

**NORTH HUNTERDON-VOORHEES
REGIONAL HIGH SCHOOL DISTRICT**

DISTRICT TECHNOLOGY PLAN

JULY 1, 2004 – JUNE 30, 2007

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EXECUTIVE SUMMARY:

Much has been accomplished in the North Hunterdon-Voorhees Regional High School District since the original technology plan was adopted in the 1996-1997 school year.

- An effective voice and data network has been established between the two high schools and the district.
- At least one network workstation has been placed in each classroom. Computer labs to accommodate large class sizes have been established in various departments.
- One of the district's three goals is to infuse technology into instruction.
- The District Technology Center has been established in the District Office to provide high quality professional development to our staff.
- Laptop computers have been provided for all staff members upon request. These laptops communicate with an 802.11b wireless network that has been established to provide network connectivity without wires anywhere in the district.
- Multimedia projectors have been provided for every other classroom throughout the district to further enhance the use of technology in the classroom.
- Mobile wireless computer carts have been provided at each school to allow teachers to bring the lab to the classroom, instead of transporting students to the lab.
- A Voice over IP phone system has been implemented to improve the use and ease of administration for the district voice network.
- A fiber optic connection has been established between the two high school buildings to allow for gigabit network speeds throughout the district. This connection is part of a solution provided by Sprint for WAN connectivity as well as Internet access. The current connection to the Internet is a 3Mbs ATM circuit that provides Internet access for the entire district.

This plan will continue to monitor and update the technology infrastructure throughout the district. The focus of the next three years will be to encourage and facilitate an increased use of technology for instructional and administrative purposes. The movement toward mobile computer labs instead of stationary dedicated labs will allow technology to be infused more deeply into each curriculum, instead of being viewed as an add-on subject. The disaster recovery and security sections of this plan will allow a safe and secure network environment.

MISSION STATEMENT:

The North Hunterdon-Voorhees Regional High School District, a district committed to innovation, personal excellence, high achievement, and community partnership, provides all students with personalized opportunities through a broad spectrum of exemplary educational experiences to develop their fullest potential, to foster lifelong learning, and to become responsible citizens in a continually changing society.

In order to achieve the above mission statement, The North Hunterdon-Voorhees Regional High School District will provide the following:

- Equipment necessary to deliver instruction using technologically innovative methods.
- Student access to current technology that will prepare them to achieve higher levels of competencies.
- Professional development for staff in order to achieve higher levels of technological competency.
- Instruction in ethical use of technology.
- A maintenance staff so computers and related equipment will be kept current and in working order to provide staff and students with reliable technological resources.
- Current and appropriate software installed on computers.

Planning Process:

This plan has been developed and will be evaluated by the District Technology Committee (DTC). This group meets periodically to work on issues that are common to both of our high schools. The DTC meets on a monthly basis throughout the school year to discuss problems or concerns within the district. These meetings are also used to have vendors give demonstrations of products that would be beneficial to our district. Previous district plans were reviewed by the DTC, and revised to produce this current plan.

District Technology Committee - 2003-2004 School Year

Richard Bergacs – Director of Technology

Dr. Frank Helies – Assistant Superintendent Curriculum and Pupil Personnel Services

Brian Keating – Voorhees Teacher

Ernie Kovacs – Voorhees Assistant Principal

John Hahola – North Hunterdon Assistant Principal

Ron Lelko - North Hunterdon Teacher

Ken Thompson - Voorhees Teacher

John Armagost – Voorhees Supervisor

Barbara Frederick – Voorhees Guidance Counselor

Karen Sweet – North Hunterdon Teacher

Linda Farrell – North Hunterdon Nurse

S. Leigh Nataro – North Hunterdon Teacher

Roger Keil – North Hunterdon Teacher

Jeff Knapp – Community Member

Debbie Close – Community Member

Ray Bindus – Community Member

Steve Woods – Community Member

Ray Krauchunas - Community Member

Clifton Bennett – Community Member

Brenda Saharic – District Technology Support

Introduction:

Our current capabilities allow for multiple modes of communication between schools and within each school. Teachers are provided with voice mail and email as methods to communicate with each other, administration, and parents.

Providing teachers with portable computers that can access the network from any room where they are teaching has expanded the capabilities of email. Every classroom has at least one multimedia computer and this plan will provide for more instructional equipment to enhance each classroom setting. Presentation equipment has been identified by the District Technology Committee as an essential piece of equipment in order to use our existing technology for instructional purposes. Administrators are instructed in the efficient use of Internet research tools and email communication capabilities. Formal professional development classes are being developed to train administrators on the benefits of using messaging and scheduling tools included in our email package.

The priorities for achieving our vision include:

- Providing reliable equipment and software to be used for instructional and administrative purposes.
- Provide staff members with comprehensive training on how to use these systems.
- Evaluate hardware and software solutions on an annual basis to determine if they are meeting the needs of the district.
- Develop curriculum for every discipline that utilizes appropriate technology resources to meet the NJ Core Curriculum Content Standards.

GOALS & OBJECTIVES:

Using our past technology plans, the North Hunterdon-Voorhees Regional High School District has achieved significant progress in providing resident students the technology and information resources necessary to meet the New Jersey Core Curriculum Content Standards. Previous goals focused on providing voice and data transmission capabilities to our classrooms, on encouraging professional development and on infusing technology into our classrooms to increase student achievement. Attention to the following goals should help the North Hunterdon-Voorhees Regional High School District in achieving and maintaining a high technological standard. These goals and objectives provide an effective plan for the implementation and use of technological resources in our schools. Each of the following goals parallels the *Education Technology Plan for New Jersey* dated January 8, 2003. It was decided by our committee that developing our goals around those of the state would allow our district to move in the same direction as the New Jersey Department of Education. It is for that reason we decided to adopt the following three goals and the corresponding objectives.

1. Students, teachers and administrators will have access to educational technology in all learning environments.

Objectives:

- 1.1 Provide access to mobile computer technology that can be used in any classroom.
- 1.2 Provide classrooms with presentation equipment necessary to deliver instruction.
- 1.3 Install and maintain appropriate and updated software on computers.
- 1.4 Provide necessary maintenance and support staff for computers and related equipment.
- 1.5 Provide teachers and administrators with individual technology resources that will be used to enhance the learning environment.

2. Students will attain the educational technology and information literacy skills that will assist them in achieving the Core Curriculum Content Standards and to succeed in the workplace of the 21st century.

Objectives:

- 2.1 Develop department specific activities and projects that use technology to achieve the Core Curriculum Content Standards.
- 2.2 Provide technology representation on curriculum committees to make suggestions and facilitate technology integration.
- 2.3 Develop and implement an assessment tool to measure the level of technology proficiency of each student on an annual basis.
- 2.4 Provide students with opportunities to take advanced courses in technologically related fields.

3. Educators will attain the skills and knowledge necessary to effectively use educational technology to assist students to achieve the Core Curriculum Content Standards and complete administrative tasks.

Objectives:

- 3.1 Provide comprehensive staff development classes in the use of district hardware and software.
- 3.2 Provide online tutorials and information sources that staff can access through the district website.
- 3.3 Provide a dedicated Educational Technology Specialist for each school that will aid staff in the implementation of technology into every curriculum.
- 3.4 Provide access to professional development opportunities that promote the infusion of technology into the classroom environment.

IMPLEMENTATION STRATEGIES/ACTIVITY TABLES

The following activities and implementation strategies will allow the North Hunterdon-Voorhees Regional High School District to accomplish the preceding goals and objectives. Each of the following tables references a specific goal and objective. Through the accomplishment of the goals and objectives, the activities and implementation strategies will ensure the following:

- All students will acquire information technology literacy skills.
- All students, regardless of gender, race, national origin, special needs, or religious affiliation will have equitable access to educational technology.
- All resources will compliment and be shared with projects through federal, state and local funding.
- Innovative strategies will be supported and implemented in the instructional classroom.
- Communication will increase with parents and community through web site enhancements and other electronic communication systems.
- Partnerships with adult literacy providers will be researched and implemented to create instructional technology resources.

