

# Voice over IP: Why next generation communications are growing in interest for schools

by *Monica Maher*

Implementing Voice over IP (VoIP) in the classroom is about empowerment – empowering school administrators with greater security and business communications within their school system, while cutting costs by leveraging existing data networks.

Voice over Internet Protocol, or IP Telephony as it is commonly called, is the ability to transfer voice over data networks. In this manner, voice is transmitted much like data - in tiny manageable packets using the Internet Protocol. IP, simply stated, is the set of rules that are applied to these packets that allow them to be sent to a proper destination, or IP address. It can be thought of as the postal system for network traffic. Transmitting voice over data networks utilizes the existing infrastructure (wiring) already in place, hereby converging networks and cutting down management costs. It is this convergence of networks upon which the industry name 'Convergence Technologies' was coined.

Until the past few years, Voice over IP had its roots in the world of big business, with companies primarily interested in taking advantage of its toll bypass capabilities (avoiding normal long distance tolls by traveling over private networks). These enterprise implementations led the way for enhancements to VoIP, opening doors of new functionality and cost savings for many potential VoIP users. Compounded with the unfortunate events of Columbine and 9/11, VoIP has also taken on the practical functionality of enhancing security by increasing levels of communication, awareness and response. This, in particular, has caught the eye of school administrators who have been tasked with increasing security within their classrooms. The answer has been in the form of IP enabled phones, which not only provide a line to the outside world, but messaging and application abilities as well. Now teachers have instant access to the main office, other classrooms, parents, and maybe most importantly, emergency numbers. These IP phones are also able to broadcast text messages and real-time news reports, adding yet another layer of security.

This new technology is not only well suited for the school system's needs, but also well suited for their budgets. In fact, schools are finding out that they can cut

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overall costs by making a few changes to their existing network to empower multiple methods of communications over one converged network. This has allowed schools to eliminate the expensive costs associated with building out a separate telephone network, which prior to VoIP, would have been required to bring dial tone and applications to the classroom. Convergence also provides greater network or facility management. Instead of maintaining separate networks, equipment and support contracts, schools are able to consolidate their efforts and focus on one.

These IP enabled phones offer many benefits beyond dial tone, including the ability to run applications much like a computer would run an office suite application. Cisco Systems Inc., the worldwide leader in networking and Internet technology, offers IP Phone models that are specifically designed to integrate with and display the applications. The phones have an oversize screen with push buttons to toggle through the applications that even a technology novice can maneuver through. These applications offer a myriad of options and features that can be custom designed to fit your school systems needs.

Virginia-based engineering consulting firms, such as AAC Associates Inc., have met with great success designing and installing VoIP solutions for school systems. Doug Bowlds, Vice President of Convergence Technologies at AAC illustrates,

“We’ve found that in many schools, voice over IP services can be added by making a few changes to their existing network infrastructure. With the addition of these services, not only have schools seen better communication and return of investment, but we have taken this one step further and developed applications tailored towards streamlining everyday functions and increasing security.”

These applications are a natural compliment to IP Phones and Cisco’s VoIP product specifically because the phones themselves are XML clients. XML, or eXtensible Markup Language, provides a mechanism whereby data can be sent to – and received from – the phones. Frederick County Public Schools in Virginia have been working with AAC Associates to converge networks and increase productivity with the implementation of Cisco Systems’ IP Phones. Rob Yost, Director of Information Technology at Frederick County Public Schools, affirms their decision to implement explaining,

“Implementing their (AAC Associates) VoIP solution and customized XML applications has dramatically increased communication and efficiency between our 20 networked facilities. The faculty has reported high satisfaction with the new phones and adapted very quickly to their user friendly applications.”

