SILAT

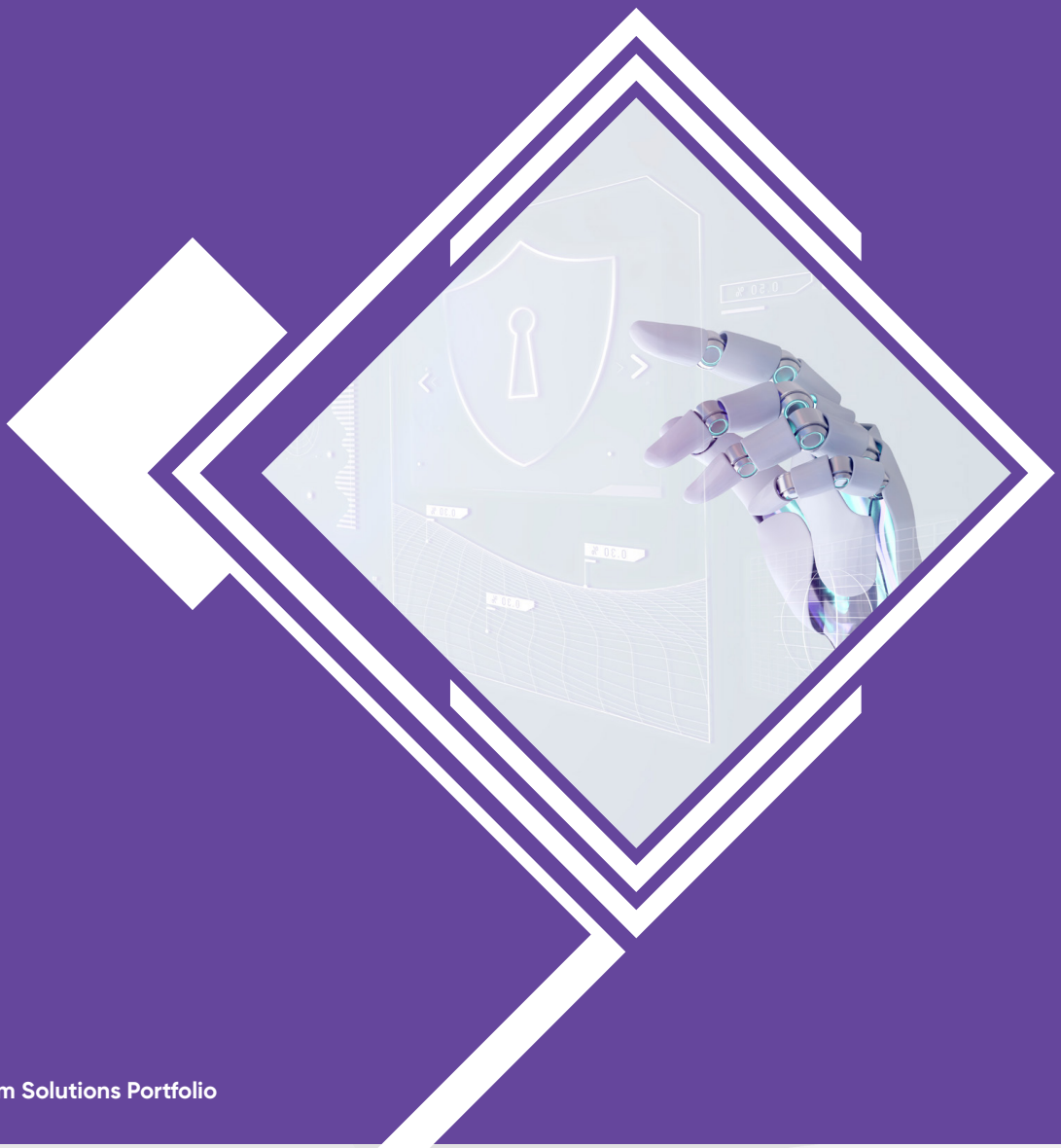
Telecom
Solutions Portfolio

SILAT Company Profile

Systems and Information-Leading Advance Technology (Silat) is a premier technology provider and business consulting service dedicated to enhancing our clients' operational excellence and profitability. We pride ourselves on delivering reliable solutions through innovative and intelligent integration of cutting-edge technologies and business processes, all tailored to meet each client's unique needs. With over fifteen years of experience and a proven track record of hundreds of successful projects across various industry sectors, Silat's team excels in providing forward-thinking consulting and technology solutions. Our unwavering commitment to excellence and client satisfaction drives us to continually introduce the latest technologies, serving enterprise companies and telecom operators with unmatched dedication.

SILAT offers a comprehensive portfolio of advanced telecommunications solutions designed to meet diverse industry needs:

- Mobile Network Solutions: Core network services (CS, PS, EPC), messaging, roaming, location-based services, Intelligent Network (IN) platforms, and value-added services (VAS).
- Customer Engagement: IVR-based systems and IP call center solutions for efficient customer care.
- Next-Generation Networks: Scalable NGN/IMS systems for streamlined operations.
- Traffic & Policy Management: DPI and PCRF solutions for optimized traffic control.
- Billing & Charging Systems: Integrated OCS/OFCS and CRM tools for seamless billing.
- IoT & Private LTE: Secure solutions for IoT applications, private LTE networks, and smart cities.



Core Network Solutions

Subscriber Management System (HLR/HSS)

The SILAT Subscriber Management System (HLR/HSS) offers a strong and economical solution tailored to address the evolving needs of contemporary operators, encompassing IoT ecosystems and Private LTE/5G networks. The architecture is designed to scale, and the licensing model offers flexibility, providing capabilities that are ready for the future, whether for small or large-scale deployments.

Core Functionality:

The SILAT HLR/HSS functions as a centralized database, housing essential subscriber information, including:

- Account details and subscription features.
- Preferences and status of the user.
- Live location information.
- Credentials for authentication.

This system integrates smoothly across various HLR/HSS front-Ends, ensuring a cohesive database for reliable and effective operations.

Key Features:

Integrated Authentication Center (AuC):
Supports industry-standard algorithms, including Mileage, COMP128 v2/v3, and TUAK, ensuring secure subscriber authentication.

3GPP Standards Compliance:
Built in alignment with international standards such as 3GPP TS 29.272 and 29.273, guaranteeing compatibility with diverse network environments.

Dual Context Management:
Provides support for both GPRS/UMTS contexts and LTE-specific PDN/EPS profiles, offering operators flexibility in provisioning subscribers across legacy and next-generation networks.

Advanced Interface Support:

- S6a for LTE network integration.
- Sh and Cx for IMS user management and services.

Benefits for Operators:

1. **Scalability:** Flexible licensing and architecture support incremental growth for expanding subscriber bases and IoT deployments.
2. **Seamless Integration:** Convenient provisioning interfaces enable smooth integration with Business Support Systems (BSS) and operational management tools.
3. **Future-Ready Design:** Incorporates advanced fields for LTE and next-generation 5G networks, ensuring compatibility with emerging technologies.

The SILAT Subscriber Management System is a strategic investment for telecom operators, enabling them to streamline subscriber data management, reduce operational complexity, and deliver enhanced services with high reliability and security.

Gateway Switching Solution (GMSC)

A flexible platform called the SILAT Gateway Switching Solution (GMSC) was created to control voice call routing for GSM/UMTS users. Specifically designed to satisfy the needs of Mobile Virtual Network Operators (MVNOs), it blends cutting-edge features with smooth network architecture interoperability.

Core Capabilities:

Softswitch-Based Architecture:

The system is based on a Class 4 Softswitch and includes certain modules:

- Using MAP protocols, the HLR Interrogation Module facilitates easy access to subscriber data.
- The gsmSSF Module facilitates intelligent service management by supporting CAMEL Application Part (CAP) protocols.

Comprehensive Protocol Support:

Provides a wide range of signaling alternatives, such as SIP/SIP-I/SIP-T, H.323, and legacy PSTN/PLMN systems, to guarantee interoperability with multi-vendor core networks. SILAT mGate ITG media gateways enable legacy interworking.

Advanced Routing Logic:

Multi-criteria routing based on parameters such as:

- Service Level Agreements (SLAs) is possible with the intelligent call routing subsystem.
- The intensity of traffic in particular directions.
- CAMEL features for service distinction, such as T-CSI, M-CSI, and N-CSI triggering.

