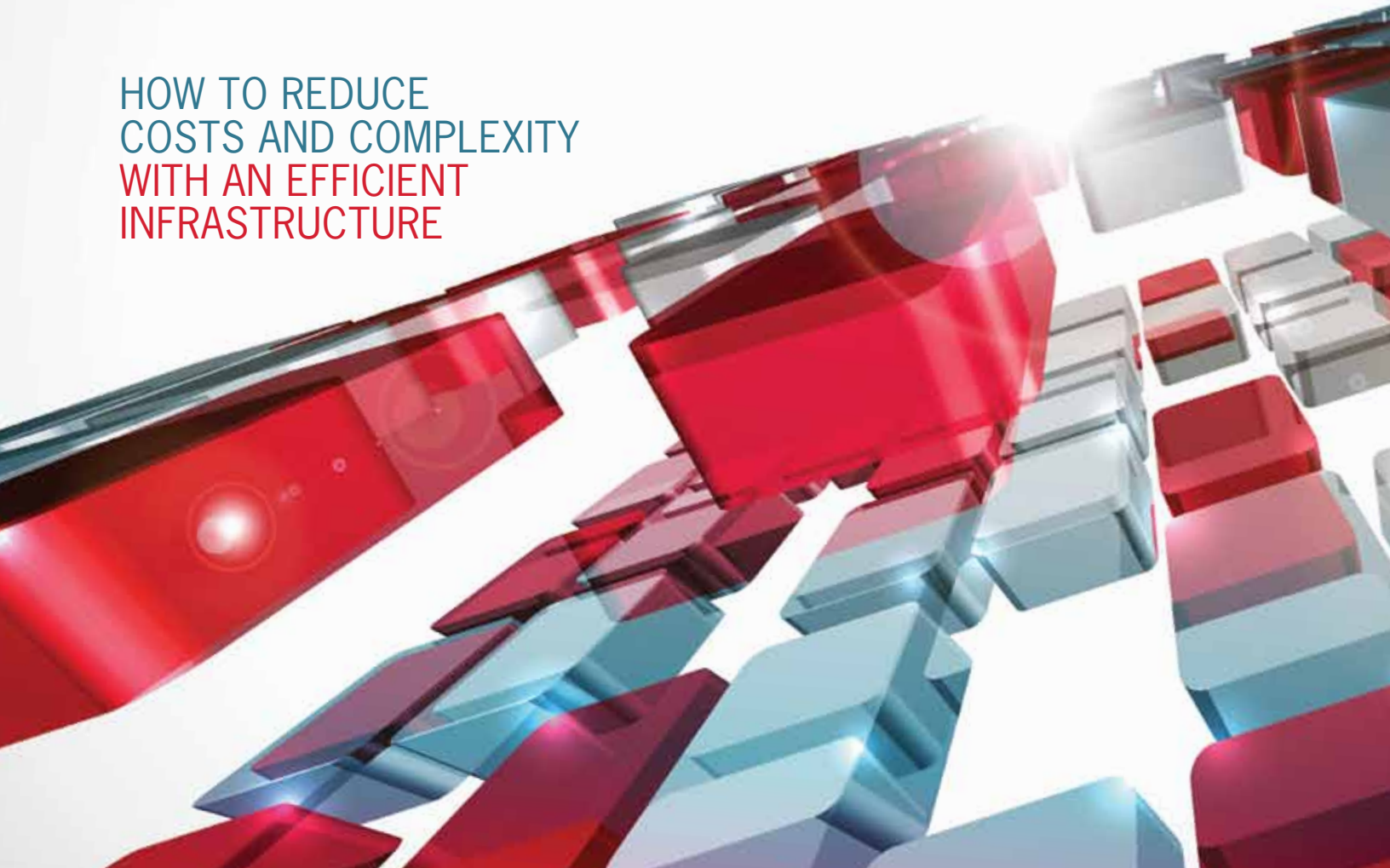


Preparing for a **Digital** Learning **Environment** in K-12 Schools

HOW TO REDUCE
COSTS AND COMPLEXITY
WITH AN EFFICIENT
INFRASTRUCTURE





Introduction

School leaders have many opportunities to make changes that can profoundly alter the learning environments they provide students. The digital revolution and rise in the use of wireless networks and mobile computing devices promise a new paradigm in education, one in which students and teachers have anywhere, anytime access to their school network; where learning can be more personalized and customized; where students are more engaged; and where collaboration becomes much easier to achieve.

