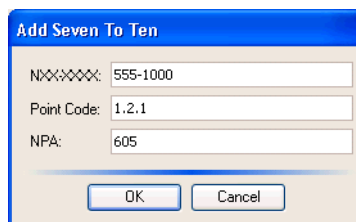


Figure 8-20 Add Seven To Ten Window

Populate the following fields in the Add Seven To Ten window and press the *OK* button to save the new entry.

NXX-XXXX	Enter a string of numbers 1 to 7 digits in length that will be used in conjunction with the incoming point code to match incoming numbers with an NPA. If this value is set to all zeros then the APmax will only use the point code to find an NPA for the incoming number.
Point Code	Enter the point code of the switch that will be sending the trigger to the APmax.
NPA	Enter the 3-digit NPA that will be used to expand incoming 7-digit numbers that match the entered NXX-XXXX and point code.

8.6.2 Destination Addresses

The *Destination Address* tab (Figure 8-21) is used to manage the AIN destination addresses on the selected APmax system. A destination address is the 10-digit Directory Number (DN) of the Intelligent Peripheral (IP) that is to be used when doing AIN play and collect operations. The IP plays voice prompts and collects digits for menus in AIN applications and services.

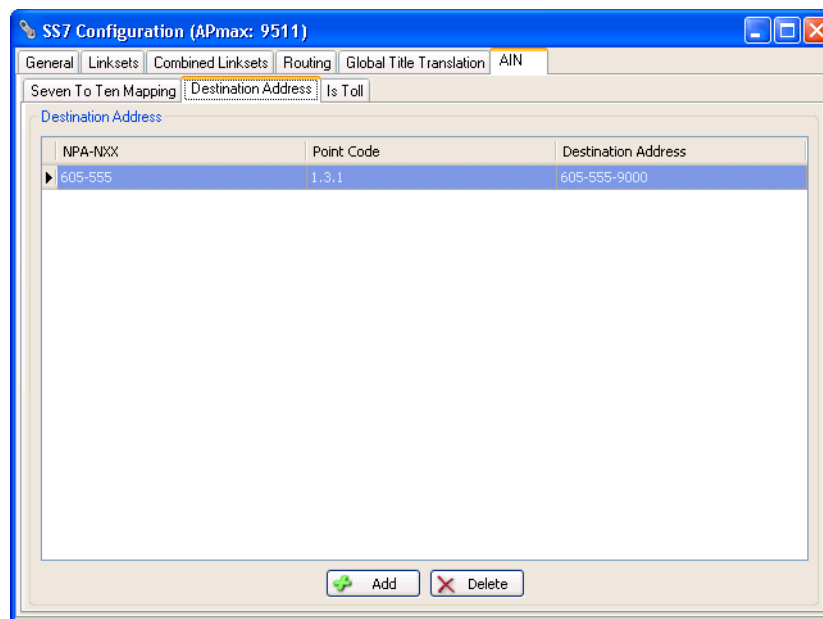


Figure 8-21 Destination Address Tab

To create a new destination address entry, press the *Add* button in the *Destination Address* section. An Add Destination Address window (see Figure 8-22) will be displayed.

Add Destination Address

NPA-NXX: 605-555

Point Code: 1.3.1

Destination Address: 605-555-9000

OK Cancel

Figure 8-22 Add Destination Address Window

Populate the following fields in the Add Destination Address window and press the *OK* button to save the new entry.

NPA-NXX	Enter the incoming 6-digit NPA-NXX that will be used for this new address.
Point Code	Enter the incoming point code.
Destination Address	Enter the 10-digit destination address.

8.6.3 Toll Call Management

The *Toll Call Management* tab (Figure 8-23) is used to define a set of “local” (toll-free) called numbers and assign those numbers to call originators. Any number called from an originator that is not on their list of “local” numbers will be treated as a toll call.

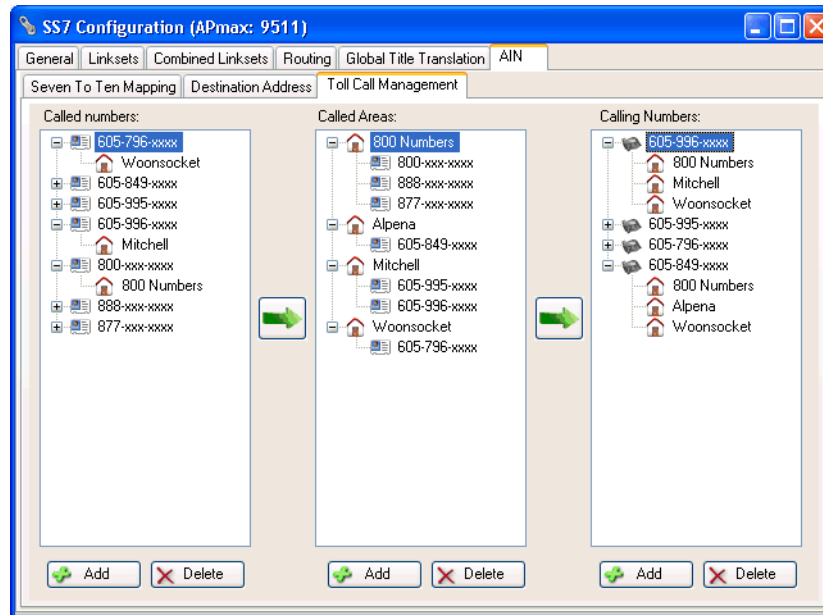


Figure 8-23 Toll Call Management Tab

The *Toll Call Management* tab is partitioned into three sections: *Called Numbers* (see Section 8.6.3.1), *Called Areas* (see Section 8.6.3.2), and *Calling Numbers* (see Section 8.6.3.3).

8.6.3.1 Called Numbers

The *Called Numbers* list contains any number that one or more originators in a service area may dial without incurring a charge. The numbers in the list may be NPAs, NPA-NXXs, or 10-digit directory numbers (DN). Called Numbers are assigned to Called Areas. Each Called Number may be assigned to only one Called Area.

Adding Called Numbers

New Called Numbers can be added by: clicking the *Add* button below the *Called Numbers* list, or by clicking the right-hand mouse button within the list and selecting the *Add New Number* command in the popup menu, as illustrated in Figure 8-24.

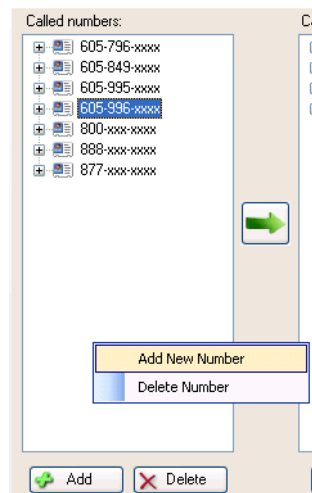


Figure 8-24 Add New Called Number

When one of the *Add* commands is selected, a new entry is added to the list and a prompt to enter the new Called Number is displayed. Enter the new Called Number directly into the prompt (see Figure 8-25 below). Valid Called Numbers must be in one of the following forms: 3-digit NPA, 6-digit NPA-NXX, or 10-digit directory number.

After the number has been entered, press the <Enter> key to accept the number. This action will terminate the edit mode for the current number, and the number will then be formatted and displayed. In addition, a new entry will be shown with the "New Called Number" prompt. If you have additional numbers to enter, simply type the next number at this prompt and press <Enter> to accept the number. When you have finished entering new numbers, simply press the <Enter> key without entering any numbers at the "New Called Number" prompt. This behavior facilitates rapid data entry when multiple numbers need to be entered.

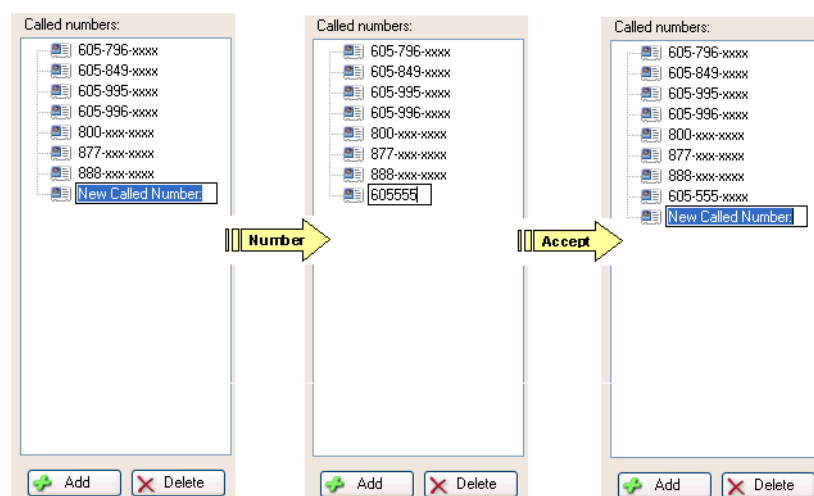


Figure 8-25 Entering a New Called Number


Assigning Called Numbers to Called Areas

Each Called Number should eventually be assigned to one, and only one, Called Area. To assign one or more Called Numbers to a Called Area, use one of the following methods:

1. Drag-and-Drop:

- a. Select one or more numbers in the *Called Numbers* list. The selection is accomplished via the normal Windows list selection mechanisms. That is, a single number is selected by clicking on that number in the list. Multiple, contiguous numbers are selected by holding the <Shift> key down while clicking on the last number in the range to be selected. Multiple, non-contiguous numbers are selected by holding the <Ctrl> key down while selecting multiple desired numbers.
- b. Click and hold down the left-hand mouse button on one of the selected numbers. While holding down the left-hand mouse button, drag the selection to one of the area names in the *Called Areas* list.
- c. When the desired Called Area name is highlighted, release the left-hand mouse button to drop the Called Number(s) into the Called Area.

2. "Add to Area" button:

- a. Select one or more numbers in the *Called Numbers* list using the same actions explained in the first step of the Drag-and-Drop instructions above.
- b. Select one area name in the *Called Areas* list by clicking on the name with the left-hand mouse button.
- c. Press the "Add to Area" button  between the *Called Numbers* and *Called Areas* list.

When the assignment is performed, the selected Called Numbers will be displayed below the target Called Area illustrating that these numbers are members of this area. In addition, the target Called Area name will be displayed under the selected numbers in the *Called Numbers* list, indicating that this number has been assigned to an area and showing the area to which it has been assigned (see Figure 8-26).

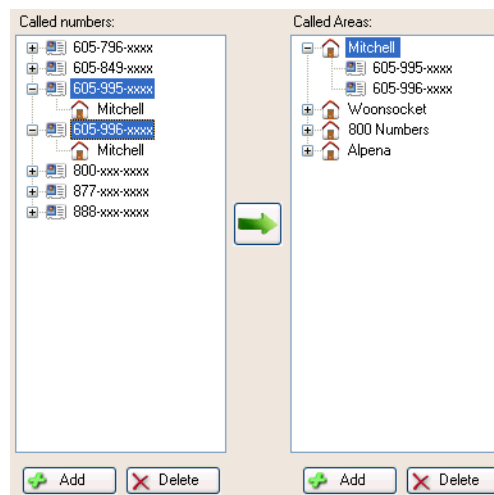


Figure 8-26 Called Number Assignments

Deleting Called Numbers

Called Numbers can be deleted from the *Called Numbers* list by selecting one or more numbers in the list and then performing one of the following actions: pressing the <Delete> key, clicking the *Delete* button below the *Called Numbers* list, or selecting the *Delete Number* command from a popup menu invoked by clicking the right-hand mouse button on one of the selected numbers.

A delete confirmation window is displayed before the delete action is actually performed. The user can choose to abort the delete action or continue with the delete action.

The deleted number(s) will be removed from the *Called Numbers* list. Also, if the numbers are assigned to Called Areas, they will be deleted from their respective areas in the *Called Areas* list.

Deleting Called Number Area Assignment

You may delete a Called Number from a Called Area by either selecting and deleting the number from the area in the *Called Area* list, or by selecting and deleting the area name under the desired number in the *Called Numbers* list. The delete mechanisms are the same three choices: press the <Delete> key, click the *Delete* button associated with the list, or select the *Delete Number* command from a popup menu.

A delete confirmation window is displayed before the delete action is actually performed. The user can choose to abort the delete action or continue with the delete action.

The *Called Numbers* and *Called Areas* lists will be updated appropriately.

8.6.3.2 Called Areas

Called Areas are logical collections of Called Numbers. For instance, one area may contain the "800" series of NPAs, and other areas may represent cities/ towns or other extended service areas. Each area is identified with a name chosen by the telephone company administrator. Each Called Area is assigned to one or more Calling Numbers. There may be as many, or as few, areas as necessary to assign the correct Called Numbers to the list of Calling Numbers.

Adding Called Areas

Adding Called Areas is similar to adding new Called Numbers (see Section 8.6.3.1): select the *Add* button below the *Called Areas* list, or click the right-hand mouse button in the *Called Areas* list area and select the *Add New Area* command from the popup menu. The same edit mode behavior as Called Numbers is also exhibited, where an editable prompt is displayed until you have completed entering the desired areas.

At the prompt, enter the name of the Called Area. Called Area names typically describe the type of Called Numbers that they will contain, e.g. the name of the city or town.

Assigning Called Areas to Calling Numbers

Each Called Area can be assigned to one or more Calling Numbers. This assignment defines, for each calling number, the called numbers that are considered toll-free. To assign one or more Called Areas to a Calling Number, use one of the following methods:

1. Drag-and-Drop:

- a. Select one or more numbers in the *Called Areas* list. The selection is accomplished via the normal Windows list selection mechanisms. That is, a single area is selected by clicking on the area name in the list. Multiple, contiguous areas are selected by holding the <Shift> key down while clicking on the last area name in the range to be selected. Multiple, non-contiguous areas are selected by holding the <Ctrl> key down while selecting multiple desired areas.
- b. Click and hold down the left-hand mouse button on one of the selected area names. While holding down the left-hand mouse button, drag the selection to one of the numbers in the *Calling Numbers* list.
- c. When the desired Calling Number is highlighted, release the left-hand mouse button to drop the Called Area(s) into the Calling Number.

2. "Add to Calling Numbers" button:

- a. Select one or more area names in the *Called Areas* list using the same actions explained in step 1 in the Drag-and-Drop section above.
- b. Select one or more areas in the *Calling Numbers* list using the same selection actions as explained in step 1 in the Drag-and-Drop section above.

- c. Press the "Add to Calling Numbers" button  between the *Called Areas* and *Calling Numbers* list.

Note that the advantage of using the "Add To Calling Numbers" button is that multiple Calling Numbers targets can be selected and populated at one time.

When the assignment is performed, the selected Called Areas will be displayed below the target Calling Number(s) illustrating that these areas can be called toll-free from the calling number.

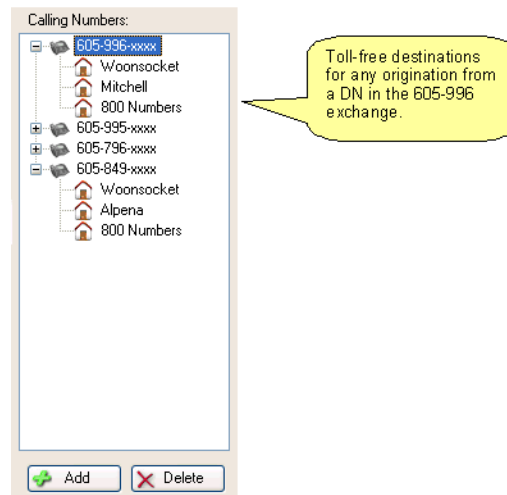


Figure 8-27 Area Assignments for Calling Numbers

Deleting Called Areas

Areas can be deleted from the *Called Areas* list by selecting one or more area names and performing the normal delete actions: press the <Delete> key, click the *Delete* button, or select the *Delete Area* command from the popup menu.

Again, the user must confirm the delete request before the delete is performed. The area(s) will be removed from the *Called Areas* list. Also, any reference to the area(s) in the *Called Numbers* and *Calling Numbers* lists will be removed.

8.6.3.3 Calling Numbers

The *Calling Numbers* list contains call originators or originator groups that are within a telephone company's service area. The numbers in this list may be defined as NPAs, NPA-NXXs, or complete 10-digit directory numbers. This list should include, either as a specified 10-digit DN entry or as a member of a NPA or NPA-NXX group, each originating DN that can be provided enhanced services on the APmax. The definition of these entries depends on how the telephone company defines local (toll-free) calling for its customers. If local calls are defined based on originating area, then this list will include originating areas (e.g. NPA-NXXs). If local calls can be individually selected per customer, then the list will include each originating DN.

Adding Calling Numbers

Adding Calling Numbers is similar to adding new Called Numbers (see Section 8.6.3.1): select the *Add* button below the *Calling Numbers* list, or click the right-hand mouse button in the *Calling Numbers* list area and select the *Add New Number* command from the popup menu. The same edit mode behavior as Called Numbers is also exhibited, where an editable prompt is displayed until you have completed entering the desired groups.

Valid Calling Numbers must be in one of the following forms: 3-digit NPA, 6-digit NPA-NXX, or 10-digit directory number.

Deleting Calling Numbers Areas

Called Areas can be deleted from selected Calling Numbers. This is done when a Calling Number can no longer call numbers in that area as toll-free. To delete Calling Number Areas, select one or more area names in the *Calling Numbers* list and delete them using one of the delete mechanisms (e.g. <Delete> key, *Delete* button, *Delete Number* popup menu command).

The user must confirm the delete request before the delete is performed. The *Calling Numbers* list will be updated after the delete is confirmed.


Deleting Calling Numbers

To delete Calling Numbers from the *Calling Numbers* list, select one or more numbers in the list and delete them using one of the delete mechanisms (e.g. <Delete> key, *Delete* button, *Delete Number* popup menu command).

The user must confirm the delete request before the delete is performed. The *Calling Numbers* list will be updated after the delete is confirmed.

8.7 Service Configuration

The Service Configuration interface is used to manage service settings (e.g. subsystem numbers, access numbers) of APmax applications that do not have an independent configuration interface.

To access the Service Configuration interface, right-click on the system's icon  in the Command Center window to invoke a popup menu, and select the *System Configuration / Service Configuration* command (as illustrated in Figure 8-28). The name of the system for which you are configuring service settings will be displayed at the top of the Service Configuration window (Figure 8-29).

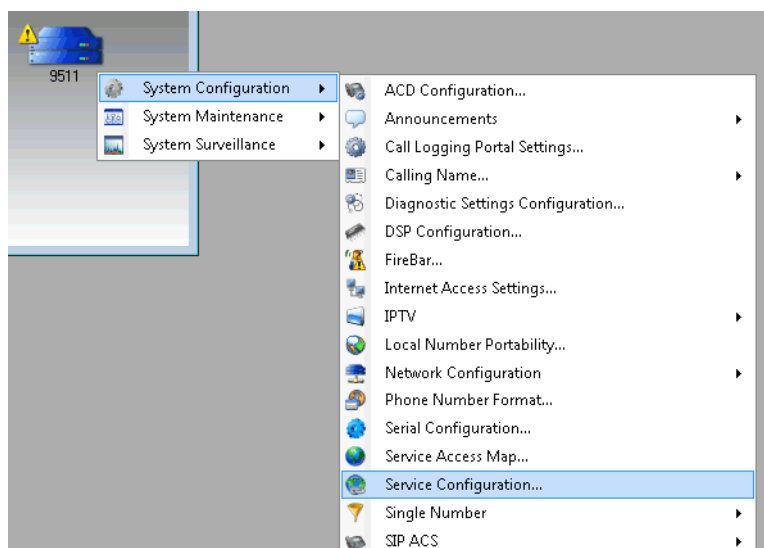


Figure 8-28 Service Configuration Menu Command

The Service Configuration window (Figure 8-33) is partitioned into tabs (e.g. *Default Trigger*, *Screen List Edit*) that represent the APmax applications supported by this interface. The *Add* and *Delete* buttons at the bottom of each tab will be disabled if the associated application is not installed on this APmax system. The following sections describe each tab available in the Service Configuration interface.

- Section 8.7.1 - "Default Trigger"
- Section 8.7.2 - "Screen List Edit"
- Section 8.7.3 - "Basic Conferencing"
- Section 8.7.4 - "Remote IP"

8.7.1 Default Trigger

The *Default Trigger* tab (Figure 8-29) is used to manage the subsystem number (SSN) used by the DefaultTriggerHandler package, which handles triggers not assigned to services.

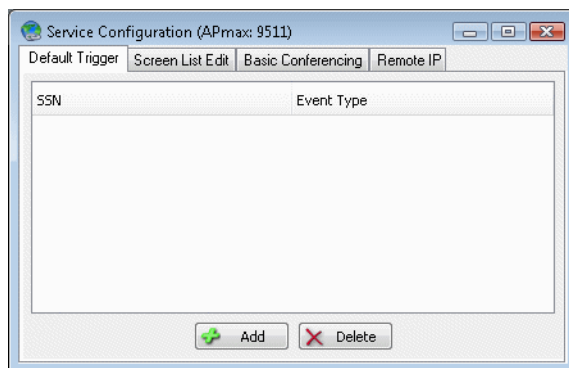


Figure 8-29 Default Trigger Tab

To configure the SSN, select the *Default Trigger* tab and press the *Add* button. An *Add SSN* window (see Figure 8-30) will be displayed. Enter an *SSN* value from 0 to 254, select an *Event Type* (e.g. Tcap Query, Trigger), and press the *OK* button to complete the addition.

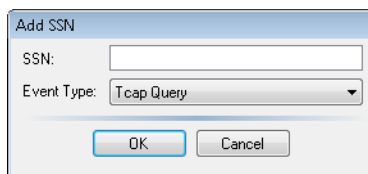


Figure 8-30 Add Default Trigger SSN

To remove the SSN from the *Default Trigger* tab, select the SSN and press the *Delete* button at the bottom of the tab.

8.7.2 Screen List Edit

The *Screen List Edit* tab (Figure 8-31) is used to manage the subsystem number (SSN) used by Screen List Editing (SLE) services.

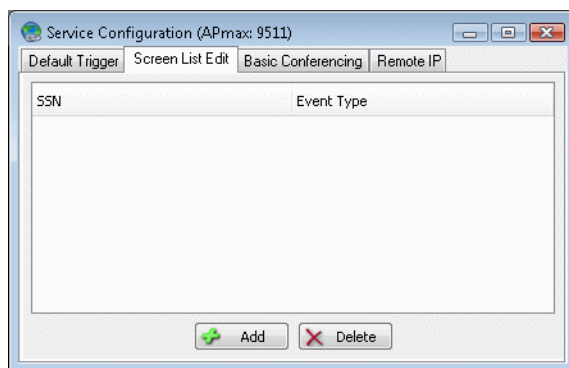


Figure 8-31 Screen List Edit Tab

To configure the SSN, select the *Screen List Edit* tab and press the *Add* button. An Add SSN window (see Figure 8-32) will be displayed. Enter an SSN value from 0 to 254, select an *Event Type* (e.g. Tcap Response), and press the *OK* button.

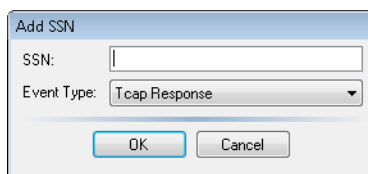


Figure 8-32 Add Screen List Edit SSN

To remove the SSN from the *Screen List Edit* tab, select the SSN and press the *Delete* button at the bottom of the tab.

8.7.3 Basic Conferencing

The *Basic Conferencing* tab (Figure 8-33) is used to manage the 7 or 10-digit designated access number that is dialed by Basic Conferencing Service users. See the Basic Conferencing Service Description for more information about this service.

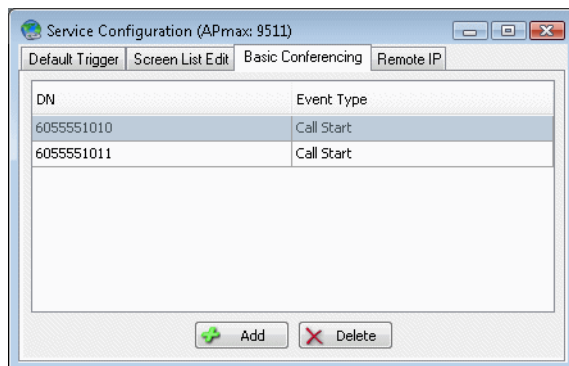


Figure 8-33 Basic Conferencing Tab

To configure the access number for this service, press the *Add* button at the bottom of the *Basic Conferencing* tab. An Add DN window (see Figure 8-34) will be displayed. Enter a 7 or 10-digit directory number, select an *Event Type* (e.g. Call Start), and press the *OK* button.

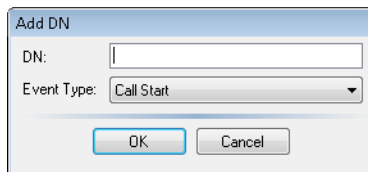


Figure 8-34 Add DN

To remove the Basic Conferencing Service access number, select the DN and press the *Delete* button at the bottom of the tab.

8.7.4 Remote IP

The *Remote IP* tab (Figure 8-35) is used to assign a trunk group to the Remote IP Service. See the Remote IP Service Description for more information about this service.

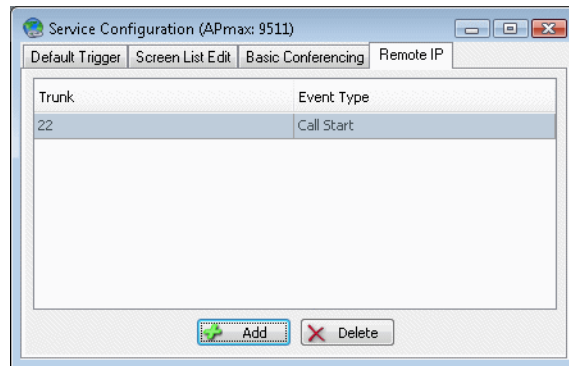


Figure 8-35 Remote IP Tab

To assign a trunk group, select the *Remote IP* tab and press the *Add* button. An Add Trunk window (see Figure 8-36) will be displayed. Enter a trunk group number, select an *Event Type* (e.g. Call Start), and press the *OK* button.

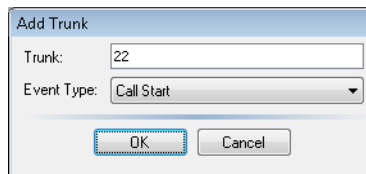


Figure 8-36 Add Trunk


To remove a Remote IP Service trunk group, select the trunk group and press the *Delete* button at the bottom of the tab.

Chapter 9 - Trunk Configuration

This chapter describes how to configure trunks connected to the APmax system. The trunk facilities, provided through the T1 circuits, are used by the APmax to provide voice services (e.g., announcements) or for routing calls in certain services.

Trunk groups are logical entities that provide an interface for telephone calls to be originated from or terminated to the APmax system. Each trunk group is associated with a specific protocol that indicates the mechanism that is used to signal the control of calls on the trunk group. Some of these protocols control circuit-switched calls (e.g., MF and ISUP protocols) and some protocols control packet-based/VoIP calls (e.g., SIP). Circuit-switched trunk groups also require associated physical hardware devices to carry the call audio. In these cases, the trunk group logically groups the hardware devices into members of the trunk group. In the APmax system, the hardware devices used to carry circuit-switched audio are T1 channels.

To access the Trunk Configuration interface in the APmax UI, right-click on the system's icon

 in the Command Center window to invoke a popup menu, and select the *System Configuration / Trunks / Trunk Configuration* command (as illustrated in Figure 9-1). The name of the system for which you are configuring ports will be displayed at the top of the Trunk Configuration window (Figure 9-2).

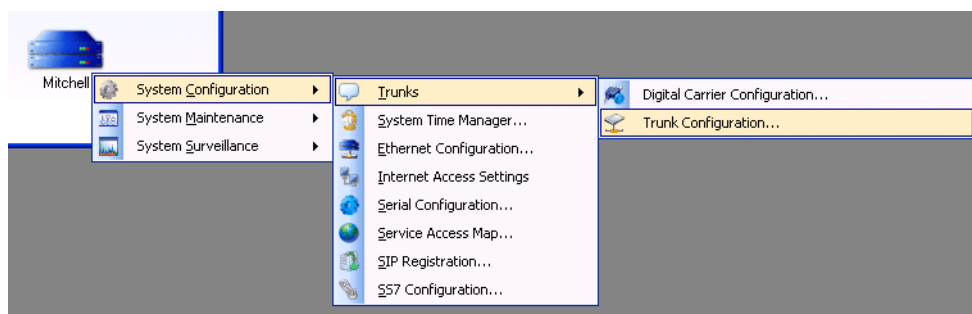


Figure 9-1 Trunk Configuration Menu Command

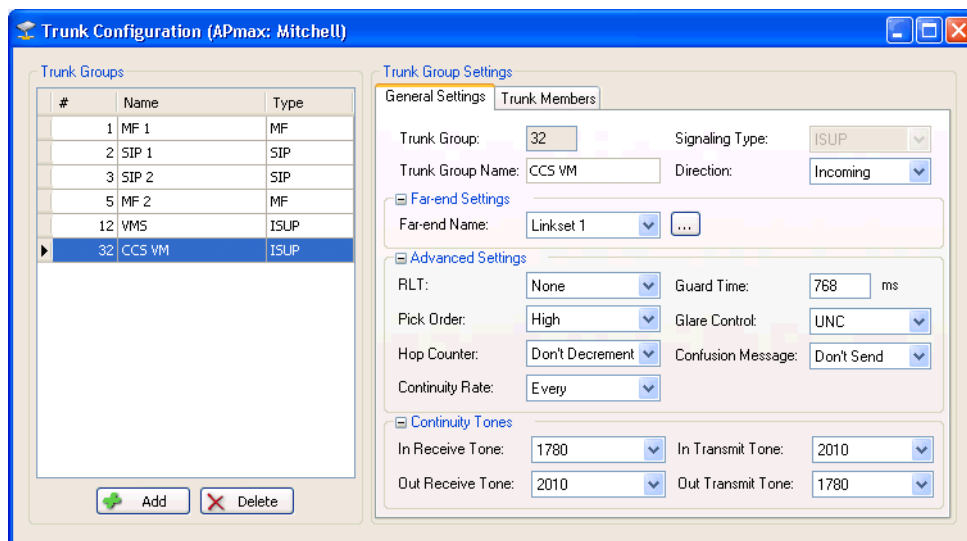


Figure 9-2 Trunk Configuration Window

The Trunk Configuration window is partitioned into two sections: *Trunk Groups* and *Trunk Group Settings*. The *Trunk Groups* section is on the left-hand side of the window and contains a list of the currently defined trunk groups, along with buttons for adding and deleting trunk groups. The *Trunk Group Settings* section (see Section 9.1) is on the right-hand side of the window and is used to manage the settings and trunk members of the trunk group currently selected in the *Trunk Groups* section.

The following sections provide instructions for creating and configuring trunk groups based on the following signaling types: MF, ISUP, SIP, MGCP, Generic, and PRI.

- Section 9.2 - "MF Trunk Groups"
- Section 9.3 - "ISUP Trunk Groups"
- Section 9.4 - "SIP Trunk Groups"
- Section 9.5 - "MGCP Trunk Groups"
- Section 9.6 - "Generic Trunk Groups"
- Section 9.7 - "PRI Trunk Groups"

To delete a trunk group of any signaling type, select the trunk group in the list on the left-hand side of the Trunk Configuration window and press the *Delete* button located below the section. A delete confirmation prompt (see Figure 9-3) will be displayed. Press the *Yes* button in the prompt to complete the trunk group deletion or press the *No* button to cancel the deletion.

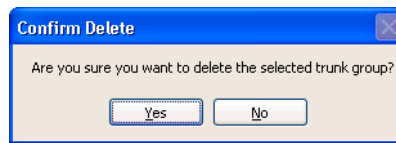


Figure 9-3 Delete Confirmation Prompt

9.1 Trunk Group General Settings

The *General Settings* tab is located in the *Trunk Group Settings* section of the Trunk Configuration window (see Figure 9-2) and shows all of the settings for the particular type of trunk group that is currently selected in the *Trunk Groups* section of the window. Most of these settings are different depending on the signaling type of the trunk group, however, there are four properties common to all signaling types. These properties are shown in Figure 9-4 and are described below.

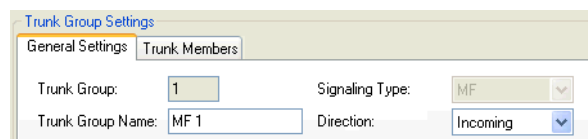


Figure 9-4 General Settings Tab

Trunk Group	The logical trunk group number whose settings are being displayed and modified. This setting can only be changed when a trunk group is being created.
Signaling Type	The signaling type of the trunk group: MF, ISUP, SIP, Generic, MGCP, or PRI. This setting can only be changed when a trunk group is being created.
Trunk Group Name	An optional descriptive name for the trunk group. Administrators can use this name to help identify the use and/or destination of this trunk group.
Direction	<p>This field indicates the direction of call setup for this trunk group: Incoming, Outgoing, or 2-way.</p> <p>Incoming trunk groups accept call origination from the switch at the far end of the trunks. Outgoing trunks can originate calls to the switch at the far end of the trunk. Trunk groups set to 2-way may accept and originate calls with the switch at the far end of the trunk.</p>

See the following sections to configure additional settings and trunk members for specific trunk group signaling types.

- Section 9.2 - "MF Trunk Groups"
- Section 9.3 - "ISUP Trunk Groups"
- Section 9.4 - "SIP Trunk Groups"
- Section 9.5 - "MGCP Trunk Groups"
- Section 9.6 - "Generic Trunk Groups"
- Section 9.7 - "PRI Trunk Groups"

9.2 MF Trunk Groups

9.2.1 Adding an MF Trunk Group

To add an MF trunk group, follow these steps:

1. Press the *Add* button in the lower left-hand corner of the Trunk Configuration window (Figure 9-2). An Enter Trunk Group Info window similar to Figure 9-5 will be displayed.

A screenshot of a Windows-style dialog box titled "Enter Trunk Group Info". It contains four labeled fields: "Trunk Group #:" with a text box containing "1", "Signaling Type:" with a dropdown menu showing "MF", "Trunk Group Name:" with a text box containing "MF 1", and "Direction:" with a dropdown menu showing "Incoming". At the bottom are "OK" and "Cancel" buttons.

Figure 9-5 Enter MF Trunk Group Info


The four trunk group properties displayed in the Enter Trunk Group Info window are described in Section 9.1.

2. Enter the new trunk group number in the *Trunk Group #* field. The trunk group number must be unique and if it is not an error will be shown.
3. Select MF in the *Signaling Type* drop-down menu.
4. Enter the *Trunk Group Name*. This field is optional.
5. Select the direction of call setup for this trunk group.
6. Press the *OK* button to add the new MF trunk group to the list of trunk groups on the left-hand side of the Trunk Configuration window.

7. Configure additional settings (see Section 9.2.2) and trunk members (see Section 9.2.3) for the new MF trunk group.

9.2.2 MF Trunk Group Settings

This section contains information on configuring settings specific to MF trunk groups. These settings are displayed in the *General Settings* tab of the Trunk Configuration window when an MF trunk group is selected in the list on the left-hand side of the window.

The four settings at the top of the *General Settings* tab are common to all types of trunk groups, and are described in Section 9.1. At this time there is one setting specific to MF trunk groups: *Start Type*. If this setting is not visible in the *General Settings* tab, click the  tree symbol next to the *Signalling Settings* legend in the *General Settings* tab. The *Start Type* setting will be displayed, as illustrated in Figure 9-6.

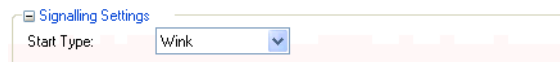


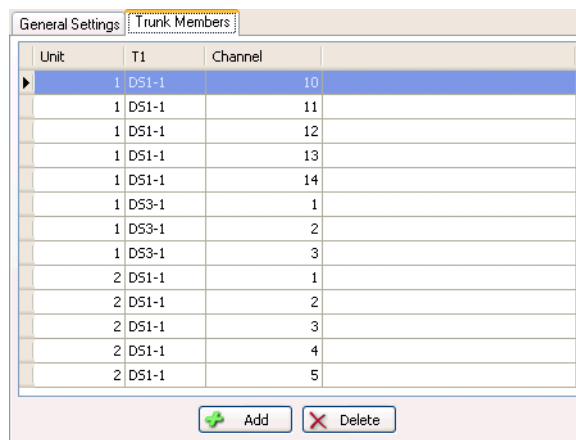
Figure 9-6 MF Trunk Group General Settings

Use the *Start Type* pull-down menu to select the appropriate start-of-dialing signal used between the APmax and the far-end switch. This field may be set to one of the following values:

Wink	The APmax will return a wink back to the switch when an off-hook is received. Digit collection will not begin until the wink has been returned.
Immediate	The APmax will not return a wink and will begin digit collection immediately after an off-hook is received.

9.2.3 MF Trunk Members

This section contains information on adding and removing trunk members (trunks) for MF trunk groups. Trunk members are viewed, added, and deleted from within the *Trunk Members* tab of the Trunk Configuration window. When an MF trunk group is selected in the list on the left-hand side of the window, all of the currently defined trunk members under the selected group will be shown in this tab (see Figure 9-7).



Unit	T1	Channel
1	D51-1	10
1	D51-1	11
1	D51-1	12
1	D51-1	13
1	D51-1	14
1	D53-1	1
1	D53-1	2
1	D53-1	3
2	D51-1	1
2	D51-1	2
2	D51-1	3
2	D51-1	4
2	D51-1	5

Figure 9-7 MF Trunk Members

The list in the *Trunk Members* tab shows the APmax Unit, T1, and channel of each trunk.

To delete trunk members from a trunk group, select the trunks you wish to remove in the list and press the *Delete* button at the bottom of the *Trunk Members* tab. A delete confirmation prompt will be displayed (see Figure 9-8). Press the *Yes* button in the prompt to complete the deletion.

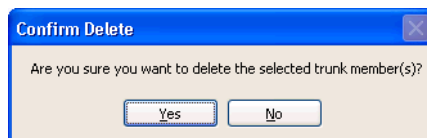


Figure 9-8 Delete Confirmation Prompt

New trunk members can be added to the selected trunk group by pressing the *Add* button at the bottom of the *Trunk Members* tab. A window similar to Figure 9-9 will be displayed.

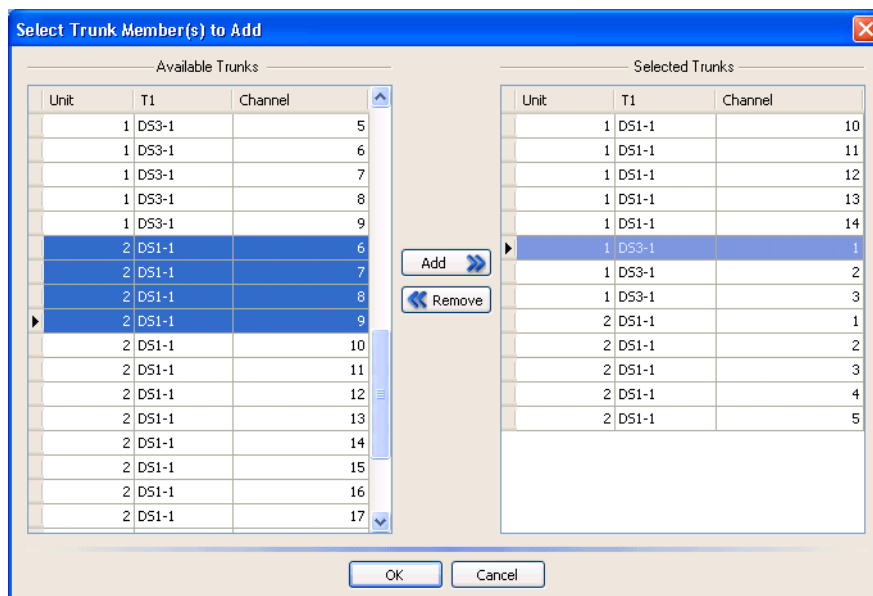


Figure 9-9 Add MF Trunk Members

The Select Trunk Member(s) to Add window contains two lists: *Available Trunks* and *Selected Trunks*.

The *Available Trunks* list on the left side shows the T1 channels that are contained in DS1/DS3s that have been enabled within the Digital Carrier Configuration interface (see Chapter 7 - "Digital Carrier Configuration"), but have not been assigned to other trunk groups or services (e.g., used as an SS7 link). The *Selected Trunks* list shows the T1 channels that will be assigned to the selected trunk group when the *OK* button is pressed.

Trunk members can be moved from the *Available Trunks* list to the *Selected Trunks* list by first selecting one or more available trunks and then press the *Add >>* button between the lists. Trunk members can be removed from the *Selected Trunks* list by selecting one or more trunks from the right-hand list and then pressing the *<< Remove* button. The removed trunk members will be placed at the bottom of the *Available Trunks* list.

After the desired trunk members have been moved to the *Selected Trunks* list, press the *OK* button to insert those trunk members into the *Trunk Members* tab (see Figure 9-7). Pressing the *Cancel* button will close the Select Trunk Member(s) to Add window without adding any trunk members to the trunk group.

9.3 ISUP Trunk Groups

9.3.1 Adding an ISUP Trunk Group

To add an ISUP trunk group, follow these steps:


1. Press the *Add* button in the lower left-hand corner of the Trunk Configuration window (Figure 9-2). An Enter Trunk Group Info window similar to Figure 9-10 (the *Far-end Name* field is not initially shown) will be displayed.



Figure 9-10 Enter ISUP Trunk Group Info

The first four trunk group properties displayed in the Enter Trunk Group Info window are described in Section 9.1.

2. Enter the new trunk group number in the *Trunk Group #* field. The trunk group number must be unique and if it is not an error will be shown.
3. Select ISUP in the *Signaling Type* drop-down menu. The *Far-end Name* field will appear at the bottom of the window.
4. Enter the *Trunk Group Name*. This field is optional.
5. Select the direction of call setup for this trunk group.
6. From the pre-defined list in the *Far-end Name* drop-down menu, select the linkset or linkset route this trunk group uses to connect to the network element (normally a switch) at the immediate far end of the trunks in the trunk group. Since an ISUP trunk group can contain trunks that terminate at only one end point, this field identifies that far end network element.

If the linkset or route needed for this trunk group is not available in the drop-down menu, it can be added by pressing the  button to the right of the *Far-end Name* field, which will display the Add New Route window (see Figure 9-11).

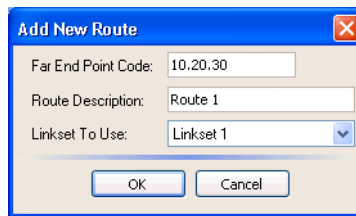


Figure 9-11 Add New Route

The Add New Route window has the following three fields:


- | | |
|---------------------------|---|
| Far End Point Code | Enter the SS7 address (signaling point code) of the switch at the far end this route will be used to reach. |
| Route Description | Enter a short description of the route. |
| Linkset To Use | Select the linkset that will be used to reach this far end point code from the drop-down list of linksets that have been defined in the SS7 Configuration interface (see Chapter 8 - "SS7 Configuration"). Linksets can only be added within the SS7 Configuration interface (see Section 8.2.1). |

Pressing the *OK* button in the Add New Route window will add the route and return you to the Enter Trunk Group Info window. The newly added route will now be available in the *Far-end Name* drop-down menu, and will also be listed in the *Routes* tab of the SS7 Configuration interface (see Section 8.4 - "Linkset Route Management").

7. Press the *OK* button in the Enter Trunk Group window to add the new ISUP trunk group to the list of trunk groups on the left-hand side of the Trunk Configuration window.
8. Configure additional settings (see Section 9.3.2) and trunk members (see Section 9.3.3) for the new ISUP trunk group.

9.3.2 ISUP Trunk Group Settings

This section contains information on configuring settings specific to ISUP trunk groups. These settings are displayed in the *General Settings* tab of the Trunk Configuration window when an ISUP trunk group is selected in the list on the left-hand side of the window.

The four settings at the top of the *General Settings* tab are common to all types of trunk groups, and are described in Section 9.1. Beneath these settings are three group boxes: *Far-end Settings*, *Advanced Settings*, and *Continuity Tones*. Next to the legend of each group box is a  tree sym-

bol. Clicking a tree symbol will alternately show and hide the settings in the associated group box. Figure 9-12 illustrates this portion of the *General Settings* tab when all of the settings are displayed.


Figure 9-12 ISUP Trunk Group General Settings

The ISUP-specific trunk group settings are described below:

Far-end Name

The linkset or linkset route this trunk group uses to connect to the network element (normally a switch) at the immediate far end of the trunks in the trunk group. Since an ISUP trunk group can contain trunks that terminate at only one end point, this field identifies that far end network element.

The drop-down menu contains a list of linksets and linkset routes that have been defined in the SS7 Configuration interface (see Chapter 8 - "SS7 Configuration").

If the desired far-end for this trunk group is not available in the drop-down menu, it can be added by pressing the  button to the right of the *Far-end Name* field, which will display the Add New Route window (see Figure 9-11). See Section 9.3.1 for information about using the Add New Route window.

RLT

Use the pull-down menu to select a Release Link Trunking setting. Release Link Trunking allows the APmax to release facilities between the APmax and the switch and merge the remaining established portions of the call to eliminate the APmax from the call path. Without this feature, two facilities between the switch and the APmax must be held during the entire call. This field may be set to one of the following values:

- **None** - Indicates the Release Link Trunking feature is turned off. This is the default value.
- **EWSD** - Turns the Release Link Trunking feature on for an EWSD switch.
- **DMS10** - Turns the Release Link Trunking feature on for a DMS-10 switch.

Pick Order

This field is used to specify how a trunk will be selected within the trunk group for an outbound call. This field is only applicable to outgoing and 2-way trunk groups. For 2-way trunk groups it is important to select a pick order to minimize glare.

The order of ISUP trunks is based on CIC, while the order of analog trunks is based on T1 and channel number. For example, channel 1 on T1-0 is lower than channel 1 on T1-1. Channel 24 on T1-0 is lower than channel 1 on T1-1. Searches will span the T1 circuits to find an available trunk, but will not span units. Sequential searches will “wrap” to the appropriate T1 when upper or lower bounds have been reached. The options available for this field are listed below:

- **Low** - Starting with the lowest trunk in the trunk group, the first available trunk will be selected.
- **High** - Starting with the highest trunk in the trunk group, the first available trunk will be selected.
- **Seq. Low** - Low-Sequential. The last trunk used is stored. Selection begins with the next highest trunk until an available trunk is found. The search “wraps” to the lowest trunk in the trunk group.
- **Seq. High** - High-Sequential. The last trunk used is stored. Selection begins with the next lowest trunk until an available trunk is found. The search “wraps” to the highest trunk in the trunk group.
- **Least Recent** - When a trunk is used in a call a time stamp is created when the call is started. This option will select the trunk that has not been used in a call for the longest time.
- **Most Recent** - When a trunk is used in a call a time stamp is created on call start. This option will select the trunk that was most recently used in a call.

Hop Counter

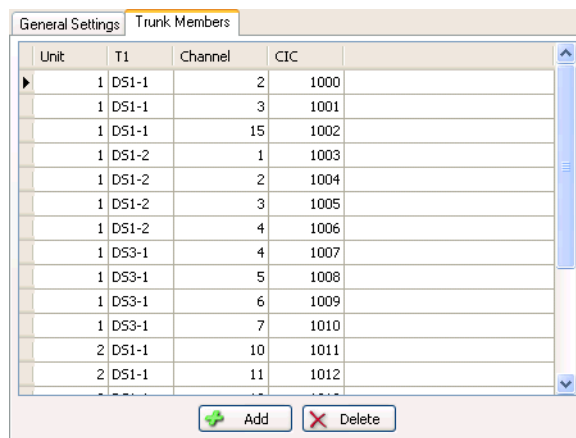
This field indicates whether the Hop Count parameter, if present in an ISUP message, should be decremented. This action is only useful on incoming trunk groups and only when the APmax is an intermediate point, not the final destination, of a call. That is, if an incoming call is to be switched through the APmax to an outgoing trunk, then the decrement hop count action is applicable. Options include Decrement and Don't Decrement, with Don't Decrement being the default value.

Continuity Rate	<p>This field indicates the number of calls that should be allowed between continuity checks on outbound calls. This field is only applicable to outgoing and 2-way trunk groups.</p> <p>Options include None, Every, and different increment values from 5 to 100. Selecting None indicates that continuity is not to be performed on outbound calls. Selecting Every indicates that continuity is to be performed on every outbound call. The default value is Every.</p>
Guard Time	<p>This value, specified in milliseconds, is the time interval that an individual trunk must be idle before it can be selected for use on another call. This field is only applicable to outgoing and 2-way trunk groups. The default value is 768ms.</p>
Glare Control	<p>If the direction of call setup for this trunk group is set to 2-way, then this field is used to determine which end of the circuit will gain control if both ends simultaneously attempt to seize the circuit. The circuit that does not become the controlling end will attempt the call on another available circuit. Options for this field are listed below:</p> <ul style="list-style-type: none">• None - The far end will be the controlling end for all instances of glare.• UNC - Uncontrolled. This is the default value. The controlling end will be determined on a per-trunk basis following the rules outlined in GR-317.• ALL - The APmax will be the controlling end for all instances of glare.
Confusion Message	<p>This field indicates how the reception of unknown ISUP messages is to be handled. If this field is set to Send, then a Confusion message is returned to the originator of the unknown message. If this field is set to Don't Send, then unknown messages are handled as stated in GR-317. The default setting is Don't Send.</p>
In Receive Tone	<p>This field allows the inbound ISUP trunk receive continuity tone to be viewed and adjusted. The tone can be set to either 1780 Hz or 2010 Hz. The default inbound receive continuity tone is 1780 Hz.</p>
Out Receive Tone	<p>This field allows the outbound ISUP trunk receive continuity tone to be viewed and adjusted. The tone can be set to either 1780 Hz or 2010 Hz. The default outbound receive continuity tone is 2010 Hz.</p>

- In Transmit Tone** This field allows the inbound ISUP trunk transmit continuity tone to be viewed and adjusted. The tone can be set to either 1780 Hz or 2010 Hz. The default inbound transmit continuity tone is 2010 Hz.
- Out Transmit Tone** This field allows the outbound ISUP trunk transmit continuity tone to be viewed and adjusted. The tone can be set to either 1780 Hz or 2010 Hz. The default outbound transmit continuity tone is 1780 Hz.

9.3.3 ISUP Trunk Members

This section contains information on adding and removing trunk members (trunks) for ISUP trunk groups. Trunk members are viewed, added, and deleted from within the *Trunk Members* tab of the Trunk Configuration window. When an ISUP trunk group is selected in the list on the left-hand side of the window, all of the currently defined trunk members under the selected group will be shown in this tab (see Figure 9-13).



Unit	T1	Channel	CIC
1	DS1-1	2	1000
1	DS1-1	3	1001
1	DS1-1	15	1002
1	DS1-2	1	1003
1	DS1-2	2	1004
1	DS1-2	3	1005
1	DS1-2	4	1006
1	DS3-1	4	1007
1	DS3-1	5	1008
1	DS3-1	6	1009
1	DS3-1	7	1010
2	DS1-1	10	1011
2	DS1-1	11	1012

Figure 9-13 ISUP Trunk Members

The list in the *Trunk Members* tab shows each trunk and its APmax Unit, T1, channel, and assigned Circuit ID Code (CIC).

To delete trunk members from a trunk group, select the trunks you wish to remove in the list and press the *Delete* button at the bottom of the *Trunk Members* tab. A delete confirmation prompt will be displayed (see Figure 9-14). Press the *Yes* button in the prompt to complete the deletion.

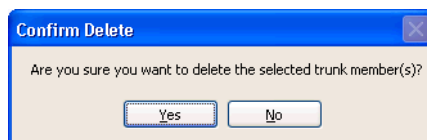


Figure 9-14 Delete Confirmation Prompt

New trunk members can be added to the selected trunk group by pressing the *Add* button at the bottom of the *Trunk Members* tab. A window similar to Figure 9-15 will be displayed.

