PAiCore TECHNOLOGY

IP Multimedia Subsystem

Reigniting telecom innovation and sustainable profitability via open source signaling solutions

VoLTE / VoNR • MMTel • SMS over IP

PAiCore TECHNOLOGY

Why IMS matters

Modernize voice and multimedia services while preserving the existing mobile core.

CUSTOMER VALUE



One integrated service layer

Bring session control, supplementary telephony, SMS-over-IP and subscriber access into a coherent IMS architecture.



Reuse your investments

Integrate with existing HSS/DRA, charging and 4G/5G policy infrastructure through standard interfaces.



Scale by network function

Containerized components allow targeted scaling without introducing proprietary appliances.



Secure subscriber access

A built-in access SBC (P-CSCF) protects mobile and fixed SIP clients at the IMS edge.

BEST FIT

MNOs, MVNOs and private networks introducing or consolidating IMS-based voice and multimedia services.

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Key Features

What customers gain from the PAiCore IMS service layer.

FEATURES AT A GLANCE

VoLTE & VoNR

Standards-based IMS voice services for VoLTE (4G EPC) and VoNR (5G SA)

Integrated Access SBC

Mobile and fixed SIP subscriber access through the IMS P-CSCF.

MMTel Telephony

Call forwarding, barring, waiting, hold and conferencing.

SMS over IP

IP-SM-GW interworking between IMS and mobile messaging domains.

Charging & QoS

Ro/Rf charging plus Rx/N5 policy authorization.

Cloud-Native Operations

Docker / Kubernetes, metrics and distributed function deployment.

Designed for multi-vendor interconnection; feature activation and integration depend on deployment scope.

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Unified Subscriber Access

The Access SBC is integrated into the IMS P-CSCF, not a separate edge appliance.

ONE EDGE FOR DIFFERENT DEVICES

Mobile

VoLTE and VoNR devices

Wi-Fi calling

Mobile access via ePDG

Fixed / SIP

Softphones, desk phones, gateways

SUBSCRIBER PROTECTION

Identity & Authentication

IMS-AKA and IPsec for handsets; SIP Digest and TLS for fixed SIP endpoints.

NAT and Registration Protection

NAT / CGNAT support, connection keep-alives, fast loss detection and registration binding.

Media Anchoring

Media is anchored at the access edge. SRTP is available for SIP clients as described in the Access SBC datasheet.

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IMS / VALUE & BENEFITS

Voice & Multimedia Services

Subscriber-oriented services beyond basic call establishment.

MMTEL SERVICES

Call Control

Originating and terminating identity presentation/restriction, call barring and call diversion.

Call Experience

Call waiting, hold, conference and supported announcement services through MMTel-AS / Annc-AS / MRF.

Subscriber Self-Service

Handsets update supplementary services via Ut / XCAP; the HSS maintains simservs configuration.

OTHER IMS SERVICES

Emergency Routing

E-CSCF and LRF classify emergency traffic and support SIP routing towards a PSAP.

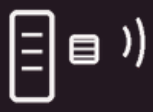
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IMS / VALUE & BENEFITS

Messaging & Interworking

Extend messaging service delivery across legacy and IP-based networks.

SMS OVER IP



IP-SM-GW

Handles SIP MESSAGE for mobile-originated and mobile-terminated SMS, and interworks with network messaging infrastructure.

INTERWORKING CAPABILITIES



Mobile Core Interfaces

Diameter S6c/SGd toward subscriber and serving-node functions; MAP through SS7/SIGTRAN.



External Messaging Connectivity

SMPP 3.4 interconnect to external SMSCs and aggregators.



Delivery Resilience

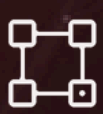
Store-and-forward handling, reachability updates and re-registration-triggered delivery.

