

V-SERVER iGATE

VoIP Gateway/Router



The V-SERVER iGATE provides Service Providers with a single device solution for delivering integrating voice, fax and data services to customers with small offices.

Key Benefits

Voice Gateway

Traditional analog telephones, keysets, PBXs and Fax Machines can be connected over low cost Internet access circuits.

Integral Data Router

Transport of Voice, Fax and Data over single link without an external router.

Standards Compliance

H.323 and Voice coder Interoperability with 3rd party Gateways and Gatekeepers and VoIP clients enables access to ITSP Long Distance Services.

Fast Deployment

Automatic voice call connection at start-up via VoiceServer.Net allows Internet connected users to make phone calls between V-SERVERS within minutes of unpacking the box.

Ease of Use

Pre-configuration, autolearn facilities and the V-Express Windows interface enables configuration changes to be made easily.

Access Service Independence

Support for Analog Dial, ISDN, xDSL and Cable Modem local loops provides flexibility for Service Provider deployment



The phenomenal growth in the Internet has been driven by a number of factors, one of these being the elimination of the distance related usage charges found with conventional communications. The cost of establishing a connection and transferring information between two points is independent of the distance between the two.

The V-SERVER iGATE is designed to assist service providers in helping their small business customers realize similar savings for voice/fax calls via Internet Telephony.

By combining a VoIP (Voice over IP) Gateway with an IP access router, a single Analog, ISDN, xDSL and/or Cable Modem link from the local carrier's POP (Point of Presence) can be used to mix voice, data and fax traffic eliminating the cost of multiple access circuits.

In addition, access to TEK DigiTel's VoiceServer.Net service, H.323 support and intelligent call routing allows the enduser to transparently

use the lowest cost voice/fax service on a call by call basis.

The low cost and ease-of-use features in the V-SERVER iGATE enables the Service Providers to quickly deploy IP based Voice/Fax services to their customers:

- Internet Service Provider's (ISPs) and Competitive Local Exchange Carriers (CLECs) can derive additional monthly revenue from their customer base via provisioning local PSTN voice circuits, enabling intercompany toll free calling and through partnerships to route calls to Internet Long Distance Telephony Providers.
- Internet Telephony Service Providers (ITSPs) can form alliances with local access providers to use the V-SERVER iGATE to simplify the re-routing of specific long distance calls to their PSTN gateways. The V-SERVER iGATE can be viewed as an intelligent "Internet Redialer" directing a subset of calls to the ITSP network.

Overview

The *V-SERVER iGATE* is designed to allow conventional telephony devices such as analog phones, key systems and PBXs to be connected via the Internet. In basic operation, it performs a gateway function converting analog voice traffic to a packet IP based information flow enabling transport over IP (Internet Protocol) based networks. In addition, fax machines connected to the same voice ports will be automatically detected and their output will also be converted to IP.

This functionality allows users with phones or fax machines connected to the *V-SERVER iGATE* to place calls across the Internet to other *V-SERVER* users or to any other standards based VoIP (Voice over IP) Gateway or PC client. When used in Gateway mode, the *V-SERVER iGATE* can be connected to an existing Router or Cable/xDSL modem via the units Ethernet port.

In addition to the Gateway function, the *V-SERVER iGATE* incorporates standards based IP routing functionality allowing it to be connected directly to the Internet access link provided by the local ISP (Internet Service Provider). An integral ISDN BRI interface (U or S/T versions available) provides direct connectivity or existing Dial Modems or ISDN Terminal Adaptors can be connected to the *V-SERVER's* Asynchronous serial port.

Features

Multi-Service Support

Configuration flexibility allows the *V-SERVER iGATE* to be used in all forms of Internet Access configurations including conventional ISDN and Analog modem dial-up connections, dedicated links as well as newer xDSL and cable modem environments. Service Providers can use the *V-SERVER* as a ubiquitous VoIP deployment tool.