**NORTH HUNTERDON / VOORHEES REGIONAL SCHOOL DISTRICT TECHNOLOGY PLAN
IMPLEMENTATION STRATEGIES/ACTIVITY TABLES**

GOAL 1: Students, teachers and administrators will have access to educational technology in all learning environments.

Objective 1.1: Provide access to mobile computer labs that can be used in any classroom.

Action Plan / Major Activities	Staff	Resources	Timelines	Indicators of Success
Purchase additional mobile computer labs for each school if required.	Technology Director	District Budget	Annually	Budgeted monies spent on mobile labs.
Develop a standard online process for teachers to schedule the use of mobile computer labs.	Technology Director/ Building Technician	Time, Training	2004-2005	Use of online signup
Develop an assessment tool to determine the use, and subsequent need for additional carts.	Technology Director/Staff	Online Survey – Records of sign-ups	Annually	Survey results indicating frequent use
Incorporate the use of a mobile computer lab into every course taught to promote the idea that technology is an integral part of the class.	Teachers, Department Supervisors	Available Labs, Training	2005-2006	Lesson plans reflecting use
Provide site based training courses at each school in the use and management of the mobile computer carts.	Building Technicians, Technology Director	Time	2004-2005	Schedule of Training

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IMPLEMENTATION STRATEGIES/ACTIVITY TABLES**

GOAL 1: Students, teachers and administrators will have access to educational technology in all learning environments.

Objective 1.2: Provide classrooms with presentation equipment necessary to deliver instruction.

Action Plan / Major Activities	Staff	Resources	Timelines	Indicators of Success
Survey each academic department to determine the need for additional multimedia presentation equipment.	Technology Director	Time, Web Site	Annually	Completed Survey Results
Provide a DVD/VCR combination unit to every classroom with a mounted multimedia projector or a mounted TV to provide in-district video capability.	Technology Director/ Department Supervisor	Budget	2004-2005	Equipment Installed in rooms
Develop and use at least one Power Point presentation in every course taught.	Teachers, Department Supervisors	Time, Training, Equipment	2005-2006	Lesson Plans
Provide interactive whiteboard technology to identified areas based on a departmental survey.	Technology Director/ Department Supervisor	Budget	2004-2005	Documented successful use of interactive whiteboards

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IMPLEMENTATION STRATEGIES/ACTIVITY TABLES**

GOAL 1: Students, teachers and administrators will have access to educational technology in all learning environments.

Objective 1.3: Install and maintain appropriate and updated software.

Action Plan / Major Activities	Staff	Resources	Timelines	Indicators of Success
Determine department specific software needs on an annual basis and include those software packages on computers being deployed.	Department Supervisors, Building Technicians, Technology Director	District Technology Budget	Annually	Successful installation & use of software
Evaluate and install software updates for district wide software packages that will increase security and reliability.	District technology Staff	Staff time, Awareness of updates	Quarterly	Audits of current software releases
Develop specific timelines and procedures for purchasing and installing department software packages.	Technology Director, Department Supervisors	Time	2004-2005	Adherence to software install timelines

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GOAL 1: Students, teachers and administrators will have access to educational technology in all learning environments.

Objective 1.4: Provide necessary maintenance and support staff for computers and related equipment.

Action Plan / Major Activities	Staff	Resources	Timelines	Indicators of Success
Develop and implement an Educational Technology Support position.	Technology Director, Assistant Superintendent	Budget	2005-2006	Successful hiring for position
Incorporate a web-based trouble ticket reporting system that is available to the entire staff.	Technology Director, Department Supervisors	Budget, Training	2004-2005	Use of the trouble ticket system
Determine average repair time based on reporting system, and determine staffing needs based on the results.	Technology Director	Time	Annually	Generated Reports
Develop building based technology Q & A sessions held at regular intervals.	Technology Director, Building Technicians	Time	2004-2005	Schedule of classes

**NORTH HUNTERDON / VOORHEES REGIONAL SCHOOL DISTRICT TECHNOLOGY PLAN
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GOAL 1: Students, teachers and administrators will have access to educational technology in all learning environments.

Objective 1.5: Provide teachers and administrators with individual technology resources that will be used to enhance the learning environment.

Action Plan / Major Activities	Staff	Resources	Timelines	Indicators of Success
Continue the Teacher Laptop Program and encourage 100 % participation.	Technology Director	Budget, Training	Annually	Documented instructional use of laptops
Develop and implement a district technology grant program to provide individual departments with specific requests.	Technology Director, Department Supervisors	Time, Budget	2005-2006	Successful grant program in place
Provide reliable network infrastructures to allow internal and external communication.	Tech Director, Network Administrator	Budget, Training	Annually	Existence of reliable network
Develop and Implement a district wide disaster recovery plan to ensure data safety and reliability.	Tech Director, Network Administrator, DTC	Budget, Time	2004-2005	Complete implementation of Plan
Develop and implement a district wide security plan to protect the physical and information assets of the district.	Tech Director, Network Administrator, DTC	Budget, Time	2004-2005	Complete implementation of Plan

**NORTH HUNTERDON / VOORHEES REGIONAL SCHOOL DISTRICT TECHNOLOGY PLAN
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GOAL 2: Students will attain the educational technology and information literacy skills that will assist them in achieving the Core Curriculum Content Standards and to succeed in the workplace of the 21st century.

Objective 2.1: Develop department specific activities and projects that use technology to achieve the Core Curriculum Content Standards.

Action Plan / Major Activities	Staff	Resources	Timelines	Indicators of Success
Develop and implement on online survey to collect data from each department on specific uses of technology in every course.	Technology Staff, Departmental Supervisors	Time, Training, Personnel	2004-2005	Successful survey results from every department
Investigate partnerships with other educational institutions to form a mentorship program to develop online curricula.	Technology Director	Time	2004-2005	Successful partnerships established
Create a standard instructional template for building online tutorials integrating subject content and appropriate technology tools.	Technology Staff	Time, Training, Personnel	2005-2006	A standard template available for tutorial building.
Students will complete one computer based project for every academic course in which they are enrolled.	Teachers, Department Supervisors	Time, Equipment	2005-2006	Lesson Plans

**NORTH HUNTERDON / VOORHEES REGIONAL SCHOOL DISTRICT TECHNOLOGY PLAN
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GOAL 2: Students will attain the educational technology and information literacy skills that will assist them in achieving the Core Curriculum Content Standards and to succeed in the workplace of the 21st century.

Objective 2.2: Provide technology representation on curriculum committees to make suggestions and facilitate technology integration.

Action Plan / Major Activities	Staff	Resources	Timelines	Indicators of Success
Work with individual departments during the current curriculum revision based on the five year cycle.	Technology Director, Assistant Principals	Time	2004-2005	Meeting minutes
Schedule technology staff to attend building and district level curriculum committee meetings	Technology Director, Assistant Principals	Time	2004-2005	Meeting Minutes
Inform staff through email and the district web site about current technology infusion practices and examples	Technology Director	Time, email & web server	2004-2005	Emails, web site

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GOAL 2: Students will attain the educational technology and information literacy skills that will assist them in achieving the Core Curriculum Content Standards and to succeed in the workplace of the 21st century.

Objective 2.3: Develop and implement an assessment tool to measure the level of technology proficiency of each student on an annual basis.

Action Plan / Major Activities	Staff	Resources	Timelines	Indicators of Success
Research existing technology evaluation tools to be used for assessment of student technology proficiency.	Technology Director	Time, Budget	2004-2005	Evaluation tool chosen
Write and adopt a procedure to ensure that every student completes the assessment tool for technology proficiency.	Technology Director Department Supervisors	Time	2005-2006	Written procedure
Implement the technology assessment tool to all students on an annual basis.	Media Center Specialist, Department Supervisors	Time, Training	2005-2006, Annually	Student Completion rate
Evaluate results from student survey and identify instructional areas where skills can be strengthened.	Department Supervisors, Technology Director	Survey Results, Time	2005-2006	Curriculum changes
Determine key technology skills required for lifelong learning and future educational success.	Technology Director Department Supervisors	Time	2004-2005	Written procedure

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GOAL 2: Students will attain the educational technology and information literacy skills that will assist them in achieving the Core Curriculum Content Standards and to succeed in the workplace of the 21st century.