IMS Core: Comprehensive Framework for Advanced Telecommunication Services

With the help of the completely virtualized and standards-compliant SILAT IMS Core, operators can now offer next-generation communication services like enhanced messaging, VoLTE, and VoWiFi. The IMS Core is made to work with both fixed and mobile operators. Its seamless integration into current infrastructures allows for reliable multimedia service delivery and seamless transitions to IP-based networks.

Global compatibility and excellent quality are guaranteed by the IMS Core's complete alignment with 3GPP International Standards (e.g., TS 23.228, TS 23.229, TS 24.229, TS 29.228, TS 29.949). It is a crucial tool for operators looking to update their networks because of its modular design, which makes deployment, scalability, and integration easier.

GMSC Key Features:

- **Vendor-Agnostic Compatibility:** Works with network cores built on any vendor's equipment with ease.
- **Effective Traffic Management:** Designed to manage voice traffic, both incoming and outbound, with a high degree of precision and dependability.
- Scalable design ensures effective resource use and expansion flexibility by adapting to the needs of operators, ranging from small-scale MVNOs to bigger MNOs.

Advantages for Operators:

- **Improved Service Delivery:** To increase operational efficiency, it supports dynamic traffic routing and intelligent call management.
- **Seamless Integration:** Lowers operational complexity by streamlining communication across legacy and next-generation networks.
- **Optimized CAMEL Potential:** Gives operators the ability to take use of cutting-edge CAMEL features for enhanced voice services.
- A state-of-the-art platform, the SILAT Gateway Switching Solution enables operators to provide premium voice services while preserving network compatibility and operational efficiency across various infrastructures.

Key Features

- **Flexible Scalability:** Supports 50 to 200,000 concurrent connections per module, serving networks of any size.
- **Advanced Traffic Balancing:** Ensures optimal performance under high traffic conditions.
- **Comprehensive Interoperability:** Supports 3GPP-compliant interfaces (e.g., Diameter, ISC, IFC) and third-party integration.
- **Cloud-Ready:** Deployable in NFV or cloud environments, offering future-proof adaptability.
- **Centralized Services:** Combines voice, video, and messaging into a single, efficient platform.
- **Zero Downtime Operations:** Modular design enables updates or changes without disrupting services.

Core Network Solutions

The SILAT IMS Core comprises several integrated subsystems, each fulfilling critical functions to ensure high performance and reliability.

IMS Call Session Control Functions (CSCF)

1. Proxy-CSCF (P-CSCF):

- The entry point for IMS/SIP devices, routing all signaling traffic to/from user terminals.
- Enforces Quality of Service (QoS) policies and interworking security measures.
- Provides Session Border Controller (SBC) functionality to safeguard the network, preserve subscriber privacy, and manage charging records.
- Ensures proper interaction with the Serving-CSCF (S-CSCF) for seamless service delivery.

2 Interrogating-CSCF (I-CSCF):

- Handles SIP message routing to the appropriate S-CSCF during registration or service requests.
- Interacts with the Home Subscriber Server (HSS) to retrieve subscriber information.
- Functions as a gateway to external networks, enabling seamless interoperability.

3. Serving-CSCF (S-CSCF):

- Acts as the primary controller of SIP sessions, managing all signaling traffic for registered subscribers.
- Downloads subscriber profiles from the HSS to handle service logic and routing.
- Directs requests to the appropriate Application Server (AS) for execution.
- Ensures redundancy and load balancing for high availability.

IMS Media Gateway (MGW)

The Media Gateway (MGW) bridges IMS and legacy networks, handling media stream processing and interworking.

- Signaling Support: Compatible with protocols such as H.248, SIP, H.323, and SS7.
- Media Resource Management: Allocates and optimizes resources for audio and video calls.
- Breakout Gateway Control Function (BGCF): Routes calls based on predefined criteria, ensuring efficient network operation.

IMS Application Servers (AS)

The Application Servers host service-specific logic, enabling diverse functionalities such as voice, video, and messaging.

Telephony Application Server (TAS):

Powers core telephony services, including call handling and conferencing.

Service Continuity Server (SCC-AS):

Ensures seamless handover of sessions between networks.

Messaging Servers:

- IMS-MGW: Facilitates the delivery of multimedia messages.
- USSI (Unstructured Supplementary Service Interaction): Supports SMS and USSD communication for modern and legacy use cases.

IMS IP Short Message Gateway (IP-SM-GW)

The IP-SM-GW integrates traditional SMS services into the IMS framework, ensuring continuity and compatibility.

- Converts SIP-based messages for IMS subscribers.
- Connects with legacy SMSCs using MAP signaling to support hybrid environments.

IMS Home Subscriber Server (HSS)

The HSS is the central repository for subscriber data and service profiles, facilitating seamless session management.

- Stores subscriber credentials, authentication data, and service preferences.
- Interfaces with CSCFs to authorize sessions and manage mobility across networks.

Why Choose SILAT IMS Core?

The SILAT IMS Core is the best option for operators switching to cutting-edge IP-based services because it offers unmatched quality, scalability, and flexibility. Its capacity to concentrate numerous services into a single platform, modular design, and adherence to international standards guarantee that operators may confidently satisfy the demands of contemporary telecommunications.

Equipment Identity Register (EIR)

SILAT's Equipment Identity Register (EIR) offers operators a strong solution for safeguarding their networks and users in response to the growing worldwide problem of mobile phone theft. The technology makes sure that stolen devices are kept off the network by allowing operators to keep a blacklist of them using their individual IMEI numbers.

Core Features and Capabilities

1 IMEI Blacklisting:

- Operators can add the IMEIs of stolen or unauthorized devices to a blacklist.
- The system blocks network access for blacklisted devices, safeguarding against fraudulent activity.

2 Automatic Device Detection:

- Every device change by a subscriber is detected and logged.
- Changes in IMEI associated with an MSISDN are identified, allowing the system to validate against the blacklist.
- The system notifies external applications or platforms in cases of detected anomalies.

3 Standards Compliance:

- Implements MAP procedures such as MAP-CHECK-IMEI in full accordance with international standards.
- Supports industry-standard triggers like M-CSI for precise and efficient device detection.

Integration with SILAT LBS Platform

The sophisticated SILAT LBS platform, an all-in-one solution for gathering, processing, storing, and transmitting subscriber location and device data, serves as the foundation for the SILAT EIR.

1. **Location and Device Data Processing:**
   - Leverages core network features or MAP capabilities like MAP-NOTE-MMEVENT, MAP-CHECK-IMEI, and MAP-SUBSCRIBER-LOCATION-REPORT.
   - Enables seamless integration with external applications for location-aware and device-aware services.

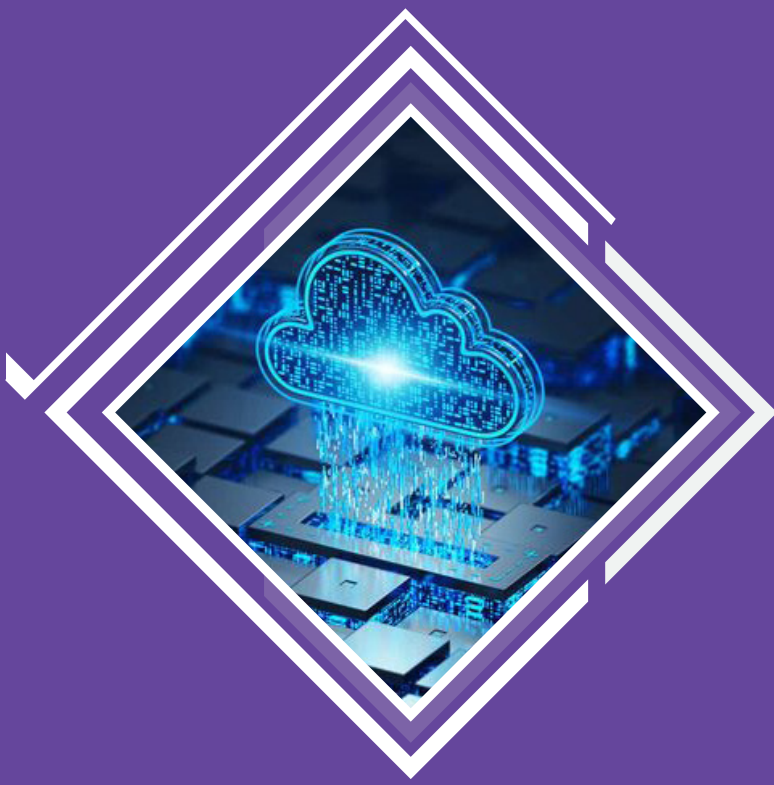
2. **Versatile Applications:**
   - **Campaigns with a geographic focus:** Information gathered might inform SMS campaigns directed at certain areas or groups of people.
   - By keeping an eye on and controlling devices close to border zones, border roaming services lower the risk of unauthorized roaming.
   - **Loyalty programs:** Allow device-based profiling to provide subscribers with individualized services.

