The Virtual Call Center:
Infrastructure Considerations for
Maximizing Productivity,
Increasing Customer Satisfaction
and Reducing Costs

An Oracle White Paper
Updated March 2007

ORACLE®

The Virtual Call Center:

Infrastructure Considerations for Maximizing Productivity, Increasing Customer Satisfaction, and Reducing Costs

The Virtual Call Center:
Infrastructure Considerations for Maximizing Productivity, Increasing Customer Satisfaction, and Reducing Costs

EXECUTIVE OVERVIEW

In today's global environment, increasing customer satisfaction while maximizing productivity is the key to remaining competitive. Virtual call centers offer an unprecedented opportunity to achieve these objectives with the added benefit of dramatically reducing IT management costs.

As a result, corporate decision-makers are searching for call center solutions that enable them to simultaneously unify their call centers around the world into seamlessly integrated, virtual call centers that transcend traditional geographic boundaries. Companies are also struggling with how to achieve this infrastructure unification without sacrificing the local autonomy that is often key to ensuring that corporate objectives are met.

INTRODUCTION

Most of today's call center technologies were created as single-tenant, bricks-and-mortar-based deployments, and have simply been repackaged as virtual call center service solutions.

Advanced call center technology now enables companies and organizations to unify call center agent groups across locations, deploy remote home-based agents, and use more-efficient routing to share customer data and provide customer solutions from any location. Customer requests are handled more quickly and efficiently by routing requests to the most qualified, available agent, regardless of location.

Unifying call center agent groups across locations—as opposed to simply unifying all call center IT operations—can meet the objective of enhancing workgroup autonomy even when back-end infrastructure is shared across all groups. The key is "multitenant" technology, which enables group-specific software processes, integrations, provisioning, and administration to be fully segmented, even though they run on a common, corporate-wide back-end infrastructure. This delivers efficiencies of a shared infrastructure without sacrificing control for local managers. Additionally, tools developed for some multitenant solutions can deliver greater autonomy, flexibility, and adaptability to changing needs than do the tools that are available when every site runs its own infrastructure.

Deploying home-based agents also offers compelling benefits. It can reduce overhead and provide recruiting and retention benefits while enabling call centers to gain access to better-qualified and less-expensive agents from less-populated regions. Remote agent capabilities can also eliminate overtime expenses, leverage time zone efficiencies, provide backup resources, and unify multiple locations.

While deploying a unified, back-end infrastructure solution can deliver unprecedented benefits by enabling the unification of agent groups across locations and the deployment of home-based agents, it is critically important to note that not all call center technologies are created equal. Most of today's virtual call center technologies were originally created for single-tenant, bricks-and-mortar-based deployments that have simply been repackaged as virtual call center solutions. As a result, they lack the necessary technology prerequisites for achieving corporate objectives in the areas of scalability, reliability, network security, quality assurance, local control, and a variety of other key concerns.

Oracle Contact Center Anywhere can help you achieve your call center objectives. A multichannel, multitenant, internet protocol (IP)-based communications solution, Oracle Contact Center Anywhere has been deployed across a diverse spectrum of Fortune-class companies, federal and state agencies, outsourcers, and small- and medium-sized businesses. Tier-one phone companies around the world also use Oracle Contact Center Anywhere to deliver hosted call center services to their business customers.

Oracle Contact Center Anywhere's skills-based routing engine delivers any type of media transaction (phone, fax, or internet) to those agents best qualified to help—regardless of where they are located or whether they are connected over IP or the public-switched telephone network (PSTN).

With Oracle Contact Center Anywhere, your entire communications infrastructure can be centralized in a traditional service provider model (with real-time disaster recovery to a standby data center), or the infrastructure components can be distributed modularly and mirrored in real time across different locations while working together as one across the network. When infrastructure is distributed across locations, each location can become an entry or exit point between the network and the PSTN.

