



## Positron Telecommunication Systems Inc.

### V114 Analog PBX Card User Guide



Publication Number 70-00007  
Document Date: 08/07/2009  
Print Date: 08/07/2009

## Publication Information

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**V114 Analog Card, User Guide**

Part number: 70-00007

Publication date: May 1, 2009

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# **Chapter 1**

## **General Information**

## About this Guide

This guide introduces you to the Positron Telecommunications Inc. V114 PCI Analog Card, its features and applications, and describes how to install it. This guide was designed to be read from beginning to end.

### 1 Related Documentation

The other guides in the Positron Telecommunications Inc. set are listed below. To order any manuals, please contact your customer service representative.

- ⑤ Positron Telecommunications Inc. Description and Installation Guide
- ⑤ Positron Telecommunications Inc. System Overview

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Positron Telecommunication's VoIP devices connect analog devices (telephone, fax and modem) to IP-Networks allowing customers to take advantage of converged voice and data services. The products support SIP Proxies, can integrate with Microsoft OCS through a combined Mediation server / PBX and provide visibility into PBX attributes through a detailed operator panel.

Full details and contact information are available at [www.PositronTelecom.com](http://www.PositronTelecom.com)

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This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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Positron Telecommunication Systems Inc... located at 5101 Buchan street, Montreal in Canada hereby certifies that the Positron Telecommunications Systems Inc. bearing labeling identification numbers mentioned above complies with the Federal Communications Commission's ("FCC") Rules and Regulations Part 68.

## **1 Product Safety**

This equipment is compliant with CSA CAN/CSA-C22.2 No. 60950-1-03



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Version 3, 29 June 2007

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END OF TERMS AND CONDITIONS

## Service and Support

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Website: [www.PositronTelecom.com](http://www.PositronTelecom.com)

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**Repairs:** US and Canada: 1-800-661-4911  
International: 1-514-345-2220

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All warranty repairs are performed at no cost. Positron reserves the right to repair or replace any equipment that has been found to be defective.

For information about out-of-warranty repairs, contact Positron's Repair department at 1-800-661-4911 (US and Canada) or 1-514-345-2220 (International). Due to the varied nature of repairs, no specific turnaround can be guaranteed, but average turnaround time is two weeks from date of receipt. In emergency situations, special arrangements can be made. All repaired items are warranted for a period of 90 days.

Before returning any items to Positron for repair, warranty repair or replacement, call the Repair department to obtain a Return Material Authorization (RMA) number. Parts returned without RMA numbers cannot be accepted. The RMA number must always be clearly marked on all boxes, crates, and shipping



documents. Bulk repairs (more than five items) will require additional processing time, so please take this into consideration when requesting an RMA number. To accelerate the repair process, whenever possible, include a report detailing the reason for return with the unit(s). Also, please include the name and phone number of a person who can be contacted should our Repair department need further information.

When packing items being returned for repair, please ensure they are properly packed to avoid further damage. Positron Telecommunications Inc. interface cards should never be shipped while installed in a shelf; this will cause damage that can extend the repair period.

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**General information:** Positron Telecommunication Systems Inc..  
5101 Buchan Street, Suite 211  
Montreal, Quebec, Canada  
H4P 2R9  
**US and Canada:** 1-888-577-5254  
**International:** 1-514-345-2220  
**Fax:** 514-345-2271  
E-mail: [info@PositronTelecom.com](mailto:info@PositronTelecom.com)  
Website: [www.PositronTelecom.com](http://www.PositronTelecom.com)

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**Customer Service and Repairs:** **US and Canada:** 1-888-577-5254  
**International:** 1-514-345-2220  
**E-mail:** [customerservice@PositronTelecom.com](mailto:customerservice@PositronTelecom.com)

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## 1 Technical Customer Support

Positron is committed to providing excellent ongoing technical support to its customers. A team of specialists is always available for telephone consultations or for on-site visits to assist in the maintenance and troubleshooting of Positron equipment.

For pricing information or assistance in the planning, configuration and implementation of the installation of equipment, contact Technical Customer Service.

## 1 Warranty Repairs

All warranty repairs are performed at no cost. Positron reserves the right to repair or replace any equipment that has been found to be defective.

For information about out-of-warranty repairs, contact Positron's Repair Department. Due to the varied nature of repairs, no specific turnaround can be guaranteed, but average turnaround time is 20 working days from date of receipt. In emergency situations, special arrangements can be made. All repaired items are warranted for a period of 90 days.

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documents. Bulk repairs (more than five items) will require additional processing time, so please take this into consideration when requesting an RMA number. To accelerate the repair process, whenever possible, include a report detailing the reason for return with the unit(s). Also, please include the name and phone number of a person who can be contacted should our Repair department need further information.

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## **1 Positron Telecommunications Inc. Warranty**

Subject to the provisions of this paragraph, Positron warrants that the equipment shall perform in accordance with Positron's specifications. The warranty remains valid for two (2) years from the date of shipment. The warranty fully covers workmanship, materials and labor. Positron shall, at its sole discretion, repair or replace the problem unit.

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- ⦿ For any other claim in any other way related to the subject matter of any order under, the customer shall be entitled to recover actual and direct damages; provided that Positron's liability for damages for any cause whatsoever, and regardless of the form of the action, whether in contract or in tort (including negligence), shall be limited to the value of the order.

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**IN NO EVENT SHALL POSITRON BE LIABLE FOR ANY INDIRECT, INCIDENTAL, SPECIAL, CONSEQUENTIAL, PUNITIVE, EXEMPLARY OR SIMILAR OR ADDITIONAL DAMAGES INCURRED OR SUFFERED**

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## **Chapter 2**

### **Overview**

## The V-Series Family

Positron Telecom's the V-Series family of cards provides PBX and telephony ports creating a seamless gateway to the cellular, traditional telephone and VoIP worlds by combining them into a single integrated device.

The Positron Telecom V-114 Analog PCI card is an affordable, scalable solution for single point of contact communication needs, enabling customers to communicate through either VoIP or telephone lines, or a mix of the two, provides a centralized communication point and routes calls accordingly to desk, home or cellular phone. The V-Series also provides customized greetings per user, lower cost long distance and a true one inbox solution for email, fax and voicemail.

The V114 PCI Analog Card provides both telephony and PBX on the card itself. The V-Series offers a unique approach because it installs as an Ethernet adapter into the system automatically providing an IP address for easy configuration. This allows the card to be easily installed into any operating system, providing a simple way for card-to-card communication for higher density installs.

### 2. Specifications:

- Dimensions:
  - H: 107 mm (4.2 inches)
  - D: 168 mm (6.6 inches)
- Environmental:
  - Operating Range: 0°C to 40°C
  - Storage: -20°C to 85°C
  - Humidity: 10% to 80%

### 3. The V114 PCI Analog Card Features:

Sophisticated Integrated PBX functions in a single-board

- 4 Analog FXO Ports
- Support for up to 4 VoIP Lines
- 1 FXS Port for analog phone or fax machine
- 128 ms echo-canceller in hardware
- Ethernet connector
- Expandable, on-board storage through a Compact Flash Interface
- Local and Remote Web-based configuration



Figure 1 V-114 PCI Card

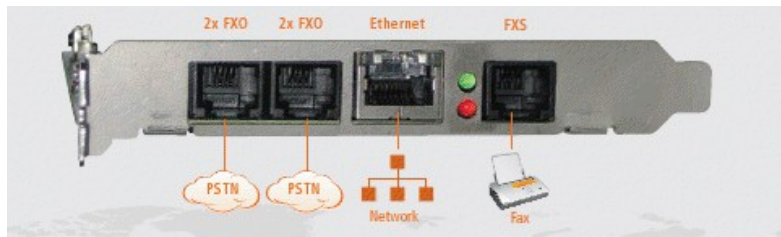


Figure 2 PCI Card Connector

### Indicators

2 LEDs

Red – Fault

Green – Power

LEDs on Ethernet Connector

LED 1 – 10/100 MBs Indicator

LED 2 - Activity

## **Basic Features**

In addition to the default PBX features like call switching, call completion, call connection, call termination and accounting, the following features can be enabled:

### **Call Routing Features**

#### **Automated Attendant**

An automatic system to answer phones with the ability to build phone menu systems, add call menus, transfer to voice mail and create flexible and programmable rules to handle all of these features.

#### **Call Menus**

Flexible call management menus with user selectable options – a more advanced version of the traditional phone tree/menu systems. Support is available for multiple sets of menus and even change them based on time or on information gleaned from caller ID.

#### **Managing Extensions**

Features to help the phone system administrator, such as the ability to add new extensions, remove unneeded extensions, change extension locations and much more from a Web-based control panel.

#### **Call Forwarding**

Automatic, programmed or manual call forwarding to any number.

#### **Call Transfer**

The ability to transfer calls between extensions without going back to a central switchboard.

#### **Call Parking**

Put the caller on hold in a waiting area so that any other phone system user can pick the call up.

