

# Alexander Central School

3314 Buffalo St, Alexander, New York 14005-9769

Phone: (585) 591-1551 Fax: (585) 591-2257 Email: [mperry@alexandercsd.org](mailto:mperry@alexandercsd.org)

Website: [www.alexandercsd.org](http://www.alexandercsd.org)



## Technology Plan 2015-2018

## **I. Executive Summary**

### **A. Mission statement**

## **Technology Mission statement**

The Alexander Central School districts technology plan focuses on technology as a tool to improve student's hands on learning and motivation. We see the vital importance of giving the classroom teachers the tools so they may act as guides in learning activities instead of just reciting facts and information. Our focuses are too incorporate technology into the regular curriculum, and provide the professional development that teachers need to use these tools with our students. Alexander's technology will benefit the students in the following ways:

- Give students the learning skills to adapt to the rapidly changing society allowing them the training in new technologies that they will meet in the 21<sup>st</sup> century workplace.
- They will benefit from learning how this information directly applies to their future in higher education or work in the outside world.
- They will be able to access, manipulate, exchange, and analyze information from electronic sources.
- Use technology not for just the sake of technology but see it used for all kinds of applications and allow the student to develop more uses for technology on their own

Alexander's plan focuses on how we can better provide the ease of use and accessibility of its technology to help teachers:

- Accommodate their curriculum needs.
- Accommodate different and developing learning styles
- Provide easy access to information.
- Bring technology to the classroom that can benefit the teacher in either small group or full group instruction.
- Make technology a tool for teachers to use for instruction of any subject.

## **B. Plan Summery**

### **Goals**

#### **Administration and Management Goals**

The Administration goals for the Alexander Central School are:

- All administrative personnel will have the capacity to access information and preform document processing by using Applications such as: publishing, word processing, databases, spreadsheets, forms management, web based applications, and cloud based software and tools.

- The district continues to enhance its digital communication between departments and school buildings. The intended outcome is better and faster interdepartmental communication, collaborative software and web based tools, digital student record keeping, crises management, and school webpage communication to the community.
- The district will continue to use technology to keep and convert its student records electronically for better management.
- Technology will continue to be used to better access curriculum, instruction, and to point out potential weak points in student learning.
- The Districts Technology will continue to be used to communicate to the community through its parent portal of its student database system, webpage, and state run web based tools.

### **Communication and Information Access Goals**

The communication and information access goals for the Alexander Central School District are:

- The advancement of Alexander's educational communications network for voice, video, and data. The district's network was developed and maintains its ability to interconnect all computer workstations, mobile laptop carts, smart classroom technology, school buildings, offices, and libraries. We have made it a goal to introduce a Wireless network to the district that will further this level of communication to newer mobile equipment, and/or cell phones and other student owner equipment.
- Students will continue to use the technology as a tool to write reports do research, prepare presentations, and use web based applications. The district would like to expand the available tools for students including collaborative group applications and cloud based software/storage.
- Every student, teacher, and staff member will continue to have access to high speed, filtered Internet through all workstations, mobile equipment, and classroom presentation equipment. We plan to expand this access through wireless technology and a wireless network.

### **Instructional and Curricular Goals**

The Alexander School District is using ISTE Standards (formerly known as the NETS) to establish for each Administrator, Teacher, and Student mastery of computer and technology skills. ISTE is broken into 5 separate standards for Students, Teachers, Administrators, Coaches, and Computer Science Educators.

- **Students:** The district uses the standards as a guide for evaluating the skills and knowledge students will need live and work in an increasingly global and digital world. The district agrees that simply being able to use technology is not enough. The district's technology needs to be used to analyze, learn, and explore. It needs to be used for communication and research. The students need these skills for further education, out in the job market, and to contribute to their communities.
- **Teachers:** Teachers need to possess the skills and aptitude with the district's technology to integrate into their teaching. Teachers should have the skills and behaviors of digital age professionals. By using the technology available to them in the classroom they prepare students for the technology they will need to use in all walks of life.

- Administrators: The district's administration takes the leadership role in the support and implementation of technology in Alexander. The administration accepts the new challenges and embraces new opportunities in digital technology implementation. This top down support has been crucial in the past for bringing new technology to Alexander, and will continue to be vital as we further expand into wireless networking, web based applications, and new mobile equipment.
- Coaches: The District continues to use teachers and staff as Technology facilitators and technology integration specialists. For the 2014-2015 school year, and through the help of the Strengthening Teacher Leader Effectiveness 3 grant, a teacher was put on special assignment for this purpose. Teachers are using video equipment to record their teaching lesson and have another teacher coach evaluate and add notes to their video using a web based application called smarter cookie. The district plans on continuing this through the coming school years.
- Computer Science Educators: The district does not have a dedicated Computer Science teacher, but we have teachers who teach computer science courses. These classes aim to go beyond the basic knowledge of the use of technology, and apply the skills to students to use software and web based applications to build content, communicate digitally with teachers and other students.

## **K-12 Technology Goals**

The Alexander Central School District has developed and identified specific goals for incorporating technology into the curriculum. With the continued use of existing technology and the use of future technologies outlined in this plan, we plan to further prepare our students to enter an increasingly digital academic and working world. These identified goals are in alignment with the New York State Standards. The following goals and outcomes have been identified:

### Elementary Grades (Grades K-2)

#### Computer Literacy

The student will:

- Identify and describe the function of the main components of a computer system.
- Demonstrate the correct use and care of the workstation or mobile device they use.
- Use the computer as a tool for research, generating and drawing ideas.
- Control computerized devices and systems through programming. The district currently works with Lego robotics and the WeDo and NXT software platforms for just this purpose.
- Our robotics program will also instruct students how to design a complex environment by giving direct commands.

#### Network Literacy

The Student will:

- Identify the Microsoft log in screen and learn how to correctly log into their account. At this level, student do not have passwords, but must log in using their first initial and last name.
- Use web based program log ins like Star Reading, Accelerated Reader, and Sum Dog to log into a website.
- Identify their home directory and learn how to save files to their protected space.
- Identify the Everyone directory and how to save files to a shared network space that both teachers and students can access.

## Software Literacy

The Student will:

- Develop word processing skills by transferring hand written short story to a word processing program
- Use the SMART (Interactive Whiteboard) to write words on the screen and manipulate their writing for class involvement.
- Learn Curriculum dependent applications like the Lego software, or the Writing to read software.

## Internet Literacy

The Student will:

- Log in and use web based applications approved by the teacher. Examples are Star Literacy, Accelerated Reader, Sum Dog....ect.
- Use the internet to research topics offered by the teacher.

## Grades 3-5

Starting in grade 3, students have the cognitive and fine motor skills to begin working with computers as tools to do more independent work. Additionally, students have gained the skills to effectively use Web based software and Internet resources along with the computer software available in the school like Windows 7 operating system, Microsoft Word, Excel PowerPoint, and the rest of the MS Office 2010 suite that is currently used in the district. Also, students have gained experience with the Classroom Interactive White Boards, scanners, printers, and the mobile laptop units.

From grades 3-5, students should be able to progress to a point of self-sufficiency on the computer, able to choose appropriate software and web based tools, complete a variety of projects using text, numbers and graphics, bring information from external sources, and produce work of a consistent and higher quality than the previous grades.

