

# mAccess

subscriber access

## Next Generation Subscriber Access and Quality of Service

mAccess is a line of Next Generation equipment for providing access to modern IP-network communications services.


With support for a vast array of network technologies, mAccess can work both in NG and traditional telephone networks.

This enables network operators to make the transition to NGN with minimal expense and disruption, allowing them to escape from the limited range of services available in traditional networks and offer their users the full Triple Play services package.

The hardware platform is exceptionally scalable and makes it feasible to provide NGN services in any size of installation, from just a few users up to many thousands.

mAccess solutions can work with softswitch or equivalent equipment from a third-party supplier,

making them ideal to use for expanding or modernising existing networks. Regular compatibility testing ensures reliable operation with existing as well as newly-released NGN equipment. The software protocol modules used in mAccess equipment are also kept updated to guarantee dependable performance.

The mAccess line covers equipment for use in urban, rural and corporate networks where both traditional and NG services are required. 





*mAccess*

*La maison*


## Equipment

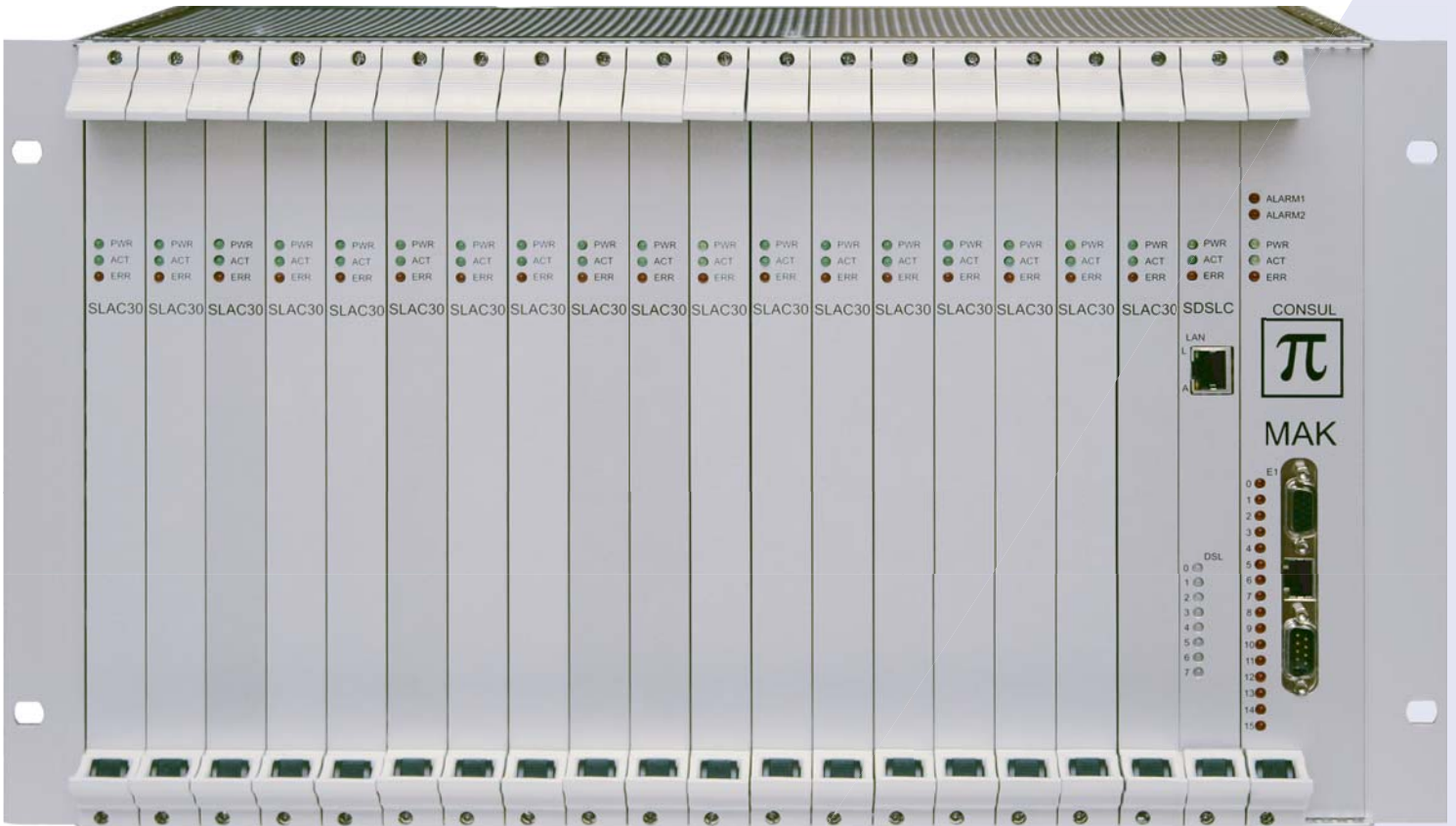
- **mAccess.MAK** – a multiservice subscriber access gateway for providing users with Triple Play and traditional voice services.
- **mAccess.MTU** – a multiservice subscriber access gateway specially designed for efficient use in low-capacity applications.
- **mAccess.DMUX** - a subscriber gateway that provides users with access to broadband data transfer and telephony services using xDSL technology.

