Proposed Telephone Upgrade Project

Presented to the Board of Trustees
December 3, 2012

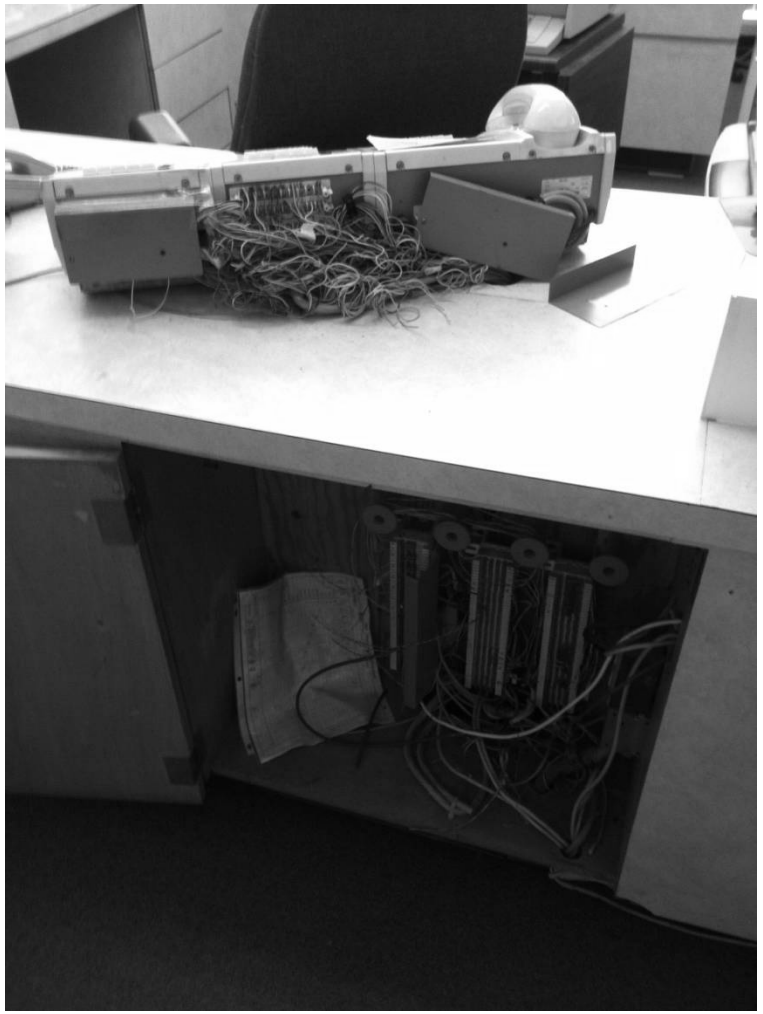
The Problem

- The District's Nortel PBX phone system is over 15 years old
- The system uses out-dated technology and is connected through unreliable Verizon T1 circuits
- Verizon has stopped providing technical support for the phone system

Visual Example of Current System

Picture of the phone system at the Office Manager's Desk at Jordan Elementary School

Similar phone system at all of the schools



Proposed Solution

- Replacement of the current phone system with a Voice over Internet Protocol (VoIP) phone system
- A VoIP system would access the District's fiber Internet connection, allowing the District to terminate the Verizon T1 circuits to each school and eliminate the monthly cost of the T1 lines

Proposed Solution

The proposed solution would require two major projects:

1. Upgrade cabling infrastructure
2. Replacement of telephone equipment

Upgrade Cabling Infrastructure

- Need to upgrade the existing network cables to prepare for a VoIP-enabled phone system
- All current District phone and intercom equipment are currently connected with CAT3 cables
- A new VoIP system needs to be connected with CAT6 cables

Types of VoIP Systems

- The District will need to decide on the type of VoIP system: **Hosted vs. In-house**
- **Hosted VoIP System** – All the major phone equipment is housed and owned by the vendor, leased to the District, and accessed over the Internet
- **In-house VoIP System** – The District owns all the major phone equipment and is responsible for the administration and support of the system

Hosted VoIP System

Advantages	Disadvantages
❖ Ease of use – Vendor administers the system and provides on-going technical support ❖ District is eligible to receive E-Rate funding	❖ District pays monthly on a service contract

In-house VoIP System

Advantages	Disadvantages
❖ Scalability – Since the District would own the equipment, as many phones and/or features could be added without incurring additional costs	❖ Technology Department staff members will need specialized training to administer and support the system and additional staff may be needed

Cost to Upgrade Cabling

As documented during the Facilities Assessment process last spring, the following are the estimated costs:

- $50,000 for each elementary site (cost at Olita will be lower amount)
- $75,000 for Rancho-Starbuck
- $40,000 for the District Office
- $25,000 for the Maintenance Office

Cost of Equipment

Hosted VoIP System:

- $75,000 for network switches
- $40,000 one-time setup fee (includes phones)
- $3,500 per month for service and support

In-House VoIP System:

- $75,000 for network switches
- $50,000 for major phone equipment (includes phones)
- $10,000 for VoIP systems training

Scenarios to Consider

- Scenario 1 – Fastest, Easiest, and Least Expensive (3-5 Year Plan)
- Scenario 2 – Standard Setup and Middle of the Road Cost (10-15 Year Plan)
- Scenario 3 – Slowest, Most Expensive, Built to Last (40 Year Plan)

Scenario 1 – Fastest, Easiest, and Least Expensive (3-5 Year Plan)