States are also increasingly adopting digital learning standards. At least 10 states have new legislation addressing digital textbooks or digital content; 28 have passed laws covering online and distance education.¹ At least 44 states are adhering to new Common Core standards that emphasize 21st-century literacy. On a national level, the National Broadband Plan and National Education Technology Plan also stress the value of integrating technology within education.

However, layered on top of these digital opportunities are budget pressures. At least 84 percent of public school districts plan to cut spending in the 2011-2012 school year, as stimulus funding expires and local and state tax revenues decline.² Among districts making cuts, about 64 percent plan to reduce spending on instructional materials and technology and equipment.

The hurdle facing schools is how to improve IT infrastructure to provide digitally enhanced learning to their students at a time when dollars are short. Schools must make do with less money, while ensuring they are providing staff and students with technology that enhances learning and leads to improved student success. Some districts have solved the problem by streamlining and simplifying their existing IT infrastructure. Improving what's already in place can not only save districts money, but make it much easier to enhance student learning and achievement using today's technological tools. Here's a look at how this is possible.

Seeking Answers: Reducing Costs, Improving IT Management, Fostering Student Achievement

Many schools have IT infrastructures that were not originally designed to handle the demands presented by 21st-century learning, such as needs for increased network bandwidth and storage capacity. As technology has rapidly progressed,

students, teachers and other education professionals have come to expect secure, powerful and reliable Internet access, including wireless service. As digital learning becomes increasingly prevalent, it also becomes “mission critical” — that is to say that it is integral to teaching and must be available to ensure learning is not interrupted. Providing updated infrastructure has become a top concern for school administrators.

Infrastructure issues that many school districts are struggling to address today include:

Reliable network access

Networks in today’s schools may need to support 1,000 or more students all logging in at once using mobile devices, whether for class, for testing or outside of class to access informational resources. Such a load can challenge the capacity of school district networks, especially older ones.

The move to “BYOD” (Bring Your Own Device) solutions can also strain networks. About 70 percent of administrators in a recent survey favor the concept of BYOD, with many considering implementing such policies.³ Allowing students to bring in devices of various types, platforms and capacities is another test for school networks.

Storage

Districts must store more information and student data today than ever before, as schools keep and deploy rich media, including HD videos and audio files, as well as student records, including projects and assessments. Some of these records must be stored and protected in accordance with laws like HIPAA and FERPA.

Systems management

Managing IT systems during a time of technological transformation presents challenges on many levels. IT managers need to cope with myriad devices with differing operating systems and platforms; keeping all these devices up and running is a potential burden for IT departments that are running lean.

Security

Security becomes increasingly important as more users enter a system. This is especially true when users are accessing the network using various mobile devices under a BYOD plan. Authentication and virus protection measures need to be in place.

Effective content filtering to prevent students from accessing inappropriate material is another security-related consideration and is mandated by federal legislation, including the Children’s Internet Protection Act.



Availability

All learning systems and networks need to be consistently reliable and accessible, both on a wired and wireless basis. When disasters strike — be it a weather event or other type of emergency — adequate back-up and recovery plans need to be in place to ensure continuity of service. This is especially important today, as more teachers, students and administrative staff rely on technology throughout the day. When districts offer around-the-clock access, they also must ensure support is in place should something happen to threaten that access.

Professional learning

Adding new equipment and technological capabilities to a district won’t automatically enhance student learning and achievement. Both administrators and teachers need to know the best strategies for incorporating technology into the curriculum. This often means online training sessions and other professional development activities, which districts need to work into jam-packed schedules and cash-strapped budgets.

