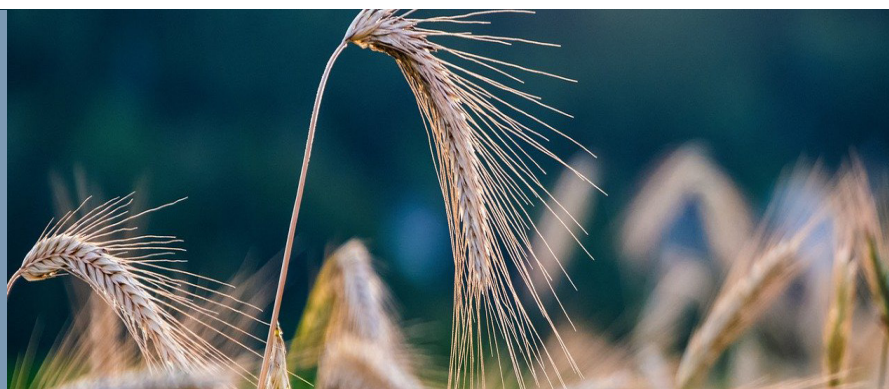


## DATASHEET

## 1646

*Fibre Ethernet Access Device*

The 1646 Ethernet Device (EAD) offers service providers a cost-effective MEF CE 2.0 compliant gigabit Ethernet access solution and enables them to offer managed Ethernet services to their business customers.



As Ethernet Demarcation Device it is possible to monitor and control Ethernet services end-to-end and to provide SLA reports. In addition to comprehensive layer-2 functionality the device also offers a layer-3 router implementation which makes it an ideal choice to deliver carrier Ethernet, Internet and IP services with one device. The equipment is interoperable with any standards-based carrier Ethernet equipment and can be integrated into any existing management environment.

## Fiber Access

The 1646 provides network operators the means to deliver advanced carrier Ethernet services to their business customers at minimal cost. Two Gigabit Ethernet Combo interfaces provide copper or fibre connectivity to the rest of the carrier Ethernet infrastructure and the 4-port GigE switch provides the interface to the user applications.

## Extensive Feature Set

At the heart of this platform is a high performance Ethernet switch/router incorporating advanced Layer 2 and Layer 3 forwarding, security and Quality of Service capabilities as standard. The software-based switching and routing core offers a very high degree of flexibility when compared to hardware-based designs in terms of features, software maintenance and upgrades.

## Metro Ethernet Services

As a demarcation device the unit delivers standard Metro Ethernet services E-Line, E-LAN, E-Tree and E-Access. For all these services, the 1646 is MEF CE 2.0 Compliant at 1 gigabit per second rate.

## OAM Monitoring

Monitoring quality and availability of every dataflow as part of the carrier Ethernet service gives a clear view on the status and the performance of the Ethernet service. The 1646 supports both point-to-point OAM monitoring (IEEE 802.3ah) and end-to-end performance monitoring (IEEE 802.1ag & ITU-T Y.1731) on all Ethernet interfaces.

## Accelerated Deployment and Service Provisioning

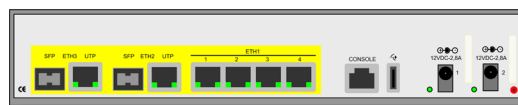
The OneAccess 1646 Fibre EAD can be integrated in any managed environment and supports all the common management interfaces such as SNMP, Telnet, SSH, HTTP and HTTPS. In addition to these interfaces a number of management tools are available to facilitate the integration of these access devices in a managed environment. These include:

- TMA GUI application
- A customisable Web-configuration utility
- A CLI for scripting and simple integration with provisioning and management systems
- Element and Inventory Management for control and monitoring of large access networks

## Quality Monitoring and Service Level Agreements

The 1646 keeps statistics of the last 15 minutes, 2 hours, 24 hours and 7 days. Selected statistics can be stored over a longer period on the device for later retrieval and processing on a management platform. Traffic quality monitoring provides all the information needed to offer Service Level Agreement reports to the customer.

# Technical Specifications



## Basic Hardware

- 2 GigE Ethernet Combo interfaces
- 4 port GigE switch
- 1 console port V.24/V.28 with RJ-45 connector
- USB port with support for LTE or 3G mobile Dongle

## Fibre Interfaces

- 2 Combo GigE interfaces
- 10/100/1000BASE-T
- 1000BASE-X and 100BASE-X SFP, GPON ready \*
- Physical parameter monitoring of SFP modules (MSA SFF-8472)

## Copper Ethernet Interfaces

- 4 port switch 10/100/1000BASE-T
- Half/full duplex with auto-sense, automatic cross-over
- Link status and activity LEDs

## USB Port

- USB 2.0 compliant
- Support for mobile USB devices

## MEF CE 2.0 Services

- E-LINE: Ethernet Private Line (EPL) and Ethernet Virtual Private Line (EVPL)
- E-LAN: Ethernet Private LAN (EP-LAN) and Ethernet Virtual Private LAN (EVP-LAN)
- E-TREE: Ethernet Private Tree (EP-TREE) and Ethernet Virtual Private Tree (EVP-TREE)
- E-ACCESS: Access Ethernet Private Line (ACCESS-EPL) and Access Virtual Private Line (ACCESS-EVPL)
- MEF CE 2.0 compliant at 1Gbps

