The Baltimore County Public Schools

2015-2019

Technology Plan

Prepared by: The Department of Information Technology

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Version 2.0

The guiding document of Baltimore County Public Schools (BCPS), *Blueprint 2.0: Our Way Forward*, "builds on the legacy of this school system, but most importantly, provides direction for the future – moving BCPS from a good school system to a great school system."

Developing this strategic plan was truly a collaborative process that began with a series of community meetings during the fall of 2012. BCPS continued to collaborate with stakeholders throughout the school year as we identified initiatives to fulfill our commitment to provide the resources necessary for every student to become a globally competitive graduate.

In 2013, the superintendent established a Digital Learning Committee, consisting of the superintendent, technology and digital learning leadership, and BCPS curriculum experts. Among other responsibilities, this Committee works to ensure that BCPS technology initiatives and strategies are aligned with the goals laid out by *Blueprint 2.0*:

> ***GOAL 1: Every student will experience high academic achievement and continuous growth by participating in a rigorous instructional program designed to raise the academic bar and close achievement gaps so that every student will become a globally competitive citizen in a culturally diverse world.***
>
> ***GOAL 2: Every school and office will be safe and secure, promote individual wellbeing, and provide positive, respectful, and caring environments for teaching, learning, and working.***
>
> ***GOAL 3: Every stakeholder will experience clear, timely, honest, transparent, and widely available communication about system initiatives and activities that engages them in building a culture of trust through action and establishes BCPS as a world-class school system.***
>
> ***GOAL 4: Baltimore County Public Schools will maximize organizational efficiency and effectiveness by engaging in strategic efforts that employ rigorous, relevant, and reasonable performance standards that provide for all employees' professional growth and shared accountability for student, school, and organizational performance.***

A key strategy in fulfilling these goals is ensuring that every school has an equitable, effective digital learning environment and that students have meaningful access to technology. The success of this strategy requires the commitment and cooperation of everyone in the school system, and that strategy can only be realized as a team – *Team BCPS*. We are undergoing a new instructional digital conversion, designed for the future, driven by the curriculum, and delivered with the full support of the Department of Information Technology. While students already benefit from technological advancements at home and in their social lives, they can also benefit from these advancements in the classroom. BCPS' most effective teachers are already maximizing their use of available technology. The Department of Information Technology recognizes the gains made possible by these uses of technology, and has developed a focused

plan to provide additional resources to further improve student outcomes in this new digital learning environment, including a unified data portal to be named *BCPS One*.

For students and teachers alike, this initiative will bring new experiences and challenges to teaching and learning. There is still a digital divide in Baltimore County between those who have access to computers and the Internet and those who do not. In order to provide a system-wide, equitable digital environment for learning, BCPS will move to a One-to-One platform – meaning that each student will have a digital learning device in his or her hands.

Students, teachers, and administrators all benefit from the strategic deployment of technology. It brings equitable access to more accurate and timely information, and enables collaboration among teachers and learners. The days of outdated and expensive hardcover textbooks are nearing an end. Digitized curriculum is quickly becoming the new standard, instantly providing up-to-date resources to every student. Technology allows for personalization. Instruction moves at the student's individual pace. Teachers can deliver differentiated instruction based on real-time assessments and results.

Equity is vital to the success of this digital initiative. Bringing every classroom in every school up to the same technology standards for an effective digital learning environment will ensure that every BCPS student has access to the opportunities technology can provide.

These goals provide strategic direction for the Department of Information Technology as it works to implement digital conversions throughout the school system and support student learning. In order to promote and achieve these goals, the Department has identified supporting strategies and a timeline for each objective. The Department has also noted recent accomplishments to illustrate how we have previously addressed these strategies.

GOAL #1: ACADEMICS

Every student will experience high academic achievement and continuous growth by participating in a rigorous instructional program designed to raise the academic bar and close achievement gaps so that every student will become a globally competitive citizen in a culturally diverse world.

Supporting Strategy #1: *S.T.A.T. - Students & Teachers Accessing Tomorrow*

S.T.A.T. is the multi-year transformation of BCPS into a complete 21st century technology-learning environment to prepare globally competitive graduates. BCPS is first redesigning curriculum in the core content areas to redefine what instruction will look like in a blended learning environment, while placing a stronger emphasis on critical thinking and analytical skills. This transformation is necessary to provide personalized learning to our increasingly diverse student population at a time when the economy requires more from our students for future success.

