

IP Multimedia Subsystem (IMS) Architecture and CommuniGate Pro

CGS Associations:



spec



MultiService
Forum

IMS was originally defined by the [3rd Generation Partnership Project \(3GPP\)](#). The 3GPP goal with IMS is to create a common platform that allows Wireless carriers to deploy modern SIP based signaling and multimedia applications for their subscribers. The proposed architecture is meant to simplify the delivery of these services regardless of subscriber access method whether connecting via LAN, WiMAX/WiFi, 3G, or home broadband services.

Although the original focus of IMS was wireless carriers, many in the telecommunications industry have begun to consider the IMS architecture as a standard definition that can be used to develop and deliver all of their IP communications products and services. Some of the appeal of the IMS architecture for carriers is the perception that some vendor lock in and technology incompatibility problems can be avoided. The architecture itself invites vendors to compete and offer IMS components to the carriers. This natural market behavior will help carriers with the IP communications services build out process by providing multiple vendors, several technology choices and price comparisons for IMS technology.

As RFC standards provide some assurance that protocols will behave as expected regardless of the software delivering the service, IMS provides an architecture standard for those protocols that can be used to create and deliver services (conferencing, video attendant, etc...) efficiently, well integrated, and customized for the carrier's business need.

Major telecoms standards organizations are now adopting IMS as a basis for their next-generation packet telephony architectures.

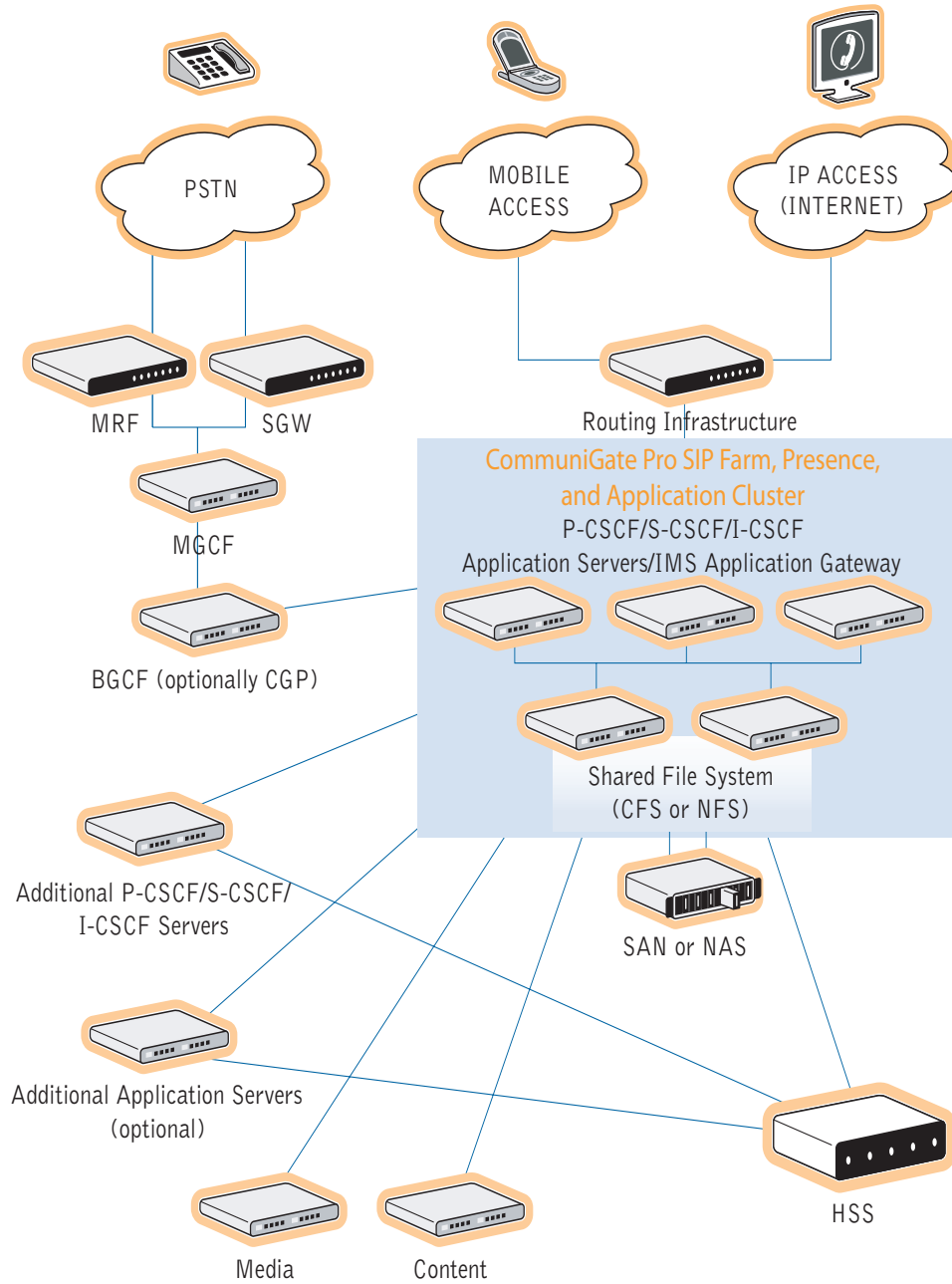
European Telecommunications Standards Institute - [ETSI](#)

