AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

	1. Contract Number	Page of Pages	
		1	1

2. Amendment/Modification Number	3. Effective Date	4. Requisition/Purchase Request No.	5. Solicitation Caption
GF-2014-B-0219-004	September 19, 2014		See Below Caption

6. Issued By: Code	7. Administered By (If other than line 6)
University of the District of Columbia Capital Procurement Division 4200 Connecticut Avenue, NW, Room C03 Washington, DC 20008	University of the District of Columbia Capital Procurement Division 4200 Connecticut Avenue, NW, Room C03 Washington, DC 20008

8. Name and Address of Contractor (No. Street, city, country, state and ZIP Code)		
	9A. Amendment of Solicitation No. GF-2014-B-0219	
	9B. Dated (See Item 11) 8/29/2014	
	10A. Modification of Contract/Order No.	
	X	10B. Dated (See Item 13)
Code Facility		

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers [ ] is extended. [x] is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning ___1___ copy of the amendment: (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or fax which includes a reference to the solicitation and amendment number. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or fax, provided each letter or telegram makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. Accounting and Appropriation Data (If Required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14

	A. This change order is issued pursuant to: (Specify Authority) The changes set forth in Item 14 are made in the contract/order no. in item 10A.
	B. The above numbered contract/order is modified to reflect the administrative changes (such as changes in paying office, appropriation date, etc.) set forth in item 14, pursuant to the authority of 27 DCMR, Chapter 36, Section 3601.2.
	C. This supplemental agreement is entered into pursuant to authority of:
X	D. Other (Specify type of modification and authority) Title 8, DCMR, Section 3016.3

E. IMPORTANT: Contractor [ ] is not, [X] is required to sign this document and return ___1___ copy to the issuing office.

14. Description of amendment/modification (Organized by UCF Section headings, including solicitation/contract subject matter where feasible.)

Invitation for Bids No. GF-2014-B-0219 for Energy Metering Upgrade at the University of the District of Columbia is hereby amended as follows:

1. To provide the Office of Information Technology UDC Infrastructure Standards & Practices Referenced in Amendment No. 3.

Except as provided herein, all terms and conditions of the document referenced in Item (9A or 10A) remain unchanged and in full force and effect

15A. Name and Title of Signer (Type or print)	16A. Name of Contracting Officer **MARY ANN HARRIS**
15B. Name of Contractor	16B. District of Columbia
15C. Date Signed	16C. Date Signed 9-19-14
(Signature of person authorized to sign)	(Signature of Contracting Officer)
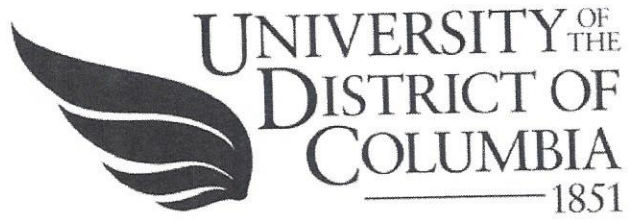
Office of Information Technology

UDC Infrastructure Standards & Practices

Revision 1.3

Revision Date 11/15/2013

About this Document

The purpose of this document is to assist departments, designers, contractors, integrators, and installers in understanding the core infrastructure at the University of the District of Columbia. These systems mentioned herein are core integration points to IT systems and support. IT requests that all applicable parties use this document as a guide to help design and create solutions that can coexist with the existing infrastructure. It is critical that these guidelines are followed so that UDC OIT will be able to offer continued support for installed products after job completion. In addition; compatibility, warranty, support and infrastructure roadmaps will not be disrupted due to continuity in the infrastructure. IT does not that technology constantly changes and that this document is a best chance effort to reflect the current state of the IT infrastructure. Applicable parties should ALWAYS request the most recent document from OIT as this document will be updated regularly.

All work that integrates with an IT component requires authorization from IT, regardless if it is not mentioned in this document. This document is designed to help applicable parties move quickly through the design and install process by following UDC best practices. IT will also require authorization prior to start of ANY project regardless of initiating party and also will inspect jobs after completion to verify job was completed satisfactory.

To receive an updated copy of this document please contact

Debbie Spencer
dspencer@udc.edu

Core Infrastructure Components

UDC is standardized on all campuses with certain hardware standards/vendors. The following section has a brief description of each systems role and key features. Each infrastructure component has a dedicated section within the document with more in depth integration information. Page numbers are listed to the right of each section.

When replacing or architecting additional systems on campus. Contractors must provide compatible equipment that utilizes these technologies and does not degrade the manageability or performance of the existing infrastructure.

Infrastructure Key Information

Core Networking
Cisco

Cisco is our vendor for our underlying network architecture. All buildings are connected using Fiber Optic cable. The core consists of two redundant switches connected in an Active/Active configuration. The main data center is located in Building 41, 3rd floor. The main MDF is located in building 38. IDFs are located in various locations throughout the campus. IDFs generally contain at Cisco 4506/4503 chassis with several blade modules. It's important to note that in new jobs capacity must be evaluated prior to deployment of any project that will connect to the switches in the IDF. It's the responsibility of the contractor to provide additional switch capacity if necessary. Another important note is that the Community College sites are connected using a layer 3 VPN that's managed by DCnet. Switches and routers are owned and managed by DCnet. All changes in these sites need to be approved and managed by DCnet with facilitation from OIT.

