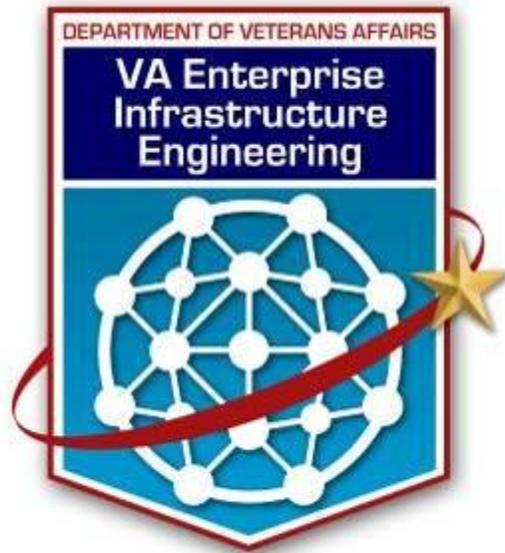




# DEPARTMENT OF VETERANS AFFAIRS

---



OFFICE OF INFORMATION AND TECHNOLOGY  
ENTERPRISE INFRASTRUCTURE ENGINEERING

---

## **VA Enterprise IT Infrastructure Standard Data Center Standard**

**Revision 1.0**

**November 13, 2009**



## TABLE OF CONTENTS

1	Introduction.....	1
1.1	Purpose .....	1
1.2	Objectives.....	1
1.3	Scope.....	1
2	Standards.....	3
2.1	Support Infrastructure .....	3
2.2	Transport Media and Interfaces.....	5
2.3	Enclosure Power Distribution.....	7
2.4	Remote Management Technology.....	8
3	Supporting Details for Standards.....	10
3.1	Support Infrastructure .....	10
3.1.1	Equipment Enclosure .....	10
3.1.2	Open Rack .....	12
3.1.3	Cable Tray .....	13
3.1.4	Horizontal Cable Management Panels.....	14
3.1.5	Vertical Cable Management Panels.....	15
3.1.6	Fiber Distribution Cabinets .....	16
3.2	Transport Media and Interfaces.....	17
3.2.1	Patch Panels.....	17
3.2.2	Fiber Distribution Cassettes.....	18
3.2.3	UTP (Horizontal Distribution).....	19
3.2.4	Fiber Optic Cable (Horizontal Distribution) .....	20
3.2.5	UTP Patch Cords.....	21
3.2.6	Fiber Patch Cords.....	21

3.3	Enclosure Power Distribution.....	22
3.3.1	Power Distribution Units (in rack/enclosure) .....	22
3.3.2	Zone Power Distribution Units.....	24
3.4	Remote Management Technology.....	25
3.4.1	KVM .....	25
4	Taxonomy of Standards .....	27
	Appendix A – Definitions .....	32
	Appendix B – References.....	32
	Appendix C – Acronyms.....	33
	Appendix D – Contributors .....	33

# 1 INTRODUCTION

## 1.1 PURPOSE

A standard is a set of rules or requirements that are determined by a consensus opinion of subject matter experts and prescribe criteria for a product, process, test or procedure. The general benefits of a standard are quality, interchangeability of parts or systems, and consistency. Information Technology (IT) standards are based on business needs provided through or supported by IT Services. IT Services are designed to support business processes and are constructed from software, hardware and infrastructure components. Establishing and enforcing standards for the selection and configuration of these supporting components improves the maintainability, reliability and availability of IT Services within projected economic constraints in alignment with business needs.

This standards document lists the acceptable and recommended specifications for Data Center passive Inside Plant, including racks, equipment enclosures, fiber and copper transport media, KVM, and rack-level power distribution. Sections include standard specifications for subject components, decisions supporting the standard specifications, guidelines or recommendations for implementing the standard specifications, and supplemental factors to consider when evaluating subject components. Other supplementary documents will provide guidance on procuring components that meet the standard specifications, guidance on integrating them with existing components, and explanation of how the subject components fit into the VA Architecture.