In such a geographically distributed virtual contact center, any form of communication can be routed to any agent or supervisor at any site over IP or circuit-switched connections by using synchronized screen data and interaction controls over the Web. Oracle Contact Center Anywhere's built-in multimedia overlay networking capabilities can unify an unlimited number of geographically distributed call centers—including those that use legacy telephone systems—into one seamlessly integrated contact center.
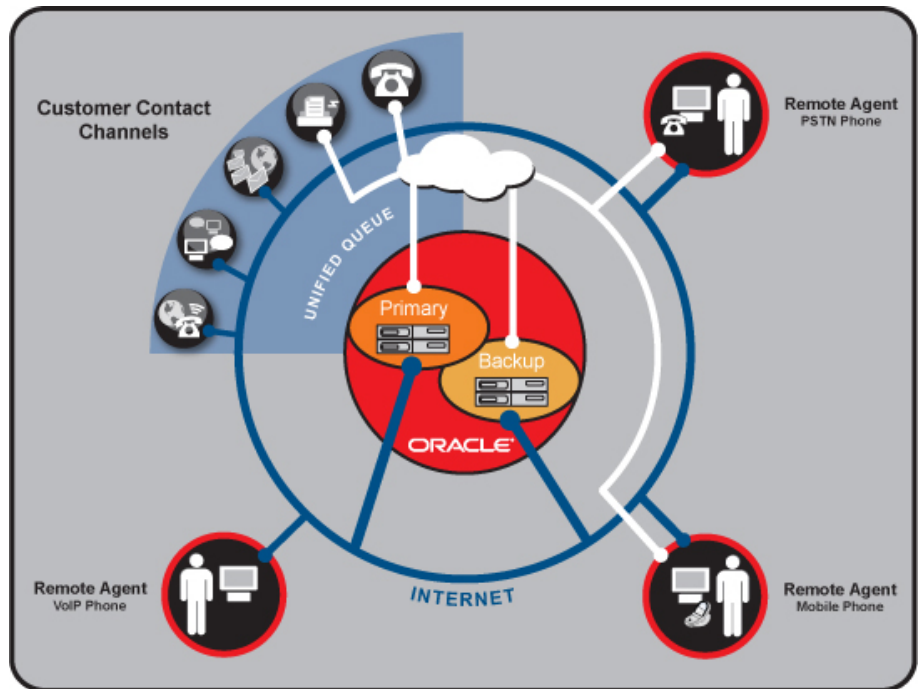
Figure 1: Virtual contact center topologies provide the flexibility to extend contact center infrastructure to reach agents in any location with an internet connection. Calls can be delivered over the PSTN, or to an agent's mobile or VoIP phone.

CREATING A UNIFIED CALL CENTER

A core attribute of IP contact center technology is that it is designed for native voice over IP (VoIP), which converts live voice communication into data packets and transmits these packets on the same high-bandwidth data networks that carry multimedia Web communications, customer relationship management (CRM) information, and other data. IP contact center technology, such as Oracle Contact Center Anywhere, enables communications to be routed from anywhere to anywhere—to agents who can work from any location on the global network.

In many virtual call center models, disparate systems are linked, but don't actually act as a single system. As a result, much of the business value that a single system provides is lost. With a solution specifically designed to support virtual call centers, companies can unify an unlimited number of call centers around the world into a seamlessly integrated, virtual contact center that spans sites or groups within a subset of sites. With these solutions, companies can transcend the geographic boundaries of agent groups and route calls to the best-qualified agents, no matter where they are located. Calls in queue are held in the network until an available agent with appropriate skills is identified, resulting in more-efficient, site-agnostic, skills-based routing.

Oracle Contact Center Anywhere enables companies to transcend the geographic boundaries of agent groups and route calls to the best-qualified agents, no matter where they are located.

Consolidating regional call centers into one seamlessly integrated, geographically distributed enterprise offers compelling efficiencies as well as cost savings. It empowers companies to fully leverage a global pool of agents by connecting individual customers with the agent best-equipped to manage their transaction in the shortest amount of time, regardless of where that agent is physically located. More-effective routing results in dramatic productivity gains as well as increased customer satisfaction.
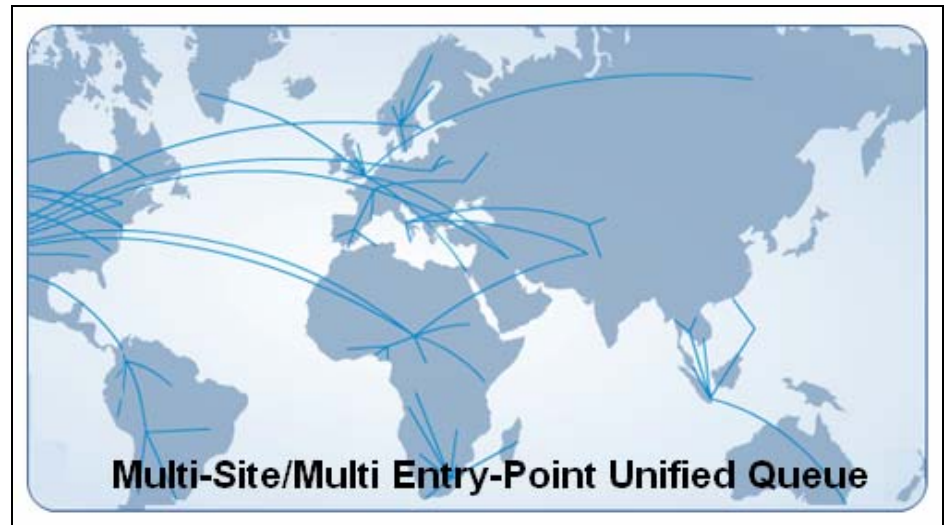

Multi-Site/Multi Entry-Point Unified Queue

Figure 2: Oracle Contact Center Anywhere provides a unified queue with multiple entry points across multiple sites.

The benefits are also compelling from a cost-reduction perspective. There are tremendous inefficiencies associated with deploying and maintaining diverse contact center systems at every location. These inefficiencies include

- Duplication of systems and licenses at each site

- Shortages of software licenses at some locations while the needed resources sit idle at other locations

- Duplication of staff required to maintain each set of systems at every location

Oracle's fully unified, multitenant IP contact center technology eliminates these inefficiencies by empowering companies to share their technology resources across a global network, dramatically reducing technology costs across all locations. It also enables companies to unify all of their communications channels onto a single global network while reducing transport costs.

