UNIVERSAL MEDIA GATEWAY

SARVAM UMG
The High-density Universal Media Gateway

SARVAM UMG

Different telecom networks offer advantages in different aspects. Today's businesses expect specific benefits from each of these networks. The VOIP, GSM/3G, ISDN and POTS are four such omni-present networks. It is vital for users to reach these networks transparently as they offer wider connectivity and lower telephony costs.

However, it is not easy to interface these networks with the existing PBX. Most of the PBXs were not designed to interface with these modern networks. Of course, one can replace the PBX with its accessories and acquire a new-generation equipment. But this proves to be a very costly solution.

Presenting, Matrix SARVAM UMG – the High-density Universal Media Gateway that offers integrated interfaces to VOIP, GSM/3G, ISDN BRI, T1/E1 PRI and POTS networks. It can be used with any brand of PBX.

It allows users to make and receive calls transparently on all networks. It supports flexible and intelligent Least Cost Routing (LCR), leading to significant cost savings and round-the-clock connectivity. It allows enterprises to dynamically select one of these networks on per-call basis for obvious benefits of reach, cost and quality of service.

Matrix SARVAM UMG provides carrier-grade gateway features, Integration, Scalability, Flexibility and Reliability. This makes it ideal for Call Centres and ITSPs irrespective of organization size and media network requirements. Matrix SARVAM UMG is interoperable with third-party IP-PBXs and ITSPs (Elastix, Broadsoft, Megapath, Brekeke, Nex Vortex, Broadvox, Babytel, Voxbone, SOTEL). It's advanced routing capabilities and comprehensive gateway features ensures that the enterprise needs of different telecom network requirements are addressed while retaining existing infrastructure with an advantage of faster and transperent operation with reduced telecommunication cost.

MATRIX
TELECOM SOLUTIONS

BRIDGE TO THE VOIP, GSM/3G, ISDN AND POTS NETWORKS

Matrix SARVAM UMG is an integrated, flexible gateway to interface with the traditional analog or new-generation digital and wireless telecom networks. They include traditional analog interfaces like FXS and FXO along with digital networks like T1/E1 PRI and ISDN BRI. Moreover, GSM/3G and VOIP networks are also supported.

Flexibility and scalability are the key strengths of Matrix UMG. Its open architecture with universal slots allows any interface cards to be inserted in any of the available slots. This flexibility facilitates "all-in-one" gateway. There is no need of having multiple gateway equipment for various interfaces. Not only that, SARVAM UMG can be configured to serve the exact traffic requirements of an organization by combining interface cards tailored for required number of ports. The configuration can be changed anytime to keep pace with changing needs of an enterprise to tackle the problems of congestion and under-utilization effectively.

SARVAM UMG supports universal routing thus allowing routing a VOIP call on to GSM/3G or T1/E1 PRI. Similarly, a call from T1/E1 PRI can be routed either on VOIP, GSM/3G or POTS ports. Fixed or Least Cost Routing can be selected to decide route for an outgoing call. It can handle calls on all the ports simultaneously, allowing full traffic on all the ports. Existing PBX users can avail the low-tariff of VOIP or GSM/3G networks by connecting Matrix SARVAM UMG with PBX system without changing their existing infrastructure. The users continue to make and receive calls without worrying on which network their calls are routed. Matrix SARVAM UMG routes the calls either on VOIP, GSM/3G, ISDN or POTS network depending on the destination numbers dialed by the users.

