

District Technology Update Report

EXECUTIVE SUMMARY

Purpose of Report: To update the school board on annual technology initiative objectives.

Technology has quickly become an important tool in the classroom as students research, analyze, compute, and evaluate information. This increased reliance on technology called for improvements in both the network infrastructure and increased broadband access. Marked improvements in these areas have been made since July 1, 2016 and are outlined in the following report.

Another area of focus has been on the District's cybersecurity. The District utilizes content filters, logical network dividing, and best practice policy to maintain data integrity and digital citizenship on its networks. A partnership with the Department of Homeland Security provides vulnerability and penetration scans and reports with the goal of keeping the network clean to ensure the best possible connectivity and accessibility.

Administrative Recommendation to School Board: Acknowledge the report on the District Technology Update.

District Technology Update Report

Purpose of Report: To update the school board on annual technology initiative objectives.

District Priority Area: Fiscal Accountability/Systems Management

Explanation:

As part of the 1:1 Chromebook Implementation, the Technology Planning Committee acknowledged the need for infrastructure planning, reliability, and security to support the increasing use of web-based 21st century learning environments. In response to this need and the cloud based nature of the Chromebook, the District has upgraded the network infrastructure and increased broadband access in the past year. The federal eRate program has already approved over one million dollars as part of the project. The State of South Dakota in conjunction with the Bureau of Information and Technology (BIT) also increased broadband rates to the District this year.

Across the District, the following upgrades have been implemented since July 1, 2016:

- Doubled internet bandwidth capacity
- Doubled bandwidth for Middle and High schools to the main data center
- Increased bandwidth for all Elementary schools to the main data center to 10x
- Increased number of access points from 1000 to 1800 District wide
- Installed new cabling for all access points in an effort to maximize throughput
- Replaced 300 switches with updated models to leverage updated features and processing
- Installed new UPS/battery gear at all switching locations to avoid downtime/brownouts due to utility outages
- Reconfigured new District switches to handle Address Resolution Protocol (ARP) traffic, the process of mapping an network IP address to a physical MAC address for routing traffic within networks, to reduce load on the state's router.

Reliability, integrity, and efficiency has improved based on support ticket volume and anecdotal evidence:

- Prior to all upgrades we would receive on average 4-8 reports per day of inconsistent connectivity, internet outage, or dropped connections.
- As the upgrades were completed, we had a noticeable decrease (fewer than 1 per day on average) in the number of connectivity related reports.
- Prior to all upgrades, the District would typically utilize 60-75% of available bandwidth on a daily basis.

- Since the upgrades have been completed, the District utilizes 30-35% of available bandwidth on a daily basis.
- Staff and students are provided network connectivity reporting utilities.

With the increase in network performance, we have successfully implemented web-enabled meetings (Skype for Business) pilot, online assessments, and cloud-based curricular content.

Cybersecurity is a critical component to maintaining integrity and performance in a local and wide area network. The District technology staff works in conjunction with the Bureau of Information and Technology to provide best practice security measures. We utilize content filters, logical network dividing, and best practice policy to maintain data integrity and digital citizenship. This year we also partnered with the Department of Homeland Security to be part of their Cyber Hygiene program. They provide both vulnerability scans and reports, as well as penetration scans. Training of end users, especially as it relates to suspicious email or scams, is a critical component of our support and commitment to protect the Sioux Falls School District's information security.

Next year, the District will be on the final year of the current three (3) year technology plan yet will continue to develop the next technology plan. We will continue to evaluate current technology practice, while adopting new effective technology in a plan that is seamless, sustainable, and flexible while effectively supporting 21st Century instruction.

Costs: Infrastructure costs total \$3,020,832.16 (switches, access points, UPS's, and cabling), with \$1,335,798 of that amount approved for reimbursement from the federal eRate program. We currently have an additional \$916,992 requested of eligible eRate entities.

Committee Participation: The District Technology Committee is composed of administrators, teachers, support staff, and instructional coaches.

Summary: As teachers have grown more used to having Chromebooks and iPads readily available for daily use in the classroom, they need network reliability, consistency, performance, and security. Through a commitment to hardware, software, communication, professional development, security and support, we can continue meet the demands of a 21st century learning environment.

Administrative Recommendation to the School Board: Acknowledge the report on the District Technology Update.