

HP Service Delivery Platform

Built on industry standards

A white paper from HP



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Faced with the paradox of providing a better, simpler customer experience for less money, service providers must find a better way to reduce costs while improving the attractiveness and quality of their service offerings

Executive overview

Seeking differentiation in the crowded marketplace, network operators must look to increasing the speed at which innovative new services can be delivered to subscribers. Consumer behavior is more sophisticated than ever, and as their tastes and needs shift from basic voice and data services to new rich media services and exciting content delivered to their choice of device, subscribers will reward those operators equipped to give them what they want precisely when they want it. At the same time, this increased competition for subscribers means that profit margins are tighter than ever. Reducing both costs and complexities of doing business while simultaneously lowering the rates of churn must now be at the forefront of every successful business model.

Currently, several factors are keeping service providers from fully exploiting the market's enormous potential. Due to the wave of mergers and acquisitions that has swept the industry, as well as the incremental nature of infrastructure upgrades, network operators are typically running a collection of complex, overlapping and resource-intensive proprietary infrastructure elements. In such environments, attaining genuine business agility simply isn't possible. Every change—whether in the deployment of new services, retracting unpopular or unprofitable services, reacting to shifts in consumer demand, or implementing service bundling offers—is an expensive and time-consuming process.

Faced with the paradox of providing a better, simpler customer experience for less money, service providers must find a better way to reduce costs while improving the attractiveness and quality of their service offerings.

Service provider challenges

Because service provider networks have traditionally been closed environments, applications have been developed using proprietary APIs (Application Programming Interfaces). As a result, the pool of developers available to create the new applications needed to attract and retain subscribers has been severely limited. Gaining and keeping market share and continuously staying one step ahead of the competition often depends upon being first to market, which requires efficiencies unavailable in closed environments. Furthermore, porting existing applications to different platforms can be slow and difficult, which directly and dramatically impacts return on investment (ROI). An equally important consideration is that if the newly introduced services don't "stick," the network operator has not only wasted time and money in developing the application, but any negative customer experience may also contribute to churn.

Key network and service provider challenges include:

- Risks and costs of introducing new services
 - Will new services will be successful?
- Slow transition from service idea to revenue with a short window of opportunity
 - Risk losing market share and revenue
- Closed telco network infrastructure
 - Cannot tap into vast developer community for new services and revenue
- Solution validation is complex and non-repeatable
 - Inefficiency generates higher costs
- Integrating applications is slow and costly
 - Diminished flexibility for present and future

The HP Service Delivery Platform (HP SDP)

The Service Delivery Platform is HP's blueprint for developing and deploying standards-based end-user services across multiple network types—fixed, mobile, and broadband—and network generations—2G/2.5G/3G/IMS/MMD.

Secure, operator-defined levels of access to network elements provided by HP SDP allows operators to safely open the network and easily extend service development to the vast field of content and application developers who are eager to share the risks and rewards of introducing new services. Deploying services within this blueprint allows operators to reach the market faster with new niche services, reduces the risks and complexity of deploying services, simplifies service interaction, and eases service management, all positively impacting revenues and reducing costs.

Share the risk, reap the rewards

HP SDP has been designed in response to the critical need for network operators to lower both costs and risks while increasing business agility. However, without security and comprehensive management, innovative technology can be a dangerous thing. HP SDP provides a secure, central point of interaction with network elements, allowing developers access to network elements at a level specifically defined by the network operator. Control over the network is always in the operator's hands, using secure gateway architecture and pre-tested methodologies. By safely opening the network, the risks and costs of application development can be turned over to the broader developer community without exposing the network to unacceptable security lapses or overload conditions.

HP SDP provides real business agility—the key to winning in today's marketplace

Despite the challenges, service providers can equip themselves to take advantage of the business opportunity. Rapidly reacting to changing market conditions and customer expectations requires planning and foresight, and the HP SDP framework addresses the critical elements of building an agile enterprise. For improving the variety of offerings to customers, reducing infrastructure and human resources costs, offloading development risk and minimizing time-to-market for new services, HP SDP simply offers network operators a smarter way of doing business across fixed, wireless, and broadband networks.

HP Service Delivery Platform features and benefits

Features

The HP Service Delivery Platform framework offers a powerful feature set:

Standards-based development environment

Common service development toolsets make it easy for developers to integrate telecom and IT functionality into their applications and core business processes. These toolsets include Parlay, Parlay-X, Web Services, .NET and Java.

Automated partner and service management ecosystem

HP provides a scalable and automated partner and service management ecosystem with well-defined security and policy management mechanisms. It enables network operators to efficiently manage a vast ecosystem of internal and external application partners and services, and provides a central platform where services can be registered, discovered and invoked.

