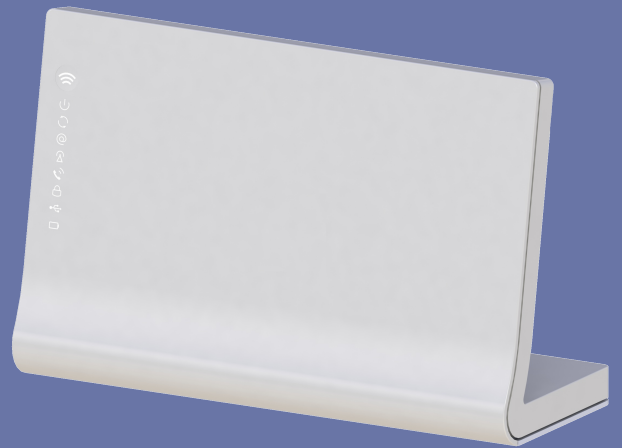


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# Oxygen *multiGateway* series



VDSL, 4G/5G, Fiber, SFP or Ethernet WAN  
Ethernet Switch LAN  
VoIP with IP-PBX functionality  
FXS, BRI Voice Interfaces  
DECT base-station  
WiFi 802.11n/ac dual-band or 802.11ax  
USB Host  
Firewall, VPN server/client  
Embedded Smart Battery  
PoE for VoIP Phones

Oxygen *multiGateway* is the total solution for a residential or SOHO broadband access network. Innovative, flexible and powerful, it provides all the functionality required for advanced NGN services.

Combining on the same platform:

- **802.11n/ac or the new, faster and more reliable 802.11ax WiFi standard with multiple antennas for better reception**
- **High speed Copper, Fiber or 4G/5G broadband access**
- **Embedded IP-PBX with support for external VoIP phones**
- **DECT base-station for multiple handsets**
- **1 or 2 USB 2.0 Host (master) ports for network file and printer sharing, and also for 4G/5G WAN connectivity**

the Oxygen *multiGateway* is a high-end Integrated Access Device that offers not only the features and performance needed for today's broadband communications, but also the flexibility and expansibility required in order to meet future operator needs for new services.

Based on the Linux OS, the device is a future-proof design with



increased CPU and memory capacities and with different choices for WAN access technology. The embedded IP-PBX with the DECT base-station and the advanced QoS policies enable full transition from TDM to VoIP telephony, with the simultaneous use of analog phones and fax machines, DECT handsets, Ethernet (optionally with PoE) and WiFi VoIP phones. All these, with very easy setup and minimal configuration by the end-user, thanks to the zero-touch mechanisms and the powerful remote management system of the

## Technical Specifications

### Network Interfaces

#### WAN

- 1 x VDSL1, VDSL2, VDSL2-Vplus
  - G.993.2 (VDSL2), G.993.1-2004 (VDSL)
  - G.INP (G.998.4), ANSI T1.424-2004
  - ETSI TS 101 270-1 and TS 101 270-2
  - G.992.x (auto ADSL2+, ADSL2, ADSL fallback)
  - 8a, 8b, 8c, 8d, 12a, 12b, 17a, 30a, 35b, G.fast\*
  - **Option:** VDSL over Coax
  - **Option:** VDSL Bonding (G.998.2, T1.427.02)
  - **Option:** Remote Power Feed (19Watt max on output connector)
- and/or
- 1 x 10/100/1000/2500/10000 BaseT, Auto-MDIX
- and/or
- 1 x GPON G.983.1/2/3/4/5, G.984.1/2/3/4, 2.5/1.24Gbps, 1490/1310nm +
  - 1 x CATV 75Ω interface 1550-1560nm
- and/or
- 1 x SFP slot for FTTH (Ethernet, GPON, G.fast)
- and/or
- 1 x internal LTE/HSPA+ module, Cat.4 or Cat.6 or Cat.12 - GPRS/EDGE/HSPA+/DC-HSPA+/LTE
- and/or
- 1 x internal 5G/LTE/HSPA+ module

#### LAN

- 4 x Ethernet ports (10/100/1000 BaseT, Auto-MDIX) with 802.3af PoE (optional)
- 802.11b/g/n 2.4GHz MIMO (2x2 or 3x3 or 4x4)
- 802.11ac 5GHz MIMO (2x2 or 3x3 or 4x4)
- or
- 802.11ax 2.4/5GHz MIMO (2x2 or 4x4)
- WiFi on/off switch, WPS button
- 1/2 x USB Host (master) interfaces (optional)
- Option to use one LAN Ethernet port as WAN

#### Voice

- 1/2/4 x FXS phone ports, (optional)
- 5 REN, ringing voltage: min 42 V rms (sine)
- Maximum loop length: > 100m
- Software configured impedance, loop voltage, loop current, ringing frequency
- 1 x FXO PSTN port (optional)
- 1/2 x ISDN BRI, progr. NT or TE mode (optional)
- ISDN external synchronization port (optional)
- ISDN power feeding 1/2W (optional)
- DECT support for up to 6 handsets (optional)

