portfolio

vocality
international

contents

Space Saving
Network Solutions

Whereas some router manufacturers are associated with terrestrial networks, the name "Vocality International" is synonymous with satellite routing and multiplexing.

Our aim as a company is to offer you voice and data solutions which equal or improve on the performance you receive from your terrestrial devices, but with features specific to the satellite environment. This includes the inbuilt TCP over satellite performance enhancing proxy, high levels of flexibility and extremely small packaging.

You also don't need to have attended a lengthy certification course before you can use our equipment - ideal for users who have more to think about than configuring communications equipment.

V100 Versatile Multiplexer

The Satellite Multiplexer

The V100 multiplexer platform offers unrivalled flexibility through its wide range of options, and also includes an integrated IP router. With unparalleled support for cryptos, audio, telephony and link error and latency optimised IP, the V100 is the natural choice for mobile and fixed satellite networks.

The V100 is used in over 100 countries worldwide, in applications ranging from US Homeland Security to providing communications to UK MoD in theatre installations ; from commercial VSAT fixed infrastructure networks to mobile satellite news gathering trucks and flyaways.

Features
Integrated Satellite IP Router
Multi–Point Capable
19" Fan Cooled Rack Mount
2 Main Option Slots
1 Special Option Slot
Cascading Architecture
AC Power Supply
Software Enabled Features
IP and RS232 Management

The Flexible Solution

The highest specification V100 variant is the 19" rack mounted Versatile Multiplexer. Incorporating two main option slots, a single special option slot for ISDN and E1 link cards as well as a front panel Ethernet port, the Versatile Multiplexer is the ideal choice for rack based installations in hub sites, fixed locations or in 19" flyaway cases.

The V100 is an innovative and flexible solution to both traditional and emerging communications needs. Through experience and an understanding of customers' requirements, Vocality International have developed a product which addresses the diverse applications of traditional, commercial and military operators - be they fixed or mobile. Not only does the V100 provide an impressive range of features and options, but it uses innovative and state-of-the-art technology giving a high-performance solution to a wide range of voice/internet/data/audio applications. The architecture of the product has been designed to meet all essential requirements and yet allow for almost unlimited expansion and flexibility.

The 1U chassis is the most compact format for mobile comms and its rugged and reliable design makes the V100 ideal for deployment in remote areas. By linking two chassis together, a sophisticated hub site can be commissioned, which exploits the versatile routing and bandwidth agility that has become the hallmark of Vocality International products.

For the latest developments from Vocality International, visit www.vocality.com or email sales@vocality.com

Versatility Through Design

Two option card bays allow a wide range of expansion cards to be installed to suit the application. The cards are easy to fit, from the rear panel. All data ports may be configured as either aggregate link or tributary port. They may be synchronous or asynchronous, presented on a standard 15-way connector with V.24, V.11, RS530, V.35 or RS449 electrical interfaces, all soft selectable from the M&C port without the need to change cards or open the case.

Each data port provides the ultimate flexibility in clocking options. This allows a unit to accept, source or onward link clocks, or even operate with asymmetric bandwidths.

All voice/FAX channels support ITU-standard compression algorithms at a wide range of bit rates. Comfort tone and call progress indication provide user confidence when integrated into switched carrier systems. Analogue interfaces support a range of connectivity options from a simple telephone to a complex PBX.
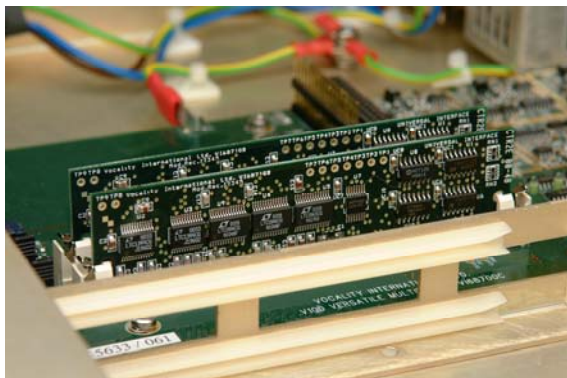
A Wise Investment

The software and hardware architecture is designed with future compatibility in mind. Customers will be able to purchase additional equipment or upgrade modules that will be compatible with the original chassis for a long time after purchase.

The V100 hardware platform gives the network designer a versatile base on which to build a wide variety of applications. Feature upgrades and new modules will enhance the value of the investment for many years to come. Many of the option cards which are available for the V100 will not be found in terrestrial multiplexers - but are specific to the satellite environment.


Control And Monitoring

The chassis has a dedicated 9-way D-type connector for management and control with an automatic detection circuit which provides either RS232 or RS485 interfaces. This port presents either a formatted display for network control or a terse teletype mode for integration into the overall network management system. The facility for uploading and downloading configuration data is also provided. In addition, the supervisor can be accessed via Telnet from the IP port.

All of the units in a network may be controlled from the supervisory port of any one unit, remote or hub. Two chassis connected together using the High Speed Channel (HSC) are configurable from the supervisor port of one unit.

Dynamic Bandwidth

The V100 may be programmed to allocate bandwidth dynamically between synchronous resources. ISDN, voice and audio services may be assigned dedicated bandwidth for the duration of the call or transmission, with remaining bandwidth optionally transferred to the data ports. It is also possible to allocate multiple channels to operate in this way with access to a pool of flexible bandwidth. In this way, data networks can make efficient use of bandwidth at all times, consistent with maximum Quality of Service for voice calls.