Reliable revenue sharing model for content providers

HP SDP enables ISVs to quickly and easily integrate with the operator's network without compromising security. Removing obstacles and reducing the cost of introducing services creates loyalty among developers and widens the appeal of the network operator's brand.

Defined service interaction methodology

Simple services, like location, presence, or conferencing, can be leveraged for multiple end-user services. SDP defines how these services are implemented within the SDP blueprint, how they interact with one another, and how they tie into operations and business support systems. Defining these interfaces reduces operational complexity and expense, while increasing the operator's agility.

Supports multiple underlying network architectures

SDP enables operators and their partners to develop end-user services once and deploy them over multiple underlying network architectures, such as Intelligent Network, IP Multimedia Subsystem (IMS), and Multimedia Domain (MMD). This reduces development costs and improves revenues as services are more effectively scaled.

Benefits

HP SDP offers network operators significant and ongoing benefits:

Generate revenues faster with shorter return on investment

HP SDP's well-defined network abstraction function, inclusion of standard APIs and common developers' toolsets dramatically shorten the time needed to develop, integrate, validate, and deploy services. HP SDP defines the integration with network elements, OSS, and BSS systems to enable faster service rollouts. Services can be targeted at specific market segments, maximizing subscriber adoption and revenue generation. And HP SDP can revitalize existing services by bundling them with other service offerings to create new, more sophisticated services for maximum ROI.

Reduce costs

The HP SDP reduces both capital expenditures and ongoing costs. Initial service development is more cost-effective due to the SDP's extensive support for Web Service technologies, while integration challenges are minimized because SDP maintains pre-defined links into necessary network elements. When network changes

are made, the network operator simply updates the SDP, instead of separately updating all the services dependent on the network. Further, comprehensive partner management means that partner services can be managed more efficiently, driving down costs even more.

Lower risk

The HP SDP allows operators to extend service development to a much larger development community and extend their eco-system reach, increasing innovation and utilization of network assets, while generating additional revenues. Development costs and risks are shared with third-party service developers and content providers, an approach which also prevents single-vendor lock-in. Timeframes for deployment and integration of new services are decreased, as are the resources needed to support multiple application environments.

A better Total Customer Experience (TCE)

Providing innovative, high-quality, rapid roll-out service offerings keeps consumers engaged and keeps revenue-producing volume flowing across the network. HP SDP empowers consumers with robust self-provisioning capabilities, because enhancing user satisfaction and loyalty is the best way to build revenue in the competitive marketplace.

Why HP?

HP brings deep and wide experience across the telecom, enterprise and consumer spaces, with modular, flexible, standards-based solutions that simplify integration and service interaction, add critical business agility, and drive down costs. Solution components are modular, pre-tested, and pre-integrated to ensure seamless interoperability, reduced deployment time, minimized project risk and shorter time to revenues.

HP has cultivated expertise and experience in this area over many years working with operators to define, develop, and deploy service delivery platforms. HP offers pre-testing and pre-integration of solution components to ensure interoperability, reduced deployment time, minimized project risk, and shortened time to revenues. This vast global experience gives HP an unrivaled understanding of the intricate technical and business realities associated with opening the network to third party developers. In fact, HP has architected, deployed and supported more than twenty SDP-based solutions over the past two years. Operators with solutions based on the HP SDP blueprint include Telefonica Moviles, Asia Broadband & Wireless, and SK Telecom.

Did You Know? HP by the Numbers

- Overall, HP is,
 - No. 1 in mission-critical infrastructure services
 - No. 3 in IT services market overall
- IT
 - No. 1 globally in x86*, Windows®, Linux®, UNIX® and Blade servers**
 - No. 1 in total disk storage systems*
 - No. 1 position in customer satisfaction for industry standard servers (ProLiant)
- Consumer
 - No. 1 globally in Pocket PCs*
 - No. 1 globally in inkjet, all-in-one and single-function printers, mono and color laser printers, large format printing, scanners, print servers, and ink and laser supplies*
 - No. 1 globally in notebook PCs*

Key HP network and service provider intellectual property

HP software, technology and know-how is incorporated into the SDP at critical junction points. HP offers best-in-class in-house technology developed by HP OpenCall, HP OpenView and HP NSP divisions.

HP OpenCall highlights

- More than 4,000 signaling protocol platforms deployed worldwide
- More than 120 million licensed subscribers with 35 service providers on five continents depend on the HP OpenCall Home Location Register
- More than 4,000 interactive voice services platforms deployed globally
- More than 900 service control points deployed globally in wireless and fixed networks

HP OpenView highlights

- More than 400 Service Providers use HP OpenView OSS products today.
- Our flagship OSS product, HP OpenView TeMIP has grown its installed base by 25 percent in the last two years.
- Network Equipment Providers such as Motorola, Siemens, Nokia, Samsung and Ericsson trust and resell HP OSS products

HP Services Highlights

- Delivered the HP Mobile E-Services server, a new HP technology for incorporating third parties into the service delivery ecosystem, into the world's most innovative operators over the past year, including SK Telecom and Telefonica Moviles.