Among the exceptional features of the mAccess line are:

- **Flexibility.** The variety of board types available simplifies expansion and modernization, and the hardware design allows subscriber boards to be changed without shutting the system down. New revenue-generating services can be added quickly and easily. The architecture used in mAccess allows solutions that combine a range of services in one

chassis: connection of analog and IP-terminals, delivery of ADSL2+ and Ethernet connections to subscribers' premises and the use of Ethernet, SHDSL, VDSL and PCM for connection to the network.

- **Unified maintenance system.** System maintenance can be carried out using a number of means: Telnet/SSH, FTP, a graphical Web interface and command line interface. The system for controlling equipment status and various levels of alarm signal features an SNMP interface and can be integrated with existing monitoring systems already in the network. The complete system makes mAccess maintenance simple and convenient.
- **Adaptation.** mAccess equipment can be installed in existing telecommunications networks and can work using the cable infrastructure resources that are already in place.
- **Expanded functional capabilities.** mAccess line equipment is dual purpose equipment; it can also be used in military applications. 



## mAccess.MAK


The mAccess line can solve the problem of subscriber base expansion. Subscribers whose terminals are served by mAccess equipment can use traditional telephony services, while if mAccess is used in a multiservice network the full range of Triple Play services becomes available. mAccess equipment connects with digital exchanges using a standard V5.2 interface or PRI/E-DSS1 over E1, and connects to multiservice networks using SIP or H.248/MEGACO using various data link-layer technologies.

Various types of terminal equipment can be connected to mAccess.MAK, including:

- traditional analog telephones;
- payphones for local and intercity calls;
- fax machines;
- modems, etc.


The mAccess.MAK multiservice subscriber gateway provides subscribers with access to Triple Play services. Modular construction means the gateway is easily scalable to increase subscriber capacity and also allows the creation of combined solutions.

mAccess.MAK is built on the following modules:

- **CONSUL** – gateway controller, for controlling interface boards. Provides interface with exchange.
- **SLAC30** – for connecting two-wire terminations.
- **SDSLC, VDSL, ADSL, ADSL2** – modules for data transfer using SHDSL, VDSL, ADSL and ADSL2+ accordingly.
- **ITC** – VoIP gateway module for connecting mAccess.MAK to NG networks. 

Depending on the functions required, mAccess.MAK can be set up with a combination of various modules. As well as providing subscriber access, mAccess.MAK can also provide transfer of voice traffic between NG and traditional telephone networks.

#### mAccess.MAK:

- Provides dial-up access to telephone network services.
- Delivers voice to multiservice network subscribers.
- Delivers of data transfer services using Ethernet and ADSL2+.
- Subscriber load multiplexing
- Internal switching of voice channels and IP packets.
- Flexible scaling and configuration.
- Simple to use and maintain.
- Wide range of connection interfaces. 

mAccess.MTU enables the transfer of voice and fax information over networks with IP packet routing using RTP protocol with SIP and H.248/MEGACO signalling. mAccess.MTU can be connected to the IP network via an SHDSL interface with data transfer rates of up to 8 Mbit/s, or via a VDSL interface.

This makes it possible to provide subscribers with high-speed internet access, even using the existing copper-wire telephone line infrastructure. ADSL2+ enables operators to expand their range of services considerably, including services requiring high data transfer speeds - up to a maximum of 24 Mbit/s downstream and 2 Mbit/s upstream.

