SOCAMES 6 Design Alert 1

Problem

During a recent construction activity of cable upgrades to an existing telecommunication room (TR) at an Initial Operating Capability (IOC) site, it was discovered during cable testing procedures that some of the cables being upgraded were greater in length to the end user device than standards allows.

Background

ANSI/TIA-568.D, “Balanced Twisted-Pair Telecommunications Cabling and Components” (Sep 2018) version of industry standards for telecommunication room fixed cabling installation, limits the total length of a network Unshielded Twisted Pair (UTP) cable segment to 100 meters. The 100 meters is broken down as 10 meters for patch cables and 90 meters for total fixed cabling. Cable length requires a three-dimensional assessment to ensure that the fixed cables being installed do not exceed the specified UTP cable segment of 90 meters of fixed cable length.

There are several scenarios that require an assessment to occur to ensure that a telecommunication rooms UTP cable segments do not exceed 90 meters.

Scenario 1: The installation of a new telecommunication room to serve an area.

Scenario 2: The relocation of an existing telecommunication room to serve an area.

Scenario 3: The installation of new cabling upgrades in a telecommunication room that will remain in place to serve an area.

Scenario 4: An existing telecommunication room that will not receive any cabling upgrades.

Solution

To ensure that an assessment is performed for each of the four telecommunication room scenarios listed above, our office in conjunction with the SD-DCIE team is providing a recommended three-dimensional estimation approach that can be shared with your respective facility leads and design team to verify all telecommunication rooms do not exceed the specified UTP cable segment of 90 meters.

Step 1: Ensure you have an accurate floor plan that depicts the locations of the telecommunication rooms serving the facility.

Step 2: Utilizing AutoCAD or rule, center on the location of the telecommunication room being assessed. From the center of the room project out lines, 80 meters in length from that point, in the plan north, south, east and west respectively.

Step 3: At the end each of the 80 meters lines created, connect a line 45 degrees from that point out to the next end point creating a diamond.

Step 4: Validate that all areas served by that telecommunication room fall within the parameters of the diamond overlay.

Step 5: If the area served by that telecommunication room is within the diamond overlay then the distance, as provided by the estimation tool, is adequate for that telecommunication room.

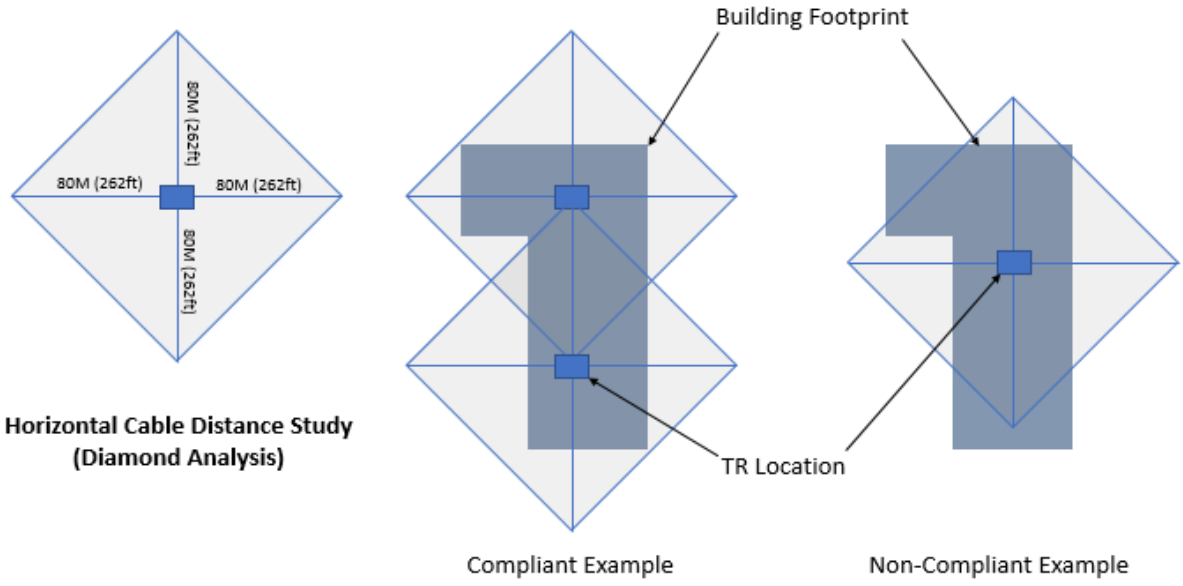
Step 6: If the area served by that telecommunication room is outside the diamond overlay then the distance, as provided by the estimation tool, is inadequate for that telecommunication room and further investigation is required by electronically testing the cable lengths to see if they pass or physical measurement. Any UTP cabling that does not pass testing protocols and is too long will need to have further design considerations to remedy the distance issue.

