Achieve more for less

How K-12 can benefit from VoIP after E-Rate Modernization
The E-rate modernization enacted with the FCC’s Report and Order FCC 14-99 in July 2014 phases out E-rate support for all voice-related services over the next five years. This will have a profound effect on the delivery of telephone service to schools.

Without the E-rate discounts they have enjoyed on their phone service for nearly two decades, K-12 schools will be looking for more cost-effective ways to make voice calls. Voice over IP (VoIP) offers one potential solution.

Converging voice, video, and data on a single IP network can bring several benefits to schools. It allows school leaders to eliminate duplicate infrastructures, while simplifying network management. It enables them to adopt unified communications tools that can enhance staff productivity. And it offers the potential for real savings on the average monthly cost per call.

This white paper will explore two different approaches to implementing VoIP in schools: SIP trunking and Hosted VoIP. It will look at the costs and challenges involved with these approaches, as well as the E-rate implications for each. Finally, it will offer advice to help K-12 leaders develop a strategic plan for migrating to VoIP, and a checklist of items to consider.
SIP Trunking vs. Hosted VoIP: understanding the differences

When moving to IP-based telephony, K-12 leaders have several choices to make. For instance, do they want to host and manage the infrastructure that handles call routing and other applications themselves, or do they want a telecommunications vendor to host this infrastructure for them? Are they simply looking to replace the transport mechanism that connects voice traffic to the public switched telephone network (PSTN), or do they want an entire calling platform that delivers a very rich feature set?

The differences between SIP trunking and Hosted VoIP begin with these distinctions.

SIP trunking uses the Session Initiation Protocol (SIP), a standard set of rules for signaling and controlling multimedia communication sessions, to establish voice and video calls between end points. SIP governs the establishment, termination, and other essential elements of a call. The call routing is handled by a school district’s private branch exchange (PBX) system, and a telecommunications carrier provides the trunking, or connectivity, between this PBX and the public telephone network.

SIP trunking enables school districts to establish a virtual connection to the PSTN over their existing data circuit, so they no longer have to lease a dedicated Primary Rate Interface (PRI) for voice traffic to each building. In essence, the SIP trunks replace a school district’s legacy PRI service.

AT&T IP Flexible Reach is a SIP trunking solution that includes voice compression technology that transports more voice traffic on the same size circuit, with no appreciable loss of quality. AT&T IP Flexible Reach enables schools to provision “virtual telephone numbers” that look like they are part of the school’s local phone network, and the service also provides Master Street Address Guide-validated information for 911 databases, allowing for integration with E-911 services.

In a Hosted VoIP solution, the vendor hosts and operates the PBX functionality that manages call routing, voice mail, and other applications virtually, in the cloud—similar to a Centrex solution with traditional telephony. The customer’s IP-enabled phones connect to the internet and, from there, to the vendor’s software, which routes the calls.

Whereas SIP trunking is primarily a means of transporting calls to and from an IP network, Hosted VoIP offers a robust platform for voice-related services and much more—including an advanced feature set that enables staff collaboration.

For example, optional features that are integrated into AT&T’s Hosted Voice Services (HVS) include tools such as on-demand conferencing and an open space for collaborating virtually; interfaces for employees to make and receive voice calls on any mobile device running on any platform, using their school district identity (which supports mobile and “bring your own device” environments); and unified communications tools that converge voice mail, email, and social media into a single user experience.
Comparing the benefits

Both SIP trunking and Hosted VoIP can simplify network management and lower IT costs by allowing school districts to consolidate their voice, video, and data traffic across a single network infrastructure. Both also position school districts well for the future, allowing them to take advantage of next-generation services such as unified messaging, audio conferencing, and more.

But there are important differences between the two types of services.

A key benefit of SIP trunking is the potential for significant cost savings on monthly phone service. With Hosted VoIP, the benefits are less about the cost of the service, and more about the robust calling features that accompany it—as well as the simplicity and savings that result from not having to purchase or manage the call routing infrastructure.

