

Product Guide

Vega 50 Europa



Product highlights:

- > ISDN2 BRI variants
- > Analogue FXS and FXO variants
- > Rich PBX featureset
- > IP-phone survivability options
- > Multiple failover options to alternative routes and interfaces in the event of WAN/PSTN outages
- > Rack mount brackets supplied
- > 1U high

For full current product specification details see the [brochure](http://www.VegaStream.com) available from www.VegaStream.com

Generic Product Details

Front view:



Status LED flash patterns are defined in the Vega Admin Guide

Standard Gateway Products:

The Vega 50 Europa supports up to 10 analogue ports, or 8 basic rate ISDN channels on 4 physical interfaces.

The Vega 50 Europa gateway connects a range of legacy telephony equipment, including PBXs, ISDN telephones, the ISDN, analogue phones & the PSTN to IP networks.

Configuration parameters and connectivity is common across the range with the only discernable differences being the telephony interface type.

The gateways can be configured for different country requirements, such as tones & line impedance.

Enhanced Network Proxy (ENP) (software option):

This feature greatly extends the capabilities of a gateway product by including SIP proxy functionality within a single device. ENP's principle functions are twofold:

1. To provide resilience for local SIP UA's in case of loss of contact with ITSP proxy.i.e. through broadband failure or loss of ITSP network connection.
2. To allow some calls that would normally always route to the ITSP to route to other devices. These can include the local gateway (hosting ENP) or other gateways or SIP devices.

ENP enables continuity of service during WAN/SIP outage and may be configured to operate in a number of ways including:

- > Standalone proxy
- > IP device survivability
- > IP device call routing
- > Emergency call routing
- > SIP to SIP call routing

Typical applications include:

- > IP-phone Survivability

Frequently the SoftSwitch is located remotely (eg head office/branch offices scenarios) with connectivity via the WAN. When the WAN suffers an outage the IP-phones within the organisation are unable to register to the off-site SoftSwitch and therefore all functionality is lost. Callers trying to reach the company cannot get through. Just as worrying though,

employees cannot make external calls outside the business and worse still internal desk-to-desk calls around the organisation cannot be placed. The business is at a standstill. Compounding on this is the compromise of the health and safety of the employees also who often have to rely on their own personal mobile phones for the duration of the outage. The solution is Vega's ENP. During normal operation the IP-phones register via the Vega which in turn caches the registrations and forwards them to the SoftSwitch. When disaster strikes in the network the Vega loses its "heartbeat" with the SoftSwitch and so it immediately becomes the vital element in the network ensuring that the IP-phones continue to operate, processing registrations and calls both internally but externally also via back-up PSTN connectivity. Vega is able to support up to 120 IP-phones.

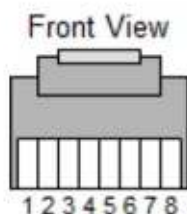
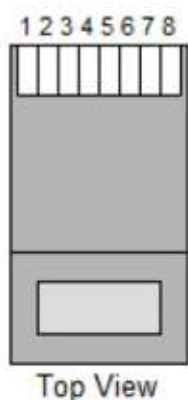
> SIP Trunking

Vega ENP enables either TDM to SIP/SIP to TDM and SIP to SIP call routing. Multiple ITSPs can be defined with various failover options when outages are detected by ENP.

Full details of Vega's ENP may be found in Section 16 of the Vega Admin Guide available from www.VegaAssist.com

LAN Connectivity:

Cables with RJ45 sockets are used to connect the Vega to an Ethernet LAN hub, switch or router. A standard straight through CAT 5 cable is required.



Ethernet	
1 (Tx+)	
2 (Tx-)	
3 (Rx+)	
6 (Rx-)	

Serial cable:

Connection from a PC to the Vega via the Console Port is necessary for the following:

- > CLI session
- > Call logging output
- > 9600 baud reset

The recommended serial cable type should be a lead with an RJ45 connector on the Vega gateway end and a female 9 way D-Type connector to plug into the PC.



