AVAYA

Intelligent Communications

The Adaptable Business Architecture: How SIP and Web Services Transform the Voice Self Service Model

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Section 1: Overview

An IT owner has to meet three simultaneous challenges today, driving an adaptable business-focused architecture; balancing technical and business needs; and delivering the "future today" through the support of innovation.

Section 2: Adaptable Business Architectures: Enabling Agility to Meet New Business Objectives

"Flexibility, speed, and innovation." All buzzwords that management and business partners use to describe goals that they envision around the kinds of differentiated services that business needs to deliver to grow and thrive. The task of providing a manageable and cost-effective way to deliver on those aspirations is expected even when business goals are not clear.

What is required is an adaptable business architecture- a way to reconfigure and add to established management capabilities, to extend existing investments in a Web-based architecture, to leverage an the underlying IT platform, and to support the cost-effective development of new services.

Interactive Voice Response as an evolving element of the Adaptable Business Architecture

Interactive Voice Response (IVR) systems and speech-enabled IVRs are established technologies that have an easy to articulate value proposition. When first introduced, IVRs presented an easily recovered cost savings for call centers ("send the customer to the IVR instead of an agent"). In order to become a part of the Adaptable Business Architecture these technologies must evolve to play a more prominent role in servicing customers, employee, and partner needs. Until the last few years, IVRs been focused on proprietary technologies and programming models and have offered limited application reuse.

In recent years a set of standards have emerged for IVR and speech environments that address the use and reuse of "IVR" and "speech services" in a web-based IT infrastructure. VoiceXML and related standards describe a way for systems to interact with end users, while Java technologies have been adopted to speed integration and support of business logic.

Increasingly, IT owners have settled on these standards in a "voice portal" ecosystem which include not just the technologies, but a set of best practices and expertise from integration experts that can be applied to create solutions.

Some of the most obvious advantages to these solution sets are:

• Consistently managed and administered application environments

• Common skill sets and tools for developing and maintaining applications

• Less expensive application environments as "vendor lock" is removed

• Common business logic and integration environments

• Greater application sophistication as enterprise business applications become integrated more directly into the self-service environment

Businesses today are required to provide a rich, valuable customer experience that translates into high automation rates and lowers the overall costs associated with call and contact centers. Delivering an Adaptable Business Architecture dictates requirements to have maintainable, extensible, and manageable applications that can quickly be modified to meet business requirements.

This, in turn, requires use of Service Oriented Architecture (SOA) best practices. Increasingly, services that may include "IVR" functionality (for example, a Service which interacts with an end user to collect identifying information like an account number) may integrate to services that include people (for example a subject matter expert who will be researching issues related to the provided account). "Adaptable" means that new business objectives may arise where customer service may become subservient to cost savings or vice-versa.

Reuse of existing Web Application infrastructure, software and development expertise has moved from "nice to haves" to requirements for all deployments. Additionally, the need to deliver high-quality metrics around business effectiveness and business intelligence now stretch to multiple constituents including departmental businesses, internal customers, and management. This requires a highly consistent approach to managing the infrastructure.

Section 3: The Avaya Voice Portal Model

Avaya brings a unique value proposition to dealing with an Adaptable Business Architecture. Understanding the needs of IT decision makers means more than providing turnkey IVR solutions — it means delivering on architectural elements and on other "softer" elements that promote understanding between business line owners, IT decision makers, and operational organizations.

Avaya has adopted key IT principles in defining its systems, including:

• Support for Web Standards, separating Access (via software-based media processing) from Presentation (through optional Java-based software frameworks), from Business Integration and Data Access. This promotes reuse and agility.

• Support for SNMP-based network management and operational standards, including roles-based access control and thin client access.

• Support for SOA design for data integration, exposure of reusable services, and management capabilities.

• Standards-based design and development practices by supporting an Eclipse-based Integrated Development Environment (IDE)

On top of this standard architecture support are new capabilities. These capabilities are focused on open communications technologies like SIP, and on pre-built integration points to Avaya's Intelligent Communications and Contact Center technologies.