## 1.2 OBJECTIVES

This standard provides acceptable and recommended specifications to support:

- Solution Evaluation
- Requirement Evaluation
- Solution Design
- Solution Procurement and Bid Evaluation
- Evaluation of Architectural Specifications
- Standardization of passive Inside Plant infrastructure across all VA data centers

## 1.3 SCOPE

This standard applies to:

- Server Enclosures
- Open Racks
- Horizontal Cabling (Fiber)
- Horizontal Cabling (UTP)

- KVM
- Patch Panels
- Fiber Distribution Cabinets and Cassettes
- Patch Cords (UTP and Fiber)
- Cable Management
- In-Rack or Enclosure Power Distribution

## 2 STANDARDS

### 2.1 SUPPORT INFRASTRUCTURE

[Populate this table from the taxonomy in section 4 and enter specifications as necessary. Replace this paragraph with a brief description of this specification set.]

<i>ID</i>	<i>Primary Attribute</i>	<i>Secondary Attribute</i>	<i>Specification</i>
1	Equipment Enclosure	Dimensions	Height (nominal): 84" Width (overall): 24.0" Depth (w/ doors): 47.4"
		Rail Style	Square-punched (2 pair = front + rear) Tooless Adjustable
		Front Door	Single Perforated Reversible Swing
		Rear Door	Single Solid (heat containment). OR Split, perforated (no thermal management)
		Latches	Keyed lock upgradable to keyless system Compression Latch
		Color	White or Existing Match
		Top Panel	23.4" x 27.4" Vertical Exhaust Duct (heat containment) High Capacity Cable Access w/Brushes
		Side Panel	Solid (heat containment) Locking
		Baying Kit	Baying Kit
		Air Dam & Sealing Kit	Air Dam & Sealing Kit

<b>ID</b>	<b>Primary Attribute</b>	<b>Secondary Attribute</b>	<b>Specification</b>
		Castors	Castors (max 4.28" added height)
		Rack Units	45
		Green Technology	Heat containment per Data Center cooling architecture
		RU Marks	Present on front and rear rails
		Static Capacity	2,500 lbs
		Bonding Connection Points	Doors and frame
2	Open Rack	Dimensions	Height: 86" Width: 23.75" Depth: 26.2"
		Channel Depth	16.25"
		Rail Style	EIA, threaded, front/rear
		Rack units	45
		Static Capacity	1,500 lbs.
		Cable Management	Built in overhead "waterfall" and channel cable management strap attachment points
		RU Marks	Present on front and rear rails
3	Cable Tray	Design	Wire Basket
		Color	Black Powder Coated (ASTM B633)
		Capacity	Initial fill ratio not to exceed 60%
		Bonding Kit	Bonding Kit
		Toolless Splice Kits	Toolless spice kit to join segments
		Large Bend Radius Kits	One per bend
		Grounding Lug Kit	One per segment
4	Horizontal Cable Management Panels	Rack Units	2 RU (up to 100 Cat 6a patch cords) 1 RU (up to 50 Cat 6a patch cords)
		Finger Spacing	Six-port
		Cover	Double-hinged

<b>ID</b>	<b>Primary Attribute</b>	<b>Secondary Attribute</b>	<b>Specification</b>
		Capacity	50 Cat 6a or 100 Cat 6a
5	Vertical Cable Management Panels	Dimensions	16" x 13" x 7' (Ultra-high density) 12" x 13" x 7 (High density)
		Door	Double-hinged
		Capacity	948 Category 6a patch cords 630 Category 6a patch cords
6	Fiber Distribution Cabinets	Cassette Capacity	3 Cassettes
		Rack Units	1 RU
		Access Door	Hinged front panel. No front door
		Internal Strand Mgmt	N/A

## 2.2 TRANSPORT MEDIA AND INTERFACES

[Populate this table from the taxonomy in section 4 and enter specifications as necessary. Replace this paragraph with a brief description of this specification set.]

<b>ID</b>	<b>Primary Attribute</b>	<b>Secondary Attribute</b>	<b>Specification</b>
1	Copper Patch Panels	Performance Category	Category 6a (10 GbE)
		Position Count	24 (4 six-port modules)
		Form Factor	Angled
		Size	One RU
		Color Coding	Black
2	Fiber Distribution Cassettes	Cassette Capacity	24 strand (two 12-strand MPOs). 50 micron.
		Cassette User Interfaces	LC quad connectors
		Cassette Backbone Interfaces	MPO

