



CSIS California School Information Services

Norris School District

Technology Review

September 7, 2017



Michael H. Fine
Chief Executive Officer







CSIS California School Information Services

September 7, 2017

Kelly Miller, Superintendent
Norris School District
6940 Calloway Drive
Bakersfield, CA 93312

Dear Superintendent Miller,

In April 2017, the Norris School District and the Fiscal Crisis and Management Assistance Team (FCMAT) entered into an agreement for a review of the district's technology services. Specifically, the agreement stated that FCMAT would perform the following:

1. Analyze the status of the following and make recommendations for improvement, if any:
 - a. Infrastructure replacement planning, deployment, and maintenance, including timelines for each.
 - b. Wireless deployment, management, configuration, accessibility, and security.
 - c. Network topology with emphasis on current and planned bandwidth and core networking equipment.
 - d. Backup and recovery plans for critical data systems including telephones.
 - e. Professional development of technology staff.
 - f. Planning for technology needs and support.
2. Conduct an organizational and staffing review of the technology department, including school site technology support staff, and make recommendations for staffing improvements or reductions, if any.
3. Review technology staff job descriptions and distribution of duties and responsibilities and make recommendations for improvement, if any.

This final report contains the study team's findings and recommendations in the above areas of review. FCMAT appreciates the opportunity to serve the Norris School District and extends thanks to all the staff for their assistance during fieldwork.

Sincerely,

Michael H. Fine
Chief Executive Officer

FCMAT

Michael H. Fine, Chief Executive Officer

1300 17th Street - CITY CENTRE, Bakersfield, CA 93301-4533 • Telephone 661-636-4611 • Fax 661-636-4647
755 Baywood Drive, 2nd Floor, Petaluma, CA 94954 • Telephone: 707-775-2850 • Fax: 661-636-4647 • www.fcmat.org
Administrative Agent: Mary C. Barlow - Office of Kern County Superintendent of Schools



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About FCMAT

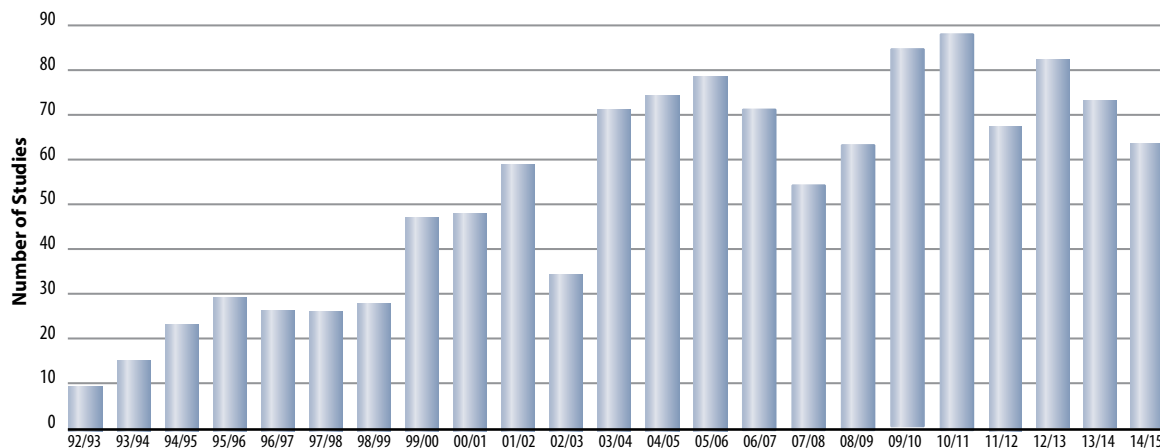
FCMAT's primary mission is to assist California's local K-14 educational agencies to identify, prevent, and resolve financial, human resources and data management challenges. FCMAT provides fiscal and data management assistance, professional development training, product development and other related school business and data services. FCMAT's fiscal and management assistance services are used not just to help avert fiscal crisis, but to promote sound financial practices, support the training and development of chief business officials and help to create efficient organizational operations. FCMAT's data management services are used to help local educational agencies (LEAs) meet state reporting responsibilities, improve data quality, and inform instructional program decisions.

FCMAT may be requested to provide fiscal crisis or management assistance by a school district, charter school, community college, county office of education, the state Superintendent of Public Instruction, or the Legislature.

When a request or assignment is received, FCMAT assembles a study team that works closely with the LEA to define the scope of work, conduct on-site fieldwork and provide a written report with findings and recommendations to help resolve issues, overcome challenges and plan for the future.

FCMAT has continued to make adjustments in the types of support provided based on the changing dynamics of K-14 LEAs and the implementation of major educational reforms.

Studies by Fiscal Year



FCMAT also develops and provides numerous publications, software tools, workshops and professional development opportunities to help LEAs operate more effectively and fulfill their fiscal oversight and data management responsibilities. The California School Information Services (CSIS) division of FCMAT assists the California Department of Education with the implementation of the California Longitudinal Pupil Achievement Data System (CALPADS). CSIS also hosts and maintains the Ed-Data website (www.ed-data.org) and provides technical expertise to the Ed-Data partnership: the California Department of Education, EdSource and FCMAT.

FCMAT was created by Assembly Bill (AB) 1200 in 1992 to assist LEAs to meet and sustain their financial obligations. AB 107 in 1997 charged FCMAT with responsibility for CSIS and its state-wide data management work. AB 1115 in 1999 codified CSIS' mission.

AB 1200 is also a statewide plan for county offices of education and school districts to work together locally to improve fiscal procedures and accountability standards. AB 2756 (2004) provides specific responsibilities to FCMAT with regard to districts that have received emergency state loans.

In January 2006, Senate Bill 430 (charter schools) and AB 1366 (community colleges) became law and expanded FCMAT's services to those types of LEAs.

Since 1992, FCMAT has been engaged to perform more than 1,000 reviews for LEAs, including school districts, county offices of education, charter schools and community colleges. The Kern County Superintendent of Schools is the administrative agent for FCMAT. The team is led by Joel D. Montero, Chief Executive Officer, with funding derived through appropriations in the state budget and a modest fee schedule for charges to requesting agencies.

Introduction

Background

The Norris School District is located in the northern portion of the city of Bakersfield in Kern County and serves approximately 4,100 students in grades K-8. The district has four elementary schools: Norris, Olive Drive, Veteran, and William Bimat; and one middle school, Norris.

For the 2016-17 school year the district reported that less than 21% of its students were eligible for free or reduced-price meals, and that approximately 3.2% of its students were English language learners. Most English language learner students speak Spanish as their primary language.

Study Team

The study team was composed of the following members:

Scott Sexsmith
FCMAT Intervention Specialist
Bakersfield, CA

David Thurston*
Director of Technical Services
San Bernardino County Superintendent of Schools
San Bernardino, CA

John Lotze
FCMAT Technical Writer
Bakersfield, CA

Jerry Waymire*
Assistant Superintendent, Information Technology
Kings County Office of Education
Hanford, CA

*As members of this study team, these consultants were not representing their respective employers but were working solely as independent contractors for FCMAT. Each team member reviewed the draft report to confirm its accuracy and to achieve consensus on the final recommendations.

Study Guidelines

In April 2017, the Norris School District requested that FCMAT review its technology support services. FCMAT visited the district on May 24-25, 2017 to conduct interviews, visit school sites, collect data and review documents. This report is the result of those activities and is divided into the following sections:

- Executive Summary
- Technology Staffing Overview
- Technology Planning
- Professional Development
- Network Infrastructure and Data Center
- Disaster Recovery
- Technology Support Staffing and Organization

- Appendix

In writing its reports, FCMAT uses the Associated Press Stylebook, a comprehensive guide to usage and accepted style that emphasizes conciseness and clarity. In addition, this guide emphasizes plain language, discourages the use of jargon and capitalizes relatively few terms.

Executive Summary

Technology Staffing Overview

Technology support is provided by four full-time positions in the technology services department and one 10-month data technician position that reports to the administrator of instructional support services.

