KRAMER & ASSOCIATES NEWSLETTER

Leaders in Call Center Consulting

Using Technology to Support eBusiness Contact Centers

Introduction

Recent advances in technology have dramatically changed the dynamics of customer contact for call centers. To say that there has been explosive growth in technology over the last several years is an understatement. The primary driver for this trend is the Internet, which has spawned a whole new service model for *"anytime/anywhere"* access– this means 24x7 access by any and every possible channel. The pace of this technology change is almost overwhelming to those of us in the call center field.

To make matters even more confusing, the term *"contact center"* has been thrown into the mix. In the true sense of the word, a contact center provides customers with multichannel access. These channels include the traditional channels of telephone, integrated fax, IVR, postal mail, and face-to-face interactions, but also all of the new eBusiness channels such as email and chat. In the not-too-distant future, we can expect Voice over Internet Protocol (VoIP) to be part of this mix. VoIP is simply the capability of engaging in a voice conversation over the Internet through a computer equipped with a microphone and speakers. The advantage is to provide real-time support to Web site visitors on a single phone line. Estimates indicate that widespread use of this technology is anywhere from 2 to 5 years away. However, it **is** coming.
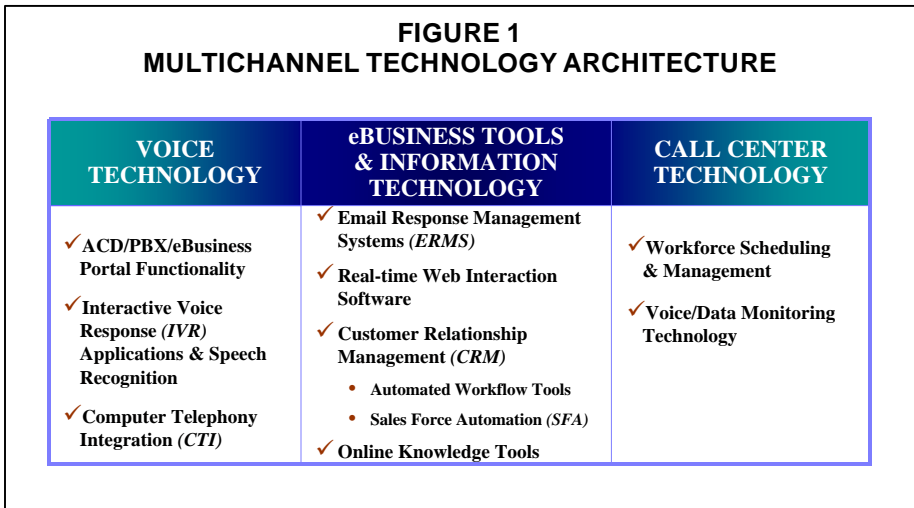
The purpose of this article is to explore how the technology and applications on the market today **and** on the horizon will affect the operation of call centers and their conversion to customer contact centers as the new service model for *"anytime/ anywhere"* access is adopted.

Three Major Categories of Technology

Although the lines of distinction are blurring very quickly, many find it useful to categorize the technology used in contact centers into three major areas:

- Voice Technology
- eBusiness Tools & Information Technology
- Call Center Technology

An overview of the technologies and applications addressed in each of these three categories is shown below in Figure 1: Multichannel Technology Architecture.

FIGURE 1
MULTICHANNEL TECHNOLOGY ARCHITECTURE

VOICE TECHNOLOGY	eBUSINESS TOOLS & INFORMATION TECHNOLOGY	CALL CENTER TECHNOLOGY

✓ **ACD/PBX/eBusiness Portal Functionality**
 	
✓ **Interactive Voice Response** *(IVR)* **Applications & Speech Recognition**
 	
✓ **Computer Telephony Integration** *(CTI)*
	✓ **Email Response Management Systems** *(ERMS)*
	
	✓ **Real-time Web Interaction Software**
	
	✓ **Customer Relationship Management** *(CRM)*
	  • **Automated Workflow Tools**
	  • **Sales Force Automation** *(SFA)*
	✓ **Online Knowledge Tools**
		✓ **Workforce Scheduling & Management**
		
