

Overview:

The Steelton-Highspire School District shall maintain an information systems structure to support business and instructional operations. In order to control the Total Cost of Ownership (TCO) the of information system, a number of standards and guidelines have been identified and are delineated as part of this document.

The Steelton-Highspire School District is technologically divided into two functional areas: Business and Academic. While each function has unique requirements for the delivery, accessibility and availability of information, they share several strategic standards. These standards are:

1. Centralized Management
2. Low Total Cost of Ownership
3. High System Availability
4. High Scalability
5. High Security
6. High Resource Availability

As the number of workstations continue to expand at Steelton-Highspire School District, maintaining network system and workstation availability will become increasingly difficult without the ability of support personnel to upgrade and manage firmware and software remotely. The DMI standard defines methods for power cycling systems and upgrading BIOS firmware through network connections.

The implementation of a High Speed WAN Connection is essential to managing the elementary school from any location within the District. The implementation of a connection which exceeds 500 KBPS is required in order to establish Remote Procedure Call (RPC) connection between servers. In addition, slower connections require significant wait times for screen and system database updates.

Microsoft Systems Management Server allows the Technology Team to remotely control workstations, manage system inventories and distribute software without visiting each workstation individually.

Total Cost of Ownership is a concept that pertains to the identification of all costs pertaining to network technology systems. This includes the direct cost of acquisition and installation, system support, user training, software upgrades, help desk support, and system upgrades. It also includes the indirect costs of technology ownership which include but are not limited to salaries, physical plant modifications, furniture requirements, insurance, system downtime and other related costs that impact technology or are impacted by technology.

Under the Total Cost of Ownership concept, it is assumed that acquisition costs of systems represent a small percentage of the Total Cost. Steelton-Highspire School District has identified the following areas in which to balance the purchase price of systems with the Total Cost of Ownership.

System Reliability

Steelton-Highspire School District places great emphasis on the premise that engineered systems provide greater reliability than assembled systems. Often second and third tier manufacturers purchase components based on pricing and do not perform acceptance testing or even clearly define interface specifications. As a result, compatibility with other hardware and/or software becomes a hit or miss exercise. First tier manufacturers are most often engineered: components are supplied with the manufacturer's name and are

tested for compliance with detailed specification. While this does not ensure compatibility, it usually means that compatibility is model dependent not unit dependent.

Support Reliability

The ability to obtain system support in a timely fashion prevents lengthy downtimes and user dissatisfaction. Evaluating the reliability or availability of a manufacturer's support mechanisms is difficult and time consuming. However, historical experiences, industry evaluations, and colleague feedback can provide vital information about product reliability.

System Consistency

Consistent system interfaces is greatest means of reducing system support, user training and help desk support. When BIOS screens are consistent among systems, Information Systems personnel gain a greater sense of familiarity and confidence with configuring systems. This reduces configuration errors and support frustration. Consistent end user interfaces allow users to share information between them. It eases training by requiring less one-on-one tutoring and allows help desk support personnel to "walk" users through many problems without requiring on-site visits.

Remotely Supportable Systems

Remotely supportable systems allow Information Systems and Help Desk personnel to upgrade firmware, monitor hardware failures and remotely monitor user interfaces. This reduces travel and on-site time, user dissatisfaction and increases the availability of Help Desk and Information Systems personnel.

System Policies and Profiles

System Policies and Profiles allow Information System managers to set system and software configuration settings on a global as well as controlled basis. Policies force systems to comply with specific settings that are considered essential to maintaining system operation.

TCO Supported Operating Systems

Implementing systems that support system policies, logon scripts, user profiles, and remote connectivity is required to controlling the Total Cost of Ownership. The use of browser based software and thin clients also become economical system additions assuming careful consideration of their potential role in the systems.

System Availability

Features that increase system availability should be included in any primary connect point or server on the information network. Any system that is accessed by a large number of users or is mission critical should have as few single failure points as possible. Information systems managers must recognize that no hardware platform is free from potential system failures, however, critical systems must be made redundant or offer fail-over where possible to reduce user down time.