### **Messaging and Management Features**

#### **Voice Mail and Voice Mailboxes**

An almost infinite number of voice mailboxes are available through the use of expandable CF card memory.

**Call Hold:**

System allows placing callers on hold with no drop off in queues with user selectable hold music and programmable options about handling hold time length.

**Conference Calling:**

System handles multiparty conference calls, internally and externally.

**Web-Based Management and Administration:**

Administrator can manage phone system directly from a Web browser.

**Operation**

The V114 PCI Analog Card is appears as an Ethernet adapter in systems running versions of Windows or Linux operating systems. During installation, the card is automatically assigned an IP address. Setup and configuration is achieved through an integrated web-based interface.

The system allows the seamless integration of VoIP and analog telephones into the same PBX. Analog PSTN lines and VoIP lines or a mix of the two can be configured and later reconfigured as needed. Users can take advantage of the quality, availability and reliability of analog lines as well as the low long-distance rates and expandability of VoIP services. In the event of Internet connection failure, calls can be made through regular phone lines.

An integrated module within the V114 PCI Analog Card seamlessly detects and installs many types of SIP phones. These hardware or software SIP phones can be located locally, connected through a managed or unmanaged switch or remotely via an IP connection.

Many call-handling features can be configured locally or through service providers.

The system can accept, store and convert voicemails to WAV or MP3 file email attachments. Users can retrieve their voicemails on a computer or mobile phone, creating a true one-inbox messaging solution for emails and voicemails.



## **Features:**

### **Auto SIP phone provisioning for these brands**

- Linksys
- Polycom
- SNOM
- Aastra
- Cisco

### **Voicemail to email conversion**

### **Fax to Email conversion using TIFF format**

### **Fax pass-through to FXS port**

### **Support for these Voice Codecs:**

- G.711 (ulaw & alaw)
- G.729
- Speex

### **Trunk Support**

- SIP
- IAX
- FXO,
- ISDN,
- E1
- T1

### **Time of Day service**

### **Find me / Follow me**

### **Conference rooms**

## **Music on Hold configurable per user**

### **Corporate or Home Directory (Auto Attendant)**

Positron's auto-attendant allows callers to dial into a main number then dial a feature code or an extension. It can be used in combination with Direct Inward Dial to allow, for example, providing a directory to allow callers to look up a name and be transferred to the corresponding extension. Its features include:

- greetings
- extended greetings
- music-on-hold
- voice message forwarding
  
- message appending

The PBX plays music or prerecorded messages to customers on hold. Music can be sorted into various folders. Separate auto-attendant feature sets can be used for different situations. The voicemail tree supports directories by department, employee, extension, etc, offering flexibility and giving small organizations a more professional telephone appearance.

### **Dial by Name**

Inbound callers can route their calls to the appropriate person without knowing their extension. This allows for either first or last name directory look up. Assuming voicemail is set up correctly, Dial by Name allows an outside caller to get help in finding the extension number of the person they wish to call as long as they know the person's name

### **Dial by Extension**

Inbound callers can route their calls to the appropriate person if they know the correct extension number

### **Dial by Group**

Inbound callers can route their calls directly to the auto attendant of a group or department

## **Configuration and Maintenance through Local or Remote Web Interface**

## **Status Display of All Connections**

## Line Status

### PBX Features:

- Call Hold
- Call Waiting
- Call Transfer - Attended and Blind
- Call Conferencing
- Call Forwarding - Unconditional, No Answer, On Busy
- Call Log (60 entries each): Made, Answered, Missed Calls
- Multiple Ring Tones with Selectable Default Ring Tone per Line
- Call Duration with Call Time Stamp Stored in Call Logs
- Syslog, Debug, Report Generation and Event

### Caller ID

Represents the digits passed from the carrier (or PABX) to the end user device (or between PABXs) that identify who the caller is. Also known as CLI (Calling line identification) or ANI (Automatic Number Identification)

### Corporate Call Back

Allows you to set up a callback destination that calls a user back and provides access to an application. An example of this would be a caller that dials your system, disconnects, is called back and then provided a DISA application to make a phone call. This is a basic service for reducing costs international calls and mobile phone charges

### Advanced Call forwarding rules

Example: Unanswered inbound calls - the caller is prompted to speak recipient's name. The call then gets forwarded over a VoIP line to the additional forwarding numbers provided in the recipient's forwarding profile. The call is forwarded with the CallerID of the inbound caller (not the PBX). The recipient will see the inbound call and can answer or ignore. Ignored calls get sent back to the recipient's voicemail box. If the recipient answers the call, they are prompted with the recording and may accept or reject the call. A rejected call is still transparent to the original caller, and sent back to voicemail.

### Configurable extension lengths (2,3,4)

### **Desktop paging**

Certain desktop phones with built in speakers can have the 'paging' function enabled which will automatically answer a paged call and play the audio without end user intervention

### **Outbound and Inbound configurable call rules**

- Example outbound rule:  
Member of 'sales\_team' can dial long distance numbers while 'support' cannot
- Example inbound rule:  
Number 'xxx-xxx-xxxx' is a fax machine and routed directly to the FXS connected fax machine

### **External Media Support (voicemail, MOH)**

- Compact Flash – all systems
- USB – G-124 only

## Introduction

This chapter of the V-114 PCI User Guide covers:

- Installation of the card in a host system
- Verifying operations of the hardware
- Connecting to the Internet
- Rebooting the V-114 PCI
- Testing the Phones
- Verifying the Dial Sequence
- Verifying Extensions

## V-114 PCI Card Installation

We recommend that the PC hosting the V-114 PCI card be connected to a surge protector or UPS (uninterruptible power supply). This will help minimize damage in the event of power fluctuations or power surges.

### Installation Equipment

To complete the installation and configuration of the V-114 PCI card the following equipment is suggested:

- Phillips screwdriver may be required to fasten card into place on host computer chassis
- A second computer, referred to as “notebook” for configuration. Alternatively, any computer capable of running a browser on the local area network can be used. If such a computer is not available, a **crossover** Ethernet cable (not supplied) can be used to perform the configuration on the host computer itself.
- It is strongly recommended that the Firefox browser be used for configuration to ensure total compatibility. Other browsers may be used, but some browsers/browser versions may yield unpredictable results.

### Unpacking the V-114 PCI Card

The V-114 PCI comes tested and housed in an anti-static plastic clamshell packaging.

### Grounding and Handling

Before removing the card from its packaging, ensure that you are grounded. To ground yourself it is recommended to use an Anti-Static wrist band, or at least, ensure that you touch the metal frame of the PC before touching the card.

When handling the V-114 PCI card try to handle it using the mounting bracket, and avoid making contact with any of the card circuitry.

The card has been designed to be connected to the PSTN and should not be connected to any other type of telecommunications service or services. Doing so will void the warranty and could cause network and / or equipment damage.

### **Inspection**

Inspect the card for any signs of physical damage. Report any damages directly to the shipper. Keep all packaging material in the event that the unit has to be shipped for servicing.

### **Inventory**

The complete package contains:

- the V-114 PCI card,
- two telephone line pigtails
- orange Ethernet cable
- documentation
- CD-ROM containing driver and sample files

### **Environment**

The selected installation site should provide a stable operating environment, clean and free from temperature and humidity extremes, shock, and vibration. The operating temperature should be kept below 100 degrees F (38° C). It is highly recommended that the card be installed in a host system located in or near the equipment cabinet and in proximity to the customer's network equipment.

### **Compact Flash Storage**

Before installing the card in the computer, determine whether CF (Compact Flash) storage is required. Although CF memory can be installed at any time, you may choose to install memory at this point. Adding or removing CF memory must be done with the power off, and requires a reboot following modification.

We recommend use of the Sandisk CF Card model xxxx for complete system compatibility. Other CF cards may be compatible.

NOTE: The CF memory can only be installed on the V-114 PCI card when the card has been removed from the host system. Under no circumstances can memory be added or removed while system power is present on the card.

Ensure that the power to the host PC is off. It is best to remove the power cord from the PC during mechanical installation of the card.

To install CF (Compact Flash) memory, remove the memory from its protective packaging, and insert it into the CF memory holder on the V-114 PCI.

## Card Installation

1. Shut off and remove the power cord from the host PC.
2. Open the cover and ground yourself by touching the metal part of the chassis.
3. Insert the card into the slot on the host PC, and ensure that it is properly seated.
4. Check the position of the card to ensure that it has been seated properly before turning system power back on.
5. Fasten the card bracket to the PC to ensure grounding and mechanical stability.
6. If using the analog line ports, install the FXO line pigtails. Each pigtail handles two lines. One pigtail supports lines 1 and 3, the other, lines 2 and 4. Labels on the pigtails should be observed.
7. Connect the pigtails to the appropriate FXO line appearances **by xxxx**.
8. Replace the PC power cord and turn on the host PC.
9. Observe the green LED on the card. During host computer boot-up the light should flicker and within 1 minute should turn to steady green. The red LED Fault light should NOT come on steadily.

