



Open Source Telecom Signaling

PAiCore SMSC

Reigniting telecom innovation and sustainable profitability via open source signaling solutions



SMSC

Scalable, Future-Proof Open Source SMSC

PAiCore’s CT Edition SMSC is well suited for operators seeking to modernize legacy messaging infrastructure with a flexible, **future-ready platform**. The **open source** nature of the platform provides the customer **full ownership** of the SMSC, allowing customization and enabling innovation from within the operator, reducing reliance on rigid vendor models.

In addition to traditional legacy protocols like SS7, SMPP and HTTP, PAiCore’s SMSC supports SMS-over-LTE (Diameter).

Developed as an **open source solution** with a telco standards-compliant foundation, PAiCore’s SMSC integrates smoothly into existing network environments. Built to handle **in excess of 100K TPS**, it can be deployed fully geo-redundant running with high availability.

The PAiCore SMSC also embeds **IP-SM-GW** functionality, bridging SIP (IMS), SS7/MAP and Diameter so operators can route SMS across legacy and IMS domains from a single platform, without impacting the subscriber experience.

Key Features



High availability to ensure continuous service



Multi-protocol conversions (Diameter, SS7, SMPP, HTTP & more)



AI-Powered SMS Firewall



High throughput optimized for 4G & 5G networks

Recent Success Stories



EMnify relies on **PAiCore’s SMSC** and underlying open source signaling framework as part of its IoT core network, ensuring efficient message routing and dependable connectivity for millions of devices worldwide.



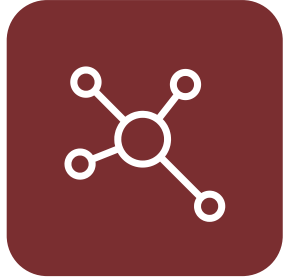
Afghan Wireless uses **PAiCore’s SMSC** to support daily B2C and A2P messaging, enabling seamless interaction between applications and its core network across multiple protocols.

Integrated IP-SM-GW / SMSC



Multiple Commercial Options

The free Basic Version, publicly available as open source, fosters continuous innovation. PAiCore also offers PT Bundles for professional services, and CT Editions available through OPEX plans with 24/7 technical support and usage rights, or CAPEX models that provide ownership of enhanced, carrier-grade CT products.



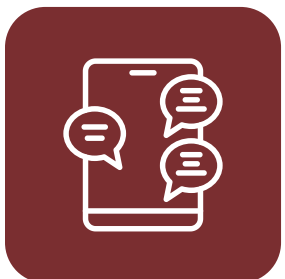
Legacy-to-IMS interworking

Enables SMS routing across legacy and IMS networks by supporting key telecom protocols, including SS7/SIGTRAN (MAP), SIP (IMS) and Diameter (SGd/S6c), for flexible integration and interoperability.



Automated Identity Mapping

Facilitates cross-domain routing by automating IMSI/MSISDN mapping through IMS 3rd party registration, with HSS/HLR update via MAP ATM or Diameter Sh (PUR/PUA).



Resilient SMS Delivery & Reachability

Maximizes delivery success by utilizing real-time reachability subscriptions (SNR/PNR) to automatically trigger message retries the moment a subscriber becomes available following a delivery failure.



Policy-Driven Service Authorization

Ensures network security by validating subscriber permissions and Operator Determined Barring (ODB) settings in real-time before processing inbound or outbound SMS flows.



High Processing Power with up to 100,000 TPS

Reach millions of users in seconds. With the capacity to reach more than 12,500 SMS per second (processing up to 100,000 TPS), our SMSC is ideal for national alert systems, mass commercial campaigns and many other high-volume use cases.



AI Powered SMS Firewall

Provides advanced SMS firewall capabilities by integrating OpenTextShield (OTS), an AI-powered component developed by our strategic partner. It embeds intelligent filtering directly into the messaging flow to neutralize spam and phishing in real time.



SMS over LTE Support

Enables standardized SMS delivery across IP-based mobile networks using Diameter S6c and SGd interfaces. It supports communication with core network entities such as the HSS and MME/SGSN in 4G LTE networks. Considering the sunset of all 2G/3G networks, this capability becomes an unavoidable need in modern SMS Centers.



Multi-Tenant Capabilities

A single SMSC instance can interconnect and serve multiple MNOs, MVNOs, and ESMEs (External Short Messaging Entities) from VAS providers and businesses, routing and directing traffic according to flexible routing rules to match multiple business and use case needs.