Cabling
Panduit/General Cable - PANGEN

UDC has worked with Panduit and General Cable to establish a cabling infrastructure solution that guarantees compatibility and continued support throughout the life of any cabling installation. It's important that any installer adheres to Panduit installation principles and best practices. This includes proper routing of cable, grounding, and installation procedures that maintain the integrity of the cable. IT will be reviewing all cable installations regardless of party to make sure that any runs adhere to best practices. IT requests that cable installation is conducted by that of a Panduit Certified Installer. Installation in this manner insures product compatibility and warranty. It also allows our system to be installer agnostic as Panduit will certify each installation.

Digital Signage
Cisco Digital Media

All digital signage utilizes technology based on Cisco's Digital Media Player platform. UDC currently has a Digital Media Manager located in its main datacenter that provides output via our data network to various monitors across the university. Output is provided across CAT6 cable and pushed to Cisco DMP devices that are mounted behind monitors and secured using mounting hardware. Content is programmed by the communication division of UDC IT.

Wireless

Cisco WAPs & Wireless Controllers

UDC has a large campus wide wireless infrastructure. This infrastructure is managed by Cisco Wireless Controllers and a Cisco Controller Server. Access points have been heat-mapped and are configured in a mesh network that allows roaming mobility throughout the campus. Access points are primarily Cisco AIR-CAP6502. Access Points have two Ethernet lines run to each (one for console another for Ethernet). Access points are powered using PoE. In addition to the primary CAP3502 access points, UDC also has several outdoor access points mounted on each building to provide blanketed wireless access to outdoor areas. External points are mounted on Building 38, 44, 32, and 47. Any renovation project should take into account the detailed planning involved with replacing access points after demolition. Any new construction project should place access points according to the previous strategy which is to include coverage for 100% of any facility. It's important to note that this wireless infrastructure stretches across multiple sites utilizing the same 100% coverage principle and core technologies.

*Please note information regarding the wireless is spread across two sections in the proceeding sections. Important information on demolition, placement and cabling is in the cabling section. Information on configuration and hardware is available in the wireless section.

Audio Visual Integration Systems

Crestron

UDC is standardized on Crestron equipment for all A/V integration points. Installations must allow manageability of the platform (Crestron Roomview). It also requires copies of the current running Crestron programming on each installed device. All AV installations must be signed off by UDC IT before completion of the job.

Security

Honeywell/Salto

UDC uses Honeywell and Salto for security systems throughout the campus. Honeywell Prowatch is used for door security and cameras. Salto is used for wireless locks. All systems utilize the UDC oneCARD for access. Campus police monitor and manage the system. However the system utilizes ITs core infrastructure for communication, thus it's important that cabling and systems are installed in accordance with OITs requirements.

Servers
Dell/Cisco/Apple
Dell is UDCs primary server provider. Systems consist primarily Dell PowerEdge and PowerVault. In addition UDC also has several Cisco UCS's which are pending deployment. We also have a mac mini server that provides exclusive services for Apple devices.

Desktops
Dell/Apple
UDC has standardized on the Dell Optiplex and Latitude line for desktops and laptops respectively. We also use Apple Mac's in computer labs. We only support specific models at one time. These models can be found by visiting the UDC IT page and viewing our Premiere Portal. Apple machines must be approved each order. Support is limited for Apple in that we currently only support them in lab environments.

Landline Telephones
Avaya/DCnet/Cisco
DCnet provides telephone support via an MOU agreement in place with OIT. The system consists of an Avaya digital telephone system that is integrated into the Distracts telephone system. The primary switch location is in Building 38 C level in the main MDF. This system utilizes POTS connections to transmit a digital signal. Alternatively, Community College sites and building 52 utilize VOIP service provided utilizing Cisco technology and handsets. This system is managed by DCnet and is integrated into the main campuses Avaya fabric.

Mobile Phones
Apple/Samsung
UDC has standardized on the Dell Optiplex and Latitude line for desktops and laptops respectively. We also use Apple Mac's in computer labs. We only support specific models at one time. These models can be found by visiting the UDC IT page and viewing our Premiere Portal. For apple machines must be approved each order.

SAN Network
Dell Equallogic
Dell Equallogic is our primary storage vendor. Our Equallogic array provides storage of upwards of 30+ TB for student data, e-mail, and virtualization.

Virtualization

Hyper V

Hyper-V is our virtualization platform. OIT has 10 Hyper-V VM hosts that are connected in standalone or clustered configuration. Hyper-V is currently running Server 2008 and 2008 R2.

Server Software

Microsoft/Red Hat

We currently have a campus agreement with Microsoft and use them as our primary server software vendor. We run an on campus Exchange 2007 environment in a Continuous Cluster Configuration. We also have host student e-mail in Microsoft's cloud using Office 365. Other software included Microsoft System Center (Config Manager, Virtual Machine Manager, Data Protection Manager). E-mail filtering is also provided by Microsoft's Forefront for Exchange. Our only Red Hat instance is the UDC Web server.

ERP

Ellucian/Banner

Banner is the university's ERP. This system stretches across multiple departments and integration between key integrated systems. Upgrades and patches are maintained by IT.

Scanning/Printing

Xerox/Pharos

The university has a contract with Xerox to provide a copying/printing at a fixed rate across multiple devices. Departments across the university have Multi-Function printers that allow copying, printing, faxing and scanning. Pharos is used in several locations for pay to print services (Library in building 41 main campus and 801 N Capitol Library). Scanning is conducted using the e-mail function on Xerox devices. Several departments also have several desktop scanners provided by Xerox utilizing ISIS technology for scanning documents into our ERP.

