

Ox-Bras

The cybersecurity Ethernet/IP Router for BMS

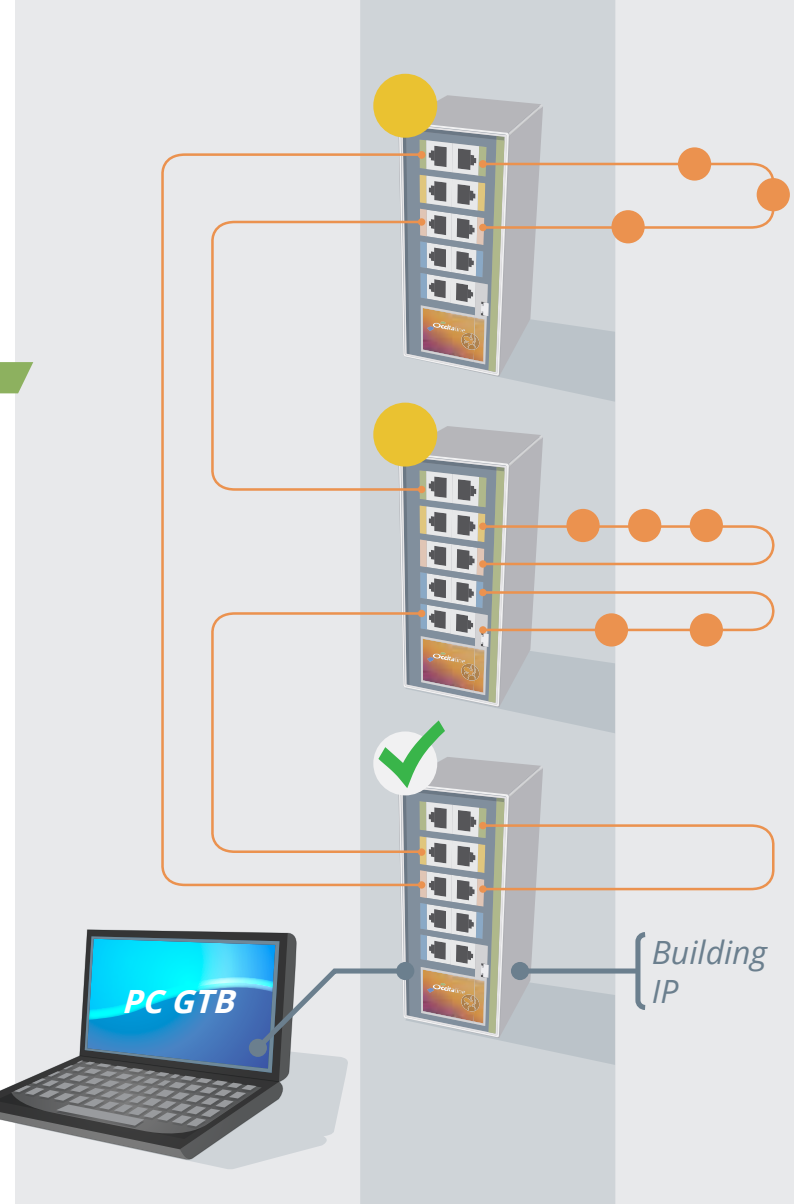
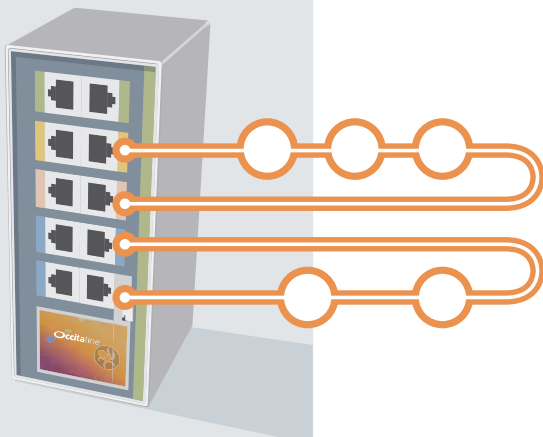
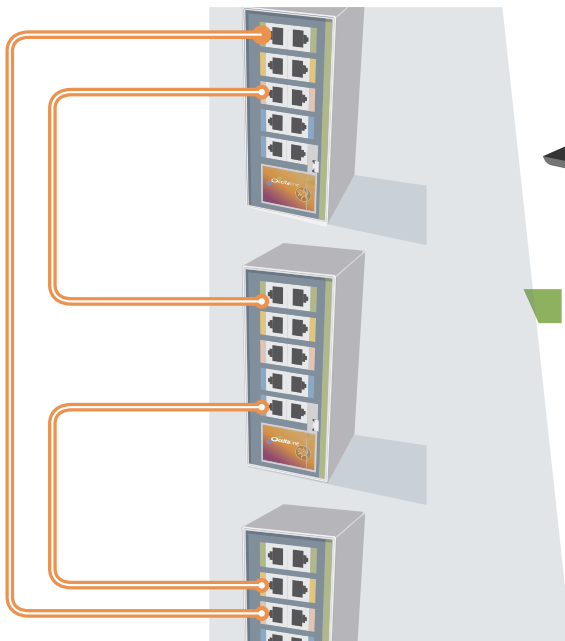


MANAGEABLE ROUTER FOR BMS

Ox-Bras router is a router that integrates an Ethernet/IP architecture. It offers installation security in IPV4 and IPV6 for new or renovation projects. It is located in the electrical cabinet or in a box near its use.