The director of technology services leads the department and reports to the administrator of instructional support services. Three staff members report directly to the director of technology services.

Technology Planning

The district's technology plan expired on June 30, 2014 and uses an obsolete format that is no longer needed. The district's Local Control and Accountability Plan (LCAP) refers to technology goals in various sections; however, it provides no detailed plans for device selection, infrastructure improvements or technology staffing and training.

The district has a board policy and accompanying administrative regulation that requires the superintendent or designee to develop a three- to five-year technology plan with a committee that consists of representatives from various stakeholder groups; however, the district has no such planning or technology committee.

Professional Development

The district provides no formal process for professional development for technology services staff members. Staff indicated that trainings are rarely offered, and those that are may not be relevant to all employee classifications.

This has led to significant gaps in knowledge about the technical systems the district relies on and has put the district at risk of prolonged outages of critical systems. These risks were highlighted by the departure in spring 2017 of the technology services director, who served as the single point of support for many important systems. Technology staff reported a limited understanding of many of these systems due to a lack of documentation, little or no cross training and recent staff turnover.

Network Infrastructure and Data Center

Wide Area Network Equipment and Design

The district contracts with Bright House Networks, LLC for wide area network (WAN) services for 1 gigabit (Gb) per second of internet service via a single connection to the district office with no alternate path. Network documentation, monitoring and usage data is lacking, as is scheduled replacement and maintenance.

School staff stated that the network is not reliable, and they have been reluctant to rely on it for curriculum and student work.

Local Area Network Equipment and Design

The district uses a variety of equipment throughout its local area network (LAN). Many of the Cisco switches use old technology and are listed as obsolete by the manufacturer. The software on these switches cannot be updated, and their data transmission capacity is extremely limited.

Technology staff were unable to provide a current inventory of network equipment, and stated there are no equipment repair or replacement plans or service agreements. Technology staff have some spare equipment on hand.

Staff reported they do not have network diagrams or documentation for the LAN at each school. As currently equipped, the LAN may be providing significantly limited bandwidth to connected devices and may be dropping connections.

Wireless Access

The district has wireless access points at all schools and one wireless controller at the district office. School staff report that although they have coverage in most areas of the schools, the wireless network is not stable or reliable.

School staff report the wireless network password has not been changed for several years and students know it. This is a significant security risk and may further limit available bandwidth. The technology staff do not use network monitoring software so do not know which or how many devices are connecting to the network. The district also lacks documentation of its wireless network.

Server Infrastructure

The district uses a variety of physical and virtual server equipment and appliances. Technology staff did not know the age of the physical servers and do not have any maintenance agreements. There is no plan or budget for repair or replacement.

Data Center

The main data center is at the district office. Technology staff report that non-technology staff have keys to the data center. The data center lacks fire suppression, emergency power disconnects and security monitoring, but it does have a separate cooling system. Technology equipment is connected to uninterruptable power supplies (UPS) but the cooling system is not, and there is no backup generator.

Disaster Recovery

The district has no formal, tested backup and disaster recovery plan for critical information technology systems, and no automated, enterprise-grade backup and recovery function.

All technology services staff interviewed expressed significant concern about the lack of a disaster recovery plan and backup and recovery systems. Staff indicated the district has suffered significant downtime of critical systems because of this.

Technology Support Staffing and Organization

Director of Technology Services

At the time of the FCMAT fieldwork, the director of technology services position was vacant, and school staff reported the district has no technology plan. In most districts, the director of technology services works closely with both administrative and instructional staff to help develop both short- and long-term technology plans.

The director of technology services position was the main technician responsible for routers, switches, phone system, servers and the wireless network. Despite the job description, which gives more weight to leadership and administration, this position's duties were heavily weighted toward the technical aspects of the department, leaving little time for needed leadership, planning and administrative functions.

Network and Advanced Systems Support

The majority of network and advanced system support has been the responsibility of the director of technology services. The lack of other technology staff trained to support these systems leaves the district vulnerable to disruptions in service due to staff turnover. The district should ensure that other staff in the technology department are trained and proficient in supporting these systems.

Helpdesk and Site Technical Support

Staff expressed a generally positive assessment of the technology support provided. However, all employees interviewed were concerned that there are too few technology staff to provide adequate support should needs increase. The district may want to start planning to add technology support staff.

Student Information and Data Systems Support

The district has an information technology (IT) systems specialist position that supports the PowerSchool student information system (SIS) and reports to the technology services director. There is also a data technician position that has as its main responsibility the generation and correction of information for the California Longitudinal Pupil Achievement Data System (CALPADS). This position reports directly to the administrator of instructional services; however it would benefit the district to move this position into the technology services department and cross train with the IT systems specialist to create an SIS support team.

Findings and Recommendations

Technology Staffing Overview

Technology support is provided by four full-time positions in the technology services department and one 10-month data technician position that reports to the administrator of instructional support services.

The director of technology services leads the department and reports to the administrator of instructional support services. Three staff members report directly to the director of technology.

Technology Planning

The district's technology plan expired June 30, 2014. It was written in 2008 and uses an obsolete format required for the Enhancing Education Through Technology (EETT) grant, which no longer exists. The plan was also used for E-Rate funding compliance; however, E-Rate funding rules have changed and no longer require a current plan. The district's administrator of instructional support services could not recall the last time the district's technology plan was updated or referenced, or who was involved in drafting it. The district's Local Control and Accountability Plan (LCAP) refers to technology goals in various sections; however, it has no detailed plans for device selection, infrastructure improvements, or technology staffing and training.

No school site or district staff interviewed knew of any long-term districtwide technology plan, and no one interviewed mentioned the technology goals in the LCAP document. Administrators, teachers and school site staff all expressed concern regarding the outdated technology plan. Staff reported that technology for students and teachers is not used extensively or to any significant effect because of a lack of clear direction. This has resulted in underuse of existing devices, primarily student iPads; limited professional development regarding educational technology for staff; and a low adoption rate of technology in both the classroom and the school office.

The district's board policy (BP) 0440 requires the superintendent or designee to develop a three-to five-year technology plan. This board policy and its accompanying administrative regulation, AR 0440, provide clear detail regarding who will draft the plan and what it will include. Per BP 0440, the district's technology plan is to be developed and written by a committee that consists of representatives from various stakeholder groups including teachers, school administrators, division and/or department administrators, classified staff, parents, and students.

The district recently attempted to implement student G-Suite (Google Apps for Education) accounts and Google Classroom, but this been delayed indefinitely because of technical and logistic issues directly related to the lack of a technology plan. All staff interviewed reported confusion regarding timelines and expectations for this important and much desired service. School staff expressed concern about the potential negative impact the district's aging network infrastructure, limited district-provided technical support and lack of staff development will have on the implementation.

School staff are also unsure whether existing iPads are the best devices for G-Suite or any other internet-based classroom productivity or digital curriculum product; these are the district's standard student devices, but some are more than three years old.

The district needs to draft a formal technology plan with input from a committee that includes a representative selection of stakeholders. It would be best practice and in accord with BP 0440 to ensure that the committee consists of representatives from all school sites, bargaining units, parent and student groups, and the local community.

The committee would need to meet regularly, first to identify districtwide technology needs and draft a plan, then to provide technology-related guidance and recommendations, and subsequently to monitor the successful implementation of the plan. The plan needs to set both information technology and educational technology objectives, and act as a guide for the successful integration of both into the district's Local Control and Accountability Plan (LCAP) and greater educational goals. The plan will need to be approved by the superintendent's cabinet and adopted by the governing board. It is best practice for technology staff and/or designated technology committee members to produce quarterly reports detailing the status of the plan's implementation, and provide annual reports to the governing board.

