Adding value to end user services

Parlay/OSA Gateway Intelligent Mediation

Accessing new revenues through new and exciting end user services.

This white paper addresses:

- The benefits of Service Middleware
- Strategies for service implementation
- The benefits of service implementation via OSA/Parlay
- Lucent's MiLife™ Intelligent Services Gateway

Lucent Technologies
Bell Labs Innovations



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Notice

At the time of publication, this document accurately reflects the Lucent Technologies UMTS solution. However, as we are continually enhancing our products, we recommend that 6 months after May 2002 you obtain the latest version of this document from your Lucent representative.

1 Introduction

There has been a long debate amongst telecom experts as to the exact needs for a Parlay/OSA gateway in their networks. Is it a theoretical luxury or a mandatory piece of the puzzle for the creation and deployment of future services?

Lucent believe that Parlay/OSA is a vital part of the way forward for the service providers wishing to introduce a comprehensive yet forward looking set of applications and services for subscribers. In this white paper the likely challenges facing service providers will be discussed using suitable examples, as will the role that the Parlay/OSA gateway can play in overcoming such issues.

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2 The Challenges

Recently many operators have revisited their budgets and business plans to reflect the realities of the current economic situation. They are simultaneously faced with a technology leap, the costs of launching 3G networks and services, and have the added burden of decreasing ARPU from existing subscribers. With such challenges there has never been a time, in recent history, when making the right decisions is so vital to maintain a healthy business.

One thing is for certain. Operators need a vast and attractive service portfolio to combat decreasing ARPU. Because the killer applications for 3G remain hard to pinpoint, operators need a safe mechanism to introduce services quickly, to test and stimulate the market. In order to accomplish this, operators need to open up their networks to host third party applications and to allow third party access, introducing new business models to their existing practices.

Currently, due to market pressure, new Internet style services have been introduced by deploying new technologies such as i-Mode, enhanced WAP/SMS servers, and location servers (Global Mobile Location Centre – GMLC) as well as upgrading existing IN infrastructure. Operators are investigating ways to attract third party developers to create services using these technologies.

However, this pragmatic approach does not seem to address the desire to create a homogeneous service environment, providing for cost and time effective service creation and service deployment that integrates easily with their existing support and network infrastructures. Nor does this approach deal with managing the multitude of services from in-house development teams, from partners, and from third party developers engaged in increasing ARPU. Clearly while short-term measures are needed to counteract the dynamics of the market, they must support the long-term goals.

3 The Middleware

One of the most cost effective ways is to move from point solutions to a more modular, horizontal layer approach that allows vertical services to take advantage of the underlying network functionality.

This central deposit of software components and functionality will allow operators to have full control of their networks whilst exploiting new business models. This horizontal layer is often referred to the Service Middleware and it provides a uniform service-enabling environment that allows services to be created more effectively, and integrated easily with the operator's network.

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The Service Middleware must be openly accessible from the applications as well as the network. It performs the following two main functions:

1) Normalization of network functionality to create a homogeneous service layer

a. Allows network functionality to be accessed in a consistent and uniform way. That is it provides the ability to access location information, to use the messaging facility, the network call and data call set-up facility, as well as other data that resides within the network infrastructure. The access to these network functions should be simple, easy to use, and easy to understand by developers.

b. Allows non-network related functionality, accessible by the application, to reduce development time: such as authentication and authorization of network access, load balancing of network resources and applications requests, integrity to ensure that error detection and recovery are automatic and seamless to the applications, as well as flexibility in billing to meet the new business models and current operator working models (pre-paid, post-paid, by minutes, by subscription, by usage, by access).

c. Allows easy provisioning and configuration of user data that is hosted on the service middleware as well as in the network elements. Reduces the integration effort to back-end office and support systems, promoting faster time to market of cost effective services.

2) Accommodating new business models

a. Allow the operator to be an active participant in the value chain, by opening their networks to third party access both within and outside the network domain. This leads to revenue sharing schemes, retailing, co-branding, and distribution business models.

b. Provides operators the opportunity to charge for network usage to help speed up the return on investment of current and new infrastructure.

c. Allows an operator to have a broad portfolio of enhanced services, needed to reverse the decline in ARPU.

Today, only the Parlay and OSA standards adequately address these points.

4 The Shift

What is needed is the development of a more strategic process for introducing services, as opposed to the tactical approaches seen so far in 2G and 2.5G networks.

To do so, an understanding of the consequences of deploying point solutions - solutions that answer only an area of the problem - is required. The following text gives an example of how the initial introduction of Location Based Services (LBS), as a point solution only, can have serious implications for subsequent service development and delivery.