Serial Cable

RJ45	9 way D-Type
1	8
2	6
3	2
4	5
5	5
6	3
7	4
8	7

1	8
2	6
3	2
4	5
5	5
6	3
7	4
8	7

Many PCs do not feature a Serial connector and therefore it may be necessary to utilise a USB to Serial converter similar to the one shown



BRI / ISDN2 Variants

Example rear view of 4 port BRI:



Serial number is the MAC of LAN port 1

BRI / ISDN overview

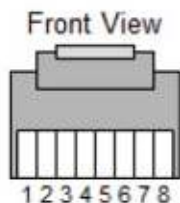
- > NT / TE configurable
- > S/T physical interface
- > Euro ISDN signalling
- > Phantom power on NT ports (optional at time of order and software configurable)
- > Euro-ISDN (DSS1/TBR3)
- > Supports PP (point-to-point /static TEI) and PMP (point-to-multipoint /automatic TEI) operations

RJ45 BRI pinouts:

- > Auto PIN switching

On standard Vega 50 Europa BRI gateways the pinouts automatically change from NT to TE depending on the configuration setting in the Vega. Therefore a straight through CAT 5 cable is used to connect a NT Vega DSL to a TE far end device, and the same straight through CAT 5 cable is used to connect a TE Vega DSL to a NT far end device.

For Loopback between a Vega 50 Europa BRI NT port and a Vega 50 Europa BRI TE port, use a straight through CAT 5 cable



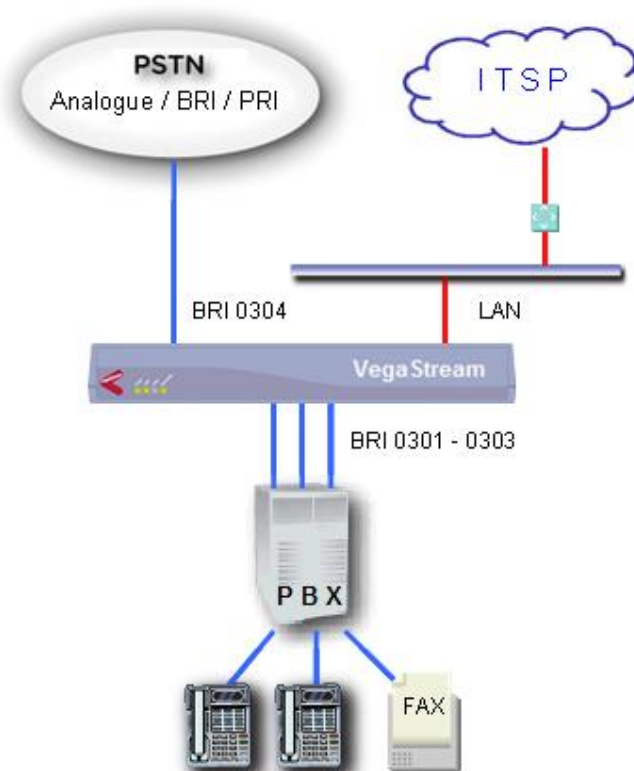
Cables with RJ45 plugs are used to connect to the Vega 50 Europa BRI ports

Vega 50 Europa BRI	Far end device
TE	NT
3 (Tx+)	3 (Rx+)
6 (Tx-)	6 (Rx-)
4 (Rx+)	4 (Tx+)
5 (Rx-)	5 (Tx-)

Vega 50 Europa BRI	Far end device
NT	TE
3 (Rx+)	3 (Tx+)
6 (Rx-)	6 (Tx-)
4 (Tx+)	4 (Rx+)
5 (Tx-)	5 (Rx-)

Typical Application - SIP Trunking

Configuration for a Vega 50 Europa BRI showing telecoms connectivity to PSTN, PBX and VoIP via ITSP in a SIP trunking application.



