PROTEI

Solutions for Mobile Operators

PROTEI Company Profile

PROTEI is an international telecommunication systems vendor operating in Russia, Eastern Europe, Central Asia, Latin America, the Middle East & North Africa, having extensive know-how and a proven track record of over 18 years in the telecommunication market.

Under PROTEI brand we present reliable, cost effective, carrier-class solutions.

Using the latest convergent technologies implemented in our products both the most innovative services such as data traffic management and well-known ones such as Steering of Roaming or SMS can be delivered with maximum efficiency. PROTEI product line covers all needs of mobile operators: core solutions (like HLR/HSS, GGSN, GMSC), roaming management, IN & VAS, messaging and so on.

Our products are highly customizable and can be altered according to any requirements.

PROTEI service platforms will help Operators to keep subscribers' loyalty, increase revenues and reinforce a position on a highly competitive market.

PROTEI serves more than 300 renowned customers in over 34 countries to cater 200 million subscribers worldwide.

PROTEI employs more than 300 highly skilled professionals of whom approximately 70% are involved in research and development.

PROTEI MENA Branch (formerly known as Silat Solutions) was formed in 2009 for expand PROTEI's HQ operations into the MENA region.

PROTEI MENA Branch is the central base of operations for PROTEI's high-caliber and Arabic-speaking professionals, who capitalize on sales, marketing, implementation, and technical support services exclusively to PROTEI customers.

It is worth mentioning that throughout these bountiful years, MENA Regional Branch has established group strategic relationships that have resulted in successfully achieving over 50 installations into 8 countries.

Core Network Solutions

Home Location Register (HLR/HSS)

PROTEI Home Location Register is a cost-effective, high performance and scalable solution to suit both – new and existing mobile Operators, mobile virtual network operators (MVNO), service- and content providers. Scalable architecture and flexible throughput licensing of PROTEI HLR/HSS enables an Operator or provider to select a solution that not only mirrors the revenue stream of today, but can be used to meet Operator tomorrow's needs, IoT for example.

PROTEI Home Location Register is a central database that contains details of each mobile phone subscriber that is authorized to use the GSM core network. Single database remains for several HLR/HSS front-ends. PROTEI HLR contains user information such as account information, account status, user preferences, features subscribed to by the user, user's current location, etc. Integrated Authentication Centre (AuC) supports all main authentication algorithms such as Milenage, COMP 128 v2/v3 and TUAK.

Subscriber's data and supported protocols are implemented in strict accordance with 3GPP standards (29.002, 23.008) that ensures compatibility of PROTEI HLR/HSS with network elements of any vendor.

The LTE-HSS subscriber profile leverages the legacy 3GPP Release-6 compliant Packet-Switched Domain subscriber profile. New LTE-specific subscription fields have been added to the profile. The PDN/EPS context required for LTE is supported alongside the GPRS context already existing for GPRS/UMTS. Operators therefore have the choice to provision one or the other (or both). PROTEI HLR/HSS supports S6a interface for easy integration into LTE networks and Sh, Cx interfaces for serving IMS users. Implementation of all these interfaces is fully compliant with appropriate 3GPP standards (29.272, 29.273, ect).

PROTEI HLR/HSS supports convenient provisioning interface to enable smooth system integration with Operator's BSS and performing appropriate management operations.

Gateway Mobile Switching Center (GMSC)

Gateway Mobile Switching Center PROTEI GMSC is intended to serve voice calls of GSM/UMTS subscribers and specially developed to suit needs of mobile virtual network operators (MVNO).

Functionally PROTEI GMSC is based on Softswitch class 4 equipped with additional functional modules that are specific for GMSC such as HLR interrogation module supporting MAP and gsmSSF module supporting CAP.

System supports a range of signalling protocols and their extensions that ensure interoperability with core MNO networks built on the equipment of any vendor. Interaction with network core maybe done via SIP/SIP-I/SIP-T or H.323; interworking with traditional (legacy) PSTN and PLMN network is organized using PROTEI mGate. ITG media gateways.

Intelligent and powerful call routing subsystem enables multi-criteria routing of inbound and outbound calls basing on various parameters, including SLA and the traffic intensity per directions. System supports T-CSI, M-CSI and N-CSI triggering to utilize maximum potential of CAMEL capabilities.

Equipment Identity Register (EIR)

Mobile phone theft has become a growing problem worldwide, with hundreds of thousands of phones reported stolen each year. PROTEI EIR enables network Operators to enter the IMEI of stolen handsets into a "blacklist", thus preventing them from being registered on the network.

PROTEI EIR provides automatic device detection functionality required for identification of changes of subscriber's device. Every change of subscriber's device will be detected by PROTEI EIR. Detection is based on MAP procedures (MAP-CHECK-IMEI) in full accordance with international standards. The change of subscriber's device leads to the change of the IMEI associated with the MSISDN, so PROTEI EIR can detect these changes and verify if the new IMEI is in the blacklist or not, notifying external systems in the latter case.

PROTEI EIR is based on PROTEI xVLR solution that is an "umbrella" platform providing the ability to process, store and transmit location information regarding subscribers of mobile networks provided by switching elements to external applications. The platform is able to process information that is available through core network vendor's proprietary features (like NSN VLR feature "Subscriber Data Feed from VLR") or using standard MAP capabilities such as MAP-NOTE-MM-EVENT (M-CSI triggering), MAP-CHECK-IMEI or MAP-SUBSCRIBER-LOCATION-REPORT. Collected data can be efficiently used for such services as geographically targeted SMS campaigns, equipment identity registration, automatic device detection, border roaming services, loyalty services and many others.

Signal Transfer Point (STP)

PROTEI STP is highly effective solution for signaling messages routing. All tasks connected with extra flexible signaling traffic routing, special routing for particular messages, necessity to connect more than one roaming provider can be solved using by PROTEI STP. It's also a proven solution for deploying active steering platform SMS Firewall, or SS7 Firewall.

PROTEI STP functionality:

- Flexible routing by SCCP-level parameters;
- Special TT (-s) for outgoing traffic;
- Flexible routes' redundancy;
- Routing by TCAP operation codes (for MAP & CAP);
- E1/SS7 or SIGTRAN connectivity.

Diameter Real-Time Mediation

Diameter is a key next-generation signaling protocol for contemporary all-IP networks, carrying policy, charging, mobility management, and authentication, authorization and accounting (AAA) traffic.

Diameter traffic will accelerate quickly with the increasing of LTE and IMS network rollouts, which could create congestion, scalability and interoperability issues at the signaling layer. These issues may be especially important and complicated for Operators taking into account that as a protocol Diameter is not well defined and some education in the industry will be required to make the best use of it. There are a lot of extensions to Diameter that may lead to interoperability problems also.

PROTEI Diameter Real-Time Mediation Platform (DRTM) enables single connection point for all Diameter-based entities interacting within Operator's network. The new network element is called the Diameter Real-Time Mediation Platform (DRTM) and it helps Operators manage services and applications on 3G and all-IP LTE and IMS networks. PROTEI DRTM centralizes routing, traffic management and load-balancing tasks to create an architecture that enables Operator's IMS and LTE networks to grow incrementally to support increasing service and traffic demands.

The DRTM deployment reduces the complexity of connecting, provisioning and interoperating essential Diameter-based equipment.