		✓ **Voice/Data Monitoring Technology**

Voice Technology

The voice technology category includes:

- ACD/PBX/eBusiness Portal Functionality
- Interactive Voice Response Applications & Speech Recognition
- Computer Telephony Integration

ACD/PBX/eBusiness Portal Functionality

The backbone of the voice technology category is the ACD, an Automatic Call Distributor, which is sometimes called the "switch" and the PBX, the Private Branch Exchange. The ACD/PBX, which has been the workhorse of call centers for years, has the primary function to route calls, manage incoming traffic in queues (wait time), and provide management reporting. The ACD/PBX is still the workhorse in the new contact center with the additional function of routing and reporting Web-based contacts. Some vendors are calling the new multichannel ACD an eBusiness portal. This is a fancy term that means the same thing as "multichannel ACD." The function of an eBusiness portal/multichannel ACD is to route and report on blended customer contacts that are comprised of telephone calls, Interactive Voice Response (IVR) transactions, email, real-time Web interactions, and electronic faxes.

The eBusiness portal is of key importance to contact center management because the technology now exists to define the business rules for how various customer segments will be handled. For example, it is possible with the eBusiness portal and appropriate supporting applications to handle a high-priority customer's email or chat ahead of another customer's phone call. In today's world, this is typically not done. Phone calls by their very nature take precedence over electronic contacts. This will not be true in the future, especially with the advent of VoIP. When this technology becomes widespread, a phone call will look like an electronic contact to the ACD/PBX although it is actually a voice contact. Most centers will want to treat that contact as such, but new technology **is** available that can be used to define how customer contacts should be prioritized. It is no longer a requirement that phone calls always be handled ahead of chats, emails, or VoIP.

New multichannel ACD's contain the same sophisticated features such as skills-based routing and priority queuing currently available in the traditional call center environment. The added benefit of this technology to the new blended media world is that the ACD can instantaneously look across all channels, determine the customer's priority and route the contact accordingly. This will make it possible to handle the more important customers first, regardless of the channel. With the eBusiness portal, important customers will no longer have to wait until the call volume subsides before their emails are handled. Since traditional ACD's do not have the functionality to route and report on Web-based contacts, the eBusiness portal becomes even more critical as VoIP comes online.

Some of the major vendors which provide multichannel ACD/PBX's are Aspect Communications, Avaya (Lucent), Interactive Intelligence, Inc. (I-3), Nortel Networks, Rockwell Electronic Commerce, and Telephony@Work.

Interactive Voice Response Applications & Speech Recognition

Interactive Voice Response (IVR) technology recently has become increasingly important to customer contact centers for two reasons. First, there is a revolution going on in customer self-service. The big news, of course, is Web-based applications; however, IVR applications are playing an even bigger role when coupled with Web-based applications.

Second, speech recognition, or *"speech rec,"* has been significantly enhanced with "natural language" developments. In traditional IVR applications, callers are presented with a series of menu prompts. Callers choose options using a keypad. The first generation of speech rec, which amounts to being able to *"press or say"* a single number or word, has been around for a long time. Callers typically must progress through several tiers of options to get the desired information whether they are pressing or saying responses to prompts.

The issue is structured menu options. Try as developers might, they still manage to confuse customers with terms and structures that make sense to the company, but not to users. Unlike traditional IVR-structured menus with tiers of options, advanced natural speech recognition enables callers to simply ask a question. Using pre-determined, customizable confidence thresholds, callers are provided with the information they request. Some common

examples of this include stock quotes and account balances. These speech rec applications are relatively easy to implement.

An advanced level of natural speech recognition can be used to verify the identity of callers with high degrees of accuracy, thus saving precious time while providing a very good quality of user self-service. To ensure a high degree of customer utilization, it is important that the self-service offerings from Web-based and IVR applications be coordinated so that terminology is consistent and data accesses retrieve from the same sources. In this way, customer information accessed from the Web will match what can be retrieved using an IVR application.