Supporting Strategy #2: *BCPS One*

BCPS is committed to developing, implementing, and expanding a digital platform, known as BCPS One. The purpose of BCPS One is to streamline administrative processes, promote stakeholder collaboration, increase productivity, and personalize learning. This digital learning ecosystem provides a centralized location for staff, students, parents, and administrators to access various interoperable applications such as the Learning Management System, Student Information System, Professional Learning Platform, Digital Resource Repository, Employee Evaluation System and Data Dashboards.

Supporting Strategy #3: *Learning Management System*

As part of BCPS One, the Department of Information Technology oversees the development and support for the Learning Management System (LMS). This system will include a curriculum management system, gradebook, assessment tools, and instructional resources.

Supporting Strategy #4: *Digital Resource Repository*

Within BCPS One, the Department of Information Technology will build a unified digital repository to house teaching and learning, research, media, and library content.

Supporting Strategy #5: *Student Information System*

Included in BCPS One, the Department of Information Technology will provide a replacement to the current student information system, enabling student data management across multiple domains. These include:

- Attendance
- Enrollment
- Grade/Transcript Reporting
- Scheduling
- Discipline

- Transportation
- Athletics
- Summer School
- School Nurse/Health System
- World Languages
- Course Maintenance
- Special Education Programs
- School Boundaries
- Graduation Progress/Process Tracking
- Designee/Court Liaison Tracking
- IEP/504 Tracking
- Special Functions
- System Interfaces
- Federal and State Reporting

Supporting Strategy #6*: Data Dashboards*
As part of BCPS One, the Department of Information Technology will develop and support Data Dashboards for teachers and administrators that will provide at-a-glance views of key performance indicators for students.

Supporting Strategy #7: *Expand School Wireless Coverage*
BCPS is committed to providing equitable network access to all students. To that end, the Department of Information Technology has already outfitted forty-six schools with wireless broadband coverage, with deployment to all remaining schools scheduled for completion within three years, in order to ensure that every school provides an equitable, effective digital learning environment.

Supporting Strategy #8: *One-to-One Initiative*
To ensure a learner-centered, personalized, blended environment that is powered by digital resources and interactive curriculum that is accessible anytime and anywhere, all teachers and students will receive a computing device. The current timeline for implementation is as follows:

- Spring 2014 All Instructional Staff PreK–12
- 2014–2015 Students at Lighthouse schools, Grades 1–3
- 2015–2016 Students at Lighthouse schools, Grades K, 4, 5
  Students at all elementary schools, Grades 1–3
  Students at all Lighthouse schools, Grade 6
- 2016–2017 Students at all elementary schools Grade 4, 5
  Kindergarten students – five devices per classroom
  Students at all middle schools, Grade 6
  Students at Lighthouse schools, Grade 7, 9, 10, 11, 12
- 2017–2018 Students at all middle schools
- 2018–2019 Students at all high schools

The Department of Information Technology will oversee this program to ensure that these devices are suitable and appropriately maintained

Supporting Strategy #9: ***Maryland Longitudinal Data System (MLDS) Support***
MSDE is currently developing a longitudinal data system for education that tracks student participation and performance throughout the student's education and work career, including courses taken, grades achieved, test results, attendance, and movement from school to school and school system to school system. The data system also includes teacher data, without personally identifiable information, providing reports about teacher preparation programs, professional development, etc. Implementation of the longitudinal data system will allow Maryland to meet the federal regulation that requires states to report and hold schools accountable for cohort graduation rate, tracking students from the time they enter grade nine for the first time until they graduate. BCPS will collect data the necessary data and work with MSDE to incorporate it into the MLDS system.

Supporting Strategy #10: ***Revised State Assessments Support***
The State of Maryland enacted a new school reform law in May 2010. This law aligns Maryland School Reform with the national Race to the Top initiative and specifies that Maryland school systems will move to online and adaptive testing by 2015, with pilots beginning in 2012. The new law will have substantial impacts on information technology, as it will require computers and/or specialized hand-held devices for student online testing, substantial bandwidth and adequate computer servers. Additionally, adaptive testing requires the use of artificial intelligence test administration. The artificial intelligence module will examine each student response, and dependent upon the number of correct or incorrect answers will automatically prompt the student with either more difficult or easy questions that relate to the sub content being assessed. BCPS is participating in the pilot program, and the Department of Information Technology will continue readying for this shift.

Supporting Strategy #11: ***Home Broadband Access***
In an effort to provide equitable Internet access to all students while they are at home, BCPS will partner with the Education Foundation to offer broadband Internet access to qualified students and families in their homes. This will extend the digital learning environment to home as well as school.