Section 4: SIP for the Adaptable Business Architecture

SIP is an Internet protocol for establishing, manipulating, and managing communication sessions. One element in delivering an Adaptable Business Architecture is the requirement to deliver services through generic infrastructure (for lower operation requirements and ubiquity of support) while providing a platform for innovation. These requirements match perfectly with SIP as a protocol. While SIP in the contact center is an emerging technology, Avaya continues to promote SIP both through standards bodies as well as delivering innovations today using this key technology.

SIP support within an Adaptable Business Architecture can be broken down into three primary areas of support: support for ubiquitous networks (SIP trunks and IP trunks), convergence of data within the communication channel (CTI replacement) and support for new classes of applications (presence and video).

SIP Support for Ubiquitous Networks

SIP was created during the Internet revolution to do for telecommunications what TCP/IP did for networking. SIP inherently broke down the barriers of distance and vendor interoperability by tackling not only the Enterprise communication space, but also the Service Provider space.

Within a SIP-aware network, every device, every service, and every resource is accessible and usable within a solution. As more Enterprise Vendors and Service Providers have driven solutions into a SIP solution set, procurement, access and operational costs have dropped. Within the Avaya Voice Portal architecture, native support for SIP has delivered the following benefits:

- **Support for Service Provider SIP Trunks:** The Voice Portal architecture integrates to Service Provider SIP Trunks without the need for traditional switched circuit resources. This allows Service Providers to pass on the lower cost of management within their infrastructures to Enterprises. More importantly, the requirement for local switched circuit resources can be consolidated into a broad IP management and procurement initiative.

- **Interoperability with multiple Vendors.** As all major vendors have adopted interoperability standards, integration with multiple SIP endpoints and SIP communication solutions is delivered.

SIP Support for Convergence

The often-requested ability to pass data from one endpoint to another in a communication application, whether from IVR to agent ("Please enter your account number"… "What is your account number?"), or agent to agent, has been hampered by complexity and cost despite the business need. SIP inherently supports convergence between voice and data channels as the SIP data and voice channels are one and the same. This delivers the following features:

- Availability: Data that needs to be passed from the self-service solution (account number, account balance, and other arbitrary data) to another SIP-aware element (Agent Desktop or other application) is always available. Avaya's architecture supports inserting arbitrary data in the SIP session so other SIP endpoints can access and use this data.

- Ease of deployment: Traditionally CTI deployments have demanded a separate data network (and integration points between computers and telephony) for operation. This has meant additional planning and costs. With SIP, the telephony network is the data network. Once the telephony aspects of the network are cared for, data paths come for free across vendors and service providers.

- Reliability and cost: SIP promises to eliminate the expensive service provider premium services for multi-call center data infrastructures and the associated unreliability and ongoing costs.

SIP Support for New Classes of Applications

The elements of SIP described above deliver on the promise of lower total cost of ownership and simplicity in management. However, the promise of SIP extends beyond this with support for new classes of applications through new primary capabilities: new media types and presence.

- SIP is inherently media agnostic. Following the internet model that transport is agnostic to content, SIP provides for not only the easily understood value of real-time voice (telephony) conversations, but also for data which can be text, images, video and complex location based data. A prime example is the ability to deliver a multi-media experience to the user of a SIP aware device (such as a 3G Mobile Telephone). Now, streaming video content and presence-aware content can be delivered to a user conversing through a Spoken interface. (For example, allowing a user to be able to see rich video content driven by a speech interface.)

