ACCEED 1102 CPE
2 Wire Pairs SHDSL
Carrier Ethernet EFM CPE

- Ethernet over up to 2 bonded copper wire pairs
- Standard compliant IEEE 802.3ah EFM
- Sub 50ms Ethernet linear protection switching
- Rate adaptive SHDSL
- Network demarcation allowing SLA enforcement
- Ethernet services with guaranteed bandwidth per flow
- Standard Ethernet Link and Service OAM
- Built-in Service Activation Test
- Intuitive graphical configuration tool
- Zero Touch Provisioning

Product Overview
ACCEED 1102 CPE supports high speed symmetrical Carrier Ethernet services on bonded copper pairs connected to MSAN/DSLAM. Comprehensive traffic management at the user network interface (UNI) and integrated TDM CES interworking functions enable the implementation of high revenue services on every broadband platform.

Applications
ACCEED 1102 CPE focuses on the following applications:
- High Speed Business Access
- Network Demarcation for Wholesale Solutions
Copper Based Ethernet Services with Fiber Like Quality
EFMC-LR is based on established ITU/ETSI SHDSL technology, supporting reliable, spectral compatible and symmetrical bandwidth of 192 kbit/s to 15.3 Mbit/s per wire pair.
Using standard based EFM-bonding, ACCEED 1102 CPE can aggregate up to 2 wire pairs providing a maximum data rate of 30.6 Mbit/s.
EFM bonding offers the great flexibility to aggregate wire pairs each with a distinct bit rate with very low overhead and minimal latency added.

Compatibility
ACCEED 1102 CPE is interoperable with 3rd party MSAN and DSLAM equipment.

Carrier Grade Ethernet Services
Traffic aware switching with extended flow management allows providers to address the emerging market of premium voice and data services over Ethernet.
ACCEED 1102 CPE meets the requirements of CE 2.0 services defined by the MEF:
- E-Line
- E-LAN
- E-Tree
- E-Access

Ethernet Service Assurance
ACCEED 1102 CPE offers a set of standard based protocols and tools to support providers managing Ethernet services over the entire life-cycle. From provisioning to SLA performance monitoring and fault localizing, ACCEED allows operational staffs to ease their workload and increase their efficiency - thus considerably contributing to reducing operating costs.

Provisioning & Turn-up
- Use of configuration files, CLI scripts and Zero Touch Provisioning minimizes the installation effort by automating the configuration process.
- Built-in Y.1564 compliant Service Activation Test (SAT) enables operational costs to be reduced in verifying the SLA at turn-up. A comprehensive test report with all relevant parameters of multiple simultaneously tested services can be generated by a simple keystroke. No need to dispatch personnel and costly test equipment to the customer premises.

Performance Management
- Y.1731 based performance management continuously monitors SLA parameters such as frame loss, availability, frame delay and frame delay variation with micro-second accuracy and generates alarms if objective thresholds are violated, giving providers the opportunity to proactively take actions before the service is seriously degraded.
- Collection of statistics on physical, packet and service level as well as real time graphs monitoring service utilization. A tracking service performance to analyze network traffic and to certify SLA conformity.

Fault Management
- EFM multi pair bonding as well as Ethernet linear protection allow the implementation of resilient architectures minimizing the impact of faults on the service.
- Fault propagation (including AIS/RDI, Dying Gasp), link, port and service level alarms together with extensive localization tools such as continuity check, linktrace and loopback allow the fast location of faults to re-establish the service in case of failures.

Management
ACCEED 1102 CPE offers a rich variety of management implementations to fulfill the needs of each customer:
- Intuitive and easy to operate graphical management applications
- Standard compliant protocols
- Easy to integrate into 3rd party solutions
- Fully automated Zero Touch Provisioning
Access can be local and from remote via inband or dedicated DCN connection.
The set-up of SHDSL and EFM bonding group is fully managed by the MSAN/DSLAM equipment according to ITU-T G.991.2, G.994.1 and G.998.2.
- CLI console, Telnet and SSH
- Local Craft Terminal LCT+ (GUI)
- Syslog and SNMP traps
- DHCP, TFTP, SCP
- RADIUS client authentication
- Standard MIBs
- AccessIntegrator Management System
- MetroIntegrator Management System
Ethernet Features

Port control
- Flow Control, Auto MDI/MDI-X
- Link Failure Propagation (LFP)
- Multicast storm protection
- Broadcast storm protection
- L2CP list with possibility to tunnel/discard/peer
- L2PT layer 2 protocol tunneling for 3rd party compatibility

Switch control
- MAC table 16k, self-learning
- Number of MAC-Addresses learned configurable
- MAC table readout
- Aging enable/disable
- Aging time configurable