PROTEI SS7 Firewall

PROTEI SS7 Firewall is intended to help operators in monitoring, controlling and managing SS7 traffic with other national and/or international operators, carriers and other telecom services providers. PROTEI SS7 Firewall is designed to detect and handle unexpected or unconventional SS7 messages through applying appropriate MTP, SCCP, TCAP and MAP policing rules.

Furthermore, and in order to assure full SS7 protection capabilities, PROTEI SS7 Firewall adopts the GSMA definition of SS7 attacks specified in GSMA IR.82 and in updates to specifications from the GSMA Fraud and Security Group (FS.11, FS.07, IR.70, and IR.71).

PROTEI SS7 Firewall supports several network protection approaches: Monitoring and Alerting, Basic Policing Rules, Advanced Policing Rules.

The system is an effective tool for preventing network and subscriber oriented SS7 attacks such as spamming and flooding, fraud generation, tracking, Identity theft, DoS (Denial of service) or Illegal interception. PROTEI SS7 Firewall can be easily upgrade to serve SMS-FW functionalities.

The system provides a flexible routing management and policy management individually for each SS7 connection (PC or GT), wide range of filtering criteria for SS7 messages, SS7 time window to control MSU's flow from a certain SS7 connection (PC or GT), SS7 Anti-SPAM functionality protecting the network from mass MSU sending (PC or GT), network addresses masking functionality, personalized Black and White Lists and support of GSM MAP phase I, II, III, HSL, SIGTRAN and SNMP Version 1,2 and 3.

Evolved Packet Core (EPC)

PROTEI EPC

PROTEI EPC is the set of platforms for LTE Evolved Packet Core (EPC) creation enabling intelligent, reliable, rich services and security for 4G operators. The EPC is designed to provide an all-IP, flat architecture which provides high throughput and reduced latency. EPCs reduce costs and support real-time media-rich services with enhanced quality of experience while also providing interworking with legacy 2G/3G networks connected via external SGSN. The EPC controls all of the components of a 4G network including macro, micro and pico base stations and the user devices they communicate with.

PROTEI EPC provides enhanced service control, advanced provisioning and ensures efficient use of network resources. The EPC components provide the functionality of access control, packet routing and transfer, mobility management, security, radio resource and network management. PROTEI EPC is a set of solutions consisting of MME, SGW (Serving GW), PDN GW/GGSN, and optionally HLR/HSS and PCRF components, or any combination of these. Each of solutions may be deployed either separately or as a part of the turn-key bundle. PROTEI EPC elements support from 100 to 1 mln simultaneously attached subscribers per node that makes PROTEI EPC suitable for mobile operators having different subscriber base and network topology.

GGSN/PDN GW

PROTEI GGSN/PDN-GW acts as a gateway GPRS support node (GGSN) in 2G and 3G network architecture, a Packet Data Network Gateway (PDN-GW) in a 4G/LTE network architecture. GPRS Gateway Service Node is the heart of PS Core Network of mobile operator responsible for data routing between GPRS Core network via GTP protocol and external IP-networks. GGSN takes part in PDP context activation sending authentication requests to the RADIUS server, as well as interaction with the DNS servers to determine IP-address assigned to the requested APN.

PROTEI GGSN/PDN-GW is developed in full accordance with international standards and allows easy integration into a packet network via Gi/SGi interface, via Gn interface with SGSN(s), via S5/S8 interface with SGW(s) of LTE networks to allow signaling and data path for establishing and maintaining subscriber PDP contexts, via Gy and Gx interfaces using in-build PCEF providing charging for data services.

In case of data traffic increasing over one GGSN/PDN-GW capacity additional modules are installed to provide greater total throughput of theentire system which makes PROTEI GGSN/PDN-GW flexibly scalable.

SGW

PROTEI SGW routes and forwards user data packets, while also acting as the mobility anchor for the user plane during inter-eNodeB handovers and as the anchor for mobility between LTE and other 3GPP technologies. It retains information about the bearers when the UE (User Equipment) is in idle mode. It manages and stores UE contexts, e.g. parameters of the IP bearer service, network internal routing information. PROTEI SGW supports default and dedicated bearers, multiple sessions/multiple bearers per subscriber, S5 and S8 interfaces for PDN GW interaction and S1-U for interaction with eNodeBs.

MME

PROTEI MME is the key control-node for the LTE access-network that processes signalling between the UE and the core network. It manages establishment, maintenance and release of bearers and the connection, authentication (by interacting with the HSS) and security between the UE and the network. The MME Performs mobility management, like tracking UE location and handover, and manages subscription profile and service connectivity. It checks the authorization of the UE and enforces UE roaming restrictions.

PROTEI MME implemented in full accordance with appropriate 3GPP standards and supports all necessary features such as default and dedicated bearer establishment (with up to 8 bearers per subscriber), ciphering and integrity protection of NAS messages, all kind of signaling procedures including attach/detach, PGW & SGW selection, S1, inter-SGW and inter-MME handovers and so on. PROTEI SGW supports S6a interface for HSS interaction, S1-MME interface, SGs and Sv interface.

Roaming Solutions

Steering of Roaming Platform

Steering of roaming system enables powerful and flexible network selection management to encourage the "right" roaming network choice for subscribers (Steering of Roaming concept).

Registration procedure control for outbound roamers is performed in full accordance with IR-73 that is main GSMA regulation document related to the steering services and allows the most efficient deployment of Steering of Roaming services as well as influencing roaming partners with a view to optimizing roaming agreements and providing required quality of service.

Steering procedure may be based on several network selection criteria like network priority, roaming KPI (share of successful registrations or share of unique subscribers registered in particular network, number of various errors), traffic proportions etc. Additionally PROTEI Steering platform is able to solve a variety of additional tasks like profile management for outbound roamers (CAMEL profile delete or update, remove fraud-risky supplementary services etc). Thus, deployment of PROTEI Steering platform efficiently covers many business and commercial tasks related to outbound roaming optimization.

Diameter front-end enables LTE traffic handling to deliver steering services for LTE network.

PROTEI Steering Platform supports Border Roaming Prevention functionality giving mobile operators the ability to prevent their own subscibers from accidentally roaming on a foreign network while still within their home country/zone.

Statistical and reporting subsystem is a powerful and useful tool for both technical and commercial teams of the operator allowing KPI's monitoring and report creation both for troubleshooting of roaming problems and deep in-sight view to roaming traffic and trends. Subsystem offers its features through a user friendly web-based interface, through wich reports, alarms, and statistics can be manage and acquired. Convenient reporting framework allows report creation in text and graphical formats.

Gateway Location Register (GLR)

PROTEI Gateway Location Register gives an Opera tor unique possibility to optimize its roaming connectivity and signaling traffic. GLR captures all information about inbound roamer's profile during initial registration and provides this information upon any request from VLR significantly reducing the necessity to interrogate with HPLMN elements. Such approach visibly decrease many risks related to SoR applicability, incompatibility problems, and other similar issues that may finally lead to loosing the roamer.

Main advantages for GLR deployment are:

- Reducing the volume of signaling traffic between Operator and SCCP-provider;
- Reducing efficiency of SoR systems installed by home Operators due to reducing number of transactions steering can be applied to;
- Secure roamers retention in Operator's network (less chance to lose the roamer during interrogation with home network or in case of short-terms failures /minor coverage problems);
- Full compliance with applicable ETSI standards (ETSI TS 23.119) and GSMA regulation;
- No violation of any GSMA rules or adding extra signaling (compliant);
- High efficiency for complex or segmented networks.