Mobile Number Portability & Outbound Rotation

Our MNP API (MNPA) enables the SMSC to comply with Mobile Number Portability regulations, while maintaining a high transactional capacity. Its Outbound Number Rotation Management ensures our customers are able to comply with business rules and regulations.



Built-In Outbound Campaign Manager

A built-in SMS Broadcast Campaign Manager, together with the SMSC's high transactional capacity, provides an ideal solution for time-sensitive messaging initiatives. Version 3.2 enhances campaign management with simplified configuration and improved sender management controls.



Online Billing Available Via OCS Integration

The SMSC can enable online charging capabilities by integrating with an existing OCS via Diameter or HTTP protocols, ensuring monetization of high-traffic use cases.



Compatible With Third-Party Monitoring Systems

The SMSC integrates with third-party monitoring systems that collect and visualize messaging traffic and operational KPIs. Version 3.2 further improves operational visibility through enhanced diagnostics, detailed SS7 API logging, and improved error reporting.



Enterprise Security & Authentication

SMSC CT v3.2 introduces SMPP over TLS, HTTP Basic Authentication, Bearer Token Authentication, API Key Authentication, secure token lifecycle management, and inbound authentication filters, enabling secure integrations with external applications and service providers.



Secure SMPP Connectivity

Encrypts SMPP communications using TLS, providing secure and reliable messaging between clients and the SMSC while protecting sensitive data in transit.



RCS Integration - (Q1-27)

Enables integration of Rich Communication Services (RCS) within operator networks, supporting advanced messaging features and enhanced user experiences.

PAiCore Technology SMSC Versions

Feature	Free Basic Version	CT Edition
SMS Use Cases		
Peer-to-Peer (P2P)	✓	✓
Application-to-Person (A2P)	✓	✓
Business-to-Consumer (B2C)	✓	✓
Protocols		
SMPP	✓	✓
HTTP	✓	✓
SS7/SIGTRAN	-	✓
Diameter (S6c/SGd)	-	✓
SIP	-	✓
RCS (Q1-27)	-	✓
HTTP/2	-	✓
Flexible SMPP Version Negotiation	-	✓
Integrations		
OCS integration Ro interface	-	✓
HTTP Dynamic Payload Interpreter	-	✓
SMPP and HTTP Proxy Mode	-	✓
Reliability		
Load balancing	-	✓
High availability	-	✓
Security		
Anti-spam	-	✓
Anti-fraud	-	✓
SMPP over TLS	-	✓
HTTP Authentication (Basic, Bearer Token, API Key)	-	✓
Advanced Features		
SMPP server with multi-port support	✓	✓
Support All SMPP Bind Types (TX / RX / TRX)	✓	✓
Full Data Coding Support (0-255)	✓	✓
Encodings supported GSM-7, UTF-8, UCS-2, ISO-8859-1	✓	✓

Feature	Free Basic Version	CT Edition
UDH support (concatenated & binary SMS)	✓	✓
Optional TLV Parameter Handling	✓	✓
Split long messages	✓	✓
Retries & DLR Mapping	✓	✓
Message Filtering & Replacement	✓	✓
Official Docker image available	✓	✓
Users Management	✓	✓
AI-Powered SMS firewall	-	✓
Dynamic Global Title Rewriting via Routing Rules	-	✓
Broadcast SMS	-	✓
SMS Traffic Reports & Dashboard	-	✓
Do Not Disturb	-	✓
Email-to-SMS Support	-	✓
Routing based on delivery rates	-	✓
Mobile Number Portability	-	✓
SMS over LTE Support via Diameter S6c/SGd	-	✓



PAiCore Technology IP-SM-GW Versions

Feature	Free Basic Version	CT Edition
General		
User's Management	✓	✓
Official Docker image available	✓	✓
Registration		
3rd Party REGISTER Handling (SIP)	✓	✓
Identity Derivation logic (TS 24.341 compliant)	✓	✓
Reg-Event Subscription (SUBSCRIBE/NOTIFY)	✓	✓
Standard Identity Mapping (1:1 MSISDN/IMSI)	✓	✓
HSS/HLR Update via MAP ATM (SS7/SIGTRAN)	✓	✓
HSS/HLR Update via Diameter Sh (PUR/PUA)	-	✓
MO Handler		
SIP (IMS SIP Message Inbound)	✓	✓
SS7/SIGTRAN (Legacy Interworking - MAP MO-ForwardSM)	✓	✓
Diameter (SGd Interface)	-	✓
SMPP (External Entity Relay - v3.4/v5)	-	✓
HTTP	-	✓
MT Handler		
SIP (IMS SIP Delivery - Relay)	✓	✓
SS7/SIGTRAN (Legacy Termination - MAP MT-ForwardSM)	-	✓
Diameter (SGd/S6c Interface)	-	✓
SMPP (A2P Inbound Submission - SMPP Server)	-	✓
HTTP (REST SMS Submission)	-	✓
Advanced Features		
SMSC (Native SMSC Core Integration (Direct Protocol Bypass))	-	✓