- Presence is an exciting new capability supported by the SIP model. Now each user or application can express his, her (or its) availability to meet an end goal. Traditionally provided by the detailed

understanding of telephony states within a call center function, presence and availability can be combined to create new ways of servicing end users and applications. Through SIP, end customers, will spend less time waiting to get the right answer for their question.
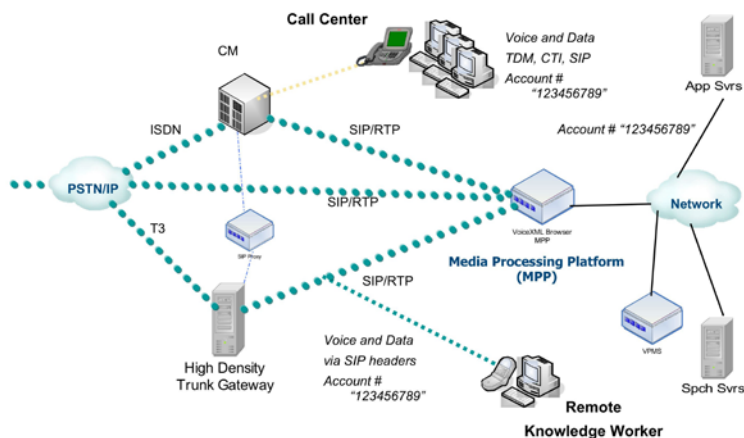

Figure 1: Within a SIP-aware network, every device, every service, and every resource is accessible and usable within a solution

Section 5: Business Understanding: Balancing Technical and Business Needs

Delivering an Adaptable Business Architecture Platform for Business

Avaya Voice Portal, as a part of the adaptable business architecture, provides IT leadership with the remarkable ability to drive strategic business advantage. Two key elements of this strategic advantage:

1. Rapid, incremental execution on pragmatic business initiatives

2. Long-term sustainability of investments that afford significant flexibility and reuse

Rapid, Incremental Execution

IT environments are complex, filled with multiple in-house and external vendor platforms and applications. Built on SOA, Avaya Voice Portal is a natural fit into these environments, allowing for immediate integration into these existing platforms, applications, and supporting processes. This SOA orientation easily enables rapid connectivity to broader automated and assisted-service processes. Each IVR application that is developed can fully leverage this connectivity.

Avaya Voice Portal's application design environment is Eclipse-based, allowing the IT organization to rapidly deploy applications that are business oriented and IT-standards based. The Eclipse foundation enables a broad set of application developers, leveraging their application design expertise, and driving integration across the spectrum of IT-designed applications. These benefits are achieved, not by huge investments in systems and application development, but through incremental investment in the platform and individual applications that drive measurable business improvement, one application solution at a time.

Long-Term Sustainability

Avaya Voice Portal's SOA foundation allows IT to deliver on short-term business imperatives while delivering a compelling, long-term value proposition for the organization. It's a given that future business drivers will change. It's a given that there will always be a complex array of multiple vendor and in-house platforms and applications in the IT environment. And it's a given that there will always be the need to deliver integration across these disparate solutions.

The power of this SOA foundation is in how well it embraces these disparate solutions and leverages them to deliver on the needs of the business. The adaptable business architecture consistently leverages the investments made across IT – investments in infrastructure, platforms, processes, and data. This leverage creates compelling benefits to the organization over the life of the business. These benefits go far beyond financial investment protection. Companies who adopt an SOA approach realize an agility that their competitors often cannot match.

Understanding how Business seek Business Advantage

Enterprises that have adopted IP Telephony typically are looking for a solution that is consistent with their web-based, SOA strategies. These companies will benefit from Avaya Voice Portal in multiple ways:

- **Cost of Ownership** – TCO starts with procurement and application development and continues through operational elements. Avaya brings license pooling and dynamic license management to maximize uptime while also eliminating initial capital costs.

- **Resiliency and Fault Tolerance** – A multiplex redundant architecture and dynamic management of media servers provides assurance to businesses that their applications will always by up, in service, and providing value.

- **Investment Protection** – No discussion of investment in new services can be had without considering the existing investments. Avaya preserves application and platform investments through open standards support while explicitly providing software platform licensing transfer and the ability to mix a hybrid of existing IVR and new Voice Portal applications concurrently.

- **Reusability and Flexibility** – Encapsulation of common business application elements through Web Services allows for integration with existing web applications environments and a Service Oriented Architecture.