Standards based VoIP Support

The *V-SERVER iGATE* supports all of the primary standard voice encoding schemes including ITU Recommendations G.723, G.729a/b, G.711 and G.723.1. This focus on standards ensures the device will be able to connect attached phone users to a wide variety of third party VoIP devices. In addition, support for H.323 v2 ensures that connections can be made to other VoIP entities using H.323 GateKeepers.

Analog Phone Support

Both FXS (Foreign Exchange Station) and FXO (Foreign Exchange Office) connections can be supported by the *V-SERVER iGATE* allowing connections to be made to analog phones, the PSTN directly and to both subscriber and trunk sides of PBXs and Key Systems. There are no restrictions on calls between any combination of these ports.

Fax Support

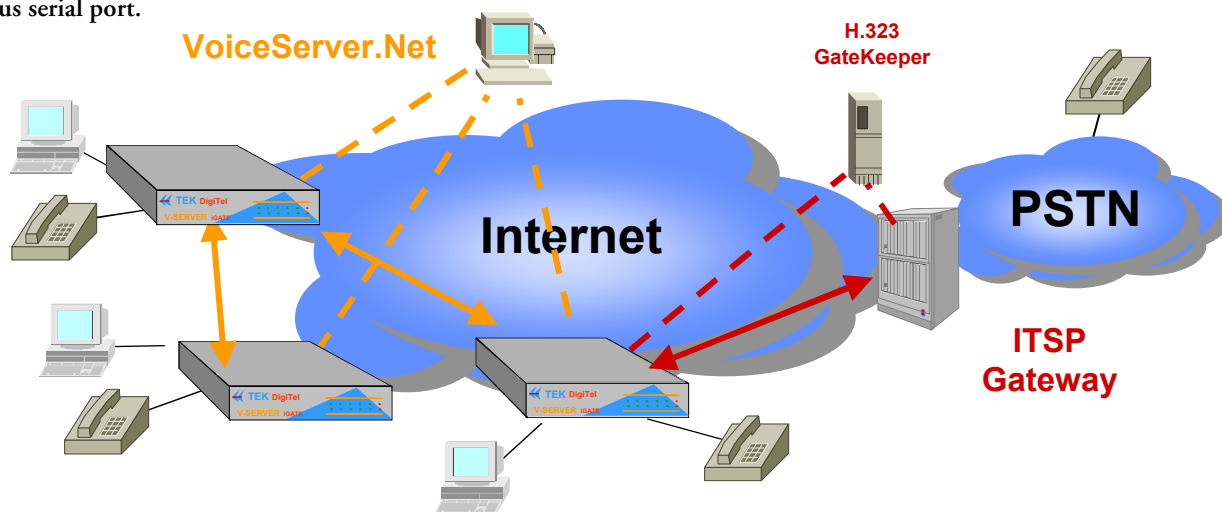
Fax Detection and Demodulation enables the *V-SERVER iGATE* to transport sessions between standard Group 2 and 3 Fax Machines. By identifying incoming fax calls and demodulating the fax modem signal, the fax "data" stream is transported through the IP network in its native 4,800-14.4 Kbps format and regenerated by the voice part on the other side. This eliminates the excessive bandwidth overhead normally found with fax connections.

Routing Support

Full standards based IP base datagram routing between the serial, ISDN BRI and Ethernet port is supported. Both Asynchronous and Synchronous PPP (Point-to-Point Protocol) are supported on the WAN link with Multilink PPP support for the ISDN BRI. DHCP (Dynamic Host Configuration Protocol) client support enables the *V-SERVER* to receive its network IP address from the ISP.

IP Address Sharing

When configured as a router, the *V-SERVER* can support multiple PC clients and voice services even though only a single IP address is provided by the carrier. Network Address Translation (NAT) functionality allows the multiple IP addresses defined for the PC users connected to the *V-SERVER* Ethernet port to be re-mapped to ap-



pear as a single IP user to the service provider. In addition, Voice/Fax calls coming into the device from the Internet will be directed to the units voice ports. This eliminates the need for a costly second IP address from the service provider.

