

NetComm V90 VoIP Phone

Quick Start Guide

Draft Release 0.1

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Overview

V90 VoIP Phone is fully compatible open SIP industry standard. It is designed as a third-party enterprise grade VoIP device, which makes it easy to integrate into an existing SIP network.



Figure 1 V90 VoIP Phone

The feature-rich VoIP Phone is designed to work seamlessly with most of the existing SIP VoIP systems.

V90 VoIP Phone Specification

Advanced System Features

- Power of Ethernet (802.3af) Support
- Setup Wizard for different types of network environment and IP phone accounts
- Auto Configuration Support via TFTP and HTTP (Plug-n-Play operation - requires no user setup when network access is available.)
- Smart Firmware Management Support via TFTP and HTTP (No need for manual firmware upgrade)
- Centralized management software for easy management for mass V90 deployment
- Primary and Backup SIP server support for primary proxy server failover and network redundancy
- Programmable QoS Marking (both 802.1q VLAN and ToS/DiffServ)
- Compatibility in multi- vendor open architecture VoIP networks
- Retrieving time via NTP Servers and SIP message
- NAT/ Firewall Traversal Support with Border Session Controller or Stun Server
- Screen Saver for displaying logo/banner

Key Features

- SIP 2.0 standardization deployed throughout
- Advanced audio processing – jitter buffer with packet delay and packet loss concealment
- Voice packetization & flexible voice compression
- Programmable voice packet payload size
- Dynamic & automatic negotiation of codec selection
- In-band and Out-band DTMF transport
- G.168 Echo Cancellation
- Two Ethernet ports supporting router and bridge mode
- Call Redial, Flash, Mute
- Caller ID / Caller ID Call Waiting
- Visual Message Waiting Indicator (VMWI)
- Call hold/Forward/Transfer (attended/unattended call transfer)
- Phone Book Memory Dialing
- Speed Memory Dialing
- Hands Free Dialing
- Hotline Dialing
- Call history for incoming, outgoing and missed calls
- Programmable Generic Function Key Definitions (automatic adding prefixes/customized LCD menu)
- Dialing Plan (Digit Map)
- Soft Login/Logout key for SIP registration
- 128x64 dot matrix LCD with/without black light
- Full Duplex Speakerphone

- Programmable Phone Commands (via dialing keypad) for additional functions (Optional)
- Auto Provisioning Support
- Firmware upgrading, loading configuration, phone status reports and etc via Centralized Management tool
- Local Music on Hold

Standards Supported

- SIP V2.0 Standard (RFC 3261)
- SDP (RFC 2327)
- Digest authentication and MD5 encryption (SIP)
- ITU-T G.711 Alaw/Ulaw, G.729A, G.729AB, G.723.1 and GSM Voice Codec
- RTP (Real Time Data Transmission) RFC1889
- RTCP (Real Time Transport Control Protocol) RFC 3550
- Proprietary Firewall-Pass-Through Technology
- Simple Traversal of UDP over NAT (STUN)
- Web-base Management
- PPP over Ethernet (PPPoE)
- PPP Authentication Protocol (PAP)
- Internet Control Message Protocol (ICMP)
- TFTP Client
- Hyper Text Transfer Protocol (HTTP)
- Dynamic Host Configuration Protocol (DHCP)
- Domain Name System (DNS)
- Out-band DTMF Relay: RFC 2833 and SIP Info
- SIP proxy address in DHCP (RFC 3361)
- RFC 3265 and RFC 3842 for Message Waiting Indication

Hardware Interface

- Ethernet PC & LAN Port (2 x RJ-45, 10/100BaseT)
- DC Jack

Shipping Contents

Table 1 below shows what comes packed with the V90 VoIP Phone.

Item	Description
Warranty Registration	Phone warranty card
Ethernet Cable	Straight-through cable
Power Supply	V90 can be powered by either LAN port (PoE enabled network or via a 12VDC/500mA output

	external power supply
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Installation and Basic Configuration

Hardware Installation

1. Connect the handset and telephone cord to the base of the VoIP Phone.
2. Use the enclosed Ethernet cable to connect the LAN port to a hub or switch, or to a DSL Router or Cable Modem.
3. Connect the power supply using the enclosed AC power supply (Note: external power supply is not required if V90 connects to a PoE enabled network via its LAN port).
4. For the first time installation, the phone will scan the network for available services which are **DHCP**, **PPPoE**, and **Fixed IP**. Select the preferred service and enter the required information if needed. No user input is required for **DHCP** service. User ID and Password are required for **PPPoE**. IP address, Netmask, and Gateway IP Address are required for **Fixed IP** mode.

