Ocean View School District

Technology Review

October 9, 2007

Joel D. Montero
Chief Executive Officer

FCMAT
FISCAL CRISIS & MANAGEMENT ASSISTANCE TEAM
CSIS California School Information Services

October 9, 2007

Edward A. Sussman, Superintendent, Ed.D.
Ocean View School District
17200 Pinehurst Lane
Huntington Beach, CA 92647

Dear Superintendent Sussman:

In March 2007, the Ocean View School District and the Fiscal Crisis and Management Assistance Team entered into a study agreement to provide a review of the district's technology. Specifically, the agreement asked FCMAT to:

1. Assess the organization and operations of the district's technology services department and make recommendations for improvement.
2. Conduct a review of the district's instructional implementation of technology and make recommendations for improvement.
3. Conduct a review of the district's administrative technology implementation and make recommendations for improvement.
4. Conduct a computer network security review and recommend improvements to harden network security precautions and improve network performance.
5. Conduct a review of the district's BiTech IFAS implementation and make recommendations for improvements.

The attached report contains the study team's findings and recommendations.

We appreciate the opportunity to serve you and we extend our thanks to all the staff of the Ocean View School District.

Sincerely,

Joel D. Montero
Chief Executive Officer

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Foreword

FCMAT Background

The Fiscal Crisis and Management Assistance Team (FCMAT) was created by legislation in accordance with Assembly Bill 1200 in 1992 as a service to assist local educational agencies in complying with fiscal accountability standards.

AB 1200 was established from a need to ensure that local educational agencies throughout California were adequately prepared to meet and sustain their financial obligations. AB 1200 is also a statewide plan for county offices of education and school districts to work together on a local level to improve fiscal procedures and accountability standards. The legislation expanded the role of the county office in monitoring school districts under certain fiscal constraints to ensure these districts could meet their financial commitments on a multiyear basis. AB 2756 provides specific responsibilities to FCMAT with regard to districts that have received emergency state loans. These include comprehensive assessments in five major operational areas and periodic reports that identify the district's progress on the improvement plans.

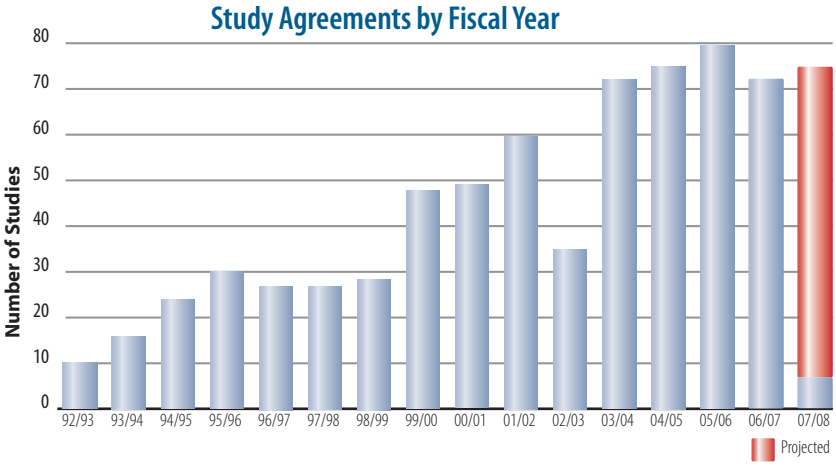
Since 1992, FCMAT has been engaged to perform more than 600 reviews for local educational agencies, including school districts, county offices of education, charter schools and community colleges. Services range from fiscal crisis intervention to management review and assistance. FCMAT also provides professional development training. The Kern County Superintendent of Schools is the administrative agent for FCMAT. The agency is guided under the leadership of 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.

Total Number of Studies..... 660
Total Number of Districts in CA..... 982

- Management Assistance..... 625 (94.7%)
- Fiscal Crisis/Emergency 35 (5.3%)

Note: Some districts had multiple studies.
- Districts (7) that have received emergency loans from the state.

(Rev. 8/6/07)



Introduction

Background

The Ocean View School District is comprised of fifteen schools and provides K-8 educational services to approximately 9,400 students in and around the city of Huntington Beach in Orange County. The district currently has an interim superintendent and an interim assistant superintendent of human resources. The district is also using consulting services to provide leadership and support in the area of business services.

In March 2007, the Ocean View School District and the Fiscal Crisis and Management Assistance Team entered into a study agreement to provide a review of the district's technology. Specifically, the agreement asked FCMAT to:

1. Assess the organization and operations of the district's technology services department and make recommendations for improvement.
2. Conduct a review of the district's instructional implementation of technology and make recommendations for improvement.
3. Conduct a review of the district's administrative technology implementation and make recommendations for improvement.
4. Conduct a computer network security review and recommend improvements to harden network security precautions and improve network performance.
5. Conduct a review of the district's BiTech IFAS implementation and make recommendations for improvements.

Study Guidelines

In March 2007 the Ocean View School District contacted the Fiscal Crisis and Management Assistance Team to request a review of the district's technology services. A FCMAT study team visited the district on June 11, 2007 to conduct interviews, collect data and review documents. This report is the result of those activities and is divided into the following sections:

I. Executive Summary

II. Organization and Staffing

III. Administrative Information Systems

IV. Communications and Operations

V. Planning and Standards

VI. Network

Study Team

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*As members of this study team, these consultants were not representing their respective employers but were working solely as independent contractors for FCMAT.

Executive Summary

Reporting within the Division of Education, a total of seven staff members from two separate departments provide technology support services to district users. Five of the staff members are classified positions and report within the Information Services Department. Two additional certificated positions titled Teacher on Special Assignment (TOSA) perform a wide variety of technology support functions.

Staff members commented that the demand for site-based instructional technology support has been rapidly increasing. However, the lack of communication regarding instructional technology needs has resulted in the instructional technology initiatives of the district being inadequately addressed.

Many technology support services are not assigned to or performed by appropriate staff and could be more cost effectively performed by classified staff. FCMAT believes that a realignment of responsibilities may improve the delivery of administrative and instructional technology support services.

The district lacks administrative software that integrates budget, general ledger, human resource, position control, and payroll systems. Many staff members make use of alternative and internally developed systems such as database or spreadsheet applications to keep track of personnel and position control information. As a result, data integrity is suspect and reporting is often inconsistent.

The district's organizational structure for technology services is fragmented and lacks clear lines of responsibility and reporting. The district should consider creating a new position titled Chief Technology Officer (CTO) to assume responsibility for all aspects of administrative and instructional technology. The CTO should report to the Assistant Superintendent of Education Services. The CTO position will improve visibility and accountability for technology projects throughout the district.

Two teachers on special assignment (TOSA) perform support services that could more cost-effectively be provided by Information Services staff members. The district should reassign both TOSA staff members to report to the CTO and consider reducing the number of staff members currently serving as a TOSA to one position.

The district should also consider creating an additional position within the IS department to provide assistance with SIS training, support, and fulfilling data requirements.