Notes

Since it is necessary to account for vertical cable distance, installation of slack for bypassing obstructions, cable management, bend radii and other in-situ obstacles 80 meters is utilized instead of the 90 meters acceptable length. This is to provide a realistic estimation of coverage of the representative telecommunication room.

This estimation tool is a recommended approach to validate fixed cable lengths meet the standards. Designers and installers remain responsible for ensuring actual cable distances do not exceed the limits in the standards.

Below is a diagram of an example demonstrating the use of the estimation tool.



HEFP SEP (SOCAMES 6) Design Alert 2

Problem

VA OEHRM previously required an on-site or near campus Help Desk during Go-Live. To better serve facilities during Go-Live, the Help Desk will now be remote and supported out of Kansas City.

Background

VHA HEFP SEP provided guidance in the ***Electronic Health Record Modernization Training and Support Space, HEFP SEP Space Planning Job Aid,*** 11/10/2020 revised 1/27/2021, that required 1,800 square feet of space for the Help Desk as part of the Command Center.

Solution

The ***Electronic Health Record Modernization Training and Support Space, HEFP SEP Space Planning Job Aid,*** has been updated to reflect the new requirements. The requirement for Help Desk space within the Go-Live Command Center was deleted, therefore, space is not needed for this activity.

Notes

Please use this link, ***Electronic Health Record Modernization Training and Support Space, HEFP SEP Space Planning Job Aid,*** 11/10/2020 revised 3/16/2021 to find the most up-to-date information.

HEFP SEP (SOCAMES 6) Design Alert 3

Problem

VA OEHRM previously planned for 3.5 classes per end user and either 8 seats per class with social distancing or 15 seats per class without social distancing. However, during the recent VHA EHRM Strategic Review, it was determined that each end user shall have 5 classes and that there will be either 8 seats per class with social distancing or 12 seats per class without social distancing. The changes described result in a larger space need.

Background

VHA HEFP SEP provided guidance in the ***Electronic Health Record Modernization Training and Support Space, HEFP SEP Space Planning Job Aid,*** 11/10/2020 revised 1/27/2021, that required 3.5 classes per end user and either 8 seats per class with social distancing or 15 seats per class without social distancing. VA OEHRM and VHA determined that more class time per end user and a decrease in the overall class size are needed.

Solution

The ***Electronic Health Record Modernization Training and Support Space, HEFP SEP Space Planning Job Aid,*** has been updated to reflect the new requirements. The following classroom calculations were revised.

Previous classroom calculations:

Standard Room Calculations
VAMC Total rooms = Number of end users x **3.5 classes per end user / 15 seats per class** / 8 weeks of EUT / 5 days of training per week
CBOC Total rooms = Number of end users x **3.5 classes per end user / 15 seats per class** / 8 weeks of EUT / 5 days of training per week.
Social Distanced Room Calculations
VAMC Total rooms = Number of end users x 3.5 classes per end user / 8 seats per class / 8 weeks of EUT / 5 days of training per week

CBOC Total rooms = Number of end users x 3.5 classes per end user / 8 seats per class / 8 weeks of EUT / 5 days of training per week.

New classroom calculations:

Standard Room Calculations
VAMC Total rooms = Number of end users x **5 classes per end user / 12 seats per class** / 8 weeks of EUT / 5 days of training per week
CBOC Total rooms = Number of end users x **5 classes per end user / 12 seats per class** / 5 weeks of EUT / 5 days of training per week.
Social Distanced Room Calculations
VAMC Total rooms = Number of end users x 5 classes per end user / 8 seats per class / 8 weeks of EUT / 5 days of training per week
CBOC Total rooms = Number of end users x 5 classes per end user / 8 seats per class / 5 weeks of EUT / 5 days of training per week.