Accessing the Web Configuration Menu

The steps for accessing the V90 Web Configuration Menu are:

- Obtain the V90 IP address.
- Enter the IP address into a browser.
- Log in to the V90 web configuration page.

Obtaining the VoIP Phone IP Address

To retrieve the IP address from the VoIP Phone:

- When the phone is in the on-hook state, press **Menu**.

- Press 3 (System Tools).
 - Press 1 (Phone Status).
 - Press 1 (LAN Port).

The phone displays:

IP: xxx.xxx.xxx.xxx

where xxx is any valid IP address between 0 and 255.

Entering V90 IP Address into a Browser

- Logging into the VoIP Phone

Connect a laptop or desktop computer to the same subnet as the SIP Phone when accessing V90 Web Configuration Page. The SIP Phone Web Configuration Menu can be accessed from any Web browser using the following URL:

http://<phone-IP-address>

where <phone-IP-address> is the IP address of the phone.

For administrator mode, the default User Name is "**admin**"; the default Password is "**admin**".

Enter the User Name and Password into the Log In screen.
Click **OK** to log in to the VoIP Phone.

Configuring the VoIP Phone

The screenshot displays the NetComm V90 IP Phone configuration interface. The main title is "V90 IP Phone". The interface is divided into several sections:

- Preference:**
 - Time Zone: GMT+10
 - Display SIP Server Time: Enable Disable
 - Time Server: pool.ntp.org
 - Time Format: 24-hour
 - Auto-provision: Enable Disable
 - Central Management: Enable Disable
 - Pound(#) Key as Delimiter: Enable Disable
 - Auto-dial Timeout: [Empty field]
 - Network Tones: Australia
 - Ringing Tone: Tone 3
- Network Configuration:**
 - LAN Port: DHCP
 - 802.1q VLAN: Enable Disable
 - PC Port: Bridge mode
- Call Settings:**
 - Phone Number: 09150388
 - Display Name: 09150388
 - SIP Proxy: sip.vsp.com.au
 - SIP Registrar: sip.vsp.com.au
 - Home Domain: sip.vsp.com.au
 - Authentication Id: 09150388
 - Password: [Masked]
 - Backup Server: Enable Disable
 - Message Waiting Indication: Enable Disable
 - Signaling Port: 5060
 - Register Expiry (seconds): 240
 - No Answer Expiry: 90
 - DTMF Signaling: Inband Outband
 - Signaling QoS: DiffServ
 - DiffServ Class: AF31 - 0x68
 - Signaling IAT Traversal: None
- Phone Settings:**
 - Vendor Name (title): NetComm V90
 - Title on LCD (subtitle): Hello VWorld!
 - Screen Saver: Enable Disable
 - Wait(seconds): 7

Figure 2 Call Settings Screen - SIP

- Following is minimal configurations required to get V90 registered in your service providers' SIP proxy server. However, depending on your network setup, more advanced information may be need. Please consult your network administrator if necessary.
 - SIP Phone number
 - Display name (Optional, This name will be used for Call ID Name Delivery, so that the other part can see your name before answering.)
 - SIP Proxy (IP Address or Fully Qualified Domain Name)
 - SIP Registrar (IP Address or Fully Qualified Domain Name)
 - Home Domain (IP Address or Fully Qualified Domain Name)

- Enable Authentication (Enable this option if authentication is required by your VoIP service provider)
 - Authentication ID
 - Password
- Selecting the Advanced Settings for additional VoIP settings for more advance operation
- Selecting the Media Settings for packet length, jitter, Codec, and network tones settings.
- Selecting Save Changes to store the current settings.

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More Configurations

Setting the LCD Default display

You can set up the phone LCD to display two lines of text during idle condition.

To set the **Vendor Name (title)** and **Title on LCD (subtitle)** in the phone in V90 web GUI:

On the **Phone Settings** under **Configurations** menu, enter the text for these two fields as desired. If the title field is not filled, the phone will display the phone number assigned by default.

Setting the Authentication ID and Password

To set the Authentication ID and Password:

On the **Call Settings** screen, enter the **Authentication ID** and **Password** in corresponding fields.

Selecting Network Tones and Ring Tone

To select Network Tones:

On the **Preference** screen under **Configurations** menu, select a country on the list beside the label **Network Tones**.

To select Ring Tone:

On the **Preference** screen under **Configurations** menu, select a ring tone type on the list beside the label **Ring Tone**. It will be best to select the **Ring Tone** via V90 Keypad Menu (Press Menu,

3, 5) since you can hear the Ring Tone selected while the selection is made.

Network Configuration

The **Network Configurations** screen allows you to set up the IP addresses of the LAN and PC port, **Bridge** or **Router** mode (static IP for PC port), default Gateway Address, and Primary and Secondary DNS server IP addresses.