In a legacy phone system, schools pay a flat rate for a PRI, even if they don’t need the full capacity. With SIP trunking, however, schools pay a monthly rate that is based on the number of simultaneous calls they want to support. If they don’t need the capacity for 23 concurrent calls, they don’t have to pay for this amount—but they can always add more capacity on the fly if necessary.

When the average monthly cost per concurrent call is analyzed, SIP trunking is a much more affordable option than leasing a dedicated voice line. A 2012 study conducted by Webtorials found an average 33% savings on monthly calling charges by institutions that migrated to SIP trunking.

With a Hosted VoIP solution, school districts pay a monthly rate that is based on the number of users in the system, as well as the various feature sets they want—such as voice mail, call forwarding, and more. Typically, customers can choose from a tiered system of features.

The monthly savings aren’t as dramatic with Hosted VoIP: generally about 10 percent when compared to a Centrex-based solution, said Bob Zapotocky, technical sales director for AT&T’s education business. However, with Hosted VoIP, school districts can get a rich feature set that saves time, streamlines communications, and improves staff productivity.

For instance, AT&T’s Hosted Voice Services includes a Premium package that allows users to turn any iOS®, Android™, Mac®, or PC device into a fully featured phone, with the same level of security as their desktop phone. Users also receive an online collaboration space called MyRoom™, which integrates office applications (such as Gmail™, Google Apps™, and Microsoft® Office 365™) and shared storage services (such as iCloud®, Google Drive™, Dropbox™, and OneDrive™) within a single platform—which allows for collaboration even when employees are using different tools and systems.

These applications provide more than just simple voice communication, adding much more value to a school district’s communications infrastructure.

School districts can run unified messaging applications and other premium voice services from third-party providers, such as Microsoft® Lync™ or Cisco® Jabber®, on top of their SIP trunking service as well—but this would require an additional expense.

To calculate the true cost savings from moving to a VoIP solution, K-12 leaders need to look at what they are spending now across all of their communications systems, Zapotocky said—including the cost of maintaining separate networks for voice and data service.

“When you consider all of the costs incurred across your entire communications continuum, that’s where you start to see real savings,” he said.