The district uses disparate and incompatible human resources and payroll systems, resulting in significant internal control issues and duplication of work and data input. The district should migrate to the county office-based human resources (HR) system as soon as possible, and convert and migrate HR data from the current DOS-based application to the county office system. Ancillary systems such as spreadsheets and databases for human resources and benefits information should be abandoned once migration is complete, as should the DOS-based system.

The district should also migrate employee attendance functions to the county office's "time and attendance" system.

The district has not yet implemented an online purchase requisition module with electronic approvals. This module should be implemented.

A lack of bandwidth between school sites and the district office prevents the use of the client server model of the SIS system. The district should implement the Client Server model of the SIS system as soon as adequate bandwidth is in place.

The district's network lacks some security and network monitoring functions, and some network elements are outdated. The district should implement password requirements, MAC address filtering, a network time protocol server, firmware updates, hardware replacement and other recommended security and network management features.

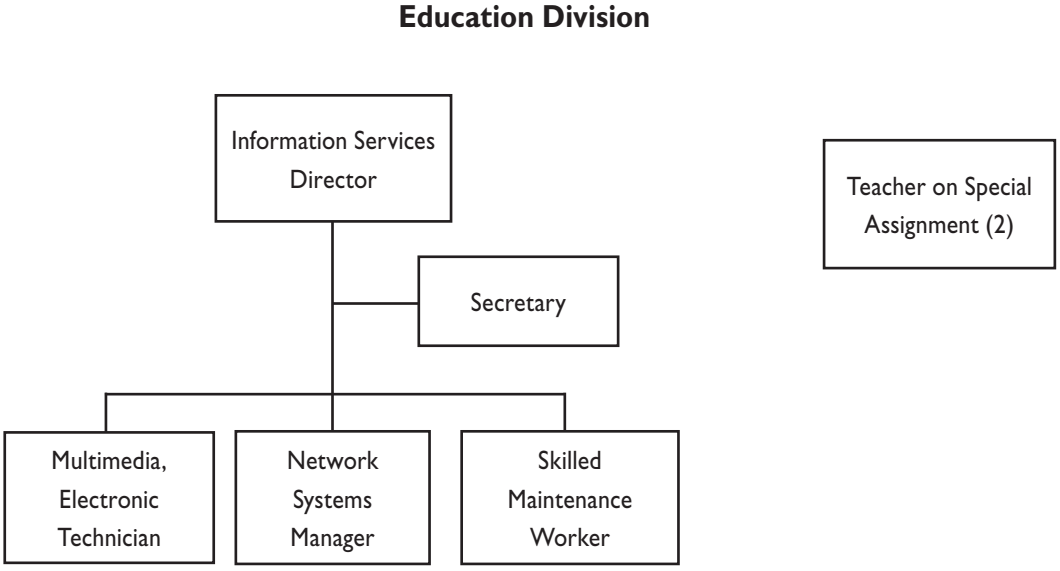
Findings and Recommendations

Organization and Staffing

Staff members from two separate departments, reporting within the education division, provide technology support services to district users. The current organizational structure depicting the two departments is presented below.

Ocean View School District

Current Technology Support Structure



Information Services Department

The Information Services Department is comprised of the following five positions:

- Director of Information Services
- Secretary to the Director
- Skilled Maintenance Worker
- Network Systems Manager
- Multimedia, Electronic Technician

The bulk of IS services is allocated to hardware support. Department staff members support approximately 1900 desktop computers, 670 laptop computers, 1037 printers, 24 servers, 80 network switches, and 10 wireless access points. IS staff members also provide student information system (SIS) support; however, additional SIS support and coordination is needed.

IS staff members commented that the demand for site-based instructional technology support has been increasing rapidly. Despite this, a review of the IS department's technology priorities for the next 24 months revealed no projects directly related to improving support for teachers or improvement of student academic performance. In addition, the IS director rarely attends instructional services division meetings, and is rarely invited to attend the principals' meetings. As a result, instructional staff members have developed the perception that the district lacks technology leadership and vision and that the delivery of technology support services and solutions is reactive rather than proactive.

The increasing demand for instructional technology support and the lack of communication regarding instructional technology needs have resulted in the district's instructional technology initiatives being inadequately addressed. FCMAT believes that improving communication between the IS department and the district's instructional leaders is needed to achieve the district's instructional goals and objectives. Good communication is a prerequisite to developing a clearer understanding of the district's evolving educational technology needs. In addition, developing a more collaborative approach to setting priorities for technology projects can improve the IS department's effectiveness.

To improve communications, the district previously used a student information system committee and a technology committee. Although these committees were useful for soliciting feedback from the user community and assisting the IS department with establishing priorities, neither committee has convened for some time to discuss current issues or to provide the IS department with any priority setting guidance. Reconvening these committees could be helpful.

Many users indicated a need for training on the use of the student information system (SIS). Users also expressed frustration that the lack of districtwide uniformity in entering accurate and consistent Aeries data makes it nearly impossible to have accurate data in the system. No one in the IS department has been assigned to support these aspects of the SIS.

The district may be able to address the need for training and standardization by creating an additional position within the IS department specifically to support the SIS and to work with site and district office users. A major focus of such a position would be to assist staff in retrieving relevant student information, producing accurate reports, and training staff on the importance of entering accurate and consistent data.

Instructional Technology Services

Two certificated positions titled Teacher on Special Assignment (TOSA) provide a comprehensive array of services to district users. Both TOSA staff members have more than 10 years of experience in their current assignments, and have developed their own job descriptions and responsibilities during this period. Some of the services provided by the TOSAs are listed below:

- Laptop computer support
- Tracking and shipping of laptop computers for outside repairs

- Conducting student information system (SIS) research
- Tracking E-Rate funding, application and documentation
- Providing staff development for all district educational technology software programs
- Preparation and management of databases for programs
- Supervision of a technology assistant staff member one day each week
- Coordination of installation, maintenance and repair of SMART Boards and projectors

Duties such as providing staff development and coordinating new instructional technologies such as SMART boards are appropriate for TOSAs and benefit the district.

Most of the services listed above are typically performed by technology department staff members. However, these services may have been adopted by the TOSAs due to a lack of manpower and/or skills within the IS department. Regardless of how these various services came to be performed by the TOSAs, many of the services currently performed by the TOSAs could be more cost effectively performed by classified staff.

A realignment of responsibilities may improve the delivery of administrative and instructional technology support services. The primary focus of the realignment should be to improve understanding of the district's goals and objectives and determine how technology services can best support them.

The decision regarding the division within which the technology services function reports is not as important as ensuring that administrative and instructional technology support services are delivered efficiently and support the district's educational objectives. The district's current search for a new assistant superintendent of business services precludes assigning the technology services department within the business services division. Although the current reporting relationship within the education division makes sense from an instructional perspective, district administrators may wish to reconsider which division manages the technology support function after a new assistant superintendent of business services is selected. Alignment of services should support the district's goal of improving learning and instruction, and should assist in accurately setting priorities and allocating the department's finite resources.