With Oracle Contact Center Anywhere, you don't have to choose between deploying a traditional or virtual call center: both approaches can be accommodated simultaneously in a seamlessly integrated environment. Virtual call center capabilities are extremely valuable (even for traditional, single-site bricks-and-mortar centers) for handling call overflow, diverting calls to branch locations, enabling agents to work remotely in case of bad weather or other circumstances

that prevent them from working onsite, adding backup agents, or simply taking advantage of time zone efficiencies and reducing overtime expenses.

THE BENEFITS OF DEPLOYING HOME-BASED AGENTS

At a time when outsourcing to offshore agents has led to a variety of customer satisfaction challenges, deploying low-cost, home-based agents inside the country (also known as *insourcing*) has become more attractive. Deploying home-based agents with remote supervision can dramatically reduce facility-related overhead, provide recruiting and retention benefits, and give contact centers access to more-qualified, less-expensive agents from less-populated regions. Using home-based agents also gives companies increased access to specialized skills (such as multilingual agents) and allows them to seamlessly outsource certain kinds of calls to other companies. Remote agent capabilities can also reduce or eliminate the traditional overtime expenses associated with around-the-clock service provided from a single time zone. Regional air quality district mandates, such as some in California, may also provide additional financial incentives for remote agent deployment.

THE BENEFITS OF REMOTE SUPERVISION

A comprehensive quality assurance strategy—including both call monitoring and quality recording—is crucial for ensuring that quality is maintained across any pool of agents.

Deploying remote supervisors offers special value to brick and mortar call centers. Many traditional call centers that use onsite supervisors to monitor the effectiveness of their customer service agents find that their internal performance ratings are out of sync with customer evaluations. Supervisors sometimes find it hard to be objective when they evaluate a person they know and see every day—perhaps someone they hired or trained. In such cases, they may even feel that a low rating reflects poorly on their coaching skills. Supervisors may also fail to understand the customer's perspective, and may even see the customer's issue as a fact of life rather than a problem requiring resolution.

Companies that outsource their agent monitoring, on the other hand, report that outsourced ratings correlate highly with customer experiences. But even with the superior service ratings from outsourcing, many companies are not comfortable with outsourcing their quality control efforts. A virtual contact center environment such as Oracle Contact Center Anywhere eliminates this problem.

EXTENDING CONTACT CENTER CAPABILITIES TO REMOTE AGENTS

To effectively deploy a distributed workforce, organizations must offer a seamless extension of all contact center capabilities to home-based agents, giving them the same synchronized screen pops, visual call control, Web interaction controls, customer interaction histories, and CRM screens as agents who are in the physical call center. There are common requirements that all virtual contact centers must

meet to succeed. Oracle Contact Center Anywhere supports these requirements with the following features:

A unified Web-based interface. The best way to extend call center capabilities to remote agents is to make them accessible through the Web. For example, using Oracle Contact Center Anywhere, remote agents can manage every communication (including voice calls, e-mails, voice mail, chat sessions, faxes, and Web callbacks) using a Web-based interface. Calls are answered, sent to voice mail, transferred to other agents or groups (accompanied by all relevant data about the call), and totally controlled as if the agents were located in the same building.

With Oracle Contact Center Anywhere, any agent can handle any type of media transaction from any computer with a standard Web interface, without worrying about software downloads, PC configuration, or installation procedures. In addition, the agent client software can be distributed and updated instantly, enabling contact centers that deploy remote agents to go live with little or no advance technology preparation. This is a particularly important consideration for companies concerned with rapid growth or disaster recovery.

Another obstacle to remote agent deployment was the confusing mess of dialog boxes that resulted from the integration of many different systems, and the associated need for extensive onsite training. Oracle Contact Center Anywhere addresses this problem by providing agents with a single, integrated, intuitive interface that encompasses communication, quality assurance, and real-time reporting.

Support for both circuit- and packet-switched calls. An effective Web-based solution must support both circuit- and packet-switched telephone calls and Web communications. Oracle Contact Center Anywhere fulfills this requirement, acting as a complete, multimedia interaction control dashboard that simultaneously provides

- Support for VoIP softphone communications

- Support for analog agent extensions in a physical contact center

- A software-based private branch exchange (PBX) extender that synchronizes call control and data flow over the internet; forwards calls to home-based agents over the public switched telephone network (PSTN) or the IP network (whichever has been defined for a particular agent); and synchronizes PSTN calls with screen pops and call control over the internet, ensuring universal agent capabilities across locations. The ability to synchronize PSTN calls with screen controls over the internet is important for contact centers that want to deploy home-based agents but have insufficient bandwidth to support toll-quality VoIP communication. All configurations are supported in a blended environment that supports both onsite and remote agents simultaneously. Packet-switched internet-based calls can even be conferenced with traditional PSTN calls.