Objective 2.4: Provide students with opportunities to take advanced courses in technologically related fields.

Action Plan / Major Activities	Staff	Resources	Timelines	Indicators of Success
Research model technology programs that prepare students for high-tech jobs and advanced skills.	Technology Director	Time	2004-2005	List of existing programs
Plan & Implement an academic program that offers advanced technological courses to students.	Technology Director, Department Supervisors	Time	2005-2006	Courses added to Curriculum Guide
Research partnerships with post-secondary schools to provide advanced technology courses to students.	Technology Director, Assistant Superintendent	Time	2005-2006	List of available programs
Create partnerships with post-secondary schools that will allow current students to take advanced technology courses while attending high school.	Technology Director, Assistant Superintendent	Time	2006-2007	Student Enrollment Records

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GOAL 3: Educators will attain the skills and knowledge necessary to effectively use educational technology to assist students to achieve the Core Curriculum Content Standards and complete administrative tasks.

Objective 3.1: Provide comprehensive staff development classes in the use of district hardware and software.

Action Plan / Major Activities	Staff	Resources	Timelines	Indicators of Success
Survey staff to determine what specific professional development courses should be offered.	Technology Director	Time	Annually	Analyzed data from surveys
Develop a schedule of face-to-face classes that will be convenient for teachers.	Assistant Principals, Technology Director	Time, Teacher Schedules	2004-2005	Advertised schedule
Provide a structured training and orientation of all hardware when it is positioned in the district.	Technology Staff	Time	Annually	Outline of orientation sessions
Teachers will attend at least one technology related course each year.	Teachers, Department Supervisors	Time, Course Offerings	2004-2005	Professional Development Records

**NORTH HUNTERDON / VOORHEES REGIONAL SCHOOL DISTRICT TECHNOLOGY PLAN
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GOAL 3: Educators will attain the skills and knowledge necessary to effectively use educational technology to assist students to achieve the Core Curriculum Content Standards and complete administrative tasks.

Objective 3.2: Provide online tutorials and information sources that staff can access through the district website.

Action Plan / Major Activities	Staff	Resources	Timelines	Indicators of Success
Research and implement online learning programs targeted to educators.	Technology Director	Time	2004-2005	List of available resources
Offer multiple online courses for basic computer use and advanced instructional technology applications.	Technology Director, District Technology Assistant	Time, Training, Budget`	2005-2006	Advertised Online Academy
Advertise technology related courses available outside the district through the district web site.	Technology Director	Time	2004-2005	List of Course Offerings
Participate in technology articulation sessions for sending districts.	Technology Director	Time	2004-2005	Meeting Minutes

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GOAL 3: Educators will attain the skills and knowledge necessary to effectively use educational technology to assist students to achieve the Core Curriculum Content Standards and complete administrative tasks.

Objective 3.3: Provide a dedicated Educational Technology Specialist for each school that will aid staff in the implementation of technology into every curriculum.

Action Plan / Major Activities	Staff	Resources	Timelines	Indicators of Success
Research existing models of educational technology support at comparable high schools.	Technology Director	Time	2004-2005	List of Positions and Responsibility
Develop a job description for the Educational Technology Specialist.	Technology Director, Assistant Principals	Time	2004-2005	Job Description
Develop a proposal to the Board of Education to hire a person for the position based on the job description.	Technology Director, Assistant Principals	Time, Budget	2005-2006	Proposal made, presented, and accepted, budget established
Hire an educator to fill the position of Educational Technology Specialist.	BOE, Technology Director	Time, Budget	2005-2006	Position staffed

**NORTH HUNTERDON / VOORHEES REGIONAL SCHOOL DISTRICT TECHNOLOGY PLAN
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GOAL 3: Educators will attain the skills and knowledge necessary to effectively use educational technology to assist students to achieve the Core Curriculum Content Standards and complete administrative tasks.

Objective 3.4: Provide access to professional development opportunities that promote the infusion of technology into the classroom environment.

Action Plan / Major Activities	Staff	Resources	Timelines	Indicators of Success
Inform staff of current educational technology trends and research.	Technology Director	Time, Information	2004-2005	Web Postings, Emails
Develop advanced online tutorials that can be accessed from the district web site to train staff in technology infusion techniques and methods	Technology Director	Time, Web Server	2005-2006	Online Enrollment
Share ideas and procedures from district staff on how technology is being integrated into courses at the district.	Teachers, Technology Director	Time, Information	2004-2005	Web postings, Emails
Provide half-day workshops to teachers that address instructional technology integration techniques.	Technology Director, Assistant Superintendent	Time, Schedule	2005-2006	Schedule of Workshops

PROFESSIONAL DEVELOPMENT:

In order to provide a comprehensive professional development program to the North Hunterdon-Voorhees Regional High School staff, the Director of Technology recommends specific professional development methods for the infusion of technology into every Core Curriculum Content Area. These decisions are influenced through current educational trends and evaluations of existing programs. Research of current literature relating to technology based professional development is reviewed on a regular basis to determine if similar programs would fit into our district. Teacher laptop initiatives, online learning, and process-based learning are all examples of programs that were initiated after thorough research and evaluation of the current literature. Research based surveys administered locally to staff members also provides a solid research foundation to determine what courses should be offered each year.

Below is a list of courses currently offered at the North Hunterdon-Voorhees Regional High School District. This list continues to evolve as needs change at the district. Teachers can register for classes directly from the district web site and classes are also available for sending district teachers.

The following are examples of courses taught at the district:

- **New Teacher Training Program** – This program meets monthly to develop various skills including technological skills that can be used in the classroom. All new staff members in the district are required to participate in this course.
- **Use of the Network** – This course provides information on how to access and utilize the network resources within the district. This course is offered at the beginning of each school year for new and existing staff.
- **Presentation Software in the Classroom** – This course focuses on using presentation software to deliver instruction necessary to meet Core Curriculum Content Standards.
- **Using Databases for Classroom Administration** – This course covers collecting, analyzing, and reporting on student data in the classroom environment. Developing custom grade books, analyzing test scores, and collection procedures will be covered.

- **Teacher Website Development** – This course covers the basics of web development for teachers to create and publish classroom information on the district website. Teachers will start the web site during the course and will leave the course with a basic web site.
- **Advanced Web Site Authoring** – This course covers more in-depth web development topics such as data collection using forms, accessibility features, and advanced design techniques.
- **Using Spreadsheets for Student Data Management** – This course will teach the skills necessary to develop a teacher grade book using spreadsheet software.

The key to successful implementation of this technology plan will be the availability of ongoing professional development opportunities for teachers, staff, and administrators. The District Technology Committee and the District Professional Development Committee will work together to provide relevant courses to staff members.

Periodic surveys of our professional staff will be conducted through the District Professional Development Committee to ascertain the current level of expertise and general need among staff members in course offerings to further utilize technology in instruction. As a result of previous surveys, we have determined that our staff is continually growing technologically. While there are still some staff members that are in the beginning stages of their learning, most have taken advantage of various training sessions and are incorporating technology into their instruction at some level. The district estimates that 60% of our staff members are proficient, 25% above proficient, and 15% below proficient in regards to technology use and integration. This is demonstrated by the amount of technology that is used to deliver instruction and classroom assignments that include technological components.

The greatest barrier to increased professional development has been identified as time. Teachers are extremely busy with increased student workloads, after school sports and activities, and other administrative responsibilities. Most teachers find it difficult at best to schedule time after school dedicated to professional development. The idea of offering full-day professional development courses where teachers are released from teaching duties has been used, but this

method cannot happen on a regular basis because teachers should be in the classroom to provide the most benefit to students. For these reasons, the North Hunterdon-Voorhees Regional High School District is piloting and researching various on-line professional development courses. This would allow teachers to complete assignments and review course content on their own time. It would also allow them to focus on the specific skills that they have identified as needing improvement. The development of such courses is the biggest hurdle, but will eventually become the preferred model for professional educators.

