



■ Mobile Service Delivery Platform

Industry

Mobile services delivery infrastructure for mobile network operators and mobile virtual network operators

Business Challenge

Mobile network operators must provide a rich environment for content providers to develop, deploy, deliver and manage mobile voice and data e-services quickly and cost-effectively

Technology Solution

OSA/Parlay/Parlay-X through Incomit
J2EE BEA™ WebLogic Server™
Microsoft® .NET and the MapPoint Web Service

Enterprise Hardware Platform

HP Servers based on Intel® Xeon™ processors

SOLUTION ARCHITECTS



Meeting New Market Demands

Information and services delivery is increasingly reaching to a wider plethora of devices – mobile phones, PDAs (Personal Digital Assistants), gas-pump displays, in-car dashboards, televisions, and many more. All of these serving one of the most basic human desire – instant gratification. Information and services must be formatted and tailored easily and cost-effectively for this truly ubiquitous access.

For Mobile Network Operators (MNO), voice has been, and will continue the primary service customers are willing to pay for. Substitution of voice with alternate means of communications – email, SMS (Short Message Service) – has steadily eroded the once lucrative profits of voice services. Converged voice and data services have gained significant attention from the industry as the one single path to profitability. The impetus to drive more voice and data traffic through a MNO's network assets is becoming stronger.

The HP Mobile Service Delivery Platform (MSDP) gives MNOs/MVNOs (Mobile Virtual Network Operator) a fast start deploying an environment that makes it easy for services/content providers to assimilate into the MNOs' mobile services delivery infrastructure. Multitudes of 3rd party content and service provider will be empowered, and become loyal customers of MNO/MVNO who implements MSDP. As the world's content becomes consumable to mobile devices, it is important the content providers can depend on the MNO/MVNO for a quick, cost effective, integrated delivery infrastructure to deliver their services and content to the hands and eyes of the masses.

The fact that this solution is based on the Intel server platform ensures reliability, serviceability and manageability with outstanding price-performance and cost-competitiveness. Intel-based servers also provide scalability and investment protection with their headroom to accommodate large-scale long-term growth.

The Business Challenge

There is intrinsic value in a mobile operator's network assets (call control, MMS (Multimedia Messaging Service), location, etc.). An operator now has the ability to increase network traffic and generate more revenues by allowing other market players (services providers or enterprises) in the mobile services ecosystem to use their infrastructure and drive services/content through it. The following challenges must be overcome:

- 1) Combining voice with mobile data services requires a wide range of sophisticated integration and interaction APIs (Application Program Interface), and business models and logic control.
- 2) Content providers need an easy way to deliver their information and services without getting unnecessarily constrained by complicated integration efforts with a mobile operator.

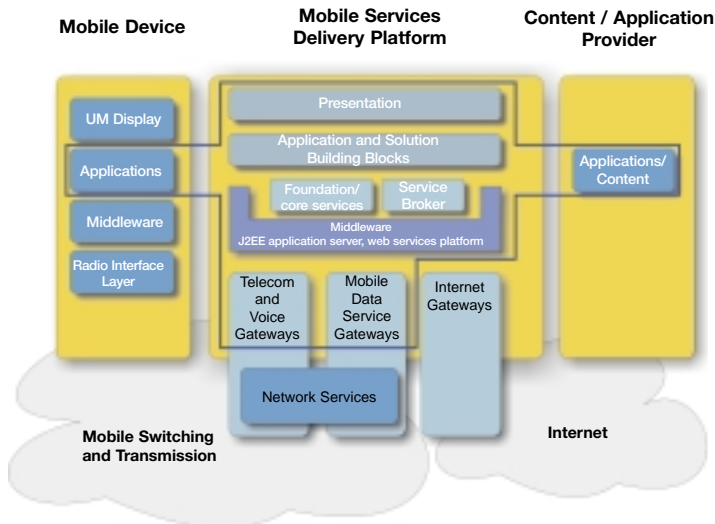
- 3) There is lack of a clear approach or strategy that allows large numbers of external parties to leverage the core capabilities of a service provider
- 4) Mobile operators need a vibrant ecosystem of service and content providers to ensure a flow of exciting, revenue-producing services on their networks. HP's MSDP encourages such third-party providers, who are attracted to the standards-based platform that allows them to create and provision new services into an operator's network.