IMS Media Gateway (MGW)

- **Improved Network Security:** Prevents illegal or stolen devices from connecting to the network, lowering fraud and guaranteeing legal compliance.
- By safeguarding subscriber data and discouraging theft, subscriber confidence is strengthened.
- **Operational Efficiency:** Network administrators have less work to do thanks to automated detection and notification features.
- **Flexibility and Scalability:** Easily integrates into current infrastructures and can accommodate networks of all sizes, from small operators to massive deployments.

Signal Transfer Point (STP)

The SILAT Signal Transfer Point (STP) is a comprehensive solution designed to streamline signaling message routing across diverse network environments. It ensures efficient traffic management, seamless connectivity, and integration of legacy and modern networks. With advanced routing features and robust security support, SILAT STP is an indispensable system for telecom operators.



STP: Key Features

Dynamic and Flexible Routing:

- SCCP-level parameter-based routing and TCAP operation code-specific routing ensure precise handling of signaling traffic.
- Special Translation Types (TT) for tailored traffic management.

Reliable and Redundant:

- Built-in redundancy mechanisms for continuous operations and high availability.

Broad Protocol Compatibility:

- Supports E1/SS7 for traditional networks and SIGTRAN for IP-based signaling, facilitating smooth hybrid network operations.

Enhanced Security Integration:

- Serves as a core component for deploying SMS Firewalls and SS7 Firewalls, fortifying the network against threats like spam, fraud, and unauthorized access.

STP: Applications

Global Roaming Management:

- Efficient interconnection with multiple roaming providers ensures seamless subscriber services.

Traffic Optimization:

- Intelligent routing algorithms manage load and improve service delivery quality.

Legacy-to-Modern Network Transition:

- Bridges traditional and next-generation networks, supporting evolving technological needs.

STP: Benefits

- **Scalable Architecture:** Modular design supports networks of varying sizes and complexities.
- **Cost-Efficiency:** Reduces operational overhead while enhancing resource utilization.
- **Future-Ready:** Fully compliant with industry standards, ensuring long-term adaptability and reliability.

The SILAT STP System equips telecom operators with a powerful, secure, and future-proof tool for managing signaling traffic, driving operational efficiency, and ensuring uninterrupted connectivity in an evolving telecom ecosystem.

DRA/DEA

Diameter Routing Agent (DRA)

SILAT Diameter Routing Agent (DRA) is a versatile solution that streamlines Diameter-based signaling in 3G, LTE, and IMS networks. It centralizes routing, traffic management, and load balancing, simplifying connectivity and scaling network operations efficiently.

DRA: Key Features

Centralized Routing: Manages all Diameter traffic with intelligent routing and traffic optimization for LTE and IMS endpoints.

Interoperability: Supports Diameter dialect adaptation to ensure seamless integration across different platforms.

Load Balancing and Scalability: Dynamically balances signaling traffic and scales to meet varying network demands.

Enhanced Security and Mediation: Improves signaling performance and mitigates risks with robust security mechanisms.

DRA: Applications

LTE and IMS Interconnectivity: Facilitates HSS address resolution, PCRF binding, and roaming across LTE, 2G, and 3G networks.

Centralized Charging and Policy Control: Simplifies billing and policy enforcement with unified architecture.

SILAT DRA reduces the cost and complexity of LTE core networks, offering a scalable, secure, and future-ready platform to enhance network operations.

Signaling Firewall

A powerful tool for defending telecom networks against fraudulent activity, unusual SS7 communications, and threats connected to Diameter is the SILAT Signaling Firewall. Constructed in accordance with GSMA specifications (FS.11, FS.07, IR.70, IR.71, FS.19), it guarantees thorough defense against network vulnerabilities and revenue losses.

Signaling Firewall

- **Advanced Protection Mechanisms:** Detects and mitigates spamming, flooding, fraud, tracking, identity theft, DoS attacks, and illegal interception.
- **Flexible Rules Management:** Supports Monitoring and Alerting, Basic Policing Rules, and Advanced Policing Rules for tailored network protection.
- **Granular Filtering:** Offers policy management and routing control for SS7 and Diameter connections using diverse filtering criteria.
- **Scalable Architecture:** Modular design allows for flexible upgrades and seamless integration into various configurations.
- **High Throughput Capacity:** Handles up to 1000 TPS, ensuring optimal performance under heavy traffic conditions.

SILAT Signaling Firewall delivers reliable, real-time protection to secure networks against evolving threats while enhancing operational efficiency and subscriber trust.

Evolved Packet Core (EPC)

EPC Innovation Suite

SILAT EPC provides a complete range of platforms for LTE Evolved Packet Core (EPC) development, facilitating effective, dependable, and secure network management for 4G operators. Featuring an all-IP flat architecture, SILAT EPC guarantees high throughput, low latency, and strong interworking capabilities with legacy 2G/3G networks via external SGSN integration. SILAT EPC facilitates macro, micro, and pico base stations, guaranteeing uninterrupted communication throughout all elements of a 4G network.

Key Features:

- **Intelligent Network Design:** Tailored for real-time, media-rich applications with improved quality of experience.
- **Scalable Architecture:** Accommodates anywhere from 100 to 1 million concurrent subscribers, addressing a variety of network topologies.
- **Interworking Compatibility:** Seamless integration with existing systems and cutting-edge LTE/5G deployments.
- **Resource Optimization:** Provides sophisticated provisioning, mobility management, and improved security protocols.

SILAT EPC consists of various modular subsystems that can be utilized independently or as a comprehensive turn-key solution.

SILAT EPC: GGSN/PDN-GW

The Gateway GPRS Support Node (GGSN) and Packet Data Network Gateway (PDN-GW) enable smooth data routing between the core network and external IP networks. Essential Attributes:

- Advanced Data Management: Manages PDP context activation and engages with DNS servers for IP address allocation.
- Thorough Interface Support: Integration through Gi/SGi, Gn, S5/S8, Gy, and Gx interfaces for LTE and legacy networks.
- Enhanced Performance: Extra modules can be implemented to accommodate increasing traffic needs.
- Integrated PCEF: Guarantees precise real-time billing for data services.

EPC Innovation Suite

The Serving Gateway (SGW) plays a crucial role in routing and forwarding user data packets, serving as a mobility anchor for both inter-eNodeB and inter-technology handovers.

Key Feature:

•Essential Attributes: Mobility Management: Preserves bearerinformation for both idle mode and active sessions.

•Session Management: Accommodates multiple bearers foreach subscriber.

•Compliant Interfaces: S5/S8 facilitate interaction withPDN-GW, while S1-U is designated for communication witheNodeB.

SILAT EPC: MME

The Mobility Management Entity (MME) serves as the centralcontrol node for LTE access networks, overseeing signaling, authentication, and session control.

Key Features:

- **Advanced Signaling Management:** Manages attach anddetach procedures, establishes bearers, and oversees sessionmanagement.
- **Secure Authentication:** Connects with HSS for user validationand encryption protocols.
- **Improved Mobility:** Facilitates handovers between SGWandMME.Thorough Guidelines Follows all applicable 3GPPstandardsfor signaling and bearer management.SILAT EPC provides aversatile, scalable, and forward-thinkingplatform designed toaddress the changing requirements ofcontemporary mobileoperators, all while ensuring compatibilitywith existing networkarchitectures.

Roaming Solutions

Steering of Roaming

The Steering of Roaming system enables effective and flexible management of network selection, ensuring the best roaming network option for subscribers, as detailed in the Steering of Roaming concept.The management of the registration process for outbound roamers is carried out in full accordance with IR-73, the main GSMA regulatory document related to steeringservices. This guarantees the most efficient execution of Steeringof Roaming services while also allowing roaming partners to enhance roaming agreements and provide the required quality of service.

