



GREENVILLE
CENTRAL SCHOOL DISTRICT

Information Technology Assessment

The New York State Technology Enterprise Corporation

- Found by New York State in 1995 through the issuance of an RFP.
- In 1996, an act of the legislature allowed state agencies access to NYSTEC and AFRL to leverage technical capabilities.
- Private, 501(c)(3) not-for-profit information technology consulting firm
- Headquarters located at the Griffiss Business and Technology Park in Rome, NY and co-located with AFRL/IF Rome Research Site.
- \$10 million annual revenue
- Currently employs ~70 people
- Office in NYC and Albany

Independently assess Greenville's "As-Is" information technology to identify commendations and recommendations related to:

- District Technology Plan, Fiscal Years 2010-2013
- Wide Area Network Architecture
- Local Area Network Architecture
- Server and Application Environment
- Future Initiatives

- Review of readily-available plans, system documentation, site surveys and network utilization reports
- Interview Greenville stakeholders for technical needs and requirements
- Limited Scope : Total 80 hour effort

Wide Area Network Architecture - *The WAN architecture refers to the data transport infrastructure that connects Greenville's users to other networks and the Internet. Included in the WAN architecture is the filtering infrastructure that filters Greenville's Internet traffic from inappropriate sites and content.*

Local Area Network Architecture - *The LAN architecture refers to local area (i.e., GCSD campus) data transport infrastructure that connects classrooms, administration and support services to each other and subsequently links to the WAN to reach to the Internet and outside content providers.*

Security – *The security section of the assessment refers to the review of Greenville's disaster recovery plan and backup procedures.*

District Technology Plan, Fiscal Years 2010-2013 - *The Technology Plan describes how a district will integrate technology into the curriculum.*

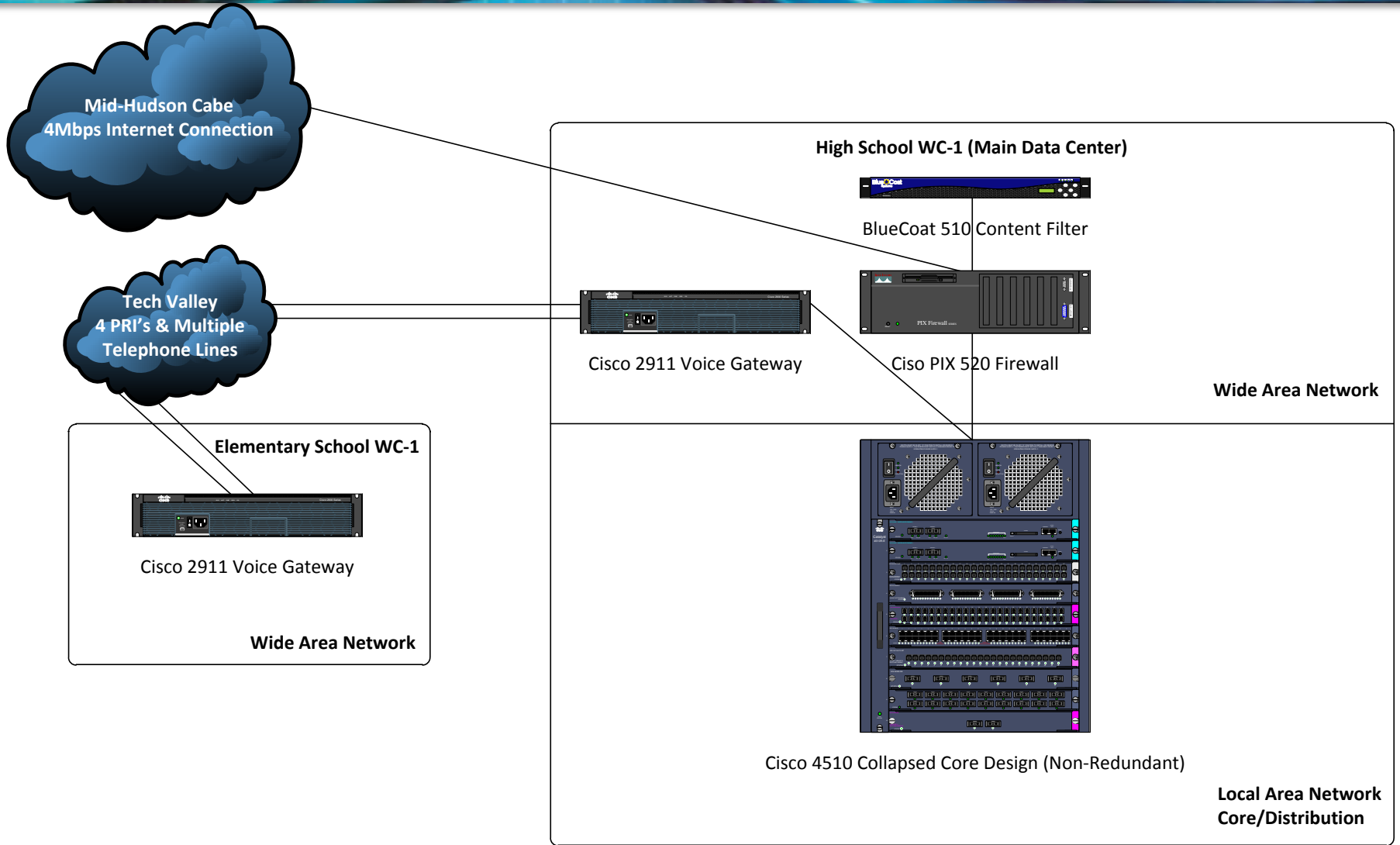
Future Initiatives and Cost Savings Opportunities

