The New Network Podcast
K-12 CIO Insights: Lessons in Network Innovation
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Part I

In today’s podcast we’ll be focusing on the importance of network performance for K-12 schools. We’ll look at the trends and applications that are pushing education networks to the limit and we’ll speak with the Chief Information Officer of Green Dot Public Schools, a non-profit organization with 23 high schools that is right-sizing its network connections for success.

Looking at some of the key K-12 application drivers, let’s start with Common Core. The vast majority of states are implementing national Common Core K-12 education standards to support students’ college and career readiness. Because online assessment is an essential ingredient in Common Core outcome measurement, it comes as no surprise that K-12 IT leaders say supporting assessment readiness is their number-one priority. However, only half of principals say their schools currently have enough bandwidth for the job. To get up to speed, more than six out of 10 principals say their school is investing in more bandwidth and mobile devices to meet Common Core requirements.

Besides online assessment, the latest surveys of K-12 leaders point to a short list of applications that are driving network performance requirements, including 1:1 computing, digital classroom content, online learning, and learning management systems.

As more education applications are delivered over the network, bandwidth needs are climbing. The White House’s connectED initiative now recommends that K-12 schools provide a minimum of 100 Mbps of Internet bandwidth per 1,000 students. Within three years, that target skyrockets to 1 Gbps per 1,000 students. For wide area network (WAN) connections between schools, district offices and data centers, connectED currently recommend 1 Gbps per school.

Even though K-12 bandwidth expectations are clear, most schools are still struggling to achieve them. A recent assessment by EducationSuperHighway found that 8 out of 10 schools are not meeting current goals for Internet bandwidth, while six out of ten do not have enough WAN capacity.

It is no secret that cost is always an issue for school districts. While a range of technologies are available for Internet and WAN connectivity, research finds that two options offer far better pricing and performance for K-12 schools: fiber-optic and cable modem access solutions. Indeed, cable modems and fiber offer a far lower cost per Mbps than competing solutions. However, because of surging network traffic, a recent analysis by EducationSuperHighway estimates that 98 percent of U.S. schools will need fiber connections to meet bandwidth requirements.
Part II

Dr. Kevin Keelen is Chief Information Officer for Green Dot Public Schools, an innovative charter school management organization that is investing to stay ahead of the bandwidth curve. Green Dot is an incredible success story, serving more than 12,000 students across 23 schools in Los Angeles, Memphis (TN), & Tacoma (WA). Over the past 15 years Green Dot has transformed struggling schools in the poorest neighborhoods into environments where 90% of graduates are accepted to college. This year eight Green Dot high schools were ranked among America’s best by US News & World Report. Green Dot is also on the cutting-edge of building and scaling high-performance networks to serve their large campus user base and application mix. We’re fortunate to have Kevin with us here today to share what Green Dot has learned about K-12 network planning and management.

Michael: Welcome, Kevin. Can you tell us a little more about Green Dot and the role of the network in driving the organization’s success?

Kevin: Sure. So kind of in brief, Green Dot is a charter management organization. what makes us unique compared to other charter organizations is, we are in the business of school transformations, by which I mean taking previously challenged public schools that are not doing so well and then operating those schools and then, getting some outstanding outcomes at those schools.

We’re really into a growth phase right now, and I think that actually mirrors our technology perspective as well, which has been over the last two years really in a growth phase as well with Time Warner Cable Business Class as a major partner in that. Kind of my whole philosophy on this is that network health is really central to organizational health, and actually is a really good indicator of your organization’s health if you’re able to look at it and see that you have strong technology and a strong network behind all of that as well.

Just to give some context, we have a full 1-gig WAN across all of our schools, 1 gig of Internet expanding to 4 gigs of Internet soon as well. Having that strong infrastructure, again, is the backbone of what we do every day, whether it’s in the classroom, from an operational perspective and in terms of our growth around the country. It’s been a really exciting time to be here, and of course it’s exciting as well to be working in technology during this time as well.

Michael: With that kind of infrastructure that you have in place, what are the applications that are creating the biggest opportunities for you, and also the greatest challenges?