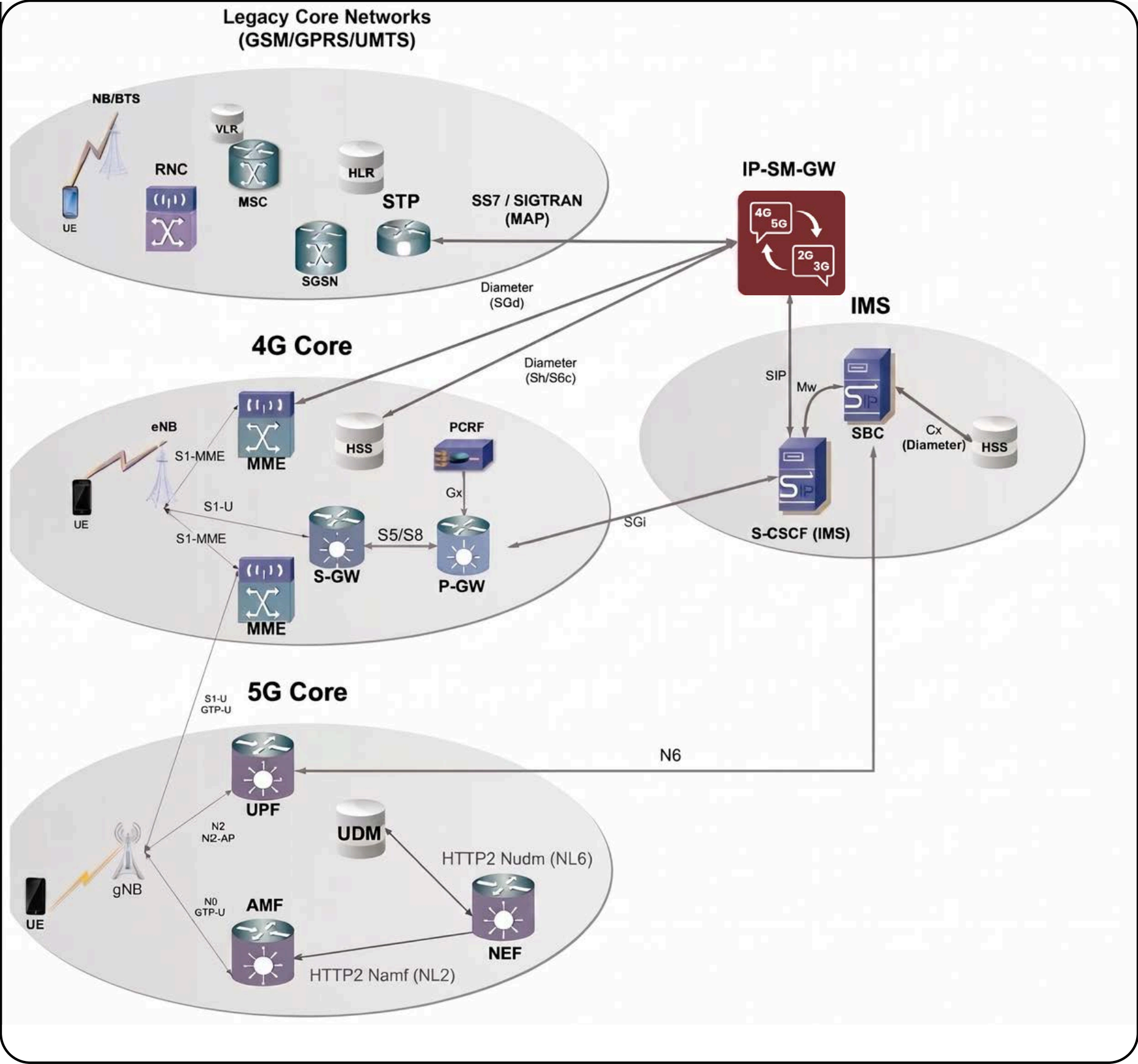


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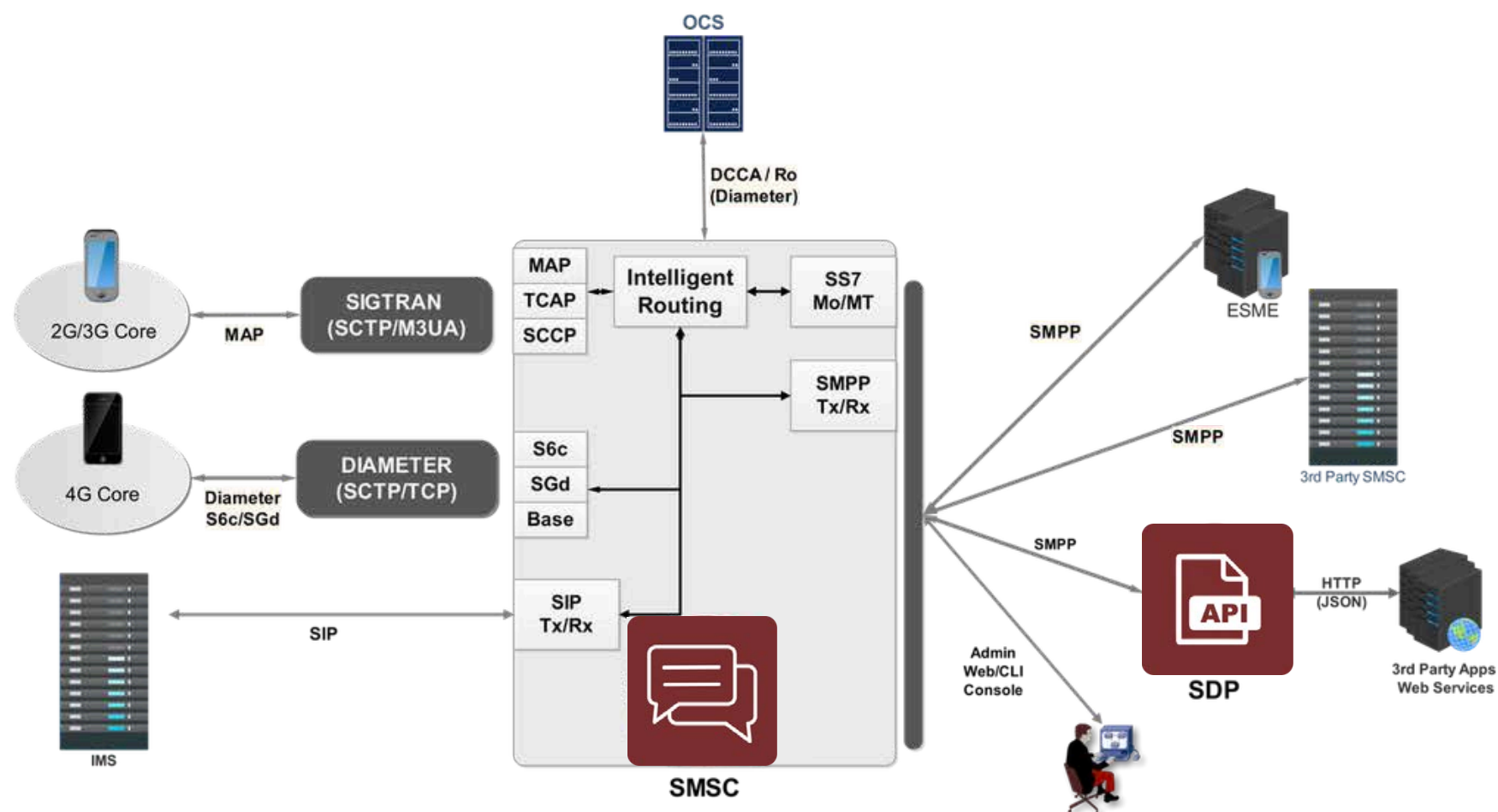
Appendix – Technical Information



Architecture



Interconnection Points



Web Management Interface



- Home
- Service Providers
- Gateways
- Rules and Routing
- Error Management
- Broadcast SMS
- Settings

Service Providers

Show 25 entries

Search: smp

NETWORK ID	NAME	SYSTEMID	SESSIONS	STATE	ACTIVE SESSIONS	ACTIONS
2			1	STARTED	0	
1			1	BOUND	1	

Showing 1 to 2 of 2 entries (filtered from 9 total entries)

Previous1Next



- Home
- Service Providers
- Gateways
 - SMPP / HTTP
 - SS7
- Rules and Routing
- Error Management
- Broadcast SMS
- Settings