Some of the major IVR vendors with primary products in this category include InterVoice/ Brite, Periphonics (Nortel Networks), and Syntellect. In

addition, Nuance and SpeechWorks are recognized leaders in natural speech recognition technology.

Computer Telephony Integration

Computer Telephony Integration (CTI) is most commonly used for "screen pops." To produce a "screen pop," callers are prompted for an account or personal identifier that is linked to a customer database. If a match is found, the customer's account data is *"popped"* onto an agent's screen at the same time the call is delivered to that agent.

Even though this technology belongs to both the voice and data worlds, we address it in conjunction with telephony since many ACD and IVR products include it as an optional module or application. It is included as an optional module from Customer Relationship Management (CRM) product
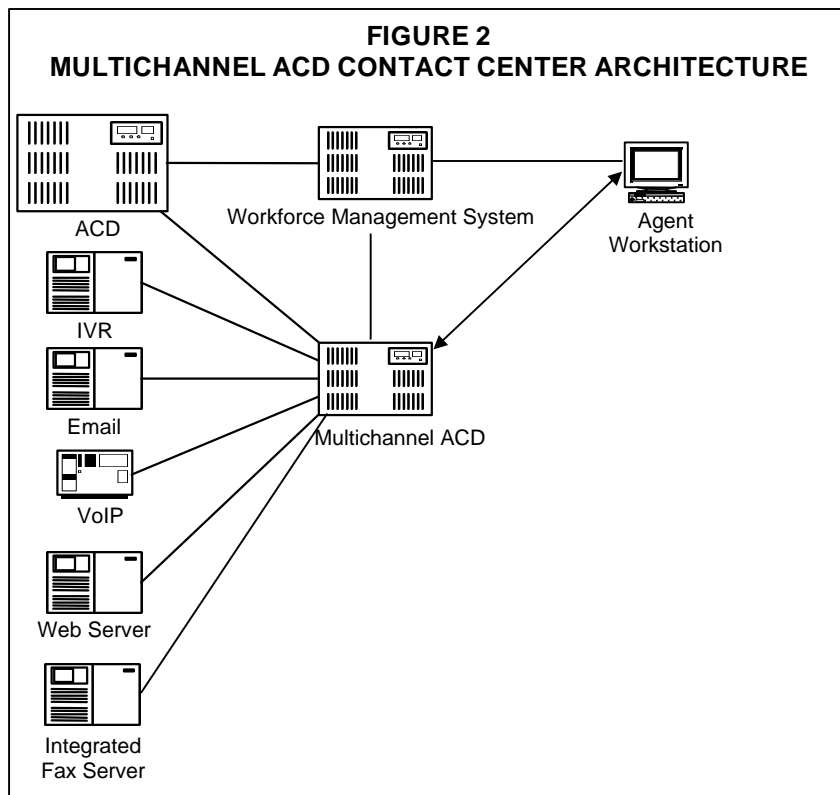
vendors as well; however, the inclusion of CTI in CRM products is relatively recent.

Many of the original CTI applications focused on prompting callers for account identification information as part of the front-end entry menu structure. The resurgence of interest in CTI is due to Web- and IVR-based transactions. The increase of customers availing themselves of self-service applications has contributed greatly to the renewed interest in CTI. Customers now expect complete technology integration.

Once a customer has gone to the trouble of entering personal data for an IVR transaction or has used a self-service Web-based application, they expect that agents helping them will have their personal session history. As a minimum, customers expect the system to identify them so that the agent does not need to request the customer's account information again.

Without CTI, when callers opt out of IVR sessions or Web-based applications, there is no caller identification and no session or application history "pop." As a result, callers are literally routed to agents unannounced. The agent does not know the identity of the caller nor what the caller tried to do in the self-service application. It doesn't take long to see that callers often abandon those attempts and go straight to the agent since nothing is gained by trying the self-service options. This level of so-called service was adequate in the past, but not now.