Notes

Please use this link, ***Electronic Health Record Modernization Training and Support Space, HEFP SEP Space Planning Job Aid***, 11/10/2020 revised 4/20/2021 to find the most up-to-date information.

HEFP SEP (SOCAMES 6) Design Alert 4

Problem

Clarification to the field is needed regarding the design of space for Telecommunications Rooms (TRs) in existing facilities for the Electronic Health Record Modernization (EHRM) initiative. The design reference, *Infrastructure Standards for Telecommunications Spaces – Version 3.0* requires 170 sq ft TRs for clinical spaces. However, due to existing space and structural constraints, HEFP SEP requires, at a minimum, only 100 sq ft TRs for clinical spaces in **existing** buildings.

Background

The *Infrastructure Standards for Telecommunications Spaces – Version 3.0* was developed by the Solution Delivery-Data Center and Infrastructure Engineering (OIT SD-DCIE) team and published to the TIL August 21, 2020. HEFP SEP identifies the following references as standards for all Information Technology (IT) physical infrastructure design and construction projects: *Infrastructure Standards for Telecommunications Spaces – Version 3.0* and *VA OEHRM Site Infrastructure and End User Device Requirements.* These references are discussed and provided to each station during and after their scheduled scoping session to identify the work needed to modernize IT infrastructure across the enterprise.

During the site scoping sessions, HEFP SEP uses the Generic Floor Plan for TRs (Two Rack Requirement), detail 3, page 155 in Appendix B-7 of the *Infrastructure Standards for Telecommunications Spaces – Version 3.0* to communicate and coordinate space requirements for **existing** TRs to support EHRM. The baseline TR template is a 10 ft x 10 ft (100 sq ft) generic floor plan with two 2 ft x 4 ft racks to house the IT infrastructure.

Infrastructure Standards for Telecommunications Spaces – Version 3.0 specifies that a clinical TR should have a generic floor plan layout of 170 sq ft to support four 2 ft x 4 ft racks. This specification for clinical TRs has created a conflict with the standardized baseline TR of 100 sq ft that HEFP SEP works with the sites to achieve.

HEFP SEP discussed the conflict in TR size requirements with the OIT SD-DCIE team. HEFP SEP identified that due to VAMC/CBOC space deficits, **existing** building footprints, and the number of TRs, it is difficult to meet the 170 sq ft space requirement without a detrimental impact to healthcare operations. Furthermore, based on the average number of end users associated with each TR, most TRs only house 2 racks and require 100 sq ft of space. HEFP SEP and OIT SD-DCIE agreed that the 100 sq ft baseline standard was the practical approach in **existing** buildings.

Solution

All EHRM projects that require TR work in **existing** spaces shall minimally use the Generic Floor Plan for TRs (Two Rack Requirement), detail 3, page 155 in Appendix B-7 of the *Infrastructure Standards for Telecommunications Spaces – Version 3.0* which requires a 10 ft x 10 ft space to support two 2 ft x 4 ft racks. Room dimensions shall be increased by 20 sq ft for any additional 2 ft x 4 ft racks.

All new construction of clinical spaces should adhere to the standards as written.

Notes

Please use this link, https://www.cfm.va.gov/til/dguide/OIT-InfrastrucStdTelecomSpaces.pdf to locate the current version of Infrastructure Standard for Telecommunication Spaces – Version 3.0 published August 21, 2020.

HEFP SEP Design Alert 5

Problem

Clarification is required regarding the need to replace or install new fire suppression systems in the data center during design and construction of Electronic Health Record Modernization (EHRM) facility infrastructure projects and the need for a third-party fire engineer review of HEFP SEP EHRM Infrastructure Upgrades Projects.

Background

On June 1, 2021 the new Fire Protection Design Manual was published and posted to the Technical Information Library (TIL). The manual contains fire protection engineering design for Department of Veterans Affairs facilities. EHRM facility infrastructure projects, and specifically work conducted in the Data Centers, may require an upgrade or replacement of the existing fire suppression system in accordance with NFPA 75 as stated in the Fire Protection Design Manual Paragraph 3.7.

