



# The Benefits of Open Architecture

## Network-Based IVR Solutions

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### THE ENVIRONMENT OF CUSTOMER INTERACTION

High customer satisfaction ratings and low operating costs are top priorities for companies in nearly every sector of the economy. Profitability and market success depend on solutions that make companies more customer-friendly and let their customers talk to them whenever, wherever, and however they choose. Contact center operations have grown rapidly as businesses increase their focus on ubiquitous support and customer care.

The growing mission-critical role of contact centers is accompanied by an increasingly complex environment that consists of many different computer and communications technologies. An overall customer interaction solution has four core components (see Figure 1):

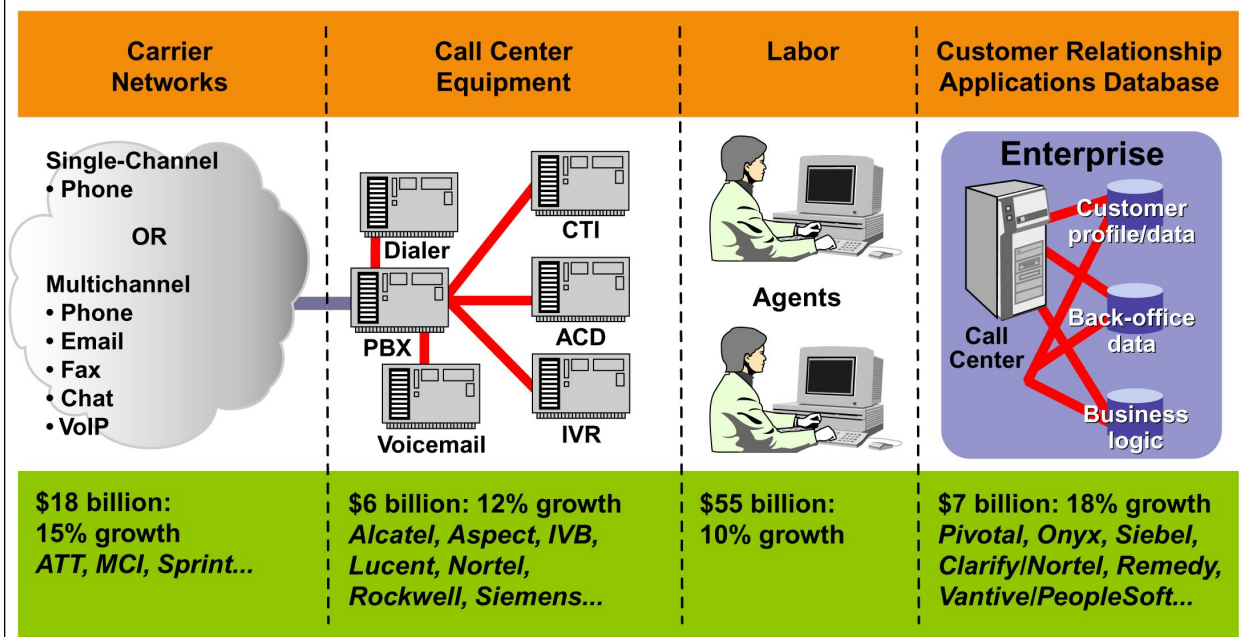
- The communications link, consisting of either a toll-free 800 number or email, fax, chat, callback, collaboration, and so on
- Communications equipment, consisting of PBX, automatic call distributor (ACD), interactive voice response (IVR), voice messaging, and so on
- Agent labor force
- Computers running customer relationship management (CRM) software

IDC research shows that in 2002, U.S. companies will spend nearly \$90 billion to staff and equip contact center operations. The largest single cost item is people. More than 60% of the cost of a contact center is payroll. Contact centers are not only expensive but also growing more and more dependent on technology, as technology allows for more self service, reducing the most expensive aspect of contact centers (people) while providing more immediate service. The challenge is to serve business needs with the technology and not let technology dictate the timing and choice of business initiatives. The technologies associated with each of these components are evolving as vendors upgrade their product offerings, extend their functionality, and improve their price-performance value proposition. However, the business conditions of customer interactions can change on the fly, and businesses are ill served when their initiatives are curtailed by the rigidities of customer interaction technologies.