SMPP Gateways

Show 25 entries

Search: HTTP

NETWORK ID	NAME	SYSTEMID	SESSIONS	STATE	ACTIVE SESSIONS	ACTIONS
7			1	STARTED	0	
13			1	STOPPED	0	

Showing 1 to 2 of 2 entries (filtered from 12 total entries)

Previous1Next



- Home
- Service Providers
- Gateways
 - SMPP / HTTP
 - SS7
- Rules and Routing
- Error Management
- Broadcast SMS
- Settings

SS7 Gateways

NETWORK ID	NAME	ACTIONS
11		
10		
9		
8		

PAiCore
TECHNOLOGY

Home

Service Providers

Gateways

SMPP / HTTP

SS7

Rules and Routing

Error Management

Broadcast SMS

Settings

Gateways SS7

SS7GW04

M3UA

Manage TCP/SCTP associations, Application Servers and Routers.

View

SCCP

Manage SAP, RSP, RSS, Addresses and Rules.

View

TCAP + MAP

Manage TCAP settings

View

PAiCore
TECHNOLOGY

Home

Service Providers

Gateways

Rules and Routing

Error Management

Broadcast SMS

Settings

Rules and Routing

+ Create

Search: SMPP

ID	ORIGIN NETWORK ID	DESTINATION NETWORK ID	INFO	ACTIONS
14			SP HTTP -> GW SMPP	
8			SP SMPP -> GW SMPP	
7			SP HTTP -> GW SMPP	

Showing 1 to 3 of 3 entries (filtered from 6 total entries)

Previous1Next

Home

Service Providers

Gateways

Rules and Routing

Error Management

Broadcast SMS

Settings

Logout

Create Routing Rules

X

Origin Network

Filters

Regex Source Address

Regex Source Address TON

Regex Source Address NPI

Regex Destination Address

Regex Destination Address TON

Regex Destination Address NPI

Regex IMSI Digits Mask

Regex Network Node Number

Regex Calling Party Address

is SRI Response

Actions

New Source Address

Remove Source Address Prefix

Add Source Address Prefix

New Source Address TON

New Destination Address

Remove Destination Address Prefix

Add Destination Address Prefix

New Destination

New GT SCCP Address for MT

Drop after get MAP SRI Response

Reroute after get MAP SRI Response

Reroute after get

PAiCore
TECHNOLOGY

Home

Service Providers

Gateways

Rules and Routing

Error Management

Delivery Error Code

Error Code

Error Code Mapping

Broadcast SMS

Settings

Delivery Error Code

+ Create

ID	DELIVERY ERROR CODE	DELIVERY DESCRIPTION	ACTIONS
5	35	Data Missing in either the MT HLR or MSC	
4	9	MT number is classed as an illegal subscriber in the MT network's MSC	
3	13	Customer is barred according to the MT HLR from receiving SMS	
2	47	Unspecified DCS (Data coding scheme) error on the MT handset	
1	36	Unexpected data value received in response to a FSM or SRI	

PAiCore
TECHNOLOGY

Home

Service Providers

Gateways

Rules and Routing

Error Management

Broadcast SMS

Settings

Broadcast SMS

+ Create

Show 25 entries

Search:

ID	CREATION DATE	MODIFICATION DATE	TASK NAME	TOTAL MESSAGES	STATUS	LOG	ACTIONS
3	2024-12-06 17:22:30	2024-12-06 17:22:33		45,000	COMPLETED		
2	2024-12-06 17:17:50	2024-12-06 17:17:57		105,000	COMPLETED		
1	2024-12-06 17:05:56	2024-12-06 17:05:59		45,000	COMPLETED		
7	2025-02-28 20:39:09	2025-02-28 20:39:26		255,000	COMPLETED		
6	2025-02-19 03:05:33	2025-02-19 03:05:47		210,000	COMPLETED		
5	2025-02-19 02:57:23	2025-02-19 02:57:46		345,000	COMPLETED		
4	2025-02-19 02:41:27	2025-02-19 02:42:33		90,000	COMPLETED		
8	2025-03-02 23:32:35	2024-03-02 23:32:39		60,000	COMPLETED		

Showing 1 to 8 of 8 entries

Previous

1

Next

PAiCore
TECHNOLOGY

Home

Service Providers

Gateways

HTTP

SMPP

SS7

Diameter

Broadcast SMS

View Broadcast SMS

GMT-06:00 (America/Guatemala)