Supporting Strategy #12: ***BCPL Partnership***
BCPS will partner with the public libraries to implement wireless access points so that student devices could readily connect to the BCPS network. Students that have One-to-One devices, but have either slow or no Internet access from home can go to any public library in Baltimore County to access the Internet and school resources. This access will route users through the BCPS network to allow access to the Internet, with schools' filtering choices imposed, as well as access to other school resources. Public "Wi-Fi" access is also provided in selected library branches.

GOAL #2: SAFETY AND SECURITY

Every school and office will be safe and secure, promote individual well-being, and provide positive, respectful, and caring environments for teaching, learning, and working.

Supporting Strategy #13: ***Web Content Filtering System***

The previous business-class Web content filtering system has been upgraded to a K-12 specific web content filtering system. The Web content filtering system allows access to necessary Internet resources that are safe for educational use, while blocking harmful content. The content filtering system automatically analyzes Internet traffic and determines whether the content is safe for K-12 students, as well as for teachers and administrative and support personnel. The new Web content filtering system allows for different levels of access depending upon the rights assigned to the user's Active Directory group, based on username. The Department of Information Technology will continue to update and maintain this system as needed.

Supporting Strategy #14: ***Raptor***

BCPS has begun using the Raptor system to identify and track visitors to BCPS sites in order to improve security and ensure student safety. Department of Information Technology staff will continue to install and maintain Raptor at all BCPS schools and offices.

Supporting Strategy #15: ***Security Camera Upgrades - One View System***

BCPS' 107 elementary schools now sport a new feature to help keep them secure and under the watchful – and now real-time – eye of Baltimore County Police. New "One View" networked school security cameras now monitor halls, front offices, and other places in each elementary school across the county. Additionally, BCPS schools and offices will be equipped with upgraded camera systems to improve security and ensure student safety.

Supporting Strategy #16: ***Active Directory Security Initiatives***

Accounts for Windows devices and servers are managed through Active Directory (AD) integration. AD is integrated with the Advantage HR system and the student information system (SIS) to maintain accurate account data. The Department of Information Technology will implement a verification process to ensure the devices are issued only to valid employees and students. Devices are not issued to staff or students who are not registered in the human resources or student information systems respectively.

Authentication for staff and student Microsoft Windows users leverages local, school-based AD servers to log into the device, as well as the student or staff server. Students are prevented from logging onto the network with any account other than the account assigned to the student's machine through machine policy. Staff will log into their machines and staff servers in the same manner as students, but their accounts will not be restricted to specific machines. Student and staff personal folders are created on the appropriate servers based on daily imports from AD and the SIS.

Authentication for middle school students requires a local account on each device. The local account is created on each student's device during the annual refresh. Students log on to school servers during school. Teacher devices have a local account similar to the students, but are required to log on to the staff server every time for security purposes. Alternatively, the servers are also configured to create a home directory if a person who does not currently have a home directory accesses the server between the import schedule.

Authentication for elementary students to log on to the device is based on generic K1 and K2 user conventions. Certain tablet devices may not have access to the AD system. Students are automatically logged onto the student server and have access to the relevant classroom folder based on this classroom credential. Teachers are able to log on to their device using a standardized teacher account. Teachers log on to the staff server using their AD accounts.

GOAL #3: COMMUNICATION

Every stakeholder will experience clear, timely, honest, transparent, and widely available communication about system initiatives and activities that engages them in building a culture of trust through action and establishes BCPS as a world-class school system.

Supporting Strategy #17: ***Web Portal / Collaboration System / Parent Portal***

As part of the BCPS One initiative, the Department of Information Technology will keep parents and guardians informed and engaged in their child's education by providing online access to grades, transcripts, schedules, attendance and various other data elements.

Supporting Strategy #18: ***One-to-One Initiative***

BCPS recognizes that communication about the Students and Teachers Accessing Technology (STAT) Plan and One-to-One Initiative is crucial to the BCPS community. The school system has a number of tools to use in this regard, all of which are supported by the Department of Information technology, including the following:

- A newly redesigned and very popular Web site;
- Systemwide and superintendent's Twitter accounts;
- Facebook
- A blog;
- ConnectEd, for delivering phone messages to parents;
- Regular media contacts, news releases, and media advisories;
- Quarterly video messages to the community, delivered online and on television;
- Regular video messages to students, delivered in the classrooms;
- A television station and video production group;
- Stakeholder advisory groups and community meetings.

A senior research writer will be following the initiative closely and recording both the process and progress. In addition, this year the system will launch a new subscription e-mail newsletter as well as a Parent University.

