



Natick Public Schools

TECHNOLOGY PLAN

SCHOOL YEAR

2008 - 2011

DENNIS ROCHE, CISA

DIRECTOR OF TECHNOLOGY

NATICK PUBLIC SCHOOLS

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Reviewers

Name	Position
Peter Sanchioni, Ph.D.	Superintendent of Schools

Distribution

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1	Library Master	Project Library
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9	Bernie Small	Principal, Brown Elementary School
10	Beverly McCloskey	Principal, Memorial Elementary School
11	Ian Kelly	Principal, Ben-Hem Elementary School
12	Barbara Brown	Principal, Johnson Elementary School
13	School Committee	School Committee Members

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Technology Vision

Going forward, we need to solidify our technology foundation. This means leveraging our existing investments and making sure our technology house is in order. The four corners of this foundation are:

- Staffing
- Infrastructure & Emerging Technologies
- Applications & Classroom Technologies
- Professional Development

In order to progress forward and realize this vision, a rebuilding process needs to take place, a process very similar to that of renovating or rebuilding a house. We cannot tear down the structure since it is used daily as the renovation takes place. An assessment conducted before construction begins will allow for careful planning and execution.

As in any project, planning is the key to success. Before constructing the walls or roof of a house, the foundation must be solid to support the structure above it.

Staffing

In the case of the Natick Public Schools, the first and most vital corner of our technology foundation is the technology staffing. By far, people are the most important element when it comes to technology. It is the first area on which we need to focus our attention. If people do not have the proper training, the proper skill sets, or are not comfortable or cannot rely on the technology, then we will not succeed.

We rely on people to evaluate, implement, train and use technology, so it is vital we get the right people in the right jobs. We need people who view technology as a tool to get things done and come each day with an open mind to achieving success.

It is important that we have defined roles and responsibilities for all technology positions. This will allow us to recognize staffing gaps and formulate staff development programs. Part of the success of building an effective team is not just defining the right positions and completing the recruitment process but what is done after they are on the job to inspire and develop each member to their fullest potential.

Infrastructure & Emerging Technologies

Once the right team is in place, our focus turns to our technology infrastructure. The infrastructure should be flexible and reliable giving us options to grow. Our vision for technology should be an open one, that embraces all forms of technology and we need to be aware of emerging technologies and their future impact. We should not limit ourselves to a single vendor's solution or marry ourselves to a technology, as it would only back us into a corner that we would need to deal with later on.

We need to consider the convergence of voice, video and data. Technologies such as wireless, interactive whiteboards, RFID, biometrics, VOIP and various hand-held devices all offer tremendous possibilities.

Applications & Classroom Technologies

As our infrastructure starts to take shape, we need to assess our applications and verify they are meeting not only our needs today but also our needs down the road. The first group of applications to focus on will be those that allow for improved communications and efficiency, as they will provide us the greatest return both now and in the future. Applications like email, web, student information systems and advanced notification systems to name a few.

As a school district, we should take a serious look at open source and web based software. Open source is software developed by a community of users and freely distributed throughout the world. Many open source products meet if not exceed many of our needs and may help keep our software license costs down. Web based products today offer robust functionality, usually for a modest annual investment, rapid deployment and allow students and teachers the flexibility of using in school or from home. Before making purchase decisions on traditional commercial software packages these options will be considered.

In the classroom, we need to define the tools needed to aide students and teachers to excel with teaching and learning. Technology is both a tool to get things done but also a way to engage and make learning fun. Technologies such as interactive white boards and laptop computers and other wireless devices for students and teachers need further exploration.

Professional Development

The final corner in our foundation is professional development. As we progress on the other three corners, our focus needs to shift toward getting the maximum value from all our investments. That will only occur by offering both our technology staff and faculty the proper amount of training and development opportunities along the way. For each dollar spent on technology we need to invest in training our people how to use it. We also need to keep in mind, training and development is an on-going process, not just when new systems are deployed and implemented. As our plans develop and evolve much more attention and focus will occur in this area.

As the following plans indicate it will be a rebuilding process. Much of the focus over the next several years will be on building the technology team and infrastructure. This will then lead to more strategic discussions on applications and professional development opportunities, but what makes our technology plan unique from most other school districts is our plan begins and ends with people.

Technology Planning Framework

Since July of 2005, the Natick Public School has been using the following framework for Technology Planning. It is an iterative process that has taken us the last 3 - 4 years to complete. The framework has been extremely helpful in guiding and gauging our progress:

Technology Planning Framework

1. Assessment
2. Team Building
3. Invest in the Back End Solutions
4. Invest in the Front End Solutions
5. Invest in Training and Support
6. Collaborate on new Technologies and Expectations

Assessment

Technology Director conducted an initial assessment and created a Technology Audit. The results of this audit are updated annually and are included as Appendix A of this year's plan. The audit covers a variety of broad issues and potential risks that existed back in July of 2005 and identifies risks that still exist today. It documents recommendations made, action taken and results achieved. It is this initial audit that still guides much of our Technology Planning today as it encompasses years of effort that are needed to make technology what we all expect it to be within the Natick Public Schools.

Team Building

In order to address concerns discovered in the audit, and ensure the proper resources are in place to manage the technology environment in both the short and long term, a technology staffing plan was defined and is included as Appendix B in this year's plan. A process of restructuring and recruiting followed and we now have a team of talented individuals in place, ready, willing and able to continue moving our technology efforts forward.

Invest in the Back End Solutions

Before we can address the needs of students and teachers directly in the classroom regarding technology we need to have a solid foundation to build on. As many of the audit concerns indicate, this is a major undertaking and the most significant pieces of work have now been completed. Remaining upgrades identified in the audit for our backend systems are scheduled in the plan for this year.

Invest in the Front End Solutions

Investing in the front end is simply investing in the teachers and the students. It means investing in the classroom, in the things we all see and touch. It is the most visible area of our technology environment and it is the most widespread. The front end encompasses all the computers and software used by students, faculty and administrators. It includes all the physical devices we see such as printers, scanners, digital and video cameras, projectors and also the more progressive technology we have been piloting such as interactive white boards.

Since these front-end technologies include so many touch points, it is also the most expensive and dynamic. It will require a significant amount of planning,

funding and a review of all technology resources. It will require collaboration with students, parents, teachers, administrators and members of the community. It will require an expansion of the technology planning process that doesn't exist today so that all these groups have a voice toward the future direction of technology.

Invest in Training and Support

As the building blocks are put into place, the faculty and staff need to be given frequent opportunities to master their technology skills so that they can effectively use them in the classroom. The faculty need to feel confident that the district will fully support technology before we will see its use expanded into the curriculum. As our long-term technology staffing plan indicates (Appendix B), a dedicated resource has now been allocated to this function, as it has become a standard practice within the Natick Public Schools.

