INFORMATION TECHNOLOGY BUILDING

AND RELOCATION MASTER PLAN SUMMARY

AS OF JULY 19, 2006

CHABOT-LAS POSITAS COMMUNITY COLLEGE DISTRICT

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INTRODUCTION

CLPCCD will be building a new Information Technology Building at the Las Positas campus. This building will house the CLPCCD Data Center, which supplies the data and information resources for the Colleges and the District. The Data Center is comprised of the following components:

District Administrative Computer room
Network Equipment room
District Training Room
Print Production room
District Help Desk
Test Lab rooms
Storage Vault
Fire Suppression System
New Equipment Staging/Storage Area and Storage Cage

All of the District ITS staff currently located at Chabot will be relocated to offices in the Information Technology Building. The building will have a footprint of approximately 10,000 square feet with 8,500 being usable. The new Information Technology Building will be located between Building 1900 and parking lot A.

All of the District Data Center computing resources currently located at Chabot will be relocated to the new Information Technology Building. As management deems appropriate, the LPC Computer Support department and selected instructional server resources will also be housed in this new building. The instructional server resources for Chabot will remain at Chabot within Building 300.

The specifications in this document related to the District Data Center and District office requirements were based on the initial Bond Measure "B" planning and budgeting exercises performed by the District in July 2003. These specifications were further refined and finalized by the District staff during the ITS Master Planning phase for Bond Measure "B" completed in 2004-2005.

The requirements for the Las Positas building space were reviewed in January 2006 with the College President and VP of Business Services and this document reflects the latest updates. The LPC Computer Support Staff reviewed the document for detail inputs on the servers and equipment as well as LPC staff to be housed in this building. The assumptions utilized for the LPC sections of the document are as follows: (1) some portion of the servers throughout the campus will be consolidated into a central server room and which servers would be selected for this consolidation would be decided by the college, based on the server's purpose and access requirements. (2) The LPC College Computer Support staff, with the exception of those that support the Distance Education and Web Services at the college, would be housed in this building. This includes a total

of 10 staff - the Director (open position), Administrative Assistant (open position), Senior Instructional Network Systems Specialist (Supervisory), and 7 technical staff members (includes 1 future open position for growth).

DESIGN ASSUMPTIONS

The preliminary requirements described in this document were compiled during the IT Master Planning efforts for the Measure B Bond, and coordinated by the District ITS staff in conjunction with the College Computer Support staff.

The design assumptions are:

- It will take a minimum of two years to design and build the new Information Technology Building.
- No changes will occur in the District Data Center currently located at the Chabot campus until the move to LPC.
- Building 1900 will continue to be the telephone and network switching center at LPC.
- High bandwidth, redundant fiber connections will be installed between Building 1900 and the Information Technology Building. Redundant fiber backbones will be run from the new Information Technology Building to each building on campus.
- A new generator will provide emergency power to both the Information Technology Building and Building 1900.

Throughout this document, room sizes and dimensions have been specified and estimated in an effort to clearly convey the needs and desires of the District and the College. These should be used as a design guide but not considered hard requirements if the design team uses an alternate approach that has a significant impact on the building layout. Preliminary room layouts have been reviewed only for the equipment rooms and shared lab areas. No layouts for personnel office spaces have been done at this time. Only estimates for types of office spaces were provided to use as a guideline. The allocation and layout of staff offices will be done during the programming/design phase with the architects to allow the appropriate involvement of the Technical staff.

It has been determined that the District ITS staff and the LPC College Computer Support staff will not be co-mingled within the same areas of the building. The District and College technical staffs will have discrete areas in the building to allow for separation of function, responsibilities, and end-user access. This will segregate the District vs. College staffs so that the separation of duties is evident to the users. Co-location of these groups in the same building will allow for continued professional collaboration and leverage of common technical needs.

1 EXECUTIVE SUMMARY

The Information Technology Building will include the following spaces:

Data Center Computer Equipment Rooms with:
- 1 District Administrative Computer Room (District)
- 1 Network Equipment room (District)
- 1 LPC Instructional Server room (LPC)

1 District Training room that will seat 16-18 people with Storage Cabinets (Shared)
1 Data Center Print Production room (District)
2 Test Lab areas to work on equipment (one for the District and one for LPC)
1 Fire proof vault for tape and other media storage - requires separate building Storage (District)
1 Large conference room that will seat 16 people with documentation cabinets (Shared- optional)
2 Small conference rooms that will seat 4 to 6 people with documentation cabinets (Shared - optional) – could be converted into 2 person offices for visiting consultants/vendors or staff additions
1 Copier/Printer/FAX area with Documentation Storage (District)
1 Break room and kitchen (Shared)
1 New Equipment Staging/Storage Area with storage cage (Shared)
2 Restrooms (Shared)
1 Electrical room

<u>Categories of personnel spaces with recommended sizes:</u>

Note: When ranges are provided, the standard office size should be selected for all these offices whether they are open or closed offices.

1 District CTO with conference area (180 sq ft)
1 Director LPC (160 sq ft)
1 Administrative Assistant LPC (64 to 81 sq ft)
2 District ITS managers (140 sq ft)
1 Confidential/Supervisory LPC (120 sq ft)
19 Technical staff (81 to 100 sq ft) – 12 are District staff and 7 are LPC staff (Closed or Open Office spaces dependent on job functions – Refer to Sections 1.2 & 1.3 for details)
(Includes 3 office spaces for consultants/future staff – 1 LPC & 2 District)
1 Closed office cubicle (81 to 100 sq ft) for the District Help Desk staff With a built-in window for access to the adjacent User Waiting Area
4 Open office cubicles (64 to 81 sq ft) combined into one open area for District Operations staff (Includes Supervisor + 2 Operations + Payroll User Area)

1 Open Waiting area for Users/Vendors at front of building (100-120 sq ft)

Mandatory adjacencies for general rooms for the District are as follows (Refer to Section 1.11 for more detail):

- Administrative Computer Room & Network Room
- Network/Server/Desktop Offices & Test Lab
- Network/Server/Desktop Offices & Network Room & Administrative Computer Room
- Operations Offices & Data Center Print Production Room
- Help Desk & District Training Room

Mandatory adjacencies for general rooms for LPC are as follows (Refer to Section 1.11 for more detail):

- LPC Technical Staff Offices & Test Lab
- LPC Technical Staff & LPC Instructional Server Room
- LPC Confidential/Supervisory Office & LPC Technical Staff

1.1A Data Center Computer Equipment Rooms

The Data Center Computer Equipment rooms will be configured as three separate rooms: one for the District Administrative Computer Room, one for LPC Instructional Server room and one for District Networking Equipment. The goal is to house all critical equipment in these rooms where they can take advantage of the shared environmental and power protection systems. Careful attention has been given to the expansion needs of each area with additional space being allocated. Open frame Telco racks will be used to house all equipment with the exception of the IBM mainframe cabinets.

The District Administrative Computer Room will contain <u>all</u> the District servers that currently reside at the Data Center on the Chabot campus so there is no need to provide a specific list of servers. However, the LPC Instructional Server Room will include only a subset of the college servers as deemed appropriate by the College Computer Support staff. Refer to Section 1.1B for the list of these LPC servers.