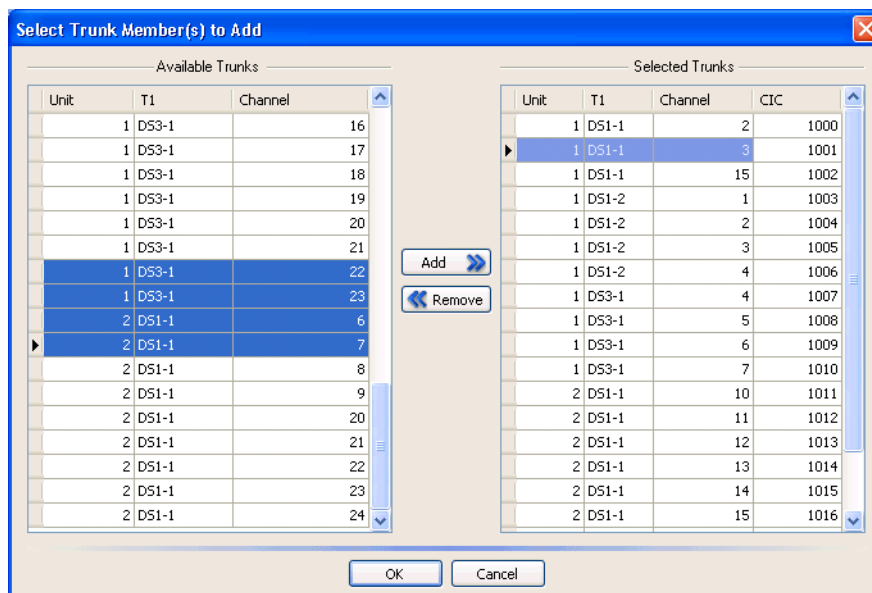


Figure 9-15 Add ISUP Trunk Members

The Select Trunk Member(s) to Add window contains two lists: *Available Trunks* and *Selected Trunks*.

The *Available Trunks* list on the left side shows the T1 channels that are contained in DS1/DS3s that have been enabled within the Digital Carrier Configuration interface (see Chapter 7 - "Digital Carrier Configuration"), but have not been assigned to other trunk groups or services (e.g., used as an SS7 link). The *Selected Trunks* list shows the T1 channels that will be assigned to the selected trunk group when the *OK* button is pressed.

Trunk members can be moved from the *Available Trunks* list to the *Selected Trunks* list by first selecting one or more available trunks and then press the *Add >>* button between the lists. A unique CIC number (unique within all trunk groups with the same far end point code) must identify every trunk member assigned to an ISUP trunk group. The CIC of each new ISUP trunk member can be assigned, after they are moved to the *Selected Trunks* list, by entering the CIC number into the trunk member's row under the *CIC* column. To make this CIC assignment task easier, the Trunk Configuration interface has an "auto-populate" function. After a number is entered in an empty CIC cell, the APmax UI will populate all empty cells below the selected cell with CIC values incremented by one from the previously entered value. For example, if a CIC number of 100 is entered into the top row, the subsequent empty rows will be assigned 101, 102, etc.

Trunk members can be removed from the *Selected Trunks* list by selecting one or more trunks from the right-hand list and then pressing the *<< Remove* button. The removed trunk members will be placed at the bottom of the *Available Trunks* list.

After the desired trunk members have been moved to the *Selected Trunks* list, press the *OK* button to insert those trunk members into the *Trunk Members* tab (see Figure 9-7). Pressing the *Cancel* button will close the Select Trunk Member(s) to Add window without adding any trunk members to the trunk group.

9.4 SIP Trunk Groups

9.4.1 Adding a SIP Trunk Group

To add a SIP trunk group, follow these steps:

1. Press the *Add* button in the lower left-hand corner of the Trunk Configuration window (Figure 9-2). An Enter Trunk Group Info window similar to Figure 9-16 will be displayed.





Figure 9-16 Enter SIP Trunk Group Info

The four trunk group properties displayed in the Enter Trunk Group Info window are described in Section 9.1.

2. Enter the new trunk group number in the *Trunk Group #* field. The trunk group number must be unique and if it is not an error will be shown.
3. Select SIP in the *Signaling Type* drop-down menu.
4. Enter the *Trunk Group Name*. This field is optional.
5. Press the *OK* button to add the new SIP trunk group to the list of trunk groups on the left-hand side of the Trunk Configuration window.
6. Configure additional settings (see Section 9.4.2) for the new SIP trunk group.

9.4.2 SIP Trunk Group Settings

This section contains information on configuring settings specific to SIP trunk groups. These settings are displayed in the *General Settings* tab of the Trunk Configuration window when a SIP trunk group is selected in the list on the left-hand side of the window.

The four settings at the top of the *General Settings* tab are common to all types of trunk groups, and are described in Section 9.1. Beneath these settings is the *SIP Trunk Group Settings* group box. Next to the legend of the group box is a  tree symbol. Clicking a tree symbol will alternately show and hide the settings in the group box. Figure 9-17 illustrates this portion of the *General Settings* tab when all of the settings are displayed.

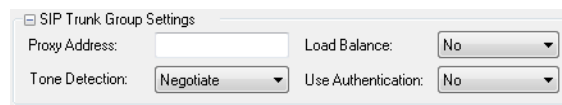


Figure 9-17 SIP Trunk Group Settings

The SIP-specific trunk group settings are described below:

Proxy Address	This field is used to specify the SIP proxy server address of the switch and optionally the port (i.e., server:port). If left blank, the Proxy Address functions as a “catch-all” trunk group, essentially bypassing security.
Load Balance	This field indicates whether or not the unit receiving calls will redirect every other call to the mate unit to balance the load between the two units. This setting is applicable if the switch can only send calls to one IP address (typically the VRRP address of the APmax). Options include Yes or No, with No being the default value.
Tone Detection	Use the pull-down menu to select the method of sending and receiving DTMF (Dual Tone Multi-Frequency) tones. This field may be set to one of the following values: <ul style="list-style-type: none"> • Automatic - The APmax listens for both in-band and out-of-band tones. In-band detection is turned off if any out-of-band tones are detected (to avoid double-digit detection). • In-Band - The APmax tells the far side that out-of-band tone events are not supported, and to use in-band only. • Negotiate - The APmax does what the far side indicates it can do. If the far side indicates out-of-band then the APmax will look for out-of-band tones. This is the default value.
Use Authentication	Indicates whether or not the APmax will challenge the caller to authenticate when a call comes in on the trunk group.

9.5 MGCP Trunk Groups

9.5.1 Adding an MGCP Trunk Group

To add an MGCP trunk group, follow these steps:

1. Press the *Add* button in the lower left-hand corner of the Trunk Configuration window (Figure 9-2). An Enter Trunk Group Info window similar to Figure 9-18 will be displayed.

A screenshot of a Windows-style dialog box titled "Enter Trunk Group Info". It contains four fields: "Trunk Group #:" with a text box containing "1", "Signaling Type:" with a dropdown menu showing "MGCP", "Trunk Group Name:" with a text box containing "MGCP 1", and "Direction:" with a dropdown menu showing "2-way". At the bottom are "OK" and "Cancel" buttons.


Figure 9-18 Enter MGCP Trunk Group Info

The four trunk group properties displayed in the Enter Trunk Group Info window are described in Section 9.1.

2. Enter the new trunk group number in the *Trunk Group #* field. The trunk group number must be unique and if it is not an error will be shown.
3. Select MGCP in the *Signaling Type* drop-down menu.
4. Enter the *Trunk Group Name*. This field is optional.
5. Select the direction of call setup for this trunk group.
6. Press the *OK* button to add the new MGCP trunk group to the list of trunk groups on the left-hand side of the Trunk Configuration window.
7. Configure additional settings (see Section 9.5.2) for the new MGCP trunk group.

9.5.2 MGCP Trunk Group Settings

This section contains information on configuring settings specific to MGCP trunk groups. These settings are displayed in the *General Settings* tab of the Trunk Configuration window when an MGCP trunk group is selected in the list on the left-hand side of the window.

The four settings at the top of the *General Settings* tab are common to all types of trunk groups, and are described in Section 9.1. There is one setting specific to MGCP trunk groups: Destination Address. If this setting is not visible in the *General Settings* tab, click the  tree symbol next to the *MGCP Settings* legend in the *General Settings* tab. The *Dest. Address* setting will be displayed, as illustrated in Figure 9-19.

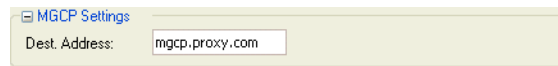


Figure 9-19 MGCP Trunk Group General Settings

The *Dest. Address* field is used to specify the MGCP destination server address (either an IP address or a host name), optionally followed by a port number (e.g. 192.168.1.5:2020).

9.6 Generic Trunk Groups

9.6.1 Adding a Generic Trunk Group

To add a Generic trunk group, follow these steps:

1. Press the *Add* button in the lower left-hand corner of the Trunk Configuration window (Figure 9-2). An Enter Trunk Group Info window similar to Figure 9-20 will be displayed.

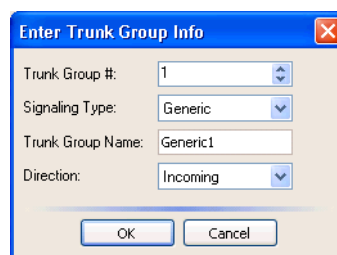


Figure 9-20 Enter Generic Trunk Group Info

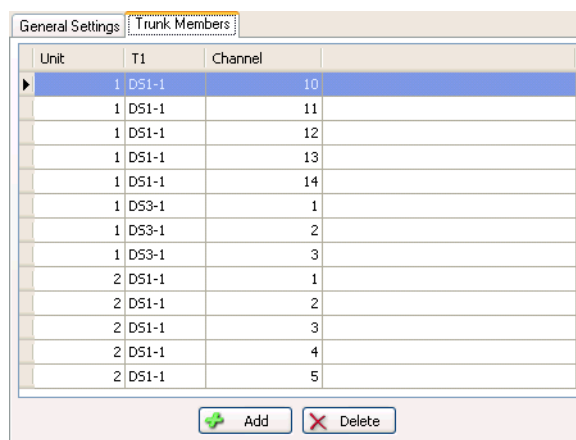
The four trunk group properties displayed in the Enter Trunk Group Info window are described in Section 9.1.

2. Enter the new trunk group number in the *Trunk Group #* field. The trunk group number must be unique and if it is not an error will be shown.
3. Select Generic in the *Signaling Type* drop-down menu.
4. Enter the *Trunk Group Name*. This field is optional.
5. Select the direction of call setup for this trunk group.

6. Press the *OK* button to add the new Generic trunk group to the list of trunk groups on the left-hand side of the Trunk Configuration window.
7. Configure trunk members (see Section 9.6.2) for the new Generic trunk group.

9.6.2 Generic Trunk Members

This section contains information on adding and removing trunk members (trunks) for Generic trunk groups. Trunk members are viewed, added, and deleted from within the *Trunk Members* tab of the Trunk Configuration window. When a Generic trunk group is selected in the list on the left-hand side of the window, all of the currently defined trunk members under the selected group will be shown in this tab (see Figure 9-21).



Unit	T1	Channel
1	DS1-1	10
1	DS1-1	11
1	DS1-1	12
1	DS1-1	13
1	DS1-1	14
1	DS3-1	1
1	DS3-1	2
1	DS3-1	3
2	DS1-1	1
2	DS1-1	2
2	DS1-1	3
2	DS1-1	4
2	DS1-1	5

Figure 9-21 Generic Trunk Members

The list in the *Trunk Members* tab shows the APmax Unit, T1, and channel of each trunk.

To delete trunk members from a trunk group, select the trunks you wish to remove in the list and press the *Delete* button at the bottom of the *Trunk Members* tab. A delete confirmation prompt will be displayed (see Figure 9-22). Press the *Yes* button in the prompt to complete the deletion.

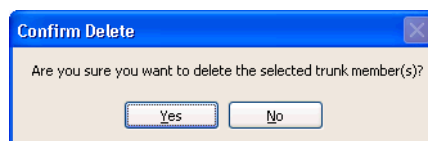


Figure 9-22 Delete Confirmation Prompt

New trunk members can be added to the selected trunk group by pressing the *Add* button at the bottom of the *Trunk Members* tab. A window similar to Figure 9-23 will be displayed.

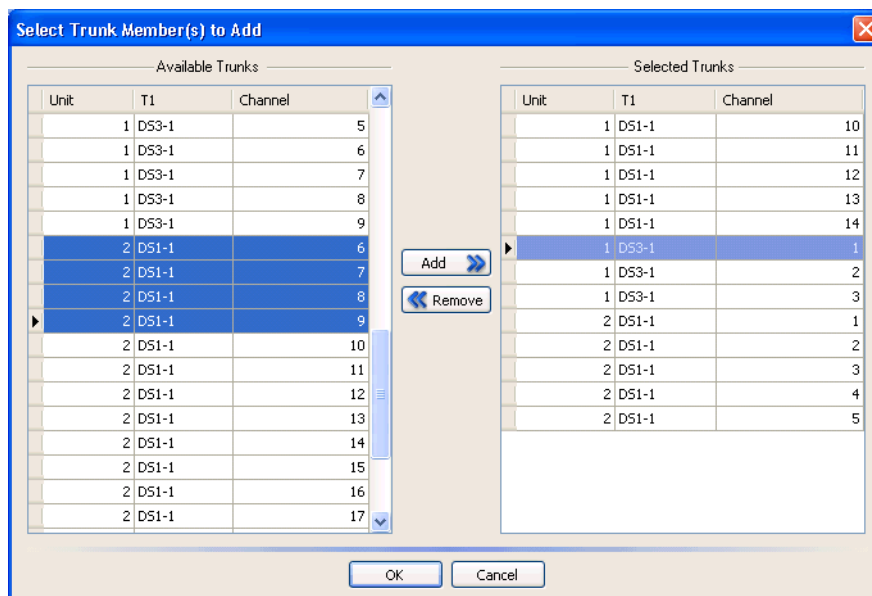


Figure 9-23 Add Generic Trunk Members

The Select Trunk Member(s) to Add window contains two lists: *Available Trunks* and *Selected Trunks*.

The *Available Trunks* list on the left side shows the T1 channels that are contained in DS1/DS3s that have been enabled within the Digital Carrier Configuration interface (see Chapter 7 - "Digital Carrier Configuration"), but have not been assigned to other trunk groups or services (e.g., used as an SS7 link). The *Selected Trunks* list shows the T1 channels that will be assigned to the selected trunk group when the *OK* button is pressed.

Trunk members can be moved from the *Available Trunks* list to the *Selected Trunks* list by first selecting one or more available trunks and then press the *Add >>* button between the lists. Trunk members can be removed from the *Selected Trunks* list by selecting one or more trunks from the right-hand list and then pressing the *<< Remove* button. The removed trunk members will be placed at the bottom of the *Available Trunks* list.

After the desired trunk members have been moved to the *Selected Trunks* list, press the *OK* button to insert those trunk members into the *Trunk Members* tab (see Figure 9-21). Pressing the *Cancel* button will close the Select Trunk Member(s) to Add window without adding any trunk members to the trunk group.

9.7 PRI Trunk Groups

9.7.1 Adding a PRI Trunk Group

To add a PRI trunk group, follow these steps:

1. Press the *Add* button in the lower left-hand corner of the Trunk Configuration window (Figure 9-2). An Enter Trunk Group Info window similar to Figure 9-24 will be displayed.

A screenshot of a Windows-style dialog box titled "Enter Trunk Group Info" with a red close button in the top right corner. The dialog contains five labeled fields, each with a dropdown menu: "Trunk Group #:" with the value "1", "Signaling Type:" with the value "PRI", "Trunk Group Name:" with the value "PRI SESS", "Direction:" with the value "Incoming", and "PRI Type:" with the value "SESS". At the bottom of the dialog are two buttons: "OK" and "Cancel".

Figure 9-24 Enter PRI Trunk Group Info


The top four trunk group properties displayed in the Enter Trunk Group Info window are described in Section 9.1.

2. Enter the new trunk group number in the *Trunk Group #* field. The trunk group number must be unique and if it is not an error will be shown.
3. Select PRI in the *Signaling Type* drop-down menu.
4. Enter the *Trunk Group Name*. This field is optional.
5. The *PRI Type* setting is used to select the type of PRI switch associated with this trunk group.
6. Press the *OK* button to add the new PRI trunk group to the list of trunk groups on the left-hand side of the Trunk Configuration window.

Chapter 10 - SIP Registration

The SIP Registration interface is used for the following functions:

- Configuring SIP (Session Initiation Protocol) registrations, which allow users to register their current location, and therefore receive information at the registered location.
- Allowing SIP devices to register locally with the APmax. Calls made to and from these devices will not go through the phone switch, but will be handled directly between the APmax and the device.

The SIP Registration interface (see Figure 10-2) for an APmax system is accessed by right-clicking on the system's icon  in the Command Center window to invoke a popup menu, and then selecting the *System Configuration / SIP Registration* command (as illustrated in Figure 10-1). The name of the system for which you are configuring settings will be displayed at the top of the SIP Registration window (Figure 10-2).

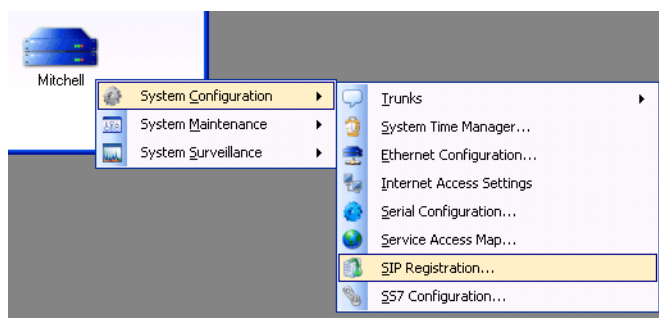


Figure 10-1 SIP Registration Menu Command

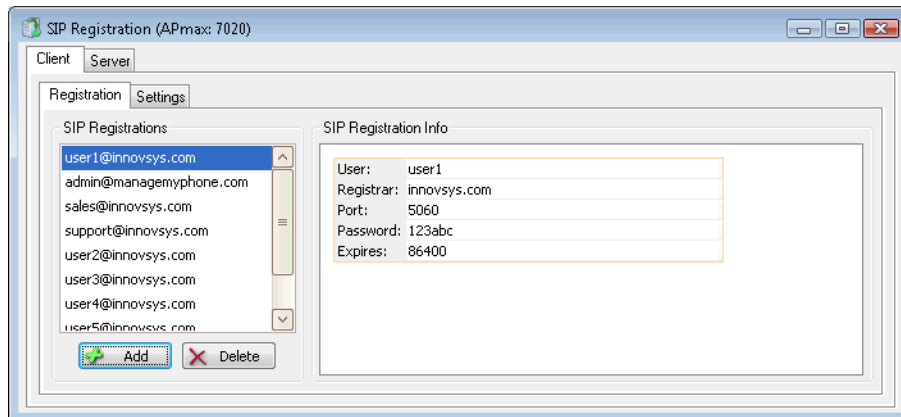


Figure 10-2 SIP Registration Window

The SIP Registration window is partitioned into two tabs: *Client* and *Server*. The *Client* tab is used to configure SIP registrations and is divided into *Registration* and *Settings* tabs. The *Registration* tab is for managing SIP registration entries, and the *Settings* tab is for configuring system-wide SIP registration properties. The *Server* tab is used to manage the devices that are allowed to register locally with the APmax.

The functions available in these tabs are described in the following sections:

- *Registration* tab - Section 10.1 - "SIP Client Registration Management"
- *Settings* tab - Section 10.2 - "SIP Client Registration Settings"
- *Server* tab - Section 10.3 - "SIP Server Management"

10.1 SIP Client Registration Management

When the SIP Registration interface is opened, the *Registration* tab is displayed by default (see Figure 10-2). The left-hand side of the *Registration* tab contains a list of the SIP registrations that have already been defined. Selecting a registration entry in the left-hand list will display the details of that entry in the *SIP Registration Info* on the right-hand side of the tab.

To edit an existing registration entry, select that entry in the *SIP Registrations* list, click the property you wish to edit in the *SIP Registration Info* section, and enter the new value.

To add a new SIP registration, press the *Add* button located below the *SIP Registrations* list in the *Registration* tab of the SIP Registration window. A window similar to Figure 10-3 will be displayed.

A screenshot of a dialog box titled "Add New SIP Registration". It contains five input fields: "User:" with the value "user1", "Registrar:" with the value "innovsys.com", "Port:" with the value "5060", "Password:" with the value "123abc", and "Expires:" with the value "86400". At the bottom are "OK" and "Cancel" buttons.

Figure 10-3 Add New SIP Registration Window

The settings in the Add New SIP Registration window are described below:

User

Enter the username of the registration. The combination of user and registrar (user@registrar) must be unique for each SIP registration. Entering a combination that already exists will overwrite the existing entry.

Registrar	Enter the domain where the registration is to be sent.
Port	The port the SIP registration will use.
Password	Enter the password required for authentication when registering.
Expires	The number of seconds before the SIP registration expires.

Populate the fields in the Add New SIP Registration window and press the *OK* button to add the registration, or press the *Cancel* button to exit without adding a new registration. The new registration entry will be immediately displayed in the *SIP Registrations* list.

To delete a SIP registration, select the entry in the list on the left-hand side of the *Registration* tab in the SIP Registration window and press the *Delete* button located below the list.

10.2 SIP Client Registration Settings

Select the *Settings* tab (see Figure 10-4) in the SIP Registration window to view and configure system-wide SIP registration properties.

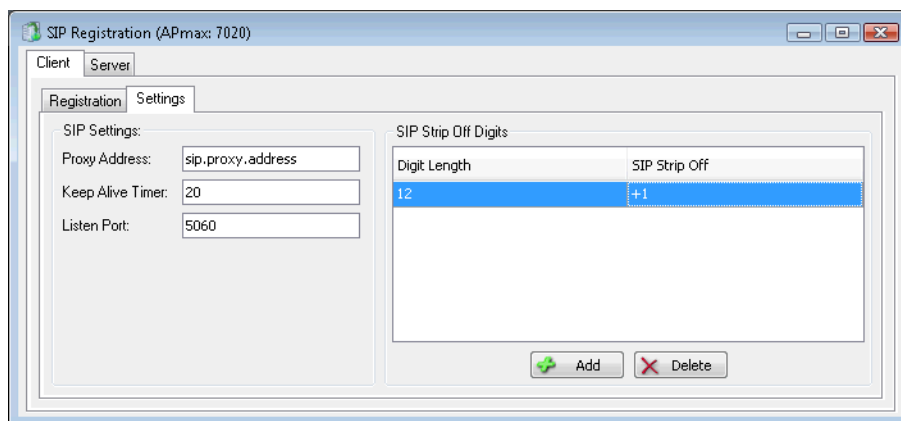


Figure 10-4 SIP Registration Settings

The *SIP Settings* section of the *Settings* tab contains the properties described below:

Proxy Address	The SIP proxy address to be used by the system.
Keep Alive Timer	The number of seconds between “keep alive” messages.
Listen Port	The port the system uses to listen for SIP messages. The default and recommended port number is 5060.

The *SIP Strip Off Digits* section of the *Settings* tab is used to manage the list of leading digits that will be removed from called, calling, redirecting and original call party numbers. For example, if an entry is found in the *SIP Strip Off Digits* section for *Digit Length* of 12 and *SIP Strip Off* of +1, and a 12-digit number such as +16059956120 is received by the switch, then the number will be changed to 6059956120 before being sent to a service.

To add a set of SIP strip off digits, press the *Add* button located at the bottom of the *SIP Strip Off Digits* section. An Add SIP Strip Off window similar to Figure 10-5 will be displayed.

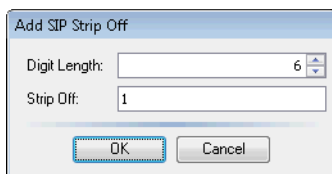


Figure 10-5 Add SIP Strip Off

Enter into the *Digit Length* field the number of phone number digits that will be looked for when determining if leading digits should be stripped off. Enter the exact digits (including '+' if necessary) to be removed in the *Strip Off* field, and then press the *OK* button to complete the addition.

To delete an entry from the *SIP Strip Off Digits* list, select the entry and press the *Delete* button.

Close the SIP Registration window to save any changes to the properties.

10.3 SIP Server Management

The *Server* tab (see Figure 10-6) in the SIP Registration interface is used to manage SIP devices that can register locally with the APmax. Calls made to and from these devices will be handled directly by the APmax.

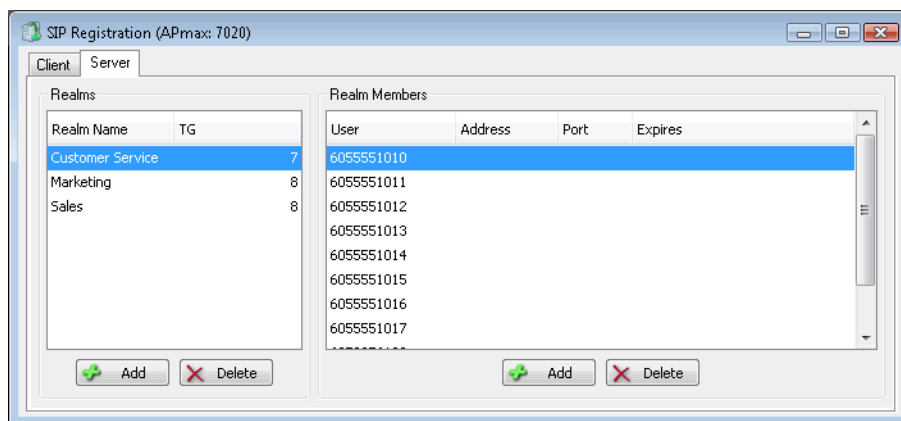


Figure 10-6 SIP Registration Server Management

The *Server* tab is divided into two sections: *Realms* and *Realm Members*. The *Realms* section on the left-hand side of the tab is used to create realms (groups) for SIP devices and assign a SIP trunk group to each realm. Selecting a realm on the left-hand side will display the devices in that realm in the *Realm Members* section on the right-hand side of the tab. Instructions for adding and deleting realms and realm members are given in the following sections.

10.3.1 Realm Management

To add a SIP Registration realm, press the *Add* button located below the *Realms* section in the *Server* tab. An Add SIP Server Realm entry form similar to Figure 10-7 will be displayed.

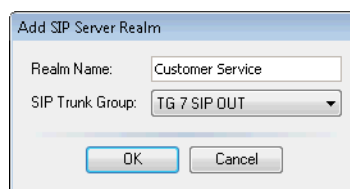
A screenshot of a dialog box titled "Add SIP Server Realm". It contains two input fields: "Realm Name:" with the text "Customer Service" and "SIP Trunk Group:" with a dropdown menu showing "TG 7 SIP OUT". At the bottom are "OK" and "Cancel" buttons.

Figure 10-7 Add SIP Server Realm

Enter a description of the new realm in the *Realm Name* field, select the outgoing *SIP Trunk Group* to use for calls for this realm, and press the *OK* button. Note that only outgoing or 2-way SIP trunk groups that have been previously configured in the Trunk Configuration interface (see Section 9.4 - "SIP Trunk Groups") for the current APmax system will be available in the Add SIP Server Realm entry form.

To delete a realm and its members, select the realm and press the *Delete* button below the *Realms* section. A delete confirmation prompt will be displayed. Choose *Yes* to complete the deletion.

10.3.2 Realm Member Management

Follow these steps to add a SIP Registration realm member:

1. Select in the *Realms* section on the left-hand side of the *Server* tab the realm to which the new member should be added.
2. Press the *Add* button located below the *Realm Members* section in the *Server* tab. An Add SIP Server Realm Member entry form similar to Figure 10-8 will be displayed.

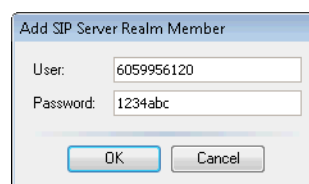
A screenshot of a dialog box titled "Add SIP Server Realm Member". It contains two input fields: "User:" with the text "6059956120" and "Password:" with the text "1234abc". At the bottom are "OK" and "Cancel" buttons.

Figure 10-8 Add SIP Server Realm Member

3. Enter the username (typically a phone number) into the *User* field.
4. Enter the *Password* associated with the new member. This field may be left blank, but for security reasons a blank password is not recommended.
5. Press the *OK* button to complete the addition of the realm member. The username of the new member will be displayed in the *Realm Members* section along with the following columns of information:

Address	IP address or domain of the device.
Port	Port of the SIP device. This value will be displayed if it is set to a value other than 5060.
Expires	When the device registration expires.

To delete a realm member, select the member and press the *Delete* button below the *Realm Members* section. A delete confirmation prompt will be displayed. Choose *Yes* to complete the deletion.


Chapter 11 - Internet Access Settings

APmax systems provide the ability for end user subscribers to control and configure enhanced services provided by Innovative Systems over the Internet. This chapter describes how to configure administrative Internet Access Settings (e.g. service provider settings, e-mail server settings, password restrictions) for APmax systems.

End user subscriber access to enhanced services is provided by the web-browser-based Web Portal Service. Before they can manage enhanced services with the Web Portal Service, subscribers must be assigned a User ID and Password. See Section 26.1.4 - "Subscriber Internet Access Settings" for information on enabling subscribers for Internet Access.

Instructions for configuring Web Portal Service administrative settings are found in Section 11.2 of this chapter. The Web Portal Service is an enhanced APmax service that must be installed separately on APmax systems. For more information on the Web Portal Service, see the documentation that is packaged with the service.

Some data transfers between the APmax and other servers or applications may require Secure Sockets Layer (SSL) communications. Instructions for requesting and installing an SSL certificate on the APmax are given in Section 11.4 of this chapter.

To access the Internet Access Settings interface, right-click on the system's icon  in the Command Center window to invoke a popup menu, and select the *System Configuration / Internet Access Settings* command (as illustrated in Figure 11-1). The name of the system for which you are configuring settings will be displayed at the top of the Internet Access Settings window (Figure 11-2).

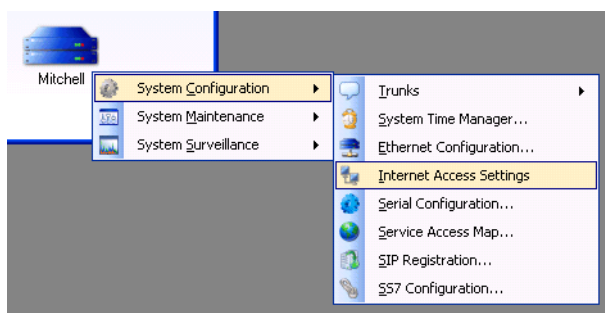


Figure 11-1 Internet Access Settings Menu Command

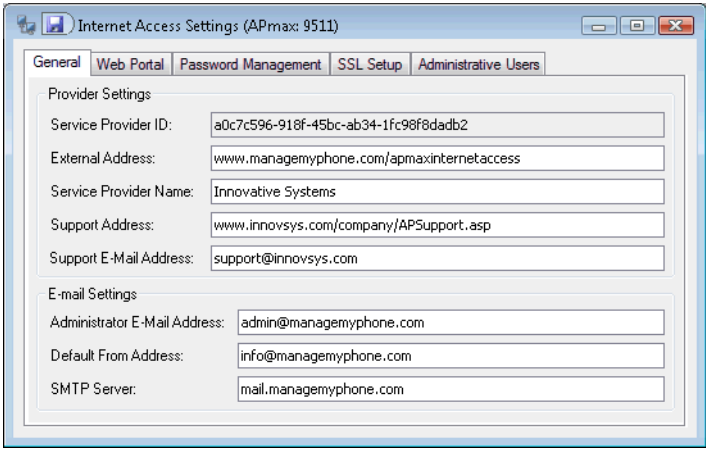
The Internet Access Settings window is partitioned into six tabs: *General* (Figure 11-2), *Web Portal* (Figure 11-3), *Password Management* (Figure 11-22), *SSL Setup* (Figure 11-23), *Administrative Users* (Figure 11-28), and *External DSP Addresses* (Figure 11-31). The settings and functions in these tabs are described in the following sections.

- Section 11.1 - "General Internet Access Settings"

- Section 11.2 - "Web Portal"
- Section 11.3 - "Password Management"
- Section 11.4 - "SSL Setup"
- Section 11.5 - "Administrative Users"
- Section 11.6 - "External DSP Addresses"

11.1 General Internet Access Settings

The *General* tab (Figure 11-2) is displayed by default when the Internet Access Settings interface is accessed. This tab contains the service provider settings and e-mail server settings that must be configured before APmax features that use the Internet will function properly.



The screenshot shows a web browser window titled "Internet Access Settings (APmax: 9511)". The "General" tab is selected, showing two sections: "Provider Settings" and "E-mail Settings".

Provider Settings:

- Service Provider ID: a0c7c596-918f-45bc-ab34-1fc98f8dadb2
- External Address: www.managemyphone.com/apmaxinternetaccess
- Service Provider Name: Innovative Systems
- Support Address: www.innovsys.com/company/APSupport.asp
- Support E-Mail Address: support@innovsys.com

E-mail Settings:

- Administrator E-Mail Address: admin@managemyphone.com
- Default From Address: info@managemyphone.com
- SMTP Server: mail.managemyphone.com

Figure 11-2 General Tab

The *General* tab contains the following properties:

Service Provider ID	The unique ID assigned to this service provider. This ID is generated automatically by the system.
External Address	The IP address or domain name that someone on the Internet would use to access this service provider.
Service Provider Name	A description of the service provider.
Support Address	Technical support URL that will be displayed in iPhone applications.

Support E-Mail Address	Technical support e-mail address that will be displayed in iPhone applications.
Administrator E-Mail Address	The e-mail address that will receive administrative messages. Multiple addresses separated by a semi-colon may be entered into this field.
Default From Address	The e-mail address that will be displayed as the source for any e-mail messages leaving the system.
SMTP Server	The SMTP server address. This is the address of an SMTP server you are allowed to send mail through.

Close the Internet Access Settings window to save any changes to the properties.

11.2 Web Portal

The *Web Portal* tab (see Figure 11-3 or Figure 11-7) provides an interface for configuring Web Portal Service administrative settings. The Web Portal Service is an enhanced APmax service that must be installed separately on APmax systems. For more information on the Web Portal Service, see the documentation that is packaged with the service.

The *APmax Root Web Address* setting at the top of the *Web Portal* tab is described below. All other settings are partitioned into the *Silverlight* (Section 11.2.1) and *HTML* (Section 11.2.2) tabs.

APmax Root Web Address	<p>This setting is used to determine whether or not Internet Access-enabled subscribers can access the Web Portal Service login page by navigating their web browser directly to the <i>External Address</i> defined in the <i>General</i> tab (see Section 11.1). Options are as follows:</p> <ul style="list-style-type: none"> • Default - The login page is only accessible by navigating to “http://<<i>External Address</i>>/Portal/PortalPage.html” where “<<i>External Address</i>>” is the IP address or domain name defined in the <i>General</i> tab (see Section 11.1). This option should be primarily used for test purposes when the service provider does not want the login page to be exactly the same as the <i>External Address</i>. • Portal - The Web Portal Service login page is accessible by navigating directly to the <i>External Address</i>, or “http://<<i>External Address</i>>/Portal/PortalPage.html.” This is the recommended option for allowing subscribers easy access to the Web Portal Service login page. • StreamingTV - The StreamingTV Service web page is the default web page. This option requires the following minimum package versions to be installed on the APmax system: Web Portal 6.0.8 and StreamingTV 2.0.14. See the StreamingTV Service Description for more information.
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11.2.1 Silverlight

The *Silverlight* tab is used to configure the *Call History* setting (described below Figure 11-3) and to manage the portals configured for this APmax system. Each portal has its own branding and HTML.

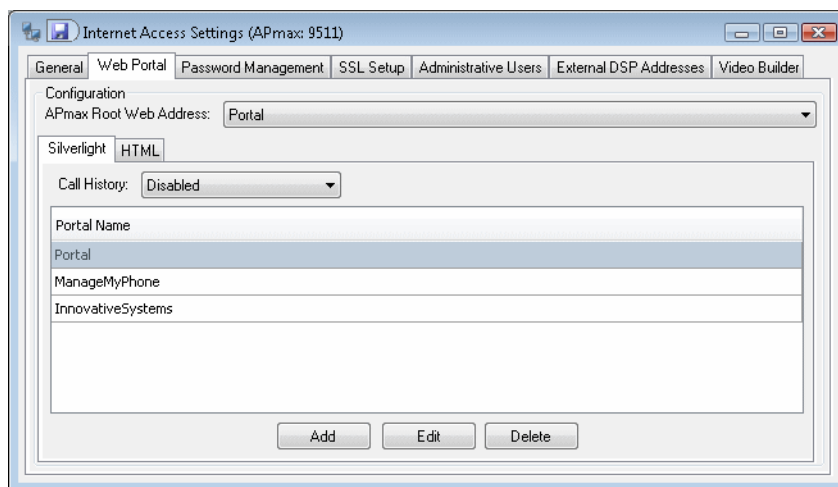


Figure 11-3 Web Portal - Silverlight Tab

The following setting is found at the top of the *Silverlight* tab:

Call History

Set to Enabled to log call information for integrated Web Portal Service subscribers (see the Web Portal Service Description for more information on integrated subscribers).

WARNING: This setting is Disabled by default because it is extremely resource intensive. Also, after enabling this service it may be necessary to clear the browser cache before real-time call logging will function properly.

11.2.1.1 Adding a Portal

NOTE: APmax Release 4.2 or greater is required for additional portals to be configured. Earlier APmax releases will be limited to the default "Portal" entry.

Press the *Add* button to display the Portal Configuration window (Figure 11-4).

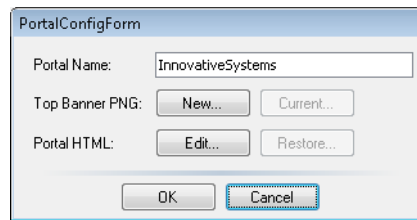


Figure 11-4 Portal Configuration (Add)

The settings in the Portal Configuration window are described below. Complete these settings and press the *OK* button to add the portal.

Portal Name

Used in conjunction with the *External Address* to access the login page of the web portal. Users access the login page by navigating to “http://<External Address>/<Portal Name>” where <External Address> is the IP address or domain name defined in the *General* tab (see Section 11.1) and <Portal Name> is the value of this field.

Top Banner PNG

Web Portal Service interfaces that are viewed by service end users include a banner that typically displays the logo or name of their service provider. The graphic used for this banner must be in a computer file of the format PNG (Portable Network Graphics).

When editing an existing portal configuration the banner graphic that is currently being displayed to subscribers can be viewed by pressing the *Current* button. This will open a Web Portal Banner window similar to Figure 11-5. The Figure 11-5 example shows a banner where the end user's service provider is the fictional company ABC Telecom.

To change the banner being displayed to subscribers, press the *New* button. This will open a standard file selection window which will allow a new PNG file to be selected. Once the file is selected, it will be displayed in the Web Portal Banner window. Press the *OK* button in the Web Portal Banner window to accept the new banner or press *Cancel* to exit without updating the banner.

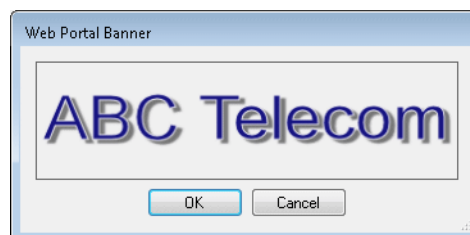


Figure 11-5 Web Portal Banner

Portal HTML

The HTML file that defines the entryway to the Web Portal Service interface can be viewed and customized by pressing the *Edit* button in the *Portal HTML* section of the *Web Portal* tab, which will display a Web Portal HTML window populated with the current HTML. After any changes are made, press the *OK* button in the Web Portal HTML window to display a save prompt, and then press the *Yes* button in the prompt to apply the changes, or the *No* button to close the window and discard all changes.

When editing an existing portal configuration, the factory default Portal HTML file that was installed with the APmax system can be restored by pressing the *Restore* button. This will display a warning message. Press the *Yes* button in the warning to overwrite the existing custom Portal HTML file with the default file, or press the *No* button to cancel the restore.

11.2.1.2 Editing a Portal

The settings of the selected portal may be viewed or changed by pressing the *Edit* button, which displays the Portal Configuration window shown in Figure 11-6. The portal settings in this window are described above in Section 11.2.1.1.

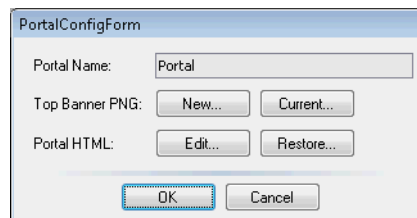


Figure 11-6 Portal Configuration (Edit)

11.2.1.3 Deleting a Portal

To delete a portal configuration, select the portal in the *Portal Name* list and press the *Delete* button below the list. A delete confirmation prompt will be displayed. Choose *Yes* in the prompt to remove the portal.

Note: The default “Portal” entry cannot be deleted.

11.2.2 HTML Tab

The *HTML* tab (Figure 11-7) is used to enter the generated keys that are required by service providers such as Facebook or Google to verify the login request is coming from the correct location. The *Login Provider* column in the *HTML* tab lists the providers supported by the APmax and the *Login Provider Key* contains the text cells where the associated keys must be entered.

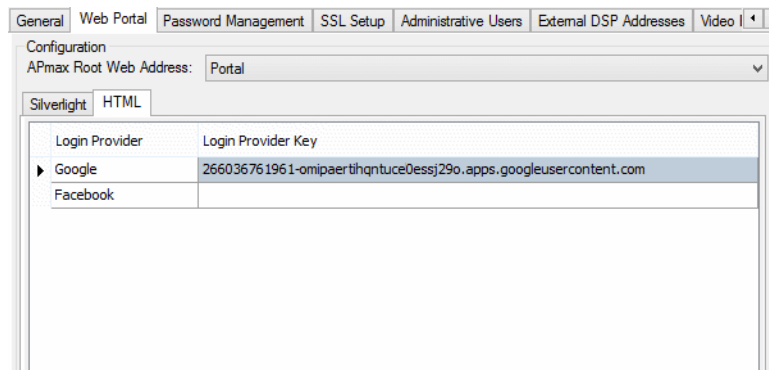


Figure 11-7 Web Portal - HTML Tab

Instructions for obtaining service provider keys are found in the following sections:

- **Google** - Section 11.2.2.1 - "Obtaining a Google Provider Key"
- **Facebook** - Section 11.2.2.2 - "Obtaining a Facebook Provider Key"

11.2.2.1 Obtaining a Google Provider Key

An account with Google is necessary to obtain a login provider key from Google. If you have a Google Account for development purposes then please have the account login and password available prior to beginning this procedure. If you do not have a Google Account then one can be created at the beginning of the procedure.

Note: Actual screens and interfaces may vary slightly from those shown in this procedure, depending on the browser used and changes made by Google to the Google Developer Console.

1. Go to <https://console.developers.google.com> to open the Google Developer Console and to begin creating a project.
 - If you are not logged in to a Google Account then the Google login page will be displayed. Login to continue.
 - If a Google Account needs to be created then use the *Create an account* link in the login page to create an account, and then press the *Get started* button in the "welcome" screen.
2. Start creating a project by selecting the *Create a project* menu command (shown in Figure 11-8) or by clicking the *Create an empty project* option or the *Create Project* button. The "New Project" screen (Figure 11-9) will be displayed.

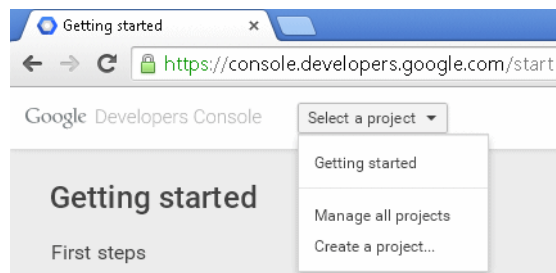


Figure 11-8 Create a Project

A screenshot of the 'New Project' form in the Google Developers Console. The form has a title 'New Project'. Below it, there's a 'Project name' field with a help icon and the value 'StreamingTV'. Underneath, it says 'Your project ID will be streamingtv-994' with an 'Edit' link. There's a link 'Show advanced options...'. A checkbox is checked, with the text 'I agree that my use of any services and related APIs is subject to my compliance with the applicable Terms of Service.' Below the checkbox are 'Create' and 'Cancel' buttons.

Figure 11-9 New Project

3. Complete the “New Project” screen (Figure 11-9) and press the *Create* button. The Google Developers Console will take a few moments to create the project.
4. Click on the *APIs & auth* category to expand it and select the *Credentials* option, as illustrated in Figure 11-10.

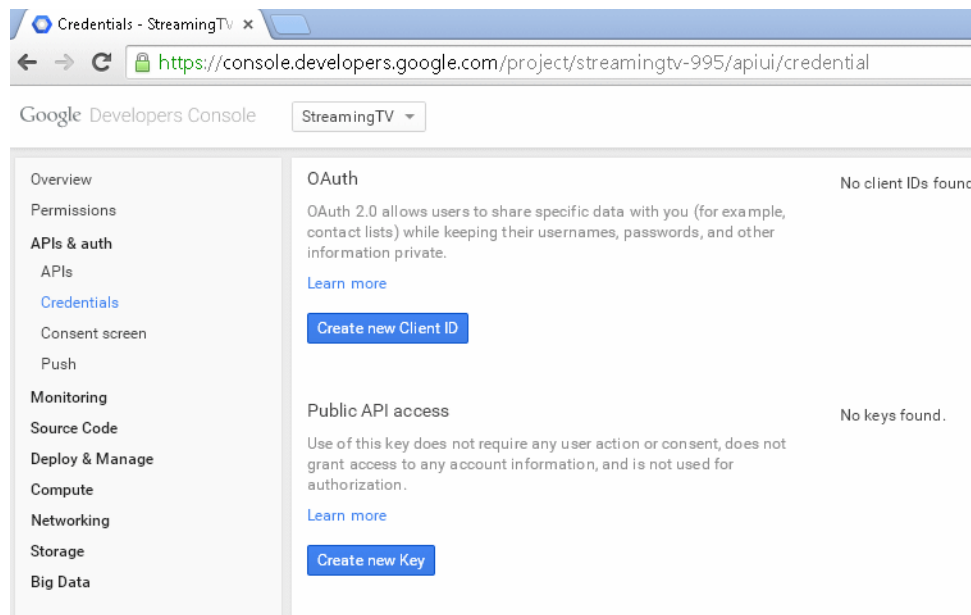


Figure 11-10 Credentials

5. Press the *Create new Client ID* button to display the “Create Client ID” screen (Figure 11-11).

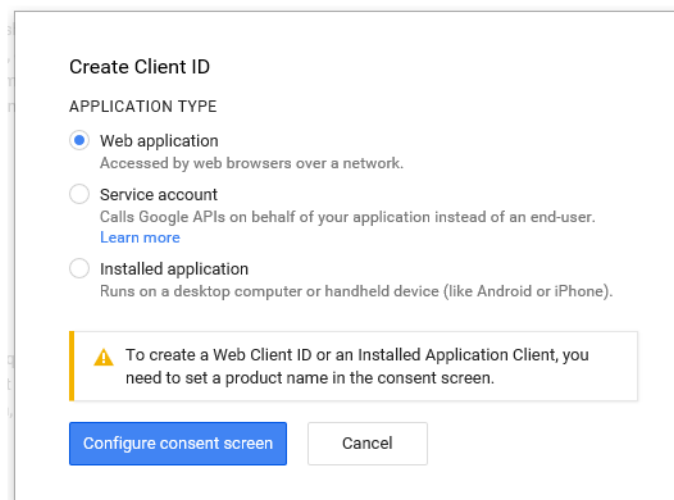


Figure 11-11 Create Client ID

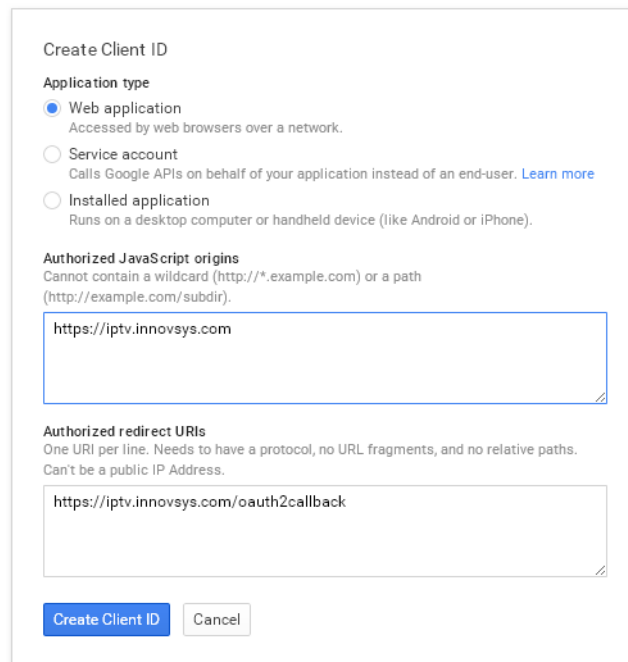
6. Select the *Web application* option in the “Create Client ID” screen and press the *Configure consent screen* button to display the “Consent screen” seen in Figure 11-12.

The screenshot shows the Google Developers Console interface. On the left is a sidebar with navigation links: Overview, Permissions, APIs & auth (highlighted), APIs, Credentials, Consent screen (highlighted in blue), Push, Monitoring, Source Code, Deploy & Manage, Compute, Networking, Storage, and Big Data. The main content area is titled 'Consent screen' and includes the following fields and instructions:

- Consent screen**: The consent screen will be shown to users whenever you request access to their private data using your client ID.
- Note**: This screen will be shown for all of your applications registered in this project.
- Email address**: A dropdown menu showing 'InnovativeSystemsTestLP@gmail.com'.
- Product name**: A text input field containing 'StreamingTV'.
- Homepage URL (Optional)**: An empty text input field.
- Product logo (Optional)**: An empty text input field.
- Logo placeholder**: A circular icon with a diagonal line through it, with text: 'This is how your logo will look to end users. Max size: 120x120 px'.
- Privacy policy URL (Optional)**: An empty text input field.
- Terms of service URL (Optional)**: An empty text input field.
- Google+ page ID (Optional)**: A text input field containing 'plus.google.com/ page ID'.
- Buttons**: 'Save' (blue) and 'Reset' (grey).

Figure 11-12 Consent screen

7. Specify an *Email address* and enter a *Product name* in the “Consent screen” and then press the *Save* button. The “Create Client ID” screen will be displayed again (Figure 11-13).



Create Client ID

Application type

☒ Web application
Accessed by web browsers over a network.

☐ Service account
Calls Google APIs on behalf of your application instead of an end-user. [Learn more](#)

☐ Installed application
Runs on a desktop computer or handheld device (like Android or iPhone).

Authorized JavaScript origins
Cannot contain a wildcard (http://*.example.com) or a path (http://example.com/subdir).

https://iptv.innovsys.com

Authorized redirect URIs
One URI per line. Needs to have a protocol, no URL fragments, and no relative paths.
Can't be a public IP Address.

https://iptv.innovsys.com/oauth2callback

Create Client ID Cancel

Figure 11-13 Enter Origin URL

8. Enter the origin URL into the *Authorized JavaScript origins* field of the “Create Client ID” screen, and press the *Create Client ID* button.
9. The Google+ API needs to be enabled. If it is already enabled then go to Step 11. To locate the Google+ API, click on the *APIs & auth* category to expand it, select the *APIs* option (as illustrated in Figure 11-14), and find the Google+ API link. Figure 11-14 shows the Google+ API link under the “Social APIs” section of the “Popular APIs.”

