White Paper

Introducing the Service Broker: Bridging the Legacy/Next-Generation Services Divide

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I. CSPs Can Deliver Competitive Next-Gen Services

The explosion of new applications available across the Internet has created an insatiable market appetite for rich function and continual novelty. Service providers that can feed this appetite are enjoying enormous success. Apple is a prime example, registering 1.5 billion downloads from its iPhone app store in its first year of operation, and device manufacturers and Internet companies are setting the pace in the digital services market.

These companies are spearheading the latest trends in service creation: building large numbers of new applications quickly and cheaply with Web 2.0 tools and techniques; harnessing extensive developer communities; and selling directly to consumers via app stores. They are introducing innovative business models – based on sponsorship or advertising, for example – and they see themselves as key enablers of the most powerful digital application of all: social networking. In competition for customer loyalty and wallet share, they appear to have a winning strategy.

Yet communications service providers (CSPs) also have a major opportunity to capitalize on the social networking trend, if they use their network capabilities and services – such as messaging, conferencing, and VPN – to support a new breed of community-based social networking applications. CSPs have in their favor large customer bases, trusted brands, and unparalleled expertise in the world's leading social networking tool, voice calling.

CSPs are held back, however, by their legacy service environments, which are based on proprietary and inflexible technology. Such environments make it slow and expensive for CSPs to create new services or enhance existing applications. Nor can CSPs easily "mix and match" services in innovative ways to upsell customers and increase both their ARPU and customer "stickiness." Compared to their Web 2.0 rivals, CSPs are struggling with a limited portfolio of services, uncompetitive delivery cycles, and failing business models, such as post-paid and walled gardens, that no longer meet customer expectations.

In response, the majority of CSPs are transforming their network and service environments with the goal of standardizing on open, commercial off-the-shelf (COTS) technologies. They see next-generation IP networks, standards-based service environments, and an IT paradigm for service creation as critical to their ability to compete with Internet players. The move to IP will reduce costs and accelerate time to market for new communications applications.

However, business-changing transformation programs require large amounts of investment and organizational change, so they typically take many years to accomplish. In the current economic climate, investment is being squeezed, and change is costly and unsettling. Over the past year, it has become increasingly clear that there will be an extended period of transition from legacy networks and service environments to a next-generation, all-IP and all-IT world of communications services that may last for another ten to 15 years. CSPs are delaying their migration to IMS and many are taking a hard look at how they can leverage their existing investment in revenue-generating services while overcoming the limitations of legacy service platforms.

CSPs cannot afford to lose momentum in the highly competitive market for new services. Nor can they afford to concede the social networking market to their Internet rivals. Instead, they need to develop a strategy to ensure that during a transition period, old and new service technologies can work together, they can continue to offer all customers a seamless service experience, and they can establish the means of introducing new service features and new bundles of service functions far more rapidly, and at lower cost, than they can today.

This strategy should enable CSPs to exploit their current service assets and network capabilities and to migrate subscribers to new infrastructure without disturbing their service experience. CSPs will also need to take care that their strategy prepares them for the open, standardized platforms of the future and is not based on proprietary solutions that will lock them into a specific vendor's service environment and services portfolio.

The purpose of this paper is to introduce the **service broker**, a technology that helps CSPs overcome these challenges and deliver a broader range of competitive services. A service broker enables any communications service to be delivered on any network, regardless of whether the service was originally developed for that network.

Figure 1: Service Broker – Definition & Functions

DEFINITION	A network element that efficiently manages service interaction and composition, resides between the service layer and the converging network, and is traditionally decoupled from the core switch and the service execution or service creation environment.
PURPOSE	To efficiently manage service interaction and service composition for network time-critical application logic across any network environment.
KEY FUNCTIONS	SCIM, IM-SSF, reverse IM-SSF, IN-IN trigger management, protocol/call flow management, subscriber data management interaction
KEY BENEFITS	Extends new and existing application reach while also interacting with data services management such as subscriber data and policy management elements. Provides an innovative alternative for protecting and leveraging an operator's current network assets and application investments, while also introducing new services over NGNs.