<b>ID</b>	<b>Primary Attribute</b>	<b>Secondary Attribute</b>	<b>Specification</b>
		Performance Characteristics	Laser Enhanced 10 GbE 50/125 Multimode
		Form Factor	1 U
3	UTP (Horizontal Dist.)	Performance Category	Category 6a (10 GbE)
		Performance Specifications	Meets or exceeds TIA-EIA-568-B.2-10, TSB-155.
		Smoke Rating	Plenum rated
		Jacket Color	Blue
		Termination Method	Pre-terminated, Bifurcated termination method
		Media Connector	Pre-terminated with split 8P8C
		Bundling	Multiple cable harness
4	Fiber (Horizontal Dist.)	Performance Category	Backbone Ribbon, Laser Enhanced to 10 GbE
		Performance Specifications	Laser Optimized 50/125 $\mu\text{m}$ fibers with effective Modal Bandwidth equal or greater than 2000 MHz•km at 850 nm
		Mode	Multimode 50/125
		Smoke Rating	Plenum
		Jacket Color	Teal
		Termination Method	Pre-terminated / Factory terminated
		Media Connector	Pre-terminated with MPO
		Strand Count	12 per assembly
		Bundling	Loose Tube
5	UTP Patch Cords	Performance Category	Category 6a 26 gauge Stranded
		Performance Specifications	Center tuned to Horizontal media
		Jacket Color	Blue (per 606A)

<b>ID</b>	<b>Primary Attribute</b>	<b>Secondary Attribute</b>	<b>Specification</b>
		Termination Method	Factory pre-terminated
6	Fiber Patch Cords	Performance Category	Laser enhanced, 50/125 multimode
		Performance Specifications	10 Gb
		Jacket Color	Teal
		Termination Method	Factory pre-terminated

### 2.3 ENCLOSURE POWER DISTRIBUTION

[Populate this table from the taxonomy in section 4 and enter specifications as necessary. Replace this paragraph with a brief description of this specification set.]

<b>ID</b>	<b>Primary Attribute</b>	<b>Secondary Attribute</b>	<b>Specification</b>
1	Power Distribution Units (in rack/enclosure)	Receptacle Type(s)/Quantities	QTY three (3) C-19 QTY twenty-one (21) C-13
		Power Cord Plug	L21-20P
		kW Rating	Between 5 and 6 kW
		Volt Rating	208 Preferred 110 Available
		Management	Power Utilization Per Phase Monitor LED Display for Utilization SNMP v3 or SSH Supported for Remote Power Management and Monitoring Ethernet with IP Supported Serial Port Breakered Breaker must be protected from accidental shut-off Remote Power On/Off Per Outlet

<b>ID</b>	<b>Primary Attribute</b>	<b>Secondary Attribute</b>	<b>Specification</b>
			User Authentication (AD Integration Preferred) Threshold Alarms Intuitive and Consistent Outlet Naming Scheme
		Mounting	Zero RU Toolless
		Phase type	Three-phase
2	Zone Power Distribution Units	Rack Units	2
		Phase Type	3-phase WYE (four wire)
		Receptacle Type(s)/Quantities	QTY four (4) L21-20R QTY six (6) NEMA 5-15/20R
		Power Cord Plug	Dual L21-20P
		kW Rating	22-24 kW
		Volt Rating	208
		Fault Tolerance	Two inputs, 5 receptacles on each leg
		Mounting	Rack mount

## 2.4 REMOTE MANAGEMENT TECHNOLOGY

[Populate this table from the taxonomy in section 4 and enter specifications as necessary. Replace this paragraph with a brief description of this specification set.]

1	KVM Switch	Target Cable Requirements	UTP Support to 150 Feet (OOB)
		Server Interface Support	USB and PS2
		Authentication	Active Directory Integration
		Uplinks	Redundant

			1 GbE
		Encryption	SSL
		Logging	Activity Logging/Syslog
		Centralized Management	
		Local User	8 Local Users
		Remote User	
		Modem	
		Protocol Support	IP-based Access for Remote Users
		Client Software Support	Browser (MS Explorer and FireFox)
		Server Ports	64 interfaces for KVM
		Resolution	1600x1200
		Virtual Media Support	Virtual Media Support with Encryption
		Simultaneous Users	Up to 8 Simultaneous Users
		Management	SNMP Support