- Hosted VoIP System
- Administration offices and classrooms have access to the new phone system through wireless VoIP phones
- Additional Wireless Access Points will need to be installed in every other classroom
- CAT6 cabling exposed

Scenario 1 – Fastest, Easiest, and Least Expensive (3-5 Year Plan)

Advantages	Disadvantages
❖ Can be set up in 2-3 months ❖ Limited amount of new cables needed ❖ Lowest costs due to exposed CAT6 cabling and wireless IP phones	❖ Wireless phones have decreased performance ❖ Exposed CAT6 cabling unattractive and easily vandalized ❖ Does not address basic infrastructure needs at each campus ❖ Cabling will not be completed as specified in the Facilities Needs Assessment Plan ❖ If modernization occurs, all cabling will need to be replaced

Scenario 1 – Fastest, Easiest, and Least Expensive (3-5 Year Plan)

Administration Offices Only	Administrative Offices and Classrooms
District operates two phone systems – new system to Admin offices and old phone system to classrooms Approximate Timeline: 2 to 3 months Estimated Cost: • $174,000 (includes 20% contingency) • Plus $3,500 monthly VoIP costs for Admin phones •Plus $1,400 continued monthly current cost for T1 lines for old phone system	District operates one phone system T1 lines disabled Approximate Timeline: 2 to 3 months Estimated Cost: • $414,000 (includes 20% contingency) •Plus $3,500 monthly VoIP costs for Admin phones

Scenario 2 – Standard Setup and Middle of the Road Cost (10-15 Year Plan)

- Hosted VoIP System
- Administration offices and classrooms have access to the new phone system through basic VoIP phones
- Surface-mounted CAT6 cable will be run to each classroom
- Between classrooms, the CAT6 cable will be run through ceiling-mounted conduit and a limited amount of trenching between buildings will be needed for underground conduit

Scenario 2 – Standard Setup and Middle of the Road Cost (10-15 Year Plan)

Advantages	Disadvantages
❖ Wired phones are more reliable and have better reception ❖ Limited amount of trenching leads to faster setup ❖ Provides a new phone system and improved network infrastructure ❖ Saves some money by only adding a single, surface-mounted CAT6 cable to each classroom ❖ Most cabling will be completed as specified in the Facilities Needs Assessment Plan ❖ Good value and performance will not be hindered with wireless technology	❖ Surface-mounted conduit more susceptible to damage than underground conduit ❖ Surface-mounted conduit may be replaced if modernization occurs

Scenario 2 – Standard Setup and Middle of the Road Cost (10-15 Year Plan)

Administration Offices Only	Administrative Offices and Classrooms
District operates two phone systems – new system to Admin offices and old phone system to classrooms Approximate Timeline: 1 to 1.5 years (2 to 3 months per site) Estimated Cost: • $246,000 (includes 20% contingency) • Plus $3,500 monthly VoIP costs for Admin phones •Plus $1,400 continued monthly current cost for T1 lines for old phone system	District operates one phone system T1 lines disabled (saves $16,800 per year) Approximate Timeline: 1 to 1.5 years (2 to 3 months per site) Estimated Cost: • $606,000 (includes 20% contingency) •Plus $3,500 monthly VoIP costs for Admin phones

Scenario 3 – Slowest, Most Expensive, Built to Last (40 Year Plan)

- In-house VoIP System
- Administration offices and classrooms have access to the new phone system through advanced VoIP phones
- Multiple CAT6 cables will be run to each classroom
- Between classrooms, the CAT6 cable will be run through ceiling-mounted conduit
- There will be an extensive amount of trenching between buildings for underground conduit

Scenario 3 – Slowest, Most Expensive, Built to Last (40 Year Plan)

Advantages	Disadvantages
❖ If Internet connection goes down, phones will still work internally ❖ All cabling will be completed as specified in the Facilities Needs Assessment Plan ❖ Provides a new phone system and network infrastructure built to last ❖ Network infrastructure ready for IP-based systems (time, fire, security) ❖ Most reliable because conduit and cable is protected ❖ No monthly service costs for service	❖ Extensive amount of trenching will be time consuming and expensive ❖ Major phone equipment may need to be re-evaluated/replaced in ten years ❖ Upfront costs for the phone equipment and cabling infrastructure will be high ❖ Staff training and potential additional staff

Scenario 3 – Slowest, Most Expensive, Built to Last (40 Year Plan)

Administrative Offices and Classrooms

District operates one phone system for Admin and classroom phones
T1 lines disabled

Approximate Timeline: 3 to 4 years (2 schools each summer – work must be completed only during long periods of non-student time due to amount of trenching required)

Estimated Cost:

- $2,574,000 (includes 20% contingency)

Summary

Scenario 1 – Implements a new phone system as quickly as possible. Cabling will not be completed as specified in the Facilities Needs Assessment Plan. Great dollar value, but performance may suffer due to wireless technology. (3 to 5 year plan)

Scenario 2 – Implements a new phone system and improved network infrastructure. Limited amount of trenching as conduit installed on roofs where possible. Some cabling completed as specified in the Facilities Needs Assessment Plan. (10-15 year plan)

Scenario 3 – Implements a new phone system on a first-rate network infrastructure. Provides good performance, longevity, and room for growth. Meets all of the requirements in the Facilities Needs Assessment Plan, but is the most costly. (40 year plan)

Administration's Recommendation

Scenario 2 with phones to the Administrative Offices and classrooms is recommended.

Rationale:

- Provides Districtwide system in a timely manner while limiting costs
- Most cost effective for sustaining the phone system and allowing access in offices and classrooms

Board Member Questions