Broadcast Settings

Approve

Reject

Basic Settings

Service Provider

Sender Id

1322888089

Description

Name

Broadcast test

Total Devices

100,000

Advanced Settings

General Settings SMPP-HTTP

Validity Period (Seconds)	300	Encoding for DCS-0	GSM7
Max Validity Period (Seconds)	600	Encoding for DCS-3	ISO88591
Source Address TON	International	Encoding for DCS-8	UNICODE
Source Address NPI	ISDN		
Destination Address TON	International		
Destination Address NPI	ISDN		

Save

Retries and validity period

Max Due Delay (Seconds)	86400	First Due Delay (Seconds)	5
Retry Delay Multiplier	2		

Save

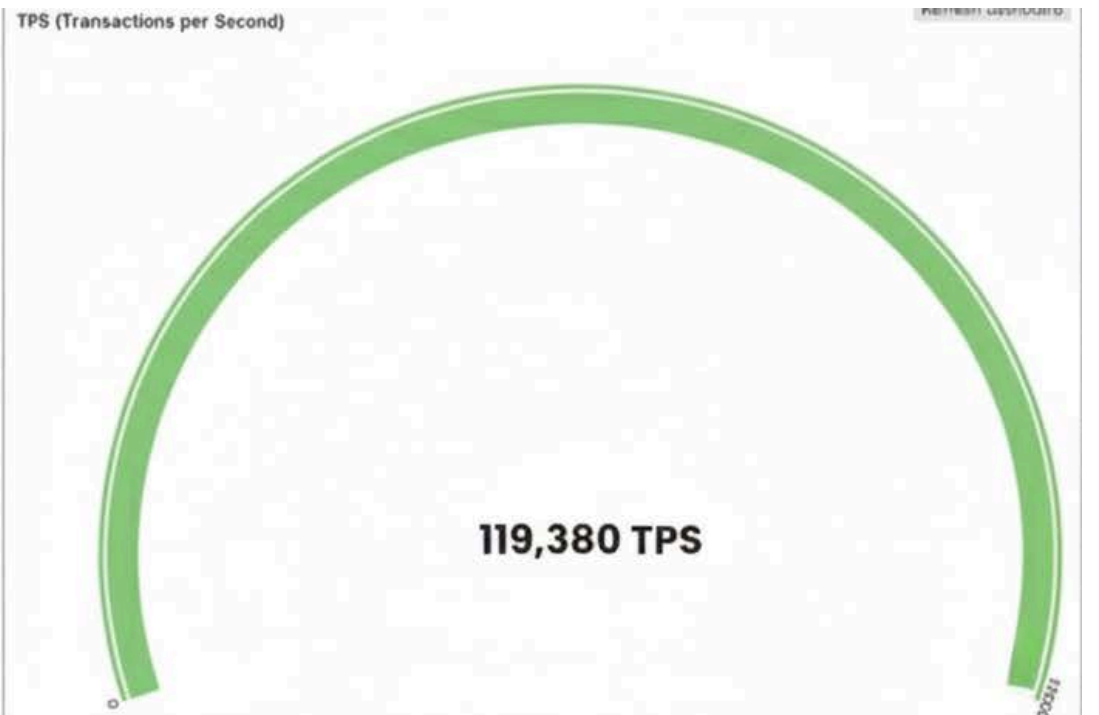
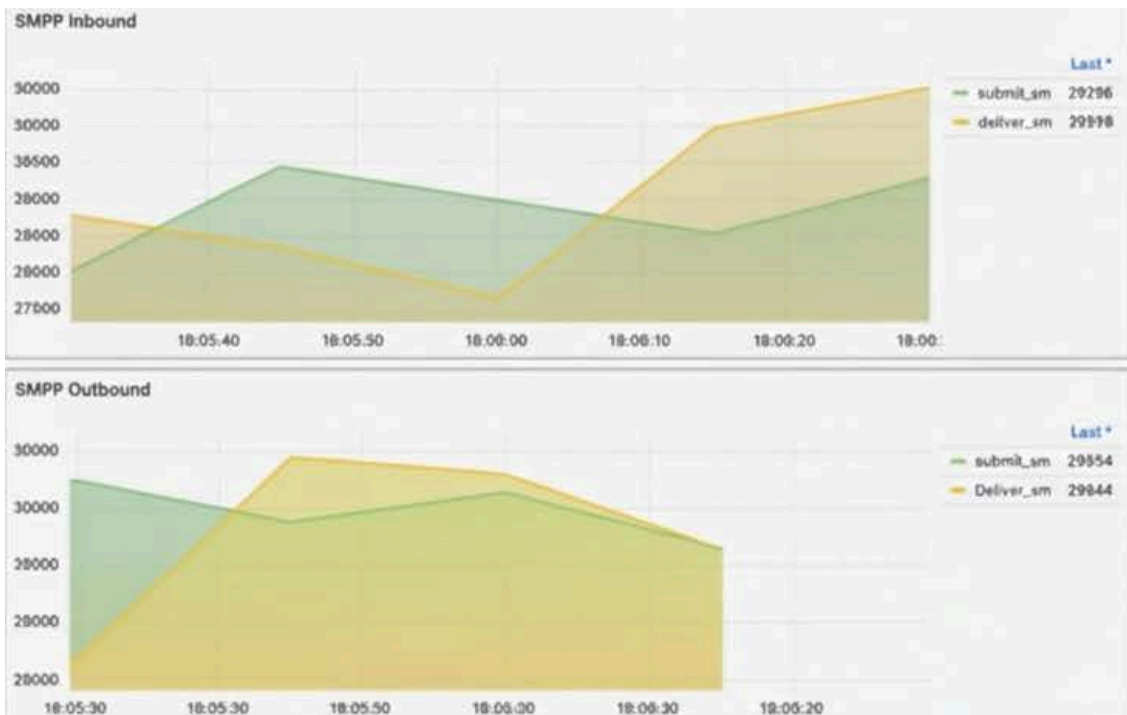
Show 25 entries