Collaborate on new Technologies and Expectations

As we meet objectives previously identified, our needs and expectations as a community will continue to rise. On a regular basis, we need to look beyond our daily activities and seek out what are the next rounds of challenges we need to face. As we do this, the framework begins a repetitive process as we need to re-assess where we are, identify we have the proper staff to get to the job done, make back end adjustments as we consider and implement new front end technologies, ensure people have the opportunity and training to master the technology and then look outside the box for the next wave of expectations.

2007 – 2008 School Year Improvements

Completed Initiatives Summer and Fall of 2008:

1. **Teacher Laptop Rollout**

With funding that was made available through a successful override vote in the spring of 2008 the school district was able to negotiate a deal with Apple to acquire hundreds of laptops that were deployed to faculty and staff.

The technology team coordinated with the various vendors and all district personnel to secure and prep all laptops. This included ensuring all laptops were operating properly, could login to the school network and all staff had their data properly downloaded. All staff attended a mandatory one-hour training workshop over the summer in order to receive the laptop, which significantly contributed to the smooth transition and start to the new school year. Topics such as data security, data synchronization and best practices for using laptops in and outside of school were covered in detail.

2. **Mobile Labs for all Elementary Schools**

The same source of funding noted above also provided for each elementary school to receive a mobile lab. Mobile labs were selected rather than traditional desktop computers not for strategic reasons but to accommodate the on-going demand for precious classroom space throughout the district. Each mobile lab consists of 25 laptop computers, a wireless access point to provide network connectivity and a mobile cart to house and charge all laptops.

3. **Retirement of OS9 Machines**

Due to the previous two projects the district was able to retire all (approximately 500) OS9 machines within the district. These machines were no longer supported by both hardware and software vendors and didn't support interactive technologies such as Flash, ActiveX and Java that are commonly in use on the internet and in demand for elementary age students.

All OS9 machines were recycled responsibly after verifying with vendors that they offered no monetary value to the school district.

4. **Infrastructure Improvements**

- a. Fine-tuning of all network file servers were conducted and tested to ensure data synchronization was implemented with the deployment of the new laptops.
- b. Wiring closet upgrades were scheduled and completed at Ben-Hem Elementary School.

5. **High School Technology Improvements with NEASAC Funding**

- a. Deployed over 50 new PCs to Science and Business Labs.
- b. Deployed two Interactive Whiteboards to Science and Foreign Language Departments.

Funding Summary

NEASAC Funding 2007 – 2008 School Year				
	Objective	Results Achieved	Cost Estimate	Actual Cost
1.	PCs for High School	Updated computers deployed to Science and Business classrooms that have not been updated in over 10 years.	51,380	51,380
2.	Interactive White Boards for High School	Natick High School has now expanded the Interactive White Board Pilot Program to four areas: Math, Science, Foreign Language and Social Studies.	17,254	17,254
	Total		\$68,634	\$68,634

Technology Replacement Funding 2008 – 2009 School Year as of 12/08/2008				
	Objective	Results Achieved	Cost Estimate	Actual Cost
1.	Laptop Rollout	Provided teachers and elementary students updated laptops and software now is use throughout the district.	287,826	245,559
2.	Memory Upgrades	Project deferred due to priority and available funds.	20,000	0
3.	Printer Upgrades	Project deferred due to priority and available funds.	15,000	3,429
4.	Wiring Closet Switches	Replaced all wiring closet equipment at Ben-Hem Elementary School.	65,000	67,772
5.	Computer Room Devices	Replaced old switching hardware in main district computer room.	12,000	5,972
	New Initiatives Added due to Priority and Available Funds:			
6.	Email and Archiving Solution	Will provide a robust and reliable email system for school district and achieve archiving compliance. (* Estimated cost not included in original 400K budget) (** Does not include cost of archiving solution.)	40,000*	23,429**
7.	Library Circulation Systems	Web based system offering students, parents, faculty and staff remote access to all book collections within the Natick Public School Libraries. (* Estimated cost not included in original 400K budget)	25,000*	25,587
	Funding Summary			
	Sub Totals		399,826	371,748
	Unallocated Funds		174	
	Funds from Spring 2008 Override		\$400,000	371,748
	Balance of Funds			\$28,252

Current Environment and Challenges

From a technology perspective, we are in a very different place than a mere three years ago. We are now operating with all four corners of our technology foundation (Staffing, Infrastructure, Classroom Technologies and Professional Development) in place.

TECHNOLOGY STAFFING

Our Technology team, which is now comprised of eleven people, manages the technology needs of the entire school district, serving approximately 700 faculty and staff and over 4600 students. The team today consists of individuals whose jobs focus in the following areas:

- Help Desk
- Network Administration
- Training
- Data Base Administration and Reporting
- Web and Internet Technologies

Over the last three years, the majority of the Technology team's focus has been to rebuild the technology foundation, to provide the most basic of services such as file storage, backup, robust internet access, network security, new websites and the implementation of a new Student Information System.

As our backend work has progressed, the Technology team has been able to shift much of its focus to developing and implementing strategies to replace much of our front-end technologies; the technologies in use within our classrooms that are used by both students and teachers on a daily basis demonstrated by the recent laptop rollouts that occurred this past summer and fall.

The biggest changes to the technology team this school year have been in the following areas:

1. **Dedicated Technology Trainer:** This position was filled early this school year with the focus of offering faculty and staff a dedicated resource for developing their technology skill sets. Our trainer offers various hands-on workshops, train the trainer classes, or one on one sessions with teachers throughout the school year to continue to build confidence in technology tools available.
2. **Transfer of Support Staff from Town:** Two individuals from the Town IT Staff have traditionally supported our school student information system. Since this is now an area of significant change for the School Department as we are now providing parents electronic access to student information via a web portal it makes sense to have these individuals report under the School Department IT Department. This was a simple budget transfer of staff that had been dedicated to this function for a number of years. It includes a Data Base Administrator and Data Entry position.

The technology team works collaboratively with the faculty and staff throughout the year to provide daily support and solutions that enhance and enrich our educational mission. A current technology staffing organizational chart is provided in Appendix B.

TECHNOLOGY INFRASTRUCTURE

The district maintains approximately 1500 computers and roughly 1/3 of these devices were replaced this past summer with updated laptop computers. The majority of these laptops were deployed to faculty and staff to ensure teachers have tools of the 21st century which is essential if our expectations are that technology be integrated into as many areas of the curriculum as possible. Our long-term vision, which we share with our new Superintendent Dr. Peter Sanchioni, is to establish 1 to 1 initiatives with our students. But first, we need to ensure our teachers; the ones leading and guiding the educational experience in the classroom are provided the tools, training and opportunities to master these skills so they have the confidence to integrate them into routine daily classroom use.