Star Networks
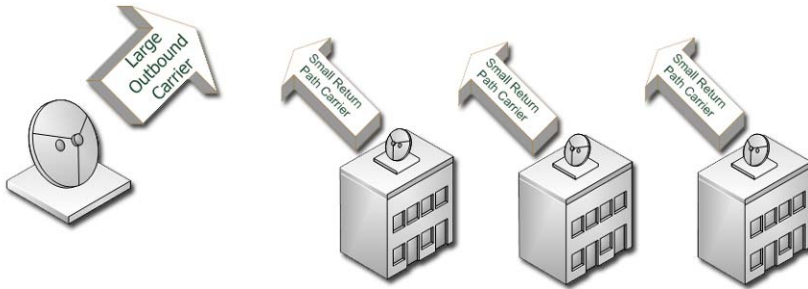
Multi-point topologies can be built with the V100 utilising either SCPC connections from the hub to each remote, or with the hub site sending out one common broadcast carrier which is received by all remote sites—the remotes provide return carriers back to the hub site. Such a network topology can reduce cost and allow for more efficient management of outgoing bandwidth between sites. Connections may be permanent or dynamic, the choice being made by the nature of the traffic.

IP traffic can be dynamically transmitted to all sites, whilst serial data traffic will require fixed routes. If remote sites need to communicate via the hub, voice or MPEG circuits will remain compressed throughout the network.

Feature Keys

All Vocality International multiplexers and integrated multiplexer cards now offer key-code enabled features such as the TCP PEP. This "Feature Key" functionality allows additional advanced software features to be soft-enabled without the need for disabling the network for a hardware upgrade.

Keys are generated by Vocality International, based on the serial number and MAC address of the unit to be upgraded. In this way, a user has total control over which features are used in a unit, and new features can be activated within a few hours with minimal disruption to the user.

Network Expansion

When first installing a multiplexer network, users can rarely tell how the network will need to expand in the future. The network may be the first part of an ongoing network development programme. To overcome the issues with network growth, Vocality International has developed a unique method to allow users the ability to connect a second chassis, without suffering from escalating bandwidth overheads - a common problem when combining terrestrial multiplexers.

The V100 has a unique high-speed serial port (the HSC) dedicated to the interconnection of units. This port allows data and control information to pass between the two chassis, so as to form a concatenated stack.

A 9-way D-type connector presents the 4-wire RS485 HSC serial bus, which runs at 4Mbps. This allows up to 2Mbps of full-duplex data to pass between two linked units and also carries receive and transmit clock signals to all units. In this way, any data port on either unit may be used as a WAN port and the demultiplexed data routed to a tributary channel on either chassis.

```
Node1                    V100 Multiplexer Supervisor
AGGREGATE STATUS        : ISDN B1 Carrier Lost  ISDN B2 Carrier Lost
----------------------------[ FEATURE KEYS ]----------------------------


Feature Name                                Key             State
SECURE VOICE RELAY                                          LOCKED
PRIMARY RATE DIGITAL VOICE                                  LOCKED
EIGHT CHANNEL VOICE EXPANSION                               LOCKED
TCP GATEWAY (PEP)                           kO9SNWMNHIq     UNLOCKED






----------------------------Configuration #1 is active----------------------------
Enter Key Provided By Vocality International|
```

Integrated IP Router/Bridge

The majority of applications now demand IP connectivity in the field, as well as the established voice and data facilities. The V100 now presents an integrated 10/100base-T port capable of supporting bridging and IPv4 routing functions over a satellite link. IP and/or bridge traffic is carried over the proprietary V100 link structure alongside other media, so rather than Voice over IP we carry Voice AND IP. This confers a number of benefits such as improved fragmentation, efficiency and low latency.
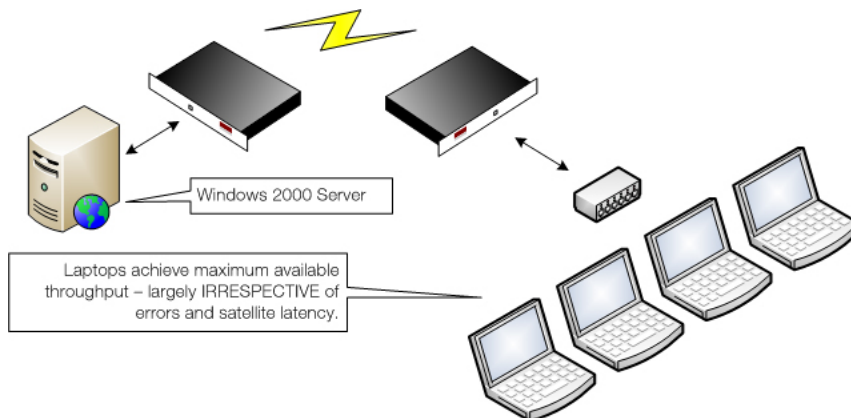
The V100 IP port offers bridging and static routing capability with DHCP Server/Relay functions built in. A UDP relay function enhances this by allowing communication between a remote client and a server on the home network. Users can now plug their laptop into the remote V100 and log in to their home network, surf the internet and pick up E-mail. The integrated IP router/bridge utilises the Dynamic Bandwidth Allocation capability of the Vocality multiplexing platform.

```
Node1                      V100 Multiplexer Supervisor
AGGREGATE STATUS       : ISDN B1 Carrier Lost   ISDN B2 Carrier Lost
------------------------------[ NETWORKS #1]----------------------------

Chan DBA     IP  Address        Mask              MTU  UDPGw TCPGw Bridge Dest
ENET         NUM 192.168.004.001 255.255.255.000 1514 OFF   ON    OFF
0:10 256000  UNN 192.168.004.001 255.255.255.000 576  OFF   ON    OFF    0:0:10










<NEW SUBNET>    <DELETE ALL SUBNETS>
                    Type <ctrl d> to delete selected entry
--------------------------Configuration #1 is active----------------------
Press <SPACEBAR> to activate
```