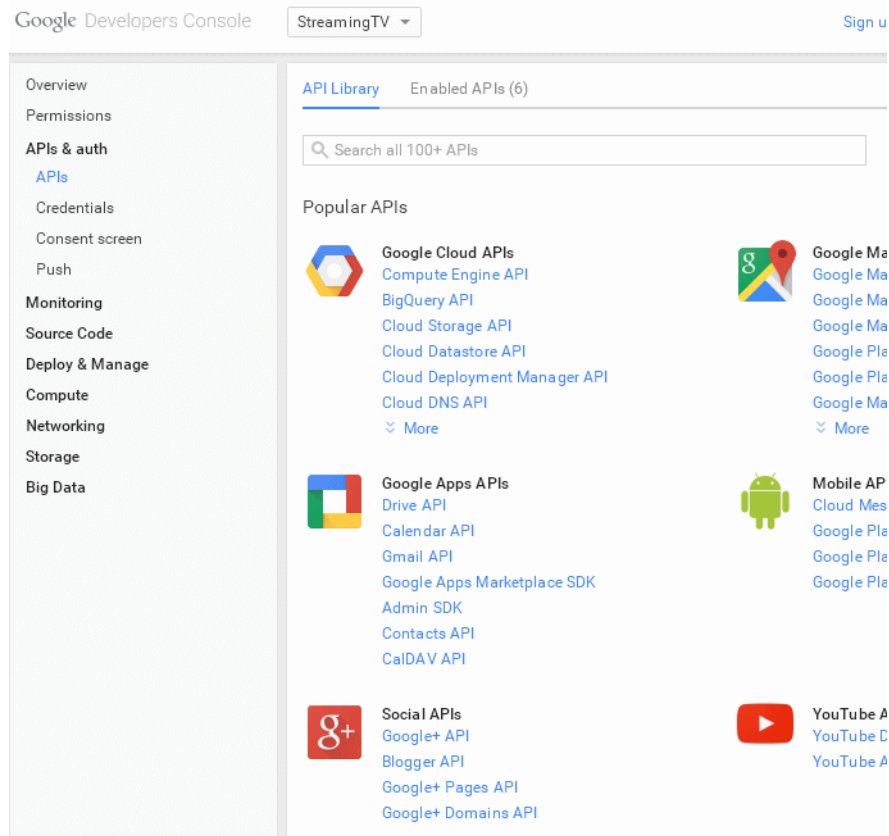


Figure 11-14 Find the Google+ API

10. Click the Google+ API link to show the *Enable API* button (see Figure 11-15) and press the button.

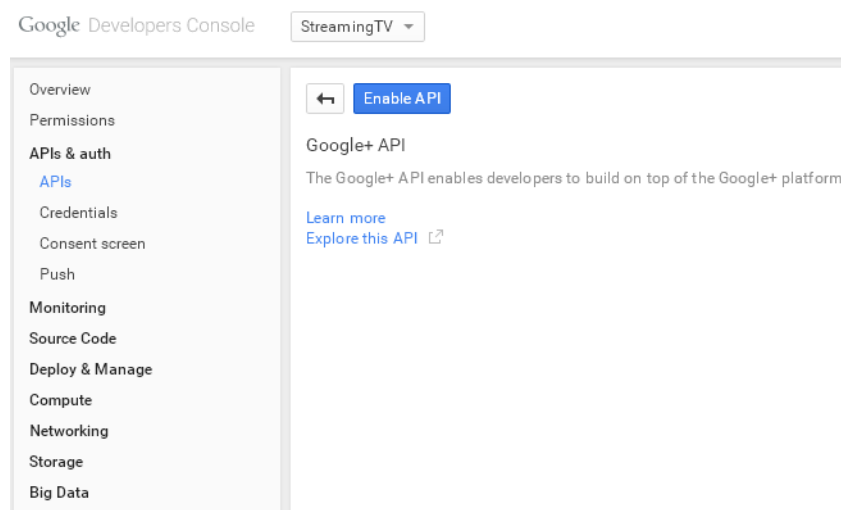


Figure 11-15 Enable the Google+ API

11. Click on the *APIs & auth* category and select the *Credentials* option. This will show the *Client ID* for the web application, as illustrated in Figure 11-16.

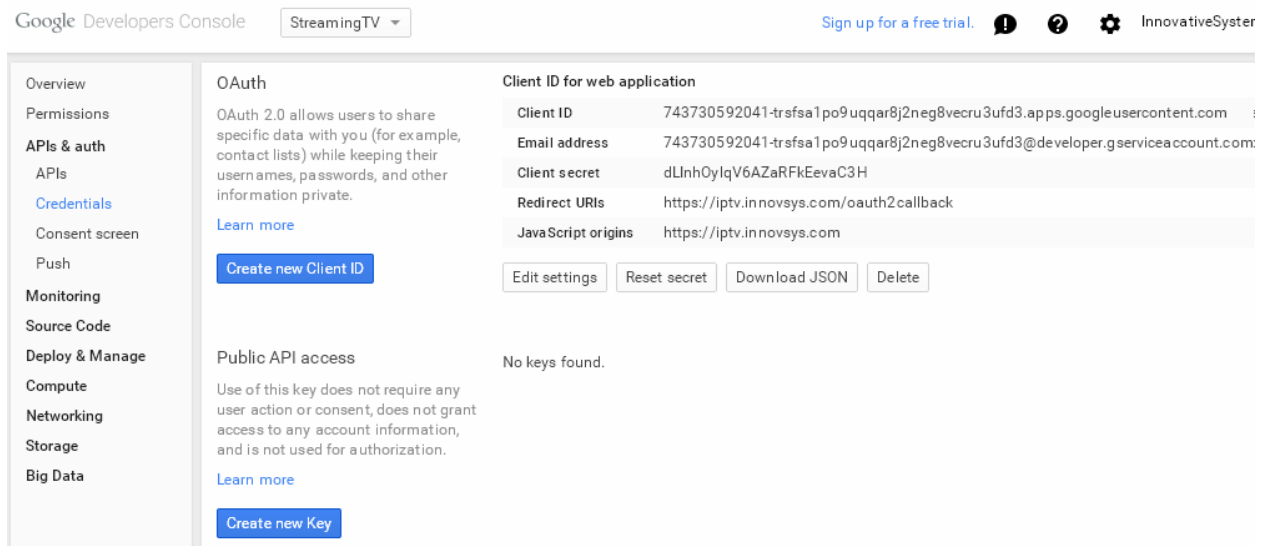


Figure 11-16 Get the Client ID

12. Select the *Client ID* value and copy it.
13. Go to the Internet Access Settings interface, *Web Portal* tab, *HTML* tab (Figure 11-7), and paste the *Client ID* value into the *Login Provider Key* cell next to Google. Close the Internet Access Settings interface to save the key value.

11.2.2.2 Obtaining a Facebook Provider Key

A personal developer account with Facebook is necessary to obtain a login provider key from Facebook. If you have a non-developer Facebook account that you wish to use for development purposes then it will have to be converted into a developer account. This process is explained in the procedure.

Note: Actual screens and interfaces may vary slightly from those shown in this procedure, depending on the browser used and changes made by Facebook to the developer interface.

1. Go to <https://developers.facebook.com>. If you are logged in then continue to Step 2.
 - If you are not logged into a Facebook account, or you need to create an account, then click on *Log In* in the upper right-hand corner of the Facebook developer page. The login page will be displayed. Log into an existing account or choose *Sign up for Facebook* to create a Facebook account, and then go back to <https://developers.facebook.com>.

2. Move the mouse pointer over *My Apps* at the top of the screen to show one of the drop-down menus seen in Figure 11-17. If the menu option says “Register as a Developer” then click on it, complete the registration, and continue to the next step. If the menu option says “Add a New App” then click on it and continue.

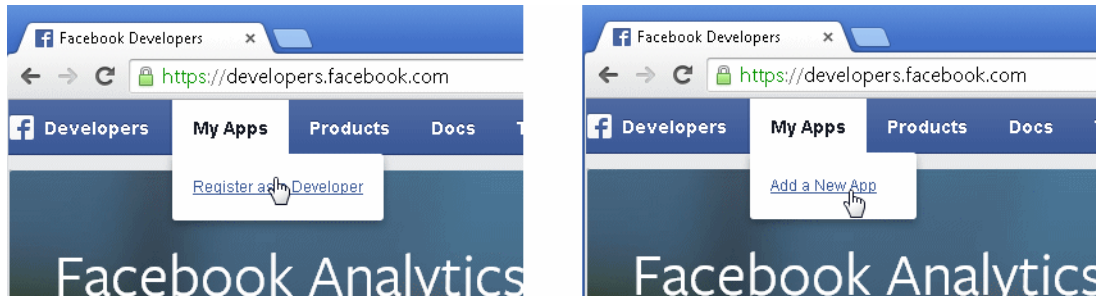


Figure 11-17 My Apps Menu Options

3. The “Add a New App” screen will be displayed (Figure 11-18). Click the *Website* option to display the “Quick Start for Website” screen (Figure 11-19).

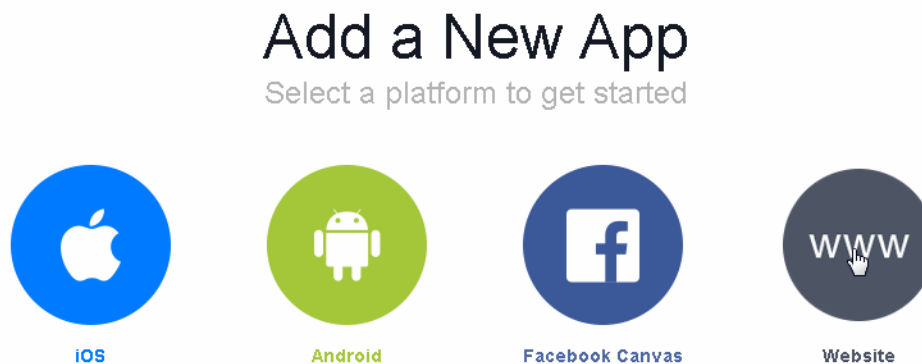


Figure 11-18 Add a New App

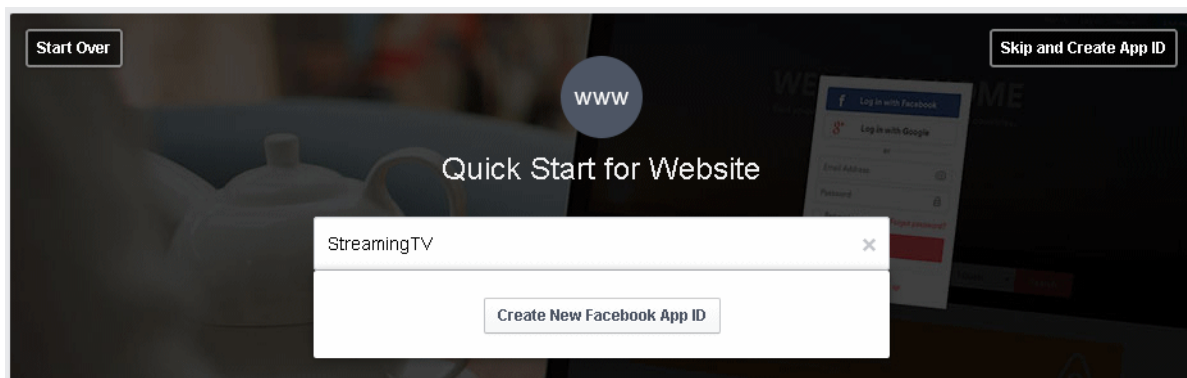
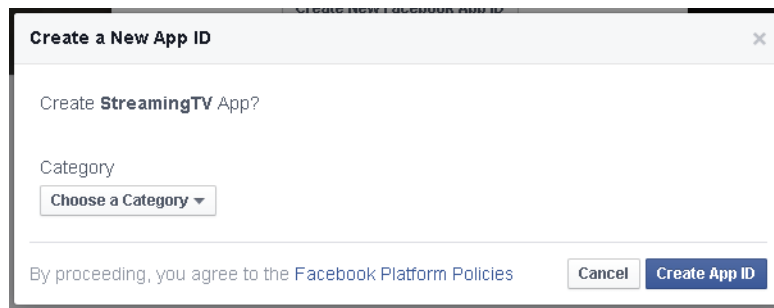


Figure 11-19 Enter Project Description

4. Enter a description in the “Quick Start for Website” screen (Figure 11-19) and press the *Create New Facebook App ID* button. The “Create a New App ID” screen (Figure 11-20) will be shown.



Create a New App ID

Create **StreamingTV** App?

Category

Choose a Category ▼

By proceeding, you agree to the [Facebook Platform Policies](#)

Cancel Create App ID

Figure 11-20 Create a New App ID

5. Choose a *Category* and press the *Create App ID* button. A screen similar to Figure 11-21 will be displayed.

Setup the Facebook SDK for JavaScript

The following snippet of code will give the basic version of the SDK where the options are set to their most common defaults. You should insert it directly after the opening `<body>` tag on each page you want to load it.

```
<script>
window.fbAsyncInit = function() {
  FB.init({
    appId      : '1638948306317159',
    xfbml      : true,
    version    : 'v2.3'
  });
};

(function(d, s, id){
  var js, fjs = d.getElementsByTagName(s)[0];
  if (d.getElementById(id)) {return;}
  js = d.createElement(s); js.id = id;
  js.src = "//connect.facebook.net/en_US/sdk.js";
  fjs.parentNode.insertBefore(js, fjs);
}(document, 'script', 'facebook-jssdk'));
</script>
```

You can also configure the SDK with [advanced settings](#).

Tell us about your website

Site URL

Figure 11-21 Setup the Facebook SDK

6. Select the *appId* value and copy it. Do not close the web browser.
7. Go to the Internet Access Settings interface, *Web Portal* tab, *HTML* tab (Figure 11-7), and paste the *appId* value into the *Login Provider Key* cell next to Facebook. Close the Internet Access Settings interface to save the key value.
8. Go back to the web browser and enter the *Site URL* where the web page will be hosted (e.g., *iptv.innovsys.com*) and press the *Next* button.

11.3 Password Management

The *Password Management* tab (Figure 11-22) is used to enforce system-wide restrictions on passwords used by Internet Access-enabled subscribers to login to Web Portal Service interfaces.

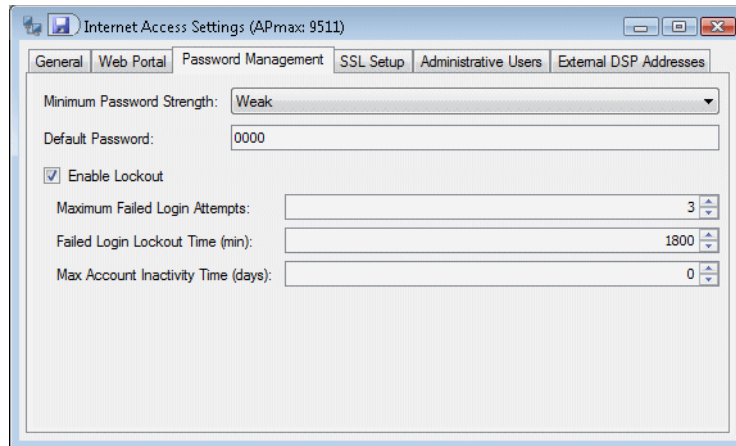


Figure 11-22 Password Management Tab

The *Password Management* tab contains the following properties:

Minimum Password Strength

The minimum strength required for all new Internet Access passwords. Password strength is determined by number of characters, type of characters (uppercase letters, lowercase letters, numbers, symbols), and whether or not the password includes common words found in the internal dictionary. The four levels of password strength are described below:

- **Weak** - Any password that is not Medium, Strong, or Best.
- **Medium** - Any password with 8 or more characters that has at least two different types of characters and does not directly match words in the internal dictionary.
- **Strong** - Any password with 8 or more characters that has at least three different types of characters and does not match any variation of a word in the internal dictionary.
- **Best** - Any password with 14 or more characters that has at least three different types of characters and does not match any variation of a word in the internal dictionary.

Default Password

The default password (20 characters maximum) that will be assigned to new Internet Access subscriber accounts.

Enable Lockout	<p>Check this box to lock individual Internet Access accounts if the specified <i>Maximum Failed Login Attempts</i> value has been reached for the account. Subscribers with locked accounts will not be able to login to Web Portal until their account has been manually unlocked (see Section 26.1.4 - "Subscriber Internet Access Settings") or the <i>Failed Login Lockout Time</i> has been reached.</p> <p>Uncheck this box to disable the lockout feature for this system. This box is unchecked by default.</p>
Maximum Failed Login Attempts	<p>Number of failed login attempts a user is allowed before the associated Internet Access account is locked for the specified <i>Failed Login Lockout Time</i> or until it is manually unlocked (see Section 26.1.4 - "Subscriber Internet Access Settings").</p>
Failed Login Lockout Time (min)	<p>The time in minutes an account will remain locked once the specified <i>Maximum Failed Login Attempts</i> value has been reached.</p>
Max Account Inactivity Time (days)	<p>The maximum number of days that may pass without the subscriber logging in before the account will be locked because of inactivity. The account will remain locked until it is manually unlocked by a customer service representative (see Section 26.1.4 - "Subscriber Internet Access Settings").</p> <p>The default value is 0, which indicates this feature is disabled and no subscribers will be locked out because of inactivity.</p>

Close the Internet Access Settings window to save any changes to the properties.

11.4 SSL Setup

Some data transfers between the APmax and other servers or applications may require Secure Sockets Layer (SSL) communications. This mechanism will require that a certificate be purchased and installed on the APmax system. This certificate must be purchased from a certificate authority that provides certificates in the PEM, CRT, or PFX file format.

NOTES:

- CRT and PFX formats require APmax Release 4.3.90 or greater.
- If the certificate is a CRT/PEM file with text content, but the file name ends with a CRT extension, and it has “-----BEGIN CERTIFICATE-----” and “-----END CERTIFICATE-----” in it, then it must be renamed to have a PEM extension before being installed.

The purpose of the *SSL Setup* tab (Figure 11-23) in the Internet Access Settings interface is to make the steps of requesting and installing a server certificate easier. These steps are given below:

1. Open the Internet Access Settings interface as described at the beginning of Chapter 11 and select the *SSL Setup* tab, as illustrated below.

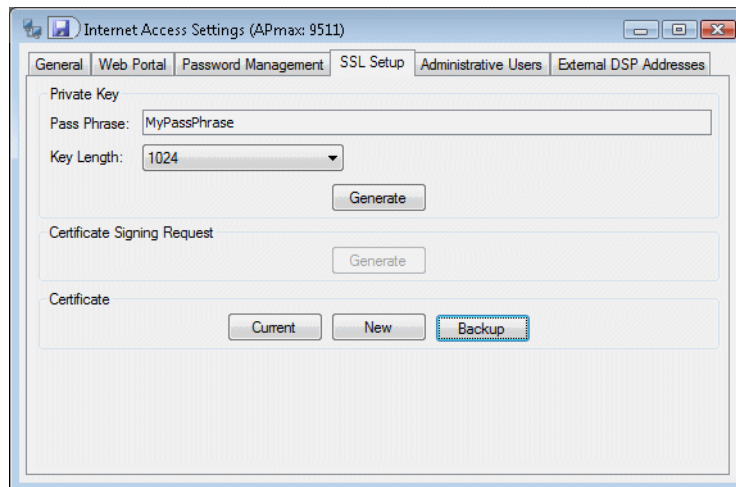


Figure 11-23 SSL Setup Tab

2. If there is currently a working certificate that is being updated via this procedure then press the *Backup* button to save the existing certificate as a local file. The backup file is a .pem file with all information (private key, main certificate, intermediate certificate) in the correct order.
3. Enter a keyword into the *Pass Phrase* field, select a *Key Length* of either 1024 or 2048 bit (depending on the requirement of the certificate provider), and press the *Generate* button in the *Private Key* section of the *SSL Setup* tab. This will create a unique key and save it on the APmax (see Figure 11-24). This key is used when requesting a certificate and must match the key on the certificate file that is installed.

WARNING: After generating a private key, do not press the *Generate* button in the *Private Key* section again until the requested certificate file is received and installed, otherwise the private key on the APmax will not match the key in the certificate.

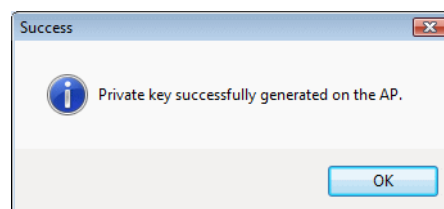


Figure 11-24 Private Key Generated

4. The *Generate* button in the *Certificate Signing Request* section should now be enabled. Press it to display the Certificate Signing Request form (see Figure 11-25).

The image shows a 'Certificate Signing Request' dialog box. It contains the following fields and values:

Field	Value
Country:	US
State or Province:	South Dakota
Locality:	Mitchell
Organization Name:	Innovative Systems
Organizational Unit:	IT
Common Name:	www.apmax.innovsys.com
E-Mail Address:	admin@innovsys.com

At the bottom of the dialog box are two buttons: 'Save' and 'Cancel'.

Figure 11-25 Certificate Signing Request Form

5. Fill out the following fields in the Certificate Signing Request form:

Country	Input the 2-letter abbreviation of the country where the APmax is located. For example: CA for Canada or US for the United States of America.
State or Province	Input the full name of the state or province where the APmax is located. Do not abbreviate the state or province name.
Locality	Input the full name of the city where the APmax is located. Do not abbreviate the city or locality name.
Organization Name	Input the name under which your organization or company is legally registered.
Organization Unit	Input your organizational unit or department, such as Telephony, Operations, or IT. If applicable, you can enter the DBA (doing business as) name in this field.
Common Name	Enter the fully-qualified domain name that resolves to the APmax (e.g, "www.myinnovsysapmax.com"). Do not include the "http://" or "https://" prefixes.
E-Mail Address	Enter the e-mail address of the person responsible for this certificate or APmax system. This is usually how the Certificate Authority contacts you.

- Press the *Save* button at the bottom of the Certificate Signing Request form. A standard Save As window will be displayed. Enter the file name and press the *Save* button to create the CSR request file. After it is saved the file will be opened and the contents will be displayed, as show in Figure 11-26.



Figure 11-26 Certificate Signing Request Information

- Submit the CSR request file to a certificate authority online (i.e., VeriSign). They will generate a PEM, CRT, or PFX certificate response file, which contains your public key and is digitally signed by the certificate authority. When the response file is received, continue to the next step. NOTE: If the certificate is a CRT/PEM file with text content, but the file name ends with a CRT extension, and it has “-----BEGIN CERTIFICATE-----” and “-----END CERTIFICATE-----” in it, then it must be renamed to have a PEM extension before being installed.
- Install the signed certificate file(s). This is done by clicking the *New* button at the bottom of the Internet Access Settings window to display a standard Open window, selecting one or more certificate response files (NOTE: Multiple PEM and CRT files may be selected), and pressing the *Open* button. If the certificate contains a private key then a password prompt (Figure 11-27) will be given.



Figure 11-27 Enter Certificate Password

- The certificate is now installed on the APmax system. The details of the installed certificate can be viewed by pressing the *Current* button in the *SSL Setup* tab, but no further action is necessary to install the certificate on the APmax.
- Press the *Backup* button to save the newly installed certificate as a local file. The backup file is a .pem file with all information (private key, main certificate, intermediate certificate) in the correct order and can be installed on another server or APmax.

11.5 Administrative Users

The *Administrative Users* tab (Figure 11-28) provides an interface for managing user accounts that have administrative access to the provisioning API. Administrative access provides a login for third-party provision systems. An administrative user can provision the settings of any subscriber, whereas as a subscriber with a normal Internet Access account can only access their own settings.

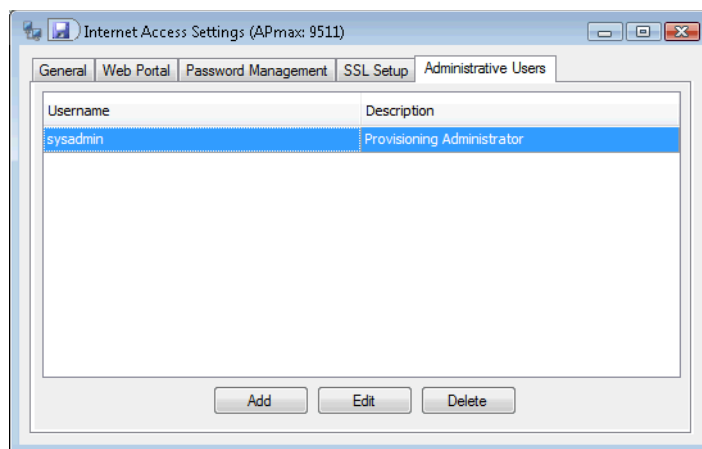


Figure 11-28 Administrative Users Tab

Instructions for adding, editing, and deleting administrative users are given below.

11.5.1 Adding a User

To define a new administrative user, follow these steps:

1. Press the *Add* button in the *Administrative Users* tab. An Administrative User window similar to Figure 11-29 will be displayed.

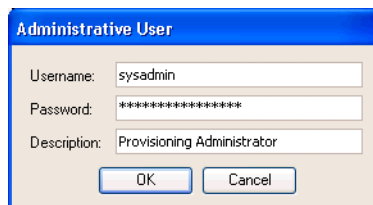


Figure 11-29 Administrative User Window

2. Populate the following fields in the Administrative User window:

Username	The name of this Internet Access account. This name must be unique among subscribers associated with the same Internet Access service provider.
Password	The password of this Internet Access account. This password is used in conjunction with the Username to allow the subscriber to have administrative access to the provisioning API.
Description	A short description of this account.

3. Press the *OK* button in the Administrative User window. The new user has now been created and will be displayed in the list of users in the *Administrative Users* tab.

11.5.2 Editing a User

To modify the settings (Username, Password, Description) of an existing administrative user, select the user in the *Administrative Users* tab (see Figure 11-28) and press the *Edit* button. An Administrative User window (see Figure 11-29) populated with the current settings of the selected user will be displayed. Make any desired changes to the settings and press the *OK* button to save the changes.

11.5.3 Deleting a User

To delete an administrative user, select the user in the *Administrative Users* tab (see Figure 11-28) and press the *Delete* button. A delete confirmation prompt (Figure 11-30) will be displayed. Select the *Yes* button to complete the deletion.

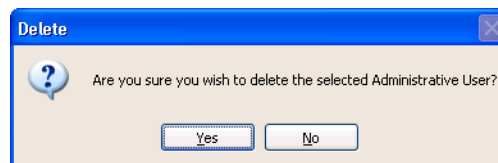


Figure 11-30 Delete User Prompt

11.6 External DSP Addresses

Note: The External DSP Addresses interface is only available for APmax systems with either the SysConfig package installed, or APmax Release 4.3 or greater.

The *External DSP Addresses* tab (Figure 11-31) is used to manage the list of domain names and IP addresses that can be used by Internet and mobile device applications to query APmax system information from DSPs on the APmax.

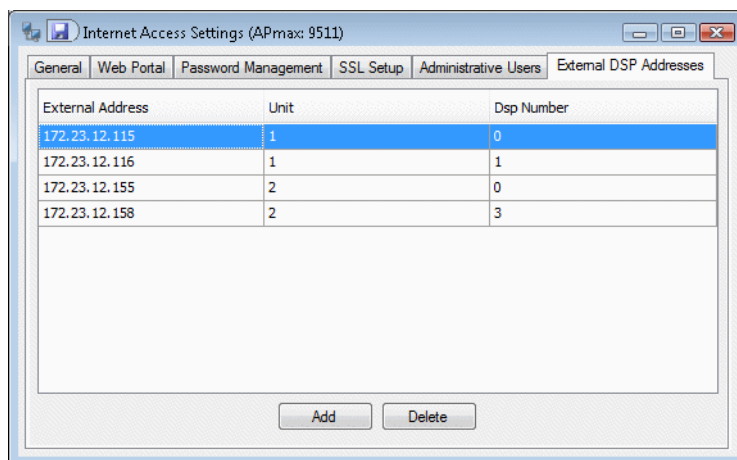


Figure 11-31 External DSP Addresses Tab

To configure a new external DSP address, follow these steps:

1. Press the *Add* button in the *External DSP Addresses* tab. An External DSP entry window similar to Figure 11-32 will be displayed.

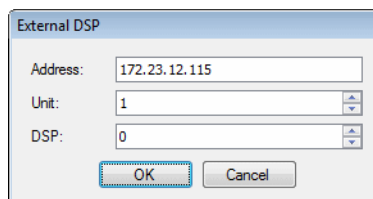


Figure 11-32 External DSP Entry Window

2. Populate the following fields in the External DSP window:

Address

Enter the IP address or domain name that someone on the Internet would use to access this DSP.

Unit Select or enter the number of the APmax unit with the DSP.

DSP Select or enter a DSP number from 0 to 3.


3. Press the *OK* button. The external DSP address has now been created and will be displayed in the *External DSP Addresses* tab.

To remove an external DSP address, select the address entry and press the *Delete* button. A confirmation prompt will be displayed. Choose *Yes* in the prompt to complete the deletion.

Chapter 12 - Phone Number Format

The Phone Number Format interface provides the following functions:

- Formatting the playback of phone numbers in announcements (see Section 12.1).
- Configuring the length of phone number addresses that are automatically added to the APmax system when a new subscriber record is created (see Section 12.2).

The Phone Number Format interface is accessed by right-clicking on the system's icon  in the Command Center window to invoke a popup menu, and then selecting the *System Configuration / Phone Number Format* command (as illustrated in Figure 12-1). The name of the system for which you are configuring settings will be displayed at the top of the Phone Number Format window (Figure 12-2).

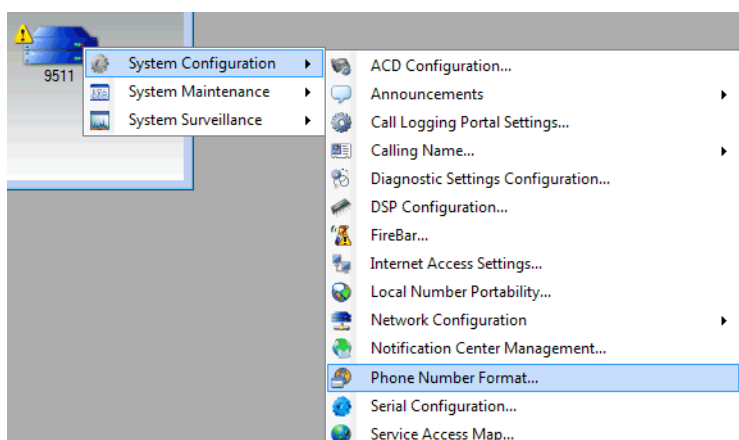


Figure 12-1 Phone Number Format Menu Command

The Phone Number Format window is partitioned into two tabs: *Format Settings* (Figure 12-2) and *Subscriber Settings* (Figure 12-5). The settings and functions in these tabs are described below.

- Section 12.1 - "Format Settings"
- Section 12.2 - "Subscriber Settings"

12.1 Format Settings

The *Format Settings* tab (Figure 12-2) is used to format the playback of phone numbers in announcements.

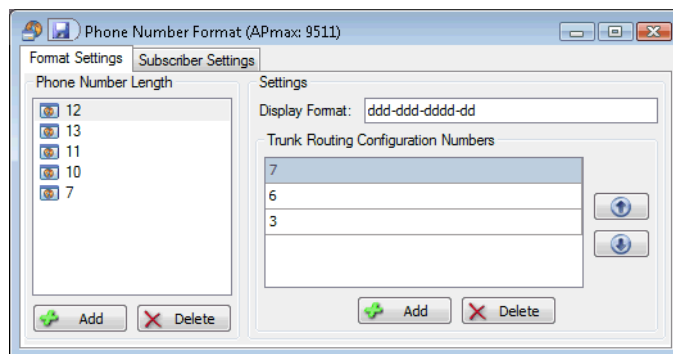


Figure 12-2 Format Settings Tab

The left-hand side of the tab contains a list of the phone number lengths (e.g. 7-digit, 10-digit, 11-digit) which have already been formatted for this system. Additional phone number lengths can be formatted by pressing the *Add* button below the list to display the Add Number Format window (Figure 12-3), filling out the fields described below, and pressing the *OK* button.

Digit Length Enter a phone number length from 5 to 24 digits.

Display Format Use the letter *d* (indicating a digit) and dashes to format the phone number.

Digits in the phone number are voiced with either a normal voice or an ending inflection, depending on where they are located in the format. Dashes in the format will result in a pause in the phone number announcement. For example, if the *Digit Length* is 10 then a possible format would be *ddd-ddd-dddd*, with the 3rd, 6th, and 10th digits having an ending inflection, the remaining digits being voiced normally, and the dashes resulting in two inter-digit pauses.

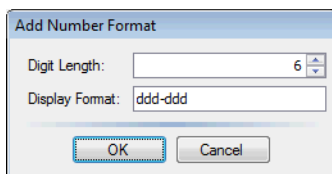


Figure 12-3 Add Number Format

Selecting a phone number length in the left-hand list of the *Format Settings* tab will show the *Display Format* and *Trunk Routing Configuration Numbers* of the selected length in the right-hand side of the tab. The *Display Format* field (described above Figure 12-3) allows the initially defined format of the selected phone number length to be edited.

The *Trunk Routing Configuration Numbers* list is used to set up a priority queue for matching phone numbers that come in on a trunk. Entries in this list are referred to as “routing numbers” and indicate the number of digits (from 1 to 10) that need to be matched before routing occurs.

For example, if the routing numbers 7, 6, and 3 are in the list then routing will occur on the first 7 digits of the incoming phone number if a match is found. However, if a match is not found then an attempt will be made to route on the first 6 digits and, if a match is still not found, an attempt will be made to route on the first 3 digits.

To add a routing number, press the *Add* button below the *Trunk Routing Configuration Numbers* list. A window similar to Figure 12-4 will be displayed. Enter a routing number from 1 to 10 and press the *OK* button to complete the entry.

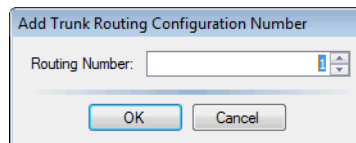


Figure 12-4 Add Trunk Routing Configuration Number

Numbers in the *Trunk Routing Configuration Numbers* list can be moved up and down in the priority queue by selecting the row of the number and pressing the up or down arrow buttons on the right-hand side of the list.

12.2 Subscriber Settings

The *Subscriber Settings* tab (Figure 12-5) is used to configure the length (number of digits) of the phone number addresses that are automatically added to the APmax system when a new subscriber record is created. For example, if entries for 7 and 10 are in the *Subscriber Settings* tab, and a new subscriber with the phone number 605-555-1000 is added to the APmax, then a 7-digit phone number address of 555-1000 would also be added to the system for the new subscriber record.

Note: An address length of 10 digits will be automatically configured for non-international APmax systems and cannot be deleted from the *Subscriber Settings* tab.

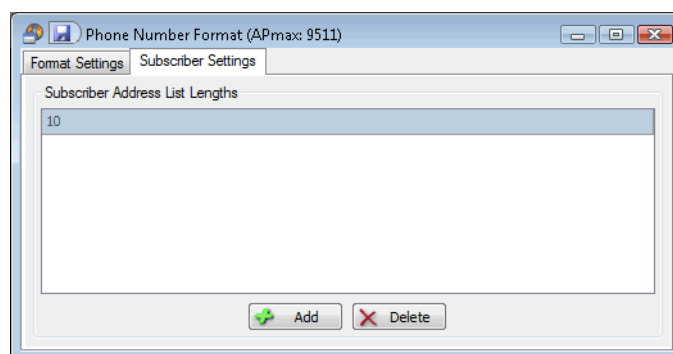


Figure 12-5 Subscriber Settings Tab

To add a new default subscriber address length to the system, press the *Add* button in the *Subscriber Settings* tab. An entry form similar to Figure 12-6 will be displayed. Enter a number of digits from 5 to 10 and press the *OK* button to complete the entry.

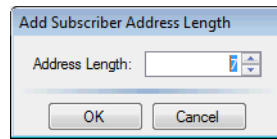


Figure 12-6 Add Subscriber Address Length

Part 3 - System Maintenance

Overview

Part 3 provides instructions for maintaining the APmax hardware and using the system maintenance functions that are included in the APmax UI software.

The following chapters are found in System Maintenance:

- Chapter 13 - "Hardware Maintenance"
- Chapter 14 - "Announcement Manager"
- Chapter 15 - "FTP Transfer Service"
- Chapter 16 - "Package Management"
- Chapter 17 - "Report Viewer"
- Chapter 18 - "System Upgrade Manager"

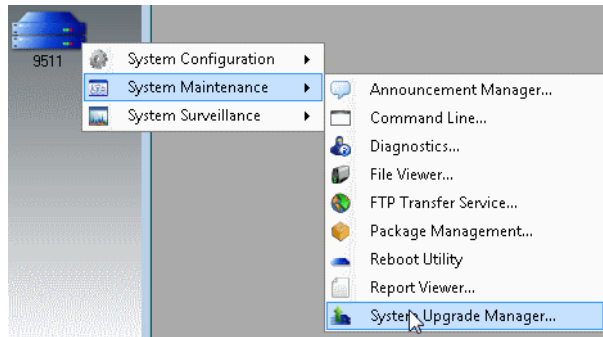
WARNING: The functions described below allow direct manipulation of the APmax through access to APmax commands and through access to files stored on the APmax's disk. These functions should not be used except under the direction of vendor technical support personnel. Before using these functions, you must completely understand what actions to perform and the consequences of those actions. Any mistakes made using these functions could have **serious** ramifications. If there is an APmax UI function available to perform the desired APmax modification, it is very strongly recommended that the APmax UI function be used to update the APmax rather than these direct access methods.

- **Command Line** - Provides access to the APmax command line where APmax commands can be entered and the response displayed.
- **Diagnostics** - Used to collect detailed information (logs, statistics, core files, etc.) from one or more APmax units. The information is then archived and can be used by vendor technical support personnel.
- **File Viewer** - Allows the display and manipulation of files stored on the APmax's disk. It also provides disk usage information.
- **Process Viewer** - Monitors the CPU usage of processes running on each unit of the APmax system.
- **Reboot Utility** - Used to perform the following actions for each APmax unit: Restart the Administration CPU, restart the Call Processing CPU, restart all DSPs, Shutdown.

To access the maintenance interfaces for an APmax system, right-click on the system's icon



in the Command Center window to invoke a popup menu. Select the *System Maintenance* command to expand the popup menu, as illustrated in the figure below. The expanded menu will display all of the available maintenance interfaces for this system. Select a command from the expanded menu to display the associated interface.



System Maintenance Menu

NOTE: The name of the APmax system for which maintenance is being performed will be displayed in the caption of any window that is opened using the *System Maintenance* command. If the system name that is displayed in the caption is not the system you want to configure, then close the window and right-click on the icon of the system you want to configure.

Chapter 13 - Hardware Maintenance

APmax system hardware may periodically require maintenance. The procedures in this chapter provide step-by-step instructions for performing the following maintenance functions:

- Cleaning Air Vents (Section 13.1)
- Fan Replacement (Section 13.2)

13.1 Cleaning Air Vents

The APmax system contains eight (four per unit) air vents. The following instructions describe how to properly clean these air vents. Complete this process once every six months or when other central office equipment has a similar maintenance procedure performed.

13.1.1 Remove Vent Cover

Remove the vent cover using needle-nose pliers (or a similar instrument). Simply grab part of the vent cover and pull (see Figure 13-1).



Figure 13-1 Remove Vent Cover

13.1.2 Remove Foam Padding

Once the vent cover has been removed, remove the foam padding behind it using the same instrument. Pinch the padding and pull it back (see Figure 13-2).



Figure 13-2 Remove Foam Padding

13.1.3 Remove Dust From Foam Padding

Blow on the foam padding or use compressed air to remove any dust. Reverse the steps to finish the process, and then repeat these steps for the remaining air vents.

13.2 Fan Replacement

CAUTION – The APmax contains sensitive electronic components that can be damaged by electrostatic discharge (ESD). Please follow Telephone Equipment ESD abatement procedures when handling equipment.

13.2.1 Recommended Tools

- #2 Philips head screwdriver (for power and alarm wiring, loosen/tighten brackets on chassis, cover)
- 1/8" slot (flat) head screwdriver (to remove/install connectors on screwlocks)
- 5/16" socket/nut driver (to remove/install APmax unit on rack)
- Small (4" or 6") long nose locking pliers (remove/install fans)
- #1 Phillips head screwdriver (remove/install fans)

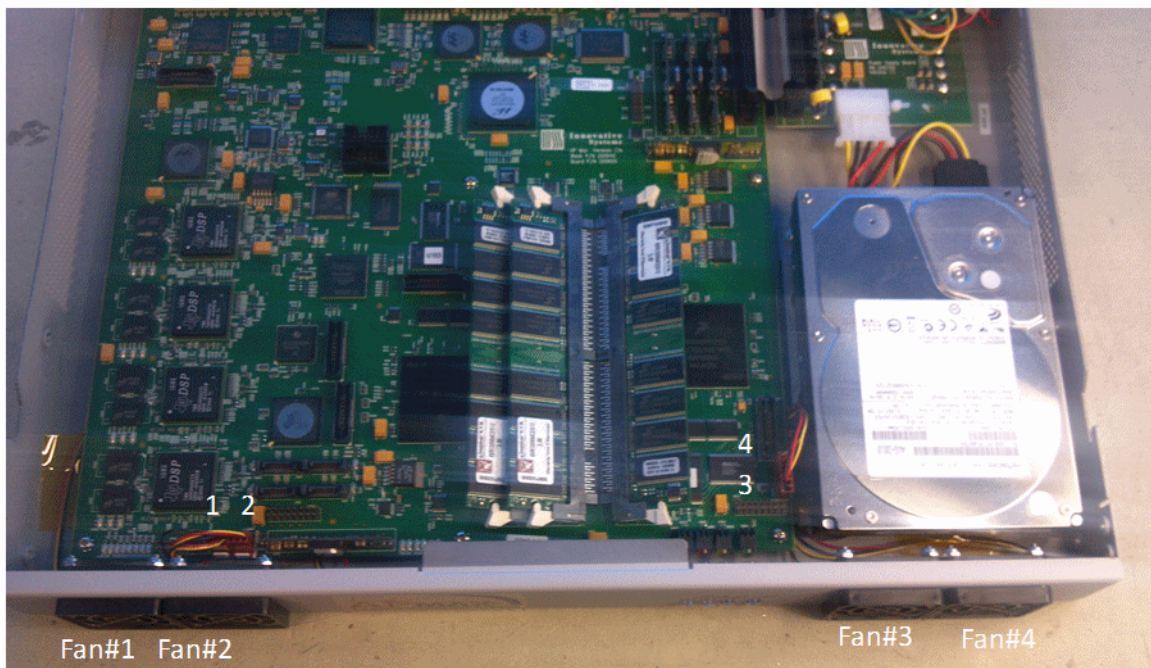
13.2.2 Fan Replacement Procedure

When looking at the APmax from the Front View, the fans are numbered from left to right. The corresponding power connectors are shown in Figure 13-4.



Figure 13-3 APmax Front

1. Power down the unit that needs to be repaired.
2. Record and tag all cables and wires connected to the repair unit.
3. Disconnect cables and wires.
4. Remove the unit from the rack.
 - a. Remove the Hex screws that secure the APmax brackets to the rack.
5. Bench the unit with the Front Panel facing technician.
 - a. Loosen the screws that secure the brackets to the APmax (5 per bracket).
 - b. Remove the two screws in the back on the unit to remove top cover.
 - c. Slide the top cover towards the back of the unit. Remove cover.

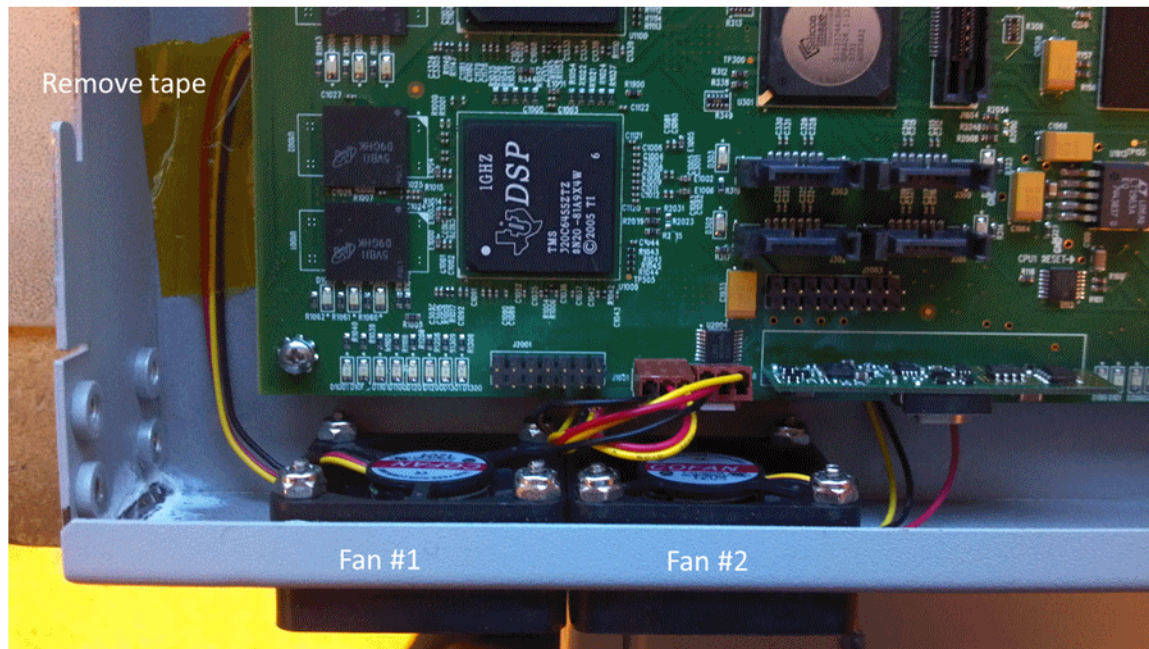
**Figure 13-4**

6. Remove fan from unit.
 - a. Remove the fan wiring from the motherboard by pulling upward on the corresponding brown connector.
 - b. Clip off connector with as much wire as possible to ease the removal of the old wire.
 - c.

Note: The fan wires are taped to the casing underneath the motherboard. Use precaution when pulling from under the board.

Pull horizontally (not upward) when removing old wires. Once fan wires are free, clip off remaining wire up to fan and discard.

Note: If for some reason the wire does not want to pull free with reasonable force, it will not cause any problems if it is left in place. Simply cut off the old wire that is visible and leave the rest.

**Figure 13-5**

- d. Use a long-nose locking plier or other small plier to hold a locking nut while using a #1 Phillips screwdriver to remove the corresponding screw from the outside of the unit. Repeat to remove remaining screws.

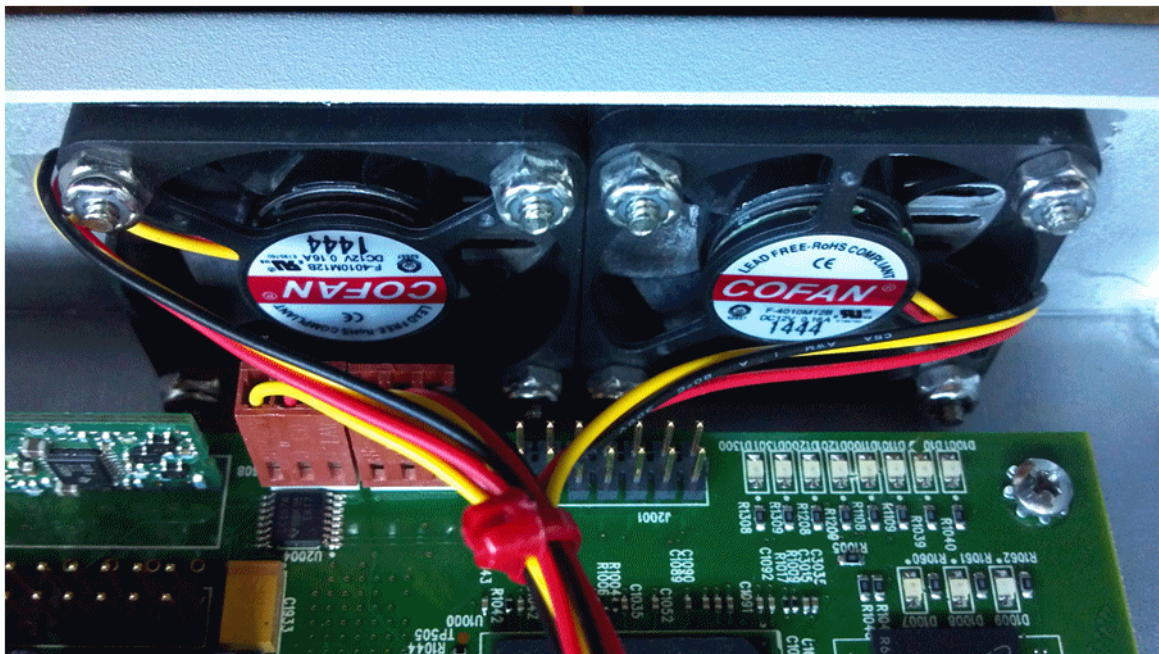
**Figure 13-6**



Figure 13-7

- e. Save and collect hardware from the fan so that you can reuse it with the new fan (This includes the outside fan filter assembly. These will be used with the new fans.)

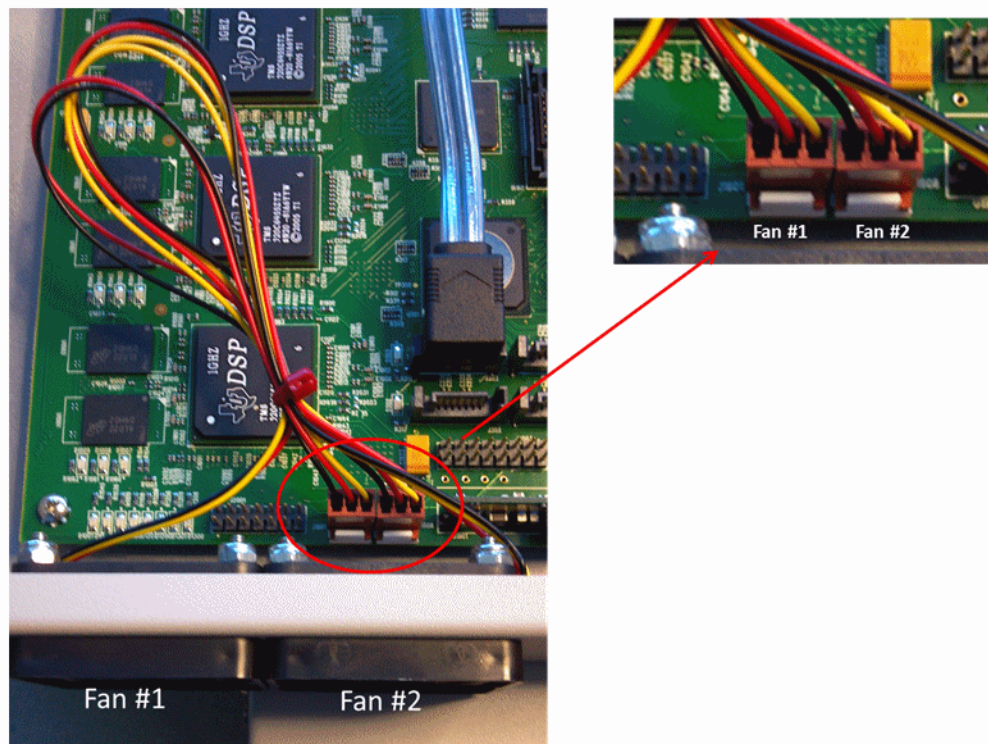
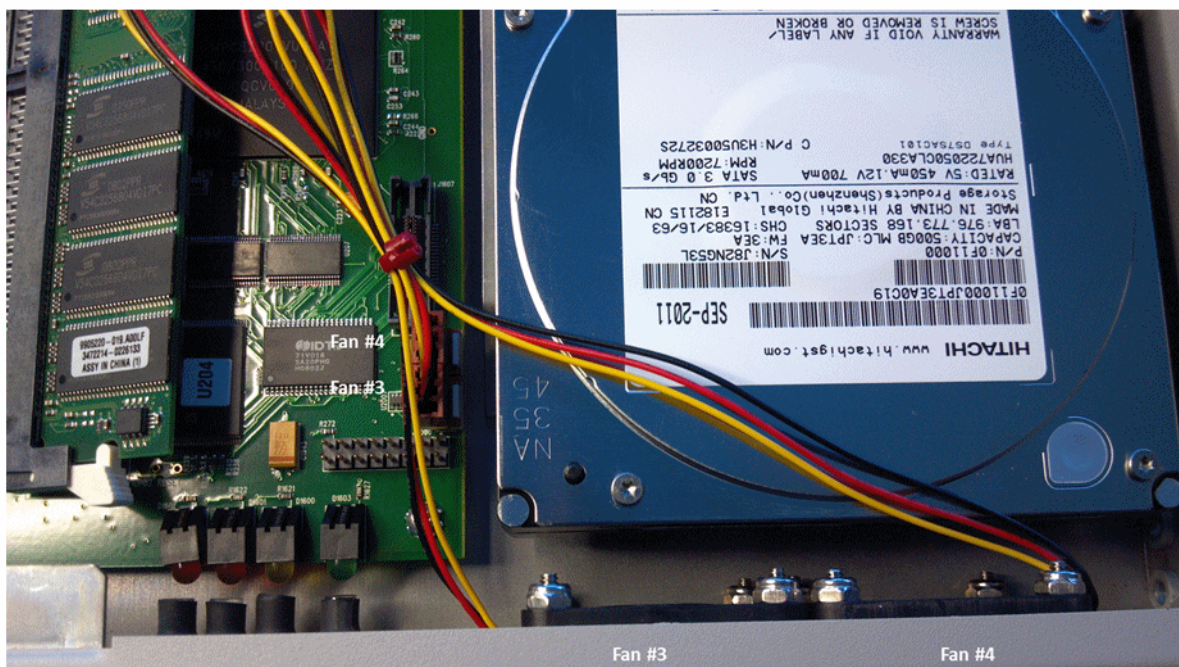
Note: Once removed, this would be a good time to blow out/clean the fan filter.