While many operators would like to have LBS as part of the service portfolio, these would require extensive resources for creation in-house, which would limit the number of services launched in a year. Operators can overcome this bottleneck by opening up their location server to third party application providers, who can then provide a great number of attractive and lucrative services.

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There are already location servers in the market that allow third party access in a secure manner. Whilst it looks both attractive and feasible to deploy this type of solution, operators must recognize that, in the longer term, next generation applications will become even more complex, demanding the use of network capabilities to help enhance their functionality and so make them more attractive to end users. Such data and functionality may well reside outside of the location server, for example HLR data, subscriber data, messaging data, profiles, short messages facility, WAP facility, and call set-up facility.

For access to a location-based service, such as 'find my nearest restaurant', the application relies on accessing the user location via the GMLC. If the operator wants a text message (SMS) or email confirmation of the restaurant booking to be sent to the end user and his friends, the application needs to implement interfaces to the Short Messaging Service Centre (SMS-C) and the email server. This implies that the SMS-C and the email server need to build an authentication and authorization mechanism similar to those found in the GMLC for third party access.

Currently, not all SMS-Cs have this capability. Even if the SMS-C does, how do operators maintain the database of registered application users of the SMS-C, email server, as well as the GMLC? The result is that data is duplicated across different network elements for the same application, which is costly for the operator to maintain. Secondly, if the same location application requires access to the user profile to get the customer's preferences and their friends email addresses, the developer of the service has to accommodate such interfaces and functionality within the program. This will greatly increase the service creation and delivery time.

With a Parlay/OSA gateway, such as Lucent's MiLife™ Intelligent Service Gateway (ISG), applications have access to such network functionality in a secure and controlled manner. This allows developers to focus on the service logic through Application Programming Interface (API) dialogues, rather than creating interfaces to each individual network resource. In addition, the MiLife™ ISG allows operators to administer application access from a centralized area, with defined policy to ensure that the network resources cannot be abused or misused.

The MiLife™ ISG extends the Parlay/OSA concept to not only allowing applications to use the network resources, but also enabling application functionality to be accessed by other applications. This can be accomplished by mapping the application's interfaces to the APIs that are already published within the Lucent MiLife™ Solution. Therefore, applications can use other application features via these APIs, making their user experience even better. This is an important feature as services begin to grow in numbers and complexity.

Point solutions can also be costly from an operational perspective. In the above example, the application needed to interface with the GMLC, SMS-C and Messaging server. Operators need to understand the impact of one of the components failing after the application is deployed: how do the different elements notify each other as well as flagging the operator when there is an error? The decision on which appropriate corrective action to take can be a tricky problem! For instance, if the GMLC is down, how does the application find an alternative GMLC backup to get the information seamlessly? The same goes for SMS-C and so forth.

In this scenario, the providers of the component platforms may implement recovery quite differently. If the corrective action is not implemented by the network elements, then the application has to accommodate this functionality. This implies longer development and integration time of the service and places a heavy burden on the operator, since dedicated resources are required to help resolve this issue.

By deploying the Lucent MiLife™ ISG within the network, operators can have a centralized point for administration and management of network resources. The MiLife™ ISG framework functionality allows network resources to register their availability and status. Applications then register themselves and, based on the policy designated, can access these resources. Failures in any components are reported to a centralized place so that remedial action can be invoked to ensure that the services are up and running seamlessly.

Another important aspect to look at is how the GMLC and SMS-C cope with the traffic, or even worse how the operators maintain a service level agreement with the different partners signed up for application access to each network resource? In this case, a policy management system needs to be in place to ensure that the integrity of the system is not affected by over usage of certain applications. These mechanisms are not inherent in any of the SMS-Cs or GMLCs today. Therefore, there will be additional costs when applications expand beyond just location-based functionality. The costs include expert resources as well as upgrades to the existing system or a new system to perform the exact functionality.

Lucent's MiLife™ ISG has the components needed to address third party access (authentication and authorization of network resources); policy management, load management, and integrity management to ensure the operator network and its resources are not compromised at any time.

Once the above problems are addressed and resolved, what happens to the provisioning of data and the monitoring of multi-vendor network elements? How are these elements integrated into the network and back-end support tools?

The MiLife™ ISG is part of the MiLife™ Solution. The MiLife™ Solution has a powerful provisioning system that can interwork with the operator's high order management system. This service management system allows an operator to provision and manage services in distributive networks. The MiLife™ Solution also comes with a service creation tool and SDKs, helping operators and their applications partners to create their own services. By doing this, operators can ensure that there is a uniform way of creating services, reducing service time and testing on both sides. The MiLife™ ISG has been designed to work with network management systems and back-end system such as billing and customer care.