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**Figure 1: Call Center Market**



Source: IDC, 2002

This white paper highlights the business flexibility benefits of network-based, open-architecture IVR solutions. A network-based IVR (NIVR) is an interactive voice response capability built in to the network so that businesses need not invest in this technology on their own. An open-architecture programming environment, such as Voice Extensible Markup Language (VXML), reduces and streamlines application development costs because application development can be done once and deployed for multiple presentations across both telephony and Web interactions. The past few years have also seen investments in "Webifying" legacy systems and CRM applications. VXML allows customers to leverage these recent investments in Web access and to easily integrate and enable them with an IVR solution.

The benefits arising from these advances reduce costs and put control into the hands of business managers, enabling them to proactively and precisely optimize the customer relationship. How this is done is described below.

### **NIVR BENEFITS**

IVR solutions automate the gathering of customer details — account information, language, and preferences — to direct callers to the services they need, often without agent help. The typical approach is to deploy one or more IVR machines in each call center site. The

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IVR machine works with ACD systems, which allocate calls according to agent availability, skill set, or other parameter. Premises-based IVR systems need to be significantly oversized to handle peak call periods. In many cases, IVRs are grossly underutilized much of the time. Moreover, IVR systems are limited in their ability to deliver services external to that call center.

Companies with multiple call center facilities face a complex and risky IVR application deployment and upgrade process. To present a single, consistent image to all customers, each IVR system must be equipped with identical application programs and scripting menus. This constrains the ability to be market-responsive in real time and to balance and distribute call loads across call centers.

NIVR solutions extend IVR functionality beyond the limitations and locations of premises-based solutions, and they enable centralized, efficient management of resources across multiple sites. This allows companies to increase their asset utilization across multiple call centers and to support frequent or even continuous new application design and deployment. Calls can be sent to the best location the first time (when used in conjunction with an intelligent call routing platform) for maximum customer service and reduced operating costs, agent work schedules can be developed more flexibly across sites, and consolidated information can be collected in real time to allow refinement of call management strategies in real time.

The benefits of NIVR extend to financial savings, improved systems reliability and performance, and greater management controls and options.

The financial benefits include:

- **Minimal capital outlay.** The NIVR approach is billed on a pay-as-you-go basis; it has minimal up-front capital expenses and little risk of stranded investment.
- **Increased utilization of existing investment.** Rather than realize suboptimal results from isolated call centers, NIVR provides the means of optimizing call center operations across multiple call centers, regardless of geographic location. Delivered as a fully managed service, NIVR offers a reliable, cost-effective, and flexible way to optimize customer relationships.
- **Lower equipment obsolescence risk.** Because the power of the solution resides in service providers' networks — rather than in capital equipment investment — businesses can set up their IVR customer service operation with minimal threat of customer premise equipment (CPE) obsolescence. Enterprises want a solution they can rely on for years to come, not for 18 months.
- **Reduced technical staff costs.** The reduction of in-house IVR infrastructure eliminates the expenses tied to building the internal telecom resources, which are required to maintain and support the infrastructure.

- **Reduced labor costs.** Because the NIVR has virtually limitless capacity, plenty of "scale" is engineered into the solution (bandwidth, ports, et al) to handle the call in the network. With IVR capacity available in real time on an as-needed basis, the need to transfer a call to an agent can be eliminated. This capability reduces labor costs.

The performance and reliability benefits include:

- **Carrier-grade reliability.** NIVR is managed by a service provider, such as a global communications company, on behalf of its customers. The communications company owns, operates, and manages the network, its core competency. Carrier-grade reliability is built on around-the-clock monitoring, with multiple levels of automatic back-up, restoration, and overflow capacities to ensure always-on operations, all of which are extended to ensure non-stop operation of the IVR solution.
- **Scalability and system longevity.** A network-based solution can accommodate bursts in call volume without the delays and capital costs of implementing additional premises equipment. While costs always grow with call volume growth, the network-based pricing model means that costs grow incrementally and are directly commensurate with the actual volume increase. Capacity limitations in premises-based hardware mean that growth comes with large, unpredictable expenses and, often, long lead times for equipment availability, deployment, installation, configuration, and programming.
- **Network-based queuing.** Call handling is done within the network, so that calls do not traverse the network prematurely or to an incorrect destination. The calls are held in the network, playing music or various up-selling announcements, until the appropriate agent is available. This eliminates the higher operating costs of holding the call at the call center premise in the ACD. Additionally, by sending the call correctly the first time, businesses are saved the costs of buying additional telephone lines linking call centers together.