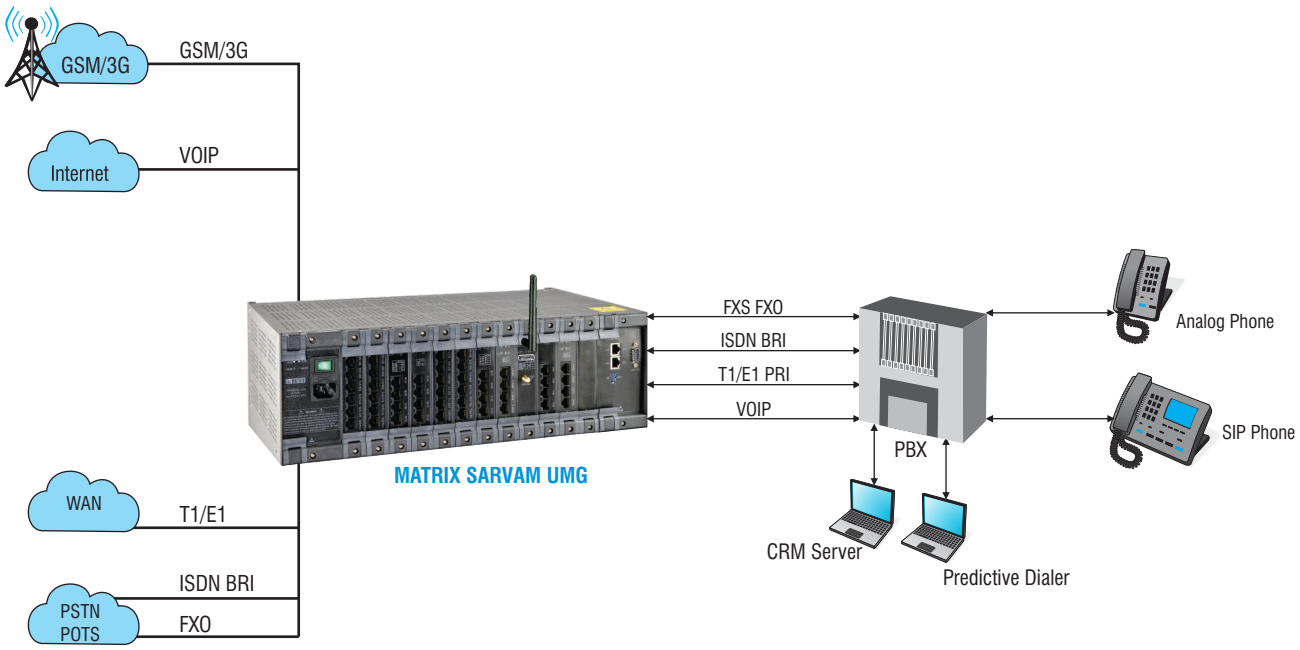
Intelligent and flexible routing is the forte of Matrix SARVAM UMG. Various Least Cost Routing (LCR) schemes are offered. The elaborate routing algorithm encompasses different attributes like Port, Calling Number, Called Number and Time. It selects the most cost-effective route for a given number at a specified time. In addition, it allows the flexibility of reserving ports for important users. Numbers dialed can be translated by Automatic Number Translation (ANT) feature to match with the destination network.

Matrix SARVAM UMG is very easy to install and operate. With IP at core and Universal slots architecture, it allows use of GSM /3G and T1/E1 PRI cards exactly in the required combination. Built-in web-server allows the system engineer to configure various parameters locally or remotely, using any Internet browser. SARVAM UMG supports SNMP, which helps to manage and monitor network elements, audit network usage and detect network faults.

TARGET CUSTOMERS

INBOUND/OUTBOUND CALL CENTRES

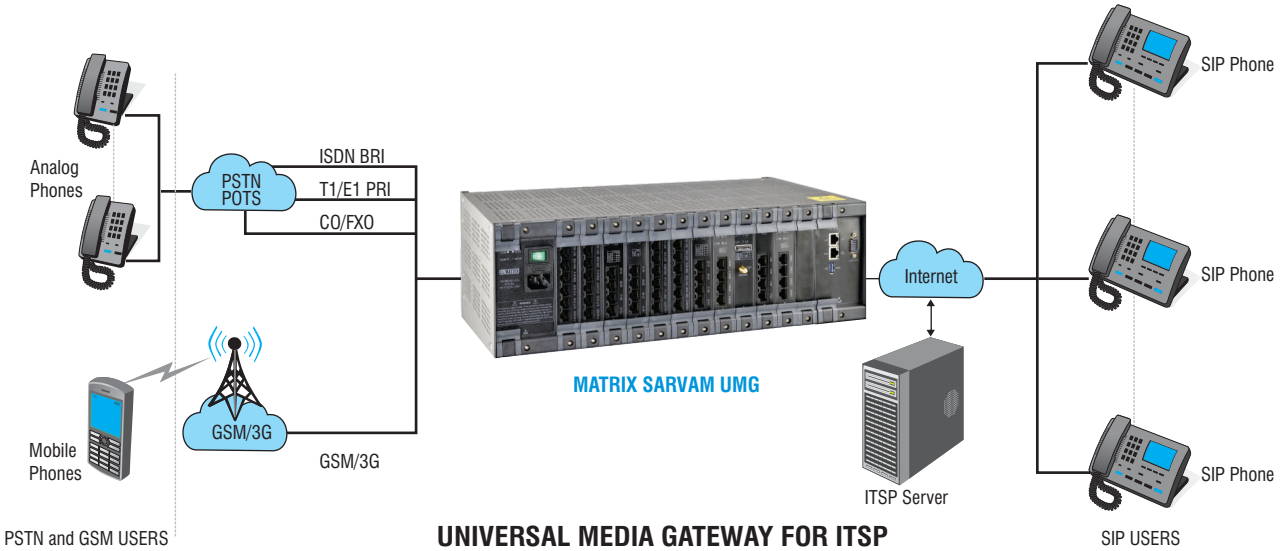
SARVAM UMG can be interfaced to the existing PBX and dialer's set-up of a call centre. Call Centre agents can make long distance, international calls using multiple networks connected to the gateway without worrying on which network the call is routed. It ensures round-the-clock connectivity in addition to reduced telephony costs.