VoIP at a glance

<table>
<thead>
<tr>
<th>SIP Trunking</th>
<th>Hosted VoIP</th>
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<tbody>
<tr>
<td><strong>What it is</strong></td>
<td>A VoIP service that connects a school district’s IP-enabled PBX to the public switched telephone network</td>
</tr>
<tr>
<td><strong>How it works</strong></td>
<td>School districts own and manage their own PBX hardware and software licenses, while the provider leases the transport</td>
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</tbody>
</table>
| **Key benefits** | • A single platform for voice and data eliminates the need to manage separate networks  
• Can result in significant cost savings on monthly voice charges  
• Can support a school district’s existing on-site equipment | • A single platform for voice and data eliminates the need to manage separate networks  
• Delivers a number of advanced and integrated calling features  
• Simplifies management and eliminates the need for investment in a PBX |
<table>
<thead>
<tr>
<th>Questions to consider</th>
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<tbody>
<tr>
<td><strong>Can you use your prior investment in PBX equipment?</strong></td>
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<tr>
<td>If you have recently invested in a PBX system, or you are hoping to get more life out of your existing system, then it might make sense to opt for SIP trunking. “That’s especially true if your PBX is new enough to support call termination using SIP signals, and all you want to do is move from one trunking mechanism to another,” Zapotocky said.</td>
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<tr>
<td><strong>Do you have the capacity to support this equipment yourself?</strong></td>
</tr>
<tr>
<td>How much time and effort are you willing to spend in upgrading and maintaining a PBX? Do you have the expertise on your staff to do this on your own? The answers to these questions can help you determine which approach is best for your schools.</td>
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<tr>
<td><strong>Are you looking for a robust feature set as part of your service?</strong></td>
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<tr>
<td>If all you need is a conduit for sending voice traffic from your IP network to the public telephone network, then SIP trunking might make sense. If you are looking for a cost-effective way to leverage services such as unified communications and other features that can make your staff more productive, then Hosted VoIP might be the better call.</td>
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<tr>
<td><strong>How much of an up-front investment are you willing to make in moving to VoIP?</strong></td>
</tr>
<tr>
<td>When planning for VoIP, it’s important to assess the current state of your network, as well as any communications equipment you already own. With both approaches, you will need to invest in IP-based phones, gateway devices that transmit and receive voice communications on an IP network, and analog conversion devices that convert the IP signal to an analog signal for fax machines and other analog equipment, Zapotocky said. And you might need to upgrade your IP network to ensure it can handle voice, video, and data traffic. With SIP trunking, you also need an IP-enabled PBX. “If you have a legacy system that needs replacing, or you are currently using a Centrex solution, you could be looking at an investment of several hundred thousand dollars,” he said. In that case, it might be easier and less expensive to move to a Hosted VoIP solution, which has a lower initial startup cost.</td>
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<tr>
<td><strong>Is it important for you to be able to respond quickly to rapidly changing communication needs?</strong></td>
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<tr>
<td>Technology is evolving so quickly these days that it can be hard for schools to keep up. One of the benefits of a Hosted VoIP solution is the flexibility it offers; rather than becoming locked into obsolete technologies, schools can be sure they are taking advantage of the latest innovations. It can reduce the costs associated with moves, adds, changes, and deletes as well. In addition, the per-seat pricing model ensures that schools only pay for what they use. “Customers easily can add or buy new elements they need,” Zapotocky said.</td>
</tr>
<tr>
<td><strong>Would a hybrid model make sense?</strong></td>
</tr>
<tr>
<td>Another option is to build a hybrid solution by implementing SIP trunking at your existing school sites, while moving to a Hosted VoIP solution at new or future sites. This would let you extend the life of your current PBX equipment, Zapotocky said, while taking advantage of feature-rich VoIP at future sites without as much of an up-front investment.</td>
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</table>
How E-rate modernization strengthens the case for VoIP

The arguments for moving to VoIP are compelling, but the FCC’s E-rate Modernization Order creates an even stronger business case for migrating to VoIP service.

“The E-rate modernization enhances the value proposition for VoIP,” said John Harrington, CEO of the E-rate consulting firm Funds For Learning.

When school districts were getting steep discounts on the cost of their monthly phone service, “the drivers in moving to VoIP were not as strong,” said Harrington, a former telecommunications analyst. He explained that there was less incentive for school districts to invest in the time and infrastructure needed to switch to VoIP.

But now, as school districts become responsible for the entire cost of their voice-related services by 2019, they will be looking to provide these services in the most efficient way possible, Harrington noted.

To illustrate the impact this change will have, consider an example of a school that qualifies for an 80% E-rate discount, uses 10 MB of bandwidth and two dedicated PRI lines at a total cost of $1,918 per month. If this school moved to SIP trunking with AT&T IP Flexible Reach service it could potentially receive comparable service for as little as $1,243 per month.

Under the new E-rate rules, funding for voice service is being phased out by 20 percentage points per year, beginning in 2015. Here is how this school’s monthly expenses would look under both scenarios. To see all the financial assumptions, please reference the cost comparison models at the end of page 13.

Traditional voice and data service

Before the new E-rate rules, the school in this example would pay only $105 per month out of pocket for SIP trunking. That would increase by $105 per month until 2018 and beyond, when the school would pay the full $525 monthly cost of the service.

In each of these years, the percentage of money saved per month (about 36%) remains constant. But as E-rate funding gradually disappears, the amount of money saved per month increases dramatically.

