Network Design Project

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Table of Contents

I. Introduction 3

II. Facility/System Issues 4-5
   a. Design narrative
   b. Floor Plan

III. General Information 6

IV. Mobility Issues 7

V. Equipment 8

VI. Budget 9
   a. Personal/Trainers/Technicians
   b. Equipment Purchases
   c. Source of Funding

VII. Implementation 10
   a. Barriers to implementation
   b. Time table
   c. Train the Trainer Description
   d. Professional Development Time Table

VIII. Questions and Answers 11

IX. Appendix 12-14
I. Introduction
Goals/Objectives of Plan
In keeping with Ascension Parish School System’s motto of “Every Child Successful in an Ever Changing World,” the goal of our tech plan is to gradually implement a one-to-one program at Gonzales Middle School, which will give all students access to an iPad in the classroom and at home. It is our hope that by providing students with access to 21st Century resources, we will prepare them for the college and career experience of tomorrow.
II. Facility/System Issues
A. Design (Graphic & Narrative)
Each device will connect to a WAP (Wireless Access Point), which will be housed in each classroom. The WAPs will be controlled at the district level by the WAC (Wireless Access Center). The Internet will filter through the Ascension Parish Data Center, where the Firewall and 1 Gig Switch will also be housed.
B. Floor Plan

[Diagram of network infrastructure starting with Internet, then through 1 Gb Switch, Firewall/Router at APSB Data Center, Wireless Access Controller, To GoMS, Switch at GoMS, Wireless Access Point in 45 Classrooms, and ending in 30 iPads in Classrooms]
III. General Information
Gonzales Middle School is located in Gonzales, LA. This school serves grades sixth through eighth. The teacher to student ratio is one teacher to twenty-five students. Currently this school is a TAP (teacher advancement program) school. This means that it is in our turnaround zone in the district. In the turnaround zone our district has a strong focus to grow schools academically. The school has approximately 750 students and 45 teachers. Gonzales Middle is also a Title I school due to the current demographics. Currently, the school has WAPs in each classroom. Also each teacher has mounted projectors and smartboards in each classroom. They also have one mobile lab. The rest of the labs are stationary, which are used for Fast Forward. Fast Forward is a reading program designed to teach students focus and increase reading comprehension. This program was implemented in all turnaround zones schools.
VI. Mobility Issues/Problems
The problem faced at most one-to-one schools right now is that not all students have Internet access at home. In order to deal with that problem, teachers will have students add desired materials to their reading lists before leaving school. The school can also add a homework lab from 2:30 to 3, to encourage homework completion.
V. Equipment (Current & Future)
Currently, the school is outfitted with WAPs in each classroom. All teachers have computer access in their rooms. As we implement the one-to-one program, the switch will need to be updated to at least one gig. Also, each classroom in the school is outfitted with a Smartboard with mounted projector, which can be used with the AppleTV. Also each student, will eventually have iPad access.
VI. Budget (2-3 year detailed):
A. Personnel/Trainers/Technicians
The SYSOP will undergo tech support training at the district level over the summer in order to insure at least one person on campus is proficient in troubleshooting device issues. The training will be led by the district tech support employees. The SYSOP will be compensated at the rate of $40/hour for the summer institute, which will result in a cost of $1600.
The ILT will identify one person in each grade who already utilizes the BYOD policy in their classrooms. These individuals will form the Tech Support School Team, and they will be responsible for researching appropriate apps and usage in the classroom. The team will lead a Summer Institute for teachers at a cost of $960/per trainer. The school board already has technicians in place at the district level. These personnel are already trained in iPad usage and issues.

B. Equipment Purchase(s)
Each year, we will purchase 180 iPads at a cost of $3790 per 10 devices for a total cost of $68,220. In addition, 10 teachers per grade level will receive a Macbook Air at the cost of $4645 per 5 devices for a total cost of $9,290 as well as AppleTVs at the cost of $99 for 40 classrooms for a total cost of $3,960.

Each year, we will purchase iPads for students, Macbook Air computers for teachers, as well as Apple TVs for the classrooms. The cost is as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
<th>Number of Items</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>iPad</td>
<td>$3,790 per 10</td>
<td>180</td>
<td>$68,220</td>
</tr>
<tr>
<td>MacBook Air</td>
<td>$4645 per 5</td>
<td>10</td>
<td>$9,290</td>
</tr>
<tr>
<td>Apple TV</td>
<td>$99</td>
<td>40</td>
<td>$3,960</td>
</tr>
</tbody>
</table>

C. Source of Funding
The school district passed a millage tax last year, which provides for the development of technology in schools. As a result, funding will be handled by the district for implementation of the one-to-one program at Gonzales Middle. The school will also use Title I funds to purchase apps needed specifically for struggling students. TAP funds will be used for Professional development for the teachers.
VII. Implementation:
A. Barriers for Implementation
Currently, teachers are struggling to implement the Common Core State Standards in their classrooms, and we fear that adding the iPads will be seen as something new to implement on top of the curriculum rather than something to enhance the new curriculum. In order to ease the use of the devices, we will offer a summer institute in order for experienced teachers to demonstrate how they use the iPads in their classrooms as an integrated part of their lessons rather than additional work on top of what they already do. The schools’ ILT will conduct periodic walkthroughs in order to capture excellent examples of iPad use to share with other teachers. The PLCs will choose one tool per nine weeks to integrate into their lessons in order to build capacity with the iPads.
Another barrier for implementation is student access to the Internet at home. In order to combat this issue, we will train students to download needed materials to their reading lists at home during the last 10 minutes of the school day. Students who fail to do so will receive an infraction the next day.