UNIVERSAL MEDIA GATEWAY FOR CALL CENTRE

INTERNET TELEPHONY SERVICE PROVIDERS (ITSPS)

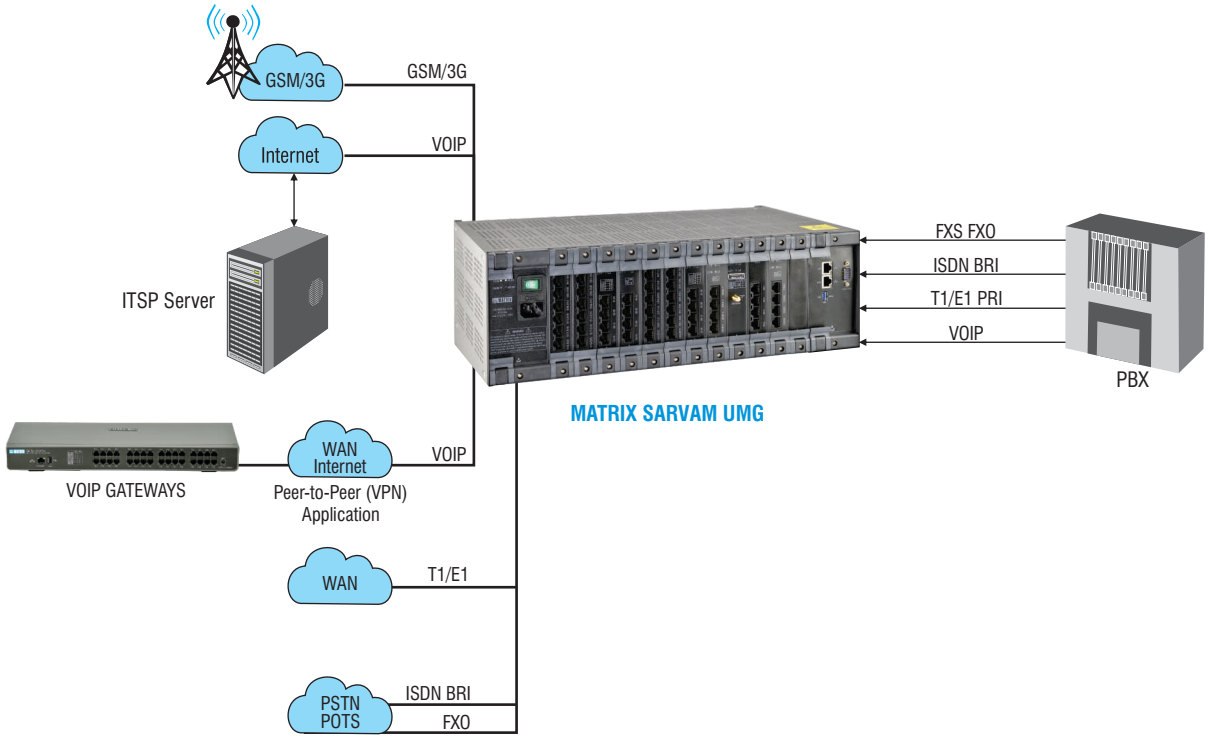
An ITSP can offer low-tariff schemes to the users of existing GSM and PSTN networks. With the GSM-PSTN-VOIP gateway ITSP can route calls originated from PSTN and GSM networks over their IP network. Furthermore, placing gateways at the regional footprints, networks can now be accessed bearing local telephony charges. In the entire process customers save on their telephony bills and ITSPs gain significant return on investment.