Performance Enhancement Over Satellite

The PEP (Performance Enhancing Proxy) option module for the V100 from Vocality International enables full utilisation of available bandwidth for TCP traffic, with optimised bandwidth and error handling. TCP/IP uses windowing to send and acknowledge data packets. Any unacknowledged data packets are stored in a buffer with a size limitation. The buffer should never fill up as packets are acknowledged and removed from it thus enabling a continuous stream of data. However, this principle starts to fail over satellite links, where TCP packets are subjected to their two worst enemies; delays and errors.

Windows 2000 Server

Laptops achieve maximum available throughput – largely IRRESPECTIVE of errors and satellite latency.

Vocality International has for many years used an optimised and proprietary protocol for connecting its products together. This optimisation is a result of experience, tried and tested in the field. Vocality International takes standard data and voice protocols and converts them into it's own for transmission and then re-presents them back to the user. Vocality International has taken this experience, and that of working with users of its Satellite Simulator product range, to provide a TCP acceleration facility which can do justice to the high levels of budget spent on international satellite links.

Unlike some other optimisation systems, the Vocality International TCP optimisation system gives significant throughput and speed improvements over high error links without the need to deploy expensive third party internet acceleration boxes.

Voice Features

Architecture

The V100 architecture supports point-to-multipoint topologies with programmable circuit routing. Ultimately, system topologies may be designed ranging from simple point-to-point applications for mixed voice/data services to full-mesh point-to-multipoint networks with dynamic call routing and redundant trunk routes.

Dynamic Routing

Vocality International multiplexers use a unit and port numbering scheme to allow calls to be dynamically or permanently routed from one voice port in one location to any other voice port in a V100 network.

Telephone Directory

The in-built unit and port identification number assigned to specific voice ports can be re-assigned to user friendly telephone numbers which reflect extensions of the voice ports used in the hub site switch.

Call Progress Tones

When switched carrier links are used (such as Inmarsat), users are presented with a specific call progress tone through the phone handset. This tone indicates that the satellite link is being established - please hold.

Digital Voice Card

The Digital Voice Card presents the ultimate in integrated voice connectivity. Primary rate ISDN circuits can be terminated by a V100 via an E1/T1/J1 interface, and protocol stacks switch and route calls throughout the V100 network. The card can optionally compress up to 30 voice calls over the satellite link.

The card supports a wide range of industry standard ISDN signalling standards such as CAS and CCS (QSIG), and as well as compressed voice circuits, the card also supports uncompressed ISDN data and a feature key enabled secure voice capability.

The basic Digital Voice Card has the ability to compress up to 10 voice circuits from an E1/T1/J1 line, and up to 30 when fitted with the expansion daughterboard.


Analogue Voice Cards

Compressed toll-quality telephony channels are available in any combination from a wide range of ITU-standard algorithms. These may be individually selected according to bandwidth and quality requirements, with bit rates from 5.3Kbps up to 64Kbps. All channels support Group 3 FAX at 2400-14400bps and provide G.168 echo cancellation. Bandwidth is dynamically assigned to optimise link use. Input/output gain adjustment allows the voice circuits to be optimised for all situations.

The analogue voice cards are available in 4 or 8 channel form and provide FXO, FXS and 4-wire E&M (Tie-line) interfaces for connection to private analogue circuits. DTMF, MF and E&M signalling standards are supported.

Secure Voice Relays

The STU Secure Voice Card for the military market replaces the 4 channel voice daughter board, adding STU relay support capability to the basic 4 channel voice card to support encrypted STU-IIB and STU-III phone and data traffic from 2.4Kbps to 9.6Kbps. STU III capability is also soon to be added to the Digital Voice Card.
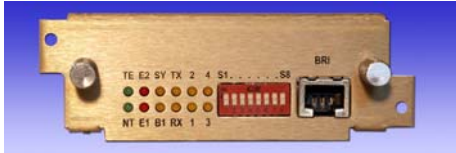
ISDN Extender Card

The ISDN Extender Card is based on the successful Propius platform. The ISDN Extender presents remote users with to a 2B+D Basic Rate Interface from the hub site. The ISDN could be used for connection to a video conferencing PC or an external ISDN MPEG codec. D channel signalling is supported as well as the 40V line power required by some ISDN applications.

Quad Serial Data Card

Remote sites needing multiple serial data ports, or hub sites inter-connecting multiple remotes can use the Quad Serial Data Card. It offers async and sync tributary and aggregate capabilities, with the normal wide range of interfaces supported. Full Dynamic Bandwidth Allocation support assures maximum flexibility of bandwidth consistent with voice and ISDN channel demands.

E1 Link Card

Further increasing the V100's versatility, the new E1 Link card gives the V100 the ability to utilise G703 / G704 connections as aggregate links. The E1 Link card even provides you with a choice of balanced or unbalanced interfaces on the card. So, whether your Telco presents you with V11, V35 or G703 the V100 can easily and cleanly interface with it, allowing you the flexibility of choice in your applications.