Section 1 | Core Network Infrastructure

Cisco is our vendor for our underlying network architecture. All buildings are connected using Fiber Optic cable. The core consists of two redundant switches connected in an Active/Active configuration. The main data center is located in Building 41, 3rd floor. The main MDF is located in building 38. IDFs are located in various locations throughout the campus. IDFs generally contain at Cisco 4506/4503 chassis with several blade modules. It's important to note that in new jobs capacity must be evaluated prior to deployment of any project that will connect to the switches in the IDF. It's the responsibility of the contractor to provide additional switch capacity if necessary. Another important note is that the Community College sites are connected using a layer 3 VPN that's managed by DCnet. Switches and routers are owned and managed by DCnet. All changes in these sites need to be approved and managed by DCnet with facilitation from OIT.

Standard Configurations

The following configurations represent basic configurations in IDFs, MDFs. Each installation has the possibility to be unique but these specs should be used as a baseline.

UDC IDF Standard – Stackable 3850 *

Item	Description	Model
Switch	Cisco 3850 Series with IP Base Software	WS-C3850-48P-S
Stacking Cable	50CM Type 1 Stacking	STACK-T1-50CM
Power Cable	Power x2	CAB-C15-CBN=
PDU	(Unofficial)	TBD
UPS	(Unofficial)	TBD
Power Supply	715 AC Power Supply	PWR-C1-715WAC
Network Module	1Gb/2x10GE	3850-NM-210G
SFP	2x 1Gb SFP Modules	GLC-LH-SM
Warranty	Smartnet 24x7x4 3850	

IDF/MDF Alternate Config Cisco 4510 Chassis

Item	Description	Model
Switch Chassis	Catalyst 4510-E	WS-C4510RE-S8+96V+
Copper Line Card*	48 port PoE / 2x Included with chassis bundle. Add additional as necessary.	WS-X4748-RJ45V+E
Power Supply	2800W ACV x2 for each 4500E switch.	PWR-C45-2800ACV
Supervisory Engine*	Included with Bundle. Add if necessary. Provides Uplink and Layer 3 services	WS-X45-SUP8-E
Power Cord	X2 L6-20A Power Cords	CAB-AC-2800W-TWLK
PDU	TBD	
UPS	TBD	
Software	IP Base Upgrade (Layer 3 Access)	L-C4500E-LB-IP
Warranty	SMARTNET 24x7x4	

MDF/IDF Caveats

- IDFs & MDFs must have active cooling systems to keep switching equipment cool. HVAC in IDFs and MDFs should be separate from main building HVAC and contain no vents from main building's HVAC.HVAC system should be spec'd to keep room at a maximum of 72 degrees year round.
- All IDFs and MDFs must have UPS systems capable of keeping switches up for at least 2 hours after loss of power.
- All cables and other hardware should stay clear of the switches ability to vent. Cisco switches generally vent to the side.
- Rack is to be grounded to earth using a grounding bus bar. All hardware should be connected to rack using grounding cables or otherwise directly connected to bus bar.
- MDF facilities need to allow adequate room for technicians to work, and
- All cable must be routed in MDF and IDF maintain cable bend radius. Any hardware needed to facilitate this should be spec'd for the job.
- Cables should not rest on top of each other when entering an MDF or IDF beyond recommended specs. Usage of cable trays is a necessity.
- When adding new cables to an MDF or IDF, installers should follow existing channels and be sure to group new cable with existing cable.

Section 2 | Cabling Standards and Practices

UDC has worked with Panduit and General Cable to establish a cabling infrastructure solution that guarantees compatibility and continued support throughout the life of any cabling installation. It's important that any installer adheres to Panduit installation principles and best practices. This includes proper routing of cable, grounding, and installation procedures that maintain the integrity of the cable. IT will be reviewing all cable installations regardless of party to make sure that any runs adhere to best practices. IT requests that cable installation is conducted by that of a Panduit Certified Installer. Installation in this manner insures product compatibility and warranty. It also allows our system to be installer agnostic as Panduit will certify each installation.

The following information should aids any contractor completing a job on UDC campuses to understand the proper way to bid and install cable on site.

Install corresponding infrastructure

Provide and install all cabling, boxes and associated materials necessary to provide data and telephone connection and service as shown on the contract documents.

Ensure and provide for increased capacity

Provide and install required equipment in existing telephone-data closets to meet increased capacity for voice, data and analogue (i.e. fax) connections, this includes but is not limited to:

- Equipment Rack(s)
- Switch(es)
- Blade(s)
- Patch Panel(s)
- Patch Cable(s)
- Punch Block(s)

Verification of Need

Contractor is to coordinate the cabling of all required Work to ensure sufficient capacity at the point of termination. Systems requiring termination may include but are not limited to

the following: Voice, Data, Security systems, Access Control, Automatic Building Controls, Digital Signage, Streaming Video Infrastructure, Wireless routers and devices.

Demolition

Where the Contract Documents require the removal of existing infrastructure or equipment, the Contractor is to provide at a minimum replacement of existing infrastructure or equipment to support the University's ongoing operations. The replacement is to conform to the standards in this Guideline. For instance, if an existing patch panel is rated for CAT-5, the Contractor is to provide a CAT-6 patch panel in its place. All cabling moved to a temporary location during construction for the Work must be reinstalled at its previous location by the Contractor.

Cable Demolition

Where cable is being removed from an existing space. The Contractor will remove the cable back to its source (patch panel), remove and store the patch cable between the patch panel and switch inside the closet.

UDC Installation Guidelines for data and voice cables

Install should follow PANDUIT Certified Installation practices or equivalent. Work should include materials necessary to guarantee warranty by Panduit or other manufacturer. Reuse of existing infrastructure is permitted where it meets this standard. All equipment, cabling and installation must be met by the most current Panduit installation practices. All work must be signed off on by UDC Information Technology before completion.

Guidelines include but are not limited to the following:

- **Contractor qualification**: All cabling installation, termination and testing shall be performed by a Panduit Certified Contractor.