Several resources are available to help the district draft a new and relevant technology plan:

- A widely used and highly respected framework is available from the International Society of Technology in Education (ISTE) (<https://www.iste.org/standards/tools-resources/essential-conditions/implementation-planning>).
- The Alliance for Education Excellence provides the Future Ready Schools framework, which includes tools to help with technology plan development (<https://dashboard.futurereadyschools.org/framework>).
- The California Department of Education (CDE) offers a template and technology plan drafting tool (<http://www.cde.ca.gov/ls/et/rs/>).
- In 2016 the U.S. Department of Education published a National Education Technology Plan (<https://tech.ed.gov/files/2015/12/NETP16.pdf>) intended to be used as a guide for technology planning at the state and district levels.

Recommendations

The district should:

1. Form a technology committee as the body responsible for drafting, monitoring and updating its technology plan.
2. Replace its technology plan with a current plan aligned with the educational objectives detailed in its LCAP document and with information technology objectives set by the technology committee.

Professional Development

The district provides no formal or official process for professional development for technology services staff members. During interviews, staff members indicated that trainings are rarely offered to technology services staff, and what is offered may not be relevant to all employee classifications. The last training for technology services staff took place in the early spring of 2017 and covered topics related to Power School Learning, the district's student information system (SIS).

The lack of professional development for technology services staff has led to significant gaps in knowledge about the technical systems the district relies on to educate students and conduct school business, and it has put the district at risk of prolonged outages of critical systems.

These risks have been highlighted by the recent departure of the technology services director, who left in spring 2017. This individual served as the single point of support for many important systems including the phone system, the virtual server platform, much of the network hardware, and the district's Microsoft's Active Directory platform. Technology staff reported a limited understanding of many of these systems because of a lack of documentation, little or no cross training, and recent staff turnover. All staff interviewed felt some degree of anxiety about their ability to promptly address technical issues and provide ongoing support for the district's network infrastructure and core systems.

Technology services staff and many district staff interviewed expressed a desire for formal, ongoing professional development. However, numerous employees indicated that individuals' professional development goals are not discussed during employee evaluations. The lack of guidance regarding professional development has led to a noticeable loss of morale among technology services staff and confusion regarding how to best develop skills valuable to both the district and the employee.

Districts with robust and successful staff development offerings identify and provide access to several methods of staff development including online training portals, annual conferences and user groups, memberships in technical professional learning communities, and regularly scheduled cross training sessions.

It would benefit the district to have the technology services director, with the guidance of the administrator of instructional support, identify resources and develop a formal professional development plan that identifies courses, conferences and/or training sessions appropriate for each position in the department. Staff can use such a document to make informed decisions when selecting courses, based on their current responsibilities, professional goals and personal interests. The document and employees' resulting attendance can also be used during employee evaluations to show measurable professional development progress. Although employee evaluations serve many purposes, it would benefit the district to give priority to the professional development component because it can help staff members who are struggling and can motivate high-performing employees.

The district can take advantage of many free or reduced-cost professional development offerings from the California Educational Technology Professional Association (CETPA). These include the CETPA annual conference, which consists of industry-specific educational sessions; professional learning communities known as CETPA regional groups; the California K-12 High Speed Network TAPD program; and access to discounted online technical instruction curriculum through its partnership with multiple vendor partners. More information on these programs can be found at <https://cetpa.net/> and <http://www.k12hsn.org/>.

Recommendations

The district should:

1. Identify critical technology systems and ensure at least two technology services staff members are properly trained to support each system; have staff use vendor-provided resources, attend staff-led cross training sessions, or use other training methods to gain the knowledge they need.

Develop and adopt a formal professional development plan for technology services that identifies and details offerings and appropriately matches each to a specific position or positions in the department.

2. Place a priority on professional development goals for each technology services staff member during employee evaluations.

Network Infrastructure and Data Center

Wide Area Network Equipment and Design

The district contracts with Bright House Networks, LLC, which is now part of Charter Communications, for wide area network (WAN) services. The system includes fiber-optic cable from the district office to each site and is currently contracted and configured to run at 1 gigabit (Gb) per second. The district relies on a single internet connection to the district office at this speed; there is no alternate connection or path.

The technology staff did not provide any network documentation or drawings, stated that they do not have or use any network monitoring tools, and were unable to provide any usage data for the WAN. Staff also indicated there is no scheduled equipment replacement plan and no scheduled network maintenance.

The technology staff report that the district has a Cisco Systems router connected to a Hewlett-Packard (HP) core switch located in the main distribution facility (MDF) at each site. An MDF is where the main telecommunication lines enter a facility, allowing for connection to the public network and other remote sites. The incoming connections are then redistributed to one or more intermediate distribution facilities (IDFs) throughout a facility or campus.

The IDFs provide individual connections of devices back to the MDF. The Cisco router is connected to the fiber-optic cable provided by Bright House Networks. Though FCMAT did not see the contract, staff report there is a maintenance contract for the core switch at each site, but it is due to expire this year. The technology staff did not know the age of the Cisco routers in each MDF but did not think there was any maintenance contract on those devices. Technology staff report that they have a firewall appliance from Palo Alto Networks, Inc. installed at the district office that is connected to the 1 Gb Internet connection. This firewall analyzes all incoming and outgoing traffic and is designed to block unauthorized traffic. It also serves as the district's web content filter. The district has recently purchased a spare firewall appliance in case of a failure.

FCMAT inspected the MDF at Olive Drive Elementary School and the data center at the district office. The router and core switch at Olive Drive Elementary School were not properly mounted or secured in the racks; both devices were stacked on other equipment or sitting on a cabinet top and were not physically secured. The fiber-optic and copper wiring was not properly installed and was hanging loosely from the equipment. This can cause a safety hazard for staff and makes it more likely that equipment will be accidentally damaged, possibly resulting in a network outage for the school. The data center also has network cable, empty boxes and equipment stacked on the floor that may cause a safety hazard. The technology staff indicated that the MDFs at all sites needed work, but the MDF at Olive Drive Elementary School needed the most.

School staff stated that the network is not reliable and that they have ongoing network connectivity issues. Because of this, they have been reluctant to rely on the network for curriculum and in some instances no longer try to use the network for student work.

Many districts have begun to rely heavily on the various services available on the network. Because of this, it is vital that a district's network, and the services running on it, be available when needed. To design and build a fault-tolerant and resilient network, many districts take a structured approach to network design and maintenance. They work carefully to plan, design, install, document and monitor the network to reduce downtime. Detailed documentation helps technology staff quickly isolate network problems, and proper monitoring tools allow technology

staff to be notified when a network issue arises. These tools also allow technology staff to monitor network use so they can better plan for future network needs and identify any congestion in the network. Many districts also maintain service contracts for critical network components and/or purchase spare equipment that can be placed into service quickly if there is an outage. Districts that adhere to best practices also develop an equipment replacement plan that allows them to budget for and follow a replacement schedule.

Recommendations

The district should:

1. Create detailed network diagrams to help staff monitor, troubleshoot and maintain its complex networks.
2. Create accurate WAN documentation for all sites; ensure that it includes an equipment inventory.
3. Develop a replacement plan for outdated and obsolete WAN equipment.
4. Maintain service agreements or spares for all WAN equipment.
5. Inspect each school site MDF for safety issues.
6. Secure MDF equipment and cabling at each site.

Local Area Network Equipment and Design

The district uses a variety of equipment on its Local Area Network (LAN), but the majority of equipment items are Hewlett-Packard and Cisco switches and routers. Many of the Cisco switches use old technology and are listed as obsolete by the manufacturer. The software on these switches cannot be updated, and if a device fails a different device will need to be purchased. The data transmission capacity of the obsolete Cisco switches is extremely limited, providing only 100 megabit (Mb) connections to end devices and wireless access points. Newer equipment allows for greater speeds, such as 1 Gb and higher to individual devices, and 10 Gb and higher back to the MDF switch.

The technology staff state that there are devices on the network from manufacturers other than HP and Cisco, but they were unable to provide a current inventory of that equipment. Technology staff also report there is no documented scheduled equipment replacement plan; equipment is replaced or repaired when it fails. Technology staff also reported they do not maintain service agreements on equipment but do have some spare equipment.