Here is a chart comparing the out-of-pocket expenses, and money saved, for both traditional voice service and SIP trunking during this period:

SIP trunking savings

In this scenario, the school’s total out-of-pocket savings were only $135 per month with full E-rate funding, but that would jump to $675—or over six times as much—once there is no longer support for voice-related services. That’s a difference of $6,840 per year.
More funding available for network upgrades

The potential to save more money is not the only factor that makes VoIP an attractive option under the new E-rate rules: These rules also make more funding available for school districts to upgrade their networks to handle the capacity for voice traffic, thereby reducing the barriers to VoIP migration.

Under the old rules, the wiring, routers, switches, and other equipment needed to build a network infrastructure were considered “Priority 2” services, meaning they were only supported once all eligible requests for telecommunications services and internet access had been funded. Because of the high demand for E-rate discounts, very few schools received any funding for their network upgrades.

The FCC’s E-rate Modernization Order changed the description of these services from “Priority 2” to “Category 2.” It also set aside at least $1 billion per year in funding for Category 2 services for 2015 and 2016, and a subsequent FCC vote extended this arrangement through 2019.

To spread Category 2 funding to the broadest number of applicants possible, the FCC has limited the maximum discount on these services at 85 percent instead of 90 percent.

With more funding available for internal connections, school districts can leverage the E-rate to help them pay for IP networks that can handle both voice and data traffic.

“Voice over IP is a superior product because of the flexibility it provides, and the other applications it can coordinate with—and you can still leverage the E-rate to some extent, because you can run that traffic over your data network,” Harrington said. “Some of that cost for the data network can be recouped via the E-rate program, and you’re also getting a better quality service for the money that you’re going to have to pay one way or another.”

Key considerations

While moving to VoIP makes more sense under the new E-rate rules, there are a few considerations that K-12 leaders will need to keep in mind:

(1) A school district’s monthly internet service is E-rate eligible as long as there is not a portion of the service that is dedicated to voice traffic. If any bandwidth is dedicated to voice service, this portion must be cost-allocated out of a school district’s E-rate application.

Some SIP trunking providers require customers to allocate a certain amount of bandwidth for each call, while others allow customers to prioritize voice packets over their data network, without dedicating any bandwidth for this task. That’s an important distinction when it comes to the E-rate.

With prioritization, school districts can receive full E-rate discounts on their internet circuits—so they should look for a provider (like AT&T) that does not dedicate bandwidth for SIP trunking services.

(2) When preparing their network infrastructure to take advantage of VoIP, K-12 leaders should pay attention to the FCC’s Eligible Services List for the E-rate.

For Funding Year 2015 and beyond, here are some Category 2 components that used to be eligible but no longer are:

- Circuit Cards/Components
- Data Protection (all except for firewall and UPS/battery back-up)
- Interfaces, Gateways, Antennas
- Servers (other than servers necessary for caching)
- Software (other than the software that supports eligible broadband connections)
- Storage Devices
- Telephone Components
- Video Components
- Voice/video IP components
The following components are eligible for Category 2 support: antennas, cabling, connectors, and related components used for internal broadband connections; caching servers; firewall services and components; switches; routers; racks; uninterruptible power supplies; wireless controllers and access points; and the software supporting each of these components.

More information about the E-rate application process, including the latest E-Rate Eligible Services List, is available from the program website: http://www.usac.org/sl/.

(3) AT&T has special programs that can help schools procure the equipment necessary to upgrade their networks to support VoIP. For instance, schools can buy or lease equipment using AT&T Capital Services, a subsidiary of AT&T that provides custom financing solutions to all AT&T Business Solutions customers.

AT&T Capital Services does not finance E-rate eligible equipment, but it can help schools finance equipment that is not E-rate eligible. This could include premises-based equipment to support voice-only traffic (such as a PBX), which is no longer E-rate eligible.

Through AT&T Capital Services, schools can convert many non-recurring cost into a custom-payment solution designed to their specific needs. For school leaders who want the simplicity of one solution with only a single contract and signature required, AT&T Capital Services offers a custom “Managed Services” contract that incorporates all terms and conditions into one agreement.