International Telecommunication Union - [ITU](#)
The Telecommunications Industry Association - [TIA](#)

MultiService Forum - [MSF](#)

The first multi-vendor interoperability testing of IMS is taking place in October 2006 under the auspices of the MSF (MultiService Forum).

<http://www.msforum.org/interoperability/GMI.shtml>



How does CommuniGate Pro fit into IMS architecture?

To answer this question we need to look at what IMS architecture expects. The architecture describes three separate layers which can be

combined to create the applications and services delivery platform:

- Transport Layer
- Call/Session Control Layer (SIP)
- Applications and Services

Access Types - IMS Transport Layer

- DSL
- Cable
- Ethernet
- Mobile network
- Wireless (WiFi, WiMAX)
- Media Gateways connecting PSTN to the IMS

tabase with all user information and permissions/application access information) - Uses [DIAMETER Protocol](#), which is a Radius replacement

Service/Applications - IMS Application and Content Layer

- Billing
- Security
- Group and list management
- Presence
- Voice and Video Telephony
- Instant Messaging
- Push to talk, push to see
- Advanced Signaling from SIP Applications Server
- Conferencing
- Gaming
- Convergence of all of the above

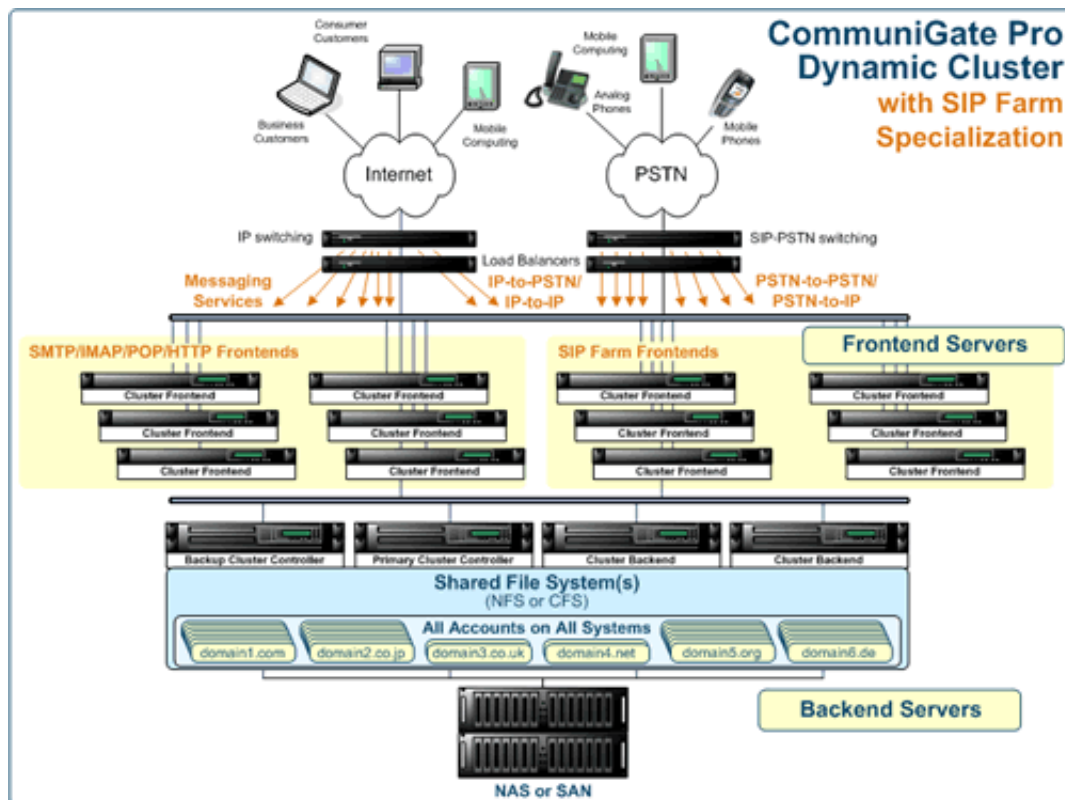
Session/Call Control (Signaling) - IMS Control Layer (SIP)

Proxy (all forwarding and user requests)

Interrogating (location service for traversing multiple IMS domains)

Serving (Signaling, AOR management, Application server based on subscriber server permissions)

Home Subscriber Server (HSS) centralized da-



With IMS architecture a complete “Communications Service Provider” can develop and deliver an infinite number of relatively easy to deploy services that transparently switch between any network the subscriber is connected to.

CommuniGate Pro can provide several components that scale, adapt, and integrate well into a Communications Service Provider’s final IMS implementation. CommuniGate Pro can contribute to an IMS based deployment strategy in each IMS layer.

Transport Layer

