

## ITS-20: NU-ITS Data Center Standard

### Standard Contents

1. Purpose .....	2
2. Scope.....	2
3. Standard Statement.....	2
4. NU-IT hg( )JTJETQ.00000912 0 612 792 reW*nBT/F1 12 Tf1 0 0 1 92T15F1 12 Tf1 0 0 1 92T15F1 12 Tf	

## 1. Purpose

This Standard is intended to mitigate physical and environmental risks within data centers managed or operated by University of Nebraska Information Technology Services (NU-ITS).

## 2. Scope

This Standard applies to all data centers managed or operated by University of Nebraska Information Technology Services.

## 3. Standard Statement

It is the intention of this Standard to establish best practices pertaining to the physical and environmental security of NU-ITS Data Centers. Deviations from the requirements defined herein in the form of exceptions must be approved in advance and in writing by the Chief Information Security Officer ( CISO ) as defined in **ITS Policy Exception Standard**. The following subsections outline the NU-ITS Data Center Standard.

## 4. NU-ITS Data Center Standard

### 4.1 Authorized Access to Data Centers

Individuals authorized to approve access to data centers will ensure that all individuals entering the designated areas have authorized access. Access will be granted in accordance with the following matrix:

Access Level	ITS Data Center	ITS Colocation Data Center
Authorized to Approve Access	Data Center Management Team	Data Center Management Team
Implement Approval	NU-ITS Infrastructure Services	NU-ITS Infrastructure Services
Category 1: Fully authorized with card access and is permitted in the facility without restriction to perform essential job functions.	VP, Information Technology AVP, Infrastructure Services Executive Director, Infrastructure Services NU-ITS Infrastructure Architecture Staff NU-ITS Network Services Staff NU-ITS Systems Services Staff NU-ITS Telecom Services Staff NU-ITS Information Security Services Staff NU-ITS Endpoint Services Staff NU-ITS Operations Center Staff UPS/CRAC Maintenance Contractor UNL Police Essential Staff UNL Facilities Essential Staff Individuals owning equipment within the facility (SECDC)	AVP, Infrastructure Services Executive Director, Infrastructure Services NU-ITS Infrastructure Architecture Staff NU-ITS Network Services Staff NU-ITS Systems Services Staff

BT/F3 8 Tf1 0 0 1 182.83 404.63 Tm



## 4.2 Assets and Property

The University of Nebraska defines assets as equipment acquired at a cost over \$5,000. Any equipment meeting this criterion will be tagged with a University asset tag and tracked within SAP. NU-ITS further extends this criterion for the purposes of managing equipment within data centers.

Any electronic equipment supporting the network, compute, storage, or telephony needs of the University that has an acquisition cost greater than \$5,000 will have an RFID asset tag affixed; in addition to the University asset tag. Assets under \$5,000 may have an RFID asset tag affixed at the discretion of the Data Center Management Team.

The following information will be tracked within the RFID asset inventory system and associated with each asset:

- Manufacturer
- Model Number
- Serial Number
- Acquisition Cost
- Acquisition Date
- First Placed in Service Date
- End of Life (EOL) Date
- End of Support (EOS) Date
- Location ±





- Maintenance and testing:
  - All electrical system components should be regularly inspected.
  - Main power switches, transformers, automatic transfer switches, and other major electrical system equipment must be maintained by qualified technicians per factory specifications and recommendations for service cycles.
  - Reports from regular inspections must be provided to the Manager, Hosting Services or their designee for review.

#### Fire alarm and suppression systems

- Suppression systems must be designed specifically for use in data centers.
- Suppression systems must comply with all state and local building codes.
- Suppression systems must use chemicals that do not damage sensitive equipment.
- Suppression systems must not pose harm to building occupants.
- Suppression systems must be maintained by qualified technicians to factory standards.
- Reports from regular inspections must be provided to the Manager, Hosting Services or their designee for review.