- f. Replace single fan or desired number of fans.

Note: It is highly recommended that when a unit is taken out of service in order to replace a faulty fan, that all four fans be replaced in the unit. If fans were also shipped for the mate unit, they may be replaced at your convenience or when that unit displays a fan alarm.

7. Install the new fan.


- a. With the “Cofan” fan label visible from the inside of the unit and with fan wires exiting from either the right side or left side of the fan (depending on which fan is being replaced, see Figure 13-6), place the new fan so that the screw holes align with holes in enclosure.
- b. Next, align the fan filter assembly on the outside of the enclosure and insert the 4 screws (make sure the filter retainer is facing outward).
- c. Secure the 4 nylon lock nuts to the screws. Do not overtighten.
- d. Connect fan wires to board (see Figure 13-8).
- e. Loop fan wires and secure with cable tie (single fan or two adjacent fans). See Figure 13-8 and Figure 13-9.

**Figure 13-8****Figure 13-9**

- f. Slide cover back into place and secure with screws in the back of the unit.
- 8. Tighten the screws that secure the brackets to the APmax (5 per bracket).
- 9. Install the unit back into the rack.
- 10. Connect cables and wires.
- 11. Return power to unit.
- 12. Clear the alarms using the APmax UI (see Chapter 19 - "Alarm Status") after the unit has finished booting up.

Chapter 14 - Announcement Manager

The Announcement Manager interface in the APmax UI allows new announcements and phrases to be created, and also allows existing announcements and phrases to be modified.

To access the Announcement Manager interface, right-click on an APmax system's icon  in the Command Center window to invoke a popup menu, and select the *System Maintenance / Announcement Manager* command (as illustrated in Figure 14-1). The name of the system for which you are managing announcements will be displayed at the top of the Announcement Manager window (Figure 14-2).

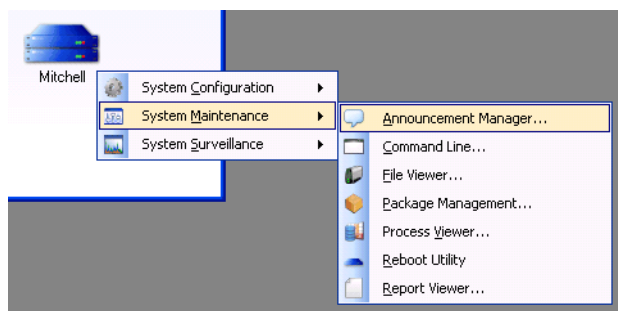



Figure 14-1 Announcement Manager Menu Command

The Announcement Manager window is partitioned into two tabs: *Announcements* (Figure 14-2) and *Phrases* (Figure 14-21). The settings and functions in these tabs are described in the following sections:

- Section 14.1 - "Announcements"
- Section 14.2 - "Phrase Management"

14.1 Announcements

The *Announcements* tab (Figure 14-2) is displayed by default when the Announcement Manager interface is accessed. This tab contains a table of the announcement sets that are currently deployed to this APmax system. On the left-hand side of each announcement set row is a tree symbol  that can be clicked to display or hide the announcements in the set. For example, in Figure 14-2 the "Std-Class" announcement set is expanded to display all of the STD/CLASS announcements on the system. A vertical scrollbar will be displayed on the right-hand side of the window if the announcement sets and announcements create a table longer than can be shown in the Announcement Manager window.

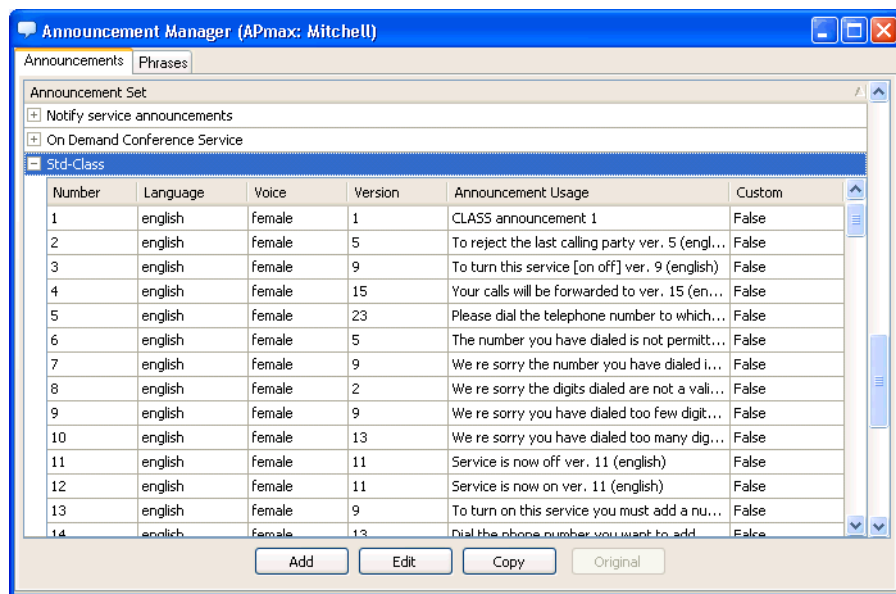


Figure 14-2 Announcements Tab

The following columns of information about each announcement will be displayed when a set row is expanded.

Number	The announcement number. This number is unique within this announcement set.
Language	The language (e.g. English, Spanish, TTY) that is used to voice the announcement.
Voice	The voice used in the announcement (e.g. female, female_2).
Version	The version number of the announcement.
Description	Descriptive text used to help identify the announcement.
Custom	Is this a custom announcement? True or False. Custom announcements are announcements that have been added or edited after the announcement set was deployed to the APmax system.

The list of announcements can be sorted by clicking on any of the column headings described above. The functions of the *Add*, *Edit*, *Copy* and *Original* buttons located at the bottom of the *Announcements* tab are described in the following sections:

- Section 14.1.1 - "Adding Announcements"
- Section 14.1.2 - "Editing Announcements"

- Section 14.1.3 - "Copying Announcements"
- Section 14.1.6 - "Restoring Original Announcements"

14.1.1 Adding Announcements

The Announcement Manager provides an interface for creating new announcements by concatenating phrases (see Section 14.1.4.1 - "Phrase Components") and information components (see Section 14.1.4.3 - "Information Components").

New announcements can only be added to switch announcement sets. Follow these steps to create an announcement:

1. Select the switch announcement set row (e.g. Std-Class) in the *Announcements* tab and press the *Add* button. The Add Announcement window (Figure 14-3) will be displayed.

Phrase	Inflection	Language	Voice
▶ service is now on.	None	english	female

Figure 14-3 Add Announcement Window

2. Enter text into the *Announcement Description* field that will help identify the announcement within the APmax UI.
3. Choose in the *Type* selection box the component to be added, either Phrase or Information.
4. Press the *Add* button. An Add Phrase window will be displayed. The fields in the window will depend on the type of component that is being added. For more information on adding phrases see Section 14.1.4.1 and for more information on adding information components see Section 14.1.4.3.
5. Fill out the fields in the Add Phrase window and press the *Insert* button to add the component to the announcement.

6. Repeat the three previous steps until all of the desired components have been added to the new announcement. Unwanted components can be deleted by selecting the component in the *Announcement Text* section and pressing the *Delete* button.
7. Press the *Test* button and listen to the announcement to verify the components of the announcement are playing correctly. See Section 14.1.5 - "Testing Announcements" for more information. When finished, close the Test Announcement window.
8. When the announcement is satisfactory, press the *OK* button in the Add Announcement window. A prompt to close the window and save the announcement will be displayed (see Figure 14-4).

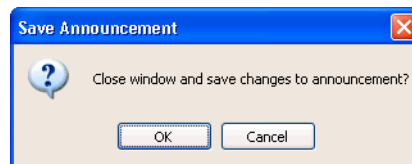


Figure 14-4 Save Announcement Prompt

9. Press *OK* in the Save Announcement prompt to continue. The Announcement Number prompt (see Figure 14-5) will be displayed.

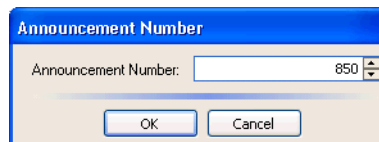


Figure 14-5 Announcement Number Prompt

10. Enter the number from 1 to 65535 that will be used to identify the new announcement, and press the *OK* button. The new announcement will now be listed in the switch announcement set.

14.1.2 Editing Announcements

The Announcement Manager allows the following changes to be made to existing announcements:

- The announcement description can be edited.
- Phrases (see Section 14.1.4.1 - "Phrase Components") can be added or deleted.
- Information components (see Section 14.1.4.3 - "Information Components") can be added, deleted, or have their *Information Sub-Type* and *Logical Station* properties changed.

Announcements in any announcement set can be edited. Follow these steps to edit an announcement:

1. In the *Announcements* tab, expand the announcement set row containing the announcement to be edited.
2. Select the announcement to edit and press the *Edit* button. An Edit Announcement window similar to Figure 14-6 will be displayed. The contents of the selected announcement will be shown in the window.

Edit Announcement

General Announcement Information

Announcement Description: Message_003

Based On Version: 3

Announcement Text

To turn this service [on off] [optional msg] silence 300 ms To hear the numbers on your list, dial 1. To hear these instructions repeated, dial 0. Please dial now. tone 400 Hz 300 ms [sec silence]

Type: Phrase Add Delete Test

Selected Phrase Properties

Phrase	Inflection	Language	Voice
To turn this service	None	english	female

OK Cancel

Figure 14-6 Edit Announcement Window

3. Make the desired changes. Options include:
 - Change the text in the *Announcement Description* field. This text is used to help identify the announcement within the APmax UI.
 - Use the *Add* button to add components to the announcement. For more information on adding phrases see Section 14.1.4.1, and for more information on adding information components see Section 14.1.4.3.
 - Remove unwanted components by selecting them in the *Announcement Text* section and pressing the *Delete* button or the Delete key on the keyboard.
4. Press the *Test* button and listen to the announcement to verify the components of the announcement are playing correctly. See Section 14.1.5 - "Testing Announcements" for more information. When finished, close the Test Announcement window.
5. When the announcement is satisfactory, press the *OK* button in the Edit Announcement window to save the changes. Alternatively, all changes can be discarded by pressing the *Cancel* button. If the *OK* button is pressed, a prompt to close the window and save the announcement will be displayed (see Figure 14-7).

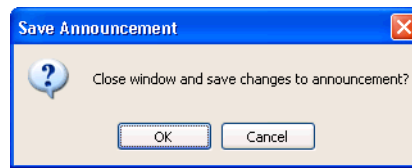


Figure 14-7 Save Announcement Prompt

6. Press *OK* in the Save Announcement prompt to confirm the save.

14.1.3 Copying Announcements

Any announcement in a switch announcement set (e.g Std-Class) can be copied to create a new announcement based on the existing announcement. Follow these steps to copy an announcement:

1. In the *Announcements* tab, expand the switch announcement set row containing the announcement to be copied.
2. Select the announcement to copy and press the *Copy* button. A Copy Announcement window similar to Figure 14-8 will be displayed. The contents of the selected announcement will be shown in the window.

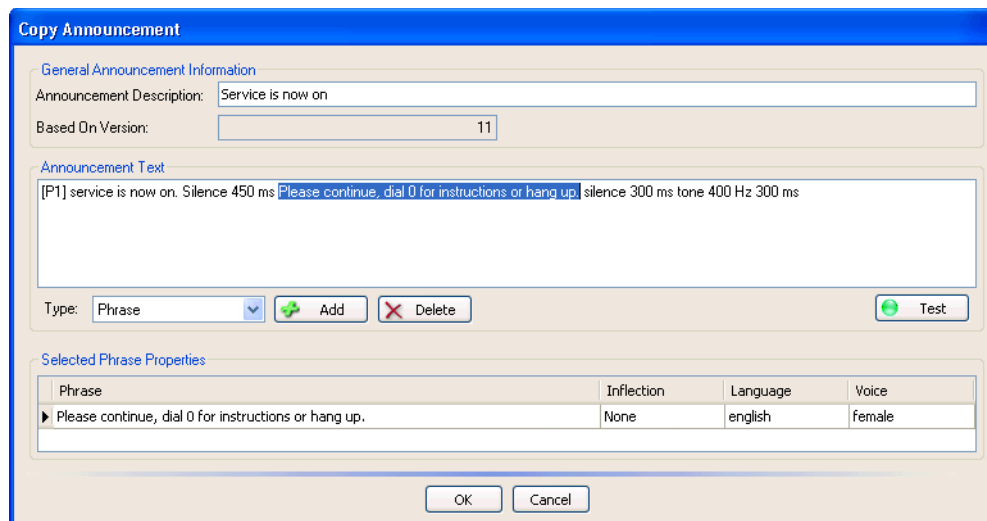


Figure 14-8 Copy Announcement Window

3. Make any desired changes. Options include:
 - Change the text in the *Announcement Description* field. This text is used to help identify the announcement within the APmax UI.

- Use the *Add* button to add components to the announcement. For more information on adding phrases see Section 14.1.4.1, and for more information on adding information components see Section 14.1.4.3.
 - Remove unwanted components by selecting them in the *Announcement Text* section and pressing the *Delete* button.
4. Press the *Test* button and listen to the announcement to verify the components of the announcement are playing correctly. See Section 14.1.5 - "Testing Announcements" for more information. When finished, close the Test Announcement window.
 5. When the announcement is satisfactory, press the *OK* button in the Copy Announcement window to save the changes. Alternatively, the new announcement can be discarded by pressing the *Cancel* button. If the *OK* button is pressed, a prompt to close the window and save the announcement will be displayed (see Figure 14-9).

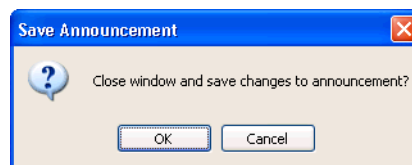


Figure 14-9 Save Announcement Prompt

6. Press *OK* in the Save Announcement prompt to continue. The Announcement Number prompt (see Figure 14-10) will be displayed.

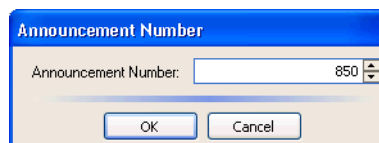


Figure 14-10 Announcement Number Prompt

7. Enter the number from 1 to 65535 that will be used to identify the new announcement, and press the *OK* button. The new announcement will now be listed in the switch announcement set.

14.1.4 Announcement Components

Announcements are comprised of one or more of the following types of components: Phrase, Parameter, Information, and Built In. These components are concatenated together to form the announcement. Descriptions of each type of announcement component are given below.

- Section 14.1.4.1 - "Phrase Components"
- Section 14.1.4.2 - "Parameter Components"
- Section 14.1.4.3 - "Information Components"

- Section 14.1.4.4 - "Built In Components"

14.1.4.1 Phrase Components

Announcement phrase components are pre-recorded audio clips that voice pre-defined letters, numbers, words, tones, or silence each time the announcement is played. These phrases may be simple, one-word phrases such as “and” or they may be multi-word phrases such as “the number you have dialed.” Some phrases are periods of silence which can be used to create pauses, resulting in a more natural-sounding announcement. See Section 14.2 - "Phrase Management" for information on creating new phrases.

An announcement with multiple phrase components is shown in Figure 14-11.

Edit Announcement

General Announcement Information

Announcement Description: Message_003

Based On Version: 3

Announcement Text

To turn this service [on off] [optional msg] silence 300 ms To hear the numbers on your list, dial 1. To hear these instructions repeated, dial 0. Please dial now. tone 400 Hz 300 ms [sec silence]

Type: Phrase Add Delete Test

Selected Phrase Properties

Phrase	Inflection	Language	Voice
▶ To turn this service	None	english	female

OK Cancel

Figure 14-11 Phrase Component Properties

Selecting a phrase in the *Announcement Text* section of the Add Announcement window or Edit Announcement window (illustrated in Figure 14-11) will display the details of the phrase in the *Selected Phrase Properties* section of the window. Phrase properties in the *Announcement Text* section are read-only and are described below Figure 14-12.

Phrases can be added or deleted from new or existing announcements. To add a phrase to an announcement, select Phrase in the *Type* selection box of the Add Announcement or Edit Announcement windows (see Figure 14-11) and press the *Add* button. An Add Phrase window similar to Figure 14-12 will be displayed.

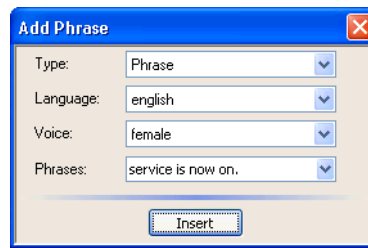


Figure 14-12 Add a Phrase Component

The Add Phrase window for phrase components contains the following fields.

Type	The type of component (Phrase or Information) that is being added to the announcement. Select the Phrase option if it is not already selected.
Language	The language (e.g. English, Spanish, TTY) that is used to voice the phrase.
Voice	The voice used in the phrase (e.g. female, female_2).
Phrases	The phrase that will be added to the announcement. Only phrases that meet the selected <i>Language</i> and <i>Voice</i> criteria will be available.

Click in this field to display a drop-down list of available phrases and select the desired phrase, as illustrated in Figure 14-13. The drop-down list can be sorted by clicking on the *Phrase Text* column heading. Also, typing while the drop-down list is displayed will filter the list to show only phrases beginning with the entered text.

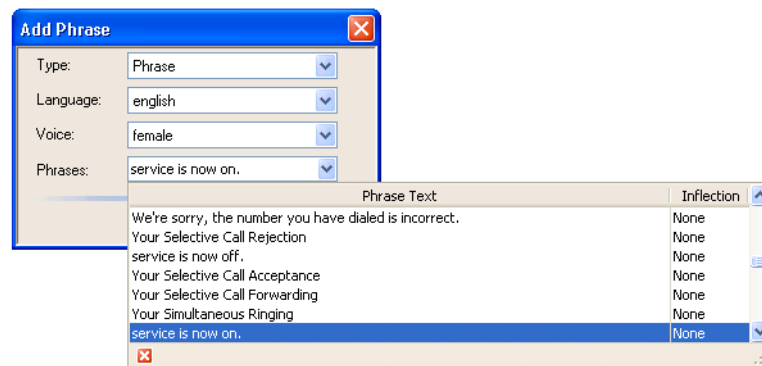


Figure 14-13 Phrases Drop-down List

Populate the fields in the Add Phrase window and press the *Insert* button to add the phrase component to the announcement.

To delete a phrase component from an announcement, select the phrase in the *Announcement Text* section of the Add Announcement or Edit Announcement window and press the *Delete* button.

14.1.4.2 Parameter Components

Parameters are the parts of an announcement that are variable. That is, parameters in an announcement may say different things each time the announcement is played. For example, if an announcement plays the current time, such as “The current time is [CurrentTime],” then the [CurrentTime] portion of the announcement is variable because it changes with the time of day. Therefore [CurrentTime] would be a parameter in the announcement.

Selecting a parameter in the *Announcement Text* section of the Add Announcement window or Edit Announcement window (illustrated in Figure 14-14) will display the details of the parameter in the *Selected Parameter Properties* section of the window.

The screenshot shows the 'Edit Announcement' window. The 'Announcement Text' field contains the text: "[P1] service is now on. Silence 450 ms Please continue, dial 0 for instructions or hang up. silence 300 ms tone 400 Hz 300 ms". The 'Type' is set to 'Parameter'. The 'Selected Parameter Properties' section displays a table for parameter P1.

Name	Stream Index	Type	Sub-Type	Length
P1	1	Number	Default	1

Below the table, there are sections for 'Condition' and 'Order / Action'.

Condition	Value	Value2
Equal	0	0
Equal	1	0

Order	Action	Language	Voice	Phrase
0	Say File	english	female	Your Selective Call Acceptance
Equal		2		0
Equal		3		0
Equal		4		0

Figure 14-14 Parameter Component Properties

Parameters are only found in factory-defined announcements and cannot be added or deleted, but the values of the *Language*, *Voice*, and *Phrase* properties may be changed. These properties are described below:

Language The language (e.g. English, Spanish, TTY) that is used to voice the parameter.

Voice The voice used in the parameter (e.g. female, female_2).

Phrase

The phrase that will be voiced. Only phrases that meet the selected *Language* and *Voice* criteria will be available.

Click in this field to display a drop-down list of available phrases and select the desired phrase. The drop-down list can be sorted by clicking on the *Fragment* heading. Also, typing while the drop-down list is displayed will filter the list to show only phrases beginning with the entered text.

Press the *OK* button when all changes are completed to save the changes and close the Edit Announcement window.

14.1.4.3 Information Components

Announcement information components are used in conjunction with the APmax Weather Plus Service (see the Weather Plus Service Description for more information) to play current weather readings from weather stations or current date and time. Consequently, an information component in an announcement may say different things each time the announcement is played. For example, if the {OutsideTemp1} information component is supposed to give the outside temperature from logical weather station 1, then the {OutsideTemp1} portion of the announcement will change depending on the current temperature at logical weather station 1.

An announcement with multiple information components is shown in Figure 14-15.

Add Announcement

General Announcement Information

Announcement Description: Current weather conditions for logical weather station 1

Based On Version: 1

Announcement Text

It is currently {OutsideTempStation1} silence 250 ms degrees Fahrenheit with {OutsideHumidityStation1} percent relative humidity silence 450 ms {WindDirectionStation1} at {WindSpeedStation1} miles per hour silence 450 ms {Rainfall}

Type: Information Add Delete Test

Selected Information Properties

Information Type	Information Sub-Type	Logical Station	Language	Voice
TotalRain	Default	1	english	female

Condition: Greater Than 0

Order	Action	Language	Voice	Phrase
0	Say Value	english	female	

OK Cancel

Figure 14-15 Information Component Properties

Selecting an information component in the *Announcement Text* section of the Add Announcement window or Edit Announcement window (illustrated in Figure 14-15) will display the details of the information component in the *Selected Information Properties* section of the window. The properties shown in the *Selected Information Properties* section are described below Figure 14-16. Of these properties, only the *Information Sub-Type* and *Logical Station* values can be changed.

Information components can be added or deleted from new or existing announcements. To add an information component to an announcement, select Information in the *Type* selection box of the Add Announcement or Edit Announcement windows (see Figure 14-15) and press the *Add* button. An Add Phrase window similar to Figure 14-16 will be displayed.

Figure 14-16 Add an Information Component



The Add Phrase window for information components contains the following fields.

Type (of component)	The type of component (Phrase or Information) that is being added to the announcement. Select the Information option if it is not already selected.
Language	The language (e.g. English, Spanish, TTY) that is used to voice the component.
Voice	The voice used in the component (e.g. female, female_2).
Type (of information)	The type of information component. Options include: Barometric Pressure, Barometric Trend, Daily Rain, Dew Point, Heat Index, Inside Humidity, Inside Temp, Outside Humidity, Outside Temp, Total Rain, UV Index, Wind Chill, Wind Direction, Wind Gust, Wind Speed, Time, and Date.
Sub Type	The unit of measurement used for this information component. Unit options may include Default (the standard sub-type for this type of information component, as defined by the announcement service), Imperial, and Metric units, and also Time and Date formats when appropriate.
Station	The number (1 to 8) of the logical weather station this information component will use to find its value.


Description	The name of this information component. This name will be used to identify this information component in the Add Announcement and Edit Announcement interfaces.
--------------------	---





Populate the fields in the Add Phrase window and press the *Insert* button to add the information component to the announcement.

To delete an information component from an announcement, select the information component in the *Announcement Text* section of the Add Announcement or Edit Announcement window and press the *Delete* button.

In addition to changing property values, conditions may be defined for information components by selecting the component and pressing the add condition  button in the upper left-hand corner of the *Selected Information Properties* section. When a condition is added, an expand symbol  will appear on the left-hand side of the component's row in the *Selected Information Properties* section. Expanding the row will display the conditions for the selected component (illustrated in Figure 14-15). Each condition row contains the type of condition, a *Value* column, and a *Value2* column. The necessity of entering a number into the *Value2* column depends on the type of condition. Conditions types that may be defined include Always, Equal, Not Equal, Less Than, Greater Than, Less Than Equal, Greater Than Equal, Range Equal, Range Not Equal, Invalid, and Other. Figure 14-15 illustrates a TotalRain information component with a condition that the TotalRain value be greater than zero.

Note: The Barometric Trend information component does not support conditions.

To remove a condition from an information component, select the condition row in the *Selected Information Properties* section and press the delete condition  button.

Each condition of an information component may have one or more actions associated with it. Use the expand symbol  on the left-hand side of a condition row to view the actions defined for the condition. The add action  button can be used if more than one action is necessary for a condition. The move action up  and move action down  buttons are used to rearrange the order in which the actions take place.

Changes to property values and conditions will be saved when the *OK* button is pressed.

14.1.4.4 Built In Components

Components that are “Built In” perform custom announcement operations that cannot be created using standard phrase, parameter, or information components. This type of component can be deleted from an announcement, but cannot be added using the Announcement Manager. If a built in component is inadvertently deleted and the announcement is saved, the component will have to

be restored by using the *Original* button in the *Announcements* tab (see Section 14.1.6 - "Restoring Original Announcements"). An announcement with a built in component is shown in Figure 14-17 .

Edit Announcement

General Announcement Information

Announcement Description: CLASS Announcement 1

Based On Version: 1

Announcement Text

custom announcement 1

Type: Built In

Add Delete Test

Built In Properties

Operation Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4
Custom	0	0	0	0

OK Cancel

Figure 14-17 Built In Component Properties

14.1.5 Testing Announcements

The Test Announcement interface (see Figure 14-18) is used to listen to announcements through PC speakers to verify the components of the announcements are playing correctly. The Test Announcement interface is accessed by pressing the *Test* button within the Add Announcement window (see Section 14.1.1 - "Adding Announcements") or Edit Announcement window (see Section 14.1.2 - "Editing Announcements").

Test Announcement

Announcement Input Values

Item	Input Value	Announcement
P1	6059956120	Six Zero Five Silence 100 ms Nine...
P2	1	Silence 100 ms

Announcement Text

Your calls will be forwarded to Six Zero Five Silence 100 ms Nine Nine Five Silence 100 ms Six One Two Zero Silence 450 ms If this number is correct, dial 1. If this number is not correct, dial 0. Please dial now. silence 300 ms tone 400 Hz 300 ms Silence 100 ms

Play Stop

Figure 14-18 Test Announcement Window

When the Test Announcement window is opened, any parameters or information components in the announcement will be listed in the *Announcement Input Values* section of the window. This section contains a table with the following three fields for each component:

Item	The name of the parameter or information component. Types of parameters and information components may include silence, strings of digits, date and time, weather station readings, etc. See Table 14-1 - "Sample Test Input Value Formats" for examples. This field is read-only.
Input Value	Enter the value to be used for testing this item. For example, if a parameter would typically be a 10-digit phone number, then click in this field and enter a 10-digit number that would adequately test the announcement. See Table 14-1 - "Sample Test Input Value Formats" for examples of input value formats.
Announcement	The phrase text that will be played when this item is reached during the playing of the announcement. This field is read-only and is dependent on the combination of item and input value. For example, if the item is "{WindDirectionStation5}" and the input value is "11" then this field will be "West South West."

The *Announcement Text* section at the bottom of the Test Announcement window displays the entire contents of the announcement including the results of the input values currently entered for any parameters or information components in the *Announcement Input Values* section. The text in this section will be updated whenever an input value is changed.

Pressing the *Play* button at the bottom of the window will play the test announcement through your PC speakers if your PC has wave audio sound capabilities. Pressing the *Stop* button or closing the Test Announcement window will discontinue the playing of the test announcement.

Table 14-1 Sample Test Input Value Formats

Item Type	Format
Silence	x to xxxxx (depending on the maximum number of seconds specified in the parameter definition)
Day/Current Day of the Week	0-6 (Sunday - Saturday)
Month	0-11 (January - December)
Year	xxxx (where x is 0-9)
Date	mmdd
ISO Date	yyyymmdd
Number	x (where x is 0-n, and n is a max number value specified in the parameter definition)

Item Type	Format
Digits	<i>x</i> (where <i>x</i> is a string of <i>n</i> digits, and <i>n</i> is a number specified in the parameter definition)
Variable Digits	<i>x</i> (where <i>x</i> is a string of 0 to <i>n</i> digits, and <i>n</i> is a number specified in the parameter definition)
Directory Number	String of 10 digits.
Time (12 hour)	<i>HHMM</i> (<i>HH</i> : 00-23) ("AM" phrase will be played if <i>HH</i> is less than 12, and "PM" if <i>HH</i> is 12 or greater)
Time (24 hour)	<i>HHMM</i> (<i>HH</i> : 00-23) ("AM" and "PM" phrases will not be played)
Timestamp12	<i>yyyymmddHHMM</i> (<i>HH</i> : 00-23) ("AM" phrase will be played if <i>HH</i> is less than 12, and "PM" if <i>HH</i> is 12 or greater)
Timestamp23	<i>yyyymmddHHMM</i> (<i>HH</i> : 00-23) ("AM" and "PM" phrases will not be played)
Inside/Outside Temperature	+/- <i>xxx</i> (where <i>x</i> is 0-9)
Wind Speed	<i>xxx</i> (where <i>x</i> is 0-9)
Wind Gust	<i>xxx</i> (where <i>x</i> is 0-9)
Wind Direction	0-15 (North - North North West)
Barometric Pressure	<i>xx.xx</i> (where <i>x</i> is 0-9)
Barometric Trend	0-2 (Steady, Rising, Falling)
Inside/Outside Humidity	<i>xxx</i> (where <i>x</i> is 0-9)
Total/Daily Rainfall	<i>xx.xx</i> (where <i>x</i> is 0-9)
Wind Chill	+/- <i>xxx</i> (where <i>x</i> is 0-9)
Dew Point	+/- <i>xxx</i> (where <i>x</i> is 0-9)
Heat Index	+/- <i>xxx</i> (where <i>x</i> is 0-9)
UV Index	+/- <i>xxx</i> (where <i>x</i> is 0-9)

14.1.6 Restoring Original Announcements

There are two types of custom announcements: new announcements that were not originally deployed with an announcement set (see Section 14.1.1 - "Adding Announcements"), and announcements that came with an announcement set but were edited (Section 14.1.2 - "Editing Announcements"). A custom announcement can be reverted to its original state by selecting the

announcement in the *Announcements* tab table and pressing the *Original* button located below the table. The *Original* button will not be enabled if the selected announcement is not a custom announcement.

Restoring a custom announcement that was not originally part of an announcement set will delete the announcement from the system since there is no original version to restore. Attempting to do this will result in the warning prompt shown in Figure 14-19. Pressing the *Yes* button in the prompt will complete the deletion.

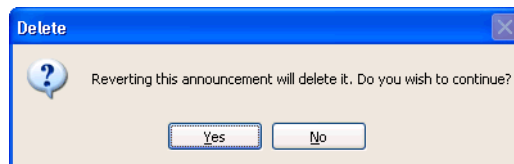


Figure 14-19 Delete Announcement Warning

Restoring an edited announcement that was deployed with an announcement set will remove all changes from the edited announcement and return it to its original, non-customized state. Attempting to do this will result in the warning prompt shown in Figure 14-20. Pressing the *Yes* button in the prompt will revert the selected announcement.

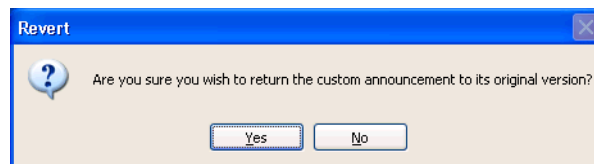


Figure 14-20 Revert Announcement Warning

14.2 Phrase Management

Announcement phrases are .wav audio files that can be used to create announcements for the APmax. For more information on using phrases with announcements, see the following sections:

- Section 14.1.1 - "Adding Announcements"
- Section 14.1.2 - "Editing Announcements"
- Section 14.1.4.1 - "Phrase Components"

The *Phrases* tab (see Figure 14-21) allows you to manage custom phrases (i.e., phrases that you have created) and to listen to all pre-defined phrases that were deployed with announcement sets. The following functions can be performed within the *Phrases* tab:

- Play all phrases on your PC speakers.
- Find all announcements that are using a phrase.

- Add custom phrases (see Section 14.2.1).
- Delete custom phrases (see Section 14.2.2).

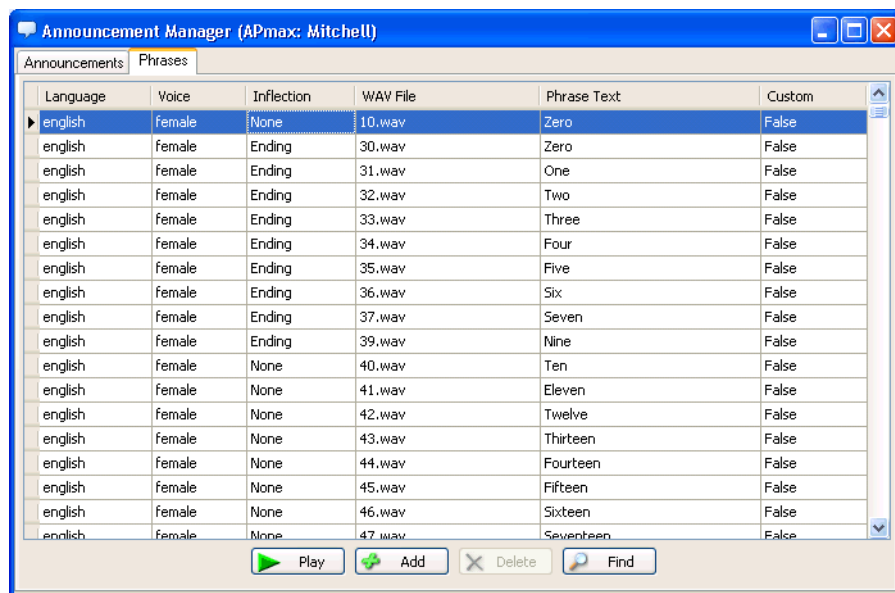


Figure 14-21 Phrases Tab

The *Phrases* tab contains a list with the following columns of information about each phrase on the APmax:

Language	The language (e.g. English, Spanish, TTY) that is used to voice the phrase.
Voice	The voice used in the phrase (e.g. female, female_2).
Inflection	Whether or not there is an inflection at the end of the phrase. Phrases with ending inflections sound more natural when played at the end of an announcement sentence.
WAV File	The name of the phrase audio file on the APmax. All phrase files are of the .wav format.
Phrase Text	Descriptive text used to help identify the phrase when using it with announcements. This text would typically be the word(s) that will be voiced by the phrase.
Custom	Is this a custom phrase? True or False. Custom phrases are those that have been added manually and were not deployed with an APmax package.

Selecting a phrase and pressing the *Play* button at the bottom of the *Phrases* tab will play the selected phrase through your PC speakers if your PC has wave audio sound capabilities.

The *Find* button at the bottom of the *Phrases* tab is used to discover if any announcements are using a phrase. To use this function, select a phrase and press the *Find* button. If the phrase is currently being used by one or more announcements, a form similar to Figure 14-22 will be displayed, listing the details of the announcements using the phrase.

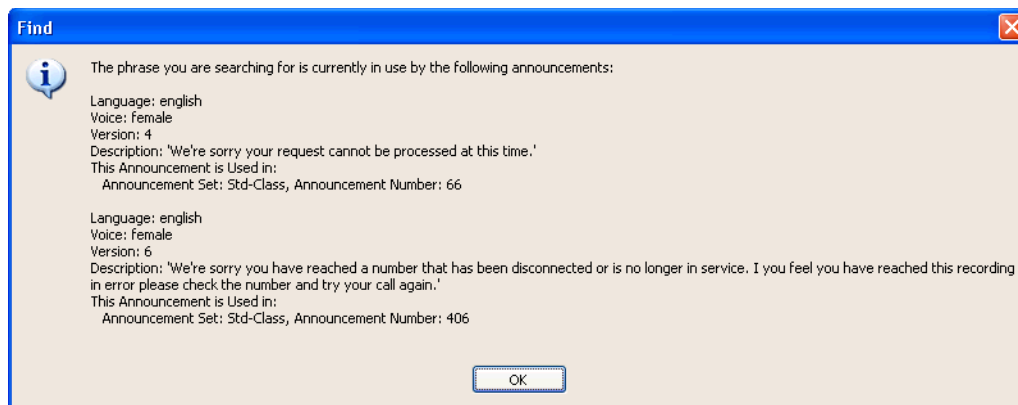


Figure 14-22 Phrase In Use

The *Add* and *Delete* buttons in the *Phrases* tab are described in the following sections:

- Section 14.2.1 - "Adding Custom Phrases"
- Section 14.2.2 - "Deleting Custom Phrases"

14.2.1 Adding Custom Phrases

The Announcement Manager provides an interface for creating new phrases by importing Microsoft WAV-formatted audio files from an outside source onto the APmax system. The following table lists the .wav file encodings that are supported by Announcement Manager and the APmax.

Unsigned 8-bit PCM	Signed 16-bit PCM	Signed 24-bit PCM
Signed 32-bit PCM	32-bit float	64-bit double
u-law encoding	A-law encoding	IMA ADPCM
MS ADPCM	GSM 6.10	G721 ADPCM 32kbps

Follow these steps to add a custom phrase:

1. Press the *Add* button at the bottom of the *Phrases* tab in the Announcement Manager window. An Enter Phrase Information window similar to Figure 14-23 will be displayed.

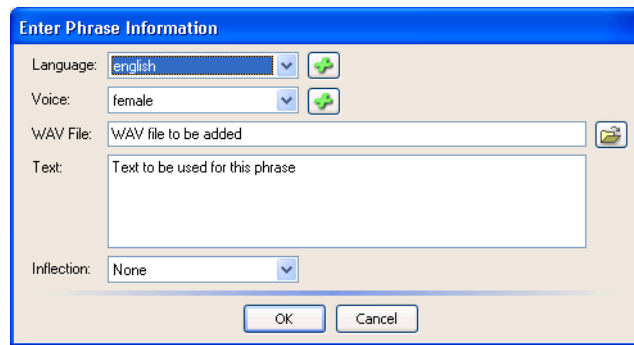



Figure 14-23 Enter Phrase Information Window

2. Choose the language of the new phrase in the *Language* selection box. If the desired language has not been defined it may be added by pressing the  button next to the *Language* selection box, which will display an Add window similar to Figure 14-24. Enter the new language and the initial voice of the new language set into the Add window and press the *OK* button to continue.

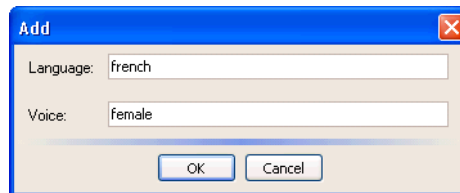



Figure 14-24 Adding a New Language

3. Choose the voice of the new phrase in the *Voice* selection box. The options in the *Voice* selection box will depend on the voices that have already been defined for the selected language. If the desired voice is not available for the selected language, it may be added by pressing the  button next to *Voice* selection box, which will display an Add window similar to Figure 14-25. Enter the new voice into the Add window and press the *OK* button to continue.

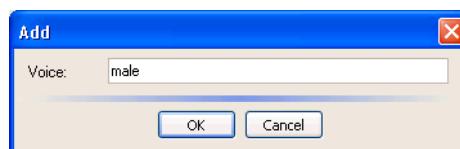



Figure 14-25 Adding a New Voice

4. Press the folder  button next to the *WAV File* field to open a standard file selection window. Use the file selection window to locate and select the .wav audio file that will be used in the new phrase and press the *Open* button. The path to the selected .wav file will be displayed in the *WAV File* field.

5. Enter into the *Text* field descriptive text that will help identify the phrase in the APmax UI. This text would typically be the word(s) that will be spoken when the phrase is played in an announcement.
6. If the phrase has an ending inflection, then choose *Ending* in the *Inflection* selection box, otherwise leave the value as *None*.
7. Press the *OK* button. The specified .wav audio file will be transferred to the APmax and the new phrase will now be available to be added to announcements.

14.2.2 Deleting Custom Phrases

Custom phrases can be deleted from the APmax by selecting the phrase in the *Phrases* tab and pressing the *Delete* button at the bottom of the tab. A delete confirmation prompt (see Figure 14-26) will be displayed. Press the *Yes* button in the prompt to continue the deletion or *No* to cancel the deletion.

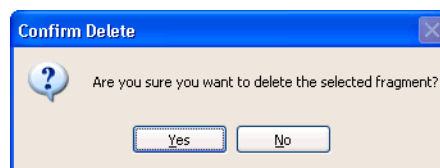


Figure 14-26 Delete Confirmation Prompt

If the selected phrase is being used by one or more announcements, an error message (see Figure 14-27) will be displayed and the phrase will not be deleted. The announcements using the phrase can be found by pressing the *Find* button at the bottom of the *Phrases* tab.

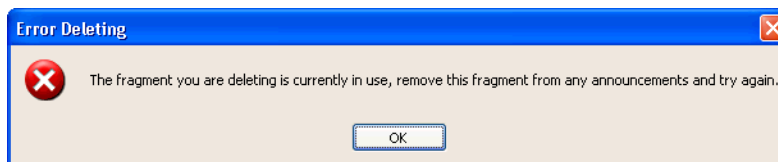



Figure 14-27 Phrase in Use Error

Chapter 15 - FTP Transfer Service

15.1 FTP Transfer Service

The APmax provides a common FTP service for archiving voice files, logs, and other files. It supports a number of options and can be used to automatically archive files from the APmax to an FTP server. The user interface described in this chapter is used to configure file transfer tasks on the APmax FTP service.

Note: The FTP Transfer Service requires the FTPUtilityService package to be installed on the selected system.

To access the FTP Transfer Service interface, right-click on the APmax system's icon  in the Command Center window to invoke a popup menu, and select the *System Maintenance / FTP Transfer Service* command (as illustrated in Figure 15-1). An FTP Transfer Service window similar to Figure 15-2 will be displayed.

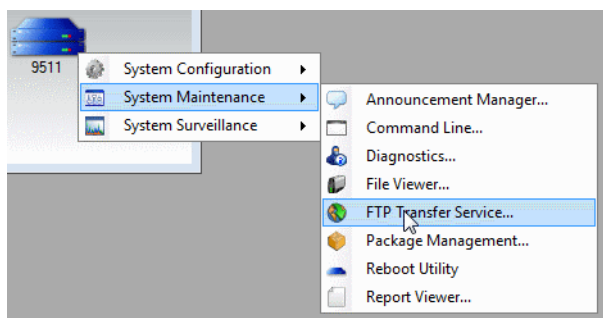


Figure 15-1 FTP Transfer Service Menu Command

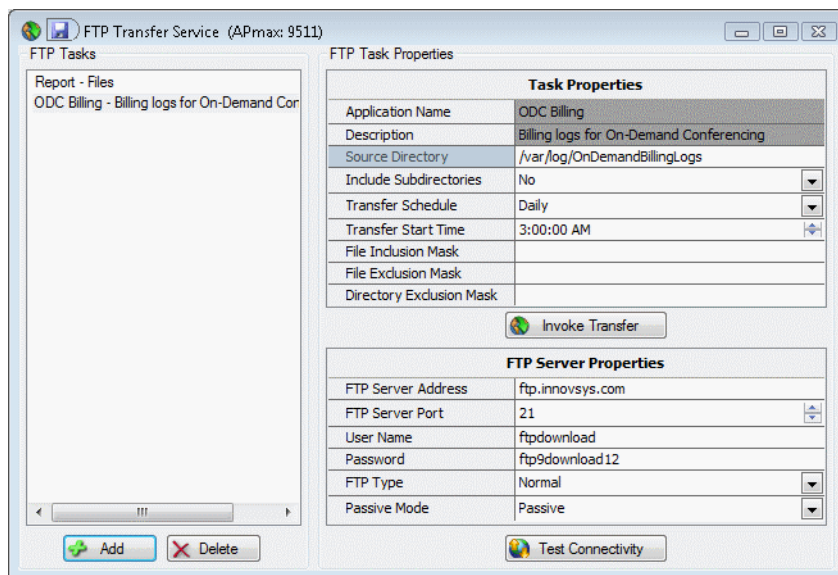


Figure 15-2 FTP Transfer Service Window

The left-hand side of the FTP Transfer Service window contains a list of tasks that have been previously configured. Selecting a task in this list will display its settings in the *FTP Task Properties* table on the right-hand side of the window.

New FTP tasks can be created by pressing the *Add* button to display the Add FTP Task entry form (Figure 15-3), entering the required task and FTP server settings (described below Figure 15-3), and pressing the *OK* button. Settings in the Add FTP Task form, with the exception of *Application Name* and *Description*, can be edited in the *FTP Task Properties* table after the task is added.

The screenshot shows the 'Add FTP Task' dialog box. It contains the same 'Task Properties' and 'FTP Server Properties' sections as Figure 15-2, with the following values:

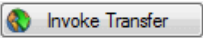

Task Properties	
Application Name	ODC Billing
Description	Billing logs for On-Demand Conferencing
Source Directory	/var/log/OnDemandBillingLogs
Include Subdirectories	No
Transfer Schedule	Daily
Transfer Start Time	3:00:00 AM

FTP Server Properties	
FTP Server Address	ftp.innovsys.com
FTP Server Port	21
User Name	ftpdownload
Password	ftp9download12
FTP Type	Normal
Passive Mode	Passive

At the bottom are 'OK' and 'Cancel' buttons.

Figure 15-3 Add FTP Task

The task and server settings found in the Add FTP Task and FTP Transfer Service windows are described in the table below.

Task Properties	
Application Name	Name of the application requesting the FTP. This setting cannot be edited after the task is created.
Description	Description of the FTP transfer. This setting cannot be edited after the task is created.
Source Directory	Starting directory for transfers.
Include Subdirectories	Whether or not to walk subdirectories. Yes or No.
Transfer Schedule	Frequency between FTP transfers. Options include: One Time, Hourly, or Daily.
Transfer Start Time	Time of day when the FTP transfer will begin.
File Inclusion Mask	Regular expression of files in the directory to include in the transfer. If blank then all files in the directory will be transferred.
File Exclusion Mask	Regular expression of files in the directory that will not be transferred. This expression takes precedence over the <i>File Inclusion Mask</i> . If blank then no files will be excluded.
Directory Exclusion Mask	Regular expression of directory names not to transfer. If blank then all subdirectories will be transferred. This setting is useful when the <i>Include Subdirectories</i> option is set to Yes.
	Press this button to immediately run this FTP transfer task.
FTP Server Properties	
FTP Server Address	IP or URL address of the FTP server where files will be sent.
FTP Server Port	Port number of the FTP server.
User Name	Username to login to the FTP server.
Password	Password to login to the FTP server.
FTP Type	The type of FTP protocol to use. Options include: <ul style="list-style-type: none"> • Normal • FTPS Secure • SFTP Secure
Passive Mode	Choose Passive or Active FTP. The default is Passive.
	Press this button to test the connection to the entered FTP server.

15.2 FTP Client Backup

This section provides general instructions for using a third-party FTP clients to backup APmax databases. These steps may need to be adapted to fit the user interface of your FTP client.

1. Open an FTP connection to an APmax unit by using the following information:


Host	Administration IP address of an APmax unit.
Username	ftpdownload
Password	ftp9download12
Port	21

2. Once logged in, navigate to the backup directory: **/ap/databases/backups**
3. The **backups** folder will have three folders named MMDDYY (month day year), which contain backup copies of the database. Copy the most recent MMDDYY folder from the APmax to your local or network drive.

Chapter 16 - Package Management

16.1 Package Management Interface

APmax packages contain the tables and files necessary to provision features for APmax systems. When a package is deployed, the contents of the package are copied to the appropriate locations on the system. The Package Management interface is used to deploy packages to a system, remove packages from a system, and view the contents of packages.

To access the Package Management interface, right-click on the system's icon  in the Command Center window to invoke a popup menu, and select the *System Maintenance / Package Management* command (as illustrated in Figure 16-1). The name of the system for which you are managing packages will be displayed at the top of the Package Management window (Figure 16-2).

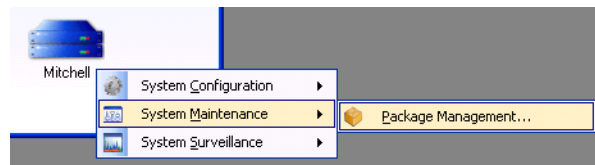


Figure 16-1 Package Management Menu Command

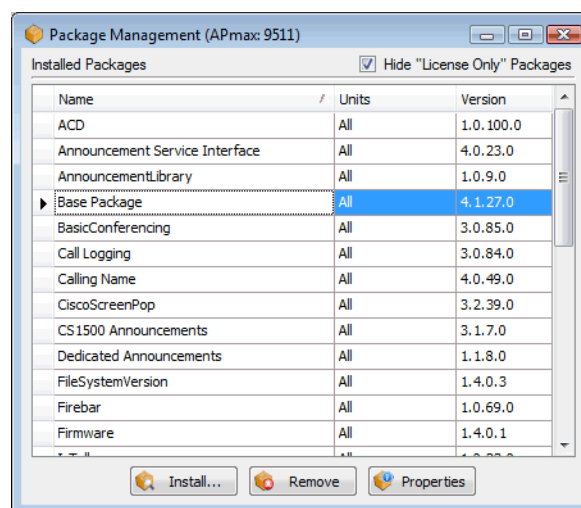


Figure 16-2 Package Management Window

The Package Management window contains a list of installed packages and the current version of each installed package. The *Hide “License Only” Packages* checkbox in the upper right-hand corner of the window is checked by default to hide packages installed only to upgrade the number of service licenses. The buttons located below the list are used to deploy packages to a system, remove packages from a system, and view the contents of deployed packages. They are described below:

Install	Press this button to begin the process of deploying a package. See Section 16.1.1 for more information.
Remove	Press this button to delete the selected package from the system. See Section 16.1.2 for more information.
Properties	Press this button to view the contents of the selected installed package. See Section 16.1.3 for more information.

