TAINET

VENUS Series
VoIP Gateway

SIP

USER'S MANUAL

The Professional Partner

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ABOUT THIS MANUAL

This section guides users on how to use the manual effectively. The manual contains information needed to install, configure, and operate TAINET's VENUS Series VoIP Gateway. The summary of this manual is as follows:

Chapter 1: Overview

Chapter 2: Hardware Installation

Chapter 3: Configuration and Management

Chapter 4: Web Base Management

Chapter 5: Edit Configuration File

Chapter 6: Maintenance and Troubleshooting

Appendix A: Supplemental Telephone Features

Appendix B: Abbreviation

Appendix C: Flow Chart for Code Determination

SYMBOLS USED IN THIS MANUAL

3 types of symbols may be used throughout this manual. These symbols are used to advise the users when a special condition arises, such as a safety or operational hazard, or to present extra information to the users. These symbols are explained below:

Warning:
This symbol and associated text are used when death or injury to the user may result if operating instructions are not followed properly.

Caution:
This symbol and associated text are used when damages to the equipment or impact to the operation may result if operating instructions are not followed properly.

Note:
This symbol and associated text are used to provide the users with extra information that may be helpful when following the main instructions in this manual.

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Chapter 1. Overview

1.1 Product Overview

TAINET VENUS Series, a critical part of the Next Generation Network (NGN), functions as an interface gateway unit between the legacy Public Switched Telephone Network (PSTN) and the IP packet network by performing the conversion of the analog voice traffic to/from the IP-based media stream.

VENUS Series is a Voice-over-IP (VoIP) Gateway that provides cost-effective and quality voice service over global IP packet network (Internet or Intranets) for end-users, and, in the meanwhile, lowers the installation and maintenance effort. With analog voice interface connecting to user's existing telephone handset or PABX, and the Ethernet interface connecting to the service providers' IP network, VENUS Series bridges the PSTN and IP network.

Depending on the installed firmware, VENUS Series supports both Session Initiation Protocol (SIP) and Media Gateway Control Protocol (MGCP), which comply with IETF RFC 3261 and RFC 3435 respectively. This document is only for VENUS Gateways installed with SIP firmware.

VENUS Gateway allows traditional PSTN users to make phone calls over the Internet without changing their telephone operating procedure. Using a Proxy Server or SoftSwitch together with the VENUS Series, service providers or telecom companies are able to provision integrated voice and data service over the IP network to their customers. Features like billing, accounting and network management supported by the SoftSwitch are available as well.

VENUS Series installed with SIP firmware provides the following services and functions:

- Support SIP protocol, which complies with IETF RFC 3261 standard.
- Venus 2832 Series support up to 32 analog voice interfaces for traditional POTS (Plain Old Telephone System) equipments (telephone handset, FAX machines, … etc).
- Modularized analog FXS (Foreign Exchange Station) or FXO (Foreign Exchange Office) telephony cards provide 8, 16, 24, or 32 telephone interfaces for various

customers. Each telephone interface can drive at least three telephone handsets through up to 4 Km (13K feet) of 24 AWG copper lines.

- Support ITU-T standard voice codecs.
- Apply quality VoIP technologies including: Real-time voice packet encapsulation and voice play-out based on the Real-Time Protocol (RTP), Adaptive Jitter Buffer, Echo Cancellation（ITU-T G.168/165）, Compensation for Loss of Packet, Voice Activity Detection (VAD) and Silence Suppression.
- Support T.30 Transparent FAX service or T.38 FAX Relay.
- Supplemental Class 5 features like Call Forwarding, Caller ID Display/Blocking, Call Returning, Speed Dial, Call Waiting, Call Transfer, Voice Message Indication, Hotline, and 3-way Conferencing… etc can be easily supported.
- Use static IP address assignment or obtain the dynamic IP address from a DHCP (Dynamic Host Configuration Protocol) Server or BootP (Bootstrap Protocol) Server.
- Provide DHCP server function on LAN port.
- Provide PSTN life-line feature as backup.
- Support PPPoE function (Point-to-Point Protocol over Ethernet), NAT/NAPT function (Network Address Translation/Network Address Port Translation), port-based VLAN, VLAN ID and priority tagging, and QoS function that including IEEE 802.1p and IEEE 802.1Q
- Support RFC-2833 RTP payload for DTMF Digits, Telephony Tones and Telephony Signals
- Provide Terminal User Interface via the console port、TELNET or web browser for easy and quick local or remote configuration and monitoring..
- Provide SNMP MIB for integrating into service providers' SNMP management system.
- Support TFTP protocol for remote software upgrade and configuration file download.
- User Interface is protected with User ID and Password from unauthorized users.
- Provide two user accounts with two levels of access privilege.
- Compact 1U-High desktop unit with ear brackets for mounting up to a 19" shelf.
- Provides a flexible dialing principles, as well as speed dial using hot key, and hotline direct dial functions.

1.2 Applications

VENUS Series, designed as a desktop or rack-mount unit, can be easily installed in a telecommunication equipment room of a building. It uses the standard 10/100 Base-T Ethernet to connect to the service providers' IP backbone through the router or data communication equipment. Up to 32 traditional telephone handsets or FAX machines

located in the rooms at each floor of the building can be connected to the VENUS Series telephone ports using copper wires (Figure 1-1). With various management features supported on VENUS Series, service providers or telecomm companies can provide toll-quality voice service to the customers. The deployment of an intelligent IP packet network for integrated data and voice service with billing, accounting, and management features can be soon built up.

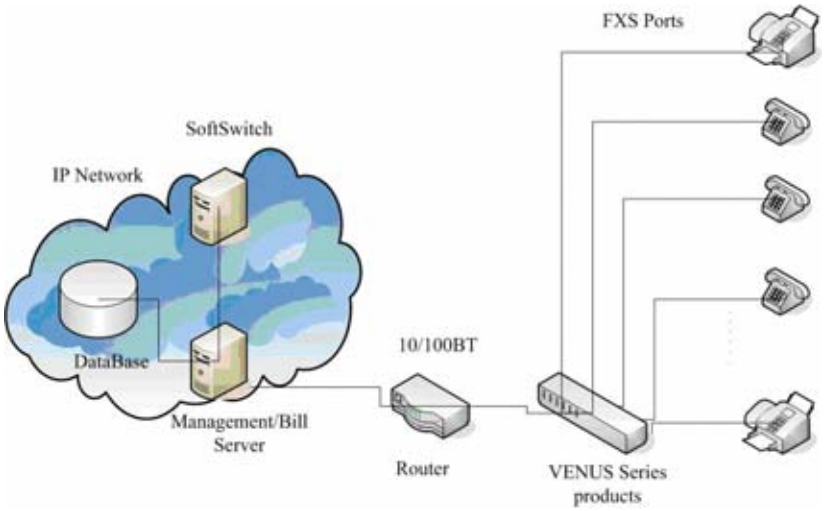


Figure 1-1 - Typical SIP VoIP Application

Large or median sized enterprises are able to build-up the high quality, cheap or free, private voice service based on the Intranet or Extranet network by deploying VENUS Series units at corporate HQ and local branch offices. The VENUS Series communicates with the SoftSwitch/SIP Proxy Server installed at corporate HQ through managed IP leased line, such as DDN (Digital Data Network) leased line or VPN (Virtual Private Network) network. With the scalable voice capacity feature provided by VENUS Series, enterprises can install proper amount of telephone interfaces for each branch (Figure 1-2).

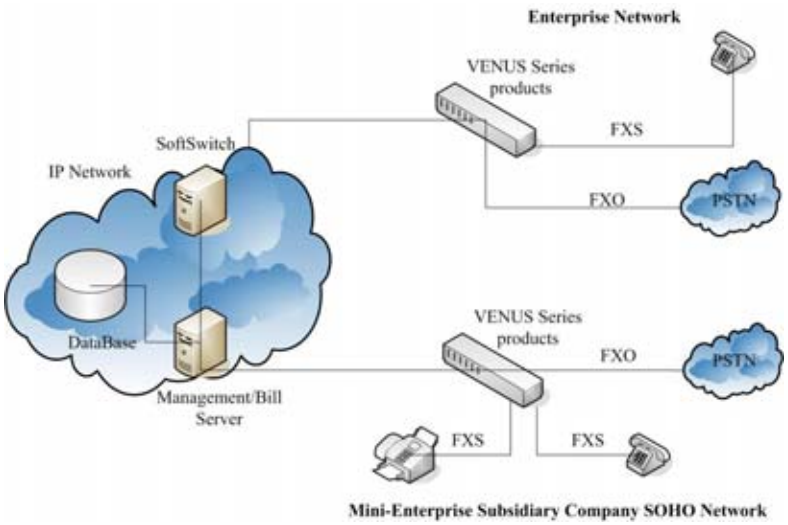


Figure 1-2 - Enterprise VoIP Intranet Application

For the Multi-Tenants Units (MTU) or Multi-Dwelling Units (MDU) markets, such as a hotel or campus, VENUS Series performs as a voice access platform to accommodate the voice-over-IP traffics from all the users. Thanks to the convenience of adding new Ethernet nodes, new VENUS Series units can be installed easily to extend the amount of users. To support more VENUS Series media gateway allows service providers to provide cost effective and quality voice services with minimum capital investment and maintenance cost.

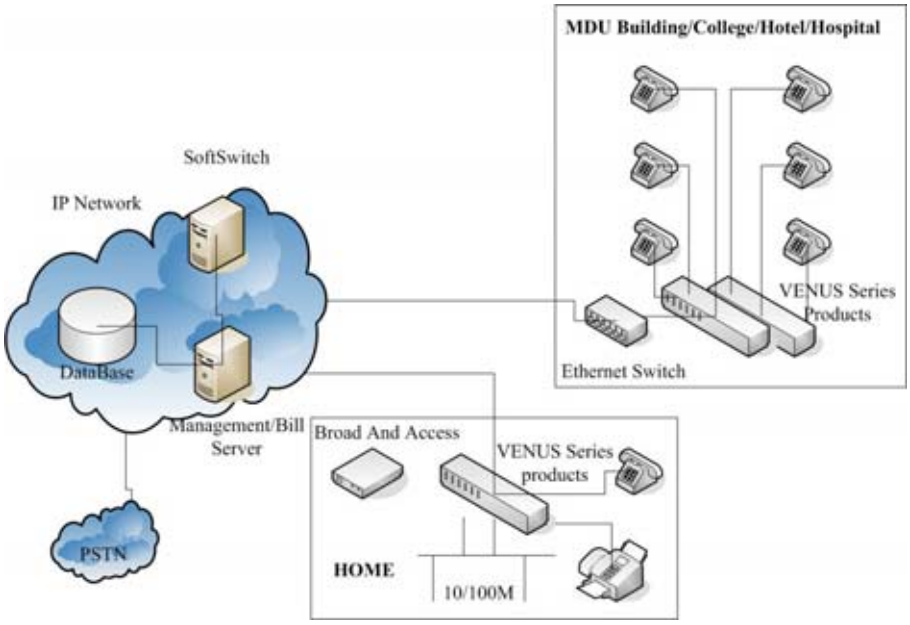


Figure 1-3 - MTU/MDU Application

The advantages of using VENUS Series, the high port density CPE (Customer Premise Equipment) Gateway, are

- Lower installation effort
- Easier maintenance
- Competitive per port price
- High voice quality
- Available feature extension
- Consuming less public IP addresses which are valuable resources

1.3 Product Description

1.3.1 Hardware Architecture

VENUS 2832 Series is a compact sized, 1U high desktop VoIP Gateway, and is installable onto a standard 19" Rack. Sub-series letter "A" is for 100~230V AC power and "D" for -36~ -72V DC power. Installation guide can be found in Chapter 3.

VENUS 2832SA+/D+ has three I/O slots on the back panel, two for Voice Modules

(Support up to 32 Voice ports) and one for Ethernet I/F module.

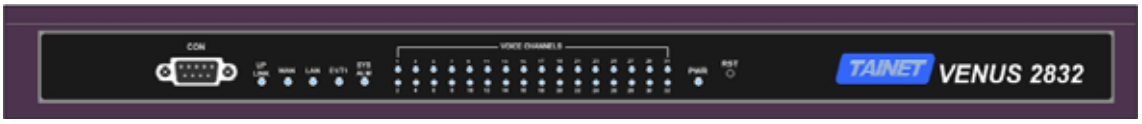


Figure 1-4 - The Front View of VENUS 2832A+ and 2832SD+

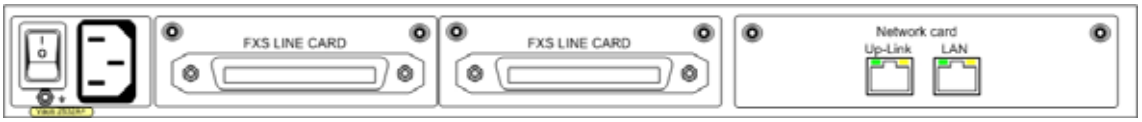


Figure 1-5 - The Rear View of VENUS 2832SA+

Figure 1-6 - The Rear View of VENUS 2832SD+

VENUS 2832SAE+/DE+ is an elite base unit that has three I/O Slots on the back panel, only one is for Voice Modules (Support up to 16 Voice ports) and one for Ethernet I/F module. The slot three is unused.

Figure 1-7 – The Front View of VENUS 2832AE+ and 2832SDE+

Figure 1-8 - The Rear View of VENUS 2832SAE+

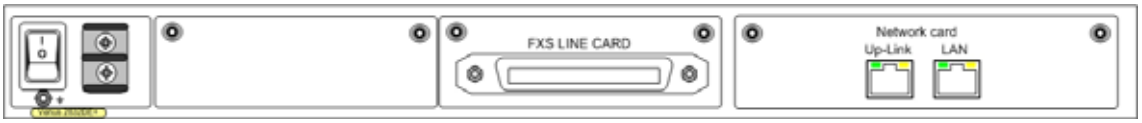


Figure 1-9 - The Rear View of VENUS 2832SDE+

VENUS 2808S/2808+S is a compact standalone VoIP Gateway with AC power; built-in 8 channels Voice Processing capacity and 1 PSTN port for dial-line backup.

Figure 1-10 - The Rront and Rear view of VENUS 2808S

VENUS 2804S is a SOHO VoIP Gateway with AC-DC power adaptor; built-in 4 channels Voice Processing capacity and 1 PSTN port for dial-line backup.

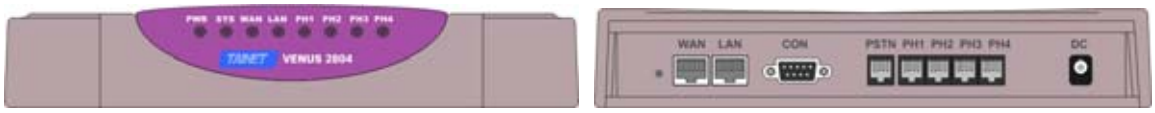


Figure 1-11 - The Front and Rear view of VENUS 2804S

1.3.1.1 VENUS Series Base Unit

- VENUS 2832SA+/2832SAE+: Base Unit with **AC** power supply
- VENUS 2832SD+/2832SDE+: Base Unit with **DC** power supply

1.3.1.2 Voice Modules

- FXS-8： 8-port FXS analog voice module with 50-pin RJ-21 Telecom Connector
- FXS-8A： 8-port FXS analog voice Add-On module
- FXO-8： 8-port FXO analog voice module with 50-pin RJ-21 Telecom Connector
- FXO-8A： 8-port FXO analog voice Add-On module

The analog telephone interface is supported by VENUS Series. Figure 1-3 shows the FXS-8 Voice Module which provides 8 FXS ports for connecting to the telephone handsets. Additional FXS-8A add-on Module can be mounted on to the FXS-8 Voice Module for capacity extension to provide total of 16 FXS ports, as illustrated in Figure 1-4.

Figure 1-5 shows the FXO-8 Voice Module which provides 8 FXO ports for connecting to the telephone handsets. Additional FXO-8A or FXS-8A add-on Module can be mounted on to the FXO-8 Voice Module.

Remark :

The FXS-8A / FXO-8A Add-on module is the capacity extention module to be mounted onto the FXS-8 / FXO-8 voice module for increasing voice capacity to 16 FXS / FXO interface. With 2 sets of FXS-8 / FXO-8 plus FXS-8A / FXO-8A card installed in slot#3 and slot#4, total of 32 POTS ports can be provided.

FXO-8 module can carry FXO-8A or FXS-8A add-on module, but FXS-8 module can carry FXS-8A module only. **The FXS-8 cannot carry FXO-8A module**

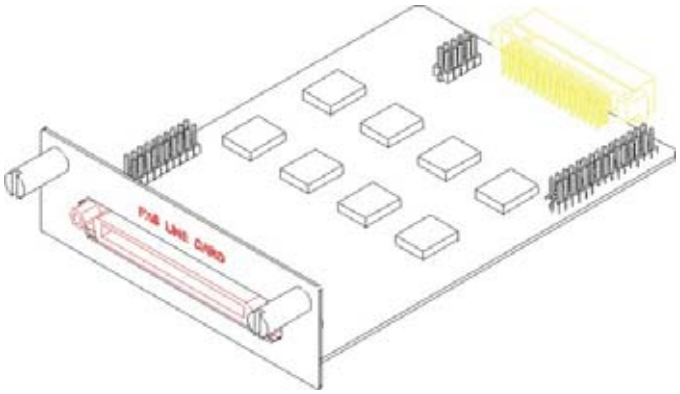


Figure 1-12 - The 8-port FXS Module (FXS-8)

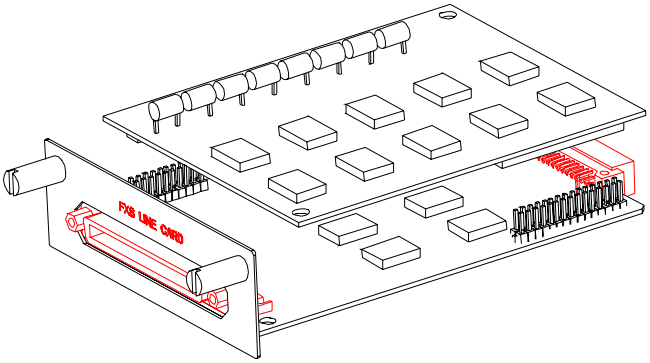


Figure 1-13 - The FXS-8 with a FXS-8A Add-on Module Mounted on the Top

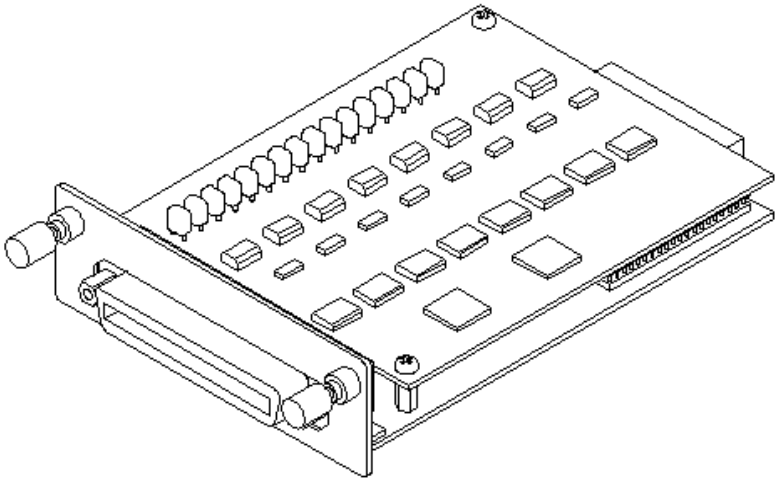


Figure 1-14 - The FXO-8 Module with an Add-on Module Mounted on the Top

1.3.1.3 Ethernet Switch Modules

- UTP-1： Single port Fast Ethernet (10/100BaseTX) card
- UTP-2： Dual-port Fast Ethernet (10/100BaseTX) Switch card, with QoS and VLAN support
- UTP-2F： Single Fiber Optical Fast Ethernet and single 10/100BaseTX Ethernet Port

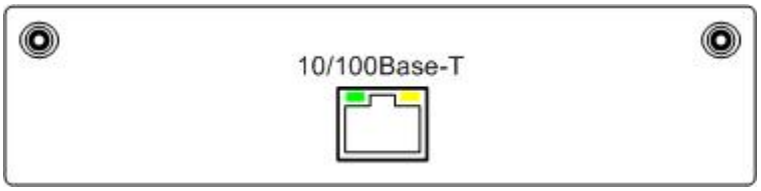


Figure 1-15 - UTP-1 Module

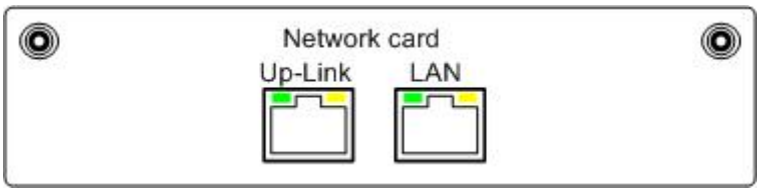


Figure 1-16 - UTP-2 Module

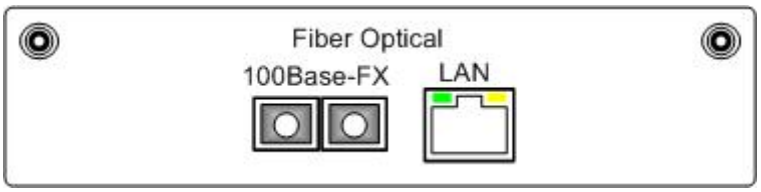


Figure 1-17 - UTP-2F Module

1.3.1.4 Accessories (Refer to 2.5.2 for detailed description)

- Copper Wire Cable（RJ-21 Male connector convert to 50 copper wires）
- Fan-Out cable（RJ-21 Male connector convert to 16 x RJ-11 connectors）
- RJ-21 to RJ-11 Adapter panel
- RJ-21 to RJ-11 conversion (2 x RJ-21 connectors convert to 32 x RJ-11 connectors)
- 50-pin Extension Cable (RJ-21 Male connector convert to RJ-21 Female connector)

1.3.2 Software Architecture

Applying advanced VoIP technology; VENUS Series uses powerful DSP (Digital Signal Processor) and CPU (Central Processing Unit) to build up a high performance Media Gateway platform. Running over an embedded Multi-tasking Real-Time Operating System, network protocols can be handled efficiently. Architecture of multiple DSPs for performing voice processing concurrently guarantees highest voice quality. Both the DSP and CPU software can be remotely upgrade for feature enhancement.

VENUS Series provides several different ways for equipment management:

- Terminal User Interface via the Console port for local management
- Terminal User Interface via Telnet for remote management
- Terminal User Interface via Web browser fro remote management
- SNMP Management

1.3.2.1 Console Port

By using the VT-100/ANSI compatible terminal emulation software, such as Microsoft HyperTerminal, user is able to configure VENUS Series via the Console port at the front panel. Refer to Chapter 3 for detailed Terminal UI description.

1.3.2.2 Telnet

VENUS Series can be managed through a Telnet connection. The User Interface format and the management functions provided by TELNET are exactly the same as the console port. To maintain the consistency of configuration, only one single user is allowed to login the terminal user interface via the console port or Telnet at the same time.

1.3.2.3 Web Browser

The gateway allows users to make settings using a web browser, must enable Web function of the Venus configuration item first. After opening a browser, enter gateway's IP address as the website address in order to enter the Web configuration screen as shown in the following diagram. (IE Browser used for example)

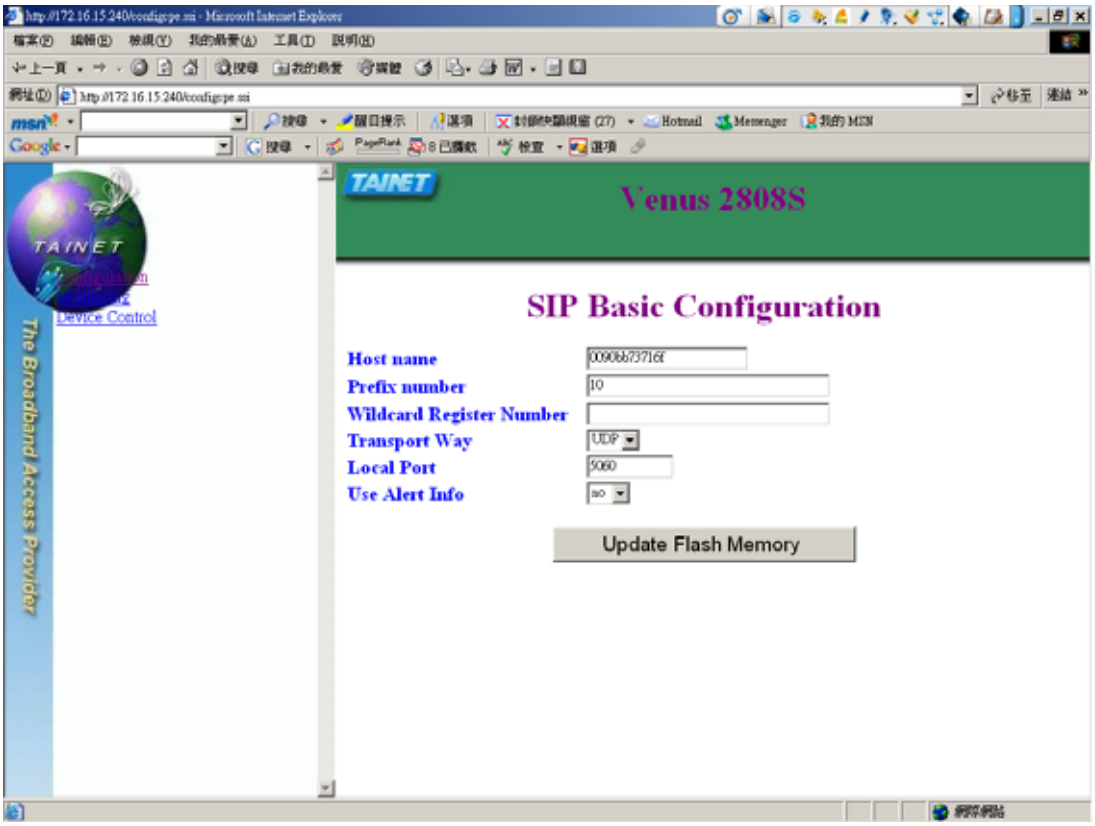


Figure 1-18 - Web Browser

1.3.2.4 SNMP Management

The embedded SNMP agent in VENUS Series allows the device to be managed by the SNMP management system.

1.4 Technical Specifications

Table 1-1 - VENUS Series Technical Specification

Items	Specification
Base Unit	• Number of slots for voice module per unit: VENUS 2832SA+/D+: 2 voice slots VENUS 2832SAE+/DE+: 1 voice slot VENUS 2808S: 1 on-board voice slot VENUS 2808S+: built-in 8 voice channel, no voice slot VENUS 2804S+: built-in 4 voice channels, no voice slot
	• Number of slots for Ethernet switch module per unit: VENUS 2832SA+/D+: 1 Ethernet switch module slot VENUS 2832SAE+/DE+: 1 Ethernet switch module slot VENUS 2808S: built-in 2 Ethernet ports. VENUS 2808S+: built-in Ethernet ports. VENUS 2804S+: built-in 2 Ethernet ports.
	• Maximum Number of VoIP Channels supported: VENUS 2832SA+/D+: 32 voice channels VENUS 2832SAE+/DE+: 16 voice channels VENUS 2808S: 8 voice channels. VENUS 2808S+: 8 FXS voice channels. VENUS 2804S: 4 FXS voice channels.
	• Console Port: - Type: RS-232, DCE mode - Connector: DB-9 Female - Format: 115,200bps, no parity, 8 data bits, 1 stop bit
	• WAN Interfaces: IEEE 802.3u 10/100BaseT Fast Ethernet port with auto-negotiation
	• Indicators: - PWR LED: Power Status - SYS ALM LED: System Status and Diagnosis Indication - 10/100BT LED: Link Status of the 10/100BT Ethernet port - UP LINK LED: Link Status - LAN LED: Network Card interface status - WAN LED: Network Card interface status - E1/T1 LED: E1/T1 interface status (reserved) - VOICE CHANNEL 1~32 LED: Hook and Ring status of the voice channels
	• RST Push Button: RESET (For Venus 2832SA+/2832SAP/2832SAE+ only)
	• Power Supply - AC power model: 100V ~ 230VAC, 50~60 Hz - DC power model: -36V ~ -72 VDC
FXS Telephone Interface channel (FXS-8 and FXS-8A)	• Signaling Type: FXS loop start driving 2-wire analog telephone handsets or G3 FAX machines
	• Number of Ports per Card: 8 FXS ports per card with optional add-on card for 8 more FXS ports (Combine FXS-8 and FXS-8A to support 16 FXS interfaces)
	• Input Impedance: 600-ohm termination mode
	• Return Loss: > 20dB from 200Hz to 3.4KHz
	• Attenuation/Frequency Distortion: ITU-T G.712 Compliant

	• Group Delay: ITU-T G.712 Compliant
	• Total Distortion: ITU-T G.712 Compliant
	• Longitudinal balance: <45 dB from 200Hz to 3.4K Hz
	• Gain: - A/D: -3 +- 0.2dB at 1KHz - D/A: -3 +- 0.2dB at 1KHz
	• DC Feed Current: 25mA current limited
	• Line Current Detection: <10mA
	• Ringer Frequency: 20Hz (17~40Hz selectable)
	• Ringer Output Voltage: >40Vrms, 3 REN
	• Ringing Current Limit: 100mA current limited
	• Signaling Format: DTMF or pulse dial
	• Idle State Voltage: Vtip-ring < 48V, and Vring<Vtip < 0V
	• 50-pin female RJ-21 Telco connector
	• Optional fan-out cable (50-pin connector to RJ-11 plugs) for wiring or testing
	• Long haul (up to 3,000m of 24 AWG lines) design
FXO Telephone Interface channel (FXO-8 and FXO-8A)	Electronic Spec
	• Signaling Type: FXO Loop Start
	• Number of Ports per Card: 8 FXO ports per card with optional add-on card for 8 more FXO ports (Combining FXO-8 and FXO-8A to support 16 FXO interfaces)
	• Line Impedance: 600-ohm termination mode
	• Return Loss: > 20dB from 200Hz to 3.4KHz
	• Attenuation/Frequency Distortion: ITU-T G.712 Compliant
	• Group Delay: ITU-T G.712 Compliant
	• Total Distortion: ITU-T G.712 Compliant
	• Longitudinal balance: <45 dB from 200Hz to 3.4K Hz
	• Gain: - A/D: -3 +- 0.2dB at 1KHz - D/A: -3 +- 0.2dB at 1KHz
	• Leakage Current < 10uA
	• On-hook Resistance > 10Mohm
	• DC Current Limit: 133mA
	• Caller ID Detection
	• Signaling Format: DTMF
	• 50-pin female RJ-21 Telco connector
	Ring Detection
	• Ring Detection Frequency: 17~40Hz (configurable)
	• Ring Debounce: < 200ms (configurable)
	• Ring Cadence: - Inter-Pulse < 550ms (Configurable) - Inter-Cycle < 5000ms (Configurable)
	• Auto Answer after Ring: 1 ring (Configurable)
	Line Disconnection
	• Detection of the Disconnection Tones: (User Configurable) - Busy Tone - Reorder Tone - Congestion Tone
	• Long Dial Tone without Dialing: 10 seconds
	• Line Reversal Detection
Voice Codec	• ITU-T G.711 μ-Law (64Kbps)

	• ITU-T G.711 A-Law (64Kbps)
	• ITU-T G.723.1 (6.3K/5.3Kbps)
	• ITU-T G.729A (8Kbps)
	• ITU-T G.726 (16K/24K/32K/40Kbps)
Tone Generation and Detection	• DTMF, Call Progress tones (Dial tone, Busy tone, Ring back tone, Congestion tone, Off-hook notice tone, etc)
	• V.21/V.25/V.8 tone detection for automatic data/fax/voice switch over to G.711 voice coder
Quality Enhancement Technologies	• Voice Activity Detection (VAD)
	• Silence Suppression
	• Comfort Noise Generation (CNG)
	• Adaptive Jitter Buffer
	• Echo Cancellation (ITU-T G.165/G.168 compliant)
	• Compensation for Loss of Packet
	• In-band or Out-band DTMF Relay
	• Selectable TX/RX Gain Controls
Call Signaling (Call Control) Protocols	• IETF RFC-3261 Session Initiation Protocol (SIP)
Voice Packet Encapsulation	• IETF RFC-1889 Real Time Protocol (RTP)
	• IETF RFC-2833 RTP payload for DTMF Digits, Telephony Tones and Telephony Signals
Media Description Protocol	• IETF RFC-2327 Session Description Protocol (SDP)
Internet Protocols	• TCP/IP, UDP, ARP/RARP, ICMP, Telnet, DNS Client, BootP Client, DHCP Client/Server, SNMP Client, TFTP Client, PPPoE, RIP I/II and NAT
QoS	• IEEE 802.1p
	• VLAN (ID, priority) tagging, port-based VLAN
IP Address Assignment	• Static or Dynamic using DHCP or BootP client
FAX over IP	• Fax Auto-detection • T.30 Transparent FAX • FAX Relay Mode: ITU-T T.38 Real Time G3 FAX over IP protocol supporting ITU-T V.21, V.27ter, V.29 and V.17 up to 14,400bps
Management	• Console, Telnet, Web Browser, proprietary authentication and SNMP management
Remote Upgrade & Remote Provisioning	• Software download and Configuration file download via TFTP
Circumstance	• Operating Temperature: 0°C ~ 50°C • Storage Temperature: -10°C ~ 70°C • Relative Humidity: 10% ~ 90% (non-condensing)
Physical Dimension	• 437 W x 44 H x 286 D mm
EMC Compliant	• EN 50081-2, EN 50081-2 • FCC Part 15 Class A • CE mark

Safety Compliant	• EN-60950 • FCC Part 68 • UL/CSA

1.5 Standard Compliance

VENUS Series complies with the following standards and protocols:

ITU-T Codec Standard

ITU-T V.21/V.25/V8 – FAX / Modem Answer Tone

ITU-T G.168/G.165 Digital network echo cancellers

IETF RFC 3261 – SIP (Session Initiation Protocol)

IETF RFC 2327 – SDP (Session Description Protocol)

IETF RFC 2976 – SIP INFO Method

IETF RFC 3262 – Reliability of Provisional Responses in Session Initiation Protocol (SIP)

IETF RFC 3264 – An Offer/Answer Model with Session Description Protocol (SDP)

IETF RFC 3265 – SIP - Specific Event Notification

IETF RFC 3311 – SIP UPDATE Method

IETF RFC 3515 – The SIP Refer Method

IETF RFC 1889 – RTP (Real Time Protocol)

IETF RFC 2833 - payload for DTMF Digits, Telephony Tones and Telephony Signals

IP Protocols: TCP/IP, UDP, ARP/RARP, ICMP, Telnet, DNS Client, BootP Client, DHCP Client, DHCP Server, TFTP Client, SNMP agent (V1 or V2c), PPPoE, NAT/NAPT and RIP I/II

Chapter 2. Hardware Installation

2.1 Unpacking

This chapter provides the information for installation of the VENUS Series. Before unpacking, make a preliminary inspection of the container. Evidence of damage should be noted and reported immediately. Unpack the equipment as follows:

- Place the container on a flat surface and open the container.
- Carefully take the VENUS Series out of the container and place it securely on a flat, clean surface.
- Inspect the unit for signs of damage. Immediately report any damage found.
- Check the packing list against your order to ensure that the supplied modules match your order. If modules have been pre-installed in accordance with your order, check that all the modules are in their proper slots and are secure. Immediately report any deviations.
- Check that all the necessary items have been included, following items are shipped with your VENUS Series:
  - □ One VENUS Series Manual (this one)
  - □ One AC power cable (For VENUS 2832SA+/2832SAE+/2808S/2808S+/2804S only)
  - □ One AC to DC power adaptor (For VENUS 2804S+ only)
  - □ One DB-9 to DB-9 serial cable
  - □ One Category-5 Ethernet cable

2.2 Site Requirements

2.2.1 Site Selection

Install the device in a clean area that is free from environmental extremes. Allow at least 6 inch (15.24 cm) in front of the device for access to the front panel, and at least 4-inch (10.2 cm) in back for cable clearance. Position the device so you can easily see the front panel.

2.2.2 AC Electrical Outlet Connection

VENUS 2832SA+ / 2832SAE+ / 2808S / 2808+S / 2804S+ with AC power input should be installed within 1.83m (6 feet) of an easily accessible grounded AC outlet

capable of furnishing the required supply voltage, in the range of 100 to 230V AC.

2.2.3 DC Power Source Connection

VENUS 2832SD+/DE+ with DC power input requires a –36~-72VDC power source.

Caution:
Do use correct AC or DC power voltage, otherwise wrong power voltage may cause damage to the device.

2.2.4 Grounding

The FCC requires telecommunications equipment to withstand electrical surges that may result from lightning strikes; the VENUS Series device meet the requirements set forth by the FCC. The following procedure outlines some common practices that can minimize the risk of damage to computer equipment from electrical surges.

1) Make sure the electric service in your building is properly grounded as described in article 250 of the National Electrical Code (NEC) handbook.
2) Verify that a good copper wire of the appropriate gauge, as described in Tables 250-94/95 of the NEC Handbook, is permanently connected between the electric service panel in the building and a proper grounding device such as:
   A ground rod buried outside the building at least 8 feet (2.44 meters) deep in the earth.
   Several ground rods, connected together, buried outside the building at least 8 feet (2.44 meters) deep in the earth.
   A wire (see tables 250-94/95 of the NEC handbook for gauge) that surrounds the outside of the building and is buried at least 2.5 feet (.76 meters) deep in the earth.

Note:
The three grounding devices described above should be firmly placed in the earth. Soil conditions should not be dry where the device is buried

3) If you are unsure whether the electric service in your building is properly grounded, have it examined by your municipal electrical inspector.
4) Install a surge protector between the device and Ground point. Any additional computer equipment you have connected to the device (directly or through another device), such as a terminal or printer should also be plugged into the same surge protector. Make sure that the surge protector is properly rated for the devices you have connected to it.
5) Call your telephone company and ask them if your telephone line is equipped with

a circuit surge protector.

6) If you are operating the device in an area where the risk of electrical surges form lightning is high, disconnect the device from the telephone line at the rear panel when it is not in use.

2.3 LED Indicators

Table 2-1 - LED Description

Label	Function Description	Colors
PWR	Power Status	Off (Power is Off)
		Green (Power is ON)
SYS ALM	System Status	Green (Normal Operation)
		Yellow (Performing Diagnosis)
		Red (System Failure)
CHANNEL LED 1 – 32	Voice Channel Status	Off (On-Hook State of the Telephone Handset)
		Green (Off-Hook State of the Telephone Handset)
LAN	LAN Status	Green (10/100BT Link is Up)
		Off (Network Card is unplug)
WAN	WAN Status	Green ((Network Card is plug in)

2.4 Front Panel Connections

2.4.1 Connecting the IP Network via Ethernet

On the base unit of VENUS Series, the embedded 10/100Base-T Ethernet port is provided as the standard interface to the IP network. The pin layout of the RJ-45 connector for IEEE 802.3 standard 10/100Base-T Ethernet ports are defined as following:

Table 2-2 -10/100Base-T Connection

Pin #.	Pin Function
1	TD+
2	TD-
3	RD+
4	N/C
5	N/C
6	RD-
7	N/C
8	N/C

For connecting the 10/100Base-T Fast Ethernet, a Category 5 unshielded twisted-pair (UTP) cable or shielded twisted-pair cable is used. Two pairs of the twisted wires are used for separated Rx (reception) and Tx (transmission). The Fast Ethernet port is backward compatible with traditional 10Base-T Ethernet. VENUS Series can automatically detect whether it is connected to a 10Base-T or 100Base-T Network.

2.4.2 Connecting the Terminal

The Console port connector labeled “CRAFT” on the front panel is provided for connection to an external ANSI or VT-100 compatible terminal for quick and easy, local configuration of the VENUS Series.

Speed and Data format: 115,200bps, none parity, 8 data bits, 1 stop bit, and no flow control.