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TECHNICAL REFERENCE

IMS Architecture & Integration

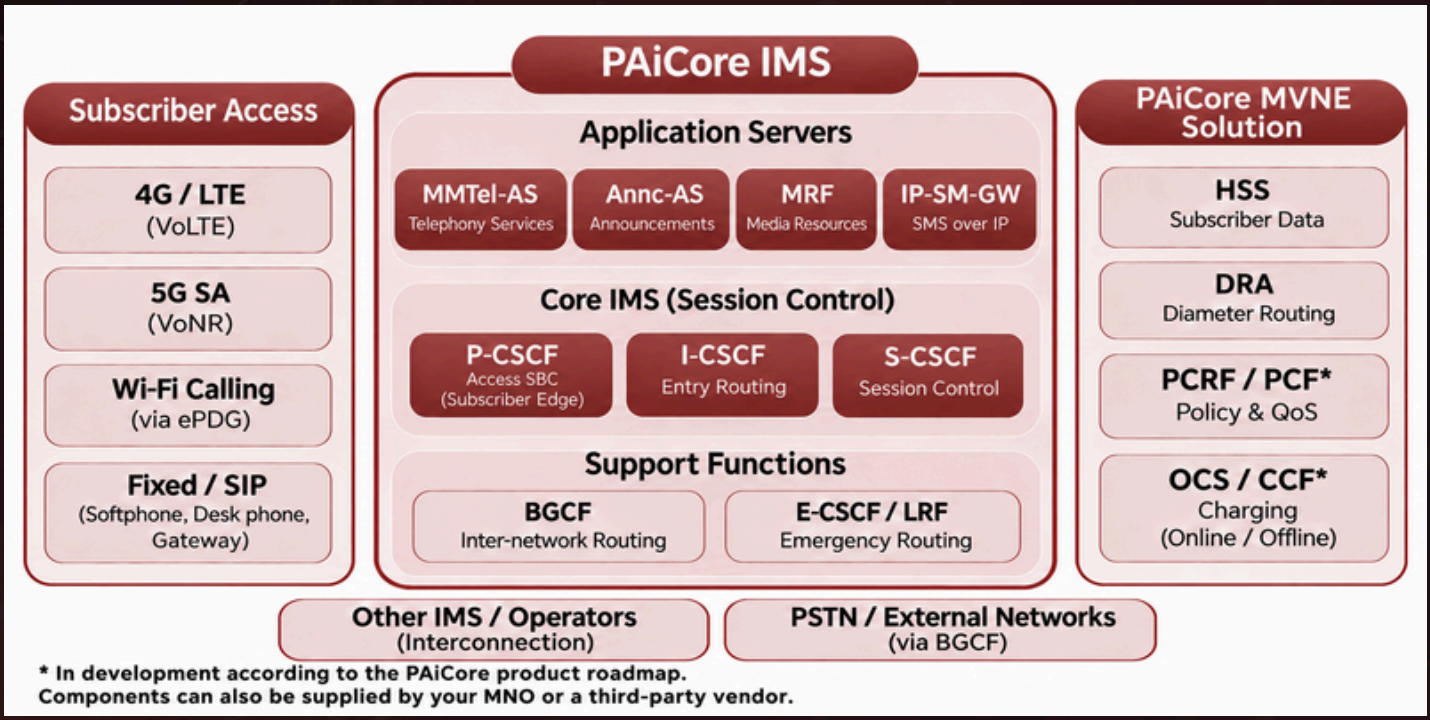
Functional components, network interfaces, security, deployment and indicative capacity.






TECHNICAL APPENDIX

Logical IMS Architecture



Interfaces and deployment topology are illustrative; actual signalling paths depend on interconnect, routing and operator architecture.

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Interfaces & Network Functions

Key integration points for solution engineering.

PROTOCOL / FUNCTION		
Gm / SIP	UE ↔ P-CSCF	Registration, signalling and access security
Mw / SIP	CSCF functions	SIP session control and routing
Cx / Sh	CSCF / AS ↔ HSS	Subscriber data and service profiles
ISC / SIP	S-CSCF ↔ AS	MMTel and supplementary service invocation
Rx / N5	P-CSCF ↔ PCRF / PCF	4G/5G media QoS and policy authorization
Ro / Rf	IMS ↔ OCS / CCF	Online and offline charging
S6c / SGd	IP-SM-GW ↔ core	SMS reachability, routing and delivery
SMPP / MAP	IP-SM-GW ↔ peers	External messaging and legacy interworking

STANDARDS

3GPP TS 23.228 / 24.229 / 23.204 • GSMA IR.92

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Security & Operations

Security controls and operational observability across IMS and the subscriber edge.

SECURITY CAPABILITIES

Access Authentication & Encryption

IMS-AKA/IPsec for mobile access; SIP Digest/TLS and SRTP for compatible SIP endpoints.

Protection at the SIP Edge

Source and subscriber rate limits, automatic bans, registration binding and identity enforcement.

Network-Facing Controls

Configurable TLS between IMS functions and deployment-scoped lawful-intercept architecture.

OPERATIONS

Metrics

Prometheus / Grafana

Tracing

HEP / Homer / SIP3

State

Shared Redis runtime state

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Deployment & Capacity

Indicative sizing and deployment options; final capacity depends on the end-to-end network.

DEPLOYMENT

Cloud / On-Premises

Container-based IMS functions can run in Docker or Kubernetes environments.

Scale Horizontally

Add instances to scale signalling and service elements as demand grows.

ACCESS SBC REFERENCE PERFORMANCE

10,000	10,000	30,000+
calls/s per node	authenticated regs/s	peak calls/s

Sizing guidance

Figures above are supplier-reported ASBC signalling measurements, not a guaranteed end-to-end IMS benchmark. HSS/DRA capacity, media workloads and traffic profile must be assessed.

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Standards & Scope Notes

Standards references and scope boundaries for customer evaluation.

KEY TECHNICAL REFERENCES

IMS / Voice

3GPP TS 23.228, TS 24.229 and GSMA IR.92 for IMS architecture and VoLTE service profiles.

Messaging / Security

3GPP TS 23.204 (SMS over IP), TS 33.203 (IMS access security) and TS 24.623 (Ut/XCAP).

Policy / Charging

3GPP TS 29.214 (Rx), TS 29.514 (N5) and TS 32.260 / 32.299 (charging).

ROADMAP / VALIDATION

Scope dependent

SRVCC/eSRVCC transfer execution, GMLC/Lh integration, Nchf and further media-engine adapters are described as roadmap. Transcoding capabilities and performance should be validated for the exact configuration offered.