

2007-2010 TECHNOLOGY PLAN

DISTRICT-LEVEL NETWORK & TELECOMMUNICATIONS PLAN – PART 1

Technology Assessment

Inventory

The district has completed the current online technology inventory and will continue to do so annually.

CIPA Compliance:

The district has completed the current Form 479 and will continue to do so annually.

District Technology Standards	Budget Summary
<p>The Office of the Superintendent of Public Instruction web site contains minimum standards for desktop and notebook computers donated for use by students (http://www.k12.wa.us/c4kids/standards.aspx). Bellingham School District has adopted this standard as its minimum specifications for personal computers (PC) with the following modifications:</p> <ol style="list-style-type: none"> a. LCD flat panel displays will generally be provided through attrition unless special circumstances warrant replacement of in place CRT monitors. b. Support staff computers are upgraded as necessary to maintain workplace task performance. c. Student and teacher computers are upgraded on a four to five year refresh cycle. d. Thin client computers are employed where full PC functionality is not required such as kiosk like installations where a limited set of network delivered application are used. <p>The District allocates technology resources for instructional support (personal computers, printers, and other peripheral devices) based on approved building technology plans.</p> <p>Servers are sized as to number of processors and speed, memory, and storage requirements based on specific function. The district server farm includes local print and file servers at each building with centrally located servers and appliances for electronic mail, content filtering, web services, caching and proxy services, virus protection, spam filtering, domain authentication, terminal services, mission critical business applications, library management, and student information systems.</p>	<p>See Attached Budget in Uploaded Additional Plan Materials.</p>

The Microsoft Office Professional suite comprises the core set of productivity Software provided for each personal computer. The District subscribes to Microsoft School Agreement for its licensing of core Microsoft PC and server based products.

To the extent practicable, software products are centrally based and delivered to personal computers via application servers. Some curriculum software must be fully or partially installed locally on computers. Notebook computers must have all required software products fully installed in order to ensure their availability outside the District network.

The network infrastructure is a hub (central district office) and spoke (to each school and support facility) topology based on fiber optic technology and is wholly owned by the District. The network was constructed in cooperation with other public agencies and is maintained by the city public works department through interlocal agreement. Gigabit Ethernet is the current bandwidth standard across the wide area network and within the building local area network backbone with 100 Mbps as the standard for communication to the desktop. Internet connectivity is through fiber optic connection to the Washington State K-20 network.

Voice communications is carried over separate fiber optic pairs (emulating traditional copper T-1 connections) of the District wide area network connecting PBX systems at remote buildings to a central PBX at the District central office. The central PBX is connected to the public switched telephone network via commercial carrier trunks for local and long distance telephone service. The entire District voice communications system is being upgraded to Avaya Communications Manager employing media servers and gateways in place of PBX systems, centralizing voice mail, enabling enhanced 911 location identification, providing for voice over IP connectivity, and introducing voice/data convergence by utilizing the WAN Ethernet transport for connectivity, replacing the T-1 emulation currently needed for PBX to PBX integration.

During the time period covered by this plan, the District will be in the process of adding two elementary schools and a middle school, conducting seismic upgrades to several older buildings and temporarily relocating the District central office. This will require significant expansion of the network infrastructure and present unique challenges in maintaining connectivity and essential services during the upheaval necessitated by the improvements at the District central office.

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DISTRICT-LEVEL NETWORK & TELECOMMUNICATIONS PLAN – PART 2

E-rate Priority One Requests

Voice, Data, Video and Other Priority One Capabilities	Purchase / Budget / Potential Funding Source(s)
<p>Telecommunications Services:</p> <ul style="list-style-type: none"> a. POTS – Local and long distance telephone service. b. Cellular phone services for administrators, operations and emergency communications. <p>Internet Access:</p> <ul style="list-style-type: none"> a. Provide K20 connectivity as primary Internet connection. b. Provide alternate means of connection when possible for District personnel conducting activities at locations where primary Internet access methods are not available. 	<p>\$92,000/yr; \$41,500 operations and maintenance, \$50,500 E-Rate</p> <p>\$33,700/yr; \$15,200 operations and maintenance, \$18,500 E-Rate</p> <p>\$20,000/yr operations and maintenance</p> <p>\$1,200/yr operations and maintenance; departmental budgets as appropriate based on need.</p>
<p>How will these services support your district's learning goals?</p>	<p>These services support the District's Learning Goals by providing means of communication that support teaching and learning, provide parents access to information regarding their children's progress, allow staff and students quick access to pertinent information, and provide for a safer environment in which to work, teach and learn.</p>