You’ll also need to consider how much money you can afford to spend up front, and how much you are able to budget per month for VoIP service. Taken together, your goals and your budget will help determine the foundation for your strategy.

2. Develop a VoIP strategy that works for your schools.

Do you want to move to SIP trunking, Hosted VoIP service, or some combination of these? Will you convert to VoIP at all school sites simultaneously, or will you choose a phased approach to rolling out the service over time? If you take the latter approach, which sites will get VoIP service first, and why? How long of an implementation cycle are you looking at?

Identify any additional services you’d like to take advantage of now or in the future, and make sure your strategy allows for these as well.

For instance, do you want to take advantage of unified communications solutions? Would you like to be able to offer online or distance education, running on a common infrastructure across the district? Do you have a first responder technology plan that leverages your district’s network—such as access to school surveillance cameras over your voice and data network?

Also, does your district have a BYOD strategy? Who are the users of your network, and could they be external as well as internal? (For example, RingCenter Office@Hand from AT&T allows you to 4-digit dial from your mobile device.)

Finally, is collaboration important to you? Do you want to have a centralized hub for all of your collaborations—stored by project name/project room?

These are some of the questions you’ll want to consider as you develop a strategy that meets both your goals and your budget.

3. Assess your network capacity and needs.

If you’re transmitting voice, video, and data over a single network infrastructure, your network will have to be robust enough to handle this additional load. Your service provider can help you take stock of your current network and determine your needs.

Based on this analysis, you’ll be able to determine where you might need to add more bandwidth, upgrade your switches, refresh outdated equipment, or add gateway and analog conversion devices to support VoIP service, for instance.

IP network convergence offers significant flexibility, reliability, and cost savings, but it comes with a greater responsibility to manage your network effectively. You’ll need to establish clear standards for design, security, and implementation and maintain strong controls around these. Taking advantage of network monitoring and management tools can help.

Best practices for migrating to VoIP service

Switching from traditional voice services to VoIP can be challenging—but it doesn’t have to be. Here’s an eight-step process that can help K-12 leaders ensure a smooth transition.

1. Consider your goals and your budget.

Successfully migrating to VoIP begins with understanding what you are hoping to achieve: Are you looking to cut costs? Improve voice service? Replace outdated equipment? Future-proof your communications infrastructure? Make staff more productive?

Your answer could include any combination of these goals, so it might help to rate the importance of each one to your overall strategy.

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Here is further food for thought: Services that combine software-defined networking (SDN) and network functions virtualization (NFV) technologies create what AT&T calls an on-demand networking capability, allowing customers to request—and pay for—only the capacity they need, and to adjust these settings easily on the fly. These technologies give AT&T customers unprecedented flexibility to scale their bandwidth up or down, and also quickly add services and locations to their network, using a simple, web-based interface.

4. Work with your team on the design of your solution.

While this might be the first time you’ve been involved in a VoIP migration, it won’t be the first time for your service provider.

Also, make sure you fully understand all the features of the solution you are adopting, as well as your own roles and responsibilities during implementation. You should only be paying for applications and features that make sense based on your particular goals.

Migrating to IP phones can be an expensive proposition. How are you going to finance this additional capital cost? Your service provider may be able to help.

Make sure you clearly understand what your migration plan is, and what you can expect during the process. Too often, only the current state and end state are discussed and negotiated—but almost all of the anxiety and anguish occurs during migration.

5. Choose a provider.

Once you’ve finalized your solution design, post your FCC Form 470 to the USAC website. Once available online, it can be certified and posted. Be prepared to receive and evaluate bids and negotiate with service providers, ultimately choosing the most cost effective provider.

When choosing a service provider, you should opt for a stable, experienced company that offers best-of-breed solutions. Make sure your provider clearly understands your needs and can fully deliver on them. Ideally, your service provider will have experience in delivering VoIP service to other education customers as well. Take advantage of your provider’s product expertise, and ask for ideas that have worked for other school districts.

Providers that offer a wider range of services typically can offer larger discounts than simple VoIP providers, based on your total spend.

