

- Scalable platform 1U
- IP PBX for 2000 subscribers with VAS support
- High-quality voice processing
- Carrier class reliability
- Up to 768 VoIP channels
- Up to 16 E1 streams
- Support for 2 built-in SD 8Gb
- Hardware redundancy



SMG-1016M is used as a trunk gateway for interfacing of signal and media streams of TDM and VoIP networks. The gateway also might be used as an IP PBX with VAS support and a universal solution for infocommunication new generation networks (NGN). The wide function-set, strict compliance with requirements and standards and carrier class reliability allow service providers to solve most part of their objectives using SMG-1016M.

Scalability

SMG-1016M is a beneficial investment in the future of your project due to its scalability. The gateway supports up to 16 E1 streams (SS7, PRI, V5.2) and up to 768 VoIP channels.

Carrier class reliability

SMG-1016M provides high level of fault tolerance due to embedded state-of-the-art Marvell chip, uniform load distribution among submodules, power modules redundancy and usage of up-to-date technologies based on parallel computing. The gateway will switch to a backup submodule in case of a primary submodule fault.

Functional compatibility

Strict compliance with up-to-date protocols' requirements, recommendations and standards provides functional compatibility with a variety of equipment: digital PBX, IP PBX, Softswitches, VoIP gateways, SIP phones, programmable SIP clients, etc.

Media streams transcoding

The hardware transcoding based on MediaCodecs Mindspeed Technologies helps to negotiate media streams with different VoIP codecs which are used in up-to-date networks.

RADIUS routing

Intellectual call routing based on billing system responses via the RADIUS protocol allows customers to create flexible methods of call processing.

Intellectual protection of IP networks

The intellectual protection against unauthorized external SIP subscribers connection and connections via http/https/telnet/ssh is realized on the SMG-1016M (Dynamic Firewall, Static Firewall, black and white lists of IP addresses and subnetworks, etc.). For additional defense, SMG-1016M is compatible with session border controllers (e.g. SBC-1000) that are used as a firewall for VoIP networks.

IP PBX with VAS support

Additional options for SMG-1016M gateway allows using it as a full-featured IP PBX with up to 2000 SIP subscribers connection and support for a wide range of value added services. A programmable IP PBX module ECSS-10 is dedicated to fast deployment of a VoIP node with a minimum of capital expenses. ECSS-10 and SMG-1016M might be used as a PBX of any level.

Features and capabilities

Calls management

- Interaction with STUN-server on the SIP interface
- Routing based on called number (CdPN) or calling number (CgPN)
- Number modifications before and after routing
- Call recording according to number mask and dialplan¹
- Use of multiple dialplans
- Subscriber lines restriction
- Subscriber service mode
- Trunk group cut-off
- Call management via RADIUS¹
- Direct connection of trunk groups
- Prefix for few trunk groups
- Interactive voice menu (IVR)¹
- Uploading/downloading of configuration as a single file
- Lines limiting for SIP interface
- Egress and ingress lines restrictions for a subscriber
- Ingress load limiting (calls per seconds) for a trunk group

Voice codecs

- G.711 (a-law, μ -law), G.729 (A/B), G.723.1, G.726 (32 Kbps)

Fax transmission

- T.38 Real-Time Fax, G.711 (a-law, μ -law) pass-through

Voice standards

- VAD (Voice Activity Detection)
- CNG (Comfort Noise Generation)
- AEC (echo cancellation, G.168 recommendation)
- AGC (automatic gain control)

Quality of service (QoS)

- Diffserv and 802.1p priorities assignment for SIP and RTP
- Dynamic and Static jitter buffer
- Ingress/egress traffic rate limiting

DTMF

- INBAND, RFC 2833, SIP INFO, SIP NOTIFY transmission methods

Billing

- Billing data is recorded in CDR file. CDR files are kept on a local HDD and remote FTP server.
- RADIUS Accounting
- Supported billing systems: Hydra Billing, LANBilling, PortaBilling, NetUP, BGBilling (there is an opportunity of integration with other systems)

Flexibility

- Multiple network interfaces creation for telephony (SIP, RTP) with different IP addresses
- Operation with multiple numbering plans
- Signal SS7 channel redundancy
- Voice activity control (by the presence of RTP or RTCP)
- Individual routing for streams from a single SS7 linkset

TDM protocols

- SS7
- PRI (Q.931)
- Q.699 (PRI and SS7 interaction)
- V5.2 LE¹
- V5.2 AN¹

VoIP protocols

- SIP, SIP-T/SIP-I, SIP-Q
- H.323¹
- SIGTRAN (M2UA, IUA)¹
- H.248¹

Capacity

- Up to **768** VoIP channels
- Up to **16** E1 streams (CENTRONICS-36)
- Maximum load intensity 14 cps