These laptops give teachers the ability to work with current technologies and the flexibility of doing so anywhere their work takes them. Whether it is conducting a videoconference with students from remote locations, using updated web technologies to communicate and share information with both students and parents, truly effective technology changes the way we do things. This can now be seen in the administrative side of teachers' and administrators' jobs as much more efficient and cost effective ways of distributing information is now in use than ever before; weekly email blasts from all schools to interested members of the Natick community, automated calls from our ConnectED System to quickly notify parents and staff of timely information as the need arises, piloting web based access of student attendance, grades and discipline from our Student Information System, and with continued enhancements being made to our websites; expansion of the "Virtual Backpack" concept to all schools and most recently with providing our teachers new interactive capabilities for the next generation of "Teacher Web Pages" is right around the corner.

At the elementary level new mobile labs of 25 laptops were provided to each elementary school to provide students a hands-on experience. The updated laptops are capable of using all types of interactive web sites and technologies that were not available to elementary students for many years.

In addition to these 1500 computer devices, the technology team also continues to support hundreds of networked printers and numerous other computing devices located within 9 buildings; one high school, two middle schools, five elementary schools and central office staff within the Town Hall.

All school and town buildings are interconnected by a fiber based network that enables us to provide centrally managed services, such as robust internet access, to all school district employees and students from the High School where the technology team is based. This strategy has allowed us to implement solutions once and provide them throughout the district without having to re-invent the wheel at each school.

Our backend infrastructure is constantly changing and evolving to adapt to the growing needs of the school district. Virtualization technologies are being introduced to help add both redundancy and maximize the utilization of all backend devices. Our backend is based on well known industry standards utilizing solutions from MicroSoft, Apple, Dell, Cisco, HP, Nortel and Sonicwall to name a few.

FUND RAISING AND COMMUNITY SUPPORT FOR CLASSROOM TECHNOLOGIES

During the 2007 - 2008 school year we began a campaign of educating the public of our need to replace and upgrade technology annually and the fact that we didn't have a line item in our budget to do so. We simply had an operating budget of just under \$140,000. This covered the costs for Internet access for all schools, hardware and software agreements for critical services and for minor repairs to computers and peripherals. There was no funding to replace or upgrade any technology.

Due to the good work of many throughout the community on raising awareness to this issue, Natick was one of a handful of town to successfully pass an override vote in the spring of 2008. A significant part of that override vote was to add \$400,000 a year to the school department's technology budget to fund replacement costs of technology. The override will provide these funds for the 2008 - 2009 and 2009 and 2010 school years. After that time this issue will need to be revisited.

Approximately half of the funding from the override, \$203K annually is being invested in a three-year lease to purchase laptop computers for the majority of our faculty and staff and to provide mobile labs for each of our elementary schools. The other half of replacement funds has been earmarked to continue to improve the backend infrastructure that is detailed throughout this plan that all front end technologies depend upon. Also part of the plan was to reclassify an existing open position within the technology department and hire a full time technology trainer. This position was filled early this fall and has been a vital component to the Natick Public Schools successfully moving forward.

As we made the public aware through our override discussions, our needs as a school district will always exceed our budget so we need to explore other sources of funding to supplement our budget. Our budget should include the basic needs of maintaining our daily operations and its infrastructure before components reach end of life.

To help us achieve this goal, members of the Parent Coordinating Council have approached the school district and suggested fund raising strategies and assistance to continue to build on the public support that was generated through the spring 2008 override effort.

Through joint efforts of school district administrators, members of the Parent Coordinating Council and the Natick Education Foundation, fund raising efforts are being put in place this year to further fund the needs of school technology. A "Taste for Technology" fundraiser is scheduled to happen in February and a "Trot for Technology" is scheduled for later in April. Both of these fund raising efforts are being coordinated to raise public awareness and funding that will benefit technology in all of our schools.

The funding raised from these two events will be used to provide teachers with more LCD projectors and interactive white board technologies. These types of technologies will empower teachers to share their new laptop experiences with all their students.

The interactive white board technology is the most compelling as it comes bundled with software and wireless interactive components that let teachers and students interact with content in real time at the board or wirelessly within the classroom. Teachers are able to integrate web content including video streams and also use wireless voting devices so teachers can collect real time assessments

to see if the subject matter is reaching their students. This provides teachers valuable feedback and allows the teachers to revisit content that may have otherwise been overlooked.

The interactive whiteboard experience is exciting for both the teacher and the students. It requires teachers to think differently about how they teach and does require more prep time initially to get started. Once teachers embrace the technology they don't know how they taught without it. Students find the technology fun and engaging. Most teachers using the technology today report more student participation and excitement in class.

As a school district, we see much promise in the technology as it could benefit students of all age levels in the district and all areas of the curriculum. We have been piloting interactive whiteboard technology for several years now as we have it in use at the high school in math, science, social studies and foreign language. Just recently a demo board was deployed at the Wilson Middle School to further educate the Natick community of its potential.

Our goal is to provide this type of technology in all of our 325 classrooms but it costs approximately \$5000 each with all the bells and whistles and would cost over \$1.6 million to deploy district wide.

As an extension of our community awareness campaign, we have been reaching out to local business to join our fund raising effort, as a need of this magnitude will be a multi-year effort. As we engage local business they have been very positive and impressed with the steps we have taken to prepare for these initiatives despite the current economic environment. Organizations that are willing and able to partner with us want to ensure their efforts will supplement our efforts and lead to success. Without taking the proper steps ourselves and addressing all the key building blocks first we would not be in the position we find ourselves today.

If any individual or organization is interested in making a donation to support these initiatives or joining our fund raising efforts please contact one of the co-chairs of the Parent Coordinating Council; Amy Mistrot at mamistrot@rcn.com or Chris McLarnon at bearhill8@aol.com and let them know how you can help.

CHALLENGES AHEAD

As we move forward, financial constraints seem to be one of the biggest challenges technology programs face in most K12 school districts. It's also clear we will always have needs that exceed our operating budget even given good economic conditions. By continuing to work together we as a community we will find the answers.

As was discussed last year, effective technology needs regular annual funding not just to flourish but merely to survive. Technology is a moving target and it will not wait for us to catch up so we need to ensure we invest at regular intervals at a responsible and affordable level for our town. Once we become satisfied with our progress in technology and ease up on our funding it begins to fall behind and we repeat a costly and vicious cycle of catch-up.

Regular and consist funding is one of the keys to keeping a technology program strong and progressive. It often takes years to recover from under-funding as we have seen with the recent efforts that have been made over the last three to four years.

We need to be more strategic in our technology investing if we are going to ensure we have a sustainable and affordable model in place. Simply having enough money to ensure client computers don't exceed a certain age is a step in the right direction but we need to get beyond this issue and challenge the model with a new way of thinking.