GLR have powerful and convenient statistics and CDR generation modules. Web-based administration kit provided with the system contains specialized analytic tools for effective analysis of inbound roaming traffic and its structure.

SMS Welcome and Roaming Tariff Advisor

PROTEI SMS Welcome system is a very efficient tool for mobile Operators to provide range of services both for subscribers when they are in roaming in foreign networks and for foreign subscribers registered in the network of the mobile Operator.

"Welcome SMS" and "Bon Voyage SMS" services allow subscribers to receive different kind of information: about the network where subscriber got registered now, about the country, prices for the main services, etc.

The system supports flexible delivery scenario, dynamic content delivery, SMS language management depending on the home country of the visitor, network and subscriber black lists. The system interacts with SMSC via SMPP v.3.4 protocol. PROTEI SMS Welcome increase loyalty of subscribers and roamers.

Roaming Tariff Advisor can add an extra-value to traditional "Bon Voyage SMS" service. This SMS-based service allows Operators to send roaming tariff information to subscribers according their visited location and prevent the possible risk of losing clients due to "unexpected" roaming costs.

Local Number for Visitors

This solution gives Operator the unique innovative functionality to provide local number for long term business roamers.

The number can be used for accepting incoming calls along with the ability to save activity of the main number. There is no necessity to purchase separate local account.

Roamers save the costs of expensive incoming calls and get more closely to their business partners because of the "presence effect" (no need to dial international number from the country where the subscriber currently resides).

Operator can use this solution to increase its reve nue by deploying new attractive services for inbound roamers and saving traffic in the network.

Roaming Assistant

PROTEI Roaming Assistant is a highly effective application for correcting typical dialing errors made by roamers.

It also allows them to access short number services from their home network while in roaming, leading to a significant increase in the proportion of successful calls and increasing Operator`s income.

This service can be deployed both for inbound roamers (ISUP-based) and for outbound roamers (CAMEL-based).

Roaming Optimization Suite

Roaming Optimization Suite is a powerful system, consist of 2 subsystems: PROTEI Roaming Optimization and Visitor Retention Subsystem.

PROTEI Roaming Optimization is an efficient solution that helps to save traffic in the network for calls between two subscribers from another country decreasing cost for roamers and increasing Operator's revenues. To call another person registered in the same network, using "optimal route", the foreign subscriber should dial the destination number with special prefix. The systems checks location of the called subscriber and if he/she is found in the same network, the system makes call using optimal routing rules without creating a voice loop via roamers home network.

Visitor Retention Subsystem is targeted to increase Operator's revenues from inbound roaming services and implements actions targeted to visitors' retention. The system ensures that roamers do not leave the network due to momentary communication problems like lost of coverage etc. It uses standard MAP Update/Cancel Location procedures to interface with the HPLMN and retain the roamer.

All subsystems of PROTEI Roaming Optimization Suite have powerful and convenient statistics and CDR generation modules. Web-based administration kit provided with the system contains specialized analytic tools for effective analysis of roaming traffic and its structure.

Multi IMSI Roaming Gateway

Multy IMSI roaming gateway is intended to expand roaming geography for MVNO, small and/or independent mobile Operators (named Roaming Clients) by using roaming agreements and subscription of well-established mobile Operators (sometime named Donors or Roaming Brokers).

Basing on PROTEI Multi-IMSI Roaming Gateway either traditional Dual-IMSI roaming services or innovative dynamic Multi-IMSI roaming services may be deployed in optimal way. Multi-IMSI roaming allows providing alternative roaming services for GSM/UMTS network subscribers by using dynamically loaded alternative subscriptions of the visited Operator (guest network). This solution makes it possible to provide a local number and access to all local services for the roamer who will be able to enjoy cheap or free local incoming calls, cheap outbound calls and attractive data prices without losing the accessibility of the roamer at his/her main phone number.

Boarder Roaming Gateway

As a general rule, subscribers do not proactively change networks during their stay, but in reality, the existence of blind spots, or temporary problems with coverage or particular cells congestion, which may occur in any Operator's network, when coverage momentarily disappears or communication services become unavailable, causes roamers to look for a new network. As a result, along the borders of the home country, subscribers may occasionally roam on a neighboring country's mobile network, where roaming rates/international call charges are applicable.

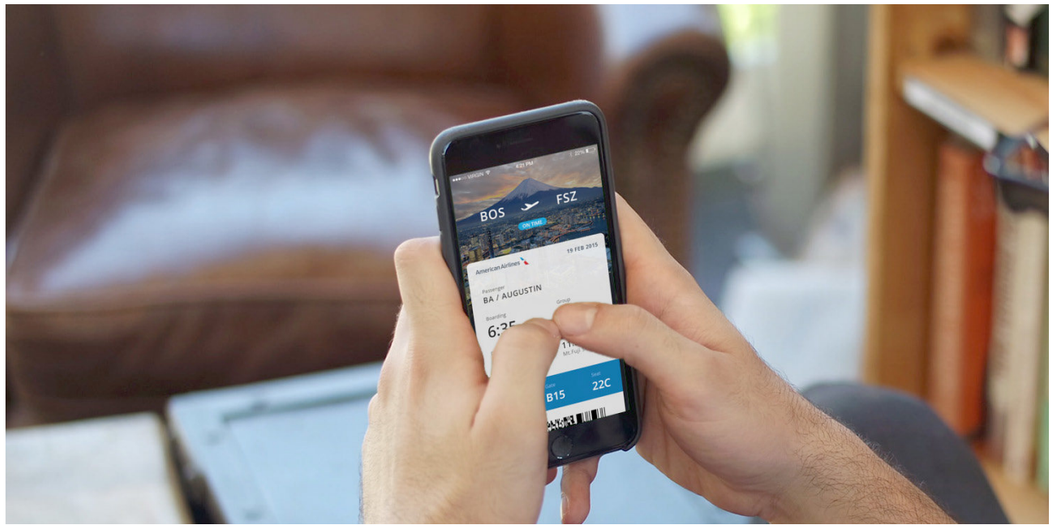
To avoid possible claims, increase level of services, enhance customer care and reduce potential cost and losses for the home network Operators and subscribers, the home networks would prefer to retain their customers in such situations.

PORTEI Border Roaming Gateway (BRG) is a platform that provides mobile Operators the ability to prevent their own subscribers from accidentally roaming on a foreign network while still within their home country/zone. Using the system helps to avoid possible claims, increase level of QoS, enhance customer care and reduce potential cost and losses for home network Operators and subscribers.

Voice Quality Control for Roamers and SIM Box Detection

Voice Quality Control system allows Operators to automatically test speech quality in a simple way for meeting customers' needs and organizing KPI's. ITU-T-based speech pattern comparison and quality estimation according with P.862 ITU-T Recommendation is performed in the system. Additionally to voice quality testing this platform allows to verify transparent CLI transition between Operator's network and the network of roaming partner.

The system also supports SIM Box Detection functionality for comparison of CLI information sent by the calling party and the one received by called party. SUP-based and CAMEL-based methods for CLI verification are supported.



