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WHITE PAPER

INTRODUCING: MEDIATION-BASED ADVANCED SERVICE MANAGEMENT

DELIVERING PERSONALIZED SERVICES, THE MEDIATION WAY

CONTENTS

EXECUTIVE SUMMARY

Personalized and higher-quality network services are compelling ways for service providers to stand out from the competition. They can take many forms, from individually tailored services to network performance-sensitive services, to any combination of the two. But can providers give customers any of the range of those services without undergoing a complete system transformation? Yes, they can. **By leveraging mediation to deliver Advanced Service Management.**

In this white paper, we will explore the possibilities of Advanced Service Management, as well as its challenges, and explain why **mediation is ideally positioned** to assist in overcoming those challenges. We will describe how the mediation platform can be used to optimally support personalized network services and contribute to higher-quality high-bandwidth network services. A few application ideas will be introduced in order to provide deeper understanding and trigger innovation.

1. INTRODUCTION: THE VALUE OF PERSONALIZED AND HIGHER-QUALITY COMMUNICATION SERVICES

Imagine a world where communication services are tailored to a customer's profile and matched to her unique online activities and interests. Imagine you're the communications company that can now personalize products for that subscriber, speedily and with no major investment. Imagine the unique products and services you could offer her, the loyalty you'd build with her and the new value both of you would see in your relationship.

Imagining this world is easy. Building it is not, at least not following conventional means. Traditionally, achieving such a vision would entail systems overhaul—if not outright replacement—at huge cost and risk. For example:

Service class differentiation tactics are often employed by service providers seeking to provide high-value customers something extra, beyond what other customers get, largely to give these customers good reason not to churn. Plus, research suggests that customers also are more likely to spend time, money and attention on services tailored to their needs, resulting in higher service revenues. Consider for example a multimedia messaging service (MMS) that provides different privileges to different classes of customers. A regular class customer can send MMS messages up to 150kb, while a VIP customer can send messages (including attachments) as large as 2MB. Another option: a VIP customer gets additional service features, reflected in richer MMS menus (e.g., such as the option to define and manage distribution lists) or access to a richer selection of network-based, free-of-charge multimedia files. Such an MMS service increases considerably the value of the service to the VIP customer population and may be achieved through an MMS application upgrade, but often cost, time-to-market and risk considerations prove prohibitive.

Service quality is another issue for service providers. With the upcoming proliferation of high-bandwidth services (such as IPTV, mobile TV, video on demand, etc.), major service quality problems are expected for these and other services, as networks will be stretched to their capacity limits. Service providers will have to find ways to wisely control the admission to such services in order to make sure their networks are not overloaded and that customers using them enjoy good quality. One way to control quality would be to control the access to these services in a way that employs service class differentiation tactics and other relevant business parameters (such as number of denials of service prior to the current service request). Such sophisticated service access mechanisms can optimize the business value of these services and improve customer satisfaction when using them. But building new systems and creating new technologies to provide such capabilities is costly, lengthy and involves considerable risks.