16.1.1 Deploying a Package

To install a new or updated feature on an APmax system, a package containing the new tables and files must be deployed to the system. When a package is deployed, the contents of the package are copied to the appropriate locations on the system.

To deploy a package, complete the following steps:

1. Note the name of the APmax system in the caption of the Package Management window (see Figure 16-2). This is the system to which the package will be deployed. If this is not the correct system, close the window and use the method described in Section 16.1 to open Package Management for the correct system.
2. Press the *Install* button located below the list of installed packages in the Package Management window. The Select a Package to Deploy window (see Figure 16-3) will be displayed.

The top of the Select a Package to Deploy window contains the *Location* field and *Browse* button and is used to locate packages for deployment. The middle of the window is used to preview the contents of a package before it is deployed. The *Install* button at the bottom of the window is used to confirm the deployment of a package to the APmax system. The *Deploy Only to Unit(s)* selection box in the lower left-hand corner of the window is used to choose the units on the system to which the package should be deployed. The *Deploy Only to Unit(s)* selection box should be set to “All” unless vendor documentation or vendor support personnel specifically designate otherwise.

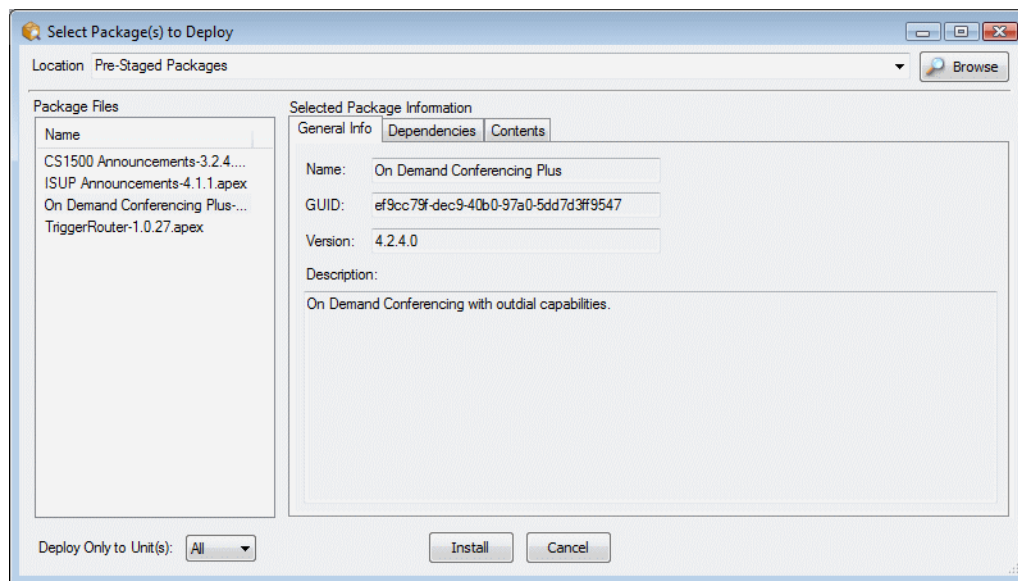




Figure 16-3 Select a Package to Deploy

3. Choose the path to the folder containing the new package using one of the following mechanisms:
 - Enter the path to the folder in the *Location* field and press <Enter> on the keyboard.
 - Press the *Browse* button (located in the upper-right corner of the window) to display the Browse For Folder window (see Figure 16-4) and navigate to the folder containing the package.
 - If packages have been previously deployed to the APmax system, the paths to the locations of those packages can be selected by clicking the  button next to the *Browse* button to display a drop-down list of the previously used locations.
 - Click the  button next to the *Browse* button and select one of the following options from the top of the drop-down list:

Pre-Staged Packages

Selecting this option will display the **primary service and system** packages that have been automatically downloaded from Innovative Systems and are ready to install. See Chapter 4 - "Network Configuration" for information on which ports need to be open for the APmax to receive pre-staged packages.

Patch Packages

Displays the **patch** packages that have been downloaded and are ready to install.

Utility Packages

Displays the **utility** packages that have been downloaded and are ready to install.

Once a folder is entered or selected, any packages in that folder will be displayed in the *Package Files* list on the left-hand side of the Select a Package to Deploy window.

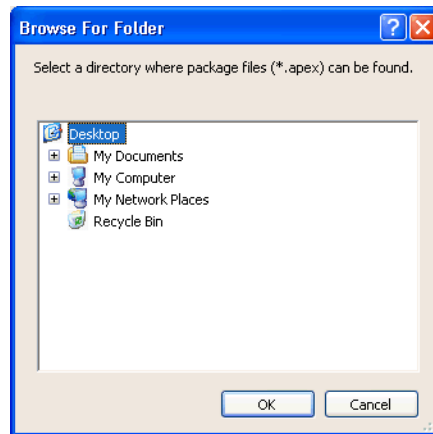


Figure 16-4 Browse for a Package

4. Select the package you wish to deploy in the *Package Files* list on the left-hand side of the window. The contents of the package will be displayed in the *General Info*, *Dependencies*, and *Contents* tabs to the right of the list. These tabs are described below. Preview the information in each tab and then continue to the next step.

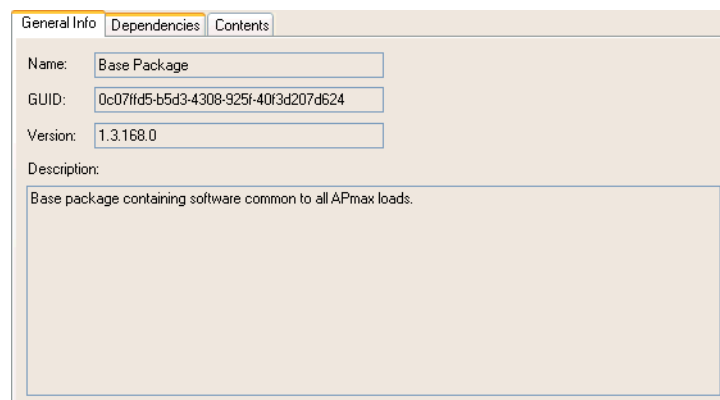
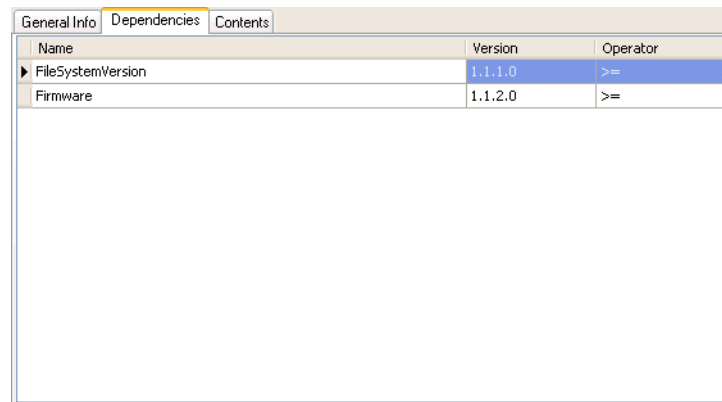


Figure 16-5 General Info Tab

The package properties found in the *General Info* tab are described below:

Name	A short, descriptive name of the package.
GUID	The unique package ID.
Version	The version number of this package.
Description	A paragraph describing the purpose of this package.

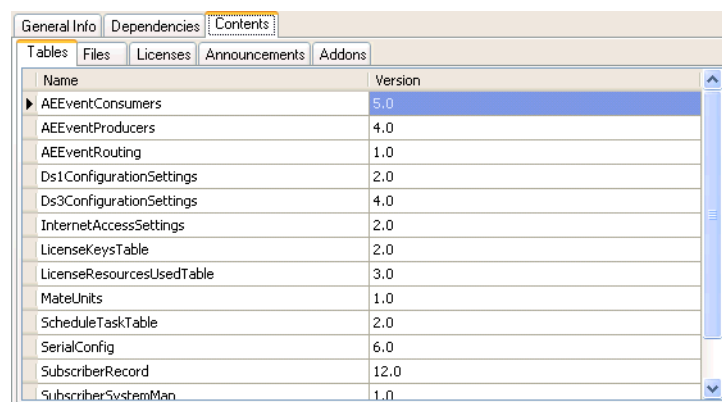


Name	Version	Operator
FileSystemVersion	1.1.1.0	>=
Firmware	1.1.2.0	>=

Figure 16-6 Dependencies Tab

The *Dependencies* tab contains the following three columns of information for each package that is required for this package:

Name	The name of a package that is required for the currently selected package.
Version	The version number of the required package that is combined with the <i>Operator</i> to determine which version(s) of the required package are necessary for the selected package.
Operator	The logical operator used to indicate if the version of the required package must be less than the selected package, greater than the selected package, et al.



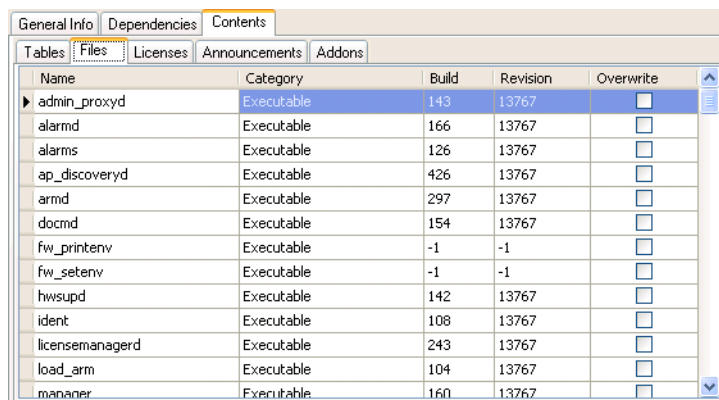
Name	Version
AEEEventConsumers	5.0
AEEEventProducers	4.0
AEEEventRouting	1.0
Ds1ConfigurationSettings	2.0
Ds3ConfigurationSettings	4.0
InternetAccessSettings	2.0
LicenseKeysTable	2.0
LicenseResourcesUsedTable	3.0
MateUnits	1.0
ScheduleTaskTable	2.0
SerialConfig	6.0
SubscriberRecord	12.0
SubscriberSystemMan	1.0

Figure 16-7 Tables Tab

Selecting the *Contents* tab will display the following tabs: *Tables*, *Files*, *Licenses*, *Announcements*, and *Addons*. The *Tables* tab (Figure 16-7) contains a list of the tables found in the package. The following properties of each table are displayed in the list:

Name A short, descriptive name of the table.

Version The version number of the table.



Name	Category	Build	Revision	Overwrite
admin_proxyd	Executable	143	13767	<input type="checkbox"/>
alarmd	Executable	166	13767	<input type="checkbox"/>
alarms	Executable	126	13767	<input type="checkbox"/>
ap_discoveryd	Executable	426	13767	<input type="checkbox"/>
armd	Executable	297	13767	<input type="checkbox"/>
docmd	Executable	154	13767	<input type="checkbox"/>
fw_printenv	Executable	-1	-1	<input type="checkbox"/>
fw_setenv	Executable	-1	-1	<input type="checkbox"/>
hwsupd	Executable	142	13767	<input type="checkbox"/>
ident	Executable	108	13767	<input type="checkbox"/>
licensemanagerd	Executable	243	13767	<input type="checkbox"/>
load_arm	Executable	104	13767	<input type="checkbox"/>
manager	Executable	160	13767	<input type="checkbox"/>

Figure 16-8 Files Tab

The *Files* tab (Figure 16-8) contains a list of the files found in the package. The following properties of each file are displayed in the list:

Name The name of the file.

Category The type of file (e.g., Driver, Executable, Library, Script).

Build The build number of the file.

Revision The revision number of the file.

Overwrite The property only applies to files that do not have a version. If this box is checked, then this file will overwrite any existing files with the same name and path when the package is deployed.

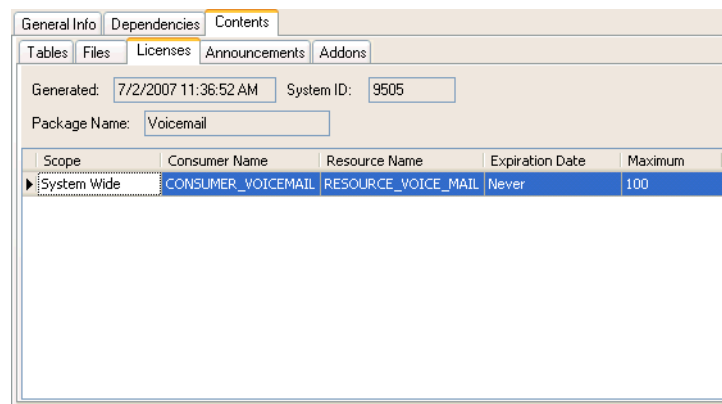


Figure 16-9 Licenses Tab

The *Licenses* tab (Figure 16-9) contains three informational fields and a list of the licenses included in the package.

Generated	The date the package license information was generated.
System ID	The ID of the system to which these licenses apply.
Package Name	The name of the package these licenses are associated with.

The following properties of each license are displayed in the list:

Scope	The system unit(s) to which this license applies. If the <i>Scope</i> is "System Wide", then the license applies to all units on the system. If the license is for a specific unit, then the value will be "Unit x" where x is the number of the unit to which the license applies.
Consumer Name	The name of the service or feature that utilizes this license.
Resource Name	The name of the resource that is being licensed for the associated consumer. Examples of resources are channels, ports, additional capabilities, subscribers, etc.
Expiration Date	The date on which this license will no longer be in effect. An <i>Expiration Date</i> of "Never" indicates the license will not expire.
Maximum	The greatest number of the associated resource that is allowed by this license.

The *Announcements* tab is divided into three tabs: *Announcement Sets*, *Announcements*, and *Fragments*. These tabs are described below.

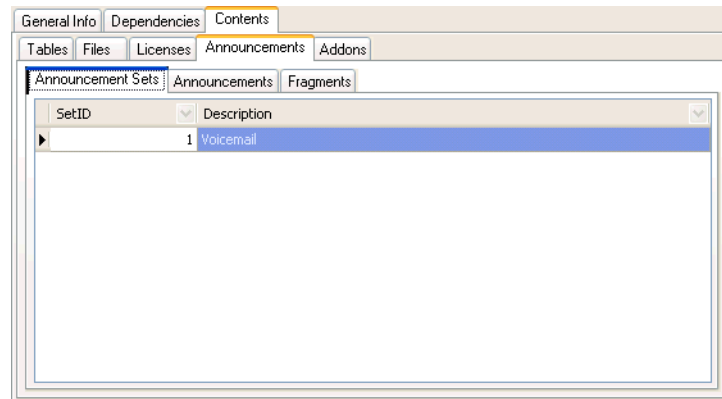


Figure 16-10 Annoucements Sets Tab

The *Announcements Sets* tab (Figure 16-10) contains a list of the sets of announcements found in the package. The following properties of each announcement set are displayed in the list:

- SetID** The unique ID of this set of announcements.
- Description** A short description of the type of announcements contained in this set.

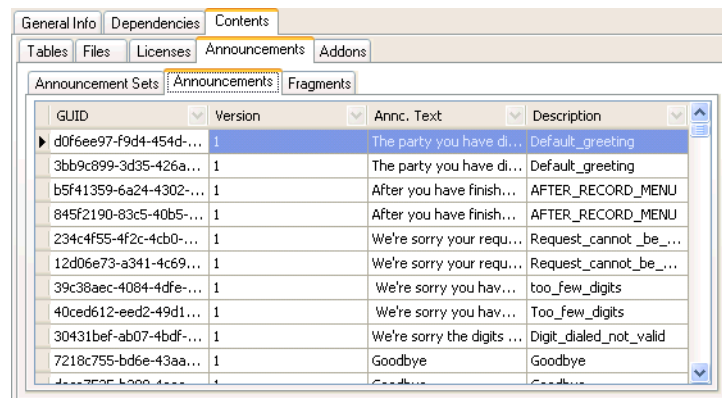


Figure 16-11 Annoucements Tab

The *Announcements* tab (selected in Figure 16-11) contains a list of the announcements found in the package. The following properties of each announcement are displayed in the list:

- GUID** The unique announcement ID.

Version	The version number of the announcement.
Annc. Text	The text that the announcement will voice when it is played.
Description	A short description of the announcement.

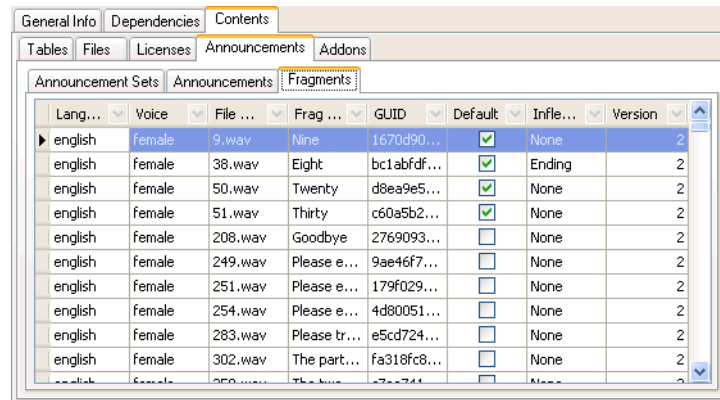


Figure 16-12 Fragments Tab

The *Fragments* tab (Figure 16-12) contains a list of the fragments found in the package. The following properties of each fragment are displayed in the list:

Language	The language of the fragment: English or Spanish.
Voice	The gender voicing this fragment: female or male.
File Name	The name of the audio file that plays this fragment.
Frag Text	The text that will be voiced when this fragment is played.
GUID	The unique ID of this fragment.
Default	This box is checked if the fragment is part of the default set of fragments.
Inflection	The location of the inflection voiced in the fragment: Ending or None.
Version	The version number of the fragment.

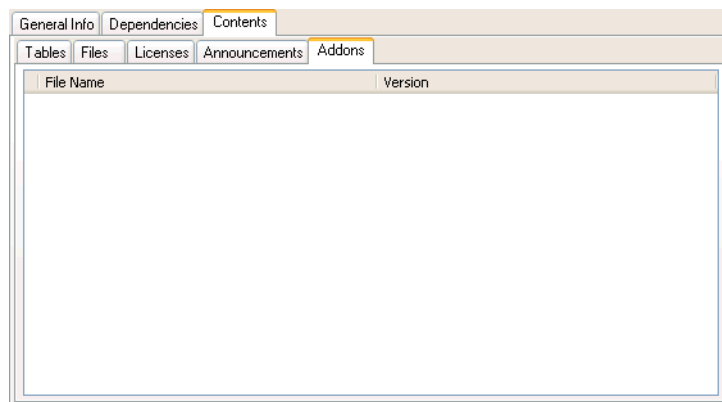


Figure 16-13 Addons Tab

The *Addons* tab (Figure 16-13) contains a list of the addons found in the package. The following properties of each addon are displayed in the list:

File Name The name of an addon DLL file in this package.

Version The version number of the addon DLL file.

- To confirm the deployment of the selected package to the APmax system, press the *Install* button at the bottom of the window. The Select a Package to Deploy window will be closed and a Deploying Package(s) progress window similar to Figure 16-14 will be displayed while the package is being deployed.

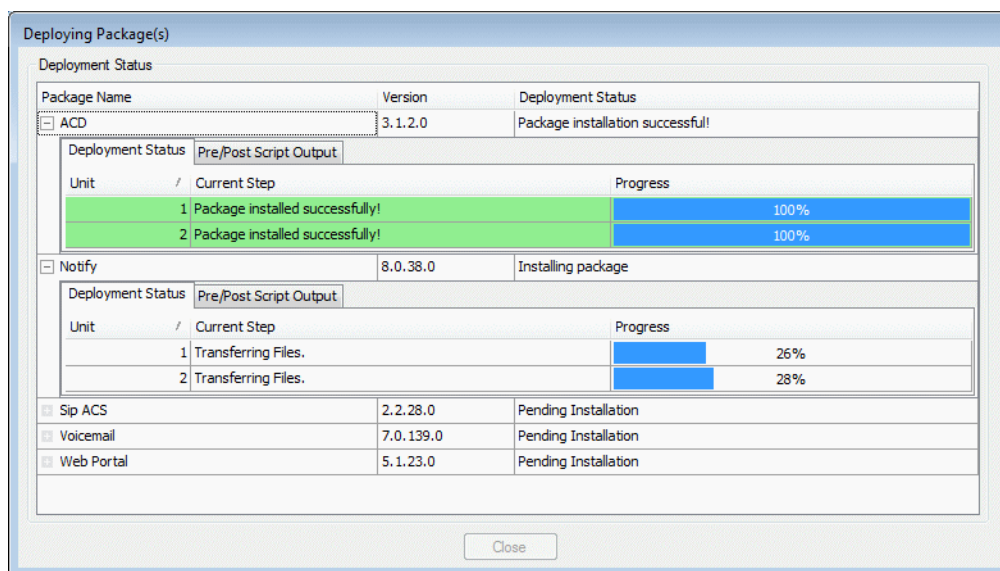


Figure 16-14 Package Deployment Progress

Once the deployment is complete, the Deploying Package(s) window will indicate the package was installed successfully, as illustrated in Figure 16-15.

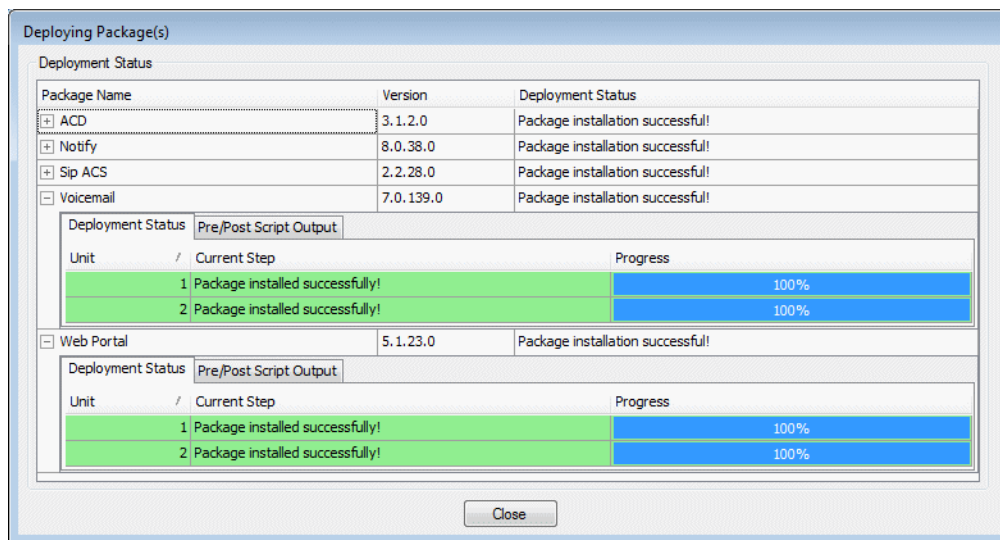


Figure 16-15 Package Deployment Complete

Press the *Close* button to exit the Deploying Package(s) window. The newly deployed package will be displayed in the list of installed packages in the Package Management window.

16.1.2 Deleting a Package

WARNING! Use this command with EXTREME CAUTION. Do NOT delete the Base Package without Innovative Systems Technical Support supervision. Deleting other packages may cause various services and features in the APmax system to no longer function.

To delete a package from an APmax system, click on the package in the list of installed packages in the Package Management window (see Figure 16-2) and press the *Remove* button located below the list. A delete confirmation prompt will be displayed (see Figure 16-16).

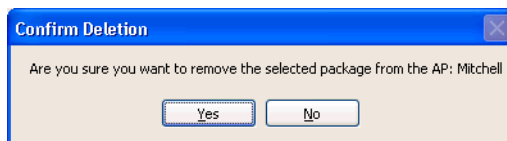


Figure 16-16 Delete Confirmation Prompt

Press the *Yes* button to complete the removal of the selected package and all of files contained in the package from the APmax system. Files that are shared with other packages that are installed on the system will not be deleted. Once the deletion is complete, the following message box (Figure 16-17) will be displayed.

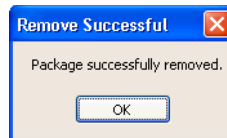


Figure 16-17 Package Removal Complete

Press the *OK* button to close the message box. The deleted package will no longer be displayed in the list of installed packages in the Package Management window.

16.1.3 Package Properties

The Package Properties window (see Figure 16-18) is used to display the contents of a package that has already been deployed to the APmax system. To view the contents of a package, select the package from the list of installed packages in the Package Management window (see Figure 16-2) and press the *Properties* button located below the list. A Package Properties window containing the details of the selected package will be displayed.

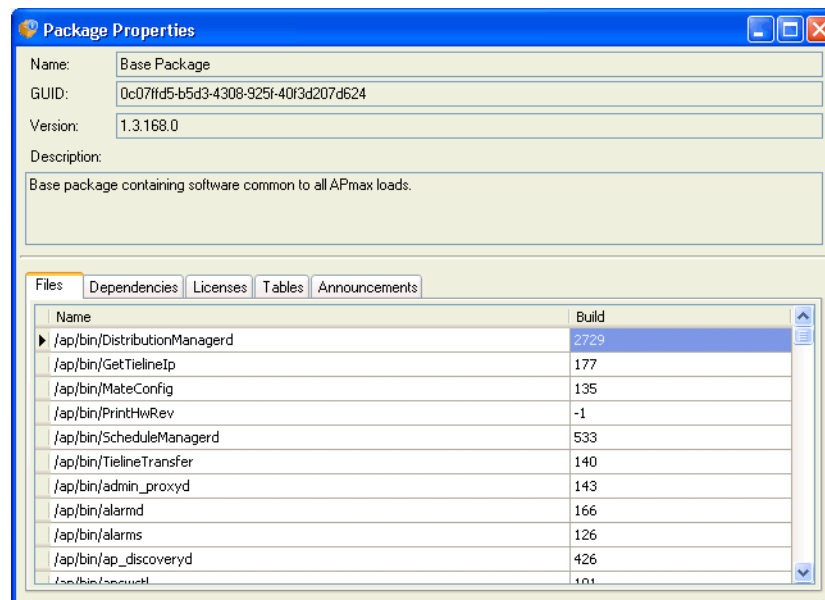


Figure 16-18 Package Properties Window

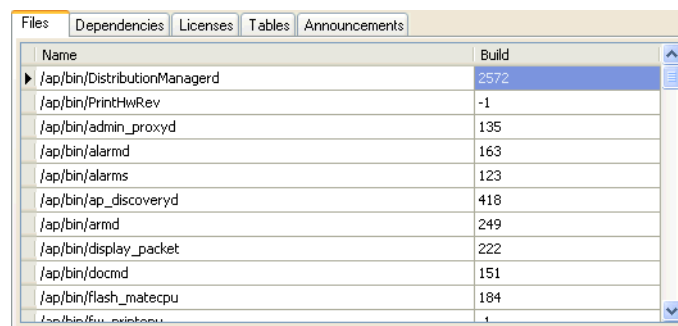
The top portion of the Package Properties window contains the following fields:

Name	A short, descriptive name of the package.
GUID	The unique package ID.
Version	The version number of this package.
Description	A paragraph describing the purpose of this package.

The bottom portion of the Package Properties window is partitioned into the *Files* tab (see Figure 16-19), *Dependencies* tab (see Figure 16-20), *Licenses* tab (see Figure 16-21), *Tables* tab (see Figure 16-22), and *Announcements* tab, which is divided into three tabs (see Figure 16-23, Figure 16-24, and Figure 16-25). The columns in all tabs may be sorted by clicking on the column headings.

The *Files* tab (Figure 16-19) contains the following two columns of information for each file in the package:

Name	The location and name of the file on the system.
Build	The build number of the file on the system.



Name	Build
/ap/bin/DistributionManagerd	2572
/ap/bin/PrintHwRev	-1
/ap/bin/admin_proxycd	135
/ap/bin/alarmd	163
/ap/bin/alarms	123
/ap/bin/ap_discoveryd	418
/ap/bin/armd	249
/ap/bin/display_packet	222
/ap/bin/doccmd	151
/ap/bin/flash_matecpu	184
/ap/bin/flash_matecpu	1

Figure 16-19 Files Tab

The *Dependencies* tab (Figure 16-20) contains the following three columns of information for each package that is required for this package:

GUID	The unique ID of a package that is required for the currently selected package.
-------------	---

Version	The version number of the required package that is combined with the <i>Operator</i> to determine which version(s) of the required package are necessary for the selected package.
Operator	The logical operator used to indicate if the version of the required package must be less than the selected package, greater than the selected package, et al.

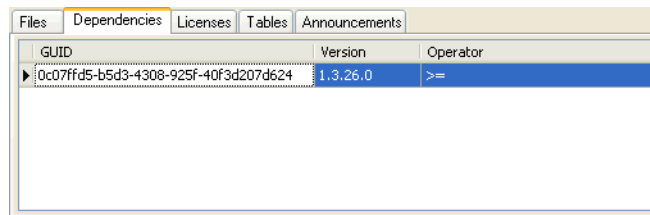


Figure 16-20 Dependencies Tab

The *Licenses* tab (Figure 16-21) contains the following five columns of information for each license included in this package:

Consumer Name	The name of the service or feature that utilizes this license.
Resource Name	The name of the resource that is being licensed for the associated consumer. Examples of resources are channels, ports, additional capabilities, subscribers, etc.
Scope	The system unit(s) to which this license applies. If the <i>Scope</i> is "System Wide", then the license applies to all units on the system. If the license is for a specific unit, then the value will be "Unit x" where x is the number of the unit to which the license applies.
Expiration Date	The date on which this license will no longer be in effect. An <i>Expiration Date</i> of "Never" indicates the license will not expire.
Maximum	The greatest number of the associated resource that is allowed by this license.

Consumer Name	Resource Name	Scope	Expiration Date	Maximum
▶ CONSUMER_VOICEMAIL	RESOURCE_VOICE_MAIL	System Wide	Never	100

Figure 16-21 Licenses Tab

The *Tables* tab (Figure 16-22) contains the following two columns of information for each table included in this package:

Name A short, descriptive name of the table.

Version The version number of the table.

Name	Version
▶ LicenseKeysTable	2.0
ProcessTable	2.0
SupervisorConfig	4.0
AEEEventConsumers	4.0
AEEEventProducers	4.0
AEEEventRouting	1.0
SubscriberSystemMap	1.0
SystemUnitDefinition	1.0

Figure 16-22 Tables Tab

The *Announcements* tab is divided into three tabs: *Announcement Sets*, *Announcements*, and *Fragments*. These tabs are described below.

The *Announcements Sets* tab (see Figure 16-23) contains a list of the sets of announcements found in the package. The following properties of each announcement set are displayed in the list:

SetID The unique ID of this set of announcements.

Description A short description of the type of announcements contained in this set.

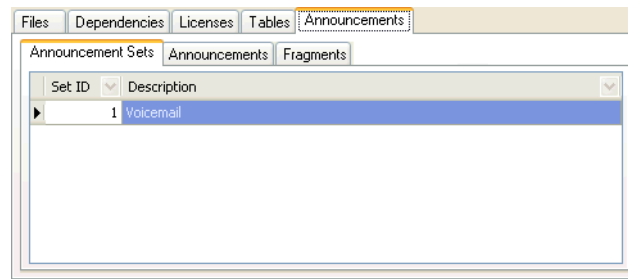


Figure 16-23 Announcements Sets Tab

The *Announcements* tab (selected in Figure 16-24) contains a list of the announcements found in the package. The following properties of each announcement are displayed in the list:

GUID	The unique announcement ID.
Version	The version number of the announcement.
Annc. Text	The text that the announcement will voice when it is played.
Description	A short description of the announcement that may contain the name and type of the announcement.

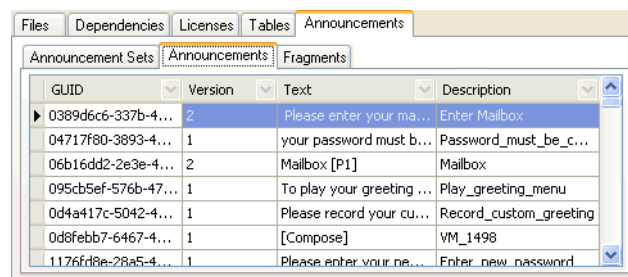
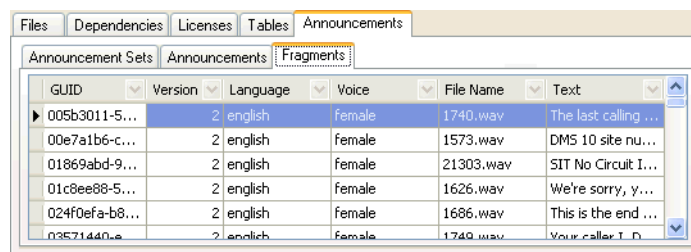


Figure 16-24 Announcements Tab

The *Fragments* tab (Figure 16-25) contains a list of the fragments found in the package. The following properties of each fragment are displayed in the list:

Language	The language of the fragment: English or Spanish.
Voice	The gender voicing this fragment: female or male.
File Name	The name of the audio file that plays this fragment.

Frag Text	The text that will be voiced when this fragment is played.
GUID	The unique ID of this fragment.
Default	This box is checked if the fragment is part of the default set of fragments.
Inflection	The location of the inflection voiced in the fragment: Ending or None.
Version	The version number of the fragment.



GUID	Version	Language	Voice	File Name	Text
005b3011-5...	2	english	female	1740.wav	The last calling ...
00e7a1b6-c...	2	english	female	1573.wav	DMS 10 site nu...
01869abd-9...	2	english	female	21303.wav	SIT No Circuit I...
01c8ee88-5...	2	english	female	1626.wav	We're sorry, y...
024f0efa-b8...	2	english	female	1686.wav	This is the end ...
03571440-e...	2	english	female	1749.wav	Your caller I D

Figure 16-25 Fragments Tab

16.1.3.1 Auditing a Package

Packages that have been installed on an APmax system can be audited to verify the files in the package match the files on each unit in the system. This feature is intended for use in verifying redundancy in file versions between packages and all units on a system.

To audit a package, right-click on the package in the list of installed packages in the Package Management window (see Figure 16-2) to invoke a popup menu (see Figure 16-26 below), and select the *Audit* command in the menu. A progress window (Figure 16-27) will be displayed while the package is being audited.

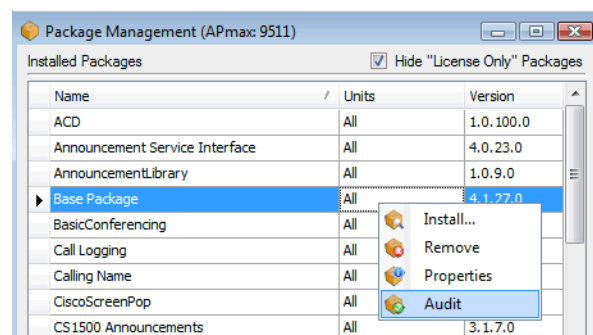


Figure 16-26 Select the Audit Menu Command



Figure 16-27 Package Audit Progress

If the audit completes without finding any discrepancies, Figure 16-28 will be displayed. If the audit finds differences then a Package Audit Information window similar to Figure 16-29 will be displayed.

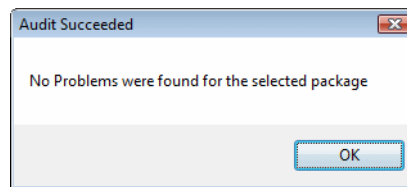


Figure 16-28 Package Audit Succeeded

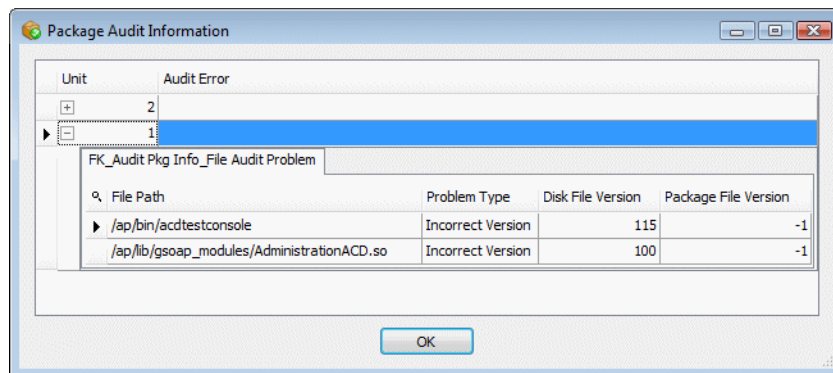




Figure 16-29 Package Audit Information Window

Each unit in the APmax system is represented by a row in the Package Audit Information window. On the left-hand side of each unit's row is a tree symbol  that can be clicked to display a list of errors found by the audit (as illustrated in Figure 16-29). If discrepancies are found for any package other than the base package, it may be necessary to re-deploy the package.

Chapter 17 - Report Viewer

The Report Viewer tool allows system administrators to create and view reports of subscribers and enhanced services on an APmax system. The purpose of this chapter is to describe the functionality of the Report Viewer tool. For more information on specific subscriber or enhanced service field definitions, see Chapter 26 - "Subscriber Management" in this manual or the appropriate Service Description document included with each enhanced service.

To access the Report Viewer interface, right-click on the system's icon  in the Command Center window to invoke a popup menu, and select the *System Maintenance / Report Viewer* command (as illustrated in Figure 17-1).

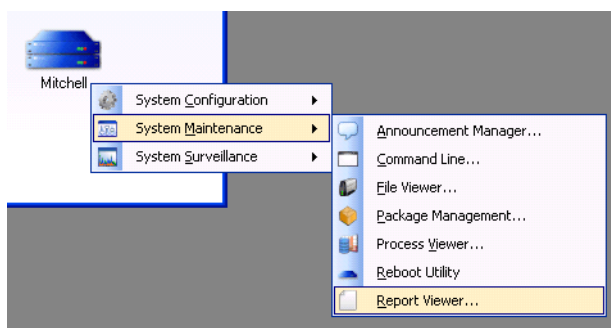


Figure 17-1 Report Viewer Menu Command

A progress window similar to Figure 17-2 will be displayed while the most recent backup databases are downloaded from the APmax and stored on your local PC. The databases will only be downloaded from the APmax if there are more recent backup files available. APmax database backups occur daily at approximately 3 A.M.

Note: If an APmax Central Reporting Service Address has been configured (see Section 3.3.4.2) in your APmax UI installation then the APmax backup databases will be retrieved from an alternate server instead of the APmax system.



Figure 17-2 Database Retrieval Progress

Once the database retrieval process is complete, a Report Viewer window similar to Figure 17-3 will be displayed. The name of the system for which you are creating and viewing reports will be displayed at the top of the Report Viewer window (Figure 17-3). A list of the APmax databases that are available for reporting will be displayed on the left-hand side of the window. These data-

bases are grouped by service (i.e. Subscriber, Voicemail). The Subscriber group is available in all APmax configurations. The availability of other groups depends on which enhanced services are installed on the selected APmax system.

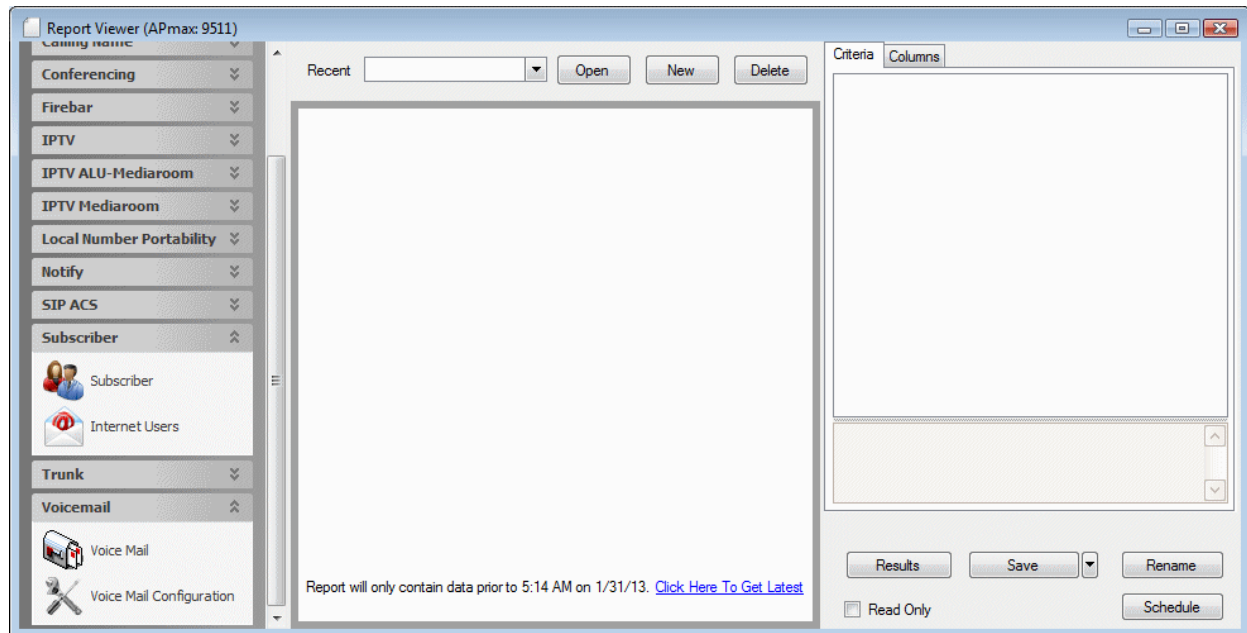


Figure 17-3 Report Viewer Window

The timestamp of the most recent database backup is displayed at the bottom of the white draw control page in the middle of the Report Viewer window. The *Click Here To Get Latest* link on the right-hand side of the timestamp can be pressed to force the APmax to generate new backup databases, which will be automatically downloaded, providing Report Viewer with the most current information. A progress window similar to Figure 17-4 will be displayed while the databases are backed up and downloaded.

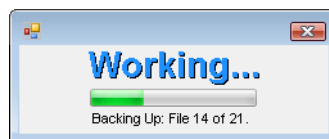


Figure 17-4 Database Backup Progress


Instructions for using Report Viewer functions to create, view, and manage reports are found in the following sections:

- Section 17.1 - "Creating a Report"
- Section 17.2 - "Viewing Reports"
 - a. 17.2.1 - "Printing and Exporting Reports"
- Section 17.3 - "Report Management Operations"
 - a. 17.3.1 - "Saving Reports"

- b. 17.3.2 - "Renaming Reports"
- c. 17.3.3 - "Password-Protecting Reports"
- d. 17.3.4 - "Deleting Reports"
- e. 17.3.5 - "Scheduling Report Emails"

17.1 Creating a Report

The following steps provide a general guide to creating a new report using the Report Viewer tool.

1. Open the Report Viewer tool if it is not already open. If the Report Viewer tool is already open and there are items in the white draw control page in the middle of the window, then press the *New* button at the top of the Report Viewer window to begin creating a new report.
2. Click on the Subscriber icon  on the left-hand side of the Report Viewer window and drag it to the white draw control page in the middle of the window (as illustrated in Figure 17-5). The name of the new report will be displayed at the top and center of the draw control. The report is tentatively named "New Search" since it has not yet been saved. Also notice that there is now a *Columns* heading on the left-hand side of the draw control. Beneath the *Columns* heading is a list of all the database fields that will be displayed in the report. At this time the only fields listed are the *Name* and *Default Phone Number* fields since they were added to the report by default when the Subscriber icon was dragged onto the draw control.

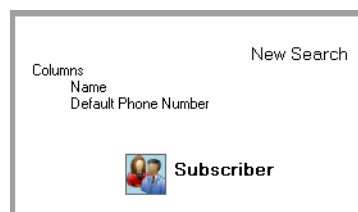


Figure 17-5 Draw Control with Subscriber Icon

Note: The Subscriber icon is not required to create a report. Enhanced service icons such as Voice Mail may be used independently to create reports that do not include information from the Subscriber database. However, the Subscriber database is present in all APmax configurations and is used as an example throughout this procedure.

Unwanted icons in the draw control can be removed by right-clicking on a single icon in the draw control to invoke a popup menu and selecting the *Delete* command in the menu, as illustrated in Figure 17-6.

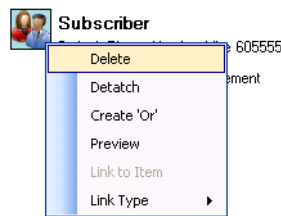


Figure 17-6 Delete Popup Command

3. Click on the Subscriber icon in the draw control in the middle of the Report Viewer window. The *Columns* and *Criteria* tabs on the right-hand side of the window will display a list of the fields found in the Subscriber database.
4. Select the *Columns* tab (see Figure 17-7). Notice each field has a checkbox next to it. Check the box next to each field that should be included in the report. In the example below, the *Default Phone Number*, *Name*, and *Service List* fields are checked.

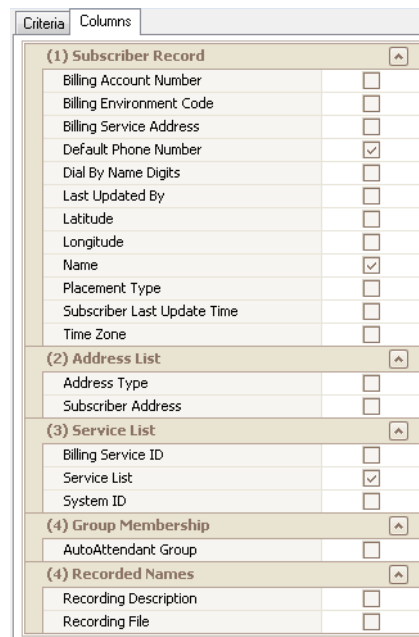


Figure 17-7 Columns Tab for Subscriber Records

5. Select the *Criteria* tab. To the right of each field in the tab is a cell that contains the user-specified criteria for that field. Figure 17-8 illustrates a *Criteria* tab where records included in the database report must have “605555” in the *Default Phone Number* field and must also be subscribed to one of the following three enhanced services: *Terminating Call Management*, *Universal Call Management*, or *Voice Mail*.

Figure 17-8 Criteria Tab for Subscriber Records

Clicking in the cell next to a field will display a dropdown button . Clicking the button will display a filter control that allows you to narrow the scope of values to be considered for that database field when the report is generated. The filter control will vary depending on the type of data that is associated with the selected field. For example, clicking the dropdown button next to the *Service List* field will display a filter control similar to the one seen in Figure 17-9, while clicking the button next to the *Default Phone Number* field will result in a control similar to Figure 17-10. Date criteria fields will include the “With in” filter (see Figure 17-11), which allows a relative date range (within the last/current/previous number of days/weeks/months/years) to be specified.

Figure 17-9 Criteria Tab - Service List Menu

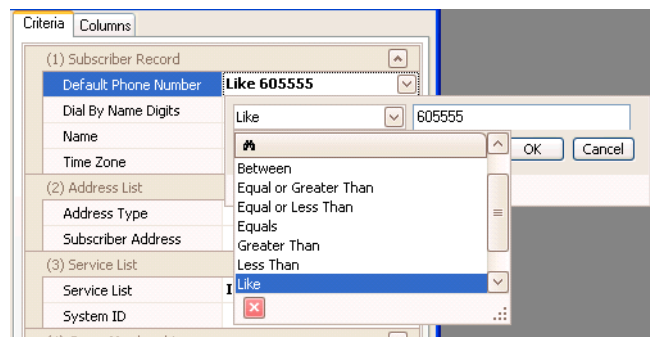


Figure 17-10 Criteria Tab - Default Phone Number Menu

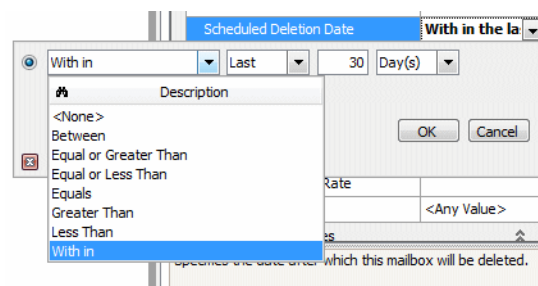


Figure 17-11 Criteria Tab - Date Criteria Menu

To remove the criteria specified for a field, right-click in the field to invoke a popup menu and select the *Reset* command, as illustrated in Figure 17-12.

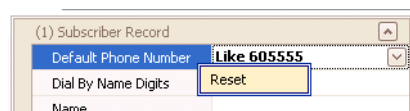


Figure 17-12 Reset Command for Criteria

Some reports may require more than one of the same type of icon to specify all of the desired criteria. For example, if two ranges of *Default Phone Number* field values need to be specified, then two Subscriber icons would be required. To facilitate this, right-click on the Subscriber icon to invoke a popup menu and select the *Create 'Or'* command (as illustrated in Figure 17-13).



Figure 17-13 Create 'Or' Command

When the *Create 'Or'* command is selected, a second Subscriber icon will be added to the draw control with a logical “OR” link between the first and second Subscriber icons (see Figure 17-14). The report will now consider Subscriber database records that match the criteria specified for either Subscriber icon. Clicking on the second Subscriber icon will display a *Criteria* tab (see Figure 17-8) for that icon, which allows additional Subscriber database criteria to be specified for the report.

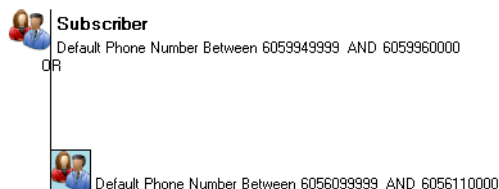


Figure 17-14 Additional Criteria

To remove an icon that is connected with an “OR” link, right-click on the icon and select the *Detach* command from the popup menu, as shown in Figure 17-15.

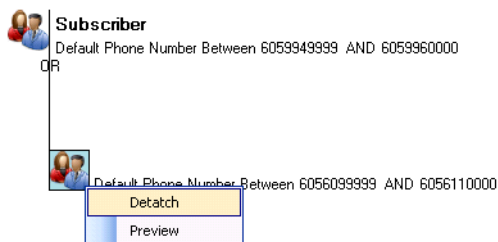


Figure 17-15 Detach Command

Set the desired criteria for this report and continue to the next step.

- The draw control in the center of the Report Viewer window should now display all of the columns and criteria you have specified. The criteria list will be attached to the Subscriber icon, as illustrated in Figure 17-16.

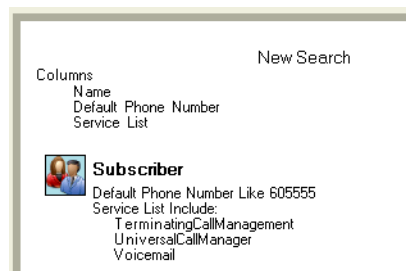
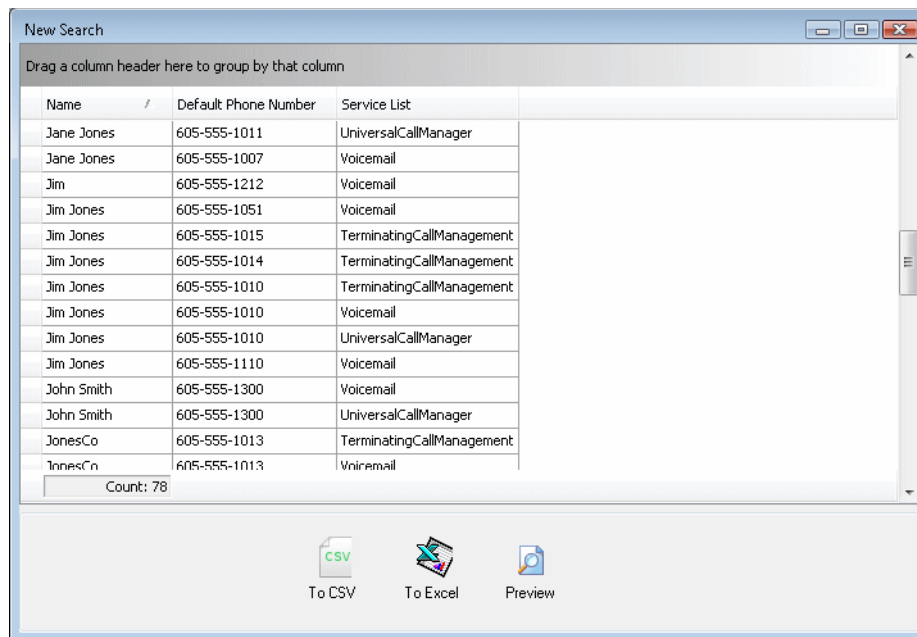


Figure 17-16 Draw Control with Criteria

To view the current contents of the report, press the *Results* button in the lower right-hand corner of the Report Viewer window. A results screen similar to Figure 17-17 will be displayed. The report will have columns for each database field that was checked in the *Columns* tab. For more information on the results screen, see Section 17.2 - "Viewing Reports". Close the results screen and save the report (see Section 17.3.1 - "Saving Reports") or make any other desired changes. For information on including database fields from enhanced services in the report, continue to the next step.