AAC’s customizable suite of phone applications include, but are not limited to:

- An attendance system
- A student hall pass management system



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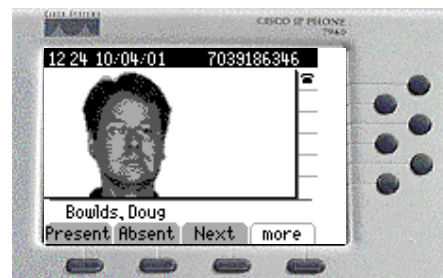
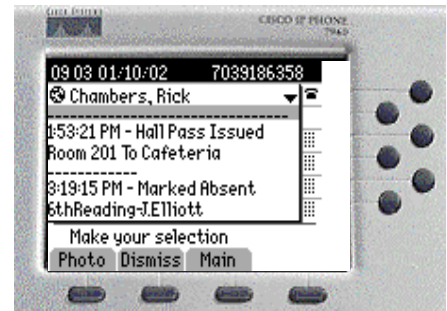
- Methods for assigning and monitoring student disciplinary actions
- Mechanisms for alerting teachers to student medication requirements
- Scheduling and reserving audio/visual equipment
- Providing greater visitor control and awareness
- Scheduling conference rooms
- Timekeeping for temporary employees
- Issuing daily reports including absentees and substitute teachers bulletins
- Instant messaging to the phones

One of AAC's published suite of applications, appropriately labeled "PhoneTopÔ K-12," has or is currently being implemented in various school districts in Virginia, such as Frederick County and Louisa County Public Schools, just to name a couple.

Indeed, these PhoneTop applications have been of great interest to many schools that have battled automating their every day functions. For Example, consider hall passes. If Johnny needs to go to the front office, the teacher can allow a "trusted student" to use the phone to issue Johnny a hall pass. The teacher may not necessarily want to allow that same student access to the teacher's PC to issue a hall pass as confidential student information might reside on the PC. Imagine that any administrator in the school can, at a glance, see how many students (and their identities) are out on hall pass in the entire school at any given moment. Imagine being able to control just how many students are allowed visitation to the school library simultaneously.

The attendance, hall pass, detention, and student locator modules each provide a picture of the student on the phone's LCD for identification purposes. This is particularly useful at the beginning of the school year with all those new faces to have to learn, as well as throughout the year for substitute teachers and other temporary faculty members. The PhoneTop attendance module can even issue email notifications to parents of truant students. The attendance module also interfaces with the school's student information system.

Robert Frost Middle School in Fairfax County Public Schools, Virginia, was the first school in the district to implement a Cisco VoIP System. AAC designed the system and, along with their team partner, CMS Information Services, installed it for the school. Here's what school officials had to say about their new phone system:



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“By adding phones to classrooms, we bring a new level of professionalism to teaching. In addition to the important benefit of increasing security for students and staff, the phones make it easy to improve and increase the level of home-school communication. In the end, the children benefit.” Leslie Kent, Principal, Frost Middle School, Fairfax County Public Schools, Va.

“The new Auto Attendant system allows us to efficiently route parent calls directly to the department they seek. Of course they can option out at any time to quickly talk to a human receptionist. The system also allows us to easily change our menus and provide bulletin-type information, such as school closing notices, to our parents. It has certainly decreased the call volume in the main office which allows us to better attend the needs of the students and the parents who visit the office.” Rosemary Barry, Assistant to the Principal, Frost Middle School, Fairfax County Public Schools, Va.

While these types of functions may be available via software for the PC platform, they are often cost-prohibitive or cannot easily be maintained and administered by school personnel. With a VoIP system in place, network administrators can easily maintain and deploy new applications from a centralized site, thereby eliminating the need to outsource, or for many, drive to each individual site to perform maintenance administration. That’s precisely the empowerment that VoIP provides: not only can the school administer the phone system and its applications, but this simplified administration will also free up their time, increasing overall personnel efficiency.

With such a high level of functionality and services, AAC realized that it was important to make sure that the phone systems were secure and had fail-over capabilities in the event of an outage. To meet this requirement, AAC designed a scalable architecture, well suited for schools to prevent public phone outages, including the kind of outages that occurred on 9/11. Bowlds of AAC explains,

By installing VoIP systems at various schools sites within a district and adding a “red phone” at each of the locations, we have been able to operate the phones over a private wide area network to act as a back-up to the Public Switched Telephone Network (PSTN). In this manner, we are able to ensure uninterrupted communications between the school board and the principals at each school, even in the event of a major outage.

This has teachers and parents breathing a sigh of relief because their communications will always be available. To help you find out what’s required to implement VoIP in your school system, IP Telephony companies, like AAC Associates, can do a readiness evaluation on your existing network. Through interviews and equipment evaluations, you can find out the associated costs for your particular solution in order to begin transforming your schools’ communication systems.

### About the Author

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