Walk into any California office or data center buildout and the most expensive equipment in the room probably is not what will save you when something fails. It is the cabling in the walls, in the ceiling, and under the floor that quietly keeps people working and servers talking. Replace a switch and you lose a few thousand dollars. Replace a failed cabling system in an occupied floor and you lose weeks, budgets, and patience.

This is why it pays to understand what you are actually buying when you sign a cabling quote, especially in California where labor, codes, and inspection standards raise the stakes.

Below, I will walk through the five main types of cable you will encounter in commercial offices and data centers, how they are used, and what decisions really matter when you are trying to balance cost, performance, and future proofing.

What cabling actually does in a workplace

People often ask, usually during budgeting meetings, a simple question: what does cabling do, exactly?

At a basic level, cabling transports power and data from one point to another. In an office, that may mean a run of Category 6 from a patch panel in the IDF (intermediate distribution frame) to a workstation jack at someone's desk. In a data center, it may be a bundle of multi-mode fiber from a core switch to a row of top-of-rack switches.

Functionally, a structured cabling system does three things:

1. It creates predictable, standards-based pathways for data and power, so that devices can be moved, replaced, or upgraded without tearing into walls.

2. It centralizes connection points, which makes troubleshooting and reconfiguration possible without hunting through a building.
3. It reduces electrical noise and signal loss, which directly affects speed and reliability.

The three primary components of cabling that matter to design are the cables themselves, the connectivity hardware (jacks, patch panels, plugs, cassettes), and the pathways and support (conduit, cable tray, ladder rack, raceways, sleeves, and firestopping). People focus on the first part because it is visible on quotes, but the other two influence long term performance and cost of moves, adds, and changes just as much.

When someone asks whether cabling is the same as wiring, in practice they are blurring two related ideas. Technically, “wiring” usually refers to electrical power circuits, while “cabling” often refers to low voltage systems like data, voice, and security. In conversation, people mix the terms, but on a California project drawing set the distinction matters because different trades and codes apply.

The five types of cable you actually see in California offices and data centers

There are countless specialty cables, but most commercial environments revolve around five families. Understanding these will answer a lot of common questions, including what are the three types of cabling people mention in networking, and what is the most common type of cabling used in networks.

Here are the five you need to recognize:

- Twisted-pair network cabling (Cat5e, Cat6, Cat6a, Cat8)
- Fiber optic cabling (single-mode and multimode)

- Coaxial cabling
- Power cabling for branch circuits and equipment feeds
- Low-voltage specialty cabling for security, AV, and control

Each of these solves a specific problem and has its own cost, code, and installation quirks.

1. Twisted-pair network cabling: the workhorse in offices

If you open a wall plate in a typical California office and find a blue or white cable punched down to a jack, you are looking at twisted-pair network cabling. This is the backbone of most office networks and, in terms of port count, it is the most common type of cabling used in networks today.

The most common grades you will see:

Cat5e

Still present in older buildings. Rated to 1 Gb/s at shorter distances, but increasingly treated as legacy in new commercial projects.

Cat6

The practical baseline for modern office installations. Supports 1 Gb/s easily and up to 10 Gb/s at shorter distances (often up to 55 meters in controlled conditions). For many office users who live on cloud apps and VoIP, Cat6 is enough for the life of a typical lease.

Cat6a

Rated for full 10 Gb/s up to 100 meters. Often used in higher density offices, engineering or media environments, and anywhere that wants to hedge against future higher throughput access points or workstations. It *Cabling Services Provider California* is thicker, heavier, and slightly fussier to install cleanly, especially in tight raceways.

Cat8

Rare in typical offices. You see it occasionally in short data center runs where copper is preferred over fiber but high speed is needed. It has strict length limitations and is not common for horizontal cabling.

In my experience on California projects, Cat6 is still the default choice for most tenant improvement work, with Cat6a reserved for clients who explicitly care about 10 Gb/s to the desktop or who are building lab, trading, or media spaces. When people ask what is the best wire for home use, I usually answer Cat6 for new construction, with Cat6a if the runs are long and the budget allows. The same general logic applies in smaller offices.