Use of the Intel-based server platform ensures a broad choice of interoperable, flexible hardware and software building blocks to customise, optimise and effectively scale this solution as needed. It ensures a high level of quality, reliability and price-performance with rapid return on investment and long-term growth potential.

The Solution Overview

The HP Mobile Service Delivery Platform (MSDP) is an integrated suite of software products and solutions from HP and its partners that enable mobile network operators to develop, deploy, deliver, and manage mobile voice and data e-services quickly and cost-effectively. Based on open technology standards, the MSDP is delivered with world-class design consulting, implementation, and support services from HP.

By making it easy for mainstream developers to create mobile applications using their existing software development environment – mostly based on Java[®] or Microsoft[®] tools – MSDP enables operators to attract and manage a large ecosystem of applications that can help differentiate and drive traffic to the operator's network. The MSDP service-deployment environment leverages existing network assets by using open standards in Web services (UDDI, WSDL, SOAP) and communications network standard interfaces (OSA/Parlay) that take advantage of the capabilities of a communications network while maintaining the integrity and security of the network. Because applications can come from the millions of Microsoft .NET and J2EE (Java[™] 2 Platform, Enterprise Edition) developer communities – as opposed to a few hundred ISVs – the MSDP addresses the critical business needs of network operators to create new sources of revenue through usage and subscription fees while increasing ARPU (Average Revenue per User) and decreasing their overall churn rate. Web services make integration straightforward and support self-service models for service discovery and initial deployment. Operators retain control over access to their networks, and don't risk network integrity by permitting non-metered and unmanaged access.



End-to-End view of HP MSDP

Technology

Linking the telecom and computing world

The HP Mobile Service Delivery Platform (MSDP) is an integrated suite of software applications built on reliable HP carrier grade servers leveraging the cost effective power of Intel® Xeon™ processors along side legacy PA RISC systems. It provides mobile network operators and their content partners the ability to develop, deploy, deliver, and manage mobile voice and data e-services quickly and cost-effectively. Based on industry-leading technology, MSDP is delivered with world-class design consulting, implementation, and support services from Hewlett Packard.

Intel processors provide industry leading compute power, scalability and reliability for dependable mobile and enterprise server applications. The Intel server roadmap ensures a long-term upgrade path to accommodate future growth and to provide investment protection.

BEA J2EE and Microsoft®.NET

Interoperability between J2EE applications built on BEA WebLogic and Microsoft® .NET environments is an important functionality of MSDP. It is founded on the Web Services middleware standard, and, at the same time, is designed to communicate with Microsoft® .NET-based services as well as BEA WebLogic J2EE-based applications through standard interfaces. Implementers of this solution need the flexibility and the enabling environment to leverage the innovation of external third party content and services. HP delivers this important interoperability as a sponsor board member of the Open Mobile Alliance, and as Microsoft's first worldwide prime integrator for Microsoft® .NET technologies.