Solution

VHA field engineers are required to ensure that the Architect-Engineer designer of record applies all applicable NFPA 75 requirements for work needed in the Data Center. Field engineers should use the Healthcare Environment and Facilities Programs (HEFP) Fire Code Plan Review Contract to review all EHRM Infrastructure Upgrades and Data Center projects. The fire code plan review should focus on compliance with the newly published Fire Design Manual dated June 1, 2021 and ensure that all associated NFPA fire and life safety codes are indicated in the designs.

Guidance to the Architect-Engineer is as follows:

For EHRM Infrastructure Upgrade and Data Center projects, the work conducted in the Data Centers (which will upgrade spaces to an ANSI/TIA-942-B, Rating 3) generally requires compliance with all requirements of NFPA 75. The most design intensive of these requirements is the addition of a gaseous fire suppression system as described in the Fire Protection Design Manual, Paragraph 3.7. Compliance with NFPA 75 is also likely to involve, but not necessarily be limited to, these additional retrofit requirements:

- Revise the sprinkler protection in the computer room to a dedicated sprinkler zone.
- Ensure a minimum 1-hour boundary around the computer room.

- Combination smoke/fire dampers at the duct penetrations through the 1-hour boundary of the computer room.
- Electrical power off button(s) at computer room exit(s).
- HVAC power off button(s) at computer room(s).

Notes

Please use this link, Fire Code Plan Reviews | Healthcare Environment and Facilities Programs (va.gov) to request third-party fire engineer review for your EHRM upgrades projects.