- **Cabling Standard**: Unless specified in the Contract documents, the University required standard for all voice and data cabling is Category 6. **Cable must not be minimum compliant**. See the preferred equipment list for more information.

- **Cable Terminations**: All new or renovated data ports require new CAT 6-rated termination devices and patch panels provided and installed by the Contractor. The Contractor must coordinate the location of cable "punch downs" to patch panels with OIT prior to installation.

- **Patch Cabling from Patch Panel to Switch**: Provide and install patch cables from the patch panel to the network switch. Provide and install the quantity and lengths as requested by University OIT. Patches should allow easy access to ports and cables should be routed utilizing cable management and in accordance with Panduit best practices.

- **Wire Management:** Contractor will provide and install wire management in accordance with Panduit best practices.

- **Patch Cabling from Jack to Computer/Phone/Device**: Provide patch cables for the wiring of University computer, telephone and IT equipment. Provide the quantity and lengths as requested by University OIT. Deliver patch cables over to Capital Construction Division Project Manager.

- **Installation in Full Renovation/New Construction**: When installing a new rack or a rack with no existing cabling, provide a patch panel for every switch blade. Provide and install patch cables for each port between the patch panel and switch, regardless of the capacity of the current project.

- **Installation in Partial Renovations**: When installing data cabling on a rack with existing data cabling, the Contractor is to remove all abandoned voice and data cabling as required to complete the Work. Where existing infrastructure required to complete the Work does not conform to these guidelines, the Contractor shall upgrade the existing infrastructure to conform to these guidelines.

- **Reorganize Data Closet**: If specifically called for in the Contract Documents, the Contractor shall re-patch all existing data cable in conjunction with patching new cable. In this instance, the Contractor will not be required to number the patch panel sequentially. Contractor is to clean all work related debris from the data closet before completion of job.

- **Cross-Connect to Telephone Blocks**: All new telephone ports require new CAT 6 rated termination devices and must be terminated on new 110-blocks provided and installed by the Contractor. Contractor must coordinate location of the 110-block termination blocks with OIT prior to installation.

- **Port Labels**: All voice and data ports must be numbered sequentially, with the number on the wall port corresponding to the number on the patch panel and 66-block or the

110-block. The letter "V" (for voice) must be placed before the jack number using printed labels. The letter "D" (for data) must be placed before the jack number using printed labels. Printed labels must be black text using a sans-serif font (Arial, Helvetica) on white.

See Section 16 for UDC requirements for wall plates. See the preferred products section for part information.

See Section 16 for UDC requirements for Patch Panels. See the preferred productions section for part information.

- **Testing & Certify Cables**: Provide cable testing with a level 4 tester at all voice jacks and data jacks to confirm adequate connectivity at required locations of data and telephone outlets. Energize the equipment and provide start-up confirmation to ensure that all equipment can be powered on and receive a signal. Submit passed test report for each line to the Capital Construction Division Project Manager on (2) compact discs.

- **Wireless Networking** – Where Wireless Access is provided, the Contractor is to remove and salvage existing wireless infrastructure, including cabling, conduit and WAP devices and store for future installation. The Contractor is to reinstall all stored devices into the New Work. If work is in an existing construction, the Contractor must coordinate the installation of the WAPs utilizing a heat map of the newly renovated space AFTER completion of renovation to certify connectivity strength. Heat map may require a wireless engineer to walk the space with tools to determine accurate placement. If additional capacity is needed the contractor will need to furnish additional infrastructure according to UDC wireless infrastructure standard.

- **Security Networking Cable** – Security cable (CAT6) includes any cable run for cameras or locks. Security cable should be routed using violet cable. Cable should not be openly exposed when run through a common area. If run requires that cable must be run through a common area cable must be run using conduit or armored cable. Cable that is run to outside locations should be protected with weather resistant material or housing. Please see the security section for more guidelines on security equipment installation.

Preferred Cabling Hardware

The following is a list of preferred hardware. The contractor is to supply the requested hardware or equivalent. If substitutions are to be made due to configuration or product availability IT must approve and sign off on usage before installation.

Part numbers are manufacturer part numbers, and Panduit parts unless otherwise specified..

PANGEN - CAT 6 – 1GIG - UDC Standard

Item	Description	Part Number/Notes
CAT6 Cabling	General Cable - GenSPEED 6000 Enhanced Minimum compliant CAT6 cable is not allowed on any UDC Projects. Color should match project application.	7131900 - Blue 7131904 – Red 7131906 – Green 7131909 – Violet 7131902 – Yellow
Patch Panels	Panduit – Punch Down Style	DP48688TGY (48 Port) DP24688TGY (24 Port)
Jack Modules	Panduit Mini-Com TX6	CJ688TGBU – Data (Blue) CJ688TGWH – Alternative/Voice (White) CJ688TGGR – HVAC/Maint (Green) CJ577TGVL – Security (Violet) CJ577TGRD – Datacenter Ingress (Red) CJ577TGYL – Datacenter SAN (Yellow)
Patch Cords	Cable should be of various lengths as necessary for application. Cables shown are 7 feet. Replace 7 with designed length.	UTPSP7BUY – Blue (Data) UTPSP7GRY – Green (HVAC/Env) UTPSP7YLY – Yellow (SAN) UTPSP7VLY – Violet (Security) UTPSP7VLY –Red (Datacenter)
Faceplate	2/4 Port White Faceplate	CFPL4WHY – 4 port CFPL2WHY – 2 port
Faceplate Blank	Faceplate Blanks All ports not in use must have blanks	CMBWH-X
Patch Panel Fiber Connector		LC - FAP6WAQDLCZ (MultiMode) SC - FAP6WAQDSCZ (MultiMode) LC - FAP6WBUDLCZ (SingleMode) SC - FAP6WBUDSCZ (SingleMode)
Fiber Patch Panel Rack		2U Fiber Rack FRME2U 4U Fiber Rack FRME4U
Horizontal Cable Management		D Ring Style - CMPHF1 D Ring Style (HD Depth) – CMPHHF1
Vertical Cable Management		WMPVHC45E -6x6 (Front & Rear) WMPVF22E – 4x5 (Front Only)
Fiber Optic Cable	10gig rated cable. All outdoor rated fiber must be run in conduit and adhere to Panduit install standards.	SM - Armored Fiber - AP0121PNU-ILPA MM (OM3) – Armored Fiber - BE0121PNU-ILPA SM 12 Strand (Outdoor Rated) - AQ0124M1A-DWB MM Strand (OM3) (Outdoor Rated) - BE0124M1A-DWB
Fiber Connectors		LC - MM (OM3) – FLCDMCXAQY LC – For Faceplate MM – CMDSAQLCBL LC – Adapter MM (OM3) - FADSLCAQ-L