### 3 SUPPORTING DETAILS FOR STANDARDS

#### 3.1 SUPPORT INFRASTRUCTURE

##### 3.1.1 EQUIPMENT ENCLOSURE

###### STANDARD

<b>ID</b>	<b>Secondary Attribute</b>	<b>Specification</b>
1	Dimensions	Height: 83.5" Width: 23.6" Depth: 47.1"
	Rail Style	Square-punched (2 pair = front + rear)
	Front Door	Single Perforated
	Rear Door	Single Solid (heat containment) *  OR  Split, perforated (no thermal management)
	Latches	Keyed Lock. Cam Latch.
	Color	White
	Top Panel	23.4" x 27.4" Vertical Exhaust Duct* and High Capacity Cable Access
	Side Panel	Solid (heat containment)
	Baying Kit	Baying Kit
	Air Dam & Sealing Kit	Air Dam & Sealing Kit*
	Castors	Castors
	Rack Units	45
	Green Technology	Heat containment per Data Center cooling architecture*
	RU Marks	Present on front and rear rails
	Static Capacity	2,500 lbs  See Implementation Guidance for seismic bracing.
Bonding Connection Points	Doors and frame	

---

## EXPLANATION OF STANDARD

These specifications define a standardized server enclosure with sufficient depth to accommodate active hardware and cable management. The total depth will not exceed 48 inches or two floor tiles. The width will not exceed 24 inches or one floor tile. This standard specifies green technology in the form of heat containment. This approach to thermal management does have corresponding data center design requirements and, therefore, should be selected based on the cooling architecture of the target data center. If the facility cannot accommodate heat containment, the noted items (\*) can be waived from this specification.

---

## EVALUATION FACTORS

- Dimensions
- Vertical exhaust duct/heat containment
- Available Rack Units

---

## IMPLEMENTATION GUIDANCE

Enclosures shall be equipped with seismic bracing when deployed in areas prone to earthquakes or as required by Federal regulation or other Authorities-Having-Jurisdiction (AHJ) and best practices

### 3.1.2 OPEN RACK

#### STANDARD

<b>ID</b>	<b>Secondary Attribute</b>	<b>Specification</b>
2	Dimensions	Height: 86" Width: 23.75" Depth: 26.2"
	Channel Depth	16.25"
	Rail Style	EIA hole pattern, threaded, front/rear
	Rack units	45
	Static Capacity	1,500 lbs.
	Cable Management	Built in overhead "waterfall" and channel cable management strap attachment points
	RU Marks	On front and rear rails

#### EXPLANATION OF STANDARD

This standard specifies a deep channel open rack to accommodate the depth and weight of most data networking equipment while providing high capacities for horizontal cable and large diameter Category 6a patch cords.

#### EVALUATION FACTORS

- Dimensions
- Cable management capacities
- Available accessories for horizontal and vertical cable management
- Static capacity

#### IMPLEMENTATION GUIDANCE

### 3.1.3 CABLE TRAY

#### STANDARD

<b>ID</b>	<b>Secondary Attribute</b>	<b>Specification</b>
3	Design	Wire Basket
	Color	Black Powder Coated (ASTM B633)
	Capacity	Initial fill ratio not to exceed 50%
	Bonding Kit	Bonding Kit
	Toolless Splice Kits	Toolless splice kit to join segments
	Large Bend Radius Kits	One per bend
	Grounding Lug Kit	One per segment

#### EXPLANATION OF STANDARD

This standard offers consistency in the construction characteristics of overhead cable tray to achieve common mounting, hanging, support, bonding, and interconnecting features for the benefit of data center designers and end-users.

#### EVALUATION FACTORS

- Wire-basket construction
- Toolless joining kits
- ASTM coating

#### IMPLEMENTATION GUIDANCE

### 3.1.4 HORIZONTAL CABLE MANAGEMENT PANELS

#### STANDARD

<b>ID</b>	<b>Secondary Attribute</b>	<b>Specification</b>
4	Rack Units	2 RU (up to 100 Cat 6a patch cords) 1 RU (up to 50 Cat 6a patch cords)
	Finger Spacing	Six-port
	Cover	Double-hinged
	Capacity	50 Cat 6a or 100 Cat 6a

#### EXPLANATION OF STANDARD

This standard creates uniform high-capacity horizontal cable management for Category 6a patch cords.