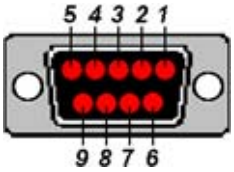


Figure 2-1 - DB-9F Console Interface

The console interface designed on VENUS Series is a female, DCE type RS-232 port. A straight DB-9 to DB-9 or DB-9 to DB-25 serial cable can be used to connect VENUS Series directly to a PC’s serial port for terminal operation. The PIN definition of the DB-9 is:

Table 2-3 - Pin definition of the Console Port connector

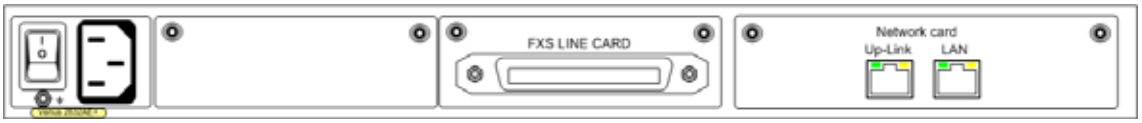
Pin #	Signal	Source
2	TXD (Transmit Data)	DCE
3	RXD (Receive Data)	DTE
5	Signal Ground	
7	CTS (Clear To Send)	DTE
8	RTS (Request To Send)	DCE

Note:
The serial UART port on some of the PCs may not support or guarantee the speed of 115,200bps. Try another PC if the terminal program is not responding or is displaying incorrect characters.

2.5 Rear Panel Connections

Caution:
While installing the interface cards, make sure the power switch is turned off to prevent VENUS Series from possible damage caused by current impact.

The figure illustrated below shows the VENUS 2832S Series rear panel connection.



Power Inlet (AC or DC)	Analog Telephony Cards (FXS /FXO) with 50-pin Telco Connector for Channel 17~32	Analog Telephony Cards (FXS /FXO) with 50-pin Telco Connector for Channel 1~16	Network Card (UTP-1, UTP-2, UTP-2F)

Figure 2-2 - VENUS 2832S Series Rear Panel Connections

2.5.1 Connecting the Power Source

Two models are available for different power source supply. The AC model (VENUS 2832SA+ / 2832SAE+ / 2808S / 2808S+ / 2804S+) accepts 100V~230VAC/50~60Hz (Auto-range) power source. The DC model (VENUS 2832SD+ / 2832SDE+) accepts –36V~-72VDC power source. Connect the device with a power cord of the correct voltage and rating to your power system.

Note:
It is strongly recommended to use an AC power cord with Grounding pin or connect the Grounding Screw on the rear panel to the grounded supply of correct power system at the site.

2.5.2 Connecting the Telephony Devices

The pin assignment for the female-type, RJ-21 Telcom connector (shown in Figure 2-3) on the FXS-8 /FXO-8 card is defined in Table 2-4:

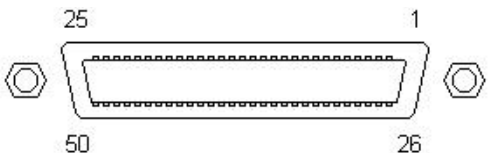


Figure 2-3 - RJ-21 Female-Type Telcom Connector

Table 2-4 - Pin Assignment of the RJ-21 Telcom Connector

Pin #	Definition
1, 26	Port 1
2, 27	Port 2
3, 28	Port 3
4, 29	Port 4
5, 30	Port 5
6, 31	Port 6
7, 32	Port 7
8, 33	Port 8
9, 34	Port 9
10, 35	Port 10
11, 36	Port 11
12, 37	Port 12
13, 38	Port 13
14, 39	Port 14
15, 40	Port 15
16, 41	Port 16
17 ~ 25	Reserved
42 ~ 50	Reserved

Several cables or accessories are available for wiring requirements of the telephone cables:

- Copper Wire Cable（RJ-21 Male connector convert to 50 copper wires）
- Fan-Out cable（RJ-21 Male connector convert to 16 x RJ-11 connectors）
- RJ-21 to RJ-11 Adapter panel
- RJ-21 to RJ-11 conversion (2 x RJ-21 connectors convert to 32 x RJ-11 connectors)
- 50-pin Extension Cable (RJ-21 Male connector convert to RJ-21 Female connector)

Copper Wire Cable: Male RJ-21 connector to 50 copper wires (see Figure 2-4). This cable is convenient for directly wiring the copper wires on to a telecomm wiring panel. Table 2-5 shows the color of each pair of the copper wires.

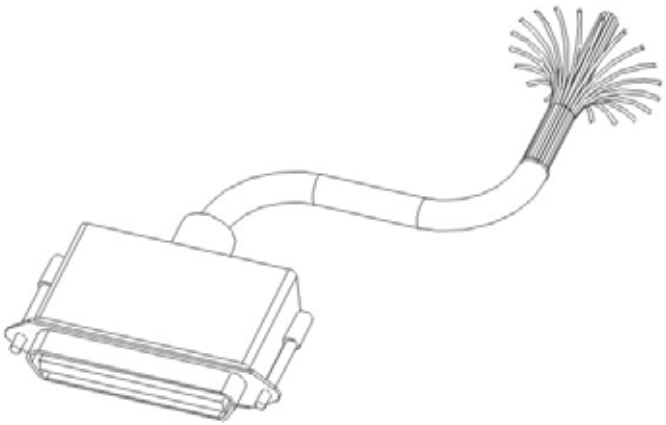


Figure 2-4 - The Copper Wire Cable

Table 2-5 - Pin Assignment of the Copper Wire Cable

RJ-21 Pin #	Color of the Copper Wires	Channel (a pair)
1 & 26	Black / Brown	Port 1
2 & 27	Black / Red	Port 2
3 & 28	Black / Orange	Port 3
4 & 29	Black / Yellow	Port 4
5 & 30	Black / Green	Port 5
6 & 31	Black / Blue	Port 6
7 & 32	Black / Purple	Port 7
8 & 33	Black / Gray	Port 8
9 & 34	Black / White	Port 9
10 & 35	White / Brown	Port 10
11 & 36	White / Red	Port 11
12 & 37	White / Orange	Port 12
13 & 38	White / Yellow	Port 13
14 & 39	White / Green	Port 14
15 & 40	White / Blue	Port 15
16 & 41	White / Purple	Port 16
17 ~ 25	--	Reserved
42 ~ 50	--	Reserved

Fan-out Cable: Male RJ-21 to 16-pair copper wires with RJ-11 phone jack plugs (see Figure 2-5). This cable is used for connection to the RJ-11 type connector provided by POTS equipment like a common telephone handset.

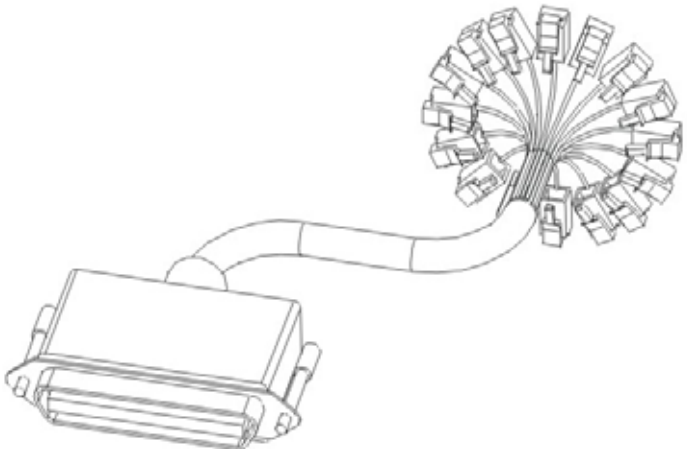


Figure 2-5 - The Fan-out Cable

Extension Telco Cable: Male RJ-21 to female RJ-21 connector (see Figure 2-6). This cable is used for length extension.

RJ-21 to RJ-11 Adapter Panel: This panel has 2 male RJ-21 connectors on the back and 32 RJ-11 phone jack connectors in the front (shown in Figure 2-6). Customer can use an Extension Telco Cable to connect the gateway to this adapter panel for providing RJ-11 connection to telephone handset directly. This panel can be screwed up to a 19-inch rack shelf.

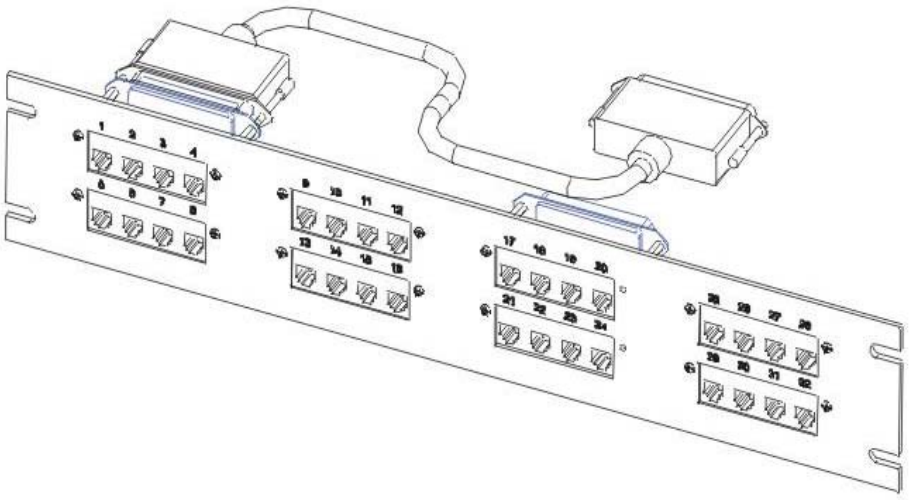


Figure 2-6 - The Adapter Panel with the Extension Cable

2.6 Hardware Diagnosis

When the connections are all done, turn on the power of the device to boot up the software. VENUS Series will perform hardware detection, initialization and diagnosis. The LED indicators at the front panel show the progress of the hardware diagnosis. If it passed all the hardware diagnosis, the "SYS ALM" LED will display GREEN color; whereas, the RED color indicates hardware failure. The diagnosis result can be observed via the User Interface (UI) provided by VENUS Series.

2.7 Basic Configuration

Once when the VENUS Series is successfully started up, please make sure ***the connection to the IP network is properly installed*** before continuing with the configuration.

Very few parameters are required for configuring the VENUS Series to bring up basic VoIP service:

Setup the IP configuration assigned for the device: the **IP address,** the **Sub-net Mask** and the **Default Gateway.**

If required, setup the IP address for Proxy Server and Registration Server.

Setup prefix number

Setup each FXS/FXO port if needed

The above configuration can be found in the Terminal User Interface provided via the Console port (115200bps, 8N1) and other management interface as well. Now, try to make a phone call and feel the quality of voice the VENUS Series can provide.

Detailed UI for software configuration can be found in the following Chapters. Read through the next Chapter to learn the detailed software configuration for the VENUS Series. Refer to Section 3.8.3 for the Troubleshooting Guide.

Chapter 3. Configuration and Management

This Chapter describes the Terminal User Interface provided by VENUS Series. There are three methods to access to the Terminal User Interface: the Craft port, Telnet and Web browser, those present the exactly same format of terminal management. The Craft port is used primarily when the device is installed for the first time and the IP configuration is not yet provisioned. Once when the IP connection is provisioned, user may login to the Terminal User Interface using the Telnet software or Web browser to remotely control or maintain the device from anywhere in the global IP network. Here in this Chapter, Section 3.1 describes the Craft port connection. Detailed operation guide to the Terminal User Interface is described in the following sections.

3.1 Connecting the Terminal

3.1.1 Setup PC

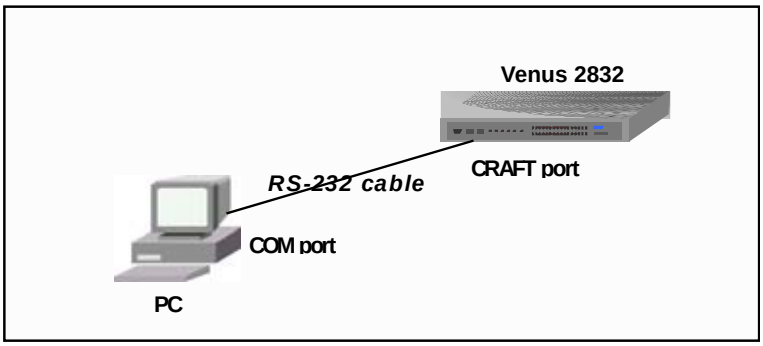


Figure 3-1 - Connecting to the PC

If you are configuring the VENUS Series from a PC (not a dumb terminal), you need software called *Terminal Emulation Program* to emulate a Terminal via the RS-232 communication port on the PC. Table 3-1 lists some commonly used software, based on the type of PC platform you are using.

Table 3-1 - Terminal Emulation Software

Operation System	Software
Windows 95/98/ME/XP/NT/2000	HyperTerm (included with Windows software)
Windows 3.1	Terminal (included with Windows software)
Macintosh	ProComm, VersaTerm (supplied separately)

Select the COM port used and setup the following settings:

- Speed: **115200 bps** (bit per second)
- Data Length: **8 bit**s

- Parity Bit: **Non**e
- Stop Bit: **1 bit**
- Flow Control: **Non**e

3.1.2 Power on VENUS Series

Power on your VENUS Series after the Craft port is connected. It takes several seconds to perform the initialization and diagnosis. Press any key on the terminal. VENUS Series will prompt the following messages:

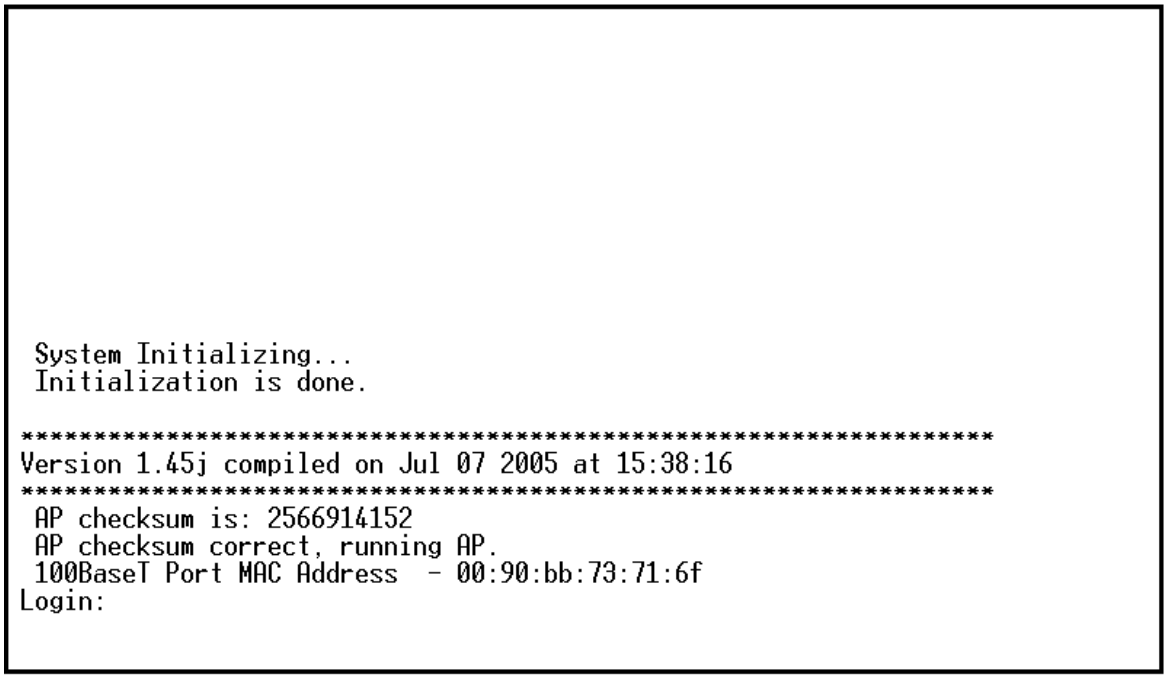


Figure 3-2 - Initial Screen

The version and the checksum value of the software and the MAC address of the Ethernet port are displayed. Verify the checksum result of the software is correct. There are two pieces of software accommodating in the device: the Boot Code and the Application Program. Improper software upgrade procedure may destroy the AP image stored in the flash memory. The embedded Boot code can always be executed and allows re-programming of the AP software to recovery the problem.

3.1.3 Login

Username and Password are required to login the Terminal UI (User Interface) for protection from unauthorized access to the device. The default Username is “user” with no password. Once when the security check is passed, the terminal UI displays the Main Menu as shown in the following Figure:

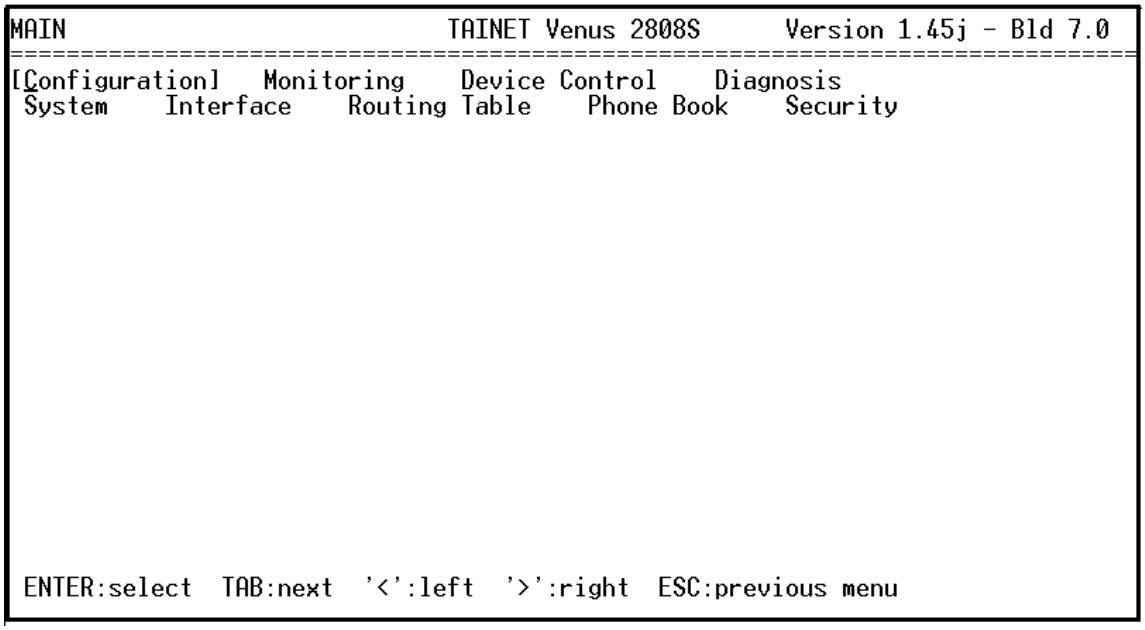


Figure 3-3 - The Main Menu

3.2 Navigation the Terminal User Interface

The following Figure shows the style of the Terminal UI. Indications point out the layout of the UI and help user to navigating through the User Interface. Table 3-2 lists the function keys supported for operating the menu selection.

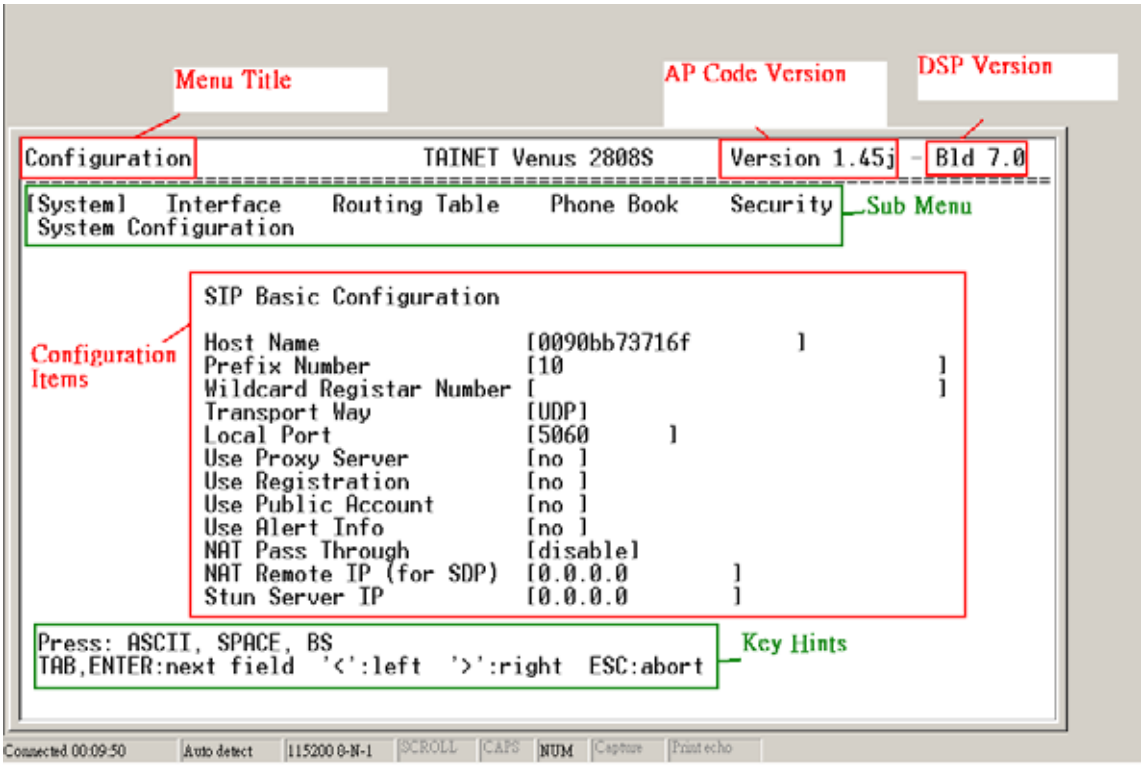


Figure 3-4 - Navigating User Menu

Table 3-2 - Function Keys used in the Terminal UI

Operation	Key	Description
Moving the Cursor	[<],[>],[TAB]	Use [<] and [>] to move the cursor left and right, or up and down. Press [TAB] to move the cursor to the next item.
Selecting a sub-menu	[ENTER]	To access into a submenu.
Moving up to the previous menu	[ESC]	Press the [ESC] key to move back to the previous menu of the upper level.
Editing the information	Type in the content, or press the [SPACE BAR] key to toggle the selection.	You need to fill in two types of fields. The First requires you to type in the appropriate information (string or digits). The second allows you to cycle through the available choices by pressing the [SPACE BAR].
Deleting the information	[BACKSPACE] or [SPACE BAR]	Use these two keys to erase the entered information
Canceling the Process	[Ctrl-C]	Press [Ctrl-C] during some menu processing (for example during the TFTP download state) can cancel the process.
Saving your Configuration	[ENTER]	Pressing [Enter] Save your configuration by selecting “YES” at the pop up “Confirm?” message. In most cases it will go to the previous menu.
Exiting the Terminal UI	[ESC]	To exit the Terminal UI, press [ESC] at the Main Menu prompt, then enter “Y” to the pop up message “Logout?” to logout.

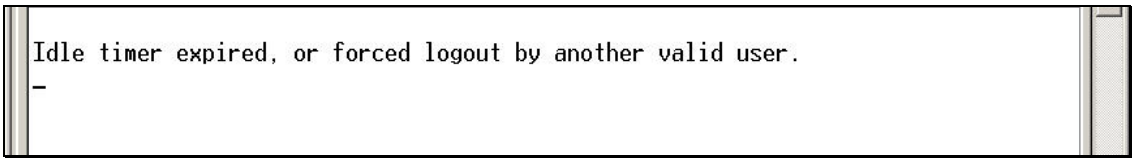


Figure 3-5 - Logout the Terminal UI

VENUS Series keeps an Idle Timer, in case the user stop operating the Terminal UI for certain duration of time, the Terminal UI forces logout automatically. To maintain the consistency of configuration, only one user is allowed to login and to use the Terminal UI at the same time from either the Craft port or Telnet. A valid new user will mutual-exclusively force the logout of the current user.

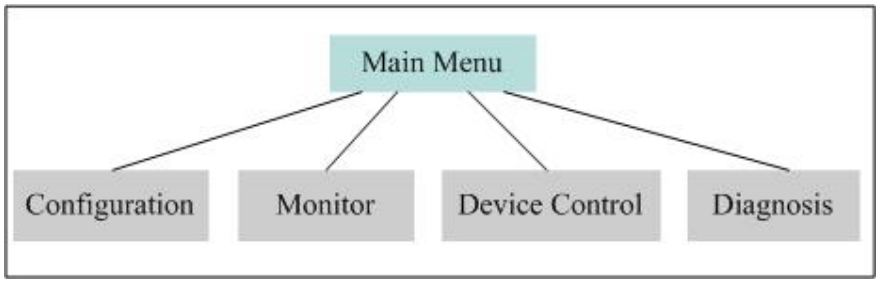
3.3 Organization of the Terminal Menu Tree

The Terminal UI is organized as a menu tree structure. On the top of the menu tree is the Main Menu. All menu items are categorized into different group of submenus for convenient and quick access.

3.4 Main Menu

There are four categories in the Main menu:

Table 3-3 - The Main Menu Items



3.4.1 Configuration Menu

This menu includes SIP Basic configuration, call features, phone features, IP configuration, DHCP, BootP, DNS and SNMP configuration, country selection, and security configuration. Menu to activate the downloading of the configuration file is also provided. Detailed description for every configuration menu is given in Section 3.5.

3.4.2 Monitoring Menu

The Monitoring menu is used to view the system status: the hardware report and the diagnosis result, the routing table, the packet statistics, … etc can be found. Detailed description for the Monitoring menu is given in Section 3.6.

3.4.3 Device Control Menu

The Device Control menu allows you to maintain the device, such as upgrading the software, resetting the device or restoring the configuration to the factory defaults. Detailed description for the Device Control menu is given in Section 3.7.

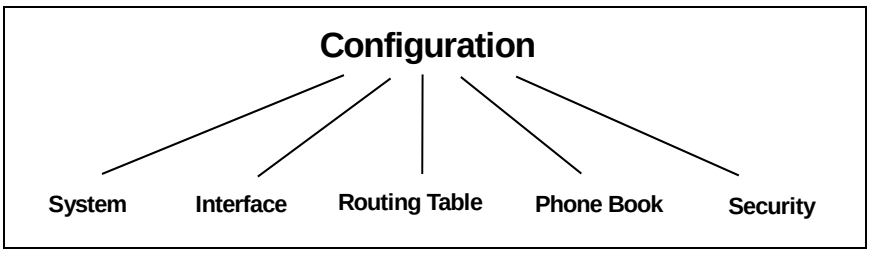
3.4.4 Diagnosis Menu

In the Diagnosis menu, the “Ping” command is provided for verification of the IP network connection. “Trouble Shooting Menu” is provided for technical support engineers to troubleshooting the operation of the device. Detailed description for the Diagnosis menu is given in Section 3.8.

3.5 Configuration

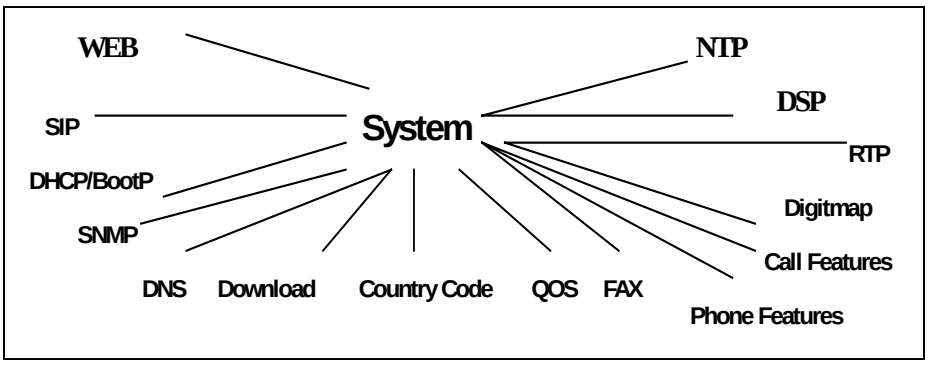
The Configuration menu is divided into five groups:

Table 3-4 - The Configuration Menu Items



3.5.1 System Configuration

Table 3-5 - The System Configuration Menu Items



3.5.1.1 SIP Basic Configuration

The Access Path: *Configuration* Menu -> *System* -> *SIP Basic Configuration*.

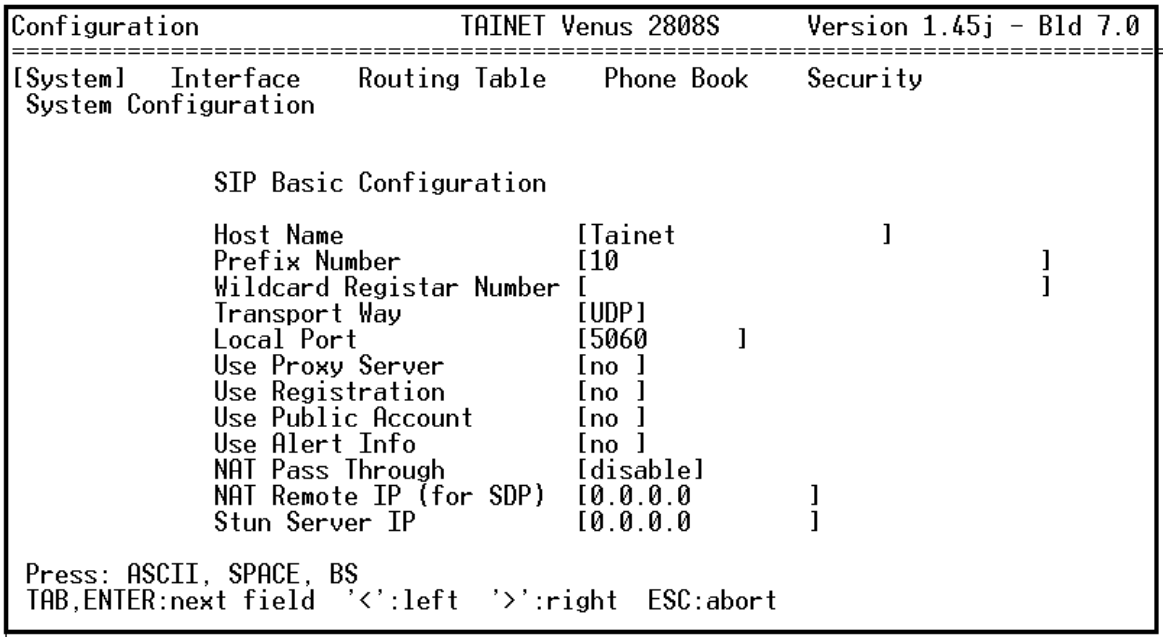


Figure 3-6 - SIP Basic Configuration

Table 3-6 - Description of SIP Configuration Items

Field	Description
Host Name	This item defines the hostname or domain name of a VENUS gateway.
Prefix Number	This item specifies the first few digits of the “userinfo” that are common to all analog (FXS/FXO) interfaces on a VENUS gateway. The prefix, together with each analog port’s phone extension, forms a unique “userinfo” in the SIP-URL.
Wildcard Register Number	This item specifies if the gateway use a Proxy Server, the Wildcard number is registered number in Proxy Server.
Transport Way	This item specifies the communication protocol, either TCP or UDP, for exchanging SIP messages.
Local Port	Setup the local User Agent (UA) port for exchanging SIP messages.
Use Proxy Server	This item specifies whether or not to use a Proxy Server. As shown in Figure 3-7 when a proxy is used, the user would need to specify IP address, port number, and domain name of the proxy server.
Use Registration	This item specifies whether or not to use a Registration Server. As shown in Figure 3-8, when a registrar is used the user would need to specify IP address, port number, and domain name of the registration server. User would also need to specify the duration of re-registration.
User Public Account	This item specifies whether or not to use the same user name and password to register all analog telephony interfaces with the registration server. As show in Figure 3-9
User Alert Info	This item specifies whether or not to use Alert-Info for alternative ring back tone.
NAT Pass Through	This is used to maintain the UDP translation entry in NAT for the SIP protocol, As show in Figure 3-10, when the gateway behind a NAT router, when this feature is enable, it would periodically send out a SIP message

	to keep this passage.
NAT Remote IP (For SDP)	This item allows the message to pass through a router configured with NAT.
STUN Server IP	This item provided another way allows the message to pass through a router configured with NAT.

3.5.1.2 Proxy Server Configuration

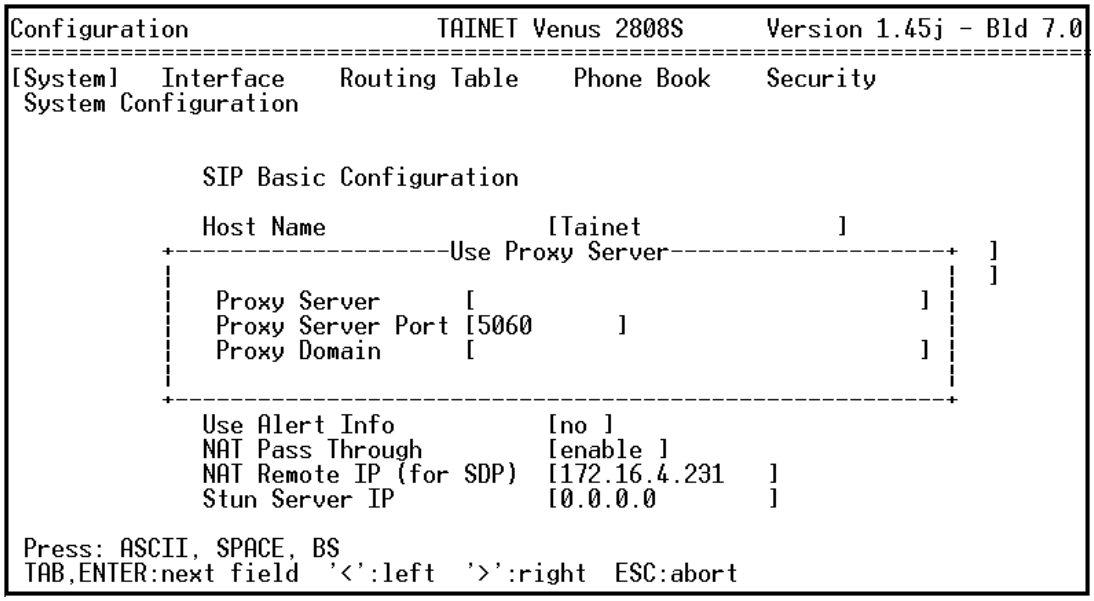


Figure 3-7 - Proxy Server Configuration

Table 3-7 - Description of Proxy Server Configuration Items

Field	Description
Proxy Server	This item specifies the IP address of Proxy Server.
Proxy Server Port	This item specifies the port of the Proxy server for communication.
Proxy Domain	This item specifies the domain name of the Proxy Server, which will be used as part of the SIP-URL. If this field is not specified, the IP address of the proxy will be used instead.

3.5.1.3 Registration Server Configuration

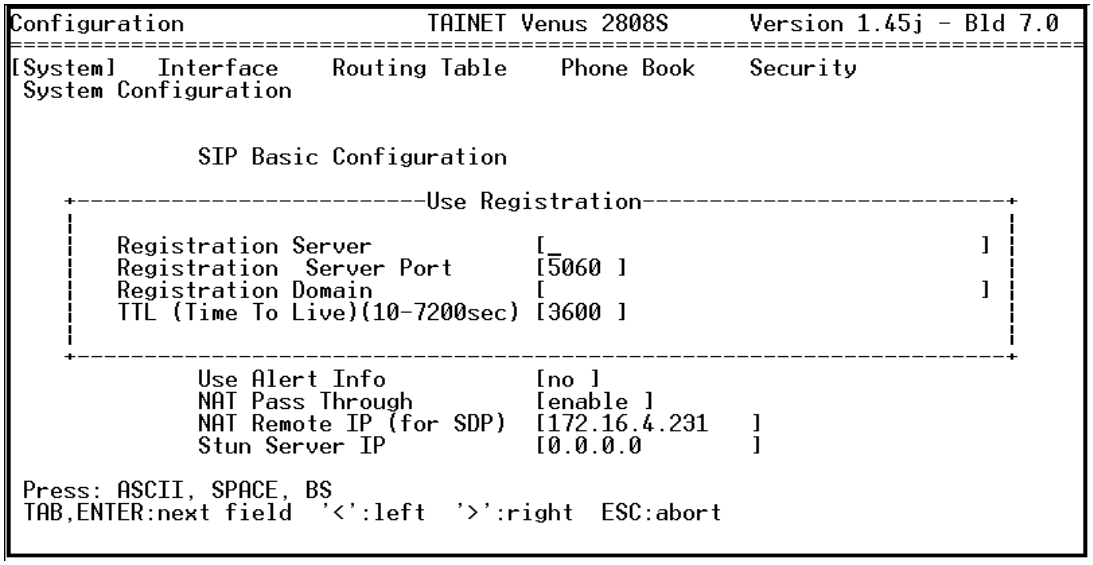


Figure 3-8 - Registration Server Configuration

Table 3-8 - Description of Registration Server Configuration Items

Field	Description
Registration Server	This item specifies the IP address of Registration Server.
Registration Server Port	This item specifies the port of the Registration Server for communication.
Registration Domain	This item specifies the domain name of the Registration Server, which will be used as part of the SIP-URL. If this field is not specified, the IP address of the registration server will be used instead.
TTL (Time to Live)	It defines the expiry time that the User Agent needs to re-register.

3.5.1.4 Public Account Configuration

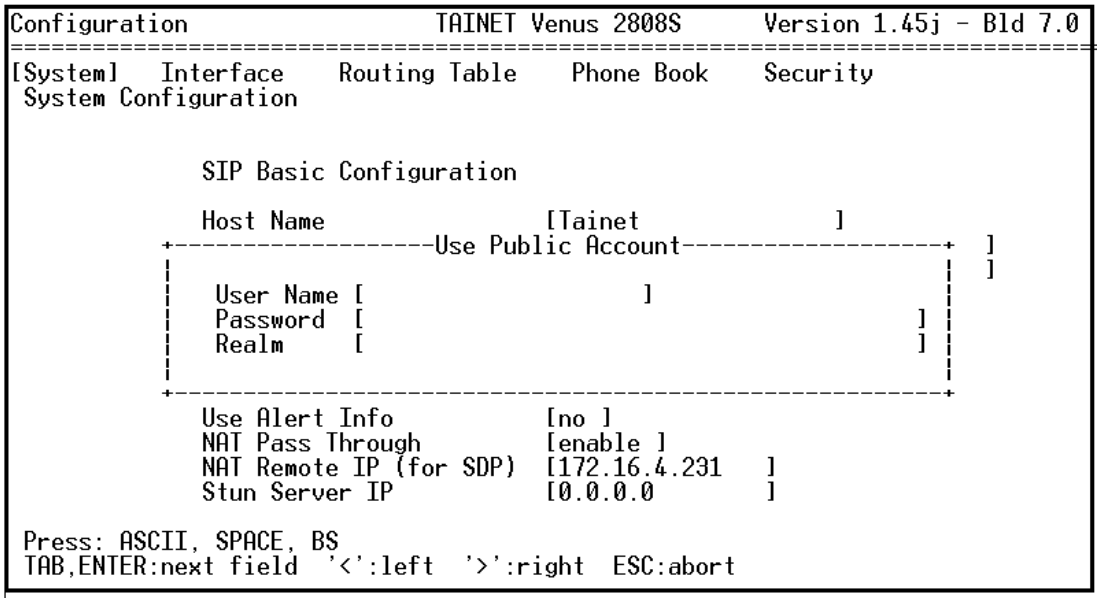


Figure 3-9 - Public Account Configuration

Table 3-9 - Description of Public Account Items

Field	Description
User Name	User name to register with the registration server.
Password	User password to register with the registration server.
Realm	This item specifies the name of registration server realm.