- Completely unified multichannel interaction controls that encompass voice fax and web communications

A fully blended seat. To maximize efficiency, an effective solution must allow remote agents to manage all forms of communication from a fully blended seat, rather than being dedicated to specific communications media. Agents dedicated to one media channel no longer have to sit idle while other media channels experience agent shortages that frustrate customers. Oracle Contact Center Anywhere encompasses all communications channels (phone, fax, voice mail, e-mail, chat, Web collaboration, and Web callbacks) from a single user interface and delivers those communications with world-class automatic call distribution (ACD) discipline that includes weighted skills-based routing, a unified queue, and consistent customer priority business rules across all media channels. It also replaces or integrates with legacy PBXs or IP-PBXs and delivers interactive voice response (IVR) support, screen pops, e-mail management, and comprehensive quality assurance. The system is also flexible enough to allow agents to be assigned to specific media channels when appropriate.

Oracle Contact Center Anywhere's unified interface allows agents to go beyond simple text chatting, empowering an increased level of interaction via Web collaboration. Agents can direct customers to different Web pages or co-browse Web pages in a Web collaboration session to help fill out forms or offer explanations. Agents can also transfer chat sessions to other agents or workgroups, with all chat session text transferred along with the customer. Since agents may be working remotely with more limited access to help, the solution provides content analysis and suggested responses to customer issues, helping to reduce typing times and ensure consistent responses.

Oracle Contact Center Anywhere also provides Web-callback capabilities, which allow customers or prospects to use the company's Web site to request a call from an agent immediately or at a specified time in the future (for example, just prior to the expiration of a vehicle lease). The system is sensitive to every customer's time zone, ensuring that calls will be returned at the correct time. It also applies skills-based routing technology to call a qualified agent at the specified time. After instructing the agent to hold for a Web-callback connection, the system makes an outbound call to the customer who made the callback request and connects him or her to the agent, making it appear as though an agent has called the customer. The remote agent is equipped with the same information he or she would have in the physical contact center, including a context-sensitive script and any customer data submitted when the callback request was made.

A unified queue. An effective solution must queue, route, and distribute chat sessions, Web-callback calls, e-mails, voice mails, and faxes to agents in a unified queue, using the same skills-based routing discipline and customer priority routing rules used to handle telephone calls.

A real-time "readerboard." Oracle Contact Center Anywhere's effective agent interface provides a complete display of all multimedia queues for an agent's workgroup. Agents can quickly see the number of agents logged on, which agents are available, and how many pending chats, phone calls, e-mails, voice mails, and faxes are in queue. This stream of information is updated in real time and appears in a dedicated section of the interface, so that it's always accessible but doesn't get in the way of customer data or call and media handling.

Localization of time zones. If companies operate in multiple time zones and multiple countries, segmenting real-time data, displays, and reports can be problematic with traditional solutions originally designed for single-site deployments. Oracle Contact Center Anywhere is designed for geographically distributed organizations. Agents, supervisors, and administrators in multiple time zones and countries can log on and use the unified system while seeing information in their own time zone, language, and date format. Because reports and real-time data are presented in the context most familiar to each remote user, geographically distributed agents, supervisors, and administrators can more-effectively leverage a shared IP contact center infrastructure.

Shared customer data. A customer should be asked for his or her name only once during a support call. But when a communications infrastructure is built with products purchased from multiple vendors, customer data often becomes trapped in multiple databases as the customer moves between IVR, ACD, call-transfer, and Web-based technologies. Callers are then forced to repeat themselves to each agent, resulting in a negative customer experience. The problem often gets worse as Web technologies are integrated into the contact center, because customers can't understand why the details of their Web transactions are not available to the call center's customer service representatives. How long customers spend in queue, how many times they've called about the same issue, and what institutional promises were broken are all important pieces of data that should drive agent behaviors and sensitivities.

To increase both efficiency and customer satisfaction, call centers must be able to share data across the organization. Oracle Contact Center Anywhere meets this challenge with an integration-by-design approach, which allows required information to move along with customers as they are transferred through the contact center's array of technologies.

Another key element of this approach is an integrated, cross-media customer interaction history that's displayed automatically with incoming communications. This history is searchable by client name or ID and includes all recorded calls (such as consents to transactions), copies of all incoming and outgoing e-mails (including attachments), faxes sent from or to the customer, and chat transcripts. With this information, agents can address customer problems effectively with sensitivity to the customer's issues and frustrations.

Oracle Contact Center Anywhere is sensitive to the customer's time zone, so Web-callback requests are answered at the correct time.

Unified messaging technology. Oracle Contact Center Anywhere provides a unified messaging system that combines all message types (e-mail, voice mail, and fax) into a single network that agents can access from anywhere in the world using any e-mail client.

With traditional messaging technologies, voice messages are managed from touch-tone phones, e-mail is managed by computer, and fax messages require senders and recipients to leave their desks and wait by the fax machine. Even companies with more sophisticated fax technologies, such as local area network (LAN)-based fax servers, usually require employees to manage those faxes from yet another client interface. Because each type of message has to be handled differently, agents spend more time managing messages than they do helping customers. This problem becomes even more complex with remote agents because faxes must often be handled and forwarded to the remote worker.