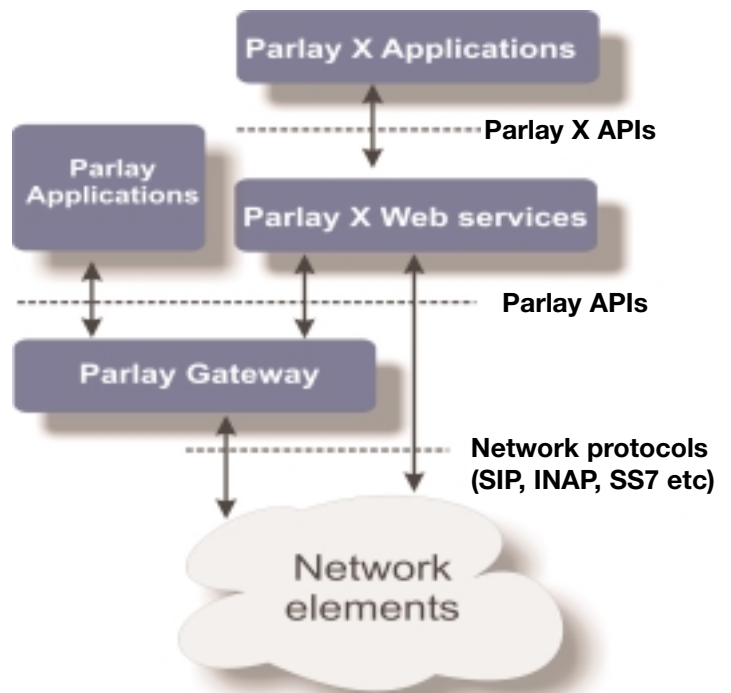
Web services, a commonly accepted standard, are technology independent, and allow applications developed using Microsoft® .NET or BEA J2EE tools to access the MSDP platform. A portability break-through of this solution is how applications can be written in any language as long as it uses standard web-service calls. This language independent approach empowers

third parties to develop new products and services in a very short time without the need of experts in telephony or telecommunications.

OSA/Parlay and Parlay X

The ability of IT-based applications to interact with telecom-based applications is enabled through standards like OSA/Parlay. Driven by the Parlay Group, an open multi-vendor consortium, OSA/Parlay (Open Service Access) provides an abstraction layer between the core telecom network and application layer. As part of the Parlay project, Parlay-X is a set of Parlay's interfaces designed to stimulate the development of next generation network application by IT developers who are not necessarily experts in telephony or telecommunications.

Parlay X defines simple and easy to use APIs accessible through web services, which represent 20% of the Parlay functionality but meet 80% of application needs. The Parlay Group is an Open Source Software (OSS) group where Incomit plays an active role on the board and the JAIN council. An expansion of this functional area in MSDP is described in the diagram below.



The interfaces between telecommunications and the computing world are a critical area of the MSDP offering – they need to be accepted by both. HP brings unique value in the creation and delivery of telecom network services using MSDP, this is facilitated by the use of open standards like OSA/parlay and JAIN (Java APIs for Intelligent Networks), provided by Incomit Movade, that let services in the telecom network and the web worlds work together for the benefit of end-users. This is a powerful HP value proposition to mobile operators – enabling third parties to take benefit of telecom capabilities in their applications.

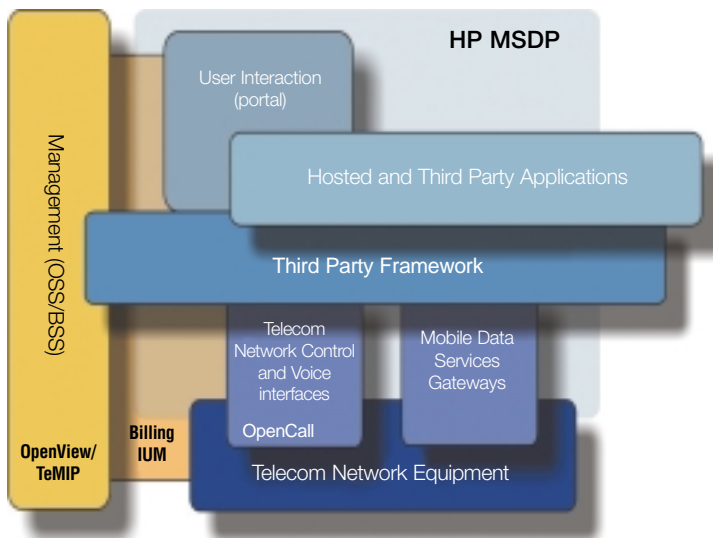
Target Market and Customer

The customers of this solution are the leading Mobile Network Operators (MNO) in each country or region. Global MNOs are the best candidates; especially as they are formulate new infrastructure investment and consolidation plans. Target MNOs as they prepare to “outsource” the services & content creation (they may still retain a core portfolio of mobile services), open their network services for use by these services/content providers while retaining and maintaining their customers information (e.g. location, preferences) and billing relationships with their customers.

