Cisco Converged Services Platform

Mobile subscribers are demanding the same type of services that are provided over the Internet on their mobile phones, including messaging, social networking, and video sharing. Mobile operators realize the importance of retaining their existing voice-service customers in the emerging all-IP world.

At the same time, mobile networks have been evolving over the last few years from second-generation (2G) to third-generation (3G) and now to all-IP networks such as Long-Term Evolution LTE and wireless networks. This challenges mobile operators to transition their mobile services infrastructure from a circuit-based to an all-IP architecture, capable of preserving existing voice and Short Message Service (SMS) revenues and delivering enhanced services that take advantage of the higher speed and lower latency of LTE networks.

This requires a convergence vision that uses the existing 2G and 3G services infrastructure as a part of the converged services core based on IP Multimedia Subsystem (IMS) and that opens services capabilities toward the web services domain and mobile application ecosystems. Operators can derive great value by employing cross-domain capabilities to support new IP-based services that transparently coexist with traditional voice and messaging services.

The Cisco® Converged Services Platform (CSP) allows operators to deploy enhanced voice, video, and messaging services across any generation of mobile devices and broadband access networks. Cisco CSP supports a wide range of applications and functionalities to deliver services over 2G, 3G, Wi-Fi and LTE networks – such as Voice and Video over LTE (V^2oLTE), Rich Communication Suite (RCS) and Converged Messaging – all from a single platform. Cisco CSP offers solutions for the mobile operators that:

- Provide real-time communication services for mobile user communities: voice, video, multimedia, and social messaging for revenue generation
- Provide network optimization: social network aggregation, voice and message routing and media delivery over IP for cost reduction
- Provide open network interfaces to support third-party application development for new business models

Mobile operators can deploy the services they want, when they want to deploy them, on the Cisco Converged Services Platform.

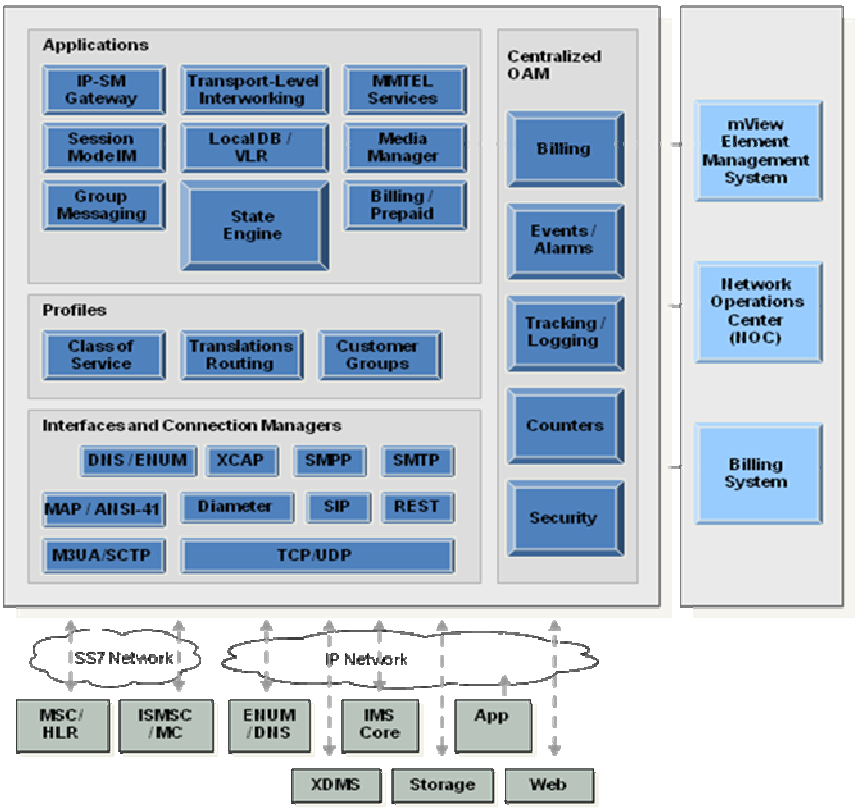
Platform for Convergence

Cisco CSP applications are based on Session Initiation Protocol (SIP) and HTTP, and comply with 3rd Generation Partnership Project (3GPP), 3GPP2, IETF, and Open Mobile Alliance (OMA) specifications such as Multimedia Telephony (MMTel), OMA SIMPLE Presence and instant messaging, and OMA Converged IP Messaging (CPM). The platform supports industry-standard interfaces to connect with existing mobile access networks; mobile core networks; SIP, voice over IP (VoIP), and IMS core networks; web services through representational state transfer (REST); and broadband IP access networks including LTE over open-standard interfaces.