Some of the major vendors with products in this category include Genesys (Alcatel) and Apropos. Periphonics, eBusiness Portals,

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FIGURE 2
MULTICHANNEL ACD CONTACT CENTER ARCHITECTURE

ACD

Workforce Management System

Agent Workstation

IVR

Email

Multichannel ACD

VoIP

Web Server

Integrated Fax Server

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and Siebel/Genesys also offer robust multimedia blending engines. CTI is often included in product offerings from ACD/PBX, IVR, CRM, and Email Response Management Systems (ERMS) vendors.

Figure 2: Multichannel ACD Contact Center Architecture on the previous page illustrates an example of how customer contact entry points, the phone, Web, IVR, and VoIP, are funneled through the multichannel ACD and then routed to the appropriate agent using a skill-based routing and established business rules.

FIGURE 3
**eBUSINESS APPLICATIONS ARCHITECTURE**

eBusiness Tools & Information Technology

The eBusiness tools and information technology category includes:

- Email Response Management Systems
- Real-time Web Interaction Software
- Customer Relationship Management
  - Automated Workflow Tools
  - Sales Force Automation
- Online Knowledge Tools

Email Response Management Systems

Email is the fastest growing new customer contact channel in call centers today. This growth is primarily due to ease of use; almost every company today has a Web site, and virtually all Web sites provide a link for email inquiries. Customer expectations for email response have escalated dramatically over the past two years. Whereas acceptable response time was once 24-48 hours, immediate acknowledgement of receipt is now expected with resolution within one to four hours according to the *ICSA/e-Satisfy Study 2000.*
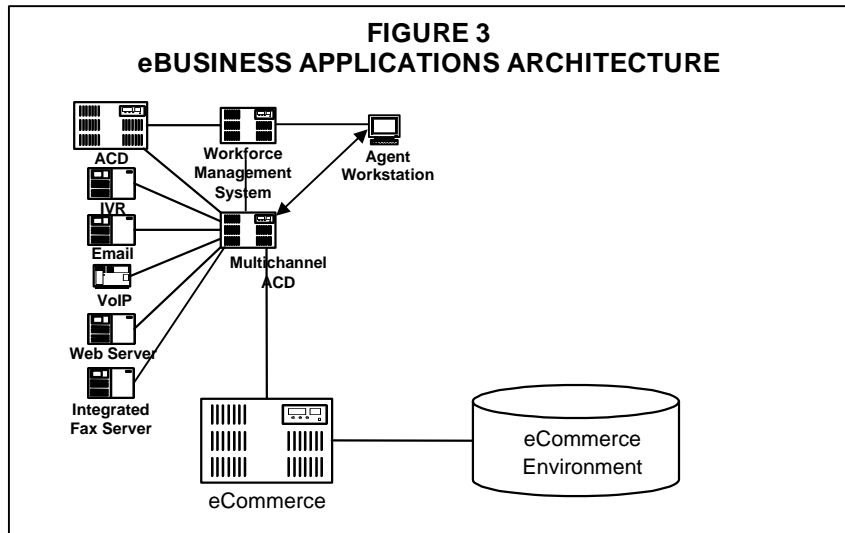
When volume and turnaround times for email responses are considered, most contact centers will need automated, intelligent email response systems in order to meet customer expectations. The automated part of these systems sends an "acknowledgement" email. This is designed to prevent customers from calling or sending additional emails inquiring whether the original email was received.

The "intelligent" part of these systems scans for key words and formulates standardized replies. The major vendor's ERMS work in conjunction with the multimedia ACD. In addition to auto-responding, emails that need agent handling are automatically routed to the appropriate mailbox with priorities, categories, and ticket numbers pre-assigned. When the ACD and ERMS interface, the ACD automatically presents either a call or an email to agents for handing, taking the guess-work out of deciding which has priority.

Typically, these systems have other features such as outbound editorial monitoring based on company-established business rules, comprehensive reporting and analyses, and automatic Frequently Asked Question (FAQ) functionality.

Some major vendors with products in this category include BroadBase (BroadVision), Cisco (Webline), eGain Communications, Inc., eShare (Melita), Kana (eCRM), and Siebel eCommerce.