Unified messaging, on the other hand, provides universal access and control of all message types from a single user interface. It increases agent productivity by making message management easier and more efficient.

Skills-based message routing. Most standalone messaging systems are ill-equipped to route messages based on agent skills—particularly if the goal is to manage a unified queue with blended agents without deploying dedicated seats for e-mail or other communications media.

With Oracle Contact Center Anywhere, agents receive ACD workgroup e-mails one at a time. Copies of all incoming and outgoing workgroup e-mails are stored in the integrated interaction history for each individual client. E-mail routed to agents can include suggested template responses based on an automated analysis of the e-mail's content. Alarms can alert supervisors when e-mails are not responded to in a timely manner, or the e-mails can be automatically redistributed to another agent after a preset time interval.

With Oracle Contact Center Anywhere, call centers can maximize productivity by sharing human resources instead of segmenting them according to media type. The result is a much more efficient use of agent time.

Automated triage system. With Oracle Contact Center Anywhere, organizations with limited resources and budgets can triage incoming e-mails using an automated system that determines whether the inquiry should be handled automatically with a standard response template, or by a human agent armed with suggested responses that can be modified as needed. E-mails that require human intervention are routed to local or remote agents using the same skills-based routing discipline that is applied to all other mediums of interaction.

QUALITY ASSURANCE FOR GEOGRAPHICALLY DISTRIBUTED AGENTS

Supervisors must have comprehensive monitoring, coaching, and quality control capabilities to manage agents in a geographically distributed environment. With

Oracle Contact Center Anywhere, remote supervisors can view real-time performance statistics and agent status, listen in on any call regardless of the agent's physical location, and send broadcast messages to all agents to advise them of changing conditions. They can also coach an agent by chatting, sending agent-specific messages, or "whisper coaching" (where the agent can hear the supervisor but the caller cannot). Supervisors can also disconnect agents and take over calls as needed, as well as log out or lock out agents.

Oracle Contact Center Anywhere also enables supervisors to customize alarms for each media type to flag unusual interactions (such as lengthy calls) and get access to real-time reports to better manage service levels.
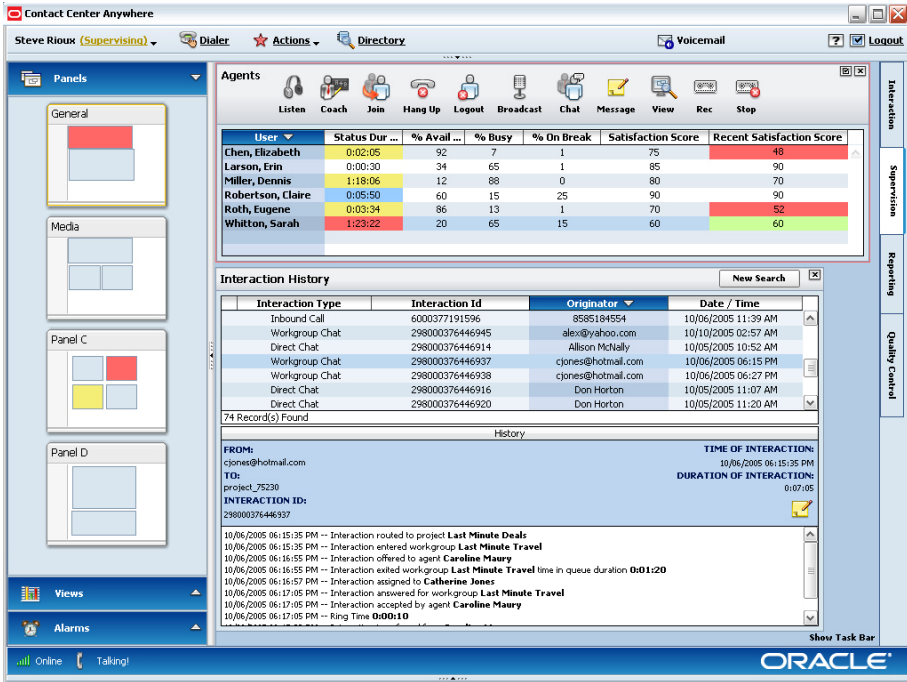

Figure 3: Oracle Contact Center Anywhere provides supervisors with actionable insight into current contact center activity with a multimedia dashboard view and color-coded alarms.

Call recording is another important tool in the Oracle Contact Center Anywhere quality assurance arsenal. Supervisors can schedule regular recordings or can initiate call recordings on the fly. A percentage of calls can be recorded on a call flow or agent-by-agent basis, enabling a higher percentage of calls to be recorded for newer agents than for agents with strong track records. This centralized recording feature eliminates the need for additional systems at individual sites. Recordings are compressed and stored on a file server, dramatically decreasing storage requirements and providing on-demand streaming of recordings to supervisors via the Web.