Name	Default Phone Number	Service List
Jane Jones	605-555-1011	UniversalCallManager
Jane Jones	605-555-1007	Voicemail
Jim	605-555-1212	Voicemail
Jim Jones	605-555-1051	Voicemail
Jim Jones	605-555-1015	TerminatingCallManagement
Jim Jones	605-555-1014	TerminatingCallManagement
Jim Jones	605-555-1010	TerminatingCallManagement
Jim Jones	605-555-1010	Voicemail
Jim Jones	605-555-1010	UniversalCallManager
Jim Jones	605-555-1110	Voicemail
John Smith	605-555-1300	Voicemail
John Smith	605-555-1300	UniversalCallManager
JonesCo	605-555-1013	TerminatingCallManagement
JonesCo	605-555-1013	Voicemail

Count: 78

To CSV To Excel Preview

Figure 17-17 Subscriber Report Preview

- If the Voice Mail Service or another enhanced service supported by Report Viewer is installed on the current APmax system, the icons representing those services can be dragged from the groups on the left-hand side of the Report Viewer window onto the draw control in the center of the window to create a report that includes fields from multiple databases. For example, if a Subscriber icon  already exists in the draw control and a Voice Mail icon  is dragged onto the draw control, a link similar to the one seen in Figure 17-18 will be created between the two icons.

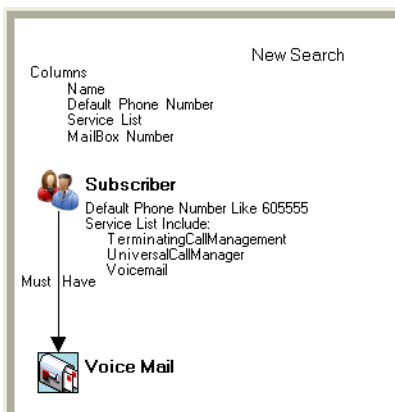



Figure 17-18 Draw Control with Two Databases

Clicking on any icon in the draw control will display the fields for the associated database in the *Columns* and *Criteria* tabs, allowing fields and filters for each database to be included or excluded in the report. By default, icons that are added to the draw control have a *Must Have* link relationship with the previously added icon (see Figure 17-18 and Figure 17-19). A *Must Have* link indicates that records must satisfy the criteria specified for both icons before they will be included in the report. This link relationship can be changed to *May Have* by right-clicking on the first icon to invoke a popup menu and selecting the *Link Type / May Have* command (as illustrated in Figure 17-19). A *May Have* link indicates that records do not need to satisfy the criteria specified for the second icon to be included in the report.



Figure 17-19 Link Type Command

In the example shown in Figure 17-20, the Voice Mail Configuration icon  has been added to the draw control and criteria has been specified for each database. The criteria for each database is listed under the name of the associated icon. For example, “Mailbox Type Include: Single (Normal)” is listed under Voice Mail. This indicates that only subscribers who have a “Single (Normal)” type of Voice Mail Service mailbox will be included in the report. Subscribers with other mailbox types such as Family, Routing, or Automated Attendant will be excluded. Also, the “Options Package Description Include Platinum” criteria is listed under Voice Mail Configuration. This indicates that only Voice Mail Service Subscribers with the Platinum package will be included in the report.

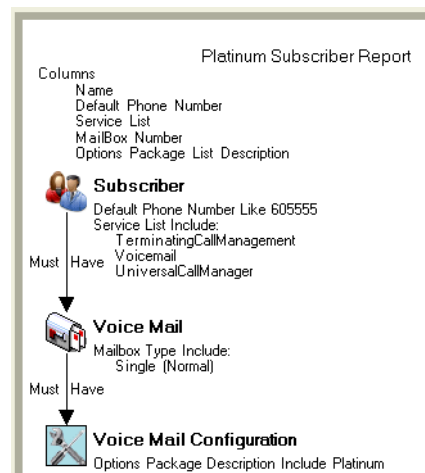


Figure 17-20 Draw Control with Three Databases

Pressing the *Results* button in the lower right-hand corner of the Report Viewer window will result in a report (see Figure 17-21) with the same columns as those specified in the draw control seen in Figure 17-20. All of the records in the report will follow the restrictions of the criteria specified in the draw control.

Platinum Subscriber Report

Drag a column header here to group by that column

Name	Default Phone Nu...	Service List	Mail Box Number	Options Package List Description
Jane Jones	605-555-1008	Voicemail	605-555-1008	Platinum
Greg Goldammer	605-555-1021	Voicemail	605-555-1021	Platinum
Gene Vold	605-555-1022	Voicemail	605-555-1022	Platinum
Ryan Tupper	605-555-1026	Voicemail	605-555-1026	Platinum
John Cersosimo	605-555-1027	Voicemail	605-555-1027	Platinum
Becky Weier	605-555-1028	Voicemail	605-555-1028	Platinum
Greg Goldammer	605-555-1054	TerminatingCallManagement	605-555-1054	Platinum

Count: 21

To CSV
 To Excel
 Preview

Figure 17-21 Subscriber Report with Multiple Databases

For information on managing reports that have already been created, see the following sections.

17.2 Viewing Reports

There are two ways to open an existing report in Report Viewer. If a report has opened previously from within the current APmax UI installation then it can be opened again by selecting it in the *Recent* drop-down box at the top of the Report Viewer window (see Figure 17-22). If the report is not available in the *Recent* drop-down box, then it can be accessed by pressing the *Open* button at the top of the window. This will display a standard file selection window that will allow you to choose the RVF (Report Viewer File) file that you wish to view. Once a report file is selected using one of these methods, the white draw control page in the center of the Report Viewer window will be populated with the databases, columns, and criteria defined in that report.



Figure 17-22 Recent Report Selection Box

To view a report that includes all of the databases, columns, and criteria in the draw control, press the *Results* button in the lower right-hand corner of the Report Viewer window. A screen similar to Figure 17-23 will be displayed. The report will have columns for each database field that was checked in the *Columns* tab of each icon in the draw control.

Name	Default Phone Nu...	Service List	Mail Box Number	Options Package List Description
Jane Jones	605-555-1008	Voicemail	605-555-1008	Platinum
Greg Goldammer	605-555-1021	Voicemail	605-555-1021	Platinum
Gene Vold	605-555-1022	Voicemail	605-555-1022	Platinum
Ryan Tupper	605-555-1026	Voicemail	605-555-1026	Platinum
John Cersosimo	605-555-1027	Voicemail	605-555-1027	Platinum
Becky Weier	605-555-1028	Voicemail	605-555-1028	Platinum
Greg Goldammer	605-555-1054	TerminatingCallManagement	605-555-1054	Platinum

Count: 21

To CSV To Excel Preview

Figure 17-23 Report with Multiple Databases

Alternatively, a report can be viewed that contains only the columns and criteria specified for one database icon. This is accomplished by right-clicking on a single icon in the draw control to invoke a popup menu and selecting the *Preview* command in the menu, as illustrated in Figure 17-24.

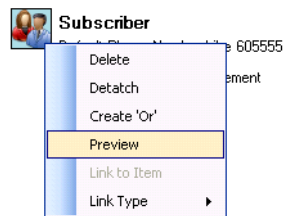





Figure 17-24 Preview Popup Command

Functions available in the Report Viewer screen (Figure 17-23) are described in the following sections:

- Section 17.2.1 - "Printing and Exporting Reports"
- Section 17.2.2 - "Copying Report Data to the Clipboard"

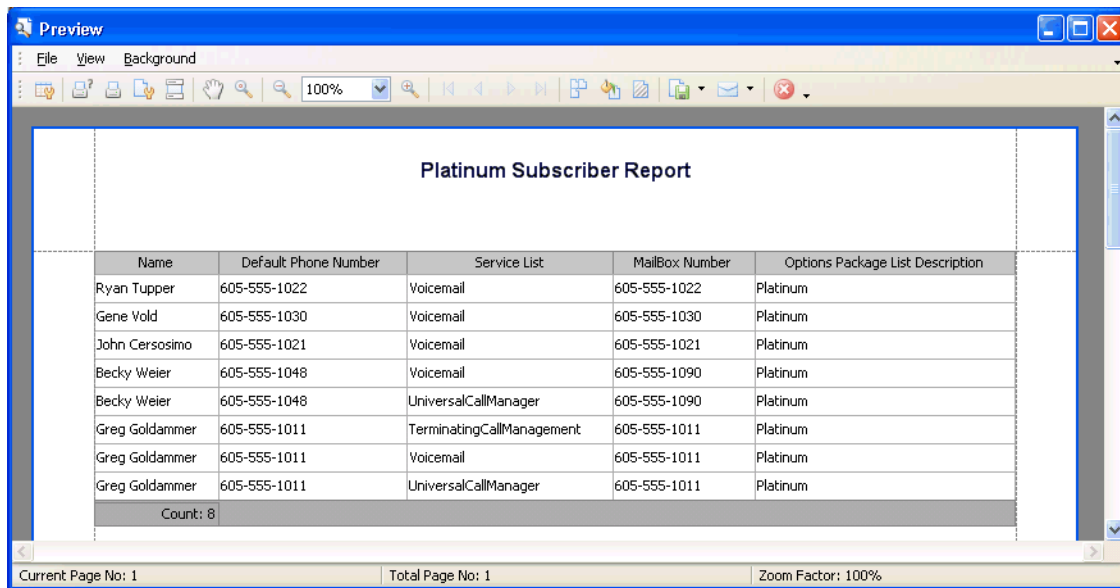
17.2.1 Printing and Exporting Reports

To export or print a report created using the APmax UI's Report Viewer, first open the report in the Report Viewer and then press the *Results* button or use the *Preview* popup command to display the contents of the report (see Figure 17-23), as described above in Section 17.2. At the bottom of the report window (Figure 17-23) there are three buttons: The *To CSV*  button, the *To Excel*  button, and the *Preview*  button. These buttons function as follows:

- Press the *To CSV* button to save the contents of the report window as a comma-separated value (CSV) file that can be imported and edited by most spreadsheet, database, and word processing applications. When the button is pressed, a standard Save As window will be displayed. Enter the file name and press the *Save* button to create the CSV file. The CSV file can now be manually opened by any program that supports viewing CSV files.

Note: Exporting to a CSV file is the only option for saving the contents of reports that contain more than 65,536 records. However, some CSV file viewing applications (e.g. Excel 2003) do not support viewing more than 65,536 records, so while the exported CSV file may contain more than 65,536 records, the number of records that can be viewed will be subject to the limitations of the CSV file viewer. Applications such as Excel 2007 support displaying more than 65,536 records.

- The *To Excel* button is used to export the contents of the report window into an XLS file and display it in your default XLS file viewer. This button will be disabled if the current report contains more than 65,536 records.
- Pressing the *Preview* button will display a print preview screen (see Figure 17-25) containing a table of the records in the report. This button will be disabled if the current report contains more than 65,536 records.



The screenshot shows a window titled "Preview" with a menu bar (File, View, Background) and a toolbar. The main content area displays a table titled "Platinum Subscriber Report". The table has five columns: Name, Default Phone Number, Service List, MailBox Number, and Options Package List Description. There are 8 rows of data, followed by a summary row labeled "Count: 8". The status bar at the bottom indicates "Current Page No: 1", "Total Page No: 1", and "Zoom Factor: 100%".

Name	Default Phone Number	Service List	MailBox Number	Options Package List Description
Ryan Tupper	605-555-1022	Voicemail	605-555-1022	Platinum
Gene Vold	605-555-1030	Voicemail	605-555-1030	Platinum
John Cersosimo	605-555-1021	Voicemail	605-555-1021	Platinum
Becky Weier	605-555-1048	Voicemail	605-555-1090	Platinum
Becky Weier	605-555-1048	UniversalCallManager	605-555-1090	Platinum
Greg Goldammer	605-555-1011	TerminatingCallManagement	605-555-1011	Platinum
Greg Goldammer	605-555-1011	Voicemail	605-555-1011	Platinum
Greg Goldammer	605-555-1011	UniversalCallManager	605-555-1011	Platinum
Count: 8				

Figure 17-25 Report Viewer Print Preview

The preview screen contains the standard print preview functions that allow the contents of the window to be printed, exported, or e-mailed. The *File* menu at the top of the screen provides access to these functions.

The *File / Export Document* command (illustrated in Figure 17-26) allows the report to be saved in a variety of document formats (PDF, HTML, MHT, RTF, XLS, XLSX, CSV, Text, Image).

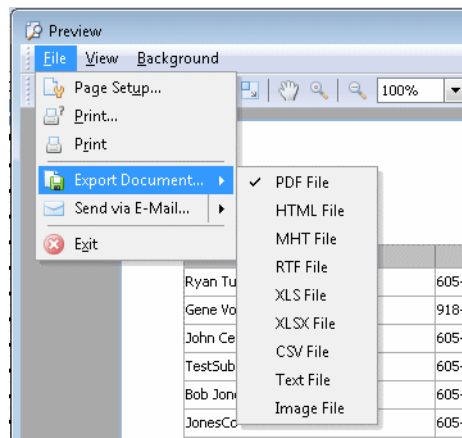


Figure 17-26 Export Document Menu

The *File / Send E-mail* menu command (illustrated in Figure 17-27) allows the report to be emailed as a document attachment.

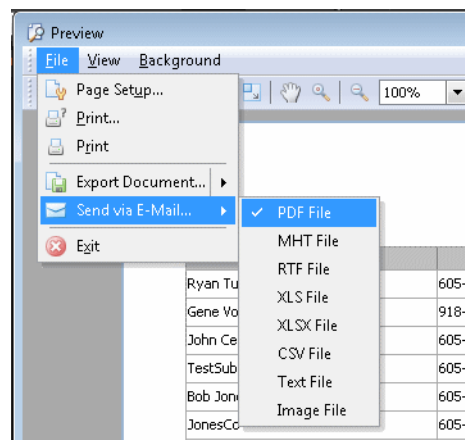


Figure 17-27 Send E-mail Menu

17.2.2 Copying Report Data to the Clipboard

Report Viewer data can be copied from the results table to the clipboard by following these steps:

1. Open a report in Report Viewer.
2. Press the *Results* button or use the *Preview* popup command to display the contents of the report.
3. Do one of the following:
 - a. To copy the contents of an individual cell, right-click on the cell and select the *Copy* command in the popup menu (illustrated in Figure 17-28).

Name	Default Phone Nu...	Service List	Mail Box Number	Options Pad
▶ Jane Jones	605-555-1008		605-555-1008	Platinum
Greg Goldammer	605-555-1021		605-555-1021	Platinum
Gene Vold	605-555-1022	Voicemail	605-555-1022	Platinum
Ryan Tupper	605-555-1026	Voicemail	605-555-1026	Platinum
John Cersosimo	605-555-1027	Voicemail	605-555-1027	Platinum
Becky Weier	605-555-1028	Voicemail	605-555-1028	Platinum

Figure 17-28 Copying a Cell

- b. To copy the contents of one row, right-click on the row indicator box on the left-hand side of the row and select the *Copy* command in the popup menu.
- c. To copy the contents of multiple rows, hold the Shift or Ctrl key down while left-clicking on the rows, and then right-click on the row indicator box on the left-hand side of a selected row and select the *Copy* command in the popup menu (illustrated in Figure 17-29).

Name	Default Phone Nu... /	Service List	Mail Box Number	Options Package List Description
Copy	605-555-1008	Voicemail	605-555-1008	Platinum
	605-555-1021	Voicemail	605-555-1021	Platinum
Gene Vold	605-555-1022	Voicemail	605-555-1022	Platinum
Ryan Tupper	605-555-1026	Voicemail	605-555-1026	Platinum
John Cersosimo	605-555-1027	Voicemail	605-555-1027	Platinum
Becky Weier	605-555-1028	Voicemail	605-555-1028	Platinum

Figure 17-29 Copying Multiple Rows

- Paste the copied data into a document or spreadsheet.

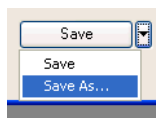
17.3 Report Management Operations

The operations used to manage Report Viewer report files are found in the following sections:

- Section 17.3.1 - "Saving Reports"
- Section 17.3.2 - "Renaming Reports"
- Section 17.3.3 - "Password-Protecting Reports"
- Section 17.3.4 - "Deleting Reports"
- Section 17.3.5 - "Scheduling Report Emails"

17.3.1 Saving Reports

Report configurations (i.e. draw control contents, columns, criteria) can be saved by pressing the *Save* button (see Figure 17-30) located in the lower right-hand corner of the Report Viewer window. If the report has not been saved previously, a standard Save As window will be displayed. Enter the file name and press the *Save* button in the Save As window to create the new report file.

**Figure 17-30 Save Button Menu**

Previously saved report files can be saved as a different file by using the *Save As* command in the drop-down menu that is accessed by pressing the arrow next to the *Save* button (see Figure 17-30).

When saving a report, if a report with the same file name is currently scheduled for email delivery (see Section 17.3.5 - "Scheduling Report Emails") then a prompt to update the scheduled report will be displayed (see Figure 17-31). Choosing *Yes* in the prompt will update the scheduled report and choosing *No* will save the current report locally, but will not update the report scheduled for email delivery.

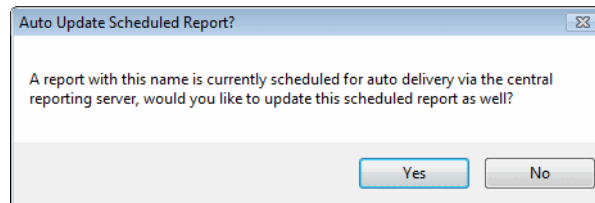


Figure 17-31 Prompt to Update Scheduled Report

17.3.2 Renaming Reports

To rename an existing report, open the report in Report Viewer and click the *Rename* button in the lower right-hand corner of the Report Viewer window. The New Name window (see Figure 17-32) will be displayed. Enter the new report name and press the *OK* button to confirm the change.

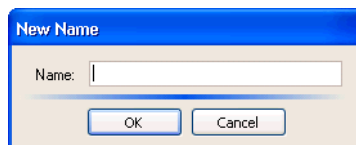


Figure 17-32 New Name Window

17.3.3 Password-Protecting Reports

Report Viewer reports can be password-protected to prevent those who do not know the password from changing the report configuration. The report may still be viewed without knowing the password, but it will be read-only and cannot be altered unless the correct password is entered.

To password-protect a report, check the *Read Only* box in the lower right-hand corner of the Report Viewer window and press the *Save* button. An Enter Password window (see Figure 17-33) will be displayed. The password you enter will be case-sensitive. Enter the password and press *OK* to save it. Attempts to open the report in the future will result in a prompt to enter the password.

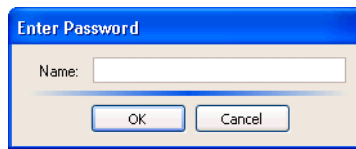


Figure 17-33 Enter Password Window

17.3.4 Deleting Reports

To delete a report, select it the *Recent* dropdown box at the top of the Report Viewer window (see Figure 17-34) and press the *Delete* button. A delete confirmation prompt will be displayed. Choose *Yes* in the prompt to complete the deletion or *No* to cancel the deletion.



Figure 17-34 Select a Report to Delete

17.3.5 Scheduling Report Emails

Report configurations that have been saved (see Section 17.3.1 - "Saving Reports") can be scheduled to run automatically. The results will then be sent to a list of email addresses. The following steps provide a guide for scheduling report emails.

NOTE: Reports containing ACD Statistics or IPTV Channel Stats cannot be scheduled at this time.

1. A common database location must be configured in your APmax UI installation so that APmax backup databases are retrieved from a server other than the APmax system. See Section 3.3.4.2 - "Advanced Settings" for information on setting up the APmax Central Reporting Service Address.
2. Open the Report Viewer tool if it is not already open.
3. Press the *Schedule* button in the lower, right-hand corner of the Report Viewer window (Figure 17-3) to display the Scheduled Reports window (Figure 17-35). The *Schedule* button is only available if the APmax Central Reporting Service Address has been configured, as indicated in Step 1.

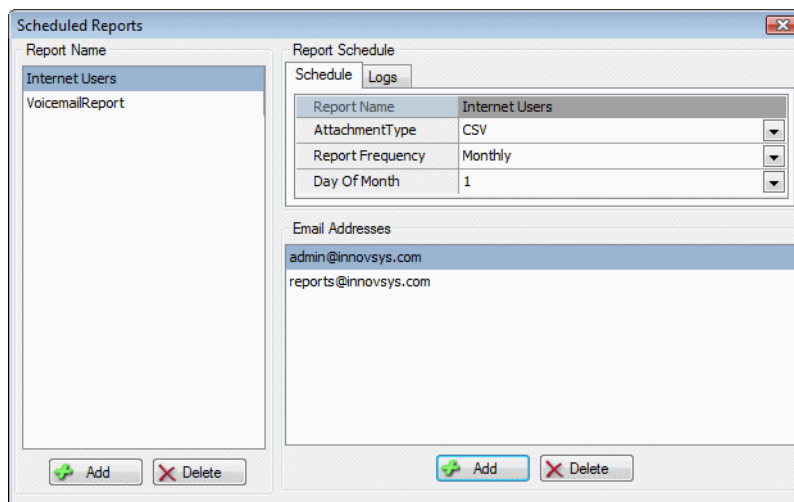


Figure 17-35 Scheduled Reports Window

4. The *Report Name* list on the left-hand side of the Scheduled Reports window displays all of the reports that are configured for scheduled emails. Press the *Add* button below the list to begin adding a report. This will display a standard file selection window that will allow you to choose the RVF (Report Viewer File) file that you wish to use.
5. After selecting an RVF file as indicated in the previous step, press the *Open* button in the file selection window to display the Report Schedule window (Figure 17-36).

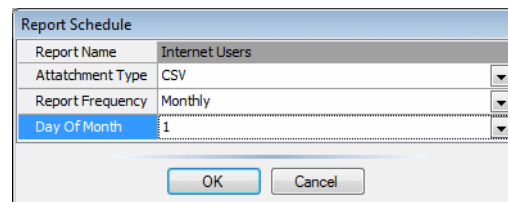


Figure 17-36 Report Schedule Entry

6. The Report Schedule window contains the settings listed below. Select a value for each setting and press the *OK* button.

Report Name	Name of the report being scheduled.
Attachment Type	Document format in which the report results will be saved (CSV, Excel, PDF). The resulting file will be attached to the report email.
Report Frequency	How frequently the report will be generated and emailed. Options include Daily, Weekly, and Monthly.

**Day of Week/
Month**

The specific day of the week, or day of the month, on which the report will be generated and emailed. This option is only available if *Report Frequency* is set to Weekly or Monthly.

7. Select the newly scheduled report in the *Report Name* list. The settings for the selected report will be displayed in the *Schedule* tab. These settings can be adjusted at any time.
8. Enter an email address to which the selected report should be sent by pressing the *Add* button below the *Email Addresses* list. This will display an Add Email entry form (Figure 17-37). Enter the address and press the *OK* button to finish adding it to list. Multiple email addresses may be entered for each scheduled report.

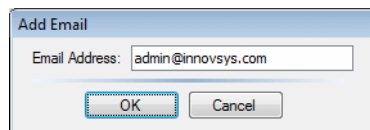


Figure 17-37 Add Email Address

9. The report is now scheduled to be generated and emailed. To view a history of report emails, select a report in the *Report Name* list and then select the *Logs* tab (see Figure 17-38). This will show the time and email results for the scheduled report. Figure 17-39 shows an example of a successful scheduled report email that has a CSV file attached.

Time	Send Success
2/1/2013 8:38 AM	Yes
2/1/2013 8:33 AM	Yes
2/1/2013 6:13 AM	Yes

Figure 17-38 Logs Tab

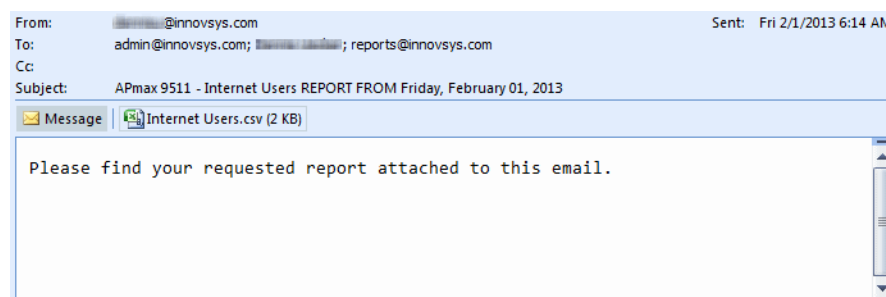


Figure 17-39 Example Report Email

If a report email is not sent successfully, follow these steps to find more information about the problem using Event Viewer:

- a. Open **Event Viewer** on the PC or server where the APmax Central Reporting Service is running. To open **Event Viewer** in Windows 7, click the *Start* button, type Event Viewer in the *Search* box, and then double-click Event Viewer in the list of results.
- b. View the **Application** event log in Event Viewer. In Windows 7 this is done by expanding the *Windows Logs* tree item and clicking on *Application*.
- c. Look for events with the **Source** title of “APMax Central Reporting Service” (see Figure 17-40) and click on them to view error details regarding why the report failed to be sent.

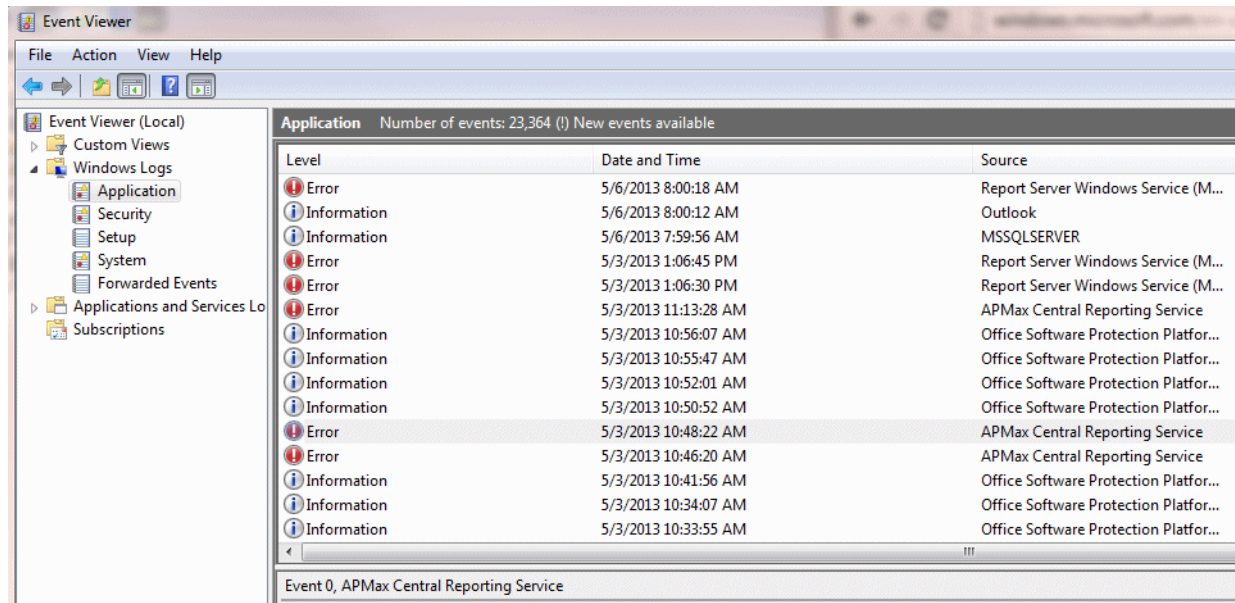



Figure 17-40 Event Viewer

Chapter 18 - System Upgrade Manager

The System Upgrade Manager tool allows APmax system upgrades to be performed with little or no assistance from Innovative Systems technical support personnel. This allows system administrators to upgrade on their own schedule and in a more timely manner. Upgrade progress reports are available throughout the process.

To access the System Upgrade Manager interface, right-click on the system's icon  in the Command Center window to invoke a popup menu, and select the *System Maintenance / System Upgrade Manager* command (as illustrated in Figure 18-1).

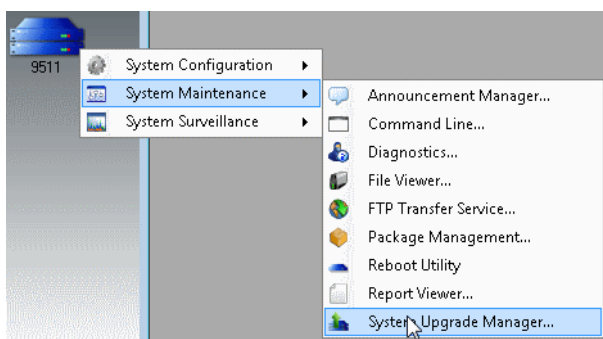


Figure 18-1 System Upgrade Manager Menu Command

The System Upgrade Manager introduction screen (Figure 18-2) displays a general warning that should be read prior to attempting a system upgrade. Below the warning is an [Upgrade Procedure Documentation](#) link that should be clicked to download a PDF containing detailed upgrade information.

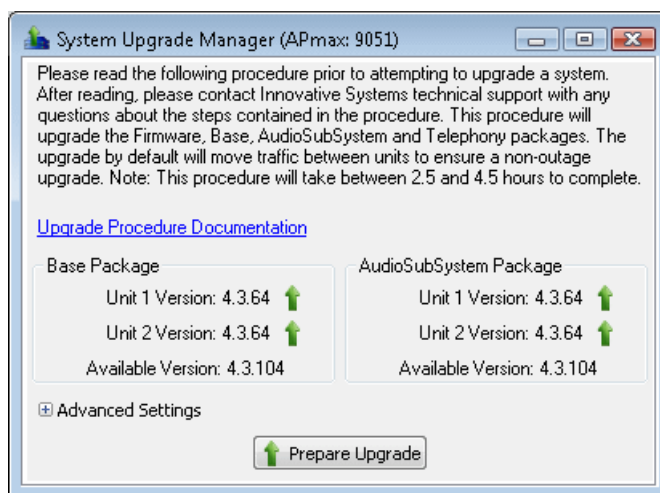


Figure 18-2 System Upgrade Manager Window

The *Base Package* box and *AudioSubSystem Package* box in the System Upgrade Manager window indicate whether or not these packages are up-to-date on Unit 1 and Unit 2. Figure 18-2 illustrates packages that need to be upgraded, and Figure 18-3 illustrates packages that are up-to-date. The *Prepare Upgrade* button at the bottom of the window will be disabled if the system is up-to-date, but will be enabled if local files are used for the upgrade (see *Advanced Settings* below).

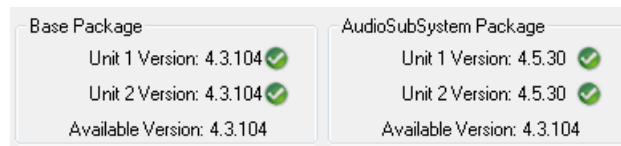


Figure 18-3 Packages Up-to-Date

Advanced Settings

The *Advanced Settings* section (Figure 18-4) of the System Upgrade Manager interface can be expanded to customize the actions that take place during the upgrade process.

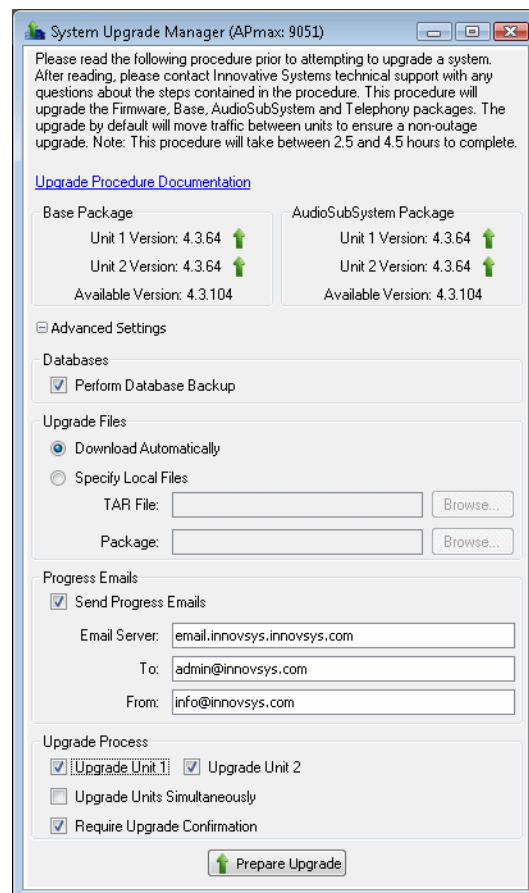


Figure 18-4 Advanced Settings

Table 18-1 Advanced Settings

Databases	Check the <i>Perform Database Backup</i> box to backup the APmax databases and store them on the local PC's hard drive, or uncheck to disable database backup. This option is checked by default.
Upgrade Files	Choose the <i>Download Automatically</i> option (selected by default) to download the latest release packages from the Innovative Systems FTP site, or choose the <i>Specify Local Files</i> option and navigate to the <i>TAR File</i> or <i>Package</i> file that will be used instead of downloading from the FTP site.
Progress Emails	Check the <i>Send Progress Emails</i> box (unchecked by default) to have several progress reports emailed from the specified <i>Email Server</i> throughout the upgrade process.
Upgrade Process	<p>The <i>Upgrade Unit 1</i> and <i>Upgrade Unit 2</i> boxes can be checked (upgrade) or unchecked (do not upgrade) to upgrade units independently, if necessary. Both boxes are checked by default.</p> <p>Check the <i>Upgrade Units Simultaneously</i> box (unchecked by default) to do a service outage upgrade.</p> <p>Check the <i>Require Upgrade Confirmation</i> box (checked by default) to pause the process after the non-upgrade steps and allow the upgrade to be continued at a later time. For example, checking this box would allow all necessary files to be transferred to the system during business hours, but the actual upgrade could be paused until a specified service window.</p>

Upgrade Process

Press the *Prepare Upgrade* button at the bottom of the System Upgrade Manager window to display a confirmation prompt, and then press *Yes* in the prompt to begin the upgrade process. The System Upgrade Manager screen will now display the steps required to finish the upgrade and the current status of each step (illustrated in Figure 18-5).

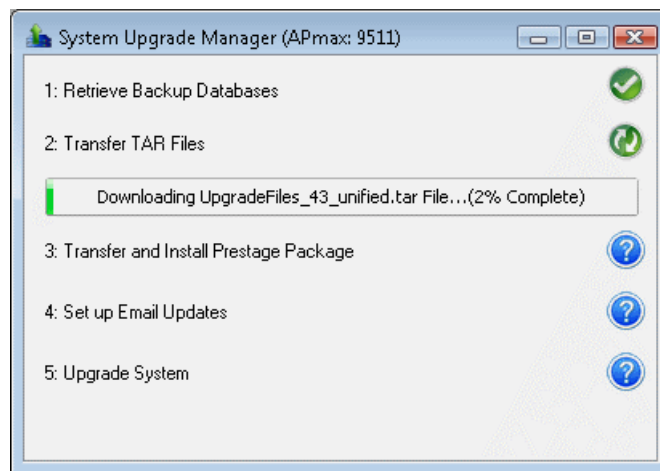


Figure 18-5 Upgrade Progress Screen

If the *Require Upgrade Confirmation* box is checked then the *Start Upgrade* button shown in Figure 18-6 will be displayed, allowing the upgrade to be resumed at any time. The *Test Email* button will also be displayed if the *Send Progress Emails* box is checked, allowing the email settings to be verified prior to the start of the upgrade. If the *Require Upgrade Confirmation* box is not checked then the upgrade process will run until completion.

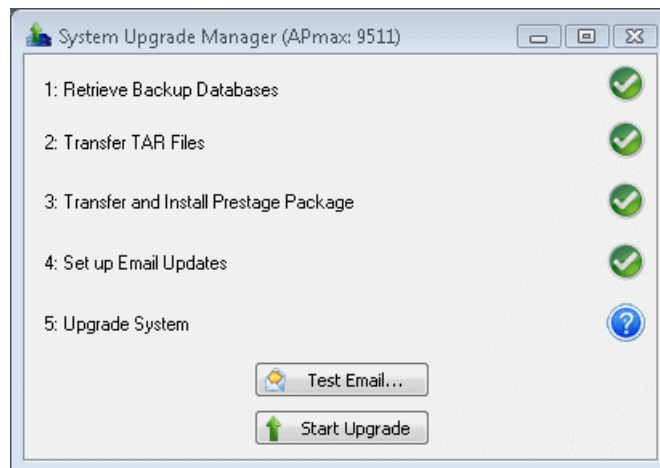


Figure 18-6 Non-Upgrade Steps Completed

Pressing the *Test Email* button (if available) will show the Email Settings window (Figure 18-7), which can be used to adjust the *Email Server* and address settings, and will send two test emails (one for each APmax unit) which contain system configuration information.

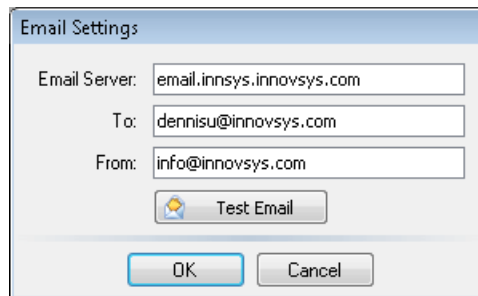


Figure 18-7 Test Email Settings

Press the *Start Upgrade* button to continue the upgrade process. The System Upgrade Manager screen will show the upgrade status of the units that are being upgraded. If both units are being upgraded then a prompt will be displayed when the Unit 1 upgrade is complete (see Figure 18-8). After validating that Unit 1 is in service, press the *Resume Upgrade* button to begin upgrading Unit 2.

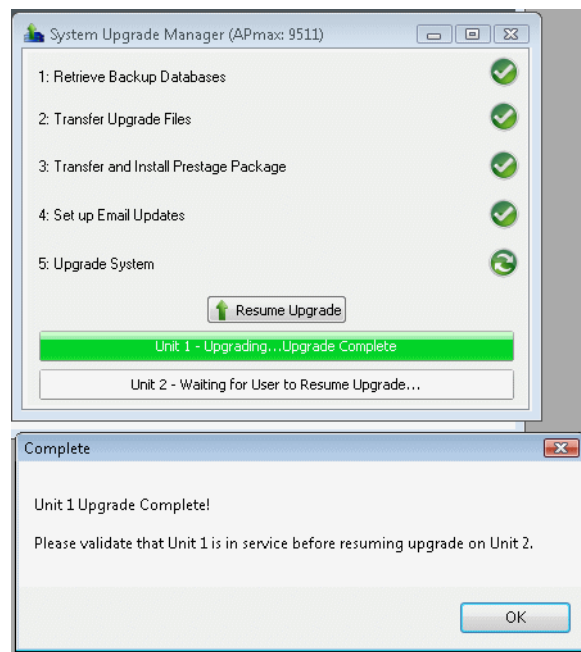
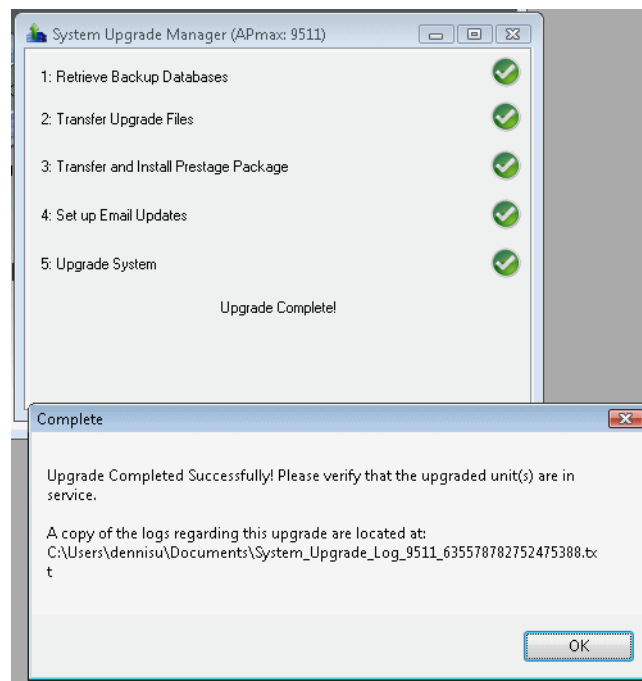


Figure 18-8 Unit 1 Complete - Resume Upgrade Prompt

For support purposes, a log file is created for each system upgrade. The log file is located in the “Documents” folder of the logged in PC user. When the upgrade is finished a prompt will display the exact path to the log file (see Figure 18-9). This is also the directory where all remotely downloaded files are located. Automatically downloaded files will be deleted automatically upon a successful upgrade.

**Figure 18-9 Upgrade Complete**

Part 4 - System Surveillance


Overview

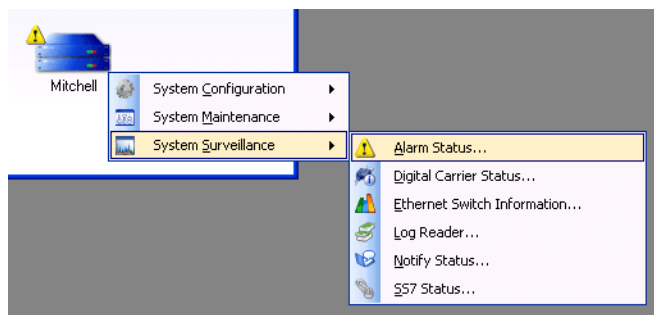
Part 4 provides instructions for using the system surveillance functions that are included in the APmax UI software.

The following chapters are found in System Surveillance:

- Chapter 19 - "Alarm Status"
- Chapter 20 - "Digital Carrier Status"
- Chapter 21 - "Ethernet Switch Information"
- Chapter 22 - "Log Reader"
- Chapter 23 - "SS7 Status"

To access the surveillance interfaces for an APmax system, right-click on the system's icon

 in the Command Center window to invoke a popup menu. Select the *System Surveillance* command to expand the popup menu, as illustrated in the figure below. The expanded menu will display all of the available surveillance interfaces for this system. Select a command from the expanded menu to display the associated interface.



System Surveillance Menu

NOTES:

- The name of the APmax system for which surveillance is being performed will be displayed in the caption of any window that is opened using the *System Surveillance* command. If the system name that is displayed in the caption is not the system you want to monitor, then close the window and right-click on the icon of the system you want to monitor.
- The **Network Trace** function in the *System Surveillance* menu should not be used except under the direction of vendor technical support personnel.

Chapter 19 - Alarm Status

19.1 Monitoring System Alarms





The Alarm Status tool allows system administrators to view and monitor alarms on APmax systems. If an alarm is present on an APmax system, the system's icon  in the Command Center window will have an alarm symbol  in the upper left-hand corner of the icon. Hovering the mouse pointer over the alarm symbol will display a tooltip (illustrated in Figure 19-1) containing a short description of the most recent alarm on the system.



Figure 19-1 System Alarm Tooltip

To access the Alarm Status interface, either click on the alarm symbol  in the upper left-hand corner of the system's icon or, if the symbol is not present because there are no alarms on the system, right-click on the system's icon  in the Command Center window to invoke a popup menu and select the *System Surveillance / Alarm Status* command (as illustrated in Figure 19-2). The name of the system for which you are viewing alarms will be displayed at the top of the Alarm Status window (Figure 19-3).

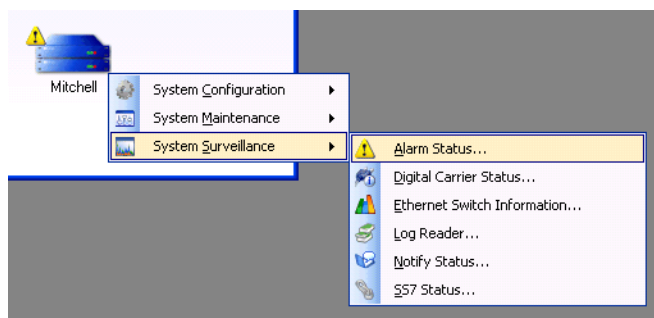


Figure 19-2 Alarm Status Menu Command

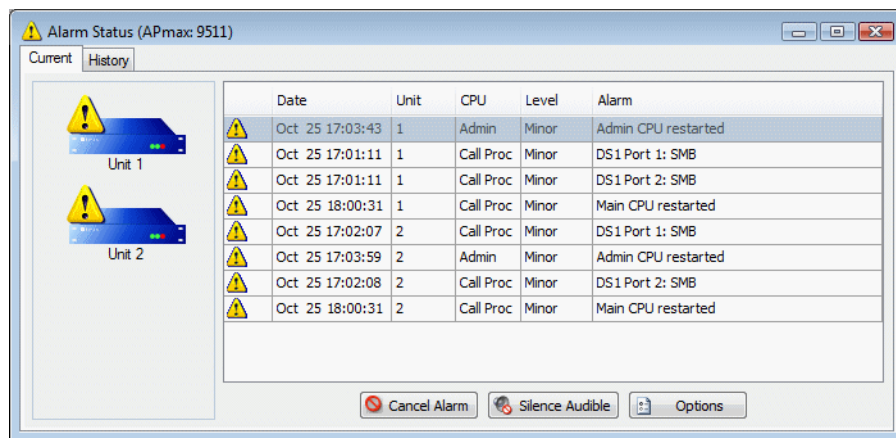



Figure 19-3 Alarm Status Window

The left-hand side of the Alarm Status window displays a system icon  for each unit in the selected APmax system. A symbol representing the most urgent alarm for each unit will be displayed above the system icon. These symbols are listed below:



Indicates there are no alarms present for this unit.



Indicates a minor alarm for this unit.



Indicates a major alarm for this unit.



Indicates a critical alarm for this unit.

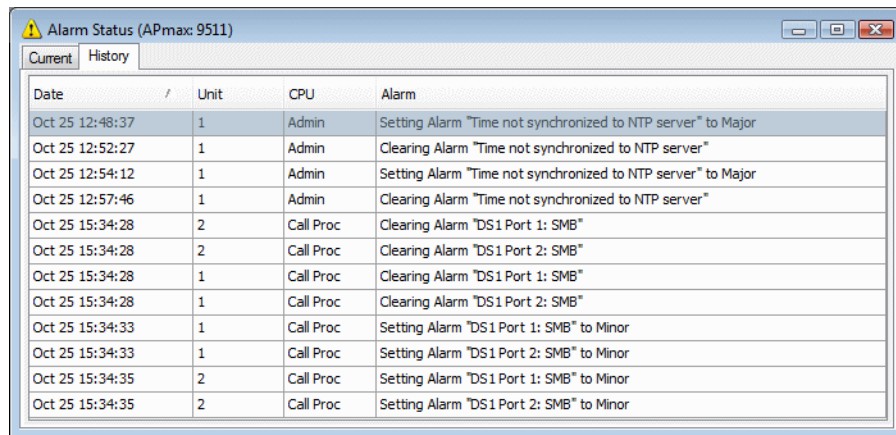
The right-hand side of the Alarm Status window contains a list of the current alarms on all units in the selected APmax system. Each row in the list represents an individual alarm and contains the following information for that alarm: timestamp of the alarm, unit number, CPU, level of the alarm, and additional information that identifies the possible cause of the alarm.

In most cases, the alarm will be cleared by the system when the reason for the alarm has been corrected. However, some alarms have to be cleared manually. For example, if an alarm indicates a system restart, it must be cleared manually to acknowledge the occurrence of a system restart. To manually clear an alarm, select the alarm in the list, and press the *Cancel Alarm* button. Multiple alarms can be selected and cleared simultaneously by holding the Shift or Ctrl key down while selecting alarms.

To manage the notifications (audio and email) associated with each alarm level, see Section 19.1.1.

To view a recent history of alarms, select the *History* tab (Figure 19-4) at the top of the Alarm Status window. The APmax UI will retrieve error log files from the APmax and display log entries for recently set or cleared alarms.

Note: Alarm History uses high speed Command Link File Transfer to retrieve log files from the APmax and therefore requires the selected system to have a minimum of APmax Release 4.2 and AudioSubsystem package version 4.3.33.



Date	Unit	CPU	Alarm
Oct 25 12:48:37	1	Admin	Setting Alarm "Time not synchronized to NTP server" to Major
Oct 25 12:52:27	1	Admin	Clearing Alarm "Time not synchronized to NTP server"
Oct 25 12:54:12	1	Admin	Setting Alarm "Time not synchronized to NTP server" to Major
Oct 25 12:57:46	1	Admin	Clearing Alarm "Time not synchronized to NTP server"
Oct 25 15:34:28	2	Call Proc	Clearing Alarm "DS1 Port 1: SMB"
Oct 25 15:34:28	2	Call Proc	Clearing Alarm "DS1 Port 2: SMB"
Oct 25 15:34:28	1	Call Proc	Clearing Alarm "DS1 Port 1: SMB"
Oct 25 15:34:28	1	Call Proc	Clearing Alarm "DS1 Port 2: SMB"
Oct 25 15:34:33	1	Call Proc	Setting Alarm "DS1 Port 1: SMB" to Minor
Oct 25 15:34:33	1	Call Proc	Setting Alarm "DS1 Port 2: SMB" to Minor
Oct 25 15:34:35	2	Call Proc	Setting Alarm "DS1 Port 1: SMB" to Minor
Oct 25 15:34:35	2	Call Proc	Setting Alarm "DS1 Port 2: SMB" to Minor

Figure 19-4 Alarm History

19.1.1 Alarm Notifications

Alarm Status will, by default, sound an audible alarm at the PC for the most urgent alarm present in the APmax system. To disable audible notifications for all of the alarms currently listed in the Alarm Status window, press the *Silence Audible* button below the list. If a new alarm appears on the list after the *Silence Audible* button has been pressed, the audible notification will be re-enabled.

To change the audio file associated with each level of alarm, or to configure email notifications of alarms, press the *Options* button in the Alarm Status window to display the Options window (see Figure 19-5).

The screenshot shows a window titled "Options" with several sections for configuring alarm settings:

- E-Mail Notification:**
 - SMTP Server: smtp.innovsys.com
 - SMTP Port: 25
 - From Address: alarms@innovsys.com
 - FQDN: apmax.innovsys.com
- Minor Alarms:**
 - Audio: None (with a Play button)
 - Notification Address: admin@innovsys.com
- Major Alarms:**
 - Audio: Default (with a Play button)
 - Notification Address: admin@innovsys.com
- Critical Alarms:**
 - Audio: Custom... (with a Play button)
 - File Path: M:\ringin.wav
 - Notification Address: admin@innovsys.com

At the bottom of the window are "OK" and "Cancel" buttons.

Figure 19-5 Audible Alarm Options

The Options window displays each of the three alarm levels (Minor, Major, Critical), an *Audio* selection box for changing the sound associated with each alarm level, and a *Play* button for playing the sound associated with each alarm level.

Note: E-Mail Notification fields described below are only available if APmax Release 4.5.17 or greater is installed on the system hosting the subscriber record.