Note: Default setting for V90 PC port is in **Bridge** mode.

LAN Port Configuration

The VoIP Phone LAN port can be configured to obtain its IP address by DHCP or the IP address can be set statically.

If you obtain a static IP address from your ISP or network administrator, you can assign it to the VoIP Phone LAN port by choosing "**Static IP**" selection and then entering the fields as provided.

1. Enter IP address of the phone beside **IP Address**.
2. Enter subnet mask beside **Subnet Mask** to specify the LAN netmask.
3. Enter IP address of the default router beside **Default Route**.
4. Enter **Primary** and **Secondary** DNS addresses.

Note: PPPoE mode should be only used for power users. It requires configuring your broadband router in Bridge mode. So, V90 can establish PPPoE connection with your ISP. In this mode, V90 PC port is normally configured in Router mode.

PC Port Configuration

Bridge Mode is the recommended setting for the VoIP Phone. In the Bridge Mode, the SIP Phone allows a PC connected to the phone to pass through to the network. No PC Configuration settings are required;

Click the Bridge Mode button to select **Bridge Mode**.

To specify an IP address manually, choose the "**Static IP**" selection and then enter the IP address and the subnet mask of the PC port.

Identifying the Time Server

The Time Server is the Network Time Protocol server where the VoIP Phone retrieves date and time information.

To specify the Time Server:

On the Preference screen, enter the IP address of the domain name (FQDN) of a valid Time Server entry (ex. timekeeper.isi.edu).

Note: V90 is also able to retrieve time from SIP proxy server, please check with your VoIP provider on availability of this feature as it is VoIP network dependent option.

Changing the Time Zone

The SIP Phone uses Network Time Protocol (NTP) to retrieve date and time information from an NTP server. The time is in GMT \pm offset. For example, Australian Eastern Standard Time is GMT +10 .

To change the Time Zone in which the phone is used:

On the Preferences screen in the **Configurations** page, enter GMT+x where x is the time difference between your time zone and GMT.

Performing an Online Upgrade

WARNING! Performing an online upgrade is for experienced users or administrators only!

To prepare the VoIP Phone for an online upgrade:

1. Click **Management** and then **Online Upgrade**.
2. Enter the IP address or domain name of the upgrade server and package name (e.g. http://202.44.167.165/V90Upgrade/T31HS-3.04-rc9-10-8.pkg)
3. Click **Start**.
4. The message below appears when the firmware upgrade is completed. Click **OK** to continue.

“Upgrade successful!”

“Current version: xxxxxxxx”

WARNING!!! Do not disconnect the power supply until the “Rebooting, Please Wait...” message appears.

Reset Configuration Settings

If you would like to reset the IP phone to factory default settings, click on the **Management** and then **Reset Config** button. Press “yes” in the dialog box to confirm the reset. Please remember to use the default passwords to access the phone again.

System Reboot

If you would like to reboot the VoIP phone, click on the **Management** and then **Reboot**. Press “yes” in the dialog box to confirm the reboot. The phone will then reboot automatically.

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VoIP Phone Operation

Making and Answering Calls

Making a Basic Call

1. Pick up handset
2. Dial phone number
3. Press **OK** or **#** to dial out immediately (**#** key is configured as delimiter key by default).

Note: if no digit is detected within Auto Dial timeout V90 will dial out the digits that have been received so far (The default Auto Dial timeout is 4 seconds).

Making a Hands-Free Call

1. Press **Speaker**
2. Dial phone number
3. Press **OK** or wait for Auto Dial timeout (**#** key is used as delimiter key by default)

Dialing from the Phonebook

1. Pick up handset
2. Press **Menu** key
3. Choose **PHONE BOOK**

4. Choose **VIEW**
5. Press **Up** or **Down** key to view the Phone Book
6. Press **OK** to select the highlighted entry
7. Press **DIAL** to dial out the number

Dialing from the Speed Dial

1. Pick up handset
2. Press **Menu**
3. Select **PHONE BOOK**
4. Select **SPEED DIAL** (only 10 memories)
5. Press **Up** or **Down** to view the Speed Dial memory
6. Press **OK** to dial out the highlighted entry

Note: Contacts need to be added into Speed Dial list first before using speed dial.

