



## **Executive Summary**

Customer Care and retention is increasingly becoming a key issue for most companies in today's competitive market place where customers demand immediate access to information and efficiency of response. Call centers are one of the most powerful tools for improving the quality of customer contact.

The advent of Computer Telephony due to the convergence of Computing and Telecommunications has created new avenues for companies to provide better service to customers by leveraging the interaction of customer calls with the company's customer databases providing access to rich customer data helping the call center agent provide better support to the customer.

This paper outlines the key components of a contemporary call center and then discusses the key technologies being used in call centers with focus on the paradigm shift from PBX to server based systems. The technologies are compared and the reasons for the paradigm shift are explained. Lastly, the future evolution of call centers into contact centers is sketched out.



## **PC Based Call Center Solutions**

### **What is a Call Center?**

Historically a call center could be defined as any place where customer calls are handled using some Telecom and computer equipment. But in today's dynamic market environment where retaining customers through excellent service is the key for the success of any company, a call center requires all the leverage that the evolving convergence technologies of Computer Telephony, CRM software and Internet can provide. And hence, just as "A Solitary Swallow Does Not Make a Summer " and just EPABX with an ACD does not constitute a call center.

Increasingly sophisticated customers demand convenience, access and efficiency (i.e., immediate response and instant information). If you can't give them the answer they need, when they need it, they're off talking to a competitor.

Thus a contemporary call center requires ACD, Predictive Dialer, CTI links, Web Integration, Interactive Voice Response / Fax On Demand, Voice Logging and Messaging, Universal Media handling capability and Integration Interfaces for other Applications like CRM (Customer Relationship Management) packages.

### **Key Components of a Call Center**

#### **1. ACD (Automatic Call Distributor)**

ACD's Distribute calls to agents as they are received. The calls may be distributed in various ways to optimize usage of the call center resources and allow the best possible agent to service the customers call.

The main parameters used for routing are:

- Agent Skill based routing
- Agent Idleness Based Routing
- Network Directed Routing (Using Calling Line Identification / Dialed Number Information Service )
- Time Based Parameters

#### **2. Predictive Dialer**

Predictive dialers go beyond just automating the dialing process to eliminate wasted time in the calling process and improve productivity. This is done by dialing calls according to a calling algorithm to smooth out a center's workflow by using complex algorithms which use factors such as the number of available telephone lines and operators, the probability of getting a busy signal and the length of an average conversation. The calling process is also made efficient by screening out no answer, busy, out of order and answering machine calls.

#### **3. CTI (Computer Telephony Integration)**

CTI integrates telephone and computer operations by linking databases to the telephone connection. A common perception is that CTI is just for a "screen pop," in which customer information "pops up" on an agent's screen as a call is received. Today CTI encompasses far more as the coordination of real time voice events and database events is far more sophisticated today allowing real time feedback for Dynamic Routing Schemes, Call Flow Scripting, Workforce Management and Real Time Reporting.



#### **4. Web Integration**

E-commerce is now becoming a reality going beyond the hype. But there is a catch, 66% of online transactions are abandoned before a sale is closed. That is where Web Integrated Call Center helps companies provide the human touch for providing information assistance, closing sales and servicing customers.

Web integration allows customers to interact with call center agents through Web Callback, Web Chat, and Collaborative Browsing, allowing companies to provide live contact to online customers which is essential for providing non standard information to customers, and giving them reassurance that there is expert help available in case they need it.

#### **5. IVR (Interactive Voice Response) / FOD (Fax On Demand)**

IVR and FOD provide information to a customer by turning the keypad of a telephone into a keyboard. As a result, many standard queries formerly answered by an agent can be handled by an IVR, freeing agents for more complex, value-added work. It also gives customers a self-service option, speeding up the transaction for the customer.

#### **6. Voice Logging and Messaging**

Voice Logging Allows digital recording of conversations and messaging allows callers to leave messages if agents are not available to handle a call. Voice Logging allows call centers to have sophisticated agent training by recording and playing back agents conversations to them. It can also be used to monitor agent performance and to provide proof of transaction records.

#### **7. Interfaces For Integration With Applications**

Modern Call Center solutions need to be integrated with other applications such as Customer Relationship Manager (CRM) modules, Lead Management Software and Billing Applications for Screen Pop-ups, Predictive Dialing, etc.

#### **8. Universal Media Handling**

Customers should be able to call up, send a Fax, send an email, visit the Web site or have a text chat with the organization's representatives. This is provided by the Universal Media handling capability of a call center, which handles all the messages in an integrated manner using common business processing rules.

