

# BG8544E

## INTEGRATED ACCESS DEVICES



### Ultra-broadband Vplus Fixed and Mobile Access Routers

Aethra Telecommunications BG8544E Series routers and integrated access devices, support the new VDSL2 35b profile, granting ultra-broadband speeds up to 300Mbps and 600Mbps in bonding.

All the configurations include also a combo GE / SFP WAN interface for FTTH connectivity and, on selected models, mobile WAN with 3G / LTE for hybrid access.

### Enterprise Class Business Features

BG8544E Series routers and integrated access devices support

enterprise grade features (advanced routing and QoS, VRF-Lite...) and traffic acceleration with sustainable throughput with active services.

### Integrated Analog and ISDN Voice Gateway

BG8544E Series include data-only routers and integrated access devices with analog and mixed analog / ISDN BRI voice ports.

BG Series	WAN	VDSL2 35b BONDING	LAN	WiFi b/g/n	WiFi ac	FXS	BRI	VOICE CHANNELS	LTE	USB
<b>BG8500EW</b>	VDSL2 35b A / VDSL2 GbE / SFP	-	4 x GbE	✓	-	-	-	-	-	1
<b>BG8500ELW</b>	VDSL2 35b A / VDSL2 GbE / SFP	-	4 x GbE	✓	-	-	-	-	✓	1
<b>BG8500E2W</b>	VDSL2 35b A / VDSL2 GbE / SFP	✓	4 x GbE	✓	-	-	-	-	-	1
<b>BG8520EW</b>	VDSL2 35b A / VDSL2 GbE / SFP	-	4 x GbE	✓	-	2	0	4	-	1
<b>BG8520EWAC</b>	VDSL2 35b A / VDSL2 GbE / SFP	-	4 x GbE	✓	✓	2	0	4	-	1
<b>BG8542EW</b>	VDSL2 35b A / VDSL2 GbE / SFP	-	4 x GbE	✓	-	4	2	8	-	1
<b>BG8544EW</b>	VDSL2 35b A / VDSL2 GbE / SFP	-	4 x GbE	✓	-	4	4	8	-	1
<b>BG8544EWAC</b>	VDSL2 35b A / VDSL2 GbE / SFP	-	4 x GbE	✓	✓	4	4	8	-	1
<b>BG8544ELW</b>	VDSL2 35b A / VDSL2 GbE / SFP	-	4 x GbE	✓	-	4	4	8	✓	1

**Table 1: Aethra Telecommunications BG8544E Series Configurations.**

## Up to 300Mbps with VDSL2 35b and 600Mbps with VDSL2 35b Bonding

Aethra Telecommunications BG8544E Series Routers and Integrated Access Devices support the new VDSL2 35b Profile, enabling the fastest bandwidth available for a business solution in FTTC architectures.

VDSL2 profile 35b grants services reaching up to 300Mbps and now, thanks to VDSL2 35b bonding, downstream speeds can reach up to 600Mbps.

## Fixed and Mobile WAN Ultra-Broadband Connectivity

BG544E Series access devices all include a gigabit combo (SFP / electrical) WAN port so that the same router / IAD can be used for both FTTC and FTTH customers.

Together with the fixed WAN interfaces, the LTE option provide mobile connectivity that can be used as backup and/or a second active WAN in hybrid access scenarios.

## Embedded Sessions Border Controller (SBC) Lite

SBC Lite is a software option available in the Aethra Telecommunications Routers and Integrated Access Devices which helps Service Providers keep their voice networks separated from the end user networks. SBC Lite guarantees both easy interoperability and security: the end user IP PBX is connected to the SBC Lite only, which takes care of managing the connection with the voice network.

All the SIP network credentials are stored in the Access Router and do not need to be communicated to the end user; the IP PBX SIP trunks are connected to the Access Router which will manage the connection towards the Service Provider Voice Network.

When a call is initiated either from the network or from the customer IP PBX, the call signalling is manipulated and the codec list is filtered in order to prevent calls to be established using unallowed codecs.

## BG8544E Series Routers and IADs Fixed Access Configurations.

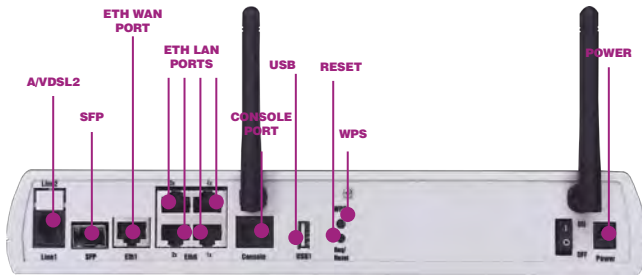


Figure 1: Aethra Telecommunications BG8500EW.