3.5.1.5 NAT Pass Through Configuration

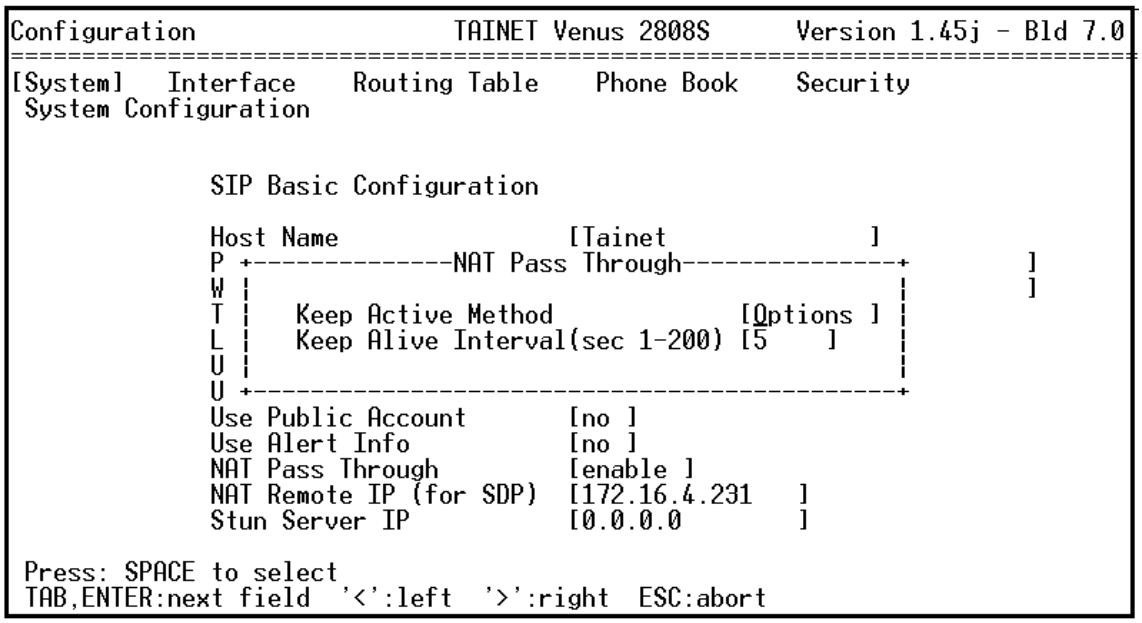


Figure 3-10 - Registration Server Configuration

Table 3-10 - Description of NAT Pass Through Items

Field	Description
Keep Active Method	This item specifies the type of SIP Request Methods (either REGISTER or OPTIONS) for sending 'Keep Alive' message.
Keep Alive Interval	This item specifies the time interval for sending 'Keep Alive' message.

3.5.1.6 DHCP/BootP Configuration

Access Path: *Configuration* Menu -> *System -> DHCP/BootP Configuration.*

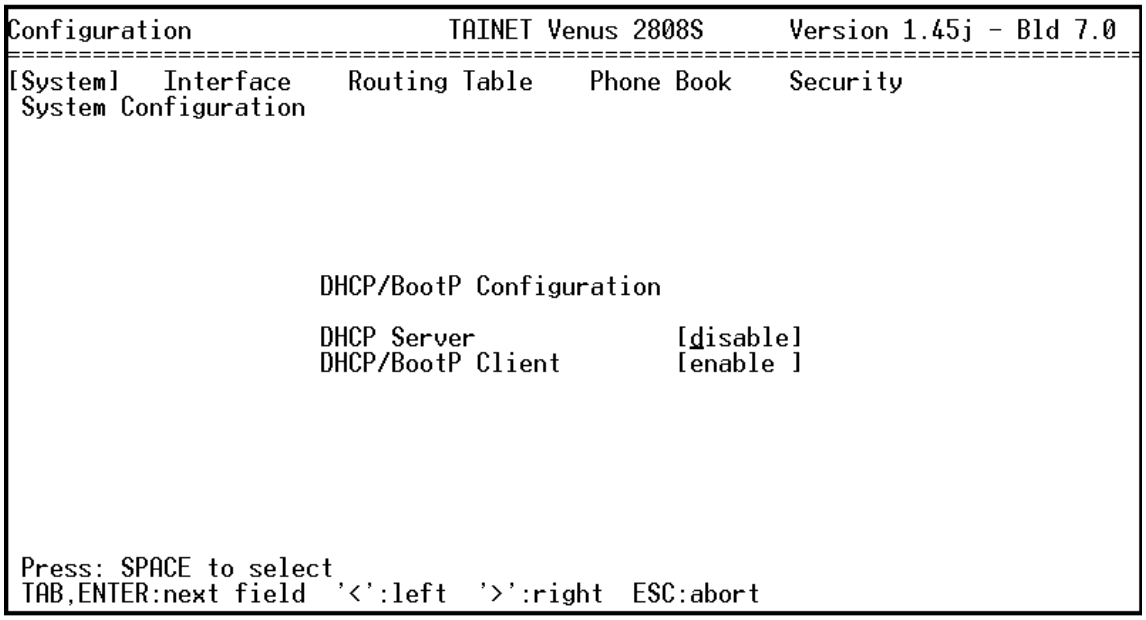


Figure 3-11 - DHCP/BootP Configuration

3.5.1.6.1 For DHCP Server

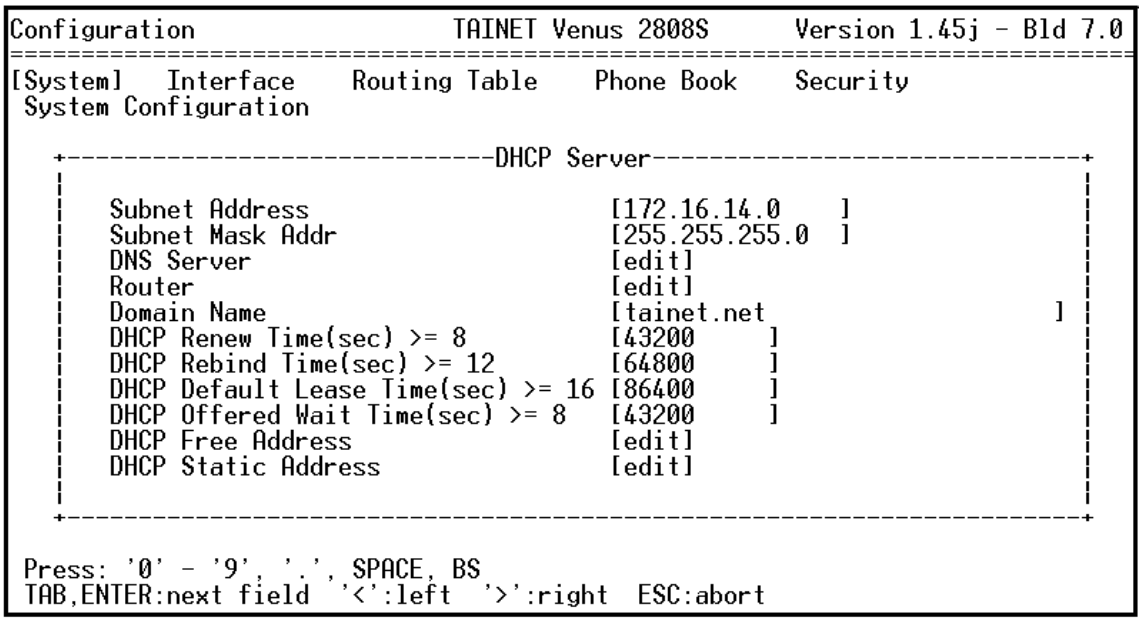


Figure 3-12 - DHCP Server Configuration

Table 3-11 - Description of DHCP Server Configuration Items

Field	Description
Subnet Address	This item specifies the subnet address for assigning IP address.
Subnet mask Addr	This item specifies the subnet mask to be assigned to DHCP Clients.
DNS Server	This item specifies the IP address of DHCP server(s) to be offered to Clients.
Router	This item specifies the router address(s) to be added to the DHCP Client's

	routing table.
Domain Name	This item specifies the DNS information to be assigned to DHCP Clients.
DHCP Renew Time	This item specifies the period (in seconds) that should pass before the Client attempts to renew its lease.
DHCP Default Lease Time	This item specifies the default lease time (in seconds) for the binding that client will use.
DHCP Offered Wait Time	This item specifies the time (in seconds) that the DHCP server will wait for a DHCP Request or Decline from a Client after a binding is offered. Once this period of time has elapsed, the binding can be offered to other Clients.
DHCP Free Address	This item specifies ranges of free IP addresses that can be assigned to DHCP Clients. Please see Figure 3-13.
DHCP Static Address	This item allows user to assign a particular IP address to Client with a particular MAC address.

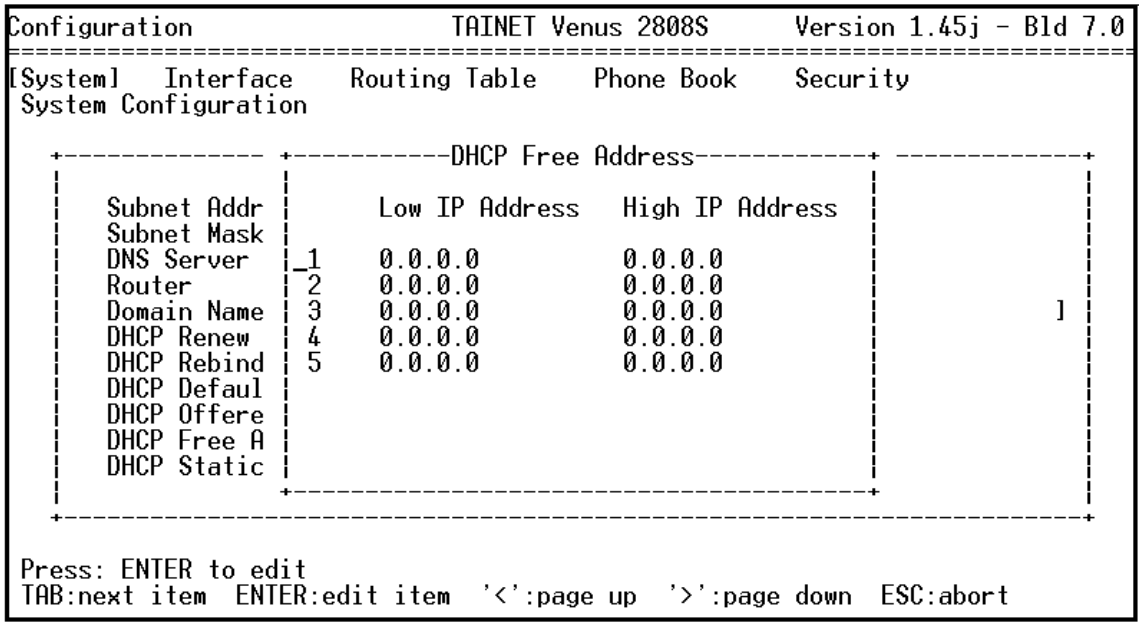


Figure 3-13 - DHCP Server Free Address Ranges Configuration

3.5.1.6.2 For DHCP Client

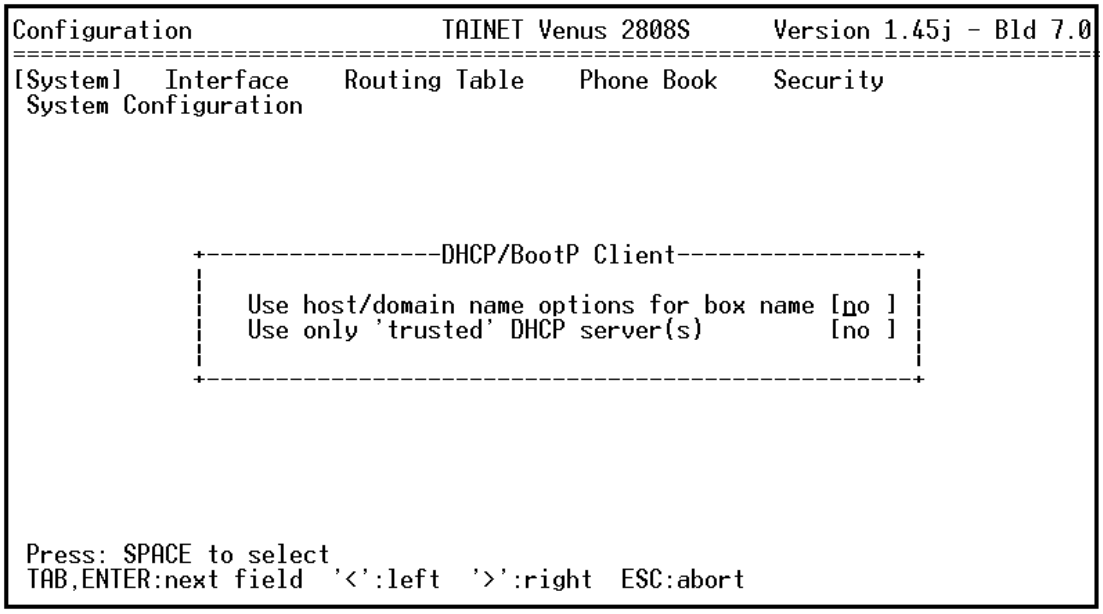


Figure 3-14 -DHCP/BootP Client Configuration

Table 3-12 - DHCP/BootP Client Configuration

Field	Description
DHCP/BootP Client	VENUS Series must be assigned with an IP address to identify the IP packet transmission and reception in the IP network. This menu item is used to enable the DHCP/BootP Client feature of VENUS Series. If the DHCP server (e.g. Microsoft Windows NT DHCP Server) or BootP server is available and is installed within the same network domain with VENUS Series, the DHCP server can automatically provide an unused IP address to VENUS Series during the boot up phase. Usually, this feature is used for installation. To manually assign static IP address to the gateway, disable this feature. VENUS Series is able to identify either a DHCP server or a BootP server is presented. Not only the DHCP/BootP server will provide the IP configuration for the device, it can also provide the location information of the configuration file for this device. Reboot the VENUS Series with this feature enabled; VENUS Series will try to discover the DHCP or BootP server. After getting the IP configuration, it will try to download the configuration file to automatically provision itself if the information is available (See Figure 3-16 – The boot up procedure with DHCP/BootP enabled). Refer to Chapter 4 for detailed description regarding the configuration file.
Use host/domain name options for box name	This option use DHCP/BootP host/domain name to register to Proxy.
Use only ‘trusted’ DHCP server(s)	This option allows user to specify up to two DHCP servers that the GW would accept response from. Please refer to Figure 3-15.When this option is enabled, any DHCP response from servers that are not in the list would be rejected.

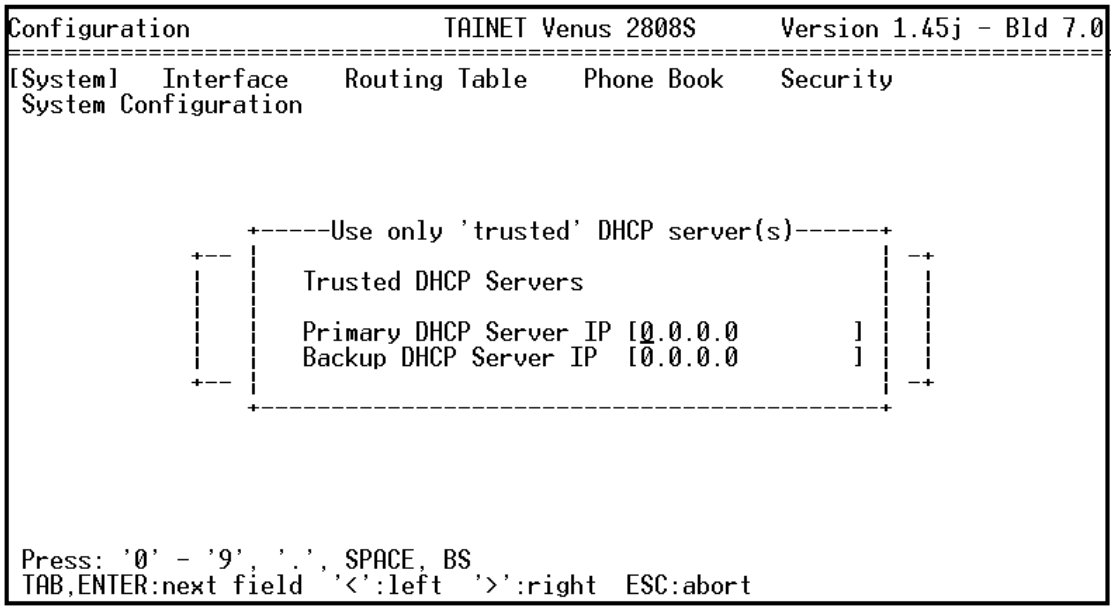


Figure 3-15 - DHCP Client Using 'Trusted' Server(s)

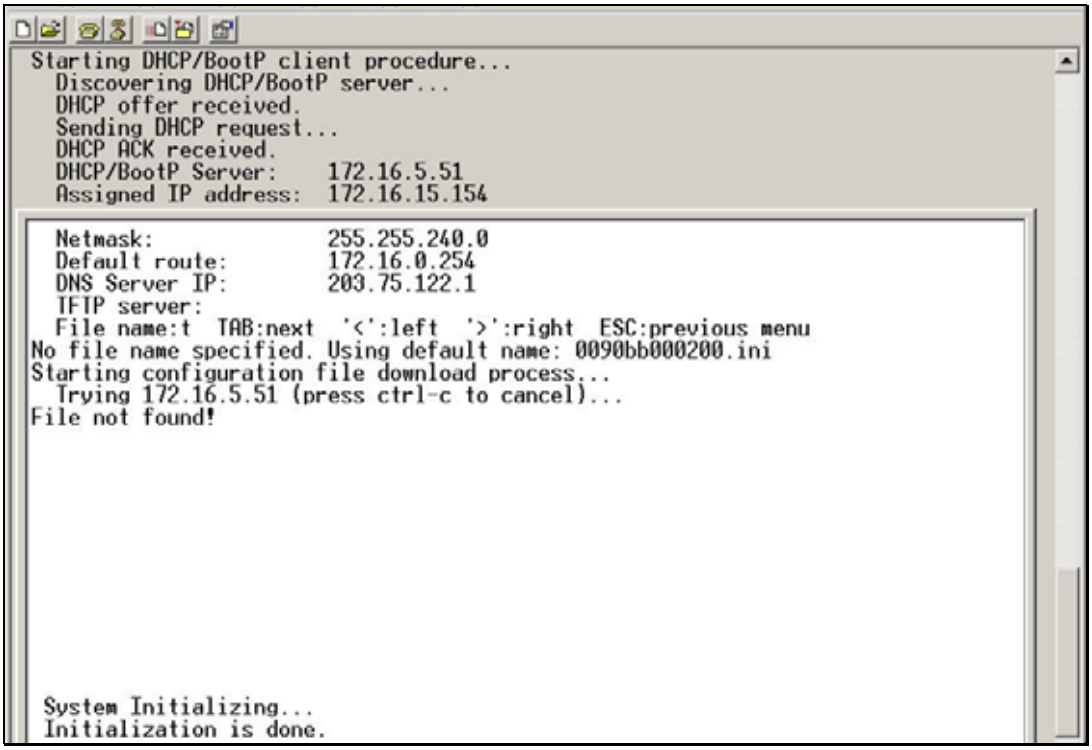


Figure 3-16 - The Boot Up Procedure with DHCP/BootP Client Enabled

3.5.1.7 SNMP Configuration

Access Path: *Configuration Menu -> System -> SNMP Configuration.*

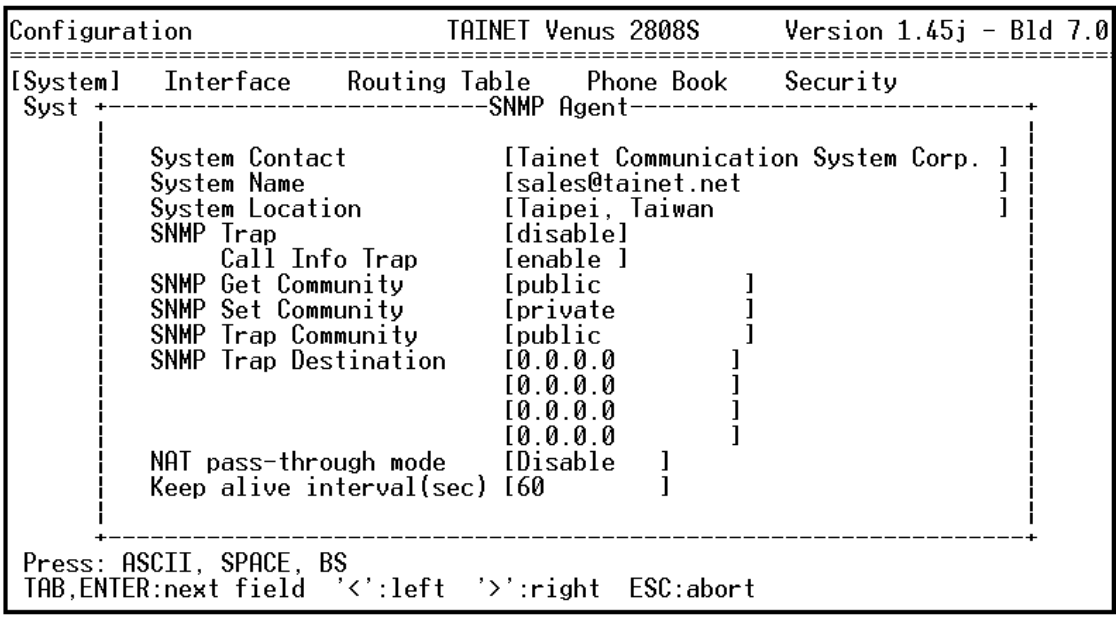


Figure 3-17 - SNMP Agent Configuration

Table 3-13 - Description of SNMP Agent Configuration Items

Field	Description
SNMP Agent	Select this item to enable SNMP agent configuration for SNMP management.
System Contact	This item is an object defined in the SNMP MIB (Management Information Base) II. This is the textual identification of the contact person for this managed node, together with information on how to contact this person.
System Name	This item is an object defined in the SNMP MIB-II. An administratively assigned name for this managed node. By convention, this is the node's fully qualified domain name.
System Location	This item is an object defined in the SNMP MIB-II. It is the physical location of this node (e.g., `telephone closet, 3rd floor').
SNMP Trap	Trap is a function defined in the SNMP and is used by the agent to inform the manager of some events like Cold Start, Warm Start, Link Down, Authentication Failure and the enterprise specific. This item is to enable the SNMP trap.
Call info Trap	This item allows more detail calling information send to Trap destination. Some billing system would like to have these information records for billing purpose.
SNMP Get Community	A pairing of an SNMP agent with some arbitrary set of SNMP application entities is called an SNMP community. Each SNMP community is named by a string of octets that is called the community name for said community. This item defines the community for the Get object from MIB.
SNMP Set Community	This item defines the community string for the Set object from MIB.
SNMP Trap Community	This item defines the community string for the Trap active.
Trap Destination	This item tells VENUS Series to send traps to the specified IP address of the SNMP Management Server.
NAT Pass-through Mode	This is used to maintain the UDP translation entry in NAT for the SIP protocol, when the gateway behind a NAT router, when this feature is enable, it would periodically send out a SIP message to keep this passage.
Keep Alive interval (Sec)	This item specifies the time interval for sending 'Keep Alive' message.

3.5.1.8 DNS Configuration

Access Path: Configuration Menu -> System -> DNS Configuration.

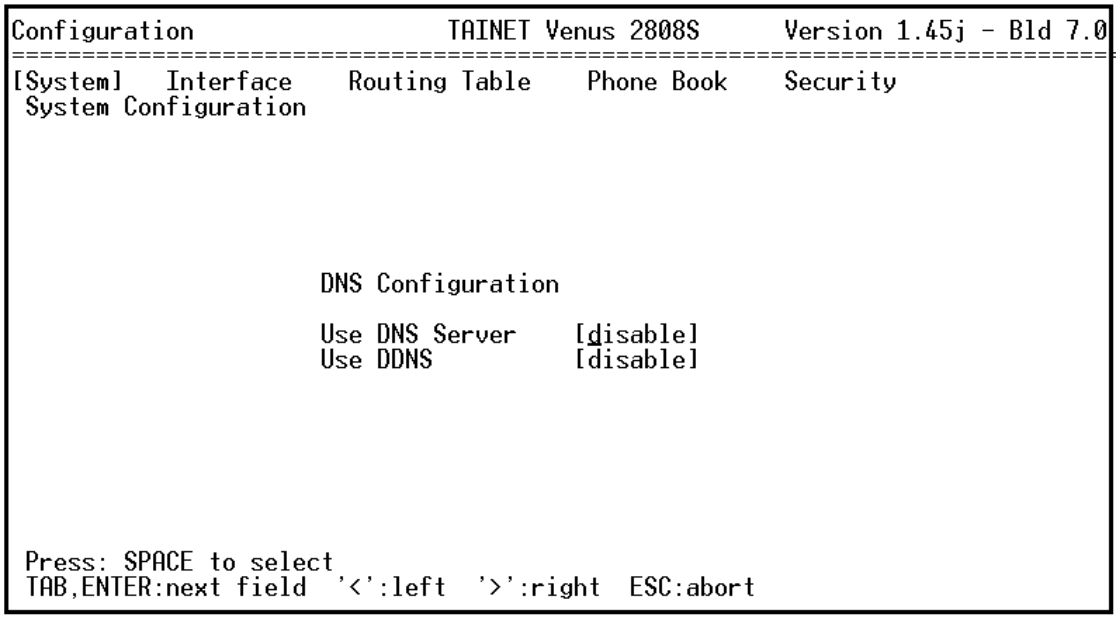


Figure 3-18 - DNS Configuration

3.5.1.8.1 DNS Server

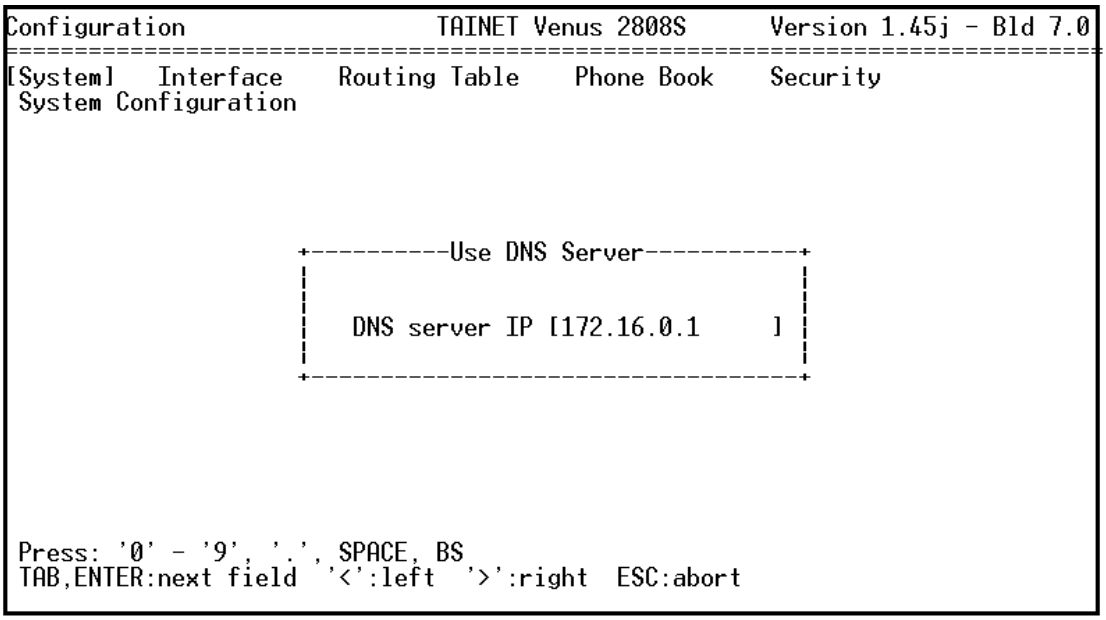


Figure 3-19 - DNS Server

Table 3-14 - Description of DNS Configuration Items

Field	Description
Use DNS Server	Setup the IP address of the Domain Name Server (DNS). The DNS server maintains a database of domain names (host names) and their corresponding IP addresses. With DNS client enabled, VENUS Series will communicate with the DNS server and look up the domain name of (1) the SIP Proxy, or (2) the IADMS server to find out their corresponding IP address. The discovered IP address of the SIP Proxy is then used for SIP protocol. *In this case, the static IP address of the SIP Proxy defined in the "SIP Basic Configuration" menu (see Section 3.5.1.1) is not used.*

3.5.1.8.2 DDNS Server

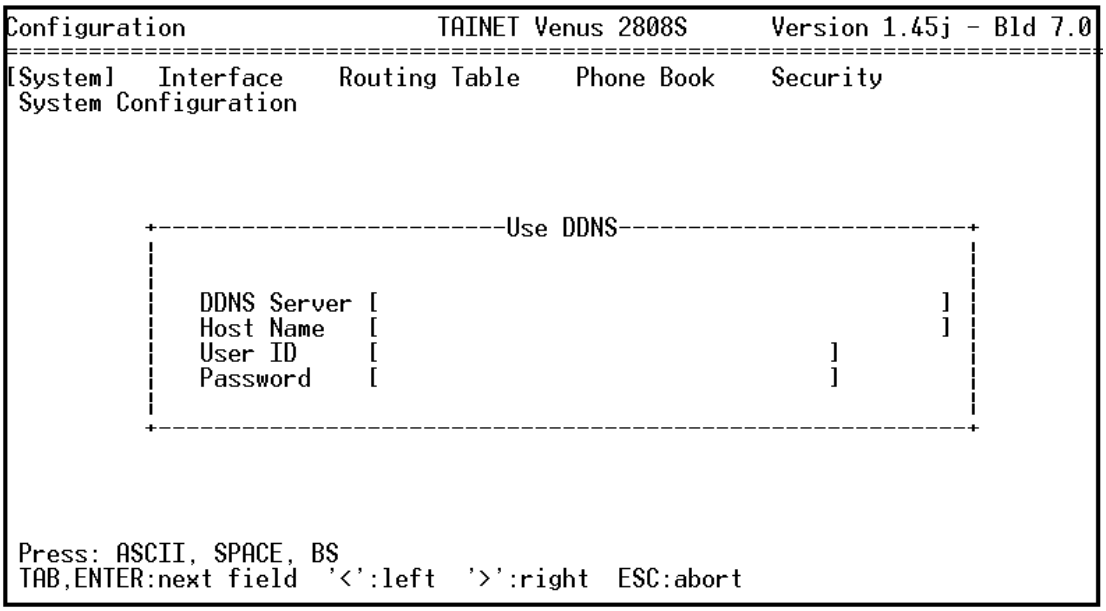


Figure 3-20 - DDNS

Table 3-15 - Description of DDNS Configuration Items

Field	Description
Use DDNS	These settings are only necessary when the gateway is set up under a NAT that uses a dynamic IP address and do not support DDNS.
DDNS Server	Sets up the IP address.
Host Name	Apply from a domain name registration provides.
User ID	The ID is used to log into the DDNS server.
Password	The Password is used to log into the DDNS server.

3.5.1.9 Download and upload Configuration File

This menu is used to manually evoke the procedure of downloading or uploading the configuration file. Detailed description for the format of the configuration file is shown in Chapter 4.

Access Path: *Configuration* Menu -> *System* -> *Download Configuration File.*

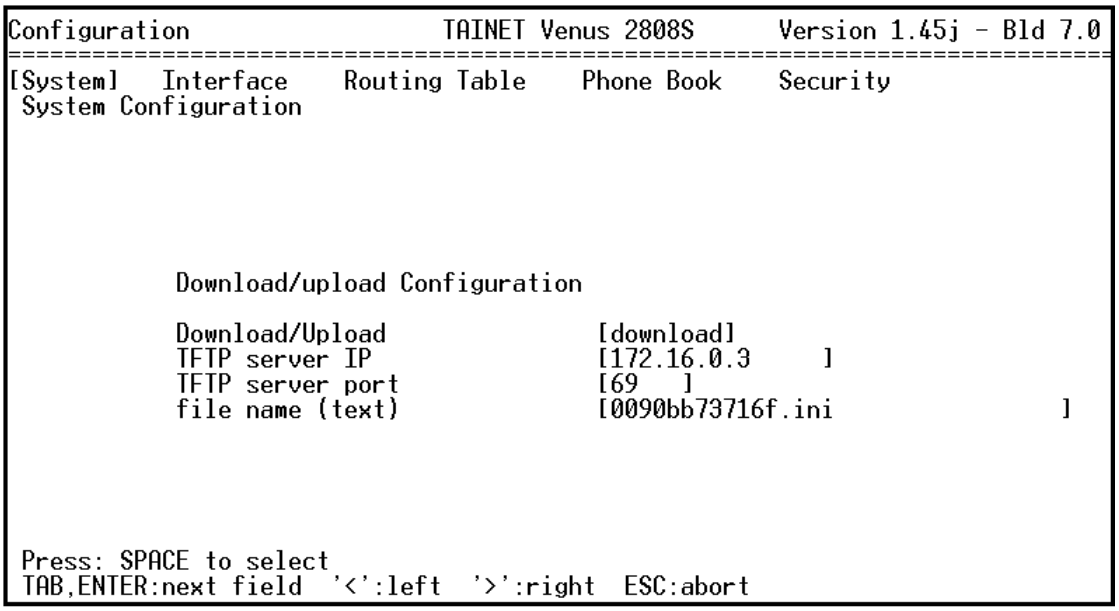


Figure 3-21 - Download Configuration File

Table 3-16 - Description of Download Configuration File Items

Field	Description
Download/Upload	This specifies whether to download or upload a configuration file
TFTP Server IP	This is the IP address of the TFTP server where the configuration file is stored.
TFTP Port	This is the Port of the TFTP server.
File Name	The file name of the configuration file.

The Download Procedure is shown in Figure 3-22:

- *Enter the IP address of the TFTP server and the file name, press Enter to start the TFTP download*
- *Press Ctrl-C to cancel the download process in case the TFTP server is not found*
- *VENUS Series parses the downloaded file and processes the configuration*

Note:
User may need to reboot the device to activate the new configuration.

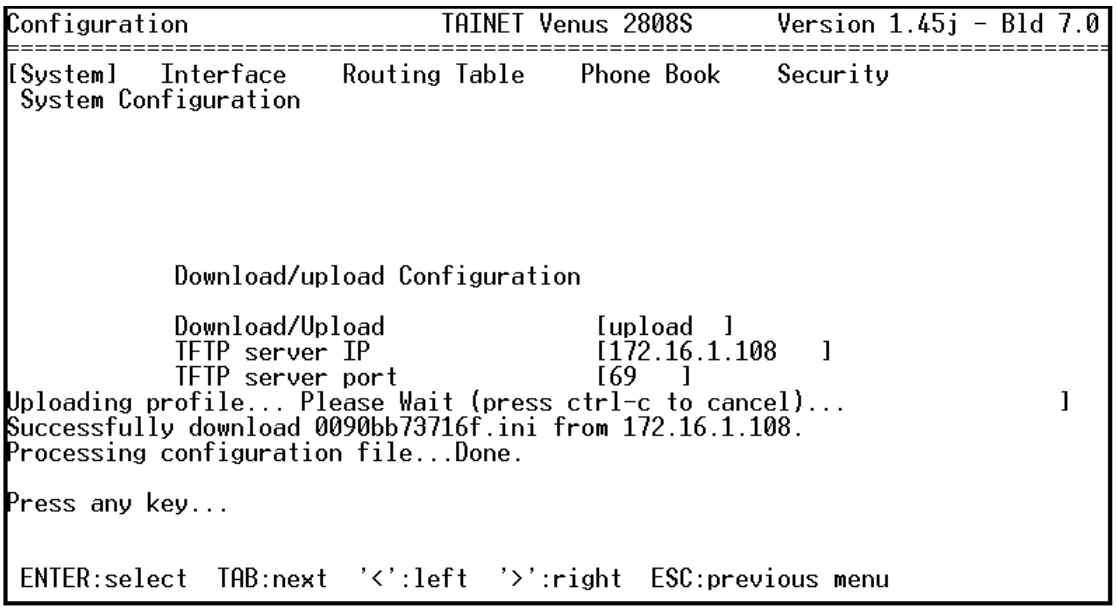


Figure 3-22 - Download Procedure of the Configuration File

3.5.1.10 Country Code

This menu is for selecting a pre-programmed POTS specification (the ring generation spec and the telephone tone spec) for some specific countries. For those countries that are not in the country selection list can setup the individual ring and tone spec within the Command Line Interface as well. Refer to Section 3.5.2, Section 3.8.3and Chapter 4 for detailed information.

Countries supported are:

1) USA
2) Hong Kong
3) Taiwan
4) China
5) India
6) Sweden
7)Malaysia

The default setting is "**generic**".

Access Path: *Configuration Menu -> System -> Country Code.*

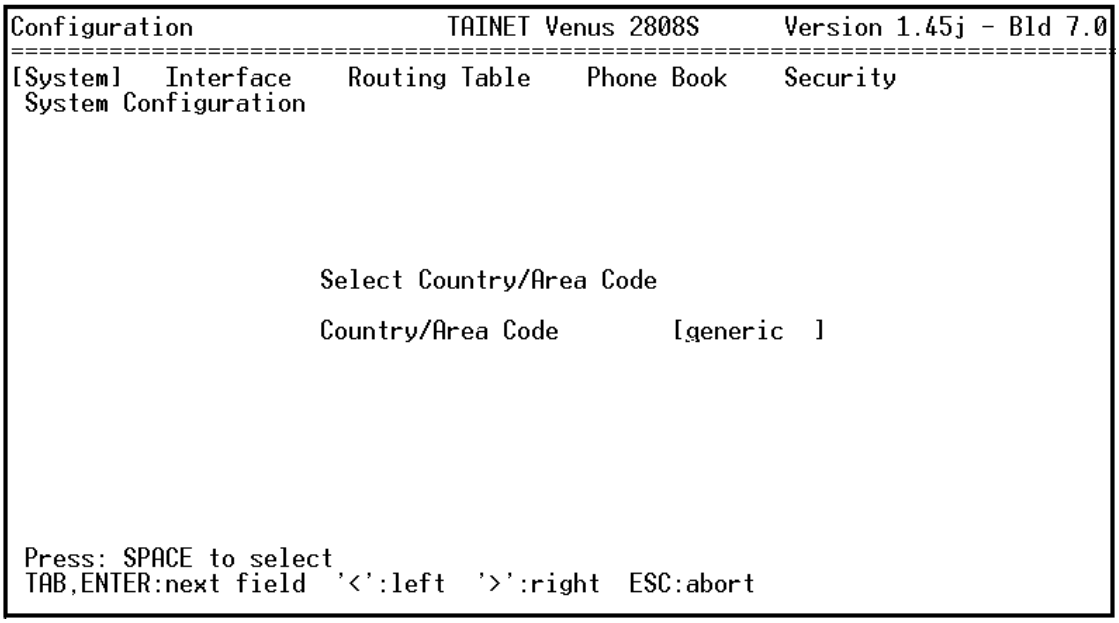


Figure 3-23 - Country Code Selection

3.5.1.11 QOS Configuration

Access Path: *Configuration Menu -> System -> QoS Configuration.*

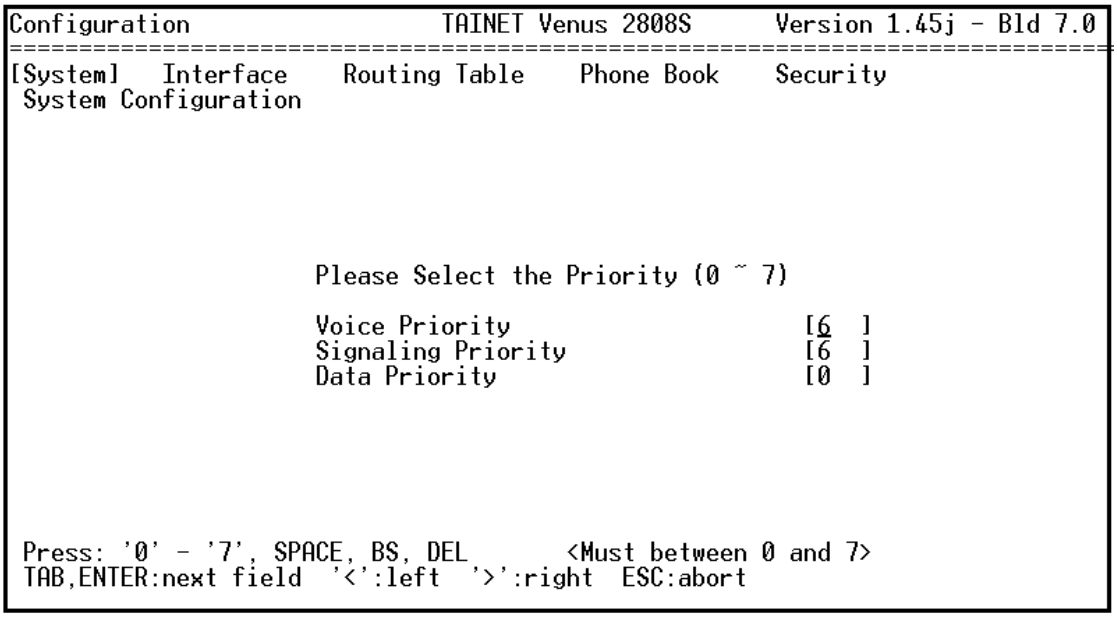


Figure 3-24 - QoS Configuration Selection

Table 3-17 - Description of QoS Configuration Selection Items

Field	Description
Voice Priority	Voice packet will be added with a priority value to the IP header. The TOS (Type Of Service) for media stream digit 7 is highest and 0 is the lowest priority.
Signaling Priority	SIP signaling packet will be added with a priority value to the IP header. The digit 7 is highest and 0 is the lowest priority.
Data Priority	Data packet will be added with a priority value to the IP header.

