



Advanced Layer 3 and 2 features

Extensive IP routing and Ethernet functionalities with advanced QoS mechanisms

Data protection with IPSEC encryption and firewall security

Next Generation Networks Introduction

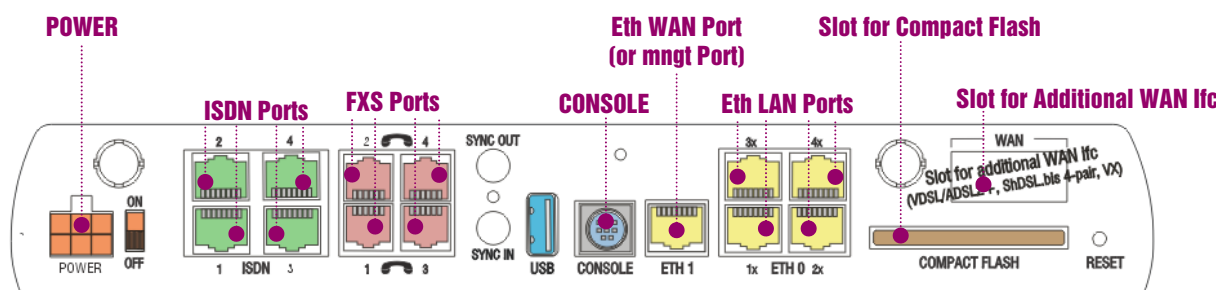
Ideal solution for integrating high-quality voice and data services over IP networks

Up to 8 simultaneous voice calls
FXS & ISDN BRI mix

Flexible Factory Configuration

An additional WAN interface besides a fixed Ethernet WAN

VDSL2/ADSL2+, ShDSL.bis with ATM/EFM & VX technologies to be suitable for a variety of scenarios.



Fast Integration and “Five-9s” Service Availability

The SV6044 family ensures seamless installation and the highest degree of compatibility with every type and brand of legacy telephony devices. Moreover, besides Virtual Router Redundancy Protocol, two of the ISDN-BRI ports can be set to perform data backup thus guaranteeing a reliable resiliency.

Full IP Services & Security Features

The SV6044 family provides advanced routing and bridging configuration also offering firewall functionality and VPN data protection (including IPSec hardware encryption).

Factory HW Configuration

The SV6044 family guarantees high flexibility in covering multiple applications thanks to different WAN modules in addition to the default Ethernet one. It offers, beside Ethernet connectivity, a factory configuration with VDSL2/ADSL2+ line module, with ShDSL.bis module (4-pair, including both ATM&EMF support) or even with V/X multiprotocol serial module.

VDSL2 Module

All VDSL2 profiles up to 30a can be configured, reaching fiber-like downstream and upstream rates. Vectoring ready and profile 8 2-pair bonding.

DEFAULT CONFIGURATION

LED Indicators

- PWR/Ready
- ISDN (1-4)
- FXS (1-4)
- ETH0 (1-4)
- ETH1
- Wi-Fi
- xDSL Line/ Internet

Physical Interfaces

- 4-port FXS with RJ-11connectors
- 4-port ISDN-BRI with RJ-45 connectors
- 4-port 10/100bT Ethernet switch with RJ-45 connectors (Eth0)
- 1-port 10/100bT Ethernet with RJ-45 connectors (Eth1)
- Sync IN/OUT ports with 2 Stereo Jack 3,5 mm connectors
- 1-port Compact Flash
- 1-port console with MiniDIN 8P connector

Voice Interfaces

- FXS
 - Compliant to Q.552 requirements
 - Port impedance: real 600Ω or complex Euro values
 - Low distortion ringing voltages
 - Diagnostic features
- ISDN-BRI
 - 2-port NT + 2-port NT/TE
 - Fully compliant to L1 standards (ETSI ETS 300 012)
 - PP and PMP configuration

Voice Processing

- Voice Codes
 - ITU-T G.711 (A-law, μ-law)
 - ITU-T G.729a (Factory Setup Option)
 - Transparent pass-through
- ITU-T G.165/G.168 echo cancellation
- Voice Activity Detection and Comfort Noise Generation
- RTP/RTCP (RFC1889)
- 8 Voice Channels VoIP

