

EXECUTIVE BRIEF

Structured Cabling

What CIOs Should Ask Their Vendor Before Signing Any Cabling Contract

An executive resource guide from International IT Solutions Inc.

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60%

OF CABLING FAILURES

caused by poor installation, not the cable itself

25 yrs

INFRASTRUCTURE LIFESPAN

structured cabling outlasts every device it supports

Cat 6A

MINIMUM STANDARD

for any new build supporting 10 GbE or Wi-Fi 6/6E APs

Why This Decision Belongs at the Executive Level

Structured cabling is the most permanent infrastructure investment an organization makes. Unlike servers, switches, or access points — which are replaced on 3–7 year cycles — a cabling plant installed today will still be in service 20 to 25 years from now, supporting technologies that do not yet exist. Approving a cabling project without understanding certification standards, documentation requirements, and close-out deliverables is one of the most common and most costly infrastructure decisions organizations make.

The difference between a compliant, warranted cabling installation and one that merely 'passes inspection' is invisible until it is not — typically during a network upgrade, an audit, or a critical failure at the worst possible time.

"The cabling plant is the only infrastructure layer your organization will never fully replace. What you approve today is what your team works around for the next two decades."

Business Risk: The Cost of Under-Specified Cabling

Cabling installed to minimum standards today (Cat 6 instead of Cat 6A) limits network upgrade options within 3–5 years. Re-cabling a facility costs significantly more than specifying correctly the first time.

Warranty voidance	Manufacturer system warranties — which can extend to 25 years — require certified installation by trained technicians using approved components. A single non-compliant connector or improper bend radius voids coverage across the entire link.
Hidden performance degradation	Marginal cabling passes basic continuity tests but fails under real-world load — causing intermittent errors, negotiation fallback, and latency that is nearly impossible to diagnose without link certification data.
Wi-Fi 6/6E and PoE+ limitations	Modern high-density wireless deployments and PoE-powered devices (cameras, phones, building controls) require Cat 6A minimum. Cat 6 installations create hard ceilings on future wireless and IoT deployments.
No documentation, no accountability	Without certified test results and as-built drawings, the organization cannot prove compliance, enforce warranties, or troubleshoot effectively. The vendor who installed it may not be there when problems surface.
Audit and compliance exposure	Healthcare, financial services, and government organizations face audit requirements that include physical infrastructure documentation. Missing close-out packages create compliance gaps that are expensive to remediate.

Certification Standards: What They Mean and Why They Matter

Not all cabling 'tests' are equal. There is a significant difference between a wiremap test (which only confirms connectivity) and a full channel certification (which validates performance to a published standard). Require the latter.

Standard / Test	What It Validates	Why It Matters to the Organization
TIA-568 (ANSI/TIA)	North American standard for commercial building cabling. Defines categories, connector types, and performance requirements.	Baseline compliance standard. Non-compliant installations void system warranties and may not support future speed upgrades.
ISO/IEC 11801	International cabling standard. Defines classes (Class D, E, EA, F, FA) corresponding to Cat 5e through Cat 8.	Required for multinational organizations. Ensures global interoperability and consistent performance expectations.
Channel Certification (Fluke DSX / Versiv)	End-to-end performance test of every installed link including patch cords. Reports PASS/FAIL against TIA or ISO limits for each parameter.	The only test that proves the installed plant performs as specified. Required for manufacturer warranty enrollment.
Wiremap / Continuity Test	Confirms pin-to-pin connectivity. Does not measure signal performance.	Necessary but not sufficient. A wiremap pass does not indicate a link will support 1 GbE or 10 GbE — it only means it is connected.

OTDR (Fiber)	Optical Time Domain Reflectometry maps every event on a fiber strand — splices, connectors, bends, and breaks with distance accuracy.	Required for any fiber installation. Identifies loss events that cannot be detected by a simple power meter test.
Insertion Loss / Return Loss (Fiber)	Measures optical power loss across a fiber link in both directions.	Validates that fiber links meet loss budgets for the intended application (e.g., 10G, 40G, 100G). Required for warranty and SLA compliance.

Copper vs. Fiber: The Decision Framework for CIOs

The choice between copper and fiber is not purely technical — it carries long-term cost, capacity, and flexibility implications that belong in the executive conversation.