These features make mAccess.MTU ideal for installation in urban, rural and corporate networks. In all cases the equipment allows provision of traditional telephony services, Triple Play and high speed Internet access.


mAccess.MTU allows analog user terminals to be connected to the external network using an Ethernet interface (Ax/Eth modification) or xDSL (Ax/DSL modification). If the subscriber uses a PBX, it can also be connected to the external IP network through mAccess.MTU, but through a PRI interface and then over Ethernet (E1/Eth modification) or xDSL (E1/DSL modification). mAccess.MTU can be used in a wide variety of situations. In urban networks, mAccess.MTU can serve as a subscriber's gateway for providing private subscribers with modern services. The scalability of mAccess.MTU-based solutions makes the system ideal for modernizing urban networks of various types and capacity.

## mAccess.MTU

mAccess.MTU is a low-capacity multiservice subscriber access gateway built on IP technology. mAccess.MTU allows 8, 16 or 24 analog user terminals to be connected.

mAccess.MTU is based on access technologies which allow the operator to provide subscribers with a full range of modern services, helping solve the problem of providing telecommunications services to small-scale end points.



Using high-capacity equipment in rural networks with a low subscriber concentration is not always an appropriate solution. mAccess.MTU can be used to bring modern services and multiservice network features to low-population areas. With mAccess.MTU in a corporate network, the company using the system does not need to install a PBX. Network users can access traditional telephony services, a wide range of additional services and data transfer. mAccess.MTU assumes the simultaneous connection of analog terminals and IP telephones, significantly increasing the number of possible approaches to building corporate networks. The inbuilt Ethernet interface allows mAccess.MTU to be connected to a LAN switch, providing high-speed corporate Internet access. The Ethernet interface provides 100 Mbit/s. The system features all the necessary interfaces for connection with the subscriber softswitch mCore.MKD-5 and third-party solutions. mAccess.MTU is also suited to delivering Triple Play services to subscribers. 

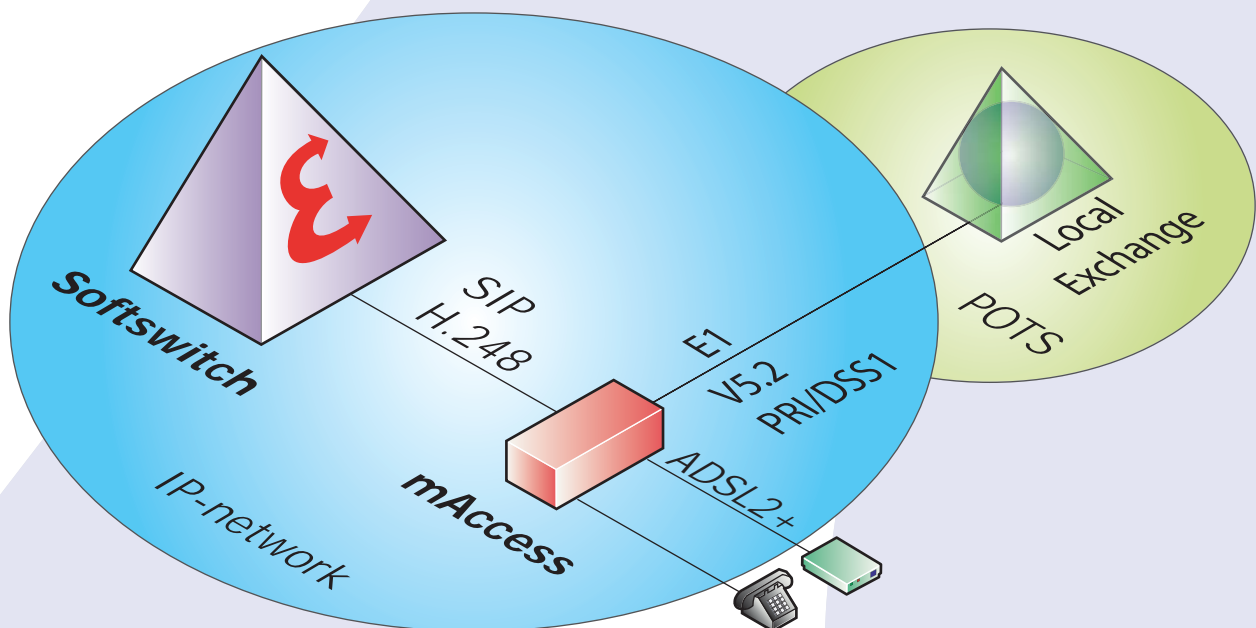
## Application

### Using mAccess.MAK in circuit-switched networks.

mAccessMAK connects to the digital exchange by E1 using standard interfaces V5.2 (with multiplexing) or PRI/E-DSS1 to provide subscribers with PSTN services. mAccess.MAK connects to the exchange using from 1 to 16 standard E1 interfaces.