3.5.1.12 FAX Configuration

Access Path: *Configuration Menu -> System -> FAX Configuration*.

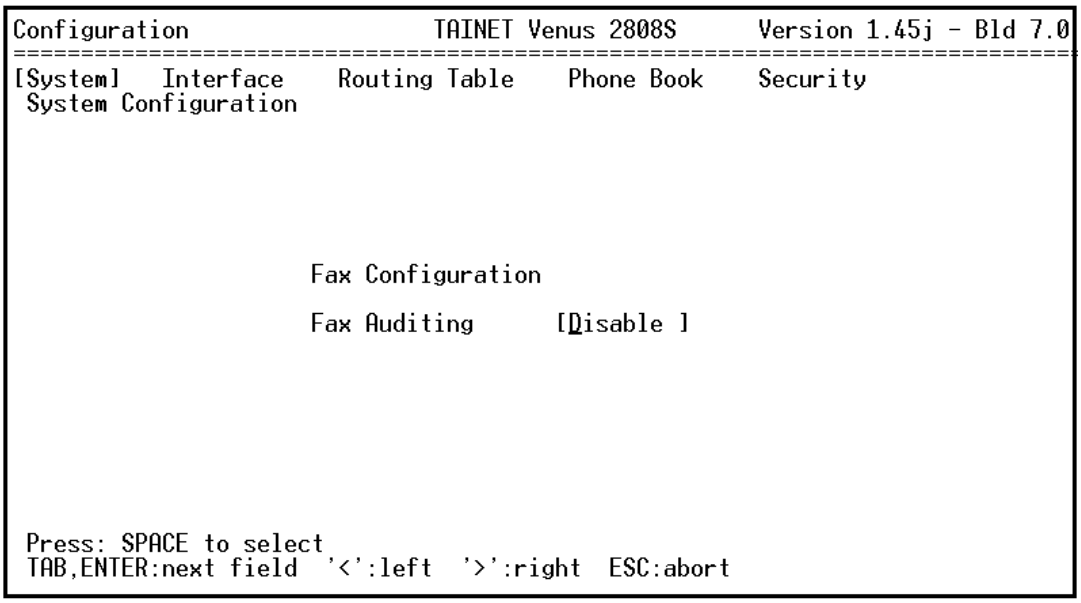


Figure 3-25 - FAX Configuration Selection

Table 3-18 - Description of FAX Configuration Item

Field	Description
Fax Auditing	The Venus Series has three types can selection of FAX operation.
Disable	Close Venus Series FAX operation.
T.38 Fax	The T.38 protocol is used for better and faster facsimile transmission. When this function is enabled, the following fax and voice parameter setting will be disabled, so it is recommended to enable this function to gain better fax quality.
T.30 Fax	The system uses T.30 as the protocol for fax transmission. The parameter setting is the same as for voice transmission. However, enable the fax function will consume more network resources and will affect transmission quality.

3.5.1.13 Call Features

VENUS gateway supports various call features. Please refer to Appendix A for more detailed operations on the calling features.

Note: The setting here is a global control for all FXS ports.

Access Path: *Configuration Menu -> System -> Call Features*

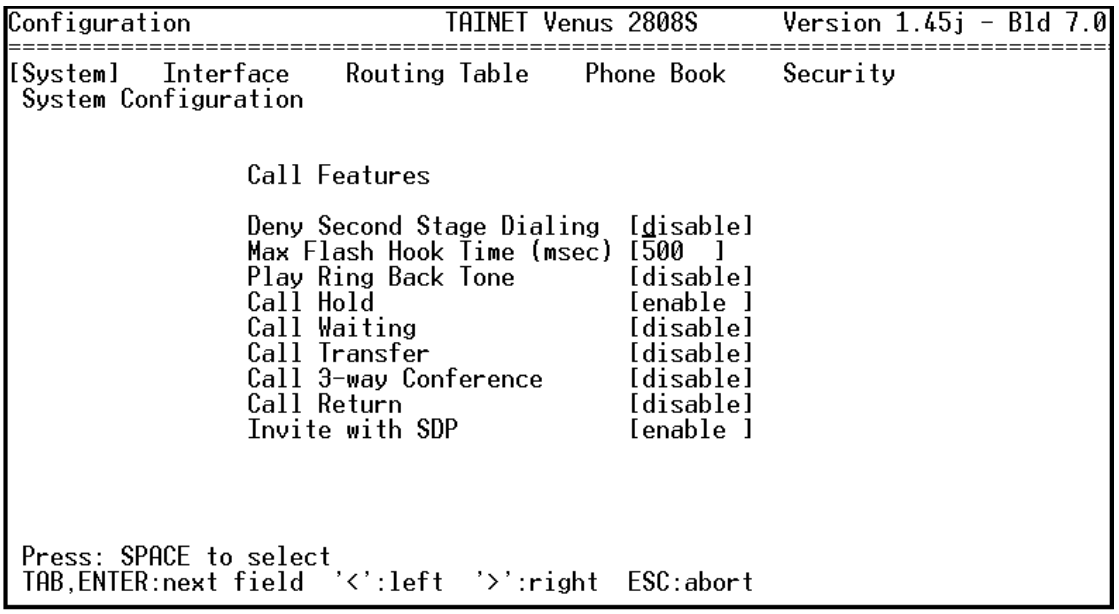


Figure 3-26 - Call Features Configuration

Table 3-19 - Description of Call Features Configuration Items

Field	Description
Deny Second Stage Dialing	This option is used to block user from making another call to a different network while it is calling from a different network.
Max Flash Hook Time	This option specifies the maximum flash hook detection period in msec.
Play Ring Back Tone	When this feature is enabled, the user would need to specify the ring back response type, as shown in Figure 3-27.
Call Hold	When this feature is enabled, the user can be chosen call hold type by self, as shown in Figure 3-28.
Call Waiting	All the items here are used to enable or disable various calling features.
Call Transfer	
Call 3-Way Conference	
Call Return	
Invite with SDP	

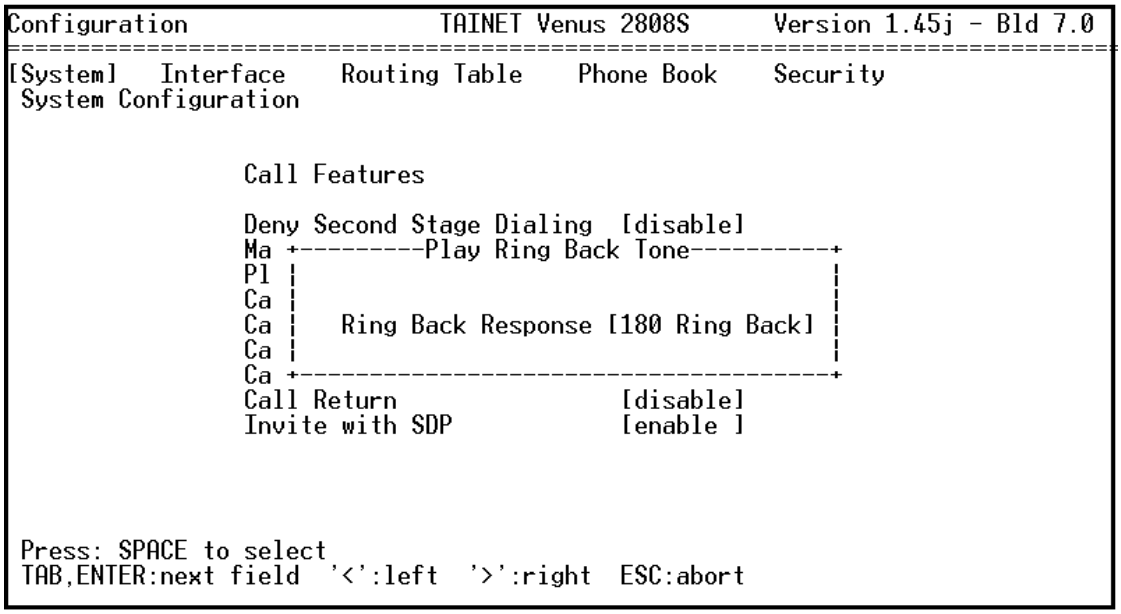


Figure 3-27 - Play Ring Back Tone Configuration

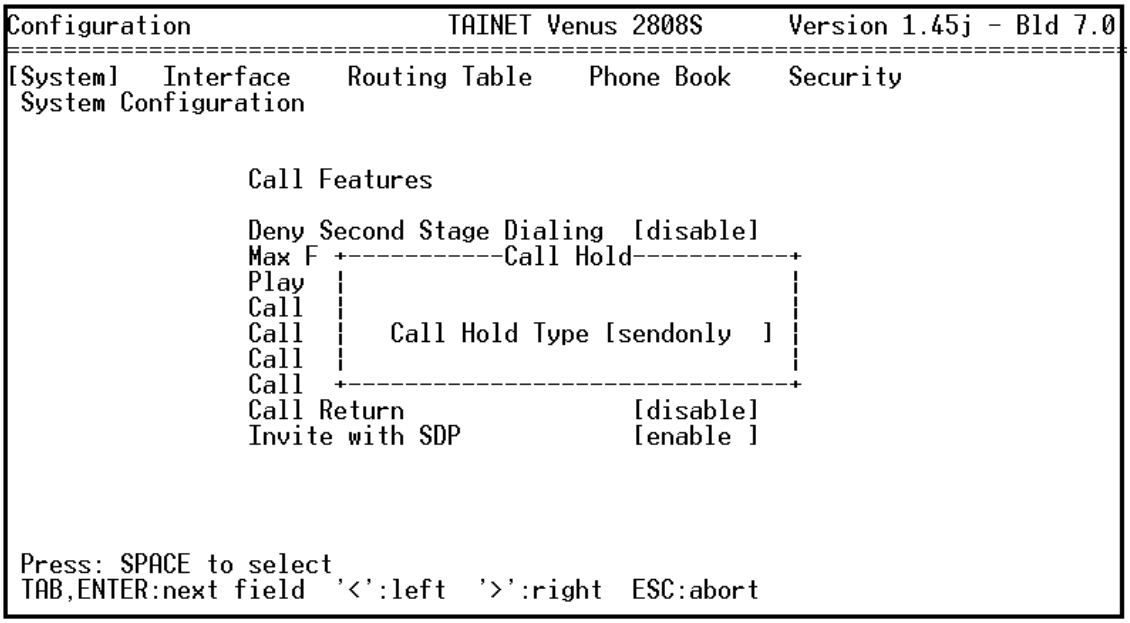


Figure 3-28 - Call Hold Configuration

3.5.1.14 RTP Configuration

Access Path: *Configuration* Menu -> *System* -> *RTP Configuration*

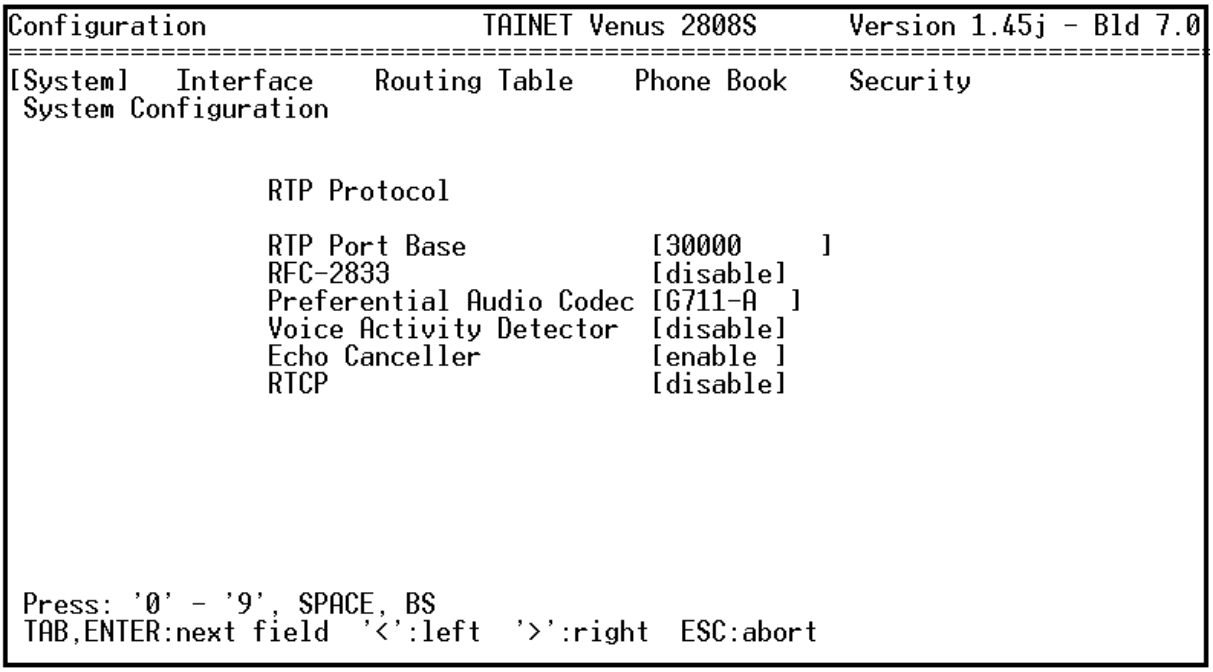


Figure 3-29 - RTP Configuration

Table 3-20 - Description of RTP Configuration Items

Field	Description
RTP Port Base	The UDP port starting number for Real-time Transport Protocol.
RFC-2833	It enables the RTP Payload to carry dual-tone multi-frequency (DTMF) signaling, other tone signals and telephony events in RTP packets. On the contrary the DTMF signaling is packed as voice data when RFC-2833 is disabled.
Preferential Audio Codec	This item specifies the preferred audio codec for compression.
Voice Activity Detector	If one side of a connection is not speaking, the system will sending voice transmission. And user can adjust dbm value from –40 to –70.
Echo Canceller	Prevents poor telecommunication quality caused by echo interface.
RTCP	If this item is enabled, the system will send RTCP package front of RTP package.

3.5.1.15 Phone Features

Access Path: *Configuration* Menu -> *System -> Phone Features*

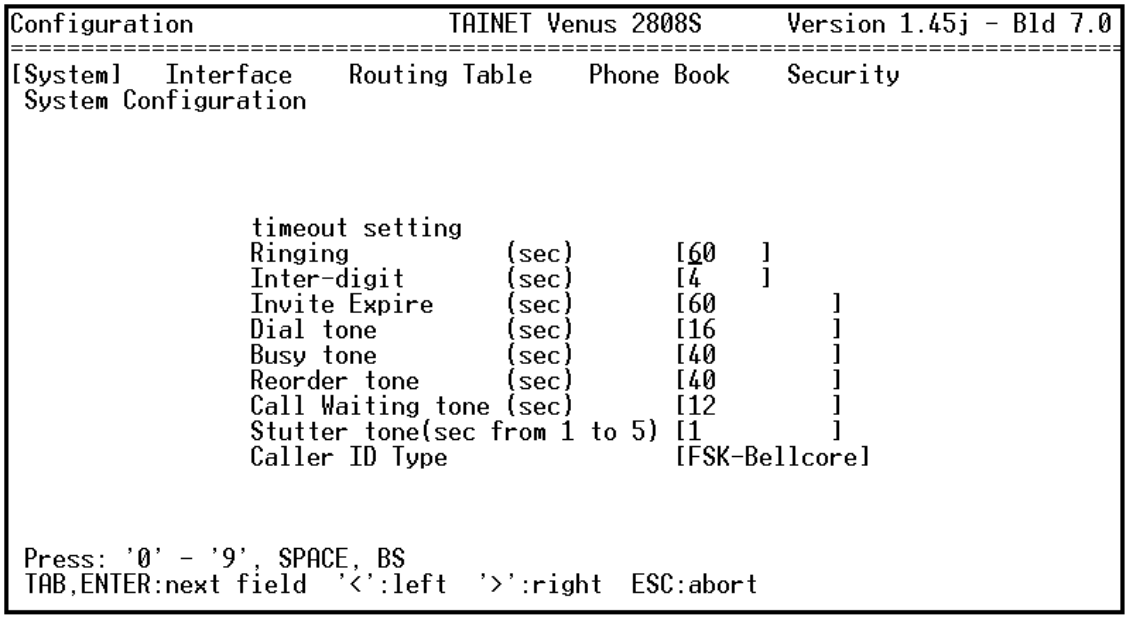


Figure 3-30 - Phone Feature Configuration

Table 3-21 - Description for Various Timeouts

Field	Description
Ringing	This item specifies the ringing timeout value in seconds.
Inter-digit	This item specifies the inter-digit timeout value in seconds.
Invite Expire	This item specifies the inter-digit timeout value in seconds.
Dial tone	This item specifies the dial tone timeout value in seconds.
Busy tone	This item specifies the inter-digit timeout value in seconds.
Reorder tone	This item specifies the reorder tone timeout value in seconds.
Call Waiting tone	This item specifies the call waiting timeout value in seconds.
Stutter Tone	This item specifies the stutter tone timeout value from 1 to 5 seconds.
Caller ID Type	The user is able to choose the caller ID type of Venus series.

Note: For this version, the 0 value means using default timeout period

3.5.1.16 DSP Configuration

Access Path: Configuration menu -> System -> DSP Configuration

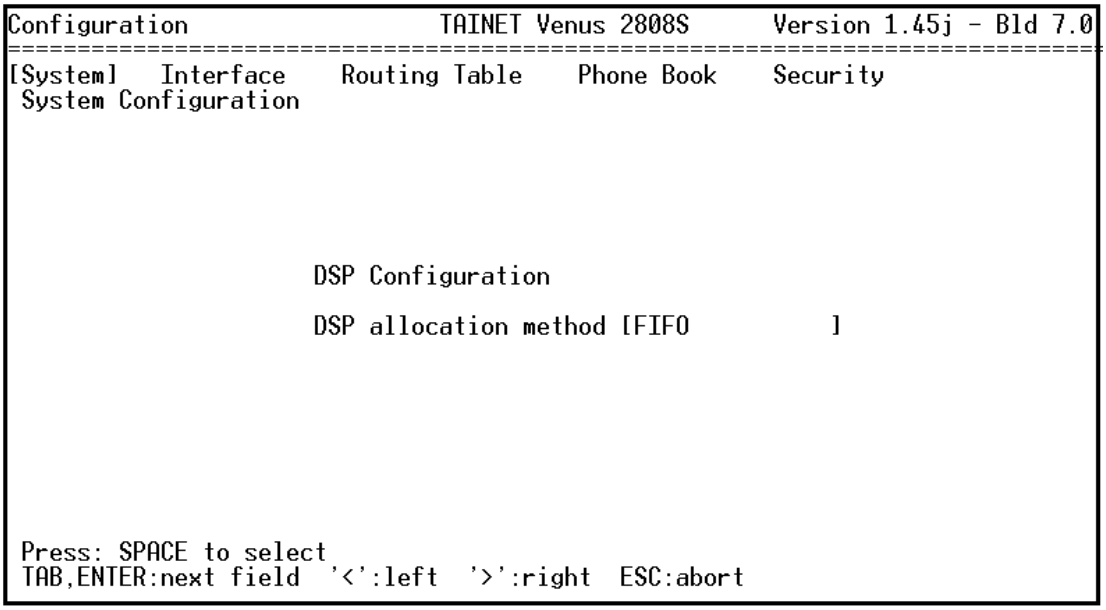


Figure 3-31 - DSP Configuration

Table 3-22 - Description for DSP Configuration

Field	Description
DSP Configuration	This item specifies the DSP chip channel register method.
FIFO	If the item is enabled, the first call will get the first channel of DSP chip no matter from any port in system.
Static Mapping	If the item is enabled, the first port will corresponds first channel of DSP chip, meanwhile, the second port will corresponds second channel of DSP chip.

3.5.1.17 Digitmap Configuration

Access Path: *Configuration Menu -> System -> Digitmap Configuration*

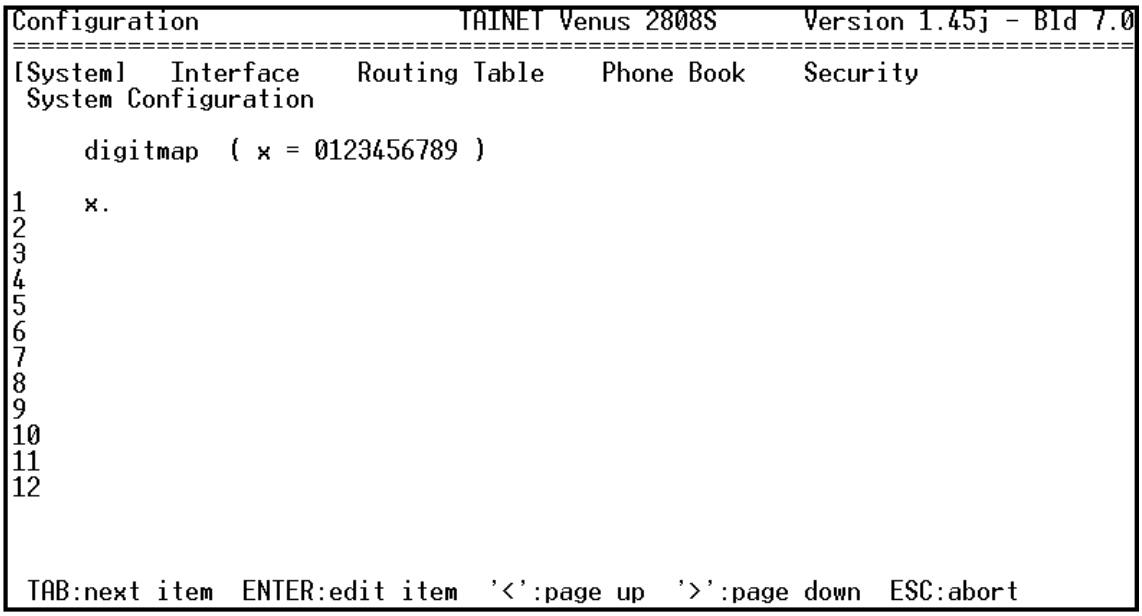


Figure 3-32 - Digitmap Configuration

The definition and configuration are the same as MGCP. Venus will accumulate the dialed numbers in a buffer as digitmap defined. Once finding matched or unmatched dialed number, it will invite a new session via proxy.

If the last dialed number is symbol '#' and it's not an matched string, the symbol '#' will be taken as ending key. This means the INVITE number string will remove the symbol '#'.

A digit map is defined either by a (case-insensitive) "string" or by a list of strings. Venus SIP IAD supports up to 12 items and each item allows 32 characters.

Each string in the list is an alternative numbering scheme, specified either as a set of digits or timers, or as an expression over which the gateway will attempt to find a shortest possible match. The following constructs can be used in each numbering scheme:

1. **Digit**: A digit from "0" to "9".
2. **Timer**: The symbol "T" matching a timer expiry.
3. **DTMF**: A digit, a timer, or one of the symbols "A", "B", "C", "D", "#", or "*". Extensions may be defined.
4. **Wildcard**: The symbol "x" which matches any digit ("0" to "9").
5. **Range**: One or more DTMF symbols enclosed between square brackets ("[" and "]").
6. **Subrange**: Two digits separated by hyphen ("-") which matches any digit between and including the two. The subrange construct can only be used inside a range construct, i.e., between "[" and "]".
7. **Position**: A period (".") which matches an arbitrary number, including zero, of occurrences of the preceding construct.

3.5.1.18 NTP Configuration

Access Patch: *Configuration -> System -> NTP Configuration*

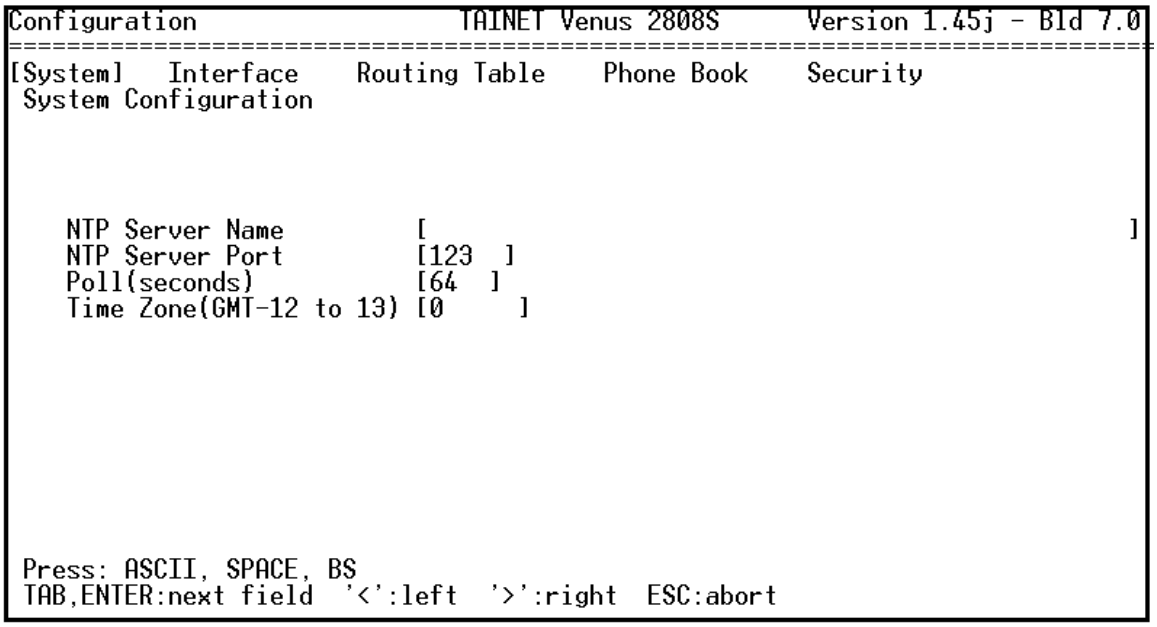


Figure 3-33 - NTP Configuration

Table 3-23 - Description of NTP Server Configuration

Field	Description
NTP Server Name	This item specifies the IP address of NTP Server.
NTP Server Name	This item specifies the port of the NTP server for get Time.
Poll (Second)	This item specifies the poll time value in second.
Time Zone (GMT-12 to 13)	The user able to adjust time zone with Greenwich mean time

3.5.1.19 Web Server Configuration

Access Patch: *Configuration -> System -> Web Server Configuration*

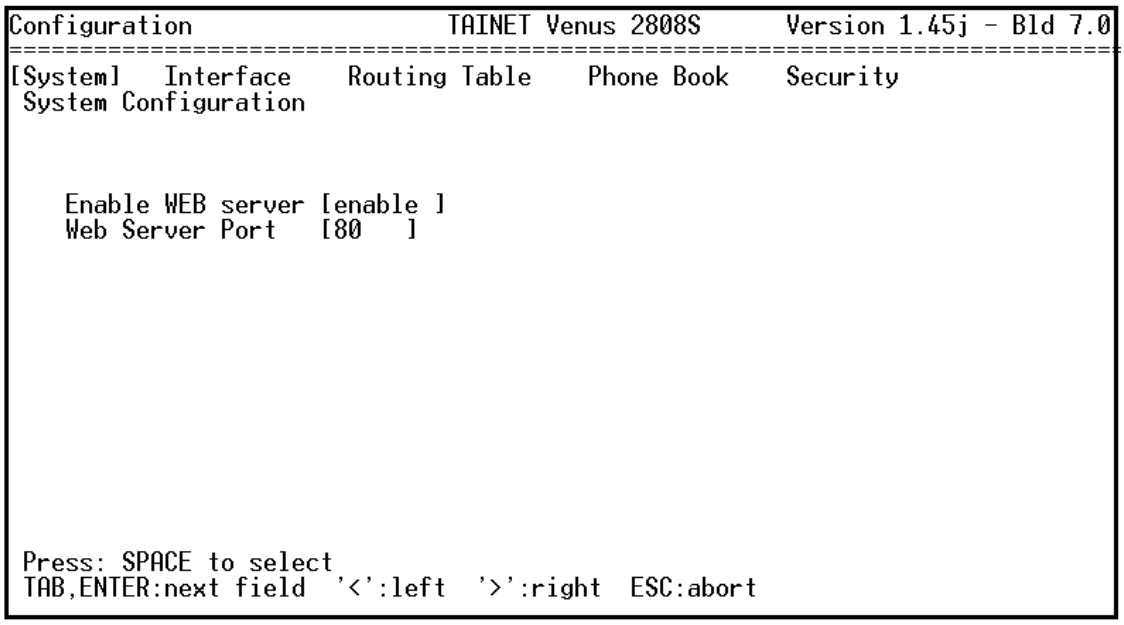


Figure 3-34 - Web Server Configuration

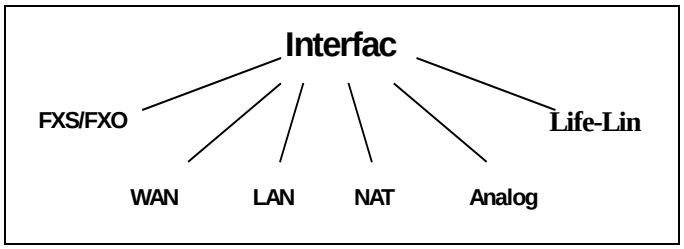
Table 3-24 - Description of Web Server Configuration

Field	Description
Enable Web Server	This item specifies the Web function whether to use or not.
Web Server Port	This item specifies the port of web browser.

3.5.2 Interface

Use this menu to configure the hardware interface of the device. The WAN interface is the interface for WAN IP network connection. The LAN interface is the interface for LAN local IP network connection. VENUS Series uses the 10/100BaseT Ethernet to connect to the IP network.

Table 3-25 – The Interface Menus Items



3.5.2.1 FXS/FXO

Access Path: *Configuration* Menu -> *Interface* ->*FXS/FXO*

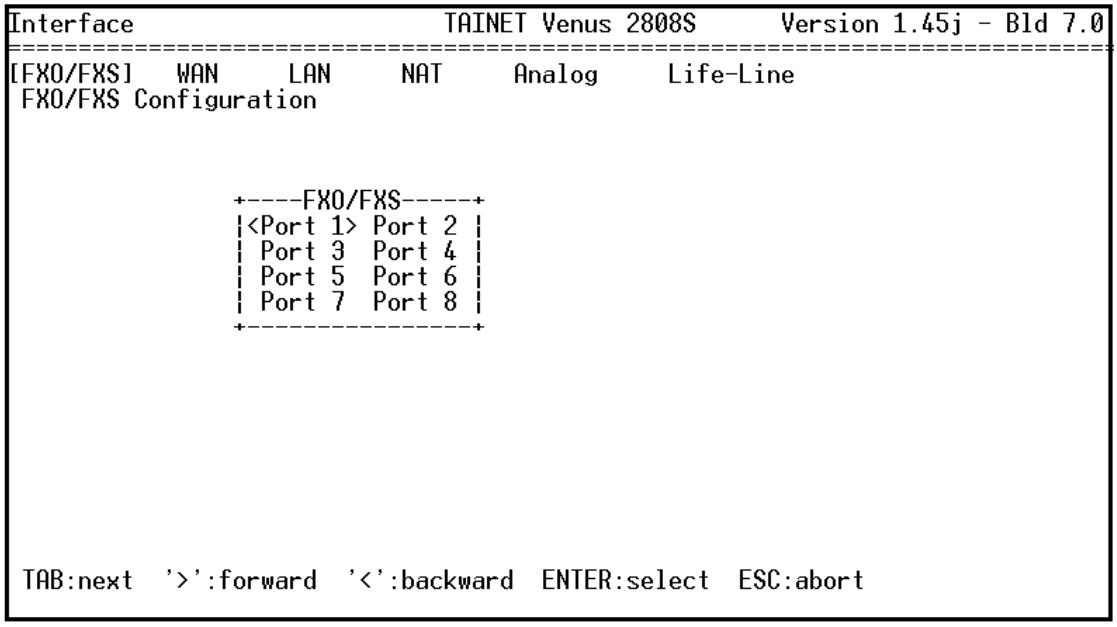


Figure 3-35 - FXS/FXO Configuration Menu

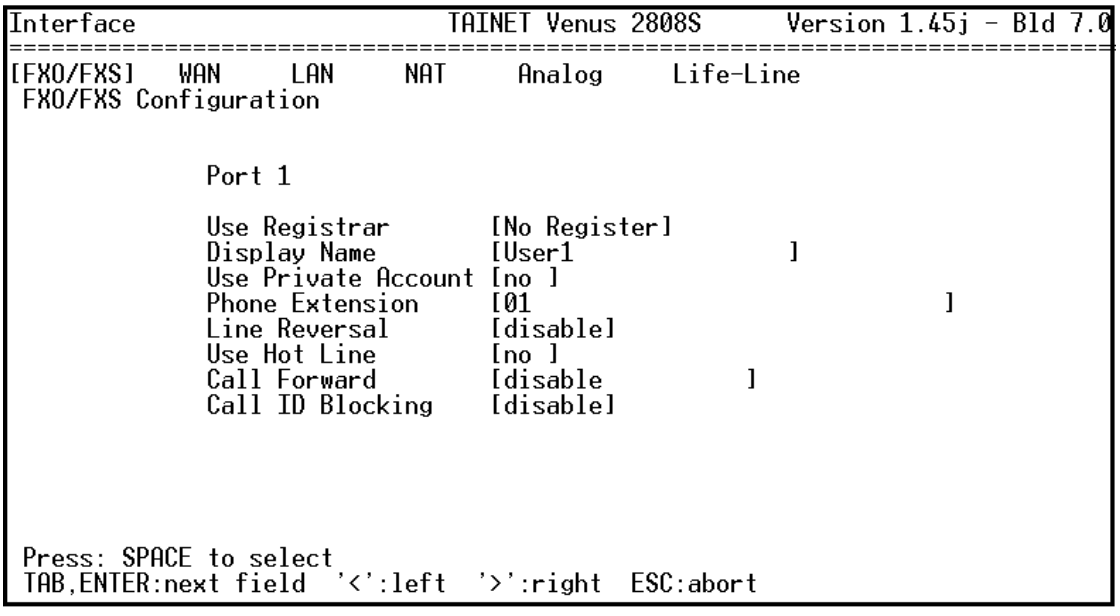


Figure 3-36 - Individual FXS/FXO Port Configuration

Table 3-26 - Description of FXS/FXO Port Items

Field	Description
Use Registrar	This item specifies whether or not this port needs to register with a Server.
Display Name	This field allows user to specify the display name associated with port's URL.
Use Private Account	This item specifies the use of private account, instead of the public account. When enabling this function, user would need to enter

	account ID, password, and realm, as shown in Figure 3-37.
Phone Extension	The phone extension has to be unique for all FXS/FXO ports. Together with the Prefix number, as described in Section 3.5.1.1, it forms part of the URL.
Line Reversal	This item specifies whether or not to use line reversal for this port. When enabled, if the caller hangs up, it would provide a momentary reversal of Tip and Ring that causes the switch to stop conducting and release the line. It's a polarity reversal that used to signal the phone and tell it that a call has been completed.
Use Hot Line	This is a Call Feature that allows automatically dialing of a user-assigned hotline number when the user picks up the phone. When enabling this feature, the user would need to enter the hotline number as shown in Figure 3-38.
Call Forward	This item allows the user to enable the call forward feature. When enabled, there are options to forward the call unconditionally (Call Forward Always) or forward the call when it can't be answered (busy or No Answer), as shown in Figure 3-39 and Figure 3-40 respectively. Please refer to Appendix A for more detail information on this feature.
Call ID Blocking	This item specifies the caller ID whether is blocking or not.