GCSD strives to provide its user communities with a highly reliable, high-performance and secure network. In practice this means:

- High network availability.
- Adequate bandwidth.
- Providing the network performance required by applications and users.
- Determining the network Quality of Service (QoS) mechanisms.
- Managing and monitoring the network to ensure that availability and performance objectives are met.
- Providing network and data security.
- Managing and monitoring the network to control costs.

Finding	Recommendation
<p>The Greenville Internet connection is no longer adequate to support the needs of the District. Peak Bandwidth usage is 100% of the 4Mbps connection. Most organizations start planning an upgrade to their Internet connection when bandwidth usage reaches 60% to 70%.</p> <p>Bandwidth limitations may be preventing the District from leveraging hosted and cloud-based shared service offerings available through NERIC and Questar BOCES.</p>	<p>Develop a plan to upgrade the Internet connection bandwidth in the most cost-effective way that will serve the District for three to five years. The Internet connection should be large enough to support cloud-based shared services.</p> <p>Continue exploring the possibility of installing a WAN connection to NERIC and having NERIC host the Internet connection to take advantage of State CoSer funding.</p>

Finding	Recommendation
<p>The WAN has limited bandwidth and network health-monitoring capabilities.</p>	<p>Implement real-time network monitoring and reporting on the LAN and WAN. Key Performance Indicators (KPIs) should be determined.</p>
<p>The District's content filter is a BlueCoat ProxySG-510 maintained by the District's CIO.</p>	<p>Maintaining the filter's access list is time-consuming. A NERIC-hosted solution would provide redundancy and cost savings and allow the CIO to focus on more strategic initiatives.</p>



NERIC Services	Current Services	CoSer/Service	Cost of Service	Description & Benefits
Internet	\$1250.00/Month for 4mb	CoSer: 512.070	\$1,380.00/Month* (10 Mbps)	This service provides districts with a connection to the public Internet using dedicated telecommunications.
WAN	NA	CoSer: 604.330	\$1,350.00/Month (1,000 Mbps)	
Total Year 1 Implementation (WAN & Internet)			\$30,055.20	WAN & Internet Services would increase the Districts capabilities for service offerings and collaboration efforts with neighboring districts.
Recurring Yearly Costs			\$23,320.20	