Efforts to support the STAT Plan have already begun, with initial efforts to educate the community about the need to move to a one-to-one digital learning environment. In addition to internal communication and professional learning activities conducted for staff, BCPS has conducted additional activities aimed at a broad array of stakeholders. These include:

- A formal program announcement at the 2012 State of the Schools event;
- Presentations by the superintendent at various local and national forums;
- Production of a video (which will be shown on BCPS-TV and the Web site) highlighting how the one-to-one environment will work, to be shown online and on BCPS-TV;
- Additional content on the BCPS Web site, including the program rationale and updates on conversion progress.

As the initiative proceeds, messages will shift away from making the case for the conversion, and toward updating the community on timeline progress. BCPS will emphasize student and family responsibility for One-to-One devices, and share stories about how the initiative functions in our schools and raises engagement, rigor, and achievement. These messages will be delivered using an integrated multifaceted approach taking advantage of all BCPS' communication tools.

Prior to distributing devices to students, beginning with elementary students in the 2015–2016 school year, the student and one parent/guardian will be required to complete device training. This training will ensure that students know how to use, troubleshoot, and care for their device. Training will be offered at multiple times and locations to facilitate accessibility, including training opportunities for parents and guardians.

Supporting Strategy #19: *Home Broadband Access*

In an effort to provide equitable Internet access to all students while they are at home, BCPS will partner with the Education Foundation to offer broadband Internet access to qualified students and families in their homes.

GOAL #4: ORGANIZATIONAL EFFECTIVENESS

BCPS will maximize organizational efficiency and effectiveness by engaging in strategic efforts that employ rigorous, relevant, and reasonable performance standards that provide for all employees' professional growth and shared accountability for student, school, and organizational performance.

Supporting Strategy #20: ***Employee Effectiveness System***

As part of the BCPS One initiative, the Department of Information Technology will provide a platform to allow data-driven academic evaluations of instructional staff and target key areas for improvement through suggested professional development activities.

Supporting Strategy #21*: Professional Learning Platform*

A Professional Learning Platform (PLP) is being developed in BCPS One so that blended professional learning opportunities can be built, tracked, delivered and evaluated. The PLP will support both "formal" learning and "informal" self-directed modules.

Supporting Strategy #22: ***Human Resources Process Support System***

The Department of Information Technology will assess Human Resources processes, workflows, and operating procedures to create tools for greater efficiency and to support clients. This will allow BCPS to identify ways in which technology can be leveraged to increase efficiencies, improve customer service, and collect and analyze Human Resources data.

Supporting Strategy #23: ***Learning Management System***

As part of the BCPS One initiative, the Department of Information Technology will enable the management and delivery of learning content and resources to students online.

Supporting Strategy #24: ***Expansion/Enhancement of Current Communications Systems***

The Department of Information Technology will conduct a feasibility study to determine whether a unified communications system will reduce the cost of telephone expenses. The Department will expand communication by giving voicemail to teachers, administrators, and key staff, and will support safe schools by providing a telephone system in every classroom.

Supporting Strategy #25: ***Education Channel Training***

The Education Channel will work with teachers and the curriculum development office to produce podcasts, video tutorials, lectures, e-books and other Web-based content.

Supporting Strategy #26: ***Education Channel Consulting***

As the Career and Technology Office and the Office of Library and Media Services develop and plan school-based television studios and video production classes, the Education Channel will continue to serve as a consultant by evaluating video equipment, providing student training opportunities, and showcasing student productions.

