# How wireless networking enables
# a mobile learning environment

By Abraham Ghebremicael

Fast, reliable access to digital tools and content fosters student engagement and keeps learning time productive. Dell™ PowerConnect™ W-Series wireless network platforms offer high-performance connectivity that is easy for the IT staff to manage.

The increased use of wireless devices in K–12 schools creates an exceptional opportunity to improve student engagement and mobility of the teaching environment within a school campus. The integration of audio, video, and graphics animation, coupled with interactivity, enables new teaching paradigms that expand the learning experience for all students. In addition, the Internet and other communication networks open access to a plethora of information that takes students well beyond traditional classroom resources.

Dell PowerConnect W-Series wireless network platforms, based on the 802.11n standard, are designed to enable seamless mobility and reliable network access to digital tools and content—while simultaneously meeting district requirements for security, scalability, and cost-effective deployment and operation. These wireless solutions provide an easy-to-manage network for IT staff that allows reliable, high-performance connectivity for students, teachers, and administrators throughout the Connected Learning environment.

### Getting wireless networks up to speed

As K–12 school districts explore ways to give students and teachers free-ranging access from mobile devices to digital resources, each other, and the Internet, it is a critical planning consideration to ensure that the supporting wireless infrastructure is up to the task. The advent of the 802.11n wireless networking standard has accelerated the shift from wired to wireless as the preferred access method in classrooms and across districts (see Figure 1). PowerConnect W-Series 802.11n network platforms enable a variety of benefits over previous wireless technologies:

- **Improved capacity and performance:** The 802.11n standard allows significantly increased data rates compared with previous standards, enabling students and teachers to take advantage of high-speed access to rich multimedia content.
- **Increased range:** Multiple-input, multiple-output (MIMO) techniques in 802.11n accelerate the connection rate for a given range and extend the range at the edge of a cell. This extended range can help IT personnel design networks that allow the entire school to serve as a single mobile learning environment.
- **Enhanced reliability:** Wireless network coverage can often be spotty, and even small changes in the environment or device placement can have a large impact on performance. By allowing multiple antennas to work together effectively to maintain the original signal, 802.11n MIMO technology helps dramatically reduce this problem. As a result, it helps ensure that students and teachers keep a reliable signal even as they move across the network.
- **Reduced costs:** The cost of connecting users with a high-speed wireless connection is typically far less than the cost of wiring each

individual device, as are the costs associated with power, cooling, and management. Moreover, in a homogeneous 802.11n-based network, the enhanced range and reliability allow access points to be spaced farther apart than they could be otherwise. The combination of lower installation costs and fewer indoor and outdoor access points can help significantly reduce overall network costs.

## Enabling classroom connectivity with the Dell PowerConnect W-Series

Dell PowerConnect W-Series access points and controllers, along with the Airwave Wireless Management Suite (AWMS), can help district IT personnel effectively deploy and manage 802.11n-based wireless networks to create a seamless Connected Learning environment. PowerConnect W-Series wireless network solutions are designed to meet the specific performance and productivity needs of K–12 campuses ranging from just a few classrooms to large school districts. Because they can be centrally managed, PowerConnect W-Series wireless network solutions enable IT staff to avoid manual configuration and utilize automatic software updates. This approach helps reduce management time and costs for network administrators.

The PowerConnect W-600 and PowerConnect W-3000 controller series provide wireless management and access suitable for different environments. The PowerConnect W-600 Series is designed for relatively small networks, enabling quick deployment with minimal IT staff presence or experience while offering a balance of features and value. The PowerConnect W-3000 Series is designed for medium and large networks that need high levels of performance, reliability, and security. Both series support optional feature modules that extend and enhance core security features.

The AWMS is a comprehensive suite of easy-to-use management options for PowerConnect W-Series network solutions, enabling simplified control while allowing IT personnel to quickly expand networks and reduce the disparate tools
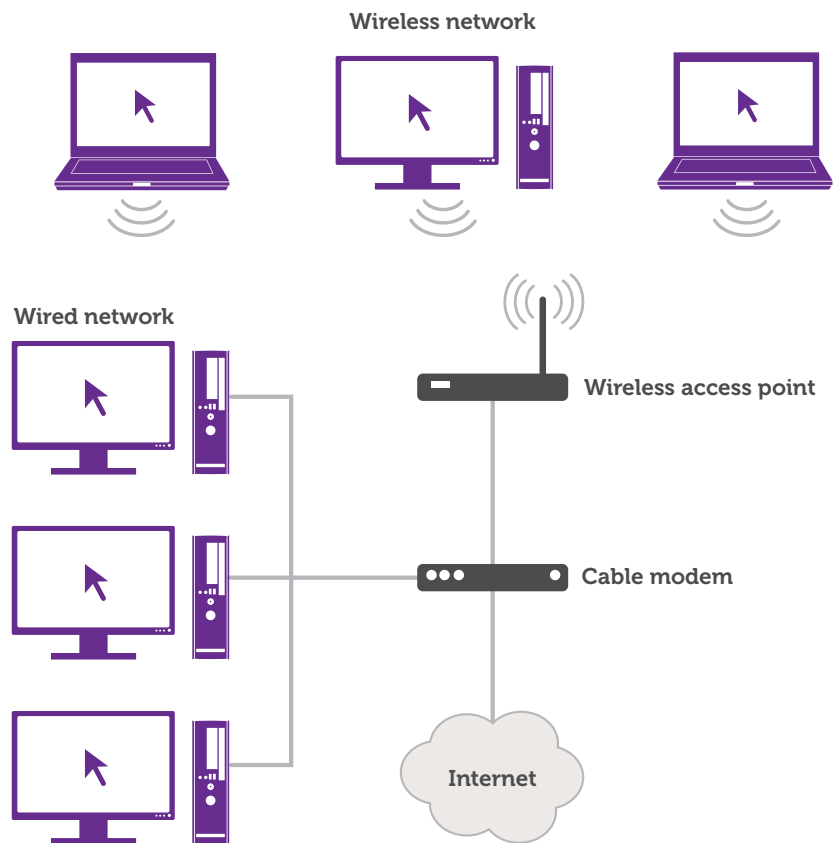


**Figure 1.** Wireless networking based on the 802.11n standard is designed to provide high-performance, reliable, and secure access in K–12 learning environments

needed to support them. It includes a mobile device manager that monitors and offers a single view of all devices on the network, as well as wired-equipment configuration and reporting.

## Facilitating interactive learning and collaboration

The widespread use of personalized computing devices—together with the need for mobility and flexible access—make wireless networking an optimal choice for many K–12 learning environments. By enabling the deployment of high-performance, reliable, and secure 802.11n-based networks that can support a wide range of bandwidth-intensive multimedia applications, Dell PowerConnect W-Series wireless network platforms can help district IT personnel foster interactive learning and collaboration. In addition, they enable teachers to track progress in real time as students engage with their digital learning community. PS

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### Learn more

**K–12 wireless networking:** dell.com/k12/resources

**Dell PowerConnect W-Series:** dell.com/k12/wireless