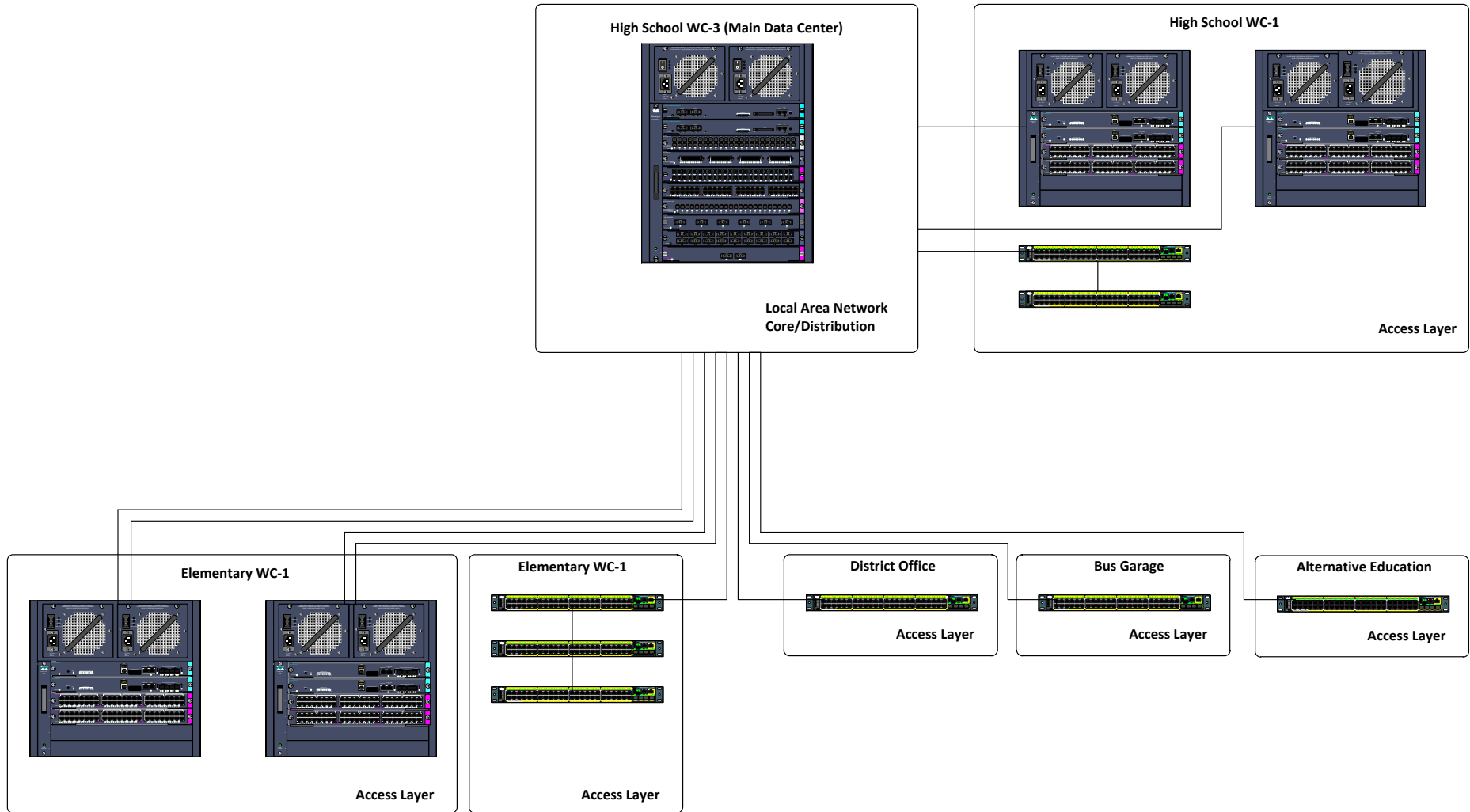
*Costs are calculated without State aid reduction.