The wiring throughout the district includes both copper wire and fiber-optic cable. FCMAT inspected the MDF wiring at Olive Drive Elementary School, where the copper wiring in the MDF included Category 3 cable. Cable categories define cable specifications for the unshielded, twisted-pair cable used in data networks. The higher the category, the greater the cable's capacity for higher data transmission rates. Category 3 cable was used mainly in voice applications and low-speed data networks and is not suitable for the high-speed networking equipment used today. The Category 3 cable may not be able to fully support the current switches at Olive Drive Elementary School. Many districts have Category 5 and Category 6 cable installed in their buildings, and will install the highest category of cable available when designing a new building or modernizing an existing one.

Technology staff report they do not have any network diagrams or documentation for the LAN at each school. The basic design of the network at each school is an MDF that connects to multiple IDFs. There is an HP core switch in the MDF that has a fiber connection to a Cisco switch in each IDF. The Cisco switches have ports to connect user devices to the network, such as phones, computers, printers and wireless access points. Because of the limited capacity of the current switches, the throughput of the devices connected to them may be significantly limited, resulting in slower connection speeds and dropped connections to the internet and district resources.

The district selected the Apple iPad for students to use for the California Assessment of Student Performance and Progress (CAASPP). The district has purchased iPad carts for the schools, with individual schools adding more iPad carts as budgets allow. The iPads are used mainly for testing, with limited use in the daily curriculum. School staff report they would like to use the iPads more regularly but are unable to do so because of the unreliability of the network. School staff also reported that some teachers have given up using the mobile devices completely because of the instability of the network.

As school districts rely more on network resources in the classroom, it is vital to design and build a network that will meet both the current and future needs of the district. This usually begins with an educational vision and the development of a technology plan. Once these are completed, the district can design, build and document a network that will handle the number of devices and services that it anticipates will be on the network. In many cases it is necessary to update the cabling infrastructure in a school to handle the bandwidth capacity of new equipment.

Network monitoring tools may be implemented to help the technology staff monitor network use and quickly isolate network problems. Districts of similar size typically standardize by choosing one equipment vendor for the switches and routers used throughout the district, and where possible standardize on a few models of these switches and routers within the network. They will also maintain service contracts for critical network components and/or purchase spare equipment that can be placed into service quickly if there is an outage. In addition to service contracts, districts that engage in best practices will develop an equipment replacement plan that allows them to budget for and schedule replacement of equipment when it becomes outdated or obsolete.

Recommendations

The district should:

1. Create detailed network diagrams of the local area network (LAN) to help staff monitor, troubleshoot and maintain its complex networks.
2. Create accurate LAN documentation for each school site and consider including data such as make, model, age, serial number, configuration, and any other notes needed by the department.
3. Develop a replacement plan for outdated and obsolete LAN equipment.
4. Maintain service agreements or spare equipment for all LAN equipment.
5. Evaluate the data cables at each school and develop a plan to replace any outdated cabling.

Wireless Access

The district's wireless network is built using equipment from Ruckus Wireless, Inc. The district has wireless access points at all schools and one wireless controller at the district office. The wireless controller consists of hardware and software used to manage the configuration and security of the wireless system. The wireless access points and controller are connected to the switches, described elsewhere in this report, the limited capacity of which may limit the bandwidth available to the wireless network.

School staff reported that there is wireless access at each campus but also some areas of weak or no coverage; they also indicated that although they have coverage in most areas of the schools, the wireless network is not stable. They reported difficulty getting on the network, being dropped from the network, and an inability to connect or stay connected to Apple TVs.* School staff reported that it is difficult to rely on the wireless network during lessons because of its instability.

At two schools visited by FCMAT the wireless access point in the office was sitting on top of a cabinet rather than mounted properly. Technology staff reported that this is the case with many wireless access points throughout the district, and some may even have books or paper stacked on top of them. For a wireless signal to reach as far as it is designed to, the access point must be mounted correctly, usually on the ceiling or high on a wall. When an access point is not mounted correctly it is difficult to predict the amount of coverage it will provide, but it will be less than the access point's specifications state.

School staff reported that the password used to access the wireless network has not been changed for several years and that students know the password. This is a security risk because it may allow unauthorized users to access district services and information and in doing so take up limited network resources, thus limiting the bandwidth available for students and teachers. Because the technology staff do not use network monitoring software, they do not know how many devices are connecting to the network or if non-school-owned devices are connecting to it. This makes it difficult to determine whether school resources are being used properly.

The technology staff indicated that when the network was deployed a wireless coverage plan had not been developed showing the placement of access points and projected coverage. Staff also reported the district has no documentation of the wireless network. The wireless network was previously managed by the director of technology services with limited help from other technology staff. The current technology staff report they have limited knowledge of the wireless network, and if there is a problem they try power cycling the affected device to get it working.

When districts install wireless networks their individual needs may vary. Some allow students and staff to connect personal devices to the network; some provide open guest access; and others allow their network to be used only by devices purchased by the district. Many districts that have a successful wireless infrastructure started with a network plan that detailed how the network would be used, the number of devices the network would need to support over the next three to five years, and what the network would be used for.

In successful districts, network planning, design and deployment is preceded and guided by an instructional vision. The plan includes both instructional and noninstructional use of the network and is built in collaboration with representatives from all departments that will use the wireless network as well as from the technology department.

Distributing such a plan to each school can help address some of the issues staff have been experiencing by making them aware of where they should be able to expect wireless access.

There is no design for wireless access that will fit all situations. Many factors will affect wireless access, including the type of materials used in building construction, electronic interference, and the projected number of users. To provide the best and most reliable wireless coverage, many school districts either conduct or have a vendor conduct a wireless survey at each site. This is a study that determines the number of wireless access points needed and the best placement of each device to provide optimal wireless coverage.

Most districts create virtual local area networks (VLANs) to separate student, staff and guest traffic. A VLAN is a group of devices on a physical network that are configured to communicate with each other. A single physical network can have many VLANs configured on it to separate traffic and provide added security. This allows the district to provide appropriate access to district resources, prioritize and secure traffic, and apply appropriate filtering policies. Access to the system is gained through a single user login that provides a staff member or student with all the resources available to users at their level of access.

*Apple TV is a small appliance connected to a display that allows digital media to be played. It can display digital media downloaded from the internet or be used to mirror digital media from an iPad or other apple devices connected wirelessly to the Apple TV.

Recommendations

The district should:

1. Create detailed network diagrams of the entire wireless system to help staff monitor, troubleshoot and maintain its complex networks.
2. Develop a wireless plan based on a needs assessment for the wireless network, taking into account the increase in number of students in the district and the anticipated increase of technology use in the classroom.
3. Conduct or have a vendor conduct a wireless site survey to determine the correct quantity and placement of wireless access points at each site.
4. Create separate VLANs for student, staff and guests.
5. Change the wireless password for the network regularly.
6. Communicate the wireless plan and timelines for implementation to all staff so teachers and principals can plan appropriately.

Server Infrastructure

The district uses a variety of physical and virtual server equipment and appliances. A virtual server environment is a combination of hardware and software that allows multiple operating systems and applications to run on one or more physical servers. This better uses physical resources and is more cost effective than purchasing separate physical servers for each service on the network. The district uses two different virtual server environments. The main virtual server environment is built using XenServer. The technology staff report they are using the open source version of XenServer, which does not include support (open source software is software that is available at little or no cost, usually because of public collaboration, but is not supported). The XenServer infrastructure supports most of the services on the network. The district also operates one VMware, Inc. virtual environment to support the Nutrikids lunch program. Both XenServer and VMware provide virtualization software that allows one or more physical server to host or

manage multiple smaller logical individual servers. VMware is a commercially available and supported product.

Technology staff did not know the age of the district's physical servers in use and reported that they do not have any maintenance agreements. The district has no replacement plan or budget for its technology equipment. If there is a hardware failure or a need to replace equipment, the director of technology services submits a purchase requisition to the administrator of instructional support services for the equipment needed.