The *SMTP Server* and *SMTP Port* fields are used to enter the address and port of the SMTP server that will send alarm notification emails. The *From Address* is the email address that will be displayed as the source of any notification emails. The *FQDN* field is used to enter the fully qualified domain name to send in the HELO command. The *Notification Address* field for each alarm level is used to enter an email address that will receive email notifications when an alarm of the associated level occurs.

Alarms must be stable for two minutes before a notification email will be sent. Email notifications will be continue to be sent once per hour. Figure 19-6 provides an example of a notification email for a major alarm on “System 123544” where the description of the alarm is “Test.”

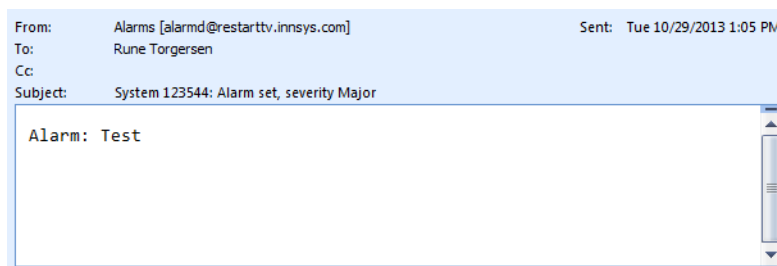


Figure 19-6 Example Notification Email


The *Audio* selection box for each alarm level in the Options window contains the following three options:

- None** No notification sound will be played for alarms of this level.
- Default** The default notification sound will be played for alarms of this level.
- Custom** A custom .wav file will be played for alarms of this level.

Selecting this option will display a standard file selection window. Use the file selection window to locate and select a .wav audio file and press the *Open* button. The path to the selected .wav file will be displayed below the selection box for the associated alarm level.

When the alarm notification sounds and email addresses have been set, press the *OK* button in the Options window to save the settings and close the window.

Chapter 20 - Digital Carrier Status

The Digital Carrier Status tool allows system administrators to monitor the status of trunks and digital signalling (DS) ports for the APmax system. To access the Digital Carrier Status interface, right-click on the system's icon  in the Command Center window to invoke a popup menu, and select the *System Surveillance / Digital Carrier Status* command (as illustrated in Figure 20-1). The name of the system for which you are viewing information will be displayed at the top of the Digital Carrier Status window, which is partitioned into four tabs: *DS* (see Figure 20-2 in Section 20.1), *Trunks* (see Figure 20-5 in Section 20.2), *SIP* (see Figure 20-6 in Section 20.3), and *Summary* (see Figure 20-7 in Section 20.4).

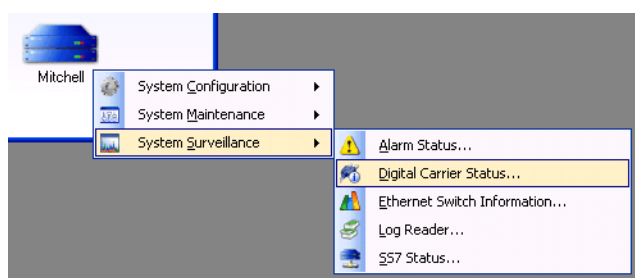


Figure 20-1 Digital Carrier Status Menu Command

20.1 Monitoring DS Ports

The *DS* tab (Figure 20-2) is displayed by default when the Digital Carrier Status interface is accessed. It contains information about the status of each DS1 and DS3 that is enabled for the current APmax system. DS ports are enabled in the Digital Carrier Configuration interface, described in Section 7.1.

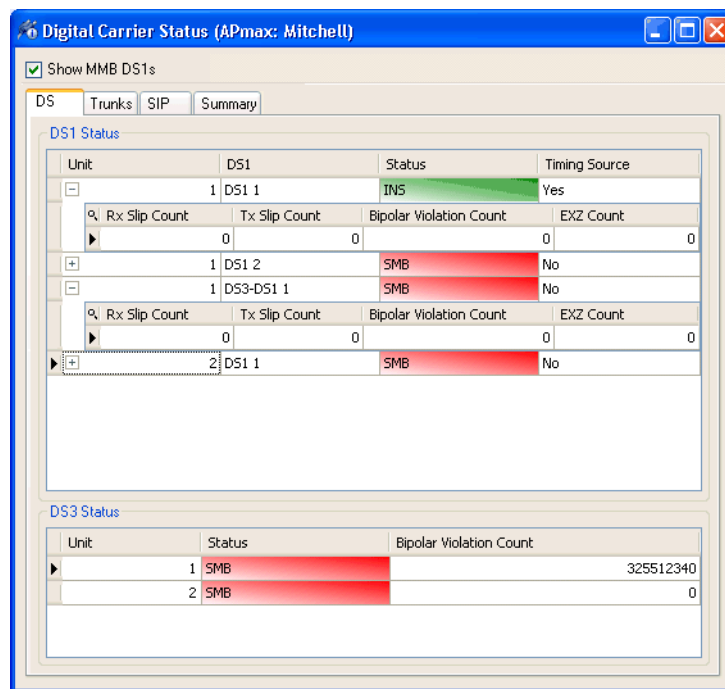


Figure 20-2 Digital Carrier Status - DS Tab

Each DS1 is represented by a row in the *DS1 Status* section of the tab. The following columns of information are available for each DS1:

Unit	The number of the APmax system unit on which this DS1 is located.
DS1	The DS port that is being monitored.
Status	The state of the DS port. Potential DS port states are INS (In Service), SMB (Switch Made Busy), MMB (Man Made Busy), or Unknown. MMB ports will only be shown if the <i>Show MMB DS1s</i> box is checked in the upper left-hand corner of the window, as illustrated below in Figure 20-3.

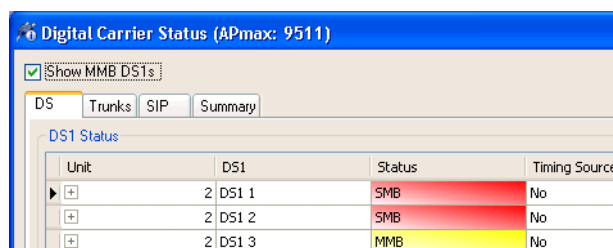



Figure 20-3 Show MMB DS1s Checkbox

Timing Source

Indicates (Yes or No) if this DS1 is the sync master port. The sync master port is the preferred source of external clock synchronization, and is used to synchronize all internal clocks to the network or BITS clock.

On the left-hand side of each row is a tree symbol  that can be clicked to display more statistical details about the associated DS1 port, as illustrated in Figure 20-2.

At the bottom of the *DS* tab is the *DS3 Status* section, which shows the status and bipolar violation counts for each unit in the current APmax system.

20.2 Monitoring Trunks

The *Trunks* tab (Figure 20-4) displays the status of all DS channels that have been assigned to MF and ISUP trunk groups. For more information on trunk groups, see Chapter 9 - "Trunk Configuration".

When the *Trunks* tab is first selected, the APmax UI will look at the trunk groups that are defined for the current APmax system and begin to query the status of the DS channels in those trunk groups. As the status of the channels in each trunk group is retrieved, the trunk groups will be displayed as rows in the *Trunks* tab. Figure 20-4 shows an example of what the *Trunks* tab may look like initially.

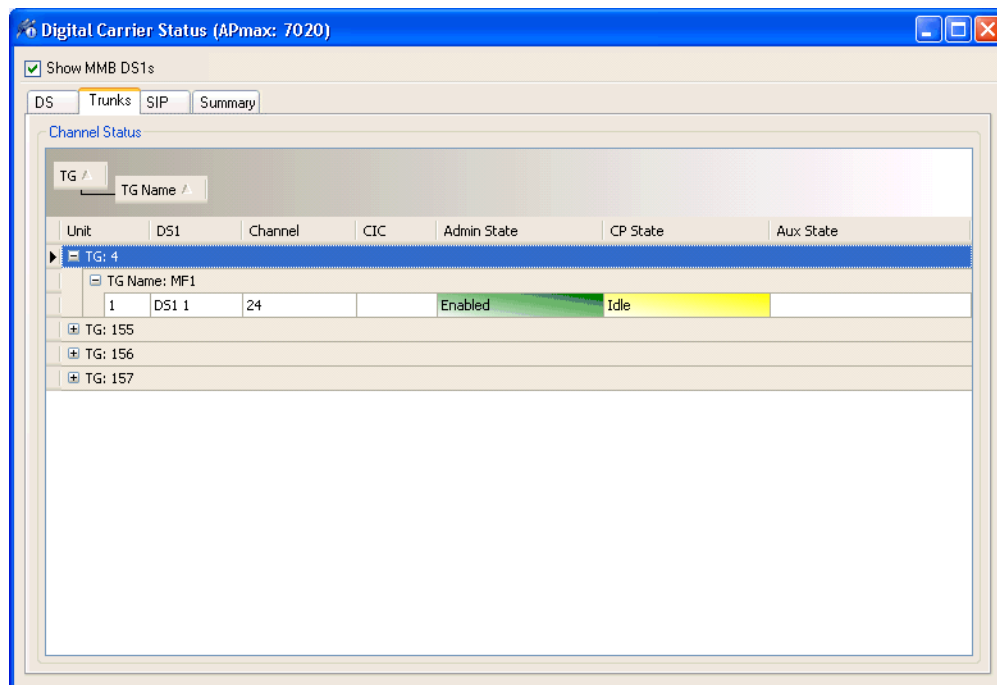



Figure 20-4 Trunks Tab - Collapsed View

On the left-hand side of each trunk group (TG) row is a tree symbol  that can be clicked to display the status of all DS channels in the trunk group. Figure 20-5 shows what the *Trunks* tab might look like when a trunk group with several channels is displayed. A vertical scrollbar will be displayed (see the right-hand side of the window in Figure 20-5) if the trunk groups and channels create a list longer than can be shown in the Digital Carrier Status window.

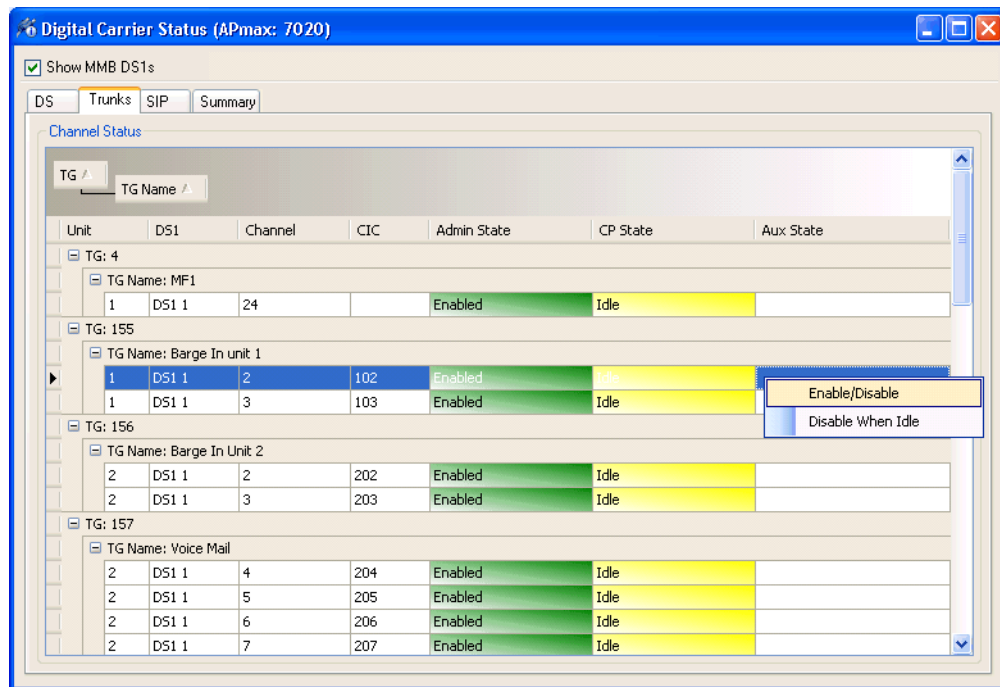


Figure 20-5 Trunks Tab - Expanded View

The following columns of information are given for each DS channel in the *Trunks* tab:

Unit	The number of the APmax system unit on which this trunk group is located.
DS1	The DS port that is being monitored.
Channel	The channel on the DS port that is being monitored.
CIC	The Circuit ID Code (CIC) used to identify trunk members in an ISUP trunk group. This field will be blank if this is an MF trunk group. CICs are assigned during trunk configuration (see Section 9.3 - "ISUP Trunk Groups").

Admin State	<p>The administrative state of the T1 channel may be Enabled or Disabled.</p> <p>The Admin State of the channel can be toggled to the opposite of its current state by right-clicking on the channel in the <i>Trunks</i> tab to invoke a popup menu, as illustrated in Figure 14-5, and then selecting the <i>Enable/Disable</i> menu command.</p> <p>A trunk can also be set to be busy when idle by selecting the <i>Disable When Idle</i> menu command from the popup menu.</p>
CP State	<p>The Call Processing state of the T1 channel. The column will indicate whether the associated channel is IDLE (not currently in use), BUSY (currently in use), or OOS (out of service).</p>
Aux State	<p>The Auxiliary States of the T1 channel. An example of Auxiliary States are ISUP “local-blocked” or “remote-blocked” conditions that may be present on ISUP trunk group channels.</p>

20.3 SIP Status

The *SIP* tab (Figure 20-6) is used to monitor and manage SIP activity for the selected APmax system. The following columns of information are given for each APmax unit:

Unit	The number of the APmax system unit.
Active Call Count	The number of SIP calls currently being handled by this APmax unit.
Status	The state of SIP on this unit. Potential states are In Service, Ignore Calls, or Redirect Calls. The state of a unit can be changed by right-clicking on the unit row to invoke a popup menu (illustrated in Figure 20-6) and then selecting either the <i>Enable/Disable</i> or <i>Redirect Calls</i> menu command.

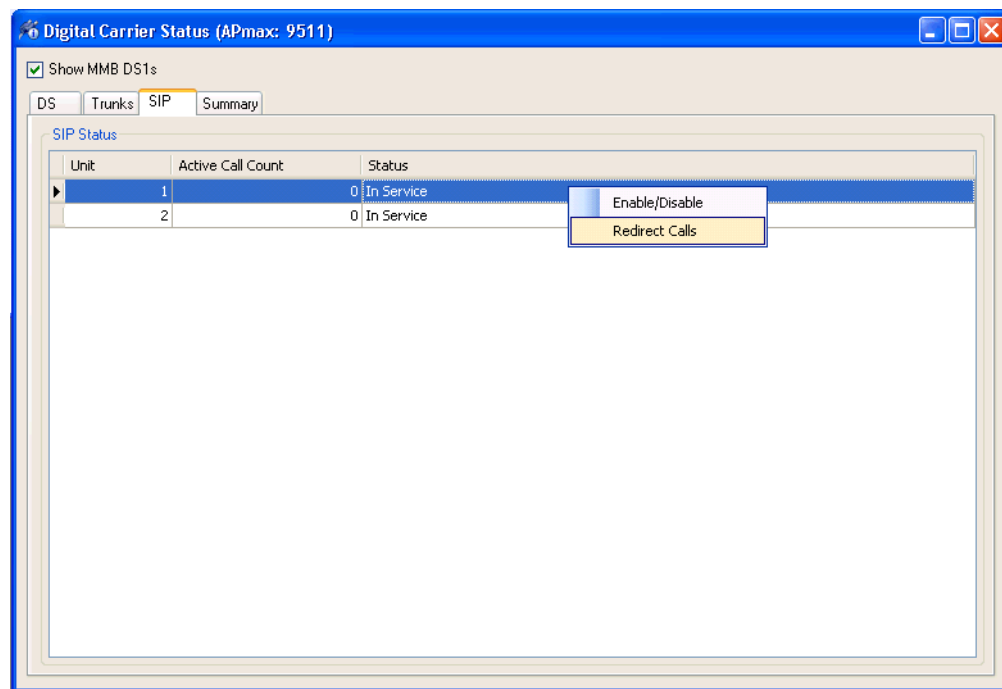



Figure 20-6 SIP Tab

20.4 DS Channel Summary

The *Summary* tab (Figure 20-7) provides a condensed view of all the DS channels that have been assigned to MF and ISUP trunk groups on this APmax system. Channels may be viewed by APmax unit or by trunk group by clicking the radio button next to the desired *Display Mode* at the top of the tab. Each configured channel is represented by a circular button  that indicates the status of the channel by its color. A red button indicates the call processing state of the channel is out of service. A yellow button indicates the channel is idle, and a blue button indicates the channel is busy. Clicking on a channel button will display the following details about the selected channel in a section on the right-hand side of the tab: Unit, DS1, Channel, CIC, Admin State, Call Processing State, and Aux State.

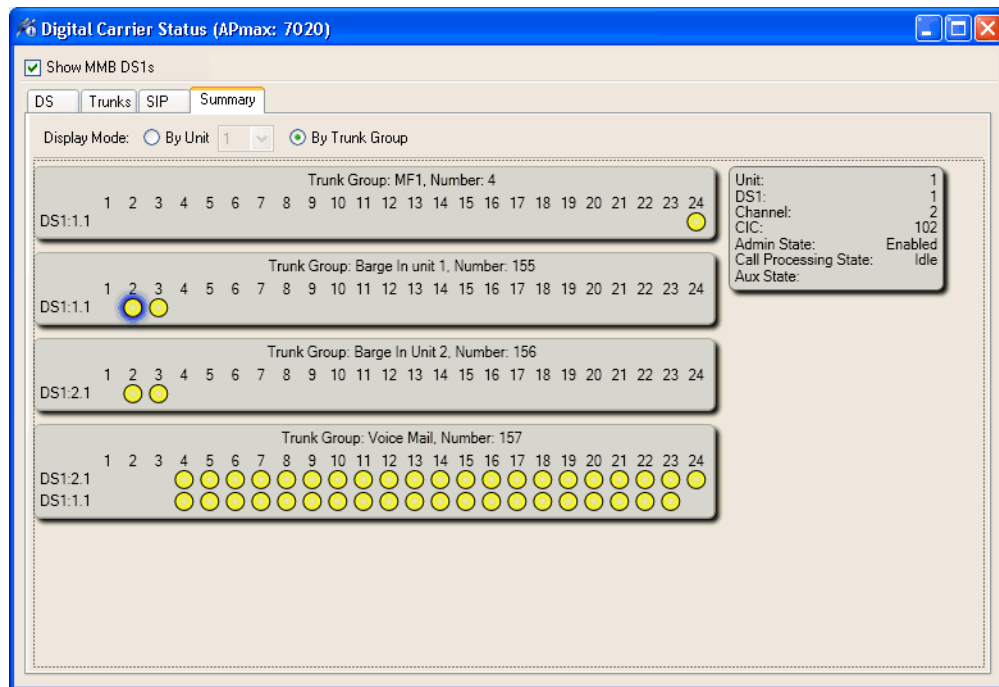



Figure 20-7 Channel Summary Tab

Chapter 21 - Ethernet Switch Information

The Ethernet Switch Information interface allows system administrators to monitor statistics for all Ethernet switch ports on a given APmax system. To access the Ethernet Switch Information interface, right-click on the system's icon  in the Command Center window to invoke a popup menu, and select the *System Surveillance / Ethernet Switch Information* command (as illustrated in Figure 21-1). The name of the system for which you are viewing statistics will be displayed at the top of the Ethernet Switch Information window (Figure 21-2).

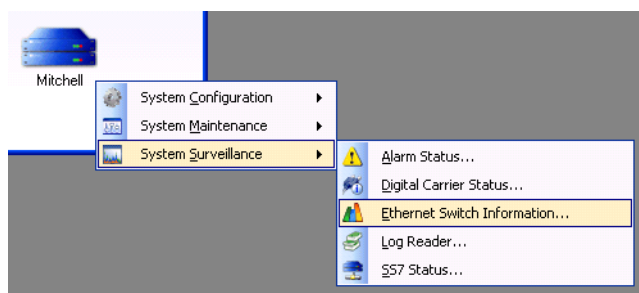


Figure 21-1 Ethernet Switch Information Menu Command

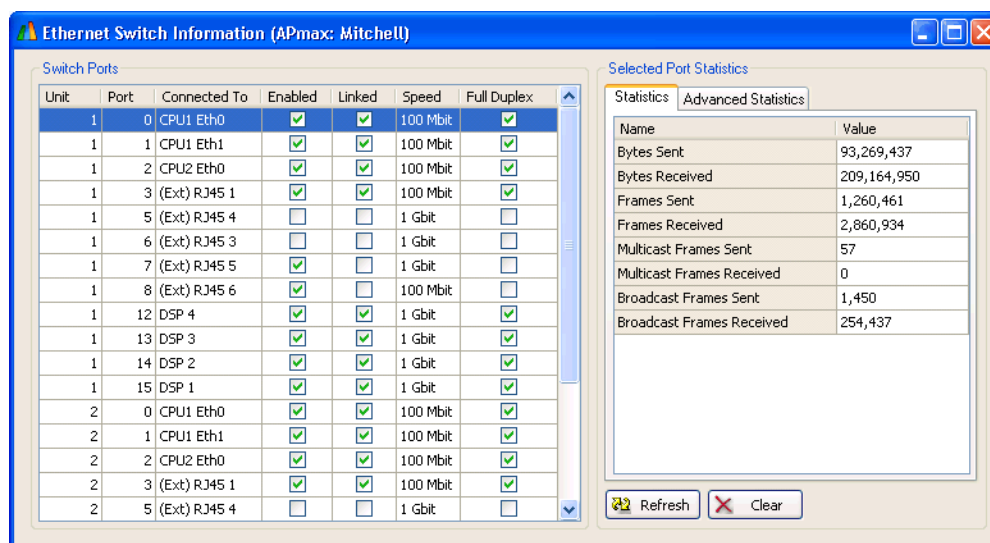


Figure 21-2 Ethernet Switch Information Window

The left-hand side of the Ethernet Switch Information window contains a list of all the Ethernet switch ports that are being monitored. The list can be sorted by clicking on the column headings. Selecting a port in the list will display the statistics for that port in the *Statistics* and *Advanced Statistics* tabs (see Section 21.1) located on the right side of the window.

The columns in the *Switch Ports* list are described below:

Unit	The APmax system unit number on which this Ethernet switch port is located.
Port	The Ethernet switch port number that is being monitored.
Connected To	The device to which this switch port is connected (e.g. RJ45 port, Ethernet port, DSP).
Enabled	This box will be checked if the switch port is enabled, and unchecked if the switch port is disabled.
Linked	This box will be checked if this switch port is used in parallel with other Ethernet ports to increase the link speed and redundancy beyond the limits of a single port. This box will be unchecked if the switch port is not linked.
Speed	The port speed. The speed is typically determined by the connected-to device.
Full Duplex	This box will be checked if the duplex of the port is full-duplex. If the duplex of the port is half-duplex, this box will be unchecked. This setting is typically determined by the connected-to device.

21.1 Switch Port Statistics

The right-hand side of the Ethernet Switch Information window contains two tabs that are used to display the statistics of the port that is currently selected in the *Switch Ports* list on the left-hand side of the window.

In the lower right-hand corner of the Ethernet Switch Information window are two buttons: *Refresh* and *Clear*. Pressing the *Refresh* button will re-query the APmax system for the current Ethernet switch statistics and will update the statistics display accordingly. Pressing the *Clear* button will reset the Ethernet switch counters to zero. This operation immediately updates the APmax system (there is no “save” concept in this interface). After the clear operation is complete on the APmax, the statistics are re-queried and statistics display is updated.

The *Statistics* tab (see Figure 21-3) in the Ethernet Switch Information interface contains a list of common statistics for the selected Ethernet switch port.

Statistics Advanced Statistics	
Name	Value
Bytes Sent	3,118,020,103
Bytes Received	682,654,459
Frames Sent	29,508,252
Frames Received	6,845,958
Multicast Frames Sent	2,385,746
Multicast Frames Received	0
Broadcast Frames Sent	14,600,748
Broadcast Frames Received	2,041

Figure 21-3 Statistics Tab


The *Advanced Statistics* tab (see Figure 21-4) in the Ethernet Switch Information interface contains a list of advanced statistics for the selected Ethernet switch port.

Statistics Advanced Statistics	
Name	Value
Fragments	0
Bytes Received (Bad Frames)	0
Bad Frames Received	0
64 Byte Frames	10,378,911
65-127 Byte Frames	21,251,474
128-255 Byte Frames	3,910,129
256-511 Byte Frames	431,734
512-1023 Byte Frames	88,918
1024-Max Byte Frames	293,044
Flow Control Frames Sent	1
Flow Control Frames Received	0
Drop Events	0
Undersized Frames	0
Oversized Frames	0
Jabber Frames	0
Bad CRC Errors	0
Collisions	0
Late Collisions	0
Excessive Collision Errors	0
MAC Transmit Errors	0
MAC Receiver Errors	0
Unrecognized MAC Ctl. Received	0

Figure 21-4 Advanced Statistics Tab

Chapter 22 - Log Reader

22.1 Viewing System Logs

The Log Reader tool allows system administrators to view the logs generated by the APmax system. To access the Log Reader interface, right-click on the system's icon  in the Command Center window to invoke a popup menu, and select the *System Surveillance / Log Reader* command (as illustrated in Figure 22-1). The name of the system for which you are viewing logs will be displayed at the top of the Log Reader window (Figure 22-2).

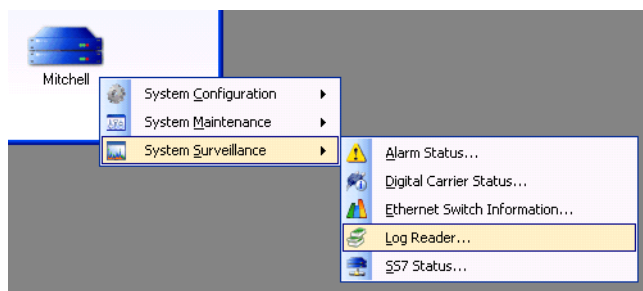


Figure 22-1 Log Reader Menu Command

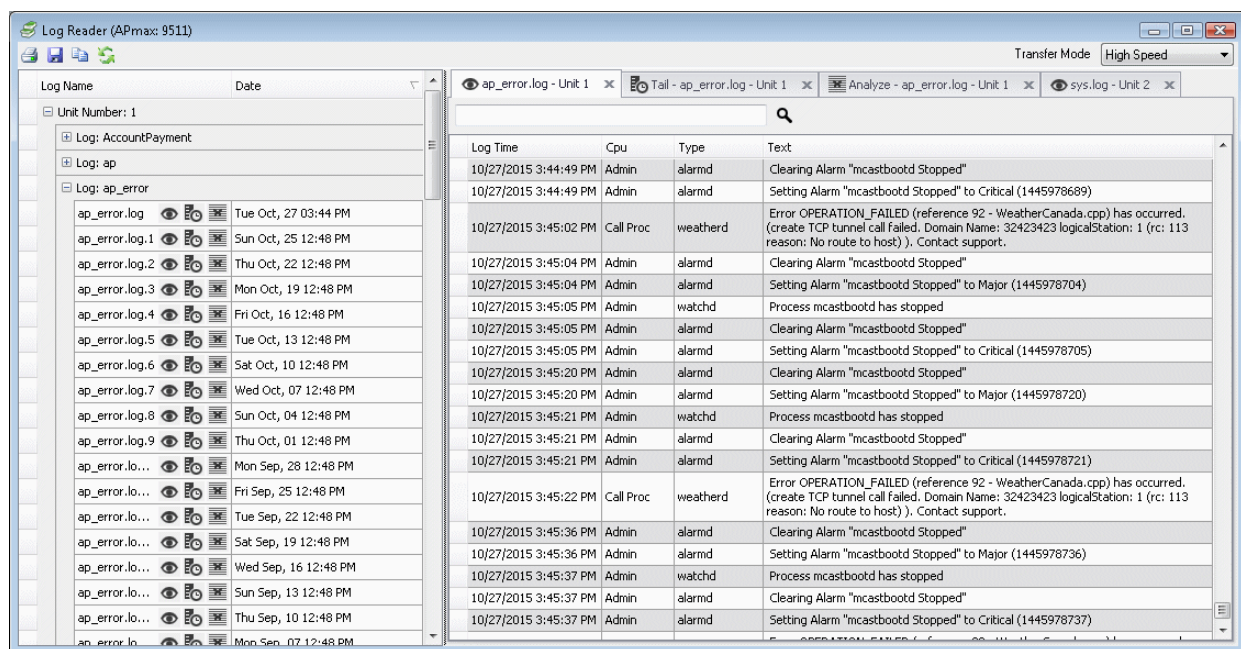


Figure 22-2 Log Reader Window

The Log Reader window is divided into two panes. By default, the left pane displays a tree view of log categories (e.g. ap, sys, user). Expand these categories to display the logs that are available for viewing (e.g. ap.log, ap.log.1). In each log row there are three buttons that can be pressed to perform the following actions on the log:



Press this button to connect to the InnoStream Server, transfer the selected log file from the server, and display the contents of the log in the right pane. See Section 22.1.2 - "View Log" for more information.



Press this button to setup real-time log viewing. See Section 22.1.3 - "Real-Time View of Log" for more information.



Press this button to setup log analysis. See Section 22.1.4 - "Analyze Log" for more information.

22.1.1 Log Reader Toolbar

At the top of the Log Reader window is a toolbar that contains controls for printing, saving, copying, and refreshing log data. These controls are described below:



Press this button or Ctrl+P to print the rows currently selected in the right pane of the Log Reader window. To select all rows in the right pane, press Ctrl+A on the keyboard.



Press this button or Ctrl+S to save the full contents of the currently selected log tab to your PC. The log can then be viewed in a text editor such as WordPad.



Press this button or Ctrl+C to copy to the contents of the rows currently selected in the right pane. The copied rows can then be pasted into a text editor, spreadsheet, email message body, etc. To select all rows in the right pane, press Ctrl+A on the keyboard.



Press this button or Ctrl+R to refresh the log file currently displayed in the right pane of the Log Reader window with the latest records on the system.

The *Transfer Mode* selection box offers the following options for retrieving logs from the APmax:

High Speed

Uses Command Link File Transfer to retrieve log files from the APmax. This option requires the APmax system to have APmax Release 4.2 or greater, and version 4.3.33 or greater of the AudioSubsystem package.



FTP

Uses slower File Transfer Protocol to download logs.


22.1.2 View Log

When viewing the contents of a log, the right pane of the Log Reader window typically shows four columns of information for each record present in the log selected in the left pane. Some logs (e.g. DspError) may only show the timestamp and error text. These columns are described below:


Log Time	The date and time this record was generated.
CPU	The APmax CPU for which this record was generated.
Type	The category of the log record.
Text	A summary of the log record.

Each time a different log file is viewed by pressing the  button, a tab with the name of the log file will be added along the top of the right pane. Selecting a tab will display the contents of the associated log file. To close a tab, click the close button  on the tab.

To search the contents of a log file, enter the search text into the box next to the search button

 and press the button or the <Enter> key. Any log entries matching the entered text will be listed in a search results box at the bottom of the right pane. Clicking on a line in the search results will select the matching row in the log.

22.1.3 Real-Time View of Log

Real-time log viewing is initiated by pressing the  button next to a log row in the left-hand pane of the Log Reader window to show a setup screen similar to Figure 22-3. Entering text into the *Filter* box of the setup screen is optional. Any text in the *Filter* box must be found in a log row for that row to be displayed.

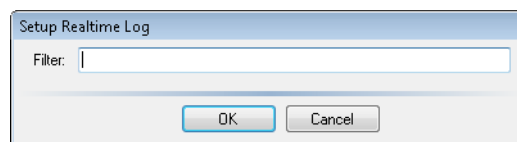


Figure 22-3 Setup Realtime Log

Press the *OK* button to begin real-time viewing. A new tab similar to Figure 22-4 will be opened, displaying in real-time any matching log entries that are reported by the system.

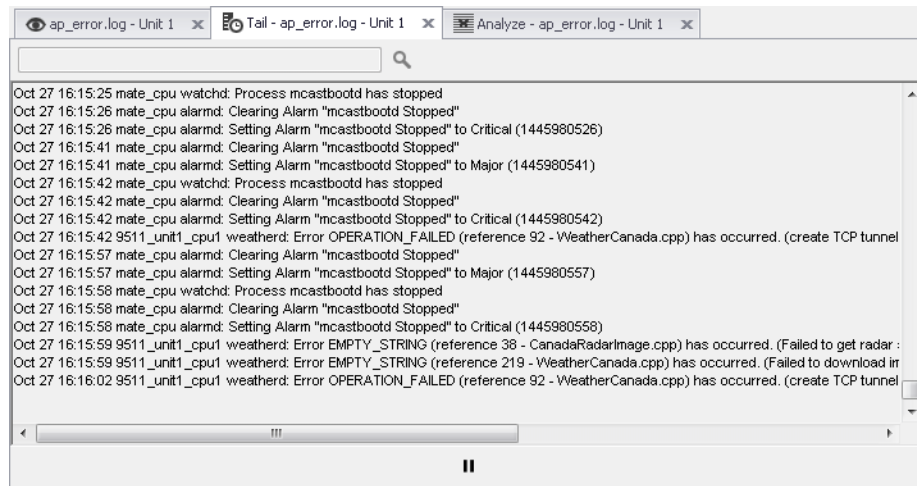



Figure 22-4 Tail Log

The pause/play button **||** at the bottom of the tab can be used to stop and restart real-time log viewing. When real-time logging is stopped then the search box at the top of the tab will be enabled, allowing the contents of the tab to be searched.

22.1.4 Analyze Log

The log analyzer tool is used to plot the frequency with which specific terms are found in existing or real-time logs. This feature is accessed by pressing the  button next to a log row in the left-hand pane of the Log Reader window (Figure 22-2). This will open a tab for the selected log file and display the log analysis settings, as shown in Figure 22-5.

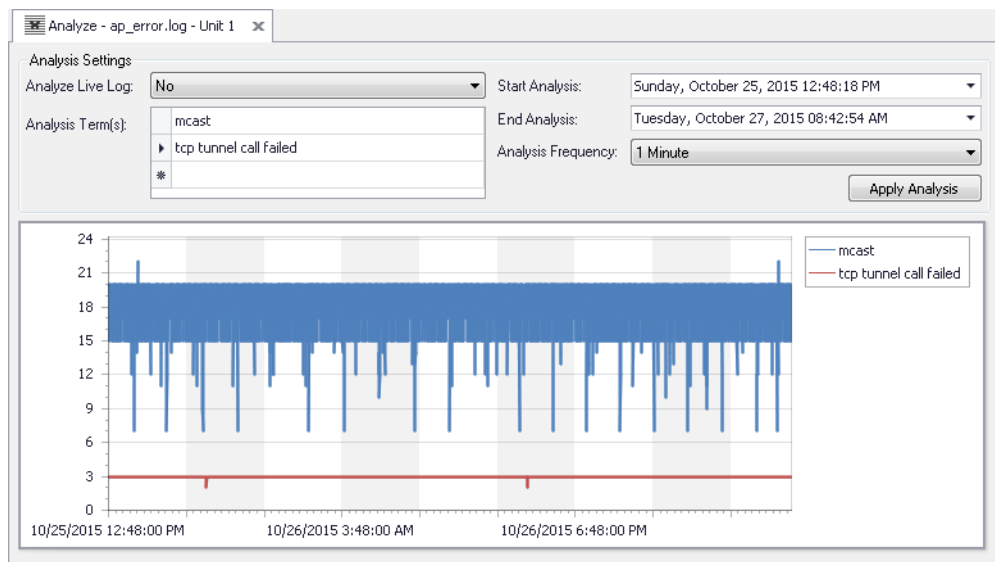


Figure 22-5 Analyze Log

The *Analysis Settings* are described below:


- | | |
|---------------------------|---|
| Analyze Live Log | Selecting Yes will use real-time log analysis, and selecting No will download the existing log records found within the specified <i>Start Analysis</i> and <i>End Analysis</i> time range and analyze them when the <i>Apply Analysis</i> button is pressed. |
| Analysis Term(s) | Enter terms (words or phrases) into one or more rows in this list to search the log for those terms and plot the results. |
| Start Analysis | When using existing log records (<i>Analyze Live Log</i> is set to No), this is the beginning of the time range of log records that will be included in the analysis. |
| End Analysis | When using existing log records (<i>Analyze Live Log</i> is set to No), this is the end of the time range of log records that will be included in the analysis. |
| Analysis Frequency | When using existing log records (<i>Analyze Live Log</i> is set to No), this value (either 1Minute or 1 Hour) determines the frequency with which search results are grouped together and displayed in the analysis graph. |

Press the *Apply Analysis* button to begin log analysis using the specified settings.

Chapter 23 - SS7 Status

23.1 Monitoring SS7 Links

The SS7 Status tool allows system administrators to monitor SS7 links in APmax systems. SS7 links are defined in the SS7 Configuration interface, described in Section 8.2. To access the SS7

Status interface, right-click on the system's icon  in the Command Center window to invoke a popup menu, and select the *System Surveillance / SS7 Status* command (as illustrated in Figure 23-1). The name of the system for which you are monitoring SS7 links will be displayed at the top of the SS7 Status window (Figure 23-2).

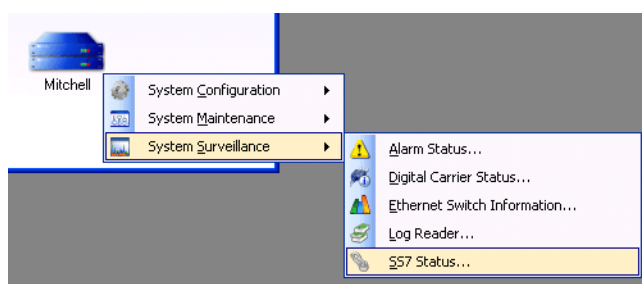




Figure 23-1 SS7 Status Menu Command

Unit	SLC	Status	Inhibit Status	T1	Channel
Linkset: 1 - CS1500SRP					
1	0	INS	Available	DS1 1	1
2	1	INS	Available	DS1 1	1
Linkset: 2 - Linkset 2					
Linkset: 3 - Linkset 3					
Linkset: 4 - Linkset 4					
1	3	MMB	Unavailable	DS1 1	13
1	4	SMB	Unavailable	DS1 1	14

Figure 23-2 SS7 Status Window

The SS7 Status window contains a table of the SS7 linksets and links that have been defined (see Section 8.2) for this APmax system. On the left-hand side of each linkset  row is a tree symbol  that can be clicked to display or hide the link rows in the linkset. By default, all linksets are expanded to show the status of their links. A vertical scrollbar will be displayed on the right-hand side of the window if the linksets and links create a table longer than can be shown in the SS7 Status window.

The list of links beneath each linkset row contains six columns of information about the SS7 links in the linkset. The lists can be sorted by clicking on the column headings. The columns are described below:

Unit	The number of the APmax system unit on which this link is located.
SLC	The signaling link code used to match each link with the SRP/STP at the opposite end of the data link. The SLC is the only common link identity information used at both ends of the data link and is therefore used by the network element at each end of the link to transfer link status information to the opposite end of the link. Consequently, the SLC for each link must be unique within each APmax system.
Status	<p>The current status of the SS7 link. Potential states are as follows:</p> <ul style="list-style-type: none"> • Green - Link is in-service and is capable of carrying SS7 traffic. • Yellow - Link is in a man-made-busy (MMB) state. • Red - Link is in a switch-made-busy (SMB) state.

The status of an SS7 link can be changed by right-clicking on the link to invoke a popup menu, as illustrated in Figure 23-3, and then clicking the *Enable/Disable* command. If the command is selected when the status is INS or SMB, the status will be changed to MMB. If the command is selected when the status is MMB, the status will be temporarily changed to SMB until the true status (INS or SMB) of the link is returned from the APmax system by either pressing the *Refresh* button, or by closing and opening the SS7 Status user interface.

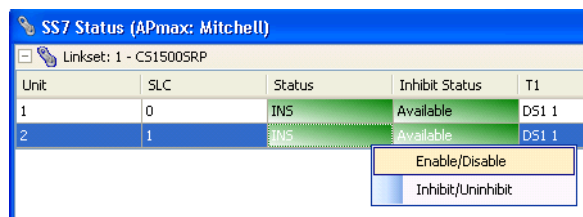


Figure 23-3 Enable/Disable SS7 Link

Inhibit Status	<p>The current inhibition state of the SS7 link. Potential states are as follows:</p> <ul style="list-style-type: none">• Green - Link is uninhibited and available.• Yellow - Link is locally inhibited.• Red - Link is remotely inhibited.• Gray - Link is inhibited and unavailable. <p>The inhibition state of an SS7 link can be changed by right-clicking on the link to invoke a popup menu, as illustrated in Figure 23-3, and then clicking the <i>Inhibit/Uninhibit</i> command. If the <i>Inhibit/Uninhibit</i> command is selected when the status is Available, then the SS7 link inhibit procedure will be initiated for the selected link. If the <i>Inhibit/Uninhibit</i> command is selected when the status is Unavailable, then the inhibit status will be removed from the selected link.</p>
T1	The DS port that is being monitored.
Channel	The channel on the DS port that is being monitored.

The *Refresh* button located at the bottom of the SS7 Status window can be pressed at any time to retrieve the current SS7 link states from the APmax system.

Chapter 24 - Daily Log Analysis Tool

24.1 Daily Log Analysis Tool

The Daily Log Analysis Tool processes the APmax error log files on a daily basis and summarizes the results into an easy-to-read overview of the APmax performance. The log analysis report is a condensed, useful accounting of the error logs from the previous day and draws attention to the most critical issues pertaining to the APmax performance at the beginning of the log analysis file. These results are delivered to a previously configured e-mail address. Each APmax unit will generate a daily analysis report, which will be delivered in separate e-mails.

Each log analysis e-mail also contains the previous days ap_error.log file for the applicable unit. The compressed attachment file may be no larger than 100 KB. In the event that the file size surpasses this limit, the feature will only deliver the last 1,000 lines of the error file.

Note: The Daily Log Analysis Tool requires the Log Analysis package to be installed on the selected system.

24.1.1 Setting Administrator E-mail Address

To receive the daily log analysis files, open the Internet Access Settings interface (see Chapter 11 - "Internet Access Settings") in the APmax UI, and configure the *Administrator E-Mail Address*, *Default From Address*, and *SMTP Server* settings within the *General* tab (see Figure 24-1).

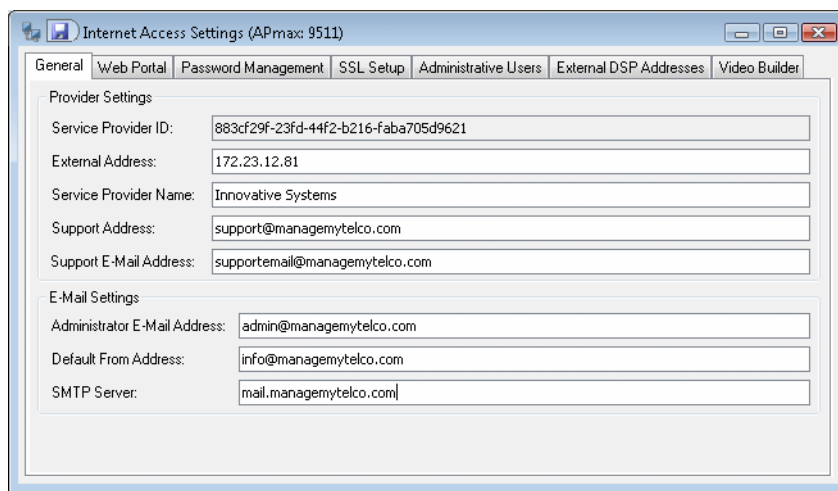


Figure 24-1 Internet Access Settings Window

24.1.2 Example of Daily Log Analysis Report

```
##### Log Analyzer (April 17 2013 Wednesday) #####

System ID: 2552                               Serial No: OEM331101336
Unit: 1
Date Range Processed: yesterday ( 4/16/2013 )
#####

----- Error Log Statistics -----

Total error log entries: 1604
Total core files: 0
Total dsp core files: 0
Total alarms: 0
Total service restarts: 0
Total unit restarts: 0

----- Unit uptime -----

Uptime: 33days, 14hours, 52minutes, 43seconds

----- TIPC queue stats -----

TIPC receive queue depth: 1

----- Alarms -----

Current alarms:
CPU1:
    No alarms set
CPU2:
    No alarms set

List of alarms generated:
Alarm Name                Alarm Type      Cpu      Cleared
Time
none

----- Core Files -----

none

----- Service Restarts -----

none

----- Disk Usage -----

FileSystem      Size      Used      Available  UsedPercentage

system          9.2G      4.6G      4.2G        53%
var             28G       1.1G      26G         5%
vmfs            412G      8.3G      383G         3%

----- System Info -----
```

```

No alarms set
ID register = 0x32
Measured voltages:
    12V = 12.06V
    5V = 4.99V
    3.3V = 3.31V
    2.5V = 2.56V
    1.8V = 1.84V
    DSP Core = 1.27V
    CPU Core = 1.53V
    FPGA core = 1.53V
    Eth Switch Core = 1.02V
    1.2V = 1.22V
    1.5V = 1.53V
    SRIO = 1.25V
Temperatures:
    Supervisor internal temp = 48C (118F)
    DSPs (Q1600) temp = 52C (125F)
    Vreg (Q1601) temp = 50C (122F)
Clock generator:
    OK
Fan Status:
    Fan 1:5578 RPM
    Fan 2:5869 RPM
    Fan 3:5625 RPM
    Fan 4:5672 RPM

```

----- Packages installed -----

Package Name	Version
FileSystemVersion	1.4.0.5
IsToll	1.0.23.0
CS1500 Announcements Defaults	3.0.91.0
Tls Configuration Defaults	1.0.6.0
VLAN partitioning	4.0.10.0
Voicemail Defaults	3.0.83.0
AnnouncementLibrary	2.0.13.0
RemoteIp	3.0.94.0
Calling Name License Information.	1.0.0.0
Firmware	1.4.1.0
FireWall	4.1.4.0
Announcement Service Interface	4.1.3.0
CS1500 Announcements	4.1.2.0
Calling Name	5.0.17.0
Notify	7.0.17.0
OCM	1.1.31.0
On Demand Conferencing Plus	4.2.7.0
Web Portal	4.1.47.0
Base Package	4.2.82.0
Telephony	4.2.82.0
TriggerRouter	1.0.32.0

```

ACD                2.5.41.0
Universal Call Manager 4.2.4.0
TCM                3.1.66.0
Log Analysis       1.0.24.0
Voicemail          6.0.89.0
AudioSubsystem     4.3.33.0

```

```

##### End of Log Analyzer #####

```

24.1.3 Log Analysis File Content Information

All of the log analysis information is divided into subsections, containing information for the specified unit (both CPU 1 and CPU 2) for the previous day. These values are defined as follows:

Table 24-1 Log Analysis File Definitions

Log Analyzer	
Log Analyzer (Heading Date)	The date the log file was generated (Month Day Year Weekday)
System ID	The APmax system ID number
Serial No	The APmax serial number
Unit	The APmax unit number
Date Range Processed	The date for which the log file was created (Yesterday and the date Month/Day/Year)
Error Log Statistics	
Total Error Log Entries	The number of error log entries
Total Core Files	The number of core files
Total DSP Core Files	The number of DSP core files
Total Alarms	The number of alarms
Total Service Restarts	The number of restarts of services

Total Unit Restarts	The number of times the specified unit restarted
Unit Uptime	
Uptime	Number of days, hours, minutes, and seconds the unit has been running since the last reboot
TIPC Queue Stats	
TIPC receive queue depth	Number of TIPC requests in the queue currently
Alarms	
Current Alarms	Alarms that have been set through CPU 1 or CPU 2
List of alarms generated	The alarm name, alarm type, CPU the alarm is on, and whether the alarm has been cleared
Core Files	
Core Files	The core file generated and the name of the service
DSP Core Files	
DSP Core Files	The DSP core file generated and the name of the service
Service Restarts	
Service Restarts	The service names that have been restarted
Disk Usage	
File System	The size of the system, the current amount of disk space used, the current amount of disk space available, and the percentage of disk space used total (for system, var, and vmfs).
System Info	
Alarms set	List of set alarms
ID register	APmax hardware revision number
Measured voltages	Status of onboard voltage converters for the APmax

Temperatures	Temperature of supervisor internal, DSPs, and Vreg (Celsius and Fahrenheit)
Clock generator	State of T1 clock synchronizer
Fan Status	Current RPM of all four fans
Packages Installed	
Package Name	The name of the APmax package that is installed on the unit
Version	The version of the package that is installed on the unit
Package Licenses	
Max Resources	The total number of licenses for this resource
Used Resources	The number of used licenses for this resources
% used	The percentage of total licenses that are in use
Resource Name	The resource being licensed (e.g., Notify Subscribers, SIP ACS Devices, Voicemail Boxes)
PreStaged Packages	
Package Name	The name of the APmax package that is pre-staged for installation
Version	The version of the pre-staged package
File Modification Time	The date this package was downloaded from Innovative Systems

Part 5 - Services

Overview

Part 5 provides instructions for using the service management functions that are included in the APmax UI software.

The following chapters are found in Part 5 - "Services":

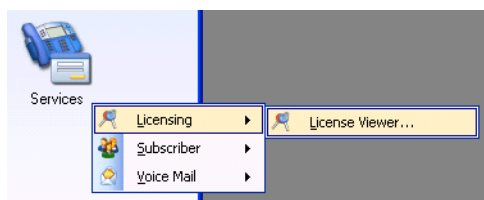
- Chapter 25 - "License Viewer"
- Chapter 26 - "Subscriber Management"



The Services icon in the APmax UI Command Center represents the licensing and system-wide service data (e.g., subscribers) of all APmax systems being administered by the APmax UI. System-specific service settings are found in the menus under the appropriate system icon



. The menu options displayed in the figure below are found under the Services icon in all installations of the APmax UI. Additional menu options may be displayed as other services are installed on APmax systems. The interfaces for additional services are not discussed in the APmax User Manual. Documentation for each additional service (e.g., APmax Voice Mail) is packaged with that service.




Services Menu

Chapter 25 - License Viewer

The License Viewer interface is used to view the announcement licenses and advanced service licenses found on all APmax systems being managed by this installation of the APmax UI.

Licenses are provided by Innovative Systems and determine the quantity of services supported by each APmax system. Licenses are configured for individual APmax systems, and in some cases, for an individual unit within a system. Additional licensing is required to increase the quantity of services.

To access the License Viewer interface, right-click on the Services icon  in the Command Center window to invoke a popup menu, and select the *Licensing / License Viewer* command (as illustrated in Figure 25-1). A License Viewer window similar to Figure 25-2 will be displayed.