Recommendations

The district should:

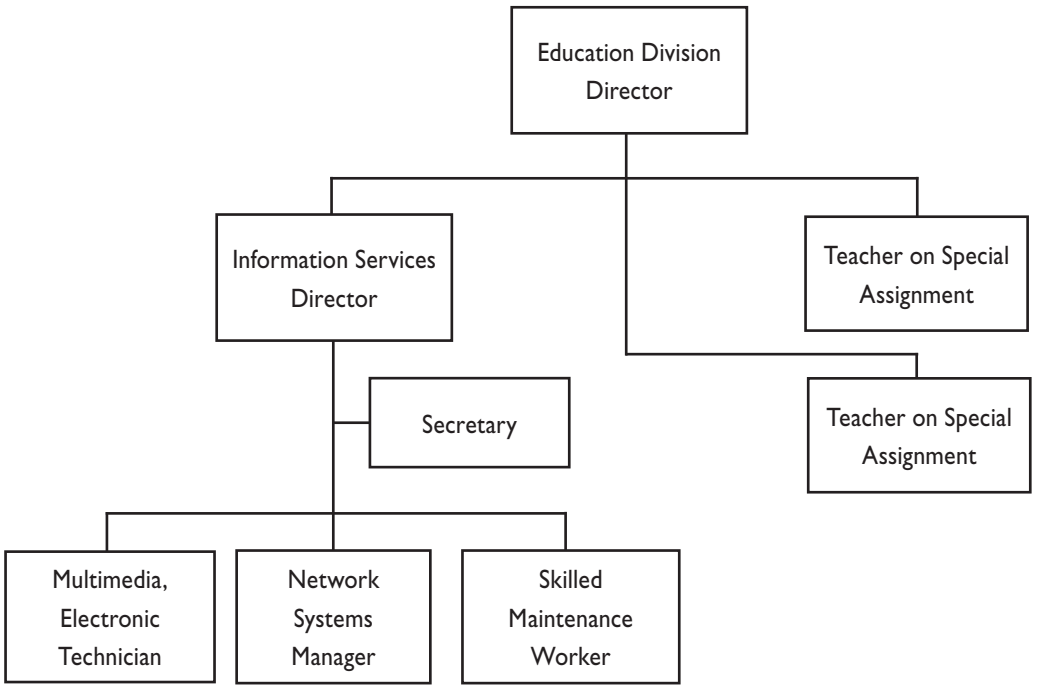
1. Consider implementing a two-phased reorganization of the information services department as described below.

   Phase One:

   - Maintain the current line of reporting for technology support services within the education division. After selecting a new assistant superintendent of business services, district administrators may wish to reconsider which division is best suited to hosting the technology support function and delivering technology support services.
   - Reassign both TOSA staff members to report within the IS department. This reassignment will enable the IS department to improve efficiency by eliminating job overlap between the TOSAs and IS staff.

   The chart below depicts the organizational structure for technology support services following completion of Phase 1.

Phase One Reorganization Structure

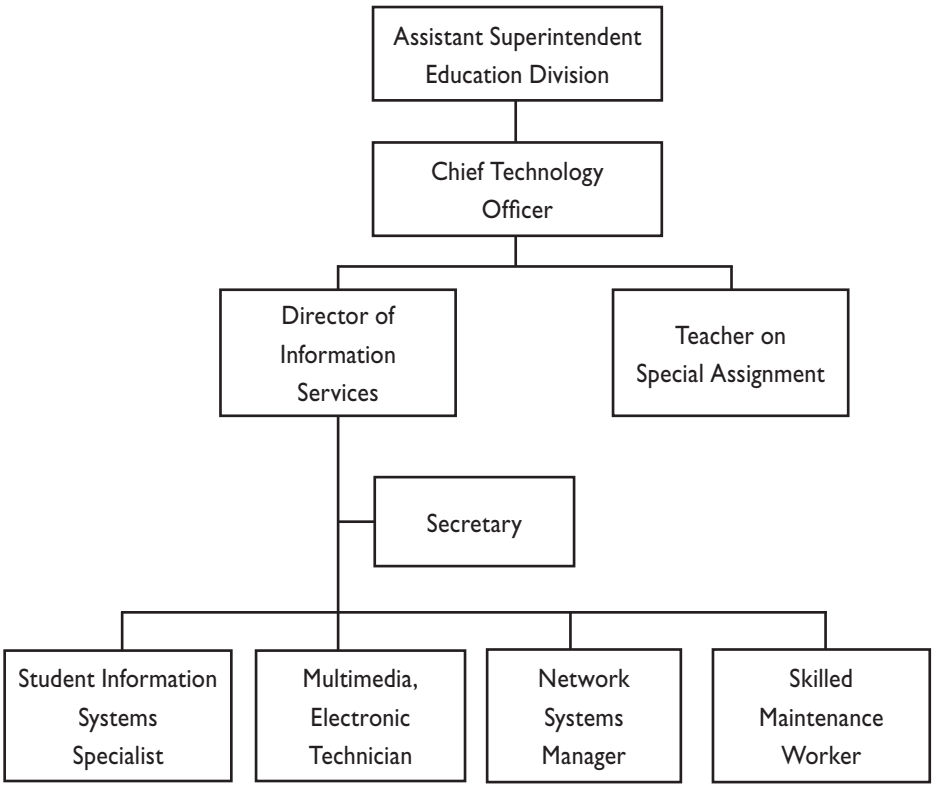


Phase Two:

- Consider creating a new position titled Chief Technology Officer (CTO) to assume responsibility for all aspects of administrative and instructional technology. The CTO should report to the Assistant Superintendent of Education Services. The CTO position will improve visibility and accountability for technology projects throughout the district. A sample job description for this position is included as Appendix B.
- Consider reducing the total number of TOSA staff to one. This will require an analysis of the tasks performed by the TOSAs and reassignment of some tasks to other IS department staff members. Tasks that are more appropriately performed by a certificated staff member should not be transferred.
- Consider creating an additional position within the IS department to provide assistance with SIS training, support, and fulfilling data requirements. The person selected to fill this position could be a staff member currently working at one of the school sites and should have extensive experience working with the district's SIS. A sample job description for this position is included as Appendix A.
- Reassign the Director of IS and the remaining TOSA to report directly to the CTO.
- Ensure that provisions of collective bargaining agreements are followed when making changes to positions.

The chart on the following page depicts the organizational structure for technology support services following completion of phase two.