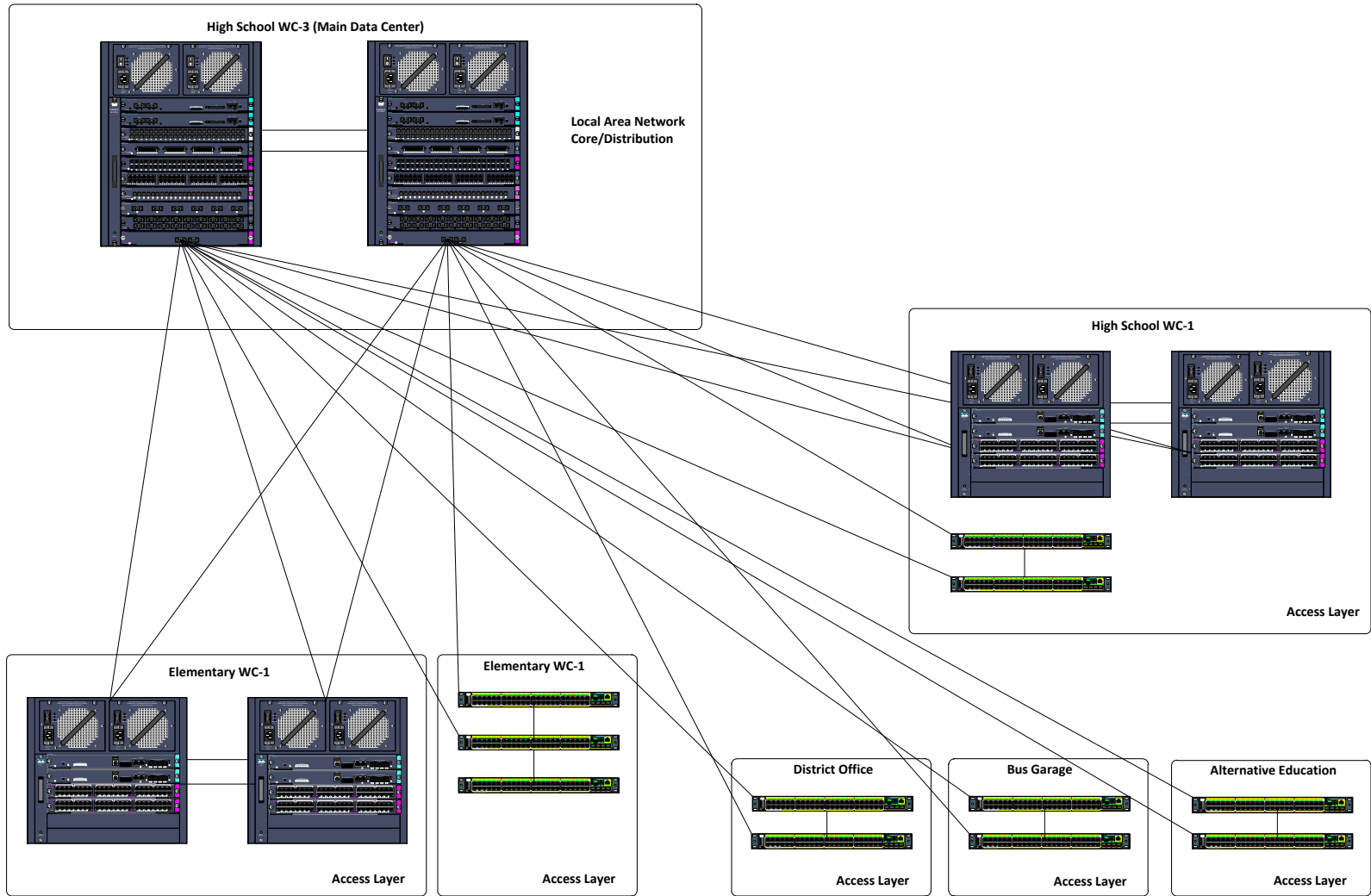
NERIC Services	Current Services	CoSer/Service Codes	Cost of Service	Benefit
Internet Safety		CoSer: 604-7710		The NERIC Solution would provide an annual cost savings along with a reduction in administrative time plus not having the liability of having hardware in district.
Internet Content Filtering	\$3,800.00/year - Not including hardware and upgrades.	Service Code: 604.195	\$695 Initial Fee, \$7.00/Workstation/Year ~525 Workstations Year 1 - \$4370.00 Annual Cost - \$3675.00	

*Costs are calculated without State aid reduction.