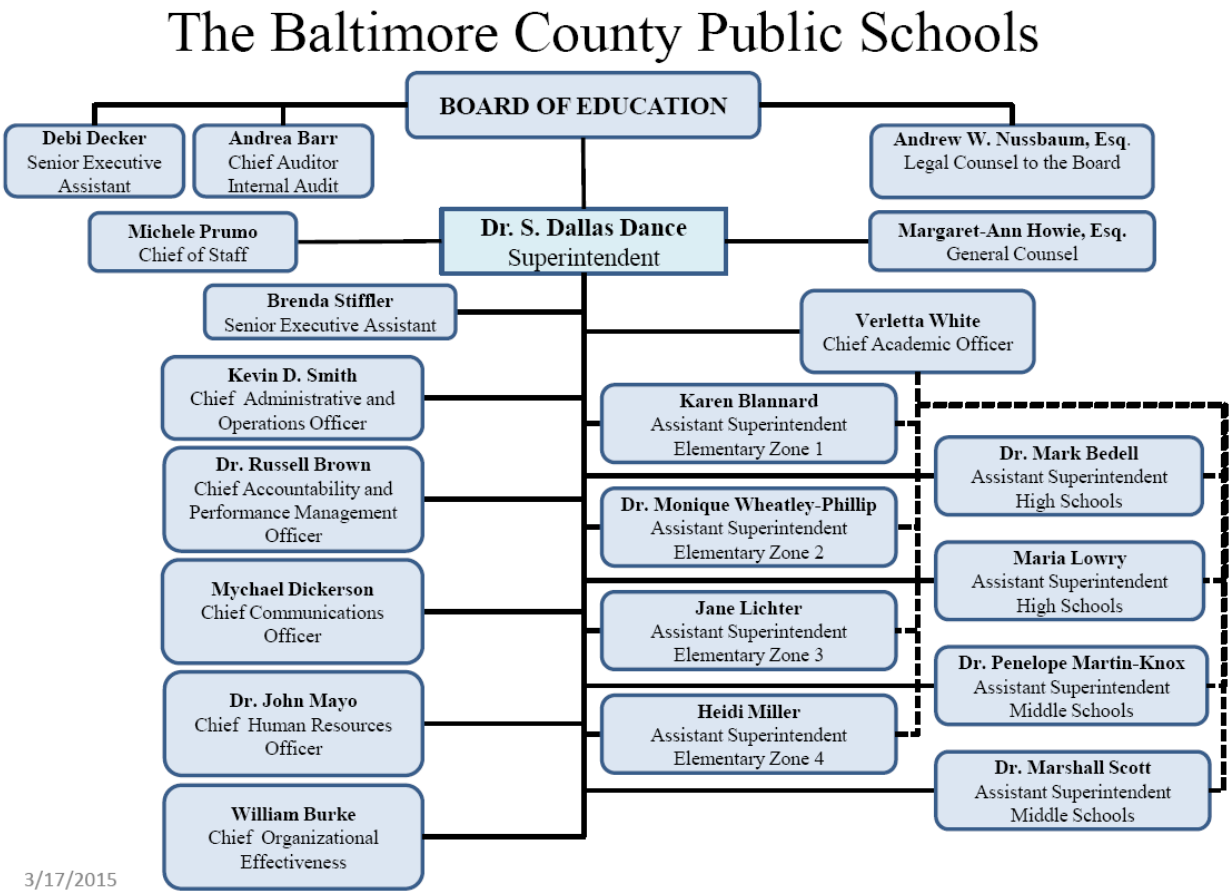
Supporting Strategy #27: ***Digital Curriculum***
The Division of Curriculum and Instruction is in the process of converting all curriculum to a digital format. Once this is accomplished, all curriculum will be available to all in the Learning Management System.

Supporting Strategy #28: ***Technology Inventory Report***
The Department of Information Technology will improve the inventory process for technology in schools. It will be a combination of automated device collection, the MSDE online inventory, and random physical inventories. This will provide more accurate and updated inventory reports and permit more effective allocation of technology resources.

Supporting Strategy #29: ***Technology Efficiency Report***
The Department of Information Technology will evaluate current systems to identify technology solutions to increase efficiencies in areas such as financial management, curriculum and learning management, applicant tracking, and employee absence and time reporting systems.

Supporting Strategy #30: ***Device and Operating System Standardization***
The Department of Information Technology will continue to evaluate hardware and software products for suitability for student and staff needs, and set standards to provide efficient deployments. We will also consider the use of mobile devices for online testing.