The steering procedure can be based on severalnetwork selection criteria, including network priority, roamingKPIs (such as the share of successful registrations, the share ofunique subscribers registered in a specific network, and thenumber of different errors), and traffic proportions, amongothers.

Additionally, the SILAT Steering platform is capable ofhandling various supplementary tasks, including themanagement of profiles for outbound roamers. Thisencompasses the deletion or updating of CAMEL profiles and theremoval of supplementary services that present fraud risks.Theimplementation of the SILAT Steering platform successfullytackles various business and commercial challenges related tooutbound roaming optimization. The Diameter front-endenables the effective management of LTE traffic, offeringsteering services for the LTE network.

The platform also providesBorder Roaming Prevention functionality, allowing mobileoperators to prevent their subscribers from accidentally roamingon foreign networks while still being within their home country orzone.The statistical and reporting subsystem acts as a valuableasset for both the operator's technical and commercial teams. Itenables the tracking of KPIs and the creation of reports,assisting in the resolution of roaming issues while offering acomprehensive overview of roaming traffic and trends. Thesubsystem provides its functionalities through a user-friendlyweb-based interface, facilitating the management and retrievalof reports, alarms, and statistics. The reporting framework allowsfor the seamless generation of reports in both textual andgraphical formats.

Gateway Location Register (GLR)

The SILAT Gateway Location Register offers an operator a distinctive chance to improve its roaming connectivity and signaling traffic. GLR gathers detailed information about the inbound roamer's profile during the initial registration process and promptly provides this information upon any request from VLR, significantly reducing the necessity to query HPLMN elements. This method effectively mitigates several risks linked to SoR applicability, compatibility concerns, and other related challenges that could potentially lead to the loss of the roamer.

The main advantages of GLR deployment consist of:Reducing the volume of signaling traffic between the Operator and SCCP-provider; Improving the efficiency of SoR systems utilized by home Operators by lowering the number of transactions that can be directed; Ensuring the secure retention of roamers within the Operator's network to minimize the risk of losing the roamer during interactions with the home network or in cases of short-term failures or minor coverage issues; Achieving complete compliance with relevant ETSI standards (ETSI TS 23.119) and GSMA regulations; Maintaining strict adherence to all GSMA rules without introducing additional signaling; Demonstrating exceptional effectiveness for complex or fragmented networks.
GLR includes strong and easy-to-use statistics and CDR generation modules. The system comprises a web-based administration kit equipped with specialized analytic tools tailored for the thorough analysis of inbound roaming traffic and its structure.

Welcome to the SMS and Roaming TariffGuide

The SILAT SMS Welcome system functions as a valuable resource for mobile operators, enabling them to provide a rangeof services to subscribers who are roaming in internationalnetworks, as well as to foreign subscribers registered on the mobile operator's network.

The "Welcome SMS" and "Bon Voyage SMS" services allow subscribers to receive essentialinformation, such as details about their current network, insightsabout the country they are visiting, pricing for key services, andother relevant updates.

The system supports multiple deliveryscenarios, enables dynamic content customization, adjusts SMSlanguage based on the visitor's home country, and incorporates network-specific parameters to enhance the subscriber experience.

Local Number for Visitors

This solution offers Operator a distinctive and innovative capability to supply local numbers for long-term business roamers.

The number serves the purpose of accepting incoming calls while also allowing for the saving of activity related to the main number.

There is no need to buy a separate local account. Roamers can reduce expenses associated with costly incoming calls and strengthen their connections with business partners due to the "presence effect", which eliminates the need to dial an international number from the country where the subscriber is currentlylocated.Mobile operators can leverage this solution toenhance revenue by introducing appealing services forinbound roamers and optimizing traffic within the network.

Roaming Assistant

SILAT Roaming Assistant is an efficient application designed to rectify common dialing mistakes made by roamers.It enables users to access short number services from their home network while roaming, resulting in a notable rise in the success rate of calls and boosting the operator's revenue. This service is applicable for both inbound roamers (ISUP-based) and outbound roamers (CAMEL-based).

Roaming Optimization Suite

The Roaming Optimization Suite is an advanced system that comprises two subsystems: SILAT Roaming Optimization and the Visitor Retention Subsystem.

SILAT Roaming Optimization is a highly effective solution designed to conserve network traffic for calls between two subscribers from different countries, thereby reducing costs for roamers and enhancing the revenues of operators. To contact another individual registered within the same network using the "optimal route," the foreign subscriber must dial the destination number with a specific prefix. The system verifies the location of the called subscriber, and if they are located within the same network, it initiates the call using optimal routing rules, avoiding the creation of a voice loop through the roamer's home network.

The Visitor Retention Subsystem aims to boost the Operator's revenues from inbound roaming services by implementing strategies focused on retaining visitors. The system guarantees that roamers remain connected to the network despite temporary communication issues such as loss of coverage. The standard MAP Update/Cancel Location procedures are utilized to interface with the HPLMN and maintain the roamer.

Every subsystem of the SILAT Roaming Optimization Suite features robust and user-friendly statistics and CDR generation modules. The system includes a web-based administration kit that features specialized analytic tools for the effective analysis of roaming traffic and its structure.

Multi IMSI Roaming Gateway

The Multy IMSI roaming gateway aims to broaden the roaming landscape for MVNOs, as well as small and independent mobile operators, referred to as Roaming Clients. This is achieved through the utilization of roaming agreements and subscriptions with established mobile operators, often called Donors or Roaming Brokers.

Based on the SILAT Multi-IMSI Roaming Gateway, either traditional Dual-IMSI roaming services or innovative dynamic multi-IMSI roaming services can be deployed in an optimal manner. Multi-IMSI roaming enables the provision of alternative roaming services for GSM/UMTS network subscribers through the use of dynamically loaded alternative subscriptions from the visited Operator (guest network).

This solution enables the provision of a local number and access to all local services for the roamer, allowing them to benefit from inexpensive or free local incoming calls, affordable outbound calls, and appealing data rates, all while maintaining accessibility to their main phone number.

Boarder Roaming Gateway

Typically, subscribers do not actively switch networks while they are connected. However, in practice, the presence of blind spots or temporary coverage issues, such as congestion in specific cells, can happen in any operator's network. When coverage temporarily falters or communication services become inaccessible, roamers may seek out an alternative network. Consequently, near the borders of the home country, subscribers might sometimes connect to a neighboring country's mobile network, which may incur roaming rates or international call charges.

To prevent potential claims, elevate service levels, improve customer care, and minimize costs and losses for home network operators and subscribers, home networks would prefer to retain their customers in these circumstances.

The SILAT Border Roaming Gateway (BRG) serves asa platform that enables mobile operators to prevent their subscribers from unintentionally roaming on foreign networks while they remain within their home country or zone. Utilizing the system aids in preventing potential claims, elevating the quality of service, improving customer care, and minimizing possible costs and losses for home network operators and subscribers.

Voice Quality Control for Roamers and SIM Box Detection

The Voice Quality Control system enables Operators to effortlessly assess speech quality, ensuring customer satisfaction and facilitating the organization of KPIs. The system conducts a comparison of speech patterns and quality estimation based on the ITU-T Recommendation P.862. Furthermore, this platform enables the verification of transparent CLI transition between the Operator's network and the roaming partner's network, in addition to voice quality testing.

The system additionally includes SIM Box Detection functionality, allowing for the comparison of CLI information transmitted by the calling party with that received by the called party. Methods based on SUP and CAMEL for CLI verification are supported.

Messaging Solutions

SMS Center

SILAT SMSC is a high-performance SMS center designed for carriers, incorporating both traditional and innovative SMS features. The supported protocols enable the deployment of SILAT SMSC via GSM/UMTS or IS-41 (CDMA) networks.
The support of SIGTRAN facilitates seamless deployment throughout next-generation mobile networks. The management of flexible delivery scenarios, the inclusion of a "First Delivery Attempt" feature, effective policy management, user-friendly licensing principles, and a robust SMS routing subsystem position SMSC as an ideal solution for the needs of operators.

Routing and bandwidth configuration tools provide a fully-functional SMPP interface, featuring an efficient access policy for interaction with external applications. Horizontal scaling architecture enables the attainment of high reliability and facilitates the adjustment of SMSC performance as the network expands. Features such as SMS forwarding, copy, auto-reply, personalized black and white lists, and detailed reports enhance service convenience for subscribers.