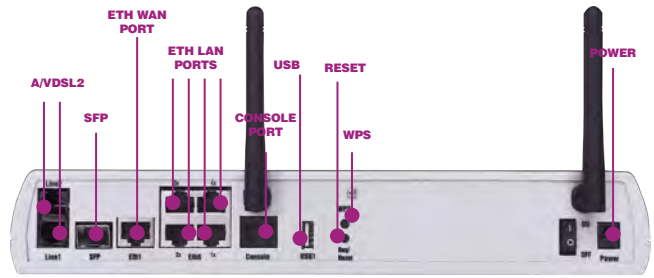


Figure 2: Aethra Telecommunications BG8500E2W.

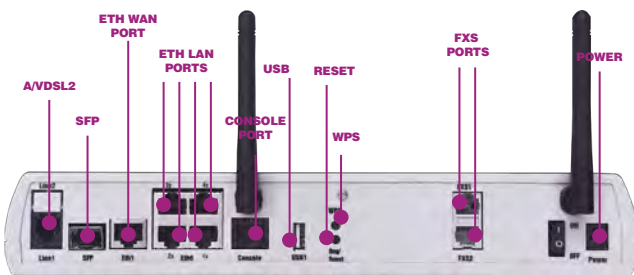


Figure 3: Aethra Telecommunications BG8520EW / BG8520EWAC.

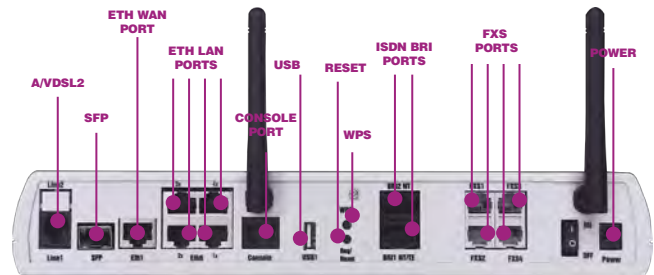


Figure 4: Aethra Telecommunications BG8542EW.

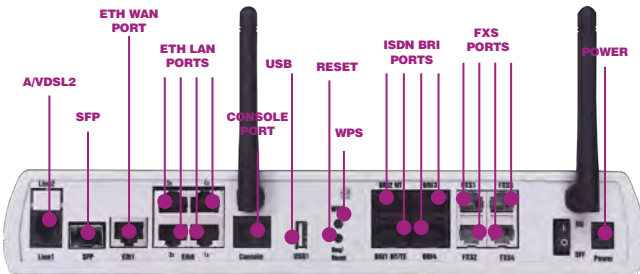


Figure 5: Aethra Telecommunications BG8544EW / BG8544EWAC.

## BG8544E Series Routers and IADs Hybrid Access Configurations.

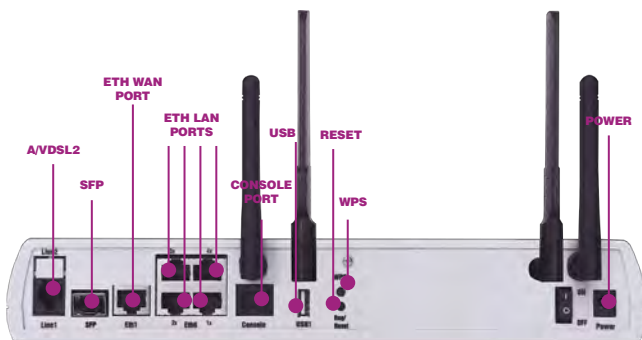


Figure 6: Aethra Telecommunications BG8500ELW.

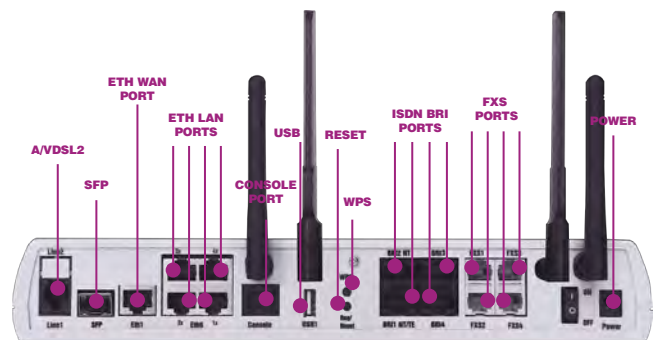


Figure 7: Aethra Telecommunications BG8544ELW.