The best targets are Mobile Network Operators who are focused on their network scalability, resilience, access security, and management policies for ever increasing voice/data traffic. They are also likely to be unifying their mobile commerce and revenue recognition/settlement applications – augmenting them with open, standards-based interfaces for 3rd party services/content providers to utilise when provisioning services/content to their customers.

Case Study/Proof Points

The HP Intel Solution Center in Grenoble France has established a functioning solution stack of Mobile Services Delivery Platform using a typical set of partner applications working together. The many functional components in MSDP that Mobile Network Operators and their customers will be looking for have been grouped into “solutions areas” (shown below).



The objective of this next generation implementation of MSDP is to demonstrate the environment, allow experimentation and provide a tool for conducting customer Proof of Concept (POC) tests. Based on industry expertise, and experience acquired with deployments of MSDP, HP engineers are able to assist mobile operators and service providers in defining their mobile delivery platform architecture & infrastructure.

The different grouped solution areas of the solution stack use carrier grade server architectures based primarily industry standard Intel Architecture servers. Included is remote access

software which allows service providers to use these telecom test facilities through secure VPNs (Virtual Private Networks) from anywhere in the world. This existing implementation can be easily leveraged by partners and customers to:

- Define processes for mobile operators to integrate the MSDP framework within their existing infrastructure.
- Show MNOs and Service Provider how to leverage telecom services for next generation value-added services.
- Tryout applications that will grow the scope of value added services accessible through MSDP and let third parties invent the next mobile ‘killer app’.

HP is a leader in the Mobile Service Delivery world, and provides this platform along with Intel as a unique environment to evaluate the next generation mobile telecom services.

Customer Value Proposition

Increase revenues through a wealth of new services

By enabling the rapid deployment of new converged voice and data services, the MSDP speeds your time to market and opens up a wealth of new revenue opportunities. The MSDP maintains open interfaces to network resources for value-added services, such as call control or location services. The ability to move easily between voice, data, and value-added services enables operators to design and deliver truly innovative services – increasing revenues exponentially without loss of control or excessive risk to network assets and integrity.

Reduce operational costs

With a single delivery environment for all applications, you no longer need to support an expensive diversity of application-support environments – eliminating the high costs of application maintenance. The MSDP moves operators into the data-services world so that you’re no longer simply a communications network, but a Web services supplier with assets that enhance the development process.

Enable more sophisticated business models

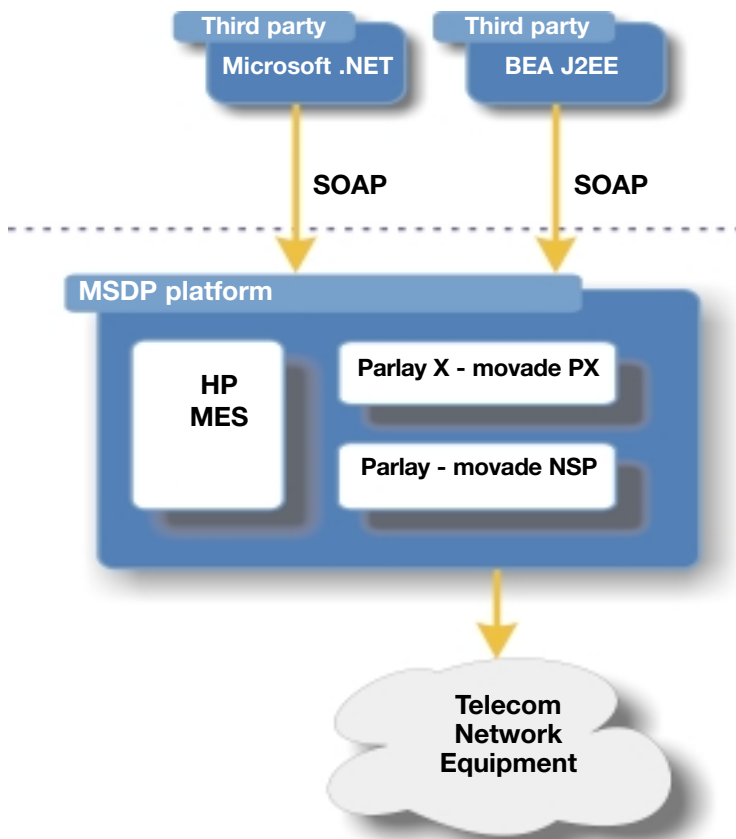
Services require whole new payment and settlement approaches. Users may use pre-pay, post-pay, credit cards, vouchers, etc., to pay for a service. These payments may need to be divided between multiple service providers. The MSDP is designed to integrate with new and existing, pre- and post-pay billing systems. It uses simple interfaces, including Web Services, to provide charging, service monitoring, and control points.