Analogue FXS / FXO Variants

Rear view of 8 port FXS Vega Europa



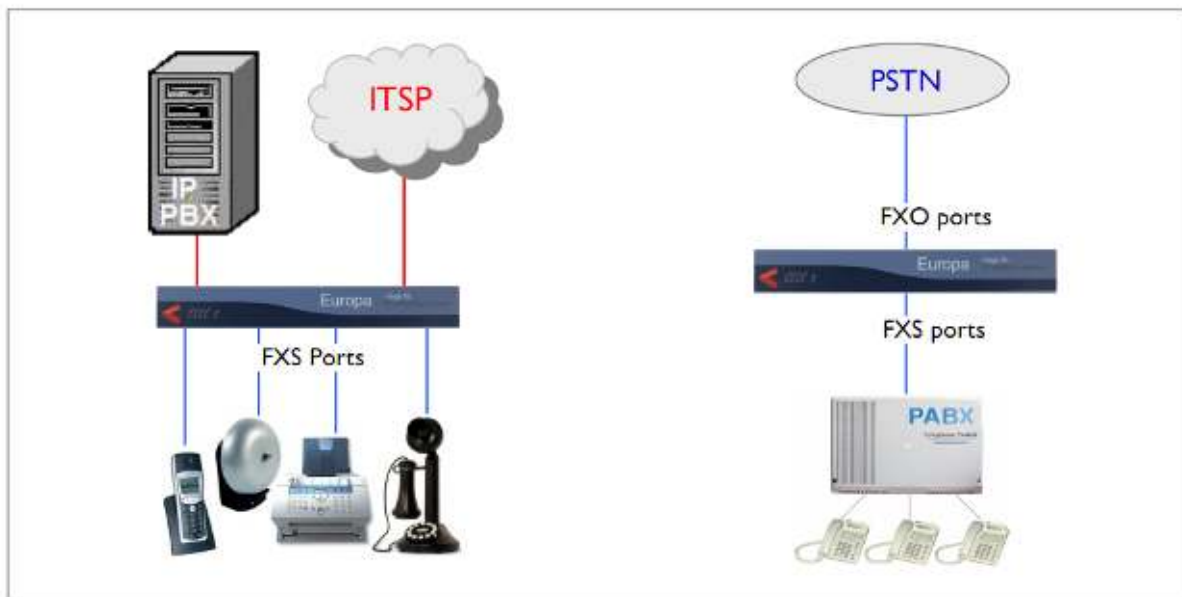
Serial number is the MAC of LAN port 1

FXS and FXO

In loop start analogue telephony there are two types of interface, FXS and FXO.

An FXO device plugs into an FXS line.

- > Standard analogue phones are FXO devices and therefore must be connected to FXS ports.
- > PBX CO lines are FXO and therefore must be connected to FXS ports.
- > The PSTN is considered as FXS and therefore must be terminated onto FXO ports.



For further information please see the information note available from www.VegaAsssit.com

FXS overview

- > 4 or 8 FXS ports
- > 2 FXO ports for call routing and powerfail failover
- > Loop start signalling
- > Generate FSK (mdmf & sdmf), ETSI Caller ID
- > Line current reversal generation (answer and disconnect indication)
- > Loop current disconnect generation (disconnect indication only)

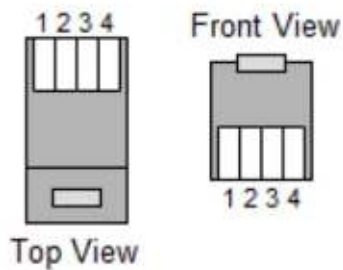
FXO overview

- > 4 or 8 FXO ports
- > Loop start signaling
- > Detects FSK (mdmf & sdmf) and DTMF, ETSI Caller ID
- > Line current reversal detection (answer and disconnect detection)
- > Loop current disconnect detection (disconnect detection only)
- > Tone detection clear-down

Lifeline PSTN Backup

All Vega variants equipped with FXS ports are also fitted with two FXO ports. When powered the Vega can route calls (999/112/911, local calls etc) to or from these two FXO ports. Under power failure conditions the two FXO ports provide a hard-wired bypass to the first two FXS ports allowing PSTN calls to be made even under this failure condition. Also in the event that the call cannot be routed via SIP to the IP-PBX/ITSP, it can be re-presented to the FXO thereby providing the customer with a back-up, resilient call routing during the outage.