Management benefits include:

- **Adaptability to next-generation customer interaction technologies.** The NIVR scales quickly and integrates rapidly with next-generation technologies such as automated speech recognition, text-to-speech processing, voice over IP (VoIP) calls, and so on, as they come to market.
- **Speed.** Services can be deployed quickly and efficiently through eliminating requirements for in-house infrastructure upgrades with each new feature design and deployment cycle.
- **Options.** End-to-end managed environment gives the customer options to choose where and when in-house expertise is justifiable.

- **Control.** Although most NIVR providers demand that they retain control of the IVR application, several providers now allow the customer to have this precious control. Traditionally, NIVR providers required change orders to be placed for any alterations in the IVR application; a 5–10-day process followed to fulfill the request. In today's fast-paced world, businesses need to adapt real time to changes affecting their clients. Carrier-class NIVR providers that allow IVR applications to be controlled by the customer combine the cost-efficient scalability of a network-based solution with the real-time responsiveness of an in-house solution.
- **Flexibility in application deployment.** NIVR supports multiple deployment options for any given application. Applications can be deployed on the network, on in-house call center facilities, or in the facilities of a third-party call center outsourcer. NIVR gives a consistent interface regardless of in-house or outsourced application deployment.
- **Speed in agent deployments.** NIVR facilitates rapid shifts in agent workforce deployments. Based on factors such as workloads, need for personalized services, or introduction of value-added services, agents can be deployed and redeployed in hours rather than days.

For companies that face an increasing distributed and dynamic customer interaction environment and that need to extend IVR features to agents and customers regardless of location or corporate structure, an NIVR solution delivers bottom-line results.

## **NIVR ADVANTAGES FOR SPEECH AUTOMATION DEPLOYMENTS**

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Many businesses today are considering or are moving to ASR technologies to enhance the user experience over traditional touch-tone interactions with IVR systems. This is driven by several inherent advantages of speech recognition. Adding new features and technologies into the customer service infrastructure is costly, time consuming, and requires careful deployment and integration planning with existing equipment. NIVR solutions can easily add features such as speech recognition by eliminating the need for purchase or integration of new equipment.

Speech recognition has several advantages over touch-tone keypads that make it more cost effective, convenient, and easy to use. The touch-tone keypad is not always available, it requires uses of hands and eyes (difficult to do with cell phones and is in violation of safe driving legislation), and it is not as natural as speech.

The introduction of a speech-enabled interface makes it possible to have more of a "flat" menuing structure, which creates a more personalized user experience. Instead of requiring callers to drill down several menus one at a time to get to the information they want, as is typical in a touch-tone system, a speech-enabled application allows callers to say what they want at any point. Because callers can speak naturally to systems equipped with speech recognition

capability, they can obtain information or perform transactions more quickly than by navigating through the menus of a touch-tone system. This customizes the end-user experience, allowing more personalized treatment of callers' requirements, thus leading to improved customer satisfaction.

While personalization is an important goal, the practical impact of deploying automated voice applications today is cost reduction. Reduced operating costs are achieved through increasing the availability and efficiency of customer contact. The average cost of a speech recognition telephone call is between \$0.10 and \$0.35, compared to the average cost of a call handled by a customer service representative, which may range from \$1.95 to \$10.00. With ASR driving an IVR or call center, the need for additional workers is reduced while benefits of 24 x 7 coverage are provided.

A convincing case can be made for the value of speech automation in the customer service infrastructure. However, it takes substantial time and resources to implement voice interface software and integrate it with existing systems. For most call centers, retrofitting existing premises-based solutions for speech automation overlays is not a viable strategy. The transition to speech automation can be done more quickly, cheaply, and less disruptively by working with an NIVR service provider.

Voice interface software is a new and evolving technology. While a number of voice-enabled, network-based solutions exist, they can be differentiated by the extent of their voice recognition capabilities. Such capabilities range from limited vocabulary recognition to the ability to handle natural speech dialogs. Natural speech recognition delivers a more effective solution than those capable of only single word recognition.

#### **ADVANTAGES OF AN OPEN-ARCHITECTURE, NETWORK-BASED ENVIRONMENT**

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As discussed above, NIVR brings several financial and management advantages over traditional, premises-based solutions. However, network-based platforms can be built in different ways. Some of these approaches use proprietary technologies and software developed specifically to support telephony applications — for example, a voice application can be written in C/C++ and run on a dedicated telephony platform. Others use open-architecture standardized software programming language.