KEY INFRASTRUCTURE CONSIDERATIONS FOR DEPLOYING A VIRTUAL CALL CENTER

Although unifying diverse locations on a common infrastructure has dramatic benefits, market adoption—though strong and accelerating—is not universal across all multisite organizations. Aversion to risk is a major reason for this. While many organizations, both large and small, have successfully deployed IP contact center technology and achieved tremendous benefits, other organizations have found themselves caught in a quagmire of quality-of-service issues, system limitations, and finger-pointing.

When deploying a virtual call center, the difference between success and failure is whether or not a company understands the core obstacles that pose the greatest risk to the project—and then selects a solution capable of eliminating those obstacles. This section reviews these obstacles and explains how Oracle Contact Center Anywhere addresses them.

Scalability

The first and most obvious concern for larger organizations is whether a proposed infrastructure solution can scale to service all corporate sites. How that scalability is achieved is also an issue. Some solutions will enable you to centralize all IT resources in a single data center for use across the enterprise. Fewer are those that will enable you to share resources distributed across different sites as a unified solution. This latter approach is preferred for system resiliency and real-time disaster recovery. But either way, achieving maximum economies of scale requires a solution that enables all sites to share common hardware, software licenses, and phone lines. The problem for owners of older systems is that traditional enterprise solutions can't scale sufficiently to support large-scale, multisite operations. Newer, network-based technologies, however, can easily scale to meet this critical objective.

Unfortunately, while many vendors claim to be network-based, what they generally mean is that their technology is distributed across multiple servers that perform specific tasks on a network. True network-based software architectures—such as Oracle Contact Center Anywhere—eliminate traditional scalability limitations by spreading mission-specific system processes across servers. The network essentially becomes one large computer, with system processes communicating with each other over the network. This redefines scalability as a flexible barrier limited only by the physical processing resources of the network. Need to scale? Plug in another server. This is important because many companies need the ability to increase capacity simply by adding more nodes and resources to the network.

Reliability

Companies are often understandably reluctant to put all their eggs in one basket. After all, if a company is going to share technology resources across locations, it must be sure that the shared system won't go down—and bring global operations to a grinding halt.

Oracle Contact Center Anywhere addresses this concern by allowing system processes to run in parallel on multiple servers at the same time, mirroring all live software processes in the network to provide uninterrupted service even if servers or data centers fail. In this distributed software architecture, executables and processes can reside anywhere on the LAN, wide area network (WAN), or internet, so the software can run on one server or many servers, in one place or many places. And, because these software processes can talk to one another using the network-based TCP/IP message passing protocol, live software process mirroring can even take place across multiple data centers, providing carrier-grade disaster recovery.

Loss of Local Autonomy

Sharing technology across an enterprise requires all locations to share common hardware, software licenses, and phone lines. This fact tends to alarm local managers, who are naturally afraid that local concerns will not be effectively addressed on a shared platform. As a result, local managers are often reluctant to support technology centralization initiatives that will place their sites' mission-critical systems in the hands of a remote IT department that isn't accountable within their own local reporting structure.

The organization can, of course, attempt to bulldoze over the objections of local managers and implement the shared infrastructure. But local productivity may be compromised by the competing allegiances and obligations of a shared IT staff—and when problems arise, the local managers will be ready to point the finger at the remote IT department.

The good news: Oracle Contact Center Anywhere provides local managers with greater control over their virtual infrastructure than they had with their old premise-based systems. This is because Oracle Contact Center Anywhere offers a unique approach—even among vendors of multitenant solutions—which empowers companies to share contact center infrastructure across locations while maintaining local autonomy. (Confusingly, *multitenant* is often also used to describe technology-centralization solutions that *don't* provide any mechanism for local autonomy. In the case of Oracle Contact Center Anywhere, however, multitenant technology enables and empowers decentralized control over shared technology resources.)

Lessons Learned from Commercial Service Providers

Today, a diverse group of commercial service providers rely on Oracle Contact Center Anywhere to deliver hosted call center services to their business customers. Since companies planning to migrate to shared infrastructures will inevitably have to address the same concerns that commercial service providers have already overcome, an understanding of those challenges and solutions can provide valuable insight.

Multitenancy is a concept that grew out of the experiences of large commercial service providers who sought to extend their brands into hosted or virtual communications infrastructure services. Their mission was (and still is) to eliminate

the need for companies to deploy their own systems and IT staff at any corporate location.

To achieve this mission, some service providers initially focused on hosting dedicated systems on behalf of subscriber clients, but this managed-services approach delivered only marginal end-user value in terms of cost reduction. The inherent inefficiency of the managed-services approach also made early service provider offerings too expensive to capture any significant market share. It soon became clear that the missing ingredient was economies of scale—that is, achieving savings by sharing infrastructure across a large base of business subscribers—and passing on these savings to the corporate consumer in the form of lower prices. It also became clear that in the next-generation offering, all subscriber companies would have to be serviced from a common platform.