Signalling

- Euro ISDN EDSS-1 / ETSI BRI/NET3
- ETS 300 125 (ITU-T Q.921)
- ETS 300 102-1 (ITU-T Q.931)
- Q-SIG (PSS-1)

- SIP 2.0 according to RFC 3261 (TCP or UDP transport)
- En-block and Overlap sending
- ISDN speech, audio and data (Fax Gr 4, UDI 64, RDI 64)
- DTMF detection and carrying (RFC2833), DTMF info
- Local Generation of
 - Dial tone
 - Ring back tone (180 Ringing reply)
 - Call Waiting tone- Busy tone
 - Fast Busy tone

Fax and Modem Support

- T.38 fax relay
- Automatic G.711 Fax and Modem Pass-Through

Supplementary Services¹

- Locally managed² or Softswitch-based
 - Call hold
 - Consultation call
 - Call waiting
 - Call forwarding
 - Caller Identity Presentation (CLIP), DTMF and FSK based
 - Identity restriction
 - Call transfer
 - 3party conference (FXS only)
 - MSN

DDI Bundle

- GNR Management
- Multi-port to one number association and vice versa
- Multi-port to multi-number range association

IP Functions

- IP Routing
 - RIP v1/v1c/ v2, BGP, OSPF
 - Enhanced Network Address and Port Translation (NAPT) engine, with multiple ALGs (including SIP, TFTP and H.323)
 - DHCP Server/Client/Relay, DHCP Learning
 - Multicast IGMP v1/v2/v3, PIM-SM, Static
- Routing Filtering Redistribution
- Firewalling
 - Extended Access Lists
 - Stateful Packet Inspection including Denial of Service attacks
- IP Services
 - DNS proxy
 - DDNS client

- VPN (GRE, IP, PPTP server/client)
- IPsec with DES, 3DES and AES
- ICMP, IGMP snooping, Telnet, TFTP
- Layer 3 QoS according to DiffServ model (RFC2474, RFC2475)
- Priority based queuing (Absolute Priority, WFQ, RED)
- Extensive monitoring, tracing and troubleshooting facilities

IP PBX Features

- Analog, DECT and SIP extensions
- Call Hold, Park, Transfer, Waiting, Barring, Pick Up and Forwarding (Unconditional, On Busy, NoAnswer)
- Time Profiles, Hunt Groups
- Interactive Voice Response (IVR)
- Voice Mail
- Speed dials

Ethernet Services

- Self Learning Bridge with up to 1k MAC addresses and automatic ageing
- Full-Duplex IEEE 802.3x
- Half-Duplex back pressure flow control
- Automatic MDI/MDI-X crossover
- Broadcast/Multicast storm protection
- VLANs (802.1Q and 802.1p) port based management
 - Tag/Re-Tag/Untag
 - Trunking (VLAN multiplexing)
 - Priority based queuing

ATM

- Services
 - Up to 8 VCCs
 - Class of Services (CBR, VRB-rt, VBR-nrt, UBR+, UBR)
 - Voice and Data packets over different VCCs (VC bundling)
 - Selective CLP marking
 - F4/F5 OAM cells, AIS and RDI
 - ATM: ITU T-I.361, ITU T-I363.5, ITU T-I432, ITU T1610, ITU T-I731
- Access protocols
 - IP over AAL-5, Ethernet over AAL-5 (RFC2684)
 - PPP over AAL-5 (RFC2364)
 - PPP over Ethernet (RFC2516)
 - LLC/SNAP and VC encapsulation
 - Multiprotocol Interconnect over Frame Relay (RFC1490 Bridged, RFC1490 Routed)

Authentication

- PAP/CHAP/MS-CHAPv1 and v2 authentication
- Basic and Digest schemes (RFC2617)