The strength of a service provider’s network, redundancy, survivability, and recovery are factors to consider in your evaluation as well. This information should be evident in service level guarantees supported by prospective providers.

Converting to VoIP service can be a significant undertaking, so you’ll want a trusted provider who is a full partner in the project—and not just a vendor selling a product.
6. Pay attention to security and quality of service.

One of the key challenges you will need to address is quality of service (QoS). To help avoid latency or jitter issues that affect the quality of your voice communications, make sure your service provider offers QoS tools to optimize voice performance. For instance, AT&T’s IP Flexible Reach service allow customers to prioritize voice packets over their data network to establish a high QoS.

Another key challenge is security: If a denial-of-service attack affects your network, how can you make sure your voice communications won’t be affected?

One solution is to separate voice service from other network traffic using virtual local area networks (VLANs); this would allow you to isolate and protect your voice traffic, even though it’s on the same physical network as your data traffic. SIP-aware firewalls and session border controllers are other key security measures to consider.

7. Prepare for installation.

Make a list of all lines and numbers to be converted to VoIP service, so they are not lost or forgotten during the migration. Also, make sure you understand the training that will be required of your staff, and plan accordingly. Work with your service provider to develop a migration plan that ensures your service will continue uninterrupted during normal school hours.

Get your customer service records from your current provider first, then cross-reference those to your physical facilities at each location. Often, significant delays or errors in deployment come from telephone services or numbers that have not been accounted for correctly.

8. Test, test, test.

It’s a good idea to convert a single line first; this will give you a chance to test the new service. Once you perfect the necessary equipment configurations, you can roll out the service across other lines or campuses.

Best practices would call for having several test numbers (usually new or unused numbers) defined for every location, and you would test and validate all services using these numbers. Once the services have tested successfully, the site can be scheduled for full porting.

SIP trunking helps Broward County save money, improve efficiency

Florida’s Broward County Public Schools (BCPS) has three main goals as part of its strategic plan: deliver high-quality instruction, improve business efficiency, and deliver effective communication.

When the district previously converted their 13 Primary Rate Interface (PRI) lines used for conferencing services
to SIP Trunking, it supported all three of these goals—high quality instruction, improved efficiency and effective communication—and now BCPS is looking to expand on these benefits by moving to a fully converged voice and data network during the 2015-16 school year.

“Just as business is looking to IT to squeeze out every last bit of efficiency, that’s something that is happening in education as well,” said Doug Pearce, Director of Technical Support Services for BCPS.

With 225,000 students and 238 schools, BCPS is the sixth largest school system in the nation. Pearce has been with the district for 27 years, beginning as a teacher and then moving to IT. During that time, he has seen a huge shift in K-12 education processes.

“I’m old enough to remember when IT wasn’t critical to our mission as a school district,” he said. “When I first started in IT, we had one T1 connection to the Internet for our entire district—and if it went down for an hour, that didn’t make a difference.”

Now, it’s a different world. BCPS has seven or eight gigabits per second of connectivity to the Internet, and “everything is reliant on IT,” Pearce said. Many of the district’s mission-critical education and business systems exist in the cloud.

“This stuff has to work,” he said. “We cannot produce student achievement and conduct assessment activities without (reliable) connectivity.”

‘Significant’ cost savings

In looking to improve efficiency, BCPS officials realized they could achieve considerable monthly savings on their conferencing services by migrating the transport from PRIs to a SIP Trunking solution.

While cost was the primary driver, setting up the district for future success also was a factor. “Part of our decision making was looking at market forces,” Pearce said, noting that the telecommunications landscape is changing rapidly. “We knew we needed to move to Voice over IP for sustainability for the long haul.”

BCPS initially awarded the service to another provider to convert their 13 PRIs to a SIP Trunking solution that supported 300 concurrent calls. But as the district was looking to expand its use of SIP Trunking from a small-scale project to an enterprise-wide solution with as many as 1,000 concurrent call paths, officials put out a request for proposals—and the AT&T IP Flexible Reach solution won the bid.