UNIVERSAL MEDIA GATEWAY FOR ITSP

LEGACY/TRADITIONAL TDM PBX USERS

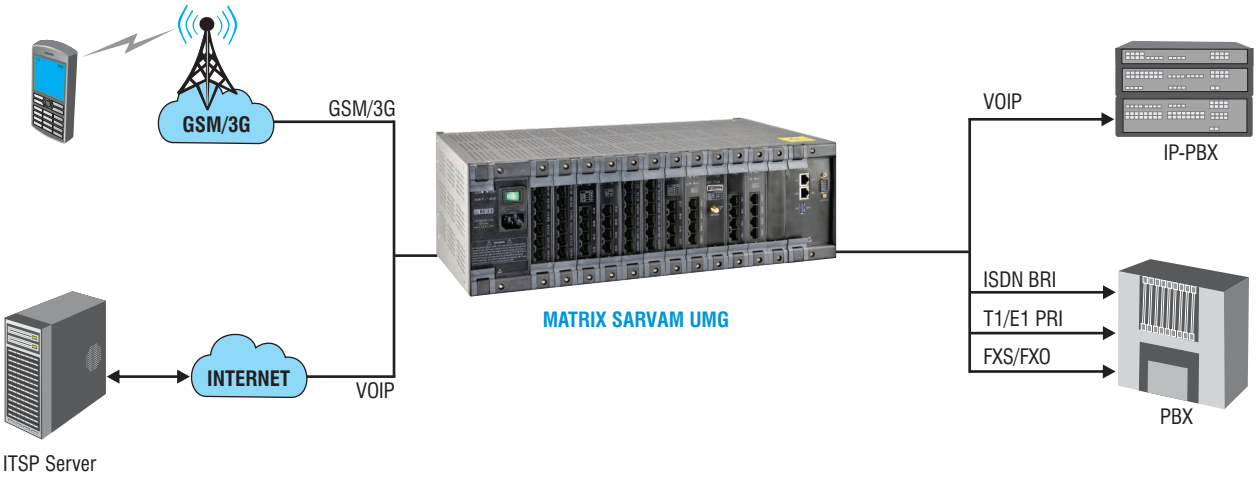
Today's telephony networks such as GSM, VOIP, POTS and ISDN offer varied benefits of coverage, speed, cost and quality of service. Organizations often employ multiple gateways to connect to these diverse networks. SARVAM UMG integrates all of these telephony networks with an existing PBX, through a common platform. This eliminates any scope of interoperability issues. It also provides option to choose between network interfaces and flexibly scale the gateway to match individual requirements.



UNIVERSAL MEDIA GATEWAY FOR TDM PBX

TELEWORKERS

Communicating with field employees is essential and a routine task in an organization, but also a major contributor to higher telephony costs. Switching to low tariff GSM and VOIP connectivity to communicate with field employees significantly lowers this cost fraction.



UNIVERSAL MEDIA GATEWAY FOR TELEWORKERS

KEY BENEFITS

Retain Existing PBX Infrastructure

Matrix SARVAM UMG works as an adjunct to your existing telephony infrastructure. There is no need to replace any equipment like PBX, Operator Consoles, Key Phones, Standard Phones, Power Supply and Wiring. This not only saves lot of equipment cost, but also saves time and efforts required for retraining.

Universal Connectivity

Communication technology has witnessed emergence of diverse networks beginning with wired PSTN/ISDN networks to the wireless GSM/3G and new-age IP networks. It is vital for any modern enterprise to link its telecom infrastructure with these networks for the twin benefits – Connectivity and Cost. Matrix SARVAM UMG forms the vital link to these networks ensuring right connectivity for each and every call. It brings all these networks to every desk of your organization. SARVAM UMG selects a network that offers the least cost for an outgoing call.

Transparent Operation

Matrix SARVAM UMG internally manages different protocols required to interface with different telecom networks and provides a consistent interface to all its users. When connected with any existing PBX, it remains completely transparent to the users and allows them to make and receive calls along with using PBX features like they did before. Least Cost Routing (LCR) algorithm to select the most appropriate network for a given call also works transparently.

Reduced Telephony Cost

The most tangible benefit of Matrix SARVAM UMG is the significant reduction in telephony cost. There are many opportunities for savings without compromising the quality of connection. Closed User Group (CUG) is one such case where mobile companies allow free calling amongst a group of specified users. One of the CUG SIM Card can be inserted in the Matrix SARVAM UMG allowing all the PBX users to make and receive free calls to their colleagues who are not in the office but travelling, at home, on vacation, at a plant or at a customer site.

