

Structured cabling

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Structured cabling is building or campus telecommunications cabling infrastructure that consists of a number of standardized smaller elements (hence structured) called subsystems.

Structured cabling falls into six subsystems:

- *Entrance Facilities* are where the building interfaces with the outside world.
- *Equipment Rooms* host equipment which serve the users inside the building.
- *Telecommunications Rooms* house telecommunication equipment which connect the backbone and the horizontal cabling subsystems.
- [Backbone Cabling](#) connect between the entrance facilities, equipment rooms and telecommunications rooms.
- [Horizontal Cabling](#) connect telecommunications rooms to individual outlets on the floor.
- *Work-Area Components* connect end-user equipment to outlets of the horizontal cabling system.

Structured cabling design and installation is governed by a set of standards that specify wiring [data centers](#), [offices](#), and [apartment buildings](#) for data or voice communications, using [category 5](#) (CAT 5E) or [category 6 cable](#) (CAT 6) and [modular sockets](#). These standards define how to lay the [cabling](#) in a [star formation](#), such that all outlets terminate at a central [patch panel](#) (which is normally [19 inch rack-mounted](#)), from where it can be determined exactly how these connections will be used. Each outlet can be 'patched' into a data network switch (normally also rack mounted alongside), or patched into a 'telecoms patch panel' which forms a bridge into a [private branch exchange](#) (PBX) telephone system, thus making the connection a voice port.

Lines patched as data ports into a network switch require simple [straight-through](#) patch cables at the other end to connect a computer. Voice patches to PBXs in most countries require an adapter at the remote end to translate the configuration on 8P8C [modular connectors](#) into the local standard [telephone](#) wall socket. No adapter is needed in the U.S. as the 6P6C plug used with [RJ11](#) telephone connections is physically compatible with the larger [8P8C](#) (RJ-45) socket and the wiring of the 8P8C is compatible with RJ11. In the UK, an adapter must be present at the remote end as the [6-pin BT socket](#) is physically incompatible with 8P8C.

It is common to color code patch panel cables to identify the type of connection, though structured cabling standards do not require it, except in the demarcation wall field.

Cabling standards demand that all eight connectors in Cat5/5e/6 cable are connected, resisting the temptation to 'double-up' or use one cable for both voice and data.

Structured cabling standards

There are structured cabling standards used internationally published by ISO/IEC. The main structured cabling standards used in the USA are:

- TIA-526-7 Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant – OFSTP-7 - (February 2002)
- TIA-526-14-A Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant – OFSTP-14 - (August 1998)
- ANSI/TIA/EIA-568-B.1 Commercial Building Telecommunications Cabling Standard Part 1: General Requirements: General Requirements, May 2001.
- Addenda ANSI/TIA/EIA-568-B.1-1-2001, Addendum 1, Minimum Curve Radius for 4 pair UTP and ScTP cable, July, 2001.
- TIA/EIA-568-B.1-2 Commercial Building Telecommunications Cabling Standard Part 1: General Requirements Addendum 2 – Grounding and Bonding Requirements for Screened Balanced Twisted-Pair Horizontal Cabling - (February 2003)
- TIA/EIA-568-B.1-3 Commercial Building Telecommunications Cabling Standard Part 1: General Requirements Addendum 3 – Supportable Distances and Channel Attenuation for Optical Fiber Applications by Fiber Type - (February 2003)
- TIA/EIA-568-B.1-4 Commercial Building Telecommunications Cabling Standard Part 1: General Requirements Addendum 4 – Recognition of Category 6 and 850 nm Laser Optimized 50/125 μm Multimode Optical Fiber Cabling - (February 2003)
- TIA/EIA-568-B.1-5 Commercial Building Telecommunications Cabling Standard Part 1: General Requirements Addendum 5 – Telecommunications Cabling for Telecommunications Enclosures – (March 2004)
- TIA/EIA-568-B.1-7 Commercial Building Telecommunications Cabling Standard Part 1: General Requirements Addendum 7 - Guidelines for Maintaining Polarity Using Array Connectors – (January 2006)
- TIA/EIA-568-B.2 Commercial Building Telecommunications Cabling Standard Part 2: Balanced Twisted-Pair Cabling Components - (December 2003)
- TIA/EIA-568-B.2-1 Commercial Building Telecommunications Cabling Standard Part 2: Balanced Twisted-Pair Cabling Components – Addendum 1 – Transmission Performance Specifications for 4-Pair 100 ohm Category 6 Cabling - (June 2002)
- TIA/EIA-568-B.2-2 Commercial Building Telecommunications Cabling Standard Part 2: Balanced Twisted-Pair Cabling Components – Addendum 2 – Revision of Sub-clauses - (December 2001)
- TIA/EIA-568-B.2-3 Commercial Building Telecommunications Cabling Standard Part 2: Balanced Twisted-Pair Cabling Components – Addendum 3 – Additional Considerations for Insertion Loss & Return Loss Pass/Fail Determination - (March 2002)
- TIA/EIA-568-B.2-4 Commercial Building Telecommunications Cabling Standard Part 2: Balanced Twisted-Pair Cabling Components – Addendum 4 – Solderless Connection Reliability Requirements for Copper Connecting Hardware - (June 2002)

- TIA/EIA-568-B.2-5 Commercial Building Telecommunications Cabling Standard Part 2: Balanced Twisted-Pair Cabling Components – Addendum 5 – Corrections to TIA/EIA-568-B.2 – (January 2003)
- TIA/EIA-568-B.2-6 Commercial Building Telecommunications Cabling Standard Part 2: Balanced Twisted-Pair Cabling Components – Addendum 6 – Category 6 Related Component Test Procedures – (December 2003)
- TIA/EIA-568-B.2-11 Commercial Building Telecommunications Cabling Standard Part 2: Balanced Twisted-Pair Cabling Components – Addendum 11 – Specification of 4-Pair UTP and SCTP Cabling – (December 2005)
- TIA/EIA-568-3 Optical Fiber Cabling Components Standard - (April 2002)
- TIA/EIA-568-3.1 Optical Fiber Cabling Components Standard – Addendum 1 – Additional Transmission Performance Specifications for 50/125 µm Optical Fiber Cables – (April 2002)
- TIA-569-B Commercial Building Standard for Telecommunications Pathways and Spaces - (October 2004)
- TIA-598-C Optical Fiber Cable Color Coding - (January 2005)
- TIA/EIA-606-A Administration Standard for Commercial Telecommunications Infrastructure - (May 2002)
- J-STD-607-A Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications - (October 2002)
- TIA-758-A Customer-owned Outside Plant Telecommunications Infrastructure Standard – (August 2004)

European countries use another set of standards, the main one being CENELEC 50173.

See also

- [Category 5 cable](#)
- [Category 6 cable](#)
- [ISO/IEC 11801](#), the [International Organization for Standardization](#) standard for generic cabling for premises
- [TIA/EIA-568-B](#), the [Electronic Industries Alliance](#) standard for telecommunications cabling in commercial premises
- [Registered jack](#), a set of standards for telephone cabling termination (including RJ11, RJ15, and RJ45)
- [Telecommunications Industry Association](#)
- [Multimode fiber](#)
- [On-premises wiring](#)

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