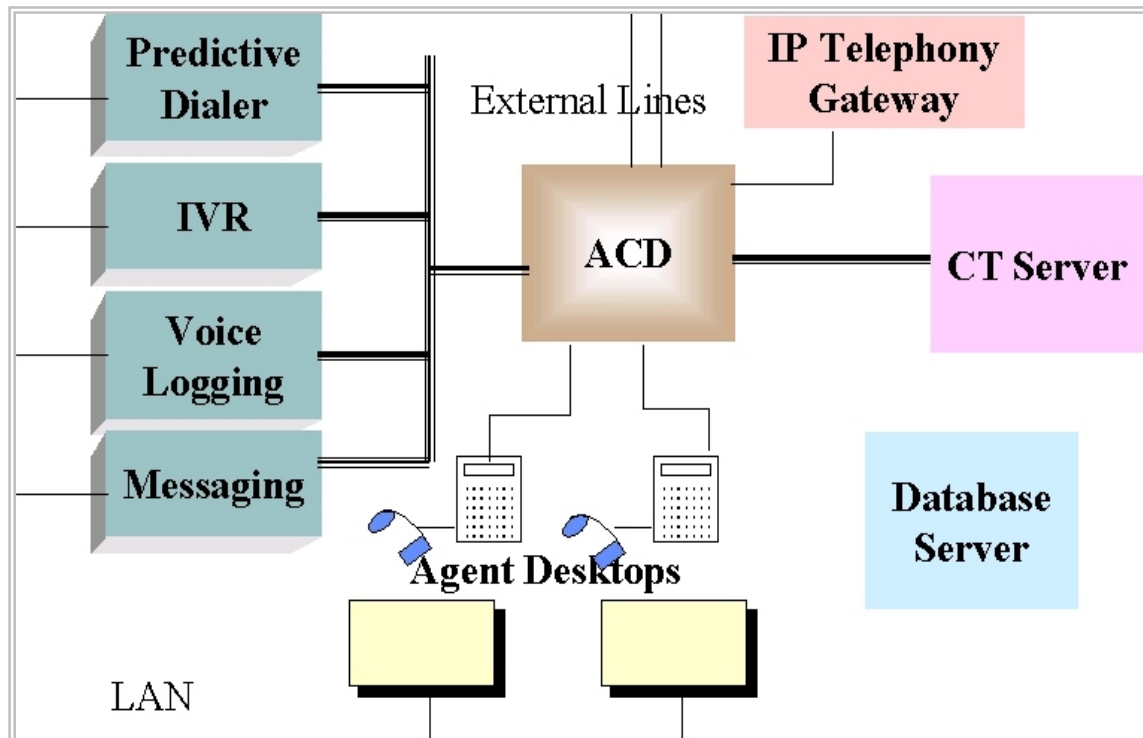


## Call Center Technologies

There are two key technologies used for Call Centers today, conventional EPABX based model and the new PC Based technology.

