# SACRAMENTO CITY UNIFIED SCHOOL DISTRICT
# BOARD OF EDUCATION

Agenda Item# 9.1

**Meeting Date:** **November 17, 2011**

**Subject**: **Technology Update**: Preparing the District's Technology Environment to Support 21st Century Learners

- ☒ Information Item Only
- ☐ Approval on Consent Agenda
- ☐ Conference (for discussion only)
- ☐ Conference/First Reading (Action Anticipated:_____)
- ☐ Conference/Action
- ☐ Action
- ☐ Public Hearing

**Division:** Accountability Office

**Recommendation:** None

**Background/Rationale:** The Assistant Superintendent, Information Education Technology will update the Board of Trustees on the current technology environment at SCUSD. There will be an examination of the current limitations and insufficient technology infrastructure that prevents the District from providing a stable and equitable technology environment.

**Financial Considerations**: Phase I technology implementation, recommended by the Assistant Superintendent, Information Education Technology, will leverage the District's recently allocated Bond Modernization Funds to deliver a secure and stable infrastructure for District technology services.

**Documents Attached:**

**AMS.Net Network Assessment and Recommendations**
**Challenge Based Learning Study**
**Chicago Public Schools IPad Project Study**
**Apple Professional Development Overview**

**Estimated Time of Presentation**: 30 minutes
**Submitted by**: Terry Kritsepis, Assistant Superintendent, Information Education Technology
**Approved by**: Mary Shelton, Chief Accountability Office

# Board of Education Executive Summary

**Technology Services**
November 17, 2011

## I. Overview/History of Department or Program

The SCUSD Technology Services Department is guided by the vision of providing students, staff, and the community with information technology resources and services that support learning, instruction, research, professional development, data collection, and administrativ

Limited network ability to accommodate technology such as Voice over IP, video capabilities and the increased use of mobile devices

These findings will enable us to create a highly productive and efficient technology infrastructure that supports the District's Strategic Plan in preparing College Ready Students, Family and Community Engagement and Organizational Transformation.

## III. Budget:

Phase I technology implementation, outlined in the Major Initiatives section, will leverage the District's recently allocated Bond Modernization Funds of approximately $2 million to deliver a secure and stable infrastructure for centralized District technology services.

## IV. Opportunities:

Building a digital learning environment does not happen without vision and leadership. Whether it is bottom up or top down, everyone on the leadership team needs to be on board with a shared vision.

Guiding questions used to develop this initiative that supports the SCUSD vision and strategic plan:

What can we do differently today to provide opportunities for students?
How do we support students to become knowledge creators, collaborators, inventors and innovators and to create critical and higher level thinking skills?
How do we support students to have the greatest level of opportunity for learning in and outside of the classrooms?
How do we support the Digital Curriculum Plan that complements Common Core standards with the Accountability and Academic Offices?

We are fortunate that two market leaders in this industry, Cisco and Apple, share in our vision and are willing to contribute and invest in our success.

Both are single source partners that will provide integrated end-to-end solutions. Both provide a leveraged cost model with a single point of contact for implementation and support.

Their contributions and domain expertise in our technology partnership benefits the District's limited resources, time and staffing to support and sustain the current technology needs of a 21st Century Learning Community.

In working with the District's existing resources, Cisco and Apple look to deliver a showcase technology infrastructure that will result in a 21st Century classroom.

It is proposed that this unique and innovative initiative partnering our school district and these two market leaders, be delivered in a two-phased model.

## V. Major Initiatives:

**Phase I**

**Infrastructure and Education Technology Model**

The first deliverable, utilizing the District's Bond Modernization Funds, is to implement a secure and stable Cisco designed infrastructure for centralized District technology services.

The new infrastructure includes the following:

Unified Communications Systems be first(s thegd)ts.2Toothegdlond a

# Board of Education

# Sacramento City Unified School District

# Network Assessment and Recommendations


**Prepared by:**

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Thomas Vasconi, AMS.NET

# Executive Summary

AMS.NET is extremely pleased to present this assessment and recommendations for your evaluation and consideration.

Today, IT organizations are being pushed and pulled in many directions. Evolving business models create complex technology challenges that IT is being asked to solve. IT consumerization is empowering students, faculty and parents, which in turn introduces new devices and risks that IT must manage and balance. Many of the new applications and solutions involve video which puts

**Observations:**

looks like a broadcast address, but which is really a unicast address in the network. This did show up in the packet capturing as DHCP and other broadcast traffic from the devices on those particular switches.

Multicast PIM “Dense Mode” is in use. This is not typically recommended on production networks. Newer multicast protocols exist that can help to keep multicast traffic more contained.

**Recommendations:**

Specific Long-term recommendations:

Design and implement a multicast routing plan. Currently PIM Dense mode is configured and should not normally be used in production environments. PIM Sparse Mode with Anycast/AutoRP or SSM (Source Specific Multicasting).

Consider an IPv6 address overlay design and implementation. IPv6 will eventually replace IPv4 and recently the IANA was depleted of all IPv4 address space.

Invest in a traffic flow analysis (Netflow/Jflow) management platform to gain a more granular view of network traffic. Traffic flow analysis at the core and WAN connections can give a better picture of network utilization down to individual flows.

Design and implement a Quality of Service overlay to support current and future applications. This will especially become necessary as the district moves toward newer voice and video applications.

Secure device access via RADIUS and user network access via dot1x architecture. Manage who and when users can use your network.

Install a guest wireless security mechanism for tracking wireless guest access. Again, control who is on your network and when they can get on.

