RESOLUTION 2014-16

BOARD REPORT NO. 386-13/14

AMENDMENT TO THE INFORMATION TECHNOLOGY STRATEGIC EXECUTION PLAN TO DEFINE AND APPROVE 3 CORE NETWORK UPGRADE PROJECTS

WHEREAS, District Staff is proposing that the Board of Education amend the Information Technology Division (ITD) Strategic Execution Plan (SEP) to define and allocate funds to three Core Network Upgrade projects to address "Technology Infrastructure Upgrades to Ensure Access" objectives, and take the associated action(s) for each project. There are three projects with a combined requested funding allocation of $8,905,696 being proposed; and

WHEREAS, the three projects being proposed are part of the School Upgrade Program approved by the Board in BOE #143-13/14; and

WHEREAS, the proposed action is consistent with the District's long-term goal to address unmet school needs as described in Proposition BB and Measures K, R, Y, and Q; and

WHEREAS, projects will be funded with $8,540,696 of bonds proceeds from already issued and/or to-be-issued Measures K, R, Y, and Q, where appropriate. The one time (non-recurring) General Fund impact associated with the core network upgrade projects is $365,000; and

WHEREAS, District Staff has concluded that this proposed ITD-SEP Amendment will facilitate the implementation of the ITD-SEP, and therefore it will not adversely affect the District's ability to successfully complete the ITD-SEP.

NOW, THEREFORE, BE IT RESOLVED THAT:

1. The School Construction Bond Citizens' Oversight Committee recommends that the Board of Education amend the Information Technology Division Strategic Execution Plan to define projects and approve funding for 3 Core Network Upgrade projects such that the Strategic Execution Plan is amended to include the 3 Core Network Upgrade projects as described in the Board Report No. 386-13/14 a copy of which is attached hereto in the form it was presented to the BOC and is incorporated herein by reference.

2. This resolution shall be transmitted to the Los Angeles Unified School District Board of Education and posted on the Bond Oversight Committee's website.

3. That a written response as required by the Charter and Memorandum of Understanding between the Oversight Committee and the Board be provided to the Oversight Committee within 30 days, reporting either on action taken or proposed to be taken in response to this resolution and each recommendation herein.

ADOPTED on April 24, 2014 by the following vote:

AYES: **10** ABSTENTIONS: **0**

NAYS: **0** ABSENCES: **4**

Pamela Schmidt
Pamela Schmidt
Vice-Chair

Quynh Nguyen
Quynh Nguyen
Secretary

LOS ANGELES UNIFIED SCHOOL DISTRICT
Board of Education Report

Report Number:	386-13/14
Date:	May 13, 2014
Subject:	Amendment to the Information Technology Strategic Execution Plan to Define and Approve 3 Core Network Upgrade Projects
Responsible Staff:	
Name:	Ronald Chandler
Office/Division	Information Technology Division
Telephone No.	213-241-8794

BOARD REPORT

Action Proposed: Staff proposes that the Board of Education amend the Information Technology Division (ITD) Strategic Execution Plan (SEP) to approve the definitions, allocate funds, and take the associated action(s) for three Core Network Upgrade projects, as described in Attachment A. These projects will upgrade critical information technology systems that serve our school sites. There are three projects with a combined requested funding allocation of $8,905,696 being proposed.

Background: On January 14, 2014, the Board of Education approved the establishment of the School Upgrade Program (SUP), the next phase of the District's Bond Program which will modernize, build and repair school facilities to improve student health, safety and educational quality. The Board's action approved the overarching goals and principles, funding sources, specific categories of need, and spending targets for the SUP. As proposed projects are developed, they are submitted to the Bond Oversight Committee (BOC) for consideration and the Board of Education for approval.

The SUP includes a spending target to address "Technology Infrastructure and System Upgrades" including Core IT Network Upgrades. The three proposed projects will upgrade the core networks, including cyber security considerations, to enable the functionality and safety of District LANs.

Expected Outcomes: Staff anticipates that the Board will amend the ITD-SEP to define three projects and allocate $8,540,696 of Bond Program funding and $365,000 of General Fund. These projects will help address the critical needs of the District's school facilities.