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5 Simplified Service Delivery

Presently an application is written specifically for each type of access mechanism whether it be WAP, i-Mode, HTML or SMS. As such, each application needs to be provisioned and maintained independently. But if operators deploy a Parlay/OSA gateway within their network, then applications do not need to be re-created for each access type. The applications can take advantage of the APIs supplied to buffer themselves from the network's underlying complexity, allowing the application to be accessed by anyone on any access devices and access network. This means operators need only to deploy one application instead of many to attract different subscribers.

Parlay/OSA gateways, like the MiLife™ ISG, allow operators the opportunity to adapt their networks to any business model with a cost-effective solution to meet the dynamic of the market. By creating a homogeneous service layer, Parlay/OSA gateway allow developers to create voice and data services for operators easily without much knowledge of the underlying technologies. By adopting the Parlay/OSA concept, the MiLife™ Solution bridges the Internet, IT and Telecom domains to create a highly competitive service creation and deployment solution.

6 The Lucent Proposition – accelerated time to market, reduction of risks and costs

Lucent understands the importance of Parlay and OSA and the benefits they bring to the operators. Lucent has implemented Parlay/OSA compliant products and integrated them within the MiLife™ Solution. This helps operators to create a manageable homogeneous service layer, allowing third party access and third party service creation to meet the emerging business model.

Lucent understands that deploying a platform is only a part of the total system. Therefore, Lucent is working with many application developers to speed up the development and deployment of new services.

For new service initiatives, Lucent enables the operator's marketing and engineering departments to prototype service concepts though SDKs and service creation tools. This allows the marketing and engineering teams to see what the service is like and what is required before proceeding to fully specify and develop the service.

Secondly, Lucent's expertise is at hand to assist operators in specifying the requirements of a new service. Prototype service concepts can be shipped to Lucent for analysis and training can be provided to help facilitate the requirements capturing phase.

Thirdly, Lucent will work within the operators testing process, to ensure that duplicative testing can be avoided by designing test scripts that encompass both Lucent's verification testing and the operator's acceptance testing.

For other off-the-shelf applications, Lucent has created in-house applications, such as content charging, as well as partnering with selective suppliers to create a new array of services, such as instant messaging. Lucent also has the MiLife™ Developers Program to attract developers with new service ideas and certify commercial-ready applications.

Therefore, it is important to understand that today's deployments will have serious long-term implications. The wrong assumptions can result in onerous network logistics, expensive legacy equipment swap-outs, as well as human resources issues.

Lucent's MiLife™ Solution is about enriching end-user services;, leveraging capabilities within the operators network and creating a new mind-set that will help operators overcome their current and future challenges. By incorporating telecom and IT experience within the MiLife™ Solution and adopting the Parlay and OSA standards, Lucent provides operators a means to launch new services more rapidly, cost effectively and with minimal risk.

APPENDIX Acronyms and Abbreviations

1G	1st Generation mobile telecom systems (e.g. TACS)
2G	2nd Generation mobile telecom systems (e.g. GSM)
2.5G	Enhanced 2nd Generation telecom systems (e.g. GPRS)
3G	3rd Generation mobile telecom systems (e.g. UMTS)
3GPP	3G Partnership Programme
802.11	WLAN standard
CDMA	Code Division Multiple Access
CDMA2000	CDMA-based 3G standard
CDPD	Cellular Digital Packet Data
CS2	GPRS Coding Scheme 2
EDGE	Enhanced Data for GSM Evolution
FTP	File Transfer Protocol
GPRS	General Packet Radio System
GSM	Global System for Mobile communications
HSCSD	High Speed Circuit Switched Data
IDC	International Data Corporation
IMEI	International Mobile Equipment Identity
IP	Internet Protocol
IPSec	IP Security protocol
IS-136	TDMA-based 2G standard
IS-95	CDMA-based 2G standard (cdmaOne)
ISDN	Integrated Services Digital Network
IT	Information Technology
m-Commerce	mobile commerce
MMS	Multi Media Messaging
PAMR	Public Access Mobile Radio
PC	Personal Computer
PCMCIA	Personal Computer Memory Card International Association
PDA	Personal Digital Assistant
ROI	Return On Investment
TDMA	Time Division Multiple Access
UMTS	Universal Mobile Telecommunications System
VPN	Virtual Private Network
W-CDMA	Wideband CDMA
WLAN	Wireless Local Area Network (e.g. 802.11)

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