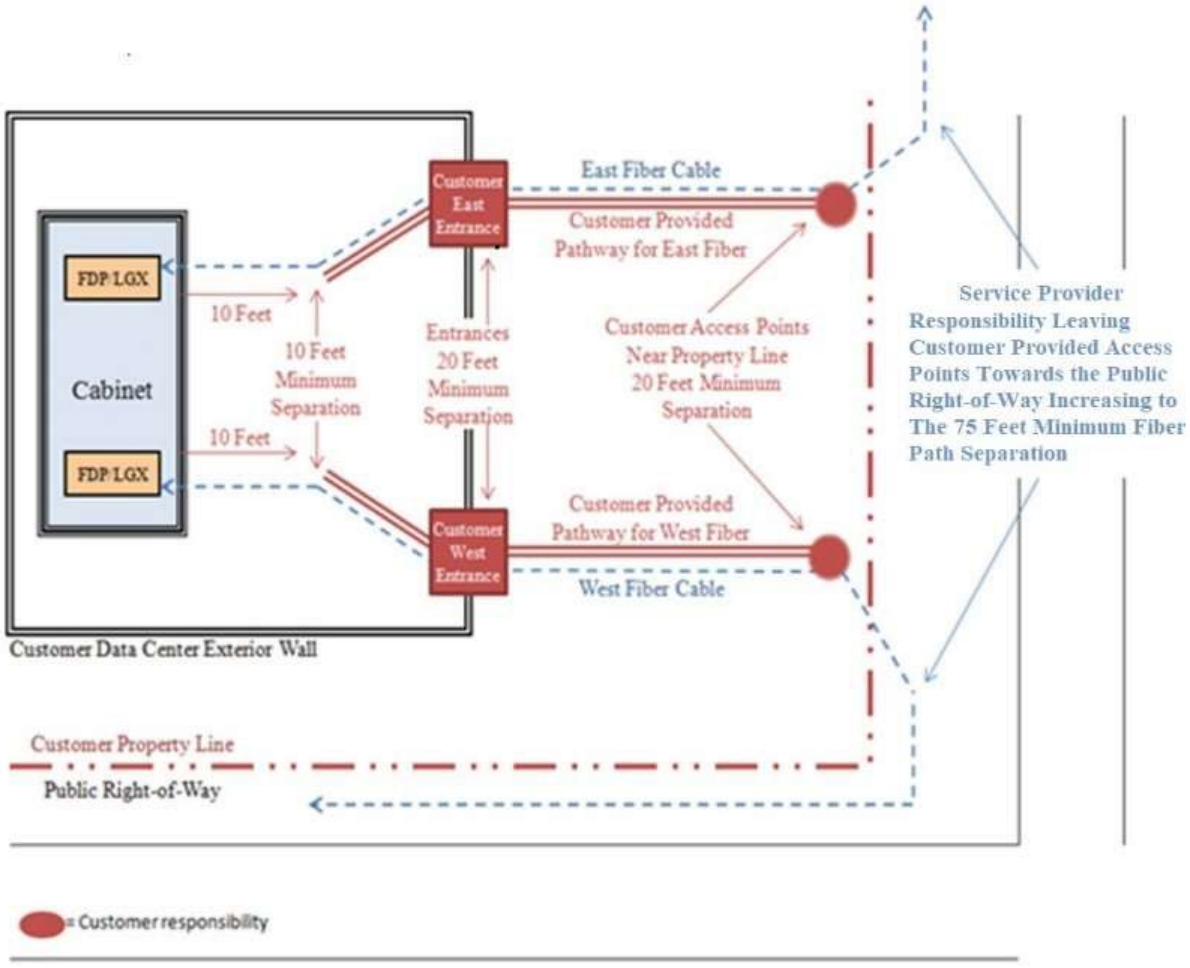
HEFP SEP (SOCAMES 6) Design Alert 6

Problem

HEFP SEP is working with OIT to create a process for installation of the additional geographically diverse path for the Wide Area Network (WAN) to ensure compliance with the VA OERHM Site Infrastructure Requirements (SIEUDR), version 2.0, paragraph 2.1.1.2.B (see below). However, HEFP SEP determined that there is currently no national OIT or OEHRM process to coordinate this work with the OIT contracted providers.

2.1.1.2 VAMC Sites

B. Facility shall have end-to-end, geographically diverse and carrier-diverse circuits with minimum fiber pathways separation: service provider public rights-of-way 75 ft, Egress 20 ft, and cabinet 10 ft. See below Figure 1.



Background

HEFP SEP completed scoping sessions in preparation for the Cerner deployment. HEFP SEP is in the process of finalizing scoping at all sites by November 2021. During these scoping sessions, HEFP SEP validates whether a site has a geographically diverse path to meet the requirement cited above. If the site did not have existing geographically diverse WAN paths, HEFP SEP identified this as a deficiency, included design and construction of the WAN paths in the scope of work and allocated funding in the ROM IGCE the scoping session. The purpose was to ensure the work was included in the scope and provide a magnitude cost estimate to design and construct the secondary conduit run to meet this requirement.

HEFP SEP has discovered that there is currently no national OIT or OEHRM process to coordinate this work with the OIT contracted providers. HEFP SEP is in discussions with OIT and OEHRM to clarify the process of working with OIT contracted providers so that guidance can be provided to the field. Without a clear process to work with OIT contracted providers, it is difficult, and sometimes not possible, to identify the location of the provider's entrance at the property boundary and the resulting pathway to the main service entrances.

Solution

Due to the contractual discussions OIT must have with the WAN providers to coordinate this work, HEFP SEP cannot provide adequate guidance to field engineers to ensure that this requirement is met.

To prevent delay and ambiguity in meeting this requirement, if a VAMC is unable to identify or locate the boundary entrance point, HEFP SEP recommends that the site discontinue this effort in current EHRM NRM projects and de-scope this work from the design and/or construction contracts (whichever applies). At this time, HEFP SEP will not provide updated IGCEs, but VAMCs may adjust cost estimates, as they find appropriate.

If a site has successfully coordinated this work with OIT and included diverse pathways in their designs, please reach out directly to James Cullum and Mike Vulpis so that HEFP SEP can ensure OIT agrees on a case-by-case basis.

When HEFP SEP clarifies the OIT process for implementing this requirement with contracted providers, our office will schedule supplementary scoping sessions with the field to scope this work under a separate EHRM NRM project.

Notes

Please use this link, VHA HEFP EHRM - 00 VA OEHRM Site Infrastructure Requirements - 2.0_Signed.pdf - All Documents (sharepoint.com) to locate the current version of OERHM Site Infrastructure Requirements – 2.0.