MPEG Audio Codec

The MPEG Audio Card is based on the established Philips Musicore-B Codec. Vocality International's Codec offers MPEG 1 and 2 compression and decompression over duplex or simplex links, as well as G.711/G.722 for low latency monitoring circuits. When combined with a voice card, this makes a powerful communications system for mobile news gathering operators.

ISDN Terminal Adapter

The ISDN Terminal Adapter is designed to work with Inmarsat GAN terminals or terrestrial ISDN networks. The card is available in three formats - Euro S/T, American S/T and American U Interface , and offers a dial up link connection of 64Kbps as well as a dual channel or bonded 128Kbps mode. The V50 and V100 are proven to be fully compatible with both the Inmarsat GAN network and equipment from the leading manufacturers of GAN terminals, including Thrane and Thrane, Nera and EMS Satcom.

Inmarsat GAN terminals offer a limited range of services :

- 1 voice/fax channel
- 1 data circuit
- 1 low speed packet data circuit

None of the above can be used at the same time. By using a field deployable multiplexer, such as the V50 or V100, and connecting it to a GAN terminal, you can gain access to a wider range of services - all at the same time.

In a normal network, a user would connect a V50 to the field terminal, and a V100 Versatile Multiplexer to ISDN at their office. The V50/GAN terminal would then auto-dial the hub unit when calls or data traffic needs to be passed. Up to 8 phones can be extended over this link from a hub PABX and LAN circuits can be extended to the remote site via the data port.

V50 Ultra Portable Multiplexer

The Smallest Solution

The V50 Ultra Portable Multiplexer calls on Vocality International's extensive experience in aggressively compact designs, by combining a wide range of secure and clear communications and networking services, all within a handheld enclosed chassis.

The V50 is, in essence, a miniaturised V100 Versatile Multiplexer, offering full interoperability with the full sized unit, connecting to the satellite link via either one of the inbuilt serial data ports or via the optional ISDN Terminal Adapter - making it fully compatible with all Inmarsat GAN terminals.

A power switch is presented on the front panel, alongside the ISDN port. The rear offers all the tributary connectivity needed to support a small communications team operating from the field together with a status LED.

Voice Features

All the regular voice compression standards are offered , from 5.3Kbps up to 64Kbps, with full fax relay and V.32bis modem relays. Four voice channels are activated as standard, with a choice of either FXS or FXO models. Four wire E&M is supported on the base four channels - optional STU secure voice capability or a further four channels of voice can be activated through the insertion of a software Feature Key.

IP Router Features

The integrated IP Router is the same as that offered in the full size V100. A full DHCP server is provided for ease of field deployment, and through the insertion of a software Feature Key, the TCP Performance Optimised Proxy can be activated for even greater performance over high latency or high error links. The 10/100base-T interface is perfect for the support of field email, secure network or internet access.

ISDN Features

Euro and American ISDN Links can be dialled via the optional ISDN Terminal Adapter, which offers optional choices of S/T or U interface standards, for truly international compatibility.

Serial Data Features

As with the V100 Versatile Multiplexer, the two data ports presented offer the ability to be configured as either tributary or aggregate interfaces, operating in async or sync mode up to 2Mbps. Similarly, the channels can operate fixed or Dynamic Bandwidth based on voice channel usage. The data ports are ideal for the support of external serial data encryptors for a combination of IP, voice and secure data.

For nine years, Vocality International's products have been available as stand-alone solutions. Now, Vocality has taken key aspects of its product range and combined them into a single hardware platform (also available standalone as the V50 Ultra Portable Mux). The Vocality Enabled solution can be integrated into third party integrated solutions.

V50 VIP Router

Data and IP – combined

With the advent of secure voice over IP, military operators are required to combine tactical data and IP over single links. These links may be presented in the form of a manpack satcom terminal, a full VSAT or an Inmarsat terminal. Either way, bandwidth inefficient IP terrestrial routers are largely unsuitable for such applications.

The V50 VIP Router offers the key features of the V50 Ultra Portable Multiplexer - without the integrated voice ports. Such a combination of features permits either 1 secure data circuit to be combined with a satellite IP connection over a serial satellite link, or 2 secure data crypto circuits to be combined with a satellite IP connection over a 64Kbps or 128Kbps Inmarsat link.

## Dynamic TDM – The Essential New Satellite Protocol

The standard packetised V100 link protocol is designed to provide a versatile and responsive transport mechanism for a wide variety of data types. The flexibility it permits makes it an ideal medium for dynamic bandwidth applications where demands are constantly varying in response to user requirements.

Nevertheless there are two key areas where the nature of such a packetised protocol has drawbacks. In order to retain responsiveness and minimise delay, the overall efficiency remains around 90% and under poor line conditions, the effect of uncorrected packet errors is to multiply the link error rate.

Vocality International has developed an innovative Time Division Multiplexing protocol, which not only gives high pure data efficiency (>97.5% above 64Kbps) and inherently avoids error extension but which still permits bandwidth to be dynamically assigned on a frame-by-frame basis. A further feature is the provision of Forward Error Correction for NRZ data at speeds up to 512Kbps.

Although the TDM software has undoubted benefits to users in certain applications, it may not necessarily be the optimum choice for all and we recommend the use of the standard V100 packetised protocol by default. The TDM software is installed in the factory at the customer's request after consultation with our sales support staff.