- Carrier LBS Solution of the Year award—Frost & Sullivan, 2005

- No. 1 in mission-critical infrastructure services
- No. 3 in IT services market overall

A critical part of all HP solutions is the engagement of HP Services consultants, project managers and integration experts. 65,000 HP service professionals in some 160 countries around the globe offer a breadth of industry experience which helps reduce risks and maximizes the return on every technology investment. HP Services offers end-to-end consulting and integration capabilities from the core network to the edge to the consumer, as well as the worldwide distribution and delivery services that dramatically streamline solution implementation.

Consultative approach

HP works with network operators to understand and determine their end-user service goals first. HP then evaluates how existing capabilities can be leveraged in the present and future, ultimately proposing a tailored set of end-user services specific to the network operator. HP then helps network operators design a service delivery strategy that maximizes existing elements and reduces overall cost. This approach helps operators minimize cost while gaining the benefits of a global service delivery platform, helping them get to market faster with new revenue generating services in a more effective and efficient manner.

* Refers to units, except storage referred in factory revenue. Source: IDC Q1 2004

** Source: Gartner, January 2004, Gartner May 2004

HP best of breed partners

Strong partnerships with other industry leaders allow HP to tailor HP solutions for every network and service provider. Many partner applications are powered by HP OpenCall carrier-grade platforms and have seamless integration with HP OpenView management capabilities. HP's robust SDP partner portfolio includes such industry-leading companies as:

- ACCESS Systems
- AePONA
- Appium
- Autodesk Location Services
- BEA
- Elata
- First Hop
- Followap
- Gemplus
- Infitel
- Innopath
- mFormation
- Microsoft®
- MobileAware
- Mobilitec
- Ubiquity
- Volantis

HP helps drive industry standards

HP is committed to increasing openness and interoperability, and is therefore a proud participant in today's most relevant industry standards bodies, including:

- 3GPP (Third Generation Partnership Project) and 3GPP2
- Digital Home Working Group
- European Telecommunications Standards Institute (ETSI)
- Global Grid Forum
- GSA
- GSMA
- IEEE
- IETF (Internet Engineering Task Force)
- IPv6 Forum
- Liberty Alliance
- OASIS
- Open Mobile Alliance (OMA)
- Service Availability Forum
- Tele Management Forum
- Trusted Computing Group
- US TIA
- W3C
- WiFi Alliance
- WiMedia
- Web Service Interoperability Forum (WS-I)

HP Service Delivery Platform blueprint design

Design requirements

A number of practical, business and technical considerations influenced the design on the HP SDP. These considerations dictated that the SDP must:

- Support multiple networks and generations of each network (mobile—1G/2G/3G/IMS/MMD; fixed—traditional IN/IP/MPLS; broadband—IP/ATM/etc.)
- Maintain a robust set of tools for third party developers, both those with and without specific telco expertise
- Be absolutely secure
- Offer the highest level of service availability
- Manage service interaction

It was further determined that the services deployed within the SDP framework must:

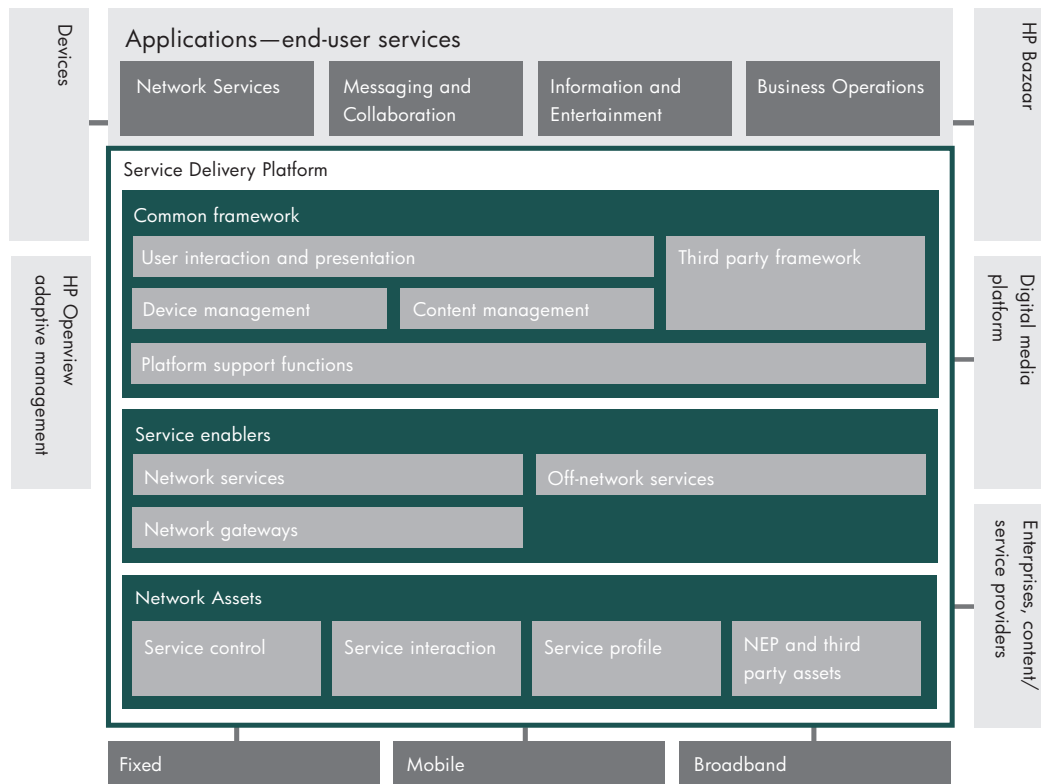
- Integrate quickly and reliably into the framework
- Interoperate with one another via standard interfaces
- Work the same way, whether the user is in the home network or roaming