Bulk SMS/MMS/USSD

In the modern landscape, reliable and prompt communication with customers has become essential for an increasing number of businesses. Competitiveness demands that market players possess the capability to swiftly engage with their customers consistently and during special occasions. The intended end-users of these services include service and content providers, banks, advertising agencies, and others. SILAT bulk SMS/MMS/USSD platform is a strong and dependable solution crafted to provide highly efficient and business-oriented SMS/MMS and USSD services. The platform seamlessly combines the functionalities of recognized SILAT Messaging solutions.
SILAT Bulk SMS/MMS/USSD platform provides the Operator with powerful and flexible tools for managing bulk SMS, MMS, or USSD campaigns, along with the ability to oversee and bill for the bulk messaging traffic generated by corporate clients. The intended audience for these services comprises service and content providers.

service providers, financial institutions, marketing agencies, and other organizations. Customers of the system receive support through user-friendly web-based and graphical user interfaces. Online charging capabilities are accessible via multiple protocols: HTTP/XML, DIAMETER, or any proprietary protocol.

USSD Center

The SILAT USSD center facilitates the exchange of USSD messages between mobile subscribers and external applications via GSM networks. With the SILAT USSD server, operators can provide balance inquiries, voucher activation, and other customer care services in the most efficient and convenient manner. The SILAT USSD center offers adaptable USSD message routing that takes into account service keys, message content, and the source MSC address, along with the capability for individualized access policy and bandwidth management for each application. Both USSD stage I and stage II are supported, enabling the creation of dialogue USSD services with a multilevel USSD menu. SMPP v3.4 offers seamless and efficient integration with external content providers. The online charging interface is also supported.

SILAT USSDS includes tools for easy and adaptable USSD-menu creation (SMPP-portal software package) and offers open XML and ODBC interfaces for seamless integration with external information systems and databases.

Various subscribers can utilize distinct applications through a single USSD service number.

The USSD center is capable of determining the type of application based on the USSD service number, as well as the sender's number (CgPN) or an identifier for a group of senders.

The SILAT USSD center is capable of connecting to any external application via SMPP, enabling the provision of dynamic information services such as currency rates, weather forecasts, and account information, among others.

The network architecture and load balancing ensure system availability; when one module hits a predetermined threshold, the excess load is redirected to an available module.

SMS Firewall

SILAT SMS Firewall is designed to safeguard the Operator's network against primary threats associated with SMS spam and fraud. The main goals of the SMS security solution are to identify and reduce SMS frauds resulting from:

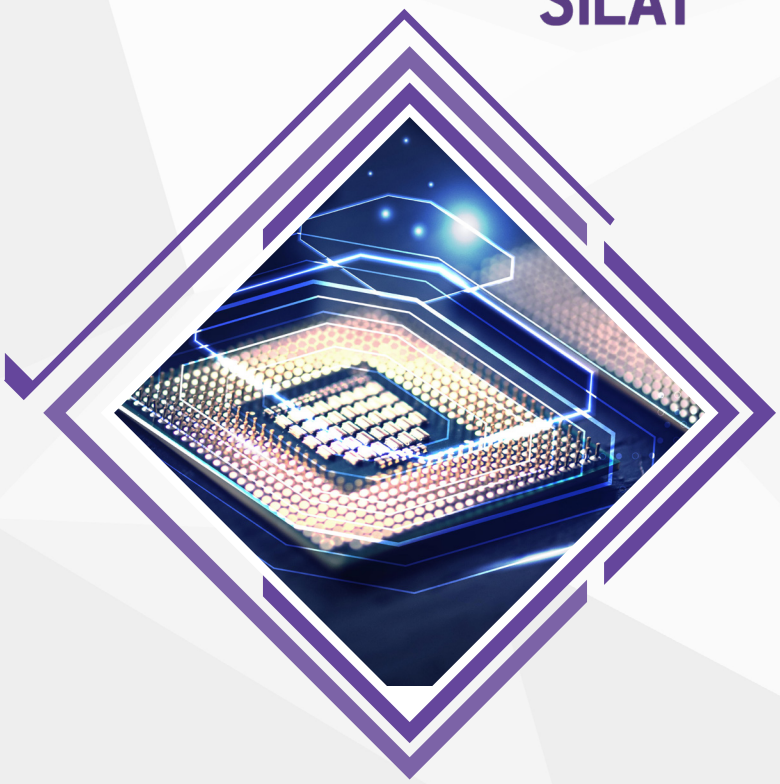
- SMS spoofing;
- SMS faking; SMS flooding;
- other forms of technical fraud.

The solution provides protection for the Operator's network and its subscribers from unauthorized SMS traffic, including both application-originated SMPP traffic and inbound/transit SS7 mobile-originated traffic.

Criteria for filtering can be established for various types of traffic. Rules may be established for MO or MT SMS, applicable to specific MSISDN ranges, Operators, Global Title ranges, or SMPP message senders. The criteria encompass a list of SS7 parameters that must be verified during the processing of inbound MO or MT messages originating from abroad.

Additionally, it includes figures that define bandwidth and routing limitations for SMS traffic, such as the limits on SMS traffic intensity from specific MSISDNs, SMSCs, or other network elements. It also outlines the range of destination numbers to which messages from the aforementioned sources can be addressed, as well as the range of origination numbers from which messages can be sent, among other details. Capabilities for filtering and detecting anti-spoofing and anti-faking are supported in accordance with the IR71 GSMA document.

SILAT SMS Firewall offers advanced anti-spam features, including keyword-based filtering, intelligent spam detection through heuristic analysis of message content, and statistical criteria like the frequency of identical or similar messages originating from a single source, network, or directed to a specific recipient. Personalized white and black lists can also be implemented based on the SILAT SMS Firewall.



SMPP-Proxy/Router

The SMPP proxy/router facilitates the exchange of messages between multiple SMS/USSD centers and external applications, employing various routing criteria, and is designed for mobile operators and content aggregators. The flexible policy and bandwidth management enable the development of intricate routing algorithms, which take into account factors such as the message type, recipient and sender numbers, and application IP address. This capability positions the SMPP proxy/router as a crucial component of the content provider's access system.

The system can be utilized effectively in various scenarios:

1. To connect the SMSC and external applications for the direct routing of requests from external applications to the SMS gateway. In this scenario, only the undelivered messages will be forwarded to the SMSC for delayed delivery. This algorithm significantly reduces the burden on the SMSC, allowing it to allocate its resources more effectively to its primary function – facilitating message exchanges among network subscribers.
2. For the exchange of messages between SMS centers. The SILAT SMPP proxy/router serves as a router connecting SMS centers from multiple carriers, facilitating the creation of a unified SMS messaging environment. In this scenario, subscribers from various service providers are able to exchange SMS messages and benefit from unified SMS services.