P300/P310 VMUX Satellite Modem
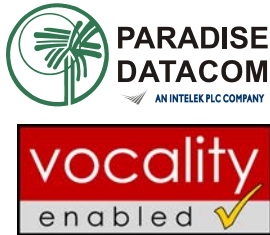
1U Multiplexer and Modem

The P300VMUX combines two industry-leading products into a single 1U unit, providing the full flexibility of the well-respected P300 Turbo Satellite Modem together with the next generation capabilities of the V100 Versatile Multiplexer from Vocality International.

This combination of equipment, popular with many satcom users, especially government and SNG/DSNG operators, is now available in its smallest ever package. The P310VMUX provides the same capabilities for L-band applications.

Extreme integration

The P300VMUX provides the user with up to 8 voice / fax ports, an IP Bridge/Router port, and a serial data port. The data from all these services is combined and transmitted through the modem at speeds of up to 2Mbps.

The P300VMUX provides all the functionality of the P300 series satellite modem with the ability to bypass the multiplexer component when required.

This product is exclusively available from Paradise Datacom. For more information, visit www.paradisedata.com

Modem Features
Full P300 and P310 Satellite Modems (IF or L–Band)
BPSK, QPSK and OQPSK operation (8PSK optional)
Turbo, Viterbi, Sequential and Reed–Solomon FEC (options)
IBS/SMS and Closed network plus ESC overhead, with variable rate Async ESC (options)
Internal BER tester and Monitor AGC port (options)
Automatic Uplink power Control (AUPC option)
Compatible with stand alone Paradise P300/P310 Modems

Integrated Multiplexer Features
Fully integrated multiplexer and router
4 or 8 telephony channels with fax/modem support
DTMF and E&M signalling support on 2 or 4 wire interfaces
Full IP bridge/router with optional satellite optimisation
10/100 base–T presentation
Serial data port (V.11, V.35, RS422/449, RS232, RS530)
Compatible with standalone V50 / V100 multiplexers

E5740 Voyager Encoder

Integrated Comms

The E5740 Voyager s a fully integrated two-way Satellite News Gathering encoder/decoder solution. It offers high-quality bi-directional MPEG video suitable for real time news contribution, in a compact 2U chassis.

The functionality of the E5740 can be augmented to include the SNG Comms Card. The card is a compact voice, data and IP product which allows a full compliment of communications services to be delivered over a bi-directional MPEG video link. The SNG Comms Card fits inside the E5740 to provide a full compliment of "back office" services such as internet access, ear piece and telephone circuits.

Award Winning

Since its launch in the middle of 2003, the E5740 Voyager and its Vocality Enabled Comms Card has won several major industry awards. The awards recognise the close integration of the two solutions and the benefits the solution offers the field reporter or field broadcasting team.

To the right is the list of show awards won to date.

Awards include...
TV Technology at NAB
BIRTV
Mediacast 2003

This product is exclusively available from Tandberg TV. For more information, visit www.tandbergtv.com

Features
Simplex or Duplex High Quality Video
Compact 2U Form Factor
IF or L–Band Output
Integrated Vocality Comms Option
4 or 8 Voice Channels
Serial Data
Full IP bridge/router with optional satellite optimisation
IP and RS232 Management

DICA 7000 ISDN Extender
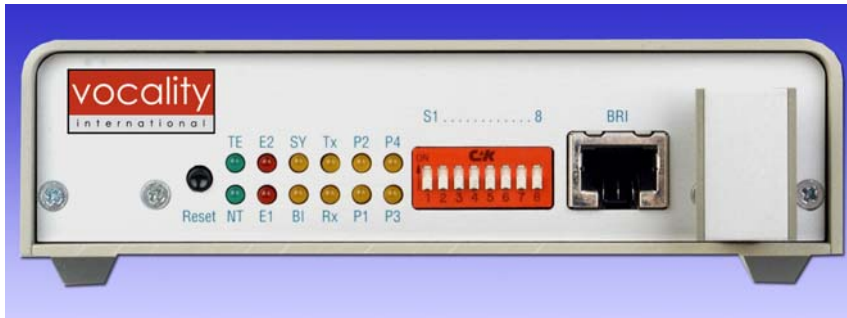
Overview

The PROPIUS ISDN Converter DICA7000 is designed to extend the range of ISDN basic-rate interface S/T facilities over non- ISDN links, such as leased lines, backbones, radio or satellite. The converters always work in pairs, extending a single BRI line over an isochronous (duplex, synchronous, transparent) transmission link. Optionally, multiple ISDN converter units can be modularly placed in a DICA6400 19" rackmountable chassis.

Digital Infrastructure

PROPIUS' ISDN Converters enable carriers and corporations to extend ISDN BRI facilities wherever they are needed, thus allowing service providers to deliver the benefits of ISDN over a broad range of digital transport technologies. The extension of ISDN services enables users to take advantage of ISDN features and facilities using standard ISDN terminal equipment in videoconferencing applications for example or simply to extend lines from the corporate PBX to remote offices.
PROPIUS' ISDN Converters offer several capabilities, including transparent extension, BRI/data sharing and network function.

Features
Basic Rate ISDN Extender
S–Bus including 40V Power
Serial Link Interface
128Kbps = 2B+D Signalling
160Kbps = 2B+D Full

ISDN Over...
Satellite
Radio
Leased Line

Transparent Extension

Transparent extension is used to extend ISDN BRI services transparently over any digital facility. Simply put, it is an "ISDN Extension Long Line Extension."
This capability is available in two versions:

- Standard: for 2B+D extension at a data rate of at least 160 kbps
- Optimized: for 2B+D at a data rate as high as 128kbps.