To make the experience positive for students, learning should go at a logical and sequential pace with frequent opportunities for assessment and error correction using technology. In addition, technology use should be a mix between teacher led instruction and self-paced opportunities using a variety of the resources in the district including the Internet, Mobile Labs, Smart Boards and so on.

The following is a framework for a sequence of steps towards a goal of self-sufficient computer usage:

The Student will:

- Learn to use the SMART (Interactive White Boards) to give presentations and participate in the teaching of curriculum goals.
- Publish original writings including illustrations found on teacher approved websites, as well as original illustrations using digital graphics programs or by using digital cameras, digital video equipment, document cameras, or scanning hardware.
- Develop the skills to introduce charts, graphs, and tables into presentations and documents.
- Access the internet and do research for curriculum related information on teacher approved websites.

## Library and Lab Media in grades 3-5

The Student will:

- Students will be introduced to Library media websites for finding and checking out

books and other library resources.

- In Lab the students will practice and expand on their ability to use file management concepts, including using the shared network drive to hand in completed work.

#### Special Education:

- Hands use of keyboards, mice, and headphones.
- Use of Touch screen monitors like Tablets.
- Become familiar with basic file management concepts.
- Introduction to safe teacher approved web resources including web based software.
- Develop keyboard or Speech to text skills in relation to the student's motor skills.
- Do research to enhance curriculum, extend understanding, and present information to others.
- Create and introduce documents, presentations, charts, graphs, and tables.
- Use curriculum specific learning software either from the computers, web based applications, or Tablet applications.

#### Intermediate Grades (Grades 6-8)

In grades 6-8 the Alexander School District puts a higher emphasis on students using computers, Internet, web based applications, presentation technology, and network tools to independently find information relevant to their class curriculum. Under the protection of iBoss internet filtering, students will use the internet to research information, take on line tests and online evaluations, and communicate with their teacher in some cases. Additionally, students use curriculum dependent software, graphic software, office productivity software, Presentation software, and are expected to work in groups and show others their work.

#### Computer Literacy

The Student will:

- Become familiar with various software programs including MS Office 2010, Internet research tools, and curriculum specific software like CAD and Photoshop.
- Demonstrate proper computer use and maintenance.
- Use file management skills to save and hand in files built by the student.
- Be introduced to web development.

#### Network Literacy:

The student will:

- Develop a better understanding of network security starting with the addition of a personal password that they are expected to keep private, and can change at any time.
- Use shared network drives to share information with other students and their teachers.
- Learn appropriate use of the network with an emphasis on confidentiality of their network login, following network rules laid out in their acceptable use policy.
- Develop an understanding of Internet security, iBoss restrictions, and internet safety.

#### Word Processing

The student will:

- Use advanced formatting techniques.
- Use word processing to complete assignments and to collaborate with other students.
- Use application thesaurus, grammar checker, and other software tools.

- Learn text arrangement techniques like tables.
- Enhance their work by incorporating graphics, charts, tables, graphs, equations, web links, video links, and illustrations.

#### Presentations:

The Student will:

- Use MS PowerPoint 2010, or other web based presentation software to design presentations.
- Incorporate graphic design elements, pictures, embedded content like Videos or Animations.
- Share presentations with the class.

#### Keyboarding

The Student will:

- Demonstrate the use of appropriate finger placement on the keyboard.
- Demonstrate familiarity with the keyboard by increasing speed in entering data.

### **Secondary Grades (Grades 9-12)**

At the secondary level there is always a changing need to identify areas in which students and staff can make logical use of technology, have existing staff competencies to support this work, and develop plans around new technology entering the district. This will be even more important when the district adds its wireless network to the existing network. New equipment and new applications will be a part of this change and the 5 year technology plan will have to be revised heavily to reflect those changes.

#### **Art**

The Art department is an interesting challenge for the IT department. Its graphic design and video editing software are very expensive and the files created by these programs tend to be large, and its digital photography needs also outpace the average file size for other classes. The Art department's files tend to be the largest storage demand on the file server in the district.

The CAD lab, or downstairs High School Lab, is the recommended lab for this department. The 28 computers in that lab are the fastest computers in the school, with large local storage for large programs, 8 GB of RAM, and add on video cards for rendering needs. This lab and all labs in our district have the Adobe CS4 suite of Graphic design programs installed on them. This Adobe suite is now 6 years old, and the district is looking into upgrading the software to make sure that it is relevant to what students will use outside of the Alexander School District. Adobe has changed it's purchasing from a license that you purchase once, to a year subscription. Ultimately, this will probably cost the district more than just buying it once and running it for 6 years before the next upgrade. The advantage is that the software will always be the newest version of the Adobe suite. Currently there is no competitor to the Adobe suite that has as much market and university use. At one time the art department was looking into Adobe certifications for students, and it's possible that our Art teacher will be teaching a class on Video editing that will require the purchase of Editing software that we currently do not have.

There are currently 3 Art rooms in the district, with 1 Art room in the Elementary school, and 2 art rooms in the Middle/High School. This may change in the future. Each room has one main wired computer, and presentation hardware. Both the Elementary and the High School have a SMART board in the art rooms, with the additional High School art room having a mobile cart with a projection unit

and a computer on it to give all three rooms roughly the same capabilities.

## Technology

The Technology department currently has more hardware and computers than any other department. There are 2 technology classrooms in the High School. One classroom has a single computer, a single SMART board, and a projection unit. The other classroom has a bank of 16 older computers that is used as a mini lab for the class, a Smart Board and projector, a teacher workstation, a test server for the class, a dedicated Smart Board computer, and a side room computer used for video editing.

Like the Art department the preferred Lab for the Technology department is the CAD Lab (downstairs HS Lab.) This lab and the mini lab in the technology room are the only labs to house the CAD Academy software package that is updated each year over the summer. The mini lab will be updated in the 2015-2016 school year with the hand downs from the old upstairs HS lab. That lab is being updated and new hard drives will be purchased to update the older computers. This will be a small upgrade for the mini lab in the technology department.

The technology department is teaching Office software to their students. It's possible that the technology department will request a newer version of Microsoft Office. We currently use MS Office 2010, but may have to be updated to Office 365 (Office 2013.) This upgrade would most likely only be for the technology department. With the addition of Google Drive to all our staff, and the potential for it to be used by our students in the future, the IT department is not looking at reviewing an upgrade to MS office until the 2017-2018 school year.

## Foreign Language

This department has been using the Internet effectively to get materials to support classroom projects, presentations, and lessons. Simply updating the equipment that already exists in these classrooms will be an improvement for this department. Like all the rooms in the Middle School and High School, we plan to continue the SMART board upgrade that we performed in the Elementary during the 2014-2015 School Year. The current projector cart will be removed in favor for a boom and new projection unit. This removes the cart and wires that ran on the ground, and provides more room for the classroom, while upgrading the projection unit to a more energy efficient projector with more input connections to accommodate newer technology.

Presentation software like Microsoft PowerPoint continues to be the favorite in use for assignments along with Word processing. More emphasis will be put on Web based presentation software in the future. Additionally, using Skype or Google Hangouts to speak to Spanish or French speakers is currently within grasp.