Security access to these rooms will be restricted and will be established based on the job functions performed by the District staff or LPC staff. In general, the appropriate District staff will have access to the District designated server, network, and production printer rooms and LPC staff will have access to the LPC designated server and equipment rooms. Access to several other general areas

throughout the buildings will be shared between the District and LPC staffs and are marked as such, with the exception of the designated Test Lab areas as noted in the document.

The interconnection to the outside world including the Chabot Campus, the District Office and the Internet will be located in the adjacent Building 1900, which provides an integral part of the Data Center operation.

In order to accommodate the existing servers and associated equipment including reasonable expansion, we will need approximately 1,200 square feet of conditioned and fire protected floor space. This calculation does **not** include space required for fire suppression equipment.

The physical integrity of the Data Center Computer Equipment Rooms is critical to the operation of the District and Colleges, and as such, it will be protected by the following:

- A raised floor with depressed slab to accommodate system cooling, power distribution and cabling. No ramps.
- A fire alarm and gaseous fire suppression system.
- Separate power panels.
- A UPS.
- An emergency generator.
- An electronic security system including intrusion detection and access control.

A glass window will be incorporated to allow display of the District Administrative Computer room to visitors without actually needing to enter the space. This will reduce the traffic in the critical area and acts as a visual element in the interior of the building.

1.1B LPC Instructional Server Room

LPC will be consolidating some of their servers located throughout the campus into the LPC Instructional Server Room. Servers for the initial move to the new IT building are identified below and additional servers may be moved to this location as the need arises.

LPC Server Move - Information Technology Building
Initial Move

Server	Rack - Tower	Current Location	OS	Function
Vcom	Tower	300	Win2003 Srv	File Sharing
Image-Server	Rack	700	Win2003 Srv	ATI-SARS
Cooper	Rack	803	Win2003 Srv	DC - Management Server
Marvin	Rack	803	Win2003 Srv	DC - File Sharing

Daffy	Rack	803	Win2003 Srv	DC - File Sharing
Alice	Tower	1900	Win2003 Srv	DC - DHCP - DNS
Taz	Tower	1900	Win2003 Srv	DC - DHCP - DNS
Elmer	Tower	1900	Linux	DNS-Web-SNMP
Stars-Server	Tower	2200	Win2003 Srv	Student Tracking
Dragon	Tower	2200	Linux	CS-Class Server
LPC1	Rack	P.E	Win2003 Srv	Web-Server
Google Box	Rack	1900	Search Box	Search Engine

1.2 Closed Office Space

In order to accommodate the District ITS and LPC staff requirements, there will be closed offices configured in five different sizes (180, 160, 140, 120, and 100 sq ft). These closed offices will be used for management and selected Senior Technical staff based on their job function and responsibilities. The District and LPC management will determine the appropriateness of a closed office for their respective staffs. Spaces for Open Positions until filled will be used by consultants for the Measure B project or contractors for special ITS projects.

The District ITS group will need closed offices (total 12) for the following positions:

1. Chief Technology Officer (includes Conference Area)	1 CTO
2. Managers for ITS (total 2)	1 ITS Manager + (Open Position)
3. Applications Analysts (total 8)	7 Analysts + (Open Position)
4. Help Desk Analyst/Webmaster	1 Help Desk/Web Analyst

LPC Technology Department will need closed offices (total 4) for the following positions:

5. Director	(Open Position)
6. Administrative Assistant	(Open Position)
7. Sr. Instructional Systems Specialist (Confidential/Supervisory)	1 Confidential/Supervisory
8. Telecommunication Coordinator	1 Coordinator

1.3 Open Office Space

Some of the staff members will be housed in office spaces with either modular office furniture or free standing desks. Regardless of whether modular furniture or free standing desks are used, the standard size for individual open offices will be either 9' by 9' or 10' by 10' dependent on the available space. Some of the open office spaces will be combined spaces without partitions and the size of these areas will either be 8' by 8' or 9' by 9' as space provides. The District ITS has identified the Operations staff as the area for their group that warrant this combination office space. Each of these areas will be a closed area with their combined office space within that closed area for limited access.

The District ITS Operations group interacts continuously during the day and will benefit from an open office layout, equivalent to four offices, in a separate room near the Print Production room. The Operations area will have the four offices for 1 Operations supervisor, 2 Operations analysts, and 1 Payroll work area.

The Help Desk will require a closed office layout as mentioned in Section 1.2. However, there should be an open office area adjacent to the Help Desk, but separate that will be utilized as a Waiting area for users and vendors at the front door access. The Help Desk will have a window area adjacent to the User Waiting area to service user or vendor visitors.

The District ITS staff that require an open office layout with partitions rather than a combined open space include the Network/Server/Desktop analysts offices. This space will be a closed area with limited access and the open offices with partitions will be contained within that closed area. The Network/Server/Desktop area will be an open office layout with partitions, equivalent to four offices (3 analysts + open position). For the Network/Server/Desktop area, 2 of the 4 open offices should be 120 sq ft to accommodate additional storage and 2 should be the standard 100 sq ft. These office sizes should be consistent with the standard office sizes adopted for all offices. Spaces for Open Positions will be used by consultants for the Measure B project or contractors for special ITS projects.

The District staff designated for the open office space is as follows:

9. Operations Staff	Combined 4 open offices
10. Network/Server/Desktop Staff	4 Separate Open Offices (includes 1 Open)
11. Waiting Area for Users/Vendors	1 Open Office

The LPC Computer Network Support staff and the Instructional Systems staff interacts continuously during the day and will benefit from an open office layout, equivalent to six offices, which includes one for a future position. This area will be a closed area with

their combined office space within that closed area for limited access. For clarification, the LPC staff will be combined open office space with no partitions similar to the District Operations staff which is different from the District Network/Server/Desktop staff that will have partitions.

The LPC staff designated for the open office space is as follows:

12. Computer Network Support Specialist II	2 Analysts + 1 (Open Position)
13. Instructional Systems Specialist	1 Analyst
14. Instructional Systems Technician	1 Analyst
15. Future Open Position	1 (Open Position)

1.4 Test Labs

Test Lab space is critical to give the technical staff a place to work on new and ailing hardware. This space must be separate from the office areas to isolate the noise and heat generated by running server class equipment.

Two Test Lab rooms are required, each measuring a minimum of 10’ by 22’, one for the District and one for LPC. Each room will support a minimum of 4 benches and still have room for cabinet and shelf storage. To allow for easy equipment delivery, the Test Lab rooms will be located near or adjacent to the new equipment staging/storage area.

1.5 District Training and Conference Rooms

The very nature of IT work requires close coordination and collaborative efforts. Ad-hoc meetings occur frequently and there are three types of rooms that will be needed. The first requirement is a large conference room approximately 15’ by 22’ accommodating 16 people where entire departments can be brought together.

Secondly, multiple small rooms are needed to accommodate meetings of 4 to 6 people. These rooms will be a minimum of 10’ by 12’ and can be converted to office use in the future, if needed. The small conference rooms can be reduced to 1 if space is needed for office spaces.