## Layer-2 Functionality

- IEEE 802.1D Transparent Bridging
- 10K MAC addresses per bridge group
- IEEE 802.1D/W/S Spanning Tree Bridging
- IEEE 802.1Q VLAN Tagging - IEEE 802.1p QOS on Ethernet Levels
- Basic and extended MAC filtering
- Ethertype translation
- VLAN Switching
- Port-based VLANs
- Protection schemes: G.8031, Y.1731 APS, LAG/LACP, failover triggered by OAM events

## Operations and Maintenance (OAM)

- OAM IEEE 802.3 chapter 57 (for EFM operation)
- OAM IEEE 802.1 ag & ITU-T Y.1731
- Built-in traffic generator and analyser (RFC2544)
- Loopbacks on ports and virtual interfaces

## IP Functionality

- NAT/PAT
- DHCP client/relay/server, DNS server/relay
- Stateful Inspection Firewall
- IPsec native, GRE & L2TP

## IP Routing

- Static routing
- Policy based routing
- RIP v1 and v2, OSPF, BGP-4
- VRF (VPN Routing & Forwarding)
- VRRP (Virtual Router Redundancy Protocol)

## Quality of Service (QoS)

- Traffic Classification and Policing (inbound/outbound)
- Layer 2 classification based on MAC addresses/ranges, 802.1p, 802.1q, IP-TOS/DSCP, Ethertype (Protocol) and physical port
- Layer 3 classification based on IP addresses/ranges, IP-TOS/DSCP, Protocol
- Priority Queuing Layer 2 (8 levels, programmable)
- RED, WRED
- Traffic Shaping CIR/EIR
- Hierarchical queuing and shaping
- Queuing mechanisms: SP, RR, WFQ, LDWFQ

## Performance and Scalability

- 2.8 Mpps bridging and switching performance
- Hardware accelerated VLAN switching on LAN side
- 1 Gbps recommended WAN speed
- Number of IPSEC, L2TP or GRE tunnels: 25

## Technical Specifications

### Maintenance and Management Support

- Console port, CLI, Telnet, SSH
- Multilevel password protection, Radius/TACACS+ AAA
- HTTP, HTTPS, customised Web Interface
- FTP/TFTP upload/download configuration/firmware
- SNMPv1, v2, v3, MIB II, proprietary MIB
- Statistics 5min, 15min, 2h, 24h, 7 days
- IP traffic monitoring: roundtrip delay, jitter, loss
- Syslog, SNMP
- DHCP/BOOTP for automated provisioning
- PC-based maintenance tool
- Element management application
- Inventory management application
- Reset button

### Dimensions

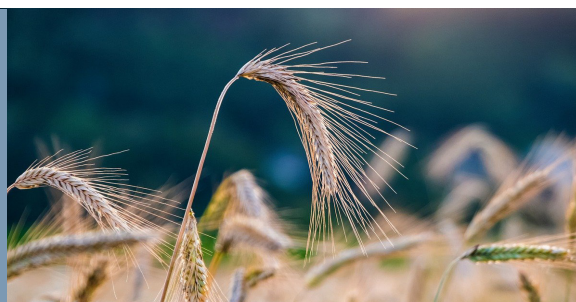
- Desktop, wall mountable, rack mountable
- W x H x D: 275 x 55 x 150 mm (2.75 x 2.16 x 5.9)
- Weight: 1.3 kg (2.86 lb)

### Power Supply

- External adapter 12V – 2.8A
- Voltage range: 90-264 Vac – 50/60 Hz
- Power consumption: <30 W
- Optional second power supply for redundancy
- Optional 24/48 Vdc powering

\* Contact Product Management for GPON availability

About



Ekinops is a leading provider of open and fully interoperable Layer 1, 2 and 3 solutions to service providers around the world. Our programmable and highly scalable solutions enable the fast, flexible and cost-effective deployment of new services for both high-speed, high-capacity optical transport networks and virtualization-enabled managed enterprise services

Our product portfolio consists of three highly complementary product and service sets: Ekinops360, OneAccess and Compose.

- Ekinops360 provides optical transport solutions for metro, regional and long-distance networks with WDM for high-capacity point-to-point, ring and optical mesh architectures, and OTN for improved bandwidth utilization and efficient multi-service aggregation.
- OneAccess offers a wide choice of physical and virtualized deployment options for Layer 2 and Layer 3 access network functions.
- Compose supports service providers in making their networks software-defined with a variety of software management tools and services, including the scalable SD-WAN Xpress.

As service providers embrace SDN and NFV deployment models, Ekinops enables future-proofed deployment today, enabling operators to seamlessly migrate to an open, virtualized delivery model at a time of their choosing.

A global organization, with operations in 4 continents; Ekinops (EKI) - a public company traded on the Euronext Paris exchange - is headquartered in Lannion, France, and Ekinops Corp., a wholly-owned subsidiary, is incorporated in the USA.

**EKINOPS360**  
Dynamic Optical Transport

 **COMPOSE**

**ONEACCESS**  
Fast Network Virtualization