### EPABX Based Call Center

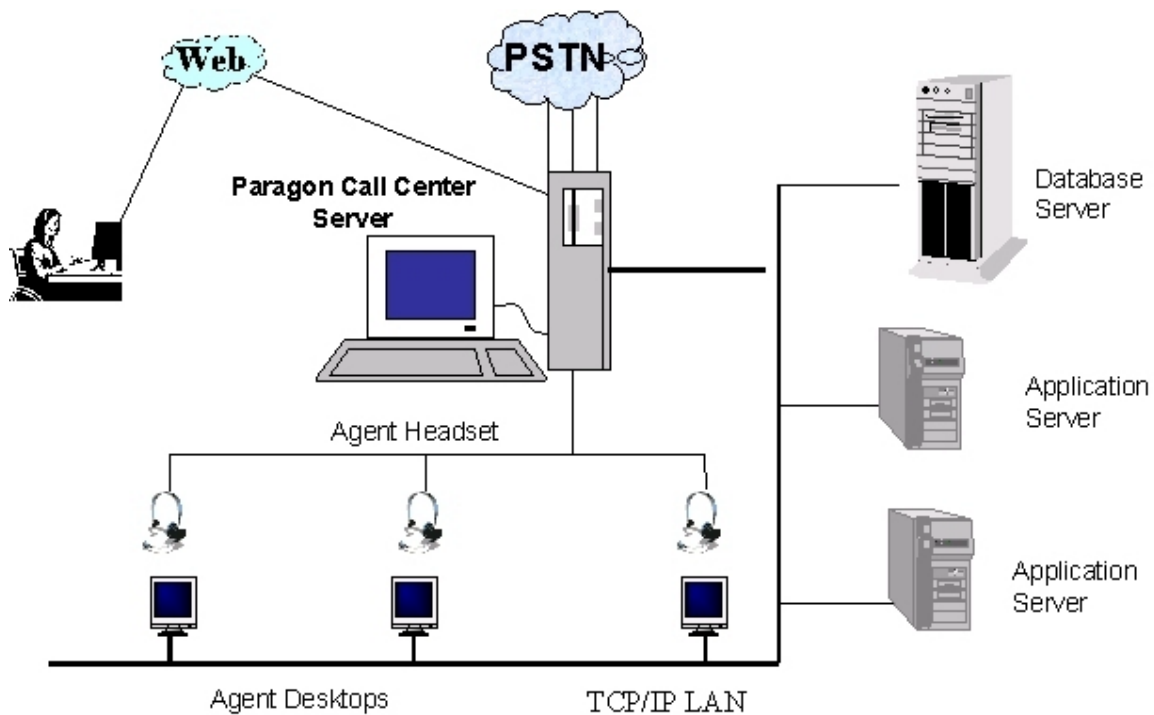
Historically Call Centers evolved from being a place with just telephone lines landing on agent desks. Then a PBX was added with ACD to distribute calls coming on common lines. Over time Predictive Dialers, IVR systems and CTI were added to create a full-fledged call center. These systems are thus architected on a gradual build up model requiring extensive and expensive integration effort.





## What is a PC based Call Center?

A PC based call center integrates all the components of a call center into one server as software components. The basic platform is a PC based server running Windows NT and Dialogic circuitry for the telephony interfaces. All these are industry standard systems, providing reliability and lower cost of ownership by allowing the call center solution to ride the technology evolution curve.





## Why PC Based Call Centers?

There is a paradigm shift happening in the switching industry. According to Gartner Groups 1999 report " PBX technology has reached a point of inflexion and must now start transiting to server based solutions. By 2005 only a few vendors will be manufacturing non server based products because of discontinued hardware components, aging hardware and increasingly non competitive development environments making the change to servers both necessary and inevitable. The rapid changes in technology will force much shorter depreciation periods for PBX's from the current 7-10 years to a 2-4 year period. These transitions will be driven by business needs for more sophisticated features like multimedia capability which will be delivered by server based systems while feature evolution will be very slow on traditional PBX's as vendors will find it increasingly difficult to develop and maintain the older architectures "

Till the recent past, call center infrastructure was complex and prohibitively expensive, hard to cost-justify, except in large installations doing big-money business. Today, however, things have changed with the advent of PC Based Call Centers. It is possible to set up small centers with as few as 4-6 agents, and still be cost effective.

## How has this happened?

The traditional architecture has not kept pace with the rapid changes in the computer industry. Telecom was a relatively protected industry and products and technology were evolving much slower than the computer industry. Thus while computer systems power and reliability were growing and costs coming down in accordance with Moore's law<sup>1</sup>, the Telecom equipment market saw near stagnation. Thus a PC based call center now costs far less than the traditional architecture. There are two main reasons for the dramatically lower cost of a PC based System:

1. Standard hardware and Software components rather than Proprietary Systems.
2. Call center components are software modules on a common platform thus eliminating expensive and difficult integration due to the need for integrating proprietary systems from different vendors.

Apart from the much lower costs, PC based call centers provide far superior features (see comparison in table below). The most important aspect of the PC based call centers is the flexibility they provide in increasing the scale of operations. In a traditional architecture, adding agents to the system means that additional hardware systems have to be bought unlike PC based systems, where the ACD, IVR and PD are software components, thus one needs to just buy additional licenses.

The other key advantage of PC based call centres is the possibility of web integration, which is very easily done. Most of the information delivery is moving towards the web and hence web integration becomes very important for providing good access to

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<sup>1</sup> Gordon Moore, Founder Chairman of Intel first observed the "*doubling of transistor density on a manufactured die every year*" in 1965. This has led to microprocessor computing power doubling and costs becoming half every 18 months.



customers. The multimedia handling capability of the PC based systems will become crucial in the coming years as communication will be through rich “Hypermedia”, which will seamlessly integrate video, voice and data.