The last requirement is a single training room sized approximately 25’ by 26’ that can accommodate a minimum of 16-18 people and be equipped with audio and video equipment similar to a smart classroom.

Documentation storage cabinets will be included along the peripheral of the conference rooms and the District Training Room.

If space allows, it is highly desirable to have a Video Conferencing unit available either in the Large Conference Room or the District Training Room. The optimum may be to have a portable Video Conferencing unit so that it can be utilized in either of these 2 rooms as needed, so allowance for connectivity would need to be addressed.

1.6 Storage Vault

A fire proof vault is needed for tape storage. This 6' by 6' room will be built to withstand a 2-hour fire without damaging the tapes and other media. The vault will be located in another building on campus. This room will need to be designed when a new building construction or remodel project occurs. A possible alternative for this storage is the reserved College IT area in the LPC Multi-Disciplinary building.

1.7 Network Equipment Room

A 230 square foot networking room is included in the Data Center Computer Equipment Room design to house all of the fiber/copper backbones entering the building, and the building voice/data station cabling. This room will be equipped with up to 8 open frame Telco racks for all fiber/copper terminations and networking equipment.

1.8 New Equipment Staging/Storage Room

A new equipment staging/storage area with a small warehouse is needed for handling of incoming equipment shipments and temporary storage. A separate caged area will be established to secure new and high value equipment, spare parts and interim/overflow storage. A roll up and pedestrian door to the outside and ideally, an inside door into the building in close proximity to the labs will be needed.

This Equipment Staging/Storage Room is intended for PC equipment and peripherals. The staging area dimensions are not adequate to include the LPC Media services equipment. The reserved IT area in the LPC Multi-Disciplinary building will be used for the storage of this media service equipment as well as for any overflow from this staging/storage room if needed.

It is assumed that the Purchasing/Receiving functions will still be performed by the District Purchasing/Warehouse department and then the equipment is sent to the IT staging area after the receipt is recorded. LPC has requested that a

Purchasing/Receiving function is established at the LPC site at the new M&O location similar to the Warehouse capabilities that currently exist at Chabot. It should be emphasized that the Purchasing/Receiving function will not be the responsibility of the District ITS or the College Computer Support staffs.

It should be noted that if earthquake survivability criteria is enacted for an excavated base with rubber bearings, then some expanded storage area under the building may be an option for this building. If this option is chosen, then the layout and size of this equipment storage area may be changed.

1.9A Copier/Printer/FAX Area

A general area is required for a shared copier, printer, and FAX for the District staff. Documentation cabinets will also be included in this area for reference materials and the storage of operating supplies. This area should be close to the technical staff offices. Additional storage cabinets will be also available in the general conference rooms.

1.9B Break Room/Kitchen

A break room equipped with tables, a sink, a microwave and a refrigerator will be provided to support staff members working in the building. This is needed to accommodate the frequent after-hours work activities for the technical staff when completing projects for the District and Colleges. This room may also be used as an overflow meeting room.

1.10 Restrooms

Restrooms to accommodate an estimated staff of 30-32 are required.

1.11 Space Summary

<u>Note:</u> Estimated square footage is to be used by ITS for preliminary planning purposes only to demonstrate the expected magnitude for the various spaces. The actual square footage will be determined during the program definition and design phases with the architects.

Quantity	Description	Size	SQF	Ext
1	District Administrative Computer room	32x23	736	736
1	District Network Equipment room	10x23	230	230
1	LPC Instructional Server room	9x23	207	207
1	Data Center Print Production room with paper storage	15x30	450	450
1	District Training room for 16-18 (shared) + Storage Cabinets	25x26	650	650
2	Test Lab (1 District & 1 LPC)	22x10	220	440
1	Fire Suppression room	6x8	48	48
2	Conference room 4-6 person (shared) + Cabinets (Optional)	10x12	120	240
1	Conference room 16 persons (shared) + Cabinets (Optional)	15x22	330	330
1	Copy / Printer / FAX Area + Documentation Storage	10x20	200	200
1	New Equipment Staging/Storage Area (shared)	20x20	400	400
31	Personnel Office Spaces (Management & Technical)	Various		3294
1	Break room (shared)	14x14	196	196
1	Men's restroom (shared)	8x12	96	96
1	Women's restroom (shared)	8x8	64	64
1	Electrical and riser room	8x10	80	80
			Total	**7661**
	(Note: Allows 10% out of 8,500 sq ft for hallways, etc)			
	Other Building Requirements:			
1	Storage Vault (in a different LPC building)	6x6	36	36
1	Building 1900 (existing – next to new IT Bldg)	35x12	750	750

CHART OF ROOM AND FUNCTION ADJACENCIES:

DISTRICT ITS STAFF AND EQUIPMENT/GENERAL ROOMS:

Primary Location	Department	Nearby or adjacent offices
District CTO Office Note: Manager offices (excluding Confidential/Supervisory) will be grouped together, but District managers will be adjacent to the District area of the building and LPC managers will be adjacent to the LPC area of the building.	District ITS	District ITS Managers offices (2) Large Conference Room LPC Director office LPC Admin Assistant
District ITS Managers (2 Offices)	District ITS	District ITS Technical Staff Offices (12) Small conference room
District ITS Technical Staff Offices - Network/Server/Desktop (4 offices) Note: Closed Area containing 4 open offices with partitions	District ITS	District ITS Test Lab area (Mandatory) District Network Equipment room (Mandatory) District Admin Computer Room (Mandatory) Equipment Staging/Storage Area (Adjacency Optional) Small Conference Room (Adjacency Optional)
District ITS Technical Staff Offices - Applications Analysts (8 Offices) Note: Closed Area containing 8 adjacent closed offices	District ITS	District Admin Computer Room Small Conference Room Copier/Printer/FAX Area
District ITS Operations Staff (4 offices) Note: Closed Area containing 4 combined open offices with no partitions	District ITS	Data Center Print Production Room (Mandatory) District Admin Computer Room

Help Desk Staff (1 office) Note: Access Window to Waiting Area	District ITS	District Training Room Waiting Area for Users/Vendors Front door (user access)
District Training Room	District ITS	Front door (user access) Help Desk Area
Large Conference Room	District ITS	CTO & Management (District & LPC)
District Administrative Computer room	District ITS	District Network Equipment room (Mandatory) - leverage raised floor, controlled HVAC, electrical, fire protection.

LPC STAFF AND EQUIPMENT ROOMS:

Primary Location	Department	Nearby or adjacent offices
LPC Director Office Note: Manager offices (excluding Confidential/Supervisory) will be grouped together, but LPC managers will be adjacent to the LPC area of the building and District managers will be adjacent to the District area of the building.	LPC CS	Administrative Assistant LPC Technical Staff District CTO Office District ITS Managers Large Conference Room
Admin Assistant	LPC CS	LPC Director
LPC Confidential/Supervisory office - Sr. Instructional Systems Specialist	LPC CS	LPC CS Technical staff offices (6) Small conference room
LPC Technical Staff Offices Note: Closed Area containing 6 combined open offices with no partitions	LPC CS	LPC Test Lab area LPC Instructional Server room Equipment Staging/Storage (Optional)
LPC Instructional Server room	LPC CS	District Network Equipment room - leverage raised floor, controlled HVAC, electrical, fire protection. (adjacent if possible since controlled room)

1.12 Data Center Power Requirements

The existing power requirement of the Data Center Computer Equipment rooms is 30 KW. Based on the projected expansion and industry trends towards smaller and more compact servers, the room will be designed to accommodate a maximum of 90 KW of power.