Messaging Solutions

SMS Center

PROTEI SMSC is a carrier-class high-performance SMS center that includes traditional and innovative SMS features. Range of the supported protocols allows deploying PROTEI SMSC through GSM/UMTS or IS-41 (CDMA) networks. Support of SIGTRAN allows easy deployment across the next generation mobile networks. Flexible delivery scenario management, embedded "First Delivery Attempt" feature, policy management, convenient licensing principles and powerful SMS routing subsystem make SMSC a perfect choice for Operator's needs.

Routing and bandwidth configuration tools support fully-functional SMPP interface with efficient access policy for interaction with external applications. Horizontal scaling architecture allows to achieve high reliability and to adjust SMSC performance as network grows. Features like SMS forwarding, copy, auto-reply, personalized black and white list, detailed report increase service convenience for subscribers.

Bulk SMS/MMS Platform

Nowadays reliable and fast interaction with customers is more and more important for increasing number of companies. Competitiveness means that market players need to have an opportunity to reach fast their customers periodically and/or at special occasions. List of target end-users of such services includes service- and content-providers, banks, advertisement agencies and others.

PROTEI Bulk SMS/MMS platform provides to the Operator power and flexible tools for managing bulk SMS and MMS campaigns and control/charge bulk SMS traffic generated by corporate clients. Convenient WEB-based and GUI interfaces are supported for system customers. On-line charging features are supported.

USSD Server

PROTEI USSD server exchanges USSD messages between the mobile subscribers and the external applications through GSM networks. With PROTEI USSD server Operators is able to provide balance enquiry, voucher activation and other customer care services using the most efficient and convenient way. PROTEI USSD server supports flexible USSD message routing based on the service keys, message body and source of MSC address with possibility of access policy and bandwidth management for each application individually. USSD stage I and stage II are supported that allows creating dialogue USSD services with multilevel USSD-menu. SMPP v3.4 provides fast and easy integration with external content-providers. On-line charging interface is also supported.

PROTEI USSDS has embedded tools for convenient and flexible USSD-menu construction (SMPP-portal software package) and supports open XML and ODBC interfaces for integration with external information systems and databases.

Different subscribers can access different applications using just one USSD service number. The USSD Server can define the type of application not only from the USSD service number, but also from the number of the sender (CgPN) or identifier for a group of senders.

PROTEI USSD Server can be connected to any external application using SMPP (for provision of dynamic information services such as currency rates, weather forecasts, account information etc.).

System availability is further guaranteed by network architecture and load balancing - when one module reaches a set threshold, excess load is routed to a free module.

SMS Firewall

PROTEI SMS Firewall is intended to protect Operator's network from main threats related to SMS spam and fraud. The primary objectives of the SMS security solution are to detect and mitigate SMS frauds caused by:

- SMS spoofing;
- SMS faking;
- SMS flooding;
- other types of technical fraud.

Solution allows protecting Operator's network and Operator's subscribers against unauthorized SMS traffic (both application originated SMPP traffic and inbound/transit SS7 mobile originated traffic).

Filtering criteria can be defined for different type of traffic. Rules can be defined for MO or MT SMS, for particular MSISDN range, Operator, Global Title range or SMPP message sender. These criteria include list of SS7 parameters to be verified when processing inbound MO or MT messages coming from abroad, as well as list of figures defining bandwidth and routing limitations for SMS traffic like limits for SMS traffic intensity from any particular MSISDN, SMSC or other network elements, range of destination numbers to which messages from the source mentioned above can be addressed, range of origination numbers messages can be sent from etc). Anti-spoofing and anti-faking filtering and detection capabilities are supported according to IR71 GSMA document. PROTEI SMS Firewall supports enhanced anti-spam capabilities such as keyword-based filtering, intellectual spam detection basing on heuristic message body analysis and statistical criteria such as number of same/similar messages from one source, from one network, to one recipient and so on. Personalized white and black lists can be implemented basing on PROTEI SMS Firewall as well.

SMPP-Proxy/Router

SMPP proxy/router serves the purpose of exchanging messages between one or more SMS/USSD centers and external applications, using several routing criteria, and intended for mobile Operators and content aggregators. Flexible policy and bandwidth management allow creating complex routing algorithms (based on message's type, recipient and sender numbers, application IP address etc.) and that creates a possibility to deploy SMPP proxy/router as a key element of content provider's access system.

The system can be effectively used in different cases:

1) For connecting SMSC and external applications for routing requests directly from external applications to the SMS gateway. Only undelivered messages in this case will be sent to the SMSC for postponed delivery. This algorithm dramatically lowers the load for the SMSC and frees up its resources for carrying out its main task – exchanging messages between network subscribers.

2) For exchanging messages between SMS centers. PROTEI SMPP proxy/router can be used as a router between SMS centers of several carriers in order to organize a single SMS messaging space. In this case, the subscribers of different service providers can exchange SMS messages and take advantage of unified SMS services. When SMPP proxy/router is used in this mode, content providers get access to different networks via single access point.

Cell Broadcast Center

Cell Broadcast is a one-to-many geographically focused messaging service. PROTEI Cell Broadcast center helps Operators and service providers to distribute geographically dependent information directly to subscribers' handsets across the networks using GSM/LTE Cell Broadcast technology. The System supports open JSON-based interface for content-providers and other services managing broadcast campaigns. Broadcasting will be addressed to all subscribers in the particular geographical segment of Operator's network (set of Cell ID, set of LAC, TAC etc) as determined in the system configuration for particular information channel. 3GPP interfaces are supported for interaction with BSC (TS 48.049), RNC (TS 25.419) and eNodeB (TS 29.168). Service architecture and commands are implemented in strict accordance with 3GPP 23.041 with extensions defined in ETSI TS 102 900 that allows to use the system not only for technology or marketing broadcasts but also as a part of public warning alert systems being such concept deployed in the particular country. System may be integrated with PROTEI xVLR solution (both systems may be managed by unified broadcast campaign management module) to enable maximum flexibility and variety of broadcasting channels.

Intelligent Network & VAS

CAMEL Gateway/Proxy

PROTEI CAMEL gateway is an ultimately efficient tool for supporting operator-specific services in GSM/3G/IMS networks. The CAMEL-enabled server allows to manage telecommunications services in GSM/3G/IMS networks by service logic application defining call, SMS and data session scenarios using API. CAMEL-gateway allows efficient deployment of wide range of IN services in any CAMEL-enabled network, both for prepaid and postpaid subscribers. Together with service logic applications may be created/delivered by PROTEI, service provider or operator's experts CAMEL-gateway operates as fully functional SCP delivering flexibility and convenience in new services creation and deployment.

The system allows real-time controlling voice call, SMS- and GPRS-sessions in GSM networks, using service logic applications.

Convenient Service Creation Environment being an additional component of CAMEL-gateway allows easy service creation and service tuning for wide range of VAS. Embedded CAMEL-proxy functionality allows PROTEI CAMEL Gateway to be easily integrated into existing IN networks, allowing new services to be deployed with no disruption to the delivery of previously available services. Horizontal scalability and easy integration with existing SCP installations make PROTEI CAMEL Gateway an ideal solution for providing IN-based Value Added Services in networks of all sizes. SIGTRAN support ensures easy integration into next-generation mobile networks.

Such services as black and white lists, inbound consumption counting, number translation, mobile VPN, and others can be efficiently deployed basing on PROTEI CAMEL-gateway/proxy.

