



SHORETEL PROJECT STATEMENT OF WORK

FOR

**Berkeley Unified School District
2020 Bonar Street
Berkeley, CA 94702**

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1. Project Scope

Overview: BERKELEY UNIFIED SCHOOL DISTRICT has an existing single site ShoreTel phone system at the District Office with PRI trunks. All other locations have old stand-alone InterTel TDM systems with Centrex trunks. This project will expand the existing ShoreTel system to all project locations per the Equipment by Site list and leverage the Districts Comcast MetroE network, VMWare and SIP trunks at redundant locations.

a) Public Switched Telephone Network (PSTN) Access

BUSD currently has 2xPRI trunks at the District Office providing PSTN access to the ShoreTel system. All other locations have Centrex trunks providing PSTN access to the InterTel systems. These legacy PSTN methods will be replaced with SIP call paths.

100 SIP call paths will each be installed at Martin Luther King and Berkeley High School for a total of 200 SIP call paths system-wide. This will be the primary PSTN access for BUSD. This provides geographic redundancy and PSTN resiliency district-wide.

In the event of a total SIP access failure, an analog trunk has been provisioned for each site. This analog trunk will also serve as the primary access to the PSAP for calls to the 911 operator.

b) Data Infrastructure

BERKELEY UNIFIED SCHOOL DISTRICT will provide the PoE LAN infrastructure. The LAN will power the ShoreTel phones and provide the necessary QoS for toll-quality voice.

BERKELEY UNIFIED SCHOOL DISTRICT has a MetroE Layer-2 network (WAN) provided by Comcast. Most locations have 1-GIG connection, except for a few with 2-GIG connections. Calls between locations and access to the PSTN (SIP) will utilize the WAN where appropriate.

Global CTI will provide configuration best practices and assist BUSD IT staff to configure the data network for voice.

A virtual SIP Session Border Controller will be provided and installed on BUSD's VMware at Berkeley High School and Martin Luther King.

c) ShoreTel Infrastructure

District Office: The existing ShoreTel at the D.O. will be expanded to the rest of the district. The D.O. is where ShoreWare Director is located. They have two(2) ShoreGear 220T1A's which will continue to provide IP phone resources and

analog back up to this location. The PRI's will be decommissioned and DID's will then port over to the SIP service provider.

Berkeley High School: A ShoreTel DVS license will be provided and installed on BUSD's VMware. The DVS is used for advanced applications such as voice mail, ShoreTel Communicator, Outlook Integration, ACD groups and paging. Users will fail up to ShoreWare Director. Four (4) ShoreGear 90's and one (1) ShoreGear 24A will be provided. The ShoreGear 90's will provide IP phone resources and PBX features. The ShoreGear 24A will provide analog station ports as well as ad-hoc 6-party conferences. A network failover voice switch will be installed on BUSD's VMware. This failover switch will run idle until needed in the event of a physical switch failure anywhere in the network.

Martin Luther King: A ShoreTel DVS license will be provided and installed on BUSD's VMware. The DVS is used for advanced applications such as voice mail, ShoreTel Communicator, Outlook Integration, ACD groups and paging. Users will fail up to ShoreWare Director. Two (2) ShoreGear 90's, one (1) ShoreGear 50 and one (1) ShoreGear 24A will be provided. The ShoreGear 90's and the 50 will provide IP phone resources and PBX features. The ShoreGear 24A will provide analog station ports as well as ad-hoc 6-party conferences. A network failover voice switch will be installed on BUSD's VMware. This failover switch will run idle until needed in the event of a physical switch failure anywhere in the network.

Typical School Site: Depending on the location, either a ShoreGear 50 or ShoreGear 90 will be used. The ShoreGear will provide IP phone resources and PBX features. The ShoreGear will provide a limited number of analog station ports and analog trunk ports used for 911 and PSTN backup.

Note Desktop PC's must be on Windows 7 or better to run ShoreTel Communicator, and Outlook 2010 or better for Outlook integration.*

Global CTI will provide training, carrier cut coverage (if applicable), and first day of business support. A full complement of services provided under this scope of work is detailed throughout this document.

