

The Network Team's Guide to Data Center Infrastructure:

Labeling and Documentation

Every network team can tell horror stories about the “spaghetti” in or around their data center racks: unmarked cable tangles that turn a quick fix into an all-day ordeal. How about cabling documentation that references infrastructure components by their now-obsolete applications? Network managers can take an active role in preventing this, working with facility teams to ensure that the entire cabling infrastructure is properly labeled during deployment or during moves, adds, and changes (MACs). Extra time spent on this step will save you immeasurable time – and pain – in your day-to-day operations.

1. Before You Start

- Base your system on the location of terminations
- Choose a labeling method, document it for posterity and apply it consistently throughout the network
- Each component should be documented and labeled - not just patch cords, but cables and hardware too
- Redundancy is good - label the fronts and backs of hardware and both ends of cables and patch cords

Corning recommends the ANSI/TIA-606-B standard for labeling. It supports uniform administration independent of application or location in a multi-vendor environment.

2. Racks and Cabinets

Finding the right patch panel and port starts with finding the rack or cabinet that houses the patch panel.

- Each telecommunications space has a unique identifier where “F” is a numeric character that identifies the floor and “S” is an alpha character that defines the space
- Identify each rack and cabinet using an X-Y axis coordinate system. You can use floor tiles as an automatic grid or use row and rack lines. The “X” coordinate is an alpha character and the “Y” numeric
- The XY cabinet identifier follows the FS identifier (FS-XY), creating a specific location for each rack and cabinet – this methodology can be applied consistently to any space

Putting It into Practice

Here is an example of a standards-compliant mapping and labeling system of fiber terminations with a data center from local equipment to remote equipment. We have provided additional “optional” coding, consistent within the ANSI/TIA-606 standard, to also identify chassis and modules typically seen in structured cabling infrastructures.

STEP 1: Frame or cabinet location.

Identify the telecommunications space (floor/space) and then the location of the frame or cabinet within that floor space using grid coordinates. Label front and back, top and the bottom.

STEP 2: Chassis (housing) location.

Identify the chassis' location within the frame or cabinet, starting from the bottom of the cabinet to the top left corner of the chassis, measuring in rack units. Label the front door and a label card inside the door. The chassis in this example is 28 rack units from the bottom to the top left corner of the frame.

3. Labeling Patch Panels

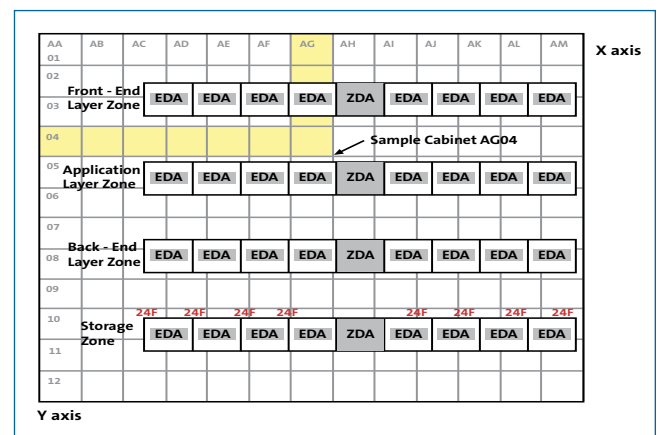
- Patch panel identifiers are usually numeric and designate the top left corner of the patch panel location
- Account for individual panels or modules and each port or fiber within the patch panel

This documentation clearly identifies which fiber strands are connected to which bulkhead and specify the range of ports or fibers the trunk is servicing locally and remotely.

4. Labeling Fiber and Cable

Fiber termination identification is equally important in mapping the data center network. Individual fibers (such as jumpers) must be clearly labeled to identify local and remote locations.

- Typically, a single jumper will contain two labels on each end, identifying the local ID and the remote ID the jumper is patching to
- Follow the previously defined code indicating rack or cabinet ID, patch panel ID, and the individual port or fiber termination location. This allows users to easily trace jumpers from one location to the next
- Documentation should clearly identify individual fiber strands of the cable or jumper
- Numeric identifiers for cables and cable strands can be used to differentiate them from other cables sharing their same characteristics



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STEP 3: Tray location.

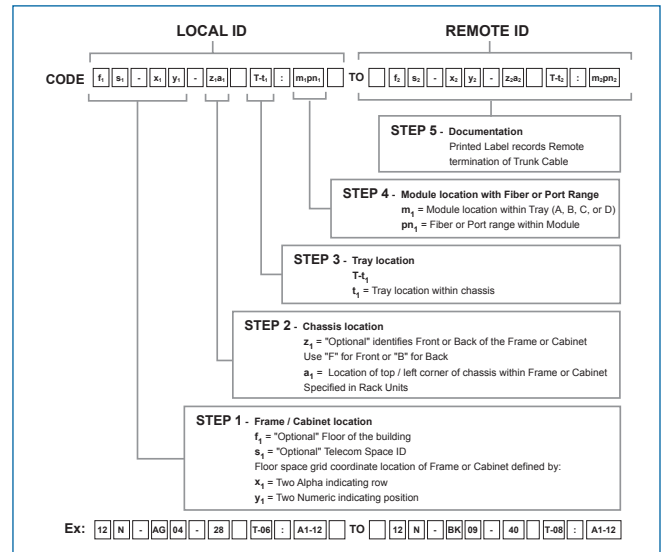
Identify the location of the tray within the chassis, working from the bottom to the top – from 01-12 trays in the case of this 4U housing. This tray's location is sixth from the bottom.

STEP 4 – Module (or panel) location with fiber and/or port range.

Work from left to right to identify each module's position in the tray (A-D, for example). In this example, the module is furthest to the left (A) in the tray and contains fibers one through 12. (12N-AG04-28-T06: A1-12)

STEP 5 – Documentation.

Identify the remote location served and determine its code using the same steps above; document this on the label card inside the chassis door. In the case of hardware, it is only necessary to print the remote location. For cables and jumpers, you would identify both the local and remote termination points on the label. In this example, we are connecting to a module in another rack within the same data center room: 12N-BK09-40-T08:A12



Additional Tips to Make Labeling and Documentation Easier

- Labeling is best supported with use of adhesive-backed label makers with media up to one-half inch in height – you can write these by hand, but the use of a label maker is best
- Choose hardware components that are pre-labeled for identification and promote a consistent labeling scheme across different hardware within the same product family. For example:
 - Chassis/housings equipped with an easily removable label card that will support adhesives and allow for easy removal
 - Bonus: Front doors with a crop mark for consistent application of the label
 - Chassis trays pre-labeled from the bottom to the top (numeric) and module/panel positions from left to right (alpha)
 - Module or panels with fiber and/or port IDs permanently printed on the adapters
 - Label card supports adhesive-backed label media and printed labels may be easily adhered to or removed for moves, adds and changes.

We offer free, personalized design assistance for network teams considering their data center infrastructure options.

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