What if a new funding model allowed or encouraged a town or school district to share some of the costs with people who used it? This is an interesting model and one often seen in higher education where students and faculty are able to use their own computers on school networks. If we begin to shift a portion of our annual technology investments to continue to move the infrastructure in this direction, in a secure and responsible way, a K12 school district may be able to implement a similar strategy. In order to do so, regular annual investments and a strong technology team need to be in place, to build and support the infrastructure needed to implement such a model. Another consideration to factor in, these types of infrastructure investments that are needed to implement such a model wouldn't become obsolete as quickly as client computer devices do today so they may be a better long term investment and would allow the town and school district to begin changing the model and sharing some of the financial burden.

It would take years to fully implement such a model but there is no time like the present to begin allocating a portion of our technology funding in this direction.

If we combine this shift in strategy with some of the trends going on in the marketplace with the introduction of the new sub-notebook market, mobile devices in the \$300 - \$500 price range, which individuals are becoming more interested in, the long term possibilities abound. While these devices today don't yet compete head to head with their more expensive \$1000 laptop counter parts, they do offer much promise as the technology continues to improve. As a school district we have invested in more web based technologies and these devices offer some compelling flexibility and portability for accessing the web if the proper infrastructure is in place. If we continue to make the right types of investments today, the Natick Public Schools will be ready to embrace new mobile devices down the road and begin sharing some of costs that technology requires. By changing the model, we have the opportunity of continuing to build and support a sustainable technology program.

We have a lot to be proud of in our schools and we have come along way in a very short amount of time. To continue to attract the best faculty and staff and engage our students, technology needs your support on an annual basis.

Next Steps

To actualize this long term vision of sharing costs and embracing devices coming into our schools will take careful planning and execution. As our plans and progress develop our Acceptable Use Policy (AUP) for both students and faculty need to be revisited and updated to reflect our current reality.

Initially we see three steps to completing this vision:

1. Testing Wireless with School Owned Devices
2. Testing Wireless with Non-School Owned Devices
3. Expanding Wireless Pilot to a Complete Building or District

Step 1 - Testing Wireless with School Owned Devices

Our first step is to re-affirm more effective and reliable wireless access in our schools will actually encourage more use of technology. To do this we will pilot a managed wireless infrastructure at our two Middle Schools, Wilson and Kennedy, and test using school owned and configured equipment.

At both pilot schools we will target a specific and limited area of the buildings to enable wireless communications, which will keep our costs in-line and also allow for a fair assessment of the results. In both cases we have selected the Libraries of each school since they are generally good open areas where a number of students or faculty members could go and effectively use the wireless access to complete a number of tasks. These will also be relatively easy areas to enable since they are open areas and will not require extensive and costly scans of wireless signal strength until a wider or complete building rollout is needed down the road. In each case we will identify a specific capacity of concurrent users and size the solution and number of required access points to achieve an acceptable level of bandwidth for those users. As always, Internet access for students will be filtered to maintain our compliance with the Children Information Protection Act (CIPA). Throughout the year we will monitor usage and the results as well as collect feedback from students, teachers and building administrators.

Our hope is students and teachers will find technology more accessible if they are able to get on-line quickly and wirelessly and will also want this type of access long term in their classrooms.

Step 2 - Testing Wireless with Non-School Owned Devices

As we complete testing from step 1 above we will move on to step 2 and begin introducing devices that are not recognized by the school network and testing these devices in a controlled manner.

As the wireless environment is initially built and before any of these pilots are conducted we will be considering all potential risks that need to be mitigated. Step 2 is really the first large-scale test to gauge its potential impact before we officially change our AUP and encourage this type of use.

As the results of step 2 are determined and assessed we will be able to make a determination if our AUP can be revised or what additional action may be

necessary to start implementing a model that would allow use to begin sharing the cost of client devices.

Step 3 - Expanding Wireless Pilot to a Complete Building or District

Upon successful completion of step 2, a decision can then be made if we want to further expand the wireless pilot into a building wide or district wide deployment.

Plan for 2008 – 2009 School Year

	Objective	Recommended Action	Comments	Estimate
1.	Student Information System	<p>Pilot parental access.</p> <p>Parents will be able to access information on their children on-line.</p> <p>This includes biographical information, grades, attendance and discipline records.</p>	<p>Pilot began with a team at the Wilson Middle School.</p> <p>Rollout will expand within the Wilson Middle School and expand to Kennedy and the High School.</p> <p>The goal is to be live with the parent portal in grades 6 – 12 by the end of the school year.</p>	0
2.	Web Development	<p>Phase III of Web Project.</p> <p>Pilot School World product as a solution for Teacher Pages.</p>	<p>Piloting outsourced solution with 27 teachers in a structured fashion.</p> <p>Goal is to retire First Class as our web hosting platform by end of school year and offer the new solution to all teachers.</p>	Will be funded as part of operating budget.
3.	Equipment Replacement Plan	<p>Fund Technology Replacement Plan as part of the school department's operating budget.</p> <p>The purpose of these funds is to replace a percentage (20% is the goal) of our oldest hardware and software in the district each year without fail.</p> <p>How Funds would be Invested:</p> <p>Funds will be allocated to addressing the most urgent need throughout the district.</p> <p>Each year a portion of the replacement funds would be invested in the classrooms, wiring closets and the data center.</p>	<p>Funding will be dedicated to replacing school technology equipment and be there each year.</p> <p>Majority of equipment will remain supportable and usable while used in the district and hardware failures due to age should be minimized.</p> <p>Most urgent need Today:</p> <ol style="list-style-type: none"> 1. Ensure all teachers have computers available to them that can perform all administrative tasks and identified software for their area of the curriculum. <p>Ensure all elementary schools have computers available for student use.</p> <ol style="list-style-type: none"> 2. Replace oldest switches 	\$400,000

			<p>at Ben-Hem.</p> <p>3. Replace and upgrade Email System. Needed to comply with current archiving regulations.</p> <p>4. Replace and upgrade Library Circulation Systems. Needed to replace unsupportable OS9 application within the district.</p>	
4.	Fund Raising and Community Awareness	Working with members of the community and local businesses to raise funding and awareness to the on-going needs of school technology.	<p>Promoting the need for more LCD projectors and interactive whiteboard technology in our schools so teachers can share their laptop experience with their students.</p> <p>This is a multi-year effort as we have approximately 325 classrooms across the district that could benefit from these types of upgrades.</p> <p>This has wide appeal as it can benefit all areas of the district and curriculum.</p> <p>This funding effort would supplement current town funding levels and allow us to accelerate technologies that are integrated in our schools.</p>	Private funding
	Total			\$400,000