1.1 Telephony Database Gathering and Design

GCTI will assign a dedicated resource to the project responsible for gathering and compiling Telephony information to include:

- Review all relevant documentation including, but not limited to, current LAN and WAN network architecture and diagrams, key business strategy documents and voice infrastructure
- Review network infrastructure and transport technologies
- Review data equipment at all locations

- Telephone type and location
- User information to include calling restrictions and class of service
- Departmental line appearances, pick-up groups and specific departmental needs
- Voicemail and Automated Attendant needs for both on and off hours

1.2 Equipment Configuration and Installation

GCTI will perform the following services and activities described below while installing the equipment outlined in Attachment a – Bill of Materials. These services, activities, and responsibilities characterize the full set of installation deliverables.

- Unpack, inspect and inventory hardware/software
- Stage critical hardware and software components for the project outlined in Attachment A – Bill of Materials
- Rack, configure and Burn-in all core components for all locations in GCTI's Implementation Staging Lab in Bakersfield
- Unpack, assemble and place all phone end-points. *(Provided by Berkeley USD staff)*
- Test VoIP QOS, redundancy and failover, DHCP, trunking test and phone turn up prior to installation and training at each location based on the Implementation Schedule
- Cutover and testing of functionality during cutover of circuits or porting of numbers

1.3 Implementation Steps

After lab burn-in and system configurations, GCTI will deploy all equipment to its appropriate locations.

GCTI Engineers will:

- Rack ShoreTel Switches and peripheral components in a GCTI provided equipment rack.
- Patch and Connect all equipment to BERKELEY UNIFIED SCHOOL DISTRICT's existing network
- Test IP connectivity of all devices
- Successfully test the ability for phones to connect, obtain IP address and connect to the appropriate VLAN for voice.
- Test Quality of Service
- Comprehensive testing to ensure components is operational on the network without issues.

GCTI will provide a detailed Implementation Schedule after contract approval with input and agreement from BERKELEY UNIFIED SCHOOL DISTRICT.

Implementation Schedule milestones are as follows:

- Contract Approvals
- Kick-off meeting
- Create Project timeline
- Order Equipment
- Provide BERKELEY UNIFIED SCHOOL DISTRICT with VLAN ShoreTel best practices
- Database gathering and design
- Database finalization and presentation
- Database freeze
- Lab build out, configuration and burn-in
- Equipment installation and testing
- Phone placements (*provided by Berkeley USD staff*)
- Telco turn-up and testing
- User training
- Cutover and testing
- First day of business Help Desk

1.4 Telco Requirements

GCTI will provide coordination and testing of all carrier circuits associated with this project. GCTI will also provide technical guidance and information for orders if applicable.

1.5 Analog Requirements

GCTI will install, cross-connect, configure and test any analog lines/stations. BERKELEY UNIFIED SCHOOL DISTRICT will be responsible for identifying all analog lines/stations

2. End User Training

GCTI will provide end user station training as described below:

- Locations: Installation site(s) conference room or designated room
- During the hours of: M-F 8-5
- 1 – 3 user training classes per site for school site administration users consisting of phone, voicemail and Communicator. Length of classes would be approx. 60-90 minutes in length

- 1 user training class per site for teachers/instructors for basic phone and voicemail usage.

GCTI trainer will work with the System Administrators to develop appropriate handouts for End Users. Class will cover features and explanation on telephone sets, voicemail set up and retrieval, and ShoreTel Communicator training.

BERKELEY UNIFIED SCHOOL DISTRICTS Responsibilities

- The BERKELEY UNIFIED SCHOOL DISTRICT's System Administrators will work with the GCTI installation team to coordinate and manage End User training classes
- The BERKELEY UNIFIED SCHOOL DISTRICT will provide an adequate training area for End Users and notify all End Users of training schedules
- The BERKELEY UNIFIED SCHOOL DISTRICT will provide additional wiring and electrical outlets that may be needed in training classroom

3. Project Management

GCTI's assigned Project Manager will act as the single point of contact for tasks such as: scheduling, coordination and manage the project as a whole. The Project Manager will develop an implementation plan and schedule based on decisions and discussion around timeline and milestone dates determined during the Project Kick-off meeting. The Project Manager will be responsible for scheduling appropriate resources to meet the milestone dates. Weekly project meetings will be established through the completion of the project to review tasks, project status and to communicate activities to the Project Team as well as to BERKELEY UNIFIED SCHOOL DISTRICT.