Board Options and Failure or delay of approval will postpone the execution and/or

Consequences:	implementation of the proposed projects and programs and the associated benefit to the schools and students.
Policy Implications:	This action is consistent with the District's long-term goal to address unmet school needs as described in Proposition BB and Measures K,R,Y, and Q.
Budget Impact:	The combined requested bond funding allocation for the 3 projects being proposed as part of this action is $8,540,696. Projects will be funded with bonds proceeds from already issued and/or to-be-issued Measures K, R, Y, and Q, where appropriate. The one time (non-recurring) General Fund impact associated with the core network upgrades projects is $365,000. ITD anticipates increased telecom costs of between $180,000-$360,000 per year after the School WAN Availability & Out of Band Management project is completed. Based on estimated E-Rate and California Teleconnect discounts, the total net cost to the District is estimated to be $18,000-$36,000. Project Hardware/Software contracts will be negotiated with 5-year annual service options. Beginning in Year 6, annual maintenance contract expenses are estimated at $605,465.
Bond Oversight Committee Recommendations:	This item was considered by the School Construction Bond Citizens' Oversight Committee (BOC) at its April 24, 2014 meeting. Staff has concluded that this proposed SEP Amendment will facilitate the implementation of the ITD-SEP, and therefore it will not adversely affect the District's ability to successfully complete the ITD-SEP.
Issues and Analysis:	This report includes projects that will upgrade critical information technology systems that serve our school sites. The School WAN Availability & Out of Band Management project includes installation of devices at school sites that enable Out of Band Management. To ensure staff and student safety, ITD has engaged the Office of Environmental Health and Safety to review and approve the specifications. Additionally, the Request for Proposals will include a requirement for safety testing before any devices are installed.
Attachments:	Amendments to the ITD-SEP – Attachment A
Informative	None.
Desegregation Impact Statement	N/A

Respectfully submitted,

DR. JOHN E. DEASY
Superintendent

APPROVED BY:

MICHELLE KING
Senior Deputy Superintendent
School Operations

REVIEWED BY:

APPROVED &
PRESENTED BY:

RONALD CHANDLER
Chief Information Officer
Information Technology Division

DAVID HOLMQUIST
General Counsel

□Approved as to form.

TONY ATIENZA
Director of Budget Services and
Financial Planning

□Approved as to budget impact statement.

Information Technology Strategic Execution Plan Amendments
Project Definitions and Associated Actions
Attachment A – BOE #386-13/14

PROGRAM: Core Network Upgrades

PROJECT: School WAN Availability & Out of Band Management

BUDGET: $1,605,696 – *100% bond funded*

SCOPE: To support the goal of providing an "Empowered Learning" experience to our students, our schools must be able to rely on a modern, robust network capable of consistently providing wireless access to the internet and adequate capacity to meet the throughput demands created by today's instructional technologies.

The School Wide Area Network (WAN) Availability and Out of Band Management (OOBM) project will ensure that at least 99% of District schools have Internet connectivity at the beginning of the instructional day by implementing hardware and software that will allow for centralized oversight of school site network equipment for troubleshooting and remote issue resolution. The system also provides a secondary connection to the District's network enabling continuity of critical business functions in the event of a primary network outage.

With the current system of 'in-band' management, a systems administrator may be aware of connection issues but cannot ascertain specific details regarding the nature of the problem. A technician must be dispatched to the location of the problem device and physically plug in to diagnose the problem and restore the device to the District's network, provided the technician has the equipment necessary to do so. During this time, a school site's connection to the District network will be lost and business critical functions will go offline impacting instruction. This traditional method of operations means not just additional costs in terms of labor, but a loss of valuable instructional time.

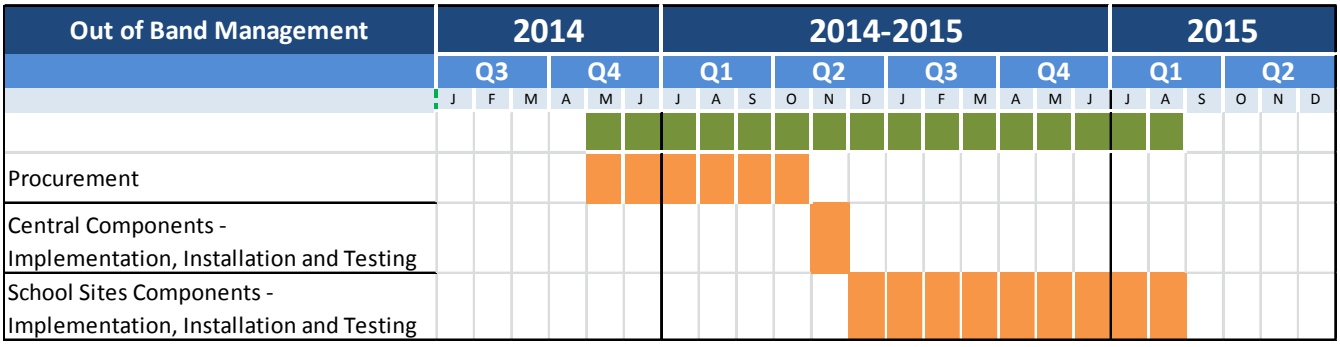
The School WAN Availability and OOBM solution will minimize downtime, allowing schools to take maximum advantage of the Virtual Learning Complex – LAUSD's optimized information, safety and communications infrastructure. By providing secure, alternate paths to remotely access, monitor, and manage network devices, the Solution ensures that the systems administrator can remotely restore a device to the network whether said device is powered on or an operating system is installed or functional. The Solution will minimize the need for site visits, reducing costs and time of device restoration and maximizing instructional time. Providing an alternate, secure connection also assures that a school will stay connected while the problem is being resolved.