Search:

ID	NAME	TLV MESSAGE RECIPE ID	MESSAGE ID DECIMAL FORMATS	CREATED AT	ACTIONS
1		FALSE	FALSE	2024-11-29 18:23:06	Edit Delete
2		TRUE	FALSE	2024-11-29 18:23:15	Edit Delete
3		FALSE	TRUE	2024-11-29 18:24:04	Edit Delete
4		TRUE	TRUE	2024-11-29 18:24:29	Edit Delete
5		FALSE	FALSE	2024-12-19 04:44:15	Edit Delete
6		FALSE	FALSE	2025-02-25 16:34:24	Edit Delete
7		TRUE	TRUE	2025-02-26 10:17:40	Edit Delete

Showing 1 to 7 of 7 entries

Previous 1 Next



TPS & Connectivity Requirements

TPS & Recommended HW

Protocol	TPS	Transactions per message	Messages per second
SMPP	100,000	8 → SubmitSM (2)(R&A), DeliverSM (2) (R&A)	12,500
HTTP	24,000	8 → POST-Send (2) (R&A), POST-DLR (2) (R&A)	3,000
SS7	10,000	10 → MO (R&A), SubmitSM (R&A), DeliverSM (R&A), SRI (R&A) and MT (R&A)	1,000
SIP	3,600	12 → MO (R&A), SIP MESSAGE (R&A), SIP MESSAGE DLR (R&A), SRI DLR (R&A), MT DLR (R&A)	300

Environment	vCPU	RAM	Storage	Estimated Throughput
Test / PoC	8	32 GB	40 GB SSD	≈ 500 msg/s
Production – Low throughput	16	32 GB	100 GB NVMe	≈ 2,000 msg/s
Production – Medium throughput	32	128GB	≥ 150 GB NVMe	≈ 5,000 msg/s
Production – High throughput (single node)	64	192GB	≥ 200 GB NVMe	≈ 12,500 msg/s

Note: Our software products are fully tested and optimized for deployment in AWS EC2 instances, ensuring peak performance and reliability. While they are compatible with any Linux-based virtual environment, performance may vary depending on the underlying infrastructure and configuration.

For the following interconnection tables, the displayed values must be taken as examples.

For SMPP interconnection

No	Description	Value	Comments
1	System ID	smpp_account_1	Identifies the External Short Message Entity (ESME) requesting to bind with the SMSC.
2	Password	*****	The password used by the SMSC to authenticate the ESME requesting to bind.
3	Peer IP	2.2.2.2	IP address used by the ESME to send or accept bind procedures with the SMSC.
4	Peer Port	2775	Port number used by the ESME to initiate or accept bind procedures with the SMSC.
5	Host IP	1.1.1.1	IP address used in bind procedures when the SMSC is acting as ESME or Service Centre (SC).
6	Host Port	2776	Port number used on bind procedures when the SMSC is acting as ESME or Service Centre (SC).
7	SMPP Bind Type	Transceiver	Binding type value: Transmitter, Receiver or Transceiver.
8	SMPP Session Type	Client	SERVER (SMSC will act as a server, listening for incoming SMPP binds) or CLIENT (SMSC will act as a client, initiating SMPP binds to remote servers).
9	System Type	smpp_account	Used to categorize the type of ESME that is binding to the SMSC.