Finding	Recommendation
<p>The LAN has sufficient capacity to handle existing and future applications but only one core switch serves the entire District. There are single access switches in the District Office, Alternative Education, and Bus Garage.</p>	<p>If the District wants to ensure high availability, it should consider a redundant core switch to provide high availability at the Core and Distribution Layers. To ensure zero downtime, GSCD should consider upgrading all single switches to have dual connections back to the core.</p>
<p>There are limited capabilities for bandwidth and network-health monitoring.</p>	<p>Implement real-time network monitoring and reporting on the LAN to diagnose and address network issues. KPIs should be determined to ensure that the network is available, performing adequately, and has the ability to scale when needed.</p>

Finding	Recommendation
<p>The current wireless infrastructure is sufficient to support the District's wireless access points. A single Cisco 5500 Series Wireless Controller supports approximately 20 access points and 20 planned access points. A site survey was never performed to determine the appropriate number or placement of access points.</p>	<p>The District should invest in a wireless site survey to determine the appropriate number of access points, installation locations, controller size, and licenses. Once a survey has been conducted, the district should explore the feasibility of an additional controller to load balance the wireless traffic and provide redundancy.</p>





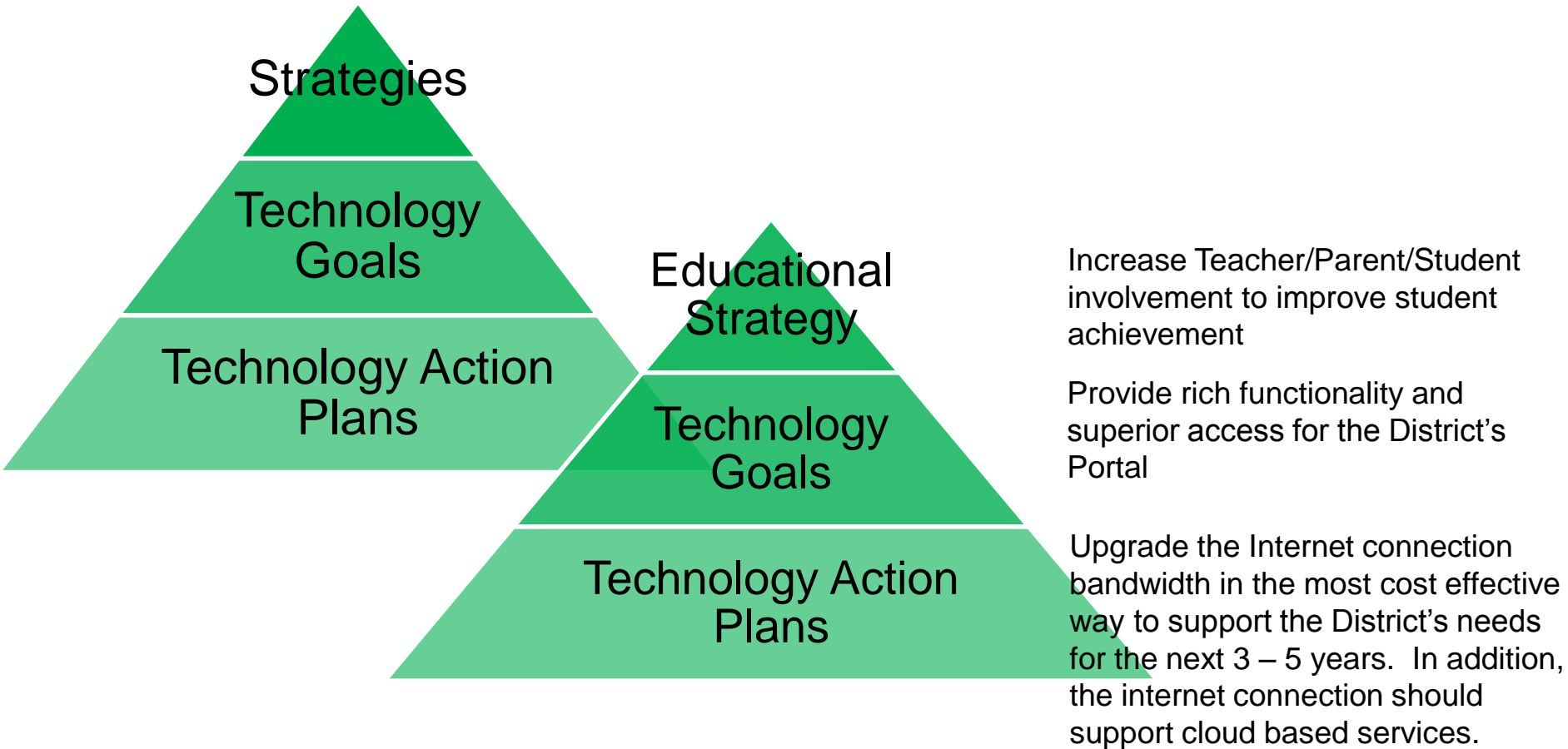
Finding	Recommendation
<p>The District's historical use of multi-purposing servers has been a success because of the District's small size, but this is not recommended as a best practice</p>	<p>The District should perform a detailed server and application assessment with the goal of reducing costs. The District should also explore virtualization and take advantage of cloud-based shared services to reduce its hardware footprint.</p>
<p>Hardware and application monitoring is lacking. Currently there is no solution in place to monitor hardware and application performance.</p>	<p>Implement a monitoring solution to enable proactive support, knowledge of performance bottlenecks, troubleshooting, access to reliable performance data, and application alerts.</p>