Additional tasks and responsibilities will also include the following but are not limited to:

- Defining project-planning objectives
 - Responsibilities of BERKELEY UNIFIED SCHOOL DISTRICT and GCTI
 - Appropriate milestone schedules
 - Project control procedures
 - Requirements for progress reporting
 - Schedule and purpose of status meetings
- Coordination and development of project plan and schedule
- Organizing resources and directing vendor resources
- Oversee installation efforts with regard to task completion deadlines, quality of work, and adherence to project plan guidelines
- Develop and maintain a project log of all open issues, responsibilities, and commitment dates

- Maintenance of working papers:
 - Establish the format of reports (i.e. Weekly Status Reports)
 - Establish and maintain project master files
- Change and quality control
- Conduct scheduled walk-thru's and reviews
- Measure actual progress and resource effort
- Identify and resolve problems
- Revise plan and reschedule if necessary

2.1 Change Control Process

The GCTI Project Manager is responsible for change control process in relation to managing requests for changes, documenting change orders and processing change orders for signature and contract revision.

Change orders will be generated and priced as requests happen and change orders will be submitted to BERKELEY UNIFIED SCHOOL DISTRICT for approval prior to equipment or services commence.

2.2 Project Escalation

The GCTI Project Manager will be the single point of escalation within GCTI. Next steps of escalation will be as follows:

- | | | |
|--|----------------|--|
| 1) Brian Brunette - Dir. Of Operations | (949) 268-3407 | bbrunette@gcti.com |
| 2) John Richardson - Dir. Of Sales | (661) 716-3701 | jrichardson@gcti.com |
| 3) David Kaiser – President | (661) 716-3705 | dkaiser@gcti.com |

4. Final Deliverables

GCTI will provide BERKELEY UNIFIED SCHOOL DISTRICT with the final deliverables:

- Provide a Project Manager to act as the customer's single point of contact for the project.
- Provide a formal change control process and document for any additional work required outside this scope of work.
- Provide as built system documentation

5. Acceptance Testing

GCTI will perform acceptance testing which involves running a suite back-up copy of tests on the installed system. Each individual test, known as a case, exercises a particular operating condition of the user's environment or feature of the system, and will result in a pass or fail outcome. Any failures will be addressed and retested until the expected results are achieved of all system configurations.

Acceptance testing will be performed after BERKELEY UNIFIED SCHOOL DISTRICT hours of operation.

Specific testing will also address, but is not limited to:

- Switch Cabling
- PSTN Trunks provide both a hard and WAN Network Connectivity
- Common Controllers, Gateways, soft copy of all product and switches including automatic network failover system manuals
- Call Accounting
- Systems Directory and call databases
- Unified and Voice Messaging
- Dial plan and call flows
- Least cost routing
- Operator assistance
- 911/E-911
- Automated Attendant menus and call routing
- Music-on-Hold
- Consoles
- Audio Conferencing
- System Administration Terminals for all installed applications
- All station equipment
- Switch failure at remote sites

6. Completion Criteria

This engagement will be deemed completed when all deliverables specified in this SOW have been completed and submitted.

7. BERKELEY UNIFIED SCHOOL DISTRICT's Responsibilities

BERKELEY UNIFIED SCHOOL DISTRICT will be responsible for the following:

- Designate a Single Point of Contact for the GCTI Project Manager to work with on project
- Provide access to sites and equipment as appropriate
- If not a part of this project, provide POE and network connectivity to all locations requiring a new IP Telephone.
- Provide racks, power and communications connectivity between all locations.
- Provide LAN information necessary – Ethernet ports, static IP addresses, and other network information for successful integration of the solution into existing network
- Provide DHCP for assignment of dynamic IP addresses for IP Telephones
- Provide environmentalals that meet or exceed manufacturer specified conditions

- Provide detail floor/building plans for each site (as available)
- Ensure that the network and Telco Circuits are complete to support the new equipment
- Provide telephone placement: unbox phones, remove plastic film, connect handset and base, associate phone MAC address to user in database, place phones on desks, plug into Ethernet network and where applicable in-line with PC, and test.