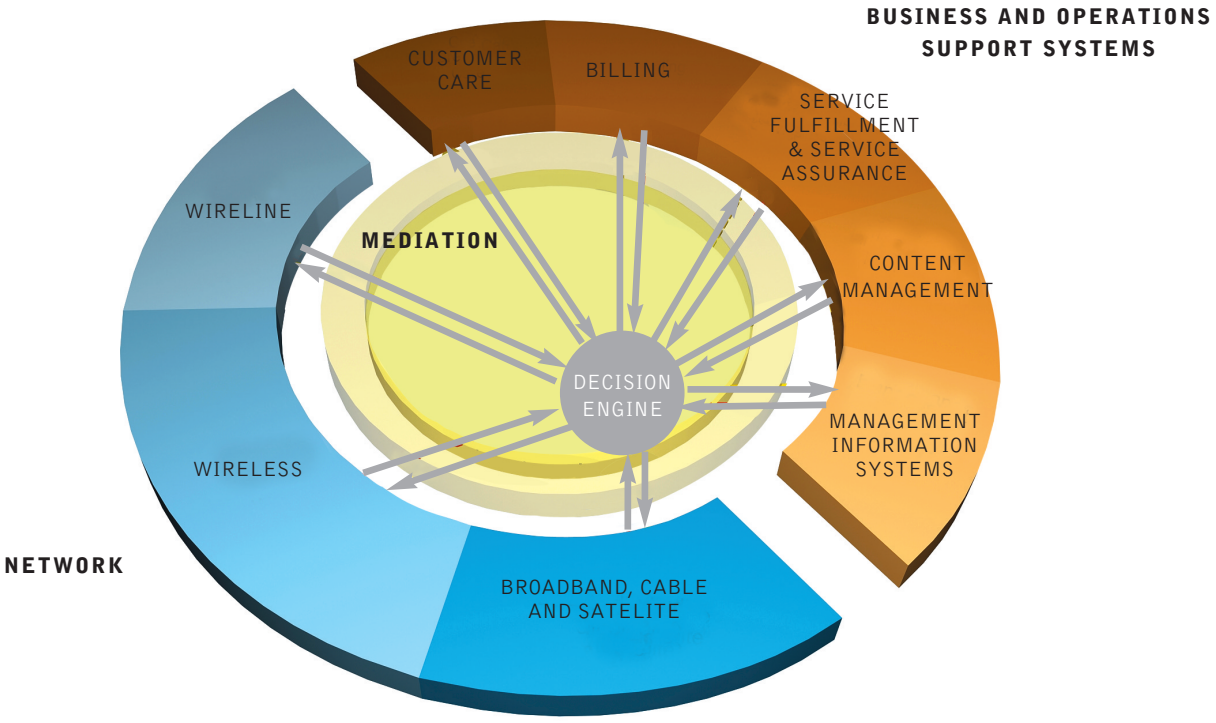
Now, there is a new approach to enable personalized services and control access to sophisticated services. And it leverages an asset—**mediation**—most service providers already have. Thus, it presents a safer, faster and less expensive option than other alternatives.

Mediation can be used to implement service flow decision processes around network-status and BSS/OSS information. Thus, it operates as a sophisticated decision mechanism connected to both network and BSS/OSS systems.

Mediation also functions as a real-time information hub, with usage information, quality of experience information, network performance and other types of information flowing through it either from the network to the BSS/OSS or vice versa. It thus occupies a unique position in service providers' IT and network environment: it interacts with multiple network systems and various types of business applications, transforming data into multiple types of business information. This means that at any given time, it naturally possesses a large part of the information that is relevant for Advanced Service Management. With such rich information in a single location, mediation is the natural locus of any business information initiative.

Thus, mediation serves as the prime foundation for a new and valuable function: Advanced Service Management

FIGURE 1:
MEDIATION AS A REAL-TIME INFORMATION HUB



As described above, service providers are challenged with creating a unique and compelling competitive edge through new and unique services, while enabling those services cost-effectively and at consistently high service quality. **Mediation-based Advanced Service Management** is emerging as an innovative solution that can overcome these challenges effectively.

As defined in this paper, Advanced Service Management is managing network services based on relevant network performance status and online information stored in business and operational support systems (BSS/OSS). This means that for every service session or event, a decision is made regarding the optimal service flow, based on network capabilities, customer and other types of relevant business information. With Advanced Service Management, network services are rendered differently to different customers and at different times, so as to provide the optimal and personal service experience.

Many services offered today are homogeneous and deliver a similar experience to all customers regardless of their personal profile or the specific network conditions at the time the services are used. Some services do use partial, static information from a subscriber's profile (e.g. his age) in order to provide a certain level of tailoring, but these are the exception today. So the fact that Advanced Service Management can enable the following fine-grained customer- and network-based distinctions in the service experience is key to provider differentiation:

> **Sophisticated service authorization —** controlling access to services based on dynamic parameters originating in several BSS and OSS or network systems.

> **Dynamic customer re-provisioning —** changing in real-time the allocation of bandwidth to customers according to the services they are using and the network capacity status.

