MCU-CES: Management & Concentrator Unit with Circuit Emulation Service (CES)

for ULAF+ access platform

Technology Background

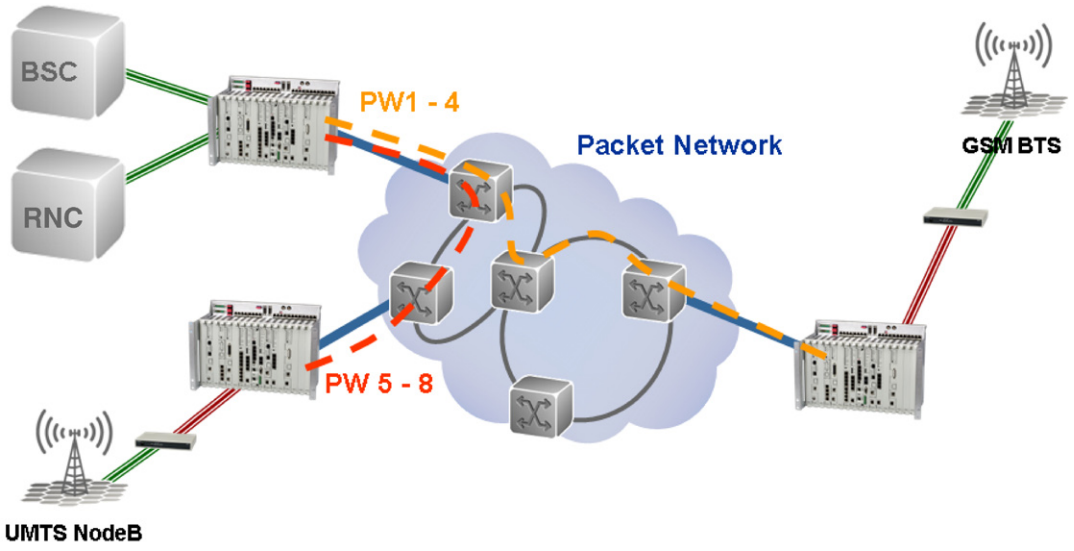
Circuit Emulation Service (CES) provides the attributes of a TDM service over a packet switched network (PSN), such as Ethernet, IP or MPLS: The TDM traffic is packetized and encapsulated with a pseudo wire control word, depending on the type of PSN. Structure Agnostic TDM over Packet (SAToP) is the CES type with lowest overhead and end to end delay and a flexible packet size.

Product Overview

The MCU-CES includes all the features of the MCU-S and the CES functionality. The MCU-CES is designed to run E1 voice and data services emulation over packet switched networks. Together with the ULAF+ transmission units the MCU-CES module optimizes performance and cost efficiency of metro Ethernet applications.

The ULAF+ CES centralized solution processes CES in the sub rack avoiding waste of bandwidth on the access links due to overhead of Ethernet packets.
Furthermore the high integrated ULAF+ architecture minimizes the need for space in the central office and avoids additional cabling of data, power and management networks.

Mobile Backhauling



MCU-CES features

Network Interfaces
MCU-CES offers Circuit Emulation Services over Packet (CESoP) transport for Ethernet and IP networks.

Circuit Emulation Services
Complies with the following standards:
- ITU-T: Y.1413, Y.1453
- IETF: RFC 4553
- MFA Forum: A 8.0.0 and MEF18

TDM Interfaces
The MCU-CES supports up to 32 E1 ports. The pseudo wire are mapped to one of the 64 E1 system of the subrack. At the customer premise the TDM interfaces E1, X.21, V.35 and V.36 are supported.

Timing
The MCU-CES incorporates a range of powerful clock recovery mechanisms for each TDM stream, allowing the frequency of the source clock to be faithfully generated at the destination, enabling greater system performance and quality. Timing is carried using RTP or similar protocols, and both adaptive and differential clock recovery schemes are included, allowing the customer to choose the correct scheme for the application.
For optimized synchronization over packet networks the standard IEEE 1588v2 is supported on demand.

Latency / QoS
The MCU-CES incurs very low latency for the data flow, thereby increasing QoS when carrying voice services across the Packet Switched Network. Voice, when carried using CESoP, which typically has latencies of less than 10 ms, does not require expensive processing such as compression and echo cancellation.
The device also supports four different classes of service on packet egress, allowing priority treatment of TDM-based traffic. This can be used to help minimize latency variation in the TDM data. Packets received from the packet interfaces are parsed to determine the egress destination, and are appropriately queued to the TDM interface. Packets queued to the TDM interface can be reordered based on sequence number, and lost packets filled in to maintain timing integrity.

Packet Processing Functions
The MCU-CES is capable of assembling packets of TDM traffic from the TDM interface and transmitting them out the packet interfaces using a variety of protocols. It supports a range of different packet switched networks, including Ethernet VLANs and IP.

MCU-CES Management
Network operators connect to the MCU-CES using either ULAF+ 'Local Craft Terminal' (LCT) software or the network management system 'AccessIntegrator'.

E1 Insertion Unit (EIU)
The EIU is a plug-in unit with four autonomous G.703 interfaces. It offers four E1 connections to the CES functionality on the MCU-CES card. It is used for ULAF+ line cards without an E1-interface to the Backplane (HTU, OTU, STU, STU2) and third party equipment. The EIU is managed by the LCT or AccessIntegrator.

Technical data

Physical & Environment	
Dimensions (W x H x D)	
Subrack	482 x 315 x 242 mm
MCU-CES plug-in	233 x 160 mm
EIU	233 x 160 mm
Operating conditions	-5 °C – +55 °C
	5 – 95% rel. humidity
Power supply	
Subrack	
Input voltage	40 – 72 VDC
MCU-CES	
Power consumption	< 22 W
EIU	
Power consumption	< 4 W
Interfaces	
EIU Port for 2 Mbit/s interfaces	4
connector	RJ45
technology	G.703 (75 Ω or 120 Ω)

02-20090213

Albis Technologies Ltd.
Albisriederstrasse 199
CH-8047 Zürich
Phone +41 58 252 4777
Fax +41 58 252 4778
www.albistechnologies.com