8. General Assumptions

- Resources from other GCTI offices and/or subcontractors will be utilized, as needed, to provide a full scope of technical expertise. Additional charges to BERKELEY UNIFIED SCHOOL DISTRICT may apply for items not specifically provided for in this Statement of Work.
- GCTI is not responsible for the performance or quality of third-party vendors, except for the use of subcontractors hired by GCTI.
- Resources and staffing from BERKELEY UNIFIED SCHOOL DISTRICT and GCTI must be committed for the duration of the project
- Engineering and/or design changes made by BERKELEY UNIFIED SCHOOL DISTRICT after project initiation may affect the agreed-upon project schedule and will require a project review to determine impact and schedule requirements.
- The quality of a VoIP call depends on many factors, including network traffic, LAN/WAN engineering (i.e.- setting up Quality of Service (QoS) across a network, and the type of CODEC'S being used (G.729a, G.711, etc.), and network carrier facilities. Business voice quality can be achieved with proper engineering and design. (QoS) cannot be guaranteed over the public Internet. GCTI will not be responsible for poor quality of voice if BERKELEY UNIFIED SCHOOL DISTRICT elects to utilize the Public Internet for VoIP applications
- In order for VoIP quality to sustain acceptable levels, please note that GCTI recommends customers to maintain SLA's with their network service provider for WAN services. GCTI cannot be held responsible for voice quality issues over less than adequate networks. Below is a list of maximum network variables that must not be exceeded:
 - Network Delay- maximum 180ms one-way between endpoints
 - Network Jitter- <20ms between endpoints
 - Packet Loss- maximum 1% between endpoints
 - The network service provider should provide documentation of these parameters in order to verify these guidelines are being met for WAN services

9. Restrictions

All work to be performed under this Scope of Work will be done Monday – Friday between the hours of 8:00 am and 5:00 pm, with the exception of the actual cutover, which will occur after hours in order to minimize downtime and customer support.

10. Staffing

GCTI will staff the project with the appropriate technical resources. Personnel assigned to this project will be certified, skilled at and/or have access to technical information.

In all cases, GCTI will be responsible for the selection of suitable resources and reserves the right to allocate resources in a manner that allows for the most efficient completion of work. BERKELEY UNIFIED SCHOOL DISTRICT shall provide the GCTI representatives full and free access to the facilities and appropriate personnel. Failure to arrange suitable access to facilities or personnel necessary to conduct services on behalf of BERKELEY UNIFIED SCHOOL DISTRICT shall result in billing for such services even if services are unable to be performed through no fault of GCTI.

11. Schedule

The GCTI Project Manager and BERKELEY UNIFIED SCHOOL DISTRICT team will work together to come up with a mutually agreeable Milestone Schedule to follow during the initial project kick-off meeting. GCTI proposes beginning this project upon acceptance of this Statement of Work and as resources availability permits. Key time drivers for the project schedule are:

- Availability of equipment
- Access to customer facility
- Availability of and access to key personnel

12. Authorization

An authorized signature on this page indicates acceptance of this document as the Statement of Work (SOW). GCTI will be responsible for the project management of GCTI resources for this engagement. Services will be performed, solely, by GCTI or its approved subcontractors. The manner, means, methods, and resources used by GCTI to perform the Services lie within the sole discretion and control of GCTI. Upon completion of the Services, GCTI shall submit to BERKELEY UNIFIED SCHOOL DISTRICT a Certificate of Delivery and Acceptance. BERKELEY UNIFIED SCHOOL DISTRICT shall countersign the Certificate indicating its acceptance of the Work or shall submit to GCTI written notice of specific objections thereto. Failure of BERKELEY UNIFIED SCHOOL DISTRICT to submit such written objections within ten (10) days shall constitute acceptance of the completion of the services. Both parties agree that the SOW and the Sales Agreement are the entire agreement between the parties.