Fault Tolerant Servers

Fault tolerant servers recognize that hardware failure will occur. By controlling single failures with backup systems, redundant components or correctable failures systems, availability is greatly improved. Mission critical servers within the Steelton-Highspire School District systems will install RAID (Redundant Array of Inexpensive Disks) level 5 or higher to ensure data availability. In addition to RAID 5 disk configurations, all servers will perform nightly backups. Backup systems will comply with approved procedures for off-site storage.

Fail-over/Clustered Systems

As newer clustering technologies become available, SHSD will implement fail-over and full clustered systems on mission critical servers for both business and educational functions. Fail-over clustered systems allow two identical systems to balance user load during normal operations, but provides mechanisms for one systems to take complete control of both data structures and system processing in the event of a system failure. Full clustered systems allow multiple systems (greater than two) to provide the same load balancing and fail-over capabilities.

Structured Cabling Systems

Structured cabling systems ensure that the Steelton-Highspire School District will be able to take advantage of high bandwidth applications as they become available without a significant reinvestment in the cabling plant.

Remote Monitoring

Remote monitoring such as done by SNMP devices allows information managers to identify resource bottlenecks, resource usage and system failures. In addition, consideration must be given to failure predicting devices on mission critical systems.

Scalability

SHSD is dedicated to acquiring systems that are scaleable to meet future growth and processing demands. Scalability of both hardware and software components is necessary to achieve systems that can expand to meet the rapidly increasing needs of the user community.

System
Availability

Scalability

System Clusters

Clustered systems allow additional servers to be added to the network without reconfiguring the user database yet providing load balancing between the connected

systems. As user demands on the main systems continue to escalate systems can be added to eliminate resource and processor bottlenecks.

Only servers capable of expanding to multiple processors should be considered for application servers within the Steelton- Highspire School District. The ability to add a second, third or fourth processor to help balance processing with the server is highly desirable to preventing processing bottlenecks.

Client/Server Applications

Client/Server applications provide the ability to reduce network bandwidth by eliminating the need to send all information to a client system for processing. Servers in the Client/Server system process database queries for the client and return only the desired information, reducing network traffic and bottlenecks.

Security

LAN Segmentation Between Academic and Business Functions

Creating separate LAN segments for the Academic and Business functions will provide the ability to filter packets and prevent student access to business function through the OSI Network Layer.

Firewall/Proxy Server

A Firewall/Proxy Server is designed to prevent outside intruders from accessing the SHSD systems as well as prevent unauthorized access to undesirable sites in the public network (Internet). The implementation of a firewall/proxy server provides the first steps to securing and implementing a district Intranet.

Encrypted User Authentication

The use of clear text password transmission will not be allowed on any of the Steelton- Highspire School District network systems. The use of only encrypted user passwords ensures that simple monitoring of the network from a workstation on the backbone will not provide hackers with the ability to gain access to restricted areas.

Single Login

The use of a single login simplifies access to the network and decreases the possibility that other users will decode other passwords by monitoring keystrokes at the workstation.

Accessibility

Resource Accessibility by User and/or Group

The ability to assign individual resources by user or by user group allows system managers to better utilize roaming profiles for users that log on to multiple workstations.

Authorized Access to any Resource

Network resources such as printers, fax servers, e-mail, etc. are key components to increasing the productivity and ingenuity of end users. However, allowing free access to all resources may encourage inappropriate use and waste. To prevent this, systems must have the ability to assign authorized access to individual resources.

Intranet/Internet/Extranet Access

The Steelton-Highspire School District fully embraces the implementation of an Intranet with access to the Internet and access by support vendors through an Extranet.

Remote Access

For network support and non-Intranet access, limited access will be available through systems referred to as Remote Access Servers. These servers will provide authenticated node access through dial-up lines. Remote access will be granted to only a few individuals

Adopted: 01/31/2009

Amended:

Reviewed without Amendment:

Steelton-Highspire School District SCHOOL BOARD

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