B. Time Table for Implementation
2013-2014: Incoming 6th Graders and 6th Grade Teachers will receive their devices.
2014-2015: Incoming 6th Grade students and teachers in the 7th grade will receive their devices.
2015-2016: Incoming 6th Grade Students and teachers in the 8th grade will receive their devices.

C. Detailed Schedule of Training:
Train the Trainers Description
Our Professional Development Plan includes a plan to develop capacity within the classroom teachers and have them lead training each nine weeks. Teachers who have been identified as technologically proficient will lead training of PLC facilitators during a Summer Institute and on Tech Tuesdays quarterly. These trainings are a requirement for professional development hours. The teachers will include examples from other schools as to how they’re using their devices in the classrooms. The PLC facilitators will then lead development of the PLCs around one technology tool per nine weeks that the team decides will be the most beneficial.

D. Professional Development Training Schedule:
Training #1: Summer Institute July 28-30
Training #2: Tech Tuesday September 16th
Training #3: Tech Tuesday November 4th
Training #4: Tech Tuesday February 10th
Training #5: Reflection/Survey May 15th

VIII. Questions and Answers
Each grade level will identify one team member who is technologically proficient to direct questions to. When that teacher is unable to fix the issue, she/he will defer to the school’s SYSOP. If that team member is unable to troubleshoot the issue, he/she will defer to the schools tech support person.
IX. Appendix:
Any Reference Sources Used
Interview with IT Director/Staff (If not submitted independent of this plan)

References:

**Interview with IT Leader**

Interview with Senior System Engineer for BCBSLA Louisiana Health Services and Indemnity Company

1. Can a firewall protect a network? Yes If so, can it be violated? Yes
2. Is pass wording student accounts safe? That doesn’t make sense. It does at a security standpoint. There’s a risk of a lack of oversight. In any system outside of school, it’s impossible to recover passwords. They can only be reset.
3. How can a school protect its school data? Backups, encryption, data loss prevention (prevents data from leaving the network), up to date malware scanning, e-mail scanning, strong password policies, user education.
4. Should a district consider outsourcing its data? Absolutely. Stipulations: Cloud services: You have much higher availability than you can provide at the district level (in case something gets hit by a meteor). You lose a level of management an transparency, but you gain security.
5. What should a district consider when considering a company for network installation? Experience, prior projects, previous customers, individual research, vendors are above-board.
6. Can a district maintain its network if data is outsourced? Those are two different things. Network is a connectivity thing. Data is data. You still have control over who can access it and for how long. If you move to cloud storage, if everyone is at one spot connecting, there can be issues about access to data.
8. Is a Cloud safe? Depends on which cloud you use. Do your research. It’s an operational cost. Do you want to spend a big sum up front, or do you want recurring costs?
9. Is Cloud adoption increasing? If so, why? Yes, because it’s cheaper upfront, can be more secure, and has higher availability.
10. Can the concept of BYOD (Bring Your Own Device) improve access
to school resources? When you’re allowing a 3rd party device to access data, you need to put some sort of control on the device to make sure it’s accessing your data correctly. On a phone, instead of being on a native e-mail app, it’s compartmentalized so it can be removed without affecting the device.

11. Name or identify three (or five) essential components of a school district/college network? Switches (what allow devices to communicate to each other and provides a path to the internet), Routers (hop between the switch and the Internet), WAP, Wireless access controller (controls the WAPs, provisions the WAPS, how the devices authenticate), Firewall (Separate physical piece of hardware that controls the flow of traffic in and out of the network. I only want people connecting on these networks, and it only allows certain connections inbound), Web Proxy (local at the school, which will do Internet filtering).

12. How do you monitor the traffic, delays or congestion on a network? Angry e-mails from people, use specialized monitoring software.

13. How often do you switch (upgrade or update) software or hardware? Software should have a defined patch schedule for security reasons. Hardware depends on if you’re leasing or buying. A user device should be replaced every three years. Servers are on a 3-5 year rotation. Networking components should be 5 or more years. What protocols would you follow to recommend a new soft or hardware? Identify what your need is, research to find out options, test out demo software on your environment, budget costs, figure out installation protocol. If the decision is driven by the system office, would they seek your input on such decisions? Yes.

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**Ascension Parish Tech Director Survey**

1. Which description best fits your role?
   - I am involved in managing the Information Services and Technology Department for one school district with 27 schools.

2. Are there standards for Technology Resources available for your organization at this time?
   - Yes – Currently this is handled through the procurement process and is available on request, but we are looking to increase the awareness of these standards by publishing them to the web and sending updates out to school leaders.

3. In the last 6 months, has your office conducted any studies that use other
institutions’ data?

No

Comment: Student data protection is currently a very hotly debated topic so the sharing of that data is closely guarded.

4. List things that are completely or mostly true about the Information Services and Technology in APSB from the IT Department’s perspective?

IT has a positive return on investment for the organization.

a) VoIP phones save the district over $500,000 per year compared to previous phone services.

b) Energy Management saves energy costs throughout the district and the control systems run on the IT network.

7. Inquire about budget for unit, responsibilities for inventory control and any other administrative issues (text box).

The APSB Technology budget is fully funded by an Ad Volorem property tax that generates approximately $8,000,000 per year.

8. Describe the decision making process and approval process for your Technology in APSB.

The Technology Department prepares recommendations and project cost estimates for the district-leadership and the Ascension Parish School Board based on the district’s planning and goal-setting. The approves the projects and sets timelines.