International Calling is another big opportunity for saving hard-earned money. VOIP calling provided by Internet Telephony Services Provider (ITSP) is much cheaper when compared with regular, fixed and mobile lines. Matrix SARVAM UMG offers VOIP connectivity with multiple ITSP servers giving the flexibility of using separate ITSP for each country/region like USA, Europe etc.

VOIP can also be used to provide free calling between different locations of a company-head office, branch offices, factories, warehouses, etc.

KEY FEATURES

3G Network Support
Matrix GSM 3G Card offers accessibility to 3G networks for Voice communication in SARVAM UMG. It supports Quad-band (GSM: 850/900/1800/1900) for 2G Networks and Penta-band (GSM: 850/900/1800/1900, UMTS: 800/850/900/1900/2100) for 3G Network. It supports fallback compatibility and hence offers flexibility to access any available network. Users can stay connected to an alternate network in case the preferred (3G) network signal is weak or unavailable. With the power of 3G, an organization can experience Noise-free, Stanch and Crystal Clear Voice Quality, Enhanced Security and Maximum Coverage.

Allowed and Denied Lists
Allowed and Denied Lists are used to restrict dialing of long-distance and international numbers. A number is blocked if its prefix matches any entry in the Denied Lists. On the other hand, a number is allowed to go through if matched with any entry in the Allowed List. This provides flexibility of allowing only specific numbers while blocking all others.

Automatic Number Translation
The SARVAM UMG modifies the dialed number or part thereof so that it matches with the numbering plan of the destination networks like PSTN, GSM/3G and VOIP. For e.g. on VOIP network, if a user dials the number (223344) to call www.abc.com, the ETERNITY adds appropriate access code (*777) specified by the ITSP and dials out the number - *777223344 instead of 223344. In case of GSM/3G network, when a user dials the local number ETERNITY adds respective country-area codes as an appropriate prefix.

Call Detail Recording (CDR) – Incoming and Outgoing
SARVAM UMG stores all the outgoing calls made in its internal memory. Various reports can be generated on the Ethernet port, using filters like Port, Number, Date, Time, Duration of the Call, etc. Total 2000 call detail records can be stored.

Caller Line Identification Presentation (CLIP)
Matrix SARVAM UMG supports CLIP on FXO, ISDN, GSM/ /3G and VOIP lines.

Call Progress Tones
Call Progress Tones like Dial Tone, Ring Back Tone, Busy Tone and Alert Tone can be selected to match with the tones used in the region or country where SARVAM UMG is installed.

CLI based Routing
SARVAM UMG can route a call based on the caller's number. This allows routing of certain calls to specific ports directly without intervention of the operator.

Compact and Sturdy
SARVAM UMG is all-integrated gateway housed in a rack. It can be mounted in any of the three ways - 19" Rack 4U Enclosure, Table-Top or Wall Mount.

CUG over GSM/3G
Matrix SARVAM UMG Gateway offers In-skin GSM/3G solution with which as many as 48 SIMs can be used. An organization can take advantage of this with CUG facility offered by service providers.

Day Light Saving
The Real Time Clock (RTC) of SARVAM UMG moves forward or backward automatically in tune with the Day Light Saving requirements of the respective country.

Direct Dial-In (DDI) Routing
SARVAM UMG can be programmed intelligently for DDI Routing feature which makes it possible to route the call directly to a desired station. The functionality of this routing logic should be supported by PBX.

Distributed Processing Architecture
Matrix SARVAM UMG with IP at its core deploys multi-processor architecture, wherein each card has its own dedicated micro-controller, code and data memory. The local processor is responsible for processing of commands and generating events for the CPU. The CPU processor is a 32-bit RISC processor and controls all slave cards. This technology enhances flexibility and reliability.

Emergency Number Dialing
This feature allows users to call an emergency number using SIP, GSM/3G, T1/E1, BRI and FXO port. At the most 10 emergency numbers of maximum 24 digits can be stored.

Fixed Number Dialing
Pre-configured number can be dialed out as soon as a call lands on a port. This allows point-to-point connectivity without the need of repetitively dialing the same number.