Teachers and administrators in the district are currently participating in a Laptop Program that provides a laptop computer to every teacher or administrator that requests one. Currently 87% of eligible staff members have requested and received laptops over the last two years. All of the laptops have wireless network access to enable teachers to access the network from anywhere in the buildings. This initiative has allowed teachers and administrators to become immersed in technology. This immersion allows teachers and administrators to learn about technology at their own pace and at any time. Through this initiative, professional development relating to technology is an on-going daily occurrence. It also allows the teacher to have access to a computer they are familiar with during instructional time. Administrators in the district have all participated in the NJ ELITE program to increase the level of knowledge regarding technology infusion in the classroom. This coupled with the immersion theory continues to increase the level of understanding that administrators have for technology. Courses are scheduled to train supervisors and administrators on specific software packages, such as student information systems, technology trouble reporting software, and evaluation software.

One of the three current district wide goals is the infusion of technology into every curriculum area. To monitor and evaluate the progress of this goal, each department supervisor develops an annual report highlighting the technology activities that are occurring in every discipline. This information is submitted to the building Principal, who monitors and evaluates these activities in conjunction with

district office personnel. Through this method every Core Content Curriculum Area will have documented technology activities occurring.

A state of the art training facility located in the District Office has provided a means to deliver professional development in a professional atmosphere. This facility is dedicated to staff development and is used for instruction related to technology and other professional tasks. Other school districts, local businesses, and community agencies use the facility to conduct professional development programs.

DISASTER RECOVERY PROCEDURES:

In order to provide a comprehensive Information Technology system to the North Hunterdon-Voorhees Regional High School District, a well planned disaster recovery plan will be formulated and disseminated to all relevant individuals. This plan will address backup procedures, data loss procedures, and annual clean-up procedures for all NHV computer users. This plan will be formulated by the District Technology Committee during the 2004-2005 school year and will become a component of all future technology plans.

SECURITY PROCEDURES:

In order to provide a safe and reliable Information Technology system to the North Hunterdon-Voorhees Regional High School District, a comprehensive security plan will be developed to address all network related security concerns in the district. This plan will address Network Operating System security, Firewall policies, Intrusion Detection Systems, virus control systems, and SPAM email issues. This plan will be developed by the District Technology Committee during the 2004-2005 school year to address these security concerns and will become a component of all future technology plans.

TECHNOLOGY INVENTORY:

NJDOE School Technology Survey 2003 – See Appendix A

Technology Inventory Narrative:

- The North Hunterdon-Voorhees Regional High School District currently maintains 900 personal computers in two high schools. These computers are connected to a Windows 2000 based network that provides Internet access, file sharing, and printer services. All users have a dedicated account that provides them with storage space on the network. This provides a secure area where users can store information and retrieve it from anywhere on the network. The network connections are 100Mbps to each desktop machine. These desktops then connect to one of the 22 Individual Distribution Frames (IDFs) that are connected to the Main Distribution Frame (MDF) through a gigabit fiber link. The MDF uses a routing switch to provide gigabit speeds while allowing multiple network subnets to communicate. With the addition of laptops and wireless network access points, teachers now have network access at 11 Mbps from anywhere in the buildings. Any teacher requesting a laptop has been provided one by the beginning of the 2003-2004 school year. Mobile laptop carts are also utilized to allow a computer lab to be brought into any classroom. The district currently has (2) 15 unit carts at each school that can be signed out by teachers for use in the classroom. An additional cart with 15 units was purchased specifically for the new Science wing at North Hunterdon. This laptop cart was purchased in lieu of six desktop machines for each room. Multimedia projectors have been provided for every other classroom. According to department request, some projectors are permanently mounted in rooms, while others remain as mobile units. This provides the consistency needed in some areas, as well as the flexibility needed in others.

- Currently our school participates in the Microsoft School Agreement and uses the Microsoft Office Professional suite of products as our core software package. Other software packages are installed throughout the school in specialized areas. These packages include but are not limited to Adobe Acrobat, Photoshop, Pagemaker, Quark Express, TurboCad, Orchestra Plus, Visual Studio, Turbo C++, Geometry Sketchpad, and Data Studio. Our district currently uses CornerPost Software Chaperon on a Microsoft ISA server as our filtering package. Microsoft Outlook is our email client and many staff members take advantage of the web access component this platform offers. A Citrix server at each school provides computing for each business lab. Windows based terminals are used to connect each lab to the “thin-client” environment. This environment will be expanded to allow access to specific applications from anywhere in the district.
- The Director of Technology is responsible for scheduling and prioritizing maintenance requests. Each school employs a technician to provide computer maintenance on site. The district currently subscribes to a web based reporting system so that department supervisors can easily report problems with equipment in their area. A network administrator travels between both schools to maintain and upgrade services provided through the network. A database administrator has been hired to oversee the central office student information system and the accounting/human resource databases. A district level assistant maintains our current web site and manages the current phone system. These employees provide maintenance, support and technical assistance to anyone in the district.
- The district currently receives Internet access from a dedicated 3 Mbps ATM circuit provided to the North Hunterdon facility. Voorhees High School receives Internet access through this line as well via the WAN link between the schools.
- Any additional construction will include standard network connections and adequate electrical capacity. Our current electrical capacity is adequate

and is upgraded as needed to provide power to computers and related equipment.

- Electrical capacity, mounting brackets, and associated cabling has been provided to classrooms with projection devices.

Technology Obsolescence:

In order to provide all staff and students with current educational technology, the North Hunterdon-Voorhees Regional High School District will utilize the following criteria to determine if computers or other technology related equipment should be replaced as a result of obsolescence.

- The expected useful life for laptop and desktop computers will be four years. This is the anticipated time frame that a purchased computer can be expected to perform utilizing current software.
- While this is an expected life to be used for budgetary purposes, every computer will be evaluated on an annual basis to determine if it can continue to function as a viable piece of equipment and run current software used throughout the district. With this evaluation it is possible that computers may need to be replaced after three years of service, but may continue to function appropriately up to five years of service.
- The determination of obsolescence for other technological devices, such as printers, scanners, and projectors will be determined on an annual basis. The same criteria will be applied to determine if the equipment still provides for current educational technology needs.

SPENDING PLAN:

The following table provides a broad based budget for technology purchases during the 2004-2007 school years. The specific purchases from each budget line item will be determined by the immediate needs of the district. Priorities and immediate needs will be discussed at the District Technology Committee. All services, materials, and other resources will be purchased using the funds allocated in one of the following line items. All budget amounts are proposed recommendations and are subject to Board of Education approval for each fiscal year. These budget projections also assume that each school has added an Educational Technology Specialist and the district has hired an additional technician. Current and projected salaries have been used for that specific line item.

Technology Budget Projections 2004-2007				
	2004-2005	2005-2006	2006-2007	
Technology Support Salaries	\$ 465,000.00	\$ 485,844.00	\$ 509,342.00	
Technological Equipment Purchases	\$ 53,550.00	\$ 55,156.50	\$ 56,811.20	
Software Licenses	\$ 114,404.00	\$ 117,836.12	\$ 121,371.20	
Technology Equipment Lease Payments	\$ 382,000.00	\$ 393,460.00	\$ 405,263.80	
Student/Budget/Personnel Record Keeping Software	\$ 101,673.00	\$ 104,723.19	\$ 107,864.89	
Annual Recurring Technology Supplies	\$ 111,666.00	\$ 115,015.98	\$ 118,466.46	
Total Technology Expenditures	\$ 1,228,293.00	\$ 1,272,035.79	\$ 1,319,119.54	
Anticipated Annual Budget	\$45,000,000.00	\$48,600,000.00	\$52,488,000.00	
% of Annual Budget spent on Technology	2.73%	2.62%	2.51%	

The above budget will provide for our software license needs and lease costs to allow the district to replace obsolete computers. It also includes software fees for the current information systems. The budget numbers presented allow for a three percent growth in every area except salaries. The salaries will be determined by current and future negotiation proceedings.

The North Hunterdon-Voorhees Regional High School District participates in the federal E-rate program. Our reimbursement rate for the 2004-2005 school year was calculated at 29%. Communication costs and Internet access have been applied for. This discount will represent a savings of \$51,000.00 for the 2004-2005 school year. At the current time, the State of New Jersey has not allocated any state aid specifically to technology. The Distance Learning Network Aid that was provided to school districts has been included in the consolidated aid given to all school districts. The business department has kept this money allocated to the technology department at the North Hunterdon-Voorhees Regional High School District. All other funds used to ensure student access to technology and teacher preparation for technology infusion will come from local funds. Any future grants that are made available through the Department of Education, that our district would be eligible for, will be considered and applied for.