### To verify the basic operation of the V-114 hardware:

- Connect an analog phone to the FXS port.
- Lift the receiver and verify that you receive a dial tone.
- Dial 6001 to hear a voice prompt

### Information Required for Initial Configuration

To complete the configuration of the card, you will require the following information:

- The network address of the V-114 PCI card as assigned by your network administrator
- The address of a Time Server on your network (if present)
- The quantity and telephone numbers of analog telephone lines to be used for incoming and outgoing calls and their physical location
- The location and telephone number of a dedicated fax line (if present)
- The configuration information from your VOIP SIP provider, typically:
  - SIP account name
  - Password
  - Codec type

In addition, to set up telephone extensions, the names, extension numbers and department groupings of employees  
Locations of prerecorded menu audio files

**To connect to the integrated web-based interface:**

- Connect a notebook computer to the Ethernet port on the V-114 PCI using the supplied orange Ethernet cable. Any straight-through Ethernet cable can be used.
- Open the notebook's internet browser, (Firefox recommended) and in the address bar, type **192.168.1.2**.
- The \_\_\_\_\_ page of the V-114 PCI Firmware Administrative Console appears.
- In the Login field, type `admin`
- In the Password field, type `mysecret`

**Initial Configuration Steps**

The following steps should be followed in the sequence listed below as information from a previous step will affect menus and options available in subsequent steps. In the event that some information has been missed or must be changed, full editing capabilities are provided by the V-114 PCI card's interface.

**Steps (listed with Menu Selections):**

1. Configure System -> Maintenance -> Date and time (NTP)
2. Configure analog and VOIP Trunks -> Trunks/Lines
3. Configure PBX -> Dial Plans and then PBX Dialplans -> rules
4. Configure PBX -> Music on Hold
5. Configure PBX -> User templates
6. Configure Users -> Extensions
7. Configure PBX -> Time Frames
8. Configure PBX -> IVR Menus
9. Configure Users -> Conference Rooms
10. Configure Users -> Ring Groups
11. Configure PBX -> Incoming Calls
12. Configure PBX -> PBX Settings



## Problem Solving

The product has been designed to aid you in diagnosing and solving possible problems. These problems are rarely serious, usually incorrect configuration or a disconnected or damaged cable. If this section does not solve your problem, contact your supplier for information.

Perform these actions first:

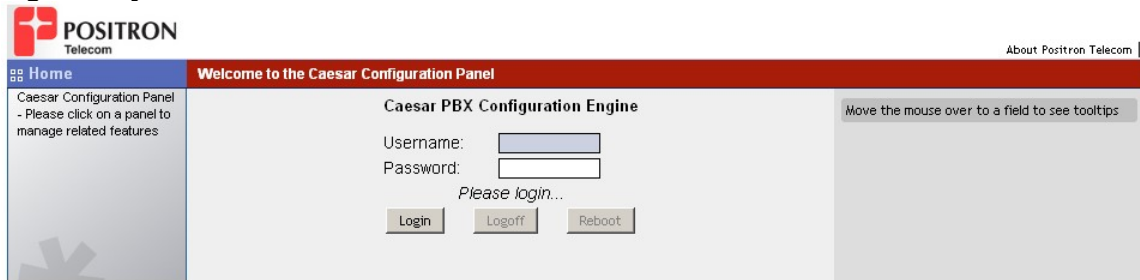
- Ensure that any associated network equipment is powered on  
Check the following:
- On the connector plate of the card ensure the green Power LED, located between the Ethernet connector and the FXS connector is ON steadily, and that the red Fault LED next to it is OFF.

## System Interface Home Screen

This screen controls access to the configuration system. Boxes are provided for the username and password of an administrator, as well as buttons to allow the logout and rebooting of the system.

Upon successful login, the “Connected!” message is displayed, and the Interface Menu Bar (see next page) along the left side of the screen is activated.

Figure 3 System Interface Home Screen



## ***Interface Menu Bar***

Provides the means to access different Configuration Panel features. Note: Only the browsers supporting the full Java implementation are supported. The Firefox browser is recommended.

**Figure 4 Interface Menu Bar**



## Extensions

Provides a short cut to allow the addition and removal of configuration components for any new phone. To add a phone, click the New button, enter the relevant information and click Save.

**User and Phone Configuration**

User Extensions:

- 1234 – Custom
- 6000 – Custom
- 6001 – Analog User 1
- 6002 – 6002
- 6050 – Check Voicemail
- 6060 – Conference Bridge
- 6090 – Call Queue
- i – Custom
- s – Custom
- t – Custom
- New Entry**

Extension:

Name:

Password:

VM Password:

Call Forward Busy Ext:

E-mail:

Caller ID:

Analog Phone:

Dial Plan:

Phone Serial:

Extension Options:

- Voicemail
- SIP
- CTI
- Call Waiting
- Can Reinvite
- External Ringing
- In Directory
- IAX
- Is Agent
- 3-Way Calling
- NAT

DTMFMode

Insecure

*Edit Codecs*

Figure 5 Extensions Screen

## Conferencing

MeetMe conference bridging allows quick, ad-hoc conferences with or without security.

**Conference Bridge Extensions Configuration**

Conference Bridges:

- 1234 – Custom
- 6001 – Analog User 1
- 6002 – 6002
- s – Custom
- i – Custom
- 6000 – Custom
- 6050 – Check Voicemail
- 6060 – Conference Bridge
- 6090 – Call Queue
- t – Custom
- New Entry

Extension:

Password Settings:

PIN Code:

Admin PIN Code:

Conference Room Options:

- Play hold music for first caller
- Enable caller menu
- Announce callers
- Quiet Mode
- Wait for marked user
- Set marked user

Figure 6 Conferencing Screen

## Voicemail

Allows configuration of general settings for voicemail.

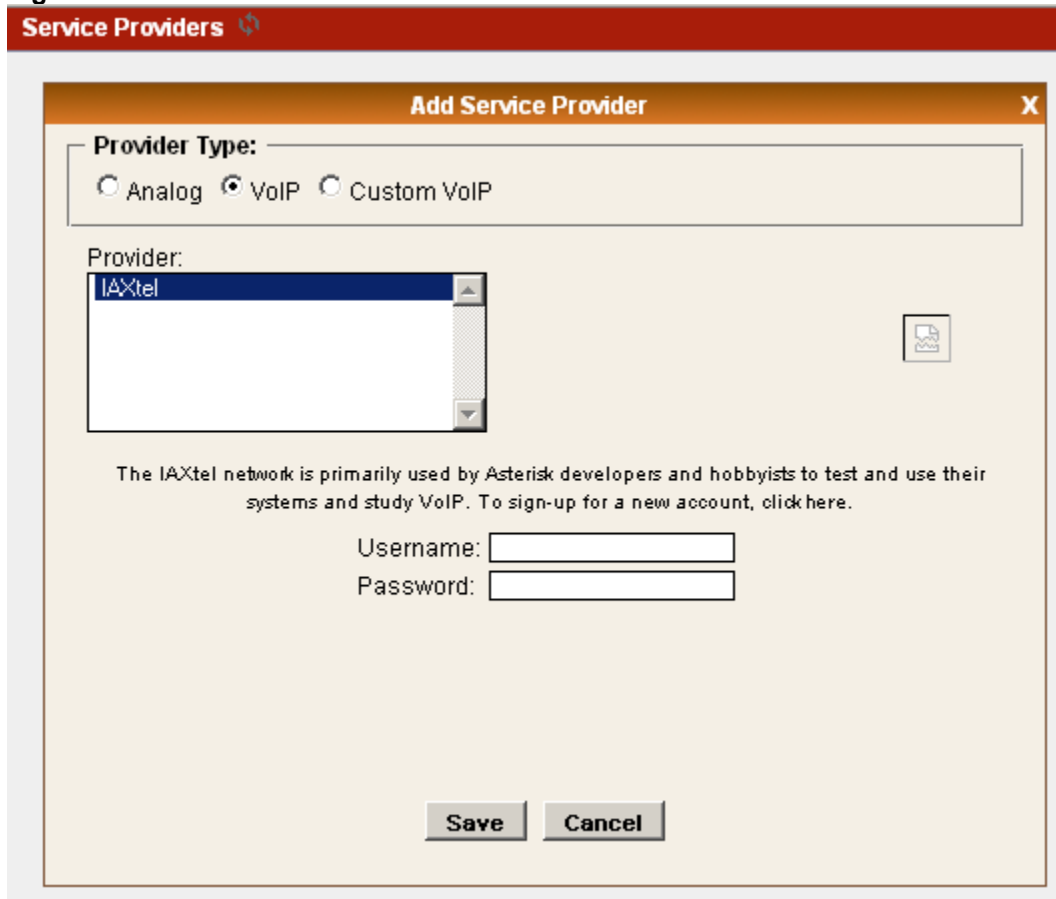
Figure 7 Voicemail Screen

The screenshot displays the 'Voicemail Configuration' window. At the top, a red header bar contains the text 'Voicemail Configuration' with a refresh icon. Below this, the 'VoiceMail Settings:' section is visible. On the left, a list of extensions is shown, with '6050 - Check Voicemail' selected and highlighted in blue. The right side of the window contains several configuration fields: 'Extension for checking messages:' is set to '6050'; 'Attach recordings to e-mail:' is checked; 'Max greeting (seconds):' is an empty text box; and 'Dial '0' for Operator:' is unchecked. Below these are two grouped sections: 'Message Options:' which includes 'Attach Format:', 'Maximum messages : (per folder)', 'Max message time:', and 'Min message time:', each with a dropdown menu; and 'Playback Options:' which includes four unchecked checkboxes: 'Send messages by e-mail only', 'Say message Caller-ID', 'Say message duration', 'Play envelope', and 'Allow users to review'. At the bottom right, there are 'Save' and 'Cancel' buttons.