Source: Service Broker Forum

Physically, the service broker sits between one or more call/session control elements (such as MSCs, switches, softswitches, IMS CSCF) and applications in the service layer, whether legacy IN applications or next-generation SIP applications, or a mixture of the two. The service broker mediates, in real time, between network(s) and applications regardless of network and application type, legacy or NGN, fixed or mobile, using a combination of capabilities, including SCIM, IM-SSF, IN-IN trigger management, protocol/call flow management, real-time charging, and subscriber data management interaction. This makes it a foundation technology for bridging the gulf between the vast installed base of revenue-generating voice-based applications and next-generation services, supporting subscriber migration from one environment to the other.

The service broker is fundamental to a CSP's ability to deliver a next generation of network-based services that preserve the customer experience, demonstrate innovation and market leadership, and which ensure that the CSP remains relevant in an increasingly competitive environment for value-added services.

II. Overcoming Key CSP Service Delivery Challenges

The service broker addresses five key CSP service delivery challenges in the current market. These are the need to:

1) provide complete service flexibility in the CSP environment, so that any subscriber can be granted access to any service, regardless of the network to which they are connected.

Most CSPs have more than one network and different sets of services that are locked into each network. CSPs want to liberate services from dependence on a particular network technology and make them available to all their subscribers – for example, as part of a legacy-to-next-generation migration program, a fixed/mobile convergence (FMC) initiative, or following the acquisition of a new property and subscriber base. **A service broker is a bridge between any service and any network technology, translating application calls to the network and respecting the latency requirements of the many network protocols it supports.** This means that applications can be pointed towards, and used by, subscribers on multiple different networks without the applications needing to be aware that they are talking to other networks.

2) make several services interact with one another in a real-time service orchestration, so that CSPs can compete with the rapid pace of service innovation in the wider market.

CSPs must be able to create new services quickly and easily from existing service components, so that they can sell more services to subscribers, raising ARPU and preventing churn. The ability to bundle services in innovative ways enables CSPs to compete on features, rather than just on price. CSPs want to blend disparate IN services, possibly running on different vendor platforms, and/or compose new services from a mix of legacy IN applications and new application logic created in a next-generation service platform. **The service broker supports the creation of new service bundles and their real-time orchestration.** It provides the connectivity and composition logic that allows interactions between IN services on multiple platforms within a service bundle; between IN and NGN services; and even between IN and Web/Web 2.0 services. In the latter case, the service broker helps to handle and monitor latency requirements. It enables operators to expose IN and/or NGN service function via high-level Web services/Web 2.0 interfaces to third-party developers for use in their applications, generating a new service exposure revenue stream.

3) leverage existing investment in IN services that generate significant amounts of revenue until CSPs are ready to replace such services with next-generation equivalents.

CSPs may want to migrate their subscribers to next-generation networks (NGNs), but fear that if they disturb the customer experience as they do so, customers will churn. Not only do CSPs want to continue to provide customers with their familiar services, but many may not be able to justify a "rip and replace" business case in the current environment. They also want a way to IP-enable all their IN services, without the expense and time delay involved in asking each IN service provider to build a custom interface. And during the migration period, CSPs will have customers on both networks, but they will not want to run parallel service environments for each one. **The service broker supports a CSP's migration strategy, making IN services available to customers on SS7/SIGTRAN and NGN/IMS networks alike, without any change to the services themselves.**

4) support redevelopment of IN services running on platforms that are reaching end-of-life.

In some cases, IN platform vendors have announced their intention to withdraw support for older platforms; in others, CSPs are finding that the maintenance costs for legacy IN platforms are soaring and have announced an end-of-life target date for these platforms. In both cases, CSPs will need to redevelop such services on open, standards-based service platforms. However, most will migrate customers between platforms on a service-by-service basis, over a period of time. **During this period, a service broker can provide seamless interworking between legacy and next-generation platforms, so that customers retain the same service experience.**

5) break the hard-coded link between legacy services and specific charging options, so that CSPs can offer any service to any post- or pre-paid customer, and allow customers themselves a choice and/or mix of charging options.