HEFP SEP (SOCAMES 6) Design Alert 7

Problem

There are specific circumstances when construction of a conditioned Telecommunication Room (TR) is infeasible or impractical in non-clinical buildings such as engineering/maintenance buildings, warehouses, temporary modular trailers and quarters that were converted to administrative space. In cases where existing space, structural or other constraints do not practically allow for construction of a TR, the use of a Telecommunication Enclosure (TE) is appropriate.

Background

HEFP SEP has seen a considerable increase in variance requests to deviate from the 80 square foot TR space standard as defined in the *Infrastructure Standards for Telecommunications Spaces* (ISTS). The variance requests specifically address low use, non-clinical TRs where expansion or new construction are not viable solutions due to space and/or environmental constraints.

Solution

The site should make every reasonable effort to comply with the current ISTS standard for all TRs in non-clinical buildings. However, where space and/or environmental constraints cannot support a new TR, both a Standard TE and Non-Standard TE are available for consideration under the conditions described below.

A Variance is NOT REQUIRED for a STANDARD TE (fan-cooled) if all the following criteria are met:

1. **Space Classification:** The space is one of the following:
   a) Parking structures
   b) Technical spaces such as warehouses, kitchens, laundries, mechanical/electrical plant buildings, chiller or boiler plants, garages, and paint shops
   c) Historical quarters converted to administrative use
   d) Buildings with no VA staffing presence and no requirements for connectivity to the VA LAN or guest Wi-Fi
   e) Temporary modular trailers. *Temporary* buildings and trailers must be validated as temporary, with a planned removal date and no history of previous deferred or cancelled removal plans.

HEFP SEP (SOCAMES 6) Design Alert 7

2. **Usage:** Usage is limited to a maximum of 96 Work Area Outlets (WAOs). Each data jack in a workspace telecommunications outlet, wired back to the patch panels in the TE, is considered a WAO for these purposes. Where 1-48 WAOs are planned, a 12RU (half-height) standardized TE is used. Where 49-96 WAOs are planned, a 26RU (full height) standardized TE is used.
3. **Environment:** Spaces meet the environmental envelope conditions for a TR, as described in Figure 19 and Table 24 of the Infrastructure Standard for Telecommunications Spaces. Ambient air conditions in the space are between 41°F-95°F dry bulb, 8-80% RH, and dew point less than 82.4°F, measured at the intake point of the TE.

Standard TE's (or equal) are provided below:

12RU - https://www.chatsworth.com/en-us/products/cabinets-enclosures-containment/wall-mount-cabinets/swing-frame/cube-it-wall-mount-cabinet/11900-e24

26RU - https://www.chatsworth.com/en-us/products/cabinets-enclosures-containment/wall-mount-cabinets/swing-frame/cube-it-wall-mount-cabinet/12419-e48

If all the above criteria are met, except for paragraph *4. Environment*, a NON-STANDARD (Environmentally Conditioned) TE may be considered, and a Variance is REQUIRED. To request a NON-STANDARD TE Variance:

1. Determine if another space in the building meets the environmental and physical security criteria for the installation of a standardized TE. If so, a standardized TE shall be relocated to the environmentally appropriate space in the building.
2. If no other spaces in the building meet the environmental and physical security criteria, submit a Variance request to DCIE for installation of a non-standard (environmentally conditioned) TE. Select which non-standard TE is proposed for use and submit the installation plan, showing the location on an as-built drawing.
3. A sampling of vendors that may meet the intent of a non-standard (environmentally conditioned) TE solution include:
    a. Liebert (Vertiv) MCR Mini Computer Room Enclosure https://www.vertiv.com/en-us/products-catalog/facilities-enclosures-and-racks/integrated-solutions/mcr---mini-computer-room-enclosure/
    b. Hoffman Spectracool – A side-mount A/C unit capable of attaching to many common manufacturer's cabinets (comes in a variety of sizes) https://hoffman.nvent.com/sites/g/files/hdkjer316/files/acquiadam/2021-05/Spec-00728.pdf?asset_type=Spec

HEFP SEP (SOCAMES 6) Design Alert 7

c. EIC Solutions Protector Series, Wall-Mount Enclosure S723616 Wall-mount AC Enclosure - 72"H x 36"W x 16"D with EIC Solutions CB Series, Compressor-Based, Side-Mount, Hazardous Location Enclosure CBIQ6000V16XP2 - 6,000 BTU Hazardous Location Air Conditioner https://www.eicsolutions.com/protector-series-air-conditioned-electronic-enclosures/ and https://www.eicsolutions.com/product/cbiq6000v16xp2/

Notes

Variance request information is in the *Infrastructure Standard for Telecommunication Spaces (ISTS)* standard, Section 1.3.1 and Appendix A.