Your potential for sophisticated business models and rapid return on investment will start to materialise in the ability to automate services and the recruitment of content suppliers – compressing your time frame from integration testing to launch (months to days). The MSDP also enables you to efficiently assemble innovative services from these suppliers and your existing network investments.

Functional Business Concept

The HP MSDP solution consists of exposing a set of the core network assets to service providers for building mobile solutions. Web Services, like location based services (LBS) and call control, can be easily integrated to make simplified services delivered to mobile end-users as an SMS as well as MMS.

When an application wants to make use of the telecom network assets, a SOAP call is made to the HP MSDP server via normal Web Services. Once the request has been received, MSDP transforms the request into a network-based protocol recognisable by standard network equipment (SS7, SMPP...).



MSDP simplifies the link between the computing world and the telecom world.

The power of MSDP comes through the simplification of using standard methods of content delivery. No proprietary software formats or protocols are needed. .NET and J2EE transparently make use of MSDP APIs (Application Program Interface) allowing service providers to focus on their content instead of the delivering technology. In fact, an application can be written in any language as long as it can make the proper Web Services calls. This approach let third parties develop new mobile services in a very short time without the need of extensive technical knowledge in telephony or telecommunications.

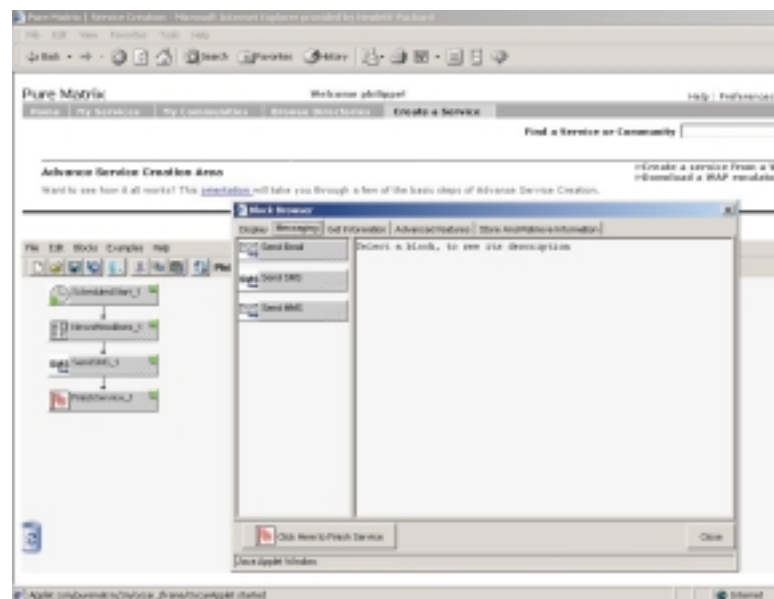
Functional features:

MSDP provides the following:

- Reduces cost and time to create telecom data services
- Shifts the risk of service development to outside the operator's core business
- Attract third party services that want to:
 - Integrate and accelerate traffic to the operator's network
 - Create differentiated end-user services
- Manages revenue sharing between application providers and thousands of telecom services
- Enables uniform customer experience across multiple devices and applications
- Drives telecom application eco-system by aligning standards such as OSA, Web Services, Java, .NET, J2ME (Java 2, Micro Edition)

User Experience

The ability to use almost any Service Creation Environments (SCE) is an important aspect of HP MSDP. Services/content companies, or even end-users, will be able to define services on their own with their own tools. The following example combines the Pure Matrix service creation environment with services exposed by MSDP. Taking advantage of the SCE's web interface, end-users simply create a service that will send each day personalised headline news by SMS or MMS to friends just by moving icons on the screen. More complex or imaginative services can be created quickly without the need to write any code.