The Upstairs HS lab is the most used by this department. This Lab is scheduled for an upgrade in the 2015-2016 School Year.

## Science

At Alexander, the science department has traditionally been very excited to adopt new technologies, and to use said technologies for its curriculum. Two science classrooms are out fitted with a bank of 3 or 4 computers, and all have SMART Boards, projection units, and document cameras. The

Science department uses all 3 labs in the High School/Middle School building, and this department was a driving force as to why we upgraded the mini lab in the Middle School to a full Lab of 28 computers.

This department has a huge potential for growth with a district wireless network. Wireless mobile units in class would allow the teacher to do more projects and show more examples. The students could benefit for Web applications and hardware specific applications that would allow them to take real time data collection and access data analysis tools. This is a great way of encouraging problem solving sciences. Mobile computers in class could provide avenues for statistical process control, real-time star charts, real time weather reports, and so on.

The Science classrooms will also greatly benefit to the upgrade to their interactive classrooms. Removing the projector cart in favor of a boom and upgraded projector will allow the teachers to use newer mobile technology to connect directly to the projector and in some cases wirelessly. This will allow a 1 person piece of equipment to be used for whole class instruction.

## Social Studies

The use of the Internet has proven to be very useful for this department across all grade levels. The addition of the tiered internet access that we added to the district in the 2013-2014 School year which allowed us to give separate computer right to Teachers and Students has been a major success in this department. The addition of Video streaming websites like YouTube adds a lot of content to our teachers for free. The Internet and web based programs like Google Earth have replaced the old need for physical maps in the classroom, and have given Teachers an unlimited section for all timelines to use in class.

One area, which might be worth looking into further for this department is the use of computer based assessment programs. Given the need for preparing students for State testing online, assessment programs would prepare the student in more than one way.

This department tends to use all the labs in the school, and works closely with the library for many of its research projects. Like the Science department, Social Studies classrooms would greatly benefit from classroom mobile equipment. Students already are expected to gain information on Stock Market numbers, developing dummy online business, accessing university papers and historical documents, using government sites to follow bills and judicial hearings among other needs and all of this could be done directly in the classroom with mobile equipment.

## English

The English department uses technology primarily for reports and research. The teachers utilize their interactive classroom technology and their greater internet access to access web sites and videos for instruction.

The teachers in this department have a good understanding with technology and how to utilize it. This department is where we would like to pilot student access to Google for education. This would allow the Teachers to build an online classroom where research materials and documents could be handed out and collected. By giving each student a Google for education account they would be able to email their teacher or group member while be restricted from emailing outside the district. They would have unlimited Google drive cloud storage and access to the gull Google drive office suite which would allow them to work from home with the same tools they have in school as long as they have Internet access and a computer or mobile device at home. It's the English teachers intrest in these technologies, and their Advanced placement classes that would make this a logical area to pilot the use

of Google Education beyond just the teachers. It is my hope that we could implement a pilot program in the 2015-2016 school year.

The English department tends to use all the labs and the library in the school. They all identically have one workstation, a Smart board, and a document camera. Wireless mobile technology would benefit these departments, especially in the case of a Google for Education pilot with the students.

### Special Education

This department has been the first to adopt mobile equipment like Apple iPads. The department has many interesting challenges and software like Speech to Text which is currently on all of our workstations has been pioneered here. Fewer of these rooms have an interactive classroom setup because of the small student body size, but in the future I see a great use of Wireless mobile technology. Special Education has already adopted many mobile devices without WiFi in the school. After the addition of a Wireless network, I would see the use of mobile equipment growing quickly here.

### Math

The Math department was not traditionally a large adopted of technology until we installed SMART boards and projection units into each classroom. The Math department has flourished with this technology and will do well with the SMART board upgrade to the classrooms we will do for all our Middle School and High School Classrooms in the 2015 school year.

The Math department does not use the computer labs as much as the English or Science departments, but we currently have college level statistical software in the Upstairs High School Lab for a few classes.

Math's biggest technology use has been the mathematical calculators they use in class. This will continue in the future. Mobile wireless computers may replace the need for these calculators in the future, and may help the teacher better explain the very complicated concepts they teach.

### Music

The band a music department use labs and dedicated software designed to teach students how to write and compose music. They use the labs for this software. The band room has been outfitted with a Smart Board and projector. The Music room only has a teacher workstation.

As I have mentioned for other departments, a wireless network and mobile technology like tablets or Chromebooks may enhance the curriculum by offering composing and recording right in the room. Video recording is currently used in Band and Music to record their concerts and like the other departments, teachers need to show the state class progress for the teachers benefit. Video recording equipment is used for this purpose as well. Tablets, would allow this department to record and review easier. Amplification and music instruments could also be used virtually with mobile equipment in the future.

### Library – Media Center

The Library and Media Center provides reinforcement to each discipline by helping students

develop research skills and providing them with a means to do so. Students are instructed on online services provided through the library and through GVBOCES library services. In the past couple of school years the Library system has expanded its use of web based services for renting text based books and audio books. Hardware equipment like iPod shuffles has been adopted to help facilitate the use of these technologies. Additionally, rental services for Videos and Movies are provided.

The Library system in Alexander recently upgraded its circulation software in the 2014-2015 school year to the Follett web based software. This allows teachers to have greater exposure to the catalog of materials they can access for the library. The web based software can be access anywhere in the district. The Librarian has built a website portal for all the web based tools that can be accessed right through our homepage.

Out of all the departments, the library can benefit most from the Wireless Network we plan to add to the district. Currently the hardware in the High School Library includes a SMART board, projector, and document camera. 12 computers for student use, a circulation computer, and color printing. The computers in the Library cannot handle a complete classroom of students. By adding wireless Laptops, Chromebooks or tablets, a full classroom of students could be accommodated for the same cost in mobile equipment as we currently pay for the 12 wired computers. This upgrade would improve the usefulness of the Library to teachers, and would go hand in hand with the web based applications currently offered in the Library and Media Center.

## **Infrastructure**

### **Current equipment and setup**

There are 4 buildings in the District: High School, Middle School, Elementary School and Bus Garage. The High School and Middle School are connected in one building. Each of these buildings has either a Server Closet or a wiring/switch closet.

#### **High School:**

**Switch Closet B:** Located on the bottom floor in an office off the Library. This switch closet has a locked cabinet to keep the switches safe. Keys are located with Mr Perry and Mr Senf.

**Switch Closet C:** Located across from conference room on the main floor of the High School. This switch closet is behind a locked door.

**Switch Closet D:** Located on the top floor of the High School. This switch closet is located behind a locked door.

#### **Middle School:**

**Server Closet:** The server closet houses our main core of switches and is where the fiber optic wires spread out to all the switch closets in the district. Our Router, Tape Backup, Fax Server, Transfinder Server which also houses our Fitness Gram software, Main File Server, Alex-DO Server which houses Finance Manager, Alex-Nutisim server which houses the Schoolmaster database and the Nutrikids Lunch program. Additionally, the DVR-Server for our Security cameras and its wiring are located here. The main phone system, and its Fiberbridge switch are located in this server closet.