1.13 Data Center UPS

A new large UPS will be installed to provide sixty minutes of 90 KW of power to the Data Center Computer Equipment rooms, plus the two test lab areas and selected offices. Lighting and cooling requirements have not been included in this calculation, nor electrical requirements for any of the spaces outside of the rooms listed above.

1.14 Building 1900 Power Requirements

The existing power usage of Building 1900 is 10 KW. With future networking gear, the maximum load of this room is 20 KW.

A new UPS will be required to provide power to this room and will be powered by the new generator.

1.15 Building 1900 Modifications

Building 1900 currently suffers from a dirt and dust problem in part due to the exhaust fan that creates a slight negative air pressure that pulls dirt and dust in from the outside. A new interior wall and door is planned for the space along with changes to the internal equipment racking.

At a minimum, the room will have the exhaust fan removed, interior wall and door added, the HVAC system optimized or replaced, the floor sealed and the interior equipment locations re-worked to best utilize the space and accommodate the new networking equipment and fiber distribution.

1.16 HVAC Requirements

The critical nature of the equipment and services provided by the Data Center Computer Equipment Rooms and Building 1900 justifies dedicated and redundant air conditioners. The power calculations listed above are based on measured equipment loads and do **not** include cooling calculations. In all spaces with

equipment and servers, the HVAC system must be designed to provide a slightly positive air pressure to help keep dust and dirt from entering.

1.17 Generator

Over the past several years, the District and Colleges have identified a mandatory requirement for a generator to ensure the mission critical computer systems are available and uninterrupted if local power failures occur. A new generator will be needed to supply emergency power to the Information Technology Building and Building 1900 UPS units, and to support emergency lighting and HVAC systems in both spaces. Preliminary estimates indicate a unit in the 400 to 500kw range being appropriate. Possible locations for the generator are behind Building 1900 where the current air handlers are located, or in the driveway between the Information Technology Building and Building 1900.

Possible generator location behind Building 1900.

1.18 Drawing – New Information Technology Building and Building 1900

1.19 Drawing – Relative Location of Information Technology Building on Campus

2 DETAILED INFORMATION

2.1 INFORMATION TECHNOLOGY BUILDING SPACE REQUIREMENTS

2.1.1 Data Center Computer Equipment Rooms

The Data Center Computer Equipment Rooms will be partitioned into three physical areas, District Administrative Computer room, District Network Equipment room and LPC Instructional Server room, each with their specific security access requirements. The environmental and fire suppression systems will be shared between the three rooms. Separate electrical panels are required, each serving the electrical circuits for the specific room space.

The following drawing is a preferred layout based on the requirements and discussions with CLPCCD's CTO and staff who support the Data Center operation. The District staff specifically defined the District Administrative Computer Room and the District Network Equipment Room. The LPC Instructional Server room was defined by the LPC Computer Support staff to house selected servers on campus into a consolidated space.

Data Center Computer Equipment Rooms Physical Construction Details

Walls

One hour fire rated sheet rock walls around the periphery of the Data Center Computer Equipment rooms will be extended above the ceiling to the structure roof for security, cooling efficiency and fire protection. Internal walls dividing rooms will not be of fire-rating construction because of the shared raised floor. All walls, the ceiling and the roof will be insulated. A window that allows viewing of the District Administrative Computer room from the interior office space is desirable to limit visitor access into the room and to provide a visual point of interest in the building. A key security consideration is to prevent the room from being visible through any exterior windows. It is preferred that the solid wall shared by all three rooms be an external building wall, to facilitate the placement of the OSP Conduit field.

Doors

The exterior door to the District Administrative Computer room will be 3’ 6” wide and 8’ tall to accommodate upright entry of the IBM server equipment. All interior doors leading from the District Administrative Computer room to the new equipment staging/storage area must also be at least this size.

Exterior doors leading into the Network Equipment and LPC Instructional Server rooms will be 3’ 6” wide to accommodate equipment delivery. All other doors may be conventionally sized 3’ 0” wide.

Ceiling

The ceiling of the Data Center Computer Equipment Rooms can be drop tiles that are either clipped in place or made of vinyl covered gypsum. In either case insulation will be placed over the tiles and under the roof.

Floor

The Data Center Computer Equipment Rooms will utilize a raised floor over a depressed slab to support cooling, power distribution and network cable routing. In an effort to reduce lost space required by ramps, a depressed slab is required. The raised floor will extend to all three rooms: District Administrative Computer room, Network Equipment room and LPC Instructional Server room.

2.1.2 Typical Racks

The District has standardized on open frame two post 19” and 23” Telco racks instead of enclosed cabinets. Additional hardware will be needed to secure and

Zone 4 seismic brace the racks through the raised floor to the concrete below. Cable runway or ladder rack will be installed above the racks to provide cable pathway and additional structural stability. Sample cut sheets are included in the Appendix.

Wire Management

Horizontal wire management will be provided between servers. Vertical wire management is required between and at the ends of the racks. Approved products are:

- Panduit WMPVS45 6" vertical wire managers with hinged cover
- Panduit WMPSE 2U horizontal wire managers located above and below each patch panel.
- Systimax 24 and 48 port Category 6 or 6A patch panels with integrated wire management.

Typical Clearances

Racks typically will have a minimum of four (4) feet clearance from the center line to any adjacent wall. Space between racks is a minimum of six (6) feet.

Data Connectivity

Each rack will be provided with a discrete 24-port patch panel, whose cables route back to the network room for switch connectivity. This will allow servers to be patched to a panel on the rack in which they are mounted and

will minimize lengthy patch cords that need to be routed along the cable runway. Vertical and Horizontal wire management will be provided as described above.

Earthquake bracing

All racks will be bolted through the raised floor to the concrete below and will be secured at the top to 12" wide ladder racking that will connect to each side wall. Servers that are not bolted to the racks will be braced with either straps or support brackets.

2.1.3 Fire Protection

An early warning fire alarm system with a gaseous fire suppression system will be needed in all three rooms. When the fire suppression system erupts, a trigger for emergency power office must also occur.

2.1.4 Server Consolidation

Rack mount servers

The vast majority of the current District and LPC servers are in need of replacement and all new servers will be rack mount varieties in either 1U or 2U configurations. Rack shelf space will be allocated for legacy tower servers. Since Telco racks will be used, two post mounting kits will be ordered with all new servers. In the absence of two post mounting kit availability, then heavy duty rack shelves will be used.