In addition to remote troubleshooting, the Solution has the capability for automatic issue resolution. When the system detects a loss of connection due to a bad configuration or an outage, it will automatically revert back to the previous functional operating system and restore the site's connection to the District's network.

SCHEDULE: The School WAN Availability and OOBM project was originally identified in the May 2012 IT Strategic Execution Plan. As such the initial planning for this project: technical architecture, design specifications, solution solicitation and selection, and vendor/product recommendation, was funded and conducted as part of the Virtual Learning Complex Program Planning Phase.

Once funded, implementation of the School WAN Availability and OOBM project will unfold in three phases. Phase one will entail the procurement of the School WAN Availability and OOBM solution. Under phase two, the central components for an out of band management system will be installed, implemented and tested. The management system is requisite to remotely troubleshooting and resolving issues occurring at school sites, thus minimizing disruption of school business.

Finally, the third phase of the School WAN Availability and OOBM project entails implementation and installation of components at school sites that will enable the centralized system to monitor network availability at schools.



Information Technology Strategic Execution Plan Amendments
Project Definitions and Associated Actions
Attachment A – BOE #386-13/14

PROGRAM: Core Network Upgrades

PROJECT: IP Address Planning

BUDGET: $4,000,000 total project budget, $3,800,000 of which will be funded by bond funds, and $200,000 by General Fund

SCOPE: Under the IP Address Planning project, ITD will implement the necessary management system to support the District's transition from the IPv4 to IPv6 IP address protocol.

In order for devices – computers, tablets, printers, smartphones, access points, routers, etc. – to communicate with one another and the internet over a network, they must be assigned an IP address. An IP address is a unique numeric label assigned to each device. At present, LAUSD's network utilizes the IPv4 address protocol. Only so many addresses can be allocated from the IPv4 system due to its limited number of characters. The District will soon run out of IP addresses. IPv6, the next generation protocol, utilizes an exponentially larger address which will accommodate LAUSD's needs now and into the future.

IPv6 was officially launched on June 6, 2012 and is rapidly being adopted throughout the industry. In its first year, IPv6's global adoption and use more than doubled[1]. This rapid adoption is spurred by analyst predictions that all available, unallocated IPv4 addresses will be consumed by 2019[2]. Failure to adopt the IPv6 protocol by this date will result in an inability of new devices to access new or existing networks and the internet.

Failure by the District to transition to the IPv6 protocol jeopardizes many technology supported goals, as IP address use is on the rise. Under the Common Core Technology Program (CCTP), phases 1 and 2 of which were approved in February 2013 and January 2014, respectively, every K-12 student in the District will receive a personal computing device. This translates into the need for over 650,000 new IP addresses to support devices alone. If the District allows students, staff and guests to Bring Your Own Devices (BYOD), even more addresses will be required. Furthermore, the over 45,000 additional network devices (access points, routers, switches, etc.) that are being implemented to support technology use in the classroom will need new IP addresses.

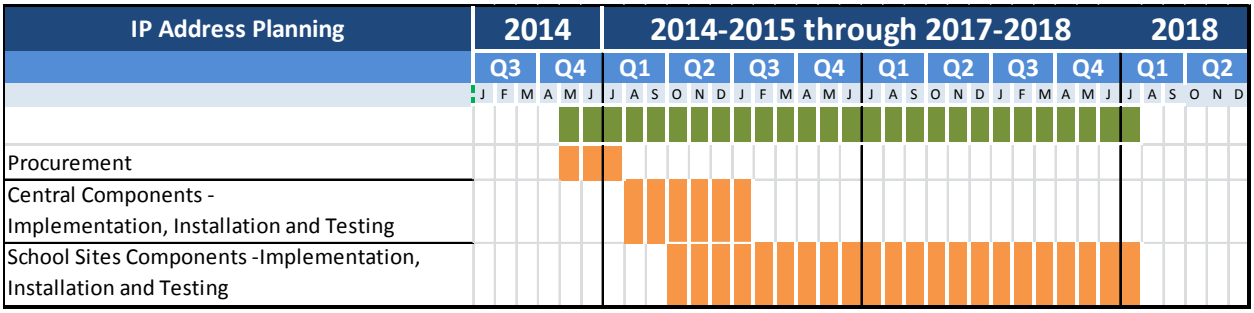
Moreover, LAUSD's technological roadmap, aimed at increasing functionality and decreasing replacement and maintenance costs, requires additional IP addresses. Under the Converged Technology Program, many school site functionalities, including phones, public announcement/intercom systems and clocks, will be added to the network and require new IP addresses.