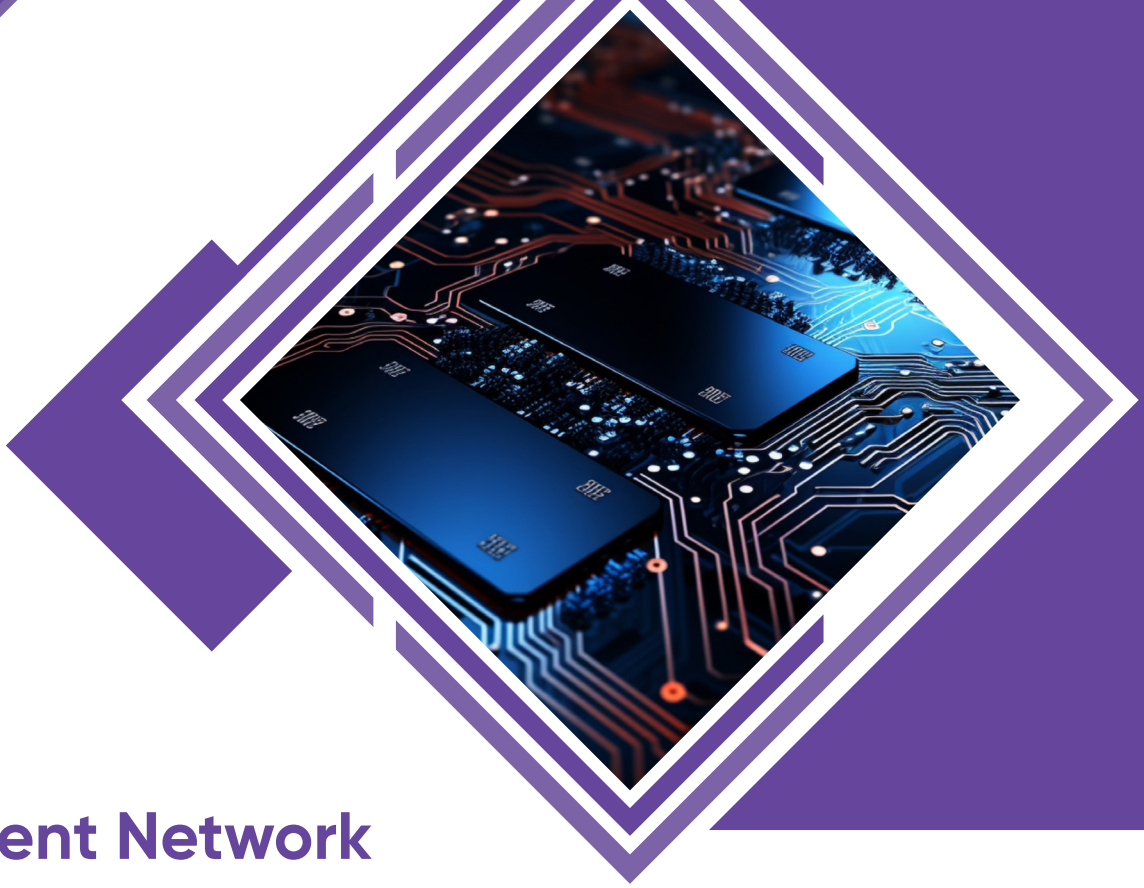
When the SMPP proxy/router operates in this mode, content providers gain access to various networks through a single access point.

Cell Broadcast Center

Cell Broadcast is a messaging service that focuses on delivering information to many recipients within a specific geographic area. SILAT Cell Broadcast center assists operators and service providers in delivering geographically dependent information directly to subscribers' handsets across networks utilizing GSM/LTE Cell Broadcast technology.

The System provides an open JSON-based interface for content providers and other services that manage broadcast campaigns. The broadcasting will target all subscribers within the specific geographical segment of the Operator's network, defined by the set of Cell ID, LAC, TAC, and other parameters as configured for the particular information channel. Support is provided for 3GPP interfaces to interact with BSC (TS 48.049), RNC (TS 25.419), and eNodeB (TS 29.168).

The service architecture and commands are implemented in strict accordance with 3GPP 23.041, along with extensions defined in ETSI TS 102 900. This implementation enables the system to be utilized not only for technology or marketing broadcasts but also as an integral part of public warning alert systems, a concept that has been deployed in specific countries. The system can be integrated with the SILAT xVLR solution, allowing both systems to be managed by a unified broadcast campaign management module, which facilitates maximum flexibility and a variety of broadcasting channels.



Intelligent Network & VAS

SCP/ CAMEL Gateway/proxy

Through service logic applications that define call, SMS, and data session scenarios via APIs, SILAT SCP/CAMEL Gateway enables the management of telecommunications services on GSM/3G/IMS networks.

Both prepaid and postpaid users can effectively access a variety of IN services in any network with CAMEL support thanks to the SCP/CAMEL-gateway. Experts from SILAT, the service provider, or the operator may develop or deliver applications in addition to service logic.

The system functions as a fully working SCP, offering convenience and flexibility in the development and implementation of new services.

Through the use of service logic applications, the system enables real-time control over voice calls, SMS messages, and GPRS sessions in GSM networks. As an extra feature of SCP/ CAMEL Gateway, the Convenient Service Creation Environment makes it simple to create and adjust services for a variety of VAS. SILAT SCP/CAMEL Gateway/proxy's included CAMEL-proxy feature makes it simple to integrate into current IN networks, enabling the deployment of new services without interfering with the delivery of already-available services.

Services like incoming consumption tracking, number translation, black and white lists, and mobile on the basis of SILAT SCP/CAMEL Gateway/proxy, VPN and other services can be effectively implemented.

Standalone CAMEL SSP

The highly sought-after possibility to arrange CAMEL-roaming for customers from CAMEL-enabled networks in networks that do not support CAMEL technology is provided to operators by the deployment of SILAT Standalone SSP. Using SILAT-SSP gives inbound roamers enrolled in the visited networks at MSCs without integrated SSP capability and without CAMEL support the chance to access services that are enabled by the home mobile operator's intelligent platform (SCP). The system complies with CAMEL phase 2, 3 requirements for SMS and phone services (prepaid, etc.).

Call Completion Suite

Even when they are unavailable, people must maintain communication. Voicemail is now a standard feature for cellular customers, whether they are using it for personal or professional purposes, allowing them to receive and retrieve messages from any location at any time.

By recording all unsuccessful calls—which are typically unsuccessful for a variety of reasons—SILAT Call Completion Suite aims to increase the number of successfully completed calls in Operator's network.

The solution offers a number of services that enable the operator to meet the needs of various subscriber categories. With a variety of capabilities to accommodate both new and existing mobile operators, the SILAT Call Completion system is an affordable, high-performance, and scalable solution that can be implemented as a stand-alone service package or as an addition to an existing voicemail system. There are also voicemail system-integrated solutions available.

This platform can be used to develop the following services:

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

Missed Call Notification/Notify Me

By sending an SMS with a list of the phone numbers from which the calls originated, the SILAT Missed Call Notification System ("MIssed Call Notification") aims to alert subscribers about the calls they missed while they were unavailable. Additionally, the "Notify Me" sub-service can alert the calling party when the recipient returns to the network or when it is open for incoming calls.

The solution's deployment raises the successful call share, which in turn raises operator profits. The SILAT Missed Called Notification System can be used as a stand-alone service or as an add-on to an already-existing voicemail system.

There are also solutions that are integrated with the SILAT voicemail system.

Voice SMS

A carrier-class asynchronous short voice messaging service that functions across networks and operators is the SILAT Voice SMS system. This is an alternative to SMS's "type and read" text messaging service that allows you to talk and listen. The ability to generate income from the investment previously made in network resources such phone circuits, SMS centers, and prepaid/billing systems is enhanced and supplemented by store and forward voice applications. Voice SMS technology enables operators to connect with one another, making it simple to expand service penetration between nations and providers. The service might be billed by the operator based on its business plan. With only a single rule added to the rating engine, "per message" pricing, similar to SMS, promotes simplicity and quicker adoption. All current handsets will be able to use the service. Upgrades to the handset are not necessary in order to cover the whole subscriber base. The service is even more widespread than normal SMS because it operates on all networks, including 2G, GPRS, CDMA, and 3G.

Minimal user experience is required for a straightforward user interface with no intricate navigation.

Mobile Number Portability

The Operator can choose the most suitable scenario according to the existing network features.

Additionally, Comfortable Jump service can be easily implemented on the basis of SILAT MNP platform.

The ability of a mobile subscriber to switch GSM subscription networks within the same nation while keeping her original MSISDN or MSISDNs is known as mobile number portability, or MNP. It is a technical difficulty in practically every country and one of the main components of telecom deregulation.

Mobile Number Portability functionality is implemented by SILAT -MNP Solution in compliance with the relevant ETSI specifications. Service provisioning can be done using an external database or an inbuilt NPDB. Since the system conforms to EN 301715 and 301716 (GSM 03.66), SILAT MNP functions as an MNP SRF functional layer.

The SILAT -MNP platform supports the following MNP scenarios:

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

Based on the features of the current network, the operator can select the best scenario. Furthermore, the SILAT MNP platform makes it simple to deploy the Comfortable Jump service.

Voice Video Mail

A modern innovation that helps to increase traffic and operator profits is the VOICE/VIDEO MAIL subsystem. It enables users to receive messages in a mailbox and access them from any location at any time, including their own mobile phone, other phone numbers (such as a fixed phone), and home and roaming networks.

The SILAT system offers several cutting-edge possibilities in addition to standard voicemail functions that significantly improve subscriber convenience of service use and encourage the creation of extra income for the operator:

- **Customization:** distinct menu layouts for various subscriber groups;
- **Dynamic mailbox creation:** a mailbox may be established at the precise instant when the first call is forwarded;
- Large selection of customizable alerts;
- Callback to the message sender with a single click;
- The service administrator can change the menu layout, including language profiles and flexible greeting management (which can change depending on the caller, the time of day, etc.).