Finding	Recommendation
<p>The current disaster recovery plan primarily focuses on technology only. Although technology is important, it is just one key piece of an overall disaster recovery strategy.</p>	<p>Contract with an independent third-party that specializes in disaster-recovery planning to develop a comprehensive disaster recovery and business continuity plan. Establish a security committee charged with periodically updating, reviewing and testing the plan.</p>
<p>Backups are performed regularly and tapes are stored securely off-site.</p>	<p>A disaster recovery and business continuity plan would enable a much shorter recovery time in the event of a disruption or disaster.</p>

NERIC Services	Current Services	CoSer/Service Codes	Cost of Service	Description
Exchange	Microsoft Exchange Licensing	Service Codes: 604.190.010-050	\$800 Initial Fee, \$33/Mailbox/year, \$105/year Domain Hosting Fee	In addition to our district-based email services; NERIC is hosting an email alternative for districts that may desire a turnkey solution.
E-Mail Archiving	N/A	Service Code: 604.190.110	\$695 Initial Fee, \$9/Mailbox/year	This service provides districts with Email Archiving which will preserve all district email communications to facilitate regulatory compliance and legal discovery.
Help Desk Tech. – Level 2 (Individual)	N/A		\$46,412 (3 days per week)*	On-Site Technical Full Time Employee (FTE)
Help Desk Tech. – Level 2 (Family)	N/A		\$56,564 (3 days per week)*	On-Site Technical Full Time Employee (FTE)
Network & Systems Tech – Level 3 (Individual)	N/A		\$51,082 (3 days per week)*	On-Site Technical Full Time Employee (FTE)
Network & Systems Tech. – Level 3 (Family)	N/A		\$61,233 (3 days per week)*	On-Site Technical Full Time Employee (FTE)

*Costs are calculated without State aid reduction.