#### Raised floor systems

- Under floor space management:
  - Must remain clear and corrosion free.
  - Constant air pressure must be maintained at all times.
  - Must remain obstruction free for proper air flow.
- Cleaning:
  - Must be done with a vacuum cleaner equipped with HEPA/S-class filters.
  - Must be done on a continual basis.
- Floor structure maintenance:
  - Must be corrosion and rust free.
  - Damaged pedestals, cross-members, tiles, or missing fasteners must be replaced immediately to maintain floor integrity.
- Floor grounding:
  - Must be separate from building ground.
  - Must comply with all state and local codes.

#### Server Cabinet Systems:

- Cabinet standards:
  - Data center rack enclosures must have 42U vendor neutral mounting rails that are fully adjustable and compatible with all EIA-equipment.
  - Cabinets must have access points for power and data pathways at the top and bottom of the cabinet.
- Cabinet layout:
  - needs.
  - The cabinets will be configured in a standard hot aisle cold aisle configuration.
  - The cold aisle edge of the equipment enclosures must line up with the edge of the floor tiles.
  - Hot and cold aisles must be wide enough to insure adequate access to equipment and safe staff workspace.
  - In cases where vented floor tiles alone are insufficient to heat load for an area, additional cooling measures will be used.
  - Blanking panels will be installed in any unused rack space to minimize cold/hot air mixing.
- Cabinet security:
  - All cabinets must be lockable.
  - All cabinets must reside in a secure area within the data center.
- Cabinet loading:
  - Rack heat load must not exceed the cooling capacity of the location.
  - Large servers and equipment must be installed at the bottom of the rack.

## Cable Plant

- Overhead delivery system cable layout:
  - The data center must have a system to support overhead delivery of data connections to the equipment cabinets.
  - The data pathways must maintain a minimum separation from high voltage power and lighting in accordance with ANSI/TIA-469-B Standards (American National Standards Institute/Telecommunications Industry Association) and the University of Nebraska Design and Construction Standards Division 27 for Telecommunication Systems.
- Fiber standards:
  - Fiber installation must use 50 micron OM3 laser optimized fiber or better, rated for the capacity of the connection.
  - All fiber installations must be labeled and comply with the NU-ITS Labeling Standard.
- Copper standards:
  - Copper jumpers must be CAT5E or newer with RJ45 connectors, rated for the capacity of the connection.
  - All copper data cables must be labeled and comply with the NU-ITS Labeling Standard.
- Grounding:
  - All cabinets and cable delivery pathways must be grounded in compliance with the University of Nebraska Design and Construction Standards Division 27 for Telecommunications.

### 4.3.3 Support Services

#### Server Installation

- Power:
  - Systems with redundant power supplies must have their power cords plugged into separate power strips.
  - Power must be isolated from data cables.
  - Power cords must be factory certified.
  - Power cords must be clearly labeled and comply with the NU-ITS Labeling Standard.
- Rack space:
  - Servers must be installed from the bottom up in the rack enclosures.
  - Equipment must be clearly labeled and comply with the NU-ITS Labeling Standard.
- Data connections:
  - Cable must not exceed required length by more than one foot.
  - Must be isolated from the system and rack power delivery system.
  - Must be clearly labeled and comply with the NU-ITS Labeling Standard.
- Fiber connections:
  - Fiber must not exceed required length by more than one meter, after service loop is installed per University of Nebraska Design and Construction Standards Division 27 for Telecommunications.
  - Must be clearly labeled and comply with the NU-ITS Labeling Standard.
  - Must not exceed minimum bend radius as specified by the manufacturer.

#### Network layout

- Standard switch layout:
  - All University networking equipment must be approved by NU-ITS network staff and installed by them or their designee regardless of ownership.
  - Switches must be installed in a fashion to minimize the length of data cables required to provision a data connection.
- Highly critical system switch layout and redundancy:
  - In the case of a highly critical system where network path redundancy is required, the systems must have redundant data circuits that connect to separate switches.
  - Redundant switches must be plugged into separate power strips.





8.