RJ11 FXS and FXO cable pinouts



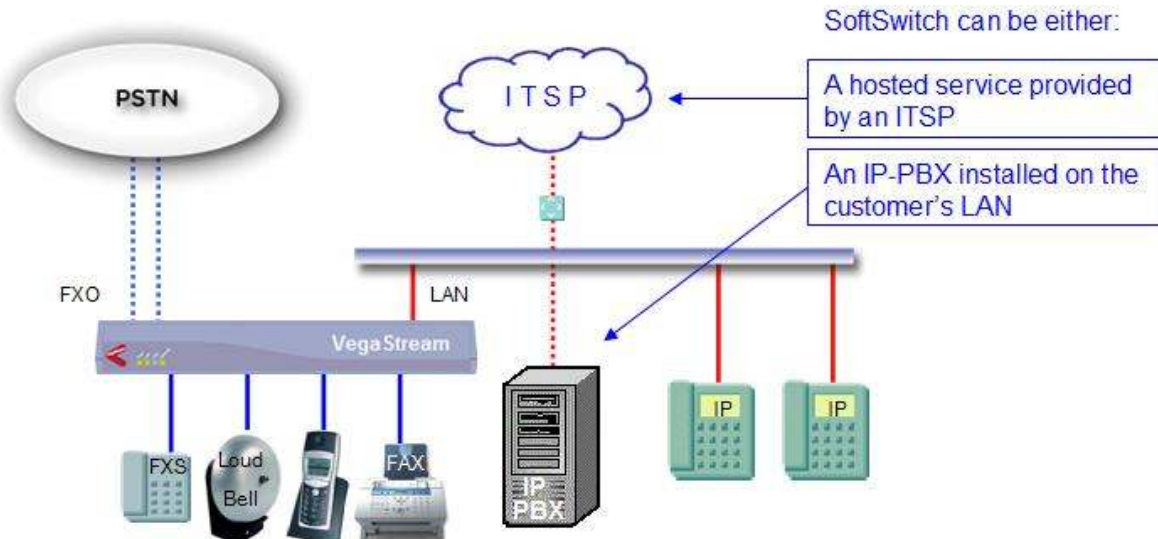
Cables with RJ11 plugs are used to connect to the Vega 50 Europa telephony ports

Vega 50 Europa
2 (Ring)
3 (Tip)

The pinouts of the RJ11 sockets for FXS and FXO interfaces

Typical Application – SoftSwitch / IP-PBX analogue endpoints

Configuration for a Vega 50 Europa FXS in a SoftSwitch or Hosted application showing telecoms connectivity to PSTN and analogue devices, and VoIP via ITSP or SoftSwitch / IP-PBX



Vega FXS - what is it typically used for?



Multiple analogue device connectivity (phone, DECT cordless, fax, external loud bells) for UA endpoints operating with either a local SoftSwitch / IP-PBX deployed on the customer's own network, or an off-site SoftSwitch / IP Centrex application hosted by an ITSP.

Why wouldn't I just deploy IP Phones?

The deployment of FXS phones & devices may be in conjunction with, or instead of IP phones, & indeed there are many areas where it is more practical to deploy a high density FXS gateway:

- > Serves as an ideal legacy PBX replacement or where there is an absence of data/network cabling. The Vega simply replaces the telephone system's central control unit & is connected to the existing telephone wiring & analogue phones
- > Where there is a requirement for a large quantity of handsets & IP phones are inappropriate to deploy (public reception areas, business centres, tenement buildings, hotels, schools, nursing homes...)
- > For long distance phone deployment (up to 8 kilometres line length)



- > Only a single LAN connection is required for the Vega thereby saving on costly switch/hub equipment & rack space requirements if multiple IP phones were otherwise deployed
- > There is a single management interface and IP address on each Vega FXS gateway for all users connected, as opposed to having to separately manage lots of individual IP phones

How does it differ from an IP phone?