[1] *World IPv6 Launch* (accessed February 14, 2014); available from http://www.worldipv6launch.org
[2] *IPv6: Five Things You Should* Know (accessed February 14, 2014); available from http://www.cisco.com/web/about/ac123/ac147/archived_issues/ipj_6-4/ipv4.html

SCHEDULE: The IP Address Planning project was originally identified in the May 2012 IT Strategic Execution Plan. As such the initial planning for this project including: technical architecture, design specifications, solution solicitation and selection, and vendor/product recommendation, was funded and conducted as part of the Virtual Learning Complex Program Planning Phase.

Once funded, implementation of the IP Address Planning project will unfold in three phases. Phase one entails the procurement of the IP Address Planning solution. Under phase two, a centralized IP address management system will be put in place. The management system is requisite to handle the more complex addresses that will be introduced under IPv6. The system will also allow for better management and allocation of the remaining IPv4 addresses, extending their life and availability until IPv6 addresses can be distributed throughout the District.

Finally, the third phase of the IP Address Planning project entails implementation of the components necessary to enable IPv6 at school sites and offices through-out the District. Below is the anticipated timeline for the IP Address Planning project.



Information Technology Strategic Execution Plan Amendments
Project Definitions and Associated Actions
Attachment A – BOE #386-13/14

PROGRAM: **Core Network Upgrades**

PROJECT: **Data Center Network Upgrade**

BUDGET: $3,300,000 total project budget, $3,135,000 of which will be funded with bond funds and $165,000 of which will be funded with non-bond funds

SCOPE: The methods and modes of educating the students of Los Angeles are changing rapidly. This includes: 1) utilization of data to drive classroom decision making, as identified as one of the District's goals, 2) institution of the Common Core State Standards, which mandates student technology proficiency, in the 2014-2015 school year, and 3) the use of personal computing devices in the classroom to access media rich, interactive lesson plans and tools. These changes, supported by the Superintend of Schools and Board of Education, along with mission-critical business functions – such as food services, student transportation, payroll and facilities services – rely upon the presence of a highly available, advanced technological infrastructure, specifically an integrated network infrastructure.

Information requested in the classroom, be it student data, a website, or an attendance portal must be available on-demand. This information must transit the District's network. At present, the Data Center network has a 1 GB pathway which is insufficient to meet the growing technological demands of the District. Under the Data Center Network Upgrade project a 10 GB network component will be implemented, enabling high speed server to server communication between the District's primary Data Center, disaster recovery[3] site, network nodes and schools.

In the absence of this upgrade, network data transfer will be slow, hindering classroom technology usage. Furthermore, the District's Disaster Recovery efforts will be inhibited, for the new equipment paid for and implemented under the Disaster Recovery program requires a 10 GB connection to function properly.

SCHEDULE: The Data Center Network Upgrade project was originally identified in the May 2012 IT Strategic Execution Plan. As such the initial planning for this project including: technical architecture, design specifications, solution solicitation and selection, and vendor/product recommendation, was funded and conducted as part of the Virtual Learning Complex Program Planning Phase.

Once funded, implementation of the Data Center Network Upgrade project will unfold in four phases. Phase one entail the procurement of the Beaudry Data Center components. Under phase two, these components will be put in place. Phase three entails the procurement of the Disaster Recovery Data Center components. Finally, under phase four, the Disaster Recovery Data Center network upgrade components will be put in place.

[3] Approved by the Board of Education in June 2013, phase 2A of the Disaster Recovery and Business Continuity program enable business continuity, in the event of a Beaudry-based disaster, by deploying a secondary ("failover") site on District owned property and modernizing and consolidating data center technologies to fit within the failover site.

Information Technology Strategic Execution Plan Amendments
Project Definitions and Associated Actions
Attachment A – BOE #386-13/14