

#### **4. Summary of District Technology Needs and Solutions**

The basic requirements to improve the district’s technology and technical support will be discussed in the remainder of this document. The requirements will highlight the basic categories outlined earlier in this study under the headings of Infrastructure, Hardware, Software, and Technical Support.

#### **4.1 Infrastructure**

##### **(a ) Site Servers**

An essential key to “pull it all together” is the requirement that all schools utilize a dedicated instructional server. The following hardware must be in place by all ABC Schools:

<b>School</b>	<b>Platform</b>	<b>Server Quad Core Dual Processor</b>	<b>Remote Management</b>	<b>Op. Sys.</b>	<b>RAM</b>	<b>Storage</b>	<b>Drive Configuration</b>
High Schools	Mac and PC	Apple X-Serve 3 GHz	Apple Remote Desktop and Altiris	OS 10.4 and Windows Server 2003 with Parallels	4 GIG	Terabyte	RAID 5
Middle Schools	Mac and PC	Apple X-Serve 2.5 GHz	Apple Remote Desktop and Altiris	OS 10.4 and Windows Server 2003 with Parallels	4 GIG	750 GIG	HD Mirroring
Elementary Schools	Mac and PC	Apple X-Serve 2 GHz	Apple Remote Desktop and Altiris	OS 10.4 and Windows Server 2003 with Parallels	2 GIG	750 GIG	HD Mirroring

Site servers provide a number of essential services such as student and teacher digital lockers (work storage and retrieval), patches, updates to the Operating System, anti-virus scanning and a secured repository of the site’s “images” and the vehicle for remote access to teacher and student computers by the site tech coordinators and IT staff.

The district has built the cost of the site server infrastructure into each schools refresh cycle allotment. Prior to refresh cycle funding schools were required to purchase site servers with local funds. The above server specifications are built upon the Apple X-Serve. The X-Serve simultaneously runs the Mac Operating System, while it “virtualizes” Windows Server 2003 using Parallels virtualization software technology. In effect, one piece of hardware runs two

Operating Systems simultaneously. Successful district beta tests prove that performance is exceptional on both platforms. The X-Serve negates the requirement for “two” site servers to provide service to the Mac and PC users that typically coexist within schools.

The server specifications above meet the following Information and Technology objectives:

1. Standardization of the district server infrastructure at all schools
2. Provision of exceptional technical support to both Mac and PC users
3. Provision of the most cost effective hardware / software solutions to all schools

Information and Technology is responsible for the X-Serve’s initial installations, set-up and configuration and scheduled imaging that occurs once each year. In addition, IT will import all student and teacher accounts and provide each user with a digital locker. IT will provide daily maintenance of the server as needed. The school’s software images will reside on the server. Both Mac and PC users will “sign-on” or authenticate to the X-serve. Site Servers will be under the supervision of the schools site tech coordinators and supported with the expert assistance of the Information and Technology department. IT will provide server training to each school’s site tech coordinator on how to provide remote technical support and how to maintain the migration of student accounts. The site serve is not be utilized by any staff member not trained and pre-approved by the information and technology department. Security of user data paramount.

In the event of a catastrophic failure of a site’s instructional server, IT will replace the server with a loaner. The school will have the option of having the school server repaired, or to purchase the new loaner server from IT. Each scenario minimizes instructional down time.

### **(b) Teacher Data and Student Data**

All users authenticate to the X-Serve no matter the computer platform in use. Teachers and students vital data is monitored, saved and accessed on the X-Serve. Information and Technology has standardized how this information will be saved and accessed within district schools.

Students and staff work is saved in digital lockers on the server. Digital lockers provide access to users’ files anywhere on campus, using any networked computer (both Mac and/or PC). At this time, students and staff may not access server files from outside their school’s campus. Students and staff may choose to use flash drives, web based digital lockers (i.e. Google), email or laptop computers to transport their work on and off campus.

Teachers will save work in digital lockers on the site server; however, the default primary location for teachers’ files will be their local machines. A special software application called “mobile accounts” will update the most recent copy of teachers’ specific files on the school’s server. The server thus provides secondary location for teacher’s file as a ‘back-up’.

It is recommended that Teachers consider utilizing laptops for their work may be transported with ease as needed in and out of the school environment. When a teacher returns to the campus, the most recently written file of the same name will be updated to the site server automatically. The

updates occur in the background of teacher’s computer activity and therefore will not distract from the day’s activity. A similar program will be utilized for the PC.

**Standardized Data Saving at Schools  
Teachers and Student**

<b>Teachers</b>	<b>Students</b>
1. local machine	1. site server digital locker
2. site server digital locker via mobile accounts automatic back-up to site server	2. web based digital lockers (i.e. Google), flash drives, email
3. web based digital lockers (i.e. Google), flash drives, email	

**(c) System Back-ups**

The district will provide district schools with a standardized back-up system for site data. All high schools will be provided RAID storage solutions to ensure outstanding data availability, scalable performance, high capacity, and recovery with no loss of data or interruption of user access. RAID hardware and configuration is expensive and is being limited to high schools which share the greatest data storage needs due to the size of the school populations.

Middle Schools and Elementary schools will be provided with the X-Serve internal hard drive mirroring protection.

All Schools will be required to do a manual back-up via a provided Firewire hard drive partitioned into separate rotating calendar dates. It is the responsibility of the school to ensure the back-up system occurs on schedule and is functioning on a day to day basis. The Firewire Hard disk should not be in the same location on campus as the site server. A probable location would be the site tech coordinator’s room where it can be connected to the site coordinator’s computer on demand.

**(d) Centralization**

Centralization is moving the control of specific services from the schools to the District Office. Centralization is a cost saving concept vital to maximizing support resources at the schools and IT. For example, in 2006-2007, the district will begin to provide all teachers an opportunity to utilize an “online” grade book. The many benefits to utilizing an online district supported grade books are: there is no cost to teacher and schools; it has web accessibility, a secure back-up of grade book data and the ability to enter grades in mass. The more teachers that learn to utilize the grade book program, the greater the cost savings and the fewer support calls needed by the IT staff. This effort will remove the current grade book programs used by teachers and replace them with a centralized grade book on a single server at the district. Centralization is one way to create support efficiencies because support technicians will not be required to visit the teacher’s classroom to address a malfunctioning grade book program. The grade book will be supported from the district office

A similar centralization effort with library servers is also scheduled to being in 2006-2007 and will produce major cost savings coupled with a reduction in hardware and technical support. The plan is to combine the thirty school library servers into two servers located at the district office.

As the district's bandwidth strategically increases current site server services provided by the IT department may be better provided centralized at the district office. Therefore, district reserves the right to remove schools' standardized site servers and reinstall them at the district office if it is determined by the IT Department that such centralization is in the best interest of students, staff and technicians.

**(e) Wireless Access Points**

Wireless access will play a prominent role on school campuses due to its flexibility and lower cost. Wireless access is currently not standardized and is a security risk as many of the current access points may be accessed by non school constituents. Therefore, beginning in 2006-2007 all wireless access point must be standardized, secured, configured and installed by IT personnel.

IT will configure each wireless access point to maintain its own static IP address. IT will create a common password for each school required to access wireless access points on campus. IT will periodically change the campus password for each school site. Wireless access points are a school cost.

**Wireless Access Points Standards**

<b>Wireless Model</b>
Apple Airport Extreme