BERKELEY UNIFIED SCHOOL DISTRICT

Name: _____

Title: _____

Signature: _____

Date: _____

Global CTI

Name: _____

Title: _____

Signature: _____

Date: _____

Supporting Documents

Timeline

Equipment by Site

Design Diagram

Virtual Machine Host Configuration Requirements

<u>Task/Milestone</u>	<u>Resource</u>	<u>Start Date</u>	<u>End Date</u>	<u>Days</u>	<u>Notes</u>
Contract Execution	GCTI/BUSD	March 31, 2016	March 31, 2016	1 day	
Project Kick-off meeting	GCTI/BUSD	April 4, 2016	April 4, 2016	1 day	Intro Team Members, review timeline, set weekly status meeting, etc
Site Surveys	GCTI/BUSD	April 5, 2016	April 7, 2016	3 days	Survey space, power, connectivity (cabling/patching), trunks, paging interface, MOH and peripherals
Network and IP Schema design discussion	GCTI/BUSD	April 11, 2016	April 11, 2016	1 day	
Network and IP Schema design documentation	GCTI Engineer	April 11, 2016	April 11, 2016	1 day	GCTI to provide VISIO
User and Call Flow Data Gathering	GCTI PM	April 11, 2016	April 29, 2016	15 days	Collect user details, call flow for inbound, special needs and develop a floorplan of phone locations
User and Call Flow Documentation	GCTI PM	May 2, 2016	May 6, 2016	5 days	
Present User and Call Flow Documentation for approval	GCTI PM/BUSD	May 9, 2016	May 13, 2016	5 days	
ShoreTel User and Call Flow Programming	GCTI Engineer	May 16, 2016	May 20, 2016	5 days	
ShoreTel Infrastructure Installation and Testing	GCTI Engineers	May 23, 2016	June 3, 2016	9 days	SG Switch connectivity to SW Director and all other SG Switches, Call Quality testing, Call Flow testing and test DHCP to phones
Perform Test Plan and submit results	GCTI Engineer	May 23, 2016	June 10, 2016	14 days	
IP Phone Placement, Assignment, Site Cutover and Testing	GCTI/BUSD	June 20, 2016	August 16, 2016	40 days	Berkeley USD will place phones
User Training, First day of Business Support and User Assist	GCTI	August 17, 2016	September 1, 2016	12 days	
Remote Help Desk support	GCTI	September 2, 2016	September 9, 2016	6 days	
System Acceptance and Support Handoff to Client Care	GCTI/BUSD	September 12, 2016	September 12, 2016	1 day	

Berkeley Unified School District				Endpoints		Analog	Trunking		ShoreTel							IP Resource Calculation				
Site	Location	420	480g	Total Exten Mailbox License	Total Exten Only License	Analog station ports	Analog CO lines	SIP trunks	Trays	DVS	SG-24A	SG-50	SG-50V	SG-90	SG-220T1	Switch IP Resources	(Analog) IP Resources	IP Resources	IP Resources (Total)	IP Resources Available
HQ	District Office- Existing System			138	12				1						2	200	0	150	150	50
1	BAM	30	10	40	2	2	2		1					1		90	20	40	60	30
2	Cragmont	23	26	49	2	2	2		1					1		90	20	49	69	21
3	Emerson	15	20	35	2	2	2		1					1		90	20	35	55	35
4	Jefferson	25	21	46	3	3	2		1					1		90	25	46	71	19
5	John Muir	16	21	37	2	2	2		1					1		90	20	37	57	33
6	LeConte	24	15	39	2	2	2		1					1		90	20	39	59	31
7	Malcolm X	42	18	60	3	3	2		1					1		90	25	60	85	5
8	Oxford	16	16	32	2	2	2		1					1		90	20	32	52	38
9	Rosa Parks	27	21	48	3	3	2		1					1		90	25	48	73	17
10	Thousand Oaks	23	25	48	2	2	2		1					1		90	20	48	68	22
11	Washington	24	22	46	2	2	2		1					1		90	20	46	66	24
12	Longfellow	48	24	72	2	2	2		1			1		1		140	20	72	92	48
13	MLK	67	32	99	6	6	2	100	2	1	1	1		2		230	40	99	139	91
14	Willard	55	25	80	4	4	2		1					2		180	30	80	110	70
15	BTA / Ind. Study	18	14	32	5	5	2		1					1		90	35	32	67	23
16	BHS	208	100	308	12	12	2	100	2	1	1			4		360	10	308	318	42
17	Berkeley Adult	35	45	80	7	7	2		1			1		1		140	45	80	125	15
18	Franklin	10	4	14	2	2	2		1			1				50	20	14	34	16
19	Hopkins	10	2	12	2	2	2		1			1				50	20	12	32	18
20	King CDC	10	4	14	2	2	2		1			1				50	20	14	34	16
21	Plant Operations	25	25	50	19	19	2		1		1			1		90	10	50	60	30
22	Transportation	5	10	15	3	3	2		1			1				50	25	15	40	10
	Totals	756	500	1,256	89	89	44	200	24	2	3	7	0	23	0	2,420	510	1,256	1,766	654