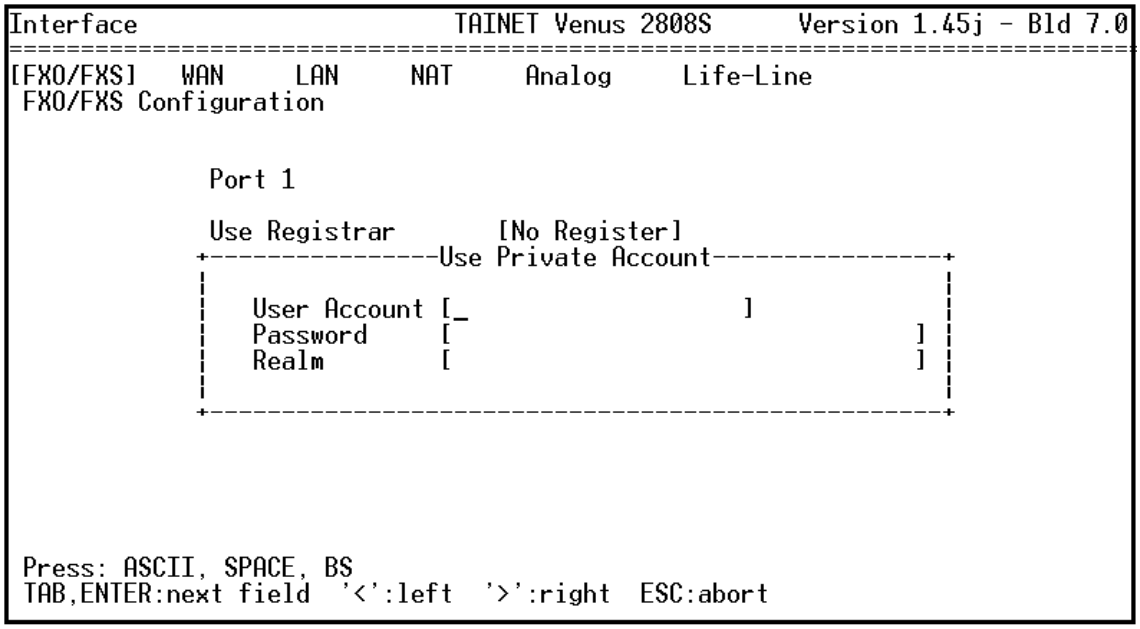


Figure 3-37 - Port's Private Account Configuration

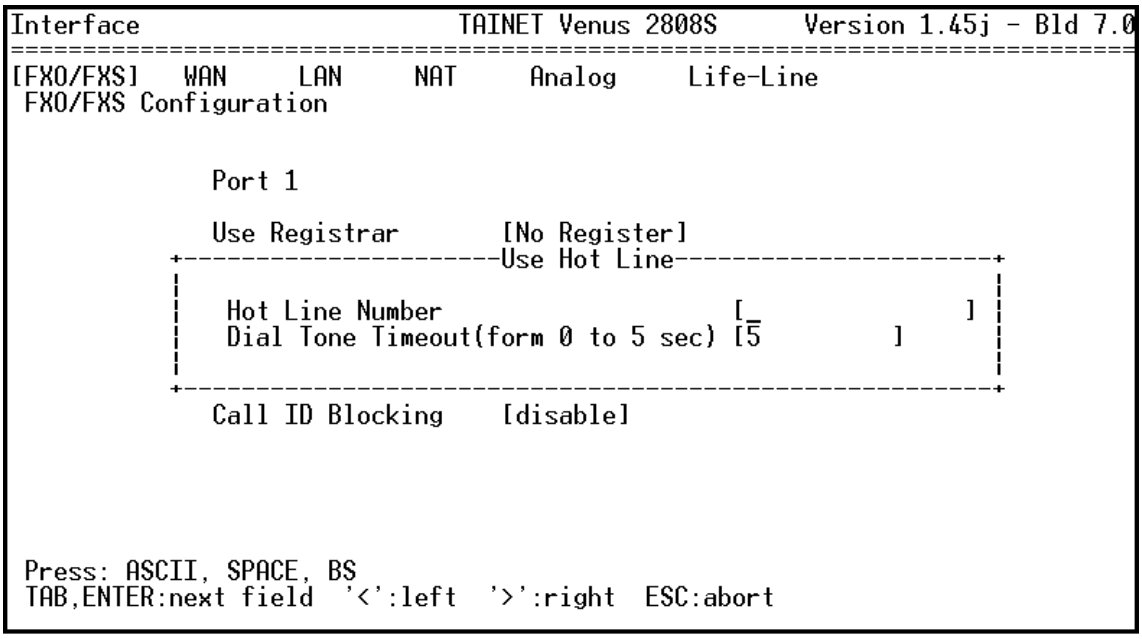


Figure 3-38 - Hotline Configuration

Access Path: *Configuration* Menu -> *Interface* -> *FXS/FXO* -> *Port xx* -> *Call Forward* -> *Always Forward*

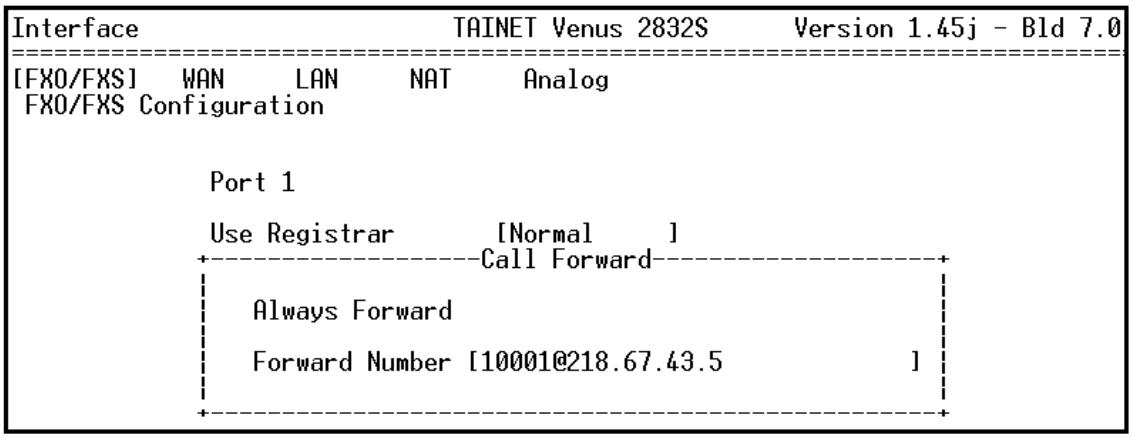
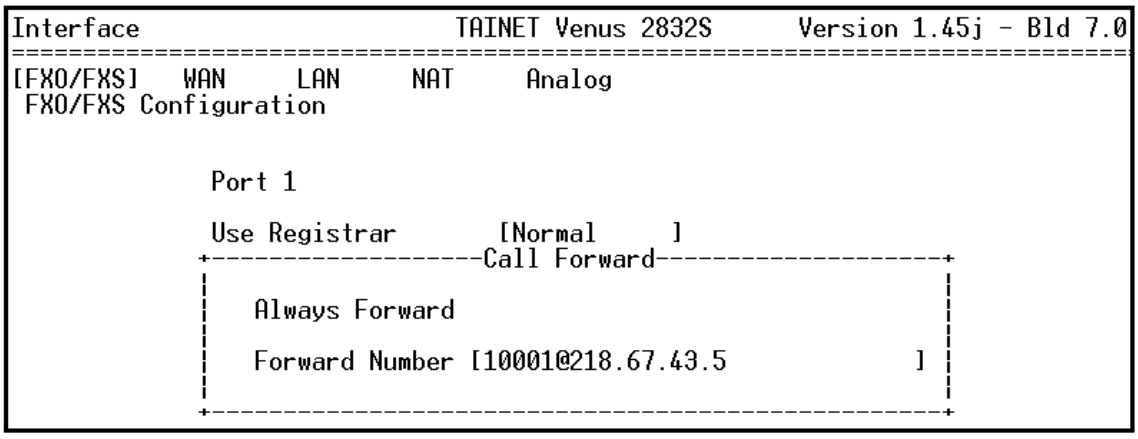


Figure 3-39 - Call Forward Always Configuration

Forward number rule: If user need to forward the phone to phone 10001, the forward rule is "**forward phone number@forward phone IP address**". For example, the number 10001 is forward number and the IP address 218.67.43.5 is forward IP address.



Access Path: *Configuration* Menu -> *Interface -> FXS/FXO -> Port xx -> Call Forward -> Busy&NoAnswer Forward*

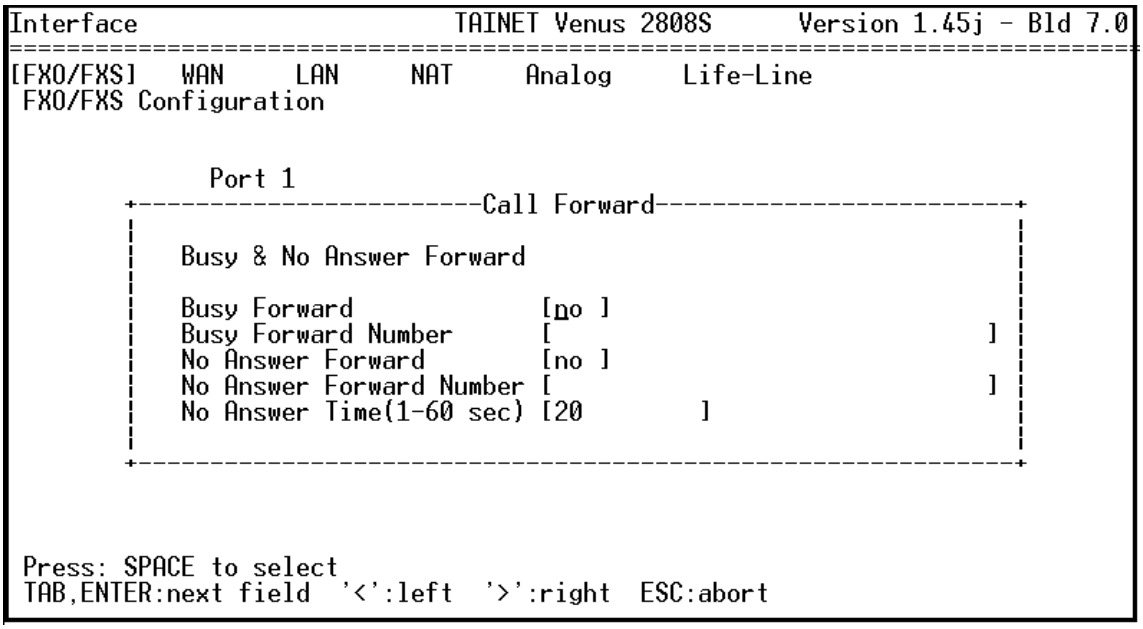


Figure 3-40 - Call Forward Busy & No Answer Configuration

Table 3-27 - Description of Call Forward Busy & No Answer Items

Field	Description
Busy Forward	This item enables or disables Busy Call forward feature. When enabled, an incoming call will be forward to the number specified below (in the *Busy Forward Number* field) when the FXS interface is busy.
Busy Forward Number	The telephone number that the call will forward to when the FXS port is busy.
NoAnswer Forward	This item enables or disables Busy Call forward feature. When enabled, an incoming call will be forward to the number specified below (in the *NoAnswer Forward Number* field) after the time specified in the *NoAnswer Time* field.
NoAnswer Forward Number	The telephone number that the call will forward to if the no one answer the call after certain period.
NoAnswer Time (1 to 60 seconds)	The time needed before the call is transferred, if not answered.

3.5.2.2 WAN

Access Path: *Configuration* Menu -> *Interface -> WAN*.

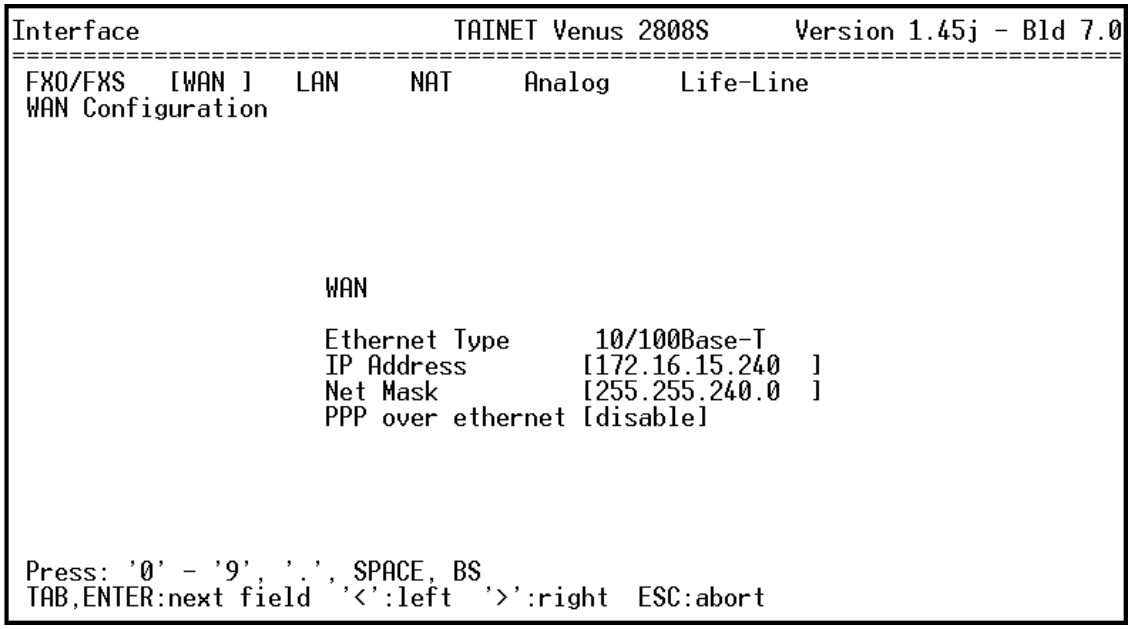


Figure 3-41 - WAN Interface Configuration

Table 3-28 - Description of WAN Interface Configuration Items

Field	Description
IP Address	This is the static IP address for the WAN interface (the 10/100BaseT Fast Ethernet port) of VENUS Series. If the DHCP client feature is not enabled, VENUS Series uses this address as its own IP address. Either a public or private IP address can be assigned. Each gateway must have a unique IP and MAC address. VENUS Series supports the Address Resolution Protocol (ARP) that can help to check the IP address and MAC address of the device. In case the DHCP/BootP client feature is enabled, VENUS Series will try to obtain the IP address dynamically. The static IP address assigned in this field is unused. The terminal UI will indicate the obtained IP address instead.
Net Mask	This IP Mask defines the domain of the local network. The destination IP address is AND with this mask to decide if it is located in the same local network. Class A (255.0.0.0) network; Class B (255.255.0.0) network, Class C (255.255.255.0) network, as well as sub-network are all supported.
PPP over Ethernet	PPPoE is a specification for connecting the users on an Ethernet to the Internet through a common broadband medium, such as a single DSL line, wireless device or cable modem.

Access Path: *Configuration* Menu -> *Interface -> WAN ->PPP over Ethernet*.

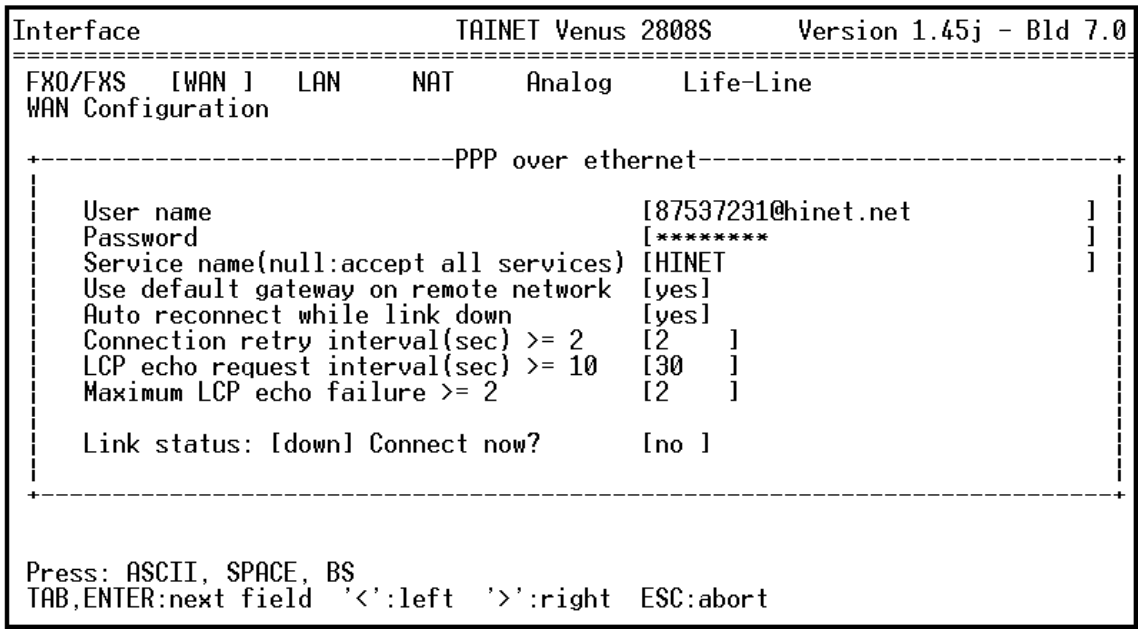


Figure 3-42 - PPP over Ethernet Configuration

Table 3-29 - Description of PPP over Ethernet Configuration Items

Field	Description
Username	The register name that can login PPPoE RAS server to get the dynamic IP.
Password	The login password that can pass the RAS authentication.
Service name (null: accept all services)	The Service Provider's name for recognition.
Use default gateway on remote network	Enabling this feature allows the system to use the default gateway specified by the server.
Auto reconnect while link down	With this function enabled, the system would automatically to re-register with the server when the link is disconnected.
Connection retry interval (sec) >=2	The waiting time between PPPoE disconnection and re-connect.
LCP echo request interval (sec) >=10	LCP includes Echo-Request and Echo-Reply Codes in order to provide a Data Link Layer loopback mechanism for use in exercising both directions of the link. This is useful as an aid in debugging, link quality determination, performance testing, and for numerous other functions. Upon reception of an Echo-Request in the LCP Opened state, an Echo-Reply MUST be transmitted. This option can be used with the lcp-echo-failure option to detect that the peer is no longer connected.
Maximum LCP echo failure >=2	If this option is given, PPP daemon will presume the peer to be dead if n LCP echo-requests are sent without receiving a valid LCP echo-reply. If this happens, PPP daemon will terminate the connection. Use of this option requires a non-zero value for the lcp-echo-interval parameter. This option can be used to enable PPP daemon to terminate after the physical connection has been broken (e.g., the modem has hung up) in situations where no hardware modem control lines are available.
Link status:	Check the link status and request to re-connect immediately.

[down] Connect now?	

Note: When PPPoE is enabled, all VoIP related data, such as RTP and SIP messages, would be sent through PPPoE.

3.5.2.3 LAN

Use this menu to configure the LAN interface of the device. LAN has two modes: Switch and Router.

Note: *For 2832 series, LAN interface will only be available with UTP-2 Module is installed.*

3.5.2.3.1 Switch Mode

Access Path: *Configuration* Menu -> *Interface -> LAN-> Switch Mode*

Under Switch Mode, the LAN interface use the same IP address of WAN and supports different VLAN function to enhance the QoS availability.

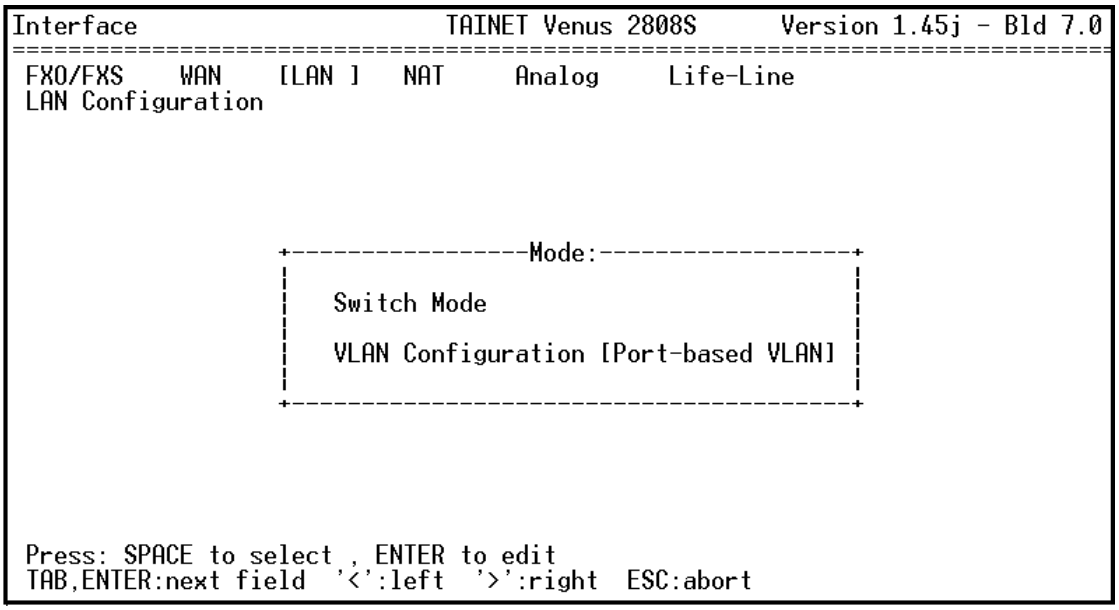


Figure 3-43 - LAN Switch Mode Configuration

Table 3-30 - Description of LAN Interface Configuration Items

Field	Description
Port-based VLAN	To build up a virtual LAN under a group of specified Ethernet ports. There are three groups can be used.
VLAN Priority	Define the VLAN priority in different interface. "1" is the lowest priority and "4" is the highest priority.
VLAN ID	To modify the VLAN identification tag on an 802.1Q class, the range is from 0 to 4095.
VLAN Tagging	For Ethernet interface only, enables the reception and transmission of 802.1Q VLAN-tagged frames on the interface. User can assign up to 4095 different logical interfaces, one for each VLAN, but they are limited to a maximum of 1024 VLANs on any Ethernet port.

Access Path: *Configuration* Menu -> *Interface* -> *LAN* -> Port-based VLAN

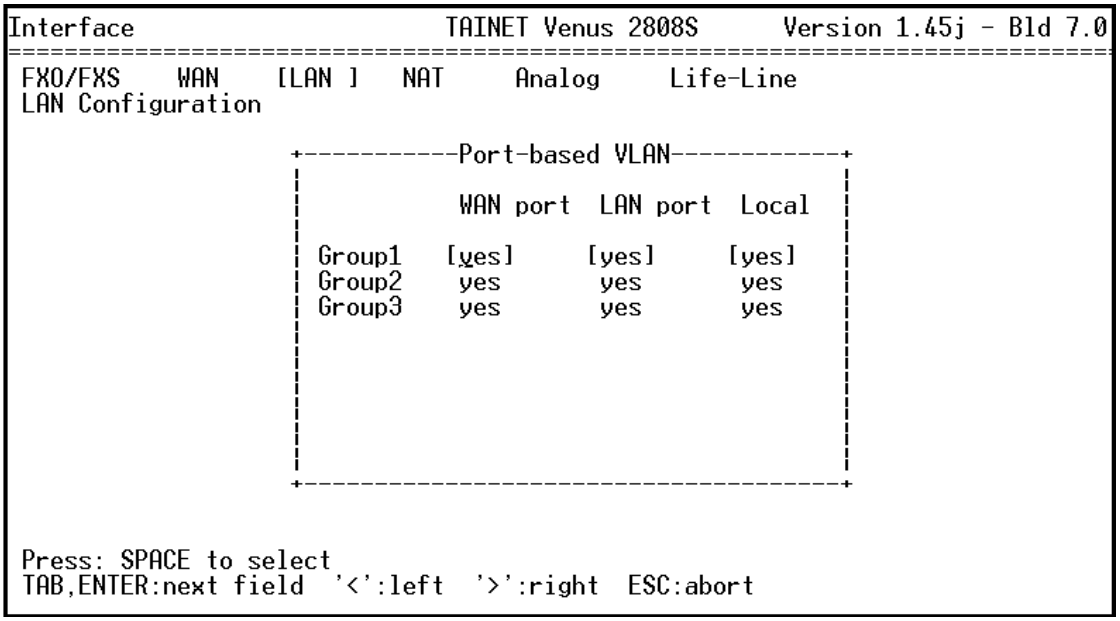


Figure 3-44 - Port-based VLAN Configuration

Access Path: *Configuration* Menu -> *Interface* -> *LAN* -> VLAN Priority

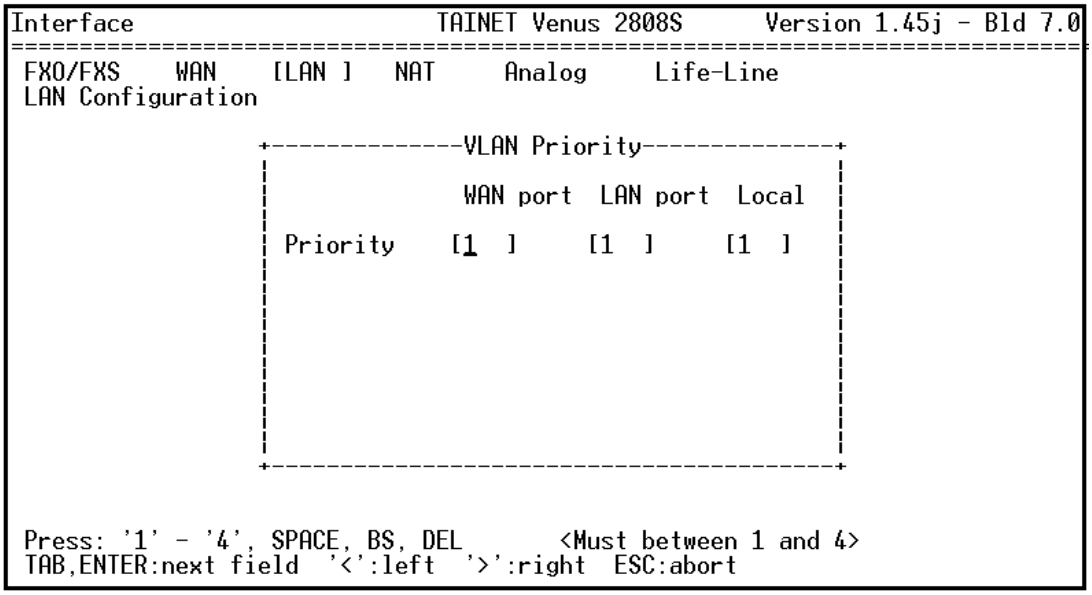


Figure 3-45 - VLAN Priority Configuration

Access Path: *Configuration* Menu -> *Interface* -> *LAN* -> VLAN ID

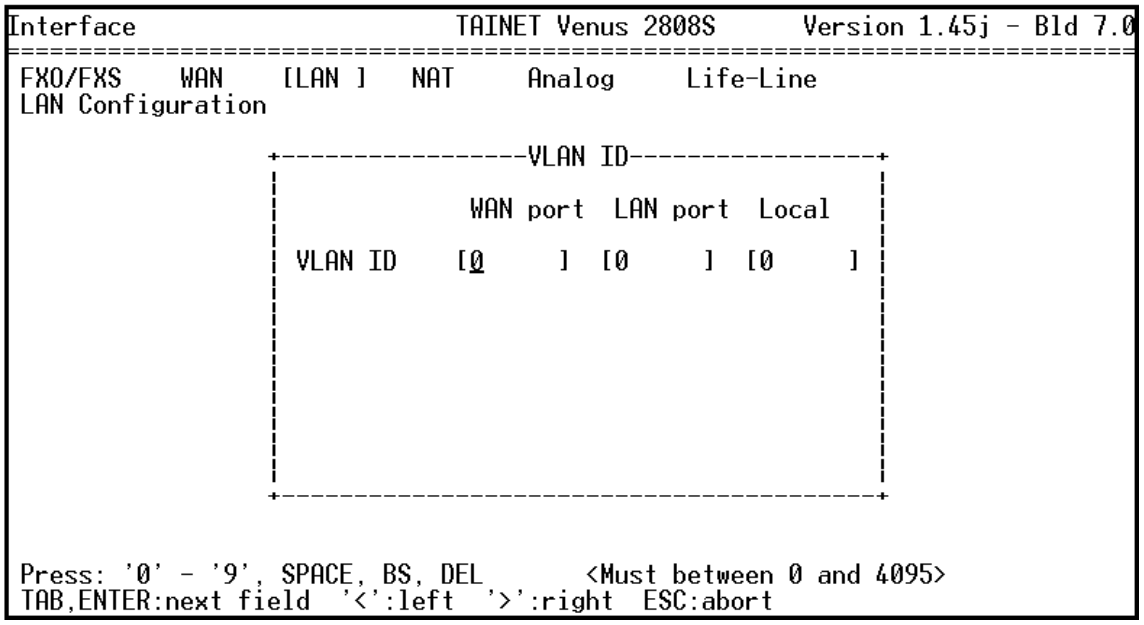


Figure 3-46 - VLAN ID Configuration

Access Path: *Configuration* Menu -> *Interface* -> *LAN* -> VLAN Tagging

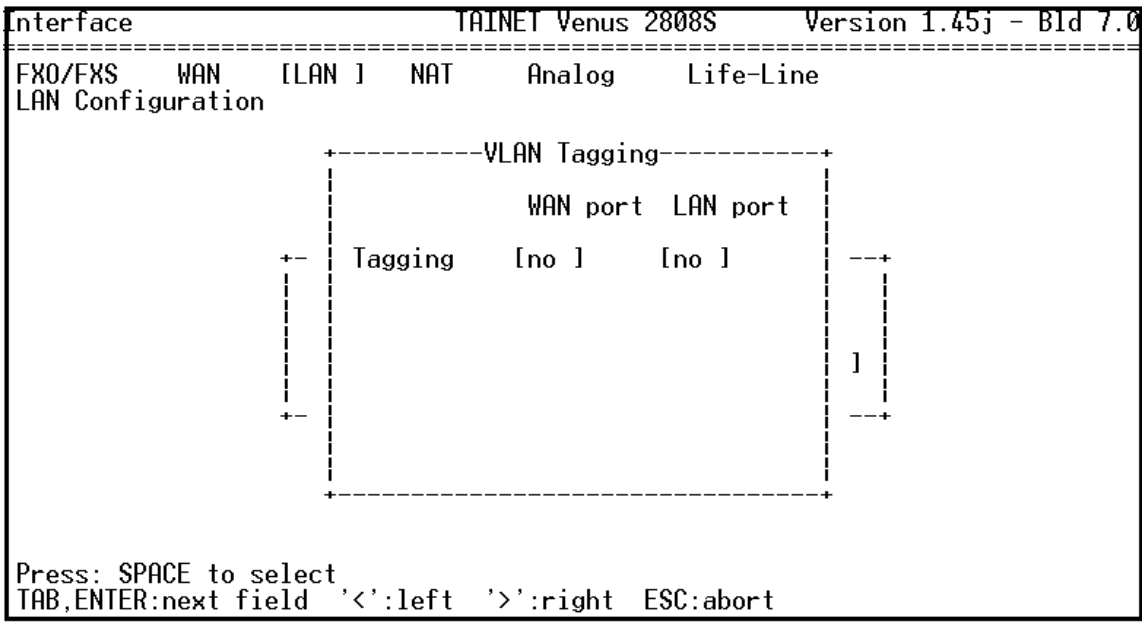


Figure 3-47 - VLAN Tagging Configuration

3.5.2.3.2 Router Mode

Access Path: *Configuration* Menu -> *Interface* -> *LAN* ->*Router Mode*

Under Router Mode, a different IP from WAN IP would need to be assigned.

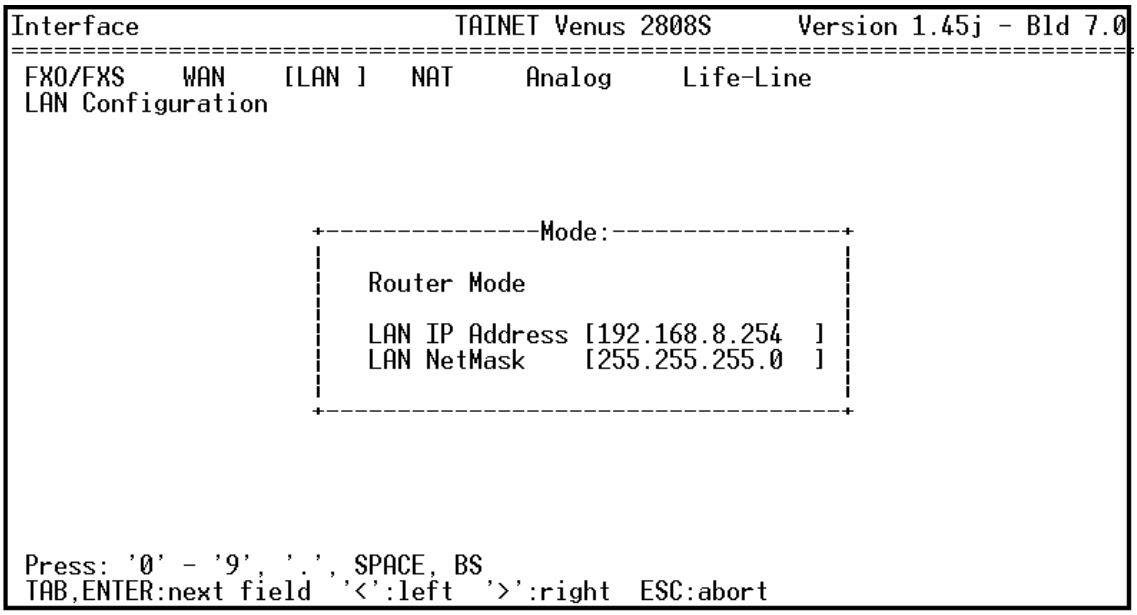


Figure 3-48 - Router Mode Configuration

3.5.2.4 NAT Configuration

Network Address Translation (NAT) feature works only when LAN is configured as **router mode**. VENUS NAT router allows nodes on the private network (LAN side) to transparently communicate with nodes on the external network (WAN side) and vice versa.

Access Path: *Configuration* Menu -> *Interface* -> *NAT*

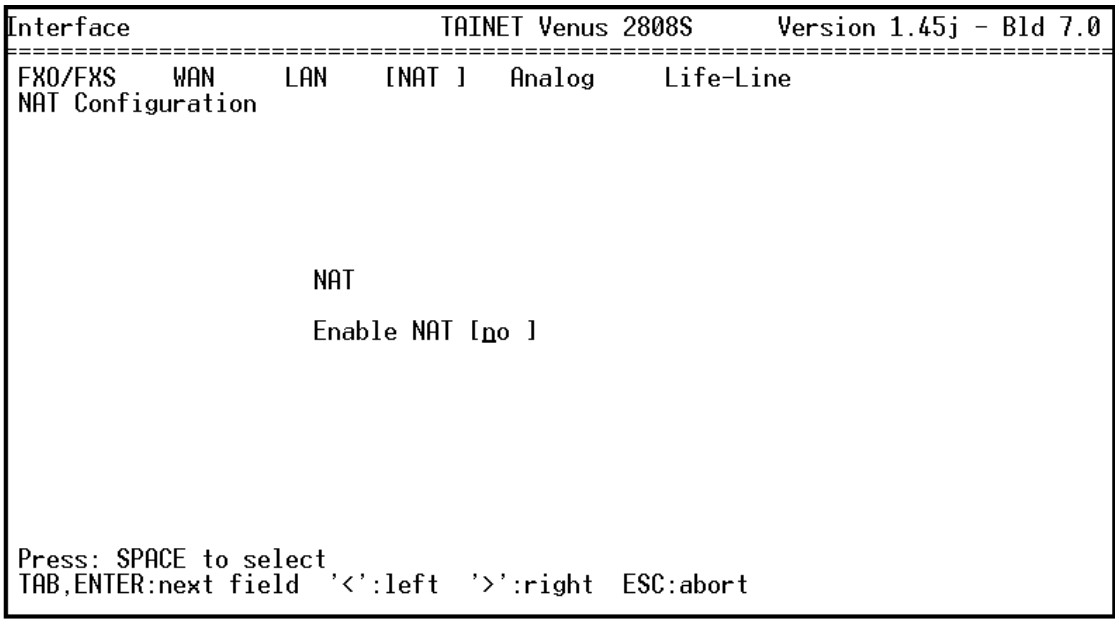


Figure 3-49 - NAT Configuration

When NAT is enabled, the following menu, shown in Figure 3-50, gives user the

option to specify nodes on the LAN side that can be accessed by nodes on the WAN side.

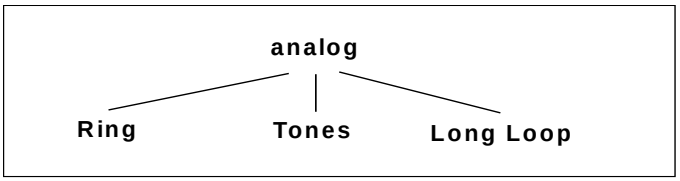
```
Interface                          TAINET Venus 2808S      Version 1.45j - Bld 7.0
================================================================================
 FXO/FXS    WAN     LAN    [NAT ]   Analog     Life-Line
 NAT Configuration

     Internal Source IP  Internal Port No.  Protocol  External Port No.

1    0.0.0.0             0                  TCP       0
2    0.0.0.0             0                  TCP       0
3    0.0.0.0             0                  TCP       0
4    0.0.0.0             0                  TCP       0
5    0.0.0.0             0                  TCP       0
6    0.0.0.0             0                  TCP       0
7    0.0.0.0             0                  TCP       0
8    0.0.0.0             0                  TCP       0
9    0.0.0.0             0                  TCP       0
10   0.0.0.0             0                  TCP       0
11   0.0.0.0             0                  TCP       0
12   0.0.0.0             0                  TCP       0



 TAB:next item  ENTER:edit item  '<':page up  '>':page down  ESC:abort
```

Figure 3-50 - NAPT Configuration

3.5.2.5 Analog

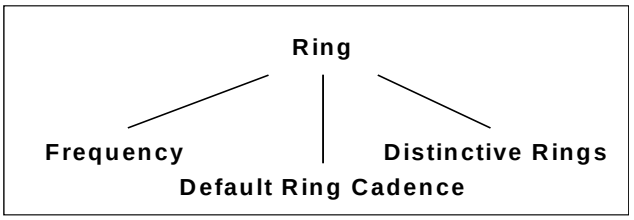
Use this menu to configure the analog characteristics of the dial line. It includes Ring, Tones, and Long Loop ability.

Table 3-31 - The Analog Menu Items



3.5.2.6 Ring

Table 3-32 - The Ring Menu Items



Access Path: *Configuration* Menu -> *Interface -> Analog ->Ring*

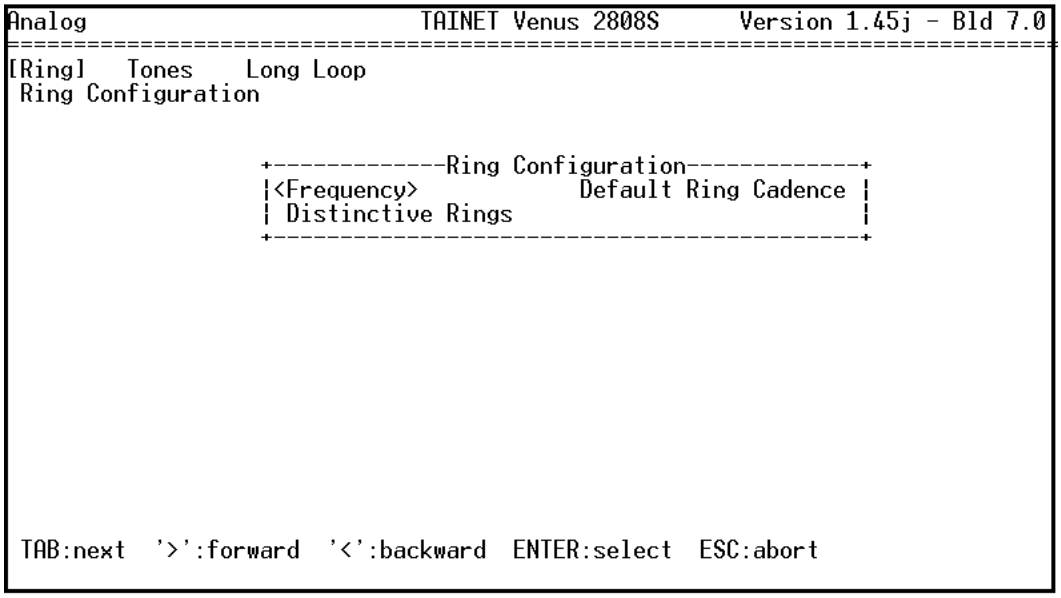


Figure 3-51 - Ring Configuration

Table 3-33 - Description of Ring Configuration Items

Field	Description
Frequency	To adjust the Ring tone frequency from 17 ~ 40Hz.
Default Ring Cadence	To setup the different ON, OFF time and duration of Ring tone. Where the [ON]/[OFF] items is the ring cycle ON time/OFF time at 100ms based. For example, to set [ON]=10 equal to 1 second ON time. Where the [duration] item is the total ring duration at 1ms based. For example, to set [duration]=180000 equal to 3 minutes.
Distinctive Rings	To generate a sequence of different frequency ring. It does same behavior of “Default Ring Cadence” and more attractive.