#### **Bus Garage:**

**Bus Garage Switch Closet:** This is a small locked wall mounted cage much like the one found in Closet B in the High School. A small 8 port switch is located here with a copper coupler to the fiber line running from the Elementary A Closet. This closet is locked in the cage with both keys located on Mr. Perry and Mr. Senf.

#### **Elementary School:**

**Closet A:** Located in the middle hall of the main floor of the Elementary, this closet houses the main core of switches for the elementary. 3 multimode fiber optic lines are run to Elementary Closet A from the main Server closet in the High School. The second DVR-Server for security cameras is located here for recording the Elementary Security cameras, and more switching equipment for the Elementary phone system are located here.

#### **Elementary Closet B:**

This closet has one switch in it for wiring to the edge classrooms in that building. It's in a locked closet in the CSE Office.

**Equipment:**  
**Switches:**

High School  
Switch Closet B:

Name	Device Type	Closet	Order
AlexHS_240_21_WCB_SW1	WS-C2950G-48-EI	HS-B	1
AlexHS_240_22_WCB_SW2	WS-C2950G-48-EI	HS-B	2

Switch Closet C:

Name	Device Type	Closet	Order
AlexHS_11_242_WCC_SW1	WS-C2950G-48-EI	HS-C	1
AlexHS_11_249_WCC_SW2	WS-CE500-24TT	HS-C	2
AlexHS_11_248_WCC-SW3	WS-CE500-24TT	HS-C	3 Spare

Switch Closet D:

Name	Device Type	Closet	Order
AlexHS_11_241_WCD_SW1	WS-C2950G-48-EI	HS-D	1
AlexHS_11_240_WCD_SW2	WS-C2950G-48-EI	HS-D	2
AlexHS_11_202_WCD_SW3	WS-C3548-XL	HS-D	3 Spare

Middle School  
Server Closet

Name	Device Type	Closet	Order
ALEX-HS-CORE-STACK-1	WS-C3750X-48	MS-A	1
ALEX-HS-CORE-STACK-2	WS-C3750-48TS	MS-A	2
ALEX-HS-CORE-STACK-3	WS-C3750-48TS	MS-A	3
ALEX-HS-CORE-STACK-4	WS-C3750X-48	MS-A	4
AlexHS_11_246_WCA_Spare	WS-C3548-XL	MS-A	4 Spare

Bus Garage

Name	Device Type	Closet	Order
AlexBG-11-244-WCA-SW1	ESW-540-8P	BUS-1	1

Elementary Switch Closet A

Name	Device Type	Closet	Order
ALEX-ES_STACK-WCA-1	WS-C2960S-48TS-L	ES-A	1
ALEX-ES_STACK-WCA-2	WS-C2960S-48TS-L	ES-A	2
ALEX-ES_STACK-WCA-3	WS-C2960S-48TS-L	ES-A	3
AlexES_240_112_WCA_Spare	WS-C2950G-48-EI	ES-A	4 Spare

Elementary Switch Closet B:

Name	Device Type	Closet	Order
AlexES_240_121_WCB_SW1	WS-C2950G-48-EI	ES-B	1

Where we are:

Over the 2012-2013 school year and the 2013-2014 School Year the district made upgrades to the Main Core switches in the HS Server closet and the ES Stack in the Elementary Closet A. This project replaced older switches, gave us a few spares, and most importantly upgraded the connection from the High School to the Elementary school from 1 Gig line on 1 fiber optic line to 3 Gig connection using 3 fiber optic lines. This gave us redundancy where we can lose up to 2 lines without losing connection in the Elementary, and it gave us a higher speed connection to the Elementary.

The updates we made to the HS Server closet and the ES main switch closet A gave us better speed between the switches in both buildings. The 4 Core switches in the HS Server Closet have a speed of 32 Gbps between the 4 core switches, and in the Elementary Switch Closet A, the 3 stacked switches have a speed of 10 Gbps between the 3 switches. This provides us room to grown in speed connections between the 2 buildings.

Where we are going:

The biggest change to the infrastructure in the 2015-2016 or next year will be the wireless network project. This project has yet to secure funding, and will be covered further in its own section of this plan. The Wireless project will require power over Ethernet switches to power the Access Points that will be located in the classrooms. These switches will be a good opportunity to replace older switches with the newer power over Ethernet switches. Some of the closets will have to take on additional power over Ethernet switches to account for the connections with the Access points throughout the district.

Where Power over Ethernet switches are not possible or affordable, Power injectors may be used in the switch closets to inject power into the line provided by an older non-powered switch for the access points. This will be how we provide power to the Bus Garage wireless access points, because that building only require 1 or 2 wireless access points and a power over Ethernet switch will be two expensive for that buildings installation.

The District also has a single mode Fiber line between the High School and Elementary School. This line has the potential of upgrading the connection between the two buildings to 10GBps from the 3 1Gbps connections we have currently. The district does not currently need 10 Gbps, but we can move there in the future if the bandwidth needs rise.

Servers:

In the High School Server Closet A there are 3 main servers and 2 application based servers.

Name	Device Type	Operating System	Software
Alex-FS8	HP ProLiant ML370	Windows Server 2008	DNS Server, Active Directory, WSUS Windows Update Server, Norton Ghost Suite, ArchServe Tape Backup software. Symantic Endpoint protection Anti-Virus.
Alex-DO		Windows Server 2003	Finance Manager
Alex-NUTRISM		Windows Server 2003	Nutri- Kids and SchoolMaster Database.
	HP DC-7700 Fax Press 2500	Windows XP	FaxPress software
	HP DC-7700	Windows Server 2003	Transfinder Server and FitnessGram 9 Server

Where we are going:

The district will purchase a new file server in the 2015-2016 school year. This new server (named Alex-FS12) will come with Windows Server 2012, and will replace the Alex-FS8 server as the main file server for the school district. This will house Active Directory and all the User accounts and Home Directories as well as the shared directories for the School's network.

The Current Alex-FS8 server will then be used to house the Nurti-Kids software and the Transfinder software in the 2015-2016 school year. This server may need to be replaced in 3 years or during the 2017-2018 School Year.

The purchase of a new file server and repurposing the current file server is made possible by a few software upgrades made in the 2014-2015 School Year. The district is moving away from its long used student database system SchoolMaster for a newer web based system called School-Tool. We will start running exclusively School-Tool in the 2015-2016 school year. The district will keep archive files of the years that we used SchoolMaster on the ALEX-FS8 server. These archive files will not need to be viewed often and do not need a large server to house them. By no longer needing a server to run SchoolMaster, and moving Nutri-Kids to the Alex-FS8 server so that it resides on a server with Windows Supported OS, this allows us to retire the Alex-NUTRISM server from the network.

Another change in the 2014-2015 school year was the change from FinanceManager to nVision. Although the finance software is still made by the same company, nVision is housed in a server by WFL BOCES's Edutech. The districts Business office connects to the nVision server by RDP (Remote Desktop Protocol.) Now, the district only needs to house archived files from FinanceManager. This can be done on the Alex-FS8 server and would allow us to retire the Alex-DO server. This will retire a server with Windows Server 2003 that is no longer supported by Microsoft.

During the 2014-2015 School year, the district is going to upgrade the FitnessGram Physical Education software from version 9 to version 10. This new version is Web based on a server outside of the district. We will no longer need to house this software in the district.

