NICE VENTURE INFORMATION TECHNOLOGIES LLC

The Structured Cabling Guide

Copper, fibre, Wi-Fi, mobile coverage and telecom rooms — what to specify, the standards that matter, and how to get a building's backbone right the first time.

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Contents

1. Structured cabling in plain English
2. Cable types compared
3. The standards worth knowing
4. The cabling ecosystem and leading products
5. 10 things to get right in any project
6. What's changing
7. How to choose a cabling partner
8. Glossary
9. Contact us

For developers, consultants, contractors, facility managers and business owners. When you want a second opinion, send us your drawings or BOQ.

Structured cabling in plain English

What structured cabling is

An organised system of cables, connectors, racks and pathways that carries voice, data, Wi-Fi, CCTV, access control, AV, BMS and IoT on one backbone.

Why it matters

It outlives the equipment on it by 15–25 years. Getting it right once avoids re-cabling an occupied building later.

Horizontal vs backbone

Horizontal cabling runs from a telecom room to each outlet (max 90 m permanent link). Backbone cabling links telecom rooms, floors and buildings.

Copper vs fibre

Copper reaches devices and carries power (PoE). Fibre carries more bandwidth over longer distances and between floors and buildings.

Telecom rooms

The MDF (main) and IDFs (per floor or zone) hold racks, switches and patch panels. They need space, cooling, grounding and security.

Testing and warranty

Every link is certified with a tester. A certified system from a leading manufacturer can carry a long system warranty.

Cable types compared

Choose the cable for the building's life, not today's devices.

CABLE	SPEED	BANDWIDTH	BEST FOR
Category 6	1 Gb/s (10 Gb/s to ~55 m)	250 MHz	Small offices, shops, villas
Category 6A	10 Gb/s to 100 m	500 MHz	New buildings, Wi-Fi 6E/7, PoE++, 15–25 year life
Category 8	25/40 Gb/s to 30 m	2,000 MHz	Short server links in data centres
Multimode OM4 / OM5	10–100 Gb/s+ (shorter reach)	—	Risers and data centres within buildings
Single-mode OS2	10 Gb/s to 400 Gb/s+ over km	—	Backbones, campuses, FTTH, long runs

The standards worth knowing

ANSI/TIA-568 series

Copper and fibre cabling performance, components and testing.

ISO/IEC 11801 & EN 50173/50174

International and European generic cabling and installation practice.

ANSI/TIA-569, 606, 607

Pathways and spaces; labelling and records; grounding and bonding.

ANSI/TIA-942 & BICSI 002

Data-centre infrastructure design and tiers.

BICSI TDMM

The industry design reference for telecommunications distribution.

IEEE 802.3bt & 802.11be

Up to 90 W PoE; Wi-Fi 7 multi-gig wireless.

TDRA, Etisalat and du guidelines

UAE in-building telecom, FTTH and mobile-coverage requirements.

Cable fire performance

LSZH sheaths and EU CPR classes, as specified by consultants.

The cabling ecosystem and leading products

We work across multiple brands and recommend on performance, warranty and total cost.

LAYER	WHAT IT COVERS	LEADING PRODUCTS
Copper horizontal cabling	Cat6/6A cables, jacks, panels and cords	SYSTIMAX, Panduit, Siemon, Leviton, Nexans, Legrand, Belden, R&M
Fibre backbone & campus	OS2 and OM4/OM5 risers, outdoor fibre, closures	Corning, SYSTIMAX, Panduit, Prysmian, Fujikura, Sumitomo
Data-centre cabling	Pre-terminated MPO/MTP trunks, high-density panels	Corning EDGE, SYSTIMAX Propel, Panduit HD Flex, Siemon LightVerse
Racks & cable management	Cabinets, open racks, managers	APC NetShelter, Rittal, Vertiv, Panduit, Legrand
Containment & pathways	Trays, ladders, baskets, trunking, floor boxes	Legrand Cablofil, OBO Bettermann, Niedax, Schneider Electric
Telecom rooms	Layout, grounding & bonding, labelling	Panduit, nVent ERICO, Brady
Control & BMS cabling	Instrumentation, BMS, GRMS, lighting and home-automation cables	Belden, Lapp, Helukabel, Nexans, Prysmian
Wi-Fi & data networks	Wi-Fi 6/6E/7 access points and PoE switching	Cisco Meraki & Catalyst, HPE Aruba Networking, Juniper Mist, Ruckus, Fortinet, Extreme
In-building mobile coverage	DAS and small cells for all operators	Ericsson Radio Dot, Huawei LampSite, Comba, JMA Wireless, Nokia
FTTH, GPON & passive optical LAN	Fibre to every home or desk	Huawei, Nokia, ZTE, Tellabs, Corning
Voice & telecom	IP-PBX, UC and telephone cabling	Cisco, Microsoft Teams Phone, Yeastar, Grandstream, 3CX
Testing & certification	Copper certification, OTDR and power-meter tests	Fluke Networks, EXFO, VIAVI