Standalone CAMEL SSP

Deployment of PROTEI Standalone SSP gives to operators highly demanded opportunity to organize CAMEL-roaming in the networks that don't support CAMEL technology for subscribers from CAMEL-enabled networks. PROTEI-SSP usage provides an opportunity to access services that are supported by the intelligent platform (SCP) of the home mobile operator for inbound roamers registered in the visited networks at MSCs that haven't integrated SSP functionality and don't sup- port CAMEL technology. The system allows providing voice services (Prepaid, etc.) and SMS services according to CAMEL phase 2, 3 specifications.

Call Completion Suite

People need to stay in touch even when they're not available. Whether its consumer or business use, voicemail has become an expected service by wireless subscribers so they can receive and retrieve their messages at any time and from anywhere.

PROTEI Call Completion Suite is intended to maximize number of successfully completed calls in Operator's network by capturing of all unsuccessful calls that usually cannot be successfully completed due to different reasons.

Solution includes several services allowing Operator to suite needs of different segments of Operator's subscriber base.

PROTEI Call Completion system is a cost-effective, high performance and scalable solution, with a wide range of features to suit both new and existing mobile operators that could be introduced both as an addition to existing voicemail system or as standalone service packet. Solutions integrated with voicemail system are also available.

The following services can be implemented basing on this platform:

- Missed Call Notification;
- Notify Me;
- Call Completion;
- Video Call Completion;
- Video/Voice SMS;
- Comfortable Jump;
- Call Collect (Pay4Me, Sponsored Call, Call for the Called party expenses);
- Voice Video Mail.

"Who Called" / "Notify Me"

PROTEI Missed Call Notification System ("Who Called") is intended for giving information about the calls that were missed by the subscribers, during the period when they were unavailable, by sending SMS with the list of telephone numbers from where the calls were originated. It also can notify the calling party when the recipient is back to the network or when it becomes available for the incoming calls (the "Notify Me" sub-service). Deployment of the solution increases successful call share that directly increases operator's revenues. PROTEI Missed Called Notification System can be deployed as an addition to existing voicemail system or standalone service package. Solutions integrated with PROTEI voicemail system are also available.

Video Call Completion

With PROTEI Video Call Completion solution Operators can seriously increase video call success ratio that is usually low due to many technical reasons and terminal compatibility issues. Video Call Completion platform may either convert 3G video calls into legacy 2G voice calls or capture the call as MMS and forward captured message to the subscriber then.

Voice SMS

PROTEI Voice SMS system is a carrier class asynchronous Short Voice Messaging Service that works across operators and networks. This is a talk and listen messaging alternative to the 'type and read' text messaging service provided by SMS. Store and forward voice applications complements and enhances the revenue generation capacity of the investment already made in network resources such as voice circuits, SMS-centers and prepaid/billing systems. Voice SMS technology provides the ability to interconnect between operators that allows easily increasing of service penetration across operators and countries. Operator can bill the service according to its business model. "Per message" billing like SMS leading to simplicity and faster adoption with just one rule added to rating engine. Service will work on all existing handsets. It doesn't require any handset upgrade that allows covering the entire subscriber base. Service works across all networks like 2G, GPRS, CDMA and 3G that makes him even more universal than standard SMS. Simple user interface without any complicated navigation requires minimal user experience.

Mobile Number Portability

Mobile Number Portability (MNP) is the ability for a mobile subscriber to change the GSM subscription network within the same country whilst retaining her original MSISDN or MSISDNs. It is one of the key aspects of deregulation in telecommunications and a technical challenge in almost all countries.

PROTEI-MNP Solution implements Mobile Number Portability functionality according to the requirements of the appropriate ETSI standards. Either embedded NPDB or external database can be used for service provisioning. System complies with EN 301715, 301716 (GSM 03.66), so PROTEI-MNP operates as MNP SRF functional element.

The following MNP scenarios are supported by PROTEI-MNP platform:

- IN Call-related signaling (CAMEL-based approach, GSM 03.66 Annex A);
- Indirect routing – Call-related scenarios, non-Call-related scenarios for SMS or AnyTime Interrogation Procedures;
- Interaction with 3rd party (national) NPDB via XML or ODBC.

The Operator can choose the most suitable scenario according to the existing network features. Additionally, Comfortable Jump service can be easy implemented on the basis of PROTEI MNP platform.

Voice Video Mail

VOICE/VIDEO MAIL subsystem is a updated solution, which helps to generate additional traffic increasing Operator's revenues. It allows subscribers to receive messages in a mailbox and retrieve them at anytime and from anywhere: from home network and roaming networks, from own mobile phone and other phone numbers (e.g. fixed phone).

In additional to traditional voicemail functionality PROTEI system supports a number of innovative opportunities which qualitatively raise convenience of service usage for the subscriber and promote generation of additional revenues for the Operator:

- personalization: different menu structure for different subscriber groups;
- dynamic mailbox creation: mailbox can be created at the moment when first call forwarding occured;
- wide range of configurable notifications;
- one-click call back to message sender;
- menu structure is adjustable by Service Administrator: language profiles, flexible greeting management (greeting may depend on the caller, time of the day etc).

Videomail subsystem deployment will dramatically increase traditional voice-mail functionality for 3G users and provide the following opportunities:

- Capturing videocalls when called 3G subscriber is unavailable or out of 3G coverage. Caller has possibility to leave video message in the subscriber's mailbox;
- Previewing and retrieving of stored video messages by recipients when returning to 3G networks;
- Possibility to get video message as MMS or e-mail;
- Recording and uploading subscribers personal video.

The solution supports SS7, PRI and SIP, that allows efficiently deploy the platform across the IMS/NGN networks.

Call Collect

It is a typical situation when subscriber trying to make urgent and important call but network rejects this call due to insufficient balance on subscriber's mobile account. Such calls form more or less visible part in statistic of any mobile network. On the other hand it is highly probable that person to whom the caller is trying to call will recall him if the caller will have possibility to inform the caller somehow about this situation. Mobile Operator that will give to its subscribers such possibility will get more revenues instead of money loss.

With PROTEI Call Collect system Operator can easily provide this opportunity to all its subscribers. The solution oriented to Operator's private customers gives them unique possibility to be reachable when their balance is not enough to make outbound calls. PROTEI Call Collect solution allows subscribers to request any subscriber in any mobile network to recall him or to recharge his account or to make a calls to destination subscriber when all call expenses are to be paid by called party.

The system supports several additional features such as:

- counters/limitations (to avoid malicious service usage and possible pushing B-party);
- prepaid/postpaid distinguishing (to limit service usage for prepaid subscribers only);
- forced location determination (to ensure correct A-party location determined system);
- "white"/"black" lists (to deliver service with more convenience).

Virtual Office

PROTEI Virtual Office Server provides universal solution for PBX-like and FMC services for small/medium corporate customers (Virtual Number, Virtual Call Center and Virtual Private Network). It also provides intelligent termination hunting functionality for mobile subscribers.

Virtual Office Server is triggered when the subscriber from any network calls to the service or the customer's number. Mobile agents provisioned for a specific customer are all monitored and the incoming call is routed to the most suitable agent based on the predefined hunting rules (depending on CgPN, calling and called party location, time schedule etc). Self-service WEB based administration toolkit is available for Virtual number customers.