Is cabling difficult when it comes to twisted-pair? The answer is that basic pulling and termination is straightforward for a trained technician, but doing it within California code, with bend radius respected, firestopping handled correctly, and proper testing, is where a lot of “cheap” jobs fall short. The cable itself is not the hard part. Doing it neatly, labeled, and documented in an occupied building is where professional experience matters.

2. Fiber optic cabling: the long-haul specialist

Walk into a modern data center or a large multi-floor office in San Francisco or Los Angeles and you will see that twisted pair runs out of steam at some point. That is where fiber optic cabling comes in.

Fiber uses light instead of electrical signals, which brings two main benefits: very high bandwidth and long distance without the signal degrading. It also is immune to electromagnetic interference, which matters in dense equipment

rooms.

Two main styles dominate:

Single-mode (OS1/OS2)

Used for long-distance runs, building to building, or between distant IDFs in a large campus. It uses a small core and a laser light source. You design around kilometers instead of meters.

Multimode (OM3, OM4, OM5)

Used inside buildings and data halls, typically up to a few hundred meters at high speeds. Most server-to-switch and switch-to-switch links in small and mid-size data centers use multimode for short to medium hops.

When people ask what are the three types of cabling in a network context, you can reasonably say twisted-pair copper, fiber optic, and coaxial. Inside structured cabling standards, you will also hear backbone, horizontal, and work area cabling. Fiber usually lives in the backbone layer, connecting floors, IDFs, and MDFs, while twisted-pair lives in the horizontal runs out to desks and devices.

California has a few extra layers to keep in mind. Plenum spaces, which are areas used for air return, require plenum-rated fiber jacket (CMP) under building and fire code. Some inspectors in Bay Area and LA jurisdictions are quite strict on this. You may be tempted to save a bit with riser-rated cable where plenum is not strictly required. The savings are real on big pulls, but you must be certain about how the mechanical engineer is handling air paths or you risk corrections later.

In data centers, fiber management is as important as the fiber itself. A neat, radius-controlled, labeled fiber infrastructure looks expensive on day one and cheap five years later when you are trying to identify a path at 2 a.m. After a link failure.

3. Coaxial cabling: less glamorous, still around

Coaxial cable is what a lot of people mean when they ask who is the cheapest cable provider, because they are thinking of cable internet and TV. In commercial spaces, coax has not disappeared, but its role has narrowed.

You still see coax used for:

Telecom demarc

ISPs often deliver their service via coax to a demarcation point, then hand off via Ethernet or fiber.

RF distribution

In some buildings, especially older ones or campuses with emergency broadcast requirements, coax carries RF signals for television or special building systems.

Some security and legacy systems

Older CCTV cameras, particularly analog ones, still rely on coax with BNC connectors.

For structured cabling budgets, coax is rarely the main cost driver now. It tends to appear as a small part of a broader low voltage scope. When it does show up in a quote, the key is to check whether the contractor is matching the provider's specifications on type and length, especially for long runs in large office buildings. Get that wrong and you end up with signal issues that neither the provider nor the cabling contractor wants to own.

Do electricians install cable outlets for coax? Often yes, especially in mixed-use spaces or smaller tenant improvements. In larger projects, the low voltage cabling contractor typically handles coax along with twisted-pair

and fiber, while the electrical contractor handles power circuits and sometimes provides boxes and conduit.

4. Power cabling: where low voltage meets electricians

Power cabling is not always thought of as part of “cabling”, but in offices and data centers it absolutely shapes how your low voltage systems work.

In a typical California office floor, branch circuits run in conduit to receptacles at workstations, equipment rooms, and common areas. In a data center, you add higher capacity feeds, distribution panels, busway, and PDUs. All of this is handled by licensed electricians who work under different parts of the electrical code than low voltage cabling contractors.

Two frequent coordination points:

Cabling and outlets

When you plan network outlets in a workspace, you usually want power right beside them. If someone asks whether electricians install cable outlets, the accurate answer is that electricians install power receptacles and any conduit or boxes that support them, while low voltage contractors pull the network cable and install jacks and faceplates. On some smaller jobs with coax or simple TV drops, an electrician might do both.