- **Customer Experience** – The customer demands a seamless interaction experience, and expects 24x7 availability, without regard to what platforms, applications, and integrations are involved to satisfy their needs. With Avaya Voice Portal, cross-platform connectivity is delivered through its SOA foundation. IVR applications are highly available. Voice Portal management tools allow for faster prototyping and versioning of services and redeployments. With Avaya Voice Portal, managers can actively monitor and modify their customers' self service experiences quickly and safely.

- **Service Differentiation** – Businesses are always looking to differentiate their businesses. Through the ability to provide applications that are presence aware (i.e. not offering an agent unless there is an agent available) and multimodal in nature (i.e. Video Wait treatments and Visual Menu hints) businesses can deliver on new applications not even possible within a legacy mindset.
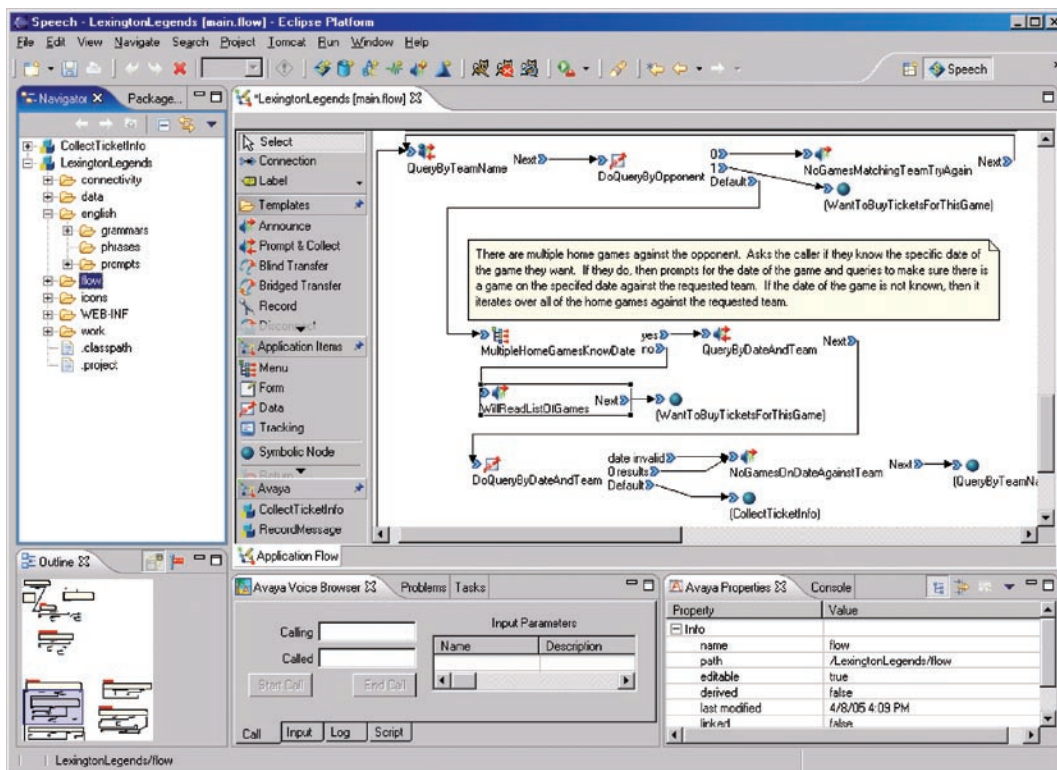
Figure 2: Dialog Designer is Enterprise Developer Ready with Embedded SOA support

Section 6: Delivering Innovation: The Future Today

Avaya Voice Portal — A Platform for Innovation

Innovation comes from many sources; understanding your customers needs, understanding your competition, and sometimes the creative spark that can't be easily categorized. Still, without a plan to capitalize on innovation, many advances will never see the light of day.