## Service Providers

Service Providers are outbound lines used to allow the system to make calls to the real world. The outbound lines can be VoIP lines or traditional telephony lines. When connecting to service providers, the connection made is typically referred to as a “trunk.” A trunk can use regular analog lines or SIP to connect to a VoIP provider.

Figure 8 Service Providers Screen



The screenshot shows a web-based interface for adding a service provider. At the top, there is a red header bar with the text "Service Providers" and a small circular icon. Below this is a dialog box titled "Add Service Provider" with a close button (X) in the top right corner. The dialog box contains the following elements:

- Provider Type:** A section with three radio buttons: "Analog", "VoIP" (which is selected), and "Custom VoIP".
- Provider:** A dropdown menu showing "IAXtel" as the selected option. To the right of the dropdown is a small icon of a document with a magnifying glass.
- Text:** A paragraph of text: "The IAXtel network is primarily used by Asterisk developers and hobbyists to test and use their systems and study VoIP. To sign-up for a new account, click here."
- Form Fields:** Two input fields labeled "Username:" and "Password:".
- Buttons:** Two buttons at the bottom: "Save" and "Cancel".

## Setup Hardware

Example configuration and setup screens for Analog Cards. Because the V-114 is analog-only, the message “No Digital Hardware detected !!” is normal and should be ignored.

Figure 9 Digital Card Configuration Wizard

**Digital Card Configuration Wizard**

**Digital Hardware**

No Digital Hardware detected !!

Country : United States/North America

**Analog Hardware**

**FXS Ports :** Port 5  
**FXO Ports :** Ports 1 , 2 , 3 , 4

Apply Changes Cancel Changes



## Calling Rules

The Calling Rules (referred to as a Dial Plan) define dialing permissions and least-cost routing rules.

**Figure 10 Calling Rules Screen**

Calling Rules

List of DialPlans:     Allow Parked Calls

List of Calling Rules in the selected DialPlan

A Calling Rule is not defined

Rule Name:

Place this call through:

Dialing Rules: If the number begins with  and followed by  digits  or more (define a custom pattern)

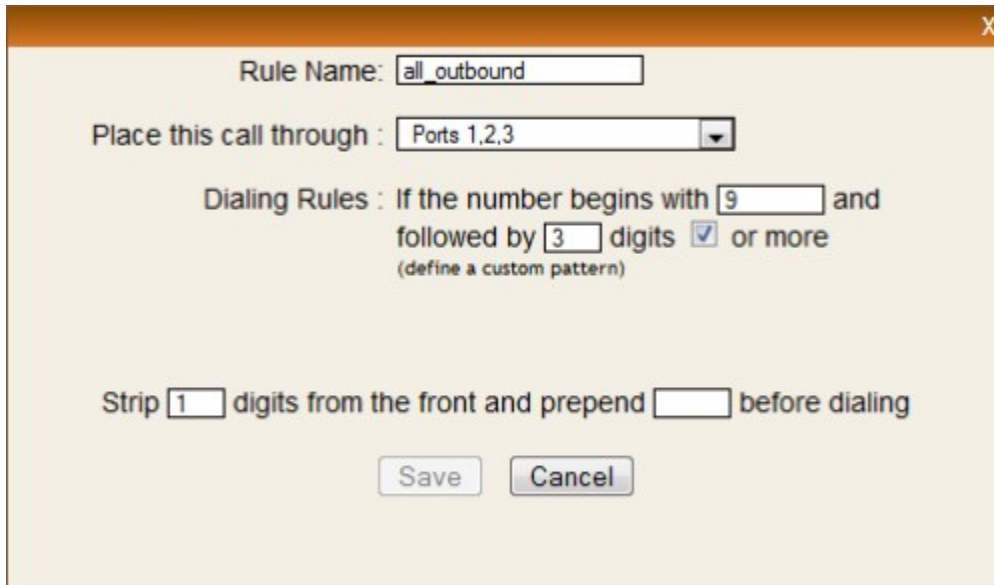
Strip  digits from the front and prepend  before dialing

(Copied from <http://www.packtpub.com/article/routing-rules-in-asterisknow-calling-rules-tables>)

An interesting feature of a PBX is the ability to support multiple dial plans, meaning that you are able to create various dial-plan logics, associate different calling rules to each dial plan, and assign users to specific dial plan.

Essentially, from the system's point of view, any dial attempt that doesn't match a Calling Rule will be considered an internal call, and thus, the system will try to route the call to an internal resource—e.g. another extension or a feature code.

Edit one of these rules to get acquainted with the call rule dialog box. Click the Edit link of the all\_outbound rule (rule 1). The following dialog box should appear on your screen:



Rule Name:

Place this call through :

Dialing Rules : If the number begins with  and followed by  digits  or more  
(define a custom pattern)

Strip  digits from the front and prepend  before dialing

Every call made from an IP phone connected to the PBX is processed by the routing rules. The processing is performed in the following order:

- \* The system grabs the dialed number and tries to match it to the prefix defined in the Routing Rule. In this dialog, the prefix is 9.
- \* It then verifies the number of digits suffixing the prefix. In this example, any number of digits that is 3 or more is considered a valid number to be assigned to this route.
- \* Now, before actually routing the call to the designated service provider, The system can remove prefixes and/or prefix numbers to the dialed number. In this example it will only remove a single prefixing digit (9) and then pass the call to your service provider–Ports 1,2,3.

The above process happens for every call that is made by a phone connected to the PBX. If the process fails all the rules defined in the Routing Table, the system assumes that the call is supposed to be routed internally. If internal routing fails, the call will fail and a fast-busy tone will be heard from your IP phone.

Some IP phones also indicate the SIP error message that was received. If routing fails, the normal error that you may encounter would be error 404 – NOT FOUND.

## ***Incoming Calls***

Screen used to define how incoming calls should be handled and to configure DID (Direct inward Dialing).

Choose action and provider from the Route drop-down menu.

**Figure 11 Incoming Calls Screen**

The screenshot shows a web-based configuration window titled "Incoming Calls" with a refresh icon. The window contains a form with the following elements:

- A "Route" dropdown menu with the selected option "All Unmatched incoming calls".
- A "from provider" dropdown menu.
- A "to extension" dropdown menu.
- "Save" and "Cancel" buttons.
- An "Add an Incoming Rule" button at the bottom of the window.

Calls may be configured to be answered by the PBX system's IVR, or go directly to a specific user's extension (DID). By configuring the incoming calls, the administrator can configure how the system directs these calls. It is important to note that a PBX can have many DID numbers that can be from different area codes or even different countries.

Example:

## Voice Menus

Menus allow for more efficient routing of calls from incoming callers. Also known as IVR (Interactive Voice Response) menus or Digital Receptionist.

Enter the name of the Voice Menu, and if needed, an Extension.

Click “Add new Step” and enter the appropriate command.

Steps can be re-sequenced using the Up and Down buttons.

The Action drop-down menu allows choosing actions from a list for each button the caller presses.

**Figure 12 Voice Menus Configuration Screen**

Voice Menus Configuration

Voice Menus:

- of
- New Entry

Name:  Extension:   Allow Dialing other Extensions?

Steps:

- Answer the Call

Up

Down

Add new Step Delete selected Step

Key	Action	'Keypress' Events
0	Disabled	
1	Disabled	
2	Disabled	
3	Disabled	
4	Disabled	
5	Disabled	
6	Disabled	
7	Disabled	

New Delete Save Cancel

## Call Parking

Screen to configure call parking features

By default extension 700 is used to park a call. While in a conversation, press # to initiate a transfer, then dial 700.

The PBX will name the current parking extension from the specified range (generally 701 – 720). The user can now hang up and the caller will be left on hold at the “parked” extension. When the “parked” extension is called from a different phone, the conversation can be continued. If a caller has been parked for a longer time than the specified time limit then the PBX will again ring the originally dialed extension.