Design challenges

The HP SDP framework addresses the following technical issues:

- Proprietary development APIs and network interfaces make it difficult to migrate applications to support new networks or to interoperate with other services
- Lack of uniform development and testing tools make solution validation complex and often non-repeatable
- Access to service development and network resources is fragmented and vulnerable, and without a central, secure access point for third party developers
- Heterogeneous legacy infrastructure presents serious operational issues
- Integration with IT environment presents serious issues, including reliability, standardization, and multiple development methodologies
- Services must cost-effectively scale from entry-level through maturity

Figure 1: HP SDP overview



HP Service Delivery Platform blueprint

The HP Service Delivery Platform is broken out into four logical sub-segments:

- Applications
- Common Framework
- Service Enablers
- Network Assets

Each sub-segment delivers a piece of the solution that ultimately allows for the creation, integration, validation, and delivery of services to consumers. The relationships between each are discussed in detail below.

Applications

This SDP sub-segment addresses the creation, validation, and hosting of end-user services. HP offers worldwide consulting services that can help network operators design a service delivery ecosystem that most effectively meets their specific market requirements.

Service development can be performed either internally or externally using the SDP blueprint. HP SDP uses common service development toolsets that support Parlay, Parlay-X, .NET, Java, Web Services and SIP capabilities—that make it simple for developers to integrate telecom and IT functionality into their applications and core business processes.

HP offers a common methodology for extending service development to third parties. Third party services are hosted on carrier-grade application servers (A/S) and tested/validated on the platform prior to deployment in the service provider’s ecosystem. Validating services both optimizes and benchmarks resource utilization, reducing service provider risk against overload and reducing costs.

HP, along with our valued solution partners, offers many pre-integrated, off-the-shelf services that operators can deploy today on the HP SDP to immediately begin generating revenues. These include Network, Messaging & Collaboration, Information and Entertainment, and Business Operations services.

Network Services focus on commercial and emergency location-based, intelligent network and voice over packet services. The Messaging and Collaboration area encompasses instant messaging, short messaging, multimedia messaging, conferencing, push-to-x, and next generation voicemail applications. Information and Entertainment services tie together applications into more sophisticated end-user services that create a richer, more enjoyable consumer experience—the kind of customer experience that increases service usage and reduces churn. Business Operations services combine simple services into more sophisticated end-user services that enable enterprise customers to share information and operate more effectively.

In addition to off-the-shelf applications, HP offers an end-user services program to complement the Service Delivery Platform. The HP Marketplace allows operators to explore new services in the HP Bazaar, test and deploy new services, including IMS-based services, in the HP Supermarket, or tap into hosted services in the HP Emporium.

Common Framework

The HP SDP Common Framework is the central control point for many aspects of service delivery including:

- managing how services and content are presented over multiple channels and devices with appropriate device management capabilities
- implementing identity management of third party and in-house services and content partners, including the authentication and authorization of access to the Service Enabler and Network Assets layers, in addition to interfacing to OSS/BSS.

The Common Framework itself encompasses several elements, including:

- Third Party Framework
- Device Management
- Content Management and Delivery
- User Interaction and Presentation
- Platform Support Functions

Specific functionalities for each element of the Common Framework are discussed in greater detail below.

Third Party Framework

When opening the network to third party developers, ISVs and service partners, as well as subscribers who require access to the network, several factors must be addressed. These include:

- Creating secure and efficient rules and methods for registering, invoking and pricing the services
- Service Level Agreements (SLAs) and Service Level Objectives (SLOs) applied to the network elements exposed by the network operator. A network operator will charge third party service providers for accessing network components and in return the third party service providers will expect the network operator to offer associated service level availability. The HP SDP allows resource allocation to be based on these service level agreements. For example, this element ensures that mission-critical services such as voicemail are always available (and operators can make appropriate adjustments), while less important services like ringtone downloads may not have the same service level assurances.