Trademarks belong to their respective owners.

Need a multi-brand comparison for your project? **Ask us →**

10 things to get right in any project

1. Specify Category 6A for new buildings and every Wi-Fi access point location.
2. Use single-mode OS2 fibre for backbones and between buildings; plan spare cores.
3. Size telecom rooms and risers for growth — space, cooling, power and access.
4. Keep every horizontal permanent link within 90 m; plan IDF locations accordingly.
5. Design containment with separation from power cables and room for future cables.
6. Plan PoE loads for cameras, APs and lighting — bundle sizes and cable ratings matter.
7. Include in-building mobile coverage (DAS) early, before ceilings close.
8. Label everything to TIA-606 and keep digital as-built records.
9. Certify 100% of copper links and OTDR-test every fibre; keep the reports.
10. Register the manufacturer system warranty at handover.

Want us to review your design against this list? **Send your drawings →**

What's changing

Wi-Fi 7 and multi-gig
Access points need 2.5–10 Gb/s uplinks: Cat6A to every AP.

More power over Ethernet
Up to 90 W per port for cameras, APs, lighting and displays.

Converged smart buildings
BMS, lighting, access and IoT move onto one IP backbone.

Single-pair Ethernet
Thin cabling for sensors and controllers in BMS and industry.

Fibre deeper into buildings
FTTH, fibre-to-the-office and passive optical LAN.

AI-ready data centres
400/800G links and dense MPO/MTP fibre.

Indoor mobile coverage
DAS and small cells planned with the building.

Digital documentation
Automated infrastructure management and digital as-builts.

How to choose a cabling partner

1. Do they work from your drawings and BOQ and return a compliance statement?
2. Can they offer more than one manufacturer and explain the trade-offs?
3. Are installers trained and certified on the system being installed?
4. Will every link be certified, and will you receive the test reports?
5. Do they produce shop drawings, submittals, as-builts and labelling to standard?
6. Can they register a manufacturer system warranty at handover?
7. Do they also cover Wi-Fi, DAS, CCTV and the systems that will use the cabling?
8. Will they support moves, adds and changes after handover?

Glossary

TERM	MEANING
MDF / IDF	Main / intermediate distribution frame — the main and floor telecom rooms
Permanent link	Fixed cable from panel to outlet, tested for certification (max 90 m)
Channel	Permanent link plus patch cords (max 100 m)
PoE / PoE++	Power over Ethernet; IEEE 802.3bt delivers up to 90 W
OTDR	Optical time-domain reflectometer — tests and locates faults in fibre
MPO / MTP	Multi-fibre connectors for high-density data-centre links
OS2 / OM4 / OM5	Single-mode and multimode fibre types
U/UTP, F/UTP	Unshielded and foil-shielded twisted-pair copper
LSZH	Low-smoke zero-halogen cable sheath
DAS	Distributed antenna system for indoor mobile coverage
GPON / POL	Gigabit passive optical network / passive optical LAN
FTTH	Fibre to the home
AIM	Automated infrastructure management — live port tracking
SPE	Single-pair Ethernet

Talk to us

NICE Venture designs, installs, tests and certifies structured cabling, Wi-Fi, mobile coverage and telecom rooms — from a single shop to towers, campuses and data centres — and maintains them for the life of the building.

Quote from your BOQ
WhatsApp the drawings

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