Creating a Strategy: Dell IT Simplification Assessment

The Dell IT Simplification Assessment can help ensure readiness for school districts by finding economical, efficient ways to enhance and streamline their existing technology infrastructure and processes. Such an assessment can provide districts with a roadmap toward enhanced, 21st-century learning for students.

ACHIEVING RETURN ON INVESTMENT

Return on investment, or ROI, can be seen from various IT simplification actions and strategies, such as:

- **Server virtualization.** A district may have hundreds of servers that have not been virtualized — meaning one physical server is dedicated to only one application. Based on an Intel study, customers can often achieve a 15:1 server consolidation ratio when moving from aging servers to new, virtualized servers running Intel Xeon processors. Based on the estimated operating system and energy consumption savings, the cost of the new servers could be paid back within 5 months.⁴
- **Consolidation.** If individual networks or servers have been set up at each school or site within a district, consolidating and bringing them back to a central location can simplify management and save money.
- **De-duplication.** Information in storage often is duplicated, particularly e-mail. Districts may think they need to buy more digital storage, when in reality, they need to “de-duplicate” the data they are storing.
- **Improved storage management.** Storage also can be used more intelligently by prioritizing where information is kept. Not all data needs to be in “high access” memory, but can be put in a lower tier. By more intelligently managing the data that districts must store, less new storage capacity needs to be purchased.
- **Outsourcing.** IT outsourcing can be a cost-effective solution for a variety of tasks, such as the handling of e-mail, help desks, or even entire IT operations. Data centers can be very expensive to operate and maintain effectively and efficiently. For some schools, outsourcing the center, or other high-cost IT functions, can save money.



So what is involved in a Dell IT Simplification Assessment? In brief, Dell education technology consultants visit a district for an extensive analysis of its entire IT infrastructure. These specialists have many years of experience within educational IT, and include former educators, technology directors and CIOs of school districts. This unique experience not only provides Dell’s education consultants with a wealth of technical expertise, but also with the ability to combine their technical expertise with their in-depth understanding of K-12 schools and districts. The assessment process they lead includes a review of the architectural, financial and operational components of the current infrastructure; a rating of the system’s capacity to support a 21st-century digital curriculum; and recommendations for how to improve the system through simplification.

“When we use the word ‘simplified,’ that can be equated with ‘efficient,’” explains Dell Educational Consultant Martin Yarborough. “When we start to reduce some of the complexity within a program, it helps to make the operation of the program much more efficient.”

Here is a more in-depth look at what’s involved in the IT simplification process:

First Stage: The Workshop

Before beginning the assessment, Dell consultants meet with stakeholders in a district, which can include administrators, IT staff, curriculum directors and others. During this workshop, also referred to as a customer whiteboard session, district stakeholders can discuss their educational goals and how they hope to use technology to meet these goals, along with pain points that are preventing achievement. Dell consultants will cover best practices and how the district’s systems compare to highly efficient enterprises, including an examination of IT problem areas.

After the workshop, participants are sent a report quantifying findings generated during the discussion, along with recommendations for future action. “In most cases, we are going to recommend they consider a full-scale assessment,” says Yarborough. “But in some cases, they may not need it. They may need something a little less intensive — maybe an end-user computer analysis, a server analysis, or a storage health check.”

The Assessment: An End-to-End Review

The Dell IT Simplification Assessment is a thorough review that looks at several areas of potential waste and

inefficiency, such as how a service desk is managed or how server support takes place. Each area is given a benchmark or baseline score or metric — a point from which improvement will begin. After all, “you can’t improve it until you measure it,” says Yarborough. Dell will then recommend the best processes, practices and procedures to drive out unnecessary complexity and improve existing internal processes. The end result is an in-depth executive summary document that calls out specific infrastructure improvements, along with the cost savings that the school can achieve through implementing each recommended action. It’s a step-by-step process in which school district IT departments can become more efficient and provide better service for less money.

As part of its review, the Dell IT Simplification Assessment examines five key areas of an educational IT system, with a broad, end-to-end perspective. Each area is reviewed to see its present “as-is” state and to locate areas of inefficiency that, if remedied, could result in “to-be” improvements.