Avaya recognizes the need of the IT decision-maker to deliver on the promise of innovation. Voice Self Service is a critical element in the innovation equation, and the Avaya Voice Portal platform delivers on the innovation promise. But a platform is not simply a set of hardware and software products. It also requires other less tangible elements from the vendor:

- A proven past with a continued long-term financial commitment to the market

- Global presence and market leadership

- An active community of top-tier 3rd party delivery partners

For more than 20 years, Avaya has led the way in providing communications, contact centers, and IVR solutions. Recently named to the Gartner Group 2006 Magic Quadrant leader's position for Voice Portals, this recognition is a tangible result of the global investment Avaya makes in customer understanding, development and services. Avaya labs with Research & Development organizations in Brazil, Australia, India and Germany coupled with U.S.-based resources bring advances in areas as diverse as core media processing, natural language understanding, multi-modal Video and Voice response, and voice-based security capabilities.

Architectures for Growth

Companies that focus delivery of innovation in only one area can frequently loose sight of the more strategic picture. Avaya Voice Portal brings innovation to the breadth of IP communications applications. Encompassing security, reliability, and the ubiquity of solutions, Avaya's Contact Center, Enterprise Communications, and Unified Communications solutions span the breadth of customer interaction needs. To meet the requirements for this wide array of solutions, Avaya has designed the Avaya Voice Portal architecture as an enabling element to all of Avaya interaction solutions – not just to the traditional IVR space.

Another example of innovation is Avaya's approach to a common designer framework. Initially built as an open, Eclipse-based IDE that supports web and SOA development for Voice Portal and self-service applications, it is quickly being expanded to include support for other communications and contact center design and runtime tasks.

Partners in Innovation

Avaya recognizes that innovation and understanding originates regardless of geography or company affiliation. With Avaya's Developer Connection (DevConnect) developer community, a formalized program is provided for thousands of developers at over 1,200 member companies. With dedicated resources for building and supporting innovation with its partner and customer community, DevConnect is a key innovation arm for Avaya and its customers.

Case in Point: Communications Enabling Web Services

Enabling communications architecture for general enterprise applications is fast becoming reality. By introducing the ability to run arbitrary speech applications within a common converged communications and IT environment, the cost and applicability of communications applications are drastically altered.

Avaya Voice Portal is an important first step towards communication-enabling thousands of enterprise applications. Until now, dedicated deployments, developments and management teams have focused on providing call center cost reduction through traditional IVR architecture. Voice Portal functionality is embedded directly into the communications infrastructure, eliminating the indecision around what IVR needs to be configured with the call center

Once a speech capability is provided for one class of applications, it can be made available for many other applications. Speech capabilities are immediately available for innovative applications such as

- **Customer Relationship Management** – ability to provide key information to Sales, Business Partners and Users through rich Speech Interfaces

- **Dispatch** – ability to interact and redirect logistics users on the fly

- **Employee productivity applications** – Workforce Management, Expense Management, Information Managements

- **Supply Chain Management** – ability to notify managers and interact via speech applications

Section 7: Conclusion

As an IT owner charged with delivering on the vision of an Adaptable Business Architecture, the traditional software and platform integration approaches to meet business demands for innovation have fallen short. What is needed is a new, more flexible approach that can continue to deliver on the high-demands of Enterprise businesses. Combining the SOA approach embedded within the software elements of Avaya's Voice Portal and Dialog Designer solutions means that you will be able to meet the challenges of delivering the "future today" in a profitable and sustainable approach.

About Avaya

Avaya enables businesses to achieve superior results by designing, building and managing their communications infrastructure and solutions. For over one million businesses worldwide, including more than 90 percent of the FORTUNE 500®, Avaya embedded solutions help businesses enhance value, improve productivity and create competitive advantage by allowing people to be more productive and create more intelligent processes that satisfy customers.

For businesses large and small, Avaya is a world leader in secure, reliable IP telephony systems, communications applications and full life-cycle services. Driving the convergence of embedded voice and data communications with business applications, Avaya is distinguished by its combination of comprehensive, world-class products and services. Avaya helps customers across the globe leverage existing and new networks to achieve superior business results.

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