EVALUATION PLAN:

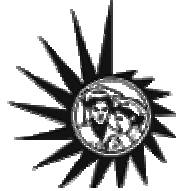
Evaluation and assessment are vital components of any project. With changes taking place daily in the area of technology, it is a difficult task to adequately review progress. At the same time, and due to these continual advancements, it is perhaps even more important that we have a well thought out plan for evaluation.

The District Technology Committee will be the primary agency to oversee and evaluate the progress of this plan within our District. Staff from North Hunterdon High School, Voorhees High School, and community members will be represented on this council. Their recommendations will be submitted to the Board of Education Technology Committee and then to the entire BOE for their approval.

Assessment/Evaluation will occur as follows:

- Evaluate the progress towards the stated goals found within this District Technology Plan annually.
- Review the District Technology Plan annually and revise components to meet current district needs. New and revised goals and objectives will evolve from this process. These revisions will be approved as part of the yearly assessment process.
- Communicate regularly with administrators, teachers, parents, and board members the progress towards fulfillment of goals and plans for the future.

Appendix B



North Hunterdon-Voorhees Regional High School District

**Educational Continuity Plan
for**

Information Technology

Date Created: *June 20, 2005*
Date Revised: *August 31, 2005*

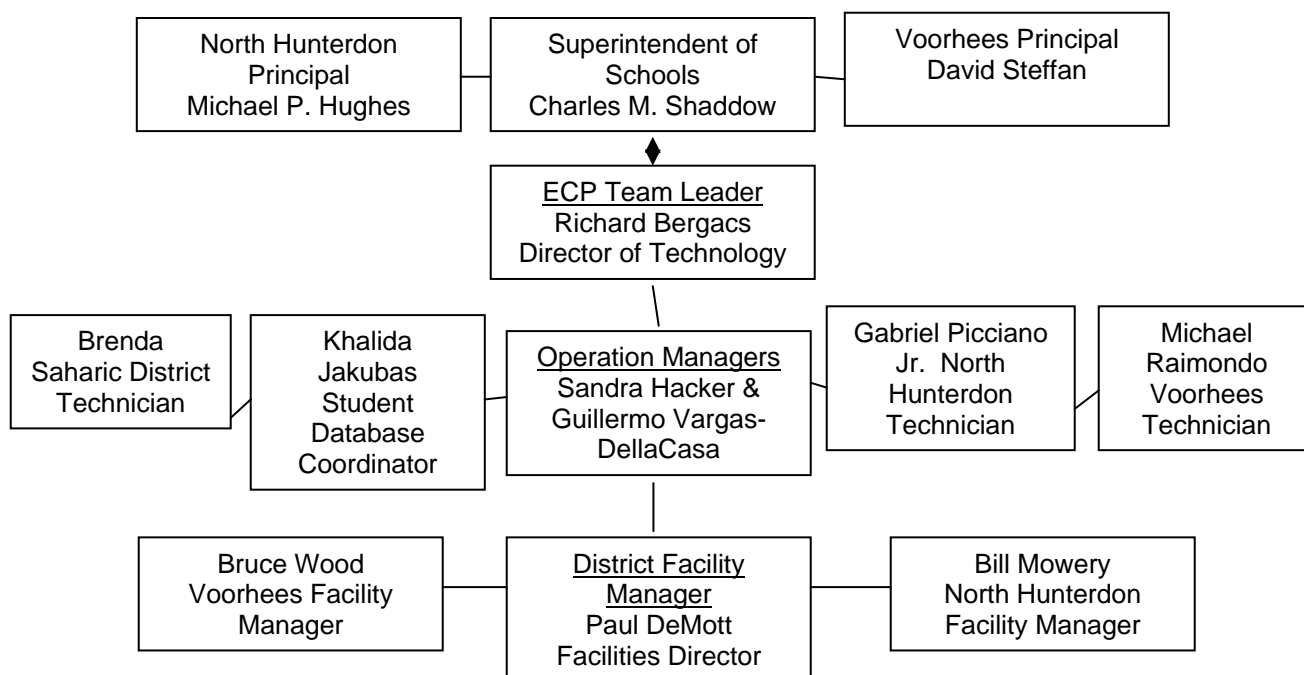
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Emergency Management Team

If a major incident/disaster occurs, the Emergency Management Team (EMT) will be convened and the situation assessed. The format of the EMT is illustrated in the following diagram:

This Educational Continuity Plan (ECP) will be activated by the ECP Team Leader, as identified in the plan, when he/she receives instructions from the Operations Manager on the Emergency Management Team (EMT).



When an emergency has been declared, the ECP Team Leader will coordinate the EMT for the duration of the emergency. All ad hoc requests for decisions, assistance with facilities, acquiring outside services, etc. will be directed by the ECP Team Leader.

It will be the ECP Team Leader's responsibility to contact all team members or their alternates and ensure that they convene at the Emergency Operations Center as defined in this plan.

The ECP Team Leader will be responsible for the successful implementation of this plan.

Stakeholder Communication:

Board of Education – This ECP will be presented to the Board of Education for review and adoption as an appendix of the existing District Technology Plan. The ECP will be reviewed each year and if major revisions are made presented for BOE approval at that time.

Technology Staff - This ECP will be communicated to the technology department staff annually during a staff meeting. This will serve to inform and remind staff of specific expectations in the event that the plan is executed.

Senior Administration – The ECP will be presented to the senior level administration at an administrative team meeting. This will serve to inform senior level administration of the processes that will take place during the execution of the plan, and allow them to make recommendations based on what they see as primary needs during an event.

Community & Staff – The ECP will be reviewed and revised based on recommendations from the District Technology Committee. This will allow for representation from both teaching staff and community members when determining revisions and/or suggestions for improvement.

ECP Team Contacts

Richard Bergacs
Director of Technology
908-713-4118
rbergacs@nhvweb.net

Sandra Hacker
Network Administrator
908-713-4199 x6081
shacker@nhvweb.net

Khalida Jakubas
Student Database Coordinator
908-713-4686
kjakubas@nhvweb.net

Guillermo Vargas-Dellacasa
Network Infrastructure Engineer
908-713-4119 x5128
Gvargas-dellacasa@nhvweb.net

All Additional Contacts will be developed and published to the individual team members who will be contacting individuals.

Emergency Operations Center

Primary Site

North Hunterdon-Voorhees Regional High School District Technology Office

The Office of the Technology Director located at 1445 State Route 31 Annandale, NJ will be used as the primary site of the Emergency Operations Center. This site is equipped with a redundant Internet connection through the local cable TV company and redundant POTS phone lines for outside communication.

Alternate Site

North Hunterdon or Voorhees High School

In the event that the primary site is not available, the actual school site not affected by the emergency will be designated through the ECP team leader as the Emergency Operations Center.

- *If the emergency has affected North Hunterdon High School, the Emergency Operations Center will be located at Voorhees High School in the MDF/Server room located at 256 Route 513 Glen Gardner NJ.*
- *If the emergency has affected Voorhees High School, the Emergency Operations Center will be located at North Hunterdon High School in the MDF/Server room located at 1445 State Route 31 Annandale, NJ.*

Scope and Objectives

The scope of this Educational Continuity Plan is to provide or restore information technology services to the educational environment. As technology continues to grow and evolve in our educational environment, students, teachers, and administrators rely on our technology infrastructure for daily activities. This plan will address the components necessary to allow for the continuation of these services in the event of a disaster or emergency situation.

- 1. Provide immediate access to student and staff files located on the networked servers.**
- 2. Provide continuous access to the Internet from any network connected computer.**
- 3. Provide reliable communication tools including email and phone service.**
- 4. Provide immediate access to district wide database systems.**

Types of Disaster

The purpose of this plan is to protect data and information services from the potential impact of:

Fire

- The potential for a fire is the most prevalent natural threat that could damage or disable network and information services. This type of disaster would have the most impact in the Main Distribution Frame (MDF) of each building.