For 3G customers, the introduction of the videomail subsystem will significantly expand the capability of regular voice mail and offer the following advantages:

- When a 3G subscriber is absent or outside of 3G coverage, videocalls are captured.
- The caller can leave a video message in the subscriber's mailbox;
- The subscriber can record and upload their own video;
- The recipients can preview and retrieve stored video messages when they return to 3G networks; and the caller can get video messages via email or MMS.

The platform may be effectively deployed across IMS/NGN networks thanks to the solution's support for SS7, PRI, and SIP.

Call Collect

It happens frequently when a subscriber tries to make an urgent or significant call, but the network refuses it because there is not enough money in the subscriber's mobile account. These calls make up a more or less noticeable portion of any cell network's statistics. However, if the caller has the chance to alert the caller in some way about this circumstance, there is a very good chance that the person they are attempting to reach will remember them. A mobile operator who offers its subscribers this option will see an increase in income rather than a loss.

The operator may easily give all of its subscribers this possibility with the SILAT Call Collect system. When an operator's balance is insufficient to make outgoing calls, the solution tailored to their private clients offers them a special opportunity to be reachable. With the SILAT Call Collect service, users can ask any other user on any mobile network to call them back, recharge their account, or recall them after all call costs are paid by the called party.

Additional features supported by the system include:

- Forced location determination (to guarantee accurate a-party location determined system);
- Prepaid/postpaid distinguishing (to limit service usage for prepaid subscribers only);
- Counters/limitations (to prevent malicious service usage and potential pushing b-party);
- And "white"/"black" lists (to deliver service with greater convenience).

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.

Virtual Office

For small and medium-sized business clients, SILAT Virtual Office Server offers a comprehensive solution for PBX-like and FMC services (Virtual Number, Virtual Call Center, and Virtual Private Network).

Additionally, it offers mobile subscribers advanced termination seeking capabilities.

When a subscriber from any network phones the service or the customer's number, Virtual Office Server is activated. Every mobile agent assigned to a particular customer is tracked, and incoming calls are sent to the best agent in accordance with predetermined hunting rules (based on CgPN, calling and called party location, time schedule, etc.). For virtual number customers, a self-service web-based administration toolbox is accessible.

Call Back

SILAT Call Back Server offers a convenient and efficient method for non-CAMEL roaming subscribers to access telecommunications services. Calls can be requested by sending SMS or USSD messages. The system offers adaptable routing capabilities, robust policy management (featuring subscriber location analysis), and an open interface (CAMEL, Diameter, or XML) for seamless integration with third-party prepaid platforms. The seamless callback option enhances convenience for customers, encouraging greater service usage. The standard CAMEL capabilities system enables subscribers to bypass the need for complex USSD sequences to access the service. The user can dial the called number as usual with the seamless option; the system will automatically convert this call into a callback.

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Personal Ring Back Tone & Video Ring Back Tone

RBT has emerged as one of the most favored VAS over the past five years. Its penetration continues to expand visibly, producing consistent income for Operators. SILAT-RBT system provides an efficient method for delivering Ring Back Tone services to subscribers. The system can be easily adjusted to meet current or new Operator's requirements, thanks to the platform's flexibility and scalability.

In addition to traditional features such as tones based on Caller ID and time schedules, Music Box, and service management elements like IVR, USSD, and WEB, there are numerous advanced options available. For instance, options like "Tone like my friend has" (Copy RBT service), "Present tone to friends," Corporate RBT, and varying tone prices per purchase channel enhance the user experience. Hang-up SMS and Anti RBT.

The solution enables the rapid expansion of the Operator's service promotional tools, creating new marketing proposals such as: "the second melody as a gift," "earn bonus points for inviting a friend," "free trial period," "fourth melody as a gift," and "first month of subscription is free."

The Video RBT option serves as a significant functional enhancement to the traditional RBT platform, designed for 3G users who have access to video calls. This service is accessible from both IMS and NGN networks.

SILAT-RBT offers a cost-effective, high-performance, and scalable solution, equipped with a diverse array of features tailored for both new and established mobile operators and content providers.

Sponsored Call

The SILAT Sponsored Call Server enables subscribers to particular thematic information channels to enjoy free or discounted calls while being presented with appealing advertisements.
Before a subscriber connects a call, they receive a multimedia promotional audio or video from an advertiser.

Subsequently, he/she is awarded various bonuses:

- A specified number of call minutes funded by the advertiser during a call;
- A discount on the price of minutes;
- A designated number of call minutes covered by the advertiser over a day, week, month, etc.

Advertisements are exclusively aired on thematic channels and solely for subscribers who have opted in. To subscribe, you can send an SMS or USSD message to one of the numbers associated with the thematic channels, or you can use the IVR by navigating the DTMF menu. Self-subscription through the web interface is also an option. A subscriber can be subscribed to multiple thematic channels at the same time.

Advertising information providers offer a user-friendly web interface for managing thematic channels, allowing users to upload and delete their own commercials, as well as view statistics.

The Operator has the authority to establish restrictions on the overall quantity of subscriber commercials that can be played, as well as on the total bonuses available to a subscriber on a daily or monthly basis.

Silat LBS

SILAT LBS is a modern, carrier-grade system designed for gathering information regarding the location and registration of subscribers within GSM/UMTS networks.

The primary objective of the solution is to enable the technological capability to process, store, update, and transmit information regarding the location and movement of the subscriber to external applications. SILAT LBS emerged as a robust solution for territory-dependent SMS notification.

The integration with a geographic information system (GIS) enables the selection of the broadcasting area on a digital map, facilitating the automatic conversion of the chosen area into a list of Cell IDs or Location Areas through the broadcast management subsystem.

Implementing an API based on HTTP/XML for interaction with external applications facilitates fast, easy, and flexible integration.

Mobile operators can provide new services to their corporate or advertising clients, allowing any company to conduct mass advertising distribution in their local area.

Additional criteria can also be selected based on information available from the Operators CRM system, such as.

- The average revenue per user (ARPU) for a single subscriber can vary and is influenced by the marketing program tailored for a specific segment of buyers.
- The distribution can be arranged for a list of the company's clients when they are present in the company's location area.
- To avoid sending messages to subscribers who have opted out of the distribution, the system maintains blacklists of subscribers.
- The integration of GIS and a robust statistics system positions SILAT LBS as a career-class multicriteria tool for effectively targeting mass distribution.

Location Based Service Platform

The SILAT Location Based Service platform enables an Operator to offer a diverse array of Value Added services by utilizing data regarding the mobile terminal's current geographic location.

The SILAT LBS Operator facilitates the introduction of widely sought-after services such as parental control, transport monitoring, navigation for optimal route calculation, and locating nearby cafes, cinemas, restaurants, and police stations.

Unlike other solutions, services utilizing SILAT LBS can be offered to any subscriber, irrespective of the mobile terminal model. The system offers two location methods: Cell ID and Cell ID+, achieving an accuracy of up to 100 meters.

Essential advantages of the SILAT LBSE platform:

- A diverse selection of distinctive and practical LB-services;
- Easy-to-use interface for content providers;
- Precision up to 150 m;
- Robust maintenance and reporting system;
- Convenient interface for content providers.
- Easy to implement;
- Comprehensive SMPP functionality;
- Conventional interface.

PCEF (DPI)

DPI Platform

Effective and adaptable data traffic management is an essential capability that modern mobile operators need to possess. The SILAT DPI platform unlocks a variety of data traffic management tools, enabling operators to deploy a range of services related to flexible traffic charging, bandwidth management, and more.

SILAT DPI features a signature constructor that enables the creation of new traffic signatures, facilitating the detection of flows from newly developed Internet applications.
The solution can detect obfuscated protocols through statistical analysis techniques and enables the flexible creation of new services and protocols with a regularly updated signature base. The platform facilitates bit rate control in relation to service priority and enables ToS/DSCP traffic prioritization.

To implement service delivery policies based on URLs SILAT DPI can classify traffic based on the URL or segments of the URL by utilizing an external database (such as Websense security cloud or potentially other content classification platforms), along with local “black” and “white” URL lists.