The first deployments of multitenant technology were rushed to market and relied on retro-fitted solutions based on older premise-based technologies. As a result, they relied on a single set of software executables to govern all "tenants;" meaning that the business logic of all "tenants" (individual business subscribers) had to be intermingled in common software executables. This approach accomplished the objective of enabling tenant-locations to share common licenses, hardware, and phone lines—but it also required local autonomy to be entirely sacrificed.

At that time, *multitenancy* referred only to data segmentation: that is, only the proprietary data of each tenant was segmented and kept separate. This approach enabled tenant locations to share common licenses, hardware, and phone lines, but it also sacrificed the ability to provide autonomy at the local level over technology-driven business processes and workflow.

The retrofitted approach had many other challenges. For example, since all tenant companies shared common back-end software processes, provisioning new campaigns or modifying old ones for any individual tenant might introduce new bugs for all tenants. Carriers called this the "new bugs for old tenants" problem, and it effectively prevented service providers from scaling their businesses. Multitenancy couldn't deliver economies of scale if service providers were afraid of adding new tenants, and customer satisfaction suffered because providers feared the stability-related consequences of responding to the requests of their legacy subscriber tenants.

The new multitenant paradigm gave each tenant the ability to run separate software processes while sharing common hardware, licenses, and phone lines.

Soon, a new service provider technology paradigm emerged—the Oracle Contact Center Anywhere approach— to address the prior limitations and empower the delivery of hosted contact center services at scale. This new paradigm gave each tenant the ability to run separate software processes while sharing common hardware, licenses, and phone lines, so tenants could enjoy autonomous control over their own technology-driven business processes without jeopardizing the stability of the shared infrastructure or sacrificing economies of scale. Segmented software processes also enabled service providers to design custom integrations of

third-party products for individual tenants without causing code bloat within the shared infrastructure.

The new paradigm also introduced the concept of integration by design, which allowed the diverse contact center technologies that once had to be cobbled together by integrators to be easily provisioned and modified on demand from browser menus. Of course, Web services were required to empower both nonstandard deployments and local integrations with third-party client software.

Today, numerous carriers and service providers around the world deliver hosted contact center services to their customers at scale, empowering tenant-managers to provision their own multimedia campaigns on demand and fix their own strained business processes in real time at granular levels.

Companies considering deploying their own shared infrastructure solution should closely examine the architectural underpinnings of their proposed solutions from the historical perspective of the commercial service provider experience. Hosted services technology, originally developed for commercial hosting, has become the acknowledged solution for successful corporate hosting of IP contact center technology across geographically dispersed sites. Oracle offers this same call center technology for in-house corporate deployments.

Network Security

All companies face the challenge of achieving air-tight network security without sacrificing important capabilities and benefits. For companies that want to share technology across locations, security concerns can typically be broken down into three core groups:

- Security issues between the different business units that must share common infrastructure

- Security issues *within* each of the business units

- Security issues concerning network intruders

To determine whether a solution can deliver the required level of network security, companies need to ask their proposed vendors a number of architectural questions.

Will Business Units Have to Share a Common Domain?

Surprisingly, many multitenant IP contact center solutions require all business units to share a common domain. This is a showstopper for most commercial service providers, and it is often a serious issue for companies with autonomous business units and sites that are concerned with maintaining their privacy.

Companies considering deploying their own shared infrastructure solution should closely examine the architectural underpinnings of their proposed solutions from the historical perspective of the commercial service provider experience.

Does the Proposed Solution Support Proxies?

Any solution under consideration by a multisite organization should also support proxies since many sites rely on proxies as part of their overall approach to network security. Proxy servers act as a middleman between internal networks and the public internet. They improve internet performance for enterprise users by caching often-accessed Web pages in memory, and they can also filter outbound universal resource locator (URL) requests to restrict employee access to certain Web sites.

Most relevant from a security perspective, a proxy server can be configured as an anonymous proxy to hide the identities (IP addresses) of corporate users from the Web sites they visit. If a contact center solution uses the Web to communicate but doesn't offer proxy configurations, it may have to forego corporate security and filtering policies. A better approach is to select a solution such as Oracle Contact Center Anywhere, which can address the differing needs of all corporate business units that the solution will have to serve, including support for proxies.

How Does the User Interface Communicate with Back-End Systems?

To ensure network security—especially when remote agents are involved—many contact centers have relied on virtual private networks (VPNs) to share resources across locations over the public internet. But the large number of VPN connections required to support a distributed workforce at scale, as well as the security concerns inherent in providing access to a large agent workforce, have prevented many contact centers from sharing resources over the internet via VPNs.

Oracle Contact Center Anywhere solves this problem by eliminating the need for VPN controls. Oracle Contact Center Anywhere is secure by design. A key attribute of security by design is that it doesn't rely on unencrypted TCP/IP communications between agent interfaces and back-end systems—so VPNs are unnecessary.