Kevin: We’re leveraging technology, including all of our web-based applications, kind of hand in hand with our traditional academic model. We’re looking to change the odds for students in the areas that we serve. They’re 90 percent, 95 percent free and reduced lunch poverty levels, not just below the poverty line, but really much more abject, problematic poverty that can be 60 or 70 percent of the areas that we serve. And so again, hopefully changing the odds for students through those types of opportunities. And I would say that one of the biggest challenges then that we face in the midst of it is, I think, ensuring that all the wealth of data that we have in the organization just connects in a really meaningful way for end users. Whether it’s teachers, administrators, home-office staff, we have a data warehouse. But it can just be overwhelming to end users. We’re helping our staff make meaning of that data, which, in turn, has really positive outcomes for students. It’s really powerful stuff.
Michael: And so clearly, Green Dot’s been about school transformation, and in your role there, you’ve also been about network transformation. So if we drill down a little further, tell us a little bit more about your network infrastructure today.

Kevin: We’ve modernized all of our schools. Kind of what that means is going through and upgrading core networking equipment and cabling. We’ve installed IP clocks and speakers and upgraded the Voice over IP system. We’ve upgraded wireless with new wireless controllers and high-density access points, a minimum of one per classroom and more in common areas. And it’s really proved incredibly powerful for schools to have all their kids online simultaneously, whether it’s for day-to-day academic activities, whether it’s for state testing, whatever it is, all of our schools now have the capacity to have every single student online on some type of device plus staff members and others, and that’s been incredibly exciting and powerful to see.

Michael: So how important is network reliability in this picture, and what are some of your uptime targets?

Kevin: It's integral. Our schools really can’t operate without the network in place. A lot of our schools, roughly a third of our devices out there are Chromebooks. Chromebooks without wireless basically have no utility whatsoever. And so you've got to have that uptime, it's got to be in place. So actually, our target for that is literally 99.9 percent. We don't tolerate any downtime.

Michael: What advice do you have for other CIOs about network trends and planning given the huge user base you’re serving and the cutting-edge applications you’re working with in the classroom, and also for administrators?

Kevin: Yes. There are two things I would say about this. And I think the first one is pretty simple. Again, when I moved over two years ago to working in technology at Green Dot, the first thing that had to be fixed was the fact that we were investing in pretty low-quality devices because we wanted to save money. And it's like that would be the absolute wrong perspective on this. And it's not to say that you go all in and buy the top of the line in everything, but you identify what’s really, really important on the hardware side and you stick to those. My whole theory on this is technology more than pays for itself in terms of the gains in efficiency that you get. And again, I don’t think that’s groundbreaking. But when you work in public education and you do have a finite amount of money to spend, it can be easy to make those cuts on technology, but I would say those cuts are generally the wrong idea. It’s one of the best investments you can make as an organization.

Michael: And that philosophy of no shortcuts and making smart, big investments to get big rewards, clearly you’ve done that as well with your WAN infrastructure and your Internet connectivity, moving all the way up from 1 gig now to 4 gig. And that provides you that capacity to look at all kinds of innovative ways to use that connectivity. One of those would be cloud services. And how’s Green Dot using cloud services today?

Kevin: Sure. I would say we’re kind of right now a 50-50 split between internally hosting and cloud based. Some examples, for example, would be, on the internal side, Power School which is our student information system; we do internally host that in all of our regions. Scholastic, which we use for literacy intervention, again, internally hosted. Cisco
Call Manager, Exchange, our own SQL-based data warehouse, all of those we’re doing internally here, hosting those internally.

On the cloud-based side, we are doing things like Google Apps for Education, Workday, which we’re migrating to in terms of our HRS and payroll systems, our assessment system, and a number of others are cloud based. And so for us, I think it’s in finding the right blend of those two. And again, long term, I think we do aspire to go cloud based with as many systems as possible.

Michael: That's a large, mission-critical application list that you’re working with, both that you’re hosting internally and through the cloud. In addition to applications, the other piece that’s exploding on networks, as you all know, is devices, particularly mobile devices. So what’s your approach to bring-your-own-device and mobile device support in general?

Kevin: I think what makes us a little unique too is, going back to the student population that we serve, again, 90 to 95 percent free and reduced lunch. And so with that in mind, I think that our tendency is to want to provide devices for students. And also we can control those devices through mobile device management systems and things along those lines. We don’t restrict personal devices. We don’t say, “No, you can’t bring those on our campuses or use those,” but our systems are best utilized using Green Dot’s technology.

Michael: So with the deployments that you’ve got going on now, could you elaborate a little more on your experience with mobile devices and its impact and application traffic; how that's affecting both the Wi-Fi network infrastructure you have and the WAN and your Internet connectivity as well?