APPENDIX A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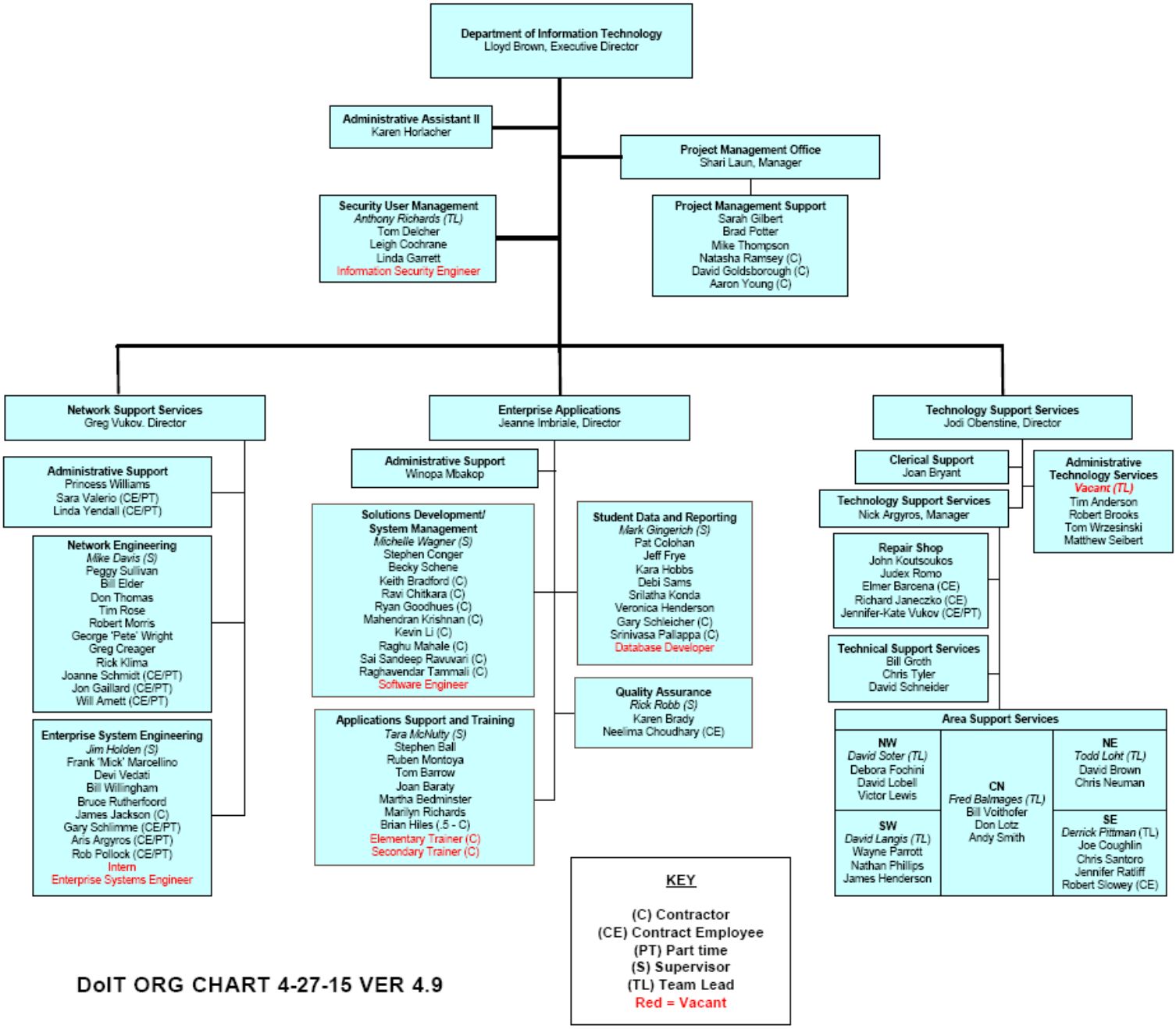
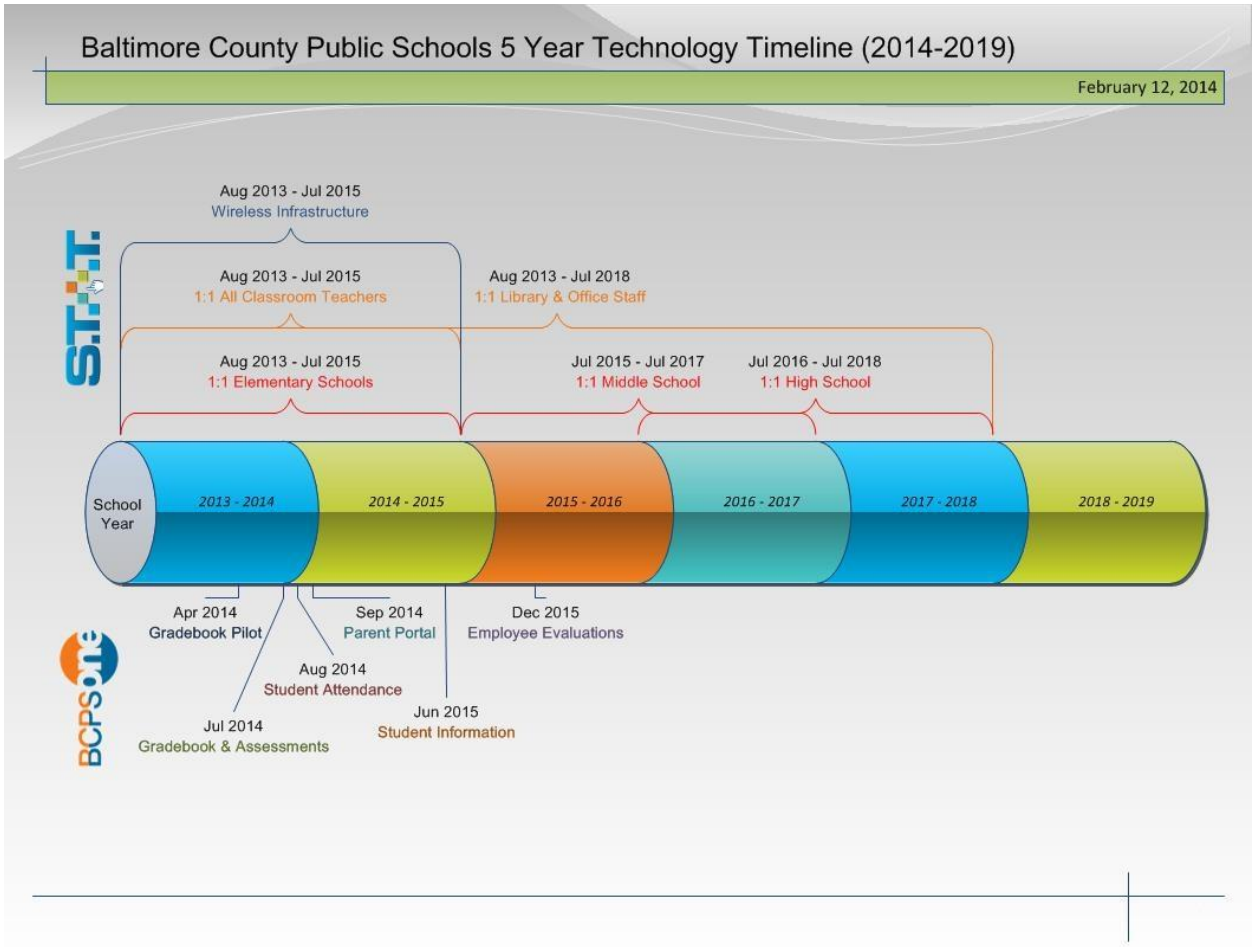
Elementary Zone 4
Dr. Marshall Scott
Assistant Superintendent
Middle Schools
William Burke
Chief Organizational Effectiveness
3/17/2015