Access Path: *Configuration* Menu -> *Interface -> Analog ->Ring ->Frequency*

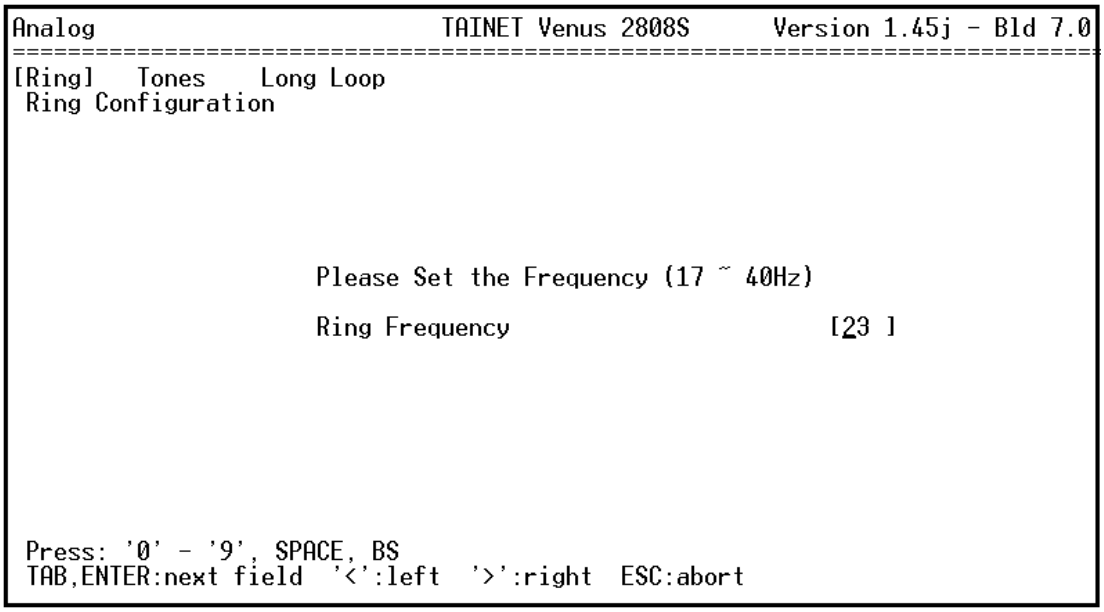


Figure 3-52 - Ring Frequency Configuration

Access Path: *Configuration* Menu -> *Interface -> Analog ->Ring ->Default Ring Cadence*

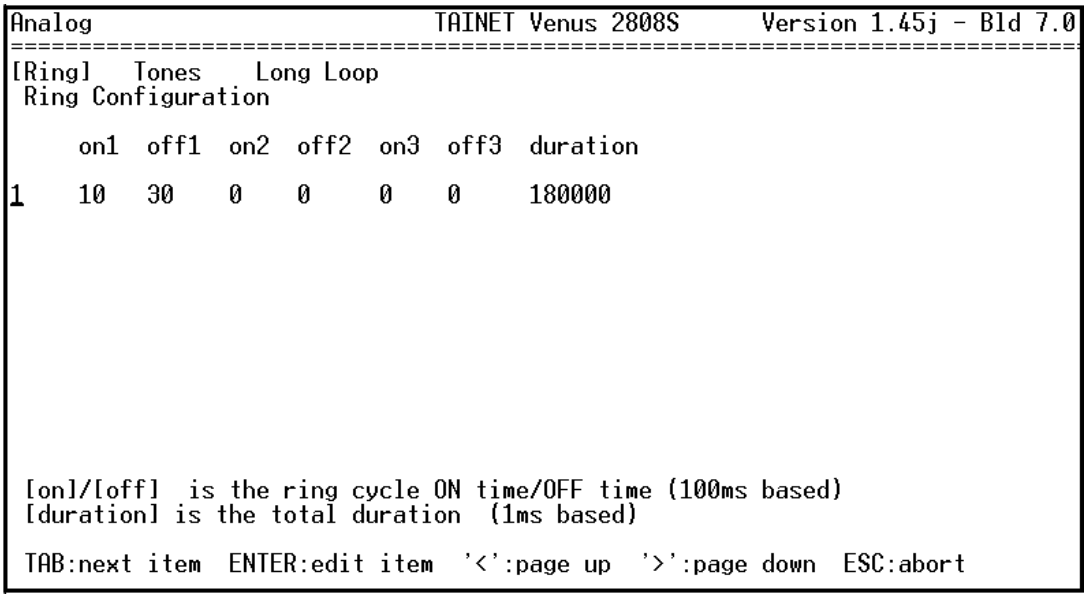


Figure 3-53 - Default Ring Cadence Configuration

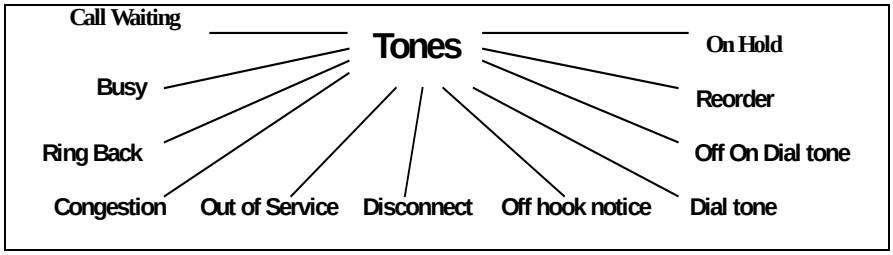
Access Path: *Configuration* Menu -> *Interface -> Analog ->Ring ->-Distinctive Rings*

```
Analog                              TAINET Venus 2808S      Version 1.45j - Bld 7.0
=============================================================================
[Ring]   Tones    Long Loop
 Ring Configuration

     on1  off1  on2  off2  on3  off3  duration

1   [20 ][40 ] [0  ][0  ] [0  ][0  ] [180000    ]
2    8    4     8    40    0    0     180000
3    4    2     4    2     8    40    180000
4    3    2     10   2     3    40    180000
5    5    1     0    0     0    0     600
6    5    2     3    2     5    30    180000
7    20   40    0    0     0    0     180000
8    30   50    0    0     0    0     180000
9    5    1     0    0     0    0     600


 [on]/[off]  is the ring cycle ON time/OFF time (100ms based)
 [duration] is the total duration  (1ms based)
 Press: '0' - '9', SPACE, BS
 TAB,ENTER:next field  '<':left  '>':right  ESC:abort
```

Figure 3-54 - Distinctive Ring Configuration

3.5.2.7 Tones

Table 3-34 - The "Tone" Menu Items




```
Analog                              TAINET Venus 2808S      Version 1.45j - Bld 7.0
=============================================================================
 Ring   [Tones]   Long Loop
 Tone Configuration


              +----------------Tones-----------------+
              |<Busy>              Ring Back          |
              | Congestion         Out of Service     |
              | Disconnect         Offhook Notice     |
              | Dial Tone          Off On Dial Tone   |
              | Reorder            On Hold            |
              | Call Waiting                          |
              +---------------------------------------+









 TAB:next  '>':forward  '<':backward  ENTER:select  ESC:abort
```

Figure 3-55 - Tone Configuration

Table 3-35 - Description of Tone Configuration Items

Field	Description
Busy	All fields in Table 3-35 are used to setup the different frequency and amplitude of different tone duration. Where the "freq" is the frequency in Hertz based, "amp" is the amplitude in 0.1dB based and the "t" is the total duration of one cycle in ms based. For keeping the cycle into forever then setup "t"= -1.
Ring Back	
Congestion	
Out of Service	
Disconnect	
Off-hook Notice	
Dial Tone	The Congestion Tone will be applied to the interface when the network cannot connect the dialed call.
Off On Dial Tone	
Reorder	The Reorder tone is an audible or visual signal that indicates a called number is occupied or otherwise unavailable.
On Hold	
Call Waiting	

Access Path: *Configuration* Menu -> *Interface* -> *Analog* ->*Tones* ->*Busy*

```
Analog                              TAINET Venus 2808S      Version 1.45j - Bld 7.0
================================================================================
 Ring   [Tones]   Long Loop
 Tone Configuration

     freq1  amp1    freq2  amp2    freq3  amp3    freq4  amp4    t (ms)

1    480    -240    620    -240    0      0       0      0       500
2    0      0       0      0       0      0       0      0       500
3    0      0       0      0       0      0       0      0       0
4    0      0       0      0       0      0       0      0       0
5    0      0       0      0       0      0       0      0       0
6    0      0       0      0       0      0       0      0       0




 [freq1]~[freq4] is frequency,in Hertz;[amp1]~[amp4] is the amplitude,in 1/10dB
 [t] is the duration, in ms, of this tone element (-1:forever)

 TAB:next item  ENTER:edit item  '<':page up  '>':page down  ESC:abort
```

Figure 3-56 - Busy Tone Configuration

Access Path: *Configuration* Menu -> *Interface -> Analog ->Tones ->Ring Back*

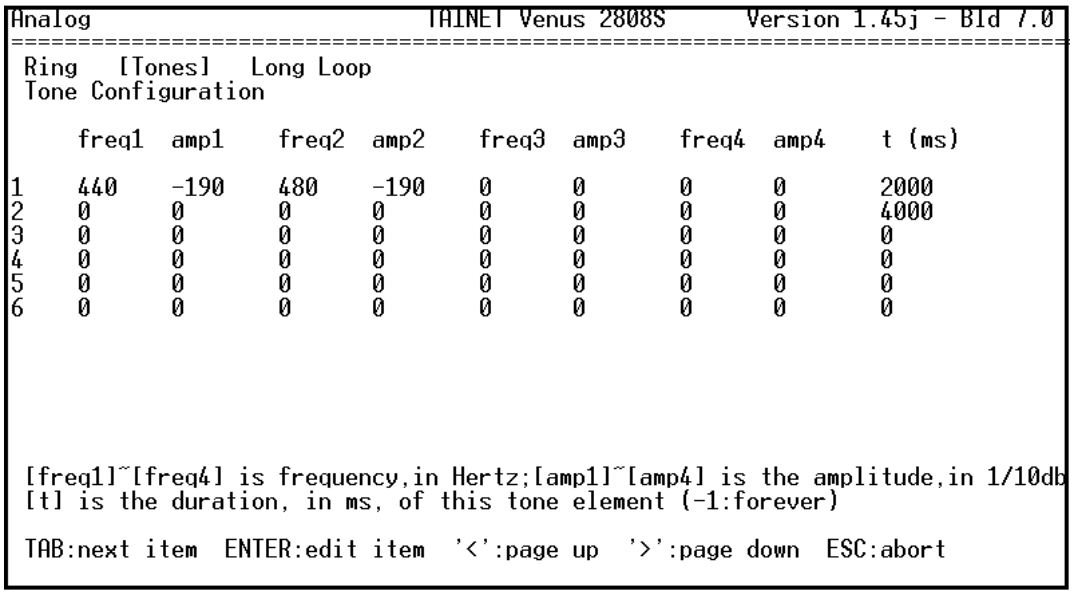


Figure 3-57 - Ring Back Tone Configuration

Access Path: *Configuration* Menu -> *Interface -> Analog ->Tones ->Congestion*

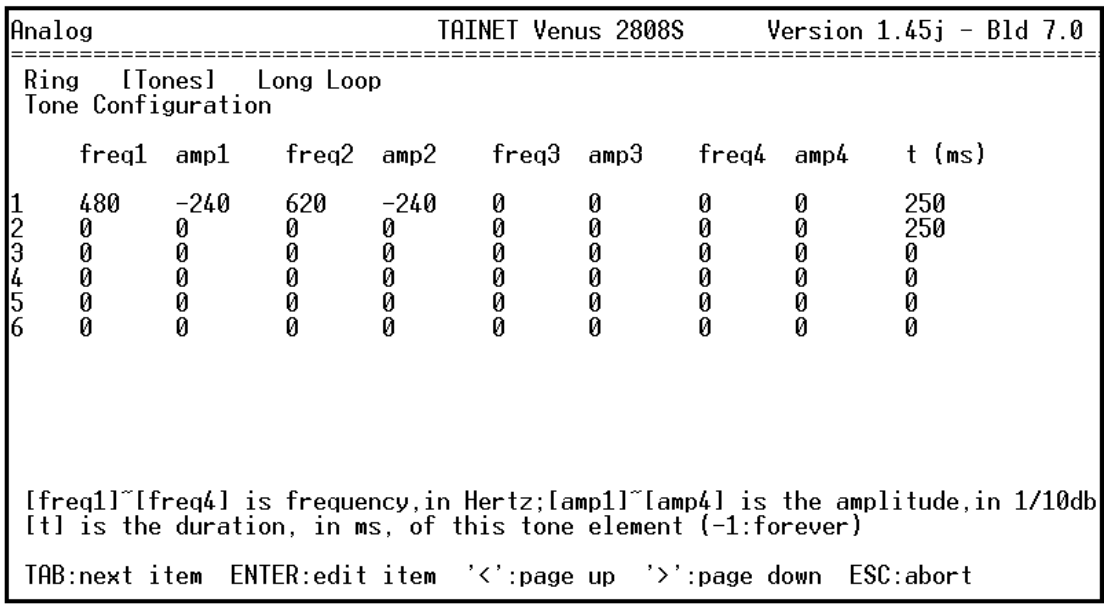


Figure 3-58 - Congestion Tone Configuration

Access Path: *Configuration* Menu -> *Interface -> Analog ->Tones ->Out of Service*

```
Analog                              TAINET Venus 2808S      Version 1.45j - Bld 7.0
================================================================================
 Ring   [Tones]   Long Loop
 Tone Configuration

     freq1  amp1    freq2  amp2    freq3  amp3    freq4  amp4    t (ms)

1    950    -130    0      0       0      0       0      0       330
2    1400   -130    0      0       0      0       0      0       330
3    1800   -130    0      0       0      0       0      0       330
4    0      0       0      0       0      0       0      0       5000
5    0      0       0      0       0      0       0      0       0
6    0      0       0      0       0      0       0      0       0




 [freq1]~[freq4] is frequency,in Hertz;[amp1]~[amp4] is the amplitude,in 1/10db
 [t] is the duration, in ms, of this tone element (-1:forever)

 TAB:next item  ENTER:edit item  '<':page up  '>':page down  ESC:abort
```

Figure 3-59 - Out of Service Tone Configuration

Access Path: *Configuration* Menu -> *Interface -> Analog ->Tones ->Disconnect*

```
Analog                              TAINET Venus 2808S      Version 1.45j - Bld 7.0
================================================================================
 Ring   [Tones]   Long Loop
 Tone Configuration

     freq1  amp1    freq2  amp2    freq3  amp3    freq4  amp4    t (ms)

1    480    -240    620    -240    0      0       0      0       250
2    0      0       0      0       0      0       0      0       250
3    480    -240    620    -240    0      0       0      0       250
4    0      0       0      0       0      0       0      0       -1
5    0      0       0      0       0      0       0      0       0
6    0      0       0      0       0      0       0      0       0




 [freq1]~[freq4] is frequency,in Hertz;[amp1]~[amp4] is the amplitude,in 1/10db
 [t] is the duration, in ms, of this tone element (-1:forever)

 TAB:next item  ENTER:edit item  '<':page up  '>':page down  ESC:abort
```

Figure 3-60 - Disconnect Tone Configuration

Access Path: *Configuration* Menu -> *Interface -> Analog ->Tones ->offhook Notice*

```
Analog                          TAINET Venus 2808S      Version 1.45j - Bld 7.0
================================================================================
 Ring   [Tones]   Long Loop
 Tone Configuration

     freq1  amp1    freq2  amp2    freq3  amp3    freq4  amp4    t (ms)

1    1400   -130    2060   -130    2450   -130    2600   -130    100
2    0      0       0      0       0      0       0      0       100
3    0      0       0      0       0      0       0      0       0
4    0      0       0      0       0      0       0      0       0
5    0      0       0      0       0      0       0      0       0
6    0      0       0      0       0      0       0      0       0




 [freq1]~[freq4] is frequency,in Hertz;[amp1]~[amp4] is the amplitude,in 1/10db
 [t] is the duration, in ms, of this tone element (-1:forever)

 TAB:next item  ENTER:edit item  '<':page up  '>':page down  ESC:abort
```

Figure 3-61 - Off-Hook Tone Configuration

Access Path: *Configuration* Menu -> *Interface -> Analog ->Tones ->Dial Tone*

```
Analog                          TAINET Venus 2808S      Version 1.45j - Bld 7.0
================================================================================
 Ring   [Tones]   Long Loop
 Tone Configuration

     freq1  amp1    freq2  amp2    freq3  amp3    freq4  amp4    t (ms)

1    350    -130    440    -130    0      0       0      0       -1
2    0      0       0      0       0      0       0      0       0
3    0      0       0      0       0      0       0      0       0
4    0      0       0      0       0      0       0      0       0
5    0      0       0      0       0      0       0      0       0
6    0      0       0      0       0      0       0      0       0




 [freq1]~[freq4] is frequency,in Hertz;[amp1]~[amp4] is the amplitude,in 1/10db
 [t] is the duration, in ms, of this tone element (-1:forever)

 TAB:next item  ENTER:edit item  '<':page up  '>':page down  ESC:abort
```

Figure 3-62 - Dial Tone Configuration

Access Path: *Configuration* Menu -> *Interface -> Analog ->Tones ->Off On Dial Tone*

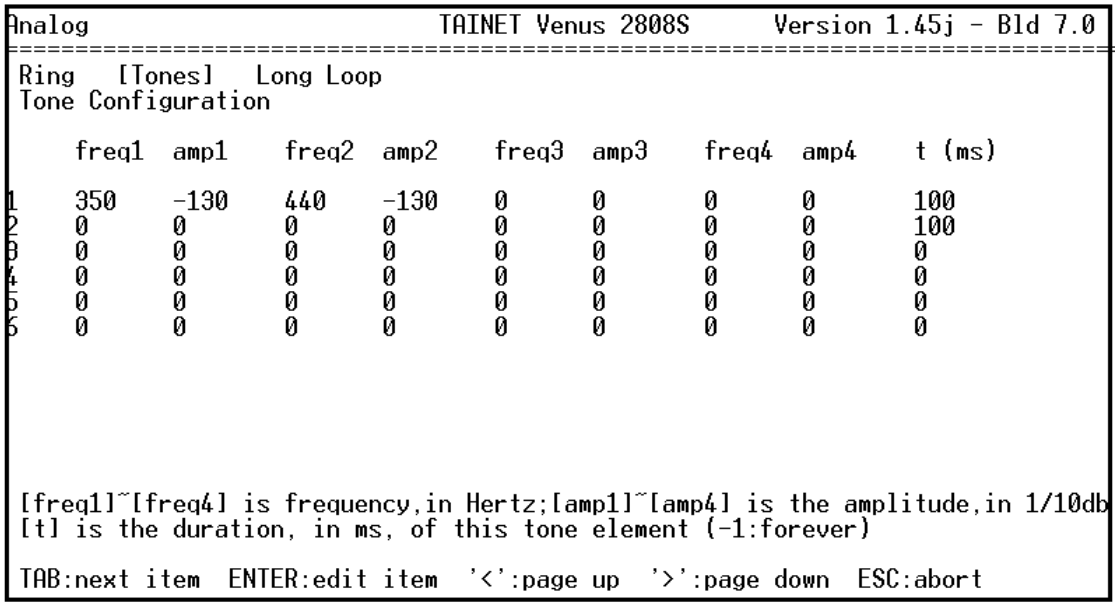


Figure 3-63 - Off On Dial Tone Configuration

Access Path: *Configuration* Menu -> *Interface -> Analog ->Tones ->Reorder*

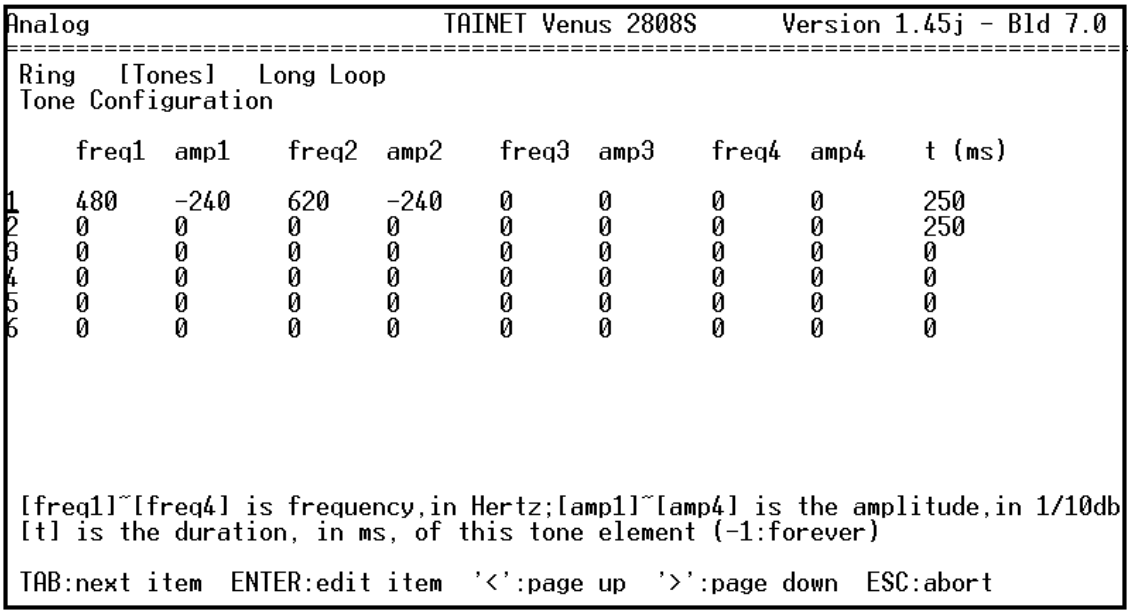


Figure 3-64 - Reorder Tone Configuration

Access Path: *Configuration* Menu -> *Interface -> Analog ->Tones ->On Hold*

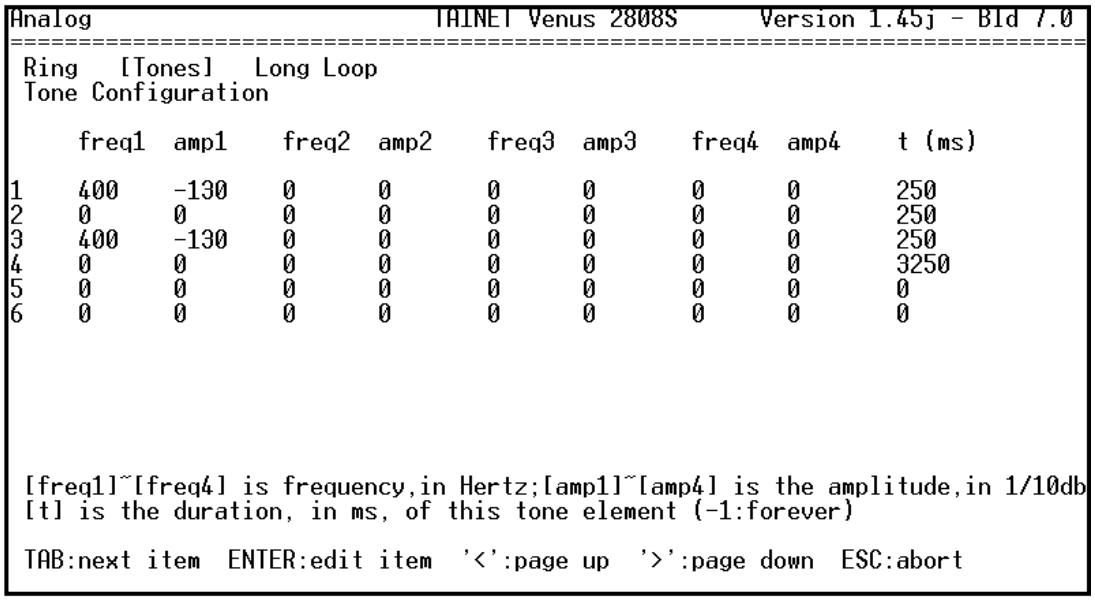


Figure 3-65 - On Hold Configuration

Access Patch: *Configuration* Menu -> *Interface -> Analog ->Tones ->Call Waiting*

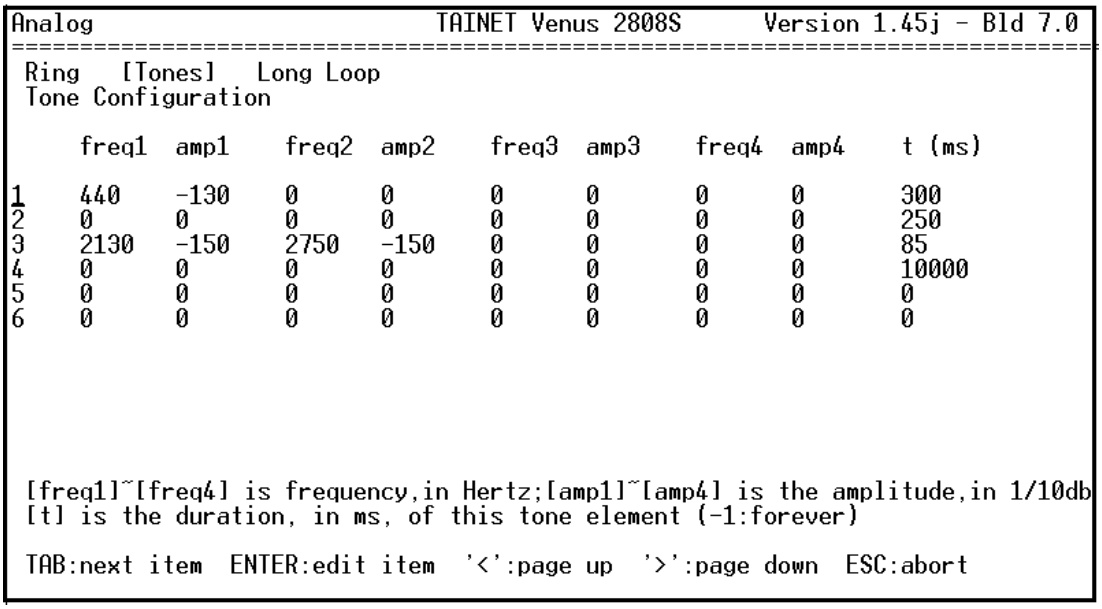


Figure 3-66 - Call Waiting Configuration

3.5.2.8 Long Loop

The “Long Loop” enables the longer distance service of voice higher 8Km than 3Km.

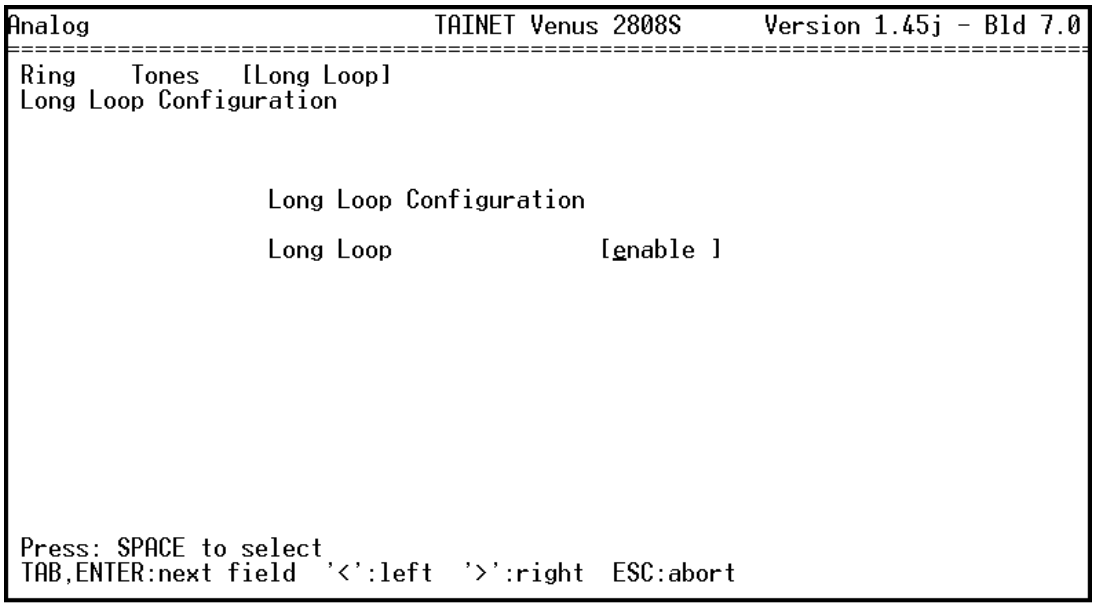
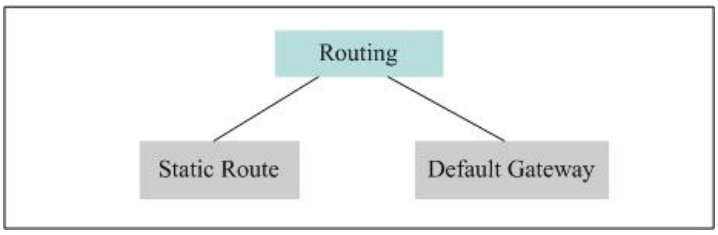


Figure 3-67 - Long Loop Configuration

3.5.3 Routing Table

Table 3-36 - The Routing Table Menu Items



3.5.3.1 Static Routing

Access Path: *Configuration Menu -> Routing Table -> Static Routing*.

```
Configuration                  TAINET Venus 2808S      Version 1.45j - Bld 7.0
=============================================================================
 System    Interface   [Routing Table]   Phone Book    Security
 Routing Table Configuration

     Destination      NetMask          Nexthop          Metric

1    0.0.0.0          0.0.0.0          0.0.0.0          0
2    0.0.0.0          0.0.0.0          0.0.0.0          0
3    0.0.0.0          0.0.0.0          0.0.0.0          0
4    0.0.0.0          0.0.0.0          0.0.0.0          0
5    0.0.0.0          0.0.0.0          0.0.0.0          0
6    0.0.0.0          0.0.0.0          0.0.0.0          0
7    0.0.0.0          0.0.0.0          0.0.0.0          0
8    0.0.0.0          0.0.0.0          0.0.0.0          0
9    0.0.0.0          0.0.0.0          0.0.0.0          0
10   0.0.0.0          0.0.0.0          0.0.0.0          0
11   0.0.0.0          0.0.0.0          0.0.0.0          0
12   0.0.0.0          0.0.0.0          0.0.0.0          0


 TAB:next item  ENTER:edit item  '<':page up  '>':page down  ESC:abort
```

Figure 3-68 - Static Routing Configuration

Static routing are those routing path manually defined by user for the VENUS Series. User may use the static routes to establish some specific fixed connections. Maximum of 20 static routes can be configured.

Table 3-37 - Static Routing Configuration

Field	Description
Destination	This parameter specifies the IP network address of the final destination. Routing mechanism is based on the target IP address and the network domain. If you need to specify a route to one single host, use the subnet mask of 255.255.255.255 in the subnet mask field to force the VENUS Series to route all the packets for this single host thru the designated router (the next hop).
NetMask	Enter the subnet mask for this destination. This mask defines the group of the destination nodes.
NextHop	Enter the IP address of the next hop (router). This is a neighbor node of your VENUS Series that will forward the packet to the destination node out side the subnet domain.
Metric	The metric represents the cost of transmission for routing purposes. IP routing uses hop count as the measurement of cost, where a minimum of 1 means the directly connected networks. Enter a number that approximates the cost for this link. The number need not be precise, but it must be between 1 and 15. In practice, 2 or 3 is usually a good number.

3.5.3.2 Default Gateway

Access Path: *Configuration Menu -> Routing Table -> Default Gateway.*

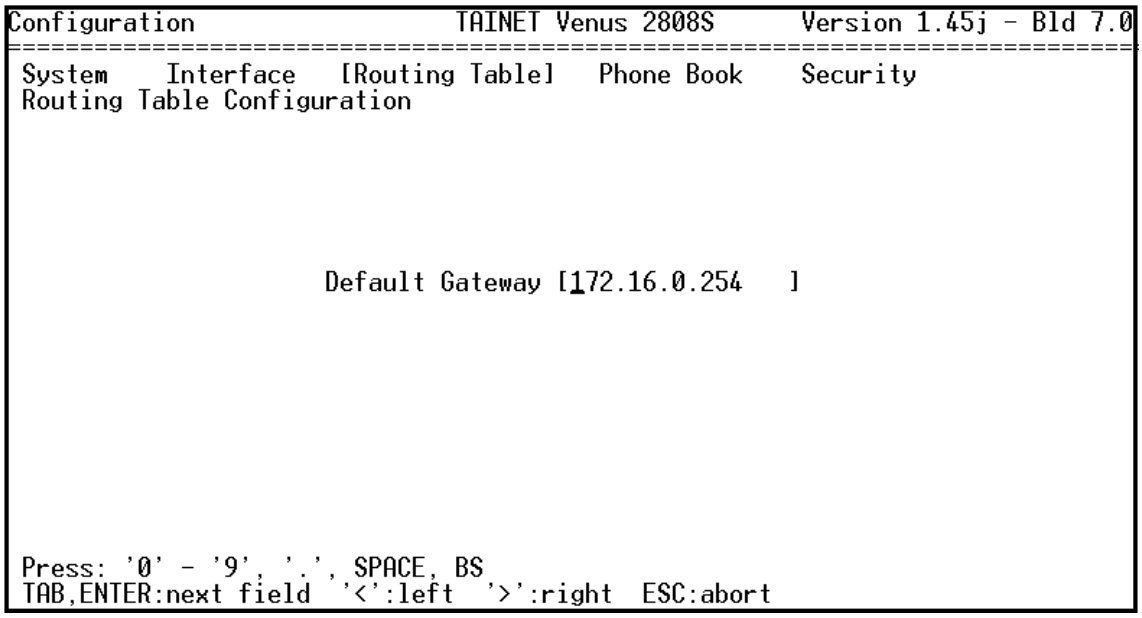


Figure 3-69 - Default Gateway Configuration

To send an IP packet to a node (for example to the SIP Proxy server or another VoIP gateway) outside the local network domain, the IP packet is sent first to the Default Gateway (usually a router) where the packet is forwarded to the destination or the next node (another router). This item defines the IP address of the Default Gateway.

3.5.4 Phone Book

Phone Book provides mapping between a phone numbers with an address. This feature allows user to make call to other VENUS gateways without the need for Proxy.

The VENUS SIP gateway can store up to 100 phone numbers in its phone book.

Access Path: *Configuration Menu ->Phone Book*

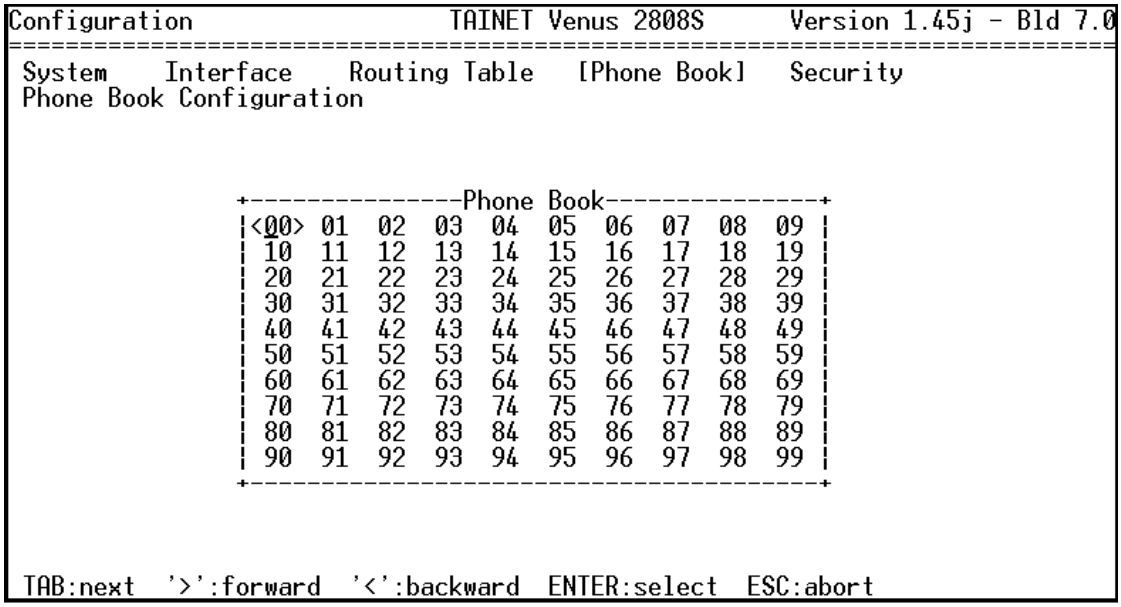


Figure 3-70 - Phone Book Configuration

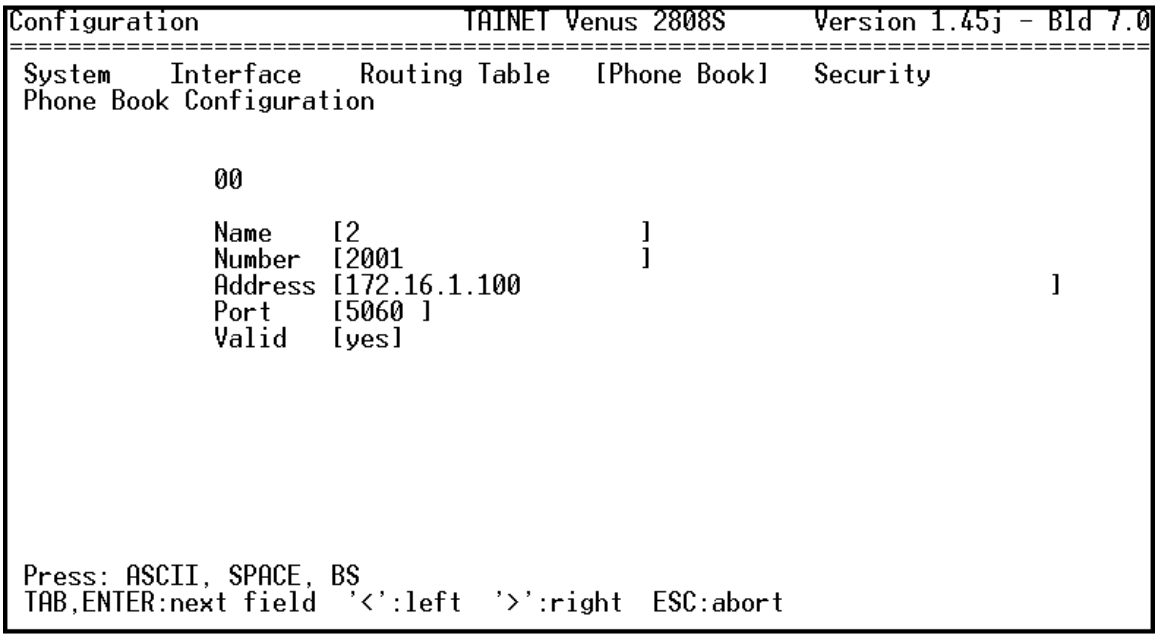
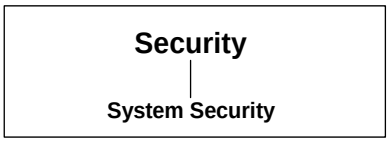


Figure 3-71 - Phone book entry Configuration

Table 3-38 - Description for Phone Book Entry Items

Field	Description
Name	Please enter a name to identify the destination. For example, other VENUS gateway code.
Number	This item specifies the phone numbers for a destination.
Address	This is the IP or domain name of the destination. For example the IP address of another VENUS series gateway.
Port	This is the port number of the destination gateway.
Valid	This item allows user to disable or enable this phone book entry.

3.5.5 Security



Select these items to change the User Name and Password for all the User Interface. Note that both the User Name and Password are case sensitive. Keep a note for the User Name and Password, in case you forget them. Contact technical support if you cannot remember the setup. User should change the password to protect the VENUS Series from unauthorized access.

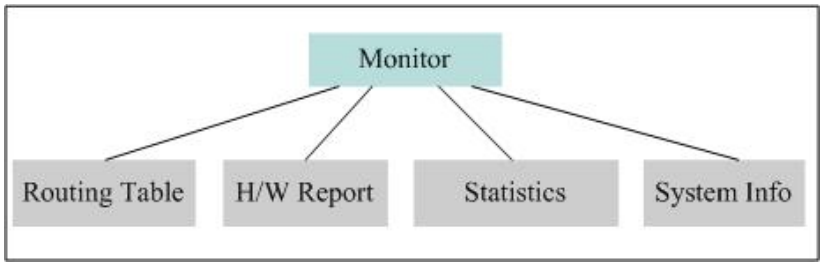
Access Path: *Configuration* menu -> *Security*

```
Configuration                    TAINET Venus 2808S      Version 1.45j - Bld 7.0
================================================================================
 System    Interface    Routing Table    Phone Book    [Security]
 Security Configuration




                        System Security

                           User Name:    [user                          ]
                           Password:     [                              ]









 Press: ASCII, SPACE, BS
 TAB,ENTER:next field  '<':left  '>':right  ESC:abort
```

Figure 3-72 - System Security Configuration

3.6 Monitoring

Table 3-39 - The "System Monitoring" Menu Items



3.6.1 Routing Table Monitoring

The Routing table shows all the routing information of your VENUS Series. The internal defined loop back route, the static route and the route for the Default Gateway are all shown here.

Access Path: *Monitoring* Menu -> *Routing Table*.

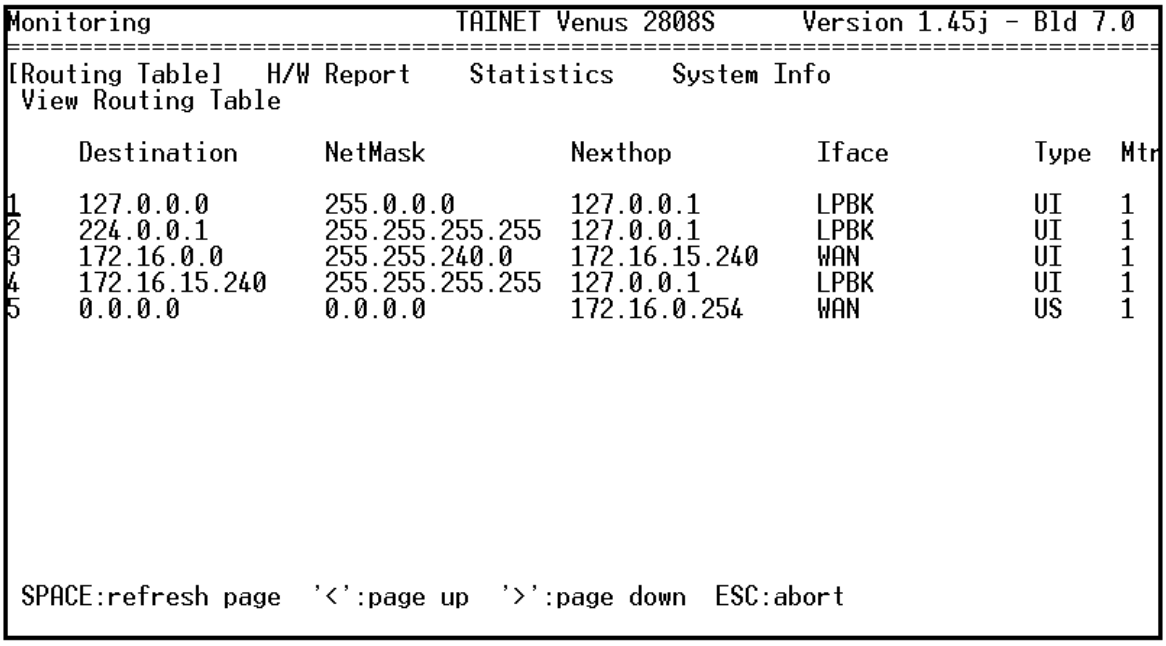


Figure 3-73 - Routing Table Monitoring

Table 3-40 - Description of Routing Table Monitoring Items

Field	Description
Destination	It specifies the IP network address of the final destination. If “0.0.0.0” appears in the field, this entry specifies the “Default Gateway” of route information.
NetMask	It represents the IP netmask of the destination IP address.
NextHop	It represents the IP address of the next router for transmission of the IP datagram to the destination network segment.
Iface	Identify the IP routing to the corresponding interface LPBK: loopback interface WAN: WAN interface LAN: LAN interface
Type	The first character (Status) U: The route is valid (up) and in use. D: The route is invalid (down) and has a metric of 16 (RIP infinity) The second character (Source) I: The route is a direct connection R: the route was established from RIP information. S: The route is a static route.
Mtr	The metric represents the cost of transmission for routing purposes.