Thanks to the many value added services that are exposed through MSDP, like the Microsoft MapPoint Web Service, application providers can now define new class of useful applications. For example, a taxi company will be able to localise a customer request, and rapidly ask the closest taxi to meet the client.

HP Mobile Service Delivery Platform

Customer name: cyrille Customer address: Place de l'Église(Cannes)

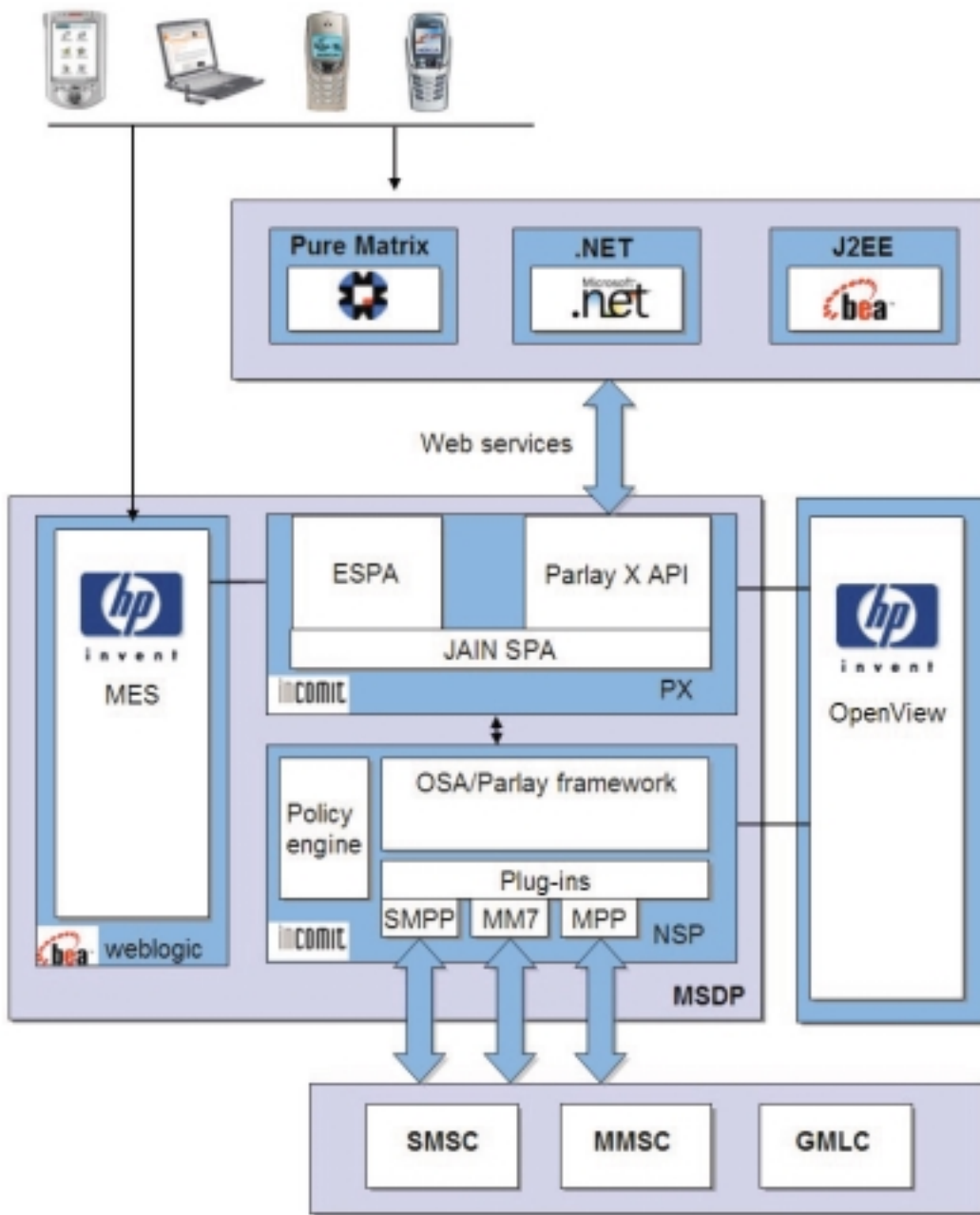
- Depart From on N7 (Avenue Bachaga Said Boualann (West)
- Turn RIGHT (North-West) onto N7 (Rue Georges-Clemenceau)
- Bear RIGHT (North-West) onto Boulevard Vallombrosa
- At roundabout, take the FIRST exit onto Rue des Suisses
- Turn LEFT (North) onto Local road(s)