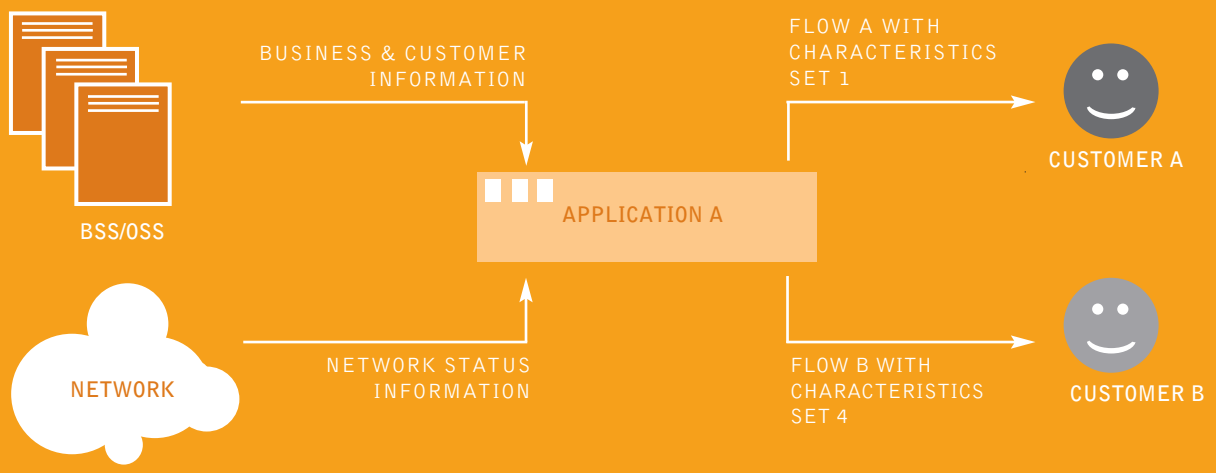
> **Customer profile-based services —** services that offer different user experience and functionality according to the customer's profile age, location, customer class, bill payment status, etc.)

> **Customer usage-based services —** services or marketing offers that are triggered as a result of specific types of customer activities (e.g., first use of a service).

> **Customer usage-profile-based services —** services or marketing offers that are triggered as a result of specific usage patterns (e.g., using service A immediately after using service B).

> **Network status-based services —** services that are provided in a different manner depending on specific, relevant network conditions such as faults and performance (e.g. an admission-control service).

FIGURE 2:
ADVANCED SERVICE MANAGEMENT FOR APPLICATION A



Behind the scenes, how does mediation work to deliver the benefits of Advanced Service Management as outlined above? Let's start with the basics. The traditional use of mediation is billing mediation, which encompasses the collection of usage data from network elements, transformation of this data into usage information and distribution of the information to billing and related systems. **Billing mediation is still the main use of mediation systems, but new uses are emerging and growing in importance**; Advanced Service Management is one of them. Several mediation capabilities can and should be harnessed to provide successful and cost-effective solutions to network services needs:

> **Interfacing —** Mediation platforms offer tools that enable the creation of new interfaces rapidly and at low cost. They also make it possible to interact in real-time with peripheral systems. Advanced Service Management entails interfacing and interacting with multiple BSS/OSS and network systems that provide information to the service management process, or that need to get service management decision feeds. Thus, efficient interfacing and dialogue management capabilities become a key benefit of mediation as an Advanced Service Management enabler.

> **Event processing —** In Advanced Service Management it is often necessary to produce information (e.g., customer information) by synthesizing data items from different sources, or to analyze event information in order to apply the relevant business logic to the event. Mediation platforms offer extensive data processing tools that enable the creation of information from raw multi-source data.

> **Business logic definition —** Advanced Service Management requires flexible definition of decision processes that implement personalization, authorization, classification and prioritization procedures. Assisted and flexible business logic definition is key to the agile and low-cost development of dynamic service management processes. Mediation platforms offer tools to define decision trees for business processes.

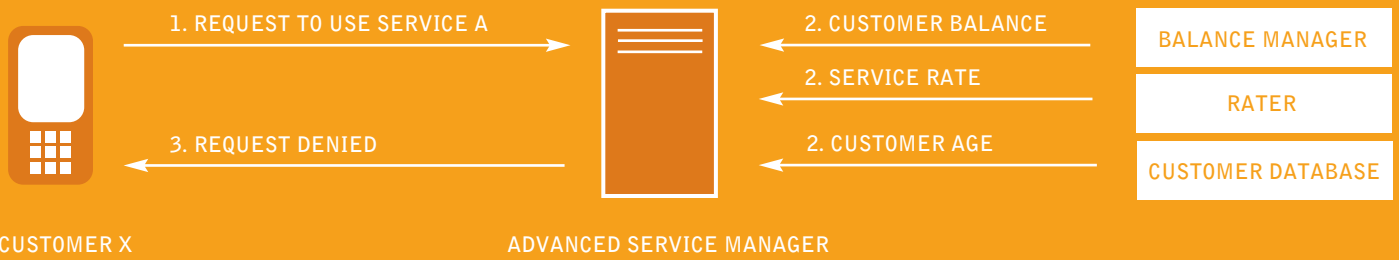
> **Real-time reliable operation —** Advanced Service Management requires split-second system reaction times in order to avoid noticeable service delays. It also requires 99.999% system availability – the "five nines" standard for carrier-grade network systems. Modern mediation platforms offer the capability to perform request-response interfacing, event processing and decision processes in real-time and with high availability. (This set of capabilities is usually termed "Active Mediation" or "Transactional Mediation.")