**Figure 13 Call Parking Preferences Screen**

**Call Parking Preferences**

Extension to Dial for Parking Calls:

What extensions to park calls on:  (Ex: '701-720')

Number of seconds a call can be parked for:

## Ring Groups

Screen which define Ring Groups to dial more than one extension,.

Enter the name of the new Ring Group, and choose from the Strategy dropdown menu, then add or remove members using the left and right arrows. Choosing the >> >>> button removes all members.

A new extension can be defined for the ring group, and the number of seconds to allow ringing can be specified.

Figure 14 Ring Groups Screen

**Ring Groups**

**Add Ring Group** X

Name:

Strategy: Ring all

**Ring Group Members**

**Available Channels**

←

→

»»

Extension for this ring group (optional) :

Ring (each/all) for these many seconds :

If not answered

Goto Voicemail of this user

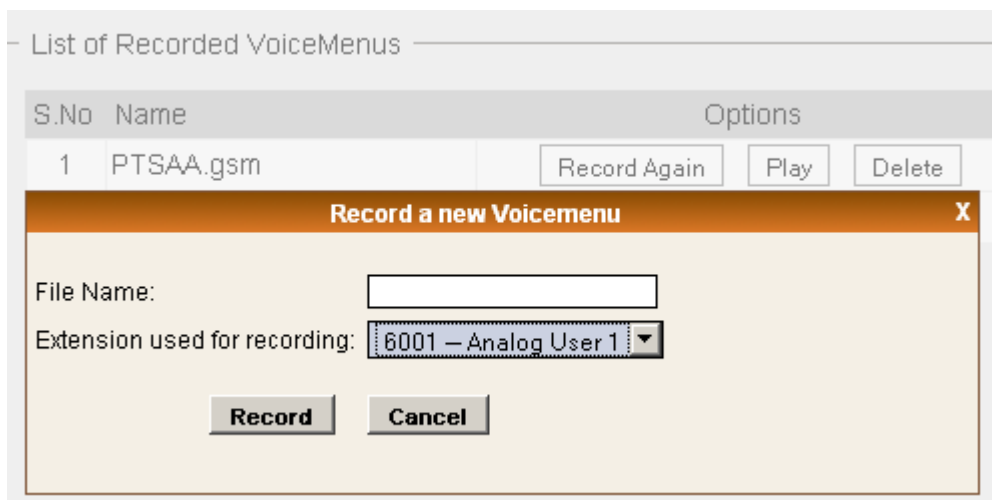
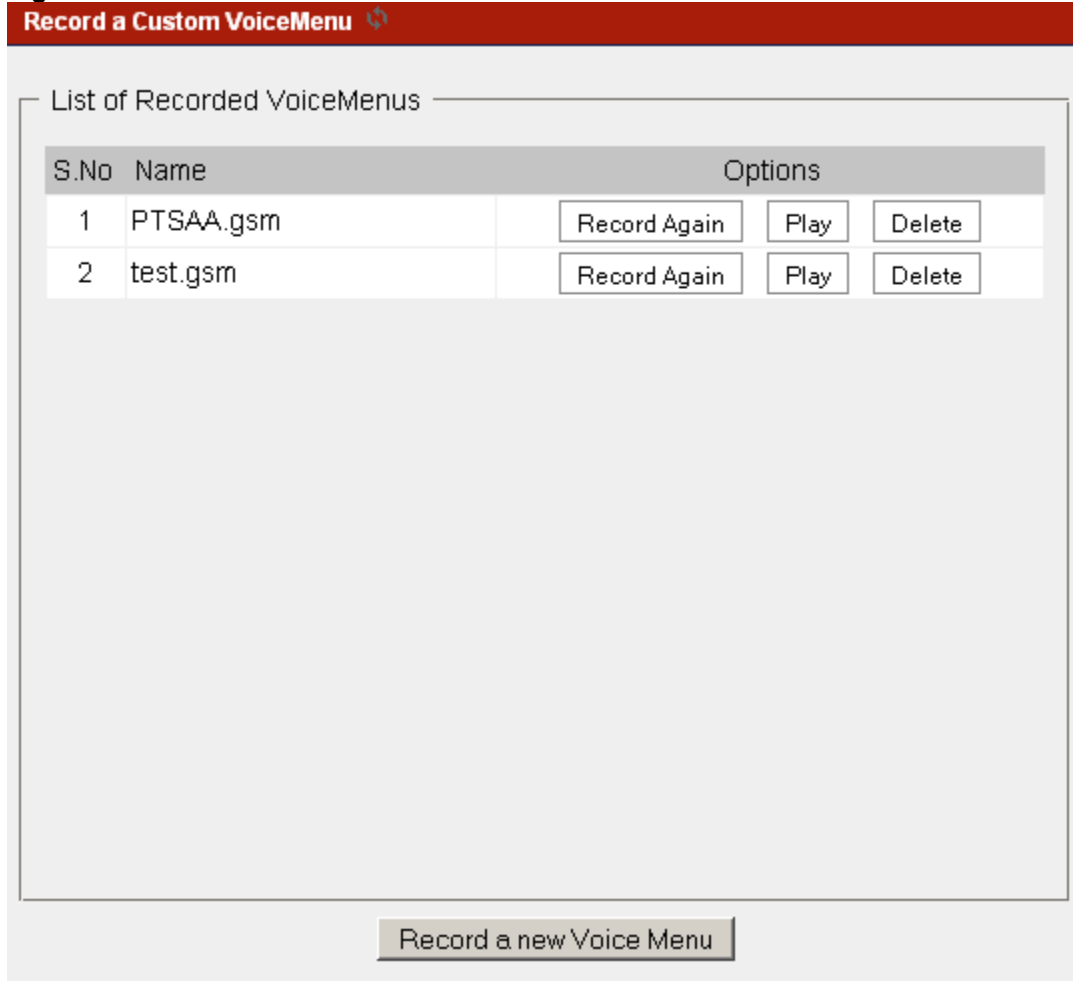
Goto an IVR menu

HangUp

## Record a (Voice)Menu

Allows you to record custom voicemenus from a handset.

Figure 15 Record a Custom VoiceMenu Screen

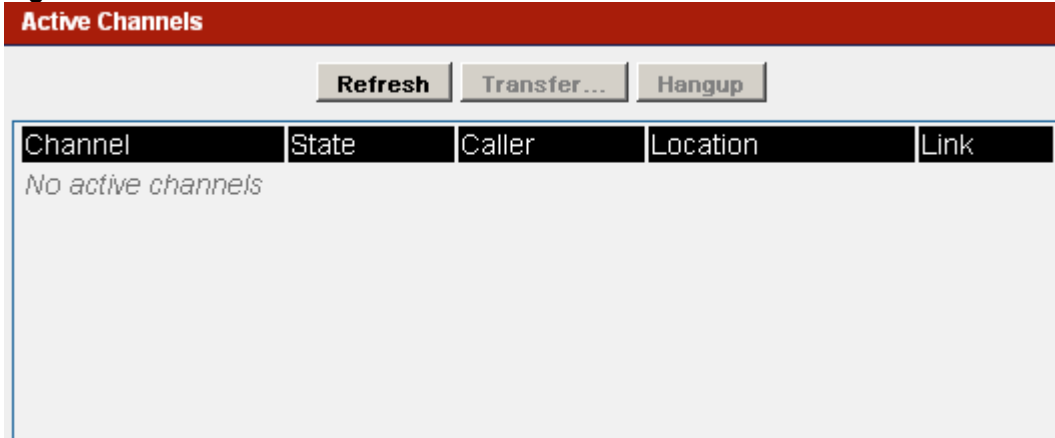


## Active Channels

Screen used monitor active channels.

When looking for info on Active Channels, a number of posts indicated that some channels appear as active in Asterisk even though no calls are being made. We should investigate this. - RC