Service Resiliency

- ISDN backup
- VRRP (RFC2338)
- Dial on Demand Routing

Management & Configuration

- Password Protected Access
 - 2 login levels + configurable privilege access right
 - AAA and local authentication
 - TACACS+
- Local Management
 - Console port
 - Extensive CLI
- Remote Management
 - CLI (internal Telnet Server)
 - HTTP (embedded WEB Server)
 - HTTPS (embedded Secure HTTP WEB Server)
 - SNMP Agent (v1, v2c, v3)
 - SSH
 - Syslog
 - Network Performance Monitor
 - Ping MIB
 - TR-069*
- Firmware upgrades: Local and Remote (TFTP & FTP client embedded)

Ethernet OAM functionality

- Link Layer OAM (IEEE 802.3ah OAM)
- Service Layer OAM (IEEE 802.1ag)
- Connectivity Fault Management
- ITU-T Y.1731 Performance Monitoring

Environment

- Operating Temperature: -5° ÷ 45°C (23° ÷ 113°F)
- Non-Operating Temperature: -40° ÷ 70°C (-40° ÷ 158°F)
- Operating Humidity: 10 ÷ 93% (noncondensing)

Compliance & Approvals

- Storage: ETSI EN 300 019-2-1 T 1.3
- Transportation: ETSI EN 300 019-2-2 T 2.3
- Operating Conditions: ETSI EN 300 019-2-3 T 3.2

- EMC: EN 55022, EN 55024, EN 61000-3-2, EN 61000-3-3
- Protection: ITU-T K.21
- Safety: EN 60950-1

Power

- External power supply
- AC input voltage: 100-240 Vac
- AC input frequency: 50/60 Hz
- AC input current: 0.50-0.25 A

Ethernet OAM functionality

- Link Layer OAM (IEEE 802.3ah OAM)
- Service Layer OAM (IEEE 802.1ag Connectivity Fault Management)
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ADDITIONAL MODULES FOR FACTORY CONFIGURATION

WiFi Interface

- IEEE 802.11b/g/n
- WEP encryption (64/128-bit)
- WPA1 and WPA2
- IEEE 802.1x authentication
- MAC filtering

VDSL2/ADSL2+ Network Interface

- VDSL2 backward compatible with ADSL2/2+ interface
- VDSL2 interface
 - ITU-T G.993.2
 - Profiles: 8a, 8b, 8c, 8d, 12a, 12b, 17a, 30a
 - Vectoring ready
 - Profile 8 2-pair bonding
 - DELT
- ADSL2/2+ interface
 - ITU-T G.992.1 Annex A (ADSL1)
 - ITU-T G.992.3 Annex A (ADSL2)
 - ITU-T G.992.5 Annex A (ADSL2+)
 - ITU-T G.992.3 Annex L (ADSL2+)
 - T1.413
 - Downstream line rate: up to 24 Mbps
 - Upstream line rate: up to 1 Mbps, up to 3.5 Mbps with Annex M

ShDSL Network Interfaces

- 4-pair ShDSL.bis interface, ATM/EFM support
- ETSI TS 101 524,
- ITU G.991.2 Annex A
- ITU G.991.2 Annex B
- ITU G.991.2 Annex F
- ITU G.991.2 Annex G
- IEEE 802.3ah EFM
- Line rate up from 72 kbps to 22800 kbps

Frame Relay on V/X

- QoS Management
- FRF.12
- LMI: Q.933a, T1.617
- Multiprotocol over Frame Relay (RFC1490)
- DLCI bundling

Models

Model	WAN Ifc			LAN Ifc	
	Eth1	VDSL2 ADSL2+	ShDSL	Eth0	WiFi
SV6044	✓	-	-	✓	Opt.
SV6044V	✓	✓	-	✓	Opt.
SV6044V2	✓	✓	-	✓	Opt.
SV6044S	✓	-	✓	✓	Opt.
SV6044-VX	✓	-	-	✓	Opt.

Notes

1 Supplementary Services management is not yet fully standardised by international bodies and their implementation could be subject to revisions

2 Depending on the specific service, a common implementation between the IAD and the Softswitch needs to be agreed

*TR-069 available under license