As shown in Figure 1, Cisco CSP is packaged with a software framework that supports rapid service development and delivery across multiple network domains–circuit, SIP, and web. The platform consists of an application layer with functional modules, providing the service logic to deliver services in the network. This layer uses a services

and subscriber profile layer, which includes sophisticated routing and carrier-grade capabilities to deliver personalized services with flexible deployment options that include geographic redundancy. These functions connect to a common interface abstraction layer, providing the flexibility to link any application service logic or function to any element in the network to provide convergence across service domains. This modular and layered software architecture allows Cisco to deliver blended services across access domains and core networks.

Figure 1. Cisco Converged Services Platform Software Architecture



For mobile operators, Cisco CSP delivers:

- Rapid IP-based service delivery across 2G, 3G, Wi-Fi and LTE domains and devices
- Voice, video, and messaging services deployed on a single platform, reducing operational expenses
- Investment protection in circuit-switch-domain equipment by using existing core network assets such as Mobile Switching Center (MSC), Home Location Register (HLR), and SMS-C to provide convergence across IMS and traditional domains.
- Interoperability with the Cisco ASR 5000 Series and third-party IMS core and applications servers in a typical multivendor network
- Flexible deployment options such as separated application servers and centralized or distributed architectures
- Fully redundant hardware, 99.999 percent reliability, and georedundant deployment options
- High scalability and flexibility to optimize application-specific capacity

Cisco CSP Solutions

Voice and Video over LTE (V^2oLTE)

The Cisco V^2oLTE solution allows LTE operators to preserve their revenues with a core voice, video, SMS and Multimedia Message Service (MMS) services delivery over LTE. This MMTel solution offers service parity with 2G and 3G voice services including interworking, mobility, and single-number identity. Cisco CSP also provides options for LTE operators to achieve rapid time-to-market for V^2oLTE by using existing assets such as the MSC in the evolution to IMS. Cisco CSP supports functionalities to route SMS and MMS traffic over IMS for delivery over LTE devices.

Rich Communications Suite (RCS)

The Cisco CSP RCS solution provides new services over 3G and 4G devices, which include social profile, social presence, instant messaging and chat, file transfer, and video streaming as mobile operators launch globally interoperable, socially interactive services to build loyal mobile communities. The solution also includes support for RCSe, which simply introduces new services for IM and chat, file transfer, and video sharing to native device address books. Cisco CSP supports all the application servers required to deploy RCS and RCSe, and the connectors to blend RCS services with web-based social networks and applications.

Converged Messaging

OMA converged messaging empowers 2G, 3G, and LTE operators to transform their messaging core while introducing new services to end users. The Cisco CSP solution for converged messaging supports functionality for multidevice delivery, group messaging, media transfer, instant messaging and chat, message management policy, and message storage.

Femtocell Services

The femtocel solution delivers voice and messaging services, using an all-IP core, to devices connected over IP-based femtocells. Cisco CSP supports the application servers to deliver MMTel, GSM and UMTS, MAP or CDMA ANSI 41 services to connect 2G (GSM and CDMA), and 3G-CS femtocells directly into an IMS core to provide voice and messaging services.

SMS and MMS Services

The SMS and MMS Messaging solution on the Cisco CSP helps operators monetize mobile messaging by either increasing revenue-generating traffic or by simply reducing costs in existing infrastructure. Personalized services such as message forwarding; copying to SMS, MMS, or email; group messaging; and autoreply provide a comprehensive user experience. Mobile operators can offer new services such as spam filtering and personalized mobile advertising in response to the intense competition and commoditization of SMS revenues.