Blade servers

Blade servers have the advantage of only taking up 25% the space that comparable rack mounted servers do for the same amount of processing power. The disadvantages are cost which often works out to be about 30% higher and the single point of failure in a common chassis. Based on the current server population and a 4-year server life span, the blade server decision will be reevaluated at the next hardware refresh cycle for the District and the Colleges.

2.1.5 UPS

The Data Center Computer Equipment rooms will have an initial server load of 30 KW with a total load of 90 KW when fully populated. In addition to the Data Center Computer Equipment rooms, the UPS will also support the two test labs, Operations staff and selected office workstations as determined by

management. The UPS will be designed to support a run time of 60 minutes at full load. A network interface on the UPS will support SNMP monitoring and automatic server shutdown.

The UPS will be located in the District Administrative Computer room to take advantage of the room cooling and provide easy access and monitoring during a power outage.

2.1.6 Power

Each rack will be equipped with three 120 volt, 20 amp circuits from the UPS mounted under the floor on a flexible whip. Vertical or horizontal power strips will attach to the rack and be connected to the under floor receptacles. One power strip will be provided for each circuit. Sample cut sheets are included at the end of this document.

A manual emergency power disconnect switch will be included in each of the three Data Center Computer Equipment rooms: District Administrative Computer room, Network Equipment room and LPC Instructional Server room.

2.1.7 Generator

A local generator will be required to support the following loads:

- Data Center Computer Equipment rooms UPS
- Data Center Computer Equipment rooms HVAC systems
- Data Center Computer Equipment rooms lighting
- Select offices in the IT Building
- IT Building emergency lighting
- IT Building security systems
- IT Building fire suppression equipment
- Building 1900 UPS that supports networking equipment
- Building 1900 telephone system and UPS
- Building 1900 HVAC systems
- Building 1900 fire suppression equipment

Initial estimates indicate that a 400 to 500 KW generator will be required to support both the Information Technology Building and Building 1900 areas as described above. If other office and non-equipment areas are added, a larger generator will be sized appropriately.

Fuel for generators of this size is traditionally diesel but natural gas will be considered if there is enough supply available on the campus for the following reasons:

- Reduced air pollution and no need to obtain a permit from the Bay Area Air Quality Management District.
- No restrictions on the total annual run time or testing schedule
- Elimination of fuel delivery and storage issues
- Elimination of Fire Department permit process
- Reduced cost by eliminating fuel storage tank
- Ability to run for extended periods of time without regard to fuel supply

A diesel generator has the advantage of a total self-contained fuel source and no reliance on the existing natural gas system. Both diesel and natural gas fuel sources will be further evaluated in conjunction with the Maintenance and Operations staff to select the most appropriate solution for the CLPCCD environment.

The generator transfer switch can be located in an electrical room or in the District Administrative Computer room. If it is not located in the District Administrative Computer room, a remote annunciator will be required next to the UPS.

2.1.8 HVAC

The HVAC system servicing the Data Center Computer Equipment rooms will be designed for high availability on a 24 x 7 basis. The cold air will be delivered under the raised floor with returns in the ceiling. Two units that can each support the full load of the three spaces will be installed to provide cooling during routine maintenance and during any system outage.

The HVAC units will be powered by both local AC power through the UPS and the onsite generator. A slight positive air pressure will be maintained to prevent dust from being drawn into the room from the office space.

Load balancing or cycling of the units will be considered to ensure the best possible service duty. Both units will be monitored for operation failures in addition to the temperature monitoring in the room itself. The condensation drains will be pumped outside of the building. Under floor water sensors with remote alerting will be installed if there is any potential of leakage.

In addition to the HVAC systems for the Data Center Computer Equipment rooms, there will be a separate system for HVAC control of the remaining

building spaces. It is possible that this HVAC system could provide emergency backup to the dedicated system that supports the Data Center Computer Equipment rooms. Engineering analysis is required to determine the placement of the HVAC systems and the most appropriate load balancing/backup/failover plan.

2.1.9 Network Connectivity

A single large network switch will be located in the networking room to support the Information Technology Building. Patch panels will be supplied to provide 24 Category 6 or 6A cables to each rack in the District Administrative Computer room and LPC Instructional Server room. For support of future connectivity speeds, the data cabling connecting the patch panels in server rooms will be the highest established transmission grade, preferably within length limitations to support 10 Gigabit speeds. At this point in time, 10Gig cabling transmission will be supported by the augmented Category 6 standard that is expected to be ratified in 2006. Cables feeding the office areas will be terminated on patch panels in the same room.

The outside plant conduits will come up directly in the network room. The OSP backbone cabling must terminate within 50 feet of the entrance to the building. In addition there will be overhead conduits leading to the offices and corridors. Since this will be part of the fire-rated area with the computer room, all penetrations must be firestopped with intumescent materials according to CEC requirements.

2.1.10 Physical and Electronic Security

The Information Technology Building will contain millions of dollars worth of equipment and data. While the building will be built along the perimeter road, it is located in a less visible part of the campus, and it is less likely that unauthorized attempts to gain entry will be readily observed. These two factors necessitate a higher level of both physical and electronic security than other LPC campus buildings. In addition to the ITS staff, security and maintenance will require access to the building.

Access Control

The rooms in the Information Technology Building will require varying levels of security access. The main lobby door may be unlocked during the day but any lobby interior doors will be continuously controlled by card access. If the lobby door is electrically unlocked on an automatic timer, there must be some method of overriding the controls to lock it if required. If the main lobby door will remain locked during the day, then an outside phone will be installed

to aid visitor access. These security details will be determined during the detailed building design phase.

The District Training Room, kitchen, bathrooms and some of the conference rooms may be used for various College, District and visitors meetings. As such these rooms should be designed together with interconnecting corridors, and a minimum of security/card key access beyond the main lobby door.

Each office will be keyed separately to allow the doors to be locked when needed.

Doors to the Data Center Computer Equipment rooms will be locked at all times and equipped with card readers for access. All other exterior doors that will be used for normal staff access will also be equipped with card readers and electric locks. The warehouse cage and two labs will be equipped with a card reader. Any emergency exits will be equipped with local door alarms to ensure that they are not accidentally propped open. All doors will be mechanically locked with latch cover plates to discourage tampering.

Alarms

Alarm systems can be designed in two ways: 1) active only when the space is unoccupied, and 2) protecting the perimeter and allows the alarm to be armed when occupied. At a minimum, all exterior doors will have door contacts installed and glass break detectors or motion detectors installed.

If skylights are part of the building design, they will be protected by burglar bars and infrared curtain beams. The security system will be designed to prevent it from being remotely disarmed and will require the physical presence of an authorized person to alarm/disarm the system.

Video Recording

The cost of video recording has dropped significantly over the last few years with the advent of inexpensive color cameras and digital video recorders. Video recording provides a great deterrent and is a quick and easy way to investigate both actual and alleged thefts. It is preferred that each exit door will be equipped with a camera as well as the Data Center Computer Equipment rooms and warehouse. The primary purpose of the camera and recorder is to archive activity for future review and not to be watched live. The Campus Police or IT management will be able to watch the video in real time with software that will run on a standard PC. The deployment of a video monitoring system will be coordinated with the campus Security Master plan and security technology solutions.

