Protei-MAK

NGN Access Solutions

Protei-MAK multiservice access concentrator is an integrated access platform that delivers traditional voice and a host of broadband data services to subscribers over a wire line network. The Protei-MAK solution can be deployed in any network topology over fiber, copper, or microwave radio. The Protei-MAK secures your investment by providing seamless integration into next-generation all-IP networks.

Key benefits

- One total access solution – provides PSTN/ISDN, leased-line, and broadband all in one scalable platform; provide individual services flexibly through plug-in modules on the universal slots;
- Traditional and broadband services are provided equally economically and efficiently – platform suits any application with any proportion between service types;
- Investment protection all services are provided on the same platform independently of underlying core network architecture (separate narrowband TDM and data or next-generation all-IP) – core upgrades are possible without access network replacement;
- Horizontal scalability – any number of interfaces per node – from 30 to unlimited.

Major features

- Multi-services platform supports a variety of subscriber services, including PSTN, Payphone, PABX, analog leased-lines, ISDN BRI and PRI, SHDSL integrated access (high-speed data and analog POTS or fractional PRI);
- Open network interfaces - V5.1, V5.2 to PSTN allowing seamless interconnection with any LE equipment, Ethernet to IP network for broadband data and packet voice (H.248, SIP);
- Flexible deployment: available in indoor and outdoor cabinets for deployment in urban, suburban or rural areas;
- Varied transmission media: designed to work totally independent of transmission medium nature - fiber, copper, or wireless;
- Universal shelf slots support any subscriber service;
- Nearly unlimited horizontal scalability;
- High density: up to 570 subscriber lines per sub-rack, up to 3420 per rack;
- Advanced loop testing capability: allows testing of the subscriber loop, test hardware is build into all subscriber interfaces;
- Versatile Web-based Network Management System. Centralized Client server based Network Management to manage the entire network from one or more locations. System performs remote administration, configuration management, fault and performance management, software download and system diagnostics, and subscriber loop tests. User-friendly, Web-based system supports any size of access network. No specialized client software is required due to Web technology.

Terminal Equipment

The following terminal equipment can be connected to Protei-MAK:

1) Using two-wire subscriber lines:

- Telephones with pulse or tone dialing;
- Local and long-distance payphones;
- Faxes;
- Devices for data transmission (modems);

2) Using digital ISDN BRI lines:

- Telephones;
- Devices for data transmission;
- PBXs supporting ISDN BRI interface.

3) Using digital ISDN PRI lines:

- PBX and other equipment.

4) Using digital SHDSL lines:

- IAD-A and IAD-D integrated access devices.

The following equipment can be connected to integrated access devices:

- Computers, local area networks and other equipment using 10 Base-T interface;
- Telephones with pulse or tone dialing by two-wire subscriber lines;
- Local and long-distance payphones;
- Group 3 faxes;
- Devices for data transmission (modems);
- PBX and other equipment using ISDN PRI interface.

Core Network interfaces

The following interfaces are used to connect Protei-MAK Concentrator to the Core Network:

- V5.1 interface compliant with ETSI ETS 300 324-1 and ETS 300 125, and ITU-T G.964;
- V5.2 interface compliant with ETSI ETS 300 347-1 and ETS 300 125, and ITU-T G.965;
- PRI interface compliant with ETSI ETS 300 001, ETS 300 125, and ETS 300 102;
- 100 Base-T interface for data and packet voice, voice signaling;
- SIP protocol IETF RFC3261,
- ITU-T H.248.

Application of Protei-MAK

Protei-MAK Multiservice Access Concentrator enables service providers to offer a broad range of telecommunications services, and serves as a good basis for network development, as well as for the modernization of existing urban and rural telecommunications networks.

Listed below are typical variants for application of Protei-MAK:

1) Expanding the network of service providers

Using V5.2 interface, Protei-MAK is connected to the base telephone exchange. Up to 570 analog subscriber terminals may be connected to a single module of the concentrator.

This variant is based on the possibility of connecting a larger number of subscribers due to traffic concentration.