Real-time Web Interaction Software

Real-time Web interaction software provides the functionality of collaborative browsing, text chat, two-way Web page sharing ("push/pull" features), Web callback (the *"Call me"* button), collaborative whiteboarding, and VoIP. In addition, the major vendors' interaction software works in conjunction with the multimedia ACD. This functionality provides automated, blended delivery of customer contacts, including Web, phone, and text chat.

Some of the major vendors with products in this category include eGain, eShare, Cisco, Kana, and Oracle. Many of the major ACD/PBX and CRM vendors offer this technology in both stand-alone and blended versions as part of their product lines.

Figure 3: eBusiness Applications Architecture illustrates how the real-time Web interaction software and ERMS work in

conjunction with the multichannel ACD. Again, the ACD routes the contact to the appropriate agent skill group.

Customer Relationship Management

Customer Relationship Management (CRM) is the cornerstone of eBusiness integration into the call center. It is both a business strategy and its support applications. CRM is designed to enable companies to manage the total relationship with customers for a 360-degree view. Nothing but CRM has the potential to link disparate processes and databases across multiple organizational channels.

CRM provides an organization with the tools and information needed to manage its relationships with customers. The value of CRM is in its ability to increase customer retention and loyalty, and, ultimately, to lead to sustainable revenue growth. eCRM interface with Web-based customer contacts is an essential part of the entire CRM effort. In the eBusiness customer contact model, a Web site contact is personalized for both incoming contacts and proactive outbound contacts.

Typical CRM packages are modular with pre-established modules for sales, service, marketing, and eBusiness applications. Together, these modules can be used for a 360-degree view of the customer across all channels. Data from multiple existing databases are linked through built-in *"hooks"* or by utilizing Enterprise Application Integration (EAI) software commonly called *"middleware."* Robust CRM applications have detailed analytical and personalization tools that facilitate creation of detailed presentations regarding customer value, purchase predictions, and individual sales. When customer value is linked with CTI, priority queuing across all channels will ensure that the best customers get priority treatment.

CRM packages that emphasize helpdesk support features provide call tracking and problem management and resolution solutions as well as **automated workflow tools** and escalation management capabilities. Robust reporting metrics enable comprehensive enterprise management and reporting. Call resolution speed can be increased using features that pre-populate commonly encountered fields and automatically complete an open problem report with relevant data. Many packaged CRM applications enable call centers to automate call tracking, call routing, workflow escalation, and entitlement processing using access to customer records and history from a consolidated customer data repository. Browser-based customer service applications manage customer contact across all channels.

Sales Force Automation (SFA) is the component of CRM that addresses key information relating to sales opportunities. The usual focus of these modules is on detailed customer information, sales contacts, lead tracking, revenue potential forecasting, territory assignment, and sales effectiveness measurement. In addition, modules that handle contracts, follow-up and mail-outs, competitor tracking, marketing campaigns, and quotes are available. All major CRM vendors have sales automation packages as part of their suites.

Robust customer analysis is a typical feature of CRM. This includes measurement of support performance through the number of inbound and outbound calls related to customers, average time per call, and agent utilization. Support costs and revenues can be developed by contract, product, service, and/or per call. Reports on customer interaction, center performance, case analyses, call load trends, product quality, service level agreement analyses, and support profitability are also generally available. The major vendors now have Web-based products available for use as companion customer self-service applications. These include eBusiness applications such as email, chat, integrated fax, and VoIP integrated with traditional phone calls.

Although there are several hundred vendors occupying this space, some of the major ones include Avaya, BroadVision, Clarify, E.piphany, Kana (Nortel), Oracle, Remedy, Pivotal, SAP, Siebel, and Vantive (PeopleSoft).

