

DCO Infrastructure: Cabling Standard

GUIDELINES STANDARDIZING THE INSTALLION OF ANY CABLING IN PDL-MANAGED AREAS OF THE DATA CENTER OBSERVATORY

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Installation

- Kept clean and orderly
- Associated cables bundled
- Bend radius does not exceed ½ inch
- Blocks of cables exhibit spatial locality
- Label identifiers are reused only to allow for broken / failed cables to be replaced with the same identifier.

Terminal Connections

- The length of cable outside a conduit or raceway is long enough to reach its termination equipment, and not longer
- Excess cable is coiled up, bound with velcro ties, and securely attached to a supporting structure
- Cables are routed so that any piece of equipment can be removed by detaching only the cables terminated at the affected device
- The use of extension cables is minimized

Cable Marking

- Cables are labeled at both ends within 2 in. of the end of a cable
- Marks identify the source and destination infrastructure device locality (rack location, floor grid coordinate), and the serial number of that cable

External Links

- Cables such as those that provide network uplinks to routers are labeled at the point where they enter PDL space and at the point where they connect to any PDL equipment

Cable Database

- Information about all cables in the installation
- There is a hard-copy of the database in a binder with the pertinent entries in the room for each cable installation
- Information maintained for each cable in the database:
 - Type (e.g., serial)
 - Serial number of the cable (e.g., 102112-001)
 - Cable Color (e.g., "black" for a common black power cable)
 - Endpoints
 - End 1 Location: The location of the end of this cable that is attached to a component closer to core equipment (router).
 - End 2 location: The location of the end of this cable that is attached to a component closer to a leaf equipment (computer).
 - Rack: The zone name, rack name and "U" location of the equipment where the cable terminates
 - Floor Location: The floor coordinate where this cable terminates
 - The equipment into which the cable terminates
 - Device: The name of the terminating device
 - Port: The name of the port in the terminating device
 - A text field describing the purpose of the cable
 - The history of the cable, including any time it was installed, moved, disconnected, reconnected, replaced, decommissioned etc.

Protection

- Cables protected from snagging by completely enclosing them (conduit, raceway or false floor)
- All cables are labeled as they enter and exit the primary routing column as well as at both ends
- Cables are securely attached to the under-floor structure and tightly bound
- Routing ensures that airflow is not obstructed
- All cables that are routed beneath false floors are plenum rated
- Cables not protected in a conduit or raceway are tightly bound with velcro ties
- Bundles of exposed cables are securely attached to equipment shelves, racks or walls

Cable Labeling

- Each cable has a unique identifier
- All numbering is base-10
- All assigned serial numbers are sequential in ascending order
- The highest number present in a cabling installation is available in a well-known, obvious location to facilitate the installation of additional cables
- Sequential blocks of serial numbers may be reserved for use in particular areas of a cabling

| Cable Length | Applications |
|--------------|---|
| 3 ft. | remote console to computers, rack switch to computers |
| 5 ft. | rack switch to computers |
| 7 ft. | rack switch to computers, sensors |
| 10 ft. | sensors, rack switch to computers |
| 14 ft. | sensors, |
| 25 ft. | rack to rack connections, sensors |
| 50 ft. | rack to rack connections, sensors |

| Cable Color | Function |
|-------------|---|
| yellow | Contact closures |
| yellow | AKCP sensors |
| yellow | other sensors |
| yellow | single mode fiber (standard) |
| orange | Network rack to monitoring infrastructure |
| orange | monitoring infrastructure network |
| orange | Network rack to remote console |
| green | remote console to computers |
| gray | Network rack to rack switches |
| blue | rack switch to computers |
| black | A-Link connections |

Multi-Recptacle Devices

- E.g., power distribution units (PDUs), power strips and multi-outlet extension cords
- MRDs are labeled by name, and this name is referenced by all attached cables in the cable database