Figure 16 Active Channels Screen





## **System Information**

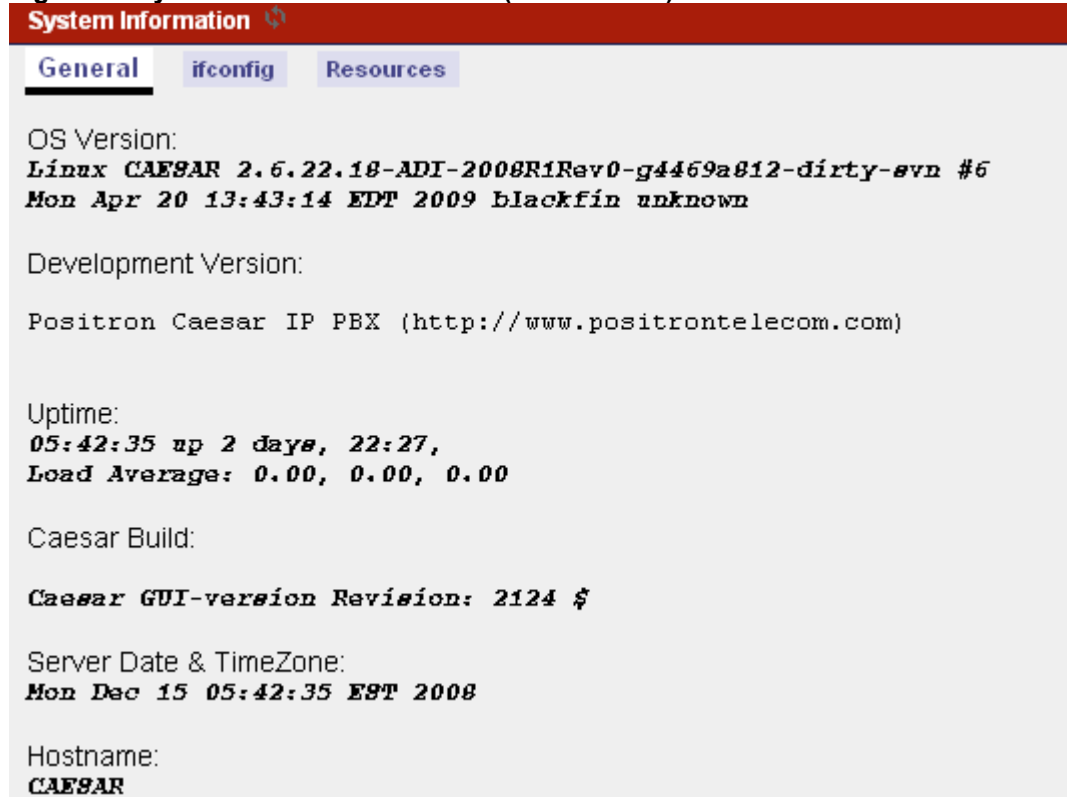
Provides for the display of system information. Three buttons: General, ifconfig and Resources are available.

Information under the General tab includes Linux and system information

ifconfig Tab: Shows the network configuration and IP address assignment

Resources Tab: Memory usage of the system

**Figure 17 System Information Screens (General Tab)**



The screenshot shows a web interface titled "System Information" with a red header bar. Below the header are three tabs: "General" (selected), "ifconfig", and "Resources". The content area displays system information in a monospaced font:

```
OS Version:  
Linux CAESAR 2.6.22.18-ADI-2008R1Rev0-g4469a812-dirty-svn #6  
Mon Apr 20 13:43:14 EDT 2009 blackfin unknown  
  
Development Version:  
  
Positron Caesar IP PBX (http://www.positrontelecom.com)  
  
Uptime:  
05:42:35 up 2 days, 22:27,  
Load Average: 0.00, 0.00, 0.00  
  
Caesar Build:  
  
Caesar GUI-version Revision: 2124 $  
  
Server Date & TimeZone:  
Mon Dec 15 05:42:35 EST 2008  
  
Hostname:  
CAESAR
```

Figure 18 System Information Screens (ifconfig Tab)

The screenshot shows the 'System Information' window with the 'ifconfig' tab selected. It displays the configuration for two network interfaces: eth0 and lo.

```

ifconfig:

eth0      Link encap:Ethernet  HWaddr 00:50:C2:69:42:24
          inet addr:172.18.0.25  Bcast:172.18.15.255  Mask:255.255.240.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:436912 errors:0 dropped:0 overruns:0 frame:0
          TX packets:6979 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:72654307 (69.2 MiB)  TX bytes:6966486 (6.6 MiB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
    
```

Figure 19 System Information Screens (Resources Tab)

The screenshot shows the 'System Information' window with the 'Resources' tab selected. It displays disk usage and memory usage information.

Disk Usage:

Filesystem	1k-blocks	Used	Available	Use%	Mounted on
/dev/mtdblock1	249856	19528	230328	8%	/
/dev/mtdblock1	249856	19528	230328	8%	/persistent

Memory Usage:

	total	used	free	shared	buffers
Mem:	62396	29852	32544	0	0

## Logs

Select the date and click the Go button

**Figure 20 Caesar Log Messages Screen**




## CDR Reader

Provides for the display of CDRs (Call Detail Records).

Choose the number of lines displayed through the dropdown menu, and use the prev and next buttons to move within the file.

Figure 21 CDR Viewer Screen

**CDR viewer** 

CDR viewer << prev next >>

[Download Records Here](#)

Viewing 1-10 of 16 (most recent first) View:

	Account Code	Source	Destination	Dest. Context	Caller ID	Channel	Dest. Channel	Last app.	Last data	Start time	Answer Time	End Time	Duration	Billable seconds	Disposition	
1			s	numberplan-custom-1	Analog User 1	Zap/5-1		Hangup		2008-12-12 12:15:46	2008-12-12 12:15:52	2008-12-12 12:16:09	23	17	ANSWERED	
2			s	numberplan-custom-1	Analog User 1	Zap/5-1		Hangup		2008-12-12 12:16:16	2008-12-12 12:16:20	2008-12-12 12:16:38	22	18	ANSWERED	
3		6002	1234	numberplan-custom-1	""6002""<6002>	SIP/6002-031f9590		AgentLogin		2008-12-12 13:11:01	2008-12-12 13:11:01	2008-12-12 13:11:32	31	31	ANSWERED	
4			1234	numberplan-custom-1	Analog User 1	Zap/5-1		AgentLogin		2008-12-12 13:11:52	2008-12-12 13:11:55	2008-12-12 13:12:11	19	16	ANSWERED	
5		6002	1234	numberplan-custom-1	""6002""<6002>	SIP/6002-031e13d8		AgentLogin		2008-12-12 13:12:12	2008-12-12 13:12:12	2008-12-12 13:12:49	37	37	ANSWERED	
6		6002	1234	numberplan-custom-1	""6002""<6002>	SIP/6002-00d6b3f0		AgentLogin	6090	2008-12-12 13:13:09	2008-12-12 13:13:09	2008-12-12 13:13:13	4	4	ANSWERED	
7			6090	numberplan-custom-1	Analog User 1	Agent/6002	Agent/6002	Queue	6090	2008-12-12 13:16:10	2008-12-12 13:16:14	2008-12-12 13:16:39	29	25	ANSWERED	
8			6090	numberplan-custom-1	Analog User 1	Agent/6002	Agent/6002	Queue	6090	2008-12-12 13:17:29	2008-12-12 13:17:39	2008-12-12 13:19:19	110	100	ANSWERED	
9		6002	1234	numberplan-custom-1	""6002""<6002>	SIP/6002-031e2b1c		AgentLogin	6090	2008-12-12 13:14:35	2008-12-12 13:14:35	2008-12-12 13:19:24	289	289	ANSWERED	
10			6001	default		Local/6001@default-c376	2	Zap/5-1	Dial	Zap/5 20	2008-12-12 14:00:06	2008-12-12 14:00:12	2008-12-12 14:00:13	7	1	

## File Editor

Allows the review and editing of configuration screens.

Choose the configuration file using the dropdown menu.

Figure 22 File Editor Screen



The web configuration system allows for most of the configuration options for the system. Some administrators may choose to edit the configuration files (SIP.conf) manually, using editors.

Note: Any changes made manually will be discarded if the GUI is subsequently used.

## **CLI**

Allows running Command Line Interface commands. (For a list of many commands, see the chapter: List of Command Line Commands)

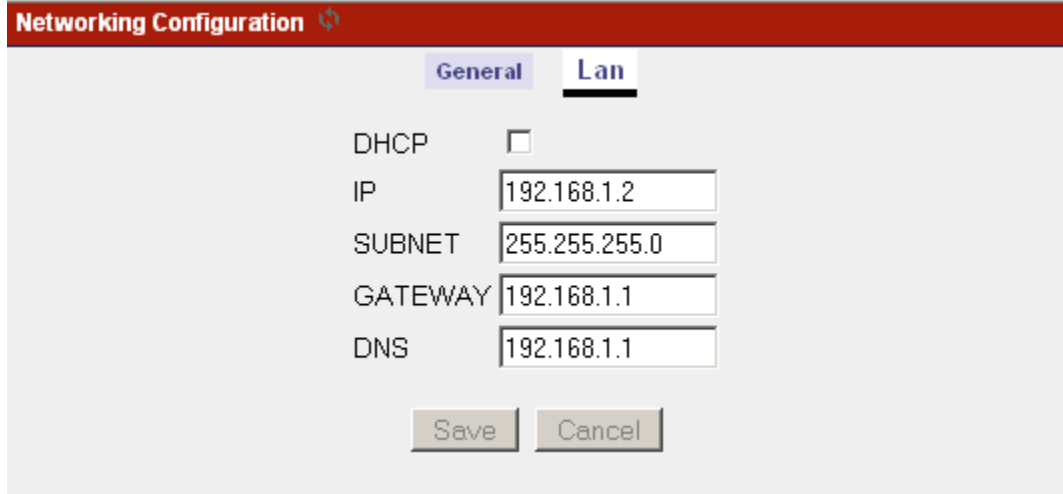
**Figure 23 Command Line Interface Screen**



## Networking

Allows for the review and editing of networking parameters.

