

**K-12 Education and VoIP: A  
Unique Fit**  
An Education Whitepaper  
By  
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# K-12 Education and VoIP: A Unique Fit



Budget constraints and other factors often keep the education sector behind the technology adoption curve, but migration to phone systems based on Voice over Internet Protocol (VoIP) is proving the exception. K12 school systems across the country are leading the VoIP charge and could teach a lot of the business sectors a thing or two about the efficiency, flexibility, and cost-effectiveness of next-generation voice platforms.

VoIP is proving to be the most cost-effective way to get a phone in every classroom. Schools are finding that the bulk of VoIP deployments can piggyback on E-Rate funding and other data infrastructure initiatives, and the elimination of expensive Centrex service enables particularly swift return on investment. Ongoing expenses are also minimized, thanks to VoIP's easy browser-based management. Software tools eliminate a lot of physical work and truck rolls and reduce reliance on expensive outside services. The end result is an affordable phone system that equips teachers with the latest communications tools, keeps parents and teachers in closer touch, and satisfies mandates to enhance classroom safety.

In this white paper we explore the technological and economic issues that are combining to make VoIP the only logical telephony choice for today's K-12 schools.

## The School Phone Challenge

K12 schools have traditionally been way behind the voice infrastructure curve, with very high employee-to-phone ratios. An entire campus with hundreds of students and dozens of classrooms might be served by one small key system and a handful of phones, all located in the school office. In this all-too-common scenario, teachers don't have their own phones or voicemail, which often results in poor communication with parents. Calls for teachers have to be fielded by the administrative staff, which is tasked with writing down paper-based messages and delivering them. This not only takes up a lot of staff time, but also introduces inevitable errors and omissions.

Without modern voice tools, there is little opportunity for communication between parents and teachers. The lack of phones in classrooms and other locations where students congregate limits E-911 access and can compromise school safety. Trying to populate schools with phones by expanding traditional voice systems or adding more Centrex lines is simply too expensive.

## The VoIP Opportunity

Fortunately, there is now a very cost-effective alternative for a radical expansion and enhancement of voice service. K-12 school systems are in the midst of major data network implementations and upgrades funded by E-Rate allocations and other information superhighway initiatives. When voice is treated as an IP data application and categorized as an enhanced data application, telephony systems can leverage these data infrastructure investments.

With VoIP, the same physical cable plant that is providing data access to classrooms can also be used to deploy phones. This saves on wiring costs and streamlines the maintenance of cabling systems. Similarly, a single logical system can be distributed across all school campuses and facilities. This eases system administration and management, and enables more efficient sharing of specialists, receptionists, and other human resources. Voicemail and other advanced telephony features can be deployed to everyone at little or no incremental cost, greatly enhancing communication. And by putting a VoIP infrastructure in place, schools are also setting the stage for multi-media distance learning.

## Avoiding VoIP Pitfalls

While VoIP's potential is enormous, the reality can be very different. Some VoIP solutions have complex and often retrofitted architectures that limit options and result in all kinds of extra costs – up-front system and option pricing, integration time and expense, hidden or soft costs, and ongoing operational expenses that eat up budgets in perpetuity. K-12 schools contemplating migration to IP telephony need a solution that fits certain basic requirements:

**Incremental rollout and legacy integration.** Funding issues, risk factors, and contractual obligations may rule out a system-wide “forklift” upgrade that replaces the traditional voice network with VoIP all at once. VoIP can also be a non-starter if it means blanketing schools with expensive IP handsets, because telephones don't qualify for E-Rate funding. The VoIP solution should enable incremental migration and be easy to integrate with legacy equipment and services, including Centrex.

**Ease of use.** User support issues can negate the benefits of new technologies, and VoIP is no exception. Users should be able to interact with the new system in the same familiar way, making the migration almost transparent. The phones are still just phones, though they may provide access to a lot more functionality. At the same time, certain office jobs can be aided considerably by a paradigm shift to computer telephony. The VoIP solution should include an intuitive PC interface with advanced tools for call handling and call control.

**Easy management.** Some VoIP solutions look good on paper, but in practice are notoriously difficult to maintain and manage. Whether the inherent flexibility of IP-based technology is a benefit or a problem depends to a large extent upon the management system which controls it. This is doubly true for VoIP, because it is spanning two very different fields of expertise: telephony and data communications.