Call Back

PROTEI Call Back Server provides convenient and efficient way to access the telecommunications services for non-CAMEL roaming subscribers. Calls can be ordered by sending SMS or USSD messages. System supports flexible routing functions, powerful policy management (including subscriber location analysis) and open interface (CAMEL, Diameter or XML) for integration with the third party Prepaid platforms.

Seamless callback option enables to increase service usage convenience for the Customers. Using standard CAMEL capabilities system helps subscriber to avoid the necessity to use complicated USSD sequences to invoke the service. With seamless option the user can dial the called number as usually; system will automatically convert such call into callback.

Personal Ring Back Tone & Video Ring Back Tone

RBT is one of the most popular VAS during last 5 years. Its penetration is still visibly growing and generating stable income for Operators. PROTEI-RBT system is a fast way to offer Ring Back Tone service to subscribers. Due to platform's flexibility and scalability the system can be easily adjusted according to current or new Operator`s requirements.

In additional of traditional features (tones depending from Caller ID and time schedule, Music Box, service management elements like IVR, USSD, WEB) there are a lot of advanced options, for example: "Tone like my friend has" (Copy RBT service), "Present tone to friends", Corporate RBT, different tone prices per purchase channel Hang-up SMS and Anti RBT.

The solution allows quickly extend Operator`s service promotional tools, forming new marketing proposals like: "the second melody as a gift", "get bonus points for inviting a friend", "free trial period", "forth melody as a gift", "first month of subscription is free".

Video RBT option is supported as an important functional enhancement of the traditional RBT platform, intended for 3G users for whom video calls are available. This service can be accessed from IMS and NGN networks also.

PROTEI-RBT is a cost-effective, high performance and scalable solution with a wide range of features to suit both new and existing mobile Operators and content providers.

Sponsored Call

PROTEI Sponsored Call Server allows end-users subscribed to specific thematic information channels, to make free or discounted calls while receiving attractive advertisements.

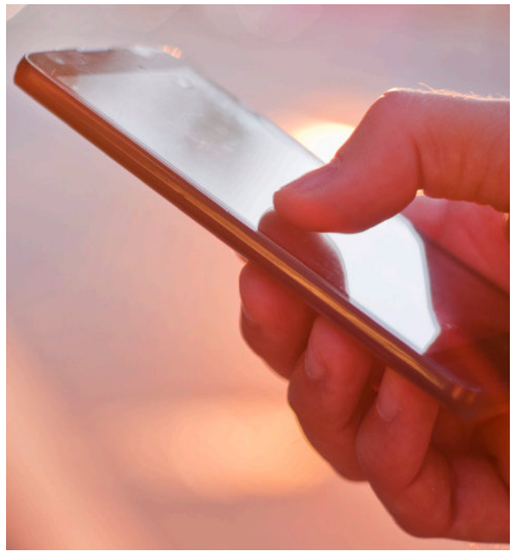
When subscriber makes a call, prior to establishing a connection, he/she receives a multimedia promotional audio or video from an advertiser.

After that he/she receives different bonuses:
- certain number of call minutes paid by the advertiser during a call;
- discount for minutes price;
- certain number of call minutes paid by the advertiser during a day, week, month etc.

Advertisement is played only within thematic channels and only to subscribers who have subscribed to it. Subscription can be made by sending SMS/USSD-message to one of the numbers corresponding to the thematic channels or through the IVR using the DTMF-menu. Self-subscription via WEB-interface is also available. Subscriber may be subscribed to several thematic channels simultaneously.

Providers of advertising information have convenient Web-interface for managing thematic channels: uploading and deleting their own commercials, viewing statistics.

The Operator may set limits on the total number of playable subscriber commercials and on the total amount of bonuses, daily/monthly available to a subscriber.



Content Delivery Platform (Mobile Portal)

Mobile Portal is a universal flexible solution for content- and service- providers intended to offer wide range of content and entertainment services. By using this solution Operator or content-provider can easily deploy services like sending SMS- and WAP-content 'on demand' (pictures, texts, logos, music, including random services) or by subscription (information, weather forecast etc).

Voting and quiz services could also be easily deployed. These services enable efficient on-line interaction with wide subscribers' base for quizzes, polls, marketing researches etc. People can participate in the voting using SMS, USSD or voice voting/quiz channels.

System supports convenient WEB-interface for system administration and watch for voting course; fully configurable visual appearance of the voting results chart; manual or scheduled voting start and stop. Integration with PROTEI IVR is supported for voice voting, content listening and ordering etc.

With PROTEI Mobile Portal, service providers can deploy new services quickly and efficiently:
- Voice information and entertainment services;
- Polls and SMS voting;
- Quizzes with voice and SMS access;
- On-demand WAP and SMS content delivery (ring tones, logos, pictures, wallpapers, random jokes etc.);
- SMS content delivery by subscription (news etc).
- Mobile advertising.

xVLR

PROTEI xVLR is a carrier class contemporary system for collecting information about location and registration of subscribers of GSM/UMTS network.

The main purpose of the solution is the realization of technological ability to process, store, update and transmit to external applications information about location and movement of the subscriber. This made PROTEI xVLR a powerful solution for territory-dependent SMS notification.

Integration with geographic information system (GIS) allows selecting the broadcasting area on a digital map with automatic conversion of the selected area into a list of Cell IDs or Location Area by means of the broadcast management subsystem.

Implementing API on the basis of HTTP/XML for interaction with external applications makes such integration fast, easy and flexible.

New services can be offered by mobile Operator to their corporate or advertising clients: any company can make a mass advertizing distribution in the area where the company is located. Additional criteria can also be chosen basing on information available from Operators CRM system, e.g.

- Average revenue per user (ARPU) for one subscriber (subscribers could be ranged and informed according to marketing program for a specific segment of buyers).
- The distribution can be made for a list of company`s clients, when they appear in the company location area.
- In order to prevent sending messages to subscribers that opted out of the distribution, the system provide keeping black lists of subscribers.
- Integration with GIS and powerful statistics system makes PROTEI xVLR career class multi-criteria tool for targeting mass distribution.

Location Based Service Platform

PROTEI Location Based Service platform gives an Operator possibility to provide a wide range of Value Added services, using information about the current geographic location of the mobile terminal.

Using PROTEI LBS Operator can easily introduce very popular services like parental control, transport monitoring, navigation (calculating optimal route to destination), searching for nearest cafe (cinema, restaurant, police etc.).

In comparison to other solutions, services based on PROTEI LBS can be provided to any subscriber regardless of mobile terminal model. The system supports two location methods: Cell ID and Cell ID+ and reaches accuracy up to 100 meters.

Key benefits of PROTEI LBSE platform:
- Wide range of unique and useful LB-services;
- Convenient interface for content providers;
- Accuracy up to 150 m;
- Powerful maintenance and reports system;
- Convenient interface for content providersp;
- Simple implementation;
- Fully functional SMPP;
- Standard interface.

Data Traffic and Policy Management

DPI Platform

Powerful and flexible data traffic management is one of the key capabilities the contemporary mobile Operator "must have". PROTEI DPI platform unlock a variety of the data traffic management tools enabling Operator to deploy range of services related with ultimately flexible traffic charging, bandwidth management etc.

PROTEI DPI is equipped with signature constructor which allows creating new traffic signatures in order to be capable of detecting flows of newly developed Internet applications. Solution is capable of detection of obfuscated protocols using statistical analysis techniques and allows flexible creation of new services and protocols using regularly updated signature base. The platform supports bit rate control with regard to service priority, supports ToS/DSCP traffic prioritization.