#### EVALUATION FACTORS

- Rack units
- Finger spacing
- Double-hinged cover
- Capacity

#### IMPLEMENTATION GUIDANCE

### 3.1.5 VERTICAL CABLE MANAGEMENT PANELS

#### STANDARD

<b>ID</b>	<b>Secondary Attribute</b>	<b>Specification</b>
5	Dimensions	16" x 13" x 7' (Ultra-high density) 12" x 13" x 7 (High density)
	Door	Double-hinged
	Capacity	948 Category 6a patch cords 630 Category 6a patch cords

#### EXPLANATION OF STANDARD

This standard creates uniform high-capacity and ultra-high capacity vertical cable management for Category 6a patch cords.

#### EVALUATION FACTORS

- Dimensions
- Capacity

#### IMPLEMENTATION GUIDANCE

### 3.1.6 FIBER DISTRIBUTION CABINETS

#### STANDARD

<b>ID</b>	<b>Secondary Attribute</b>	<b>Specification</b>
6	Cassette Capacity	3 Cassettes
	Rack Units	1 RU
	Access Door	Hinged front panel. No front door
	Internal Strand Mgmt	N/A

#### EXPLANATION OF STANDARD

This standard specifies a small, modular enclosure for mounting MPO/SC fiber cassettes. The smallest form-factor has been selected for application flexibility.

#### EVALUATION FACTORS

- Form factor
- No front door
- 3 cassette capacity

#### IMPLEMENTATION GUIDANCE

Horizontal cabling, including fiber and UTP, should be installed in a structured topology with patch panels serving as Equipment Distributors (ED) and a corresponding set of patch panels located at a Horizontal Cross Connect (HC). The HC should be located adjacent to switching components to minimize patch cord length and cable management requirements. See Standards.

ED Fiber Distribution Cabinets will be installed in RU 45 of each enclosure where required.

## 3.2 TRANSPORT MEDIA AND INTERFACES

### 3.2.1 PATCH PANELS

#### STANDARD

<i>ID</i>	<i>Secondary Attribute</i>	<i>Specification</i>
1	Performance Category	Category 6a (10 GbE)
	Position Count	24 (4 six-port modules)
	Form Factor	Angled
	Size	One RU
	Color Coding	Black

#### EXPLANATION OF STANDARD

This standard anticipates the deployment of 10 gigabit Ethernet in production and test data centers. This standard can be applied to field-terminated 10 GbE or factory pre-terminated (preferred) applications.

#### EVALUATION FACTORS

- Performance category
- Form factor
- Compatibility with pre-terminated cable interfaces

#### IMPLEMENTATION GUIDANCE

Horizontal cabling, including fiber and UTP, should be installed in a structured topology with patch panels serving as Equipment Distributors (ED) and a corresponding set of patch panels located at a Horizontal Cross Connect (HC). The HC should be located adjacent to switching components to minimize patch cord length and cable management requirements. See Standards.

ED patch panels will be installed in the top five rack units of each enclosure (except SAN)

### 3.2.2 FIBER DISTRIBUTION CASSETTES

#### STANDARD

<b>ID</b>	<b>Secondary Attribute</b>	<b>Specification</b>
2	Cassette Capacity	24 strand (two 12-strand MPOs). 50 micron.
	Cassette User Interfaces	LC quad connectors
	Cassette Backbone Interfaces	MPO
	Performance Characteristics	Laser Enhanced 10 GbE 50/125 Multimode
	Form Factor	1 U

#### EXPLANATION OF STANDARD

This standard specifies one component of the structured cabling system for fiber optic cabling in the data center. It is the fiber equivalent to UTP patch panels. It requires 1- strand 10 GbE laser-enhanced ribbon backbone fiber cable (specified elsewhere in this document) pre-terminated with MPO connectors. Each cassette supports two 12-strand cable assemblies for a total capacity of 12 duplex SC interfaces. Three of these devices can be installed in the specified fiber distribution cabinet.