Summary Counts	
Trays	24
DVS License	2
SG-24A	3
SG-30	0
SG-50	7
SG-50V	0
SG-90	23
SG-90V	0
SG-T1K	0
SG-220T1	0
SG-220TA	0
IP-420	756
IP-480	0
IP-480G	500
IP-485G	0
IP-655G	0
Operator License	0
Exten/Mailbox	1,256
Extension Only	89
Site Licenses	22

Session Border Controllers	2
SIP Trunks	200

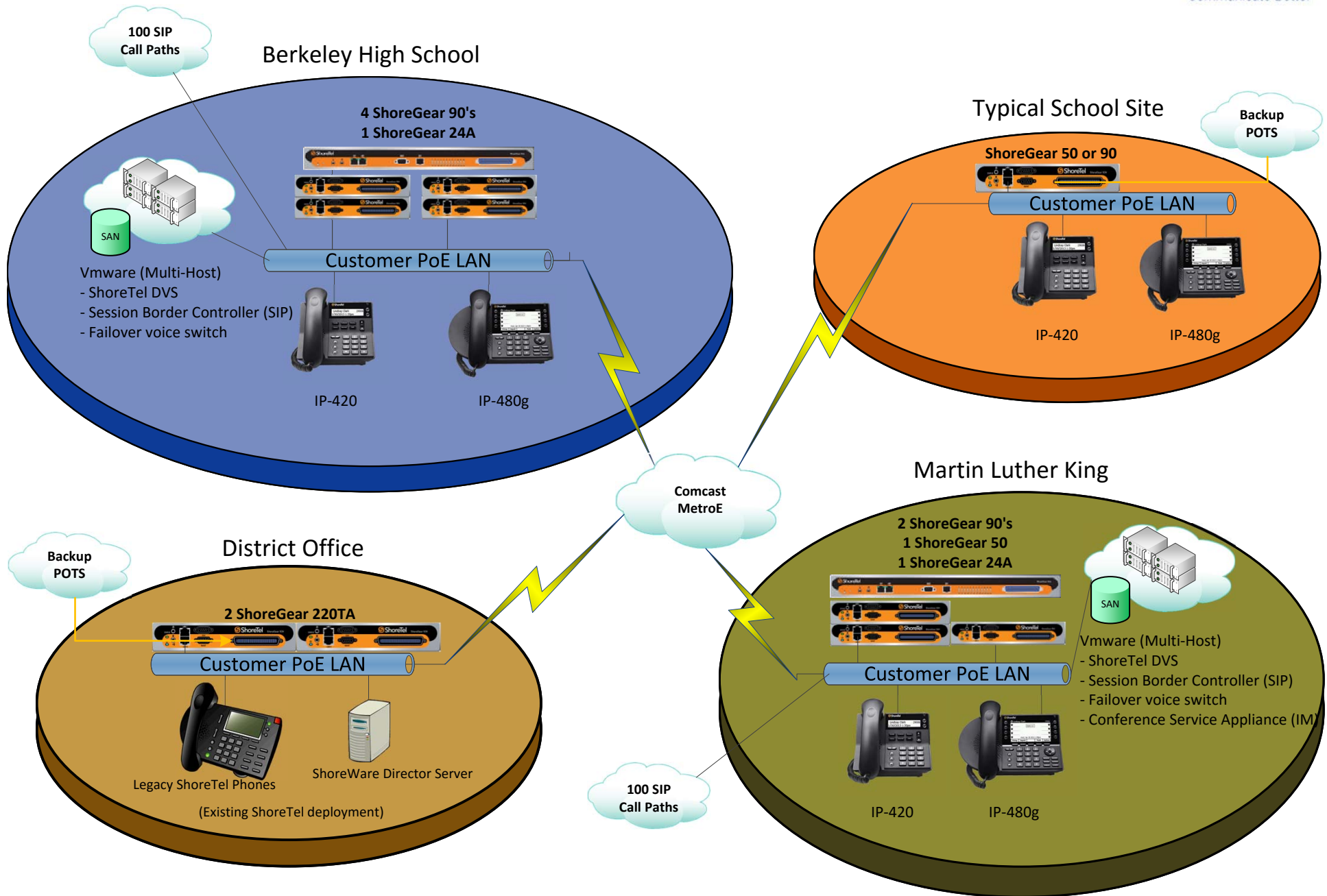
Note: HQ District Office not counted in above counts. Only new sites

