

Cabling Types

Each recognized cable has individual characteristics that make it suitable for a range of applications defined against each category or cabling type in the applicable cabling standards.

A single cable may not satisfy all end user requirements. It may be necessary to use more than one medium in the backbone cabling.

In those instances, the different media shall use the same facility architecture with the same location for cross-connects, mechanical terminations, and inter-building entrance facilities.

As a result of the wide range of services and site sizes where backbone cabling will be used, more than one transmission medium is recognized.

This standard specifies the transmission media that shall be used individually or in combination in the backbone cabling.

Recognized cables associated connecting hardware, jumpers, patch cords, equipment cords, and zone area cords shall meet all applicable requirements specified in applicable standards and related addenda (e.g., ISO/IEC 11801, TIA-568-series).

Backbone cabling shall consist of one or more of the following media types:

- 100-ohm balanced twisted-pair Category 3/Class C minimum, (Category 6/ Class E or higher recommended)
- OM3 multi-mode optical fiber cable minimum, (OM4 multi-mode optical fiber cable recommended)
- OS1 or OS2, single-mode optical fiber cable
- 75-ohm coaxial cabling (Telcordia GR-139-CORE 734-type and 735-type)

Redundant backbone cabling protects against an outage caused by damage to the primary backbone cabling.

Redundant backbone cabling may be provided in several ways, depending on the degree of protection desired.

Backbone cabling between two spaces (e.g., a horizontal distribution area and a main distribution area)

can be provided by running two cabling channels between these spaces, preferably along different routes.

If the computer room has two main distribution areas, redundant backbone cabling to the horizontal distribution area may not be necessary although the routing of cabling to the two main distribution areas should follow different routes.

Some degree of redundancy can also be provided by installing backbone cabling between horizontal distribution areas. If the backbone cabling from the main distribution area to the horizontal distribution area is damaged, connections can be patched through another horizontal distribution area.

The Equipment cords and patch cords, the backbone cabling distances shall be designed to accommodate the maximum cordage length so that when configuring channels for use with applications the combination of equipment cord, a permanent link and patch cords never exceeds the channel loss limits.

Centralized Optical Fiber Cabling

Centralized optical fiber topologies permit the intermediate distribution areas and horizontal distribution areas to have no switches.

Centralized cabling design shall allow for the addition and removal of horizontal and backbone optical fiber cabling.

Enough space shall be left in the HDA and IDA to allow for the addition of patch panels needed for the migration of the pull-through, interconnect, or splice to a cross-connection.

Centralized cabling design shall allow for migration (in part or in total) of the pull-through (continuous sheath cables), interconnect, or splice implementation to a cross-connection implementation or configuration utilizing equipment (e.g., switches) in the distributors.

Centralized cabling shall support the administration and labeling requirements of the cabling standards being followed.

Administration of moves and changes shall be performed at the centralized cross-connect. In addition, computer room splice, and interconnect hardware shall be labeled with unique identifiers on each termination position.

Polarity shall adhere to the requirements of the cabling standards being followed. Service loop storage shall provide bend radius control so that optical fiber bend radius limitations are not violated.

Single-Mode and Multimode Connector Color Recommendations

The single-mode connector or a visible portion of it should be blue, referring to a flat-polished optical fiber end face; green should signify a connector featuring an angle polished optical fiber end face.

Where a mixture of OS1 and OS2 exist in a single data center space or room, additional identification should be applied to clearly identify the fiber type used.

Horizontal Cabling

The horizontal cabling is the portion of the telecommunications cabling system that extends from the equipment outlet (EO) in the EDA to the TIA HC or ISO/CENELEC ZD in an HDA, IDA, or MDA.

The horizontal cabling includes:

- Horizontal cables
- Mechanical terminations
- Equipment cords, patch cords, or jumpers;
- TIA zone outlet, TIA consolidation point (CP), or ISO/CENELEC local distribution point (LDP) in the optional ZDA

Horizontal cabling shall consist of one or more of the following media types:

- 4-pair 100-ohm balanced twisted-pair Category 6/Class E minimum (Category 6A/Class EA or higher recommended)
- OM3 multi-mode optical fiber cable minimum (OM4 multimode optical fiber cable recommended where horizontal fiber cabling lengths exceed 70 m [230 ft])
- OS1 or OS2, single-mode optical fiber cable

Balanced Twisted-Pair Cabling

Balanced twisted-pair cabling performance is described using a scale based on classes or categories, as defined by ISO/IEC and TIA, respectively. While Category 3/Class C is the minimum acceptable performance for backbone cabling, Category 6/Class E is the minimum requirement in TIA-942-A and CENELEC EN 50173-5 for horizontal cabling, and Category 6A/Class EA is the minimum requirement as listed in ISO/IEC 24764.

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