#### EVALUATION FACTORS

- Performance characteristics
- Form factor
- Interfaces

#### IMPLEMENTATION GUIDANCE

### 3.2.3 UTP (HORIZONTAL DISTRIBUTION)

#### STANDARD

<b>ID</b>	<b>Secondary Attribute</b>	<b>Specification</b>
3	Performance Category	Category 6a (10 GbE)
	Performance Specifications	Meets or exceeds TIA-EIA-568-B.2-10, TSB-155.
	Smoke Rating	Plenum rated
	Jacket Color	Blue
	Termination Method	Pre-terminated, Bifurcated termination method
	Media Connector	Pre-terminated with split 8P8C
	Bundling	Multiple cable harness

#### EXPLANATION OF STANDARD

This standard specifies pre-terminated Category 6a Unshielded Twisted Pair (UTP) for horizontal distribution in production and test data centers. Pre-terminated cables require that distances between termination points are known. However, this approach results in rapid installation of horizontal data center cabling without risks associated with field termination including wire fragments, impaired cabling performance due to installation techniques, faulty terminations, etc.

#### EVALUATION FACTORS

- Performance characteristics
- Compatibility with specified patch panels

#### IMPLEMENTATION GUIDANCE

Horizontal cabling, including fiber and UTP, should be installed in a structured topology with patch panels serving as Equipment Distributors (ED) and a corresponding set of patch panels located at a Horizontal Cross Connect (HC). The HC should be located adjacent to switching components to minimize patch cord length and cable management requirements. See Standards.

ED patch panels will be installed in the top five rack units of each enclosure (except SAN)

### 3.2.4 FIBER OPTIC CABLE (HORIZONTAL DISTRIBUTION)

#### STANDARD

<b>ID</b>	<b>Secondary Attribute</b>	<b>Specification</b>
4	Performance Category	Backbone Ribbon, Laser Enhanced to 10 GbE
	Performance Specifications	Laser Optimized 50/125 $\mu\text{m}$ fibers with effective Modal Bandwidth equal or greater than 2000 MHz•km at 850 nm
	Mode	Multimode 50/125
	Smoke Rating	Plenum rated
	Jacket Color	Teal
	Termination Method	Pre-terminated / Factory terminated
	Media Connector	Pre-terminated with MPO
	Strand Count	12 per assembly
	Bundling	Loose Tube

#### EXPLANATION OF STANDARD

This standard specifies laser-enhanced 50/125 multimode fiber-optic cable to be used in production and test data centers. Pre-termination requires that distances between termination points is known, however it assures maximum performance and rapid installation.

#### EVALUATION FACTORS

- Performance characteristics
- Pre-terminated with MPO connectors
- 12 strand, plenum rated, loose tube ribbon

#### IMPLEMENTATION GUIDANCE

Horizontal cabling, including fiber and UTP, should be installed in a structured topology with patch panels serving as Equipment Distributors (ED) and a corresponding set of patch panels located at a Horizontal Cross Connect (HC). The HC should be located adjacent to switching components to minimize patch cord length and cable management requirements. See Standards.

### 3.2.5 UTP PATCH CORDS

#### STANDARD

<b>ID</b>	<b>Secondary Attribute</b>	<b>Specification</b>
5	Performance Category	Category 6a 26 gauge Stranded
	Performance Specifications	Center tuned to Horizontal media connectors
	Jacket Color	Blue (per 606A)
	Termination Method	Factory pre-terminated

#### EXPLANATION OF STANDARD

This standard specifies center-tuned Category 6a patch cords. Inside Plant Design best practices dictate that component level compliance to a performance standard must be maintained across the entire horizontal link. The quality of patch cords and adherence to performance standards is critical to the reliable operation of a high-speed LAN.

Jacket color should be determined by ANSI/TIA/EIA 606A or other Inside Plant standard. Color coding the jacket to function may result in inventory management issues.

#### EVALUATION FACTORS

- Performance characteristics
- Center-tuned to installed patch panels

#### IMPLEMENTATION GUIDANCE

### 3.2.6 FIBER PATCH CORDS

#### STANDARD

<b>ID</b>	<b>Secondary Attribute</b>	<b>Specification</b>
-----------	----------------------------	----------------------

6	Performance Category	10 Gigabit
	Performance Specifications	Laser enhanced, 50/125 multimode fiber, Duplex SC
	Jacket Color	Teal
	Termination Method	Factory pre-terminated

#### EXPLANATION OF STANDARD

This standard specifies high-bandwidth fiber patch cords. Inside Plant Design best practices dictate that component level compliance to a performance standard must be maintained across the entire horizontal link. The quality of patch cords and adherence to performance standards is critical to the reliable operation of a high-speed LAN or SAN.