Phase Two Reorganization Structure



2. Advise the Director of IS to work more closely with instructional staff members in support of the district's educational goals. The purpose of the IS department is to support both business and education, and to do so successfully requires a comprehensive understanding of each department's responsibilities.
3. Encourage the IS Director to consider enrolling in the Chief Technology Officers Academy administered by the California Educational Technology Professionals Association (CETPA), California County Superintendents Educational Services Association (CCSESA) and FCMAT. The CTO academy exposes attendees to a wide range of information covering educational, administrative, and other forms of technology. The academy is an eight month program and will be held in southern California starting in the fall of 2007. More information about this academy can be found online at http://www.cetpa-k12.org/files/CTO/index.htm.
4. To improve the perception of the IS department, prepare and publish a revised set of major departmental goals. These goals should support those of the district and the education division. Goals that are identified as "technical" or "infrastructure" in nature should be included but, unless otherwise agreed, should be published as secondary goals.

5. Reconvene the SIS and technology committees with new staff members assigned from appropriate departments. Develop an annual list of scheduled meetings, and publish meeting minutes to improve problem resolution and progress on various SIS and other technology issues.

Administrative Information Systems

System Integration

The district lacks an administrative information system that integrates budget, general ledger, human resource, position control, and payroll systems. Staff members use alternative and internally developed systems such as database or spreadsheet applications to keep track of personnel and position control information. As a result, data integrity is suspect and reporting is often inconsistent. The district spent approximately $100,000 four years ago to examine the possibility of migrating to a fully integrated system, but took no corrective action.

Human Resources

Human resources staff members enter personnel records into an antiquated DOS-based database, into spreadsheets, and into the county office-based payroll database. The DOS database does not permit staff members to merge data with other applications, and the DOS databases data lacks security. In addition, because the application is no longer supported, pieces of it do not work and the possibility of total data loss is extremely high. The DOS software is not up to date and cannot accommodate new data required by federal, state or local changes and mandates.

Data is not integrated with the budget or payroll systems in a way that most effectively uses the information system and staff resources. A fully integrated system would provide a necessary internal control to ensure that data in the human resources (HR) system are the same as data in the payroll system. In addition, integration of the various system modules would permit greater efficiency when making universal changes to data, such as salary schedule and benefit rate changes. At present some of this information is entered employee by employee.

Because the district does not use the HR module of the payroll system used by the Orange County Office of Education (county office), manual entry is required to enter budget information. An integrated system would allow budget development directly from data maintained in the HR module and would relieve staff of the need to perform the extra data input. Use of the HR module would also allow the district to take advantage of position control features to more accurately control budget and payroll data.

Entering data into more than one application is an inefficient use of staff time and increases problems associated with data entry errors. Significant effort is required to double- and sometimes triple-enter data into disparate systems. Processing and maintenance tasks associated with the disparate databases also result in decreased efficiency for staff members within the business, payroll, and personnel departments. Significant time and effort is expended reconciling disparate databases. Similar problems exist with respect to employee benefits data.

Payroll

District staff process payroll using a county office-based payroll system. Because the HR module of the system is not used, payroll staff must use spreadsheets to maintain some of the same data. In addition, payroll staff members track employee absence information using the previously mentioned unsupported DOS database, which has a very high risk of total data loss.

The county office has a time and attendance module that allows employee absences to be tracked using data acquired through the district's Substitute Employee Management System (SEMS). The County is currently testing automatic upload of substitute time sheets from SEMS into the payroll system. Migrating to the time and attendance module would make it possible for employees to view their leave balances and pay stubs online.

Payroll and human resources staff members do not have access to the State Teachers' Retirement System (STRS) and Public Employees' Retirement System (PERS) online access programs. These systems are crucial to the district's ability to verify employee retirement information, particularly for new and substitute employees. Both PERS and STRS make this software available to districts at no cost.

Budget

Department managers have access to online information and are able to review accounts online and access automatic reports on their desktops. Yet district office personnel print budget reports twice a month and forward the hardcopy reports to sites and departments. Site administrators making critical budget decisions must have access to accurate and up-to-date budget information. Giving site administrators online access to the system would save significant staff time and paper and would result in more timely access to more accurate data. A system function referred to as click, drag and drill (CDD) could be used to develop automated online reports for administrators as needed.

Requisition and Purchasing

The district has allowed users at the sites to do online ordering from the district warehouse. However, users are not required to use the online purchase requisition function of the financial system. Use of the online purchase requisition system would allow sites to enter requisitions online, electronically send them to the appropriate approver(s), and transmit them to the purchasing department for printing and distribution. A properly implemented system of this type allows site users to monitor their requisitions and purchase order information online.

Student Information Systems

The Aeries SIS used by the district is widely used in California. The version in use at the district creates separate databases at each school site, then gathers information from individual databases nightly to create a districtwide database.

Because the data in the districtwide database is not always current, attendance and other information is too often inaccurate.

Because of the inherent difficulties of this type of distributed system, many school districts which use the Aeries product moved to a newer version of the product known as Client Server (CS). The CS model uses a central database that keeps all information up to date in real time. This model provides more consistent and accurate data and helps districts produce timely and accurate district, state and federal reports.

The district allows use of different course numbers at different sites for the same class offerings. This creates significant problems with the production of accurate and consistent reports such as CBEDS. In addition, as longitudinal data is collected on student performance and achievements, it becomes increasingly difficult to analyze the data because of the variations and inconsistencies in course numbers. Involving a variety of stakeholders in developing standards for data consistency could help resolve these issues.

Recommendations

The district should:

1. Migrate to the county office-based HR module as soon as possible.
2. Convert and migrate the HR data maintained by the DOS-based application to the county office-based human resources system. This migration should be conducted with the assistance and guidance of staff members from the Orange County Office of Education and should be started immediately, with a goal of full use of the county office system by the end of the 2008-09 fiscal year.
3. Ensure that budget and human resources personnel work together to implement the position control module so that all staff members understand how it works and who is in charge of maintaining the data.
4. Discontinue using ancillary systems such as spreadsheets and databases for maintaining human resource and benefits information following successful migration to the county office system.
5. Migrate employee attendance functions to the county office's time and attendance system, and discontinue using the DOS-based system currently used to track employee absence information.
6. Immediately obtain and make use of the STRS and PERS online access applications. These applications should be installed on the computers of staff in the payroll and HR departments.
7. Contact the county office to obtain the training required to use the STRS and PERS applications.
8. Develop CDD reports for budget managers and administrators that can be accessed from their computers by clicking on the desired report name, and

discontinue printing hard copies of budget reports at the district office for distribution to sites and departments.

9. Train budget managers and administrators in accessing and using CDD reports for proper budget and expenditure monitoring.
10. Implement the online purchase requisition module with electronic approvals.
11. Investigate the possibility of transmitting purchase orders electronically to vendors.
12. Convert to the Client Server model of the SIS system as soon as the bandwidth between the school sites and the district office has been updated and improved (through projects such as completion of the wireless wide area network). Because installing and configuring the Client Server data model is complex, an external consultant or vendor should be used to coordinate the conversion.
13. Establish a committee comprised of users from school sites, the IS department, and other appropriate district office staff to identify and resolve inconsistencies in data standards applied to the SIS. The committee should define standard codes and numbers to be used throughout the district, and training should be made available to SIS users in the use and interpretation of the codes.