Fiber Patch Cord	LC 10 Gigabit 50/125UM	**FXE10-10M1Y**
19in Rack	Chatsworth	**55053-7Z3**
Ladder Rack	Chatsworth - 12in	**10250-712**
Ladder Rack Waterfall	Chatsworth	**12100-712**

Cable Color Scheme

Color is to be used in all endpoint to patch panel runs as well as the patch cord connecting the the device to the switch.

Blue – Data Interconnects & Patches
Purple – Security (Camera interconnects, Security Door interconnects, patches)
Green – HVAC/Maintenance Patches & Interconnects
Red – Datacenter Data
– Datacenter SAN Traffic

Wire Management / Runs

- Installation of any new cable run must terminate to a PATCH PANEL. Runs will not be accepted if directly ran from point to point with RJ45 male connectors on each end. If additional capacity is needed installer will need to add an additional 24 or 48 port patch panel depending on application.

- All installations must adhere to Panduit installation practices. If in doubt contact IT for guidance. Lines that are improperly run will not be approved by UDC IT.

- Wire Management is to be used at all times. Any installations that include cables that are not installed using wire management will not be approved. All cables must not exceed their maximum bend radius. Any equipment needed to maintain the integrity of the cable must be spec'd in the job.

Section 3 | Digital Signage

All digital signage applications require one CAT6 connection with an RJ45 connector box located on the wall behind of the commercial grade monitor. A blue patch cable will connect the port to the DMP. An HDMI connection will connect a DMP to the commercial grade monitor. An RS232 connection will connect the television monitor to the DMP for remote control capability. RS232 is included with the DMP package. Alternative DMPs are available for possible wireless scenarios. Any installation involving these will need OITs involvement during the spec process.

UDC Digital Signage Standard Config

Item	Description	Model
DMP Mounts	Mounts to rear of monitor	DMP-PRCASE-4310-S1
DMP Unit	Includes HDMI Cable	Cisco DMP-4310
Monitor	Sizing may be different but class of device must be the same.	NEC V423 42" Public Display
Television Mount		Chief LTMU Large Tilt Mount
Lock		Masterlock Pad Lock (Master Keyed)

Section 5 | Audio/Visual

The university has standardized on Crestron AV integration solutions. All installations must be compatible with Crestron Roomview and have the necessary networking in place to route traffic over UDC's data network. The following configuration is an example of hardware for a basic lecture classroom. IT understands that AV installations very depending on room and application, however the underlying technology must utilize Crestron hardware. IT will review all specs prior to start of project, and sign off again on completion of job once work is completed to assure quality.

UDC Standard Lecture Classroom Install

Item	Description	Model
Room Controller	Crestron Digital Media 8G+	DM-RMC-200-C
Control Panel	Crestron Wall Mount	MPC-M10
Projector	Infocus	IN3126
Input Wallplate	2 Gang DigitalMedia 8G+	DM-TX-200-C-2G
Projection Screen	Draper, INC 113" Matte White	XT1000E
Flat Panel Display	Optional NEC 55" Public Display	V423
Podium	Video Furniture Intl. w/ Following Features VESA Arm Mount USB Connector VGA Connector HDMI Connector Master Keyed w extra keys. *.	Video Furniture EDU-LE w/ C900S Video Arm
Computer	Dell 20in" All In One Touch w/ VESA Mounting Hardware Wired Keyboard & Mouse fed to USB extension cord connected to back of PC on VESA mount. Keyboard and Mouse locked securely in Podium.	Dell 3011 AIO Touch with VESA mount
Apple TV	Connected to extra HDMI Port	Apple TV (Latest Generation) A1469
Chief Secure Project Mount	Key must be master keyed for all installations.	RPAA1

Display

A 113" Diagonal, 16:10 Aspect Ratio, Ceiling Recessed Electric Projection Screen with Matt White Material will be mounted flush with the ceiling as designated by contractor. Contractor will be responsible to bring power to the screen.

A 4000 Lumen WXGA (1280 x 800) resolution projector will be installed below the ceiling and approximately 13' 6" from the screen. The projector will connect via a pipe to a plenum rated box that will be mounted above the drop ceiling. The box is 12" x 24" and is made to mount appropriately in a 2x2 drop ceiling. It will house the Crestron Receiver/Scaler and a small amplifier. It also has one gang openings intended for power outlets.

In installations that are not using a projector. A commercial grade monitor must be used. See optional equipment in table for more information.

