



# TERA<sup>®</sup> and Call Center Applications

## - Siemon's TERA Dramatically Cuts Costs of Call Center Cabling

Call centers have been popular in the US for many years. Telemarketing, collections, charities and individual companies find benefits in productivity, customer relations and other business areas through the use of automated dialers and inbound call center applications. The call center environment is a bit different than other work areas due primarily to equipment and density. Call center work areas rarely exceed 100 square feet per employee. Rather, they are typically dense cubicle environments with compact work areas.

The smaller work areas, generally 4-6ft (101-152mm) wide, contain a server-connected PC, which provides scripting, fill in forms and other applications needed for calls such as credit card processing. Of course, these work areas also include a phone: either a traditional PBX based unit connected through an automated dialer, or an IP based version.

Call centers can be divided into three basic categories, inbound, outbound or a combination of the two. Inbound call centers are designed to take inbound calls for help desk services, technical support or ordering. The calls are routed to available agents through the inbound PBX. The calls could be traditional voice calls or an instant "chat on demand" service, which provides the functionality through an internet-connected chat box. Typically, these work areas are outfitted with a phone and a PC running call logging and resolution software. The phone system in an inbound call center is more than just a basic phone as it must provide transfer functions for escalation.

Outbound call centers are a bit different. As the name implies, these centers are designed to reach out to customers. Central to the outbound call center is the automated dialer. The dialers are fed a bank of numbers. These numbers are dialed in the switch and upon successful connection, the dialer automatically activates a manned work area phone. Like inbound centers, the work area is typically outfitted with a PC that is connected to the customer management system, and phone. Lately, many advanced centers even implement video based personnel monitoring systems.

Blended agent call centers provide a combination of both inbound and outbound services. These are the most sophisticated infrastructures, as a combination of several services is required.

Nearly every call center utilizes some degree of call monitoring. Call monitoring is most often a live supervisor connection to a call in progress. In a standard PBX, the phones are connected via a two wire voice grade connection. The supervisor can monitor the calls by activating a monitoring headset, an activation usually performed through software. This allows a supervisor to monitor the success of a call and provides them with other information that can be used in training.

The problem with call monitoring is determining which conversation(s) are in need of supervisory assistance. With the advent of IP video, supervisors can now view many more employees, increasing their effectiveness when training employees and handling customer issues. Addition of video, however, increases infrastructure needs within the center. The cameras may be either placed at the work area, or placed at a ceiling level.

The advantages of adding video to call center environments is that a supervisor can remotely view the facial expressions and demeanor of the call center personnel. This body language can provide key information on call success. This method is also being applied to outsourced call center operations for the same reason. By implementing advanced monitoring, supervisors can successfully monitor remote outsourced personnel, increasing program success.

Another trend in call centers is taking advantage of IP Telephony services. IP Telephony/VoIP has distinct advantages including reduced call fees, IP manageable equipment and IP based fax services. This also allows for a closer integration between an IP based CRM (Customer Relations Management) system and phone systems. IP Phones are typically connected via a two pair 10/100 Ethernet connection. This increases the network connectivity needs for a work area.

**Unique connectivity needs**

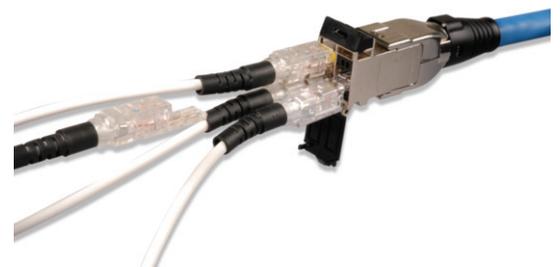
If a work area is outfitted with all of the equipment listed above, the needs for each space include a 10/100 PC network connection, a voice grade phone connection or a 10/100 IP based phone connection, and if IP video is used, a one pair connection that is acceptable for video services. If credit card processing is integrated, another phone grade service connected to the processing box is also required. If a company is utilizing Category 5e cabling or above, the industry standards stipulate that pairs cannot be split behind the faceplate, and that all 4 pairs must be terminated to a 4 pair modular jack. This means that to connect each of the services mentioned above, a work area would need 4 fully terminated 4-pair outlets.

As anyone that has ever pulled cable through cubicle furniture can tell you, there is a finite amount of room for both power and cables. Four Category 5e or 6 cables consume a large portion of this space. This does not include extra connections for network printers, network fax machines and other peripherals that may be needed in the work areas. Enter Siemon's Category 7A/Class FA TERA®. This end-to-end solution features both exceptional bandwidth and a unique connector that maximizes work area connectivity.

Due to the connector's four quadrant fully shielded design and a variety of 1,2, and 4-pair patch cord options, a user can realize two 10/100 connections in the same space as one RJ45 outlet. In a call center, office or cubicle space is more concentrated than in a regular office environment. As the workstations are limited to specific applications, the need for a connection over 100Mbps is not common. Primarily, the call center workstation only accesses one application, and new trends are moving these applications to web based services. This migration increasingly allows a thin client environment. All connections must be terminated via an 8-position connector behind the faceplate but, this does not mean that you cannot "split pairs" in front of the faceplate. This TERA benefit eliminates the wasted pairs common in RJ45 connectivity.

One TERA connector features the ability to run a one pair video, one pair legacy voice and a two pair 10/100 PC connection; or one two pair VoIP phone and a two pair 10/100 connection. This ability to split pairs in front of the faceplate is a unique benefit of TERA. The chart below shows just what you can do with a pair and/or pair requirement for various applications.

Gigabit or 10 Gigabit Applications (4 pair)	10/100 Applications (2 pair)	Single Pair applications
Gigabit PC	Workstation	Phone (analog voice)
Gigabit Switch port	Print server	Video Camera (CCTV)
	Wireless Access point	
	VoIP phone	
	Network Printer	
	IP Camera	
	Monitoring Phone	
	Blade Server Port	



## WORLD WIDE LOCATIONS

While many VoIP phone manufacturers include a network switch in the phone, this is really designed for legacy applications where two data pairs are not always available. The switch in the phone introduces a single point of failure to the work area. Also, as this is an active device, it adds to administrative overhead. Active equipment has a much shorter lifecycle (typically 3-5 years) than do passive components (typically 10-15 years), making the investment in a passive cable significantly better than an active component that may require replacement once or twice in the same time frame.

For instance, one TERA can support the same 10/100 devices as two category 5e or 6 channels for less cost while providing the ability to support future 4-pair applications including 10Gb/s without the need to recable or reterminate. Savings is realized in materials, space, and labor. A typical implementation of category 5e or 6 wastes two pairs if the end user is utilizing 10/100, as these applications operate over two pairs. With TERA, no pairs are wasted and two 10/100 connections can be operated over each single cable run.

As you can see, the variety of configuration options makes the Siemon TERA system the most versatile on the market. For more information on the TERA system and to view case studies of companies taking advantage of this superior technology visit [www.siemon.com](http://www.siemon.com).

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