As far as the ITSP or IP-PBX is concerned there is no difference. Each FXS endpoint is provisioned just as an IP phone would be and will behave in just the same way that an IP phone does; it will independently register with the SoftSwitch and will have its own telephone number, user account and password.

How do the connected phones work?

Vega gateways support telephony features which enable the FXS device to interoperate with the SoftSwitch and to use the advanced features which it provides:

- > * Support of hook flash / TBR - for call hold & transfer - the **R** button on the phone!
- > * CLIP to FXS telephone display - the user can observe who is calling before answering
- > * MWI lamp indication or stuttered dial tone - for new voice mail message notification
- > * Call waiting - the user can decide whether to hold, toggle or disconnect the existing call & answer the arriving call
- > Three party conference
- > Executive interrupt
- > Call forward – unconditional, busy, no answer
- > Do Not Disturb
- > Hunt groups – linear up, round robin, random
- > Call barring
- > Hotline - a pre-determined number is called upon lifting the handset (visitor or door phone automatically calls the operator)
- > Post fax voice call - after sending a fax the user can talk to the remote caller thereby saving money by not having to make a new call
- > Distinctive ringing for called numbers (eg, sales, accounts) so that the user can answer the call appropriately
- > Support of fax T.38 protocol. Also the ability to connect modem, PDQ etc



* From the customer's viewpoint it is arguable therefore that there is no discernable loss of features over an IP phone provided of course that the analogue telephone is capable of supporting these.

The Vega enables the advanced features of the SoftSwitch (call recording, voice mail etc) to be accessed just as an IP phone would do.

PBX featureset

KEY: ● As Standard ○ Cost option at time of order X Available via software license		Vega Europa 4FXS 2FXO	Vega Europa 8FXS 2FXO	Vega Europa 4FXO	Vega Europa 8FXO
In Call Features	Internal calls - initiate/receive	●	●	n/a	n/a
	External calls - initiate/receive	●	●	●	●
	Call transfer - blind / consultative	●	●	n/a	n/a
	Call hold / toggle	●	●	n/a	n/a
	Call waiting tones	●	●	n/a	n/a
	Three party conference	●	●	n/a	n/a
	Executive interrupt	●	●	n/a	n/a
	Post fax voice call	●	●	n/a	n/a
	Do not disturb	●	●	n/a	n/a
	Call forward (unconditional, busy, no answer)	●	●	n/a	n/a
Admin Settings	Distinctive ringing	●	●	n/a	n/a
	Hunt groups (linear up, round robin, random)	●	●	n/a	n/a
	Call barring	●	●	●	●
	Hotline	●	●	n/a	n/a
	CLI Presentation (multiple protocols)	●	●	n/a	n/a
	CLI Detection (multiple protocols)	n/a	n/a	●	●
	CLIP screening of calls from selected sources	●	●	●	●
General Features	DDI / DID	●	●	●	●
	MOH (music on hold) via external IP device/server	●	●	●	●
	T.38 Fax support up to G.3	●	●	●	●
	Modem support up to V.90 using G.711	●	●	●	●

LCR / ARS - multiple dial plans	•	•	•	•
External bell connectivity	•	•	n/a	n/a
8km line length	•	•	n/a	n/a
Call representation to alternative interface/proxy/SP	•	•	•	•
Tele-worker, remote office	•	•	•	•
MWI - stuttered dial tone / lamp indication	•	•	n/a	n/a
Pulse and tone dialing	•	•	•	•
SIP	•	•	•	•
H.323 V.4	•	•	•	•
Codecs: G.711 (a-law/ μ -law), G.729, G.723.1	•	•	•	•
Codec: GSM	O	O	O	O
DTMF readback of IP parameters	•	•	n/a	n/a
Enhanced Network Proxy (ENP)	x	x	x	x

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