Audio System

Four 1'x2' Speakers (when space allows) will be installed in the ceiling evenly spaced in the room for complete audio coverage. They will drop into the ceiling grid and be attached above the ceiling to the slab with support wire. They will be powered with a 35 Amp 70 Volt amplifier that will reside in the above ceiling plenum box when possible.

Microphones are to be installed in ceiling as well when applicable as well as a lecture mic in larger applications. Please check with project manager for information and confirm with IT the type of microphone.

Sources

All sources will be pulled to a Crestron switcher and outputted via an HDMI cable to the display device. Source panel will be available on podium, near a desk, or at location TBD by information technology.

DVI/HDMI – In Podium Computer
HDMI – Apple TV (connection hidden routed directly to apple TV)
HDMI – External HDMI (Available on Podium Pop-Up)
VGA – On Podium or Pop-Up
1/8 Audio – in Audio in for VGA connection

Connectivity

A wall plate will be mounted in the furniture offering HDMI and VGA w/3.5mm Connections that will accommodate old and new laptop video and audio outputs. Contractor will provide HDMI to Display Port adaptors for use if an instructor or student should wish to connect an Apple Mac laptop or similar device. Supply a two gang box for the wall plate.

Control

Complete control of the system will be via a push button system that will be installed flush with the wall near the projection screen. Provide a three gang box for the control panel. It will provide control of the entire system as follows:

- **Projector:** On/Off
- **Projector Screen:** Up/Down
- **Audio Volume:** Up/Down/Mute
- **Source Switching**
    - Apple TV
    - External HDMI
    - PC (internal PC)
    - HDMI for external laptop
    - VGA for external laptop

Miscellaneous

Provide the following:

- All equipment, wire and accessories required for a fully functional audio and visual system
- Labor associated with turnkey engineering, installation, programming, testing and training
- Documentation package including as-built system CAD diagrams and Operation & Maintenance manuals. Drawings should be delivered in hard copy and soft copy PDFs.
- One Year warranty coverage of all materials and craftsmanship, effective upon completion of training or first beneficial use of system(s)
- User training on system operation
- Software licensing –Provide access to source code written specifically for the operation of the control systems. This will be provided under a

licensing agreement limiting the duplication and distribution of software written for the specific use within the systems installed.

- Provide all conduits, high voltage wiring panels, breakers, relays, boxes, receptacles, etc. Any related electrical work, including but not limited to 110VAC, conduit, core drilling, raceway and boxes
- Voice/data cabling, IE analogue phone lines, ISDN lines, network ports, etc.
- Network connectivity, routing, switching and port configuration necessary to support audio-visual equipment
- Concrete saw cutting and/or core drilling
- Fire wall, ceiling, roof and floor penetration, patching, removal or fire stopping
- Necessary ceiling tile or T-bar modifications, replacement and/or repair
- Any and all millwork (moldings, trim, etc.) and/or furniture. All millwork and/or furniture or modifications to project millwork to accommodate the AV equipment is to be provided by others unless otherwise noted in this proposal
- Painting, patching or finishing of architectural surfaces
- Permits (unless specifically provided for elsewhere in the contract)
- HVAC and plumbing relocation
- Rough-in, bracing, framing, or finish trim carpentry for installation
- Cutting, structural welding, or reinforcement of structural steel members required for support of assemblies, if required
- Any applicable taxes, permits or bonds related to the project
- Customer furnished equipment (CFE) or equipment by others that is integrated into the systems (as described above) is assumed to be current industry acceptable equipment in good working order. If it is determined that this equipment is faulty upon installation or adversely affects the system additional charges may be incurred.

Section 8 | Dell/Apple PCs

Dell/Apple

UDC has standardized on the Dell Optiplex and Latitude line for desktops and laptops respectively. We also use Apple Mac's in computer labs. We only support specific models at one time. These models can be found by visiting the UDC IT page and viewing our Premiere Portal. Apple machines must be approved each order. Support is limited for Apple in that we currently only support them in lab environments.

UDC Standard Dell Software Configuration

All system installs must adhere to these criteria when being setup. By following common practices we insure that all systems installation have been tested and will behave the same when diagnosing problems. All software will be updated by IT via configuration management. No updates are necessary by end users. If users are having trouble do to a version incompatibility IT will decide the course of action. If users are seeing software update prompts IT should be contacted as there may be a configuration issue.

All imaging is to be done via Microsoft System Center Configuration Manager. Below is a listing of the standard configuration of a machine. Installations may have alternative selections such as additional licensed software (Acrobat Professional, SPSS, etc.) but all machines must have the following setup to be supported by the university.

Official UDC Software Configurations
Latest Systems -
Windows 7 (Service Pack 1)
Internet Explorer 9
Adobe Flash **11.9.900.117** (Automatic Update)
Oracle Java **Version 6 Update 43**
CDBurner XP 4.2.4.1420
Quicktime Player 7
McAfee Anti-Virus 8.7i
Microsoft Office Enterprise 2010 SP2
Microsoft Project 2010
Microsoft Visio 2010
Adobe Acrobat Reader 11
Microsoft Silverlight 5.1.20913
ApplicationXtender Advanced ActiveX Toolbar
ApplicationXtender Scanning Add-On

Exceptions

There are no exceptions to this policy unless approved by the System Administrator. Machines that do not adhere to this policy must be moved into spec when applicable. If machines require additional licensed software they may be installed as long as they do not conflict with these specifications.

Machines that require alternative software configuration changes due to work environment are allowed. In these cases the imaging must be approved by the system administrator. User will need to submit a written argument for any changes outside of these specifications. Any other software outside of this official specification is not maintained by the UDC Information Technology department (i.e. Alternative Web Browsers, Mail Clients, and 3rd party software). The user is to contact the vendor for support when we are unable to correct a problem.