Communications and Operations

The IS department director does not hold regularly scheduled staff meetings. Some staff commented that it is not unusual for the department to go several months or more without a staff meeting. This has contributed to a perception among several IS department staff members that they sometimes operate without sufficient information about projects on which they are involved. Some staff members indicated that they are sometimes unsure how their individual effort on projects contributes to any overall technical solution or to the district's larger educational mission.

Staff members in other departments voiced similar concerns regarding the difficulty understanding the roles and responsibilities of IS department staff members. Because of this lack of understanding, users who need technology support stated that they call anyone they can reach in the IS department to start resolving their support issue. These types of random calls are disruptive to the members of the IS department.

Although students and teachers are required to sign an Acceptable Use Policy (AUP) annually, some employees indicated that they have never signed one.

The district maintains a master staff development calendar. However, several IS staff members expressed a desire for more technical training to assist them in the performance of their jobs. Technology support staff members indicated that they do not currently receive training. Effective technical training can be obtained from the following resources:

- The TechSETS Web site contains a skills matrix tool to help assess knowledge and key requirements for a number of technical positions. This information can be found on the Web site at http://www.techsets.org/training/matrix.php.
- Local training provided by training centers which specialize in current technologies. Training centers usually offer courses in desktop, server, networking software and applications. Typical courses are three to five days in length and cost approximately $300 to $500 a day.
- Discounted online training is available through TechSETS and a partnership with My SkillSource. Information on these online classes can be found online at http://www.techsets.org/training/mss_index.php.
- County offices of education occasionally conduct coordinated trainings individually or in partnership with specific vendors. These trainings are usually offered for free or at a greatly reduced cost. A schedule of upcoming training sessions can be obtained from the Orange County Department of Education.
- Other agencies that provide free or reduced training include the California Technology Assistance Project (CTAP), California Educational Technology Professionals Association (CETPA), Computer Using Educators (CUE), and the California Association of School Business Officials (CASBO).

The IS department uses an internally-developed Microsoft Access-based ticketing system to track user support requests and other information about networking and assets. The system is configured so that only IS department staff members can initiate a support request by creating a support ticket. Users who want to have a ticket created must complete a paper request form and fax it to the IS department. Submission of ticket requests varies greatly: some sites submit as few as 36 requests per year; other sites submit hundreds of requests. The inconsistency in request submissions and processing is inefficient. Most school districts in California use an online help desk system that allows users to enter support requests and monitor the status of open tickets.

Many school districts have also begun to consider how to take advantage of automated management and support of computers to reduce the need to hire additional technology staff.

The district could automate management of its Novell network infrastructure by implementing a product called Novell ZENworks, which provides for the remote support of desktop and laptop computers, allowing staff to change configurations without physically visiting each computer. In addition, software updates can be automatically delivered to computers districtwide without having to visit each school site and computer location. ZENworks also provides asset data such as information on computer operating system versions, installed application, memory, disk space and other items. This type of asset information can be very beneficial in determining whether or not a particular software program is suitable for installation on existing hardware. Although technology support staff members have taken preliminary steps to evaluate ZENworks, no significant progress has been made in its implementation because limited staff time is available for the project.

User name and password security for SIS access is lacking. Many SIS users know the usernames and passwords of other users, and username and password information is widely known throughout the district. A similar situation exists with regard to GroupWise e-mail accounts. These practices create serious data security weaknesses.

There is a lack of planning, communication and training regarding the use of desktop applications. For example, one user commented that it is impossible to take advantage of office groupware applications such as calendar sharing and coordination because of the lack of training.

The purchase and installation of new applications are not effectively coordinated with communication and training for staff members. Some staff members use WordPerfect and Lotus while others use Word and Excel. This results in a variety of compatibility and communication problems among district staff and with outside agencies. Many staff members who use Word and Excel commented that they never converted their documents for use in a different office application suite because of a lack of training and support to assist them.

Technology support staff commented that district users have had access to shared network folders since 1995. However, some district users indicated that they were unaware of shared network folders.

Several business office staff members stated that on many occasions the IS department has informed them that the computer system must be shut down during the working day without prior notice. Staff indicated that on one occasion an unplanned shutdown took place on the day of month-end payroll deadline. Had the system been down for hours as in other instances, the payroll deadline would have been missed.

The system should never be brought down during working hours. Common technology practice for system work that requires downtime is to perform the work during the evenings or over the weekend and to provide all affected users with ample advance warning of the upcoming system outage and an estimate of when the system will be back online.

Some users indicated that the current telephone system does not have the ability to track calls by extension number. Technology support staff indicated that although tracking by extension is possible, the rate information is outdated.

The district does not use an electronic document imaging system to archive important documents such as student, personnel, payroll and financial records. Document imaging systems automate the scanning of documents that need to be retained as permanent records, make data retrieval easier and reduce the need for storage space. Document imaging and archiving is an important function and should be performed annually to ensure that records are easily accessible.

Recommendations

The district should:

1. Improve communication within the IS department by conducting regular (probably weekly) staff meetings. An agenda should be created in advance for each meeting, and staff members should be encouraged to submit items for the agenda in advance. Meetings should include discussion of the department's plans in support of the educational goals of students and staff. This discussion should result in a joint vision of how the department can best organize its limited financial and personnel resources to support the district's educational mission.
2. Create a directory of services offered by the IS department to increase awareness of the services available and who is responsible for providing them. The directory of services should be circulated widely to school sites and throughout the district office, and should be updated frequently.
3. Require all employees to sign an acceptable use policy annually. Division heads should be responsible for ensuring that all members of their division sign and return an AUP.
4. Conduct a training needs assessment of each staff member in the IS department to accurately determine their current knowledge in relation to expected job duties and functions. Use this information to create a comprehensive training plan.
5. Improve coordination of districtwide staff training by assigning responsibility for instructional technology professional development to the remaining Teacher on Special Assignment.
6. Consider implementing the free Web-based solution called MyTechDesk, which is available from TechSETS, to manage support tickets and track problem resolution. MyTechDesk is a sound application that can be used to monitor, evaluate and continually improve the technology support operations. Features of the system include the following:
    - Web-based and accessible via standard web browser.
    - Easy and efficient system tracking and control of work orders.
    - Detailed tracking and reporting of service requests.
    - Simple user-based entry of technical assistance requests.
    - Increased communication and productivity of support teams.
    - Improved organization and prioritization of time and work load.
    - Ability to track service requests that are Ed Tech K-12 voucher eligible.

    Additional information regarding MyTechDesk can be found online at http://www.techsets.org/mytechdesk/.
7. Reduce the total cost of ownership by fully implementing the ZENworks tools. This will require that the district set aside sufficient staff time to implement this

software. The district should contract with an external vendor or consultant to install and configure the system as soon as possible. Technology support staff members should be fully involved in the installation of the product and should receive appropriate training in its use from a Novell certified training center.