Figure 24 Networking Configuration Screen



The screenshot shows a web-based configuration interface for networking. At the top, there is a red header bar with the text "Networking Configuration" and a refresh icon. Below the header, there are two tabs: "General" and "Lan". The "Lan" tab is currently selected. The configuration fields are as follows:

DHCP	<input type="checkbox"/>
IP	192.168.1.2
SUBNET	255.255.255.0
GATEWAY	192.168.1.1
DNS	192.168.1.1

At the bottom of the configuration area, there are two buttons: "Save" and "Cancel".

DHCP is to enable DHCP Client Mode. In this way, the V-114 PCI will receive its IP address from the DHCP server on the LAN.

Note: this is NOT recommended.

## Backup

Manages the configuration of Backups. Allows for the creation on new files and restoration of settings from existing files.

The format of the file name is: **xxx**

**Figure 25 Backup/Restore Configurations Screen**

The screenshot displays the 'Backup / Restore Configurations' interface. At the top, a red header bar contains the title 'Backup / Restore Configurations' and a refresh icon. Below this, a section titled 'List of Previous Configuration Backups' contains the message: 'No Previous Backup configurations found !!' and 'Please click on the 'Take a BackUp' button to take a backup of the current system configuration'. A modal dialog box titled 'Create New Backup' is open, featuring a text input field for 'File Name:', a note '(do not enter any extension )', and two buttons: 'Backup' and 'Cancel'. Below the dialog, a 'Take a Backup' button is visible. At the bottom, a section titled 'Fetch a remote backup image and make it locally available:' includes radio buttons for 'HTTP URL' (selected) and 'TFTP Server', an input field for 'HTTP URL:', and a 'Go' button.



## Update Flash

Allows for the updating of the system firmware from the Internet or a local file (via local TFTP Server).

The default settings for the local file are: **xxxxx**

A customer password is required.

**Note: It is recommended to backup the current configuration first, as a factory reset may be required.**

Figure 26 Update Appliance Firmware Screen

The figure displays two screenshots of the 'Update Appliance Firmware' web interface. Both screenshots feature a red header bar with the text 'Update Appliance Firmware' and a refresh icon. The main content area is a light gray box with a border. The top screenshot shows the 'Download image from a :' section with two radio buttons: 'HTTP URL' (selected) and 'TFTP Server'. Below the radio buttons is a text input field labeled 'HTTP URL : ' and a 'Go' button. The bottom screenshot shows the same section but with 'TFTP Server' selected. It includes two text input fields: 'TFTP Server : ' containing '192.168.1.1' and 'File Name : ' containing 'ulmage', both followed by a 'Go' button.

## Options

Allows the review and editing of global settings which affect all users, and provide default settings for new users.

**Note: The Factory Reset settings will reset the username, password and IP address**

Figure 27 Admin Settings Screen

The screenshot displays the 'Admin Settings' interface with a red header bar containing 'Admin Settings' and 'Change Password'. The settings are organized into several sections:

- Local Extension Settings:**
  - Local Extensions are: 4 digits (dropdown)
  - First Extension Number: 6000 (text input)
  - Operator Extension: Analog User 1 (6001) (dropdown)
  - Allow analog phones to be assigned to multiple extensions
  - Allow extensions to be AlphaNumeric (SIP/IAX users)
- Call Forward Busy Settings:**
  - Call Forward Busy Extension: (empty text input)
- Default Settings for a New User:**
  - Is Agent
  - In Directory
  - SIP
  - Call Waiting
  - VoiceMail Password (text input)
  - Voicemail
  - CTI
  - IAX
  - 3-Way Calling
- Factory Reset:**
  - Factory Reset (button)

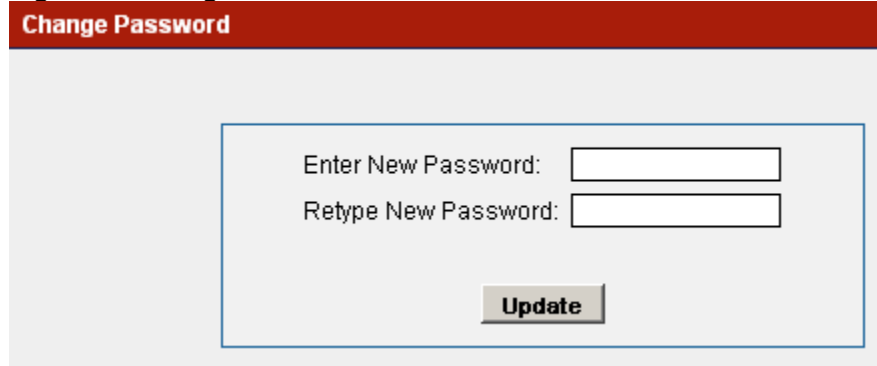
At the bottom of the screen are 'Save' and 'Cancel' buttons.

## ***Change Password***

Allows the administrator to change the system configuration access password.

**Note: This step is strongly recommended.**

**Figure 28 Change Password Screen**



Change Password

Enter New Password:

Retype New Password:

**Update**

### Analog Options

The Zap Channel Module provides an interface layer between Asterisk on the one side, and the Zaptel interface drivers on the other side. These drivers, in turn, provide the ability to use interface cards to connect your PBX to traditional digital and analog telephone equipment.

**Figure 29 Configure the Zap Channel Screen**

The screenshot shows a web interface titled "Configure the Zap channel" with a red header bar. The interface contains the following configuration fields:

- language:
- Context:
- switchtype:
- nsf:
- pridialplan:
- prilocaldialplan:
- internationalprefix:
- nationalprefix:
- localprefix:
- privateprefix:
- unknownprefix:
- resetinterval:
- overlapdial:
- priindication:
- priexclusive:
- prtimer:

## SIP Options

The Session Initiation Protocol (SIP) is a signalling protocol, widely used for setting up and tearing down multimedia communication sessions such as voice and video calls over the Internet. Other feasible application examples include video conferencing, streaming multimedia distribution, instant messaging, presence information and online games. The protocol can be used for creating, modifying and terminating two-party (unicast) or multiparty (multicast) sessions consisting of one or several media streams. The modification can involve changing addresses or ports, inviting more participants, adding or deleting media streams, etc.

**Figure 30 Session Initiation Protocol Configuration Screen**

**SIP (Session Initiation Protocol) Configuration**

Context:

Realm for digest authentication:

UDP Port to bind to:

IP address to bind to:

Domain:

Allow guest calls:

Overlap dialing support:

Allow Transfers:

Enable DNS SRV lookups (on outbound calls):

Pedantic:

**Type of Service**

TOS for Signalling packets:

TOS for RTP audio packets:

TOS for RTP video packets:

Max Registration/Subscription Time:

Min Registration/Subscription Time:

Default Incoming/Outgoing Registration Time:

Min RoundtripTime (T1 Time):

Override Notify MIME Type:

Time between MWI Checks:

Music On Hold Interpret:

Music On Hold Suggest:

Language:

Enable Relaxed DTMF:

## ***IAX Options***

IAX (Inter-Asterisk Exchange Protocol) is a communications protocol for setting up interactive user sessions. IAX is similar to SIP (Session Initiation Protocol ). It was developed as a robust, user-friendly alternative to SIP, MGCP (Media Gateway Control Protocol) and RTP (Real-Time Transport Protocol).

IAX is well suited for control and transmission of streaming media and VoIP (Voice over Internet Protocol). Because IAX works well with all codecs, it is adaptable to almost any type of data transmission. Communications bandwidth and latency are minimized by means of multiplexing and trunking. IAX works well in conjunction with firewalls and allows the transmission of several data channels over one link. IAX uses the same path for both signaling and media.

In IAX, handshaking is not required when a call is initiated, which renders the communication vulnerable to denial-of-service (DOS) attacks. However, the risk can be reduced by the use of firewalls, passwords and other standard security countermeasures.