For SIGTRAN (SCTP/M3UA) interconnection

No	Description	Value	Comments
1	OPC	1001	Originating Point Code identifying the platform within the SS7 network over IP (carried in the M3UA routing label).
2	DPC	2002	Destination Point Code identifying the peer node (e.g., STP or core element) in the SS7 network over IP.
3	Global Title	919800123456	Signalling Connection Control Part (SCCP) Global Title digits assigned to the platform.
4	SSN	6145	Signalling Connection Control Part (SCCP) Subsystem Number assigned to the platform.
5	Network Indicator	National (2)	International (0/1) or National network (2/3) determination for Signaling Point Codes (OPC/DPC).
6	IP and Port at peer side	1.1.1.1	Peer (usually SGW) SCTP endpoint IP address(es) and port number list.
7	IP and Port at host	2.2.2.2	Host (usually AS) SCTP endpoint IP address(es) and port number list.
8	SCTP mode	Host	Side that shall initiate the SCTP association and act as client: Host or Peer?
9	M3UA type	AS	Process that shall run on the platform host at M3UA: AS or SGW or IPSP?
10	Routing Context	101	The Routing Context assigned to the platform identifying its MTP3 routing key.
11	Network Appearance	12	Identifier of the SS7 network context for the routing key. Not required if SGW operates in the context of a single SS7 network, or if individual SCTP associations are dedicated to each SS7 network context.
12	Traffic mode	Override	Traffic mode type: Override or Loadshare. Override: ASP takes over all traffic overriding any currently active ASPs in the AS. Loadshare: The ASP will share in the traffic distribution with any other currently active ASPs.
13	Message Exchange	SE	IPSP model defining if each exchange of ASPTM or ASPSEM messages can be initiated by either IPSP (Double Exchange, DE) or not (Single Exchange). SE if unknown.
14	MUA ASP ID	1	Optional ASP ID (provide it only if it has been set by the operator).

For SIP interconnection

No	Description	Value	Comments
1	SIP IP	1.1.1.1	S-CSCF IP Address
2	SIP Port	5090	S-CSCF SIP Port
3	Domain	ipsmgw.mnc001.mcc748.3gppnetwork.org	IMS Core Domain (o IMS Home Domain)
4	Target Host (SCSF Domain)	scsf.customer.com	SIP domain used for user registration and sessions/messages
5	IP-SM-GW User	ipsmgw	SIP identity user of the IP-SM-GW. Together with ipsmgw_domain, it forms the SIP URI used to identify the IP-SM-GW as the source of traffic to the IMS

For Diameter interconnection

No	Description	Value	Comments
1	Host IP	1.1.1.1	Diameter IP address(es) assigned to the PAiCore Technology platform (SMSC, GMLC, DRA, etc.).
2	Host Port	3868	Diameter port number(s) assigned to the PAiCore Technology platform (SMSC, GMLC, DRA, etc.).
3	Host Realm	epc.mcc748.mnc012.3gppnetwork.org	The string(s) in the Network Access Identifier (NAI) that immediately follows the "@" character assigned to the PAiCore Technology platform (SMSC, GMLC, DRA, etc.).
4	Host User Name	host_name.epc.mcc748.mnc012.3gppnetwork.org	The string(s) which contains the User-Name in a format consistent with the NAI specification assigned to the PAiCore Technology platform (SMSC, GMLC, DRA, etc.).
5	Host Number	861684684	ISDN (E.164) number assigned to the PAiCore Technology platform (SMSC, GMLC, DRA, etc.).
6	Peer IP(s)	2.2.2.2	Diameter IP address(es) of the peer side (DSC or DRA or DEA or IWF).
7	Peer Port(s)	3869	Diameter port number(s) of the peer side (DSC or DRA or DEA or IWF).
8	Peer Port Range	3868-3869	Port range to use for establishing SCTP associations.
9	Peer Realm	epc.mcc748.mnc01.3gppnetwork.org	The string in the DSC/DRA/DEA/IWF Network Access Identifier (NAI) that immediately follows the "@" character.
10	Peer User Name	peer_name.epc.mcc748.mnc01.3gppnetwork.org	The string which contains the DSC/DRA/DEA/IWF User-Name in a format consistent with the NAI specification.

For HTTP/1.1 and HTTP/2 integrations

No	Comments
1	The required API documentation is available.