Flexible Configurations
SARVAM UMG can be configured to meet the exact port and traffic requirements preventing fixed overheads. Modular system design gives flexibility to expand the system capacity at any given point in time. System's capacity can be enhanced by just placing the required module/card in the system. Multiple cards of the same type can be used simultaneously giving multi-directional flexibility.

Configuration Group
SARVAM UMG offers different schemes to select destination port for an incoming call. They are First Free and Round Robin.

Web Based Programming Tool
SARVAM UMG supports built-in web server for system configuration locally through LAN or remotely through Internet. Web browsers like Internet Explorer, Mozilla Firefox and Chrome can be used to log in to the SARVAM UMG to further open and modify system configuration.

Least Cost Routing
SARVAM UMG selects a port that offers the least cost for an outgoing call. It supports different LCR algorithms when a call is originated from GSM/3G, T1/E1 PRI or SIP trunk. Different routing options like CLI Based, Fixed, All Calls, Dialed Number Based and Called Number Based are provided to select the most cost-effective route.

Monitoring (SNMP)
SARVAM UMG supports SNMP, which helps manage and monitor network elements, audit network usage and detect network faults. SNMP manager supports SNMPv1/v2c/v3 versions.

Multi-Stage Dialing
There are many applications which require dialing of a few fixed numbers before the actual number. An abbreviated short code can be programmed to eliminate numbers of dialing stages. It is a convenient feature which processes calls faster and saves time.

Network Selection
Each GSM/3G port can be programmed to work only with a few selected networks preventing a GSM/3G port from registering with an overlapping costly network. This flexibility is very useful when Matrix SARVAM UMG is installed near a state or national border.

Peer-to-Peer Calling
SARVAM UMG can make and receive calls from other VOIP users without any Registrar or Proxy Servers. Numbers and IP addresses can be assigned to the other VOIP users to provide direct access across the network. Organizations having multiple locations like branch offices and factories can use this features to provide direct dialing between these end-points VOIP.

PIN Authentication
PIN Authentication is a necessary security feature to restrict access to the system and prevent possible misuse of the resources. It can be used on source port to establish identity of the caller before the call is processed by SARVAM UMG.

Security (TLS/SRTP)
SARVAM UMG supports transporting SIP messages over TLS. The TLS protects SIP signaling against loss of integrity, confidentiality and replay. It also supports SRTP for secure conversation over SIP.

SIP Accounts
SARVAM UMG allows maximum of 120 SIP Accounts of multiple service providers or all from a single service provider. Each SIP trunk can be programmed for either making outgoing calls, receiving incoming calls or both. Various allocation methods like First Free, Round Robin are supported to select the most appropriate SIP ITSP for a given call. Diffserv and Precedence are supported for QOS.

Speech Gain Setting
Matrix SARVAM UMG allows user to set Receive and Transmit gain on GSM/3G port to improve quality of speech.

System Activity Log
SARVAM UMG maintains a complete system activity log. User can find out when a particular card was removed from the system or even when a particular port was not detected by the software.

Time Zones
Call routing can adapt to different routing needs during day time, lunch time and night hours. Three different time zones can be programmed and each port can be programmed to function differently in each time zone.

Universal Routing
SARVAM UMG supports port-agnostic routing. A call received on a GSM/3G port or SIP Account, can be routed on any channel of a T1/E1 PRI NT port, T1/E1 PRI TE or even another GSM/3G port. Similarly, a call received on any channel of T1/E1 PRI NT port can be placed on a GSM/3G port, any SIP Account, any channel of T1/E1 PRI TE port or even another channel of T1/E1 PRI NT port.

Universal Slots
All the expansion slots of Matrix SARVAM UMG are universal in nature. Any interface card can be inserted in any slot and the system will configure it automatically. This scheme eliminates configuration bottle-necks because any slot can be used for GSM/3G, T1/E1 PRI, ISDN BRI or POTS and thus allowing complete flexibility in configuration.

SYSTEM ARCHITECTURE

SARVAM UMG is MEDIA-GATEWAY software which runs on ETERNITY GENX - The Next-Generation hardware platform.

ETERNITY GENX12S PLATFORM	+	SARVAM UMG	=	UNIVERSAL MEDIA GATEWAY SOLUTION

ETERNTIY GENX12S: It is a next-generation platform with CPU Card, 12 Universal Slots, and AC/DC power supply in 19inch 4U enclosure. SARAVAM UMG with ETERNITY GENX encompasses functionality of IP at core, offering high-density VOCODER (VOIP) channels through DAUGHTER-BOARD MODULE (NX DBM VOCODER64) which can be availed in steps of 4/16 VOCODER channels licenses as per simultaneous VOIP calls requirement.