Factors the district evaluated included cost, the reputation of the provider and its solution, the provider’s ability to support the district and respond to potential problems, the quality of its Service Level Agreements (SLAs), and its ability to execute a large-scale project successfully.

Phase 1 of the project was to convert the earlier SIP Trunking rollout for the district’s conferencing services to AT&T IP Flexible Reach solution.

This initial phase went “very well,” Pearce said, noting there was close communication between AT&T and the district’s telecommunications team. “We were really happy.”

What’s more, BCPS has seen “significant savings” from this move, Pearce said. The district is now paying less than it was previously to support the same number of concurrent call paths.

While BCPS has realized substantial monthly savings from this small-scale project alone, the project did require a significant up-front investment in session border controllers and other IP equipment. “It’s not a trifling investment,” Pearce said, “but we have seen a return on this investment.”

In Phase 2, the district is planning to expand its use of AT&T IP Flexible Reach to support 900 concurrent calls, and it continues to build out its IT infrastructure to support this move. While BCPS will maintain some Centrex lines for backup and disaster recovery purposes, the district expects to pay only a third of what it used to pay for monthly phone service when the rollout is complete.

Keys to success

BCPS has paid careful attention to the change management aspects of the project, redeploying some employees whose services no longer were needed.

“As IP becomes our new lingua franca, we’re taking staffs who traditionally have been experts in the world of TDM and moving them into our network operations and management,” Pearce explained. “That’s a logical move as we shift to an IP infrastructure.”

Pearce advises other districts that are considering a move to VoIP to pay attention to staff training and security.
“The cost savings around this solution are extremely favorable,” he said. “But keep in mind; you need to budget for security to secure the perimeter.”

Also, care and consideration must be given to business continuity, Pearce added: “You don’t want to over-centralize and leave a single point of failure.”

If school districts haven’t begun transitioning to VoIP yet, “it’s time to begin the self-education process,” Pearce recommended. “The world of PRIs is in the latter stages of its lifespan.”

He concluded: “I think a lot of people haven’t made the move to VoIP because of traditional concerns about reliability: ‘What will happen if…’ But those earlier concerns have been mitigated. You realize the engineering work has been done to keep networks fault-tolerant—and schools safe.”

### VoIP migration checklist

Here’s a handy checklist of items to consider as you transition to VoIP service.

<table>
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<tr>
<th>Planning</th>
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<tr>
<td>List and prioritize your communication goals: Are you looking to cut costs? Improve voice service? Replace outdated equipment? Make staff more productive? Or some combination of these?</td>
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<tr>
<td>Develop a budget. How much can you afford to spend in capital outlays? Monthly service charges?</td>
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<tr>
<td>Identify the services you’d like to take advantage of now and in the future: Unified communications? Collaboration? BYOD?</td>
</tr>
<tr>
<td>Assess the state of your current network, and plan any necessary upgrades.</td>
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<tr>
<td>Design a VoIP strategy that meets your goals and your budget. Do you want SIP trunking, hosted VoIP, or a hybrid solution? Will you migrate all facilities at once, or start with just a few?</td>
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<tr>
<th>Purchasing</th>
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<tr>
<td>Petition your consortium or group purchasing organization to offer Hosted VoIP and SIP-based voice services on master agreements for your respective state.</td>
</tr>
<tr>
<td>In choosing a service provider, consider the following factors:</td>
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<tr>
<td>Strength of the provider’s network?</td>
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<td>Provider’s reputation and experience in education?</td>
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<tr>
<td>Does the provider offer voice packet prioritization rather than bandwidth allocation?</td>
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<tr>
<td>Draft service level agreements (SLAs) that ensure an acceptable quality of service, redundancy, security, and support.</td>
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<tr>
<td>Be sure to include technology refresh clauses in your agreements, so you can migrate to future solutions with no penalties.</td>
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<td>Make sure that master agreements have a price reset interval, to take advantage of future market trends and lower technology costs.</td>
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<td>Consider capital leasing options to trade current equipment for salvage value on your next-generation solution.</td>
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<td>Make a list of all lines and numbers to be converted.</td>
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<tr>
<td>Anticipate possible challenges, and discuss these with your service provider before the work begins.</td>
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<tr>
<td>Work with your service provider to develop a migration plan that ensures uninterrupted service. Make sure you fully understand the process.</td>
</tr>
<tr>
<td>Plan for staff training and support.</td>
</tr>
<tr>
<td>Test and validate all new services before migrating fully to VoIP service.</td>
</tr>
</tbody>
</table>
Final thoughts