#### EVALUATION FACTORS

- Performance characteristics
- Performance specifications

#### IMPLEMENTATION GUIDANCE

### 3.3 ENCLOSURE POWER DISTRIBUTION

#### 3.3.1 POWER DISTRIBUTION UNITS (IN RACK/ENCLOSURE)

##### STANDARD

<b>ID</b>	<b>Secondary Attribute</b>	<b>Specification</b>
1	Receptacle Type(s)/Quantities	QTY three (3) C-19 QTY twenty-one (21) C-13
	Power Cord Plug	L21-20P
	kW Rating	Between 5 and 6 kW
	Volt Rating	208

	Management	Power Utilization Per Phase Monitor LED Display for Utilization SNMP v3 or SSH Supported for Remote Power Management and Monitoring Ethernet with IP Supported Serial Port Breakered Breaker must be protected from accidental shut-off Remote Power On/Off Per Outlet User Authentication (AD Integration Preferred) Threshold Alarms Intuitive and Consistent Outlet Naming Scheme
	Mounting	Zero RU, Toolless
	Phase type	Three-phase

#### EXPLANATION OF STANDARD

This standard creates uniform in-rack power distribution at 208 volt with IEC power outlets. This standard supports remote monitoring capability to provide real-time power consumption monitoring at the rack level. Power redundancy is supported by this standard by installing up to four PDUs per enclosure and splitting the power inputs across two circuits within the zone PDU.

#### EVALUATION FACTORS

- Outlet type and quantity
- Phase type
- kW rating
- Cord plug specification
- Remote monitoring

#### IMPLEMENTATION GUIDANCE

### 3.3.2 ZONE POWER DISTRIBUTION UNITS

#### STANDARD

<b>ID</b>	<b>Secondary Attribute</b>	<b>Specification</b>
2	Rack Units	2
	Phase Type	3-phase WYE (four wire)
	Receptacle Type(s)/Quantities	QTY four (4) L21-20R QTY six (6) NEMA 5-15/20R
	Power Cord Plug	QTY two (2) L21-30P
	kW Rating	22-24 kW
	Volt Rating	208
	Fault Tolerance	Two inputs, 5 receptacles on each leg
	Mounting	Rack mount

#### EXPLANATION OF STANDARD

This standard creates uniform zone power distribution at three-phase 208 volt with 110 step down if necessary. This standard supports power redundancy is supported by energizing up to four PDUs across two 30 amp, three-phase power feeds.

#### EVALUATION FACTORS

- Rack units
- Phase type
- 208 and 110 volt
- Dual inputs
- kW rating

#### IMPLEMENTATION GUIDANCE

## 3.4 REMOTE MANAGEMENT TECHNOLOGY

### 3.4.1 KVM

#### STANDARD

<b>ID</b>	<b>Secondary Attribute</b>	<b>Specification</b>
1	Target Cable Requirements	UTP Support to 150 Feet (OOB)
	Server Interface Support	USB and PS2
	Authentication	Active Directory Integration
	Uplinks	Redundant 1 GbE
	Encryption	SSL
	Logging	Activity Logging/Syslog
	Centralized Management	
	Local User	8 Local Users
	Remote User	
	Modem	
	Protocol Support	IP-based Access for Remote Users
	Client Software Support	Browser (MS Explorer and FireFox)
	Server Ports	64 interfaces for KVM
	Resolution	1600x1200
Virtual Media Support	Virtual Media Support with Encryption	
Simultaneous Users	Up to 8 Simultaneous Users	

---

## EXPLANATION OF STANDARD

This standard creates uniform digital KVM over IP solution for remote access to USB and PS2 server interfaces. This standard supports secure remote access.

---

## EVALUATION FACTORS

- -

---

## IMPLEMENTATION GUIDANCE

## 4 TAXONOMY OF STANDARDS

[Build taxonomy of this standard, defining the primary and secondary attributes common to all standards sets that will be contained in this standard. Add additional rows and cells as necessary. This attribute set will be used to populate the tables in Sections 2 and 3. Replace this paragraph with a paragraph introducing your taxonomy.]