The right VoIP solution will have a graphical interface that is not only web-based but very intuitive. Command-line interfaces, if they exist at all, should be merely options for die-hard technicians of the old school. The web-based console should provide a single-system view of the entire multi-site network, enabling the staff to manage it from anywhere with an Internet connection, including at home. A measure of training time and costs is an important evaluation component, and can provide a very valuable clue about the manageability of a particular VoIP solution. Such estimates can often be verified by independent reports or customer references.

Reliability is another measure that directly impacts the management burden, and should not be part of any trade-off in the VoIP migration. IP telephony should at least equal the 99.999% availability of traditional telephony, in part so the technical staff isn't spending a lot of time running around fixing things. Fortunately, IP's peer-to-peer architecture was designed with fault tolerance in mind, and a good VoIP solution will exploit this capability. If the central switch fails, the switches at the individual sites should automatically go into stand-alone mode so there is no disruption in voice service. A more likely and less controllable event is the failure of the data network, and a highly reliable VoIP solution will be able to dial around the WAN to the PSTN whenever it becomes necessary.

## ShoreTel's Smart IP Telephony System Gets High Marks

Many vendors have approached VoIP by taking existing telephony or data communications platforms and retrofitting them. The legacy of this approach is unnecessary system overhead and complexity. ShoreTel's voice system was designed from the ground up to be a VoIP platform, and the result is a simple, distributed architecture that carries no legacy baggage. The ShoreTel solution scales in both directions and can be rolled out gradually, using a cookie-cutter approach that enables plug-and-play installation. Integrated voicemail and management create an all-in-one solution that further simplifies implementation and use.

An intuitive Web-based management console provides an integrated view of the entire multi-site network, and includes software tools that greatly streamline administration. Moves, adds, and changes that used to require truck rolls and hands-on wiring modifications can now be done remotely in two or three minutes with a few mouse clicks.

ShoreTel makes forklift upgrades of entire telephony infrastructures easier, but does not require them. The ShoreTel system can be easily networked with legacy phone switches and Centrex lines that can't be replaced yet, so school systems can be migrated building by building or site by site. Meanwhile, the ShoreTel system can provide voicemail services to all teachers and staff, whether their offices have been migrated to VoIP already or not. Teachers can check their voicemail from any phone, and receive direct, detailed messages from parents. ShoreTel's extensive legacy integration capabilities include support for inexpensive analog phones, eliminating the need to deploy high-priced IP handsets. This is particularly important in the K-12 education sector: While much of a VoIP solution's components qualify for E-Rate funding as providing enhanced IP services, the actual telephone handsets do not.

Handsets connected to the ShoreTel switches work just like traditional phones, easing the transition for teachers and staff. Employees can elect to use ShoreTel's award-winning Personal Call Manager (PCM), which provides an intuitive point-and-click interface on a PC for advanced call control and unified messaging. An enhanced Operator version of the PCM boosts the productivity of office staff by eliminating the need for paper-based messages. The staff can log notes about calls and access complete call histories, leaving no question about when or if a particular conversation took place. ShoreTel's PCM is a highly intuitive interface at all levels, and users can be brought up to speed with a minimum of training. Many schools have found that even the most hardened technophobes can be won over by it.

ShoreTel provides all this extra functionality without placing additional burdens on school budgets that are already stretched thin. School districts which have implemented ShoreTel report that it cost 15% to 40% less than alternative VoIP solutions they considered. Most of them also report that the migration resulted in significant savings on annual telephony costs. By aggregating local access, reducing or eliminating Centrex service, and greatly streamlining administration, school districts across the country are reducing telephony costs \$40,000 to \$150,000 per year while at the same time greatly expanding phone service.

## Summary

E-Rate funds and other data-networking initiatives are presenting the education sector with a unique opportunity to expand and enhance school phone systems dramatically. By treating voice an IP data application, K-12 schools across the country are finding they can blanket classrooms with phones and extend voicemail and other advanced services to teachers and staff while reducing traditional telephony costs. One multisite system replaces multiple PBXes and key systems, simplifying administration and management without sacrificing reliability or voice quality. Dedicated lines and expensive but feature-limited Centrex service are reduced, and browser-based management replaces most truck rolls. The right VoIP solution provides more features for less, enabling ubiquitous E-911 access for enhanced classroom safety and a direct line of communication between parents and teachers.



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