CSPs also want to be able to enrich charging options for legacy customers, by providing them with access to parental controls, community tariffs, home-zone services, advertising promotions, etc. **The service broker can link a CSP's different IN charging platforms with each other and/or with an NGN charging platform to create a unified charging experience for all customers, regardless of network.**

III. Key Service Broker Functions

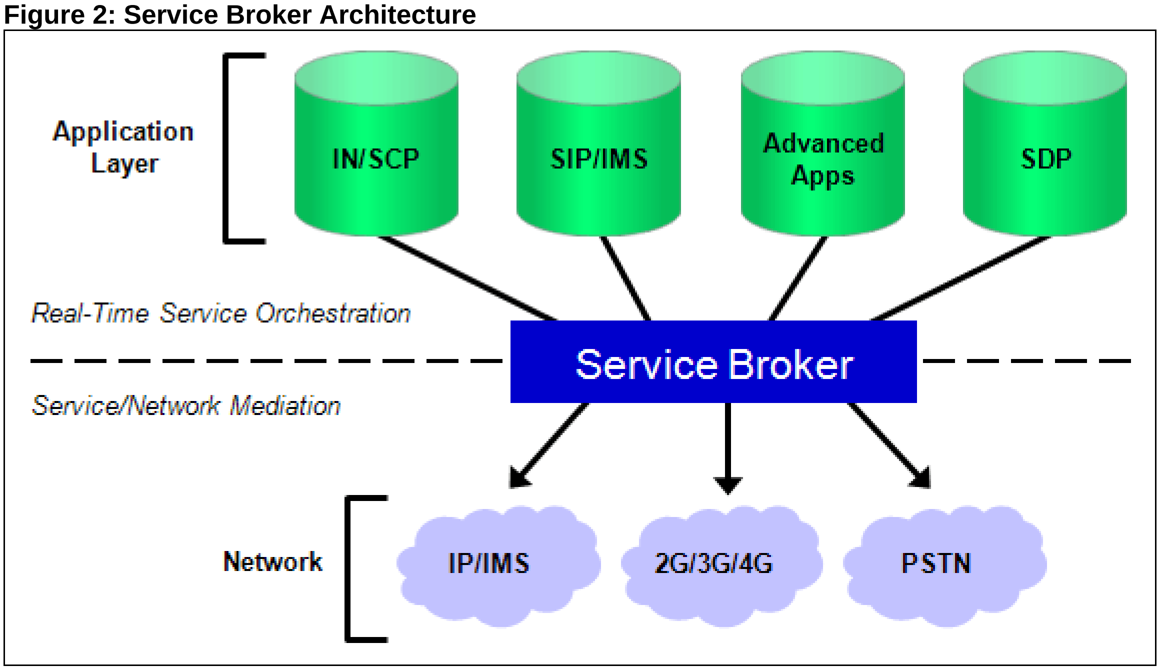
A service broker has two primary functions. It carries out **mediation between services and the network**, providing all the network connectivity and protocol translation needed to support inter-working between any communications service and any network. For example, a service broker can mediate between: IN services using different IN protocol variants; IN services and NGN session control; IN services and next-generation applications; and next-generation applications and legacy network call control. Service brokers support service-to-network connectivity across fixed and mobile networks, and across different generations of mobile networks.

The service broker also supports **real-time service orchestration,** which allows multiple services to interact with one another within a single call or session. This function enables CSPs to create new services/service bundles by composing a number of individual services, either attached to the legacy network or the NGN, or a mixture of both.

The service broker supports multiple service orchestration scenarios, including:

- IN service interaction in a legacy network, overcoming the SS7 network design limitation that allows only one IN service to control a call. The service broker enables IN services on different platforms to be orchestrated together in a service-interaction scenario. For example, the service broker is able to leverage a rules engine to support complex and configurable service interaction scenarios.
- orchestration of different IMS application servers within NGN-based service composition, acting as an IMS Service Capability Interaction Manager (SCIM). Compared to the basic S-CSCF filter criteria mechanism, which simply allows one to chain SIP-based applications, the service broker handles much richer and more complex service interaction scenarios, not limited to the SIP application server domain.
- real-time service compositions that deliver information to, or which can trigger Web services orchestrations in, the non real-time IT world, where the latter are orchestrated using service-oriented architecture (SOA) BPEL technology.

Figure 2: Service Broker Architecture



Source: Service Broker Forum

IV. Why Service Broker Alternatives Won't Work

CSPs don't have to use a service broker to move legacy IN services from end-of-life platforms or support the migration of subscribers and services to a next-generation service platform. They can adopt alternative strategies.

For example, a number of network equipment vendors offer next-generation IN (NGIN) platforms. These are updated versions of their existing platforms with some level of programmability, so that CSPs can change and enhance their IN services themselves. Network equipment vendors are also rewriting their IN services for these platforms.