SARVAM UMG: Matrix SARAM UMG is software that enables Universal Media Gateway functionality. It is pre-loaded with licenses for 4 VOCODER (VOIP) channels.

System Resource	Maximum Resources (ETERNITY GENX)	Description
NX DBM VOCODER64	2 Modules (128 Channels)	VOCODER DAUGHTER-BOARD MODULE (HARDWARE) for ETERNITY GENX CPU cards capable of supporting maximum 64 simultaneous VOCODING (VOIP) channels
Concurrent IP to IP Calls Without Transcoding	500	SARVAM UMG is built with IP at core
Concurrent IP to IP Calls With Transcoding	64	One VOCODER channel is used to transcode every call using transcoding.
Concurrent IP to TDM Calls	128	One VOCODER channel is used to transcode every IP to TDM call.

Hardware Features	
Compact and Sturdy Design	Real Time Clock (RTC)
Distributed Processing Architecture	RS232C Port
High Density Switching	Universal Slot Architecture
Modular Architecture	19" Sub-Rack (4U Enclosure) Wall Mount and Table-Top

System Resource	Max. Capacity
SIP Trunks	120
VOIP Channels	128
GSM Ports	48 SIMs
T1E1 Ports	4 (120 Channels)
BRI Ports	48 (96 Channels)
CO/FXO Ports	120
FXS Ports	120

Features List	
3G Network Support	Least Cost Routing
Allowed and Denied Lists	Network Selection
Automatic Number Translation	Peer-to-Peer Calling
Call Detail Recording (CDR)	Port Status
Call Maturity	Remote Programming
Caller Line Identification Presentation (CLIP)	SIM PIN
Call Progress Tones	SIM PUK
CLI based Routing	SIP Accounts
CUG over GSM/3G	Speech Gain Setting
Day Light Saving	System Activity Log
Direct Dial-In (DDI) Routing	System Fault Log
Emergency Number Dialing	Time Zones
Fixed Number Dialing	Universal Routing
IMEI Number	Web-based Programming

ORDERING INFORMATION

Product	Description
SARVAM UMG	MATRIX SARVAM Universal Media Gateway. Preloaded with License for 4 VOCODER Channels. (VOCODER Daughter-board required).
SARVAM VOCODER CHNL 4/16	License for VOCODER Channels for SARVAM UMG to support 4/16 simultaneous calls with transcoding.
ETERNITY GENX12SAC	ETERNITY GE NEXT-GENERATION platform with CPU card, 12 universal slots and AC power supply in 19inch 4U enclosure. VOCODER hardware daughter-board is not included.
ETERNITY GENX12SDC	ETERNITY GE NEXT-GENERATION platform with CPU card, 12 universal slots and DC power supply in 19inch 4U enclosure. VOCODER hardware daughter-board is not included.
NX DBM VOCODER64	VOCODER daughter-board module (hardware) for ETERNITY GENX CPU cards capable to support maximum 64 simultaneous vocoding channels. UMG Server licenses are supplied with 4 built-in VOCODER channels. Additional VOCODER CHNL license is required to activate desired number of channels.

Note: Existing ETERNITY GE SLT, CO, GSM, T1E1 PRI and BRI are compatible with SARVAM UMG. For detailed technical information, please refer to ETERNITY GENX Technical Specifications Brochure.

ABOUT MATRIX

Established in 1991, Matrix is a leader in Telecom and Security solutions for modern businesses and enterprises. An innovative, technology driven and customer focused organization; Matrix is committed to keep pace with the revolutions in the telecom and security industries. With more than 40% of its human resources dedicated to the development of new products, Matrix has launched cutting-edge products like Video Surveillance solutions, Access Control, Time-Attendance, IP-PBX, Universal Gateways, Terminals, Convergence solution, VoIP Gateways and GSM Gateways. These solutions are feature-rich, reliable and conform to the international standards. Having global foot-prints in Asia, Europe, North America, South America and Africa through an extensive network of more than 500 channel partners, Matrix ensures that the products serve the needs of its customers faster and longer. Matrix has gained trust and admiration of customers representing the entire spectrum of industries. Matrix has won many international awards for its innovative products.

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TELECOM SOLUTIONS

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