Interfaces

- 2 x 1000Base-X ports (2 slots for SFP modules)
- 3 x 10/100/1000Base-T (RJ-45) ports
- E1 (2 x CENTRONICS-36 connectors)
- 2 SATA ports (for SSD modules installation)

Management and monitoring

- E1 and VoIP channels monitoring in web interface
- Management of channels and SS7 links in web interface
- Alarm logging with the opportunity to save entries to syslog server
- Tracings are stored on the SSD and USB storage
- Emergency notification through SNMP

Security

- Black and white IP addresses lists
- Attempts of access to device are logged
- Automatic blocking by IP address after unsuccessful login attempts or/and access via http/https/telnet/ssh
- List of permitted IP addresses for access to control of the device
- Access rights delimitation - admin/user
- Delimitation of rights to access calls records
- Control of opposite RTP stream's source IP address
- Digest authentication (RFC 5090, Draft-Sterman)
- Digest authentication in RADIUS (RFC 5090, Draft-Sterman)

Redundancy

- Operation in warm redundancy mode 1+1
- The system switches the redundant part on automatically
- Automatic synchronization of main redundant module settings

Advanced SIP/SIP-T/SIP-I functionality

- Registration and authentication of 2000 SIP subscribers¹
- VAS support for 1000 SIP subscribers¹
- SIP and SIP-T/SIP-I interaction
- Trunking and subscriber registration of SIP trunks
- Transit registration of subscribers on SIP trunk with switching to local service mode in case of server unavailability

Value added services¹

- Call Forwarding
 - Call forwarding out of service (CFOS)
 - Call forwarding on no reply (CFNR)
 - Call forwarding unconditional (CFU)
 - Call forwarding on busy (CFB)
- Call Transfer
- Music on Hold (MOH)
- Call Hold
- Call Hunt
- Call Pickup
- Busy Lamp Field
- Conference add-on (CONF)
- Conference for a list of subscribers
- 3-Way conference
- Intercom
- Paging
- Outgoing calls restrictions
- Egress communication by password (RBP)
- Password activation (PWD ACT)
- Password reset (PWD)

¹Optional

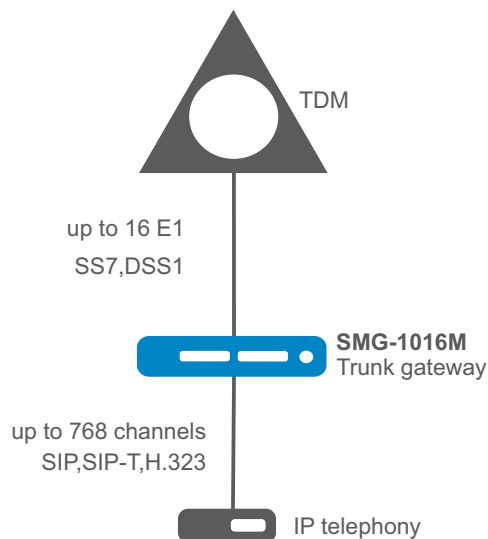
Current firmware version 3.14.0

Application diagrams

Protocols converter

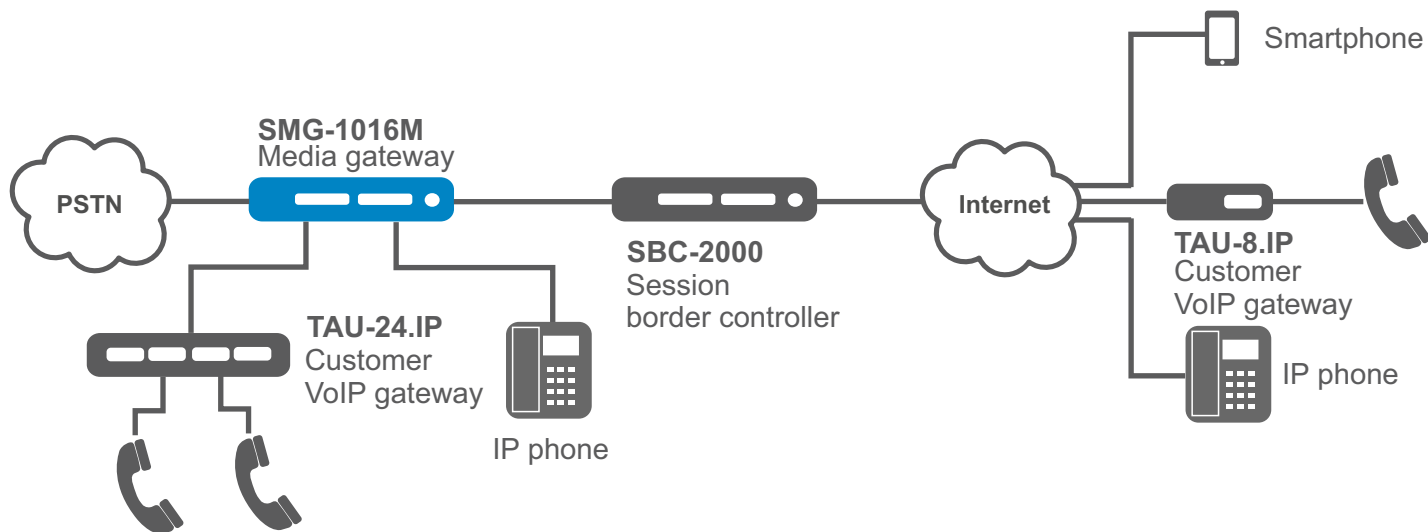
The wide range of supported TDM and VoIP protocols allows using SMG-1016M for signal and media streams negotiation in different directions:

- VoIP <-> VoIP
- VoIP <-> TDM
- TDM <-> VoIP
- TDM <-> TDM



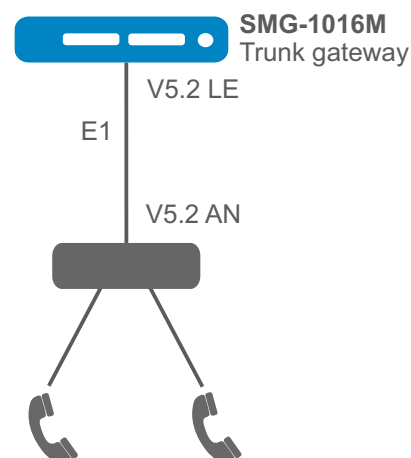
Local office tandem

The additional options of software module IP PBX ECSS-10 (SMG1-PBX-2000 and SMG1-VAS-500) allow using SMG-1016M with up to 2000 subscribers connection at the initial stage of local office tandem construction as a full-function PBX with support of VAS. In case of extending of the capacity, there is an opportunity of migration to a full-featured server solution ECSS-10 with the support of a multi-layer redundancy and flexible scalability of the elements.




Outstation via V5.2 protocol

The additional options of software module IP PBX ECSS-10 (SMG1-V5.2LE, SMG1-VAS-500) allow organizing outstation via V5.2 protocol and service up to 2000 subscribers with support of a full VAS set. Equipment of any manufacturer that supports V5.2 might be used as an outstation.



Ordering information

Name	Description	Image
SMG-1016M	Digital gateway chassis SMG-1016M: 4 slots for C4E1 submodules, 6 slots for SM-VP-M300 submodules, 2 slots for PM160-220/12 and PM75-48/12 power modules	
Modules of SMG-1016M		
SM-VP-M300	SM-VP-M300 submodule with support of 128 VoIP channels (G.711)	
C4E1	C4E1 submodule with support of up to 4 E1 streams	
SSD-8Gb	Embedded SSD for SMG-1016M equipment, 8 GB, Form factor: 44x30 mm, 22P/90D	
PM160-220/12	PM160-220/12 power module, 220 VAC, 150W	
PM100-48/12	PM100-48/12 power module, 48 VDC, 100W	
Cables		
UTP-18-X	UTP-18-X cable: 18-pair cable, X meters length, CENTRONICS-36 connectors (X=4, 6, 12, 20, 30)	
Options for SMG-1016M		
SMG1-PBX-2000	Activation of ECSS-10 module for 2000 SIP registrations with BLF function on the digital gateway SMG-1016M	
SMG1-VAS-500	Extension for SMG1-PBX-2000 option: activation of standard VAS set for 500 subscribers of digital gateway SMG-1016M	
SMG1-H323	Activation of H.323 (without Gatekeeper) on the digital gateway SMG-1016M	
SMG1-RCM	Activation of Radius CallManagement functionality on the digital gateway SMG-1016M	
SMG1-VNI-40	Extension of the number of VLAN interfaces to 40 on the digital gateway SMG-1016M	
SMG1-REC	Activation of Call Recording functionality on the digital gateway SMG-1016M	
SMG1-CORP	Activation of ECSS-10 module for 500 SIP registrations with VAS on the digital gateway SMG-1016M	
SMG1-V5.2LE	Organization of outstation via V5.2LE on the digital gateway SMG-1016M	
SMG1-V5.2AN	Organization of outstation V5.2AN on the digital gateway SMG-1016M	
Discounted option sets for SMG-1016M		
SMG1-SP2	"PBX+VAS" set, includes 3 options for one gateway SMG-1016M: 1xSMG1-PBX-2000 and 2xSMG1-VAS-500	
SMG1-SP4	"Triple" set, includes 3 options for one SMG-1016M: SMG1-H323, SMG1-RCM and SMG1-VNI-40	

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About EltexAlatau

EltexAlatau company is one of the first communication equipment manufacturers in Kazakhstan established in 2012. The main focus of the enterprise is a set of solutions and the opportunity of their seamless connection to the customer's infrastructure.