BRI/Data Sharing

BRI/data sharing allows bandwidth sharing between ISDN and data applications. Priority switching is performed based on the needs of individual ISDN applications. This capability allows the same link to be utilized for ISDN applications such as voice or video, and for data applications such as router connectivity. BRI/data sharing is also available in standard (160 kbps) or optimized (128 kbps) versions.

Network Function

Network function (NF) allows ISDN services to be provided (emulated) without an ISDN network. These services can then be back-hauled to an ISDN gateway or simply used to provide a private ISDN network. The company's latest revolution in this area is an integrated FRAD for carrying ISDN over Frame Relay. This award winning product is called IFRAD and explained in a separate data sheet.

DICA 6400 ISDN Multiplexer

Overview

The PROPIUS ISDN Multiplexer DICA6400MUX can extend up to four transparent ISDN BRIs to any remote location over a single serial digital link. The BRIs can be extended to locations where no ISDN is available, or multiple BRIs can be used instead of a costly Primary Rate Interface.

Dynamic Bandwidth

The unique dynamic bandwidth allocation gives users the most cost effective usage of their bandwidth. Multiple transmission lines are no longer needed to provide both ISDN and other data traffic to remote locations. Bandwidth is allocated automatically based on the applications demand.

The DICA6400MUX is thus ideal for Video Conferencing applications combined with LAN-to-LAN connectivity using one serial link with appropriate bandwidth.

Configuration

The DICA6400MUX is a modular 19-inch rack-mountable device, which can be equipped with up to four (4) BRIs. Additional data transmission is supported by one or more serial interfaces.

Ease Of Use

The DICA6400MUX is designed to be easy to install and to use. On customer request, each unit is pre-configured, so that the user can set it up and have it running within minutes.

Remote Control

The DICA6400MUX can be configured and monitored locally or remotely via dialup modem link or in-band using the DRDS (DICA Remote Diagnose and Service System). A functionally limited DRDS basic version is delivered with each device.

V100 Integrated Version

The DICA7000 ISDN Extender is integrated into the V100 Versatile Multiplexer by way of the ISDN Extender Card. This card allows full Dynamic Bandwidth interaction with voice, data and IP services, providing one or two basic rate ISDN Extensions. This facility is ideal for users needing to deploy STE ISDN Cryptos or ISDN-based video conferencing, alongside regular office services, for example.

About Propius

Propius—formally DICA Technologies/DTM Data Telemark, have provided ISDN over Satellite solutions for many years, Vocality International was one of the original distributors for their products, and it is this technology that is embedded into the V100 solution to allow us to offer the ISDN Extender card. Propius are based in Germany and Vocality provide Propius solutions to satellite users worldwide.

Simulator 2

High performance synchronous satellite link simulator providing delay, error conditions and test facilities

The Simulator 2 is ideal for a wide range of digital satellite and leased line simulations. By providing a realistic set of link conditions, the Simulator 2 is the perfect bench tool for any user or integrator involved in the stage testing and implementation of WANs (Wide Area Networks) including satellite links, GSM, radio or terrestrial leased lines.

Comprehensive error and fault injection facilities make the Simulator 2 an essential tool for stability testing.

The Simulator 2 provides A and B simulation ports, and a station clock reference port for phase-locking the simulation rate to an external source.

In addition to front panel controls and indicators for independent use, a dedicated management port allows the user to program a wider range of conditions, or to drive the Simulator 2 from a PC using automated test sequences through a teletype-style command set.

Main Features

The Simulator 2 is typically used as a convenient alternative to complex and often costly live system performance testing. It has many versatile features which allow equipment to be rigorously exercised in many of the final configurations for which it is intended. The primary function is as a synchronous full-duplex link and clock source, with variable end-to-end delay. Different delays can be inserted into the link in each direction.

Simulation

The Simulator 2 provides digital communications links at speeds up to 2Mbps and can represent typical link fault and environmental conditions. The versatility of clock sources and speeds allows a wide range of equipment to be connected for evaluation.

Error Injection

The error-injection facility allows typical line characteristics and fault conditions to be simulated, in conjunction with delay and clock generation facilities. Errors are injected in the local data stream just prior to output.

Lab Testing

Allows systems to be authentically tested during development under controlled laboratory conditions, prior to the commitment to expensive digital networks. The Simulator 2 quickly repays the initial investment through savings in live bandwidth costs. Users who are NOT planning to use the latency friendly V100 Multiplexer / Router from Vocality International can use a Simulator 2 to evaluate and test third party IP solutions such as CISCO Routers. This can all be done within the comfort of a test lab without a costly outlay in satellite time.

Stress Testing

Data link protocols and software stacks may be rigorously tested under most commonly encountered link conditions to ensure that a final implementation is fully robust. By using Simulator 2, conformance test fees may be kept to a minimum.