POWER

Ox-Bras is standard-equipped with **redundant powers**: AC or DC in 12V or 24V. Reduced consumption power of **12VA** in addition to the non-ventilated housing, which enables Ox-Bras to be both efficient and silent.



CONNECTORS AND WIRING

Ox-Bras can be both used as the backbone of your IP network or integrated into an existing architecture with market-standard products. Wiring to the main loop can either be made by **RJ45** copper connectors or by **optical fiber** with a SFP transceiver.

Ox-Bras is better used in clusters in order to increase security and reliability.

EASY INSTALLATION / SETUP

Equipment installed on all floor loops are automatically scanned and addressed by one or two local **DHPC servers**. The **spanning tree** on floor loops is assuring a redundant communication. CSV import/export are available to identify each device, position it into the right topology and attribute a permanent/fixed IP address.

CONFIGURATION AND SETTINGS

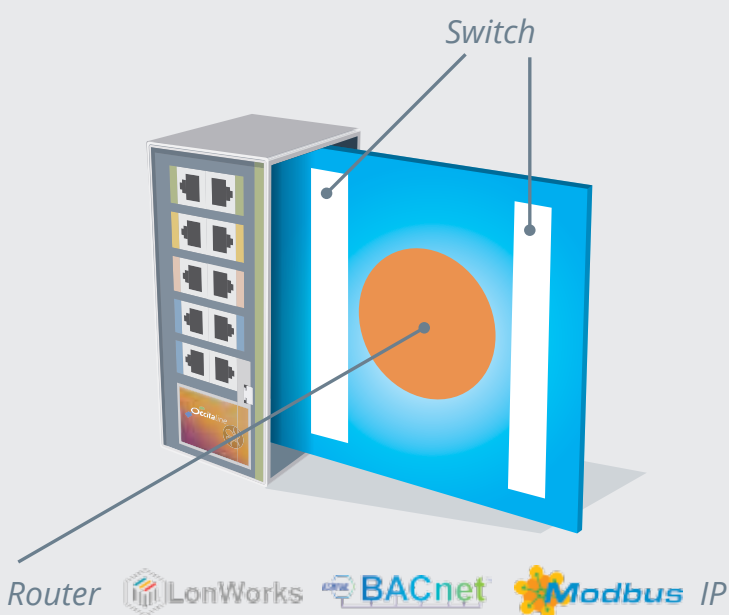
Configuration for setup is made through a Web Service page that can be disabled.
It is then **distributed to the cluster** in an **encrypted database** on which a router can be very quickly installed.

A **SSH console** is also available.

RELIABILITY AND REDUNDANCY

Some **IT or BMS services are more sensitive** than others, such as routing tables, VPN server or Config server. In the event of one of them disappearance, the whole installation goes down.

In the cluster, these services are **“floating”** so that when the master is unavailable, the Ox-Bras of lower priority rank takes the lead.



SECURITY

Support of 802.1X protocol for access control integrated in Ox-Bras focuses **especially on security**.

VLAN management is secured by 802.1Q protocol support. The “trunk” mode is available on the building network and filtering is made by MAC addresses for floor equipment that are not handling 802.1Q protocol.

A **tactile TFT colour screen** informs about Ox-Bras cluster status. General status is synthetized by pictograms and coloured keys:

• Configured and safe	☀️	😊
• Permanently-all open	💀	😞
• Temporarily open	💀	😊
• Temporarily closed	💣	😊
• Closed, awaiting for confirmation	🔔	😞

All bugs are recorded locally or on a remote “Syslog” server for future analysis.

The NFC chip located at the rear of the screen ensured an increased authentication and a dialog canal between Ox-Bras and portable devices to activate or deactivate services.

DIAGNOSIS

SNMP protocol provides status data about Ox-Bras and BMS devices installed on the network, as well as the main alarms and alerts. Bandwidth indicators for each BMS protocol are shown.

After the scanning of devices on each floor loop, modules are **cyclically tested**. According to each BMS protocol supported by each device, it is possible to control validity of **answers in Lon, BACnet, Modbus...** In order to set up and make advanced diagnosis, **“port forwarding”** for WireShark is available on Ox-Bras cluster.

MECHANICAL - ELECTRICAL	VALUE
Power	Double redundant 12 VDC and 24VAC
Consumption	12 VA
Polarity	Protected against inversion
Mounting	DIN rail
Protection	IP20
Weight	450g
Dimensions with connectors	H 175 x P 130 x L 57 mm
Use temperature	0 °C ~ 60°C
CPU- SECURITY	VALUE
CPU	Dual Core Cortex-A7 1GHz + Cortex M4 200MHz
Memories	512 Mo RAM + 8Go Flash
« Secure element »	Chip dedicated to certificates and encryption/decryption calculation
Algorithms	SHA-256 with option HMAC, ECDSA, ECDH, Standard-P256 NIST
Proxy Access	NFC
WIRING	VALUE
Copper connectors	8 ports RJ45 10/100/1000 with automatic detection
Fiber connectors	2 ports SFP 100Mb or 1000Mb depending on transceiver
Power	2 x 3-points connectors 12 VDC and 24VAC
Alarm	NOpen & NClose relay to signal defect 1A 24VDC
SERVICES	VALUE
Configuration	Web with deactivating HTTPS, SSH
Spanning tree	STP/RSTP/MST
Multicast Addressing	IGMP snooping
VLAN management	801.1Q, attribution by port, MAC address or 802.1X
Time setting	NTP
Addresses attribution	DHCP server by floor loop or by floor
Names management	DNS server on the cluster
Monitoring	SNMP V3 with oAuth



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