Environmental and security monitoring

The following conditions will be monitored by the security system and the SNMP alerting system:

Alarm	Security	M&O	ITS Staff
Generator running	X	X	X
Generator low fuel		X	X
Generator low oil		X	X
Generator high temperature		X	X
UPS running on batteries		X	X
UPS trouble		X	X
Data Center Computer Equipment rooms high temperature	X	X	X
Data Center Computer Equipment rooms under floor water	X	X	X
Information Technology Building fire alarm	X	X	X
Information Technology Building intrusion alarm	X		X
Building 1900 high temperature	X	X	X
Building 1900 fire alarm	X	X	X
Building 1900 intrusion alarm	X		X

Vehicular Accidents

The Information Technology Building will be located along the perimeter roadway on the western boundary of the campus. Though unlikely, it is possible that an errant driver could jump the curb and collide with the building. To minimize the impact if an accident of this type occurs, the Data Center Equipment rooms should be placed on the side(s) of the building away from the roadway. Suitable barriers and landscaping to deter vehicles out of control shall also be considered.

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2.2 TEST LAB SPACE REQUIREMENTS

Two Test Labs are required: one for use by the District and one for the LPC personnel. Each Test Lab will be equipped with four lab benches and storage for small parts and equipment that is in transit. A combination of mobile wire shelves and lockable cabinets will be used. A sample layout is shown below. Benches will be dedicated to specific staff members for accountability.

Lab Layout - 220 sq feet each

Typical benches

A typical lab bench will have a 28 x 72” sized laminated top with an optional 12” x 72” upper shelf. A power strip with 12 receptacles is often included and at least one drawer.

Typical lab bench

Workspace clearances

Each bench needs a minimum 4' of clear space in front of it for chairs and handling equipment. No space is needed behind or to the side of the bench.

Tool, cable and small parts storage

Each bench will be supplied with 3 drawers for small tool and parts storage. Free standing cabinets will provide additional storage.

Connectivity and power

Each bench will be powered by three UPS protected 20amp 120v circuits. Twelve network jacks are needed at each bench. The data cables will be pulled to a 19" rack in the Test Lab and terminated on 48 port patch panels. The lab network rack will be treated like the Data Center Computer Equipment rooms racks and 24 augmented Category 6 cables will be supplied back to the networking room. A separate network switch will be installed to provide connectivity from the Bench to the production network. The test lab rack will be powered by three UPS protected 20 amp circuits.

Empty box storage

When testing new equipment it is often necessary to save the shipping containers for possible return. Space will be allocated for this function in the new equipment staging/storage area.

Burn-in space

It is often necessary to burn in or test servers over an extended time and instead of tying up bench space, a 7' tall, 19" rack open Telco rack with shelves will be included. The rack will be provided with three 20 amp circuits. The lab benches and the rack will be powered by the building UPS.

Transit hardware storage

Mobile wire shelving to house equipment that has been received and is waiting for configuration will be included, as well as shelving for configured equipment waiting to be deployed.

2.3 OFFICE AREA REQUIREMENTS

Connectivity and power

Due to the high concentration of network equipment in any IT organization, each communication outlet will consist of 4 Category 6 or 6A cables that will be used for both voice and data. All cables will be terminated on Category 6 or 6A patch panels in the Network Equipment room. All communication outlets will have an adjacent quad-plex (four receptacles) electrical outlet beside it. As a general rule of thumb, walls will have communications and electrical outlets installed every 10-12 feet.

For electrical load planning, it will be assumed that each workspace will have a load equal to two computers and two monitors. A total load of 500 watts per workspace should be used for capacity planning. All communication outlets will have an adjacent quad-plex (four receptacles) electrical outlet beside it. Each electrical outlet will be powered by a dedicated 20 amp circuit.

Closed Offices

The single person closed offices will include one communications outlet on each wall and one electrical outlet on each wall.

Open Offices

Open office areas will be equipped with the same style of communications outlet used in closed offices. If modular furniture is used, an 8’ by 8’ size with ample storage space for manuals is adequate. This open space can be expanded to 9’ by 9’ size if the building allowance can accommodate this increased size in order for the open office to be more equivalent to the close office size from 81 to 100 sq ft. Space and additional communications outlets will be allocated for office equipment such as printers, faxes, etc.

Lived in 8’ x 8’ Open office area

Empty 8’ x 8’ Open office area

Access to other spaces

The Operations group will be located near the Print Production room since this is the key element of their daily work.

The District networking and server staff ideally will be located near the District Administrative Computer room and the District Test Lab.

The LPC technical staff ideally will be located near the LPC Instructional Server Room and the LPC Test Lab.

Small conference rooms in the proximity of the technical staff will make the frequent ad-hoc meetings easier to accommodate without disrupting the other workers.

Close proximity of the new equipment staging/storage area to the Test Labs and Data Center Computer Equipment rooms will facilitate material movement and limit wear and tear on the building associated with moving equipment on carts or hand trucks.

Management will ideally be close to both the large and at least one small conference room.

Care will be taken to minimize noise and disruption when possible.

- Use the labs for testing and configuration of equipment
- Use IP-based KVM's to limit the need for physical access
- Use multiple small conference rooms in close proximity to workers
- Group the operations team and printers together
- Locate the labs close to the new equipment staging/storage areas
- Provide a door to the labs to limit noise in the office area
- Keep the door from the new equipment staging/storage area to the rest of the office closed whenever possible

Office Equipment

Most modern office equipment is now IP-based and a standard communications outlet will be provided for each copy machine and printer.

Whenever possible functions such as printing, scanning and fax will be combined together into a single machine. Based on the planned head count, a minimum of two shared machines with associated paper storage will be required. Local printers will be placed in offices as needed.

There will be a central District Copier/Printer/FAX area that will be shared among the District ITS Staff.

Conference Rooms

Each of the two small 4 to 6 person conference rooms will have 4 communications outlets installed (one on each wall). Cable clutter can be reduced by installing one outlet in the floor for routing up through the table. In the event the space is converted to an office the floor outlet can be covered and wall outlets used instead. White boards as large as possible should be installed on all walls.

The large conference room will be equipped with the following:

- One floor mounted communications outlet
- One communications outlet on every wall
- One outlet with two data jacks in the ceiling for wireless access point connectivity (future)
- A ceiling mounted projector or wall mounted LCD/Plasma screen
- An electrically operated screen or a smooth textured wall if a projector is used
- As much white board space as possible
- A VGA cable for connection to a visitor supplied laptop
- A conference room grade speaker phone
- An optional PC with wireless keyboard and mouse connected to the projector or display
- Raceway provisions for a mobile video conference system (future)
- Electrical outlets distributed near each communications outlet with ample circuit assignment

District Training Room

The training room will be equipped with free standing desks that can be re-arranged as needed. The room will be equipped similarly to Technology Enabled classrooms and will include the following:

- 3 communications and electrical outlets on each wall
- 4-8 floor mounted communications and electrical outlets with carpeted lids
- At least one communications and electrical outlet for the instructor PC
- A ceiling mounted projector with ceiling data outlet for wireless AP
- An electrically operated screen or a smooth textured wall
- As much white board space as possible

- A VGA cable for connection to a visitor supplied laptop
- A conference room grade speaker phone
- An optional PC with wireless keyboard and mouse connected to the projector.
- Raceway provisions for a mobile video conference system (future)
- All additional equipment not listed that is part of a Technology Enabled classroom
- Fifteen (15) 20-amp circuits distributed around the room and in floor boxes with communications outlets

Rest Rooms

Restrooms will be provided to support a total of 30-32 users consisting of one stall for the women and one stall and one urinal for the men.

