2 Overview

2.1 Network Element View

Figure 1 MileGate 2011 view on front cover

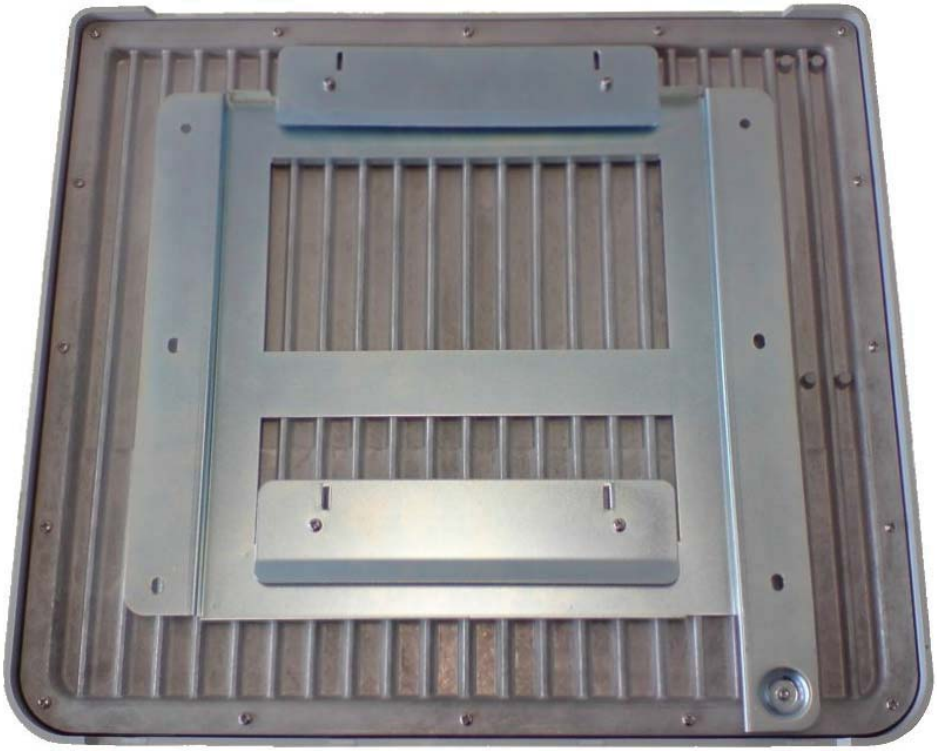

Figure 2 MileGate 2011 rear view with mounting frame

2.2 Specification

The following table specifies the MileGate 2011; features without a SW version indicated have been available from v1.1.

Table 4 MileGate 2011 Specification

Feature	Specification	SW Version
VDSL		
Line modulation type	DMT (Discrete Multi-Tone)	v1.1
VDSL Framing	ITU-T G.993.2 VDSL2 Standard compliant (Annex B)	v1.1
Max. transmission speed	100 Mbit/s downstream, 100 Mbit/s upstream (VDSL1 & 2)	v1.1
Profile	VDSL2 997/998 Band Plan 8a, 8b, 8c, 8d, 12a, 12b, 17a, 30a (refer to section 6 "Annex" on page 313 for details)	v1.1
Supported functions	UPBO (Upstream Power Back-Off) enable / disable DPBO (Downstream Power Back-Off) enable / disable U0 band, ADSL band and ISDN band enable / disable Amateur Radio (HAM) band enable / disable Interleave / fast data channel TR-176 INP (Impulse Noise Protection) and parameter PSD (Power Spectral Density) mask by operator Trellis coding Virtual Noise Online reconfiguration bit-swap Online reconfiguration SRA (Seamless Rate Adaptation)	v1.1 v2.0 v2.0
Supported functions (cont'd)	SELT[1] (only raw data) / DELT U0 band auto activation and frequency selection Line MIB Loopback via EOC 30 a profile with 8 kHz tone spacing 8a, 8b, 8d, 12a, 12b and 17a profile with 4 kHz tone spacing No. of bands: up to 6 bands (D1, D2, D3, U1, U2, U3) G.993.2 Annex A complied for less than 12 MHz range G.993.2 Annex C complied for more than 12 MHz range Enable/disable OLR (Online Reconfiguration) for VDSL2 parameters	v1.1 v2.0
Link type	Rate-adaptive mode Rate limit in steps of 64 kbit/s	v1.1
Data channel	Interleave channel or Fast channel	v1.1
Layer 2 Functions		
Switching	Layer 2 switching (Store and Forward)	v1.1
Switching capacity	9.5 M packets/s, 12.8 Gbit/s	v1.1
Switching function	Full throughput for all ports (Non-blocking) 16 K MAC, 4 K VLANs	v1.1
Multicasting	IGMP Snooping v2/v3 and IGMP proxy Static and dynamic multicast group registration Maximum number of multicast groups: 512 Maximum number of concurrent multicast streams per NE: 512 Maximum number of concurrent multicast streams per trunk port: 512 Maximum number of concurrent multicast streams per subscriber port: 16	v1.1 v1.1 v2.1 v2.1 v2.1 v2.1