8. Implement regular user training to increase awareness of security issues, including password security. Consider training users in password memorization techniques to reduce the risk of teachers and staff writing their passwords down and storing them at or near their computer workstations. Implement password history checking to ensure that passwords are not reused, and password aging to ensure that passwords expire at least every 120 days. To provide maximum security, passwords for SIS and e-mail access should be changed, by the user only, at least annually.
9. Ensure that the re-established technology committee reviews and approves any changes in office software suites or other application software.
10. Develop and enforce a standard for purchasing and installing office suite applications. All computers on which the selected office suite will be installed should be updated as necessary to run the applications.
11. Provide training in the use of all office software applications.
12. Provide conversion assistance and support for any user who is switching from one office suite to another.
13. Increase awareness of shared network folders among site and instructional staff to increase information sharing and collaboration.
14. Discontinue the practice of unplanned system outages unless circumstances make it unavoidable. Ensure that system work that requires downtimes is performed during the evenings or over the weekend, and ensure that all system outages are preceded by warnings to affected users.
15. Update the rate information within the telephone system and work with business office staff to ensure that the information on tracking of long distance telephone calls is available as needed for billing purposes.
16. Consider implementing an electronic document imaging system to archive important data, records, and reports. This should be done only after consulting with other school districts that have such a system to understand the benefits of the system and to learn what to be aware of when contracting for a service provider. Document imaging vendors can be researched online at http://www.osp.dge.ca.gov/imaging.

Planning and Standards

The district has in place and appears to be following a technology plan. The findings and recommendations in this section are provided to assist the district in strengthening its planning and standards.

Technology support staff members have found it difficult to enforce district standards for applications, hardware and operating systems. The lack of enforced standards affects the technology department's ability to support and maintain its systems. As a result, disparate, incompatible systems have been implemented and the advantages of collective purchasing power have been lost.

Technology department staff members expressed frustration regarding the difficulty of establishing a standard for hardware acquisition. For example, technology services staff may recommend a certain product or vendor, but the recommendation is sometimes ignored because users may pursue similar equipment that can be acquired at a lower cost. This has made it more difficult and complex to provide technology support service, and increased costs. Enforced application, hardware and operating system standards are needed to simplify technology support and increase efficiency.

Nonstandard equipment on a network creates additional support costs: technicians have to carry twice the number of software drivers, create twice as many images for a computer that has malfunctioned, and receive twice the amount of training. Increased coordination of technology purchases would reduce expenditures, benefit schools and departments, and save site resources.

Recommendations

The district should:

1. Establish districtwide technology standards for all hardware and software applications. The technology services department should review and revise the standards annually.
2. Ensure that the newly defined technology standards are enforced throughout the district. This would help provide better standardization of equipment; allow for more accurate technology budgeting and planning; and reduce both support costs and, as a result, the total cost of ownership.
3. Ensure that all technology requisitions are forwarded to the chief technology officer for approval. This will help improve standardization and keep support requirements to a minimum. Technologies that are not compatible with existing standards should be considered on a case-by-case basis. Nonstandard requests that are deemed justified should be granted; however, the CTO should first meet with the user to determine if existing standards can be maintained.

4. Increase awareness of the technology services department's existing guidelines for standard hardware purchasing alternatives, operations and technical procedures by posting this documentation on the district's Web site.

Network

FCMAT reviewed the network elements listed in the network documentation provided by district staff. Any network elements omitted from the network documentation were not reviewed; however, the recommendations in this report should be applied to all network elements in the district's network. FCMAT also performed a remote port scan of the district's externally routable IP address space.

Network documentation is incomplete. Typical network documentation should include the following information for each network element:

- IP address
- Manufacturer part number
- Serial number
- Current firmware version
- Purchase date
- Physical location

Other information can be included in the documentation if desired, but the above list constitutes the minimum amount of information that should be maintained.

A high percentage of network equipment is either no longer supported by the hardware vendor, or is currently in the vendor's announced "end of sale" state. It is not advisable to operate a production network that includes obsolete or unsupported equipment.

In addition, a high percentage of network equipment is running firmware that has been declared "end of support" by the hardware vendor. Firmware updates are critical to the stability of a network environment because they contain important bug fixes and feature enhancements.

All Wireless Access Points that were reviewed are using the wired equivalent privacy (WEP) security protocol. The use of WEP security is not recommended because it has known and easily exploited vulnerabilities. Software to decode WEP keys and gain unauthorized access to a wireless network is widely available on the Internet. WEP has been replaced with the 802.11i standard, which addresses the shortcomings of WEP.

Authentication, authorization and accounting (AAA) is not in use on any of the district's reviewed network elements. Using AAA would provide controlled management access to all network elements through central control and management of network element logins and passwords, as well as an enhanced audit trail for commands entered on network elements that use AAA. A Linux server can run the required protocols to fully support AAA. The RADIUS and TACACS+ protocols are most commonly employed in an AAA system.

Hypertext Transfer Protocol (HTTP) management servers are enabled on many network elements, but access is not protected by an IP (Internet Protocol) access list on network elements that support access lists. HTTP management daemons embedded in network elements should always be protected with an IP access list if they are enabled. The access

list should permit HTTP connections to the network element from a very small number of management workstations. If possible, HTTP management daemons should be disabled, or alternatively, the Secure Socket Layer (SSL) HTTPS encrypted version of the management daemon should be used instead. HTTP management daemons that are not protected with an IP access list are vulnerable to connections from unauthorized workstations and may result in unauthorized tampering with the network element.

Simple Network Management Protocol (SNMP) community strings are configured on many network elements, but are not protected by an IP access list on all network elements that support access lists. Some network elements are configured with the default SNMP community strings, "public" and "private." These community strings can be used by an unauthorized user to tamper with the network element.

None of the reviewed network elements had remote logging enabled. Remote logging provides an audit trail that can be useful for diagnosing network problems and security issues.

Remote Telnet access to network elements is not protected by an IP access list on all network elements that support access lists. Instead, all network elements reviewed that support management access via Telnet are configured to allow connections from any IP address on the district network.

Some network elements are configured to time stamp logs with the uptime of the network element rather than with a time of day from a network time protocol (NTP) server. Some network elements are not configured to use a NTP server for time synchronization. Using an NTP ensures that system logs and SNMP trap messages are synchronized across all network elements. This practice will also ensure that all system logs are properly synchronized in the event that the logs are used to troubleshoot a network problem or security incident.

Some Cisco network elements have the password encryption service disabled. This service ensures that any passwords configured on the network element are not displayed in plaintext in the network element configuration. Although this service by itself does not provide adequate password security, it provides an additional layer of security and should therefore be used.

Some network elements are configured with individual passwords on the VTY and console ports, and others are not. Some network elements with local console ports and some network elements with local auxiliary management ports are not configured to require a password before providing access to their management interface. Thus anyone who connects to the local console port or local auxiliary management port can gain access to the network element's management interface.