Break Room

Break Room facilities will be provided to accommodate staff who work evening and weekend hours on various ITS projects. The Break Room will include a refrigerator and be provisioned for other small appliances as needed.

Since the Break Room may double as an overflow conference room, tables for 16-20 people will be provided. The available walls will be equipped with communications and dedicated electrical outlets. Separate electrical circuits will be provided for the kitchen appliances.

New Equipment Staging/Storage Area

The new equipment staging/storage area ideally will include the following:

- A 12’ wide roll-up door to the outside
- A single pedestrian door to the outside
- One or more doors into the office space. Doors and corridors need to be wide enough (3’6”) so that a pallet of network equipment can be rolled into the lab or network room. Doors need to be tall enough, so IBM server equipment can be delivered upright, without tilting.
- A bench to be used for shipping
- A scale to be used for shipping
- Staging area for inbound and outbound material
- Storage space for one or two electric carts
- Storage space for packing material
- Storage space for evaluation equipment shipping boxes
- Shelving for equipment in transit

- A locked cage or cabinet for high value equipment such as memory and hard drives
- Room for delivery carts and hand trucks
- Room for a 6 or 8 foot utility ladder
- Room for a portable air compressor to be used to blow dust out of equipment being serviced

The new equipment staging/storage area is to be equipped with communications and electrical outlets to facilitate placement of a computer and/or telephone by the receiving roll-up door. By this receiving roll-up door, it is expected that there will be a good delivery zone within the adjacent exterior in between the new IT Building and the existing Building 1900.

Print Production Room

Printing is a key responsibility of the District Operations group and adequate space is needed to house their equipment, which currently consists of:

- 2 HP 8100 DN laser jet printers
- Moore PS-4 turbo pressure sealer
- 2 Printronix line printers
- Moore report burster

In order to support CLPCCD's anticipated student growth, the following needs to be accommodated:

- Additional HP 8100 DN laser jet printer
- New pressure sealer to replace the existing
- Paper and forms storage for up to 40 boxes
- Toner and other supply storage
- Work space to physically layout a print job for separation or assembly
- Delivery cart storage

This equipment requires a variety of power circuitry and connection cabling (RS-232C, Ethernet, etc.). To facilitate cable routing and reduce tripping hazards, a raised floor with sunken slab is required. Like the Data Center Equipment rooms, the depressed slab enables the Print Product room to be structured without the loss of space due to ramps.

Communications and electrical outlets shall be distributed along the walls and in the raised floor. Specific electrical outlet types and locations will be coordinated with the printer/device layout. Communications outlets will be placed adjacent to the electrical outlets, or using the standard wall distance described previously.

Some of the equipment in the printing room generates a significant amount of noise. Sound proofing the walls and ceiling is necessary to limit the impact on the adjacent spaces.

During certain print production processes, the sealer generates a significant odor and a high capacity exhaust fan is needed when this process is running.

Paper will be stored in the printer room and we believe that DSA will require 1-hour firewall construction. A locked cabinet to store supplies of secure forms is required. Besides the supply storage shown in the Print Production Room below, there is a need for additional storage for about 100 boxes of rosters, mailers, or paper that can be stacked 3-4 boxes high in a space of 8' x 13'. Shelves above the boxes would hold the UPS mailing trays used for the mailings and boxes of labels. These boxes can be stored in the Print Production Room or in the New Equipment Staging/Storage Area.

A sample floor plan with clearances can be found below.

Print Production Room

Storage Vault

The purpose of the vault is to provide secure storage for critical backup media. The primary concern is fire protection, not theft, and the vault space will include:

- Approximately a 6' by 6' floor space with shelves on two walls

- Room for a lockable fire rated filing cabinet
- A 2-hour fire rating for ceilings, walls and door
- Shelves for tape storage
- Water tight tape enclosures
- Card reader or combination access to the door

This vault will be located in a different building on the LPC campus. Identification of the location and construction of this space must be considered during one of the remodel or new building projects. The reserved College IT space in the LPC Multi-Disciplinary building is a possible option.

2.4 BUILDING 1900

Building 1900 is the LPC campus' main interconnection to the outside world and is the voice and data hub. The space currently houses the core networking equipment, connections to SBC and the fiber connections to the various campus buildings. In addition, the campus telephone system and many of the District and College servers that support the LPC campus are housed here.

Once the new Information Technology Building is built, the servers will be relocated into the District Administrative Computer room or the LPC Instructional Server room, whichever is appropriate. The networking and telephone equipment will remain in Building 1900. Any future requirements for the telephone equipment will be coordinated with the LPC Computer Support staff.

Space will be needed to support a considerable amount of new conduit installed to support the communications infrastructure to the Campus and the Information Technology Building.

The current space suffers from a dirt and dust issue due to the exhaust fan and two exterior access doors. Specific recommendations for this room are:

- Install a wall and door to provide an entry lobby
- Separate the controls of the two existing HVAC systems from the rest of the Campus to ensure 24x7 operation
- Eliminate the exhaust fan
- Create a slightly positive air pressure in the space to minimized inbound dust and dirt
- Seal the floor with an epoxy coating to reduce the concrete dust or install vinyl tile
- Re-arrange the existing Telco racks and fiber patch panels to minimize fiber patch cord management
- Provide a raceway for new fiber and copper cabling

- Eliminate the barrier between the telephone and networking equipment to maximize space utilization
- Replace the existing UPS system with one that can support up to 20 KW for 60 minutes.
- Connect UPS to new Information Technology Building generator
- Update the electrical distribution to support two 20 amp circuits per rack with active equipment
- Provide environmental monitoring for temperature
- Re-use existing fire protection system
- Expand the Information Technology Building alarm and access control system to monitor and control access to the building

2.5 ONGOING DISTRICT ITS SPACE REQUIREMENTS AT CHABOT CAMPUS

After the Data Center is moved, the District ITS staff will continue to need a total of 3 office work areas for technical staff (network, server, applications, and operations), and 1 office space for a local line printer for large volume outputs. This District ITS space will provide a combination of 4 discrete areas for site support. These offices are required for District ITS technical and network staff when they come to Chabot campus to work with users on various projects and system problems similar to the ITS office setup at the District Office.

The recommended spaces for the District ITS staff are portions of the current occupied District ITS staff space. The first 2 offices can be accommodated by using the current 312A network/server staff offices which contains 2 offices, each approximately 120 sq ft, with additional space for equipment testing & storage.