3.6.2 H/W Report Monitoring

Hardware information, such as the number and type of interface card installed, the number of total POTS ports supported, and the hardware diagnosis result, are listed in the H/W Report Monitoring menu.

Access Path: *Monitoring* Menu -> *H/W Report.*

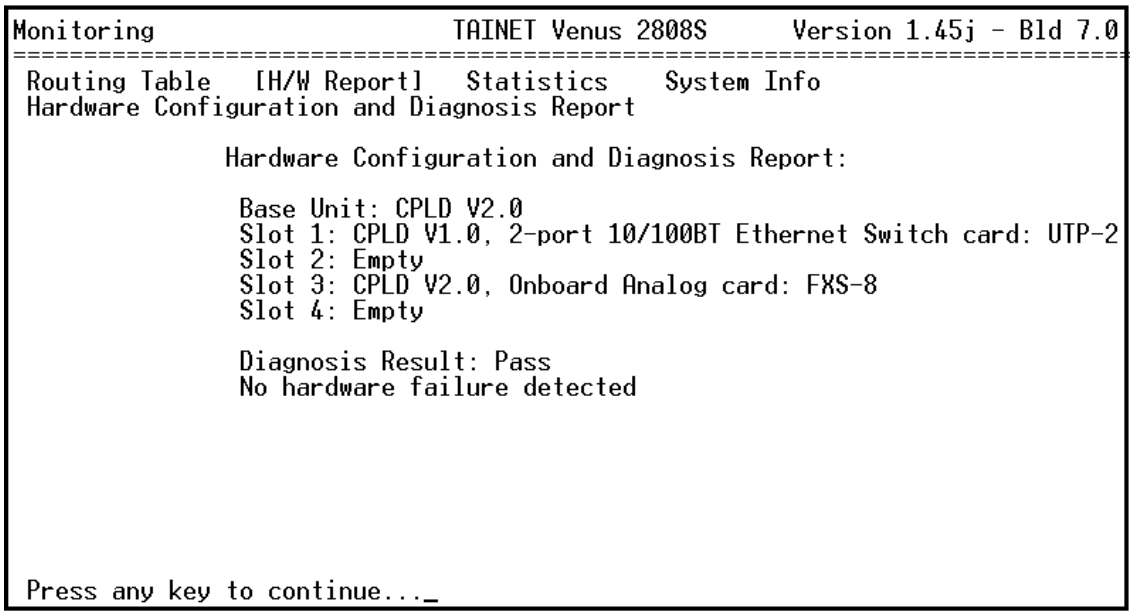


Figure 3-74 - H/W Report Monitoring

3.6.3 Statistics Monitoring

3.6.3.1 Interface Statistics

The interfaces menu provides statistics information collected for monitoring the interface packet flow.

Access Path: *Monitoring* Menu -> *Statistics* -> *Interfaces*

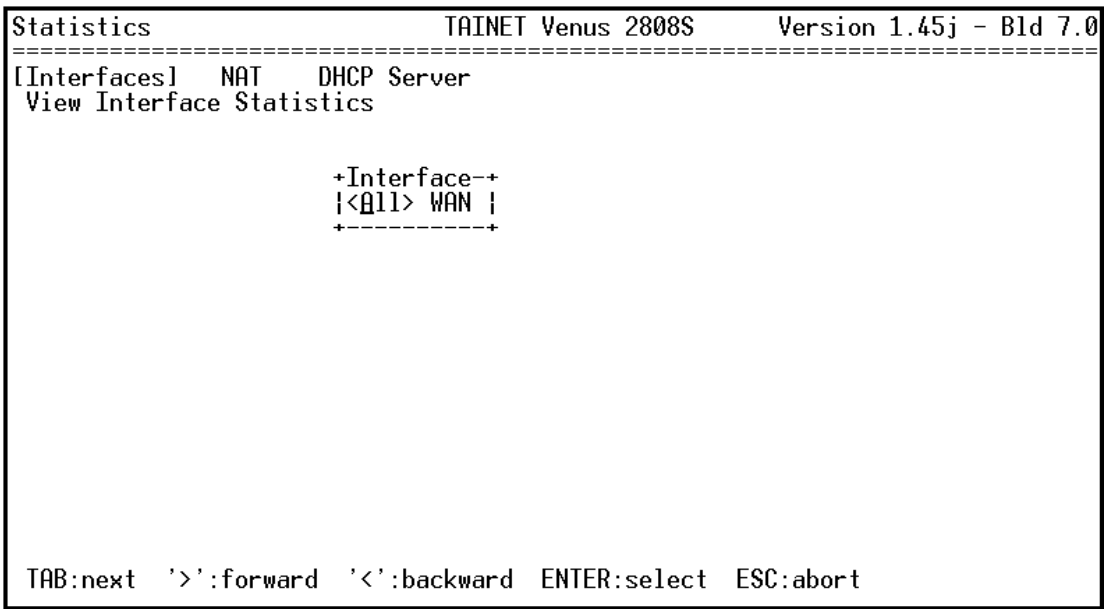


Figure 3-75 - Interface Statistics Monitoring

Access Path: *Monitoring* Menu -> *Statistics* -> *Interfaces->All*

```
Statistics                    TAINET Venus 2808S      Version 1.45j - Bld 7.0
================================================================================
[Interfaces]   NAT    DHCP Server
 View Interface Statistics

     Iface  RX:octets   pkts        err pkts    TX:octets   pkts        err pkts

1    WAN    2425763     27160       0           240         8           0









 SPACE:refresh page  '<':page up  '>':page down  ESC:abort
```

WAN and LAN shows more detailed information on each interface.

Access Path: *Monitoring* Menu -> *Statistics* -> *Interfaces->WAN*

```
Statistics                    TAINET Venus 2808S      Version 1.45j - Bld 7.0
================================================================================
[Interfaces]   NAT    DHCP Server
 View Interface Statistics

                      Interface Statistics: WAN

                      Tx Octets              240
                      Tx Packets             8
                      Tx Broadcast Packets   0
                      Tx Discarded Packets   0

                      Rx Octets              2469853
                      Rx Packets             4
                      Rx Broadcast Packets   27689
                      Rx Discarded Packets   0
                      Rx Unknow Protocols    817
-




 ENTER:select  TAB:next  '<':left  '>':right  ESC:previous menu
```

3.6.3.2 NAT statistics

NAT statistics provide the information of NAPT translation usage per protocol type.

Access Path: *Monitoring* Menu -> *Statistics* ->*NAT*

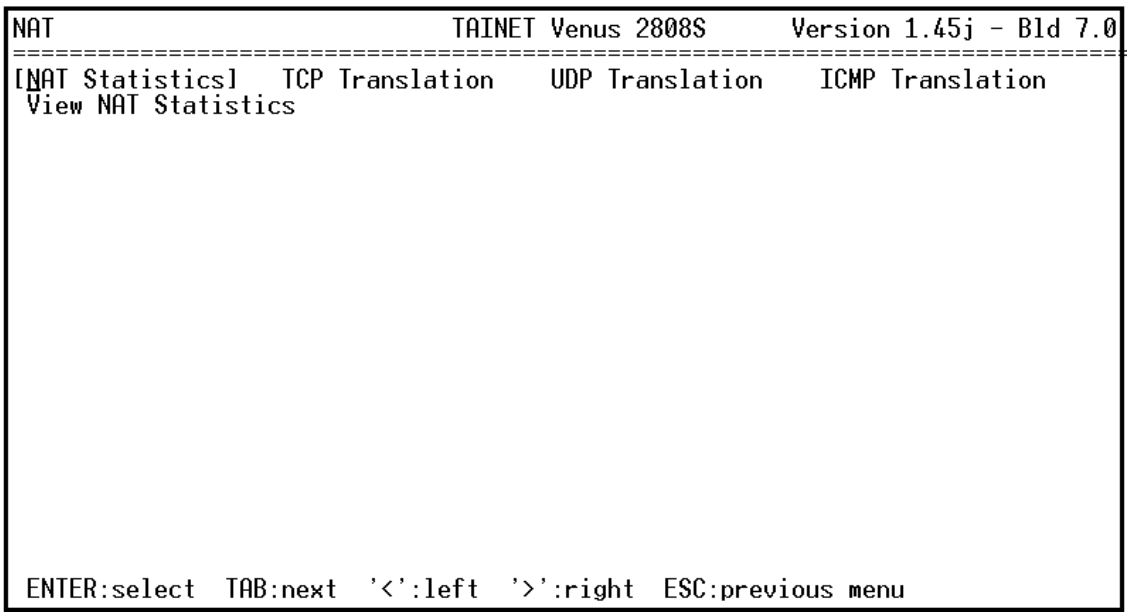


Figure 3-76 - NAT Statistics Monitoring

3.6.3.3 DHCP Server statistics

Access Path: *Monitoring* Menu -> *Statistics* ->*DHCP Server*

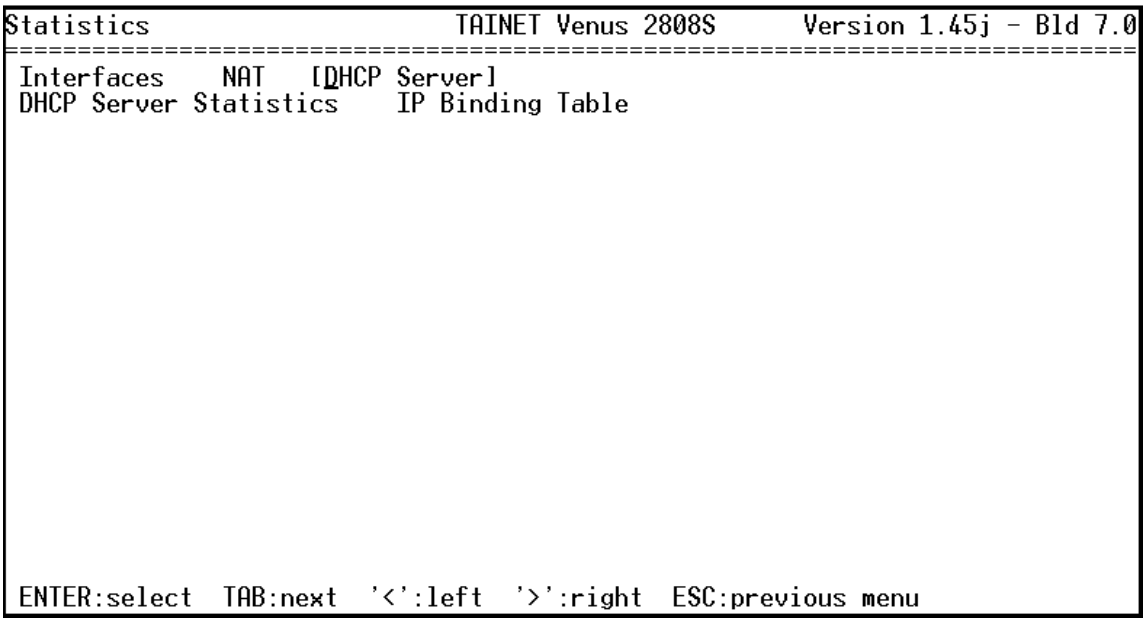


Figure 3-77 - DHCP Server Statistics Monitoring

3.6.4 System Info Monitoring

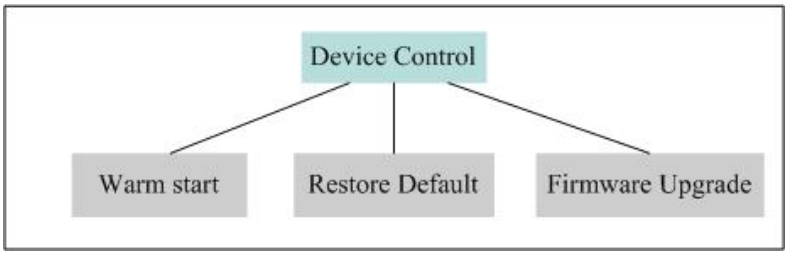
This menu briefly summarizes the system information including the System Up Time since the device is powered on.

Access Path: *Monitoring* Menu -> *System Info*.

```
Monitoring                        TAINET Venus 2808S      Version 1.45j - Bld 7.0
================================================================================
Routing Table    H/W Report    Statistics   [System Info]
View System Information

              System Information:

               SNMP agent:              disable
                    trap:               disable

               DHCP/BootP client:       disable

               DDNS state:              Disable

               PPP over ethernet:       disable

               System Up Time:          0 day 01h:57m:23s




Press any key to continue!
```

Figure 3-78 - System Information Monitoring

3.7 Device Control



3.7.1 Warm Start

After changing some configurations of the device, it may be required to restart the device to activate the new configuration. Use this menu to reset the VENUS Series.

Caution:

Reset the gateway only when there is no phone call in progress. Otherwise, VoIP service will be abruptly terminated

Access Path: *Device Control* Menu -> *Warm Start*.

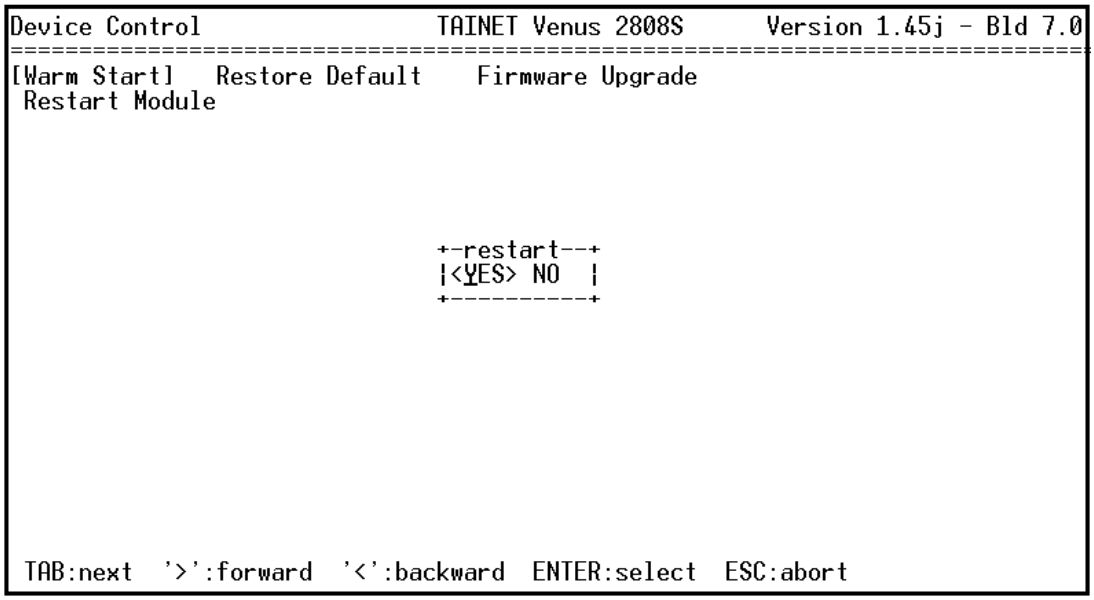


Figure 3-79 - Reset the VENUS Series

3.7.2 Restore Default

Access Path: *Device Control* Menu -> *Restore Default*.

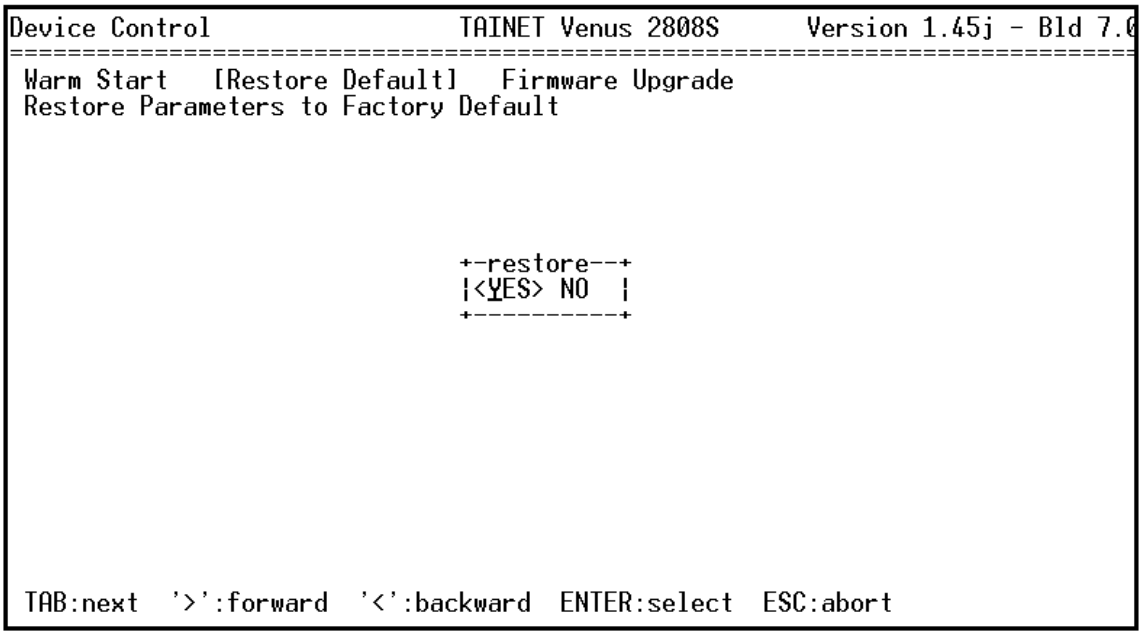


Figure 3-80 - Restore Default

This feature is used to reset all the settings to the factory defaults. Selecting this menu will cause an en-forced reset to the VENUS Series. The configuration defaults are:

- DHCP Client: Disabled
- SNMP Agent: Disable
- SNMP System Contact: Tainet Communication System Corp.
- SNMP System Name: sales@tainet.net

- SNMP System Location: Taipei, Taiwan
- SNMP Trap: Disable
- SNMP Get Community: Public
- SNMP Get Community: Private
- SNMP Get Community: Public
- SNMP Trap Destination: 0.0.0.0
- DNS Server: Disable
- IADMS Registration: Disable
- Country Code: Generic
- WAN IP Address: 172.16.15.240
- WAN IP Mask: 255.255.0.0
- Default Gateway: 0.0.0.0
- User Name: user
- No Password

Caution:
Restore the defaults only when there is no phone call in progress. Otherwise, VoIP service will be abruptly terminated.

3.7.3 Firmware Upgrade

VENUS Series allows software upgrade for feature improvement. The new firmware (the Application Program), in binary code format, can be remotely downloaded from a TFTP server and written into the internal flash memory of the VENUS Series. Check with our technical support for the availability of the latest software.

Access Path: *Device Control* Menu -> *Firmware Upgrade*s.

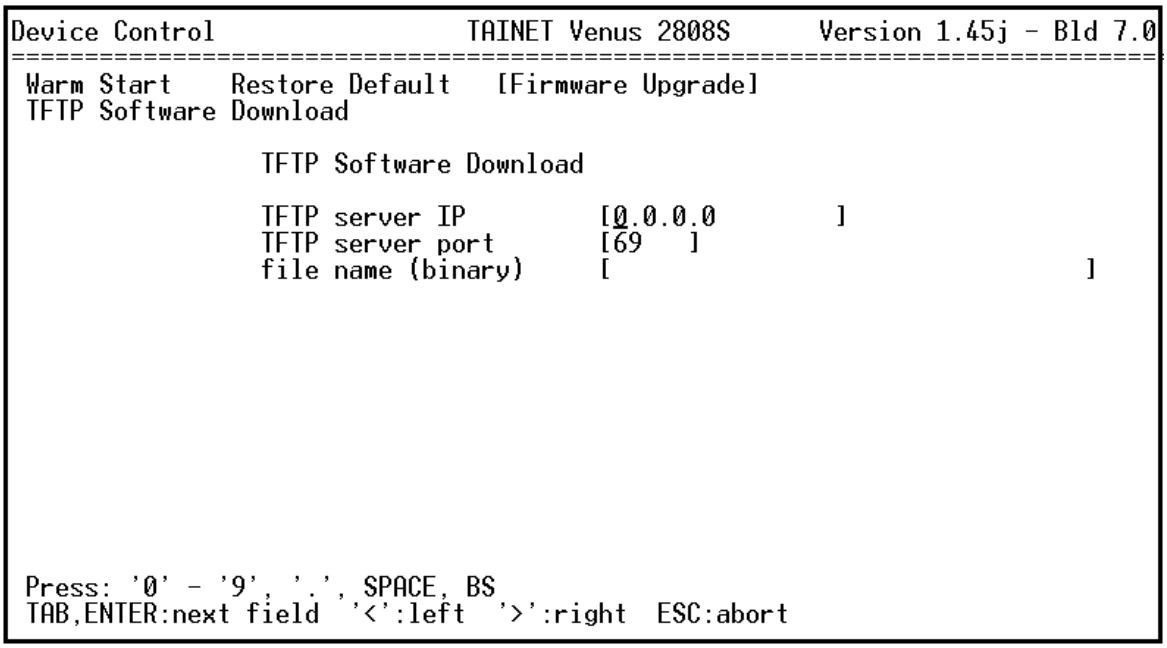


Figure 3-81 - Firmware Upgrade

Table 3-41 - Description of "Firmware Upgrade" Items

Field	Description
TFTP Server IP	This item tells VENUS Series which IP address of TFTP server that includes the firmware.
TFTP Server Port	This item tells VENUS Series which port of TFTP server that includes the firmware.
File Name (Binary)	This item tells VENUS Series that file should be loading from TFTP server. The firmware must be in the binary format.

The Upgrade Procedure is listed bellow:

- Enter the IP address of the TFTP server, then press Enter
- Enter the file name of the new firmware, then press Enter
- The TFTP download process is started as shown in Figure 3-82
- Enter "Ctrl-C" to cancel the download process
- When download is finished, VENUS will report the size of the file, and verifies the checksum as illustrated in Figure 3-83
- Press "Y" (Yes) to write the software into the flash memory

- It takes a couple of minutes to perform the flash memory write. Once when the flash write is completed, as illustrated in Figure 3-84, VENUS Series performs the verification and then reboot itself to start the new firmware

Caution:
Upgrade the software when there is no phone call in progress. Otherwise, VoIP service will be abruptly terminated

Caution:
Do not write the software with incorrect checksum and do not reset the device while performing flash write. In case the flash write is abnormally disrupted, VENUS Series can still boot up using the Boot code. Re-download the software and re-program the flash again to recovery the AP software

```
Device Control                  TAINET Venus 2808S      Version 1.45j - Bld 7.0
================================================================================
 Warm Start    Restore Default   [Firmware Upgrade]
 TFTP Software Download

                TFTP Software Download

                TFTP server IP          [172.16.1.108   ]
                TFTP server port        [69   ]
                file name (binary)      [2808Sv145j.BIN                  ]
Downloading (press Ctrl-c to cancel)... Please Wait...
  204800 bytes( 9.77%) received.









 ENTER:select  TAB:next  '<':left  '>':right  ESC:previous menu
```

Figure 3-82 - Downloading the New Software

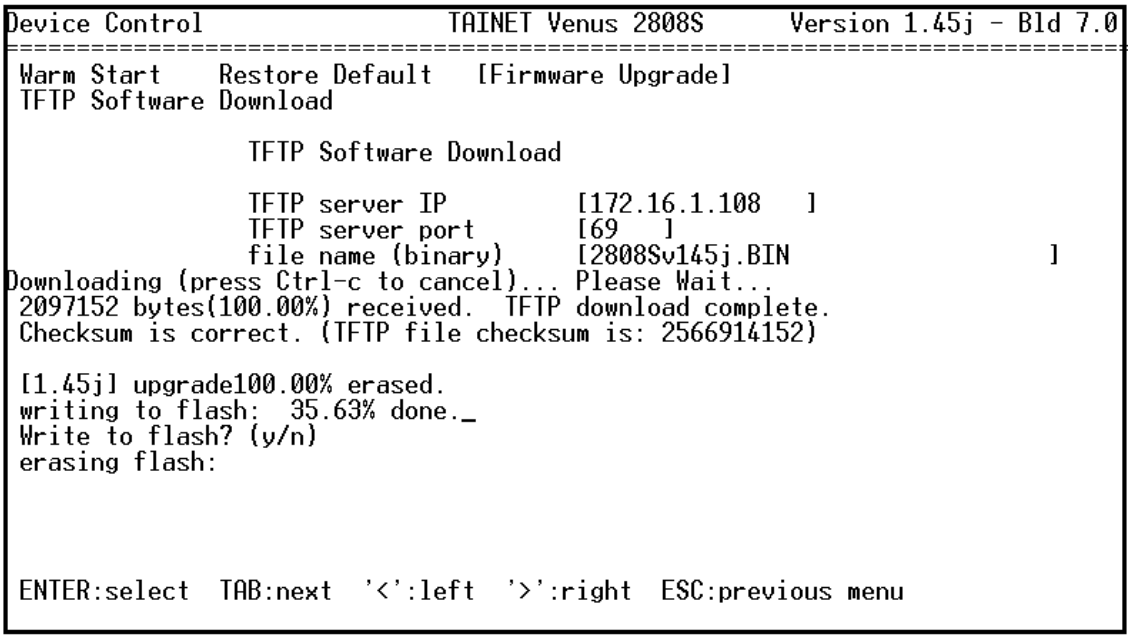


Figure 3-83 - Writing to New Software into the Flash Memory

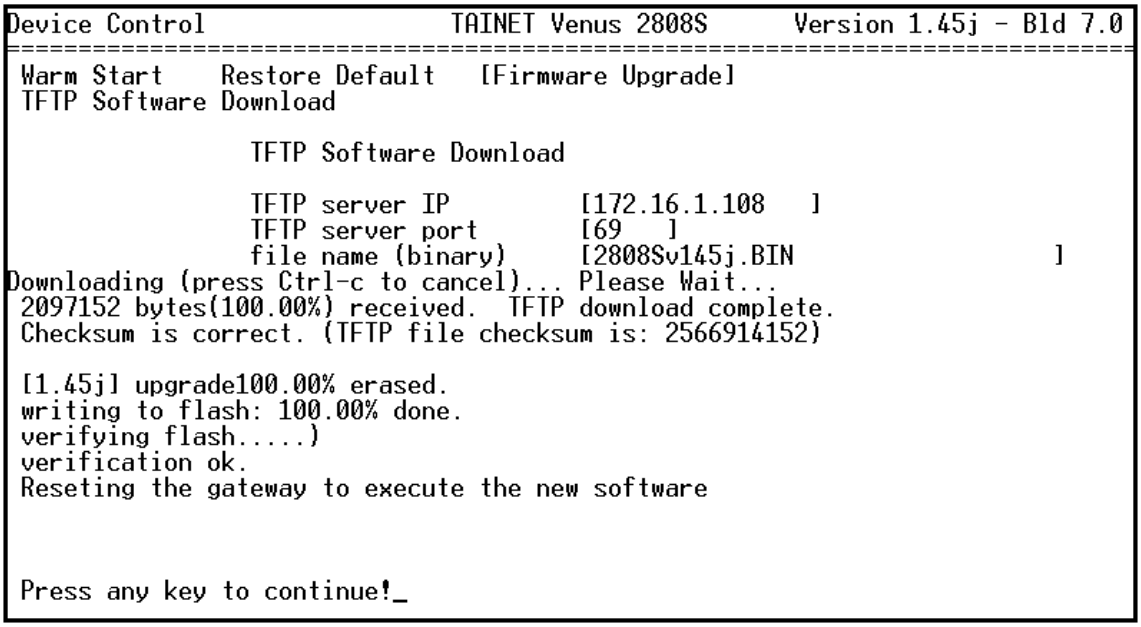


Figure 3-84 - Upgrade Completed

One option to try out the new software is to execute the downloaded trial software within the internal RAM memory without destroying the Application Program stored in the flash memory. Select “N” (No) to not to write the software into flash. Instead, execute the downloaded program immediately (See the Figure 3-85).

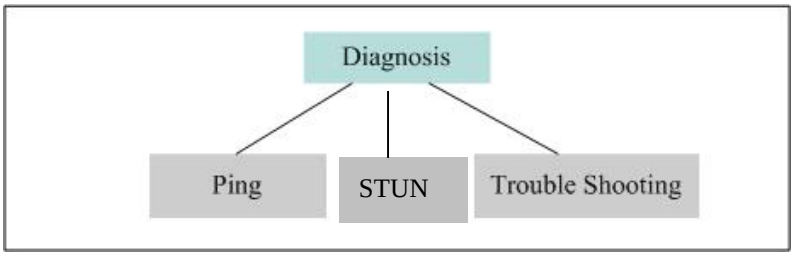
```
Device Control                  TAINET Venus 2808S      Version 1.45j - Bld 7.0
================================================================================
 Warm Start    Restore Default   [Firmware Upgrade]
 TFTP Software Download

                TFTP Software Download

                TFTP server IP          [172.16.1.108   ]
                TFTP server port        [69   ]
                file name (binary)      [2808Sv145j.BIN                  ]
Downloading (press Ctrl-c to cancel)... Please Wait...
 2097152 bytes(100.00%) received.  TFTP download complete.
 Checksum is correct. (TFTP file checksum is: 2566914152)

 [1.45j] upgrade to [1.45j]

 Write to flash? (y/n)
 Execute the code in SDRAM? (y/n)_



 ENTER:select  TAB:next  '<':left  '>':right  ESC:previous menu
```

Figure 3-85 - Execute the Trial Software

3.8 Diagnosis

The Diagnosis menu helps to troubleshooting the VoIP service.

Table 3-42 - The "Diagnosis" Menu Items



3.8.1 Ping

This feature can be used to verify the path of packet transmission between VENUS Series and another node. For example, to check whether the Proxy Server is reachable or is alive. Make sure you configure the correct subnet mask, and the IP address of the default gateway.

Access Path: *Diagnosis* Menu -> *Ping*.

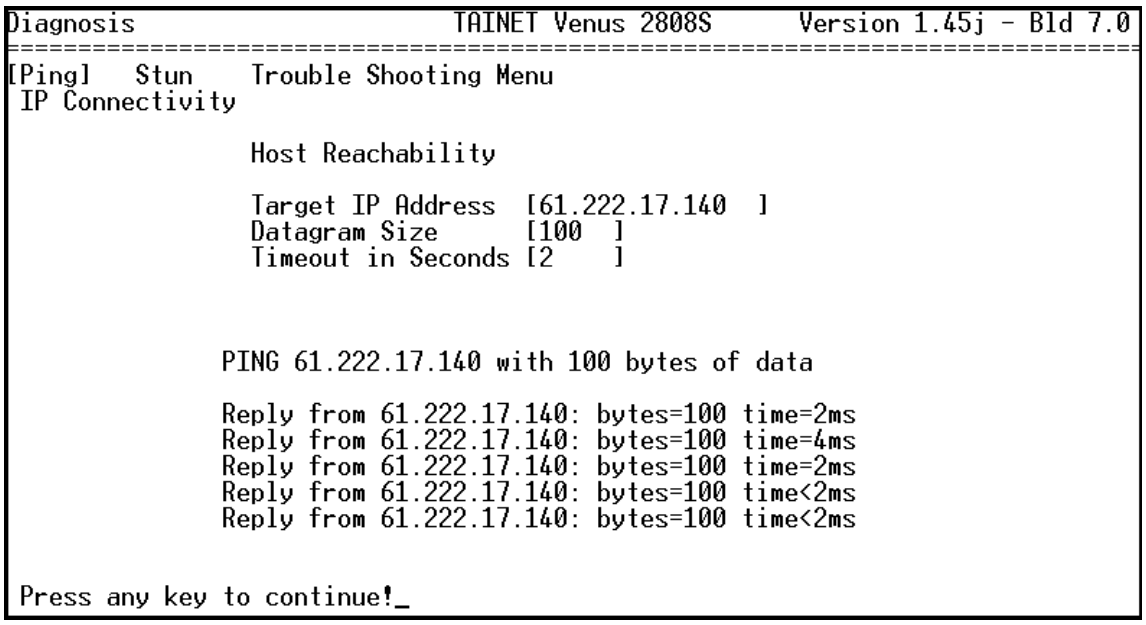


Figure 3-86 - Ping a Host

3.8.2 STUN Type Diagnosis

This feature can be used to chick the STUN server stand.

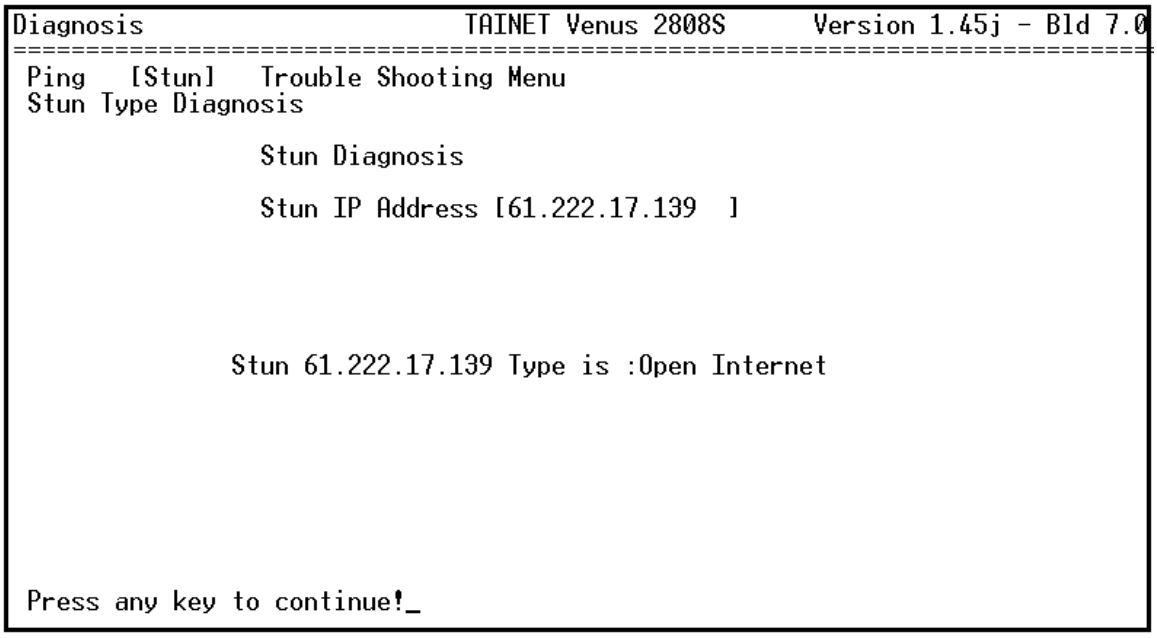


Figure 3-87 - Stun Type Diagnosis

3.8.3 Trouble Shooting Menu (Command Line Interface)

The Trouble Shooting Menu is designed mostly for technical support engineers. It provides a Command Line Interface (CLI) where user can enter commands

- To setup detailed configuration
- To monitor detailed system status messages, and
- To diagnose the device

Caution:
Activating some of the commands supported in the Command Line Interface (CLI) during run-time may affect the normal service of the device. Read through this section and Chapter 4 to learn the command sets.

The command line syntax is “command parameter …”. The major commands useful are listed and described in Table 4-1 “Command Sets” in Section 4.3. Here in this section, the mostly used commands are introduced briefly. The following are some example commands:

“set tcid 3 rxgain –5”

“venus card 4 fxs ring_freq 20”

By adding the command lines into a text file (refer Chapter 4 – Editing the Configuration File), user can create a configuration file for a device. The device can then be activated to download the file from a TFTP server and feed the commands into the Command Line Interface (CLI) to automatically configure the device (see Section 3.5.1). Basically, all the configuration items of the device can be setup within the CLI. This is an option for quick and easy configuration comparing to the console port interface.

To access the Command Line Interface (CLI), select the “Diagnosis” menu, then “Trouble Shooting Menu”. The device will prompt “dbg>”, where user can enter the command lines (Figure 3-88).

To quit from this interface back to the menu tree of the terminal UI, type “Q” then press the “Enter” key.

```
Diagnosis                        TAINET Venus 2808S      Version 1.45j - Bld 7.0
================================================================================
 Ping    Stun   [Trouble Shooting Menu]
 View System Debug Messages

dbg>
```

Figure 3-88 - Entering the Command Line Interface

Within the CLI, enter “?” or “help”, the device will display all the commands available (Figure 3-89).