The HP Third-Party Framework also provides a scalable and automated partner management ecosystem that offers well-defined security and policy management mechanisms. It enables network operators to efficiently manage a vast ecosystem of internal and external

application partners, and serves as a central platform where services can be registered, provisioned, and invoked. Further, it provides a common interface into operational and business support systems. Within the Third Party Framework, an integrated security engine enables network operators to control the level of access granted to network resources. For un-trusted developers, access is granted to high-level resources, while for trusted and internal developers, additional access rights can be defined.

Device Management

New devices hold the potential for substantial revenue increases, but only if operators can implement effective strategies for managing them at minimal cost while making them easy for consumers to use. The Device Management element of the Common Framework enables operators to remotely manage a wide scope of mobile devices, enabling better service penetration. Robust and intuitive user self-activation and provisioning capabilities, combined with flexible device controls, decreases the operational costs associated with high-end devices. HP, along with best of breed device management partners like Bitfone, Gemplus, InnoPath, and mFormation, provides a complete suite of device management solutions. These solutions include everything from terminal configuration management and device software component management to mobile diagnostics.

Content Enablement

HP Content Enablement gives end users simple and quick access to content and applications, greater customization options, more detailed and accessible customer care, and the ability to “mix and match” service offerings, ultimately providing a more personal end user experience. The HP SDP solution provides this ability by managing the relationships with content providers through the process of submitting, publishing and managing content, while keeping track of the business relationships associated with each content provider. The SDP is able to support multiple media types, devices, and delivery of the media in a highly secure manner. HP partners with ACCESS, Elata, and Mobilitec in this space to offer personalized content and downloads for the end-user.

User Interaction and Presentation

Subscribers use many different types of digital devices to access service provider networks. Whichever device they choose to use, the HP User Interaction and Presentation element allows subscribers to access rich and compelling content and service offerings in a standard and seamless fashion. The device rendering aspect of the solution automatically recognizes the handset in use and creates optimized pages for the supported browser to access the operator’s portal. HP partners with BEA, MobileAware and Volantis to provide a structured approach to tailoring content sources and formats for specific devices, giving subscribers an optimal user experience.

Platform Support Functions

The Platform Support Functions element implements the following functionalities for the HP SDP:

Single Sign-On (User-Plane), Authentication, Authorization & Accounting (AAA)/Identity & Access Management (IAM), and Policy Management.

Single Sign-On (SSO), IAM/AAA and Policy Management are implemented through the use of OpenView SelectAccess and OpenView Identity Management to ensure appropriate policy management rules are applied, governing which services a specific subscriber, or grouping of subscribers, may access. For example Premium-rate (Gold) subscribers may be permitted reduced-rate mobile email access any time of the day, and may be allowed to send and receive an unlimited number of messages, while general subscribers may only be permitted to access email services at off-peak times, and with limited monthly email message quantities.

Workflow and Directory Data

Workflow and Directory Data provisioning are also features of the SDP Platform Support Functions and support the (User-Plane) execution of complex service sequences hosted in the network operator domain. The third Party Framework enables third party ISVs and internal operator developers to deploy and execute complex service sequences. Service invocation requests are routed through the SDP third Party Framework Access Gateway, where they invoke network operator SDP Service Enablers.

Directory Data Provisioning is supported through the SDP Common User Repository (CUR) function. The CUR delivers a single, unified view of a subscriber, providing information on the subscriber's billing profile, the services the subscriber is offered as part of their subscription plan, the services to which they have already subscribed (for example, content delivery from CNN on a monthly subscription), as well as consolidated service invocation data, such as a history of all the services that the subscriber has invoked during a specific period.

Service Enablers

The Service Enablers layer of SDP comprises Network Services, Off-network Services, and Network Gateways. Network and Off-network Services include simple services such as location, presence and availability, messaging, and media streaming that are required to build sophisticated end-user services. Network Gateways abstract core network functions, provide hooks to lower level network assets, in addition to simplifying access to the underlying enabling protocols used to communicate with core network assets. HP SDP Network Gateways offer open, standards-based service execution environments that enable a service to be developed once, and then re-used repeatedly, even across different network architectures.

Network & Off-network Services

Network and Off-network Services are the building blocks used to create innovative end-user services.

Location Based Services

The HP location-based services portfolio enables operators to capture a handset's specific geographic location and make it available to end-user services. Subscribers can then enjoy services that automatically have their location information. The HP Location Based Services (LBS) solution combines a suite of location-based services and infrastructure, deployed on HP carrier-grade platforms, and designed, integrated, and supported by HP Services. HP partners with market leaders Autodesk Location Services, Cambridge Positioning Systems, Microsoft, Openwave, Networks in Motion, and Teydo to deliver this capability.