However, there are significant drawbacks to this approach. CSPs that have multiple IN platforms from different equipment vendors today will need to acquire next-generation platforms from each supplier in order to continue to run the same set of services on each. If they want to standardize on a single equipment vendor's platform, that will mean moving subscribers away from the services they were used to on the losing vendor's platform, and onto new services in the next-generation platform, with all the attendant risks of migration.

Furthermore, while network equipment providers may include a composition capability within their own next-generation platforms, CSPs with multiple next-generation platforms will still not be able to compose cross-platform applications, limiting the number of service bundles they can create. And once they have invested in the equipment provider's next-generation platform, the CSP will remain locked into it for a further period of time, rather than having the freedom to add new services and service platforms from other vendors. This will potentially hamper the CSP's pace of innovation, access to a wider development community, and ability to compete with Web 2.0 and over-the-top VoIP service providers.

Alternatively, a CSP can choose to move straight to a next-generation telecom app server environment, redeveloping all of its legacy IN services on the next-generation app server and taking a "big bang" approach to switching subscribers over to the new service platform.

This strategy presupposes that the CSP is, in parallel, making a rapid transition to IP/IMS in the network, so that the network is ready to support the new services as soon as they are ready. It also carries the heavy risk that subscribers may not retain the same, familiar experience in the new environment and churn as a result; it also requires a significant amount of capital investment in new app servers, service redevelopment, network transformation, and subscriber migration. The CSP will have to write off all its existing legacy service investment. In the current market, this strategy is increasingly unpalatable to CSPs.

V. The Service Broker in Action

Faced with these choices, it is not surprising that network operators worldwide are either deploying service brokers in their networks or beginning to evaluate them via RFIs and RFPs. CSPs have long wanted a way to "join up" their IN platform estate so that disparate IN services from different vendors can be made to interact in new and exciting ways. Now the business case for service brokers is becoming even more compelling, as CSPs implement NGNs and want the subscribers they migrate to be able to access familiar, tried-and-tested services. Service brokers also enable CSPs to expose IN assets to the vibrant world of IT and Web 2.0 service development. For example, conferencing capabilities are easy to expose as a simple set of Web services interfaces, which can be embedded in a wide variety of IT enterprise and consumer applications.

The following three service broker use cases are based on real customer deployments. They demonstrate that network operators are already gaining, or can expect to gain, large benefits, both financial and competitive, from service broker use.

Case 1: Using a Service Broker to Orchestrate New Services

The subject of this use case, an Asia/Pac alternative mobile operator, competes in a developing, dynamic marketplace with a predominantly young population who are almost exclusively pre-paid subscribers. To attract the attention of this market segment, the operator wants to seize on the latest Internet trends, such as social networking, and make the mobile phone an indispensable device within the home as well as outside it. As an alternative operator, the company also needs to build market share, which it is doing through an intensive program of bonuses and promotions. Around 80 percent of the operator's traffic has a bonus or promotional element attached to it.

The mobile operator had two requirements for a service broker. First, it wanted to launch new community and home-zone services that would be available to all of its customers, regardless of which charging platform they were attached to. For historic reasons, the mobile operator has two pre-paid charging platforms from different network equipment vendors. For the community application to work, for example, it was imperative that members of social groups were not prevented from joining the service because their charging platform didn't support it.

A service broker was deployed to support the orchestration between the new applications and the operator's multiple pre-paid charging services. For example, the service broker was configured with new service logic, so that when a call request comes from the network, the service broker triggers the new community service to find out whether both called and calling parties belong to the same community. If so, the service broker adjusts the CAMEL message so that the charging system(s) will apply a special tariff. If not, the service broker directs the unchanged message to the correct charging platform. The community service in this case is a standalone application, fully independent from the charging system and with its own feature roadmap.

Second, the mobile operator needed a way of getting new bonus and promotions platforms, one for voice and the other for SMS, to talk to both charging platforms, so that it could apply its promotional campaigns across its entire subscriber base. Again, the service broker supports the orchestration between the bonus and promotions platforms and the charging platforms.