- **End User Computing**
This encompasses the equipment and services users directly interact with, including their current work stations, mobile devices, output devices and messaging.
- **Data Center**
A district’s server and storage, facilities, network, disaster recovery procedures and database operations are examined.
- **Application Operations**
Portfolio management is reviewed, along with the SDLC (software development life cycle) operations impact; software licensing; enterprise application integration; and automation.
- **Service Management**
A look at how well the service desk operates, including IT governance and service delivery management.
- **Security & Compliance**
The focus here is on reviewing vulnerability management, account management, intrusion detection and compliance management.

In addition to the end-to-end analysis, the assessment process includes discovery input, the examination of specific metrics reported by a district’s IT team; in-depth interviews with focus groups within the district, IT issues ranging from service management to storage to end-user experiences; and activity costing, which calculates specific costs for operations within a system.



Deliverables to expect after an assessment

Once this thorough, systematic review is completed, Dell prepares a detailed report with recommendations for improvement. These recommendations can be implemented by Dell if a district chooses, by the district itself, or by another company. The recommendations are independent and vendor agnostic.

Deliverables include:

- **Executive presentation** — a report describing the high-level findings of the assessment as well as the financial value of having a simplified environment.
- **Simplification index** — a scale showing how a district can progress through stages of the simplification process, ranging from initial complexity, to improvement, to consistency, and to optimization.
- **Recommended initiatives** — key initiatives are identified and rated from highest to lowest difficulty.
- **Initiative detail** — further explanation of each key, recommended initiative, with a detailed analysis of the current situation, proposed future mode of operation, recommended actions, benefits and implementation considerations.
- **Sample ROIs** — a cost breakdown showing financial return on investment that can be achieved with implementation of recommended initiatives.
- **“As-Is To-Be” chart** — a flowcharted, semi-graphic display summarizing the current state of a district’s IT system (“as is”) as well as what it could look like (“to be”) if simplified.

Benefits of an IT Simplification Assessment

A key benefit from the Dell IT Simplification Assessment is that the final analysis identifies specific recommendations and improvements that will improve efficiency, effectiveness

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and cut costs. These results can typically include a value-to-fee proposition of 5x or more — meaning the implementation of the recommended actions can result in an overall cost savings of at least 5 times the cost of the assessment. Implementing these recommendations also allows districts to perform more work, more efficiently, with fewer resources.

A simplified system typically results not only in cost savings, but time savings as well. When a system is less complex while also being more robust, less IT support is needed for maintenance and day-to-day operational tasks. Instead, IT professionals can devote more time towards innovative approaches to education. Teachers also save time by not having to deal with technology issues or hold-ups, leaving them more opportunity to focus on teaching — and students with more time to learn.

Conclusion

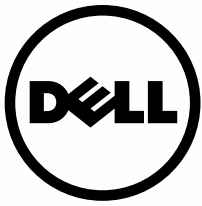
As schools move towards digital learning environments, it is critical for them to have an extremely efficient infrastructure that is aligned with the district's educational goals to be successful. Systems that are optimized for a



21st-century curriculum will ensure schools have the technology and infrastructure in place to enable and support the digital learning initiatives that schools work so hard to implement. Students can participate in collaborative learning on a 24/7 basis, connecting with teachers and other students anywhere, at any time. Teachers can make the best use of Internet technologies to provide a more interactive and personalized level of instruction. BYOD solutions and one-to-one computing initiatives become more achievable, helping to provide mobile access to all students. Student assessments are more easily managed. Finally, professional development for teachers is enhanced through online access, helping them to effectively integrate technology with learning.

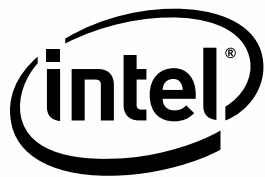
Endnotes

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Dell is committed to helping students develop the knowledge and skills they need to learn and succeed in an increasingly digital world and a globally competitive workforce. As a top provider of technology and services to schools, Dell listens to and works with students, educators, administrators, communities and industry partners around the world to deliver innovative technology and services that give them the power to do more.

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