Kevin: Yes. And the good news on this is, it’s pretty much been seamless. Whenever we finish one of these modernizations, there may be a three-to-four week period when we go back to make some small tweaks based on the configuration of the wireless controller, little things around the campus. But generally, once we get that settled down, it’s just not even something schools have to think about it. On most campuses we’re able to support over 1,000 devices on the Wi-Fi simultaneously without any issues. Our schools, I didn’t say this already, we’re a small-school model with about 600 students per campus on average; so again, we’re able to do far more than a one to one on those campuses without any issues. And this was especially true during state testing which we did back in spring. And on campuses we were able to have, again, over 1,000 students simultaneously on devices with no issues. It was really exciting, again, especially compared to two years ago where; really, almost none of that capacity was in place.

Michael: And clearly, online testing and assessment is becoming a big deal. What are you noticing about the network requirements for online testing and assessment?

Kevin: Sure. So we were really conscientious about this. If you haven’t worked in education before, schools are so incredibly stressed out about state testing, and the last thing you want on top of that is to have technology issues that go hand in hand with, say, student behavior issues as a part of state testing, or teachers that call in sick and you have a long-term sub or a short-term sub in a class for a particular day as well. And so if we can take that layer off where it’s incredibly stressful, and instead you have no technology issues, it’s seamless. We’re there on site doing hands-on support, the wireless network is perfect, the wired network in terms of plugging into the LAN is perfect
as well. We’re able to allow our schools to do what they do best, which is focus on classroom instruction and preparing students for college, leadership, and life. And that’s ultimately the lens through which we see our work. We love what we do, we love technology. Our goal is to take away all of those impediments. Take away all those restrictions so our schools can focus again on core instruction, which is what’s most important to our students.

Michael: And it sounds like, when you hit these big technology game days, like when it comes to assessment, that whole approach of no shortcuts and making smart investments is really paying off for you. So if we look at the overall takeaway here on how network solutions are helping Green Dot, what’s the message that you’d want our listeners to know?

Kevin: Sure. I think it all goes back to kind of the first thing I started with here, which is, network health is indicative of overall organizational health. It’s central to it. It facilitates health and its representative of health as well. Tech has really become just core to student learning regardless of where you’re at in the country. I think, again, it’s our moral obligation for those of us who work in the field of technology to ensure that all tech that’s at school sites, whether it’s on the network side, whether it’s on the desktop side, whatever it may be, works seamlessly, so that we can, again, maximize instructional time.

We’ve seen highly effective instruction, having a highly effective teacher in every classroom has the highest impact on student growth of any other variable out there. So if we can just leave teachers to do what they do best, which is, again, instruct students and do that in a highly effective way, remove those obstacles so they can do that, it’s a win-win. It’s a win-win for teachers. They can enjoy their jobs more. It’s a win-win for administrators. They don’t have that stress of making sure that everything is working right. And of course, it’s a win-win for students, who will benefit from having a really focused teacher, having technology in their hands, and having the right environment to learn.

Michael: Thanks so much, Kevin, for being with us today. It’s wonderful to hear about the successes at Green Dot and the huge impact you’re having for kids all across the country.

Kevin: Yes, absolutely. It’s really cool to see how it all connects back together. And again, Time Warner Cable Business Class and the tools that they provide us through our WAN and our Internet is at the core of that.

Thanks Kevin. Organizations like Green Dot are showing how K-12 schools can stay ahead of the bandwidth curve. With smart investments in high-performance network infrastructure, schools can leverage mobile devices, cloud services and other applications to drive results in the classroom.

A transcript for today’s podcast is available on the Time Warner Cable Business Class website that includes details on the research and statistics we discussed.

For Time Warner Cable Business Class, this is Michael Harris.

https://business.timewarnercable.com/
i COSN 2015 K-12 IT Leadership Survey Report
ii “Fourth Annual Principals’ Assessment of Public Education,” MCH Strategic Data, February 2015
iii ConnectED, White House Plan for Connecting U.S. Schools, June 2013
iv “Connecting America’s Students: Opportunities for Action. An Analysis of E-rate Spending Offers Key Insights for Expanding Educational Opportunity,” EducationSuperHighway, April 2014
v “Connecting America’s Students: Opportunities for Action. An Analysis of E-rate Spending Offers Key Insights for Expanding Educational Opportunity,” EducationSuperHighway, April 2014

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