When the service broker receives a call/SMS request from the network, it interrogates the appropriate promotions platform to see whether the call/message should be charged. If it is covered by the subscriber's bonus allocation, the service broker sends the CAMEL or INAP message, along with the bonus information, back to the network without touching the charging system. The MSC has a call detail record (CDR) that a bonus has been applied, and this information will be picked up by the billing system, so the service broker has an important role to play in the revenue-assurance audit trail. If the promotions platform indicates that the subscriber does not qualify for a bonus, the service broker forwards the request to the appropriate charging platform, which in turn will charge for the service in real time.

In the future, the mobile operator expects to use the Web services exposure capability within the service broker to support the real-time orchestration element of hybrid network/IT services that it or its third-party partners may develop. The service broker deployed is also able to invoke SIP-based services, as soon as these are required and new SIP services are introduced.

Case 2: Using the Service Broker to Extend Legacy Service Assets to the NGN

When an Asia/Pac converged operator rolled out its next-generation IP network with an IMS core, it faced a dilemma. How should it deliver applications across the new network, ensuring a cost-effective solution for each service with minimal risk and impact to its large and growing customer base? Its existing IN services – such as new pre-paid charging, 1-800, and color ringback – were stable and generating significant revenue. These services together represented an investment of more than US$12 million. Since a majority of the operator's customers used these services, it faced a set of alternatives that might prove costly from a time, revenue, or customer perspective.

The operator began the process of evaluating the alternatives with two key objectives in mind: reducing operating expenses and maximizing investment. One option included creating three new services for the NGN and initiating a mass cut-over of existing customers. This would involve a significant additional capital investment, and there was little assurance that the new services would attract more customers and incremental revenue. The operator also risked customer churn, given the different user experience associated with the new NGN applications. Another possibility considered was the building of duplicate applications on the NGN and the operation of parallel networks. This option also meant that the operator would incur additional capital expense, as well as the operational overhead of supporting duplicate applications on two separate networks. The third alternative was the service broker, which would allow the operator to extend legacy service assets to the new network so that it could optimize its investment, minimize costs, and keep the customer experience consistent as users transitioned from the old network to the new.

To determine the best course of action, the operator needed to understand the financial impact of recreating applications for the NGN vs. leveraging their existing IN services into the new network. It carried out a financial analysis that concluded using a service broker would save the company around US$2.5 million from an initial cost perspective. The savings would increase as additional applications began to use the scaleable service broker, with a three-year savings figure of more than US$7 million. The operator expects its total cost of ownership to improve over time, as the cost of the service broker is amortized across all the legacy services the operator wants to extend into the NGN environment. At the same time, the operator was able to make services available immediately on its NGN network to attract new subscribers, whereas it would have taken nine months to a year to start delivering the new services proposed in the two alternative scenarios.

The service broker is bringing the converged operator's services and subscribers seamlessly into the NGN world. By reusing stable, existing IN services through a service broker, the operator is spending typically less than half what it would have had to pay its original service provider(s) for custom IP-enabling a single service. Nor has it had to disrupt existing applications, and thus will see lower operating costs. The service broker provides the openness, flexibility, and scaleability to enable legacy-to-NGN connectivity for multiple services, while the operator would have had to pay separately for each custom enablement of its services. Once the migration to the NGN is complete, the operator sees a future role for the service broker in normalizing all the connectivity between services and its network. It anticipates that given the pace of technological change, there will always be a need for this function.

Case 3: Using the Service Broker to Support Legacy to NGN Service Migration

The legacy IN infrastructure supporting a European mobile operator's main revenue-generating services – such as pre-paid, VPN and closed user groups (CUGs) – is based on two platforms from two different network equipment providers. The platforms, which between them run 40 IN applications, are aging and becoming increasingly costly to maintain and enhance. The provider of one of the platforms has declared it end-of-life, giving the operator a two-year window to replace the platform before support is withdrawn. The operator also has a goal of reducing the opex associated with its revenue-generating services by 50 percent. It is finding the cost of asking the platform providers to create new IN service features and variants prohibitively high. This has an impact on how quickly the operator can innovate and bring new services to market.

The operator wants to move to an NGIN architecture – by which it means having a standardized COTS hardware and software platform on which to run IN applications, which will reduce the cost and effort involved in developing new features and services by at least 50 percent. As part of its NGIN architecture, the operator also intends to standardize on feature-rich CAMEL Phase 4 messages within its network switches, rather than the proprietary variants of IN protocols used by existing legacy IN applications.