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16-Mar-16

Berkeley Unified School District



Please refer to the Equipment by Site list for specific parts listing by location.

Customer Name: Berkeley Unified School District		VMware Server - Virtual Machine Host Configuration						
Host	Application	Processor *	Cores Per VM	RAM per VM	Disk Size GB	NIC's	Guest OS	Comments
	ShoreTel ShoreWare Director / DVS							
1	ShoreTel ShoreWare Director (Medium 2500 Users max. 1000 per server)	2.66 GHz or >	4	8	500	1	MS Server OS 2012 R2	
1	ShoreTel ShoreWare Director (Medium 10000 Users max. 1000 per server)	2.66 GHz or >	8	8	500	1	MS Server OS 2012 R2	
1	ShoreTel ShoreWare DVS (Distributed Voice Server) (1000 Users max)	2.66 GHz or >	4	8	500	1	MS Server OS 2012 R2	
	ShoreTel - Virtual IP Phone Switch							
1	Virtual Phone Switch (Free Failover) (250 IP Phones or less)	750MHz	1	2	20	1	Linux via OVA	Installed from ShoreWare Director
1	Virtual Phone Switch (500 IP Phones or less)	1.5 GHz	1	2	20	1	Linux via OVA	Installed from ShoreWare Director
1	Virtual Phone Switch (1000 IP Phones or less)	2.9 Ghz	1	2	20	1	Linux via OVA	Installed from ShoreWare Director
	ShoreTel - Virtual SIP Trunk Switch							
1	Virtual SIP Switch Trunk Up to 100 SIP Trunks)	2.9 GHz	4	2	20	1	Linux via OVA	Installed from ShoreWare Director
1	Virtual SIP Switch Trunk Up to 200 SIP Trunks)	2.9 GHz	8	2	20	1	Linux via OVA	Installed from ShoreWare Director
1	Virtual SIP Switch Trunk Up to 500 SIP Trunks)	2.9 GHz	24	2	20	1	Linux via OVA	Installed from ShoreWare Director
	ShoreTel - Virtual Service Appliance (IM/Conference)							
1	Virtual Service Appliance (IM/Conf) (50 Audio, 50 Web, 500 IM)	2.4 GHz or >	4	2	100	1	Linux via OVA	Installed from ShoreWare Director
1	Virtual Service Appliance (IM/Conf) (200 Audio, 200 Web, 2000 IM)	2.4 GHz or >	4	6	500	1	Linux via OVA	Installed from ShoreWare Director

*Please install the main server OS, but Global CTI engineers will launch and configure the OS services and ShoreTel applications for each machine.

VMware – Support for ShoreTel HQ and DVS servers

VMware ESXi 5.1, 5.5 & 6.0

VMXNet3 Virtual adapter not the E1000

VMware features that are not supported:

Fault tolerance not supported. This feature is not supported by VMware across multiple CPUs