The FCC’s E-rate Modernization Order has changed the school communications landscape dramatically.

In phasing out support for voice-related services, it has strengthened the business case for migrating to VoIP— and in spreading support for Category 2 services more broadly, it has reduced the barriers to VoIP migration. For K-12 leaders considering how to future-proof their communications infrastructure, there is no better time for switching to VoIP service than now.

In making this move, K-12 leaders will need to assess their goals and decide if SIP trunking or Hosted VoIP would be best for their institutions. SIP trunking can save schools as much as 30 percent on their monthly phone bills, while Hosted VoIP provides a wide range of services than can add tremendous value to a school’s communications platform.

A trusted provider like AT&T can help with this and other decisions that K-12 leaders will need to make, facilitating a successful migration to a VoIP solution that can help meet their needs for years to come.

Appendix: PRI vs SIP Trunking cost comparison assumptions.

<table>
<thead>
<tr>
<th>Assumptions used in the E-rate cost comparison model:</th>
<th>PRI scenario</th>
<th>IP Flex scenario (SIP trunking)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• MIS Plus (10MB) = $718</td>
<td>• MIS Plus (10MB) = $718</td>
<td></td>
</tr>
<tr>
<td>• LD (15,000 minutes x .02/min) = $300</td>
<td>• LD = $0 (15,000K min of LD is included, overage charge applies if exceeded) (300 mins x 50 call paths = 15K)</td>
<td></td>
</tr>
<tr>
<td>• DID (1,000 numbers x .10 with discount will vary) = $100</td>
<td>• DID = $0 (with 2+ year term)</td>
<td></td>
</tr>
<tr>
<td>• 2 PRIs ($400 x 2) = $800</td>
<td>• Call Paths (50 voice paths (leaving room for data) x $10.50 each) = $525</td>
<td></td>
</tr>
<tr>
<td>• Total = $1918</td>
<td>• Total = $1,243</td>
<td></td>
</tr>
</tbody>
</table>

Note: Assume using G729 compression
Assumes COS prioritization for the SIP trunking, which means e-rate cost allocation for our data connection is not required.

<table>
<thead>
<tr>
<th>Year</th>
<th>Traditional voice and data service</th>
<th>SIP trunking and data service</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Voice</strong></td>
<td><strong>E-rate funding</strong></td>
</tr>
<tr>
<td>2015</td>
<td>$1,200</td>
<td>$720</td>
</tr>
<tr>
<td>2016</td>
<td>$1,200</td>
<td>$480</td>
</tr>
<tr>
<td>2017</td>
<td>$1,200</td>
<td>$240</td>
</tr>
<tr>
<td>2018</td>
<td>$1,200</td>
<td>$0</td>
</tr>
<tr>
<td>Total Cost</td>
<td>$4,800</td>
<td>$2,872</td>
</tr>
<tr>
<td>Total E-rate Benefit</td>
<td>$1,440</td>
<td>$2,296</td>
</tr>
<tr>
<td>Total Out of Pocket</td>
<td>$3,360</td>
<td>$576</td>
</tr>
</tbody>
</table>

This equates to approximately 36% savings with SIP Trunking over a comparable PRI scenario.

To find out more about VoIP solutions, visit www.att.com/edu.