Once approved, the designer of record **MUST** incorporate the approved TE into the design documents.

HEFP SEP (SOCAMES 6) Design Alert 8

Problem

A conflict was noted between the Infrastructure Standard for Telecommunication Spaces (ISTS) v3.1 and the HVAC Design Manual concerning design parameters for temperature and relative humidity ranges in Telecommunication Spaces.

Background

This Design Alert provides temporary guidance on temperature and relative humidity design ranges for Telecommunication Spaces. This Design Alert will remain in effect until the Infrastructure Standard for Telecommunications Spaces and the HVAC Design Manual publish updates that reconcile the temperature and relative humidity parameters.

Solution

The HVAC Design Manual requires a dry bulb temperature of 64° F for heating and 81° F for cooling and a relative humidity of 30% RH to 60% RH for Telecommunication Spaces, (pp. 6-106 for Data Centers and pp. 6-109 for TRs). These temperatures are supply temperatures. The ISTS requires rack inlet temperatures in telecommunications rooms between 41°F and 95°F and between 72°F and 80.6°F in computer rooms with a relative humidity range of 8% to 80%. Please use the Computational Fluid Dynamics (CFD) Modeling Guide for CRAC and rack inlet temperature design in Data Centers while meeting the more stringent of the two standards. To summarize, AC supply temperature set points must be between 64°F and 81°F per the HVAC Design Manual while maintaining rack inlet temperatures between 72°F and 80.6°F in computer rooms. Relative humidity in all telecommunications spaces will be maintained at the more stringent HVAC Design Manual requirements of 30% to 60%.

HEFP SEP (SOCAMES 6) Design Alert 9

Problem

There are specific circumstances when construction of a conditioned Telecommunication Room (TR) is infeasible or impractical in non-clinical buildings such as engineering/maintenance buildings, warehouses, temporary modular trailers, and quarters converted to administrative space. In cases where existing space, structural conditions, or other constraints do not practically allow for construction of a TR, the use of a Telecommunication Enclosure (TE) is appropriate, See Design Alert 7. However, the Physical Security and Resiliency Design Manual (PSRDM) does not provide clear direction for the physical security of a TE.

Background

When a TE is appropriate, physical security of the enclosure is required. Due to the nature of the enclosure, it is not possible to provide the same physical security required by the PSRDM for Telecommunication Rooms, Section 9.4.3 and Appendix B (Security System Matrix). In this instance, the TE must meet the same standards as the building in which it is placed. For example, if the TE is located within a building classified as Life Safety Protected in accordance with the PSRDM, then the electronic security of the TE is to be protected to that same level (e.g., keyed access, door position switch, video monitoring), to the maximum extent possible (i.e., PIV readers for TEs are not available). Layered security measures must be in place to ensure the TE meets PSDRM criteria to the greatest extent possible.

Solution

The site should make every reasonable effort to comply with the PSRDM, Appendix B for all TEs as if it were a TR. Use the following requirements below as guidance.

Requirements:

- TEs must be in areas not readily accessible to general foot traffic, conditioned, away from high heat sources and can be secured, either by key lock or card reader such as an office, break room, copier room, etc. If in doubt regarding the proposed location, submit a Station Inquiry.
- Comply with the power and cooling requirements for a TE as described in the Design Alert 7 - Telecommunications Enclosure Design Guide.
- Secure the door(s) of the TE with a door position switch, connected to the Physical Access Control System (Appendix B, 10.4 PACS & 10.5 IDS).
- Use a fixed camera with passive infrared (PIR) supplemental lighting (Appendix B, 10.6 SSTV).
    - Note: Due to issues regarding privacy and union contractual requirements, the use of digital masking is required to ensure that only the TE is recorded in the field of view (FOV).
- Incorporate the TE keys into the existing key management program.