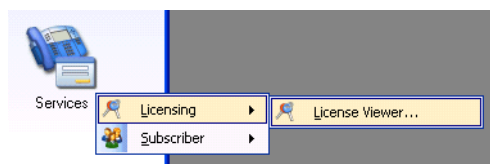


Figure 25-1 License Viewer Menu Command

License Viewer

Drag a column header here to group by that column

System	Consumer	Resource	License Use	Unit	Distribution Type	Expiration Date	Alarm Threshold
9511	Music On Hold Application	Music On Hold Service	0/1 - 0%	NA	System	Never	NA
▶ 9511	Voice Mail	Voice Mail Boxes	9/100 - 9%	NA	System	Never	90% Edit
9511	Any	Voice Transcription	0/1 - 0%	NA	System	Never	NA
9511	Any	Voicemail Mobile Access Subscribers	10/100 - 10%	NA	System	Never	75% Edit
9511	On Demand Conferencing	On Demand Conferencing Ports	0/12 - 0%	NA	System	Never	None Edit
9511	Web Portal Subscriber	Web Portal Subscribers	0/1000 - 0%	NA	System	Never	100% Edit
9511	Unknown	Unknown	5/5 - 100%	NA	System	Never	None Edit
mitchell...	Any	Voice Transcription	0/1 - 0%	NA	System	Never	NA
mitchell...	Notify	Notify Subscribers	0/100 - 0%	NA	System	Never	NA
mitchell...	Terminating Call Management	Terminating Call Management Subscrib...	0/200 - 0%	NA	System	Never	NA
mitchell...	Calling Name	Calling Name Subscribers	0/109000 - 0%	NA	System	Never	NA
mitchell...	Calling Name Configuration	Calling Name Configurations	1/1 - 100%	NA	System	Never	NA
mitchell...	Calling Name 557 Expansion	Calling Name 557 Exp Allowed	0/1 - 0%	NA	System	Never	NA
mitchell...	Calling Name Targus Expans...	Calling Targus Exp Allowed	0/1 - 0%	NA	System	Never	NA
mitchell...	Net Echo	Net Echo Caller ID Subscribers	0/109000 - 0%	NA	System	Never	NA

Figure 25-2 License Viewer Window

The License Viewer window displays a list of the licenses found the systems being managed by this installation of the APmax UI. The list can be sorted by clicking on the column headings. The columns in the list are described below:

System	The name of the APmax system to which this license applies.
Consumer	The service or application that is being licensed (e.g. Voice Mail).
Resource	The resource within the consumer that is being licensed (e.g. subscribers, mail boxes, ports).
License Use	The usage information for this license. The first usage indicator is an x/y fraction where x is the number of used licenses and y is the total number of licenses. To the right of the fraction is a percentage indicator of the licenses that are in use. Additionally, each <i>License Use</i> cell in the table is a bar graph that will fill up from left to right to indicate how many of the licenses are already in use.
Unit	The unit, on this APmax system, to which this license applies. For example, if the <i>Unit</i> value is 1, then the license is only valid for unit 1 on this system. If the <i>Unit</i> value is All, then the license applies to all units on this system.
Distribution Type	Determines whether or not licenses used by resources (e.g. subscribers, ports) are maintained when the APmax system is rebooted. A value of Unit indicates the licensing is dynamic, and that no resources (e.g. ports, trunks) associated with this license will remain licensed after the system is rebooted. A value of System indicates the licensing is persistent and the resources (e.g. subscribers, mail boxes) associated with this license will remain licensed after a reboot.
Expiration Date	The date on which this license will no longer be valid. A value of Never indicates the license will not expire.

Alarm Threshold

The percentage of license usage at which an alarm will be set. Alarms can be viewed using the Alarm Status tool (Chapter 19 - "Alarm Status").

Note: This function is only available for systems with APmax Release 4.4 or greater.

A value of "NA" indicates the licensed resource either belongs to a system that does not meet the minimum release requirement, or the licensed resource is a "one-time license" feature that will never run out.

To change the *Alarm Threshold*, press the *Edit* button to open the Edit Alarm Threshold window (Figure 25-3) and select either "None" (indicating an alarm will never be set for this license) or a percentage of license usage from 5% to 100%. The default *Alarm Threshold* value is "None."

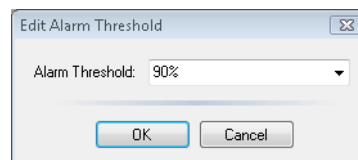


Figure 25-3 Edit Alarm Threshold

Chapter 26 - Subscriber Management

26.1 Subscriber Management Interface

The Subscriber Management interface is used manage the advanced service subscribers for all APmax systems being administered by the APmax UI. The term “subscribers” in this chapter refers to end users that are subscribed to advanced services (e.g. APmax Voice Mail). The terms “user” and “subscriber” are used interchangeably.

This section provides an overview and general information about managing users of APmax advanced services. The Service Description documents associated with a specific service will provide more details on managing APmax subscribers for that particular service. Subscribers will typically need to be inserted into the APmax system using the Subscriber Management interface before they can be subscribed to an advanced service.

The presentation of the Subscriber Management interface depends on the options selected in the User Preferences section of the APmax UI (see Section 3.3.4 - "User Preferences"). The floating (window) and docked presentations of the Subscriber Management interface have the same fields, controls, and functions.

If the Subscriber Management interface is not automatically displayed when the APmax UI is


started, then right-click on the Services icon  in the Command Center window to invoke a popup menu and select the *Subscriber / Management* command (as illustrated in Figure 26-1). A Subscriber Management window similar to Figure 26-2 will be displayed.



Figure 26-1 Subscriber Management Menu Command

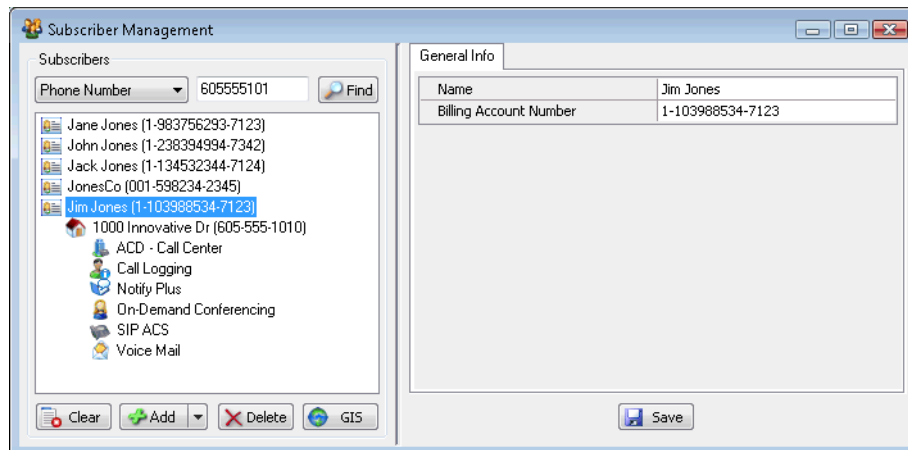


Figure 26-2 Subscriber Management Interface (Floating View)

If the “Docked” option for the *Subscriber Management Location* setting in APmax UI User Preferences is selected, then the Subscriber Management interface will be docked at the bottom of the APmax UI window (see Figure 26-3).

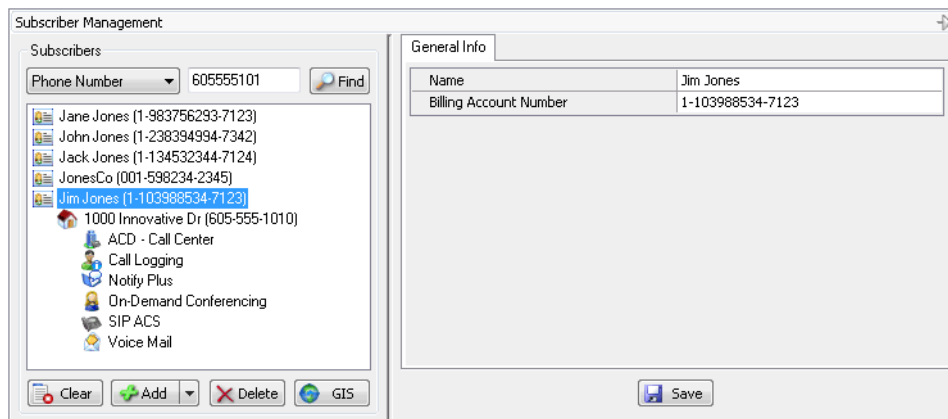


Figure 26-3 Subscriber Management Interface (Docked View)

The pin button in the upper right-hand corner of the docked Subscriber Management interface can be clicked to “pin” or “unpin” the docked interface. When the Subscriber Management interface is pinned it will always be displayed and will remain on top of any other windows opened in the APmax UI. When the Subscriber Management interface is unpinned it will be minimized to the *Subscriber Management* tab in the lower left-hand corner of the APmax UI window (see Figure 26-4) when the mouse cursor moves away from the interface. Moving the mouse cursor over the *Subscriber Management* tab will show the interface and give the user the opportunity to pin interface if they wish.

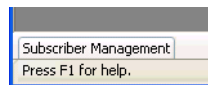


Figure 26-4 Subscriber Management Tab

The Subscriber Management interface is partitioned into the *Subscribers* section (see Section 26.1.1) and three tabs: *General Info* (see Section 26.1.2), *Address Info* (see Section 26.1.3), and *Internet* (see Section 26.1.4). Each section is discussed below.

26.1.1 Subscribers Section

The *Subscribers* section (Figure 26-5) is located on the left-hand side of the Subscriber Management interface. The top portion of this section displays a list of the subscribers that have been retrieved using the *Find* button, as described in Section 26.1.1.1 - "Gathering Subscriber Information".

The *Subscribers* list has four tiers of subscriber-related items. The first tier, indicated by 🏠 icons, represents subscriber names. The second tier, indicated by 📍 icons, represents one or more billing service addresses associated with the subscriber. The third tier contains a list of services and service groups 📋 that have been added to a billing service address. The fourth tier is a list of services that have been added to a service group. Icons can be double-clicked to hide or show the tiers below them. Right-clicking on any subscriber name, billing service address, service group, or service icon will result in a popup menu with commands related to the selected icon. These commands are described in Section 26.1.1.2 - "Subscribers List Commands".

Figure 26-5 illustrates a *Subscribers* list with five subscriber records (four collapsed, one expanded). The expanded subscriber has two billing service addresses. One of the subscriber's billing service addresses has nine services associated with it, and the other address has one service and two service groups. One service group is subscribed to two services, and the other is subscribed to one service.

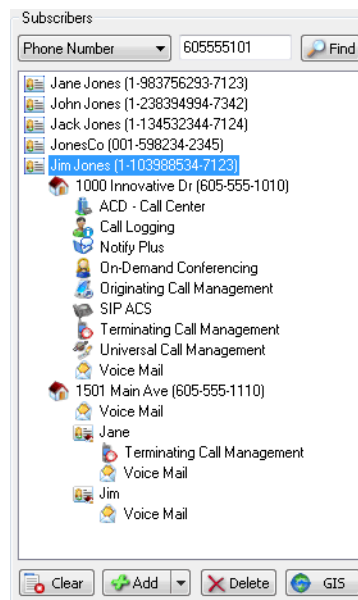


Figure 26-5 Subscribers Section

The lower portion of the *Subscribers* section contains buttons for performing the following functions:

- Removing all query results from the list is done by pressing the *Clear* button.
- Adding Subscribers - (see Section 26.1.1.3)
- Deleting Subscribers - (see Section 26.1.1.4)
- Adding Billing Service Addresses - (see Section 26.1.1.5)
- Deleting Billing Service Addresses - (see Section 26.1.1.6)
- Adding Service Groups - (see Section 26.1.1.7)
- Deleting Service Groups - (see Section 26.1.1.8)
- Adding Services - (see Section 26.1.1.9)
- Deleting Services - (see Section 26.1.1.10)

Selecting a subscriber, billing service address, or service group icon in the *Subscribers* list will display information pertaining to the selected item in the tabs located on the right-hand side of the interface. See the following sections for more information on the subscriber settings that are managed in each tab.

- Section 26.1.2 - "General Info"
- Section 26.1.3 - "Address Info"
- Section 26.1.4 - "Subscriber Internet Access Settings"

Selecting an advanced service icon in the *Subscribers* list will display settings for that service on the right-hand side of the Subscriber Management interface. The Service Description documents associated with a specific advanced service will provide more details on managing subscribers for that particular service.

26.1.1.1 Gathering Subscriber Information

To retrieve subscriber information from the APmax system, follow these steps:

1. Use the selection box in the upper left-hand corner of the Subscriber Management interface to choose the type of identification you wish to use to locate the subscriber. The types of identification are described below these steps.
2. Enter the appropriate identification value (e.g., 10-digit directory number, e-mail address) of the subscriber into the field next to the *Find* button. This value must match the type of identification that is selected.
3. Press the *Find* button. Once the *Find* button has been pressed, the subscriber information retrieval process will begin. When the retrieval process is complete, all subscribers matching the entered criteria will be displayed in the *Subscribers* list on the left-hand side of the Subscriber Management interface. Subscribers from previous searches will remain in the *Subscribers* list unless the *Clear* button is pressed prior to the search.

The standard types of identification are described below:

Phone Number

Search for subscribers by entering a 9 or 10-digit phone number. If the number entered has nine digits, then the space is treated as a wildcard character. For example, entering 605-555-100 (see Figure 26-6) and pressing the *Find* button will result in information for all subscriber phone numbers beginning with 605-555-100 being retrieved.

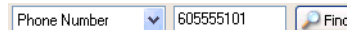


Figure 26-6 Finding Subscribers

E-mail Address

Search for subscribers by entering their e-mail address.

Billing Account Number

Search for subscribers by entering their billing account number.

SIP Address

Search for subscribers by entering their SIP address.

Name

Search for subscribers by entering their name.

Additional types of identification may be used to find subscribers, depending on the services that have been installed on the APmax system. For example, Mailbox Number may be used to find subscribers if the Voice Mail Service is installed, and Conference ID may be used to find subscribers if the On-Demand Conferencing Service or Large Scale Conferencing Service are installed.

26.1.1.2 Subscribers List Commands

Items in the *Subscribers* list will display a popup menu when the right-hand mouse button is clicked while the mouse pointer is positioned over the item. The right-click menu commands for subscriber, billing service address, service group, and service icons are described below.

Subscriber Menu Commands

Right-clicking on a subscriber icon will display a popup menu (see Figure 26-7) with the following commands:

- **Refresh Subscriber** - Select this command to re-query the APmax system for the current data for the selected subscriber record.
- **Clear Subscriber from Search** - Select this command to remove the selected subscriber from the *Subscribers* list.

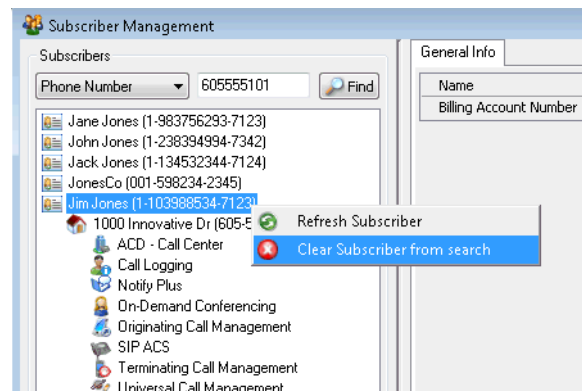


Figure 26-7 Subscriber Right-Click Menu

Billing Service Address Menu Commands

Right-clicking on a billing service address will display a popup menu (see Figure 26-8) with the *Move Billing Service Address* command. This command can be used to create a new subscriber account for the selected billing service address, or to merge the billing service address with an existing account.

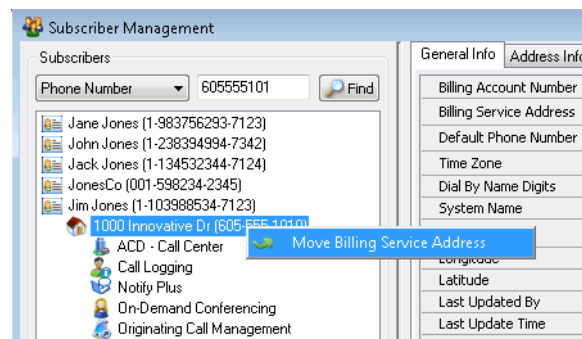


Figure 26-8 Billing Address Right-Click Menu

Selecting the *Move Billing Service Address* command displays the Move Billing Service Address window (see Figure 26-9).

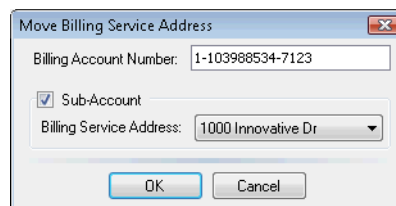


Figure 26-9 Move Billing Service Address

Enter the new *Billing Account Number* for this billing service address.

- If the entered account number already exists then the *Billing Service Address* selection box will list the addresses already defined for the entered account number and you will have the option to check the *Sub-Account* box to join the billing account as a sub-account. If the *Sub-Account* box is checked when the *OK* button is pressed then a prompt to join as a sub-account will be displayed (see Figure 26-10). Choosing *Yes* in the Join as Sub-Account prompt will add the selected billing service address and all of its associated services as a sub-account underneath the selected *Billing Service Address*.

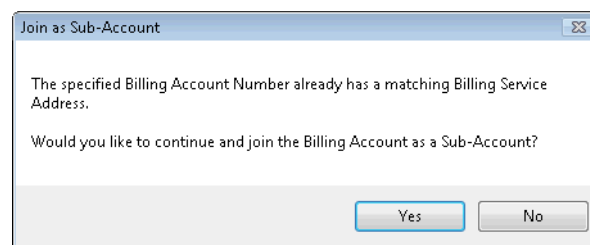


Figure 26-10 Join as Sub-Account

- If the entered account number already exists, but the *Sub-Account* box is not checked then a prompt to merge the selected billing service address with the existing account will be displayed when the *OK* button is pressed (see Figure 26-11). Choosing *Yes* in the Merge Billing Account prompt will add the selected billing service address and all of its associated

services as a new billing service address underneath the subscriber with the account number entered in the Move Billing Service Address window (Figure 26-9). The pre-existing billing addresses and services underneath the subscriber will not be replaced during the merge.

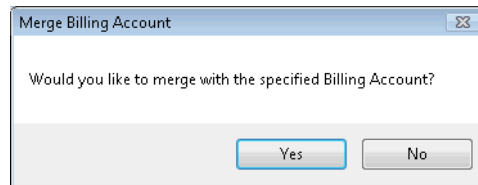


Figure 26-11 Merge Billing Account Prompt

- If the entered account number does not exist, a prompt to create a new billing account will be displayed (see Figure 26-12) when the *OK* button is pressed. Choosing *Yes* in the Create New Billing Account prompt (Figure 26-12) will effectively change the *Billing Account Number* of the selected billing service address to the account number entered in the Move Billing Service Address window (Figure 26-9). If the selected billing service address is the only address defined for the subscriber, then the subscriber record will remain the same, with the exception of having the newly entered *Billing Account Number*. If the subscriber has multiple billing service addresses, then the selected address will be removed from the subscriber and will be displayed as a new subscriber record in the *Subscribers* list. The new subscriber record will have the newly entered *Billing Account Number*, but will retain the *Name* of the original subscriber record.

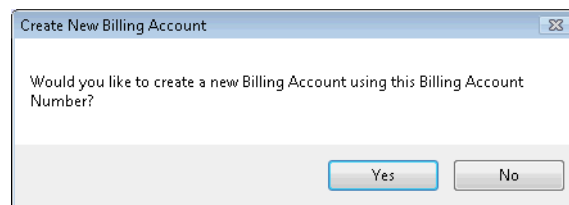


Figure 26-12 Create New Billing Account Prompt

Service Group Menu Commands

Right-clicking on a service group icon will display a popup menu, as seen in Figure 26-13.

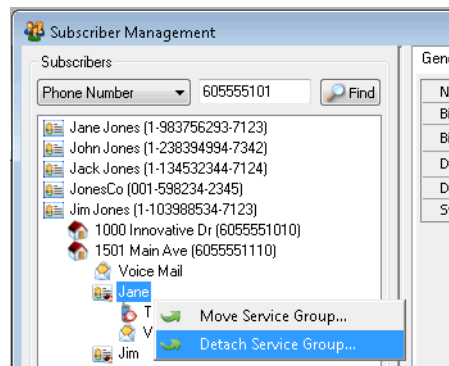


Figure 26-13 Service Group Right-Click Menu

The following commands are available in the service group popup menu:

- **Move Service Group** - This command is used to reassign the service group to a different billing service address within the same subscriber account. Selecting this command will display a Move Service Group window (Figure 26-14) populated with a drop-down list of available billing addresses. Choose an address and press the *OK* button to complete the move to the new address.
- **Detach Service Group** - This command is used to remove the service group from the current billing service address and create a new subscriber account with the settings and services of the service group. Selecting this command will display the Detach Service Group window (Figure 26-15). Enter a unique *Billing Account Number* and press the *OK* button to complete the upgrade of the service group to a subscriber account.

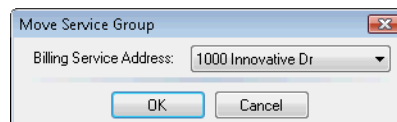


Figure 26-14 Move Service Group

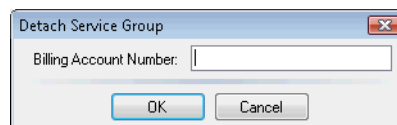


Figure 26-15 Detach Service Group

Service Menu Commands

Right-clicking on an advanced service icon will display a popup menu (see Figure 26-16) with the *Refresh Service Information* command, which can be selected to re-query the APmax system for the currently selected service's data.

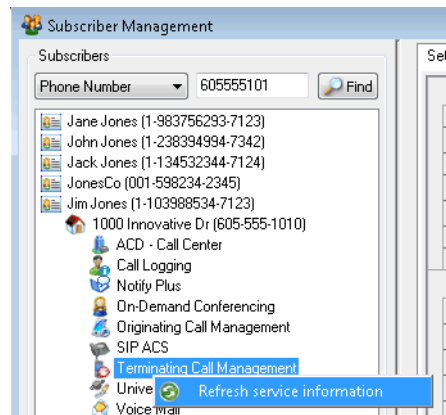


Figure 26-16 Service Right-Click Menu

26.1.1.3 Adding Subscribers

To create a new subscriber, begin by pressing the *Add* button located below the *Subscribers* list in the Subscriber Management interface. An Add New Subscriber window similar to Figure 26-18 will be displayed. If there are subscribers in the *Subscribers* list, then a drop-down menu will be displayed (see Figure 26-17) and the *Add New Subscriber* menu command must be selected before the Add New Subscriber window will be opened.

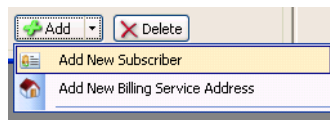


Figure 26-17 Add New Subscriber Menu Command

The screenshot shows the 'Add New Subscriber' dialog box. It contains the following fields: 'Name' (Jim Jones), 'System' (9511), 'Phone Number' (605-555-1010), 'Billing Account Number' (1-91399-8583-13), 'Billing Service Address' (1000 Innovative Dr) with a 'CASS' button, and 'Service' (Voice Mail). At the bottom are 'OK' and 'Cancel' buttons.

Figure 26-18 Add New Subscriber Window

Enter the information of the new subscriber into the fields (described below) of the Add New Subscriber window.

Name	Enter the name or a short description of the subscriber. The entered value does not have to be unique and is used in various interfaces to help identify the subscriber.
System	Select the APmax system on which the new subscriber record will be located.
Phone Number	<p>Enter the default 10-digit directory number associated with this subscriber.</p> <p>The default subscriber phone number can be changed by adding a new 10-digit phone number in the <i>Address Info</i> tab (see Section 26.1.3) and then selecting that new number in the <i>Default Phone Number</i> field in the <i>General Info</i> tab (see Section 26.1.2).</p> <p>Shortened phone numbers ranging from 7 to 9 digits may be automatically added to the <i>Address Info</i> tab depending on the settings in the Phone Number Format interface described in Section 12.2.</p>
Billing Account Number	Enter the account number used by the billing system for this subscriber. This field is not constrained to be unique and therefore multiple subscribers may have the same billing account number.
Billing Service Address	<p>This field is typically a postal address, but may be another location.</p> <p>The CASS button next to the <i>Billing Service Address</i> field is an optional feature that uses the CASS™ system to improve the accuracy of the billing address by verifying it with the United States Postal Service®. To certify an address, follow these steps:</p> <ol style="list-style-type: none">1. Enter a postal address (address, city, state and zip code) into the <i>Billing Service Address</i> field.2. Press the CASS button. If the entered address matches the certified address then nothing will happen. If the entered address does not match the certified address then an Address Change window similar to Figure 26-19 will be displayed, showing the originally entered address and the certified address. Press Yes in the Address Change window (if displayed) to update the <i>Billing Service Address</i> field with the certified address.

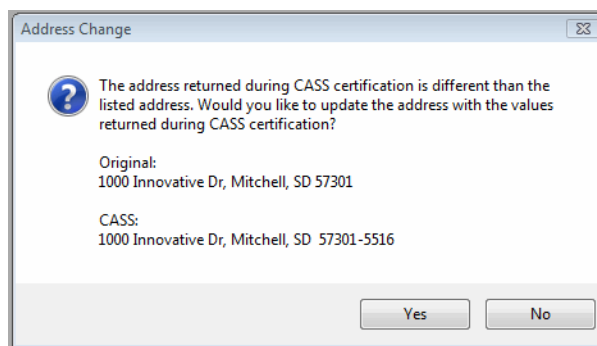




Figure 26-19 Address Change for CASS Certification

Service

Select a default service (e.g., Terminating Call Management, Voice Mail) to be configured for this subscriber. This field is optional and may be left blank.

If a default service is selected then an additional service configuration window may be displayed when this subscriber is added. The service description for the selected service will contain more information about any additional service configuration needed for this subscriber.

Press the *OK* button in the Add New Subscriber window. The new subscriber  will be displayed in the *Subscribers* list and will have a default billing service address  of “Location 1,” as illustrated in Figure 26-20. The billing service address can be edited in the *General Info* tab (see Section 26.1.2). Advanced services may now be added to the subscriber (see Section 26.1.1.9).

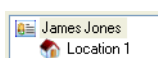



Figure 26-20 New Subscriber Record

26.1.1.4 Deleting Subscribers

To delete a subscriber, select the subscriber name  in the list on the left-hand side of the Subscriber Management interface and press the *Delete* button located below the list. A delete confirmation prompt will be displayed (see Figure 26-21). Press the *Yes* button in the prompt to remove the subscriber and all addresses, services and other settings associated with the subscriber. Press the *No* button to cancel the deletion.

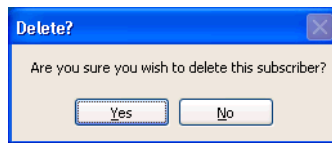


Figure 26-21 Delete Subscriber Prompt

26.1.1.5 Adding Billing Service Addresses

Each subscriber on an APmax system has a default billing service address, which is created when the subscriber is added to the system. It is typically a postal address, but it may be some other location. If a subscriber has services at more than one location they may need additional billing service addresses.

To add a billing service address to a subscriber, select the subscriber in the *Subscribers* list (Figure 26-5), press the *Add* button located below the list, and choose the *Add New Billing Service Address* menu command (see Figure 26-22) . A window similar to Figure 26-23 will be displayed.

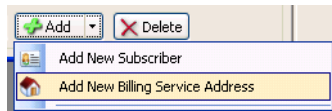



Figure 26-22 Add New Billing Service Address Menu Command

A window titled "Add New Billing Service Address" with a close button in the top right corner. The window contains several input fields: "Name:" with the text "Jones Family"; "System:" with a dropdown menu showing "9511"; "Phone Number:" with a masked input field; "Billing Account Number:" with the text "1-103988534-7125"; "Billing Service Address:" with the text "Location 1" and a "CASS" button; and "Service:" with a dropdown menu. At the bottom, there are "OK" and "Cancel" buttons.

Figure 26-23 Add New Billing Service Address Window

Enter the information of the new billing service address into the fields (described below) of the Add New Billing Service Address window and press the *OK* button. A new billing service address icon  will be displayed in the *Subscribers* list below the subscriber record. The billing service address can be edited in the *General Info* tab (see Section 26.1.2). Advanced services may now be added to the new billing service address (see Section 26.1.1.9).

Name	The name or short description of the subscriber that is used in various interfaces to help identify the subscriber. This field is read-only and can only be edited when the subscriber record is selected (see Section 26.1.2).
System	Select the APmax system on which all services added to this address will be located.
Phone Number	<p>Enter the default 10-digit directory number associated with this billing address.</p> <p>The default phone number can be changed by adding a new 10-digit phone number in the <i>Address Info</i> tab (see Section 26.1.3) and then selecting that new number in the <i>Default Phone Number</i> field in the <i>General Info</i> tab (see Section 26.1.2).</p> <p>Shortened phone numbers ranging from 7 to 9 digits may be automatically added to the <i>Address Info</i> tab depending on the settings in the Phone Number Format interface described in Section 12.2.</p>
Billing Account Number	The account number used by the billing system for this subscriber. This field is read-only and can only be edited when the subscriber record is selected (see Section 26.1.2).
Billing Service Address	<p>This field is typically a postal address, but may be another location.</p> <p>The <i>CASS</i> button next to the <i>Billing Service Address</i> field is an optional feature that uses the <i>CASS</i>™ system to improve the accuracy of the billing address by verifying it with the United States Postal Service®. To certify an address, follow these steps:</p> <ol style="list-style-type: none">1. Enter a postal address (address, city, state and zip code) into the <i>Billing Service Address</i> field.

2. Press the CASS button. If the entered address matches the certified address then nothing will happen. If the entered address does not match the certified address then an Address Change window similar to Figure 26-24 will be displayed, showing the originally entered address and the certified address. Press Yes in the Address Change window (if displayed) to update the *Billing Service Address* field with the certified address.

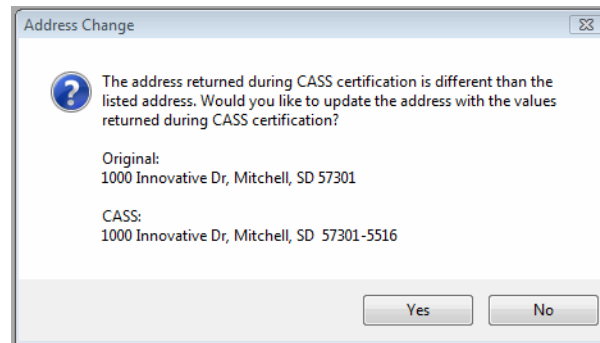



Figure 26-24 Address Change for CASS Certification

Service

Select a default service (e.g., Terminating Call Management, Voice Mail) to be configured for this subscriber. This field is optional and may be left blank.

If a default service is selected then an additional service configuration window may be displayed when this subscriber is added. The service description for the selected service will contain more information about any additional service configuration needed for this subscriber.

26.1.1.6 Deleting Billing Service Addresses

To delete a billing service address from a subscriber, select the appropriate billing service address icon  in the *Subscribers* list and press the *Delete* button located below the list. A delete confirmation prompt will be displayed. Press *Yes* in the prompt to complete the deletion. If services are currently assigned to the billing service address then an error will occur and the delete will be aborted.

Attempting to delete the only billing service address for a subscriber will result in a warning (see Figure 26-25) that doing so will also delete the subscriber and any data associated with the subscriber.

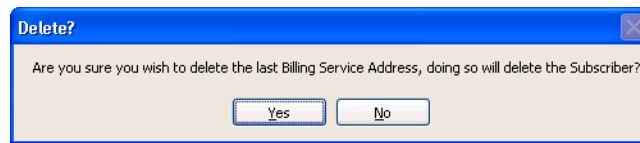



Figure 26-25 Delete Subscriber Warning

26.1.1.7 Adding Service Groups

If more than one subscriber exists at the same location then a service group may be added to the billing service address. Advanced services can be added and managed independently for each service group at a billing service address, but the primary subscriber account and all service groups attached to the subscriber will share the same billing account number. Service groups that have already been added to a billing service address are shown below the associated billing service address icon  in the *Subscribers* list of the Subscriber Management interface (illustrated in Figure 26-5).

To add a service group to a billing service address, select the address and press the *Add* button at the bottom of the *Subscribers* list. A drop-down list (see Figure 26-26) will be displayed. Select the *Add New Service Group* menu command in the drop-down list. An Add New Service Group window similar to Figure 26-27 will be displayed.

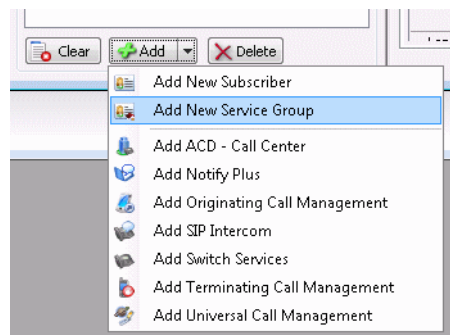


Figure 26-26 Add New Service Group Menu Command

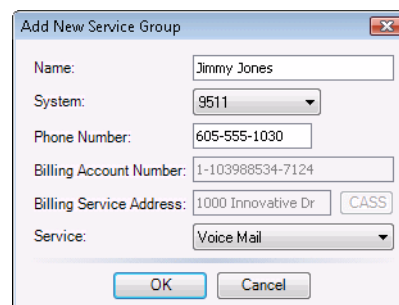




Figure 26-27 Add New Service Group Window

Enter the information of the new service group into the fields (described below) of the Add New Service Group window. The *Billing Account Number* and *Billing Service Address* fields default to the values of the parent subscriber and cannot be changed.

Name	Enter the name or a short description of the service group. The entered value does not have to be unique and is used in various interfaces to help identify the service group.
System	Select the APmax system on which the new service group record will be located.
Phone Number	<p>Enter the default 10-digit directory number associated with this service group.</p> <p>The default service group phone number can be changed by adding a new 10-digit phone number in the <i>Address Info</i> tab (see Section 26.1.3) and then selecting that new number in the <i>Default Phone Number</i> field in the <i>General Info</i> tab (see Section 26.1.2).</p> <p>Shortened phone numbers ranging from 7 to 9 digits may be automatically added to the <i>Address Info</i> tab depending on the settings in the Phone Number Format interface described in Section 12.2.</p>
Billing Account Number	The account number used by the billing system for this service group.
Billing Service Address	This field is typically a postal address, but it may be some other location.
Service	<p>Select a default service (e.g., Terminating Call Management, Voice Mail) to be configured for this service group. This field is optional and may be left blank.</p> <p>If a default service is selected then an additional service configuration window may be displayed when this service group is added. The service description for the selected service will contain more information about any additional service configuration needed for this subscriber.</p>

Press the *OK* button in the Add New Service Group window. The new service group  will be displayed in the *Subscribers* list. Advanced services may now be added to the service group (see Section 26.1.1.9).

26.1.1.8 Deleting Service Groups

To delete a service group, select the service group name  in the list on the left-hand side of the Subscriber Management interface and press the *Delete* button located below the list. A delete confirmation prompt will be displayed (see Figure 26-28). Press the *Yes* button in the prompt to remove the service group and all other settings associated with the service group. Press the *No* button to cancel the deletion.

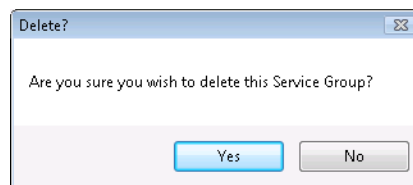




Figure 26-28 Delete Service Group Prompt

26.1.1.9 Adding Subscriber Services

Subscribers in the APmax system have one or more billing service addresses. Each billing service address may have one or more advanced services or service groups added to it. Services that have already been added to a billing service address or service group are shown below the associated billing service address icon  or service group icon  in the *Subscribers* list of the Subscriber Management interface (illustrated in Figure 26-5).

To add an advanced service to a billing service address or service group, select the address or service group and press the *Add* button at the bottom of the *Subscribers* list. A drop-down list of available services similar to Figure 26-29 will be displayed. Select the service you wish to add from the drop-down list. Depending on the service, some variation of an “Add Subscriber” window will be displayed, containing all of the required fields that must be populated to subscribe to the selected service. Enter the requested data into the fields and press the *OK* button to complete the subscription procedure. More information on each service listed in the *Add* button menu is available in the Service Description document associated with each service.

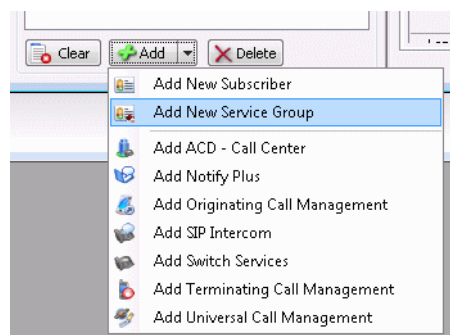


Figure 26-29 Add Button Service Menu

26.1.1.10 Deleting Subscriber Services

To delete an advanced service from a billing service address or service group, select the service in the *Subscribers* list of the Subscriber Management interface and press the *Delete* button at the bottom of the list. A delete confirmation prompt (see Figure 26-30) will be displayed. Select *Yes* in the prompt to complete the deletion.

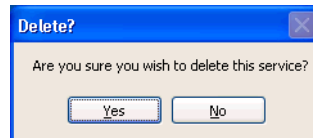


Figure 26-30 Delete Service Prompt

26.1.2 General Info

The *General Info* tab (see Figure 26-31) is displayed when the Subscriber Management interface is initially opened. It is used to manage a variety of subscriber settings that are associated with the subscriber's billing service addresses and service groups. To view and edit the contents of the *General Info* tab, expand the subscriber's icon in the *Subscribers* list on the left-hand side of the Subscriber Management interface, and then select a billing service address or service group, as illustrated in Figure 26-31.

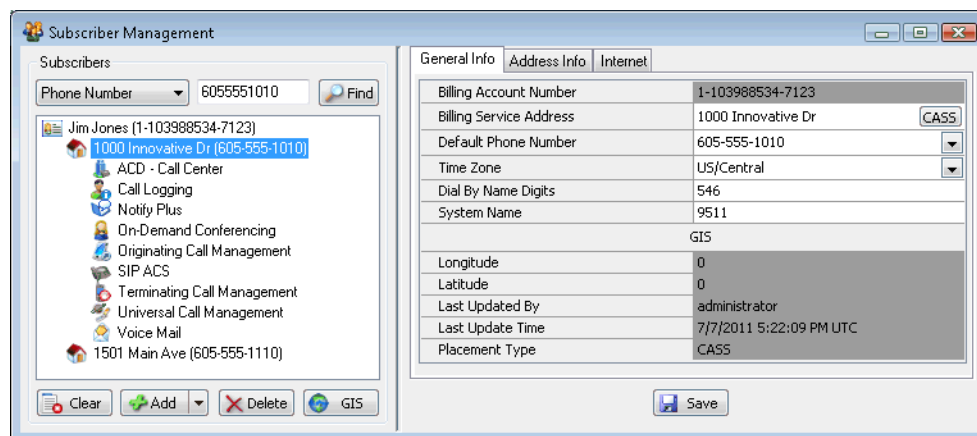


Figure 26-31 General Info Tab

The subscriber settings found in the *General Info* tab are described below:

Name

A non-unique name or description of this subscriber or service group. This field defaults to the name entered when the subscriber or service group was added. Editing this name for a subscriber record will change it for all billing service addresses defined for the subscriber.

Billing Account Number The account number used by the billing system for this subscriber. This field is not constrained to be unique and therefore multiple subscribers may have the same billing account number. Editing the value for this field will change it for all billing service addresses and service groups defined for this subscriber.

Billing Service Address This field is typically a postal address, but may be another location.

The CASS button next to the *Billing Service Address* field is an optional feature that uses the CASS™ system to improve the accuracy of the billing address by verifying it with the United States Postal Service®. To certify an address, follow these steps:

1. Enter a postal address (address, city, state and zip code) into the *Billing Service Address* field.
2. Press the CASS button. If the entered address matches the certified address then nothing will happen. If the entered address does not match the certified address then an Address Change window similar to Figure 26-32 will be displayed, showing the originally entered address and the certified address. Press Yes in the Address Change window (if displayed) to update the *Billing Service Address* field with the certified address.

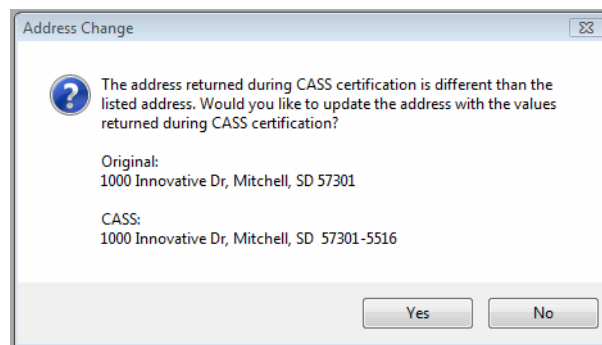


Figure 26-32 Address Change for CASS Certification

Default Phone Number The 10-digit directory number associated with this billing service address or service group. This field is configured separately for each of the subscriber's billing service addresses and service groups. The default value for the first billing service address is the phone number entered when the subscriber record was created.

All 10-digit phone numbers defined in the *Address Info* tab (see Section 26.1.3) for this billing service address or service group will be listed in this selection box and may be selected to change the value of this field. The currently selected phone number in this field cannot be deleted from within the *Address Info* tab. This number cannot be changed to a 7-digit phone number or a phone number used by another billing service address or service group.

Changing this number will display a prompt (Figure 26-32) which provides the option of updating the phone numbers of the services associated with this billing service address or service group.

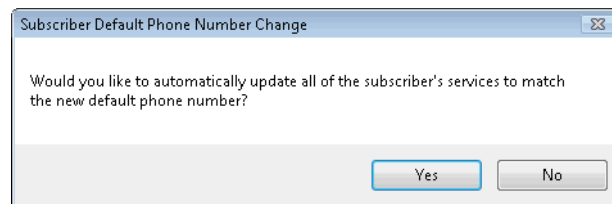


Figure 26-33 Prompt to Update Subscriber Services

Time Zone

The time zone that will be used for all time-related functions involving this billing service address. This field is unique to each billing service address defined for this subscriber and therefore changing it will not alter the time zone for any other billing service addresses.

Dial By Name Digits

The digits used by features, such as Automated Attendant mailbox configurations in the Voice Mail Service, to find this subscriber in a group. The default value is the telephone keypad numbers corresponding to the first three letters in the subscriber name that is entered when the subscriber or service group record is first created. These digits will not be automatically updated if the name is edited, but may be manually changed to any string of digits up to nine digits in length.

System Name

The APmax system on which this billing service address or service group record exists. This field cannot be changed.

Any changes to these settings can be saved immediately by pressing the *Save* button. Settings will be automatically saved when the Subscriber Management interface is closed, another subscriber is selected, the *Find* button is used, or the *Clear* button is used.

In addition to managing the standard billing service address settings, the *General Info* tab is also used to display Census Tract and Block information, and Innovative Systems GIS (Geographic Information System) location data for billing service addresses. This data will only be available if the Innovative Systems GIS application is installed on the computer running the APmax UI software. See the Innovative Systems GIS support documentation for more information.

26.1.3 Address Info

The *Address Info* tab contains all of the phone numbers, e-mail addresses, SIP addresses, and Centrex extensions associated with the billing service address or service group currently selected in the *Subscribers* list of the Subscriber Management interface. At the very least a subscriber will have their default phone number listed in the *Address Info* tab. Instructions for adding (see Section 26.1.3.1) and removing (see Section 26.1.3.2) addresses are given below.

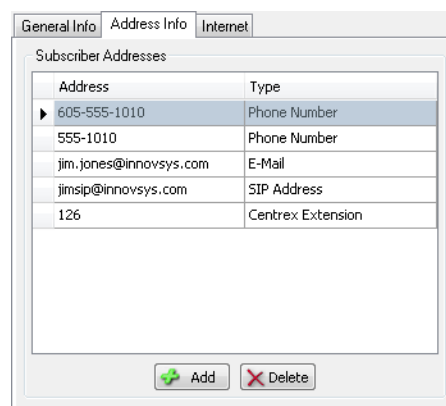


Figure 26-34 Address Info Tab

26.1.3.1 Adding Addresses

To add an address to a billing service address, first press the *Add* button located below the *Subscriber Addresses* list to display the Add New Address window. By default, the *Address Type* selected in the Add New Address window will be Phone Number (see Figure 26-35).

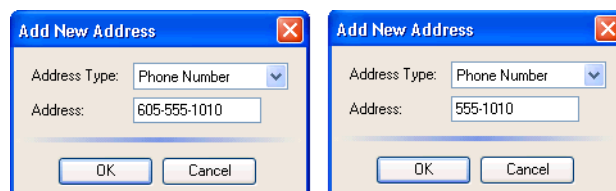


Figure 26-35 Add New Phone Number

Next, select the type of address you wish to add. Options include Phone Number (Figure 26-35), E-Mail (Figure 26-36), SIP Address (Figure 26-37), and Centrex Extension (Figure 26-38). The formatting of the *Address* field will change depending on which *Address Type* is selected.

Note: The Centrex Extension address type is only available if APmax Release 4.5.7 or greater is installed on the system hosting the subscriber record.

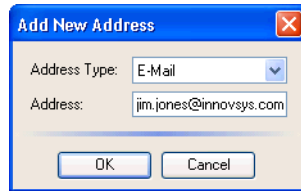


Figure 26-36 Add New E-mail Address

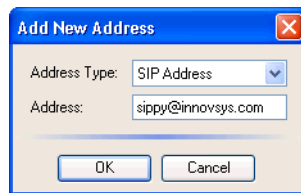


Figure 26-37 Add New SIP Address

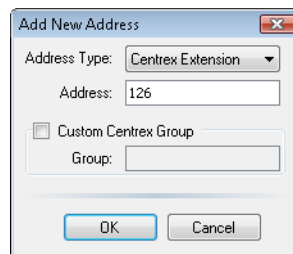


Figure 26-38 Add New Centrex Extension Address

After selecting the *Address Type*, enter a properly formatted value (as illustrated in the figures above) into the *Address* field and press the *OK* button. If the *Address Type* is Centrex Extension then a custom Centrex group name may be specified, as illustrated in Figure 26-38.

The new address will be displayed in the *Subscriber Addresses* list. If the new address is a 10-digit phone number then it will now be available to this billing service address or service group as a Default Phone Number option in the *General Info* tab (see Section 26.1.2).

26.1.3.2 Deleting Addresses

To delete a phone number, e-mail address, SIP address, or Centrex extension associated with a billing service address or service group, select the address to delete in the *Subscriber Addresses* list and press the *Delete* button located below the list. A delete confirmation prompt (see Figure 26-39) will be displayed. Press the *Yes* button in the prompt to complete the deletion, or press the *No* button to cancel the deletion.

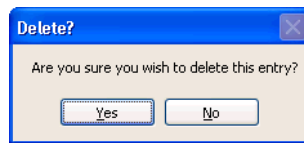


Figure 26-39 Delete Address Prompt

NOTE: The last phone number address cannot be deleted if the subscriber has a service that requires a phone number.

26.1.4 Subscriber Internet Access Settings

The *Internet* tab (see Figure 26-40) is used to configure the Internet Access account settings for the billing service address or service group currently selected in the *Subscribers* list of the Subscriber Management interface.

 A screenshot of the "Internet" tab in a software interface. The tab is titled "Internet Access Setup". It contains a table with three rows: "Username" with the value "jimjones", "Active" with the value "Yes", and "Password Change" with the value "No". Below the table are three buttons: "Setup", "Web Portal" (with a globe icon), and "Unlock".

Figure 26-40 Internet Tab

The top of the *Internet Access Setup* section contains the following settings:

Username

The username of this Internet Access account. This name must be unique among subscribers associated with the same Internet Access service provider and is used by the end user subscriber to log into the Web Portal Service user interface (see the Web Portal Service Description for more information).

The Username can be created or changed by pressing the *Setup* button (see Section 26.1.4.1).

Active	Whether or not this Internet Access account is active for this billing service address. Select Yes or No. The default value is No.
Password Change	Set to Yes to force the user to change their password the next time they log into the Web Portal Service user interface. The default value is No.

There are three buttons in the *Internet* tab: *Setup*, *Web Portal* and *Unlock*. The *Setup* button is used to configure the username and password of the account and is described in Section 26.1.4.1. The *Web Portal* button is used to view the Web Portal Configuration interface (see Section 26.1.4.2 - "Web Portal Setup") for this subscriber. The *Unlock* button is used to manually reset the failed login count for an Internet Access account to zero. For more information on Internet Access account security, see Section 11.3 - "Password Management".

26.1.4.1 Internet Access Setup

Press the *Setup* button in the *Internet* tab of the Subscriber Management interface to open the Internet Access Settings window (Figure 26-41), which is used to create or modify the username and password of the selected account.

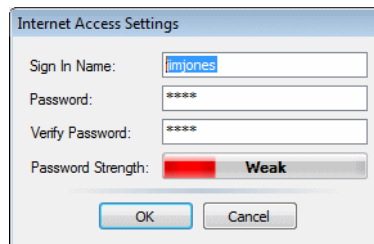


Figure 26-41 Internet Access Settings

The account properties in the Internet Access Settings window are described below:

Sign In Name	<p>The username of this Internet Access account. This name must be unique among subscribers associated with the same Internet Access service provider and is used by the end user subscriber to log into the Web Portal Service user interface (see the Web Portal Service Description for more information).</p> <p>The Sign In Name text is not case-sensitive and may contain any combination of letters, numbers, and the following symbols: period, hyphen, underscore, at sign. The minimum length of the Sign In Name is 1, and the maximum length is unlimited.</p>
---------------------	---

Password	The password of this Internet Access account. This password is used in conjunction with the Sign In Name to allow the subscriber to log into Internet Access user interfaces. The Password text is case-sensitive and may contain letters, numbers, and the following symbols: hyphen, underscore. The minimum length of the Password is determined by the Password Strength setting. The maximum length is 20 characters.
Verify Password	New or changed passwords must be entered into this field along with the Password field to verify the password has been typed correctly.
Password Strength	<p>This meter is used to indicate the strength of a new password. Passwords for previously configured accounts will always indicate a Password Strength of "Weak" since the password is encrypted on the APmax and the APmax UI cannot calculate its strength. The minimum strength required for new passwords is configured on a per-system basis in the Internet Access Settings interface (see Section 11.3 - "Password Management").</p> <p>Password strength is determined by number of characters, type of characters (uppercase, lowercase, numbers, symbols), and whether or not the password includes common words found in the internal dictionary. The four levels of password strength are described below:</p> <ul style="list-style-type: none">• Weak - Any password that is not Medium, Strong, or Best.• Medium - Any password with 8 or more characters that has at least two different types of characters and does not directly match words in the internal dictionary.• Strong - Any password with 8 or more characters that has at least three different types of characters and does not match any variation of a word in the internal dictionary.• Best - Any password with 14 or more characters that has at least three different types of characters and does not match any variation of a word in the internal dictionary.

Press the *OK* button in the Internet Access Settings window to save any changes to the account settings.

26.1.4.2 Web Portal Setup

Press the *Web Portal* button in the *Internet* tab of the Subscriber Management interface to view the Web Portal Configuration interface (see Figure 26-42) for this subscriber. The Web Portal Configuration interface provides shortcuts to the enhanced service settings that are required for this subscriber to have full access to the Web Portal Service user interfaces (see the "Integrated Web Portal Subscriber Management" section in the Web Portal Service Description for more information).

NOTE: Notify Plus Service subscribers should not be enabled for Integrated Web Portal features as they are incompatible. See the Feature Interaction section of the Notify Plus Service Description for more information.

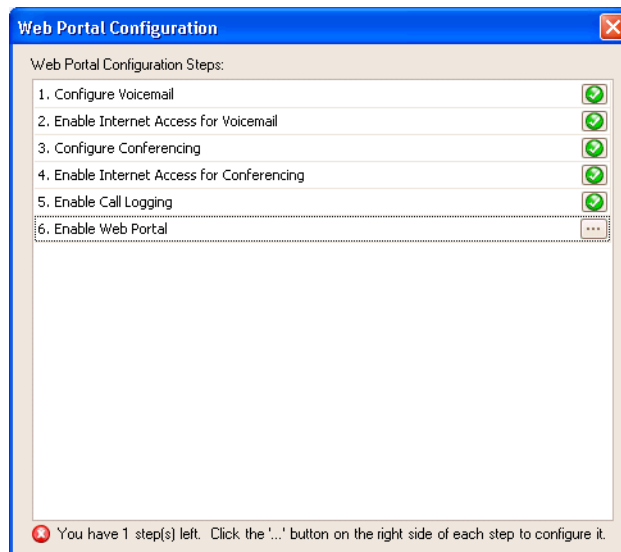





Figure 26-42 Web Portal Configuration

For each step listed in the Web Portal Configuration interface, there will be either a  button to indicate the step has not been completed, or a  icon to indicate the step has been completed. The subscriber illustrated in Figure 26-42 has been configured for the first five steps and has one step remaining.

Clicking on the  button next to a step may automatically configure the step, or it may display a window with additional configuration options related to the selected service. The Service Description documents associated with each advanced service in the Web Portal Configuration steps will provide more details on configuring and provisioning subscribers for that particular service.

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