Simulation Ports	
Number of Ports:	2
Clock Sources:	Internal, External, Station Clock
Interfaces:	RS449/V.11/V.24, V.35 DCE or G.703(Co-directional)
Connectors:	DB15F for RS449/V.11/V.24/V.35, BNC and RJ45(UTP) for G.703

Features	
Data Rates:	9.6, 64, 128, 192, 256, 512, 1024, 2048 and intermediate rates by numeric entry
Buffer:	0, 25ms, 50ms, 100ms, 200ms, 300ms, 500ms, 1sec, 2sec and intermediate rates by numeric entry
Bit/burst Error Rate:	0, 10^{-2}, 10^{-3}, 10^{-4}, 10^{-5}, 10^{-6}, 10^{-7}, 10^{-8}, 10^{-9}
Test modes:	Local Loop, Remote Loop
Miscellaneous:	Bit/Burst error modes Single bit error-injection facility Separate kill buttons for CLOCK, RXD, TXD on both ports External clock reference input on BNC socket RS232 supervisor port for remote control Non-volatile memory of current settings

Front Panel Controls	
General Controls:	Rate, Delay, Error, Bit/Burst, Inject
Controls per port:	Clock Source, Loop, Kill RXD, Kill TXD, Kill Clock
General Indicators:	Rate, Delay, Error, Bit/Burst, Inject
Indicators per port:	Clock Source, Loop

Supervisor	
Data Format:	Asynchronous, 9600bps, 8-bit, no parity, 1 stop bit
Interface:	V.24/V.28 DCE on dedicated DB9F
Flow Control:	XON/XOFF(in-band)
Emulations:	Automatic support of most common terminals Structured menu and direct command line

Physical	
Dimensions:	430mm x 250mm x 44mm (1U) 19" rackmount enclosure
Weight:	1.5Kg
Environment:	Operating temperature 0–50°C, 0–90% RH non-condensing
Power Supply:	85–264V AC, 15 Watts, 47–440Hz

V50 VIP Router

Data Ports	
Presentation	DTE or DCE, Aggregate or Tributary
Interface	Selectable V.24, V.11, V.35, RS449 on DB15F
Specification	As per V100 data ports

IP Router	
Interface	10/100 base–T as a hub
Specification	IPv4 Static Router/Bridge including DHCP Server/Relay Spanning Tree (IEEE 802.1d) Protocol for Bridged Networks Optional PEP (Performance Enhancing Proxy) for TCP UDP Relay for IP Subnet Broadcasts Proxy ARP Telnet for IP Based Supervisor Access with Security Filtering Full Integration with Dynamic Bandwidth Allocation

Supervisor	
Interface	3.5mm Jack
Specification	As per V100 supervisor port

Physical	
Front Panel	Power Switch, ISDN Terminal Adapter Port
Rear Panel	All Other Connectors + 1 LED Indicator
Dimensions	251mm x 121mm x 51.5mm
Weight	
Environment	0–50°C operating, 0–90%RH non–condensing
Power Supply	12VDC or 24 VDC Max 25 Watts

V50 Ultra Portable Multiplexer (FXO Model)
(specification as per V50 Router with the following additions)

Voice Features	
Interface	8–way RJ45
Presentation	Four channels 4–wire with FXO 2–wire support Additional four channels FXO 2–wire software enabled
Specification	As per V100 analogue voice card specification
Relays	STU–IIB/STU–III Secure Voice Relay (software enabled)

V50 Ultra Portable Multiplexer (FXS Model)
(specification as per V50 Router with the following additions)

Voice Features	
Interface	8–way RJ45
Presentation	Four channels 4–wire with FXS 2–wire support Additional four channels FXS 2–wire software enabled
Specification	As per V100 analogue voice card specification
Relays	STU–IIB/STU–III Secure Voice Relay (software enabled)

V100 Versatile Multiplexer (Chassis)

Data Ports	
Presentation	DTE or DCE, Aggregate or Tributary
Interface	Selectable V.24, V.11, V.35, RS449 on DB15F
Format	Transparent, Synchronous, HDLC or Asynchronous
Data Rates	Sync: 50bps to 2Mbps Async: 50 to 115200bps selected word structure combinations
Clock sources	TXC: INT, EXT, RXC, DBA by phase–locked loop RXC: INT, EXT, TXC, DBA by phase–locked loop

IP Router	
Port Presentation	10/100 base–T
Specification	IPv4 Static Bridge/Router including DHCP Server/Relay

Supervisor	
Interface	RS232 or RS485 on DB9F or Telnet via IP Router Port
Format	Asynchronous
Data Rate	9600bps, 8 bits, no parity, one stop bit
Mode	Formatted terminal display or Teletype M&C
Emulations	Automatic support of most common terminals
Alarms Presentation	Voltage–free changeover contacts

High–Speed Channel	
Presentation	Proprietary RS485 on DB9F
Format	Synchronous HDLC
Data Rate	4Mbps
Clock sources	TXC: Internal, External RXC: Internal, External

Physical	
Front Panel	6 LED indicators
Dimensions	438mmx405mmx44mm(1U)19" rackmount
Weight	3–5Kg
Environment	0–50°C operating, 0–90%RH non–condensing
Power Supply	100 – 264V AC, 60 Watts, 50/60Hz

Option Slots	
Main Option Slots	2 Main Option Slots which can house : Voice Cards Data Cards ISDN Extenders MPEG Codec Cards
Special Option Slots	1 Special Option Slot which can house : ISDN Terminal Adapter E1 Link Card TDM Link Card

V100 Versatile Multiplexer
(Option Cards)

