

## Convergence on Campus: How IP Solutions Enhance Education

**Cistera  
Networks™**

www.cistera.com



Education is an investment in the future, providing a foundation to help build tomorrow's citizens, employees and leaders in a world of accelerating technology. Education administrators are acutely aware that meeting tomorrow's goals requires resolving today's problems.

Given the increasing drive to improve student performance within the tightening boundaries of resource allocation, it is reasonable to look to technology for solutions. IP communications help administrators prepare for the future as well as manage the present.

The ubiquity of the Internet is changing education by improving the quality and versatility of learning environments and accessibility. This market creates a demand for solutions that integrate IP communications deeply into the management and curriculum of progressive schools and higher education systems, which seek to:

- Improve campus safety through the use of technology to increase coverage
- Integrate data, voice and video applications to unify communications
- Improve access to educational resources through increasing accessibility
- Reduce complexity and simplify systems management
- Improve reliability of systems that are deployed
- Secure records and protect privacy
- Be responsive to the needs of the community

This white paper explores the communication challenges faced by education administrators and examines the recent trend toward IP communications. It also discusses IP communications solutions that improve the delivery of core educational services in a safer, more secure, environment.

### ■ Market Challenges for Education Administrators

The overall goal of education administrators is to deliver the highest level of education possible. IP communications provide an environment that fosters this goal by increasing safety and security on campus, focusing budgets and resources on appropriate communications problems and increasing student and teacher access to technology resources to create the highest quality education outcomes.

#### **Campus Safety**

According to a 2007 report by the United States Census Bureau's National Center for Education Statistics (NCES)<sup>1</sup>, only a quarter of schools nationally have implemented alarm systems. Recent campus violence increases the urgency for a comprehensive communications solution that enables students, whether in K12 or higher education, to meet their learning potentials in safe and secure environments.

The event alerting and notification dilemma highlighted by campus violence is itself an alert to the dangers of ineffective alerting on campus. Email, although reliable for non-emergency communications, is not a viable solution when lives depend on fast, accurate alerting and notification. Educators and administrators, as well as emergency personnel, must be able to communicate effectively with students, staff, parents and others, in a timely manner. Authorities must be able to alert and communicate with people in dorm rooms, classrooms, offices, hallways, cafeterias, libraries and even on the campus lawn if necessary— through overhead paging systems and other methods.

The need for effective communication capabilities, however, extends far beyond the emergency response and campus security scenario; it also includes the learning environment itself.

<sup>1</sup> NCES (2007). The Condition of Education. See <http://nces.ed.gov/programs/coe/>

"The security enhancement is incredible, as response time is much faster," she said. "We use this feature every day. Security is a big issue for administrators, parents and students—with this capability we feel that we are providing a best-in-class solution for everyone."

**CYNTHIA LITTLES**  
ITS Telecommunications Manager,  
Trinity University

### **The Need for Unified Communications**

Educators have found that unified solutions enhance their ability to deliver core services. Administrators require event alerting and notification solutions that improve responses to the needs of students and staff.

Complicating the challenge is an increasing disparity of devices and protocols, ranging from cellular phones and two-way radios, to analog phones, IP phones and email. A comprehensive solution must unify communications, cost effectively integrate data, voice and video into an easily manageable system and allow mobile users to access services remotely. Administrators must be able to easily automate and target key communication functions such as overhead paging, bell ringing, auto-dialing and other tools, with minimal disruptions to the classroom, leaving educators free to teach, enhancing the learning experience for students. Taking advantage of targeted message delivery to key groups and individuals, educators can focus on improving student performance.

### **Legacy System Limitations**

To move toward the goal of more effective event alerting and notification solutions and unified communications, organizations must first deal with the technological limitations of aging legacy telephone systems, which often lack the flexibility to meet the challenges of campus expansion and population growth. Legacy telephone systems are a frequent source of user frustration and management complexity. Adding, changing and moving users in a legacy environment can be costly, complex and time consuming, resulting in high administrative costs and telephone company charges.

