Choose the Right Copper Trunk Cables

Pre-terminated cable assemblies are an ideal solution for data centers and other applications where speed and testing simplify installation - saving time, labor, and jobsite waste - when compared to a field-terminated installation. Leviton trunk cables are custom configured in pre-engineered lengths using component-rated connectors to meet the needs of each application.

How do you know which assemblies are appropriate for your network? The following steps will help you select the right copper trunks.

1. Riser vs. Plenum
You must first consider types and fire ratings of materials to minimize danger in the event of a fire. Most data centers are a riser environment, where airflow is not a consideration. Plenum spaces do facilitate air circulations, and these areas - like drop ceilings and raised floors - will generally require plenum-rated cable. Consult the Authority Having Jurisdiction (AHJ) before deciding on the type of cable for your application.

Leviton copper trunks include a braided mesh sleeve whose properties match that of the cable jacket. This ensures that the binding material does not degrade the suitability of the product in a plenum environment.

2. Termination Types and When To Use Them
The termination type of the cable assembly depends on the layout of the data center or telecommunications room, and the design philosophy employed. You should consider the accessibility of the active equipment, and to what patching will be employed.

Jack-to-Jack - Requires the use of empty patch panels on each end (Leviton offers a wide selection of empty QuickPort panels). Patch cords would them be used to complete the channel between active equipment (i.e. servers and switches) and the physical layer. Many users prefer to employ cross-connects instead of direct connections. Active equipment is expensive and can be very delicate. To minimize the potential for trouble, active equipment may be installed in a locked cabinet, with patch panels accessible in a nearby two-post rack.
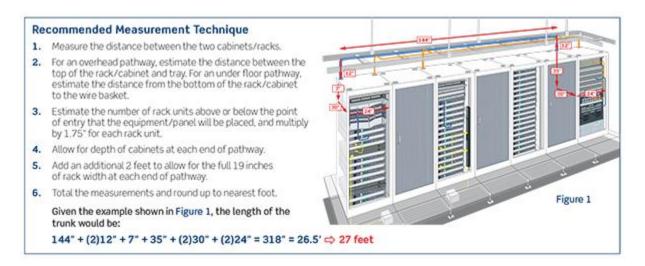
Jack-to-Plug - Eliminates one cross-connect point by having the cable plug directly into the active equipment (i.e. switches). The jack termination snaps into an empty panel, which would then be patched to other equipment or work area ports as necessary.

Plug-to-Plug - Used to make a direct connection between active equipment (e.g. server to switch), eliminating cross-connect capabilities. It also can be used in an open-space work area as a bundled patch cord group.

Jack-to-Open - Used in applications similar to the Jack-to-Jack configuration, but one end would be cut to length and field-terminated to a 110-style panel, QuickPort panel, or wallplate. This termination type requires field testing of the drops after the cables have been terminated.

3. Measuring For Proper Length
To realize the benefits of pre-terminated copper trunks, they must be ordered in proper lengths. Leviton offers copper trunks in one-foot increments from 10 to 295 feet, with a minimum length of 30 feet for CAT 6A configurations. The length of a Leviton copper trunk is measured from connector to connector, inclusive of breakout length.

Recommended Measurement Technique

1. Measure the distance between the two cabinets/racks.
2. For an overhead pathway, estimate the distance between the top of the rack/cabinet and tray. For an under floor pathway, estimate the distance from the bottom of the rack/cabinet to the wire basket.
3. Estimate the number of rack units above or below the point of entry that the equipment/panel will be placed, and multiply by 1.75" for each rack unit.
4. Allow for depth of cabinets at each end of pathway.
5. Add an additional 2 feet to allow for the full 19 inches of rack width at each end of pathway.
6. Total the measurements and round up to nearest foot.

Given the example shown in Figure 1, the length of the trunk would be:

144" + (2)12" + 7" + 35" + (2)30" + (2)24" = 318" = 26.5' ⇨ 27 feet

Figure 1

4. Selecting The Proper Breakout Length
Breakout length refers to the dimension from the end of the braided sleeve to connectors at the end of the cables. This dimension is part of the overall length, not in addition to the length measurement. The primary consideration for breakout length is to have flexibility to route the cables as needed, but not so much "uncovered" cable that cable management becomes difficult.

In most cases, a 36-inch breakout length is sufficient. With this dimension, the trunk remains in the vertical manager and the individual ables can route through the vertical duct fingers and still reach across the 19-inch rack to the farthest port.

Applications outside of a rack or cabinet may require the flexibility of having the connectors spread out farther apart, and in turn a longer breakout length (e.g., 48 inches or more). For manufacturing reasons, the shortest breakout length allowed for Leviton trunks is 12 inches.

5. Staggered vs. Even Environment
Although both alignment types are available for either trunk end, the default for jacks is a staggered alignment, while the default for plugs and open is an even alignment. It is assumed that Jack terminations will be inserted into patch panels, and that the staggering will aid in dressing out the cables neatly to the side of the rack or cabinet.

When choosing staggered, consider which side of the patch panel (left or right) the trunk will enter from. It will need to be specified if cable number one in the trunk will be the shortest or the longest cable in the stagger.

Conversely, active equipment will vary with respect to the location and density of the connection ports. An even alignment for plugs ensures a uniform reach for all six cables in a trunk.

Open terminations are supplied with an even alignment to preserve the choice of the installer. If you prefer staggered alignment, the open ends can be trimmed to length prior to termination.

Resource:

http://www.leviton.com/OA_HTML/SectionDisplay.jsp?section=61278&minisite=10251