Finding	Recommendation
<p>The Technology Plan is concise and complete. However, linkages between the action plans and Technology Goals are lacking. Also, elements in the professional development section do not address drivers, strategies or government mandates, and the limited set of staff-development opportunities are not linked to specific goals.</p>	<p>Incorporate a “strategies” section that ties the action plans back to the technology goals. Also incorporate a strategies subsection in the professional development section.</p>



One to Three Years

- Cloud Based Shared Services
- Collaborative Environments
- Game Based Learning
- Mobile Computing



Four to Five Years

- Augmented Reality
- Flexible Displays

Finding	Recommendation
<p>GCSD is planning and/or has started several very interesting IT related initiatives (listed in Section 4.6 of this report).</p>	<p>Consider server consolidation and virtualization. Virtualization can reduce data center space requirements, cut power costs, and lower the cost and hardship during a natural disaster or hardware troubles.</p> <p>Consider desktop virtualization. Desktop virtualization offers several benefits, including the potential to lower costs.</p> <p>Continue investigating and implementing shared-services strategies via the cloud. Cloud-based shared services have the potential to lower costs and increase flexibility.</p> <p>Implement video conferencing. GCSD can realize cost savings by utilizing video-conferencing technologies.</p>

National Education Technology Plan – Key Component Area	Goal Statement	Examples of GCSD Opportunities
1.0 Learning: Engage and Empower	All learners will have engaging and empowering learning experiences, both in and out of school, that prepare them to be active, creative, knowledgeable, and ethical participants in our globally networked society.	High-performance GCSD Student/Teacher/Parent Portal Internet2 access to global distance-learning opportunities
2.0 Assessment: Measure What Matters	Our education system at all levels will leverage the power of technology to measure what matters and use assessment data for continuous improvement.	Tight integration with NYS RTTT expanded student data systems Training teachers to use new RTTT student performance data to improve instruction.

National Education Technology Plan – Key Component Area	Goal Statement	Examples of GCSD Opportunities
3.0 Teaching: Prepare and Connect	Professional educators will be supported individually and in teams by technology that connects them to data, content, resources, expertise, and learning experiences that enable and inspire more effective teaching for all learners.	Web-based effective teachers and leader development programs NERIC Connect or equivalent solution

National Education Technology Plan – Key Component Area	Goal Statement	Examples of GCSD Opportunities
<p>4.0 Infrastructure: Access and Enable</p>	<p>All students and educators will have access to a comprehensive infrastructure for learning when and where they need it.</p>	<p>Access to video conferencing with other schools, colleges and employers (e.g., Global Foundries)</p> <p>Increased Internet bandwidth</p> <p>Providing WAN connectivity to NERIC for cloud-based shared services and district to district connectivity.</p> <p>Providing full wireless coverage throughout the district.</p> <p>Laptop solution for the Music Lab</p> <p>iPAD Pilot</p> <p>NERIC CONNECT</p>

National Education Technology Plan – Key Component Area	Goal Statement	Examples of GCSD Opportunities
5.0 Productivity Redesign and Transform	Our education system at all levels will redesign processes and structures to take advantage of the power of technology to improve learning outcomes while making more efficient use of time, money, and staff.	<ul style="list-style-type: none"> Video Conferencing Distance Learning Server consolidation and virtualization Desktop Virtualization Cloud-based Shared Services Centralized Printing

Priority	Focus Area	Recommendation
1	District Technology Plan	Incorporate a “strategies” section that ties the action plans back to the technology goals. Also incorporate a strategies subsection in the professional development section.
2	Wide Area Network, Local Area Network, & Server and Application Environment	Implement real-time network monitoring and reporting on the LAN and WAN. Key Performance Indicators (KPIs) should be determined.
3	Wide Area Network	<p>Develop a plan to upgrade the Internet connection bandwidth in the most cost-effective way that will serve the District for three to five years. The Internet connection should be large enough to support cloud-based shared services.</p> <p>Continue exploring the possibility of installing a WAN connection to NERIC and having NERIC host the Internet connection to take advantage of State CoSer funding.</p>
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