Like FitnessGram, the Bus Garage Transfinder software will also be moved off the server it is currently on in favor of the Alex-FS8 Server that will be made available during the 2015-2016 School Year. This move will house Transfinder on the newer Windows Server 2008 software that is still supported by Microsoft. This move, and the upgrade to FitnessGram 10 will allow us to retire the HP

dc7700 server they both occupy and will remove the last Windows Server 2003 server from the district.

The FaxPress Server hardware (Fax Press 2500) can only be run on a Windows XP workstation. This Windows XP HP DC 7700 workstation is not scheduled for replacement. In the 2014-2015 School Year, we decided it was too expensive to update the digital propagation of incoming Fax to the district. The Fax Press 2500 and the HP DC7700 will both be retired, and district faxes will now be printed out in the District Office from a brother Fax machine already located there.

The District currently has a HP Storage Works Ultrium 3000 SAS Tape backup system. The Ultrium 5 LTO tapes can currently hold 1.5 Tb of data, which is currently more than we back up in the district. The 2015-2016 school year may be when we upgrade this tape backup system to accommodate the new Alex-FS12 server we will be installing. If we do not, then we will revisit this in 2016-2017 or the 2017-2018 school years.

We currently have 5 APC battery backup systems in the Server closet. These will receive battery replacements when needed, but with the reduction of hardware in the server closet starting in the 2015-2016 school year, I do not see a need to schedule a complete replacement for these unless we have a complete hardware failure and a replacement needs to be ordered.

The district has a Cisco 2921 Router and an ADVA FSP150CCF device to bring in our internet line. The district currently has a 20mbps Internet connection with a dedicated 40Mbps to Edutech for Edutech provided software (like nVision.) The District reviews its need for more bandwidth each school Year. The Wireless project will be the most taxing on this bandwidth, and after it's installation we may need to lease a larger Bandwidth allocation from Edutech. This will be reviewed in the 2015-2016 School Year or whenever the wireless project is completed.

The 2015-2016 school year will see the reduction from 5 servers down to 2. With the expansion of the cloud and web based applications we are able to take advantage of this to lower our costs and need for hardware in the district to run applications. The district will continue to look for other cost saving avenues with software and move to web based applications when there is no lose in productivity and an overall savings to the district. The Alex-FS8 Server will need to be replaced in either the 2016-2017 or the 2017-2018 school years.

## **Wireless Project**

The District has been planning for a comprehensive Wireless network that will cover the entire district. This is an essential upgrade to the districts infrastructure that opens the door to a lot of new technologies including mobile equipment, chromebooks, tablets, web software access, and other new technologies that cost less than the workstations we currently use to give students computer access. Additionally, students will enter higher education and/or the work force that has already embraced Wireless networks and the technologies that are used with it.

The IT department has met with Wireless vendors, and has spoken to other schools with the same user population and size as the Alexander School District. We have estimates on how many access points will be needed to cover the district. Heat maps have been made of the district by third party vendors to help us outline what the districts needs will be for this project. We also have price estimates from other districts and from vendors for the equipment that will be needed to implement this project.

Below I will outline what this project will entail; including estimates for the amount of equipment needed and what type of equipment will best suit a District of our size and user count. We have collected price estimates that I will outline here as well.

### **Types of Wireless Networks:**

As of the 2015-2016 school year there are two clear options for wireless networks to consider

for the school district. These are based on the controller used on the network. Over the last ten years wireless Network technology has evolved greatly. Much of this evolution can be seen around the controller of the network. A wireless LAN controller is used to manage a large amount of access points by the network administrator. The District will need a large amount of Access Points to cover the District in one Wireless network. These access points will be placed in classrooms, Gyms, Auditoriums, and other high traffic areas where technology can be used. A Controller is an essential piece of the wireless infrastructure to manage the Wireless network and to control the many Access points that will be put throughout the district.

**Physical Controller:** One option open to us is to use a physical controller that would be placed in the High School Server Closet. This is an expensive piece of equipment that will need to be on a recycle plan and will be prone to hardware failure. Without the controller the Wireless network will not work. This is the older of the two options, and the more expensive of the two options open to us.

**Cloud based Controller:** The much newer option is to use a cloud based controller. This controller exists in the cloud and is access through the internet. The Access Points that go with this type of network are designed to be smart and to look to the cloud for their commands. This system does require a yearly subscription cost to the controller, but removes the need for a local physical controller and all the costs that come with it. Upgrades to the controller are instant with this type of Network. I feel that this is a lower cost solution for the district and we have met with a couple of vendors of this exciting new Wireless technology.

A large consideration for the district is support for this Wireless Network for both installation and for the everyday administration of it. WFL BOCES Edutech offers support for a Cloud controller based network from Cisco called Meraki. This district has used almost exclusively Cisco products for its wired Infrastructure for the last 12 years, and those products have given us a very long life with almost no problems. This along with the fact that we would have BOCES support, and that it's a cloud controller based product makes Meraki the product that I would suggest for our Wireless Network.

Equipment Estimates for Wireless project.

### **Access Points:**

Access points will need to be installed throughout the district to achieve wireless connections everywhere in the district. Just this year the 802.11ac protocol has become inexpensive enough for the district to use for all of its access points when we install the wireless network. The new AC protocol is 4 times more efficient than the previous 802.11n protocol, and is capable of transferring data at 433Mbps. This speed difference brings the Wireless network as close to the speeds of a wired network as it's ever been. This is an advantage for the district. If we had installed the Wireless network before now, we would have a much slower wireless network.

Based on heat maps we have done on the district to see what kind of coverage we would need to cover the district it appears that 126 access points will need to be installed. This would be 79 Access points for the Middle and High School Building, 2 Access points for the Bus Garage, and 45 Access Points for the Elementary School Building. This is the estimate for full coverage of the district. The district may choose to not immediately go for full coverage. If this becomes the case then it will be easy to extrapolate from our heat maps how many Access points will be needed to have the desired coverage. Meraki and its cloud based controller system would make this scalable so that we could install the Wireless network in stages.

The Meraki Access points recommended to us from the Annese reseller that BOCES Edutech contracts with is the MR34 Cloud Managed AP. The cost per Access Point is \$769.45 as of March 2015. For 126 of these access points it would cost the district \$96,950.70. With the Access points, the district would have to purchase the license for the enterprise cloud controller. The 5 year license for 126 Access Points would cost \$180.00 per license or \$22,680 for 126 licenses. The district could

reduce the cost of the entire project by purchasing less access points, or by purchasing 3 or 1 year licenses for the cloud controller.

**Wiring**

The Wireless network would need wiring to each and every one of its Access points. The only wire needed for each Access Point is either a category 5e or category 6 network wire. Many of the classrooms already have two Category 5e cables run to each room, with only one used in most cases. It’s possible that the spare line can be used in most classrooms to reduce the cost of wiring the access points to the switches. There are many questions how we will wire the Access points that can’t use this existing line. The Alexander School District still has many ceilings with asbestos that will need to be avoided when possible. Most Access Points are designed to be placed in the middle of the ceiling of each room they are placed in. This may not be possible in the rooms with asbestos ceilings, especially because of the wiring needs.