## TECHNICAL SPECIFICATIONS

### LED Indicators

- POWER
- FXS
- ISDN
- USB
- ETH0
- ETH1
- Wi-Fi
- INTERNET
- LINE

### Physical Interfaces

- 1 or 2-port A/VDSL2 with RJ-11 connector
- 1-port GbE with RJ-45 and SFP connectors (Eth1)
- 4-port GbE switch with RJ-45 connectors (Eth0)
- 1-port console with RJ45 connector
- 1-host USB
- 4-port ISDN-BRI with RJ-45 connectors
- 2 or 4-port FXS with RJ-11 connectors

### VDSL2/ADSL2+ Network Interface

- VDSL2 interface
- support for profile 35b (Vplus - EVDSL)
- backward compatible with ADSL2/2+
- ITU-T G.993.2
- Profiles: 8a, 8b, 8c, 8d, 12a, 12b, 17a, 30a, 35b
- Full Vectoring
- Profile 17a, 30a and 35b 2-pair bonding
- DELT
- ADSL2/2+ interface
- ITU-T G.992.1 Annex A, B<sup>(9)</sup>
- ITU-T G.992.3 Annex A, B, J, L, M<sup>(9)</sup>
- ITU-T G.992.5 Annex A, B, J, L, M<sup>(9)</sup>
- T1.413
- Downstream line rate: up to 24 Mbps
- Upstream line rate: up to 1 Mbps, up to 3.5 Mbps with Annex M

### Mobile WAN Interface

- LTE (FDD) B1/B2/B3/B5/B7/B8/B20
- DC-HSPA+/HSPA+/HSPA/UMTS dual-band B1/B2/B5/B8
- EDGE/ GPRS/ GSM quad-band 850/900/1800/1900 MHz
- Data Transfer Rate
- DC-HSPA+ :Downlink:42 Mbps, Uplink: 5.76 Mbps
- LTE FDD: Downlink:100 Mbps, Uplink: 20 Mbps @Bandwidth 20M (CAT3)

### ATM

- Services
- Up to 8 VCCs
- Class of Services (CBR, VRB-rt, VBR-rt, UBR+, UBR)
- Voice and Data packets over different VCCs (VC bundling)
- Selective CLP marking
- F4/F5 OAM cells, AIS and RDI
- ATM: ITU T-1.361, ITU T-1363.5, ITU T-1432, ITU T1610, ITU T-1731
- 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)

### WiFi Interface

- IEEE 802.11b/g/n
- IEEE 802.11ac (factory option)

- WEP encryption
- WPA1 and WPA2
- IEEE 802.1x authentication
- MAC filtering

### Voice Interfaces

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

### SBC-Lite

- Session Border Controller Lite
- Inbound and Outbound calls codec manipulation
- Customer and Provider networks separation

### 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)
- Up to 8 Voice Channels VoIP

### Signalling

- Euro ISDN EDSS-1
- ETS 300 125 (ITU-T Q.921)
- ETS 300 102-1 (ITU-T Q.931)
- SIP 2.0 according to RFC 3261 (TCP or UDP transport)
- En-block and Overlap sending
- ISDN speech, audio and data (Fax Gr 2/3)
- 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 Services<sup>(9)</sup>

- Locally managed<sup>(9)</sup> 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
- VRF-Lite

- 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

- IP Multipath Balancer

- 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, Easy-VPN client, DMVPM client)

- IPSec with DES, 3DES and AES

- ICMP, IGMP snooping, Telnet, TFTP

- Layer 3 QoS according to DiffServ manipulation (RFC2474, RFC2475)

- Priority based queuing (Absolute Priority, WFQ, RED)

- Extensive monitoring, tracing and troubleshooting facilities

### 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

### 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<sup>(9)</sup>

- 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
- SAM according to ITU-T Y.1564

### PCI DSS 2.0 Compliance

Aethra Telecommunications Routers and Integrated Access Devices include high-end security features that can be used to help businesses ensure that all the payment data and transaction are protected according to the specifications of the Payment Card Industry (PCI) Data Security Standard.

Please refer to the "PCI DSS 2.0 Compliance with Aethra Telecommunications Routers and Integrated Access Devices" white paper to understand how to use BG Series Integrated Access Devices to help secure the access portion of the network in order to achieve PCI DSS Compliance.

### 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

### Physical Dimensions

- 283mm x 175mm x 47mm

### Weight

- 720g

### Power

- External power supply
- AC input voltage: 100-240 Vac
- AC input frequency: 50/60 Hz
- AC input current: max 0,65A

### NOTES

<sup>(9)</sup>Supplementary Services management is not yet fully standardised by international bodies and their implementation could be subject to revisions

<sup>(9)</sup>Depending on the specific service, a common implementation between the IAD and the Softswitch needs to be agreed

<sup>(9)</sup>TR-069 available under license

<sup>(9)</sup>For Annex B and Annex J support please contact your sales representative

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