APPENDIX B

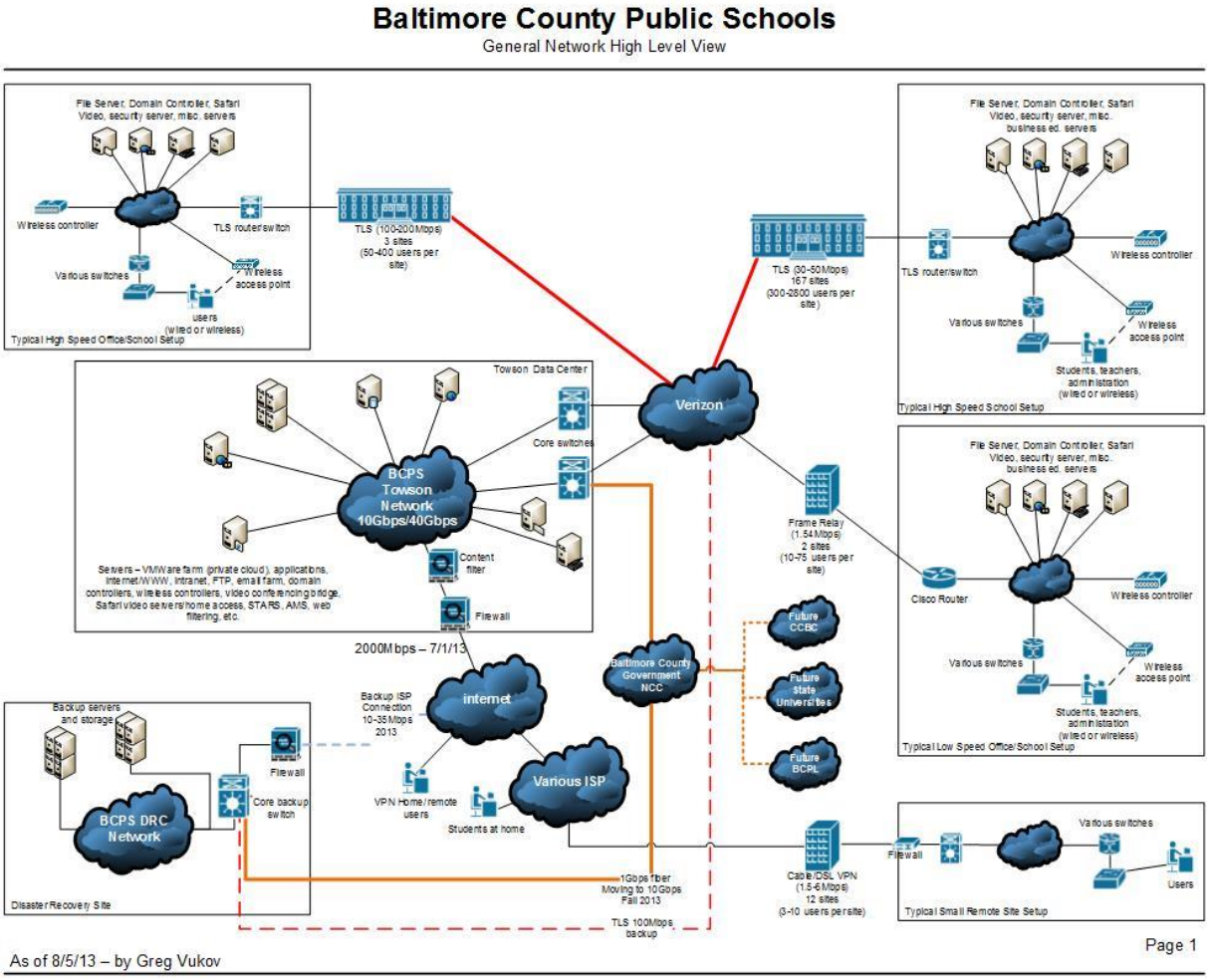
DEPARTMENT OF INFORMATION TECHNOLOGY 2014-2015



APPENDIX C


Baltimore County Public Schools 5 Year Technology Timeline (2014-2019)
February 12, 2014
Aug 2013 - Jul 2015
Wireless Infrastructure
Aug 2013 - Jul 2015
1:1 All Classroom Teachers
Aug 2013 - Jul 2018
1:1 Library & Office Staff
Aug 2013 - Jul 2015
1:1 Elementary Schools
Jul 2015 - Jul 2017
1:1 Middle School
Jul 2016 - Jul 2018
1:1 High School
School Year
2013 - 2014
2014 - 2015
2015 - 2016
2016 - 2017
2017 - 2018
2018 - 2019
Apr 2014
Gradebook Pilot
Sep 2014
Parent Portal
Dec 2015
Employee Evaluations
Aug 2014
Student Attendance
Jul 2014
Gradebook & Assessments
Jun 2015
Student Information

APPENDIX D


Baltimore County Public Schools
General Network High Level View
File Server, Domain Controller, Safari Video, security server, misc. servers
Wireless controller
TLS router/switch
Various switches
Wireless access point
users (wired or wireless)
Typical High Speed Office/School Setup
TLS (100-200Mbps) 3 sites (50-400 users per site)
TLS (30-50Mbps) 167 sites (300-2500 users per site)
File Server, Domain Controller, Safari Video, security server, misc. business ed. servers
TLS router/switch
Wireless controller
Various switches
Wireless access point
Students, teachers, administration (wired or wireless)
Typical High Speed School Setup
Towson Data Center
Core switches
BCPS Towson Network 10Gbps/40Gbps
Content filter
Firewall
Servers – VMWare farm (private cloud), applications, internet/WWW, intranet, FTP, email farm, domain controllers, wireless controllers, video conferencing bridge, Safari video servers/home access, STARS, AMS, web filtering, etc.
Verizon
Frame Relay (1.54Mbps) 2 sites (10-75 users per site)
File Server, Domain Controller, Safari Video, security server, misc. business ed. servers
Cisco Router
Wireless controller
Various switches
Wireless access point
Students, teachers, administration (wired or wireless)
Typical Low Speed Office/School Setup
2000Mbps – 7/1/13
Backup ISP Connection 10-35Mbps 2013
internet
Various ISP
VPN Home/remote users
Students at home
Baltimore County Government NCC
Future CCBC
Future State Universities
Future BCPL
Backup servers and storage
Firewall
Core backup switch
BCPS DRC Network
Disaster Recovery Site
1Gbps fiber Moving to 10Gbps Fall 2013
TLS 100Mbps backup
Cable/DSL VPN (1.5-6Mbps) 12 sites (3-10 users per site)
Firewall
Various switches
Users
Typical Small Remote Site Setup
Page 1
As of 8/5/13 – by Greg Vukov