Figure 4: Multichannel CRM Architecture Example illustrates

FIGURE 4
MULTICHANNEL CRM ARCHITECTURE EXAMPLE
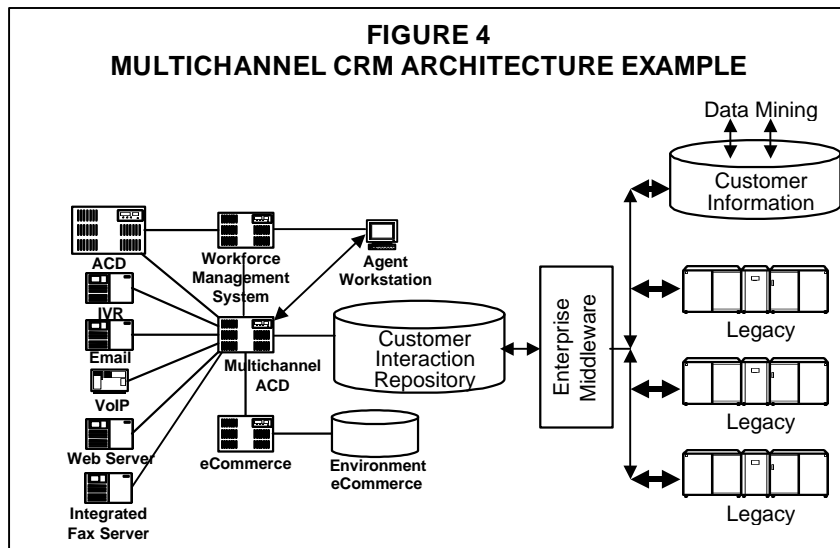
how the customer access servers, including telephone, IVR, VoIP, Web-based applications, and email response systems, work together through the multimedia ACD for routing. In this diagram, a CRM interface has been added. Before the ACD routes the call, it queries the CRM database and uses established business rules to prioritize the contact. Voila! The most valued customers receive preferential treatment.

Online Knowledge Tools

The primary function of online knowledge tools is to assist agents in quickly locating information needed to resolve a customer's problem. In many cases, these tools are also designed to be accessed by customers in self-service applications. By definition, online knowledge systems must be easy to use and produce relevant information very quickly to be beneficial. As such, most products in this category are based on sophisticated search engines and/or decision-tree logic.

Some online knowledge tools can be integrated with CRM. For those applications, relevant information is divided based on transaction type or another category. Relevant information can be hyperlinked to fields for access as needed and related directly to questions that specifically pertain to that field. Information can be segregated so that only very small portions of the database are accessed. This would provide quicker, more targeted access to the help needed.

Most online knowledge bases integrate with CRM. Some use advanced forms of natural language search algorithms to enable customers to describe complex problems. Some also have enterprise application interfaces that allow access to legacy-based information with Web-based interfaces. Many of the products in this category are quite robust and have modules that integrate with intelligent, automated (ERMS) applications and text chat. Customers can use the self-service capabilities to search information and receive responses by email, chat, or through the IVR system.

Specialty vendors in this category are Knowlix (Peregrine Systems), Primus, Inference (eGain Communications), Unicenter (Computer Associates), Magic Solutions (Network Associates), and ServiceWare. Many CRM vendors, such as Applix, Chordiant, Clarify, Remedy, Siebel, and Vantive, also have modules for online knowledge databases.

Call Center Technology

The call center technology category includes:

- Workforce Scheduling & Management
- Voice/Data Monitoring Technology

Workforce Scheduling & Management

One of the most important functions in large contact centers is workforce forecasting, scheduling, and management. The addition of the eBusiness service model to call centers includes the added complexity of forecasting the volume of electronic contacts such as emails, chat, and other online customer help requirements. As customer contacts continue to increase across electronic channels, call centers will require workforce scheduling and management software that considers input from all channels.

Workforce management software typically has the functionality to forecast staffing requirements for each queue by ¼- to ½-hour intervals, analyze workload trends and contact volumes, compare staff requirements to availability, and generate optimum schedules based on preferences and work rules. Multimedia workforce management takes all channels into account when forecasting staffing requirements based on expected volume for each channel and established service level parameters. Real-time schedule adherence, which monitors agent activity on a real-time basis and provides comparisons with their scheduled activities, is available as a separate module from all of the major vendors.