The operator has built a business case for the redevelopment of its entire IN application portfolio in SIP using a standard, COTS Java EE/SIP application server. However, since the operator does not yet have an IMS network, it will need the new SIP applications to talk to its SS7 network, which is simultaneously being upgraded to support CAMEL Phase 4. It will also need some redeveloped services to continue to use CAMEL Phase 2 messages when subscribers are roaming.

The operator is therefore implementing a service broker to carry out the mediation from the next-generation SIP application environment to the upgraded legacy network. IN services are being migrated one at a time over a period of six to eight months, to allow the operator to thoroughly validate that the user experience of the redeveloped applications is identical to the legacy experience. Subscribers may therefore have a mix of legacy and next-generation IN services during this period. The service broker will handle the mix of legacy and NGN calls needed to support subscribers seamlessly while both network and application migration is underway.

The operator will use the orchestration function within the service broker to support interactions between multiple IN applications running in the next-generation environment, so that the composite service makes a single call to the network through the CAMEL interface. The orchestration function enables the operator to innovate easily and quickly by creating new service compositions. As part of the application redevelopment process, it is configuring the orchestration rules that will govern such service compositions.

VI. A Future-Proof Technology

These use cases show that the service broker has a strong role to play in helping CSPs with the problems they face today. But will there continue to be a need for this technology in the future? A service broker is not just a tool to help CSPs transition to next-generation IP, but a long-term investment that underpins the future flexibility of a CSP's business. Once implemented, service brokers can support a number of ongoing initiatives. For example, service brokers can support:

- CSPs as they rationalize their service portfolios across their entire footprint. Many CSPs own multiple properties in different regions of the world, often expanding via acquisition. This means they have disparate service portfolios and service platforms to consolidate. They want to rationalize these portfolios and platforms to minimize operational costs; present a consistent brand experience wherever subscribers are in the world; and offer their complete range of services to all customers, regardless of property or region, adding incremental revenue. The service broker can play a key role in such a strategy.
- The range of services being developed in the wake of FMC, such as home-zone and call-continuity services. Service broker functionality is critical to a CSP's ability to support the same service on fixed and mobile networks, allowing it to "roam" with the customer.
- Inter-operator roaming for complex services. Increasingly, customers will want their entire service environment to be available "from the cloud" when they are mobile, regardless of the network they are on. The service broker has an important enabling role to play here.
- The continued evolution of network technologies, which is unlikely to stop with IMS, LTE, and WiMax. New technologies beyond these are already on the horizon, and continuous change and innovation are givens in the telecom industry. With the service broker, CSPs gain a trusted, robust, and scaleable network element that can support future migration needs, as well as the TDM-to-IP migration occurring today. Service brokers bring a clear horizontal architecture to seamlessly deliver services regardless of network topology.
- SIP application server orchestration in an IMS environment. One of the goals of IMS is that CSPs will be able to add new SIP-based applications easily and have them interwork with others during a SIP session. It is unlikely that CSPs will buy or develop all the next-generation applications they want on the same SIP app server, and different SIP platforms may support different variants of the protocol. For example, IMS Service Control (ISC) is already S-CSCF vendor-specific. Even in an all-IMS environment, CSPs will need a third-party, cross-app-server service broker to support session-level orchestration. When IMS becomes a reality, the service broker can provide this function.
- Migration of users to a common, real-time, online charging system, where pre- or post-paid becomes a payment method rather than a service choice, and all services are available to all users, regardless of which method they choose. Many applications developed to run on SIP app servers cannot be extended to pre-paid users, as the underlying platform does not support a pre-paid capability. Thus, a burgeoning community of pre-paid users are limited in their ability to subscribe to a rich portfolio of services from their CSP.
- CSPs putting SOA-based IT architectures in place see Web services-based orchestration and the enterprise service bus (ESB) that supports application-to-application orchestration and integration as a fundamental part of this initiative. In real-time communications networks, the requirement is now emerging for a similar application orchestration and network integration (connectivity) function, which IT technologies such as the ESB and BPEL cannot support. The service broker fulfills this functional need and is already being deployed by leading CSPs as they modernize their service environments and begin to fight back against Internet players and device manufacturers in the battle for a new generation of applications and subscribers.

Glossary of Terms

BPEL: Business Process Execution Language. An orchestration language that is used to define business processes describing Web services interaction, thus providing a foundation for building SOA solutions based on Web services.