The previous section outlined several possible applications of Advanced Service Management. Let's delve deeper to see how the unique capabilities above fuel mediation-supported innovation in a few such applications:

> **Content services authorization —** a sophisticated authorization process where the authorization to access content services is based on both the subscriber's balance and his age (see figure 3). The mediation system collects relevant information from the balance management (customer's data services balance), rating (service rate) and customer management (customer's age) systems. The system then activates a business logic-based process that determines whether to approve or reject the service request, based on these parameters and the service authorization policy. Implementing content services authorization without a mediation system would require two separate systems—one for the financial aspect of the process and one for the customer profile aspect—complicating the architecture and incurring additional costs.

> **VIP services —** an application which enables VIP-class customers to access service options not available to regular subscribers. This application is enabled through a mediation-based personalization server which assembles the relevant customer information (age, location, customer class, bill payment status, etc.), applies the appropriate service policies and notifies network services application servers of the required service flow. The application servers then activate a "standard" or "VIP" service flow according to this information. Without a mediation personalization server, each

FIGURE 3:
MEDIATION-SUPPORTED CONTENT SERVICES AUTHORIZATION

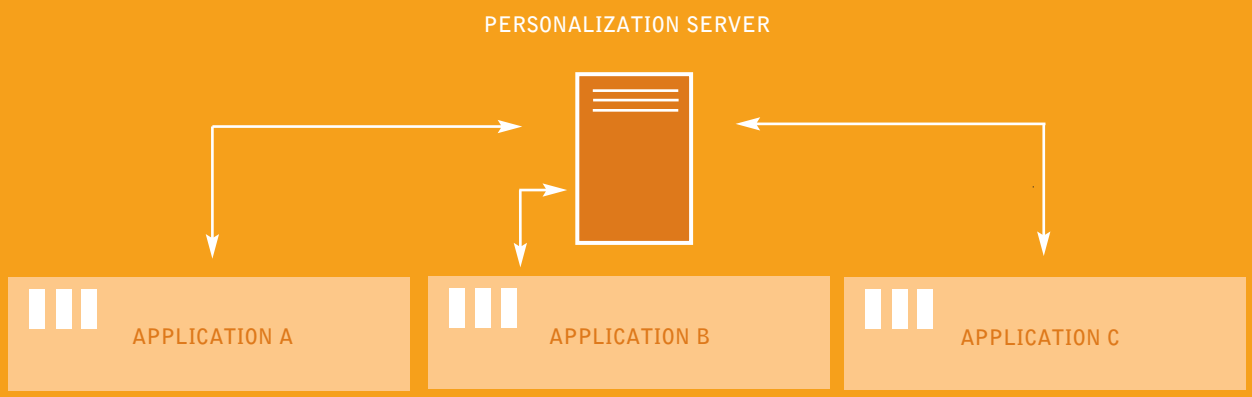


application server would have to be coded for personalization and would have to interface with customer care and other databases independently. Moreover, as each application server constitutes a silo, the personalization processes defined in one application server and that might be relevant for other application servers as well, will not be reusable for other application servers. Conversely, using mediation as a personalization server centralizes the process and offloads all personalization tasks from the application servers, minimizing costs and improving efficiency and flexibility.

> **Other interesting applications include:**

- **Dynamic offering —** enables service providers to generate on-the-fly service offers based on customers' real-time activities; a proven way to increase services usage.
- **Service admission control —** authorizes customers' service requests for high-bandwidth services depending on network congestion and the customers' class.
- **On-demand bandwidth —** enables customers to request real-time changes to their bandwidth allocation, either to improve their service experience or to run services requiring greater bandwidth.

FIGURE 4:
MEDIATION AS A PERSONALIZATION SERVER



5. PATHS TO ADVANCED SERVICE MANAGEMENT

There are two leading system architectures that enable Advanced Service Management, each involving different types of systems and interactions:
1) customized application servers
2) converged buffer system with standard application servers.

The customized application server approach entails direct customization of network services, specifically via the application servers. In this scenario, each network service (application server) is customized to get, by itself, the relevant network performance status and BSS/OSS information. It is then coded with service flow decision processes to enable Advanced Service Management.