#### Routing/Bridging

- RFC 2364 PPPoA, RFC 2684 MPoA, RFC 1577 Classical IPoA, RFC 2516 PPPoE
- 8 Virtual Circuits, UBR, VBR-rt, VBR-nrt, CBR
- Per-PVC/VLAN Queuing and Traffic Shaping
- PVC/VLAN-to-Service mapping support
- 802.1d bridging, 802.1q VLAN, Private VLANs
- RIP v1/v2, OSPF\*, BGP\*, Static Routing

- DHCP Client/Server/Relay
- SNTP Client/Server
- IPv6 support (dual-stack, DS-lite, MAP-T, MAP-E)
- NAT, PAT and DNS relay agent
- IGMP v1/2/3, proxy, snooping
- IP QoS (ToS/DSCP), Ethernet QoS (802.1p/q CoS)
- Q.ueuing, rate limitation, fragmentation
- Low latency handling of VoIP/Video services
- Multihoming, Load-balancing, 3G/4G backup
- Dynamic DNS
- Multiple WLAN SSIDs, WLAN Captive Portal
- Radius Server, VRRP
- PPP Server / Proxy

#### Telephony Options

##### Embedded IP-PBX

- SIP, H.323 (optional), MGCP (optional)
- Full IP-PBX functionality
- Individual number per FXS port & DECT handset
- Automatic provisioning of external VoIP phones
- Automatic fallback to PSTN/ISDN/3G/4G upon WAN or VoIP service failure
- SIP Trunking, Media Gateway functionality

##### Smart Battery Backup > 1h operation (optional)

#### Speech Coders

- G.711 A-law & u-law, G.726-32\*, GSM\*, G.729ab\*, G.723.1\*, G.722\*
- Packet Loss Concealment, VAD / CNG
- Adaptive Dynamic Jitter Buffer
- G.168, variable tail length echo cancellation
- Fax/modem tone detection & codec switching
- G.711 pass-through, T.38 fax-relay

#### DTMF support

- According to ETSI ES 201235-3
- RFC 2833 / RFC 2976 relay

#### Supplementary services

- Country specific tones and suppl. service codes
- Call Forward (Unconditional, Busy, No Answer)
- Call Hold, Call Waiting, Call Park
- Message Waiting Indication (with LED)
- Call Transfer (Blind, with Consultation)
- 3-Party Call
- Anonymous Call Block, Black List, DND
- CLIP (DTMF and FSK), CLIR
- Line Hunting, Hunt Groups
- Voice Prompts
- Advice of Charge (FXS 12/16KHz, ISDN AOC)
- RFC 4040, Unrestricted Digital ISDN Call

#### Dial-plan

- Web based control of call-routing
- Abbreviated-Dialing (Speed-Dialing) numbers
- Call Detail Records (CDR)

- MSN / DDI / IVR support
- Built in answering machine (optional)
- Unified Voice Mail: e-mail, wav-format (optional)
- Emergency call routing
- PIN for call access-control

#### Security

- Enhanced policy-based and SPI firewall
- Standard and Extended Access Lists
- URL Filter, Virtual Server, DMZ
- MAC filtering
- VPN IPSec\*, TLS/SSL OpenVPN, L2TP, L2TPv3\*, PPTP\*, GRE, VPN pass-through
- WLAN: WEP 64/128-bit, WPA, WPA2, 802.1x, WPS

#### Management

- DSL Forum TR-069, TR-098, TR-104, TR-181
- Multilevel Web-based graphical user interface
- SSH/Telnet remote access to CLI
- SNMP v1/2c/3
- ATM F4&F5 OAM
- Automatic LAN device detection and provision
- Diagnostic and performance monitoring
- Connection test (end-user), ping, traceroute
- Local management through telephone
- Remote management through SMS\*
- E-mail / SMS alerts
- Syslog with network support
- Packet capturing (sniffer)
- Configuration backup and restore
- Zero-touch deployment mechanism
- Automatic remote firmware upgrades
- Dual firmware image support
- WiFi Protected Setup (WPS), WDS
- UPnP IGD, NAT-PMP
- Wake on LAN
- Time-of-day Schedule, Patental control

#### USB Services

- Print Server support
- File Server support (FTP, SMB/CIFS)
- UPnP Media Server support
- Data-backup through external LTE modem

#### Additional specifications

- Flash/RAM: 128-512MB / 128-256MB
- Functional LED indicators
- Power and WiFi on/off switch, Factory reset pin
- Embedded 802.3af PoE module (optional)
- External power adaptor: 12V DC, 1 or 1.5A / 90-240V AC, 50-60Hz
- Temperature: 0 to 40°C (oper.), -20 to 70°C (stor.)
- Humidity (non-cond.): 10-90% (oper.), 5-95% (stor.)
- Dimensions: 212x137x81mm
- CE Mark, IEC 60950, EN 60950, K.21, RoHS
- ADSL: TR-67 / TR-100

(\*) Optional