Social Networks Aggregation

Cisco CSP optimizes social network traffic to lower costs for operators and provide an enhanced experience to consumers. This solution provides personalized delivery of social feeds to end users and manages contacts across various social networks.

Cisco CSP Functions and Deployment Architecture

Table 1 summarizes the Cisco CSP functions and the related deployment architecture.

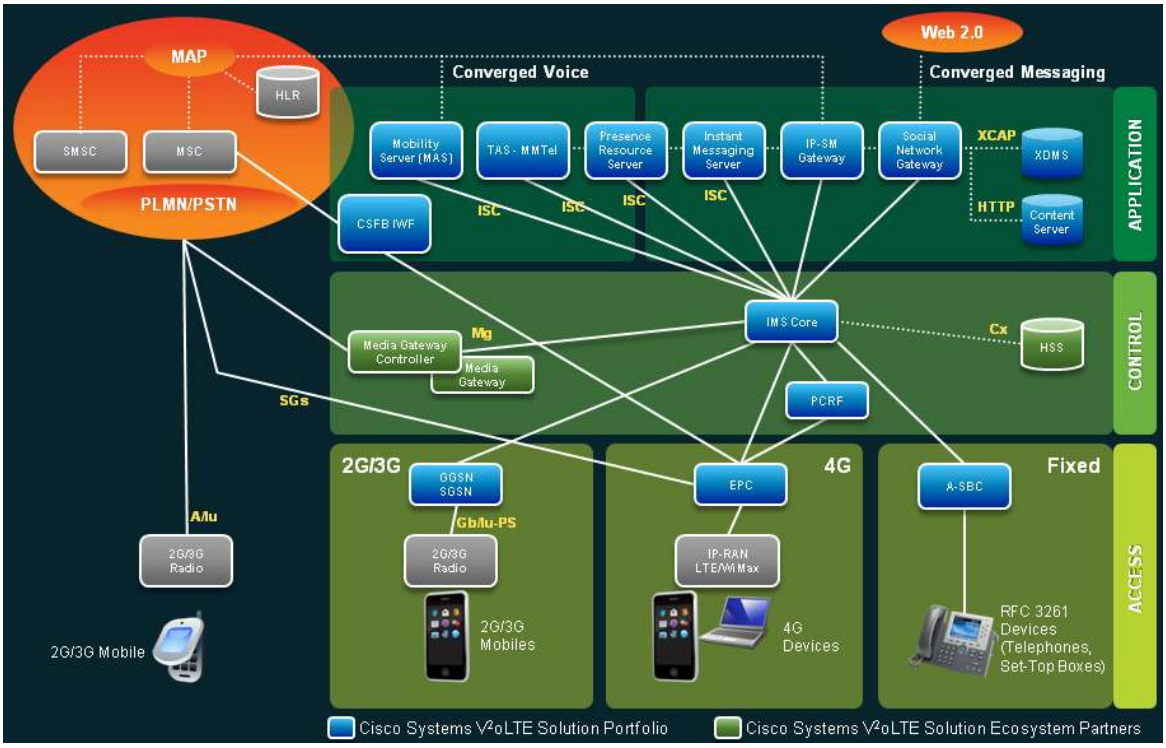
Table 1. Cisco CSP Functions and Deployment Architecture

Capability	Function Supported
Telephony Application Server (TAS)	• Full-featured 3GPP MMTel TAS • GSMA IR.92 compliance • MAP support for call routing • ANSI-41 interfaces • CAMEL, WIN, and INAP triggers for existing IN services • MAP and IS-41 • MRF tones and announcements, conferencing, prompt, and collect service • Ut interface • REST APIs for service control • 3GPP2 Femtocell Convergence Server (FCS)
Mobility Application Server (MAS)	• 3GPP SCC AS and SR-VCC (GSM): single radio • SCC application server • CAMEL support for return of IMRN • Domain transfer (CS to IMS, MS to CS) • SMS domain availability notification • Integrated SCP (WIN support for return of IMRN) • Access transfer (PS to PS, CS to PS, PS to CS, interdevice user equipment) • T-ADS function • Midcall service transfer
Converged messaging solutions	• 3GPP IP-SM Gateway for SMS over LTE • RCS R2 and R3 support for chat, file transfer, and image share • RCS R4 (CPM) support for chat, file transfer, image share, text, and multimedia messaging • RCSe support for chat, file transfer, image share, multidevice storage, and forwarding • REST API for messaging conforming to GSMA One API and RCS API framework
Presence and resource list server	• OMA SIMPLE support for PS and RLS • Support for hard state, soft state, watcher authentication, subscription filters, throttling, flexible timers, and RLS to PS subscription optimizations
XML Document Management System (XDMS) and Aggregation Proxy (AP)	• OMA XDM standards for storage and management of XML documents • SIP subscription to document updates • Support for multiple XDMS applications (PS, RLS, Shared Group, Shared List, and Shared Policy) • Multiple authentication options for XCAP and Ut interface
Social networking gateway	• Support for aggregation of social network feeds from Facebook, Twitter, MySpace, and Flickr • Support for contact list matching and storage, feed filtering, and request throttling • Common REST APIs for aggregated feeds, messaging, and social network management