Taxi drivers can instantly be provided and routing, access direction and see a map of the itinerary using a PDA or a smart-phone.

Software Architecture

HP's Mobile Service Delivery Platform (MSDP) is a powerful set of telecommunications tools made up of software applications, HP carrier-grade hardware and integration services. Different configurations of these components can be assembled providing partial or fully integrated environments to deploy all of an operator's different mobile services, such as messaging, location and entertainment.

The HP Intel Solution Center brought the MSDP platform together with worldwide industry leaders in computing and telecommunication to illustrates the ease of developing mobile web services using network functionalities exposed through Parlay X interfaces. In the future even more expanded MSDP functionalities will be implemented to further broaden this solution into areas like multi-device portal, billing, and more.



The core platform, hosted by mobile's operators, is responsible to expose a set of APIs (Application Programmatic Interfaces) that makes use of the network assets to service and application providers. The MSDP core platform can be accessed through the SOAP (Simple Object Access Protocol) standard by any web services based application - in particular, .Net and Java developers can access the platform effortlessly. HP has incorporated Incomit Movade to support OSA/Parlay and JAIN standards. Movade also adds value by managing access, security and capacity-loading policies between Internet protocol applications and telecommunications network services. Key among the partner solutions is the BEA WebLogic Application Server, optimised on the HP platform, forming a core component in the middleware infrastructure of MSDP.

Incomit Movade

The Movade Network Service Platform (NSP) provides a single point of access to an operator's network, whether for the operator's own application developers or for the creation of a third-party application ecosystem. NSP allows operators to remain in control, while providing secure access to different parts of their networks.

The Movade Proxy (PX) support applications running in external environments, such as the application servers of other vendors in the service layer. Movade PX gives application developers the high-level, easy-to-use Java API's and Web Services they need to develop enhanced mobile applications.

Platform management

HP OpenView Performance manager is a powerful graphical analysis and planning tool. It is designed to analyse and project future resource utilisation and performance trends.

Using historical data, the Performance manager lets you examine resource utilisation and performance trends in-depth. With this information, you can then uncover bottlenecks that, if left unchecked, result in poor service levels. HP OpenView is already meeting the needs of early Web service adopters by extending their capability to monitor middleware platforms into the Web services space.

HP MES

HP Mobile E-services Server (MES) enables mobile operators to aggregate and provision mobile e-services using standards-based technologies like UDDI, SOAP and WSDL. This standardises the way a company's services and those of its partners are registered, discovered, invoked and identifies how they can be developed into higher value-added services. It supports HP's Mobile E-services Taxonomy, and provides end-to-end integration with OSS/BSS systems (Operation Support System/Business Support Systems).

BEA Service provider layer

BEA's WebLogic Application Server is optimised to provide an e-commerce transaction platform for secure, scalable and manageable applications with system-level details. As the industry-leading e-commerce transaction platform, WebLogic Server allows users to quickly develop and deploy reliable, secure, scalable and manageable applications that make use of MSDP.