Another consideration when it comes to wiring the Access pints back to the Server or Wire closets is whether this can be done in house with our staff, or whether we will need to pay a 3<sup>rd</sup> party to do the installation. BOCES Edutech has a service to do this job, and there are 3<sup>rd</sup> party vendors that can accomplish this for us as well. The cost of this is hard to estimate before we move ahead with the project and receive quotes. I have seen estimates as low as \$10,000 dollars and as high as \$20,000 dollars to accomplish this task.

**Switches:**

The Access points get their power through the Ethernet line that is run to it. This is the same cable that it gets its data from. Most likely we will need to purchase Power over Ethernet switches to run the data and give the power to the Access point through the same line. In some cases we may be able to use “Power ejectors” to use an existing switch and inject the power in the line needed to run the Access Point. We plan on using power injectors in the Bus Garage because that building needs only 2 Access Points.

The following is an estimate on how many Power over Ethernet switches are need for a full district Wireless network, and where they will be located. We used Cisco Switches in this estimate because the district uses Cisco currently for all its infrastructure switches.

Building	Location	Quantity	Switch type	Ports	Price Estimate
MS	Closet A	1	Cisco 3750X	48	\$7280
HS	Closet B	1	Cisco 2960s	24	\$1789
HS	Closet C	1	Cisco 2960s	24	\$1789
HS	Closet D	1	Cisco 2960s	24	\$1789
ES	Closet A	1	Cisco 2960xr	48	\$5429
ES	Closet B	1	Cisco 2960s	24	\$1789

These switches will give us 192 power over Ethernet ports which only 126 are needed for Access Points. These additional 66 ports can be used to replace an older switch in a closet, or to use them for our Digital Phone system that currently uses a copper wire crossover on each IP phone because we do not have Power over Ethernet switches in most of our closets.

The Prices listed above are based on quotes received in March of 2015 from Synergy Western New York. The Switches listed as is would cost the district \$19,865 but these prices could be reduced.

By fining cheaper switches, or reduced by providing trade in with older switches the district no longer needs.

Based on the Meraki equipment, the switches needed, and the installation costs which include running wires to each classroom, the total cost for the wireless project could be \$149,495.70. This price can be adjusted as stated above by changing yearly licenses, purchasing less access points for the district, or purchasing different Power over Ether net switches.

**Labs:**

The Alexander School District has 8 labs, not counting the libraries. The labs are as follows:

Lab Name	Building	Computer Count
Upstairs HS Lab	High School	28
Downstairs CAD Lab	High School	28
Middle School Lab	Middle School	28
Elementary Lab	Elementary School	28
Mobile Cart 1 (Batmobile)	Elementary School	24
Mobile Cart 2 (Kitt)	Elementary School	24
Writing to Read Room	Elementary School	10
Tech Lab	High School	16

The districts Labs are an important part of the Technology at the District. Since the introduction of computer technology into the Alexander School District, the Computer Labs have been the one place for teachers to bring an entire class to do research, testing, web applications, and to use curriculum based local software. Over the last 5 years the amount of Computer labs has doubled from 4 to the 8 listed above. With the introduction of a Wireless network, the districts need for Computer lab rooms will most likely change. Wireless would provide us with the ability to purchase less expensive mobile equipment like laptops, tablets, and /or chromebooks that with a mobile charging station could be brought in to any classroom. This would be a less expensive alternative to the first 4 labs listed above, and would reduce the cost on the district to provide a room, furniture, and Lab setting. It is my hope that in the next 5 years the Wireless Network will be implemented and we will see a shift from permanent Lab rooms to mobile classroom labs for all but the High School Cad lab which will require a more powerful workstation than mobile equipment provides.

Upstairs HS Lab: This lab is by far the oldest major lab in the school when it comes to its workstations. In the 2014-2015 school year, we regularly see age issues with the Computer’s hard drives. Although the lab is functioning, it is time to replace the 28 Workstations in this lab. In the 2015-2016 School Year, 28 new workstations will be purchased to update this lab. The old workstations will be used in the Tech Lab and the Writing to Read Room. 28 new hard drives will be purchased for these older workstations and these will be moved to the 2 labs in the 2015-2016 school year as well. The Upstairs HS Lab currently has one high yield Black and White Laser Printer, and this will not change. This lab is an excellent candidate to be replaced by mobile classroom labs as soon as the District has a wireless network.

Downstairs CAD lab: The CAD software and the Adobe Graphic Design Software are the most taxing on a computer. This lab is dedicated to the use of these programs by the Art Department and the Tech department. These workstations not only require a lot of RAM and a fast processor, but also need a separate Video Card to handle the graphic intensive programs used here. The Lab was given new workstations in the beginning of the 2014-2015 school year, and will need to considered for

another replacement of workstations in the 2018-2019 school year. This lab currently has a Color Laser Jet Printer and a Black and White laser jet printer. The printers will not change in this Lab. This Lab cannot be easily replaced by a mobile lab due to its graphic and speed needs. Additionally, Programs like CAD and Photoshop require larger monitors than mobile equipment normally have.

**Middle School Lab:** This Lab was added to the school in the 2013-2014 school year. It replaced a mini lab of 16 computers that was not sufficient for the class sizes in the middle school. This lab was upgraded to 28 computers and given a full sized room for class size reasons and the upcoming possibility of state online testing. This Lab has one black and white laser printer and that will not change. The Middle School lab will have to be considered for computer replacement in 2017-2018 school year, but like the Upstairs HS lab, the Middle School lab could be replaced by mobile classroom labs when the wireless network is put in.

**Elementary Lab:** This lab has computers put in the 2012-2013 School year, and will have to be considered for a replacement of workstations in the 2016-2017 School Year. It has one black and white laser printer, and one color laser printer that is a good fit for this lab. Like the MS Lab and the Upstairs HS Lab, this lab could be replaced by mobile lab equipment after a wireless network is put in.

**Mobile Cart 1 (Batmobile):** This was the first mobile computer lab added to the district. It has HP laptops, a Mobile charging unit to house the laptops, and a Cisco Wireless router purchased in the 2013-2014 school year. This lab has been a great success for the school despite a lot of drawbacks. One issue for this lab is its complexity. When the lab is brought into the classroom it must be plugged into a power socket, and it has to have its Category 5E cable plugged into an available network slot. Not all rooms have an available Network slot and are forced to unplug another piece of technology to use the Cart. The router preforms well for the 24 connections that it may need to handle, but the necessity of turning the router on and off throughout the day causes issues. Most issues are human error, and some are with the router not booting up correctly and keeping the laptops from making a connection. The Wireless School Network would correct many of these issues by removing the router from the mobile cart and having an always available connection for the laptops to use. Wear and Tear on these units has been light thanks to the careful use by our teachers. It is possible that these laptops can have their Windows operating system replaced by the Chrome OS later in their life, giving them a second life. Consideration for replacement of these laptops should be made in the 2016-2017 School Year.

**Mobile Cart 2 (Kitt):** This cart is identical to Mobile Cart 1 and has the same advantages and drawbacks as its twin. The equipment is nearly the same, but the mobile Cart 2 was purchased later in the school year and has a newer model of HP laptop with a web cam where the mobile cart 1 laptops are missing this. This Cart should be considered for replacement in the 2016-2017 or 2017-2018 school years. Neither of these two mobile cart labs can print currently.