Cisco V²oLTE Solution Portfolio

Cisco CSP is an integral part of Cisco's comprehensive and flexible Voice and Video solution over LTE (Figure 2), and allows operators to deploy enhanced voice, video, and messaging services across any generation of mobile devices and broadband access networks.

Figure 2. Cisco V²oLTE Solution Portfolio



Product Specifications

Table 2 lists the specifications for Cisco CSP.

Table 2. Cisco CSP Product Specifications

Description	Specification
Logical interfaces	• GSM and MAP • GSM and UMTS • Narrowband SS7 and SIGTRAN • IMS Ma, Mw, Mg, Mj, Mr, ISC, Cx, and Sh • IETF SIP • H.248
Physical	• Dimensions (H x W x D) 24.5 x 17.5 x 17.5 in. (621.03 x 446.91 x 445.69 mm) • Mounting weight (chassis): 101.5 lbs (46.12 Kg) • SBC weight (up to 14 per chassis): 6.7 lbs (3.06 Kg) • Total (fully loaded): 195.7 lbs (88.96 Kg)

Description	Specification
Power	• Base 14-unit chassis: 256W • Switch engine (2 per chassis): 200W • Admin manager (2 per system): 165W • Application cards (up to 20 per system): 147W • Resource manager (2 per chassis): 200W • Total (fully loaded): 2622W • 4 power feeds, capable of carrying 45A each • Operating voltage: –40.5 to –72V
Environmental	• Normal operating temperature: 40 – 104℉ (+5 to +40 ℃) • Transient: –23 to 131℉ (–5 to +55℃) • Operating humidity: 5 to 85% • (90% short term) noncondensing • Storage: 10 to 95% noncondensing
GSM and UMTS (circuit-switch domain)	• 3GPP TS 24.008, 48.006, 48.008, 25.413, 29.232, Q.1950, 23.003, 29.002, 23.039, 23.040, 24.011, 24.080, 24.081, 24.083, 24.084, 24.091, 24.173, 23.009, 49.008
3GPP IMS	• 3GPP TS 23.003, 24.229, 29.228, 29.229, 29.328, 29.329, 24.341, 29.311
Presence and XML	• Presence RFC 3856, 3863, 3903, 4479, 4480, 4661, 4662, 4825, 4826, 5262 • OMA SIMPLE v1.1 • OMA XDM v2.0, OMA Resource List Server
Messaging	• SMPP v3.3 and v3.4 • 3GPP TS 24.341 and 29.311 • RCS R2 and R3 (SIMPLE IM) • RCS R4 (CPM) • RCSe • MM3/SMTP, MM4, and MM7
IETF	• RFC 1035, 2046, 2387, 2617, 2782, 2915,2976, 2833, 3261(SIP), 3263 (SIP), 3262, 3264, 3265 (SIP), 3310, 3311, 3323, 3325, 3327(SIP), 3428, 3455, 3551, 3588, 3608 (SIP), 3680, 3761, 3842, 3966, 4483, 4566
SIGTRAN	• SIGTRAN RFC 2960, 3309, 3332
CDMA	• CDMA A.S0013-C v2.0, A.S0014-C v2.0, C.S0005-D v2.0

For More Information

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Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

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Singapore

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