Plan for 2009 – 2010 School Year

	Objective	Recommended Action	Comments	Estimate
1.	Fund Year 2 of Laptop Lease	Annual payment needed to fund lease of laptops purchased for teachers and elementary students.	Needed to maintain the lease.	\$203,000
2.	Pilot Managed Wireless Infrastructure	Investigate options for implementing a secure wireless infrastructure	May allow us to change funding model and encourage people to bring in their own devices. If done right funding of future client devices could then be shared by the district and users of the network.	\$70,000
3.	Pilot Mobile Devices	Investigate other mobile devices that take advantage of the wireless infrastructure.	Need to define the need and age level to address before selecting the device.	\$30,000
4.	Wiring Closet Upgrades	Upgrade and replace old updated wiring closet hardware.	Schools in need: Memorial Brown Lilja	\$69,000
5.	Fund Raising and Community Awareness	Working with members of the community and local businesses to raise funding and awareness to the on-going needs of school technology.	<p>Promoting the need for more LCD projectors and interactive whiteboard technology in our schools so teachers can share their laptop experience with their students.</p> <p>This is a multi-year effort as we have approximately 325 classrooms across the district that could benefit from these types of upgrades.</p> <p>This has wide appeal as it can benefit all areas of the district and curriculum.</p> <p>This funding effort would supplement current town funding levels and allow us to accelerate technologies that are integrated in our schools.</p>	Private funding
	Total			\$372,000

New Requests for Consideration				
	Objective	Recommended Action	Comments	Estimate
1.	Middle School Multi-Media Computers	Ensure both the Kennedy and Wilson Middle School need at least one lab of updated computers to support advanced technology.	This is the minimum level to continue to allow the curriculum to grow and provide students opportunities to use advanced technology.	\$75,000
2.	Storage	Need to reserve funds in the event of failure.	Current network storage device that saves all faculty and student data is no longer a device the hardware vendor will warranty.	\$15,000
3.	IStaff Module	One time cost to license new IPass module to consolidate employee data.	Otherwise multiple databases are required and prone to error.	\$11,000
	Total			\$101,000

Plan for 2010 – 2011 School Year and Beyond

As our technology foundation is completed and the reality of building a new High School draws closer, we should be looking into technologies that will extend our open technology strategy. Implementing an enterprise class wireless environment and LAN security products that proactively assess a client's security vulnerabilities prior to connecting to the network should be part of our plans for a new or renovated High School. The wireless pilot proposed at the Middle School level is a great test bed for these technologies within the Natick Public Schools and would offer both faculty and students greater flexibility, use of personal computer equipment in a secure fashion and may also offer creative alternatives to funding annual replacement cycles.

For students and teachers, we need to research and find the best options for offering students a blended approach to learning; traditional classroom settings along with an on-line component, much as they will see when they move onto college. Technologies to consider include Moodle, Blackboard, Virtual High School and Mass One to name a few.

For curriculum and administrative effectiveness, selection and implementation of data warehousing technologies and document management systems with workflow capabilities would help replace many of the manual processes and record keeping systems that exist today.

In the classroom, we should be looking into more web-based applications and services as the cost of bandwidth continues to decrease. Collaboration tools such as Internet and use of interactive whiteboards that include interactive components for students.

In conclusion, the technology landscape at the Natick Public Schools is full of challenges and potential. Our future is only limited by our creativity and benefits teaching and learning in the classroom.

Appendix A – Technology Audit

Risk No	Objective	Status	Effect on Technology Objectives	Recommended Action	Action Taken
1.	Team Organization				
		Complete	Ineffective support of existing network resources and too much reliance on the most highly skilled staff.	Conduct individual skills assessment and develop long-range technology staffing plan. Team approach with a focus on customer service and satisfaction. Establish centralized Help Desk function for entire school district.	Long range staffing plan developed. See Appendix B. Established centralized Help Desk Function. Hired Network Administrators, Help Desk Manager, Web and Data Base Administrator and a Hardware Technician. Support personnel dispatched to each school based on priority and need. Cell phones used to coordinate many of the support personnel in timely manner.
2.	Project Management				
		Complete	No written plans for any technology initiatives (OSX rollout, moving all servers to High School, cabling of Johnson, etc.) No way to know how projects are in relation to time, budget, milestones or risks.	We need to plan first then invest in what makes sense.	All technology projects under regular review. Technology Plan updated annually.
3.	Computer Room Environment				
	Organization	Complete	Equipment, combustibles and junk everywhere. Production and test equipment not clearly identified. Labelling poor or outdated.	Major overhaul of the room is required to determine what equipment is necessary to operate the network in an effective manner.	Transformed computer room at Natick High School into the school district's Network Operations Center operated by the Network Administrators. All equipment rack mounted. Non-essential combustibles and junk removed or relocated to another room. All cables replaced and bundled together in an organized fashion and labelled. Proactive monitoring of network

					displayed in real time throughout the school day.
	Fire	Unresolved and Known Risk Disclosed	No fire-suppression or smoke detectors exist within computer room.	Install dry fire suppression system to protect main computer room for school district.	<p>Unresolved Risk: Construction of Data Center within High School not adequate to handle a dry fire suppression system. Cost is prohibitive within existing building. As a result this room is not protected from a fire event.</p> <p>The risk of data loss minimized due to improved backup capabilities and off-site rotation in place.</p>
	Electrical	Complete	<p>Electrical supply to computer room shared with other areas of the High School. High School electrical system is currently not adequate during times of high use.</p> <p>No central UPS for computer room. Individual units untested with an unknown life expectancy.</p> <p>No main shut-off to electrical power installed.</p>	<p>Install dedicated electrical panel with adequate power to supply critical devices in main computer room tied into a backup electrical generator.</p> <p>Replace older UPS units and recycle to less critical roles.</p>	<p>Installed and tested new-dedicated electrical panel protected by an electrical generator during summer 2006.</p> <p>Replaced and recycled UPS units.</p>
	HVAC	Complete and Unresolved Risk Disclosed	<p>Reliance on single ductless AC unit. Frequent failures have occurred resulting in temperatures exceeding 100 degrees and failure of several network services.</p>	Add second HVAC unit to minimize single point of failure.	<p>New primary HVAC system installed summer of 2007.</p> <p>Older ductless system left in place to supplement primary unit if temperature exceeds threshold.</p> <p>Unresolved Risk: The only Data Center equipment within the High School not protected by emergency generators are the primary and backup HVAC systems. These were excluded due to funding constraints.</p> <p>As a result, anytime a power outage occurs at the High School it has the ability to cause a district wide computer outage if the outage occurs for an extended period of time or after hours.</p> <p>To minimize risk, a temperature monitor is in place and facilities staff have been instructed to contact key technology staff when power events occur.</p>
	Environmental Monitoring	Complete	<p>No monitoring exists so problems could go on for long periods without notification.</p> <p>Leaky roof caused outage</p>	Add monitoring equipment to measure temperature, humidity, power problems, security, smoke and fire.	<p>Temperature and humidity monitoring equipment is now in place.</p> <p>Moved computer equipment within the computer room away from location with known water leaks as much as possible. More work may need to address this issue.</p>