### Feature Comparison

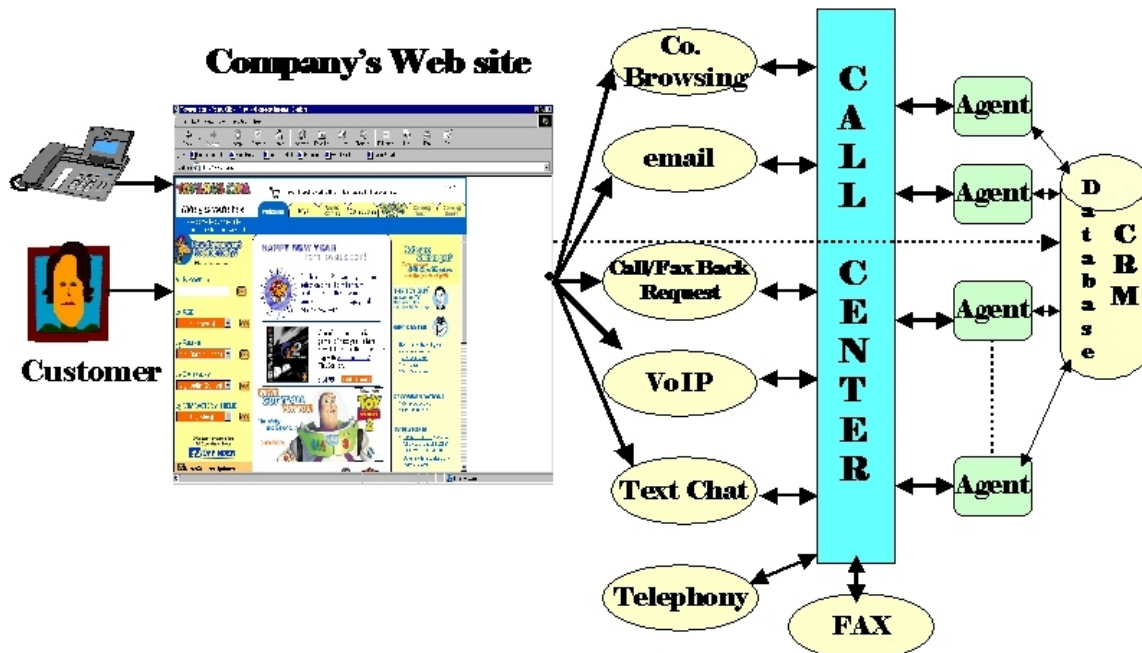
Features	Legacy Systems	PC Based Call Center
ACD Capabilities	Simple Hunt Groups	Skill based routing with Virtual Agent Groups
Call Control	Complex Keypad	Simple Desktop GUI
Conferencing	Only Conferencing	Conferencing and Coaching
Conversation Recording	Limited and extra	In-built on all channels
IVR capabilities	Blocking	Available on all channels
MIS & Statistics	Limited Reports	All statistics available in open databases
Architecture	Proprietary and closed	Standard Based and Open
Web Integration	Not Possible	Built In
Multimedia Handling	Not Possible	Possible
System Integration	Using proprietary CT server and CT link software	Using open, published APIs and standard interfaces
System Management	Proprietary Protocols	SNMP based open interface
Setup & Installation	3 Months	2 weeks



## The Future? Complete Contact Center

The term "call center" itself, will become obsolete. Sales, marketing and customer service are already moving toward multiple methods of interaction including telephone, e-mail, video-conferencing and the Internet so call centers will evolve into "Complete Contact Centers" allowing multiple media for connecting to customers. Going beyond E-Commerce will be M-Commerce, especially in the B2C (Business to Consumer) market space, where Mobile Phones and Mobile Computing devices will be the key drivers of the economy.

Currently, there are vendors providing products, which can be characterized as "point solutions". There are Call Center Vendors, Email management system vendors, Web traffic management vendors, and Customer Relationship management software vendors. They are currently forming alliances to offer "integrated" Contact Center solutions. These are, at best, stop gap arrangements. The different products, each with its own architecture, administration and reporting mechanism sit together in an uneasy partnership.



The Contact Center will have sophisticated CRM (Customer Relationship Management) software as an integral part, which will provide for Unified Administration and Reporting Capabilities, reducing the overall system complexity for the end user. The Contact Center will also be able to correlate and track contacts with the same customer which occur using different media like Phone, Fax, Email, Voice-mail, Web-Chat and VoIP allowing agents and customers to switch communication media seamlessly.



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