Presence & Availability

The HP SDP Presence & Availability function allows network operators to deploy presence-enabled subscriber services. The solution, along with infrastructure and end-user services, enables presence detection, management, and sharing. End-user services include Presence Enhanced Contacts (PEC), Instant Messaging (IM), Push-To-Talk (PTT), Online Gaming, Dating, Conferencing, and Content. HP partners with Followap to deploy presence and availability services.

Messaging & Collaboration

HP SDP Messaging & Collaboration services implement managed access to services such as instant messaging, short messaging, multimedia messaging, conferencing, push-to-x, and voicemail. In this area, HP partners with such leading companies as Followap, Intrado, Speech-Design, Yomi, and First Hop.

Network Gateways

The HP SDP Network Gateways layer addresses service creation APIs, which provide hooks into lower level network assets, as well as the enabling protocols used to communicate with network operator-owned core network. The HP SDP Network Gateways offer open, standards-based Network Gateways that enable a service to be developed once, and then re-used, without the need for further modifications to be deployed in different network topologies.

Supported APIs

HP SDP supports multiple service creation APIs including Parlay, Parlay-X, SIP Servlets and SIP CPL, as well as Web Service-based APIs including XML-structured Web Service Definition Languages (WSDLs) for SIP, MM7, VXML, ccXML.

- For Parlay and Parlay-X, HP partners with AePONA, Appium, and Infitel.

Parlay requires additional knowledge of the underlying telecom network, but makes additional lower level protocols available to the developer for customization. Parlay-X APIs are used by developers more familiar with Web service development models, than with telecom development models, primarily for creating Web or IT-based services for telecom networks.

- In the Web services space, HP partners with Autodesk, BEA, Openwave, Borland, Microsoft Ubiquity and others, as well as leveraging HP OpenCall capabilities. The HP SDP supports OMA Web Services, ccXML, or Call Control XML, which is the W3C standard language for controlling how phone calls are placed, answered, transferred, and conference among other capabilities, as well as VXML, or Voice XML, which provides a way for services to interact with the Internet through interactive voice technology. ccXML works with both VoiceXML and XML, which are non-communications specific APIs, to provide a standards-based method of implementing telecom services.

Adaptors support

Web Services

- Location Adaptor—exposes Web Services interface to Openwave and Autodesk Map service and supports route, directory, location, presentation, and gateway services.
- Direct MMS MM7 Web Services Adaptor—exposes Web Services interfaces to access the MM7 I/F on a MMS-C; the MM7 I/F supports 3GPP 23.140, Release 5.3.0. Parlay X MMS Sen is also supported.
- Direct WAP Push Adaptor—exposes Web Services interface to access a PAP Protocol, supports service loading and indication, and allows notification of a mobile subscriber for a particular event.
- Messaging Adaptor—exposes SMS, MMS, and WAP Push as Web Services; also supports FirstHop Message broker
- Location LIF-MLP Adaptor—exposes Web Services to a location server; the location server must support OMA LIF-MLP v3.0.0.
- Charging WS Adaptor—exposes charging Web Services interface based on HP Internet Usage Manager (IUM)
- Video Streaming Adaptor—exposes Web Services to the meta-file, which enables the streaming of a video clip to devices having a video-capable client; supported on PacketVideo.

HP OpenCall Network Assets

The HP SDP Network Assets layer utilizes the HP OpenCall suite to address the integration with core network elements required to deploy services in the network.

HP OpenCall Signaling & Service Control

Signaling is a fundamental aspect of telecommunications and enables the exchange of information between network elements. As such, signaling platforms form the centerpiece of the HP OpenCall suite. HP OpenCall service control platforms provide support for key industry standards including SS7, Parlay, SIP, and Sigtran. Products include the SS7 Signaling Platform, Intelligent Network Server, Signaling Gateway, and Service Controller. These products power applications such as real-time prepay, SMS, network offload and home location register.

HP OpenCall Service Interaction

Voice and media processing is helping power a new revolution in communication. Next-generation networks are evolving the transport of voice, data and content towards new protocols such as SIP, while the service creation is migrating to application servers running XML-based environments. HP's interactive media platforms support all types of interactive voice services, from new generation voice-enabled portals to those offered in traditional service node/intelligent peripherals types of architectures. Products include the HP Media Platform

and HP Converged Network Media Server. These products have been used to create voice portal, next-generation voicemail, unified messaging, directory automation, mobile advertising, and ringback tone applications.

HP OpenCall Service Profile

HP delivers value to service providers by helping them manage their mobile customers with greater efficiency. Products include Home Location Register, Home Subscriber Server, and Position Determination Entity. These products are used by operators to strengthen subscriber mobility management and create location-based services.