Some network elements allow remote Telnet connections to be made to the management interface of the network element without prompting for a password. These network elements are extremely vulnerable to tampering by an unauthorized user and should be replaced as soon as possible.

None of the Ethernet switches reviewed are configured to provide port-level media access control (MAC) address security. As a result, an unauthorized user could connect a "rogue node" workstation to the network by plugging into any unused Ethernet port. This "rogue node" could obtain confidential information from the network. It would also be possible for such a "rogue node" to use the district network to send spam e-mail or launch an attack on a remote network via the district's Internet connection.

Although it is a substantial undertaking, the possibility of implementing a network-wide 802.1x system needs to be investigated. The use of 802.1x security access provides for authentication before a node is allowed to use the network.

The Internetwork Packet Exchange (IPX) protocol is configured on a small number of routers. This protocol has been made obsolete by use of internet protocol (IP); even Novell, which invented IPX, has supported the use of IP in their products since the mid 1990s. Any hardware or software that requires IPX is probably no longer officially supported by the original vendor.

None of the network elements reviewed has SNMP traps enabled. SNMP traps provide real-time notification of important network element events that can often serve as indicators of an impending network outage or security incident.

Adequate login banners are not configured on any of the network elements reviewed. A login banner clearly states that unauthorized access to the network element is not permitted, and that all login sessions may be recorded. Properly worded login banners are critical in the successful prosecution of a criminal case.

A remote port scan of the district's externally routable IP address space revealed at least two remote access programs that permit connections from any host on the Internet. The remote access programs discovered were SSH and VNC. Remote access to these types of systems should never be permitted from any random host on the public Internet. It is preferable that this type of access be provided via a virtual private network (VPN) connection if possible. If a VPN connection is not possible, or if a specific IP access list cannot be implemented, this type of remote access should be made available for as short a time as possible.

Recommendations

The district should:

1. Create a complete set of network documentation. This documentation should be reviewed and updated at least quarterly.
2. Identify and replace as soon as possible any network elements that are no longer supported by the original hardware manufacturer.
3. Identify any network elements running firmware revisions that are no longer supported by the manufacturer. Either upgrade these elements to a current supported version of firmware, or replace them with new equipment.

4. Discontinue using WEP security on all wireless access points (WAPs) as soon as possible. All WAPs should be upgraded to a version of firmware that supports the 802.11i standard, and any WAPs that do not fully support the 802.11i standard should be replaced.
5. Provide control and management of all network elements using authentication, authorization and accounting (AAA), and ensure that all new network elements purchased support the use of AAA.
6. Protect with an IP access list all HTTP management daemons that are embedded in network elements. The access list should permit HTTP connections to the network element from a very small number of management workstations. If possible, disable the HTTP management daemons, or use the SSL (HTTPS) encrypted version of the management daemon instead.
7. Protect with an IP access list all SNMP community strings in use on a network element. The access list should permit SNMP connections from a very small number of management workstations.
8. Discontinue using the system default SNMP community strings "public" and "private" as soon as possible. SNMP community strings should be difficult to guess and should change regularly. If regular use of the SNMP protocol is required, consider using SNMP v3, which provides greatly enhanced security for SNMP connections between a network element and a management workstation.
9. Enable remote logging of network element events as soon as possible. The syslog protocol is typically used for this purpose, and a Linux server can provide a centralized collection point for logs from all network elements.
10. Protect Telnet access to the management interface of any network element by using an IP access list. The IP access list should permit a small number of management workstations to connect to the management interface of the network elements, and deny all other connection attempts.
11. Ensure that all network elements are configured to synchronize their internal clocks to a NTP server, and implement time stamping with the local time provided by the NTP server rather than with the network element uptime.
12. Enable the password encryption service on any Cisco network elements that support it.
13. Ensure that the management interface of any network element with a local console port or a local auxiliary management port is password protected.
15. Replace, as soon as possible, any network elements that do not require a password to access their management interface via a Telnet connection.
16. Implement the use of port-level MAC address security in all of the Ethernet switches that support this feature. Investigate the possibility of implementing a network-side 802.1x system.

17. Discontinue the use of the IPX protocol wherever possible in favor of the industry standard IP protocol.
18. Configure all network elements to support their primary network management interface logins via AAA. If the AAA system is not available, the network elements should be configured to authenticate network management interface logins via a locally configured password.
19. Configure SNMP traps on all managed network elements. These traps should be sent to a central trap collection workstation that can correlate the traps and send alarms to the network managers. A Linux server can be used for this purpose.
20. Ensure that any firewall policy that permits remote management or remote desktop access to a device located on the district's internal private network is tightly controlled by an IP access list. Remote access to these types of systems should never be permitted from any random host on the public Internet. It is preferable that this type of access be provided using a VPN connection. If a VPN connection is not possible, or if a specific IP access list cannot be implemented, this type of remote access should be made available for as short a time as possible.
21. Configure and use a properly worded login banner on all network elements that support the use of login banners. An example login banner is shown below:

Login Banner Example

****

NOTICE TO USERS

This is an Ocean View School District (OVSD) computer system and is the property of OVSD.

It is intended for authorized use only.

Users (authorized or unauthorized) have no explicit or implicit expectation of privacy.

Any or all uses of this system and all files on this system may be intercepted, monitored, recorded, copied, audited, inspected, and disclosed to authorized site, OVSD, and law enforcement personnel, as well as authorized officials of other agencies, both domestic and foreign. By using this system, the user consents to such interception, monitoring, recording, copying, auditing, inspection, and disclosure at the discretion of authorized site or OVSD personnel.

Unauthorized or improper use of this system may result in administrative disciplinary action and civil and criminal penalties. By continuing to use this system you indicate your awareness of and consent to these terms and conditions of use. LOG OFF IMMEDIATELY if you do not agree to the conditions stated in this warning.

****

Network Addendum

Subsequent to FCMAT's field work at the district and prior to issuance of this report, IS department staff communicated the following:

- Network elements using the IPX protocol are no longer used in production because a districtwide wireless bridge is in place.
- All firmware has been upgraded and passwords have been encrypted on 21 Cisco switches.
- All firmware has been upgraded and password protection implemented on 37 HP switches.
- The district's network has a total of 46 wireless access points.

Appendices

Appendix A

Sample Job Description: Student System Technician

Under general supervision, provide technical support to school site and district office staff for student information systems; interfaces with software and hardware vendors; provide assistance and training to users on student information systems; perform related duties as required.

Examples of Duties:

- Provides technical support developing solutions to user-related problems and application systems; reviews and evaluates software and makes recommendations on same.
- Organizes and prepares application software documentation, procedural documentation, and operation instructions.
- Assists in the analysis, evaluation and implementation of student information systems; reviews and evaluates procedures, schedules and system controls.
- Interface with software and hardware vendor personnel to resolve technical issues; may design, write or modify computer programs as needed.
- Create data reports, and perform file transfers and data conversions; evaluates data and reports and maintains quality control.
- Operates computer and printer and scanning equipment as required.
- Reports progress status and problems to supervisor.