This provides:

- establishment of incoming and outgoing connections (local, intercity and international calls);
- delivery of additional services to subscribers with analog terminal equipment using facilities available on the branch exchange (only when V5.x multiplexer is connected) or PBX;
- transmission of tariffication signals for payphones;
- provision of telephony, 3.1 kHz, unlimited 64 kB/s data transfer;
- fax and modem session support.






### Using mAccess.MAK in NG networks.

The MAK gateway can transfer voice traffic and fax information over networks with IP packet routing. mAccess.MAK supports SIP and H.248/MEGACO protocols to interact with softswitches in multiservice networks. VLAN greatly simplifies the task of working with different data types while maintaining quality of service.

The use of ADSL2+ allows the operator to transmit data at rates of up to 24 Mbit/s downstream and 2 Mbit/s upstream.

With mAccess.MAK, the ease of expanding subscriber capacity and the capacity for combined solutions help the operator to build networks with minimal expenditure, raise turnover and increase profits. 

## mAccess installation


mCase enclosures and cabinets are used for mAccess.MAK installation:

- mCase1000
- mCase500
- mCase200

Cabinets are required for protecting equipment from the outside environment and from unauthorized access. The street enclosure is equipped with climate control, power supply and signalling sensor equipment.

The climate control system protects equipment from overheating and from excessively low temperatures. Street enclosures have heating and thermally insulated walls and doors.

The subscriber and exchange connection junctions are housed in separate sections to minimize the risk of harm from environmental conditions (rain, snow, low temperature) during maintenance when the enclosure doors are open. This additionally reduces the risk of unauthorized access and vandalism.

mCase enclosures feature a door sensor (detects when doors are opened), temperature sensor and a fire safety sensor. 

## Basic mAccess specifications

mAccess.MAK				
Characteristic	Value			
Number of analog two-wire interfaces: • 6U 19" chassis • Full rack	Up to 570 lines Up to 3420 lines			
Interface boards: • analog two-wire board • ADSL2+/ADSL board	30 POTS interfaces 24 ADSL + 24 POTS interfaces			
Transport boards: • SHDSL board • VDSL board	8 SHDSL interfaces 8 VDSL interfaces			
VoIP codecs	G.711, G.723. G.726, G.729.			
Exchange interface	E1 (2048 Kbit/s, G.703, 120 Ohm, HDB3)			
Subscriber interfaces	FXS, ADSL2+, PRI, 10/100 Base-T			
Connection protocols: • with exchange • with multiservice network nodes	V5, PRI/EDSS1, 2BCK, ISUP-R SIP, H.248/MEGACO			
Services	VAS PSTN NGN			
Maintenance	Secure Web control, CLI, telnet/SSH, FTP, SNMP			
Chassis dimensions	- Width - 482 mm / 19 inches - Height - 6U (246 mm) - Depth - 300 mm - Weight - approx 15 kg (with typical board installation)			
Power supply	-48V (-10/+15%) -60V (-10/+15%)			
Power consumption (one analog interface)	No greater than 0.4 W			
mAccess.MTU				
Characteristic	Value			
Number of analog two-wire interfaces: • 1U 19" module	8/16/24 ports			
Modifications	Ax/Eth	E1/Eth	Ax/DSL	E1/DSL
Interface with external network	Ethernet	Ethernet	xDSL	xDSL
User interfaces	8/16/24	PRI	8/16/24	PRI
Supported signalling protocols	Uplink		Downlink	
	- SIP - H.248/MEGACO		- E-DSS1 - analog subscriber	
VoIP codecs	G.711, G.723. G.726, G.729.			
Interface types	- Ethernet 100 Base-T - SHDSL - ADSL2+ - VDSL - analog FXS - PRI			
Maintenance	Secure Web control, CLI, telnet/SSH, FTP, SNMP			
Services	VAS Selection of Centrex services NGN			
Power supply	220/12V adapter in subscriber premises			

### R&D Center PROTEI