2) Providing integrated access services

The second variant for organizing communications using Protei-MAK Concentrator allows for connecting it to the base telephone exchange using V5.2 interface, to a data transmission network via 100 Base-T interfaces, and to connect integrated access devices (IAD-A, IAD-D) to the concentrator over SHDSL.

The following devices may be connected to IAD:

- analog subscriber devices by two-wire subscriber lines;
- equipment supporting PRI interface (for example, PBX);
- Data transmission devices (computers, LAN) over 10 Base-T interface.

3) Combined application of Protei-MAK

This variant demonstrates the full range of possibilities for the utilization of Protei-MAK Multiservice Access Concentrator allowing for the simultaneous connection of subscriber terminals, computers, and local networks to PSTN and data transmission networks.

4) NGN Access

Protei-MAK can be used for organizing access to Next Generation Networks. MAK interacts with Softswitch using standard protocol SIP/SIP-T.
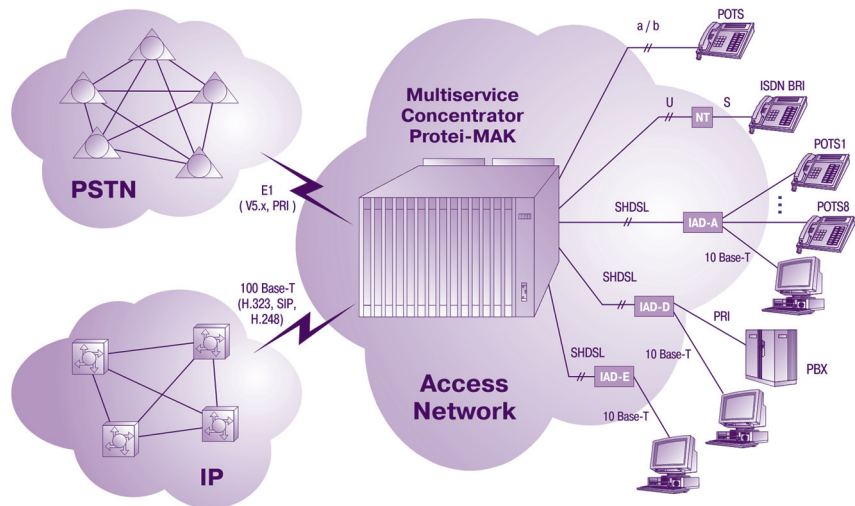
Technical servicing of Protei-MAK Concentrator

Maintenance of Protei-MAK Concentrator is realized utilizing easy-to-use Web-based GUI. The technical servicing software must be installed on the technical service server of the service provider. The user can use any Web browser.

Protei-MAK Concentrator features the following technical servicing options:

- Detecting failure states and sending alerts to the technical servicing center;
- Measuring characteristics of subscriber lines;
- Testing concentrator equipment.

Structure of the technical servicing system of the concentrator

Description	Volume, note	
Number of analog two-wire interfaces: – in 6U 19" modules – in the rack	Up to 570 lines Up to 3420 lines	
Interface boards: – analog two-wire lines board – digital U-interface board (ISDN BRI) – SHDSL board	30 interfaces 8 interfaces 8 interfaces	
Interface of the base telephone exchange	E1 (2048 kb/s, G.703, 120 Ω, HDB3)	
Signaling protocols for interaction with the base telephon exchange	V5.1, V5.2, PRI/DSS1	
Signaling protocols for interaction with NGN nodes	SIP, H.248	
Synchronization	External	
Supported connections:	– outgoing to telephone exchange – incoming from telephone exchange – long-distance	
Supported additional PSTN services	Standard services provided by base telephone exchange*	
integrated access devices connected over SHDSL interfaces:	Access to PSTN	Access to data transmission networks
– IAD-A – IAD-D	– 8 analog SL – Fractional PRI	– 10 Base-T – 10 Base-T
Control	WEB-based	
Losses when services subscriber load (at the average load per subscriber line 0.125 Erl)	No more than 0.1 per cent	
Power supply**	(-36 V ... -72 V) for the entire system	
Rated power consumption per analog subscriber interface	No more than 0,4 W	

* – only when connected over V5

** – for supplying power to short subscriber lines, additional power supply may be used (-20 V ... -30 V)