Generally, Web-based applications send communications over two common firewall ports: port 80 for hypertext transfer protocol (HTTP) communications, and port 443 for secure hypertext transfer protocol (HTTPS) communications. Most Web site communications use HTTP, but Web sites can also establish secure, 128-bit encrypted HTTPS transmissions. Unfortunately, many contact center Web interfaces use unencrypted connections instead of encrypted transmissions, which are much more secure and less open to attack. That's why they need VPNs to function on the public internet. Another benefit of HTTPS encryption is that you can also transmit extensible markup language (XML) over HTTPS (as in Web services architectures) so individual applications, clients, and servers can communicate securely.

You can also increase security by sandwiching hosted Web server applications between two firewalls in a secure demilitarized zone, or DMZ. Larger enterprises and telephone companies often put application servers behind the DMZ and use the Web server in the DMZ to convert HTTPS communications from the internet (where the agents are) into TCP/IP binary messages. This allows agents to use

common browsers and Web-based clients without requiring the manipulation of firewalls, since port 80 and port 443 don't require special programming and permissions from IT security experts.

Does the Solution Require Every Business Unit's Customer Data to Be Aggregated in a Common Database?

Virtual contact center solutions that share technology resources across locations will typically require access to each participating business unit's customer data in order to prioritize their customers in queue. But such vital customer data is generally regarded as a proprietary resource, and most autonomous business units have serious objections to aggregating their data with that of other business units in a common database. Some business units may even have security policies that prevent them from allowing customer data to be housed outside their own data center.

Oracle Contact Center Anywhere solves this problem by using multihost data polling, which enables the solution to segment call routing and agent data in a hosted, partitioned database while securely leveraging each business unit's customer priority rankings directly from that business unit through their own firewalls. In other words, the data that drives customer priority routing rules need not be aggregated in a common database.

Multihost data polling operates by using a translation applet that lives behind each business unit's firewall. The translation applet responds to incoming transactions by polling the local database (or databases) of the business unit for the required customer priority data and then securely transmitting it over the public internet using HTTPS encryption. That same applet also acts as a proxy to send relevant data to local agent screens—without running them through an external network. In this fashion, secure data never needs to leave the enterprise.

With multihost data polling, Oracle Contact Center Anywhere empowers business units to operate in a secure fashion behind their own firewalls, but still enjoy the cost savings and efficiencies of shared infrastructure. Each business unit has absolute control over its own applet's source code and what data the shared solution can poll from its database. For example, the shared system only needs to know *who* priority-one callers are, and not *why* (i.e., because of job title, amount of money spent last year, family relation, or any other confidential information). The translation applet can therefore deliver dynamically updated customer priority data to the multitenant system without providing access to the data inputs which define it. The context of the data remains confidential and the objection to running a shared solution can be overcome. In addition, multihost data polling allows agents working remotely to securely gain access to data from back-end databases through firewalls over the public internet—without VPNs—by leveraging HTTPS encryption. The result can be a dramatic reduction in the overhead ordinarily associated with managing VPN access for a large agent workforce with significant weekly turnover.

Can the Shared Solution Store Each Business Unit's Records Behind Its Own Firewalls?

Many business units don't want their transaction data (such as call recordings, faxes, e-mails, and chat transcripts) to be aggregated with the records of other business units and stored outside their own data centers. Oracle Contact Center Anywhere solves this problem by using secure multihost data streaming to allow customer data to be streamed through firewalls into each business unit's data center instead of (or in addition to) being stored at a centralized location. The method works exactly like secure multihost data polling, only in reverse: HTTPS content is streamed through the firewall and then transformed by the translation applet into its original native format or formats.

CONCLUSION

As with any technology or set of technologies, informed customers can effectively address potential pitfalls ahead of time to ensure that their IP call center technology will meet both their current and long-term needs.

Multisite organizations and companies that want to deploy remote agents can leverage IP contact center technology to maximize productivity and customer satisfaction through more efficient routing. In addition, IP contact center technology can dramatically reduce technology operating costs.

That said, not all technology platforms are created equal. In fact, nearly all contact center communications solutions were created for single-tenant, premise-based deployments and have only been superficially repackaged as virtual contact center solutions. As a result, they often lack the basic prerequisites for virtual contact center success at scale.

In addition, while all multitenant solutions enable different business units to share common technology resources, not all solutions deliver comprehensive control to local managers. Providing shared access to software-based communications technology at scale poses unique challenges—and doing so in a timely fashion even more so. Maintaining integration with CRM and other solution components can also be difficult and expensive when solutions are not aggregated by design.

As with any technology or set of technologies, informed customers can effectively address potential pitfalls ahead of time to ensure that their IP call center technology will meet both their current and long-term needs. Oracle Contact Center Anywhere is a built-for-purpose solution that delivers the capabilities and IT prerequisites your company will need to succeed on any scale. Whether you require an in-house deployment, a hosted solution, or a hybrid of both, we're confident we have the right solution for your virtual call center needs.

ORACLE

The Virtual Call Center: Infrastructure Considerations for Maximizing Productivity, Increasing Customer Satisfaction, and Reducing Costs
Updated March 2007
Author: Eli Borodow

Promero, Inc.
1100 Park Central Blvd. South, Ste. 2500 Pompano, FL 33064

Inquiries:
Phone: 888.204.0822
Fax: 954.935.8842