Under the converged buffer system approach, one buffer system performs the above-mentioned information collection from the BSS/OSS and network systems and the service flow decision processes on behalf of all application servers, providing them with "bottom line" information: how to proceed with the service flow. In this scenario, the application servers just need to have a few standard flows defined and will activate the relevant flow based on the indication provided by the buffer system. **Mediation platforms are ideally positioned to assume the converged buffer system role**.

ADVANCED SERVICE MANAGEMENT IS MANAGING NETWORK SERVICES BASED ON RELEVANT NETWORK PERFORMANCE STATUS AND ONLINE INFORMATION STORED IN BUSINESS AND OPERATIONAL SUPPORT SYSTEMS (BSS/OSS).

6. HOW MEDIATION-BASED ADVANCED SERVICE MANAGEMENT STACKS UP

Reaching an optimal architecture for any customer experience system is no mean feat. Regardless of the path chosen to achieve Advanced Service Management, the architectural considerations for it (or any system) include the seven factors below. Given the unique capabilities and benefits of a mediation-based Advanced Service Management architecture, how does it stack up?

FACTOR	DESCRIPTION	MEDIATION CAPABILITIES
FUNCTIONALITY	The variety of applications that can be supported	Mediation is an open platform with modular functionality and built-in mediation applications development tools; any interfacing and event processing application can be developed easily and efficiently. Also, functionality developed for one application can be re-used for other applications.
PERFORMANCE	Carrier-grade qualities such as end-to-end process latency and high availability	Modern mediation platforms with active mediation capabilities enable low end-to-end latency for end-to-end interfacing and event processing, and high availability. Those capabilities combine to provide a carrier-grade system that can be introduced into a network service delivery chain, with no noticeable effect on users' service experience.
COST	Investment required in hardware, software, implementation, operation and maintenance when building the solution and over the lifetime of the solution, assuming multiple new services are implemented	Due to their efficient use of hardware and ease of mediation applications implementation and modification (enabled by out-of-box and extensible functionality and mediation platforms' modular architecture), mediation systems tend to incur a low total cost of ownership.
TIME TO MARKET	Speed achievable in bringing a new service idea from inception to live implementation, and from requirement for service modification to live service update	The same qualities mentioned above contribute as well to minimizing the time-to-market for new applications. In addition, the reusability of application modules, a multi-project development environment and the friendly system operation (which enables independent easy configuration and development by the service provider) support the ultra-fast execution for new services and modification of existing ones.
RISK	Probable and possible effects on other systems, network services and ultimately revenue	Mediation mediates the transfer of "digested" BSS/OSS and network information to the relevant application servers. Thus, it shields other systems from the constant change that dynamic personalization requires, and thereby mitigates risk.
SCALABILITY	The ability of the solution to linearly grow to accommodate higher volumes	Modern mediation platforms enable linear scalability, thereby enabling the system to grow efficiently with higher processing volumes as new applications and subscribers are added.
EXTENSIBILITY	The ability to add new functionality "on the fly," without the need for a software upgrade	Mediation is an open system that enables the definition of any interfacing and event processing flow. Applications can be added on top of the mediation platform without affecting existing applications or requiring a software upgrade.

While non-mediation-based solutions for managing advanced services can provide some of the benefits detailed above, none can deliver all of them. **Mediation-based Advanced Service Management is uniquely positioned to enable a centralized, efficient and cost-effective service management architecture.**

7. SUMMARY

As shown in this paper, the mediation platforms most providers have in place today can optimally support the requirements of Advanced Service Management, enabling business and network status-oriented service management and a wealth of high-value new services, such as sophisticated access authorization, through real-time service offering to personalized network services. By using inherent real-time interfacing and event processing capabilities, and leveraging data and information that naturally flow through the system, mediation platforms provide the backbone for these requirements with rich functionality, minimum cost, fast time to market, low risk and a highly efficient and scalable architecture.

The benefits to the service provider are clear: minimum infrastructure and effort investments, higher profitability and fewer barriers for innovation. And the benefits to the customer—high quality service, tailored to their needs and to network conditions—are priceless. Simply put, Advanced Service Management can help service providers to attract new customers and retain existing ones by improving the customer experience and delivering value beyond that offered by competitors. It uses an existing key to unlock a brand new world.

"Interested in delivering personalized, next-generation services to your customers? Visit amdocs.com and learn about how Amdocs Convergent Mediation Solution can help. Or contact Amdocs' Mediation experts to get more insight about Advanced Service Management:

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