CAMEL: Customized Applications for Mobile network Enhanced Logic. Provides the mechanisms to support services of operators that are not covered by standardized GSM services even when roaming outside the HPLMN (Home Public Land Mobile Network).

CDR: Call detail record. The computer record produced by a telephone exchange containing details of a call that passed through it.

COTS: Commercial off-the-shelf. A term for software or hardware that is ready-made and available for sale, lease, or license to the general public.

CSCF: Call Session Control Function.

CUGs: Closed user groups. Groups of mobile telephone subscribers who can only make calls and receive calls from members within the group.

CSP: Communications service provider. A company that transports information electronically. The term encompasses public and private companies in the wireline, wireless, Internet, cable, satellite, and managed services businesses.

ESB: Enterprise service bus. A software architecture construct that provides fundamental services for complex architectures via an event-driven and standards-based messaging engine (the bus).

FMC: Fixed/mobile convergence. Te infrastructure technology and network service that enable a specialized phone handset (which is dual-mode) to support both the wide-area (cellular) access as well as the local-area technology and switch between networks ad hoc.

IMS: IP Multimedia Subsystem. An architectural framework for delivering multimedia services over Internet Protocol (IP).

IMS CSF: IP Multimedia Subsystem Connected Services Framework.

IM-SSF: IP Multimedia Service Switching Function. Acts as a gateway between the IMS network and application servers using other signaling standards, such as **INAP** and **CAMEL**.

IN: Intelligent Network.

INAP: Intelligent Network Application Part. A signaling protocol used in the **IN** architecture.

S-CSCF: Serving Call Session Control Function.

Java EE: Java Platform, Enterprise Edition. A scaleable middleware platform used in the telecom domain.

LTE: Long Term Evolution. The last step toward fourth-generation radio technologies, designed to increase the capacity and speed of mobile telephone networks.

MSCs: Mobile switching center. Connects the landline public switched telephone network (PSTN) system to the wireless communication system. The MSC is typically split into a MSC server and a media gateway, and incorporates the bearer-independent call control (BICC).

NGIN: Next-generation Intelligent Network. A new model for telecom services development, going beyond the traditional **IN** to overcome its many limitations and provide the power, flexibility, and openness needed to deal with ever-increasing complexity in service requirements.

NGN: Next-generation network. Describes key architectural evolutions in telecommunications core and access networks that will be deployed over the next five to ten years.

Reverse IM-SSF: Provides connectivity and access to applications/services in the opposite direction from the **IM-SSF**.

SCIM: Service Capability Interaction Management. A network node introduced by IMS standards that manages the composition and delivery of services from multiple application platforms towards the **CSCFs**.

Service Broker: A network element that efficiently manages service interaction and composition, resides between the service layer and the converging network, and is traditionally decoupled from the core switch and the service execution or service creation environment.

Service Composition: Allows developers to compose applications and processes using services from varied environments, without regard to the details and differences of those environments.

Service Orchestration: Coordination of multiple implementation services exposed as a single, aggregate service.

SIP: Session Initiation Protocol. A signaling protocol widely used for controlling multimedia communication sessions such as voice and video calls over IP.

SOA: Service-oriented architecture. Provides methods for systems development and integration that group functionality around business processes and package these as interoperable services. SOA is an architectural platform for integrating enterprise applications built of Web services.

WiMax: Worldwide Interoperability for Microwave Access. A telecom technology that provides wireless transmission of data using a variety of transmission modes, from point-to-multipoint links to portable and fully mobile Internet access.

3GPP: The 3rd Generation Partnership Project. A collaboration between groups of telecom associations to make a globally applicable third-generation (3G) mobile phone system specification.

About the Service Broker Forum

The Service Broker Forum is a multi-vendor association with the goal of evangelizing and educating the telecommunications industry on the service broker product category through the sharing of ideas, opinions, and knowledge. Founded by industry leaders in the Service Broker market space, the forum provides a common platform to facilitate discussion and communication around the many benefits that can be realized from utilizing Service Brokers within an overall network evolution strategy.

Membership in the Forum is open to those vendors, system integrators, service providers and application developers that are interested in embracing the product category and committed to evangelizing the benefits of Service Broker solutions. This whitepaper has been sponsored by the following service broker industry leaders: AppTrigger, Convergin, jNetX, and OpenCloud, which are also among the founding members of the Service Broker Forum.

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