**Writing to Read Room:** This mini lab in the elementary is mostly used by the first grade and is not as high traffic as the Elementary lab. The 10 computers here are normally “hand me downs” from other high traffic areas in the district. In the 2015-2016 school year it is planned to install new hard drives in the old HS Computer lab and replace the older TA computers here with the newer TB computers. This lab should be immediately be considered for less expensive mobile equipment as soon as a wireless network can be put in. It’s my belief that this room could have more technology in it for less than what we currently spend.

**Tech Lab:** This mini 16 computer classroom lab is shared between the two technology teachers. These teachers and their students are the only ones who have access to this mini lab. Like the Writing to Read room in the Elementary, this lab received “hand me down” technology. In the 2015-2016 school year, this mini lab will receive the TB computers from the High School computer lab after its replacement computers are installed. The needs of this mini lab are decided by the technology teachers. The 16 workstations currently run CAD software, and this may keep it from being a good candidate for mobile wireless equipment. This mini lab will get another upgrade from the replacement

of the Middle School Lab in the 2017-2018 school year if it is kept in its current configuration. Yearly meetings with the technology department will decide which direction we take this lab.

### **Interactive classroom White Boards:**

Each classroom in the District is outfitted with interactive white boards from SMART. This equipment included a SMART interactive white board, a projector, and a document camera. When these were first installed in the classrooms the projection unit was placed on a cart about 8-9 feet away from the SMART board. This was our only option because of the long throw of the projectors available to us at the time. In the 2014-2015 School year we upgraded the projection units in 24 Elementary classrooms. The newer Epson 420 projectors are short throw which allowed us to by a wall mounting kit so that the projection unit was moved off the cart and suspended above the white board. This removed the large cart from the room and the wires that were on the floor and presented a tripping hazard. The removal of the cart also freed up a lot of space in each of the classrooms. The newer Epson 420 projectors all run on economy mode and get more than twice the expected bulb life than the older Dell 1200MP projection units we used previously. This saves the district a lot of money with doubling the life of the expensive bulbs needed for these projection units. Another advantage to these new projection units is that they have many more connections than the older Dell projection units. The older units had VGA, RCA, and S-Video connections only. The Epson 420 projectors have HDMI, 2 VGA, RCA, S-Video, USB, and Wi-Fi connection capabilities. This opens a lot of new technologies that can be projected through the projector and frees the district to look for different technologies than a Windows Desktop to be used in conjunction with the Projectors and Smart Boards. The new Epson Projectors also include a very loud speaker, which is a major advantage to the older setup which required external Computer speakers for acceptable sound.

In either the end of the 2014-2015 or the beginning of the 2015-2016 school years we will take this very successful upgrade to the High School and Middle School. 31 Epson 520 projectors and wall mount kits will be purchased. The previous Epson 420 model is no longer available, and the Epson 520 projector is almost exactly the same.

The upgrade to the projection units are only done with the older SMART Interactive white boards. These SMART Boards have no moving parts and seem to have a very long life span which allows us to do this upgrade. All new installations of SMART Whiteboards in rooms that do not previously have one will be handled differently. New Installations will be a SMART SBM680 White Board, a TEQ Ultra Short Throw projector with wall mount kit, and a USB speaker kit. The School Principals decide what new classrooms might need this equipment.

### **Document Cameras**

The district originally purchased Aver Media 120 and 130 model Document cameras to go with the interactive classroom setups. The newer of the two models as of the 2015-2016 school year will still be used in the classrooms. The old setup of these documents cameras was that they hooked directly into the projection unit with a S-Video cord. When the newer Epson projection units are installed the Aver Media document cameras are hooked into the workstation via a USB cord. This installation allows the use of the Interactive White Board software and pens in conjunction with the displayed image from the document cameras.

New installations where a classroom has the older model Document camera or does not have one at all are done by purchasing the T3 Hovercam Document cameras. The Aver Media Cameras originally cost us \$600 dollars a unit. The T3 Hovercams only cost us \$200, and are a better unit with scan capabilities. Most of the High School and Middle School classrooms have the newer Aver Media Cameras so we will continue to use those models until they need to be replaced because of hardware

issues.

### **Workstations:**

The Alexander School District currently as of the 2014-2015 school year has 6 different models of HP desktop workstations, and 2 different models of HP office laptops. We use a naming convention that uses the letter “T” for a desktop workstation, then a letter in alphabetical order to name the type of workstation. TA is our oldest workstation, and TF is the newest. Laptops are given the naming convention of the letter “L” with a number in chronological order to mark its model. We currently only have a L1 and L2 model in the district.

Below are the desktop workstations and Laptops we have in the district.

School Name	Manufacture	Model	Purchase Year	Quantity
TA	HP	DC7700	2008-2009	60
TB	HP	DC7800	2009-2010	28
TC	HP	DC7900	2010-2011	20
TD	HP	Elite 8200	2012-2013	92
TE	HP	Elite 8300	2013-2014	51
TF	HP	Elite 800 G1	2014-2015	74
L1	HP	Probook 6460b	2012-2013	24
L2	HP	Probook 6470b	2012-2013	24

All district workstations are currently running Windows 7, except for 3 that run Windows XP because of old software. The 3 XP workstations run the Fax Server, The Bus Garage Gas Boy Program, and old Phycology Software in the HS Guidance Room. In the summer before the 2015-2016 school year the Fax Server will be removed, and the phycology software will go web based which will remove these two XP workstations. The Third workstation is needed for running Gas Boy gas pump monitor software in the Bus Garage. I have recommended that they upgrade this software, but the IT department does not have control of this.

The High School and Middle School Classrooms predominantly have the TE workstations that will have to be scheduled for replacement in the 2017-2018 school years. The Elementary Classrooms have the TE model workstations and should be scheduled for replacement by the following 2018-2019 school year. The Administration offices have mostly the TD class of workstations and should schedule a replacement no later than the 2016-2017 school years.

The District has always used Windows desktop workstations in its classrooms, but with the coming Wireless Project, the upgrades to the Projection units in classrooms, and the move to a web based student database system (School-Tool) in the 2015-2016 school year, we will need to evaluate whether we need or want to stay with Windows desktop workstations. The same could be said about most of the admin offices, but they are more likely to stay with Windows desktop workstations for the foreseeable future.

### **Lunch System:**

The District currently uses BOCES Edutech support Nutri-Kids software for the Cafeteria Management and Point of sale cashier workstations. There are 3 Cashier Workstations and 1 management desktop workstation used in running the cafeteria. The three cashier workstations are TFs and where installed new in the 2014-2015 school year and should be scheduled for replacement in the 2018-2019 school year. The Management workstation is a TE and should be scheduled for

replacement in the 2017-2018 School Years.

The Nutri-Kids software will be moved to the Alex-FS8 Server in the 2015-2016 School year to update it to a server that runs Windows Server 2008. This Server should be looked at for replacement in the 2016-2017 or the 2017-2018 school years.

### **HVAC Maintenance workstations:**

The Environmental control workstations or HVAC that run software from U&S Services are important to the districts heating and venting systems. The HVAC workstations consist of 2 workstations and a server. The two workstations run Windows 7 and were installed in the district in the 2014-2015 School year. Both are TF model workstations.