			and water damage to firewall equipment.		
4.	Network Communications				
	IP Routing	Complete	<p>Core switches in place at Natick High School, Wilson Middle School and Ben-Hem Elementary School due to size of the networks in place at these locations.</p> <p>Network cores are single points of failure and only the High School has a current maintenance agreement.</p> <p>Routing of IP traffic does not appear to be working properly. Devices plugged directly into main network core at the High School cannot ping devices at all locations.</p> <p>Both the Wilson Middle School and Ben-Hem Elementary School appear to have an excessive number of subnets.</p>	<p>Determine maintenance options for all core switches and have plan in place in event of failure.</p> <p>Clearly define IP routing at the main core and to all locations.</p> <p>Revisit and simplify IP scheme.</p> <p>Gather more details on core routers at Natick High School, Wilson Middle School and Ben-Hem Elementary School.</p>	<p>Documenting network infrastructure.</p> <p>Focus is on the network core at Natick High School, Wilson Middle School and Ben-Hem Elementary School.</p> <p>Investigated maintenance options and costs for Wilson and Ben-Hem.</p> <p>Significant changes to network routing and equipment replacement scheduled for 2006 – 2007 school year.</p> <p>Network upgrades to both Natick High School and Ben-Hem are planned for the 2007 - 2008 school year.</p>
	AppleTalk	Complete	AppleTalk seeders at the High School represent single point of failure.	Determine maintenance options and have plan in place in event of failure.	<p>AppleTalk has been eliminated from both Middle Schools and High School.</p> <p>Will not be able to eliminate from elementary schools until all OS9 machines are retired.</p>
5.	Servers				
	Hardware	Complete	<p>Minimum specifications not established. Most servers do not have monitors and only accessible via remote management, single hard disks, single power supplies, and single</p>	<p>Establish minimum hardware specifications based on network function with proper redundancies.</p> <p>Install monitor cards and KVMs to manage servers even if network communication issues occur.</p>	<p>Minimum server specifications complete.</p> <p>Monitor cards and KVMs implemented.</p>

			network cards.		
	Software	Complete	Servers that provide core network services are co-mingled with user data and applications	Move servers that provide network infrastructure services to dedicated boxes.	All MAC servers upgraded to newest version of OSX during summer 2006 & summer 2007. As data migration progresses, servers are being reconfigured and repurposed.
	Storage	Complete	No real strategy exists for organizing where data is stored for students and faculty. This makes account maintenance, backups and capacity planning a much more difficult task.	Investigate and implement centralized storage device. A properly organized storage strategy will allow student and faculty data to be better organized and protected, provide for reliable backups and improve ability to conduct adequate capacity planning activities.	New multi-platform centralized storage device purchased and implemented summer 2006. Data migration to complete throughout the 2006 - 2007 school year. All faculty and student accounts now on new storage device to start 2007 – 2008 school year.
	Backups	Complete	Current backup solution not adequate to conduct unattended backups. Incrementally backups done in the past but tapes have never sent off-site. Relied on a single tape appended to each night for an entire school year. A computer room fire or a simple media failure could jeopardize losing an entire year's worth of data. No backups scheduled to run since end of school year.	Identify all data storage devices. Research autoloader tape units with dual drives. Continue attempts to conduct full backups of the network. So far, all attempts have been unsuccessful. Establish daily, weekly and monthly backup procedures that include an off-site media rotation and long-term archival process.	New backup autoloader purchased and implemented summer 2006. Backups conducted daily and new rotation implemented.
	Software Configuration	Complete	Mis-configuration of the security system has contributed to a large number of permissions issues to both individual accounts and groups. Apple and Windows clients currently communicate in separate	Rebuilding all servers and the entire domain will be required to correct these issues in the long term. With a single domain established correctly, with the proper permissions, windows and apple clients will be able to work seamlessly together.	Created a Windows Active Directory Domain in a test environment. Both MAC and Windows clients binding to it. Further testing is on going as we develop our migration plan. Migration from Open Directory to Active Directory completed over the summer of 2007. All accounts now managed in Active Directory allowing us to more seamlessly integrate Windows and MAC clients.

			domains. Making sharing of files not possible among platforms.		
6.	Perimeter Security Measures				
		Complete	<p>Current security measures are weak at best. High risk of unauthorized access or interruptions to network services.</p> <p>A number of servers have external IP addresses on the private side of our network and are port forwarding through our firewall. This allows unnecessary traffic through to the core of our network and subjecting it to attack from the internet.</p> <p>Current firewall appliance is an all-in-one product that is not very effective. Product is immature and not properly configured.</p>	<p>Eliminate port forwarding for all unnecessary services immediately to minimize risk.</p> <p>Establish a DMZ to isolate unnecessary external traffic from the core of our network.</p> <p>Investigate viability of current firewall solution or seek out a more robust firewall solution to safe guard our network.</p>	<p>Changed all administrative passwords.</p> <p>Locked down external access to core router.</p> <p>Port forwarding turned off for all unnecessary services.</p> <p>Due diligence was conducted on existing Joebox firewall. We determined the product lacked basic functionality and technical support found in other industry standards solutions.</p> <p>New firewall selected and implemented due to its feature-set, technical support and attractive price-point.</p>
7.	Cabling				
	Patch Cables	Complete	A large number of patch cables used throughout the district are voice grade cables contributing to network slow downs.	Replace all known voice grade patch cables.	Verified and replaced patch cables at all schools. Visited all devices and conducted a physical inventory at the same time.
	Daisy Chaining	Complete	Daisy chaining of hubs and switches found in classrooms, wiring closets and main computer room at High School. This contributes to excessive network latency (network slow downs) and	<p>Eliminate the use of hubs.</p> <p>Switches should be the exception in the classroom and not the rule.</p> <p>Going forward, daisy chaining of devices should never be acceptable in computer lab environments. As labs are re-done, install an adequate number of cables to support number of computer devices.</p>	<p>Eliminating hubs as found.</p> <p>Re-cabled computer lab A109 in the High School properly summer 2005 to support the number of devices.</p> <p>Dismantled and re-cabled computer room during the three October holidays early in the 2005 – 2006 school year.</p>