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E-rate Priority Two Requests

Hardware/Software/Support	Purchase / Budget / Potential Funding Source(s)
<p>Replacement of Telephone PBX Systems</p> <ul style="list-style-type: none"> a. 2007 – replace PBX systems and phones at 1 high school, 1 middle schools and 4 elementary schools b. 2008 – replace PBX systems and phones at 1 high school, 1 middle school and 4 elementary schools c. 2009 – replace PBX systems and phones at 1 high school, 2 middle school, 5 elementary schools, and the Maintenance Dept. d. 2008 - Implement Enhanced 911 District-wide. 	<p>\$200,000 - \$220,000; current Tech Levy</p> <p>\$170,000 - \$190,000; current Tech Levy; \$40,000 (Possible) E-rate</p> <p>\$210,000 - \$230,000; future Tech Levy; \$64,000 (Possible) E-rate</p> <p>\$75,000 - \$80,000; current Tech Levy</p>
<p>Infrastructure Upgrades</p> <ul style="list-style-type: none"> a. 2008 – Yew Street elementary school (new building voice, data and video installations – wireless, wiring, fiber optic cabling, switches, gateways, server, workstations, telephones, printers, video projectors, etc.) b. 2009 – Aldrich Road elementary school (new building voice, data and video installations – wireless, wiring, fiber optic cabling, switches, gateways, server, workstations, telephones, printers, video projectors, etc.) c. 2009 – Shuksan middle school rebuild (new building voice, data and video installations – wireless, wiring, fiber optic cabling, switches, gateways, server, workstations, telephones, printers, video projectors, etc.) d. 2010 – Seismic upgrades at District Central Office (Roeder) includes relocation of District Central services staff and rerouting of fiber optic cabling, computer equipment and telecommunications systems to old Shuksan Middle School and reconfiguration back to the Roeder building when upgrades are complete. 	<p>\$210,000 - \$135,200 Capital Projects; \$74,800 (Possible) E-Rate</p> <p>\$210,000 - \$135,200 Capital Projects; \$74,800 (Possible) E-Rate</p> <p>\$215,000 - \$96,750 Capital Projects; \$118,250 (Possible) E-Rate</p> <p>\$100,000 – Capital Projects</p>

Replacement of Network Equipment

The District infrastructure will require upgrading of several major items as switch technology improves and the tendency to converge voice and data systems becomes a reality.

- a. IP telephony will require the ability to manage quality of service across wide area network boundaries.
- b. Greater reliance on video resources will place higher demands for bandwidth on local and wide area networks.
- c. Secure wireless will become a standard access method as mobile computing emerges as a significant presence across the District and beyond.
- d. Internet bandwidth will require upgrading and more proactive management as remote services become an increasing component of curriculum resources
- e. Trunking of WAN links may be required in the short term to provide higher bandwidth internal links for selected schools in the short term. Wave division multiplexing and or upgrading to 10 Gigabit transmission equipment may be needed in the longer term.
- f. Upgrades are planned for caching servers, proxy servers, firewalls, content filters, spam filters, streaming media services and electronic mail for staff and students

E-Rate priority 2 funding may be available for four elementary schools and one middle school where NLSP participation yields a discount percentage of 80%. It is highly unlikely that priority 2 funding support will be provided for buildings below the 80% level or for services at the shared discount percentage of 55%.

How will these services support your district's learning goals?

The District has primary goals of improving student learning with an emphasis on Math and continued emphasis on Reading success. A number of assessment tools are being used to evaluate the success being achieved in these areas. Staff need to be able to access, manipulate and understand the data provided from these assessment tools. Technology plays a major role in testing the students, sending and receiving pertinent data, interpreting that data and communicating the results to parents.