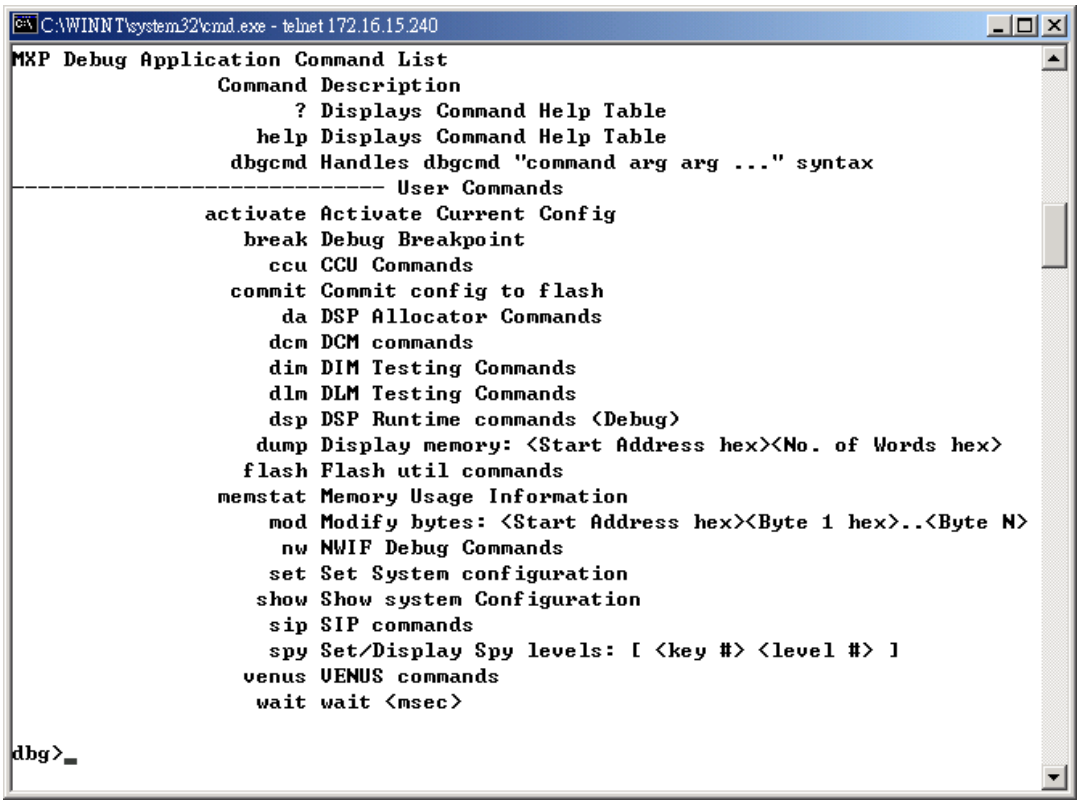


Figure 3-89 - The "help" Command

The basic command used for major configuration is "venus". Enter "venus" to display the syntax. All configuration items provided in the terminal UI can be found here (Figure 3-90)

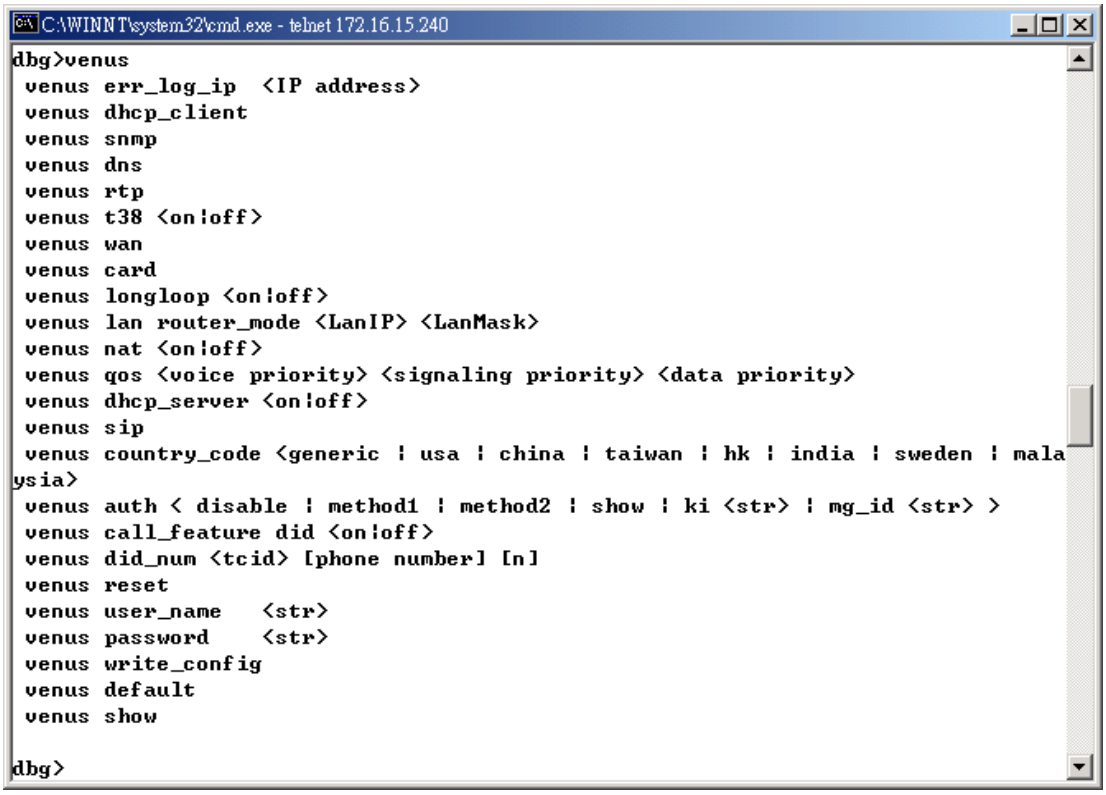


Figure 3-90 - The "venus" Command

The “spy” command is used to select the “spy-level” for monitoring the behavior of a software task. The command format is “spy [key] [level]”, where the key is the task number (from 1 to 15) and the level is the monitor level (from 0 to 5).

This command enables the display of debugging message of different monitoring level for a specific task (Figure 3-91). A lower level will display more information, while a higher level may show only the critical or fatal messages. Users can apply this command to monitor the device and, if necessary, capture the detailed messages and send it to the Technical Support for further study and diagnosis.

The default spy level for all tasks is 3. It filters out the normal event messages and displays only the Minor Unexpected Event, the Major Unexpected Event, and the Fatal Error messages.

A commonly used spy feature is to monitor the SIP communication for diagnosing the compatibility of inter-operation.

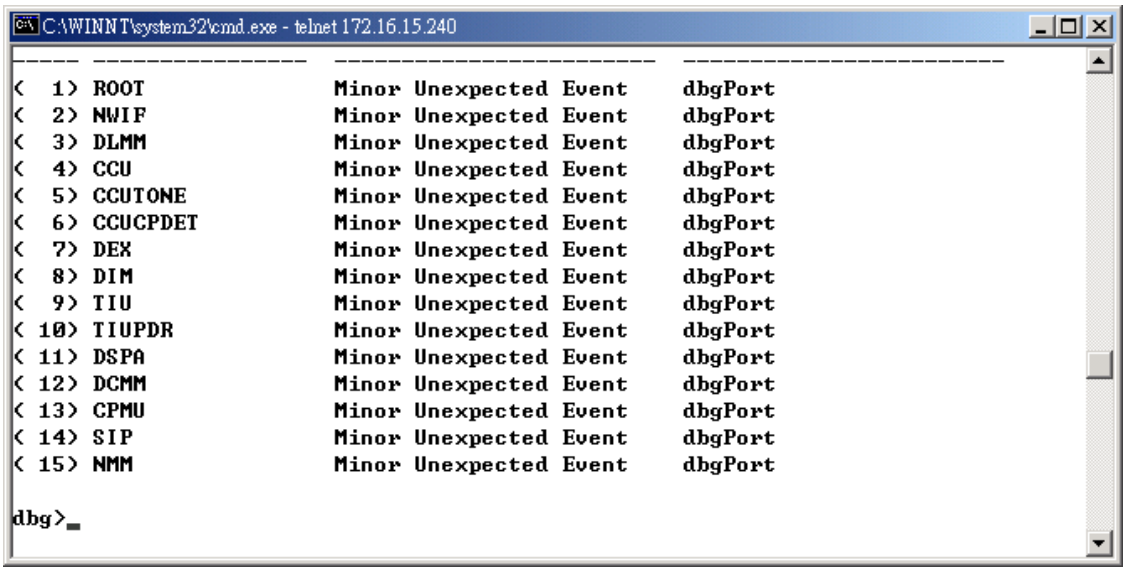


Figure 3-91 - The Spy Command

Chapter 4. Edit Configuration File

This Chapter describes the format of the VENUS Series configuration file. The configuration file is actually composed of VENUS Series command lines. Users are allowed to edit this file for their own need. By downloading the configuration file from a TFTP server to the device, user can easily perform the system configuration and don't have to go through the step-by-step configuration items provided by the terminal interface.

4.1 Download The Configuration File

Store this configuration onto a TFTP server where the VENUS Series device can reach. There are two methods to enable the device to download the configuration file:

(1) Manually activating via the terminal interface (refer to Section 3.5.1). Simply enter the IP address of the TFTP server, and the file name of the configuration file. The device will download the file and provision itself.

(2) Automatically activating via DHCP/BootP client (refer Section 3.5.1.6). In case the DHCP/BootP client is enabled, the device will request the dynamic IP address configuration from the DHCP/BootP server, and obtain the location of the TFTP server and the file name as well if the information is provided.

The DHCP server on the Windows NT platform is one of the popular DHCP server software. To setup the configuration file information on Windows NT DHCP server, launch the DHCP Manager; select the "DHCP Options" menu (see Figure 4-1).

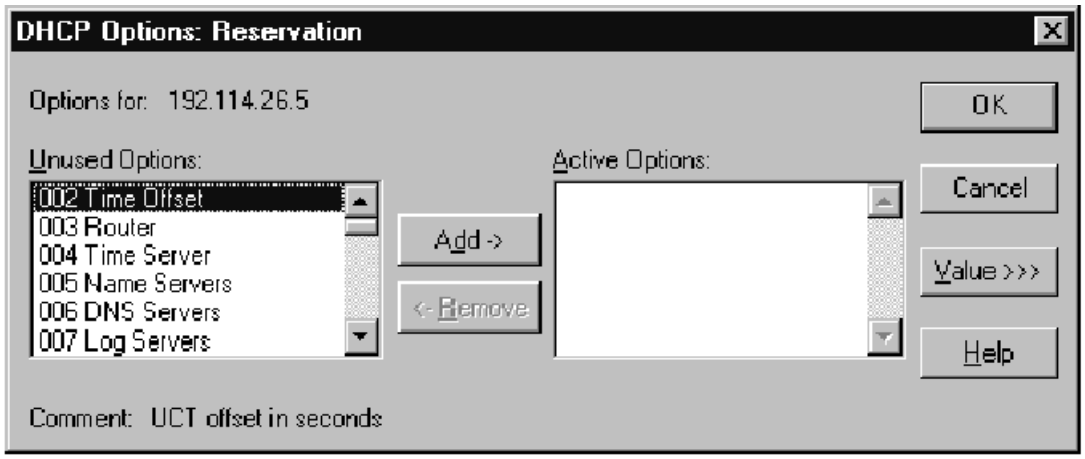


Figure 4-1 - DHCP Manager of the Windows NT Server

Add the following extension fields from the left-hand table (see Figure 4-2):

066 Boot Server Host Name *(Domain name or IP address of the TFTP server)*
067 Bootfile Name *(the configuration file name)*

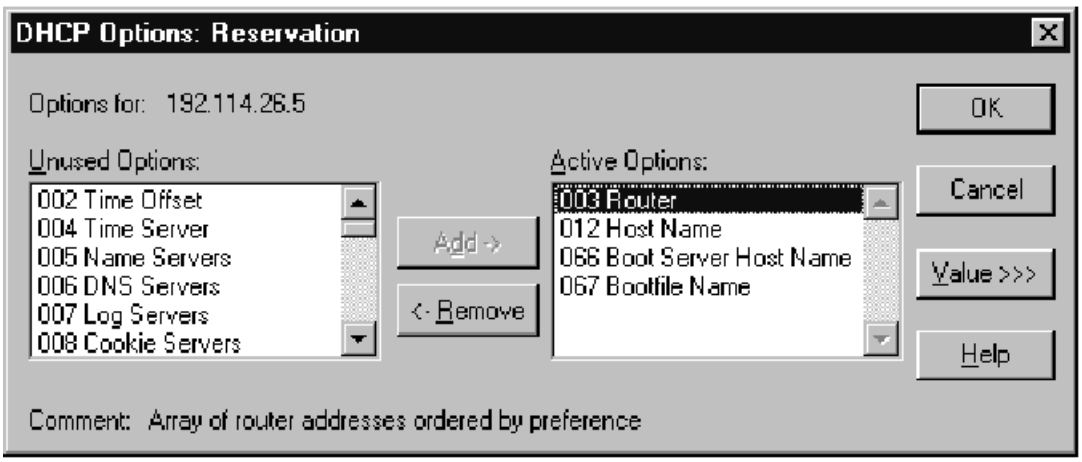


Figure 4-2 - DHCP Options – Adding the Reservation Fields

Click at "066 Boot Server Host Name" on the right-hand table. Click at the "value" button. Now enter the domain name or the IP address of the TFTP server, and then click OK (Figure 4-3).

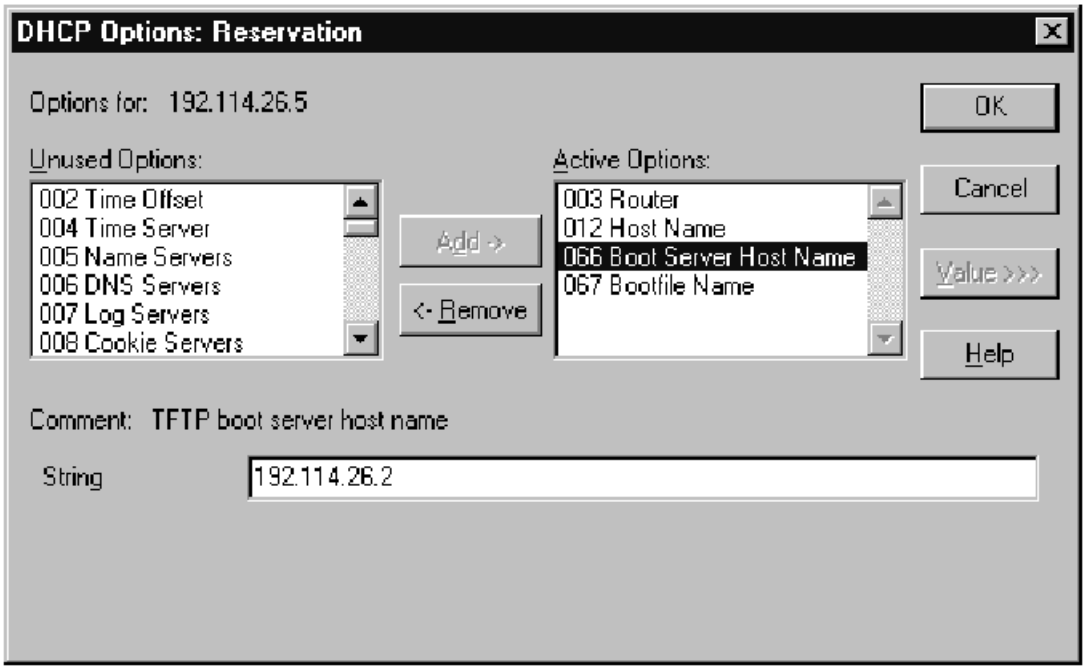


Figure 4-3 - Setup the TFTP Boot Server Host Name

Click at “067 Bootfile Name” on the right-hand table. Click at the “value” button. Now enter the configuration file name, and then click OK (Figure 4-4).

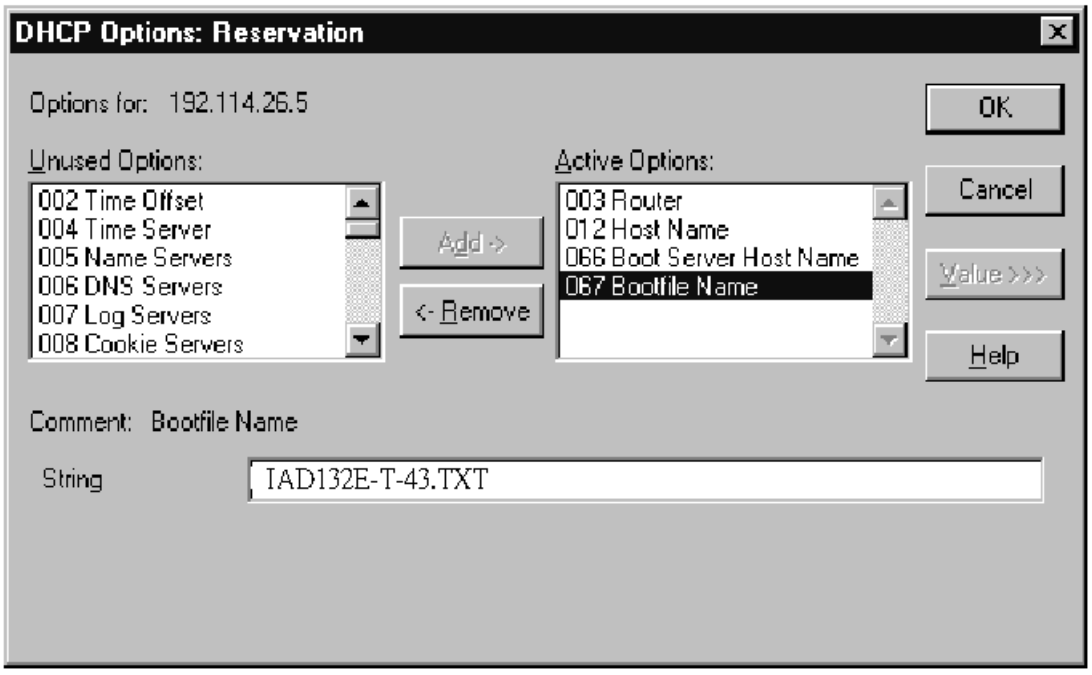


Figure 4-4 - Setup the Configuration File Name

User may configure the DHCP server to provide different configuration files for each VENUS Series device. Refer to the user’s manual of the DHCP/BootP server you are using to configure the server.

4.2 File Format

The configuration file must be in ASCII text format, use the text mode editor like Microsoft NotePad, or Microsoft WordPad to edit the file. The rules of the file are:

- The file must start with the string “VENUS Series Configuration File” at the 1st line (case sensitive). This is the identification header.
- A line started with a “#” or “;” symbol is a comment line.
- Each line must be ended with a “0x0D” or “0x0A” (the Line-Feed or Carriage-Return code).
- This file must be ended with a “0x00” (the End of File code).
- All of the characters (except the 1st line) in the file must in lower cases.
- The command lines are processed in sequential order, so arrange the commands in a proper order.

4.3 Command Sets

The following table lists the major commands and includes a brief function description for each command. Some of the most useful commands can cross-refer to the detailed

description in the corresponding sections in Chapter 3.

The command syntax is “command parameter1 parameter2 …”. The parameter included in the “[ ]” symbols must be provided, while a parameter included in the “< >” symbols is optional. A “|” symbol separates all the parameters allowed.

Table 4-1 - VENUS Series Command Sets

Command Set	Function Description	Cross Reference
venus box_name [string]	Setup the logic name of the device Example: venus box_name 000.M003 This example names the device “000.M003”	3.5.1.1
venus dhcp_client [on | off]	Enable / Disable the DHCP/BootP. This command enables the device to request a dynamic IP address and to obtain the net mask and default gateway IP address from a DHCP or BootP server during device boot-up state. Defaults: off	3.5.1.6
venus dhcp_client name [string]	To specify client’s host name	3.5.1.6
venus dhcp_client restrict [on|off]	Enable / Disable ‘trusted’ DHCP server(s) feature. When this feature is enabled, only responses from the severs, specified by the next command, will be accepted.	3.5.1.6
venus dhcp_client serv[n]	IP address of ‘trusted’ server(s).	3.5.1.6
venus snmp agent [on | off]	Enable / Disable the SNMP agent Defaults: off	3.5.1.7
venus snmp sys_contact [string]	Contact person for this SNMP managed device.	3.5.1.7
venus snmp sys_name [string]	Domain name for this SNMP managed device.	3.5.1.7
venus snmp sys_loc [string]	Physical location of this SNMP managed device	3.5.1.7
venus snmp trap [on | off]	Enable / Disable the SNMP trap Defaults: off	3.5.1.7
venus snmp get_com [string]	The community string for Get object from SNMP MIB	3.5.1.7
venus snmp set_com [string]	The community string for Set object from SNMP MIB	3.5.1.7
venus snmp trap_com [string]	The community string for trap active	3.5.1.7
venus snmp trap_dest_[n] [IP address]	IP address of the SNMP manager	3.5.1.7
venus dns [on | off]	Enable / Disable DNS lookup Defaults: off	3.5.1.8

Command Set	Function Description	Cross Reference
venus dns ip [IP address]	Setup the IP address of the Domain Name Server	3.5.1.8
venus dns iadms_name [string]	Setup the domain name of the IADMS. This command enables the device to communicate with the domain name server to look up the IP address of the IADMS.	3.5.1.8
venus rtp filter [on|off]	Enable / Disable RTP filtering.	3.5.1.14
venus rtp 2833 [on|off]	Enable / Disable RFC 2833 feature.	3.5.1.14
venus t38 [on|off]	Enable / Disable T.38 feature and specify the method.	3.5.1.12
venus country_code [generic | usa | china | india | hk | …]	Country selection of the telephony specification (ring and tone spec) Defaults: generic	3.5.1.10
venus wan static_ip [IP address]	Setup the static IP address of the WAN interface (the Ethernet port) for the device. (Note: The static IP address is active when the DHCP/BootP function is disabled)	3.5.2.2
venus wan net_mask [IP network]	Setup the Sub-net Mask. (Note: The net mask is active when the DHCP/BootP function is disabled)	3.5.2.2
venus wan default_gw [IP address]	Set up the IP address of the default gateway (Note: The default gateway IP address is active when the DHCP/BootP function is disabled)	3.5.3.2
venus card [3-4] fxs tone [tone type] [ne] [nf] [f1] [a1] [f2] [a2] [f3] [a3] [f4] [a4] [t]	Setup the spec of a call progress tone for a specific voice module card, where [tone type] can be busy ring_back congestion dial_tone dial_tone2 out_of_service disconnect offhook_notice offhook_alert dial_tone3 off_on_dial_tone call_wait reorder	3.5.2.7

Command Set	Function Description	Cross Reference
	rmt_disconnect [ne] is the number of tone elements composing this tone (1~6) [nf] is the number of frequency for this tone element (1~4) [f1]~[f4] is the 1st, 2nd, 3rd and 4th frequency of the tone element, in Hertz [a1]~[a4] is the 1st, 2nd, 3rd and 4th amplitude of the tone element, in 1/10db [t] is the duration, in ms, of this tone element (-1: forever) Example: venus card 3 fxs tone dial_tone3 1 1 450 –100 0 0 0 0 0 0 –1 This example sets the dial tone spec. The dial tone has only one tone element: 450Hz, -10db, and is played continuously. Example: venus card 3 fxs tone busy 1 2 480 –240 620 –240 0 0 0 0 500 venus card 3 fxs tone busy 2 0 0 0 0 0 0 0 0 0 500 This example sets the busy tone spec. The busy tone has dual tone elements: (1) 480Hz, -24db, and (2) 620Hz, -24db. The tone pattern is 500ms on and 500ms off.	
venus card [3-4] fxs ring_freq [17~40(Hz)]	Setup the ring frequency of a voice module. Example: venus card 3 fxs ring_freq 20 This example sets the ring frequency of 20Hz	3.5.2.6
venus card [1-4] fxs ring_cadence [on1] [off1] [on2] [off2] [on3] [off3] [duration]	Setup the default ring cadence of a voice module, where [on] is the ring cycle ON time (100ms based) [off] is the ring cycle OFF time (100ms based) [duration] is the total duration of the ring generation (1ms based) Example: venus card 3 fxs ring_cadence 10 40 0 0 0 0 180000 This example sets the ring cadency with 1-second	3.5.2.6

Command Set	Function Description	Cross Reference
	On, 4-second Off cycle. The ring will last for total of 180 seconds.	
venus card [1-4] fxs distinctive_ring [1-9] [on1] [off1] [on2] [off2] [on3] [duration]	Setup the ring cadence for a distinctive ring pattern, where [1-9] is the distinctive ring pattern (Note: 9 is for setting the spec of the "splash ring") [on] is the ring cycle ON time (100ms based) [off] is the ring cycle OFF time (100ms based) [duration] is the total duration (100ms based) Example: venus card 3 fxs distinctive_ring 2 5 10 20 10 0 0 180000 This example sets the ring pattern for the 2nd distinctive ring with 0.5-second On, 1-second Off, 2-second On, 1-second Off cycle. The ring will last for total of 180 seconds. Defaults: r1: 2 sec on / 4 sec off r2: 0.8 sec on / 0.4 sec off, 0.8 sec on / 4 sec off r3: 0.4 sec on / 0.2 sec off, 0.4 sec on / 0.2 sec off, 0.8 sec on / 4 sec off r4: 0.3 sec on / 0.2 sec off, 1 sec on / 0.2 sec off, 0.3 sec on / 4 sec off r5: 0.5 sec on / 0.1 sec off r6: 0.5 sec on / 0.2 sec off, 0.3 sec on / 0.2 sec off, 0.5 sec on / 3 sec off r7: 2 sec on / 4 sec off r8: reserved r9 (splash ring): 0.5 sec on	3.5.2.6
venus lan router_mode [lanIp] [lanMask]	Specify LAN IP and mask under router mode.	3.5.2.3
venus nat [on|off]	Enable / Disable NAT.	3.5.2.4
venus qos [voice priority] [signaling priority] [data priority]	Setup different priority for different type of service.	3.5.1.11
venus user_name [string]	Setup the user name Defaults: "user"	3.5.5
venus password [string]	Setup the user password Defaults: no password	3.5.5
venus write_config	Write the configuration into the flash memory	N/A

Command Set	Function Description	Cross Reference
venus default	Reset the configuration to factory default Defaults: see section 3.7.2	3.7.2
venus reset	Reset the device	3.7.1
venus show	Display current configuration	3.6
flash clean	Clean the configuration stored in the flash memory. Once this is done, user should reboot the device, and the device will set the configuration to factory defaults.	3.7.2
spy	Display the spy level of each software task.	N/A
spy [key#] [level#]	Set the spy level (from 0 to 5) of a specific software task. This command enables the display of debugging message of different monitoring level. A lower level will display more messages, while a higher level shows only critical or fatal messages. Spy levels: 0: General Information 1: Function Entry 2: Normal Event 3: Minor Unexpected Event 4: Major Unexpected Event 5: Fatal Error Defaults: The default spy level is 3. (Note: Enabling a spy level lower than level 3 during heavy service loading may exhaust the device to produce too many messages to crash the device) .	N/A
show	Display system status. Enter “show” to see detailed command description.	N/A
show coding	Display the configuration of the coding profile for this application	N/A
set coding	Setup the coding profile. Enter this command to display detailed setup items.	N/A
show tcid [0 to 31]	Display the configuration of each voice telephony channel	N/A
set tcid [0 to 31]	Setup the detailed configuration for a specific voice channel. Enter this command to display detailed setup items.	N/A
activate	Activate the new configuration following the above “set” command	N/A
commit	Write the current active configuration into the flash memory.	N/A

Command Set	Function Description	Cross Reference
dump [start address] <# of words>	Dump memory content	N/A
mod [start address] [byte 0] .. <byte n>	Modify memory content	N/A
memstat	Monitor memory buffer usage	N/A
dcm	digit map test command. Enter this command to display detailed control items.	N/A
dlm	DNS testing command. Enter this command to display detailed control items.	N/A
dim	DSP interface testing command. Enter this command to display detailed control items.	N/A
dsp	DSP Runtime Control command. Enter this command to display detailed control items.	N/A
da usage [0 .. 8]	Monitor the DSP usage status	N/A

4.4 Example File

The following is an example configuration file with embedded comments started with "#" for explanation.

VENUS Series Configuration File
This is an example of the configuration file
The 1st line "VENUS Series Configuration File" is the id header of a valid configuration file
This example file will configure the device to
- setup the static IP address as "172.16.3.233"
- setup the net mask as "255.255.240.0"
- setup the IP address of the default gateway as "172.16.0.254"
- select country code "china"
- then write the configuration into flash
venus wan static_ip 172.16.3.233
venus wan net_mask 255.255.240.0
venus wan default_gw 172.16.0.254
venus country_code china
venus write_config

end of configuration file

Chapter 5. Maintenance and Troubleshooting

5.1 Instruments

The following instruments may help to allocate the problem:

A multi-meter: *to identify the line condition, the power condition, etc.*

A PC: *with a LAN card installed and the IP setup configured properly*

A network scope: *to identify the network status and the traffic load over the network.*

5.2 Troubleshooting

Turn off the power first. Follow the procedures below to allocate the problem:

1) Cable Connections

Make sure all the cables are connected correctly and firmly. Check if you provide a correct power source.

2) The Power Source

The LED indicators offer some helpful information for users to check the hardware status of VENUS Series. Check if the PWR LED is ON. Use the multi-meter to measure the power supply.

3) Boot up Diagnosis

Observe the boot up sequence of the gateway. During the boot up phase, VENUS Series performs the hardware initialization, run-time AP software verification, interface module detection and then the hardware diagnosis procedure. Check if all the LEDs can display correctly.

The SYS ALM LED indicates the diagnosis state: while it is Yellow, the device is performing diagnosis. A Red SYS ALM LED indicates a hardware failure. A Green SYS LED indicates no hardware failure.

Login to the Craft port Interface, and select the “Hardware Configuration and Diagnosis Report” menu to see if the device reports correct hardware configuration, type of interface cards installed, number of voice channel detected, and the diagnosis results.

In case of hardware failures, record the indication of LEDs during the boot up phase, and report the diagnosis result generated by VENUS Series to our customer service.

4) IP Network Interface Connection

Check the indicator for the WAN interface indicating normal condition. If the 10/100Base-T Fast Ethernet port is used, check if the 10/100BT LED is on. Verify if a correct Ethernet cable is used. To connect VENUS Series directly to another Ethernet port of a network node (for example a router), a cross cable, instead of a straight cable, may be used.

5) IP Address Configuration

Check if the IP address was assigned statically or obtained dynamically from a DHCP server.

If the DHCP client mode is enabled, look at the DHCP server for the exact IP address assigned to the gateway or monitor the display message of the DHCP server discovery status from the Terminal User Interface via the Console port. Remember that the DHCP server must be located in the local network where the DHCP server can receive the broadcast packets sent from the gateway. Make sure there is unused IP address available on the DHCP server.

If static IP address is enabled, make sure the net mask and the default Gateway are set correctly. Use the PC to perform a PING test to the gateway, or activate the PING feature from within the Craft port Interface to verify the IP packet transmission between the gateway and some other nodes. Try to PING the default gateway first, then the SIP Proxy Server. Check with your access service provider for a well-maintained WAN link.

Use the Network Scope (or the Protocol Analyzer) to monitor the packets sent received by the VENUS Series. Refer to Section 3.8.3 for detailed description.

6) Firewall and NAT

Normally, a public IP address should be used for VENUS Series. In case the VENUS Series is located in the local network behind the firewall or router, Make sure the IP packets is not blocked or modified.

For the security purpose, a firewall server or VPN is usually installed to filter out unauthorized accesses from the outside world. Make sure the traffic to/from the VoIP gateway is not blocked.

The NAT server may cause problem as well. The NAT server performs the Network Address Translation between the public IP address and the private IP address. It may not recognize some Text-based protocols (like SIP) used by the VoIP gateway and may cause incorrect IP address or port translation for a packet.

7) Off-hook the Telephone Handset

Pick-up the phone and hear to the response. Check if the LED of the telephone port is turned ON. If no tone is heard, check the transmission between the Proxy and Registration Server and the gateway again.

8) Make a Local Call

If the dial tone can be heard, try to dial a local number to another port on the same gateway. See it the ring back tone is heard and the called party are ringing. See if the Channel LED flashes while the phone rings. Answer the phone, and start conversation. Hear the voice quality.

9) Make an On-Net Call

Try to make a call to another VoIP gateway somewhere located in the IP network. If the ring back tone is heard, but no voice can be heard after the called party answers the phone, the voice packets sent by these two gateways may be blocked somehow (reason like firewall, VPN, etc). Contact your service provider to check the setup of the routing path.

The voice waves are converted to digital voice coding (such as G.711, G.723, G.729, …etc) and encapsulated in RTP packets. RTP is a transport protocol running on the top of UDP. To make a VoIP phone call, a RTP connection is created for the caller and the called gateway. The UDP port used for RTP is not fixed. *VENUS Series uses the UDP number started from 30000*.

10) Hear the Voice Quality

If the voice quality is not good, possible reasons include

Low WAN link throughput *not able to support enough bandwidth for voice traffic (see the following table for calculation of maximum bandwidth required)*

Network congestion*: a well maintained network flow control policy or protocol help to control the traffic and prioritize the service for different type of media*

Type of voice codec

Network device delay*: firewall, router, switch, access device, … etc all contribute latency to the traffic. A good network configuration in advance is very important.*

Type of the Voice Codec selected is a big factor and tradeoff to the voice quality. The PCM type codec (G.711 u-law or A-law) provide excellent voice quality, but consume large amount of network bandwidth. A higher compression rate codec provide fair voice quality and consumes less network bandwidth, however requires more CPU/DSP power which increase the voice latency.

Table 5-1 - Voice Codec Bandwidth

Codec Types	Bit Rate
ITU-T G.711 A-Law PCM	64K
ITU-T G.711 μ-Law PCM	64K
ITU-T G.723.1	6.3K/5.3K
ITU-T G.729A	8K
ITU-T G.726.	16/24/32/40K

Appendix A Supplemental Telephone Features

For the traditional PSTN service providers, they used to invest on extra equipment or technology for those services and may charge extra to their customers.

The supplemental telephone features like Call Forwarding, Call Waiting, Caller ID Display, Caller ID Blocking, Speed Dial, Call Return and 3-way Conference can be provided.

The following Table describes some example procedures for VENUS Series to enable or disable several example supplemental features.

Table A-2 - Supplemental Telephony Features

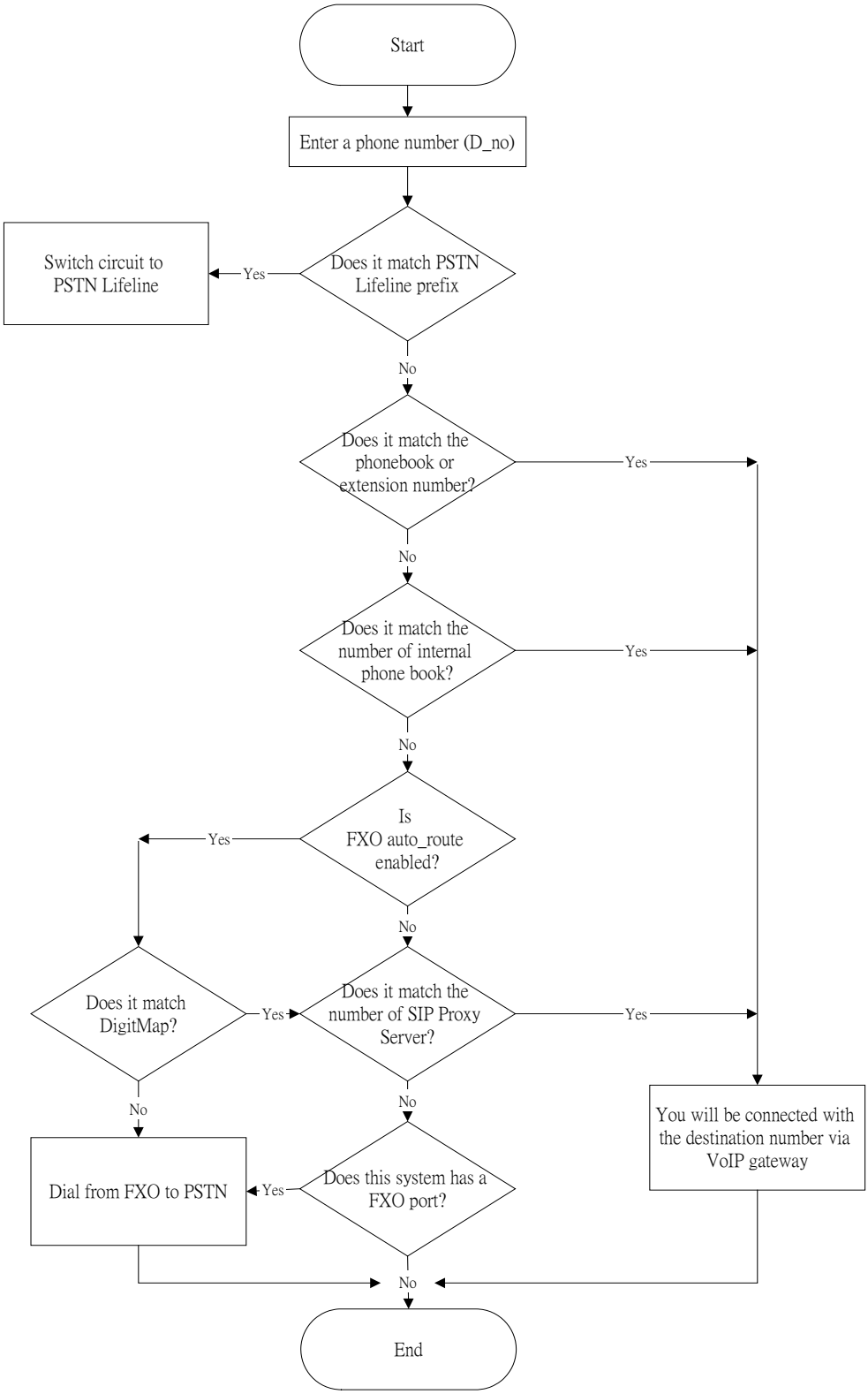
Features	Description	Examples
Call Forward All (CFA)	Forward all the incoming calls to a designated telephone number	- To enable Call Forwarding All Pick up the phone and press 72# Hear the Dial Tone Enter the telephone number to which the incoming calls will be forwarded Hear the Confirm Tone - To disable Call Forwarding All Pickup the phone Press 73# Hear the Confirm Tone
Call Forward Busy (CFB)	Forward all the incoming calls while the local phone is busy	- To enable Call Forwarding Busy Pick up the phone and press 74# Hear the Dial Tone Enter the telephone number to which the incoming calls will be forwarded to Hear the Confirm Tone - To disable Call Forwarding Busy Pickup the phone Press 75# Hear the Confirm Tone
Call Forward No Answer (CFNA)	Forward the incoming calls to a preset telephone number if the call is not answered after several rings	- To enable Call Forwarding No Answer Pick up the phone and press 76# Hear the Dial Tone Enter the telephone number to which the incoming calls will be forwarded to Hear the Confirm Tone - To disable Call Forwarding No Answer Pickup the phone Press 77# Hear the Confirm Tone
Caller ID Blocking	The Caller ID (telephone number) and the registered Name of the local phone will not be displayed on the	- To enable Caller ID Blocking Pickup the phone Press 86# Hear the Confirm tone

Features	Description	Examples
	Called phone for privacy.	- To disable Caller ID Blocking Pickup the phone Press 82# Hear the Confirm tone
Selective Caller ID Blocking	The Caller ID (telephone number) and the registered Name of the local phone will not be displayed on the Called phone for a signal phone call.	- To block Caller ID for an individual call Pickup the phone Press 67# Hear the Dial tone Dial the telephone number to make the call
Call Return	To call back to the caller of the last incoming call. This feature works even if last incoming call was not answered.	- To make a return call Pickup the phone Press *69
Call Waiting	This feature allows interruption of a 3rd party to a call in progress. Make the coming in call to wait until current conversation finished. The talking person will be informed by short tone	- Call Waiting example While one call is in progress (say A is talking to B) C dial the phone number of A A hear the Call Waiting tone indicating an interruption A press the “Flash” button on the handset A can now talk to C while put B on hold To finish the conversation, A press the “Flash” button to switch back to B and continue the conversation - To disable Call Waiting for an individual call not to be interrupted Pickup the phone Press 70# Hear the Dial tone Dial the telephone number to make a call which will not be interrupted
Speed Dial	This feature allows users to store telephone numbers to the telephone book located in the database of the service provider. User can press fewer digits to automatically dial the stored number. The total numbers that the telephone book can store is depending on the service provider	- Example of storing a telephone number to position 4 in the telephone book Pickup the phone Press 74* Hear the Dial tone Press 4 (the 4th position in the phone book) Enter the telephone number to store Hear the Confirm tone - To dial a stored telephone number Pickup the phone Press 4# (the 4th telephone number)

Appendix B Abbreviation

Abbreviation	Stands for
ARP	Address Resolution Protocol
BootP	Bootstrap Protocol
CLI	Command Line Interface
CPU	Central Processing Unit
DDN	Digital Data Network
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name System or Domain Name Server
DSP	Digital Signal Processor
FXS	Foreign Exchange Station
HTTP	Hyper Text Transfer Protocol
IAD	Integrated Access Device
IADMS	IAD Management Server
ICMP	Internet Control Message Protocol
IETF	Internet Engineering Task Force
ITU-T	International Telecommunication Union - Telecommunication
MDU	Multi-Dwellings Units
MGCP	Media Gateway Control Protocol
MIB	Management Information Base
MTU	Multi-Tenants Units
NAT	Network Address Translation
NCS	Network-based Call Signal protocol
NGN	Next Generation Network
POTS	Plain Old Telephone System
PPPoE	Point-to-Point Protocol over Ethernet
PSTN	Public Switched Telephone Network
RARP	Reverse Address Resolution Protocol
RFC	Request for Comments
RTP	Real Time Protocol
SDP	Session Description Protocol
SIP	Session Initiation Protocol
SNMP	Simple Network Management Protocol
TCP	Transmission Control Protocol
TELNET	Telecommunication Network Protocol
TFTP	Trivial File Transfer Protocol
UA	User Agent
UI	User Interface
UDP	User Datagram Protocol
URL	Uniform Resource Locator
VAD	Voice Activity Detection
VoIP	Voice over Internet Protocol
VPN	Virtual Private Network

Appendix C Flow Chart for Code Determination



Appendix D Venus series Power Consumption

	All Idle	Full Loading
Venus 2804+	*9.9W*	*12.9W*
Venus 2808	*41.8W*	*53.8W*
Venus 2816	*35.2W*	*54.4W*
Venus 2832A+	*46.2W*	*94.2W*