Network based PSTN connectivity for SIP to PSTN gateway hardware and software solutions. This includes registration into devices for the creation of SIP gateways and devices registering into CGP. CGP’s multiple gateways for flexible and scalable SIP trunking includes a resource and quality preserving media proxy functionality.

[External Gateways](#)

[Registrar Services](#)

[NAT Traversal and Media Stream Proxy](#)

Control Layer

CommuniGate Pro is a complete SIP Applications server with true clustering for SIP protocol sessions. This gives CGP the power to cover a wide range of IMS control layer functions. CGP has a real time signaling rules engine that can be configured to manage and control signaling based on incoming information from the caller system. Options such as the DIAMETER protocol can be integrated with CGP APIs. Many of the HSS requirements of IMS can be hosted on a CGP Cluster.

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Content Layer

The content layer is well supported by CommuniGate Pro. Many of the described applications and applications enablers are already included with the product. The CG/PL environment adds the development control component that most providers seek. CG/PL is not based on more complex environments such as J2EE. It also provides an IP communications centric development platform that allows a wider range of skilled engineers to create complex communications applications. CGP supports powerful development tools of the content layer and does not overcomplicate the integration process of the resulting applications. The comparison of a voicemail application any other environment (J2EE, TCL, CPL, VoiceXML) and a CG/PL based solution demonstrates how development, delivery, upgrading, and maintenance of services can be dramatically improved. CG/PL is flexible and can interoperate with other development environments. Options for this integration can include GUI and/or connection to other requested applications, support interfaces, or policy requirements such as CALEA.

[CommuniGate Programming Language \(CG/PL\)](#)

[Real Time Application Module](#)

[PBX Services](#)

[XIMSS \(XML Interface for Messaging,
Scheduling and Signaling\)](#)