Implement other security mechanisms such as port security, arp inspection and DHCP snooping. This will work toward mitigation of potential network attacks, denials of services, etc.

Invest in 10GB WAN/LAN uplinks and 1GB user ports to support newer, more demanding applications such as video.

**The Vision**

The next step in realizing a strategic vision and creating a highly productive and efficient IT infrastructure is to collaborate with a network and datacenter solutions expert that understands your long-term business goals and how to maximize your business’s success.

overcome current economic constraints so you can develop and implement an IT business plan that is primed to address future challenges and support new technologies.

AMS.NET has been promoting innovation networking solutions since 1988. Experienced in consistently and reliably delivering solid networking and datacenter products, AMS.NET delivers solutions supported by award-winning technical partners throughout the United States and world.

As a leader in technology innovation, AMS.NET is committed to fostering changes in the industry that are priorities to Sacramento City Unified School District and to supporting you every step of the way.

**Where do we go from here**?

AMS.NET, through the help of our technology partners, is looking to help transform Sacramento City Unified School District so that it is relevant to the needs of 21st century learners, educators, and organizations. This will require a shift in the way teachers teach, leaders lead, and students learn. Technology will play a critical role in the development of engaging curricula and meaningful assessments

the network. Our partners are at the forefront of leadership in advancing network standards, service intelligence, and sustainability solutions enables operators to innovate.

- **Workplace transformation:** The new classroom experience is visual, mobile, and in the moment. For the student and teacher, the quality of the experience is everything; AMS.NET, through our technology partners, offers:

  - **Video delivery:** The end-to-end medianet solution, which is bolstered by primary services such as multicast, quality of service (QoS), and VideoStream. Validated designs, Partner IT experience, and an extensive ecosystem further heighten the positive effects of business video within Borderless Networks.
  - **Mobility solutions:** RF leadership (ClientLink technology), scalable systems (802.11n), a mobility services architecture (voice, security, and location), and wired/wireless integration (integrated services routers (ISR) and Catalyst switches) enable anywhere access.
  - **Application optimization:** Application-layer traffic controls - Wide Area Application Services (WAAS) for WAN optimization, application control, VDI acceleration.

- **Operational excellence:** Resource efficiency, IT staff productivity, systems integrity, and network readiness are all important indicators of success. offers:

  - **Advanced IOS Services**: SmartInstall, SmartAutoPorts, SmartCallHome are just a few of the hundreds of features built into our network products to help lower the operational costs while maintain a high degree of availability.
  - **Best practices:** With technical guidance (Validated Designs), IT experience, and industry solutions (K-12, Higher ED), provides customers with the tools and techniques necessary for success.
  - **Management:** Prime provides a rich set of management applications designed to configure and provision the features needed for the network services layer of the Borderless Network Architecture.
    - In addition to command and control of LAN technologies, the ***LAN Management Solution*** can be used assess, configure and deploy EnergyWise, MediaNet, SmartInstall, AutoSmartPorts, and SBA across the network.
    - ***Prime Collaboration Manager*** is valuable for monitoring and trouble-shooting Telepresence video session across the network.
    - ***Prime Network Control System***

devices from the network for agility and efficiency.

- **Security with TrustSec:** Strengthens security across distributed networks with visibility and control to connect the right people, devices, and locations.
- **Mobility with Motion:** Provides anywhere, anytime access to information for wired, wireless, and remote users on any device to enhance participation.
- **Application performance with Application Velocity:** Enables the optimal experience of any application, at any time, and on any device, delivering a very fast application performance, using capabilities fully integrated into the Borderless Network portfolio. With application awareness built into the network, IT has an effective tool for managing application performance holistically.
- **Seamless user experience with AnyConnect:** Endpoint/user services, even though they are the functions of the network, define the user experience and enable the attributes of secure, reliable, and seamless performance on a broad range of devices and environments. AnyConnect is an example of device software that delivers secure, persistent, policy-based access for a seamless user experience.

**Customer Benefits**

The Borderless Network Architecture transforms the way IT manages scales, secures, and governs networks by linking users, devices, applications, business processes, and the network into a holistic, extensible architecture. A Borderless Network provides:

- A robust network platform capable of delivering real-time collaboration experiences to any device.
- Transparent mobility with location services for anytime, anywhere communications.
- Security for devices both on the local network and across cloud services.
- Sustainability and reduced energy costs for efficient and cost-effective business operations.
- Optimized application performance for virtualized applications

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- **Enhanced Power Over Ethernet:** Enhanced PoE offers more power, greater flexibility, and increased mobility to users with

TrustSec solution implements access policies that limit risk, data breaches, and help ensure system availability; securing networks to minimize downtimes. Overall, the solution helps reduce costs, improve efficiencies, and lower OpEx.

- **EnergyWise helps organizations measure, report, and manage energy usage within the network:** Consider a municipality with 10,000 PCs spread across county offices. Without energy management, the annual energy costs for those PCs would be US $770,000. With EnergyWise in Catalyst switches, they can configure nightly shutdown of these PCs to save over one third of that amount - approximately US $280,000. With more aggressive energy management - putting PCs into sleep state and powering

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# CPS iPad Program 2011

## Program Background

The SY2010-11 iPad g

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## Selection Process

iPad School Grant proposals solicited through CPS communications were then evaluated by Education Technology on a multi-tier rubric addressing the grant plan's overall q18[ (th) -5  0 0.24 30 45 0 0 Tm /0tm /0

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## Conclusion

| Technology Profile |
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| Each Site completes a Technology Profile to provide baseline data on teacher knowledge, skill and current use of technology. A follow-up Technology Profile will be done at the end of the school year to measure |