Consideration	Copper (Cat 6A)	Fiber (Single-mode / Multi-mode)
Maximum distance	100 meters channel length (including patch cords)	Single-mode: effectively unlimited. Multi-mode: 300m–2km depending on grade.
Bandwidth ceiling	10 GbE at full spec. Cat 6A supports emerging 2.5G and 5G NBASE-T.	100 GbE and beyond. Future-proof for virtually any enterprise application.
PoE support	Full PoE, PoE+, PoE++ support. Required for APs, cameras, phones, and IoT.	Does not carry power. Devices requiring PoE need separate copper runs.
Installation cost	Lower material and labor cost per drop. Faster to terminate.	Higher material cost. Fusion splicing requires skilled labor and equipment.
Recommended use	Horizontal runs to workstations, APs, cameras, and PoE devices. Standard for most office and campus floor distribution.	Backbone between IDF/MDF closets. Data center interconnects. Any run exceeding 90 meters. High-bandwidth or interference-sensitive paths.
Emerging consideration	Wi-Fi 6E APs require Cat 6A minimum. Lower spec limits AP performance before the wireless radio becomes the bottleneck.	Multi-mode OM4/OM5 recommended for new builds. OM5 supports emerging wavelength-division multiplexing (WDM) applications.

Documentation Requirements: What to Demand at Project Close-Out

A cabling installation is only as valuable as its documentation. Without a complete close-out package, the organization cannot enforce warranties, troubleshoot efficiently, or plan future upgrades. Require the following

before issuing final payment:

- **Certified test results for every link** — PASS results from a Fluke DSX, Versiv, or equivalent Tier 2 certifier, exported as PDF and native project file. Every horizontal copper run and every fiber strand.
- **As-built drawings** — Updated floor plans showing actual cable routes, outlet locations, conduit paths, and TR/IDF/MDF room layouts — reflecting what was built, not what was designed.
- **Jack labeling and port schedule** — Every outlet labeled and mapped to a patch panel port. Labels must match the test results. Inconsistency between the two is a red flag.
- **Fiber test reports (OTDR + insertion loss)** — Bidirectional OTDR traces and insertion loss measurements for every fiber strand, with pass/fail against the specified loss budget.
- **Manufacturer warranty documentation** — Enrollment confirmation from the cable and connectivity manufacturer. Warranties of 15–25 years are standard for certified system installations.
- **Material submittals and cut sheets** — Documentation of every product installed: cable, jacks, patch panels, enclosures, and hardware. Confirms that specified products were actually used.
- **Change orders and deviation log** — Any deviation from the original design documented in writing, with the reason and approval signature.
- **Installer certification records** — Credentials of the technicians who performed the installation and terminations (e.g., Fluke Authorized Tester, BICSI INST1/INST2, manufacturer-specific certifications).

Executive Checklist: Evaluating a Cabling Vendor Proposal

Use this checklist before approving any structured cabling contract. A vendor who cannot confirm these items in writing should not be awarded the work:

Before You Sign — 12 Questions for Your Cabling Vendor

- Does the proposal specify cable category (Cat 6A minimum for new builds)?
- Is channel certification by a Tier 2 certifier (Fluke DSX/Versiv) included in scope?
- Will certified test results be delivered for every link — copper and fiber?
- Are as-built drawings included as a project close-out deliverable?
- Does the proposal include manufacturer system warranty enrollment?
- Are installer certifications documented (BICSI, manufacturer-authorized)?
- Is fiber specified as OM4/OM5 multi-mode or single-mode for backbone runs?
- Are OTDR traces included for all fiber strands?
- Does the labeling scheme match the test results and patch panel schedule?
- Is a complete material submittal (cut sheets for all products) included?
- Are change order procedures and deviation documentation defined in the contract?
- Is final payment structured to be contingent on delivery of the close-out package?

Warning Signs in a Cabling Proposal

These are indicators that a vendor may be cutting corners on quality, compliance, or documentation:

- ✗ Proposal specifies Cat 6 for a new build without justification
- ✗ Testing is described as 'passed' without specifying the test standard or equipment used
- ✗ As-built drawings and close-out documentation are not listed as deliverables
- ✗ Manufacturer warranty is not mentioned or is listed as 'optional'
- ✗ Installer credentials are not documented in the proposal
- ✗ Fiber backbone is specified as OM3 for a new construction project
- ✗ Unit pricing is unusually low — often a sign of inferior materials or skipped certification
- ✗ No mention of independent third-party testing or owner-witnessed certification
- ✗ Final payment is not tied to delivery of test results and documentation

Quick Reference: Cable Category Standards

Category	Max Supported Speed	Recommended Application
Cat 5e	1 GbE	Legacy only. Do not specify for new installations.
Cat 6	1 GbE (10 GbE to 55m)	Acceptable for workstation refresh only. Not recommended for new builds.
Cat 6A	10 GbE to 100m	Minimum standard for all new construction. Required for Wi-Fi 6/6E APs and PoE++ devices.
Cat 8	25/40 GbE to 30m	Data center top-of-rack connections. Not appropriate for general horizontal cabling.
OM4 Fiber	100 GbE to 150m	Multi-mode backbone for campus and data center. Current standard for most enterprise builds.
OM5 Fiber	400 GbE+ (WDM)	Next-generation multi-mode. Recommended for new construction to support future high-density applications.
OS2 Fiber	Effectively unlimited	Single-mode for long-distance backbone, inter-building, and high-bandwidth campus runs.

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