Dialing from the Call History

1. Pick up handset
2. Press **Menu**
3. Select **CALL HISTORY**
4. Choose one category: **ANSWERED CALLS, MISSED CALLS, DIALED CALLS**
5. Press **Up** or **Down** to view the entries in the category
6. Press **OK** to select an entry
7. Select **DIAL** to dial out the entry selected

Answering an Incoming Call

There are two ways to answer an incoming call:

1. Pick up the handset to answer the call normally.
2. Press the **Speaker** button to answer in speakerphone mode.

Using other Call Features*

Putting a Call on Hold

To put a call on hold:

1. Press **Hold** button

To release a call on hold:

1. Press **Hold** button again

Transferring a Call

To transfer a call to another extension:

1. Press **Transfer** button
2. Dial phone number
3. Press **OK**

Using Voicemail

To listen to your voicemail messages (voicemail parameter must be set in the webpage):

1. Press **Voicemail** button
2. Listen to the voice prompts and enter your access code
3. Listen to your messages

Call Waiting

When you are talking on the phone and another call comes in on your phone extension, a short tone sounds in your handset and the LCD displays an incoming call message. To temporarily put a caller on hold and talk on another incoming call:

1. Press **Flash** button

To return to the previous call, press **Flash** again. You can switch back and forth between the calls repeatedly by pressing **Flash**.

Using the Flash Button

The Flash button is primarily used for Call Waiting. It is the equivalent to putting an active call on Hold then switching to the 2nd voice channel. If the 2nd channel has an active call when Flash is pressed, this is like switching the “talking” channel, and the 2nd channel will be activated.

If the 2nd channel is idle with no active conversation going on, you will hear a dial tone when Flash is pressed.

Note*: Call features in this section require corresponding supports in proxy server please check with your VoIP server provider about these features.

Other Phone Operations

Checking Call History

1. Press **Menu**
2. Select **CALL HISTORY**
3. Select one category: **ANSWERED CALLS, MISSED CALLS, DIALED CALLS**
4. Press **OK**
5. Using **Up** or **Down** to find the number you want in the entries listed. You can either dial this number or add the number to your phonebook.

Accessing Phonebook

The VoIP Phone has phonebook with a maximum storage capacity of 100 records. To dial, edit, delete, or add a number in the Phonebook:

1. Press **Menu** button
2. Select **PHONE BOOK**
3. Press **Up** and **Down** arrows to view the phone book entries
4. Press **OK** to select an entry
5. Select an action displayed

Adding contacts to Speed Dial memory

6. Press **Menu**
7. Select **PHONE BOOK**
8. Select **SPEED DIAL**
9. Select **ADD NEW**
10. Now you can choose contacts in your **PHONE BOOK** and assign it to this speed dial entry

Adjusting the Ring Volume

1. Press **Menu**
2. Select **SYSTEM TOOLS**
3. Select **RING VOLUME**
4. Press **Up** or **Down** to adjust the ring volume or turn ring volume off.

Resetting Phone Configuration

To reset the SIP Phone to factory configuration:

1. Press **Menu**
2. Select **SYSTEM TOOLS**
3. Select **RESET CONFIG**
4. Press **OK**
5. Enter the Username (default is admin) and Password (default is admin)

This will reset the entire phone configuration back to factory settings. Please note all settings in **PHONE BOOK** and **SPEED DIAL** will be erased as well.

LCD Indicators

Date and Time

VoIP Phone displays the date and time at the top of the LCD screen. Ensure that the time zone configuration (GMT±) is set to reflect the GMT time offset.

Unanswered Calls

When there are unanswered calls, the LCD screen displays the following message: **X CALLS MISSED**

You can use the **CALL HISTORY** to look up the numbers of calling parties.

Menu Display

When in Menu mode, use the scroll arrow button to highlight an item. Press **OK** to select the item. Press the digit key corresponding the item desired select the item immediately.

Call Display

During a call, the LCD screen displays the caller's name, number and the duration of the call. If the caller number matches an entry in the phone book, the name in the phone book will be displayed instead of the **Caller Name** received. **Call Duration** is displayed in a call.

When remote party hangs up, the LCD screen displays: **CALL END**.

All the calls' details can be found in **Details** of each entry in **CALL HISTORY**.

Keypad Encoding Scheme

When entering phone book entries, you must use V90 keypad to key in alphanumeric characters and special characters. V90 uses the key encoding system similar to the one found in mobile phones.

When entering alphanumeric characters and special characters, you press a key multiple times to select the desired alphanumeric characters and special characters. If the same key is not pressed after 1.5 seconds, the displayed alphanumeric character or special character will be selected as your input.

Table 2 shows the encoding scheme for the available alphabets, numbers, and symbols.

Table 2 VoIP Phone Keypad Encoding Scheme

Key	Description
1	1
2	2 A B C
3	3 D E F
4	4 G H I
5	5 J K L
6	6 M N O
7	7 P Q R S
8	8 T U V
9	9 W X Y Z
#	# @ % &
0	0
*	* . , < ! ?
Backspace	Backspace