Digital Voice Card	
Presentation	BNC (coax) or RJ45 (twisted pair)
Impedance	75, 100 or 120ohm termination for short– or long–haul by soft selection
Coding	G.703 B8ZS/AMI
Clocking	Co–directional, internal and loop timing
Framing	E1/T1/J1 including SLC–96
Signalling	ABCD (CAS) and QSIG (CCS) or 64Kbps transparent
Standards compliance	ANSI: T1.403–1995, T1.231–1993, T1.408 AT&T: TR54016, TR62411 ITU: G.703, G.704, G.706, G.736, G.775, G.823, G.932, I.431, O.151, O.161ETSI: ETS 300 011, ETS 300 166, ETS 300 233, CTR4, CTR12 Japanese: JTG.703, JTI.431, JJ–20.11 (CMI coding only)
Channels	10 standard, extendable to 30
Compression	G.723.1 (5.3/6.3Kbps MP–MLQ), G.729 Annex A (8Kbps CS–ACELP), G.726 (16–40Kbps ADPCM), G.727 (16–40Kbps E–ADPCM), G.711 (64Kbps PCM) µ–law or A–law Proprietary NetCoder® (6.4,7.2,8.0,8.8,9.6Kbps)
Relays	Group 3 FAX relay at 2400–14400bps V.32bis Modem relay up to 14400bps STU–IIB/STU–III Secure Voice Relay (Option)
Echo cancellation	G.168 adaptive (16/32mS tail)

Quad Analogue Voice/Fax Card	
Port Presentation	8–way RJ45
Voice/FAX Interface	2–wire FXS for connection to telephone/trunk port with ring voltage/cadence generation and dial pulse/ring trip detection 2–wire FXO for connection to extension port with ring trip detection, loop hold and programmable impedance and termination for international compliance 4–wire Tie–line with E&M type I or V signalling
Compression	As per the Digital Voice Card
Relays	As per the Digital Voice Card
Signalling	MFR1, R1, R2, SS4, SS5, AC15, Call Progress
Echo cancellation	As per the Digital Voice Card
Coding delay	Per algorithm
Gain	±31dB programmable in 1dB steps

Quad Analogue Voice/Fax Expansion Card	
Specification	As per the Quad Analogue Voice/Fax Channel Card
Installation	Docks with the above card to expand the card to eight channels

Secure Voice Relay Card	
Relays supported	STU–IIB, STU–III
Rates	2400, 4800, 9600bps secure or non–secure
Number of channels	Up to four simultaneously per card
Installation	Docks with the Quad Analogue Voice/Fax Channel Card in place of the Quad Analogue Voice/Fax Channel Expansion Card

Vocality International operate a policy of continuous product development. Specifications may change without notice.

MPEG Audio Codec Card

Codec	MPEG–1&2 layers 1&2, G.722, G.711
Bitrates	MPEG–1: 32Kbps to 448Kbps. MPEG–2: 8Kbps to 256Kbps. G.722: 64Kbps G.711: 64Kbps
Sampling	MPEG–1: 32KHz, 44.1KHz, 48KHz MPEG–2: 16KHz, 22.05KHz, 24KHz G.722: 16KHz G.711: 8KHz
Modes	Mono, Dual Mono, Joint stereo or Stereo modes
Coding Delay	G.722 30mS MPEG varies with bit–rate
Audio Performance	24–bit 48Khz sampling
Peak Level	+18dBV
I/P Impedance	>20KOhm (balanced)
O/P Impedance	<100Ohm (balanced)
SNR	>88dB
Interface	XLR L/R in/out analogue ports, digital AES/EBU

ISDN BRI Extender Card

Interface	Basic Rate ISDN S/T bus on RJ45
Presentation	NT or TE
Protocol	Internationally compliant
Structure	2x64K 'B' channels + 'D' channel signalling

E1 Link Card

Presentation	G.703/G.704 Balanced or Unbalanced
Data Rates	2Mbps

ISDN Terminal Adapters

S0/T0 Card Interface	Basic rate ISDN2 S/T–bus on RJ45
S0/T0 Card Protocol (specify)	EURO–ISDN NET3 US National–1 ISDN US Nortel DMS–100 US AT&T
U0 Card Interface	Basic rate ISDN2 U–bus on RJ45
U0 Card Protocol	US National–1 ISDN US Nortel DMS–100 US AT&T

TDM Link Interface

Presentation	DTE Aggregate
Interface	Selectable V.24, V.35, RS449 on DB15F
Data Rates	Sync only at 16Kbps to 512Kbps
Clock sources	TXC: EXT, RXC RXC: EXT only

Quad Data Card

Presentation	DTE or DCE, Aggregate or Tributary
Interface	Selectable V.24, V.11, V.35, RS449 on DB15F
Format	Transparent, Synchronous, HDLC or Asynchronous
Data Rates	Sync: 50bps to 2Mbps Async: 50 to 115200bps selected word structure combinations
Clock sources	TXC: INT, EXT, RXC, DBA by phase–locked loop RXC: INT, EXT, TXC, DBA by phase–locked loop

The Philosophy

Vocality International supplies the reliable back bone to essential data, network and voice communications in many of the world's most strategic and mission critical networks. For the past nine years, Vocality International have worked with governments, defence organisations, TV broadcasting networks and corporate customers to provide the solutions that THEY NEED.

Through continued close relationships with these valued customers, Vocality International's products have continued to evolve unique and individual capabilities, which make them - in many cases - the only viable solution to the needs of the network operator.

As will become evident reading this portfolio, Vocality International's product developments are driven by two key customer demands : efficiently compressing services into narrow link bandwidths, and squeezing the flexible hardware solutions into a very small form factor.

The portfolio presented in this document represents the cream of British design and engineering excellence, delivered to the global market with a passion for satisfying the most demanding technical and commercial requirements.

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