Flood

- The threat of a naturally occurring flood is a remote possibility at either school, but leaking roofs, burst water pipes or other mechanical failures could produce an isolated flood area that could cause network and information access disruption.

Internal Sabotage

- This is the most prominent unnatural disaster that could cause loss of information and/or denial of network services. Some prevention will be addressed in this plan, but further steps will be addressed through a separate security plan.

Power Loss

- Power loss in a rural area such as this is a common occurrence and the need for redundant power in key areas will be addressed.

Terrorist or Other combatant Attack

- While this type of emergency is the least likely, the mention of such an incident will allow for the planning of information services recovery.

Objective 1 - Student & Staff File Storage

Description of Function

All students and staff members are provided a network account to access the NHV network. This account provides a dedicated storage area on a network server referred to as the "Home" folder, for each individual to save electronic files and information. In addition to the personal storage area on the network, a shared file system is in place for staff and students to share information. This system is referred to as the "Workgroup" folder at each school.

In addition to data storage, each server in each school performs critical 'domain' or network functions. Some of these functions must be restored prior to restoring the access to personal files. The order of server restoration and their subsequent functions must be determined and performed by the Operations Manager in accordance with the engineering requirements of the Network Operating System.

Prevention Measures

Record of data storage and function according to server:

Server Name: NHHS1.nhhs.nhvadm.nhvweb.net 172.16.3.1 Location: North
Function: Windows 2003 DC, DHCP, DNS, WINS, DELL EMC attached SAN , FSMO Role holder for RID master, PDC emulator, Symantec System Center Server
Data: student home folders for NHHS, NHHS Workgroup folder, Paw Prints, Yearbook, Northern Lights Magazine, backup folder, Admin Folder

Server Name: NHHS2.nhhs.nhvadm.nhvweb.net 172.16.3.2 Location: North
Function: Windows 2003 DC, DHCP, DNS, Print Server for 16 subnet, FSMO Role holder Infrastructure Master, Symantec Server, Terminal Server Licensing
Data: Kurzweil Program and Files

Server Name: VHS1.vhs.nhvadm.nhvweb.net 172.18.3.1 Location: Voorhees
Function: Windows 2003 DC, DHCP, DNS, WINS, Dell EMC attached SAN, FSMO Role Holder for RID master, PDC emulator, Symantec Server
Data: student home folders for VHS, VHS Workgroup folder, Viking View, Yearbook, Admin Folder

Server Name: VHS2.vhs.nhvadm.nhvweb.net 172.18.3.2 Location: Voorhees
Function: Windows 2003 DC, DHCP, DNS, Print Server for 18 subnet, FSMO Role holder Infrastructure Master, Symantec Server, Terminal Server Licensing

Server Name: NHVADMIN.nhvadm.nhvweb.net 172.30.3.1 Location: North
Function: Windows 2003 DC, DHCP, DNS, Dell EMC attached SAN, Print Server for NH Guidance and DTL, FSMO Role holder for Operations Master of the Forest, Symantec Server
Data: Administrative, District, and teacher home folders, Admintools, local backup, CafeSBanks, CST, District Workgroup, Exception List, Facilities, Gradequick, Health Dept. Share, North CST IEP, Nurse Share, Payroll Information, PayrollHR, SPMS, Student Activities, Transportation

Server Name: NHVADMIN1.nhvadm.nhvweb.net 172.30.3.1 Location: North
Function: Windows 2003 DC, DHCP, DNS, Veritas Backup Exec Server, Symantec System Center Server, Print Server for : Administration, Athletics, CST, Copyroom, Attendance, Guidance, FSMO Role holder PDC Emulator nhvadm domain, Enterprise Certificate Authority

Server Name: NHVADMIN2.nhvadm.nhvweb.net 172.29.3.1 Location: Voorhees
Function: Windows 2003 DC, DHCP, DNS, Dell EMC attached SAN, Print server for; Guidance,

Athletics, Main Office, Symantec Server, FSMO Role Holder alternate for any role on nhvadm domain.

Data: VHS administrative Home folders, teacher home folders, Athletics, Backups, Guidance Workgroup, Nurse-trainer, Student Attendance, VMathDept, VScienceDept, AdminV

Server Name: NHVADMIN3.nhvadm.nhvweb.net 172.29.3.2 Location: Voorhees
Function: Windows 2003 DC, DHCP, DNS, WINS, Symantec System Center server, Veritas Backupexec server, FSMO Role holder Infrastructure Master nhvadm domain.

Backup locations:

User Data

North

Both NHHS1 and NHVADMIN have full backups once a week traveling cross-WAN to Voorhees. This eliminates a single point of failure for North data. These backups are performed via Veritas Backup Exec, using a SAN based backup-to-disk located on the EMC attached to VHS1 and NHVADMIN2. Differential Backups are made of data throughout the week to the same SAN. The recovery point in time would be at the most, 12-36 hours prior to the disaster.

Voorhees

Both VHS1 and NHVADMIN2 have full backups once a week traveling cross-WAN to North. This eliminates a single point of failure for Voorhees data. These backups are performed via Veritas BackupExec, using a SAN based backup –to-disk location on the EMC attached to NHHS1 and NHVADMIN. Differential Backups are made of data throughout the week to the same SAN. The recovery point in time would be at the most, 12 to 36 hours prior to the disaster.

A full local backup is also made each week in case of disaster at either site, allowing for restoration of data locally if need be until the cross-WAN backups can be rescheduled and run.

System State Recovery

Automated Recovery System disks (ASRs) and Emergency Repair Disks (ERDs) which in their making, also backup the System State Data, are remade each time a series of updates or hardware/software changes are performed on a server. This must be done in this way to reflect the current state of the system in case of a system failure. ERDs and ASRs are required as a disaster recovery tool for Windows servers.

Location of the following documents, hardware information, and data must be known by the ECP Team Leader and Operations Manager:

All Server Operating System and Application Software, Licenses, Technical Support Documents, Service Tags/Express Service Codes, ASRs, ERDs, System State Data, Documented Recovery Procedures.

Currently, this software and these documents reside in the Operation Managers Office, the North server room, the Voorhees server room, and in the ECP Team Leader's office.

Power Loss:

Each Active Directory Site is equipped with an Uninterruptible Power Supply Tower. Each server and each router, switch and firewall is protected by their respective site UPS Tower. The ECP Team Leader and the Operations Manager are paged on any critical UPS event. In the event of a power loss, the UPS Tower supplies power from battery to all attached network servers and appliances for a twenty minute period. After twenty minutes of continuous power outage, the

servers are shut down 'gracefully'. This protects services and operating systems from being irreparably corrupted from a 'hard' or 'dirty' shutdown.

Recovery Procedure:

The Recovery Procedure in its first phase; assessment of structural, hardware, cabling, depends on the cooperation of the Facilities Department with the Technology Department. An immediate meeting of the Facilities Department along with the Technology Department should be set up at the EOC upon discovery of a disaster. The ECP Team Leader should work in conjunction with the Facilities Director in the coordination of the meeting. The ECP Team Leader and the Operation Manager will communicate the meeting and time to the rest of the Technology Department and the EMT. The disaster will cause one of the following effects: Total Loss, Partial Loss, Minimal Loss.

Total Loss

In case of total hardware loss in either site, the Operations Manager will notify the ECP team leader of all needed hardware as soon as an assessment of the damage to the site can be made. It is understood that access to the site in question to make the decision of 'total loss' will probably be delayed until the site is deemed safe to enter by Emergency Response Personnel, i.e. the Fire Department, Police. An assessment of the scope of damage beyond the actual network hardware must be made by the Technology Department in conjunction with Facilities department, and a replacement site will be determined by the EMT if a rebuild of the original site is impossible. The decision and location of the rebuild site will be communicated to all Technology Department ECP Team Leader.

An immediate assessment of the existing Active Directory structure must be made by the Operations Manager in preparation for a seize of FSMO roles by the remaining Domain Controllers, which will restore Active Directory replication and function in the parent domain. The child domains, which authenticate North and Voorhees students, must be rebuilt **after** the proper function of the parent domain is restored.