VLAN
- 802.1Q (VLAN)
  - 4095 C-VLAN/CE-VLANs
  - Port VID
- 802.1ad (Provider Bridge)
  - Provider/Service VID (S-VID)
  - Provider/Service Ethertype (S-TPID)
  - Multiple customer services (different C-VLANs to S-VLANs) on same customer port
- TR-101 VLAN manipulations
  - Inner/outer swap
  - 1:1 translation
  - N:1 service multiplexing
  - Port-based stacking
  - VLAN-based stacking/multiplexing

Classification
- Predefined criteria:
  - Ingress Port
  - Destination MAC-Address
  - Source MAC-Address
  - Ethertype (TPID)
  - VLAN-ID
  - VLAN Priority
  - Destination IP-Address
  - Source IP-Address
  - IP Priority (DSCP)
  - IP Datagram Protocol
  - TCP/UDP Destination Port
  - TCP/UDP Source Port

QoS/Policing
- Prioritization based on:
  - Ingress port
  - 802.1p (L2)
  - DSCP (L3)
  - Any other criteria (flow)
- Ingress and Egress Policies
- MEF10.2 Ethernet Services Attributes
  - Committed Information Rate (CIR)
  - Peak Information Rate (PIR)
  - Committed Burst Size (CBS)
  - Excess Burst Size (EBS)
  - Peak Burst Size (PBS)
  - Color mode (CM)
- Metering according to RFC2697, 2698 and 3290 with single or two rate three color marking
- 8 priority queues per egress port
- Per color queue size
- Hard QoS (guaranteed traffic profile)
- Strict priority (SP)
- Weighted fairness algorithms (WFQ, WRR, SDWRR)
- Per port shaping (rate and burst size)
- Per queue shaping (rate and burst size)
- Random early detection (RED)
- Flexible L2/L3 remarking
- Flexible traffic class assignment

Counters
- Per port packet and byte counters (RMON Etherstats)
- Per ingress and egress policy counters (packet or byte / per color)
- Transmit queue counters (packet or byte)
- Per service/CoS counters (EVC)
- History for all packet counters
Supported Standards

- MEF 9 Ethernet Services at the UNI (MEF 11, 13, 20)
- MEF 14 Traffic Management (MEF 6.1 / 6.1.1, 10.2 / 10.2.1, 23.1, 29)
- MEF 25 Service OAM (MEF 17, 30, 31, 35, 36)
- IEEE 802.3ah Ethernet in the First Mile (EFM)
- IEEE 802.3ah Ethernet Link OAM (LOAM)
- IEEE 802.1ag Connectivity Fault Management (CFM)
- ITU-T Y.1731 Service Layer OAM (SOAM)
- ITU-T Y.1564 Ethernet Service Activation Test
- IEEE 802.1D MAC Bridging
- IEEE 802.1Q VLAN Bridging
- IEEE 802.1v (VLAN Classification by Protocol and Port)
- IEEE 802.1ad Provider Bridging
- DSL Forum TR-101 Flexible VLAN handling
- IEEE 802.3i 10BASE-T
- IEEE 802.3u 100BASE-TX
- IEEE 802.3x Flow Control
- ETSI TS 101 524 SDSL
- ITU-T G.991.2 SHDSL
- ITU-T G.994.1 Handshake
- ITU-T G.998.2 Ethernet bonding
- ITU-T G.8031 Ethernet linear protection switching
- RFC 2865 RADIUS

Ordering Information

ACCEED 1102 CPE
- DT 2wp (Eth) S3118-H642-E401

Related Products

- ACCEED copper and fiber Ethernet Demarcation Devices (EDD)
- BSRU
- BSRU+
- AccessIntegrator (AcI)
- MetroIntegrator (MI)

Technical Data

Power (AC Adapter included)
- Input Voltage: 95 to 260 V_{AC}
- Input Frequency: 50/60 Hz

Power Consumption
- ≤7 W

Interfaces
- User Network Interface (UNI)
  - 1x RJ45 10/100BASE-T
- Management
  - 1x RJ45 Ethernet 100BASE-T
- EFM
  - 1x RJ45 / 2 copper wire pairs SHDSL.bis Line code TC-PAM 4/8/16/32/64/128
- Payload Bitrates
  - 192 kbit/s to 15.3 Mbit/s per wire pair
  - up to 30.6 Mbit/s with 2 wire pairs

Physical and Environment
- (W x H x D) 271 x 43.5 x 175 mm
- Operating Temperature: -5° C to +55° C at 5 to 95 % rel. humidity

Safety
- EN 60950-1 (2013)

EMC/EMF
- EN 300 386 V1.5.1 (2010)
- ES 201 468 V1.3.1 (2005)
- ITU-T K.45 (2011)
- EN 62479 (2010)

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