Technology staff reported that the director of technology services was the staff member responsible for the server infrastructure; however, this position was vacant at the time of FCMAT's fieldwork, and the current technology staff have not been trained to support the district's server resources. The technology staff reported that PowerSchool (the district's student information system) was compromised recently with ransomware, which required staff to rebuild the server to get the system operational so attendance could be entered.

The district's telephone system runs on a separate appliance located in the server rack and is subject to the same power and security issues as previously discussed. School staff reported there have been phone outages that lasted more than two days during the past year. During the outages, the schools did not have any phone service and had to rely on personal cell phones. School staff were not aware of any written procedure to follow during a phone outage.

Many school districts use a virtual server environment to meet their server needs. This is usually done as a cost-saving alternative to purchasing and managing individual physical servers for each service. Districts usually build their virtual server environment using a single commercially available product that includes support, because this is more cost effective than training staff on and/or purchasing support for multiple systems.

Recommendations

The district should:

1. Evaluate the benefits of moving to a single virtual server product with support available from a third party.
2. Create an accurate inventory of its server infrastructure.
3. Develop a replacement plan for outdated server equipment.
4. Maintain service agreements for all server equipment.
5. Maintain hardware support from a third party on all server equipment.

Data Center

The main data center is located at the district office in a room within the building that houses the technology staff. Access to the data center is through two keyed doors. Technology staff reported that staff other than technology staff have keys to the data center. There is no emergency power disconnect, fire suppression equipment, or security monitoring system for this room. The data center is cooled by its own separate HVAC system. All equipment in the data center is connected to uninterruptable power supplies (UPSs) to protect the equipment and provide power during a short power outage. Technology staff reported that the UPS devices will keep equipment running for approximately 30 minutes during a power outage. The HVAC system is not connected to a

UPS and will shut down during a power outage. There is no backup generator to provide power. A prolonged power outage at the district office will cause services such as telephone, internet, student records and Nutrikids to shut down, resulting in a loss of service throughout the district until the power is restored. At the time of the FCMAT fieldwork there were wires, equipment, boxes and debris on the floor of the data center that could cause a safety hazard for staff. The flooring in the data center room is carpet and may not have anti-static properties; this increases the risk of damage to sensitive computer equipment from an electrostatic discharge.

The data center as it is now equipped may not adequately protect the district from a catastrophic disruption in service. The lack of fire suppression and environmental monitoring could allow a complete loss of equipment and data housed at the data center in the event of a fire or overheating due to an HVAC failure. Current fire suppression technology used in data centers can quickly extinguish a fire without causing additional damage to the equipment. This allows a district to restore services quickly.

The district data center's physical security may allow unauthorized access, theft or damage to the district's systems and equipment. The district could increase physical security for the data center by adding locks that require key cards or biometric information and thus keep a record of who enters the room. In addition, setting up a separate alarm zone in the data center would allow the room to be secured separately from the remainder of the building.

As districts rely more on technology, it is critical to make sure systems are reliable and secure. Many districts similar in size to the Norris School District have data centers that are purpose-built to meet the districts' current and projected future requirements, following industry standards. These designs include physical security, fire suppression (including heat and smoke detection), and redundancy for power and HVAC.

Recommendations

The district should:

1. Evaluate the need to install a fire suppression system that is designed for a data center.
2. Install an emergency power disconnect.
3. Verify that the carpet in the data center is an anti-static type; if it is not, replace or remove the carpet.
4. Install a security lock that records access to the data center.
5. Add a separate alarm zone for the data center.
6. Remove unused wire, equipment, boxes and debris from the data center.
7. Develop a long-term plan to upgrade the data center to meet its growing needs; ensure that the plan meets current data center standards.
8. Evaluate the need for a backup generator for the data center.

Disaster Recovery

The district has no formal, tested backup and disaster recovery plan for critical information technology systems, and it has no automated, enterprise-grade backup and recovery solution. This leaves the district vulnerable to data loss and prolonged system outages in the event of a hardware failure, cyber attack, or nonmalicious user error. All technology services staff interviewed expressed serious concerns regarding the lack of a disaster recovery plan and corresponding backup and recovery system. Staff reported that the district has suffered significant downtime of critical systems, including the phone and the student information systems, because of its lack of proper, tested backup and recovery processes.

The district lacks sufficient central data storage for electronic documents that staff create, and this hinders implementation of an enterprise backup system. All school site staff interviewed by FCMAT reported storing most documents on local drives on their work devices. These documents include school site plans, staff evaluations, budget documents and other important files needed for efficient school management and effective classroom teaching. Most staff interviewed made no backups of important files. When asked about the impact of data loss due to workstation failure, all staff stated that such a loss would be significant and require many extra hours of work to recreate important documents. Some staff realize this is an unsafe document storage arrangement and have started to back up their work documents to their district-provided Google Drive account or to personal USB flash drives. This is understandable; however, reliance on cloud-based storage or flash drives is not sufficient as a backup option because files stored on these media can still be deleted or otherwise lost without a method for recovery. In addition, use of individual cloud storage or flash drives leaves the district without adequate controls over who can access backed up documents. This allows for the possibility of breaches of and unauthorized access to sensitive student and staff information.

Districts with successful backup and recovery systems implement a file storage infrastructure and documented storage policies that require or strongly encourage staff to store documents on centrally-managed servers or specialized storage devices such as storage array networks (SANs), network attached storage (NAS), or properly managed and secured cloud-based storage. Once established, these centralized storage locations can be backed up using enterprise-grade backup software.

The district is also vulnerable to significant business disruption and data loss due to the lack of a backup plan and solution for its critical services, including the districtwide telephone system, wireless and network configurations, student information system, and other important servers. Technical services staff indicated that the district's physical and virtual servers are unprotected by backups, and the district has not purchased sufficient maintenance and support for several important products, including the Digium phone system, the Palo Alto firewall and web filter, and its Microsoft Active Directory service. A failure of any one of these systems due to a hardware fault, user error or a malicious attack could cause a prolonged and expensive interruption in services vital to the district and the students and parents it serves.

Two significant examples of this dangerous vulnerability are the recent three-day outage of the district's Digium phone system, which effectively disabled the phones at every site while technical services staff rebuilt the system configuration; and the prolonged outage of the district's Power School SIS due to a ransomware attack against the system's web server. If the district had the proper infrastructure and disaster recovery plan in place at the time of these events, the effort

needed to recover from these incidents would have been greatly reduced and the impact on the organization significantly minimized.

Technical services staff indicated that before selecting a backup and recovery solution, the district's data center technologies, including centralized storage, the virtual server platform, and network equipment, must be redesigned and updated to provide an environment in which a backup and recovery plan can be drafted and applied.

Because of the technical limitations of the district's data center as it is currently designed, technical services staff must manually initiate copies of data to protect only some critical systems; other systems remain without backup. Until the data center is modernized to include a fully supported virtual server, centralized storage, and the use of hot and/or cold spares* for appliance-based systems (e.g. the Digium phone system, the Ruckus wireless controller and the Palo Alto firewall and web filter), the district will be unable to develop and implement a sufficient backup and recovery plan.

There are many free online resources the district can reference to help it develop a backup and recovery plan. One of the most well-known and widely used sources for cyber security preparation and planning is the SANS institute. The Institute's whitepaper on backup and disaster recovery provides an approach to drafting and implementing a disaster recovery plan that does not rely on any particular vendor. The whitepaper is available at <https://www.sans.org/reading-room/whitepapers/recovery/disaster-recovery-plan-strategies-processes-564>.

*Hot spares are equipment spares that are kept operating so they can be switched over to automatically without a loss of operation. Cold spares are spare equipment that is not operated until installed and used as a replacement.