The 3rd office space and line printer space will be the current 312B Operations staff offices which would provide ample space to house a remote Banner line printer for serving Chabot and office space for the Operations or Network staff as required. In addition, this room will contain a laser printer and copier for the District staff and additional storage for supplies needed. These 4 office areas need to be closed areas with restricted access for the ITS staff or College Computer Support staff due to the sensitivity of the ITS information and equipment within these offices.

In addition to the office spaces described above, the telecommunication racks and fiber termination area in room 306 of Building 300 will continue to be used for the centralizing network switching that will run the Chabot Campus Data network. The 4 District office spaces need to be adjacent to the Network equipment room that will continue to be located in Room 306 and which will also be adjacent to the Chabot Computer Support staff. District ITS will provide remote support for this network room, and other network rooms on campus, in a similar manner to how the LPC campus is supported today.

Besides the 4 office spaces for the District ITS staff in Building 300, there is a need to also retain the existing Training Room in room 307. This Training Room is utilized today by both Chabot staff and District staff for any training class needed and so this capability needs to be kept. If the District ITS provides training on Banner or the email system, this room would be used to provide local training for Chabot instead of having the Chabot staff go to the District or LPC Training rooms. Equipment in that Training Room will be increased to at least 12 workstations to make its capacity more in line with the current District Training room.

Once the new IT Building is available for move-in at Las Positas, the District ITS will also be vacating all the offices for staff currently located in Building 100 (196), so these office spaces will become available for Chabot usage.

2.6 CHABOT INSTRUCTIONAL EQUIPMENT AND SUPPORT STAFF

There are currently approximately 16 servers supporting the Chabot instructional users that will remain on the Chabot campus. Many of these are located in a repurposed classroom (310) along with the support staff, creating a cluttered work environment without the proper environmental controls. The recommendation is to relocate these servers into the Data Center in room 312C currently housing the IBM equipment. This room has a large UPS, a raised floor, dedicated air conditioning and fire suppression equipment and will become vacated once the District move is complete. The printer space in room 312 will also be vacated by

District personnel and will provide additional space for the Chabot equipment. The other District ITS office spaces at Chabot, 312A and 312B, will be reserved for the District ITS personnel usage for remote support to Chabot as noted in Section 2.5.

In the event that the existing District space will be used by another campus group, suitable space for the Chabot Instructional Server Room, lab space and offices will need to be allocated somewhere else on campus with the same environmental, power and fire protection systems.

Power requirements

The current servers and networking equipment require approximately 5,000 watts of power. If we allow for expansion of additional services, including possible local future online services, the total power usage could easily range between 10,000 and 20,000 watts. The existing UPS currently utilized by the District Data Center will remain and can support this load.

HVAC

The Chabot Instructional Server room is critical to the Chabot campus operation and a stable HVAC system is required. The HVAC system will be evaluated to determine its remaining useful life and upgraded or replaced if necessary.

The Chabot Instructional Server room will include a temperature sensor tied into the alarm system for 24 hour monitoring and remote alerting.

Generator

A new generator will be installed to support the Chabot Instructional Server Room and the main telephone room in Building 200. The telephone room electrical connectivity is needed in order to keep the switch/router/firewall interface functioning to the DS3 Internet connection on SBC OC12 terminal.

Lab space, burn-in and transit hardware storage will be needed just as they are at LPC. The existing District Print Production room could possibly meet all of these requirements.

Security

The networking areas and Chabot Instructional Server room are critical to the operation of the Chabot campus and will be protected by an intrusion detection and access control system tied into the Campus system. At a

minimum, this will consist of card readers on critical doors and an alarm system for all areas. This will be coordinated with the Chabot Campus Security Master Plan.

2.7 MOVE PLAN

The relocation of District ITS staff and servers from Chabot to Las Positas will take careful planning and execution. The move can take place over a series of weekends or all at one time, provided the infrastructure is complete at Las Positas.

It is required that the District ITS staff who support the Data Center infrastructure and equipment must relocate concurrently with the equipment that they are responsible for due to the distance from Chabot to LPC.

The following is a simple outline of the tasks needed assuming we will be moving all at one time. This is provided for discussion purposes only:

Phase I - Planning

- Determine which machines are going to move
- Determine which services such as DNS and DHCP will need to be expanded
- Determine what new hardware will be needed for redundancy of service (mail forwarding, external DNS, etc.)
- Determine IP/DNS changes if any
- Development move schedule in conjunction with key users across the District and Colleges.
- Consider quality of service and bandwidth requirements
- Determine changes to WAN connectivity, if any
- Build a detailed project plan with dependencies
- Plan for the unexpected and develop contingency plans

Phase II - Preparation

- Create a staging area at both campuses for machines that will be moving using Telco racks
- Migrate existing servers to new rack mounted hardware clearly labeling all of it to avoid any confusion when the move takes place
- Create a detailed network design and drawing
- Order new WAN connectivity and networking hardware
- Implement new core networking hardware at both Chabot and LPC

- Implement QoS on the WAN and test application performance to determine impact on Chabot and LPC users so that the correct expectations can be established.

Phase III– Information Technology Building Outfitting

- Outfit the new Information Technology Building including all environment, power and connectivity services.
- Create detailed rack layouts with all equipment listed
- Install all shelves, power, connectivity and KVM systems prior to the move
- Clearly label racks to aid in equipment installation
- Perform load tests on the UPS and generator
- Install new core networking equipment
- Build detailed network port assignments and label all cables
- Determine and document optimal machine startup sequence
- Create a testing plan for each site and establish testing teams for the following:
    - LPC
    - Chabot
    - Information Technology Building
    - Applications
    - Networking
- Communicate service interruption to all users
- Create contingency plans for all critical services
- Stage extra hardware for possible emergency deployment
- Create a list of cell phone/pager numbers for all personnel involved in the move and distribute

Phase IV – Sample Move Schedule

Friday Day

Move the District personal items, printers and any non-essential equipment to the new Information Technology Building.

Friday Night

Perform a full backup of all systems even if it means starting the backup early or taking some applications off line so that the backup finishes no later than 7 am on Saturday. If a full backup cannot be accomplished by 7 am, consider temporary backup to NAS using disk-to-disk copying with incremental backup utilities like Robocopy.

Saturday Morning

- Arrange for extra security at both sites during the move
- Place a mark or sticker on active Ethernet/SCSI ports to avoid confusion when re-installing
- Shut down each system making any necessary IP changes.
- Place the power/SCSI cables in a plastic bag labeled with the machine name
- Load the servers for transport. Consider using personal vehicles instead of moving vans to provide a more cushioned ride for the Intel servers

Saturday Noon

- Install equipment in pre-determined rack locations attaching pre-installed network and KVM cables
- Start machines according to pre-determined sequence

Saturday Afternoon

- Start executing separate test plans from each site
- Document any issues detected
- Start trouble shooting any issues

Saturday Evening

- Complete testing
- Perform full load test on UPS and Generator

Sunday

- Address any open issues

Monday Morning

- Provide end user communication of any known issues
- Provide a special war room at each campus to deal with any user issues
- Provide full support staff at each site and at the Information Technology Building