

MileGate NUSA1

NUSA1 provides transport of TDM and Ethernet services over SDH STM-16/4/1 in dedicated networks



NUSA1 und Variante für den lüfterlosen Betrieb NUSA1-F (rechts)

- Interfaces
 - 2 x SDH STM-16/STM-4
 - 2 x SDH STM-4/STM-1
 - 4 x 10/100/1000BaseT
- PDH/SDH mapping/demapping for
 - 2Mbps unframed
 - 2Mbps framed
 - n x 64 kbps
- Ethernet-over-SDH
- Layer 2 and 3 switching
- SDH/PDH protection (MSP, SNCP)
- 1+1 equipment protection
- Fanless operation possible
- Supports MileGate's chassis switch architecture

The MileGate SDH STM-16 unit NUSA1 offers the ability to transport TDM and Ethernet services via SDH STM-16, STM-4, or STM-1 from the MileGate platform. NUSA1 enables the smooth migration from SDH networks to pure Ethernet networks in one subrack. NUSA1 also allows the coexistence of both types of transport technologies simultaneously.

■ Unit Description

NUSA1 can be fitted in the subracks MileGate 2510/2310. NUSA1 provides SDH and Ethernet interfaces on the front of the unit. It has access to the traffic of the TDM bus as well as to the GbE/10GbE star of the backplane. NUSA1's access to the TDM backplane allows the transport of TDM traffic from any TDM interface installed in the MileGate subrack. This includes SHDSL TDM lines, E1 and V/X interfaces as well as legacy voice services. NUSA1 is available in a 1-slot wide fan-based and a 2-slot wide fan-less variant.

■ Ethernet-over-SDH (EoS)

NUSA1 can transport Ethernet traffic via an SDH network with its Ethernet-over-SDH functionality. The Ethernet data can be supplied via the front ports of the unit or the backplane. So data from installed Ethernet cards SUE12 and SUE18 can be processed as well as data from the core unit COGE5. Beside the Layer 2 and Layer 3 switching operational mode, the front ports can be configured for a direct point-to-point connection mode, to ensure the availability of the required bandwidth.

■ Supported Topologies

The unit allows the realisation of various SDH transport topologies:

- ring networks, including multiple ring connections on one MileGate
- linear networks
- star networks
- meshed networks

■ Protection Functions

The NUSA1 provides a set of functions which guarantees the highest equipment service availability through the support of traffic and equipment protection mechanisms:

- Multiplex Section Protection (MSP)
- Subnetwork Connection Protection (SNCP)
- 1+1 Equipment Protection (EQP)
- Synchronous Equipment Timing Source (SETS) protection
- Ethernet-over-SDH providing Link Capacity Adjustment Scheme (LCAS)

■ Chassis Switch Architecture

NUSA1 is part of MileGate's chassis switching architecture. This means that MileGate is one switch with one IP address and an expandable number of ports. Every installed Ethernet card will

expand the switch. With it the access node can be adapted to the local demands.

■ Reliability Concept

MileGate offers highest reliability and quality. For this purpose all modules come with an on-board power supply and high MTBF values.

■ Management System

All MileGate functions are centrally managed via the management system UNEM/ ECST or via a local access. Operators save costs and accelerate the provisioning process with only one element manager for all services.

Technical Data

General	
VC cross connects	High Order: 128 x 128 VC-4, 384 x 384 VC-3 Low Order: 48 x 48 VC-3, 1008 x 1008 VC-12
Multiplex Section Protection (MSP)	1+1 unidirectional and bi-directional
Traffic protection	Subnetwork Connection Protection (SNCP)
Equipment protection	1+1 EQP, with 2 units via the backplane
Performance monitoring	According to G.826
Synchronisation	SETS according ITU-T G.813
Access to TDM bus	32 terminated/transparent 2 Mbps channels, n x 64 kbps with grooming (64 with later firmware upgrade)
Ethernet switching	Onboard 10 Gbps VLAN-aware Layer2 switch
Remote management	Via DCC-channel (MSOH and/or RSOH), OSPF routing on COGE5
SDH Network Interfaces	
Bit rate	2.5 Gbps (STM-16), 622 Mbps (STM-4), or 155 Mbps (STM-1)
Number of ports (single unit)	2 x STM-16/STM-4 and 2 x STM-4/STM-1
Number of ports (EQP-pair, two units)	4 x STM-16/STM-4 and 4 x STM-4/STM-1
Port types (optical and electrical)	SFP-based
Ethernet-over-SDH (EoS)	
Framing procedure	GFP according to ITU-T G.7041
Virtual concatenation (VCAT)	According to ITU-T G.707
Link Capacity Adjustment (LCAS)	According to ITU-T G.7042
Number of EoS channels	Up to 12 (32 with later firmware upgrade)
Total bitrate (all EoS channels)	Up to 2 Gbps
Ethernet Interfaces	
Interfaces (connectors)	4 x 10/100/1000BaseT (RJ45)
Mode of operation	EoS point-to-point and switched operation
Management	
ECST	For local management and offline configuration
UNEM	For central management
Power Supply	
Input voltage nominal (min/max)	-48/-60 VDC (-39.5 VDC ... -72 VDC)
Operation Environment	
Temperature range and humidity	According to MileGate environmental specifications



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