Recommendations

The district should:

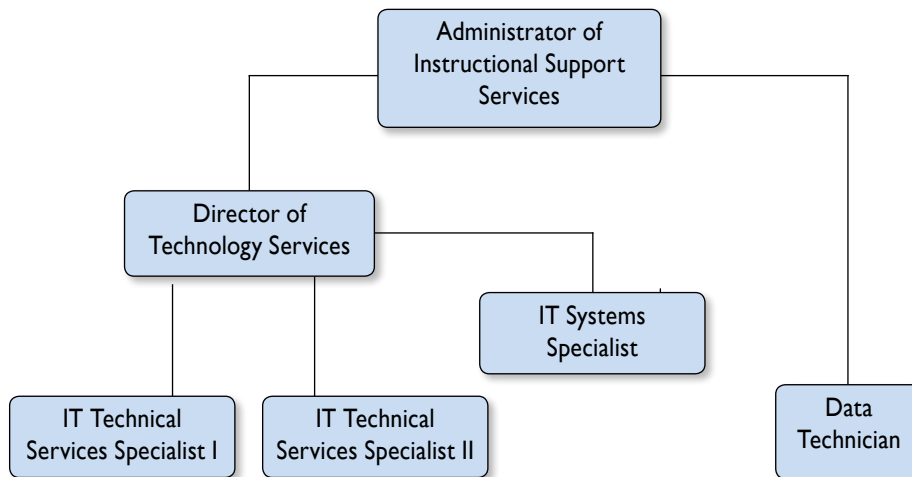
1. Identify its critical systems and sources of important data to help design and implement an effective backup and recovery plan.
2. Evaluate and correct weaknesses and vulnerabilities in its current data center design.
3. Redesign and update the data center using widely supported, industry-standard technologies that provide for scheduled, automated and verified backups of user and system data.
4. Draft a backup and recovery plan based on clearly communicated expectations regarding the extent and amount of data and system recovery required.
5. Evaluate and implement an enterprise-grade backup solution.
6. Ensure that spare hardware (hot and/or cold spares, as needed) is available for critical appliance-based systems, including the district's wireless controller, firewall and phone system.
7. Purchase sufficient support and maintenance for critical systems, including the phone system.

Technology Support Staffing and Organization

Technology support is provided by four full-time positions in the technology services department and one 10-month data technician position that reports to the administrator of instructional support services.

The director of technology services leads the department and reports to the administrator of instructional support services. Staff who report directly to the director of technology services include one IT technical services specialist I, one IT technical services specialist II, and one IT systems specialist.

The department is organized as shown in the following chart.



Director of Technology Services

At the time of FCMAT's fieldwork, the director of technology services position was vacant. This is a senior management position responsible for the overall direction of the technology services department. Duties also include scheduling work, supervising and evaluating staff, and meeting the district's technology needs. This position reports to the administrator of instructional support services.

The job description provided to FCMAT was revised in April 2017 and describes a leadership position that is intended to meet the district's instructional and administrative technology needs. School staff report they have not experienced the technology leadership from this position in the past and need leadership that will help them implement and use current technology tools and services in the classroom. For example, school staff report they would like to use the Google for Education system, but it is not currently available.

The job description outlines a position that is a technical expert and can implement solutions that will meet the organization's objectives. School staff report that the district lacks a current technology plan. In most districts, the director of technology services works closely with both administrative and instructional staff to help develop both short- and long-term technology plans. Without this coordination and leadership, the district may have difficulty meeting its technology needs.

The responsibilities listed in the job description outline a position focused on leading the department rather than participating in leading the organization's overall technology direction and

vision. Lacking from the job description is the responsibility to lead and develop a formal, board approved comprehensive technology plan for the district. Responsibilities include planning, organizing and directing department activities, and coordinating and providing technical support. The job description includes meeting with department and site staff to answer questions, resolve problems and receive feedback on department services; it does not include planning for the district's use of instructional and administrative technology.

The duties the director of technology services performed were heavily weighted toward the technical aspects of the department, leaving little time for leadership activities the school site staff report as a need. The latest job description for the position reflects this and does not include such districtwide leadership activities as main responsibilities.

In many small to medium-sized districts the lead technology position includes some technical responsibilities as a working manager; however, those duties are not the main function of the position. Rather, the main function focuses on leadership, planning and resource management. The position's technical responsibilities usually support other technology staff by providing guidance and functioning as backup technical support should the primary technician be unavailable. When the main function of a technology leadership position involves the technical aspects of the job, little time is left for research, planning or technology leadership, including participation in developing a district's technology plan.

As districts rely more on network resources for academic use, it is important for the lead technology staff member to ensure that the department meets not only the district's administrative technology needs but also the increasing academic technology needs of the schools. To accomplish this, many districts reassign most technical duties to other staff members in the technology department. This requires adequate and ongoing professional development for support staff assigned to those duties, but frees the director of technology to spend more time providing technology leadership for the district.

Recommendations

The district should:

1. Update the director of technology services position's job description to include as a main responsibility participation in developing the district's technology plan and providing district technology leadership.
2. Evaluate the duties and responsibilities of the director of technology services position, and reassign some of the technical duties to other staff.
3. Provide adequate and ongoing staff development for staff who are assigned the additional technical responsibilities.

Network and Advanced Systems Support

Under the current staffing conditions and organizational chart, the majority of network and advanced system support is the responsibility of the director of technology services. As discussed earlier, this has overextended and specialized the director's position. The district is too reliant on the technology services director position for nearly all advanced support. District leaders and other staff indicated that previous directors of technology services provided little or no cross training, rarely delegated more advanced system and network tasks, and produced no detailed system documentation. This concentration of knowledge and duties in one position leaves the

district with significant gaps in a wide-range of network and advanced system knowledge and vulnerable to disruptions in services due to staff turnover.

Although it is not uncommon for districts the size of Norris School District to require the director of the technology department to regularly handle some technical tasks, these are usually limited to the most advanced processes and procedures. Districts with high-functioning technology departments assign routine second- and third-tier technical tasks to mid-level technical support positions.

The district has an IT technical services specialist II position that can be used in this capacity to provide these more routine second- and third-tier technical tasks. Representative duties from the job description for the IT technical services specialist II position include basic network and systems installation, configuration and maintenance; troubleshooting of network and systems problems; documentation of various installed systems and networks; research and providing recommendations for network and systems solutions; and providing second-level technical support for users and the IT technical services specialist I position. The job description also states that this position is “the second level of a three-tiered career ladder encompassing network system administration and workstation support and is usually assigned to more advanced technical support.”

Staff indicated that the district is not using the IT technical services specialist II position to provide second-level support and system administration; rather, it is used to provide first-level helpdesk and remote user support similar to the responsibilities of an IT technical services specialist I position.

Interviews revealed that the individual in the IT technical services specialist II position does not have sufficient technical skills or experience to assume second-level support responsibilities or to perform the more advanced network and system support duties. Yet if the district does not reassign second-level support and advanced network and system support duties to the IT technical services specialist II position, it risks continuing to have its director perform almost all advanced technical responsibilities. This will prevent the district from building the technical support capacity it needs to more fully integrate technology into the classroom and to maintain reliable network services.

Recommendations

The district should:

1. Clearly define the second-level and advanced network and systems responsibilities assigned to the IT technical services specialist II position.
2. Evaluate existing technical services staffing assignments to ensure staff have the experience and skills required by the job descriptions. Provide professional development opportunities to staff as needed to increase the technical knowledge needed for those positions.
3. Ensure the director of technology services delegates routine, mid-level and some advanced system and network tasks to the IT technical services specialist II position.

Helpdesk and Site Technical Support

The district has one IT technical services specialist I position. According to the job description, this position is responsible for resolving initial help desk requests and user support, including first-level operating system and software problems; troubleshooting basic system faults and technical issues; and completing basic network tasks such as connecting devices, enabling ports and performing low-level connectivity troubleshooting. The job is described as the “first level in a career ladder encompassing workstation, network and application support.”

District technology services staff indicated the job description matches the daily tasks expected of this position. However, the staff member in the IT technical services specialist I position has advanced experience and skills and so has assumed the technical workload and responsibilities associated with the IT technical services specialist II position, while the staff member occupying the technical services specialist II position handles most of the IT technical services specialist I tasks. This mismatch of job responsibilities with positions creates a condition in which the IT technical services specialist I staff member may be working out of the position’s classification.