Legacy systems offer no effective means to integrate communications solutions into the telephony environment, leaving organizations no option except eventual replacement.

## **■ IP Communications Trends in Education**

Recent trends in the education sector to implement IP communications make it clear that IP telephony is quickly becoming the system of choice.

IP communications resolve issues of user frustration and administrative complexity, simplifying the often time-consuming task of adding, changing and moving users, as well as enabling the integration of voice, video and data applications onto a single network, benefiting students, educators, administrators and researchers.

### **Education Implementation Underway**

According to a 2006 *Computerworld* survey<sup>2</sup> of 134 educational institutions, 35% of respondents were either planning to implement or had already implemented IP telephony systems.

The same survey found that the education sector wants systems that feature:

- More cost-effective moves, adds and changes
- Simplified management
- Advanced system reliability

Respondents emphasized the importance of being able to easily manage systems via a Web browser interface and were more likely than respondents in other industries to place a high priority on advanced features and applications. They also expressed an understanding that achieving these benefits requires a layered approach.

This survey, therefore, reveals that an effective approach for the delivery of a comprehensive communications solution requires three important strategies:

- A network layer strategy
- An IP telephony strategy
- A telephony application services strategy

## **■ Advantages of a Converged Solution**

An effective event alerting and notification solution allows educators and education administrators, as well as parents, to focus on improving student performance, with less worry about security.

Automating key functions such as broadcasting, bell ringing, intercom, directory and other features opens up new learning opportunities and channels, cuts costs, increases productivity and simplifies management of services.

An IP communications solution must:

- Integrate any number of devices, including IP phones, analog phones, wireless phones and two-way radios
- Be secure, reliable and cost effective
- Protect student records and institutional information through virtual private networks, firewalls, intrusion detection systems and video networking
- Provide multiple ways to send messages quickly and easily
- Link data and voice with any device
- Quickly transmit text or voice messages
- Be easily manageable via a Web interface

<sup>2</sup> Computerworld (August 2005). The Government Sector Rates Importance of IP Telephony Features, Management and Applications. See <http://www.computerworld.com/>

## ■ Cistera Networks Converged Solutions

In response to the needs of administrators and educators, Cistera Networks has developed comprehensive, IP communications solutions for a fully integrated educational environment. Cistera provides support for core applications on the Cistera ConvergenceServer™ (CCS), offering an unsurpassed set of features ranging from integration of traditional zone paging systems to advanced buffered recording solutions for malicious call recording.

A Cistera converged IP telephony communications solution, built on an enterprise-level application platform for reliability and network security, offers benefits to educators and administrators at all levels of primary, secondary and higher education.

Cistera Networks IP communications solutions:

- Integrate data, voice and video technologies on a single network
- Enhance the educational experience and improve curricula through virtual classrooms via IP-delivered video
- Offer remote students access to on-campus resources, classroom-to-classroom collaboration and access to off-campus experts
- Reduce management complexity through easy web-based management tools
- Increase reliability with dependable hardware and software support
- Integrate any number of devices, including IP phones, analog phones, wireless phones and two-way radios
- Link data and voice with any device
- Provide multiple ways to send messages quickly and easily
- Instantly transmit text or voice messages, live or prerecorded, to a select group—or to an entire organization
- Broadcast live or recorded pages to overhead speakers in specific locations for targeted alerts and notifications anywhere on campus
- Improve campus and public safety by creating greater environmental control and quickly delivering actionable information

Cistera solutions enhance the IP communications platform by providing key application engines and features to support a fully converged education environment under the following comprehensive solution sets.

### Emergency Alerting and Notification

Event-driven emergency alerting and notification (EAN) is an urgent requirement across the entire education sector, from preschool to college. The Cistera CCS incorporates a flexible event engine that triggers actions based on events such as automatic 911 or malicious call recording. Other actions may include automatic calls triggered by open doors or similar events. Actions taken in response to such triggers can be configured to broadcast, record or dial a specific number to alert appropriate personnel.