Imaging & Package Deployment Process

Imaging and software packages will be managed by the second tier IT support group. Help desk technicians are responsible for informing network support of imaging & software issues if a problem should arise.

If a specialty software package need to be installed across more than >=5 PCs a work order can be created to second tier IT Support to have the product pushed (when possible by software). Software installations with < 5 PCs will be installed by the help desk using Remote Tool, RDP or physically accessing the station. Exceptions are made for commonly installed additional applications, or common propriety software and these packages will be distributed on a as needed basis (i.e. Visio, Microsoft Project).

Section 16 | Layouts and Diagrams

UDC Wall Plate Diagram

BLDG #

IDF Closet

Patch Panel #

38 -2 -1

D6   V6
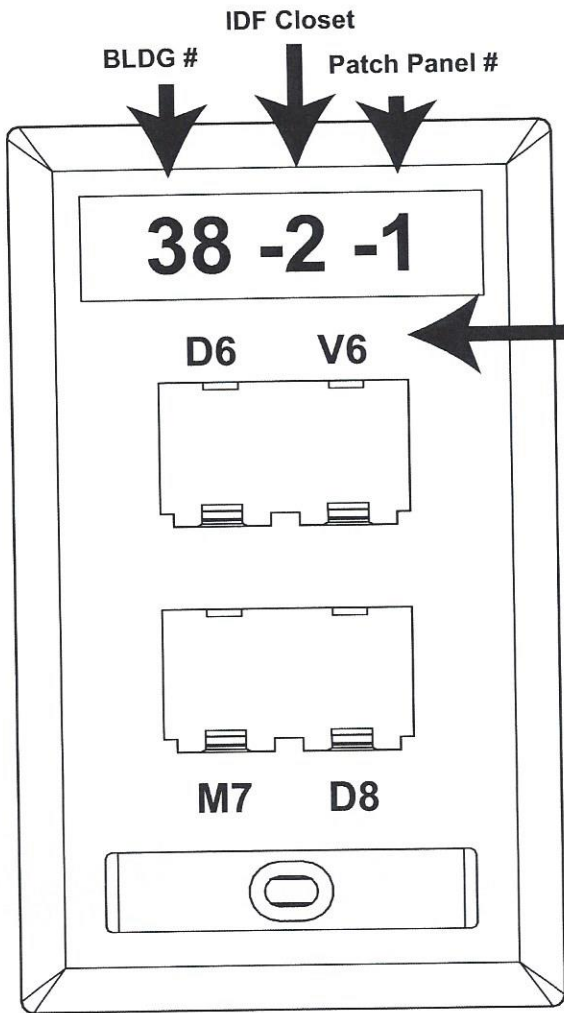
Prefix + Port Number
D for Data
V for Voice
M for Maintenance*

*Maintenance is any port that is attached to a maintenance device (Green, & Violet Cable) HVAC or Security

M7   D8

Wall port

Figure 1.1

Part Numbers

Faceplates
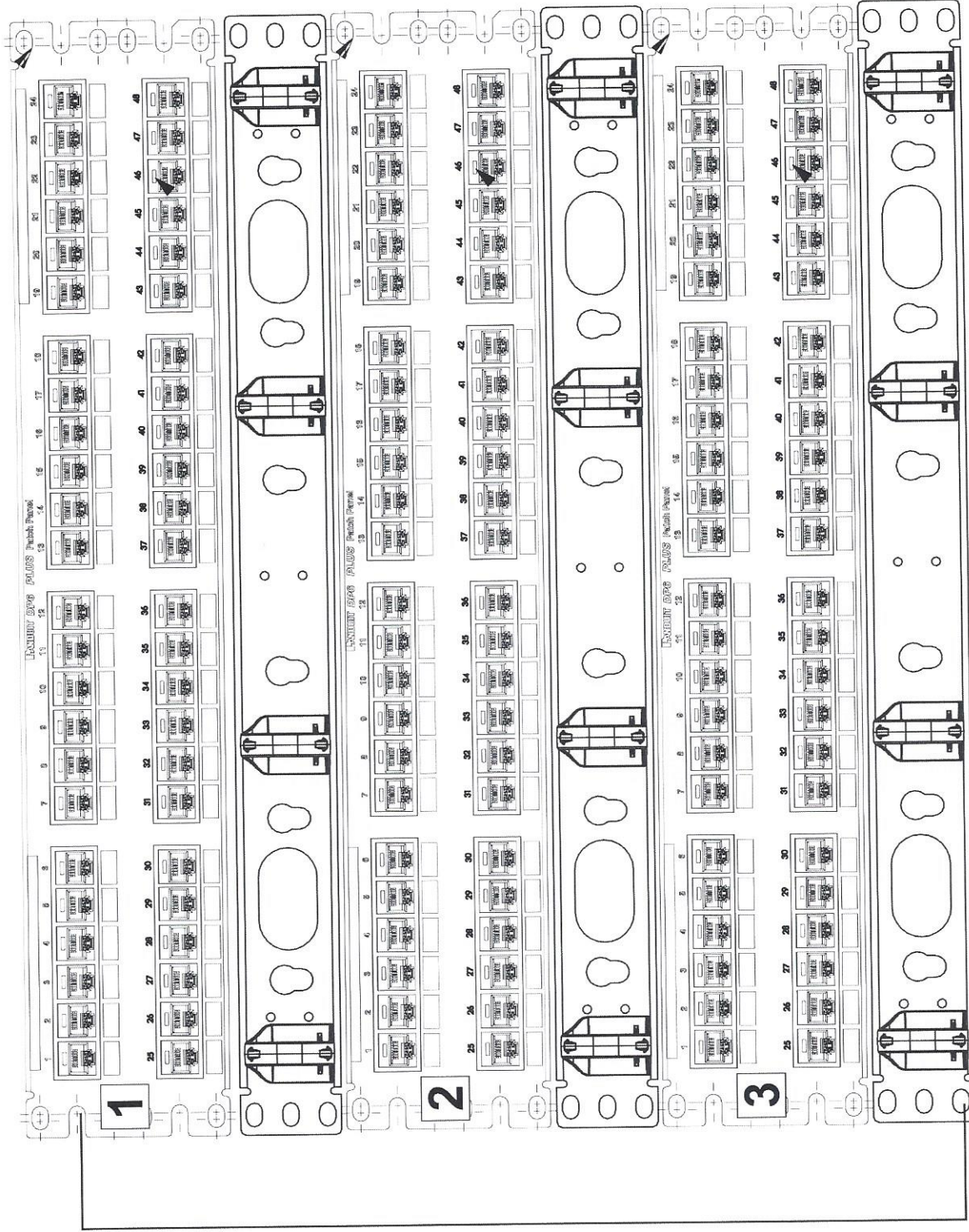Panduit CFPL4WHY – 4 port (White)
Panduit CFPL2WHY – 2 port (White)