Staff at school sites expressed a generally positive assessment of the support provided by the technical services team. This was attributed to the recent reorganization of the department, placing it under the supervision of the administrator of instructional support services. However, all employees interviewed were concerned that the technical services staff has a large workload for the number of staff, such that when the schools or the district add new devices and services, the current staffing may not be sufficient to handle any increase in technology adoption. This factor, along with the need to clarify the roles of all technology support staff members, indicates that the district may want to start planning to add technology support staff, particularly at the IT technical support specialist I level.

Because different amounts and types of technology are used at each grade level, the requirement for support can vary from school to school. For example, middle schools typically require more staff time and a higher level of technical support than elementary schools. The amount of technology adoption, the age of equipment, and the technical knowledge of school staff can also affect the amount of support needed.

In many cases technology support equal to a 0.5 FTE position can meet the needs of an elementary school. This often increases to 0.75 FTE for middle schools and K-8 schools.

The district has four elementary schools and one middle school. The following table shows recommended starting points for technology support staffing.

School quantity and type	FTE needed per school	Subtotal FTE needed
4 elementary schools	.50	2.0
1 Middle school	.75	.75
Total positions		2.75

The district has school site technical support provided by a 1.0 FTE IT technical services specialist I position. FCMAT’s experience and analysis indicate that adequate staffing would be a total of 2.75 FTE; thus, the district is understaffed by 1.75 FTE IT technical services specialist I positions. The effect of this staffing deficiency may not be felt immediately, but the lack of adequate first-level technicians may ultimately delay implementation of future technology projects, such as the district’s Google Apps for Education project.

It would be best for the district to increase the number of support positions in phases, first adding 1.0 FTE IT technical services specialist I position, followed by a period of analysis and continued evaluation of the need for additional support at school sites.

Recommendations

The district should:

1. Review the type of work being performed by the IT technical services specialist I position and make adjustments in duties and/or job descriptions.
2. Evaluate the need to add up to 1.75 FTE new IT technical services specialist I positions.

Student Information and Data Systems Support

The district relies on a single position, the IT systems specialist, to support its PowerSchool SIS. This position reports to the director of the technology services and, according to the job description, is responsible for maintaining and administering the SIS database; configuring, implementing, documenting and supporting various SIS applications and processes, including teacher grade books and student report cards; and generating reports for data analysis and mandated state reporting.

According to the IT systems specialist staff member, most of the job duties match the job description, but they are also expected to assist the IT technical services specialist I with initial user support. In addition, several executive management staff indicated that once the technology services director position is filled, there is a plan to redirect the IT systems specialist's effort and time to teacher training and support for educational technology instead of advanced SIS support. This appears to be based on the practice of assigning advanced SIS support responsibilities to the technology services director.

This is not recommended because, as discussed in the preceding sections, it risks overextending the director, which is what has caused significant SIS-related problems for the district as recently as last year when the SIS was not adequately configured in time for the beginning of the new school year. This delayed student registration and new student enrollment during the summer before the start of the 2016-17 school year and was mentioned as an example of disruptive deficiencies in services by employees at all schools and by executive cabinet members.

The district's data technician position also supports the SIS. On the district's organizational chart, this position reports directly to the administrator of instructional support services rather than to the director of technology services. This is a ten-month (0.83 FTE) position and according to the job description is responsible for monitoring and maintaining data systems including the California Longitudinal Pupil Achievement Data System (CALPADS) and the district's SIS. Some in the district view it as an entry-level position that, with additional experience and education, can lead an individual to a IT technical services specialist I position.

However, interviews with the data technician and their supervisor made it clear that the position's primary responsibility is the generation and correction of the district's CALPADS submissions. The position was created in response to significant delays and errors in the district's CALPADS reporting in prior years when the director of technology services was tasked with state reporting responsibilities.

The creation of the data technician position presents the district with an excellent opportunity to develop much needed capacity for SIS and data system support. Because nearly all the data needed to generate the CALPADS submissions is collected by and stored in the SIS, and the SIS is primarily the responsibility of the technology services department, it would benefit the district to have the data technician position report to the director of technology services instead of to the administrator of instructional support services.

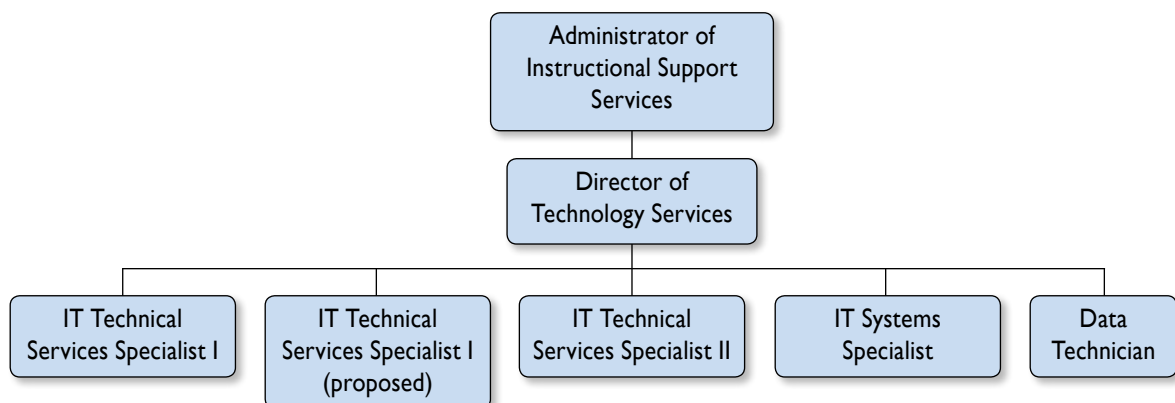
Because the data technician and the IT systems specialist positions are closely related and deal with the same system, it would benefit the district to consider changing the advancement path for the data technician position so that, with adequate experience and appropriate education, individuals in this position can be promoted to the IT systems specialist position. This small but important change would allow the district to develop a data systems team, with the IT systems specialist responsible for database administration and overall SIS management and the data technician responsible for general user support and existing state reporting duties.

The IT systems specialist could cross train the data technician on some basic to intermediary SIS application configuration and database maintenance tasks, while the IT systems specialist could be cross trained and act as a backup for the time-sensitive and complex CALPADS submission process. Under this structure, and with the proper level of cross training, the data technician would be progressively exposed to more advanced SIS processes and would be able to act as an emergency backup for the IT systems specialist position.

Districts with high-functioning, well supported student information systems assign SIS-related tasks to specialized positions. A district's SIS is essential to the education of all students and for the proper functioning of individual schools and the district. It is also the source of data needed to meet mandatory state reporting requirements for data that is used to establish a district's funding level and measure accountability. Because of its importance, SIS support should not be concentrated in a single position. Rather, best practice is to form an SIS support team under the direction of the technology services director, and to ensure that team members have clearly delineated job responsibilities, ideally organized in a way that allows for tiered user support and career advancement through increased experience and sufficient cross training.

Once an SIS team is established and sufficiently staffed, it is most effective to ensure it is involved with or responsible for the support of other systems and/or services that integrate with the SIS. For example, because many educational software systems such as Google Apps for Education and the district's assessment system interact with the SIS, the SIS team would be best suited to be the primary technical and support contact for these services.

The following organizational chart shows the proposed reorganized technology services department.



Recommendations

The district should:

1. Ensure that the SIS is the primary responsibility of the IT systems specialist position.
2. Change the data technician position so it reports to the director of technology rather than the administrator of instructional support services.
3. Change the career advancement path in the data technician's job description so that individuals in the position can advance to the IT systems specialist position.
4. Create an SIS support team within the technology services department, composed of the IT systems specialist position and the data technician position.
5. Assign support for the SIS and related systems to the SIS support team.