<b>ID</b>	<b>Primary Attribute</b>	<b>Secondary Attribute</b>
1	Enclosure	Dimensions
		Rail Style
		Front Door
		Rear Door
		Latches
		Color
		Top Panel
		Side Panel
		Baying Kit
		Air Dam & Sealing Kit
		Castors
		Rack Units
		Green Technology
		RU Marks
Static Capacity		
Bonding Connection Points		
2	Open Rack	Dimensions
		Channel Depth
		Rail Style
		Rack units

		Static Capacity
		Cable Management
		RU Marks
3	Cable Tray	Design
		Color
		Capacity
		Bonding Kit
		Toolless Splice Kit
		Large Bend Radius Kit
		Grounding Lug Kit
4	Horizontal Cable Management Panels	Rack Units
		Finger Spacing
		Cover
		Capacity
5	Vertical Cable Management Panels	Dimensions
		Door
		Capacity
6	Copper Patch Panels	Performance Category
		Position Count
		Form Factor
		Color Coding
7	Fiber Distribution Cabinets (Horizontal SAN & Data)	Cassette Capacity
		Rack Units
		Access Door
		Internal Strand Management

8	Fiber Distribution Cassettes	Cassette Capacity
		Cassette User Interfaces
		Cassette Backbone Interfaces
		Performance Characteristics
		Form Factor
9	UTP (Horizontal Distribution)	Performance Category
		Performance Specifications
		Smoke Rating
		Jacket Color
		Termination Method
		Media Connector
		Bundling
10	UTP Patch Cords	Performance Category
		Performance Specifications
		Jacket Color
		Termination Method
11	Fiber Patch Cords	Performance Category
		Performance Specifications
		Jacket Color
		Termination Method
12	Fiber Optic Cable (Horizontal Distribution)	Performance Category
		Performance Specifications
		Mode
		Smoke Rating
		Jacket Color

		Termination Method
		Media Connector
		Strand Count
		Bundling
13	Power Distribution Units (in rack/enclosure)	Receptacle Type(s)/Quantities
		Power Cord Plug
		kW Rating
		Volt Rating
		Monitoring
		Mounting
		Rack Units
		Phase Type
14	Zone Power Distribution Units	Receptacle Type(s)/Quantities
		Power Cord Plug
		kW Rating
		Volt Rating
		Fault Tolerance
		Mounting
		Rack Units
		Phase Type
15	KVM Switch	Target Cable Requirements
		Server Interface Support
		Authentication
		Uplinks
		Encryption

		Logging
		Centralized Management
		Local User
		Remote User
		Modem
		Protocol Support
		Client Software Support
		Server Ports
		Resolution
		Virtual Media Support
		Simultaneous Users

## APPENDIX A – DEFINITIONS

[Click here to enter definitions.](#)

## APPENDIX B – REFERENCES

ANSI/TIA/EIA-568-B.1

Commercial Building Telecommunications Cabling Standard.

Part 1: General Requirements 2001

ANSI/TIA/EIA-568-B.1.1

Commercial Building Telecommunications Cabling Standard.

Part 1. Addendum 2001

ANSI/TIA/EIA-568-B.2

Commercial Building Telecommunications Cabling Standard.

Part 2: Balanced Twisted Pair Components 2001

ANSI/TIA/EIA-568-B.3

Optic Fiber Cabling Components Standard 2000

ANSI/TIA/EIA-569-A

Addendums 1 through 6

Commercial Standard for Telecommunications Pathways and Spaces 1998

ANSI/TIA/EIA-606-A

Administration Standard for Commercial Telecommunications Infrastructure 2002

ANSI/TIA/EIA-J-STD-607-A

Commercial Building Grounding and Bonding Requirements for Telecommunications 2002

CSI MASTERFORMAT™ 2004 EDITION NUMBERS & TITLES Construction Specifications Institute (CSI)

NECA/BICSI 568-2006 Standard for Installing Commercial Building Telecommunications Cabling (ANSI) 2006

NFPA National Electric Code Handbook 2002

Telecommunication Distribution Methods Manual BICSI, Eleventh Edition 2006

VA DIRECTIVE 6500 INFORMATION SECURITY PROGRAM 2006

## APPENDIX C – ACRONYMS

Refer to the [VA Acronym Lookup](#) Web page for a list of VA specific acronyms.

EIE VA OI&T Enterprise Infrastructure Engineering

[Click here to enter additional acronyms.](#)

## APPENDIX D – CONTRIBUTORS

The following subject matter experts have contributed to the development of this document as indicated

Name	Organization	Role
<a href="#">Click here to enter list of subject matter experts and briefly describe their contribution to this document.</a>		