**Figure 31 Inter Asterisk Exchange Protocol Configuration Screen**

**IAX (Inter Asterisk Exchange Protocol) Configuration**

Bind Port:

Bind Address:

IAX1 Compatibility:

No Checksums:

Delay Reject:

ADSI:

**Call Detail Records**

AMA Flags:

Accountcode:

Music On Hold Interpret:

Music On Hold Suggest:

Language:

Bandwidth:

**Jitter Buffer**

Enable Jitter Buffer:

Force Jitter Buffer:

Drop Count:

Max Jitter Buffer:

Max Interpolation Frames:

Resync Threshold:

Max Excess Buffer:

Min Excess Buffer:

Jitter Shrink Rate:

# **Appendix 1**

## **List of Command Line Commands**



## **List of Command Line Commands**

### **General commands**

- \* !<command>: Executes a given shell command
- \* abort halt: Cancel a running halt
- \* add extension: Add new extension into context
- \* add ignorepat: Add new ignore pattern
- \* add indication: Add the given indication to the country
- \* debug channel: Enable debugging on a channel
- \* dont include: Remove a specified include from context
- \* help: Display help list, or specific help on a command
- \* include context: Include context in other context
- \* load: Load a dynamic module by name
- \* Asterisk CLI logger reload: Reopen log files. Use after rotating the log files.
- \* no debug channel: Disable debugging on a channel
- \* originate: originate a call.
- \* remove extension: Remove a specified extension
- \* remove ignorepat: Remove ignore pattern from context
- \* remove indication: Remove the given indication from the country
- \* save dialplan: Overwrites your current extensions.conf file with an exported version based on the current state of the dialplan. A backup copy of your old extensions.conf is not saved. The initial values of global variables defined in the [globals] category retain their previous initial values; the current values of global variables are not written into the new extensions.conf. (:exclaim:) Using "save dialplan" will result in losing any comments in your current extensions.conf.
- \* set verbose: Set level of verbosity
- \* show agents: Show status of agents
- \* show applications: Shows registered applications
- \* show application: Describe a specific application
- \* show channel: Display information on a specific channel
- \* show channels: Display information on channels
- \* show codecs: Display information on codecs
- \* show conferences: Show status of Asterisk conferences
- \* show dialplan: Show dialplan
- \* show hints: Show registered hints
- \* show image formats: Displays image formats
- \* show indications: Show a list of all country/indications
- \* show locals: Show status of local channels
- \* show manager command: Show manager commands
- \* show manager connect: Show connected manager users
- \* show parkedcalls: Lists parked calls
- \* show queues: Show status of Asterisk queues, see details here
- \* show switches: Show alternative switches
- \* show translation: Display translation matrix
- \* soft hangup: Request a hangup on a given channel

- \* show voicemail users: List defined voicemail boxes
- \* show voicemail zones: List zone message formats
- \* devstate change: Change state of a custom device (new in Asterisk 1.6.0)

### **Server management commands**

- \* restart gracefully: Restart Asterisk gracefully, i.e. stop receiving new calls and restart at empty call volume
- \* restart now: Restart Asterisk immediately
- \* restart when convenient: Restart Asterisk at empty call volume
- \* reload: Reload configuration
- \* stop gracefully: Gracefully shut down Asterisk, i.e. stop receiving new calls and shut down at empty call volume
- \* stop now: Shut down Asterisk immediately
- \* stop when convenient: Shut down Asterisk at empty call volume
- \* Asterisk CLI dialplan reload: Reload extensions and only extensions (formerly extensions reload)
- \* unload: Unload a dynamic module by name
- \* show modules: List modules and info about them
- \* show uptime: Show uptime information
- \* show version: Display Asterisk version info

### **AGI commands**

- \* show agi: Show AGI commands or specific help
- \* dump agihtml: Dumps a list of agi command in html format

### **Database handling commands**

- \* database del: Removes database key/value
- \* database deltree: Removes database keytree/values
- \* database get: Gets database value
- \* database put: Adds/updates database value
- \* database show: Shows database contents
- \* database showkey: Shows database contents: An alternative to showing keys by family with database show, this command shows all the families with a particular key

### **IAX Channel commands**

- \* iax2 debug: Enable IAX debugging
- \* iax2 no debug: Disable IAX debugging
- \* iax2 set jitter: Sets IAX jitter buffer
- \* iax2 show cache: Display IAX cached dialplan
- \* iax2 show channels: Show active IAX channels
- \* iax2 show netstats: Show network and jitter buffer statistics for active IAX calls
- \* iax2 show peers: Show defined IAX peers
- \* iax2 show registry: Show IAX registration status

- \* iax2 show stats: Display IAX statistics
- \* iax2 show users: Show defined IAX users
- \* iax2 trunk debug: Request IAX trunk debug
  
- \* iax debug: Enable IAX debugging
- \* iax no debug: Disable IAX debugging
- \* iax set jitter: Sets IAX jitter buffer
- \* iax show cache: Display IAX cached dialplan
- \* iax show channels: Show active IAX channels
- \* iax show peers: Show defined IAX peers
- \* iax show registry: Show IAX registration status
- \* iax show stats: Display IAX statistics
- \* iax show users: Show defined IAX users
- \* init keys: Initialize RSA key passcodes
- \* show keys: Displays RSA key information

### **H323 channel commands**

- \* h.323 debug: Enable chan\_h323 debug
- \* h.323 gk cycle: Manually re-register with the Gatekeeper
- \* h.323 hangup: Manually try to hang up a call
- \* h.323 no debug: Disable chan\_h323 debug
- \* h.323 no trace: Disable H.323 Stack Tracing
- \* h.323 show codecs: Show enabled codecs
- \* h.323 show tokens: Manually try to hang up a call
- \* h.323 trace: Enable H.323 Stack Tracing

### **SIP channel commands**

- \* sip debug: Enable SIP debugging
- \* sip no debug: Disable SIP debugging
- \* sip reload: Reload sip.conf (added after 0.7.1 on 2004-01-23)
- \* sip show channels: Show active SIP channels
- \* sip show channel: Show detailed SIP channel info
- \* sip show inuse: List all inuse/limit
- \* sip show peers: Show defined SIP peers (clients that register to your Asterisk server), see details here
- \* sip show registry: Show SIP registration status (when Asterisk registers as a client to a SIP Proxy)
- \* sip show subscriptions: Lists all sip presence (busy lamp indication) subscriptions
- \* sip show users: Show defined SIP users

### **Zap channel command**

- \* zap destroy channel: Destroy a channel

- \* zap show channels: Show active zapata channels
- \* zap show channel: Show information on a channel
- \* zap show status: lists all the Zaptel spans. A span will appear here whether or not its channels are configured with chan\_zap.
- \* zap show cadences: Show the configured ring cadences (available e.g with Zap/1r2).
- \* zap set swgain(<= 1.6): set the (software) gain for a hannel. Temporary equivalents of rxgain and txgain in zapata.conf.
- \* zap set hwgain(<=1.6): set the hardware gain for channels that support it.
- \* zap set dnd(<=1.6) set a channel's do-not-disturb mode on or off.

### **Console channel commands**

- \* dial : Dials the given extension, if specified, from the console. Can be used to initiate a call, or to dial digits during an existing call.
- \* Asterisk CLI answer: Answer a call if one is currently ringing on the console.
- \* Asterisk CLI hangup: Hangup the call if there is currently one on the console.

### **Asterisk channel MGCP commands**

- \* mgcp audit endpoint: Audit specified MGCP endpoint
- \* mgcp debug: Enable MGCP debugging
- \* mgcp no debug: Disable MGCP debugging
- \* mgcp show endpoints: Show defined MGCP endpoints

### **skinny channel commands**

- \* skinny debug: Enable Skinny debugging
- \* skinny no debug: Disable Skinny debugging
- \* skinny show lines: Show defined Skinny lines per device

### **Asterisk channel CAPI commands**

- \* capi debug: Enable CAPI debugging
- \* capi no debug: Disable CAPI debugging
- \* capi info: Show CAPI info

### **Sirrix ISDN channel commands**

- \* srx reload: Reload channel driver configuration; active calls are not being terminated!
- \* srx show ccmsgs: Disable / enable output of incoming callcontrol messages.
- \* srx show chans: Show info about B-Channels
- \* srx show globals: Show info about global settings
- \* srx show groups: Show info about configured groups
- \* srx show layers: Show info about ISDN stack (Layer 1, 2, 3)

- \* `srx show sxpvts`: Show private info about active channels
- \* `srx show timers`: Show info about running timers

## **Appendix 2**

### **Acronyms**

## **Acronyms**

ADSI – Analog Display Services Interface  
AMA – Automated Message Accounting  
ANI – Automatic Number Identification  
CDR - Call Detail Record  
CID - Caller ID  
CTI - Computer Telephony Integration  
DID - Direct Inward Dialing  
DNS - Domain Name System  
DTMF - Dual-tone multi-frequency  
FXO - Foreign Exchange Office  
FXS - Foreign Exchange Station  
GUI – Graphical User Interface  
IAX – Inter Asterisk Exchange  
IP – Internet Protocol  
ITSP - Internet Telephony Service Provider  
IVR - Interactive Voice Response  
LAN – Local Area Network  
MAC – Media Access Control  
MIME - Multipurpose Internet Mail Extensions  
MTU - Maximum Transmission Unit  
MWI – Message Waiting Indicator  
NAT - Network Address Translation  
NTP – Network Time Protocol  
OS - Operating System  
PBX – Private Branch Exchange  
PIN - Personal Identification Number  
RFC - Request for Comments  
RTP - Real-time Transport Protocol  
RTP - Real-time Transport Protocol  
RX – Receive  
SIP - Session Initiation Protocol  
TOS – Type of Service  
TTL – Time to Live  
TX - Transmit  
UDP - User Datagram Protocol  
URI - Uniform Resource Identifier  
VOIP – Voice Over Internet Protocol  
Zap – Zaptel