Forecasts are developed based on agent skills, business rules, and call types. Most major vendors in this market have robust multi-site capabilities that enable workforce management across multiple sites form a single point of control. This enables centers to have a central-site view of real-time and historical data both on a consolidated or independent basis. Software from the major vendors is scalable to a large number of sites and integrates with most vendors' ACD's.

Some of the major vendors in this category include Aspect (formerly TCS), Blue Pumpkin, IEX (Tekelec), and Pipkins.

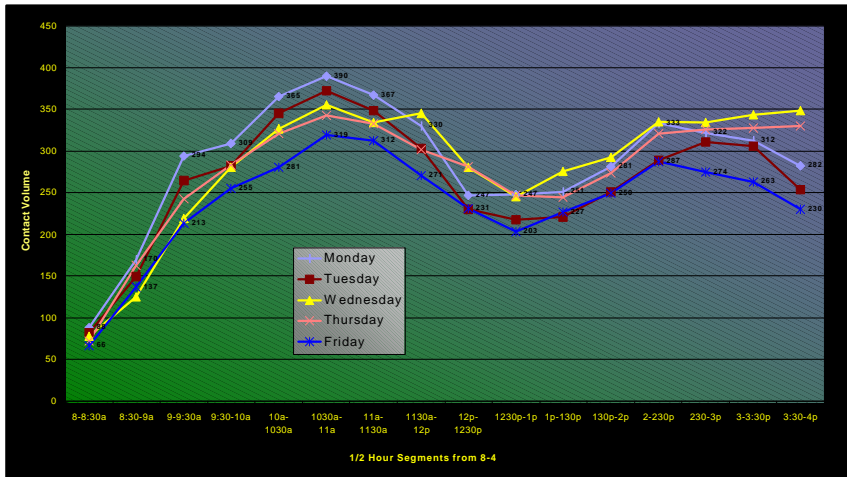**FIGURE 5**
EXAMPLE DAILY CONTACT DISTRIBUTION

Figure 5: Example Daily Contact Distribution illustrates the peak staffing requirements by ½-hour based on Erlang C modeling and average handle times (talk + after contact work) for both phone and electronic contacts.

Voice/Data Monitoring Technology

Voice/data monitoring technology is designed to capture agent-customer interaction through voice recording and synchronized screen capture. Essentially, this technology captures and records both the voice and data transaction for telephone calls. Random agent and event monitoring allows for recording a designated percentage of calls based on pre-established business parameters. These features typically enable either real-time or delayed monitoring.

Recently voice/data monitoring technology has been developed that also captures Web-based sessions for eBusiness-enabled contact centers. This functionality allows for Internet interactions including email, chat, instant messaging, and guided browser sessions to be recorded and/or monitored real-time. The technology can also be integrated with CRM and programmed to record interactions of designated customer issues.

The most robust systems have easy retrieval, playback, and storage options for a range of media and a variety of quality reporting capabilities.

Some of the major vendors specializing in this technology include Comverse Infosys, NICE Systems, and Witness.

Summary

The technology explosion is dramatically changing the dynamics of customer contact today. The combination of the Internet and rising customer expectations for *"anytime/ anywhere"* access is a primary driver for this trend with 24x7 access quickly becoming the standard for every customer access channel. The *"contact center"* of the future will provide integrated access of customer contact including telephone, integrated fax, IVR, email, chat, and, in the not-so-distant future, VoIP. This new technology mix will dramatically change the skills, training, and management requirements in most centers.

These technologies have been designed to provide the level of service and access that customers expect. They are no longer *"nice-to-haves,"* but are rapidly becoming a competitive imperative. Properly deployed, advanced technologies promise improved customer satisfaction, increased revenues, maximized agent productivity, and increased operating efficiencies. Simply put, they are key to competitive advantage.

About Us

Kramer & Associates is a management consulting firm specializing in integrating eBusiness service models into call centers. The company's areas of expertise include eBusiness integration, call center audits and reviews, development of CRM business requirements, business process mapping and redesign, and technology assessment as well as call center consolidation and start-up. The firm is experienced with both B2B and B2C applications.

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