Dynamic Address Resolution Selection

The *V-SERVER*, in the process of trying to match the phone number entered by the user to the IP address of the remote VoIP port, supports three modes of address resolution: Static, H.323 Gatekeeper and TEK's Dynamic Dialing Administrator (DDA). As calls are placed on the *V-SERVER* voice ports, the unit will attempt to find a destination using all three of these mechanisms:

Static - Direct Phone number to IP address mappings can be stored in the *V-SERVER's* configuration memory enabling calls to be placed without intervention by an external Gate Keeper. This mode of operation also provides fast call set-ups and enables quick connection to PC telephony applications like Microsoft NetMeeting.

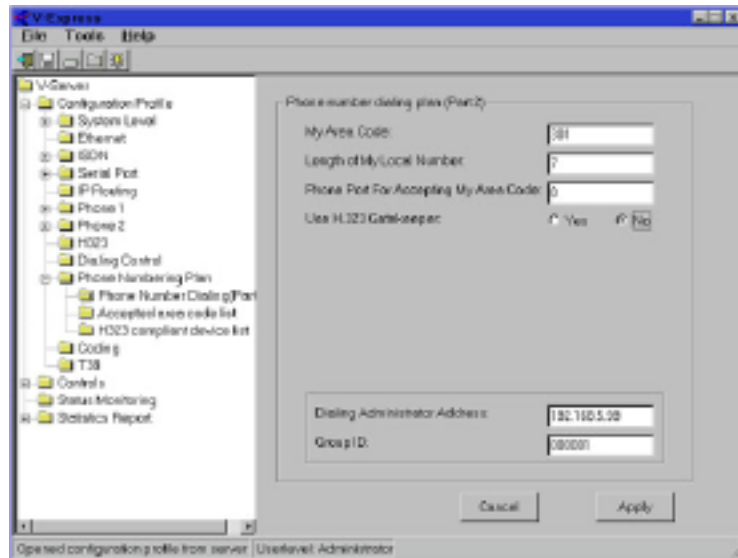
H.323 Gatekeeper - This allows the *V-SERVER* to request help in matching the input phone number to an IP address using any external H.323 based Gatekeeper on the network. In using this facility, all added functionality provided by the Gatekeeper (i.e. call billing, call authorization, calling card access, etc.) is enabled for the call.

Dynamic Dialing Administrator (DDA) - This enhanced gatekeeper functionality provides a hybrid of the static and H.323 mode delivering the better qualities of each. Rather than delivering Phone Number to IP address mappings on a request by request basis, the central DDA server automatically takes responsibility for maintaining map-

ping tables in each of the *V-SERVERs*. Each *V-SERVER* upon starting up or making any changes to it's IP address, updates the DDA server which in turn keeps all *V-SERVERs* up to date with the phone number/IP address mappings of all (or just a subset) the other *V-SERVERs* in the network. Phone calls are made in a similar fashion as the static mode as a connection to a Gatekeeper is not required.

user be on line to receive calls means that VoIP connectivity is not guaranteed.

To eliminate this issue, the *V-SERVER* has the unique ability to "wake up" disconnected remote users by triggering their *V-SERVER* to dial the ISP to receive the call. In addition to the IP address, of the remote user, the local *V-SERVER* maintains the phone number of the remote *V-SERVER* and upon not



VoiceServer.net Support

Each *V-SERVER* node that is shipped by TEK DigiTel comes pre-programmed with a unique phone number that is registered with TEK DigiTel's *VoiceServer.net* DDA server on the Internet. This unique phone number and the fact that the *V-SERVER* will automatically advise the *V-SERVER* of it's location upon start-up enables users to place *V-SERVER* to *V-SERVER* Voice/Fax calls immediately upon unpacking the node, and without having to configure the unit.