Table 4 MileGate 2011 Specification (continued)

Feature	Specification	SW Version
Additional functions	IEEE802.1Q VLAN Double Tag VLAN (Q in Q support) VLAN translation IEEE802.3ad LACP (802.1AX-2008), Static Trunking (only for uplink ports) Spanning Tree Protocol; STP (IEEE802.1d), per-VLAN STP, RSTP (IEEE802.1w) MSTP for CST (802.1d/1w) DHCP Relay (Option 82) L2 DHCP Relay PPPoE Intermediate Agent DHCP client Subscriber logon filtering	v1.1 v1.2 v2.0 v1.1 v1.2 v1.2 v1.2 v1.2
Security functions	Layer 1 ... 4 packet filtering ACL (Access Control List) NetBIOS / NetBEUI filtering Private DHCP server packet filtering MAC address restriction per port Rate limit of uplink port for both ingress & egress in steps of 64 kbit/s Broadcast / Multicast / DLF packet limit TCP sync attack protection TCP port scan attack blocking Abnormal source MAC blocking Packet dump Subscriber loop detection and blocking Gateway filter Logon destination MAC filter STP BPDU filter	v1.1 v1.2 v2.1 v2.0
QoS	QoS including IEEE802.1p and DiffServ / TOS 8 queues per port DSCP marking / remarking SPQ, WRR (weighted round robin), DRR (deficit round robin) scheduling CPU traffic QoS	v1.1 v1.2
Congestion Management	HOL (head of line) blocking prevention Back pressure IEEE802.3x flow control	v1.1
System Configuration		
Subscriber Capacity	8 VDSL2 subscribers (port 1 ... port 8)	v1.1
Uplink connection	4 uplink ports (port 25 ... port 28) - 2 fixed 10/100/1000Base-T - 2 fixed 1000Base-X(SFP)	v1.1
Subscriber interface	VDSL2: total 16 pins (2 pins per port)	v1.1
	Voice: total 16 pins (2 pins per port), only available with a splitter module inserted	v1.1
NE clock synchronization	NTP client	v1.1
Dimensions	Wall-mount type, 378 (w) x 338 (h) x 104 (d) mm	v1.1
Weight	4.88 kg without options (splitter module, CATV module, mounting frame) 5.28 kg with mounting frame	v1.1
Fans	No fans	v1.1
Housing Materials	Front: ABS Back: Aluminium (heat sink)	v1.1
Others	Built-in thermometer and surge protection circuit	v1.1

Table 4 MileGate 2011 Specification (continued)

