ACCEED 1102
2 Wire Pairs SHDSL

Carrier Ethernet CPE for MSAN/DSLAM and ULAF+ platform

- Ethernet over up to 2 bonded copper wire pairs
- Standard compliant IEEE 802.3ah EFM
- Sub 50ms Ethernet linear and ring protection switching
- Rate adaptive SHDSL
- Network demarcation allowing SLA enforcement
- Ethernet services with guaranteed bandwidth per flow
- Non blocking line rate switching
- Integrated CES interworking function
- E1 interfaces to support legacy customer equipment
- Synchronization with 2048 kbit/s, 2048 kHz and SHDSL symbol clock
- Standard Ethernet Link and Service OAM
- 3.3ms CCM intervals
- Built-in Y1564 Service Activation Test
- Intuitive graphical configuration tool
- Zero Touch Provisioning

Product Overview
ACCEED 1102 supports high speed symmetric Carrier Ethernet services on bonded copper pairs connected to MSAN/DSLAM or and ULAF+ platform.

Comprehensive traffic management at the user network interfaces (UNI) and integrated E1 CES interworking functions enable the implementation of high revenue services on every broadband platform.

Applications
ACCEED 1102 focuses on the following applications:
- High Speed Business Access
- Network Demarcation for Wholesale Solutions
- Reliable Mobile Backhaul
- Business Access for Rural Areas
- Utility 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 services of 192 kbit/s to 15.3 Mbit/s per wire pair.
Using standard based EFM-bonding, ACCEED 1102 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 is interoperable with MSAN and DSLAM equipment of major suppliers as well as ACCEED 1416, 1104 and 1102.

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 supports the complete set of CE 2.0 services defined by the MEF: E-Line, E-LAN, E-Tree and E-Access.

Support of E1 Legacy Services
ACCEED 1102 features E1 ports giving the possibility to connect legacy TDM customer equipment. This allows a successful migration to full Carrier Ethernet.
The integrated pseudo wire interworking function supports Structure Agnostic (SAToP) and Structure Aware (CESoPSN) payload encapsulated in Ethernet or MPLS PWE3 protocols.

Ethernet Service Assurance
ACCEED 1102 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 operation staffs to ease their work 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) allows to cut operational costs to verify 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 personal 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 microsecond accuracy and generates alarms if Objective Thresholds are violated, giving providers the possibility 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. Tracking service performance to analyze network traffic and to certify SLA conformity.

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

Management
ACCEED 1102 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
The 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 CO 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
- Port Mirroring (ingress and egress)
- L2CP list with possibility to tunnel/discard/peer
- L2PT layer2 protocol tunneling for 3rd party compatibility

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

VLAN
- 802.1Q (VLAN)
  - 4095 C-VLAN/CE-VLANs
  - Port VID explicit settable
- 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)
- MEF10.2 Ethernet Services Attributes (ingress and egress bandwidth profiles):
  - 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 VLAN 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
- 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 18 Circuit Emulation Services (MEF 3, 8)
- 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 802.10 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.994.1.1 Handshake
- ITU-T G.998.2 Ethernet bonding
- ITU-T Y.1413 TDM-MPLS network interworking
- RFC 4553 Structure-Agnostic Time Division Multiplexing (TDM) over Packet (SAToP)
- RFC 5086 Structure-Aware TDM CES over Packet Switched Network (CESoPSN)
- ITU-T G.703 Physical signal characteristics
- ITU-T G.704 Structured E1
- ITU-T G.8031 Ethernet linear protection switching
- ITU-T G.8032 Ethernet ring protection switching
- RFC 2865 RADIUS

Ordering Information

ACCEED 1102
- DT 2wp (Eth) S3118-H642-E413
- DT 2wp (Eth+G703) S3118-H642-D413

Accessories

- Adapter cable 2 Mbit/s RJ45-BNC C195-A336-A45
- Desktop Mounting Set 1 HU C107-A124-C128

Related Products

- ACCEED 1104
- ACCEED 1404
- ACCEED 1416
- ACCEED 2102
- ACCEED 2104
- ACCEED 2202
- BSBU
- BSBU+
- AccessIntegrator (AcI)
- MetroIntegrator (MI)

Technical Data

Power Supply
- Input Voltage -40 to -72 V<sub>DC</sub>
- 95 to 260 V<sub>AC</sub>

Power Consumption
- ≤9 W

Interfaces
- User Network Interface (UNI)
  - 4x RJ45 10/100BASE-T
  - optional 2x RJ45 G.703 120/75 Ohm for E1 or reference clock in and output

Management
- 1x RJ45 serial
- 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
  - (wall and rack mounting option)
- Operating Temperature
  - -5° C to +55° C
  - at 5 to 95 % rel. humidity

Safety
- EN 60950-1 (2011)

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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