Appendix

Study Agreement



CSIS California School Information Services

**FISCAL CRISIS & MANAGEMENT ASSISTANCE TEAM
STUDY AGREEMENT
April 20, 2017**

The Fiscal Crisis and Management Assistance Team (FCMAT), hereinafter referred to as the team, and the Norris School District, hereinafter referred to as the district, mutually agree as follows:

1. BASIS OF AGREEMENT

The team provides a variety of services to local education agencies (LEAs). The district has requested that the team assign professionals to study specific aspects of the district's operations. These professionals may include staff of the team, county offices of education, the California State Department of Education, school districts, or private contractors. All work shall be performed in accordance with the terms and conditions of this agreement.

In keeping with the provisions of Assembly Bill 1200, the county superintendent will be notified of this agreement between the district and FCMAT and will receive a copy of the final report. The final report will also be published on the FCMAT website.

2. SCOPE OF THE WORK

A. Scope and Objectives of the Study

1. Analyze the status of the following and make recommendations for improvement, if any:
 - a. Infrastructure replacement planning, deployment, and maintenance, including timelines for each.
 - b. Wireless deployment, management, configuration, accessibility, and security.
 - c. Network topology with emphasis on current and planned bandwidth and core networking equipment.

- d. Backup and recovery plans for critical data systems including telephones.
 - e. Professional development of technology staff.
 - f. Planning for technology needs and support.
2. Conduct an organizational and staffing review of the technology department, including school site technology support staff, and make recommendations for staffing improvements or reductions, if any.
 3. Review technology staff job descriptions and distribution of duties and responsibilities and make recommendations for improvement, if any.

B. Services and Products to be Provided

1. Orientation Meeting - The team will conduct an orientation session at the district to brief district management and supervisory personnel on the team's procedures and the purpose and schedule of the study.
2. On-site Review - The team will conduct an on-site review at the district office and at school sites if necessary.
3. Exit Meeting - The team will hold an exit meeting at the conclusion of the on-site review to inform the district of significant findings and recommendations to that point.
4. Exit Letter – Approximately 10 days after the exit meeting, the team will issue an exit letter briefly memorializing the topics discussed in the exit meeting.
5. Draft Report - Electronic copies of a preliminary draft report will be delivered to the district's administration for review and comment.
6. Final Report - Electronic copies of the final report will be delivered to the district's administration and to the county superintendent following completion of the review. Printed copies are available from FCMAT upon request.
7. Follow-Up Support – If requested by the district within six to 12 months after completion of the study, FCMAT will return to the district at no cost to assess the district's progress in implementing the recommendations included in the report. Progress in implementing the recommendations will be documented to the district in a FCMAT management letter. FCMAT will work with the district on a mutually convenient time to return for follow-up support that is no sooner than eight months and no later than 18 months after completion of the study.

3. **PROJECT PERSONNEL**

The study team will be supervised by Michael H. Fine, Chief Administrative Officer, Fiscal Crisis and Management Assistance Team, Kern County Superintendent of Schools Office. The study team may also include:

- | | |
|----------------------------|-------------------------|
| <i>A. To be determined</i> | <i>FCMAT Staff</i> |
| <i>B. To be determined</i> | <i>FCMAT Consultant</i> |
| <i>C. To be determined</i> | <i>FCMAT Consultant</i> |

4. **PROJECT COSTS**

The cost for studies requested pursuant to Education Code (EC) 42127.8(d)(1) shall be as follows:

- A. \$650 per day for each staff member while on site, conducting fieldwork at other locations, presenting reports or participating in meetings. The cost of independent FCMAT consultants will be billed at their actual daily rate for all work performed.
- B. All out-of-pocket expenses, including travel, meals and lodging.
- C. The district will be invoiced at actual costs, with 50% of the estimated cost due following the completion of the on-site review and the remaining amount due upon the district's acceptance of the final report.

Based on the elements noted in section 2A, the total not-to-exceed cost of the study will be \$17,800.

- D. Any change to the scope will affect the estimate of total cost.

Payments for FCMAT's services are payable to Kern County Superintendent of Schools - Administrative Agent located on 1300 17th Street, City Centre, Bakersfield, CA 93301.

5. **RESPONSIBILITIES OF THE DISTRICT**

- A. The district will provide office and conference room space during on-site reviews.
- B. The district will provide the following if requested:
 - 1. Policies, regulations and prior reports that address the study scope.
 - 2. Current or proposed organizational charts.
 - 3. Current and two prior years' audit reports.
 - 4. Any documents requested on a supplemental list. Documents requested on the supplemental list should be provided to FCMAT only in electronic

format; if only hard copies are available, they should be scanned by the district and sent to FCMAT in electronic format.

5. Documents should be provided in advance of fieldwork; any delay in the receipt of the requested documents may affect the start date and/or completion date of the project. Upon approval of the signed study agreement, access will be provided to FCMAT's online SharePoint document repository, where the district will upload all requested documents.

- C. The district's administration will review a preliminary draft copy of the report resulting from the study. Any comments regarding the accuracy of the data presented in the report or the practicability of the recommendations will be reviewed with the team prior to completion of the final report.

Pursuant to EC 45125.1(c), representatives of FCMAT will have limited contact with pupils. The district shall take appropriate steps to comply with EC 45125.1(c).

6. PROJECT SCHEDULE

The following schedule outlines the planned completion dates for different phases of the study and will be established upon the receipt of a signed study agreement:

Orientation:	to be determined
Staff Interviews:	to be determined
Exit Meeting:	to be determined
Draft Report Submitted:	to be determined
Final Report Submitted:	to be determined
Board Presentation:	to be determined, if requested
Follow-Up Support:	if requested

7. COMMENCEMENT, TERMINATION AND COMPLETION OF WORK

FCMAT will begin work as soon as it has assembled an available and appropriate study team consisting of FCMAT staff and independent consultants, taking into consideration other jobs FCMAT has previously undertaken and assignments from the state. The team will work expeditiously to complete its work and deliver its report, subject to the cooperation of the district and any other parties from which, in the team's judgment, it must obtain information. Once the team has completed its fieldwork, it will proceed to prepare a preliminary draft report and a final report. Prior to completion of fieldwork, the district may terminate its request for service and will be responsible for all costs incurred by FCMAT to the date of termination under Section 4 (Project Costs). If the district does not provide written notice of termination prior to completion of fieldwork, the team will complete its work and deliver its report and the district will be responsible for the full costs. The district understands and agrees that FCMAT is a state agency and all FCMAT reports are published on the FCMAT website and made available to interested parties in

state government. In the absence of extraordinary circumstances, FCMAT will not withhold preparation, publication and distribution of a report once fieldwork has been completed, and the district shall not request that it do so.

8. **INDEPENDENT CONTRACTOR**

FCMAT is an independent contractor and is not an employee or engaged in any manner with the district. The manner in which FCMAT's services are rendered shall be within its sole control and discretion. FCMAT representatives are not authorized to speak for, represent, or obligate the district in any manner without prior express written authorization from an officer of the district.

9. **INSURANCE**

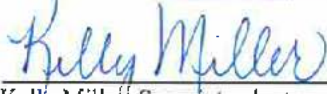

During the term of this agreement, FCMAT shall maintain liability insurance of not less than \$1 million unless otherwise agreed upon in writing by the district, automobile liability insurance in the amount required under California state law, and workers compensation as required under California state law. FCMAT shall provide certificates of insurance, with Norris School District named as additional insured, indicating applicable insurance coverages upon request prior to the commencement of on-site work.

10. **HOLD HARMLESS**

FCMAT shall hold the district, its board, officers, agents and employees harmless from all suits, claims and liabilities resulting from negligent acts or omissions of its board, officers, agents and employees undertaken under this agreement. Conversely, the district shall hold FCMAT, its board, officers, agents and employees harmless from all suits, claims and liabilities resulting from negligent acts or omissions of its board, officers, agents and employees undertaken under this agreement.

11. **CONTACT PERSON**

Name: Kelly Miller
 Telephone: (661) 387-7000
 E-mail: kelly.miller@norris.k12.ca.us

 Kelly Miller, Superintendent
 Norris School District
 Date

 Michael H. Fine,
 Chief Administrative Officer
 Fiscal Crisis and Management Assistance Team
 Date