To deploy URL-based service delivery policies PROTEI DPI is able to classify the traffic by URL or part of URL using external database (Websense security cloud or other content classification platforms may be supported), local "black" and "white" URL lists.

PROTEI DPI supports Gy (Diameter) per-service realtime charging and periodical per-service quota and also performs subscriber identification using RADIUS, Diameter (Gx), XML. The platform can be integrated with "pull" or "push" subscriber identification databases. System supports different tariff plans which can be applied to a subscriber basing on his identity or command from external source (3GPP PCRF).

PROTEI DPI is horizontally-scalable, carrier class system having redundant architecture with no single point of failure or "bottleneck". It performs as a software or software-hardware packet (using of 40 Gbit/s boards developed by PROTEI).

Bill Shock Prevention Platform

'Bill shocks'-related cases are generating many problems not only for Customers, but also for Operators. Both customers who roam don't use their mobile devices because they are worried about usage costs, and subscribers who use their data services without regard to costs are source of headache for mobile operators. Customers become angry with Operator for sending them a huge bill, and Operators often cannot collect huge amounts from their subscriber (due to image risks of other reasons) but responsible for wholesale amount to be paid to their roaming partners.

PROTEI Data Usage Control and Billshock Prevention System allows to avoid the customer complaints that follow bill shock by notifying roaming subscribers in real-time about their data traffic consumption and related costs.

This platform enables subscribers to set spending and/or usage thresholds based on pre-established policies. The policies may be configured by subscriber and by Operator as well. System has capability to inform subscribers via SMS upon approaching this threshold and switch service off as soon as consumption limit had been reached.

Solution deployment will help Operators to assist their roaming subscribers to manage data roaming costs, while also helping prevent fraud and abuse of flat-rate data roaming plans.

Policy Controller (PCRF)

PROTEI Policy Controller is an intellectual node regulating policy and charging parameters of mobile broadband subscribers in 3G and LTE networks. Equipped with a flexible and easy-to-manage policy decision engine PROTEI Policy Controller addresses mobile network operator's business need to implement policy and charging rules providing dynamic distribution of limited broadband network resources.

Policy and charging control in modern networks implies dynamic per-service modification of available bandwidth and money debiting rules during ongoing Internet session depending on the type of service, subscriber profile parameters, subscriber historical data, date and time and commands from external systems like subscriber portal. Besides data channel parameters control PROTEI Policy Controller allows to manage content-filtering rules for the subscribers providing parental control or corporate control services.

PROTEI Policy Controller supports the following interfaces:

- Gx-interface towards GGSN, PDN-GW or DPI. This Diameter-based interface is used for policy and charging rules transfer to policy enforcement point (PEP).
- Sp-interface (Diameter or XML) allows to receive subscriber-related information from subscriber profile repository.
- Rx-interface towards external applications which may require a capability to modify the parameters of subscriber's Internet connection. This interface is Diameter-based, XML-based exchange is also supported.
- In 3GPP Release R8+compliant networks PROTEI Policy Controller also supports Gxc-interface, used for policy and charging rules transfer to S-GW, and S9 interface, towards VPCRF in roaming scenarios.

WiFi Offload

The increasing demand of Internet access forces mobile Operators to make huge investments to networks infrastructure. Wi-Fi technology is great alternative for Operators for providing high-speed Internet access to substitute the limited resources of 3G/4G or LTE spectrum. Wi-Fi resources reusing is apparently the best way to satisfy the demand for high-speed connection.

PROTEI WIX is an advanced market-proven WiFi offloading solution allowing mobile network Operators to organize access by means of WiFi domain integration into the network infrastructure. The platform enables mobile operators not only to offload broadband traffic, but also allows inter-standard roaming, giving subscribers the unique capability to receive calls and SMS on their own phone number while registered in WiFi network via VoIP technology.

With the help of WIX platform Operators can deploy bandwidth-efficient FMC services, providing corporate clients with the ability to use WiFi inside the office and 3G/4G outside with the same MSISDN and the same billing account in both networks. WIX platform is also capable of integration with WLAN aggregators which allows subscribers to use Wi-Fi worldwide while paying for the service from home network account (WiFi roaming).

The platform provides real-time charging of data transmission and voice calls, withdrawing credit from subscribers main mobile account. It is important to note that the subscriber can be either postpaid or prepaid in case of CAMEL and Diameter technologies are used for on-line charging.

WiFi Calling Platform

The technical features of mobile networks cannot guarantee the high quality of service in some places, such as in buildings or in points with radio signals interference.

In case of lack or low signal level of the mobile network, instead of the traditional development of the radio access infrastructure, which requires significant capital investments, it's more efficient to use the innovative WiFi Calling service.

Using the stable connection with WiFi access point the subscriber can make calls with usual quality and reliability and pay for services from the main account by common calls tariffs.

Implementing WiFi Calling service will significantly improve the coverage area without huge investments and increase traffic in places where number of calls earlier was minimal.

WiFi Calling solution by PROTEI has developed in full accordance with 3GPP standards and thanks to transparent handover procedure between WiFi and LTE/3G networks no mobile applications required if the mobile terminal supports WiFi Calling option.

The solution supports SWu, SWm, SWx, S2b, S2a, and S6b protocols for full integration with IMS core and existing Operator's billing system and for convenient management of service access algorithms.

WiFi Calling platform supports various subscribers' authorization algorithms, including EAP-SIM and EAP-TLS, and provides services to home users and visitors. It operates with subscriber's location data allowing to create/manage user profiles and maintain detailed statistics.

Charging

OCS Platform for MVNO/MVNE

PROTEI OCS is an on-line charging system, fully-functional automatic accounting, charging and billing solution supporting all functions related with subscriber accounts registration and management, real-time service charging etc. Due to rating engine capabilities system may be efficiently deployed by MVNEs and shared among several MVNOs built on such MVNE.

The basic functions of PROTEI OCS are accounting and charging of all kind of telecom services consumed by prepaid subscribers, subscriber management functions including order processing for subscription and unsubscription for the services, administrative management, and rate plan management with unlimited number of tariff plans. System supports time-based, event-based, volume-based and service-based charging including but not limited "pay-as-you-go" charging and service bundles.

PROTEI OCS supports such features as inventory functions related to prepaid packets sales support, working with dealers (including convenient API or WEB-interfaces for dealers and/or MVNOs), interacting via RADIUS or DIAMETER (Gy) with external latforms (like PCEF/DPI, GGSNs, WiFi Service Gateways) for real-time charging of data services, integration with external customer care platforms (Voucher management systems, IVRs).

Subscribers' accounts may be recharged using vouchers, airtime transfer or by credit card payments collected through external systems (payment gateways, terminals, ATMs etc). Convenient APIs for integration with external financial, accounting, CRM and Customer Care software tools makes able to implement fully functional financial module complementing this OCS. Flexible and power statistical reporting and generation tools allows to get comprehensive picture regarding service usage, subscriber activity etc.

Real-Time Charging Gateway

PROTEI Real-Time Charging Gateway helps Operators to optimize and simplify on-line authentication/authorization and charging procedures for many services such as data traffic charging including broadband data traffic charging (WiFi, xDSL and so on). The wide range of supported interfaces means the platform can be integrated into practically any GSM/UMTS network.