An open-architecture standardized programming language allows companies to use the same developers, tools, and resources to create call center telephony applications, Web site ecommerce applications, and other internal corporate applications (sales force automation, enterprise resource planning, supply chain management). The open-architecture XML programming environment facilitates a single development environment for both telephony and Web applications. Unified service realization for both Web and telephone customer service means that application development can be done once and managed for multiple presentations across IVR telephone and Web site access.

VXML provides a standard mechanism for developing voice applications and is closely related to HTML, which provides the basis for the huge volumes of information available on the visual Web. VXML is a high-level programming interface to speech processing/telephony resources for application developers, service providers, and equipment manufacturers. This means that developers no longer need specialized voice technology skills and they can leverage existing Web infrastructure to provide voice access to information on Web sites, databases, and corporate intranets.

The open-source VXML development environment creates several advantages for call centers that play directly into the strengths of NIVR. These include:

- **Lower application development costs.** Traditional applications are captive to the IVR platform. Consequently, all changes must be done by the IVR vendor (or its development partners), which develops the IVR application using its proprietary platform. This results in an expensive, nonportable, nonscalable deployment. A VXML-based application environment allows a cheaper development environment and independence from the cost structure and proprietary environment of the IVR vendor.
- **Dramatic expansion in the number of application developers.** Historically, the number of IVR systems developers has been severely limited. Each IVR vendor has had its own application programming interface (API), which is unique to its proprietary platform. Developers have had to invest in learning how to program proprietary environments that are unique to particular IVR vendors.
- **A relatively graceful extension of the HTML environment.** The incremental investment to obtain VXML development skills is relatively minor. Consequently, the universe of developers has increased from thousands to millions.

The close linkage of VXML and HTML drives a major cost benefit by eliminating the need for redundant parallel telephone and Web systems. With VXML, a company could develop a voice application using many of the same Web development tools with which its programmers are already familiar, publish the application on an existing Web server, and present it via VXML interpretation. Because established Web technologies are used, both Web and telephone presentations share the same Web backend software application and business logic. This will enable telephone users and PC browser users to access contents and services in call centers, Web sites, and company intranets.

VXML and HTML linkages are also especially useful now that many companies have invested significant amounts of time and money to Web-enable their legacy systems and CRM applications. Traditionally, customers would have to reimplement legacy access to IVR solutions. The VXML framework allows easier IVR enablement of these recent Web applications.

## CONCLUSION

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The most successful companies manage technology investment to serve their business needs and improve their operations. In the customer interaction environment, companies need technologies that give them the ability to make decisions on the fly and to leverage expensive application development resources across the company.

The NIVR solution that also gives full application control to the business managers while minimizing the investment required to maintain proprietary, premises-based infrastructure is the ultimate value for today's call center managers.

The open-architecture XML programming environment allows the same developers, tools, and resources to be used for telephony applications, Web site ecommerce applications, and other internal corporate applications (sales force automation, enterprise resource planning, supply chain management).

The financial benefits accruing to the open-architecture, network-based solution include:

- **Minimal capital outlay.** The network-based solution is a pay-as-you-go model that avoids up-front capital costs and complex integrations.
- **Reduced telecommunications and IT staff costs.** The reduction of in-house IVR infrastructure eliminates expenses tied to building internal telecom resources. The write-once/present-many-times open-architecture programming environment eliminates redundant software development teams for voice-based and Web-based customer contact mediums.
- **Reduced agent workforce costs.** NIVR meets on-demand capacity requirements. This reduces the need to transfer a call to an agent.

The management benefits include:

- **Full application control.** The best service providers are those that allow their customers to control the NIVR application. Business managers can make application changes in real time, leading to high customer satisfaction levels and more efficient operations.
- **Adaptability to next-generation contact center technology,** including speech automation, text-to-speech processing, VoIP, and so on
- **Easy integration** of voice-based and Web-based customer interaction to allow a more consistent user experience
- **Reuse of recent investments in Web-enabling access** to legacy and CRM environments

Finally, delivered by a world-class communications carrier, an open-architecture, NIVR solution brings a level of reliability and scalability, which is magnitudes greater than any achievable in a premises-based solution.

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