### Cistera *RapidBroadcast*™ Enhanced

*RapidBroadcast* Enhanced is the preeminent broadcasting solution for IP telephony. It is an advanced, full-featured messaging service that links data and voice with communication devices and allows IP phones to be grouped together for broadcasting and notification.

*RapidBroadcast* Enhanced can instantly transmit text or voice messages or schedule pre-recorded broadcasts to an entire organization through IP phones or external overhead speakers. Easy to configure and administer, *RapidBroadcast* Enhanced, and the entire suite of Cistera Networks applications, is managed via a web-based interface. Features include whisper, intercom, paging, text messaging and numerous others.

The latest version of the proven *RapidBroadcast* application engine, *RapidBroadcast* Enhanced includes advanced PSTN Paging and Panic capabilities. PSTN Paging allows remote users to access the *RapidBroadcast* engine by dialing into the IP phone network, selecting a group and broadcasting a page to the selected group. Paging options include sending the page live or recording the page for preview purposes and then sending it (the PSTN page must be sent immediately; it cannot be stored for later delivery).

The Panic capability of *RapidBroadcast* Enhanced allows messages to be sent until all users have acknowledged receipt, ensuring automated delivery of the message to all intended recipients.

Key features and benefits of *RapidBroadcast* Enhanced include:

- Integrated overhead paging
- One-button panic delivery, allowing identification of where the broadcast was initiated
- Intuitive, web-based template manager for creating messages
- Forced code authorization for secure access
- Flexible group administration
- Configurable forced acknowledgement receipt
- Send and receipt record logging
- Integration with Cistera *CallCenterRecord*™ or *QuickRecord*™ for automatic 911 recording
- Soft key configurations for one-button paging
- One-button intercom capabilities
- Integration with Cistera *PresenceManager*™ for Do Not Disturb functionality
- PSTN Paging allows remote access for broadcasting pages
- Panic capability ensures automated delivery of messages until all recipients have acknowledged receipt

### Cistera *QuickConnect*™

Cistera *QuickConnect* is the premier engine for the delivery of event alerting and notification for cellular and analog phones. As part of Cistera's Event Alerting and Notification (EAN) solution, *QuickConnect* extends the popular *RapidBroadcast* to launch notifications beyond IP phones, overhead paging systems and two-way radios to now include all communication devices. As an outbound dialing engine, *QuickConnect* can manage communications in a variety of scenarios, mixing IP phones and analog phones together quickly in multicast conferences. When combined with Cistera *QuickConference*™, key personnel can quickly build both "meetme" and conference bridges to solve collaboration issues

Key *QuickConnect* features and benefits include:

- Manage calls based on your organizations' needs
- Eliminate manual dialing and improve efficiency with automated redialing
- Generate mass emergency messages, saving time and improving campus and public safety

### **Cistera LMRConnect™**

Two-way radios are a communications cornerstone for public agencies, emergency operations and businesses around the world; however, until today, proprietary technology confined push-to-talk radios to their own networks—keeping them well-separated from convergence with IP telephony.

Recognizing the need to integrate, Cistera has combined two-way radio integration into a converged application server specifically designed for education environments. This capability preserves the existing two-way radio investment and enhances campus safety by incorporating the two-way radio protocol into the IP telephony environment.

*LMRConnect* allows instantaneous connectivity from IP phones and analog Phones to multiple disparate two-way radio systems. Using the latest radio over IP (RoIP) technology, multiple communications devices can be both instantly alerted or bound together in a *QuickConference* bridge for IP telephone/push-to-talk radio conferences.

Key personnel can quickly build both “meetme” and conference bridges to solve collaboration issues. These conferences can then be shared through podcasting with other students.

Key features and benefits of *LMRConnect* include:

- Multi-frequency bridging
- Predefined bridging groups
- Bridging IP phones with push-to-talk radios
- Multicast recording capability over wide area networks (WAN)

### **Cistera ZoneController™**

The *ZoneController* is a hardware appliance that allows digital and analog convergence—IP telephony applications with overhead speakers. The *ZoneController* uses the Cistera CCS and the *RapidBroadcast* application engine to configure zones, just like configuring IP paging groups—with the ability to create groups that include both overhead speakers and IP phones.