MiniCom Jack Modules*
Colors Match application
CJ688TGBU – Data (Blue)
CJ688TGWH – Alternative/Voice (White)
CJ688TGGR – HVAC/Maint (Green)
CJ577TGVL – Security (Violet)
CJ577TGRD – Datacenter Ingress (Red)
CJ577TGYL – Datacenter SAN (Yellow)

UDC Standard Rack Elevation (Detail)

Figure 2.2

Patch panel numbering is sequential
starting at the lowest to the highest from top to bottom

UDC Standard Rack Elevation

Panduit WMPVF22E
Vertical Cable Management

Equipment in order from top to bottom

Panduit DP48688TGY - 48 Port Patch Panel
Panduit CMPHF1 - Horizontal Management
Panduit DP48688TGY- 48 Port Patch Panel
Panduit CMPHF1 - Horizontal Management
Panduit DP48688TGY - 48 Port Patch Panel
Panduit CMPHF1 -Horizontal Management
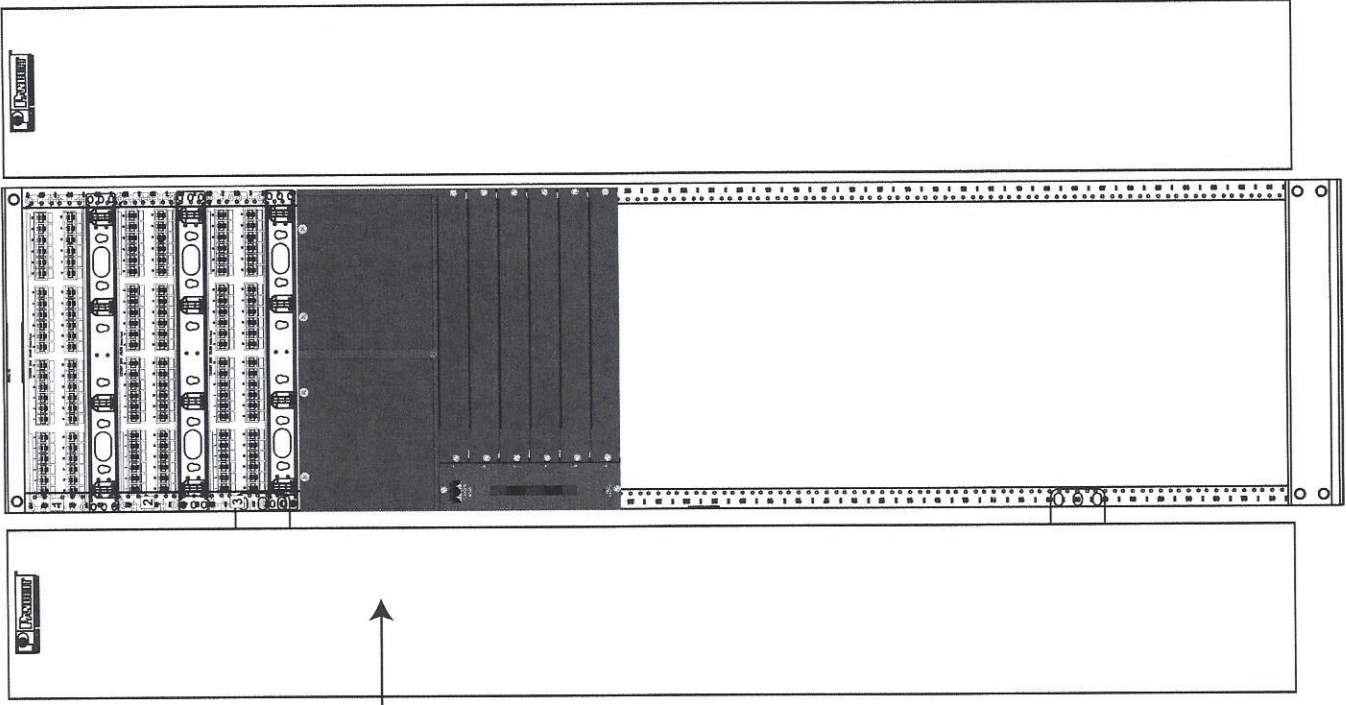Cisco 4506 Chassis

Rack is Chatsworth 19in Part No. 55053-7Z3

Figure 2.1