The platform supports all functionality need for smooth integration of different platforms and easy deployment of on-line authentication and charging capabilities for any services being delivered on those platforms. The platform supports such functions as authentication, access and accounting for data sessions controlled by 3GPP or non-3GPP broadband access equipment, both fixed and wireless, real-time charging of data sessions controlled by broadband access equipment, both for Operator's own subscribers and inbound roamers, volume-based or time-based charging of data sessions, call-based charging for voice services such as VoIP calls served by non CS-core call control components.

System supports various methods for subscriber authentication and authorization: authorization using WEB-portal using MSISDN and one-time passwords requested by IVR, SMS or USSD and/or vouchers, EAP-SIM/EAP-AKA authentication etc.

System supports a variety of interfaces towards platforms delivering services to be charged. Integration can be done via RADIUS, http or any other proprietary interfaces. Integration with OCS can be done via DIAMETER, CAMEL or billing vendor's specific interfaces and protocols.

Signaling Solutions

Universal Signaling Converters

The runaway development of the telecommunications industry has led to a wide array of signaling systems, and yet more are sure to come.

The PROTEI line of signaling converters ensures seamless integration of modern and next-generation equipment into your network. The well-proven reliability of our solutions makes certain that your installations will deliver the dependability and quality that your subscribers demand.

The following options are supported: SS7-R2, SS7-R1.5 (Russian 2CAS), SS7-PRI, PRI-R2, and PRI-R1.5. On the same platform wide range of small and medium capacity trunk gateways can be implemented: SIP-SS7, SIP-PRI, and SIP-R2. Solution capacity is up to 16E1.

A-bis Compression System for BTS Connection via Narrowband Satellite Links

A-bis compressing solution intended to enable mobile communications over narrowband satellite channels. The solution consists of several Modules of Concentration (MC) installed on the remote sites and Group Modules of Concentration (GC) installed on the site of network operator.

It is proposed to use the equipment supporting packed data transferring via IP protocol as the base station (BTS) e.g. nanoBTS by ipAccess Ltd may be used. The nanoBTS communicates with base stations controller via IP channel using the proprietary protocol Abis over IP. Voice stream is transmitted by RTP-protocol using AMR codecs.

For bandwidth reduction before satellite transmission system Modules of Concentrations are installed. MC and GC performs removing overhead information transmitted over IP-channel using highly efficient IP-headers' compression algorithms. The main purpose of MC/GC is concentration of headers in IP-packets, which usually exceed the useful contents of the IP-packet. For example, for the codec AMR7.4, useful (voice) data is 19 bytes. Additional information transmitted in the header is consists of headers codec AMR (2 bytes), RTP (12 bytes), UDP (8 bytes), IP (20 bytes), Ethernet (18 bytes) is 40 bytes in summary.

Average compression ratio for IP headers is more than 3 that means overall compression efficiency is more than 40%.

3G Video Gateway (SIP-H.324M)

PROTEI Video Gateway enables mobile operators and service providers to deliver a variety of advanced video services to 3G customers. This carrier-grade solution connects mobile networks and NGN/IMS networks. This device can operate as independent solution or complement PROTEI Service Platforms powering the deployment of interactive converged video services over any bearer. With these platforms such services as like Video IVR, Video Mail and Video RBT and more can be enjoyed by 3G handset owners.

PROTEI Video Gateway connects mobile networks and IP networks. It supports real-time bi-directional video and voice telephony between 3G-324M-based mobile terminals and IP-based video media servers, messaging systems, SIP-terminals etc.

22012020 karaush@protei.ru

Customer Care

Call Center

PROTEI Call Center is a new generation cost-effective solution for any companies that provide information, help desk, booking and other similar kind of services. New generation technologies: VoIP and WEB are widely used in PROTEI Call Center. Subscriber can access PROTEI Call Center services by standard way from PSTN/PLMN, from Internet via WEB/e-mail call-back order, by e-mail or by making VoIP call and that gives an opportunity creating geographically distributed call centers.

The system supports unlimited number of the agents' groups and service access numbers with a possibility to organize any number of services in one system. Several types of call routing algorithms (on the base of dialled number, CgPN, time/day, state of the service queue) and flexible call distribution (including skill level differentiation) are implemented. This allows tuning up the Call Center according to the needs of the particular customer.The System has embedded call recording and call monitoring systems.

Call center Supervisors and System Administrator has efficient tools for service quality monitoring.

Voice Portal (IVR)

PROTEI IVR is a carrier-class automatic voice service system geared towards various customer care, information and entertainment services. PROTEI IVR can interact with TDM equipment via SS7, EDSS-1 as well as with NGN platforms via SIP. Modular SIP-enabled architecture allows easy system integration into perspective IMS environment.

This system enables interactive self-service capability and outbound subscriber notifications. The system covers standard IVR functions and operations like including balance inquiry, payment registration, services activation/deactivation, tariff change, low balance notification etc and wide range of information services also. By using DTMF, subscriber can navigate to a particular menu item, e.g., number activation/deactivation or balance enquiry. If it is necessary IVR can interact at any point of dialogue menu with external information systems (e.g. mobile Operator's billing system) to retrieve the requested information or to change necessary settings in the subscriber'sprofile.

All menu schemes can be easily defined by the System Administrator by using voice menu constructor (service creation environment). Outbound notification (mass calling) can be initiated by the request from the billing system or by the System Administrator.

Integration with 3rd party ASR and TTS engines allows to manage voice services flexibly.

Voucher Management System

A fully functional voucher management system allows efficient administration, activation management and control of voucher usage. Also it can be used as the embedded PIN-generator or the external PIN-generation system during the voucher generation.

The system allows controlling and managing parameters like voucher expiry date (life duration), date of voucher transfer to dealer, date of voucher activation that allows efficiently controlling all voucher lifecycle and card resellers' activities.

The system has convenient and powerful WEB-based administration tools with different access levels that allow easy system integration into existing Operator's business-processes. Voucher activation via IVR, USSD and SMS or from call center agent workplace is available.

Our customers

Rostelecom

Beeline™

MEGAFON

orange™

umniah belong

MTN

МТС

Tinkoff

MEGACOM

MTT

Ucell

life:)

Asiacell

ooredoo

Safaricom Twaweza

الاتصالات Paltel

UZTELECOM

EMPRESA DE TELECOMUNICACIONES DE CUBA S.A. ETECSA

Batelco Group

vodafone

COMORES TELECOM

one.vip

TT Tunisie Telecom

КЫРГЫЗТЕЛЕКОМ акционерное общество

HEAD OFFICE
PROTEI
60A B.Sampsonievsky
Business Center “Telecom”
St.Petersburg, 194044, Russia
Tel.: +7 812 449 47 27
E-mail: sales@protei.com
Website: www.protei.com

PROTEI EUROPA OÜ
KOPLI t.81-11/12, 11712 Tallinn
EESTI VABARIIK
Tel.: +372 56 935 699
E-mail: sales@protei.com
Website: www.protei.ee

PROTEI MENA LLC
Wasfi AL Tal St. No 98
Al Otoum Commercial Complex suite 205
P.O Box 961741
Amman 11196 Jordan
Tel.: +962 6 560 78 33
E-mail: sales@protei.me
Website: www.protei.me