Other assets

Other critical assets supporting the HP SDP solution blueprint include HP Integrated Service Management (HP ISM) and HP Convergent Charging for integration with network operators' OSS and BSS environments, which ensure that services are effectively managed and billed.

HP ISM offers adapters and integration to a service provider's existing OSS environment, or can provide the basis for a new, rich and flexible OSS deployment. HP ISM utilizes HP OpenView modules at all levels of the HP SDP framework to offer a flexible, integrated management toolset that can be quickly and easily customized to meet specific service provider requirements. Furthermore, through existing interfaces with the BSS environment at the Network Assets and Gateway levels, HP offers charging via the HP SDP Parlay Charging API (if the billing system supports Parlay), or via the HP Convergent Charging solution which incorporates HP Internet Usage Manager (HP IUM) and HP OpenCall Service Access Controller (HP OC-SAC).

Additional assets include HP Consulting and Integration for business and technical consulting as well as HP Customer Service, HP Managed Services, HP Storage and HP Hardware.

Service Interaction

The HP Service Delivery Platform offers multiple approaches for Service Interaction. These include the IN-centric service creation model, where in-house service provider developers with deep technical knowledge of the underlying telecom network can develop the new services; the Java and MS .NET Web development frameworks, where new services can be developed without detailed knowledge of the network infrastructure; and a middle ground approach utilizing OSA/Parlay.

Service Interaction within the HP SDP blueprint is available at the Service Enabler and Common Framework layers through exposure to network abstractions in Java or .NET Integrated Development Environments (IDEs):

- Service Enabler: HP Parlay, Parlay-X and JSR 116: SIP Servlets.
- Common Framework: Standards-based Web Services interfaces, such as ccXML, VXML, OMA Web Services, LIF, SIP Servlets, and Messaging.

This multi-layer approach enables new services to be developed and tested using appropriate development environments. Whichever service interaction is utilized the HP SDP ensures that the appropriate business/access rules are being applied to third party ISVs or service providers, ensuring authenticated and controlled network usage and to prevent un-trusted third party developers from over-loading or abusing core network elements.

Defining new service offerings as a sequence of Web Services using WSDLs or BPEL (Business Process Execution Language) structures, enables services to be combined together to form more sophisticated end-user services, where the business logic for which service to invoke next is either encapsulated in the controlling sophisticated WSDL, defined in a BPEL script, or is retrieved at the time of service execution from within the Common Framework layer. This Service Orientated Architecture (SOA) interaction model offers greater service flexibility and innovation, producing an end user experience that can be specifically tailored to their unique preferences, and/or satisfying service providers service bundling requirements. Such requirements might include targeting specific categories of subscribers with service bundles tailored to their precise business or market needs. These sophisticated end-user services leverage more simple service enablers such as Messaging, Presence, or Location.

Sample HP SDP usage case

Example of User Experience for an SDP Service—
“Healthcare—Code Red”

Service process using HP SDP

Pretext: Hospital patient needs a specialized surgeon during the morning rush hour.

1. Nurse station verifies that Doctors A, B, C, D, E, and F are qualified to perform the surgery (via IM group listing for surgery type).
 - Group List Management Server, IM application
2. Nurse looks up the doctors and determines that Doctors A, C and E are available.
 - Presence server
3. Nurse looks up the doctors’ locations and routing options, and determines that Dr. C is closest and he can arrive most quickly.
 - Location Server, Geo-Server, Traffic application
4. Nurse sends an IM with situation and availability confirmation request to Doctor. Presence Server notes that Doctor C is available, but is currently watching TV, so the message is displayed on his TV.
 - Presence Server, IM application
5. Doctor C confirms availability via IM and initiates a conference chat (via a shared buddy list) with the admitting ER staff on his mobile.
 - Presence Server, Click-To-Conference or Push-To-Talk
6. Doctor C requests fastest routing information to the hospital (via interactive voice system). Service checks presence and notes that he’s just turned on his HP iPAQ PDA (wirelessly enabled), and sends a map and direc-

tions to the iPAQ. En route, the system notes that there’s been an accident and reroutes him by alerting him on his mobile and sending updated directions to the iPAQ.

- Location Server, Geo-Server, Presence Server, Multi media Messaging Service Center, Traffic Application, Media Server, Traffic Routing application

How the service works with HP SDP

Solution components

- Network Core and Edge: Position Determining Entity, Location Server, GeoServer, Media Server, Presence Server Group List Management Server, IM Server,
- Applications: Click-To-Connect or Push-To-Talk, Traffic Routing, Interactive Voice front-end

Technical aspects

- Integration and interoperation between network elements is handled through the SDP. Integration is only required once between the HP SDP and underlying elements and supporting applications.
- Once integration is completed, other sophisticated end-user services can then take advantage of the SDP’s pre-tested interfaces to each network element and supporting network services.
- Application has a single interface to HP SDP, which then interfaces to each network element. Workflow capabilities allow new services to utilize existing service sequences that manage a certain interaction among different network elements. This allows for faster time to market for new service or service updates.
- Changes to a service simply require a single change in the interface to the SDP itself, rather than separate, time-consuming changes to all the components the application interfaces with through SDP.