Remote V-SERVER Wake-up

Connecting between VoIP clients in a dedicated environment is a fairly straight forward process. However when remote VoIP clients access the Internet via "dial on demand" ISDN links the requirement that the remote

being able to reach it will place a conventional phone call to the remote device. This unanswered "toll free" call will trigger the remote *V-SERVER* to dial into the Internet to allow the VoIP call to be placed. This mechanism enables dial-up Internet users to receive the same Voice/Fax connectivity as dedicated users.

V-Express

Every *V-SERVER* comes bundled with a copy of *V-Express*, a graphical Windows configuration tool designed for the non technical user to guide them through managing the node. *V-Express* supports monitoring, statistics, status, alarms, and control functions of local or remote *V-SERVERs* as well as updating the software. A special Fast Setup Wizard mode steps the new user through the basic configuration prompting them for the values needed

in a simple configuration. *V-Express* can connect to the *V-SERVER* locally via the Ethernet or Serial port or even across the Internet.

Management

In addition to the *V-Express* Client, the *V-SERVER* can be configured/monitored via the Asynchronous control port or via a local or remote Telnet session. New software can be transferred to the unit via *V-Express* or conventional BOOTP/TFTP mechanisms. The *V-SERVER* is also fully SNMP manageable under 3rd Party UNIX and Windows NT SNMP platforms.

Specifications

Interfaces

- Ethernet (10BaseT)
- Serial WAN (DB26)
- ISDN BRI (U or S/T - RJ-45)
- Asynchronous Console (RS-232 - DB-9)
- 2 Analog Voice (RJ-11)

Voice Support

- H.323 v2 RAS Client for GateKeeper Interoperability
- Voice Coder Options:
 - G.711 (64 Kbps PCM)

- G.729a/729b (8 Kbps CS-ACELP)
- G.723.1 (5.3/6.4 Kbps)
- Silence Suppression with Comfort Noise
- G.168 Automatic Echo Cancellation
- Voice Port Configuration
 - PLAR or Switched Support
 - A-Law or u-Law Companding
 - DTMF or Pulse Dialing
 - Gain/Attenuation Settings
- E.164 Address Parsing/Routing
 - Full Digit Absorption with remote end ployout
 - Add/Strip Pre and Post Fix Digits
 - Call Forwarding
 - Hunt Groups (Across single or multiple nodes)
- Voice QOS (Quality of Service) via Prioritization over Data Traffic

Fax Support

- Fax Detection
- V.21, V.27 ter, V.29, V.17 Modulation/Demodulation
- T.30, T.38 Fax Spoofing

Data Support

- IP Routing (DHCP client, BOOTP, TFTP)
- PPP (Sync or Asynchronous)
- MPPP (Multilink PPP)
- RIP and/or Static Routing

- NAT (Network Address Translation)

Configuration Tools

- Asynchronous Console
- Local/Remote Telnet
- SNMP Enterprise MIBs (includes Call Detail Records)
- *V-Express* Windows 95/98 GUI with Easy Configuration Wizard
- Software Download via *V-Express*/BOOTP/TFTP Software Download
- FLASH ROM for nonvolatile software storage

V-Express Requirements

- Windows 95/98 Based PC
- 16M RAM
- Pentium 166 Mhz Processor or better

Certification

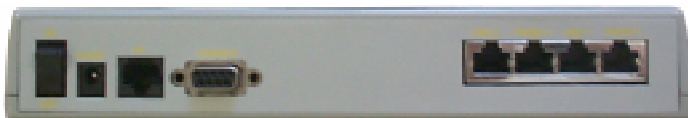
- FCC Part 15a and Part 68
- Industry Canada CS-03

Physical

- Dimensions: 9 in x 6 in x 1.5 in (22.5 cm x 15.3 cm x 3.7 cm)
- Weight: 5.45 lbs (2.48 kg)
- Power: 120VAC, 19W

Operating Requirement

- Temperature: 32-104 F
- Relative Humidity: 5-90%



Ethernet VoIP Gateway



VoIP Gateway with ISDN/Async Router



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To learn more about TEK DigiTel, visit our World Wide Web site at www.tekdigitel.com.