Knowledge of:

- Principles, techniques, methods, and procedures pertaining to the various aspects of student information systems.
- Appropriate computer hardware and software systems including operation techniques for personal computers.
- Knowledge of data base development techniques and software used to implement them.

Ability to:

- Effectively and efficiently formulate, implement and maintain computer systems.
- Prepare and present clear and concise reports.
- Analyze data and situations.
- Reason logically and creatively identify problems, draw valid conclusions and develop effective solutions.
- Apply creative thinking in design and development of methods of processing data

with computers.
- Speak and write effectively.
- Coordinate work with activities of other technical personnel.

Appendix B

Sample Job Description: Chief Technology Officer

SUMMARY

Under the general direction of the Education Division Assistant Superintendent, assumes primary management responsibility for the Technology Services Department; ensures efficient delivery of information system services and technology resources for users districtwide; and performs other essential job-related work as required. The fundamental objective of this position is to ensure that computers and technology efforts are consistent with the overriding objective of effective delivery of quality educational services for the students, parents, and community.

DUTIES AND RESPONSIBILITIES

The following are examples of duties related to this position:

1. Plans, organizes, leads, directs, develops, and monitors all aspects of the Technology Services Department; supervises Teacher on Special Assignment (TOSA) staff members and other departments and provides direction to Technology Services staff members.
2. Directs and facilitates ongoing districtwide needs assessment and development of technology implementation plan to ensure delivery of efficient and effective day-to-day and ongoing information system and technology services districtwide.
3. Directs research, evaluation, assessment and testing functions, and district standardized testing program.
4. Oversees, develops, and implements the district plan for information systems and technology. Sets policy for the purchase and repair of computers, peripherals, and audiovisual equipment.
5. Directs, facilitates, and monitors information system implementation efforts to ensure that the Department keeps pace with day-to-day and future needs. Assures compliance with graduation requirements. Guides and assists departments and sites in the development of appropriate educational technology implementation and curriculum.
6. Maintains frequent group and one-on-one communication and works in a collaborative manner with department directors and other administrators and professionals districtwide to facilitate decision making and problem solving in the area of computers and technology services and assessment.

7. Oversees progress toward objectives relating to migration and other project management efforts.
8. Oversees the management of the interconnection of operating systems, desktop computer applications, network protocols, and mainframe applications.
9. Reviews, monitors, and facilitates negotiations with vendors and agencies to provide cost-effective resources in terms of day-to-day demands and longer term goals and objectives.
10. Complies with applicable state, local, and federal rules, regulations, and laws, as well as the policies and procedures of the district.
11. Establishes and maintains effective working relationships with a variety of groups, including teachers, students, administrators, coworkers, vendors, consultants, and others as required.
12. Demonstrates and models safe, prudent, and healthful work behaviors and practices; identifies and works toward the elimination of unsafe or unhealthful work area conditions.
13. Performs other essential job-related work as required.

SUPERVISORY RESPONSIBILITIES

Assign and supervise of all Technology Services Department employees. Carries out supervisory responsibilities in accordance with the districts policies and applicable laws. Specific requirements include, but are not limited to, the following:

1. Manages substantial data bases and other information such that the quality, quantity, time lines, and facility of data retrieval and reporting support district and site needs.
2. Manages resources so that Technology Services Department staff members provide timely and essential customer service, training and user support.
3. Utilizes knowledge sufficient to manage complex data base systems, network management [LAN and WAN environment] and protocols, intranet and Internet access, mini-computer operations, and multiple hardware and software platforms.
4. Manages and directs systems that support and assist users at all sites in computer, software, network, and system functions.
5. Develops and manages long-range planning for technology, infrastructure, and network environment to facilitate technology use districtwide.
6. Manages services that provide support through multiple methodologies, including but not limited to, help desk, on site training, equipment repair, and essential data retrieval for management purposes.

7. Clearly commands knowledge and expertise sufficient to facilitate the data needed to support the district's fiscal services, business services, human resources, and student services departments and/or divisions.
8. Manage districtwide network that supports voice, video and data transmission.

QUALIFICATIONS

Education and Experience

Evidence of successful experience and management expertise in an educational setting or similar-sized organization involving computers and technology management.

Appendix C

Study Agreement

recommendations to that point.

4) Exit Letter - The Team will issue an exit letter approximately 10 days after the exit meeting detailing significant findings and recommendations to date and memorializing the topics discussed in the exit meeting.

5) Draft Reports - Sufficient copies of a preliminary draft report will be delivered to the District administration for review and comment.

6) Final Report - Sufficient copies of the final study report will be delivered to the District following completion of the review.

3. PROJECT PERSONNEL

The study team will be supervised by Anthony L. Bridges, Deputy Executive Officer, Fiscal Crisis and Management Assistance Team, Kern County Superintendent of Schools Office. The study team may also include:

A. Andrew Prestage, FCMAT Management Analyst
B. Linda Grundhoffer, FCMAT Consultant
C. Scott Sexsmith, FCMAT Technology Consultant
D. Bradley White, FCMAT Technology Consultant

Other equally qualified consultants will be substituted in the event one of the above noted individuals is unable to participate in the study.

4. PROJECT COSTS

The cost for studies requested pursuant to E.C. 42127.8(d)(1) shall be:

A. $500.00 per day for each Team Member while on site, conducting fieldwork at other locations, preparing and presenting reports, or participating in meetings.

B. All out-of-pocket expenses, including travel, meals, lodging, etc. Based on the elements noted in section 2 A, the total cost of the study is estimated at $10,000. 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 acceptance of the final report by the District

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

Payments for FCMAT services are payable to Kern County Superintendent of Schools-Administrative Agent.

5. RESPONSIBILITIES OF THE DISTRICT

A. The District will provide office and conference room space while on-site reviews are in progress.

B. The District will provide the following (if requested):

1) A map of the local area
2) Existing policies, regulations and prior reports addressing the study request
3) Current organizational charts
4) Current and four (4) prior year's audit reports
5) Any documents requested on a supplemental listing

C. The District Administration will review a preliminary draft copy of 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 District 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 key study milestones:

Orientation:	June 11, 2007
Staff Interviews:	June 11, 2007
Exit Interviews:	June 11, 2007
Preliminary Report Submitted:	July 23, 2007
Final Report Submitted:	To be determined
Board Presentation:	To be determined

7. CONTACT PERSONS

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District Financial Consultant

Please print name of contact persons: Beverly M. Hempstead
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Internet Address cchandler@ovsd.org beverly@ovsd.org

Edward A. Sussman 4-23-07

Dr. Edward A. Sussman, Superintendent Date
Ocean View School District

Barbara Dean April 20, 2007

Barbara Dean, Deputy Administrative Officer Date
Fiscal Crisis and Management Assistance Team

In keeping with the provisions of AB1200, the County Superintendent will be notified of this agreement between the District and FCMAT and will receive a copy of the final report.