It is possible that a restructuring of the Active Directory Forest would be in order after a total loss disaster of one of the sites. The existing child domain could be expanded to incorporate both schools for the sake of lessening the recovery time. In the case of one site loss, the other site's child domain should not have been affected beyond its dependency on the parent domain for its DNS and Replication Site specific functions.

All staff (parent domain) whose accounts are affected by the total hardware loss of one site will be able to work offline on their laptops. Offline files would have been synchronized to the latest point in time the user logged off prior to the disaster. All staff and students who do not possess a district issued laptop would be afforded an immediate temporary account to allow network access via the parent domain and/or the undamaged child domain. Strict instructions on how to use the temporary accounts would be determined by the OM and ECP TL and communicated by the ECP Team Leader to all staff.

A timeline for new hardware acquisition for rebuild of the lost site would be provided by the ECP team leader. Once received, a rebuild of the lost network servers and their services would take place, performed by the Operations Manager and initiating help from the Technical Support Staff and Facilities Staff in installation of racks, server hardware, and cabling to the rebuild site. An estimated time of completion for this first phase of recovery would be made by the OM to the ECP Team Leader.

The second phase of recovery would be to restore the correct function of Active Directory Services, and all services provided in the support of the directory as listed above, per server. System state restoration to the point of the last backup before the disaster would be performed on the rebuilt servers. Testing of the network services and Active Directory would be done on each server as it was brought up, and finally tested as a whole. Any errors on the servers or in services would be analyzed by the Operations Manager, and appropriate measures would be taken to eliminate any errors that would be fatal to the proper function of Active Directory Services. The second phase of recovery may well illicit the help of Microsoft Support Services by the Operations Manager.

The third phase of the recovery would be to restore from backup all student and staff data to the newly built servers and provide proper network access to this data by Group Policy Settings. This phase, in an estimate based on current backup time, would take approximately 12 hours maximum to restore all data from every home folder of one site. If an import of all student accounts and their settings for one site is needed into a rebuilt or existing child domain, it takes approximately 4 hours for 1500 students. It would be advised to restore all systems/services and data before importing user accounts. A total loss would reasonably be expected to take a week or more for recovery, with weeks being a more realistic time period.

Partial Loss

Partial Loss could be due to any disaster, and would not incorporate the need to relocate the site in question, although a delay in access to the site for evaluation of the scope of damage is probable. An immediate meeting of the Facilities Department and Technology Department should ensue at the EOC to discuss evaluation of the site. Upon entrance to the site for evaluation, the technician along with the OM, ECP Team Leader and Facilities staff should determine the extent of the Partial Loss disaster. This would include probable hardware damage and/or loss in the server room and/or cabling and switches within the building. In case of flood, all existing equipment not damaged by the onset of the disaster should be covered immediately in order to protect the assets from further damage by water.

The location of the damage and the asset/service tags should be communicated to the ECP TL as soon as possible so that ordering of replacement parts can be made.

An assessment of network damage on the data communications level will be made by the OM and building technician through software and service testing and communication with staff as far as their ability to access network resources. When all downed services are determined, a list will be compiled and placed in order of priority towards a restore of network services by the Operations Manager. This list of service restore tasks will be communicated to the ECP Team Leader and a timeline will be established for expected restoration of all network services. A full restore of all student files, including the workgroup folder, would include the allowance of delivery of a damaged child domain controller, the 4hour re-introduction of a new server to the network, the allowance for troubleshooting any network issues the new server may encounter, and the maximum time of approximately 6 hours of data restoration from backup. Partial Loss would encompass more than one day but less than one week for restoration of data and/or services.

Minimal Loss

Minimal Loss could be due to any disaster, but would not incorporate the need to relocate the site in question, replace any cabling, switches, or routers. All domains and authentication would be working, but there may be data loss, print server loss, server service loss (such as DNS, DHCP, or the loss of an FSMO role), or drive mapping failure. This type of disaster has a minimal impact on network operations, and can be evaluated in a relatively short time with a minimum of staff. It would be up to the discretion of the Operations Manager and the ECP Team Leader to determine if a meeting was necessary at the EOC, or if simple communications between these two entities and the Technicians was all that was needed.

In such a case, as the Technology Department is all that is needed, the timeline for restoration of network operations is very short, with time needed to restore services being within a working day. Any and all equipment damaged or stolen during a minimal loss disaster would be inventoried by the technicians and the OM, and communicated to the ECP Team Leader. The ECP TL would then order replacement machines and a time for replacements would be given. In the case of a print server malfunction, it would be the determination of the OM and the technicians, as technicians are responsible for printing on the network, as to when services would be restored and this would be communicated to the ECP team leader. Any network operations failures reported to the OM, will be evaluated by the OM, and a restoration time will be communicated to the ECP Team Leader. In short, a minimal loss network disaster would be handled internally by the Technology Department, and would not cause loss of any critical network service estimated to be for more than 8 hours.

Objective 2 – Continuous Internet Access

Description of Function

Every computer within the NHV district is connected to the network to allow immediate Internet access. This access is essential to the retrieval of information used in classrooms for instruction and for research purposes by staff and students. All Internet requests are forwarded through a proxy server running Microsoft ISA Server 2000 that resides at each individual school. This proxy server is used to provide filtering for inappropriate content as required by the Children's Internet Protection Act (CIPA) federal requirements for public schools. The software package used for filtering is Chaperon developed by Cornerpost Software. Once the proxy server determines that the web request is appropriate, the request is then sent to the firewall where a separate set of criteria is applied limiting requests based on TCP/IP ports. The firewall is a Fortinet FortiGate 400A firewall that has both a primary and failover unit running to provide a failover unit for hardware redundancy. The firewall then forwards appropriate requests to the Cisco 3600 Internet router provided by Sprint. This router then utilizes two ATM circuits totaling 3 Mbps bandwidth for Internet access across the district.

Preventive Measures

Currently each school uses a separate proxy server for each building to gain Internet access. If this proxy server were destroyed or became inoperative, group policies could be used to change proxy server settings allowing all Internet traffic to flow through one proxy server. This provides hardware redundancy with minimal intervention.

The Fortinet firewall is comprised of two units operating in Active-Active mode, so that if one unit fails, the other immediately picks up the network load. A notification is then emailed to the Technology Director that the unit has failed over allowing the hardware replacement procedure to begin. In the event of an equipment failure, the hardware has a Next Business Day warranty. A backup of the running-config is created whenever a change is made to the configuration. This backup is stored locally in the Technology Director's office and also in the AdminTools shared folder on NHVADMIN.

The Cisco 3600 Internet router is provided by Sprint as a part of the ISP contract. Sprint guarantees a two hour response time and a 6 hour repair time for this and all related equipment necessary to correct an Internet outage. The running-config of this router is backed up by Sprint on a weekly basis, or whenever changes are made. This config is also backed up locally to the Technology Director's office.

Recovery Procedures

In the event of a disaster causing the malfunction of either proxy server, group policies would be utilized to redirect Internet access through the other school's proxy server. If hardware is necessary for recovery, this would be determined by the OM and ordered by the ECP team leader. Once hardware was procured, the operating system, ISA software, and Chaperon software would all be loaded to allow for normal usage to resume.

In the event of a disaster that causes the loss of the primary firewall, the secondary firewall will be activated and Internet access should appear seamless. The appropriate replacement hardware will be ordered and replaced with one business day of the event. In the event of a disaster that destroys both the primary and secondary firewall, the appropriate hardware would be ordered and the firewall structure would be rebuilt using the backup of the running-config. This rebuilding process should be complete within 24 hours of receiving the replacement hardware. The ECP team leader will be responsible for obtaining the replacement hardware and coordinating consultants to complete configuration recovery from the backup config file.

In the event that the Cisco 3600 Internet router suffers damage, the ECP team leader will immediately notify Sprint Advanced Network Services to begin the process of hardware replacement. This process should not take longer than 6 hours based on the current ISP contract.

Objective 3 – Reliable Communication Tools

Description of Function

Each staff member is provided with a district email address and mailbox storage. North Hunterdon-Voorhees RHSD hosts its own mail server. The district runs Microsoft Exchange and Outlook Web Access which provide email internally on the network and externally from the internet. Email is a critical business communication tool necessary for every day operations of the district.