The *ZoneController* is a significant addition to an education environment that relies on overhead paging systems and is implementing, or has already deployed, an IP phone system. The integration of phones and overhead speakers maximizes the return on investment for an IPT deployment by centralizing administration and eliminating costly paging systems. The *ZoneController* is compatible with most powered and non-powered overhead speakers.

Key features and benefits of the *ZoneController* include:

- Significantly reduced cost to integrate existing overhead speakers with IP telephony deployment
- Easy integration with existing and newly installed overhead speakers
- Reduced administration
- Highly scalable
- Zone within zone control
- Zone2Phone™ control
- Works in tandem with other Cistera applications
- Built for Cisco IP telephony environments
- Provides a cost competitive alternative to existing paging solutions

### **Cistera MasterBellScheduler™**

This application engine provides proven time-of-day bell ringing and routing solutions for the education market. With sophisticated filtering and routing, calls can be automatically routed, excluding administrator or emergency calls. Teachers can receive the full benefit of phones in the classroom, while administrators can tailor access to fit their needs.

*MasterBellScheduler* offers intuitive administration, flexibility, scalability and the ability to integrate with other solution sets and application engines on the Cistera CCS.

### **QUALITY ASSURANCE AND COMPLIANCE**

As security needs increase in schools, Cistera offers both continuous and ad hoc call recording. These features allow users to record entire calls retroactively, regardless of when the record button is pressed—a key feature for recording malicious calls.

### **Cistera QuickRecord™**

*QuickRecord* is a robust IP telephony voice recorder and media management service designed to support those environments requiring reliable call recording functionality on an ad hoc basis, using major IP telephony platforms. *QuickRecord* is the premier solution for ad hoc and personal recording.

### **Cistera CallCenterRecord™**

Dynamic call recording and playback features for the IP telephone network through *CallCenterRecord* provide high-quality, continuous call recording capabilities that will become integral to your organization’s operations. With digitized recordings, users can transport recorded calls in the network as they desire — attach them to a problem ticket, analyze them for customer service and minimize potential liability to the organization. *CallCenterRecord* and *CallCenterRecord Enhanced* provide serious quality assurance and compliance workflow, reporting and archiving.

### **UNIFIED COMMUNICATION SOLUTIONS**

### **Cistera VirtualDirectory™**

*VirtualDirectory* is a robust, voice-enabled directory system that allows telephone users, both internal and external, to traverse corporate information quickly without time consuming tree-based systems. Callers can use touch tone or voice to request information or to be directed to the appropriate extension. *VirtualDirectory* also integrates into Cistera *PresenceManager* to provide comprehensive directory/presence solutions for any size organization.

### **Cistera QuickConference™**

Cistera’s *QuickConference* offers high-level conferencing capabilities with easy-to-use administration. *QuickConference* gives every organization an advanced means to host multi-channel, multi-user conferences—a key to successful communications. *QuickConference* is tightly integrated into the IP telephony environment to provide an unparalleled user experience.

### **Cistera PresenceManager™**

*PresenceManager* allows IP phone users and administrators to tailor their environments based on multiple factors, including physical presence and availability. *PresenceManager* allows administrators to control Global Presence for phones, such as setting the access for phones in classrooms (also known as time-of-day). Included in *PresenceManager* is an advanced do-not-disturb capability that provides comprehensive presence capability straight from the phone.

"Education Administrators, indeed all those responsible for public safety are recognizing that a single mode notification solution is not sufficient to deal with today's challenges. They are seeing that a multi-mode event alerting and notification strategy is now a must have as part of an overall security plan".

**GREG ROYAL**  
Executive Vice President  
Cistera Networks

## CASE STUDY

Trinity University, in San Antonio, Texas, one of the nation's top private undergraduate institutions, is an independent liberal arts and sciences university with 2,500 students.

Trinity needed to improve campus communications, especially campus safety and emergency alerting and notification.