The Server is a TB and runs Windows Server 2003. Due to Microsoft dropping support for its Server 2003 software and the age of the server, the HVAC server should be replaced in the 2015-2016 school year. Whether this will be under the IT department's Budget or the Maintenance department's budget is still to be decided.

### **Security Cameras**

The district added security cameras in the 2009-2010 school year. The district currently has 27 Security cameras and 2 DVR servers. Six cameras are in the Elementary school and the other 21 are in the Middle School and High School. One Server is in the Middle School Server Closet, and the other Server is in the Elementary Switch closet A. The Security cameras and servers are under a contract by U&S Servers, the same company that handles our HVAC system in the Maintenance department. All 27 Cameras are a low quality SDIFF resolution. In the 2014-2015 school year, we lost 2 security cameras in the Elementary due to age. We lost the main door security camera in the Elementary and one of the two gym cameras over there.

In the 2015-2016 school year it is been decided to replace the 2 cameras that were lost in the Elementary and perhaps add cameras to both systems. Additionally, the 2 DVR servers need to be replaced in favor of just one Server that will handle the recordings from both buildings. The New cameras will be a higher resolution 1 or 2 megapixel camera. Until it is decided how many cameras will be added to the district, it is impossible to know what we will need for a replacement DVR Server.

The Security cameras are not under the IT department budget, but this department maintains the equipment and has input on the future of the security camera system. As of March 2015 discussions with U&S services and the admin staff have been made, but there is still no decision on which way the district will go on the security camera system.

### **New Paths for the Technology Department:**

#### **Google Apps for Education:**

In the 2012-2013 school year, the Alexander School district was one of the first districts in the region to move its staff off the Edutech hosted Groupwise email system in favor for the freely offered Google Apps for Education software. The immediate decision was made because of the better email system and large space offered to house and store email, and at the time Edutech's Email retention system would have cost the district a lot more than the Postini 10 year email retention provided by Google.

By the 2014-2015 school year the Google Apps for education software has grown considerably. Edutech now fully supports this software and the Alexander School district pays for their yearly support. Every account now has unlimited storage in Email, and their Google Drive Cloud storage.

Every staff member is on the system, and over 1000 extra licences have been added to the Alexander account so that we may in the future provide accounts to our students. The following is a run down of the services provided and where we may go in the future with these tools.

### **Google Education Email:**

The email system is the first tool this district utilized with it's staff. The email system has unlimited storage as of 2015, and it's much easier to organize than our old system. The Spam filtering is much better than our old system and blocks up to 99% of the spam that comes into the district. We receive 10 year email retention on this email system through Edutech. Furthermore, the email system can be restricted in its use. The Staff has normal unrestricted use of the email system, but in the future if we choose to open email accounts for students for the first time, we can restrict the email system to only receive and email out to other accounts in our email domain. This could be a new level of communication for our teachers and students that would affect everything from assignments and handing in work.

### **Google Education Calendars:**

The district immediately replaced many of its old calendars and sign out sheets with the Google Calendar system. Our labs are now signed out through shared calendars, and teachers can now see when the lab is in use via the calendar without having to walk up to the lab to use a sign out sheet. The flexibility of the calendar allows us to keep a district calendar and an agenda that appears right on our homepage. This gives the community a better idea of upcoming events. All users can create multiple calendars and share them with other staff members in the domain. If we open these accounts to students, teachers could share rubrics and calendars through this system to keep students organized.

### **Google Drive:**

Google Drive replaces the older "Google Docs" system that we used until 2014. Google Drive is an unlimited data storage space for each user on the cloud. Anything uploaded to the Google Drive space can be viewed by the user who uploaded it anywhere where there is Internet access. Also, Google Drive comes with a full office suite that can read and convert Microsoft office documents. This includes Google Docs for word processing, Google sheets for databases, and Google Slides for presentations. Additionally, a user can connect to other Google Drive tools for drawing, Cad, Forms, Surveys and many other options. Opening this to students would be a huge step for our entire district. It would give each student a complete tool set for creating documents and storing them from home or at school.

### **Google Classroom:**

Added to the Google Apps for Education in the 2014-2015 school year, Google Classroom allows each teacher to build a classroom portal where they can add students with Domain accounts and announce assignments, hand out documents and collect finished work instantly, share calendars, set up groups for collaborative work, and much more.

The Google Apps for education tools are a game changer for the Alexander School District and the IT department will try to move towards opening accounts to students in the 2015-2016 school year. The wireless network project will also add to this service because Google Apps for Education can be accessed by all mobile equipment and even cell phones. The biggest issue we face in Alexander is that

not all of our community has easy access to the internet. Without full internet access to our students at home, it's a concern that we will set up a have and have not situation, where students who have Fast, reliable, Internet at home would have an advantage over students who do not. This will have to be addressed in any discussion about opening this software to the students.

### **Shared technician from Edutech:**

For over 15 years the Alexander school district has participated in the Shared Tech program through Edutech. This allows the Alexander School District to have an extra IT employee for 2 days a week (Monday and Tuesdays) who is otherwise shared with another school district. In the case of our current Shared Tech, Larry Senf, is shared with Batavia. The Alexander School District's current IT Coordinator started at the district as a shared tech from Edutech under the previous IT Coordinator.

Over the last 10 years the amount of technology in the Alexander School District has grown quickly. Where there used to be just 3 labs and a few computers in each classroom, the district has grown to incorporate Interactive classroom technology like SMART boards and projectors, the labs have more than doubled, We are in the planning stage of adding a wireless network on top of the wired network that already exists. Security cameras and an IP phone system has been given over to the IT department for administration. The amount of computers has also grown in the District. All of this growth has occurred and the IT department still only has one full time employee. This is one reason why the Shared Tech is so important to the school district. Additionally, the shared tech brings different fields of expertise to the district. Our current Shared tech is a Net Analyst and is extremely knowledgeable about infrastructure and switches. Larry's shared time with Batavia school districts allows him to share what Batavia, a much larger school district, is trying and what technology works and does not work there.

It is my recommendation that the district continues to participate in the Shared Tech program with Edutech for the next 5 years. The necessity of this extra help only continues to grow exponentially.

### **Operating Systems:**

The Alexander School district needs to keep its operating systems up to date to have patch support from Microsoft, and to keep our workstations protected from viruses, malware, and hacking. Microsoft gives a timeline to when support will no longer be available, and in every case where we can, we will change our operating systems to maintain that support.

The District Workstations as of the 2014-2015 School year currently run Windows 7 Professional, which is still receiving support from Microsoft. The workstations will continue to be purchased with whatever the newest Operating system license is available, but the district will install Windows 7 until a new operating system is deemed appropriate. At this point the district plans to not use the Windows 8 operating system in the future, and will instead skip to the Windows 10 operating system which is supposed to become available in September 2015. This operating system will be adopted by the district after testing can be accomplished in the 2015-2016 school year. It may be as early as the 2016-2017 School year that we see this operating system in the district.

Windows Server Operating systems fall under the same time restrictions as the workstation operating systems. As of the summer before the 2015-2016 school year, the district has plans to remove the servers with the Windows Server 2003 operating system, in favor for Windows Server 2008 that the district already owns, or new servers with Windows Server 2012.