			dropped connections.	Daisy chaining within the computer room is never acceptable. This will be corrected ASAP. Servers on a hub and taking a big performance hit.	
	Exposed Cables	Complete	Exposed cables in classrooms and unsecured wiring locations at risk to tampering or modification.	Exposed data cables within reach in classrooms need to inside electrical conduit or wire-mold to protect from damage.	Installed new data cabling at Johnson Elementary school Summer 2005 within protective conduit.
	Wiring Locations	Complete and Unresolved Risk Disclosed	<p>Within most wiring closets ventilation is poor, temperature was warm to hot and unmonitored, shared storage with non-essential equipment intruding within 3ft of equipment, signs of dirty and dusty conditions present.</p> <p>Removed power cords from two servers at Ben-Hem during the school day caused unnecessary downtime. The source of the problem remains unsolved.</p>	<p>Secure all wiring locations. Build steel cages around wiring in open areas to secure equipment and not create ventilation issues.</p> <p>Restrict access to all wiring closets and remove non-essential material from area.</p> <p>Environmental monitoring devices should be installed within all wiring closets and temperature and ventilation improvements considered.</p> <p>Clean on a regularly scheduled basis all equipment in wiring closets and main computer room to avoid pre-mature damage or failure.</p>	<p>Conducted audit of all wiring locations.</p> <p>Unresolved Risk: Collected keys to most, but not all wiring locations. We remain too lax in securing these locations and it continues to present an unnecessary high risk of downtime.</p>
8.	Workstation and Classroom Technologies				
	District Wide	In Process	<p>Approximately 1500 computers exist in the district.</p> <p>Mostly MAC workstations.</p> <p>Windows machines in school front offices and in a limited number of classrooms at the High School.</p>	Assess and determine need before making platform decisions.	Manual inventory conducted district wide and under review.
	High School	In Process	<p>Most classrooms have only one computer for teacher access.</p> <p>Dedicated computer labs and the library are available for student access.</p>	<p>Assess technology needs and use in the classroom and set district wide standards at all levels.</p> <p>At High School level need to determine platform based on need and increase student exposure to environments found in higher education and the work place.</p> <p>Explore mobile lab concept why it is failing.</p>	

			<p>One mobile cart available but not used very often.</p> <p>MAC workstations: Newer and more up to date computers running MAC OSX.</p> <p>Windows workstations: Older machines mostly acquired through donations and refurbished by A+ students.</p>	<p>Explore other classroom technologies such as interactive white boards, web based applications, uses of internet2 and rich media.</p>	
	Middle Schools	In Process	<p>Major differences between two Middle Schools:</p> <p>Kennedy: Most classrooms have only one computer for both teachers and students.</p> <p>One computer lab and library available for student access.</p> <p>One mobile cart.</p> <p>MAC workstations: Newer and more up to date computers running MAC OSX.</p> <p>Wilson: Most classrooms have one computer available for teacher access and three computers available for student access.</p> <p>Two computer labs and library available for student access.</p> <p>Two mobile carts available but not used very often.</p> <p>MAC workstations: Newer and more</p>	<p>Assess technology needs and use in the classroom and set district wide standards at all levels.</p> <p>Find strategies to equalize technology investment across both middle schools.</p> <p>Explore mobile lab concept why it is failing.</p> <p>Explore other classroom technologies such as interactive white boards, web based applications, uses of internet2 and rich media.</p>	

			up to date computers running MAC OSX.		
	Elementary Schools	In Process	<p>Classroom technology varies greatly by school. Some elementary schools only have one computer in the classroom while others may have three to four computers for both teacher and student use.</p> <p>Unclear how much student use the computers get in the classroom.</p> <p>Some elementary schools have a dedicated computer lab for student access.</p> <p>No mobile labs.</p> <p>Oldest machines in the district. Majority running MAC OS 9 and some running MAC OS 8.</p> <p>Most applications not compatible with MAC OSX.</p> <p>Failing machines are a daily occurrence. Requiring time to troubleshoot and not worth putting any money into repair. As a result, student to computer ratio is suffering due to attrition.</p>	<p>Assess technology needs and use in the classroom and set district wide standards at all levels.</p> <p>Find strategies to equalize technology investment across all elementary schools.</p> <p>Explore other classroom technologies such as interactive white boards, web based applications, uses of internet2 and rich media.</p> <p>Determine strategy replacing aging equipment and upgrading to OSX and upgrading older applications.</p>	<p>All elementary computers (Approximate 500 machines) within all classrooms and computer labs reconfigured with a standard suite of software. All faculty now have access to Microsoft Office throughout the district.</p> <p>All elementary faculty and students now have access to Appleworks, Inspiration, Kid Pix, Neighborhood Map Machines, Sammy's Science House and the Internet.</p> <p>All elementary student accounts now have direct access to the Internet to make it easier for students and teachers to incorporate the Internet into classroom projects and allow students to save their work.</p>
9.	Wireless				
		In Process	Wireless access through low cost access point deployed throughout school district.	Need an enterprise wise strategy to effectively deploy wireless and protect against unauthorized access.	<p>Investigating options for wireless technology at Natick High School.</p> <p>Recommendation for solution that has the possibility of changing the funding model is included in the plan for the 2009 -2010 School Year.</p>