Trinity deployed a campus-wide Cisco IPT solution, including Cisco 7960 phones in each dorm room, each student being assigned a personal extension. They then selected the Cistera ConvergenceServer (CCS) and licensed *QuickRecord* to enable on-demand recording of malicious or important calls. *RapidBroadcast* was licensed for its capability of paging to IP phones.

A security enhancement available with *RapidBroadcast* has proven invaluable. When anyone dials 911 from a Cisco phone, campus security and the IT director are automatically notified via their own IP phones. Simultaneously, the San Antonio Police Department is also notified. All alerts include the dorm and extension location of the call's origin, which allows for immediate follow-up for assistance if needed.

According to Cynthia Littles, ITS Telecommunications Manager, Trinity is very pleased with the Cistera solution. "The security enhancement is incredible, as response time is much faster," she said. "We use this feature every day. Security is a big issue for administrators, parents and students—with this capability we feel that we are providing a best-in-class solution for everyone."

## Conclusion

Educators and administrators face numerous challenges in their efforts to improve student performance, save money and address critical campus safety concerns. Surveys show a steady movement in the sector toward the implementation of IP telephony systems to meet demands for reliability, simplicity and ease of management.

A converged IP telephony solution unifies communication devices and protocols, integrates data, voice and video technologies, provides multiple messaging capabilities, protects vital records and improves campus and public safety through automated event alerting and notification.

A Cistera Networks converged solution for education provides comprehensive solutions through key application engines that cut costs through integrated technologies, deliver learning opportunities over the IP network, reduce complexity and provide critical campus safety measures through effective emergency alerting and notification tools. Cistera's solutions enhance the delivery of actionable information quickly and reliably, combining IP, mobile and analog phones, as well as two-way radios.

## About Cistera Networks

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Cistera is a leading global provider of enterprise and small business communications solutions and services. The company focuses on blending powerful application infrastructure to deliver the benefits of voice, video and data convergence to the user. Cistera's broad portfolio of Convergence Servers and application solutions provide advanced voice, video and data communications platforms and applications for customer contact management, event notification and alerting, recording and monitoring and collaborative solutions.

The Award Winning Cistera Convergence Server™ (CCS) is the leading platform for the delivery of Enterprise Application Engines for IP Communications. The CCS delivers enterprise scalability and performance all the way to the desktop and the phone. Couple that with a Unified Administration for the lowest Total Cost of Ownership (TCO).

Based on open standards and a proven server technology foundation, the Cistera Convergence Server enables customers to create a robust and scalable environment that is flexible enough to adapt to their changing needs over time. The CCS platform scales up to support organizations with thousands of users and scales down for offices with fewer than one hundred users, making it a viable alternative for a broad range of organizations.

Cistera Networks makes Application Driven Telephony a reality by setting the new standard in advanced IP phone application platforms and engines for the Enterprise VoIP Telephony environment. The Cistera ConvergenceServer™ (CCS) uses the industry-leading Cistera Enterprise Platform for IPT to provide Unified Application Administration as well as Fault and Performance Management for enterprise IPT Application deployments. Cistera provides next-generation solutions for numerous vertical markets including education, finance, healthcare and government. Cistera Networks maximizes IP phone capabilities -- taking the communications platform to an entirely new level.

Cistera focuses on three core application services solution sets:

- Event Alerting and Notification
- Quality Assurance and Management
- Unified Communications

### Glossary

Cistera Networks describes our core platform as "Enterprise Application Platform for IP Communications". On that platform we have a number of tools and engines that provide application services, both fixed function and individual configurations for clients.

**Application Platform for IP Communications** – platform that provides core underlying components that allow application services to exist. They are Security, Provisioning, Fault and Performance Management and Billing (OSS & BSS services)

**Application Services** – Feature function that manifests itself in the hands of the user

**Application Engine** – Function specific software component that reside on the Application Platform

**Application Services Layer** – Software and hardware layer where application services are provisioned within the

To learn more about Cistera Networks and Enterprise Application Platforms and Engines for IP Communications please visit us online at <http://www.cistera.com>, call us at 1-866-965-8646 or email [info@cistera.com](mailto:info@cistera.com)