Each staff member is also provided with a voice mail box located on the building based VoIP system. This is an essential communication tool to allow parents and teachers to communicate. Phones are provided in all classrooms, office areas, and large room areas. The 3Com NBX VoIP telephone system is located in the server room at each high school.

Prevention Measures

The Exchange Server (here on referred to as the 'mail server') has three critical types of data which must be backed up for disaster recovery; The Information Store, the Inetsrv (IIS) file, and the actual user mailboxes. Veritas BackupExec has a special 'agent' which allows for individual mailbox backup and restore, and also allows proper backup and recovery of the Information Store. The Inetsrv file is a normal file which needs no special agent, but must be backed up immediately following an Information Store backup to allow for proper recovery. Full mail server backups are scheduled once a week, with differential mailbox data being performed every 2 days. The most an individual can lose would be 48 hours of mailbox data, and this is if the individual was NOT utilizing 'cached' mode, which would allow 100% recovery of all mailbox data. Incoming messages would be held in a queue for approximately 48 hours before bouncing back to the sender.

The use of Office 2003 has introduced Exchange 'cached' mode, which in the event of a mail server shutdown, allows all users to continue viewing their mail and composing new messages, or calendaring, until the mail server comes back online and the client can synchronize its mailbox with the server.

The 3Com NBX VoIP telephone system is configured to allow access from IP phones through out each building. The running-config of each phone system is backed up to the Technology Director's office on a weekly basis or whenever changes are made to the configuration.

Recovery Procedure*

The disaster will cause one of the following effects and will be determined to be by the Operations Manager in communication with the ECP Team Leader; Total Loss, Partial Loss, Minimal Loss. The ECP Team Leader will determine the need to notify the EMT.

Email Services

Total Loss

In the case of total loss of the mail server, which resides in the North Hunterdon server room, the server itself must be replaced. The Operations Manager will notify the ECP Team Leader of the need to order another server. Total loss will mean complete loss of email use for all staff until the mail server itself is replaced, the Operating System is re-installed, Exchange is re-installed, and the Mailbox Store, the Inetsrve file is restored, and the individual mailboxes are restored from backup. Exchange 'cached mode' will allow for the continuous review of pre-disaster mailbox contents using the Outlook client, but an interim client must be used for all real-time internal or external email communications. Interim use of an outside internet mail client such as yahoo mail, or hotmail are choices. The choice of interim mail client should be chosen and communicated to staff by the ECP Team Leader. A time for delivery of the new server should be communicated to the OM by the ECP

TL.

A time line for recovery after the receipt of the new mail server will be estimated by the OM and communicated to the ECP TL. This is currently estimated at 24 hours or less after the receipt of the new mail server hardware, and the OM may illicit a support call to Microsoft Exchange Support Services to aid in the recovery.

Total loss of the site of the mail server (NHHS, currently) will present a need for a decision by the EMT on the new location for the mail server.

Partial Loss

A partial loss of the mail server is caused by a 'dirty' or 'ungraceful' shutdown. This could be caused by a failure of the UPS tower in a power loss, internal sabotage, or terrorist attack. A dirty shut down corrupts the Information Store and possibly also the Inetsrv file of the mail server, rendering the mail functions inoperable. The bulk of the mail server hardware is intact in a partial loss, although the operating system or Exchange Store may be corrupted by the failure of a single hardware part. Exchange 'cached mode' will allow all clients to continue to view and work with their existing messages, but an interim free internet mail client would be needed for any real-time email communications while the mail server is 'down'. A partial loss will be evaluated by the OM using standard diagnostic tools for Exchange, and/or eliciting the help of Dell Support Services. The damage assessment will be communicated to the ECP Team Leader. A recovery time of less than 24 hours is usual for a partial loss of the mail server, including the 4 hour response time for Dell parts, with an extremely high percentage of staff discovering no or minimal loss of data on recovery.

Minimal Loss

A minimal loss is defined as a loss of individual mail data limited to the individual's mailbox. The Exchange Agent from Veritas allows an individual mailbox restore with an anticipated 100% recovery of all mail data up to the last backup. Exchange cached mode will allow for synchronization with the mail server and a total recovery of the user's mailbox data up to the time of communications loss with the mail server.

Recovery time is directly related to the size of the user's mailbox and the amount of data lost. This is measured in minutes.

*All Exchange Server recovery procedures are documented on www.microsoft.com, and are also hard copied and filed in the Operations Manager office.

In the event of a disaster causing damage to the 3Com VoIP system, the ECP team leader would assess and evaluate the extent of the damage. If total hardware loss is determined, replacement hardware will be ordered and staff would be notified of the timeline to resume normal phone activity. Emergency POTS phone lines are provided to the district office, school main office, and nurses office at each school. These lines would be utilized for temporary communication until the phone system hardware could be obtained. Once hardware is obtained, the configuration file for the phone system would be used to restore normal functionality.

Objective 4 – District Database Systems

Description of Function

The district is using Microsoft SQL server for the Business Administration Databases, from here on referred to as 'SQL'. These databases include data for both the financial and personnel database systems. The software package used for each of these databases is written and supported by Computer Solutions Inc.

The student database contains information relevant to student demographics, attendance, grades and transcripts. The software package resides on two servers, but all data is centralized on the primary server in a Visual FoxPro database.

Prevention Measures

The district uses Veritas BackupExec with its SQL agent to do a remote backup, cross-WAN from the North SQL server to a Voorhees backup location. Transaction logs are backed up every 4 hours during the work day, 5 days a week, to ensure a recovery of the database to a place in time no more than 4 hours prior to the disaster, or loss, of the database. There is also a local backup of the entire database run every night on the SQL server itself for a simple recovery in case of a corrupted database. The Visual FoxPro student database is also backed up cross-WAN to Voorhees on a daily basis. Additional backups are completed using the proprietary backup tools within the program on a weekly basis.

Recovery Procedure

The disaster will cause one of the following effects and will be determined to be by the Operations Manager in communication with the ECP Team Leader; Total Loss, Partial Loss, Minimal Loss. The ECP Team Leader will determine the need to notify the EMT.

Total Loss

Total loss will mean the loss of the physical server by any means of disaster. Upon discovery of the total physical loss of the SQL or FoxPro server, the OM will notify the ECP TL that another server needs to be ordered. A timeline for delivery will be established, and an estimated time of recovery for the server and all SQL or FoxPro database functions is approximately 12 hours after hardware installation.

A support call to Microsoft may be made by the OM during the rebuild of the SQL or FoxPro databases. The ECP TL will communicate the estimated time of recovery to the EMT, and update them on any further information during the recovery process performed by the OM. All Microsoft OS software, and SQL server software is kept in the North server room.

The point in time of recovery is at the most, 4 hours prior to the disaster using transaction log backups.

Partial Loss

Partial Loss of any database systems include, but are not limited to, the loss of software functionality of the SQL server engine, the loss of database functionality, or the loss of any databases themselves. Partial loss also incorporates the loss of Operating System function, such as in the case of a 'dirty' shutdown of the server in power loss, or sabotage. The loss of the OS would prohibit the communication with the SQL server installation of the server and in turn, prohibit the use of the databases.

Partial loss would be determined by examination of the system by the ECP Team Leader, the Operations Manager, and the users of the SQL or FoxPro database. When the extent of the damage is determined, the appropriate recovery steps will be taken by the OM according to documented recovery procedures in text and on line. Currently, text recovery procedures are kept

in the OM's office. The time line for recovery of a partial loss to the SQL or FoxPro server is less than 12 hours, and the point in time to which any database may be recovered is 4 hours maximum prior to the disaster.

Minimal Loss

Minimal Loss would be the loss of one database by corruption, or the loss of any transactions. The databases can be recovered by using Veritas BackupExec, and would take minutes to restore. The transaction logs would also take a minimum amount of time to restore to, at the most, 4 hours prior to the loss of data.

Exercise Log

The following format will be used to record exercises conducted to test the reliability of the systems outlined in the plan. These exercises may include convening the ECP team, simulating a data loss situation, or checking documentation related to network services.

Date	Type of Exercise	Comments