Key points

- Lower costs and resource usage, and greater ROI because approach allows operators to reuse development work and integration.
- Faster, simplified application updates through a single point of control, rather than updates to each element the service uses.

How the service works without the HP SDP

- Costly and lengthy service development, since the service must integrate and manage the underlying (sometimes proprietary) network interfaces.
- Integration timeframe is extensive and expensive, and cannot be reused for other applications, meaning a lower return on investment.
- Future changes to application require costly and lengthy updates to each element with which the service interacts.
- Each and every new service has to go through a repetitive lengthy integration, testing and provisioning cycle, limiting rapid time-to-market and requiring a significant testing effort.

Future evolution

HP recognizes that the pace of change will only increase, and so the HP Service Delivery Platform design strategy focuses on maximizing value and efficiency in the current service provider environment while ensuring seamless forward compatibility as convergent network architectures become the norm. HP SDP allows network operators to develop, test and deploy services that can be utilized immediately and continue to cost-effectively drive revenue and customer satisfaction in future service environments.

Today, the HP SDP addresses today's network and service requirements through multiple methodologies, including Parlay/Parlay-X, OMA Web Services, or SIP Gateways. In addition to these well-known and understood service delivery models, the HP SDP offers a natural extension path to next-generation service models from 3GPP/3GPP2, including 3G IMS and MMD.

What subscribers really want is simple, seamless services, content and communications. This requires that the insulated silos separating fixed-line phones, mobile communications devices, and such broadband communications devices as personal computers must be broken down. By integrating the services and functionality across all the devices and networks subscribers utilize, service providers will see increased subscriber adoption and usage, and unlock powerful new revenue streams.

Currently, such services as presence and availability are in silos in each area. Subscribers with an instant messaging service for their mobile and broadband devices must manage two separate contact lists, and their presence and availability information isn't synchronized between the two. With HP SDP-enabled IMS/MMD, network operators will leverage one presence and availability engine that tracks a subscriber's presence and availability across all three networks, including IP-enabled fixed-line phones. This ensures that subscriber presence and availability information is synchronized and more relevant to other contacts.

The subscriber will have an integrated contact list that is synchronized across their mobile, fixed, and broadband devices, so that this single contact list is used for all types of subscriber communications including traditional voice, push-to-talk, click-to-connect, voice and video conferencing, instant messaging, voice-clips, multimedia messaging, short message services (which are likely to be integrated with instant messaging in the future), and email. When the subscriber wants to communicate—no matter from which device—they simply select the desired contact from their group/buddy list, and choose their mode or modes to communicate (perhaps sending a picture while chatting with others on a conference call). Once in a communication session such as voice, the subscriber can easily pull in other modes such as conferencing, broadband media (to share photos for example) applications, etc. The result is a more satisfied customer and increased revenues.

Conclusions

Faced with the critical necessities to increase the speed and reliability of bringing new digital services to market while reducing the costs and complexities of the network operations “behind the curtain,” network and service providers are turning to the HP Service Delivery Platform. HP SDP is a network core-to-network edge solution blueprint designed to reduce the costs, timeframes and risks of involved with developing, deploying, delivering and managing service applications for mobile, fixed and broadband networks.

The secure and scalable HP SDP framework includes applications and enabling software from HP and our solution partners, along with carrier-grade HP hardware, all backed by the field-proven experience of HP Services support, delivery and implementation personnel who are active in some 160 countries around the world. With HP SDP, network and service providers are no longer bearing the full risks and costs of service development. Within the secure SDP framework, developers large and small create the new revenue-producing applications, spurred by the assurance that their work will reach the broad audience they need to reap real financial rewards.

In a marketplace where time literally is money, HP SDP dramatically reduces time-to-market for new services. This increased business agility means that operators can rapidly react to changing market conditions. HP SDP modules are pre-tested and pre-integrated, and they save money by leveraging existing infrastructure where possible. The blueprint offers multiple start points depending upon current infrastructure maturity, and allows network operators to determine their own roadmap for upgrading the resource-draining proprietary systems currently in place.

In the end, the benefits from implementing the HP SDP blueprint go far beyond lower costs, carrier-grade reliability and improved return on investment. It provides subscribers with a more engaging, transparent, and ultimately more rewarding customer experience. In a marketplace that gets faster and more competitive by the hour, the HP SDP enables network operators to stand above the crowd.

For more information: www.hp.com/go/communications

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