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Maintenance, Upgrade and Support Strategies

Description of Maintenance/Upgrade/Support Strategies	Purchase / Budget / Potential Funding Source(s)	Timeline
<p>Technology support at the District level is provided by the Computer Services Department comprising 10 direct support technical staff, a computer systems operator, and a manager. Six technicians and a Network Supervisor are dedicated to support of workstations, servers, and the network infrastructure. They typically process over 3000 on-site work orders per school year. The remaining technical staff supports mission critical software applications, the core suite of desktop applications, electronic mail systems and various appliances database systems and servers.</p>	<p>\$820,000/yr for Tech Support salaries & benefits; Operations & Maint.; \$8,000/yr Sub Tech Labor; General Fund</p>	<p>2007 – 2010</p>
<p>The District purchases computer hardware primarily from Gateway Computers and, through Gateway's Authorized Service Provider program, is able to repair and maintain its own systems. Tools such as disk imaging hardware and software systems are used to prepare workstations for deployment. The District has over 4200 PCs deployed and a program in place to refresh them on a 4 – 5 year cycle (800 to 1000 per year). Over the next few years, disk storage space and data protection measures will require updating and expansion as a requirement to maintain comprehensive student portfolios is implemented.</p>	<p>\$480,000/yr student computers; \$160,000/yr staff computers; \$70,000 servers; \$119,500 Printers & other misc peripherals; Tech Levy</p>	<p>2007 – 2010</p>
<p>The District subscribes to Microsoft School Agreement which provides rights to upgrade to the latest versions of operating systems, core applications, core client access licenses and selected mission critical server products. The District reconciles the count of workstations and servers annually with the Microsoft reseller and adjusts the quantity accordingly. Other major software systems include Follett Destiny, WSIPC Legacy fiscal and human resources systems (to be replaced by WESPac), IEP.Online, TetraData data warehouse, virus protection, content filtering, spam filtering and the Zangle student information system.</p>	<p>\$472,000/yr Tech Levy; \$200,000/yr Operations & Maint.</p>	<p>2007 – 2010</p>
<p>Zangle provides a web based interface for teachers, students and parents to share information and a desktop client for power users requiring access to non web-based modules such as enrollment and scheduling. The existing traditional District web site architecture will be structured into a portal-based model providing enhanced content management, centralized calendar management, and a more user-friendly way to share important information with students, staff, parents and the community. The School Board and District Administrators use Board Docs, a web-based application which facilitates the exchange of information between Administrators, the Superintendent and Board members as well as provides a public forum where Board meeting agendas and materials can be shared with the community at large.</p>	<p>\$10,000/yr Portal Tech Levy</p>	<p>2007 - 2010</p>
<p>The wide area network infrastructure is comprised primarily of Foundry switches at the central core and as edge devices at remote sites. Building local area networks (LAN) are a collection of managed and unmanaged</p>	<p>\$40,000/yr Tech Levy</p>	

	<p>Gigabit and 100 Megabit switches from a variety of vendors. As equipment is replaced through technology refresh programs, a more standardized approach to vendor selection will be implemented at the LAN level. Wireless access to the network infrastructure will be expanded significantly to accommodate mobile computing initiatives focused on staff and students.</p> <p>As older equipment is upgraded and new equipment is added to the infrastructure, support staff will require technical training in its installation, configuration, operation and maintenance. Technical training is generally purchased at the time hardware or software is initially purchased; however, refresher training, progressive training and training of new technical support staff is also required from time to time. Training costs include tuition, course materials, travel and per diem.</p>	<p>\$15,000/yr Tech Levy</p>	<p>2007 – 2010</p> <p>2007 - 2010</p>
<p>How will this support your district's learning goals?</p>	<p>Technology must be kept current and operational and staff and students need to be up to date on hardware and software use if that technology is to be effective in supporting education. A more robust and stable technology infrastructure reduces downtime, decreases user frustration and therefore increases use and productivity. As more on-line learning opportunities are implemented, system users will become more reliant on the hardware, software, network and Internet access. Expectations will be to have a seamless and trouble-free connection to these resources. This will necessitate that hardware and software is kept up-to-date and robust, that the network infrastructure has the ability and flexibility to handle increased demands, and that competent and highly trained support is available when needed.</p>		

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Review and Update Process

Progress Evaluation and Update Activities/Objectives	Person/Team Responsible	Timeline
Review and Update Building Forms	District Technology Committee, Building SIP Leaders	August - October
Conduct online Technology Survey using PILOT	District Technology Committee, Building Principals	January - February
Review Building Activity Evaluation results	Building Principal, SIP Leaders	May - August
Review and update District Technology Plan	Technology Director, District Tech Committee	November - April