SILAT DPI facilitates Gy (Diameter) for real-time charging on a per-service basis and manages periodic per-service quotas. It also conducts subscriber identification through RADIUS, Diameter (Gx), and XML. The platform allows for integration with subscriber identification databases through either “pull” or “push” methods. The system accommodates various tariff plans that can be assigned to a subscriber based on their identity or commands from an external source (3GPP PCRF).
SILAT DPI is a horizontally scalable, carrier-class system featuring a redundant architecture that eliminates any single point of failure or bottleneck. It functions as a software or software-hardware package, utilizing 40 Gbit/s boards developed by SILAT.

Bill Shock Prevention Platform

Cases related to 'bill shocks' are causing numerous issues for both customers and operators. Customers who roam often refrain from using their mobile devices due to concerns about usage costs, while subscribers who utilize their data services without considering expenses create challenges for mobile operators.

Customers often express frustration towards Operators when they receive unexpectedly large bills. Operators frequently face challenges in collecting substantial amounts from their subscribers, whether due to concerns about their image or other factors, yet they remain accountable for the wholesale amounts owed to their roaming partners.

The SILAT Data Usage Control and Billshock Prevention System helps prevent customer complaints associated with bill shock by providing real-time notifications to roaming subscribers regarding their data traffic consumption and associated costs.

This platform allows subscribers to establish spending and/or usage limits according to predefined policies. The policies can be configured by both the subscriber and the Operator. The system is designed to notify subscribers through SMS when approaching this threshold and will deactivate the service immediately upon reaching the consumption limit.

The deployment of the solution will enable Operators to support their roaming subscribers in managing data roaming expenses, while also aiding in the prevention of fraud and misuse of flat-rate data roaming plans.

Policy Controller (PCRF)

The SILAT Policy Controller serves as an intellectual hub that governs the policy and charging parameters for mobile broadband subscribers within 3G and LTE networks. With a flexible and user-friendly policy decision engine, the SILAT Policy Controller meets the business needs of mobile network operators by implementing policy and charging rules that enable the dynamic distribution of limited broadband network resources.

In contemporary networks, policy and charging control involve the dynamic adjustment of available bandwidth and financial debiting rules for each service during an active Internet session. This adjustment is influenced by factors such as the type of service, subscriber profile parameters, historical data, date and time, and commands from external systems like the subscriber portal. In addition to managing data channel parameters, the SILAT Policy

Controller enables the administration of content-filtering rules for subscribers, facilitating parental control or corporate control services.

The SILAT Policy Controller is compatible with the following interfaces:

- Gx interface to GGSN, PDN-GW, or DPI. This Diameter-based interface facilitates the transfer of policy and charging rules to the policy enforcement point (PEP).
- The Sp-interface (Diameter or XML) facilitates the retrieval of subscriber-related information from the subscriber profile repository.
- Rx-interface for external applications that may need the ability to adjust the parameters of a subscriber's Internet connection. This interface is based on Diameter, and XML-based exchange is also supported.
- In networks compliant with 3GPP Release R8, the SILAT Policy Controller also supports the Gxc-interface, which is utilized for the transfer of policy and charging rules to the S-GW, as well as the S9 interface, directed towards the VPCRF in roaming scenarios.

WiFi Offload

The growing demand for Internet access compels mobile operators to invest significantly in network infrastructure. Wi-Fi technology serves as an excellent alternative for operators seeking to deliver high-speed internet access, effectively compensating for the constraints of 3G/4G or LTE spectrum resources. Reusing Wi-Fi resources seems to be the most effective method to meet the demand for high-speed connections.

SILAT WIX is a sophisticated, market-tested WIFI offloading solution that enables mobile network operators to manage access through WIFI domain integration within the network infrastructure.

The platform empowers mobile operators to offload broadband traffic and facilitates inter-standard roaming, providing subscribers with the exceptional ability to receive calls and SMS on their own phone number while connected to a WIFI network through VoIP technology.

Using the WIX platform, operators can deploy bandwidth-efficient FMC services, enabling corporate clients to utilize WIFI within the office and 3G/4G outside, all while maintaining the same MSISDN and billing account across both networks. The WIX platform can integrate with WLAN aggregators, enabling subscribers to access Wi-Fi globally while billing for the service through their home network account (WIFI roaming).

The platform offers immediate charging for data transmission and voice calls, deducting credit directly from the subscriber's primary mobile account.

It is essential to recognize that the subscriber may be either postpaid or prepaid when CAMEL and Diameter technologies are utilized for online charging.

Charging

OCS Platform

SILAT OCS is an online charging system that offers a fully functional automatic accounting, charging, and billing solution. It supports all functions related to subscriber account registration and management, as well as real-time service charging.

The rating engine capabilities allow for efficient deployment by MVNEs, which can be shared among multiple MVNOs built on the same MVNE.

SILAT OCS encompasses essential functions such as the accounting and charging for various telecom services utilized by prepaid subscribers. It also includes subscriber management tasks like order processing for subscriptions and service subscriptions, along with administrative management and the capability to handle an unlimited number of tariff plans. The system accommodates various charging methods, including time-based, event-based, volume-based, and service-based options, such as "pay-as-you-go" charging and service bundles.

SILAT OCS offers a range of features, including inventory functions for prepaid packet sales support, dealer management through user-friendly API or WEB interfaces for dealers and/or MVNOs, and interaction with external platforms via RADIUS or DIAMETER (Gy) for real-time data service charging. It also integrates seamlessly with external customer care platforms such as voucher management systems and IVRs.

Subscribers can recharge their accounts using vouchers, airtime transfers, or credit card payments processed through external systems such as payment gateways, terminals, and ATMs. The availability of convenient APIs for integration with external financial, accounting, CRM, and Customer Care software tools enables the implementation of a fully functional financial module that complements this OCS. Flexible and powerful statistical reporting and generation tools provide a comprehensive view of service usage, subscriber activity, and more.

Customer Care

Call Center

SILAT Call Center offers a modern, cost-effective solution for companies that deliver information, help desk, booking, and other related services. Innovative technologies: VoIP and WEB are extensively utilized in the SILAT Call Center. Subscribers can access SILAT Call Center services through standard methods from PSTN/PLMN, via the Internet using WEB/e-mail call-back orders, by e-mail, or by making VoIP calls, which enables the creation of geographically distributed call centers.

The system accommodates an unlimited number of agent groups and service access numbers, allowing for the organization of any number of services within a single framework. A variety of call routing algorithms are implemented, based on factors such as the dialed number, CgPN, time or day, and the state of the service queue, along with flexible call distribution that includes skill level differentiation. This enables the optimization of the Call Center to align with the specific needs of each customer. The system includes integrated call recording and monitoring features.

Call center supervisors and system administrators possess effective tools for monitoring service quality.

Voice Portal (IVR)

SILAT IVR is a sophisticated automatic voice service system designed for a range of customer care, information, and entertainment services.

SILAT IVR is capable of interacting with TDM equipment through SS7 and EDSS-1, as well as with NGN platforms using SIP. The modular SIP-enabled architecture facilitates seamless system integration within a prospective IMS environment.

This system provides an interactive self-service feature along with outbound notifications for subscribers.

The system encompasses standard IVR functions and operations such as balance inquiry, payment registration, service activation/deactivation, tariff changes, low balance notifications, and a broad array of information services. Through the use of DTMF, subscribers can easily navigate to specific menu items, such as activating or deactivating numbers or checking their balance. IVR can engage with external information systems (e.g. mobile Operator's billing

Voice Portal (IVR)

system) at any stage of the dialogue menu to obtain the requested information or to modify necessary settings in the subscriber's profile.

The System Administrator can effortlessly define all menu schemes using the voice menu constructor (service creation environment).

Outbound notification (mass calling) may be initiated either through a request from the billing system or by the System Administrator. Integrating with third-party ASR and TTS engines enables flexible management of voice services.

Voucher Management System

A comprehensive voucher management system enables effective administration, activation management, and oversight of voucher usage. Additionally, it can serve as either the embedded PIN-generator or the external PIN-generation system during the voucher generation process.

The system enables the control and management of parameters such as the voucher expiry date, the date of voucher transfer to the dealer, and the date of voucher activation, facilitating efficient oversight of the entire voucher lifecycle and the activities of card resellers.

The system features user-friendly and robust web-based administration tools with various access levels, facilitating seamless integration into the Operator's existing business processes. Activation of vouchers can be done through IVR, USSD, SMS, or by contacting a call center agent.

Our Customers

Our Customers

SILAT

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