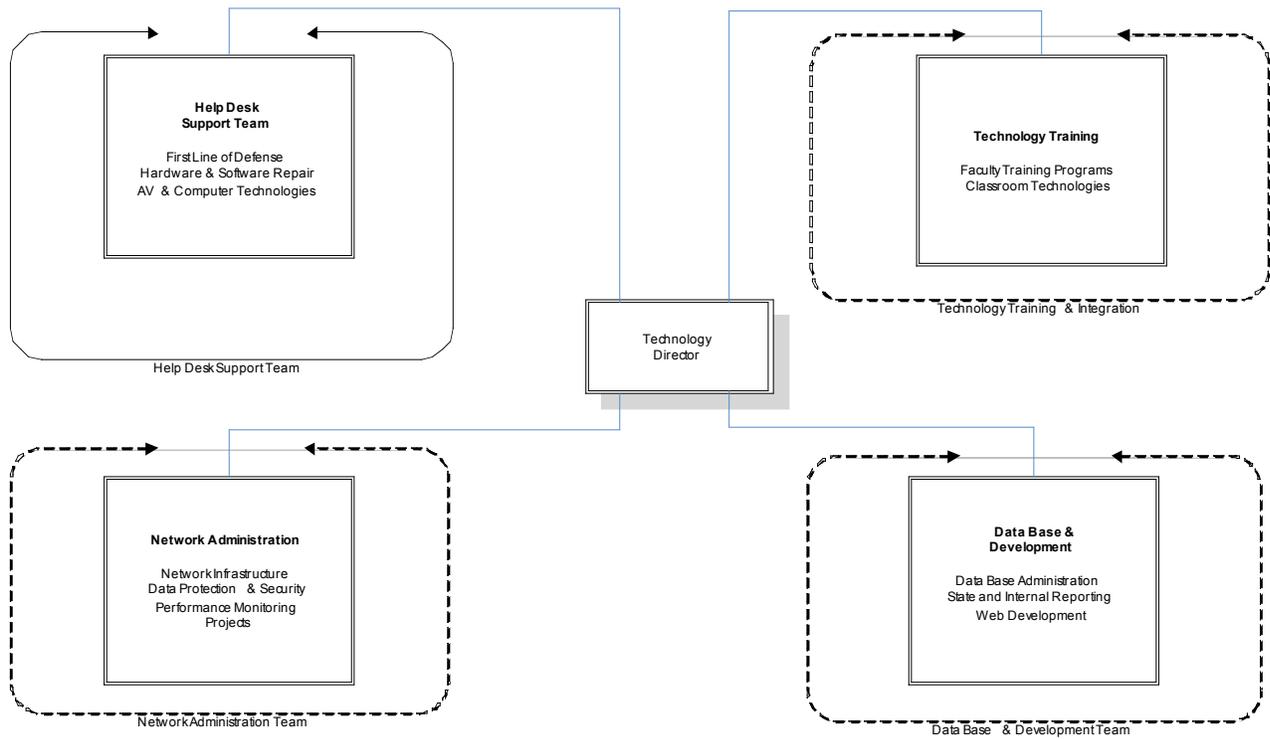
10.	Anti-Virus Protection				
		In Process	<p>Anti-virus solutions not effective.</p> <p>Joebox firewall has modest anti-virus services.</p> <p>First Class also has some basic anti-virus protection.</p> <p>Only a few Windows Servers and a few MAC clients had any anti-virus software.</p>	<p>Need to take a layered approach:</p> <p>Firewall Email Server Servers Workstations</p> <p>Adequate anti-virus protection needs to be in place, up to date and scanned on all the above layers on regular basis.</p>	<p>Discovered we own copies of both Symantec Anti-Virus and Computer Associates Etrust.</p> <p>Researching which product or products will work best and cost to implement.</p> <p>Symantec Anti-Virus (Centrally Managed) currently on all windows servers and a group of windows clients at Natick High School.</p> <p>Etrust running on a few MAC clients.</p> <p>Deploying Symantec Anti-Virus solution to all Windows clients during 2007 – 2008 school year.</p>
11.	Anti-Spam Protection				
		Complete	<p>Anti-Spam protection provided by FirstClass and JoeBox is inadequate.</p> <p>Spam is a daily frustration for many.</p>	Evaluate solution against industry standards.	Implemented new Anti-SPAM filter Summer of 2006.
12.	FirstClass Server				
	Reliability	Complete	<p>First Class Server fails daily.</p> <p>Users have reported data loss.</p>	A more detailed audit of the First Class Server is required.	<p>Conducted audit with outside company and confirmed our concerns.</p> <p>Many of the configuration and permission settings improperly configured and applied.</p> <p>Developing a detailed plan to correct and minimize any potential downtime.</p> <p>Installed script to check First Class is running all the time. If not, it restarts the necessary services.</p> <p>Automating backup routine with new backup device.</p>
	Organization	In Process	<p>Currently Email and Website reside on same server.</p> <p>All website data is public information.</p> <p>Need exists for internal intranet for school district.</p>	<p>Email and Website should run on separate servers. Investigate if First Class can handle this requirement or if another product needed.</p> <p>Need to establish website for external use – face to the public and an internal site – Intranet for internal school district use.</p>	<p>Moving public website off First Class to dedicated box. Separating web and email hosting to minimize risk and take website to next level.</p> <p>District and School websites removed from First Class during the 2007 – 2008 school.</p> <p>Teacher websites scheduled to migrate to new product during 2008 – 2009 school year.</p> <p>New email system with archiving solution is planned for Summer 2009.</p>

13.	Citrix Servers				
		Complete	<p>Citrix servers deployed to allow PC applications to run on MAC systems.</p> <p>OS drive running out of disk space. Server will not run until corrective action taken.</p> <p>Servers riddled with virus activity.</p> <p>Servers failed daily, negatively impacting:</p> <ol style="list-style-type: none"> 1.) Natick High School to teach some Business and Science classes. 2.) Nurses unable to access (SNAP) student medical records. 3.) Facilities unable to control heating systems to several schools. 	<p>Explore the need Citrix is addressing. Other approaches exist to manage Windows applications that may be more effective.</p> <p>Need to remove user data from C drive to create more space.</p> <p>Scan and clean server viruses.</p>	<p>Conducted extensive internal and external review of all Citrix servers and how we utilize the technology.</p> <p>It was determined the Citrix servers would need to be totally rebuilt if we wish to continue their use.</p> <p>Configuration and permission settings improperly configured and applied.</p> <p>To minimize the impact Citrix is having on our environment in the short term we have locally installed the necessary student applications needed to conduct classes.</p> <p>It is unknown at this point if Citrix is required in this environment as all applications are now available through other means.</p> <p>No further action until the need is determined.</p>
14.	Software Distribution				
		In Process	<p>Many undocumented tools (Netboot, Filewave, Keyserver, etc.) and procedures exist that will be useful going forward.</p>	<p>Develop software distribution strategy for both Windows and MAC clients.</p>	<p>Testing of Netboot and Filewave have been conducted:</p>
	Netboot	Complete	<p>Netboot's current configuration and use to boot local workstations contributes to slow login times at Wilson and Ben-Hem.</p>	<p>Evaluate the benefits of using Netboot to boot off a server image and the amount of network overhead generated.</p> <p>A better approach may be to use Netboot to deploy new images but still allow machines to boot locally.</p>	<p>Conducted speed tests within both computer labs at the Wilson Middle School. Greatly enhanced boot and login time when machines were pointed to boot locally and re-imaged.</p>
	Filewave	In Process	<p>Used to push software packages to clients not in the standard Natick Public School</p>	<p>Need to explore solutions to deploy software across both MAC and Windows platforms.</p>	<p>Will investigate this product further during the 2007 – 2008 school year as we rebuild standard software images for both MAC and Windows clients.</p>

			image.		
15.	Patch Management				
		In Process	Patch management tool is currently not in place to guard against OS vulnerabilities or bugs.	Review and implement automated solutions for both Windows and MAC platforms. Evaluate MAC OSX.4 capabilities and Microsoft's Windows Update Services Server.	Implemented automatic software updates for MAC clients. Will investigate Windows options as we develop standard software images.
16.	Telecommunications				
	Voice	Pending	NEC PBX installed locally within each school building managed by the town IT staff. Not all classrooms have telephones installed.	Develop plan to deploy phones to all classrooms. Should investigate VOIP possibilities.	
	Data	Complete	District relies on a single 5MB internet pipe provide by MecNet directly to Natick High School. RCN is the local loop providing us connectivity back to MECNet's backbone in Marlborough Mass. MecNet uses multiple ISPs to provide schools commercial internet access.	Review current bandwidth needs and utilization. Investigate options for increased bandwidth. Consider adding secondary service provider to balance traffic or provide failover capabilities.	Investigating options for high speed internet directly with tier one providers. In Fall of 2006 filed under the E-Rate program to review competitive vendor bids. RCN was awarded the bid and our bandwidth went from 5MB to 20MB. This bandwidth is shared among all our schools and was fully implemented in June of 2007.

Appendix B – Technology Staffing Plan

Natick Public Schools Long Range Technology Staffing Plan



Natick Public Schools Current Technology Staff 2008 – 2009 School Year