Feature	Specification	SW Version
MTBF	30 years	v1.1
Operation Environment		
Input power	85 ... 264 V_{AC}, 47 ... 63 Hz	v1.1
Power consumption at 115 V_{AC} at 230 V_{AC}	Typ. 37 W Typ. 36 W with profile 30a Typ. 37 W with profile 30a	v1.1
Operating temperature	-5 °C ... 60 °C When equipped with a CATV module, the upper temperature limit is 40 °C.	v1.1
Min start-up temperature	-10 °C	v1.1
Operating humidity	0 ... 80 % relative humidity, non condensing	v1.1
Operation Management		
Management Method	CLI, Telnet, SNMPv1/v2c/v3 SSH Syslog ECST GUI (via SNMP, operation dialogues only)	v1.1 v1.2 v1.1 v2.1.2
Upgrade	Capable of remote software upgrade through TFTP, FTP	v1.1
Environment Monitoring	Temperature and Door open/close	v1.1
Other	Remote modem reset	v1.1

1. SELT in FTTB applications is not providing usable results due to short lines. Short lines cause SELT test results to be inaccurate. Also, the SELT is only providing raw data and does neither interpret nor evaluate these data.

2.3 Network Element Description

The MileGate 2011 uses VDSL (Very high speed Digital Subscriber Line) technology to deliver premium services as VoD, IPTV, VoIP and high-bandwidth access, and offers a most efficient medium to both residential and business customers over the existing telephone wiring.

The MileGate 2011, complying with the ITU-T G.993.2 VDSL2 standard is the high performance FTTB VDSL2 NTU (an IP-based micro-DSLAM) that can transport traffic on its subscribers ports at a speed of up to 100 Mbit/s downstream and 100 Mbit/s upstream. It offers most efficient services especially in FTTB (Fibre To The Building) configurations to residential customers.

The MileGate 2011 is wall-mountable and features compact design, advanced plug-and-play functionality, easy installation and handy Ethernet LAN configuration capability.

The MileGate 2011 designed for basement installation, has built-in environment monitoring system which makes it possible for the operator to monitor environment status such as door open and its temperature as well as system status at remote site. In addition, its hermetic structure features easy maintenance and system protection from moisture penetration.

The MileGate 2011's built-in LAN switch supports Ethernet base Layer 2 switching function, and provides 8 subscriber ports, and 4 uplink ports (2 fixed 10/100/1000Base-T and 2 fixed 1000Base-X). It also provides an Ethernet port and a console port for CLI management purposes.

The MileGate 2011 supports such additional Layer 2 functions as STP (Spanning Tree Protocol), Link aggregation, port-based VLAN and 802.1Q. The MileGate 2011 provides the means of convenient system management and of multicasting data transmission with IGMP Snooping and Proxy functions.

The MileGate 2011 supports powerful packet filtering (Layer 2 to Layer 4) functions and QoS for service security and quality improvement. NetBEUI/NetBIOS filtering, DHCP filtering and MAC address restriction per port can be realized through this packet filtering function.

2.3.1 Housing

The MileGate 2011 housing is a specific housing for vertical wall mounting. For installation of the housing, refer to [318] User Guide "MileGate 2011 Installation" (MileGate).

For information on optional accessories please refer to [012] Release Note "MileGate R3B".

To evacuate the heat from the housing, an aluminium heat sink is used.

2.4 Control Functions

2.4.1 Unit Control

The control within the MileGate 2011 relies on a CPU in a central control block.

The main tasks of the central control block are

- Management of the NE configuration
- Control of the system operation
- Management communication
- Monitoring of the system performance

2.4.2 Management Communication

Management access to the MileGate 2011 is done using the CLI via the local serial interface, or via remote login. A local craft terminal, ECST, can be used to manage operation related parameters via a Graphical User Interface (GUI). ECST R2A is required as a minimum version.

For general information about management communication for MileGate, refer to [304] User Guide “MileGate & MCST” (MileGate).

For instructions on the initial connection to MileGate 2011, refer to section 4.3 "Management Connection" on page 25 of this user manual, or to the Quick Guide for ECST.

In this document, the following abbreviations are used for management related terms:

- CLI = Command Line Interface
- ESW = Embedded Software