Microsoft® .NET

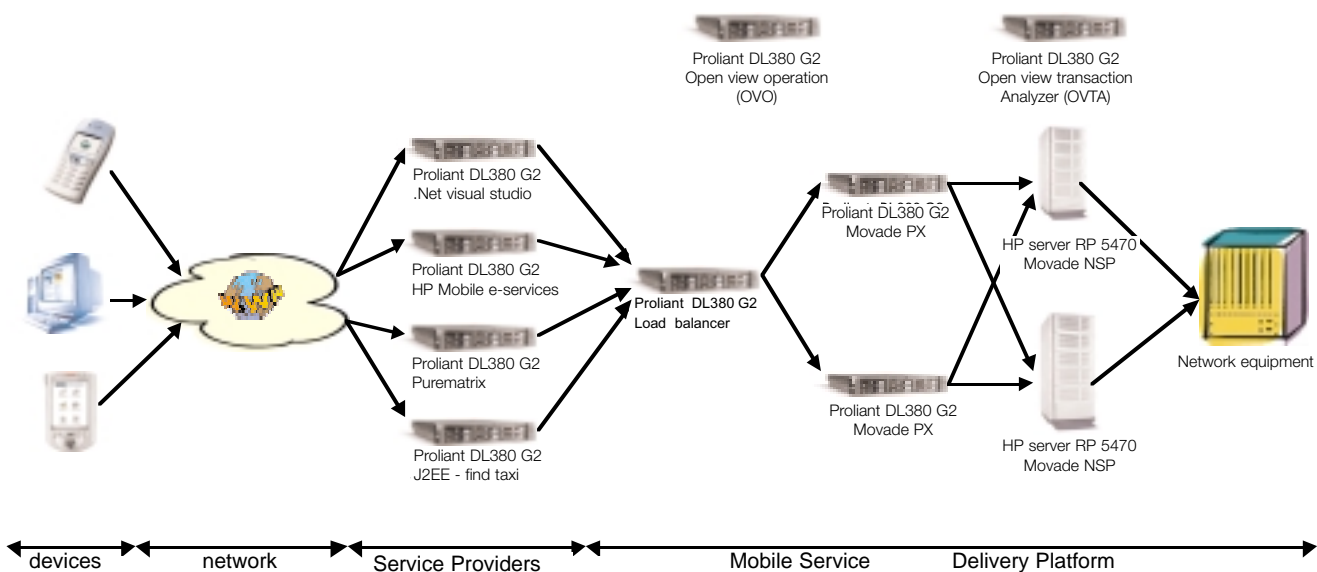
Microsoft® .NET is a set of Microsoft software technologies for connecting information, people, systems, and devices. It enables a high level of software integration through the use of XML Web services—small, discrete, building-block applications that connect to each other as well as to other, larger applications over the Internet.

Microsoft MapPoint

Microsoft MapPoint Web Service Technology encompasses location technology that deliver mapping and location based services, on any device. MapPoint .NET provides developers the key building blocks needed to create geographically savvy applications. As a standard SOAP programmable XML Web Service, the learning curve is minimal and the service can be accessed from a variety of platforms and development tools environments such as BEA J2EE and .NET.

Pure Matrix

The Service Creation Environment from Pure Matrix (PM SCE) acts as a service creation and service provisioning layer for the mobile operator's network. It enables faster creation of new voice and data applications, such as location systems, billing, content delivery systems and Intelligent Networks (IN).



System Architecture

The platform is mainly powered using powerful industry standard Intel® Xeon™ processors in HP Proliant DL380 G3 servers. Intel® Xeon™ provides tremendous reliability and in a very cost effective package. The 2U capability allows for easy racking and the smallest footprint possible for a complete solution.

The MSDP utilises HP UX operating systems in key places, a standard for many telcos. Today the Parlay UX servers are using PA RISC servers. These will be upgraded to more powerful and cost effective Itanium®-based servers in the near future as the new version of the core platform is released.

The solution has been defined with a scaling up capability in order to support large telco needs by taking advantage of BEA WebLogic Server Clustering architecture.

How To Engage

The HP Intel Solution Center is chartered to help customers complete Proof Of Concept (POC) testing and sizing to prove this is the best solution available for you. If you want to verify this solution will work for you please fill-in our qualification:

www.hpintelco.net/engage

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Part Number: BPO5-2003/E