Power for racks and data rooms

In data centers and server rooms, the design of power cabling affects everything from rack layout to airflow. Cable trays for low voltage often run parallel to busway or overhead power whips. Keeping separation and crossing angles correct helps avoid electromagnetic issues and keeps inspection simple.

California Title 24 and energy codes influence the design of lighting and controls as well, which sometimes leads to extra low voltage runs for sensors and control modules. That bleeds into our fifth category.

5. Low-voltage specialty cabling: security, AV, and control

Beyond network and power, modern offices and data centers rely on a web of dedicated low voltage systems. These can include:

Access control and badging

Door readers, electric strikes, request-to-exit devices, and controllers often use multi-conductor, shielded cables. Distances, voltage drop, and lock hardware current draw must be accounted for in design.

CCTV and surveillance

Newer cameras ride on the same twisted-pair infrastructure via PoE, while some legacy or special cameras still use coax or hybrid cables that carry both power and signal.

Audio-visual

Conference rooms now look more like studio sets than meeting spaces. HDMI extenders, AV-over-IP systems, ceiling microphones, speaker lines, control panels, and occupancy sensors all rely on a mix of shielded twisted pair, speaker cable, and sometimes fiber.

Building management and controls

HVAC, lighting control, and monitoring systems often use low voltage control and communication cabling. Mismanaging these pathways can lead to noisy signals and erratic behavior.

Projects in California often have a separate low voltage package specifically for these systems. It is common to see confusion here about who owns what. One vendor may supply the access control hardware, another the surveillance system, and a third the AV gear, each with their own preferred cabling specs. An experienced structured cabling contractor can often consolidate much of this into a coherent, standards-based design that satisfies all vendors while keeping the number of cable types manageable.

How much does cabling cost in California?

Anyone responsible for budgets eventually asks: how much does cabling cost, and why does it differ so much from bid to bid?

Costs vary by region, building type, and labor market. For commercial projects in California, some realistic ranges (all rough ballpark values, not quotes):

Horizontal twisted-pair (Cat6 or Cat6a)

For typical office runs, all-in cost per drop (including terminations, testing, labeling, and standard pathway materials) often lands in the range of 150 to 350 dollars per cable, depending on volume, complexity, union vs non-union labor, and whether the building is occupied. High density or heavily congested existing pathways push that higher.

Fiber backbone links

A multi-strand fiber run between IDFs in the same building might range from a few thousand dollars to tens of thousands, depending on route difficulty, fiber count, termination method (field terminations vs pre-terminated assemblies), and patch hardware. Long campus runs with trenching or aerial work go higher quickly. Cabling Services Provider California

Low voltage specialty (security, AV, controls)

Pricing here is extremely design dependent. Simple access control doors might be a few hundred dollars in cabling each. Complex AV spaces can have several thousand dollars in cabling and terminations alone.

The question of who is the cheapest cable provider usually blends two issues: internet service pricing and cabling installation pricing. For ISP service, the cheapest option in California is often a coax-based or lower tier fiber plan from a major carrier, but you need to match the bandwidth and uptime expectations of your business. For cabling installation, the cheapest bid usually reflects shortcuts you cannot see until after occupancy: incomplete labeling, inadequate testing, crowded pathways that are impossible to expand, or non-compliant firestopping. Over a 5 to 10 year lease, that “cheap” cabling system is rarely the least expensive.

When comparing quotes, look past per-drop numbers and ask for:

- Written test results (ideally Fluke or similar manufacturer-approved testing)
- Clear scope on pathways, supports, and firestopping
- Labeling and documentation standards

Those three ingredients often explain most of the cost difference between a low and a high bid.

Who actually installs what: electricians vs low voltage contractors

On a California project, scopes can blur. Owners ask if cabling is the same as wiring, or whether they can have their electrician “just handle the network too.”

The reality on most commercial jobs is:

Electricians

Handle power wiring, panels, branch circuits, lighting, and sometimes rough-in for low voltage. They install conduits, stub-ups, power receptacles, J-boxes, and may pull simple coax or speaker runs, especially in smaller projects.

Low voltage / structured cabling contractors

Handle network cabling, fiber, patch panels, racks, wireless access point cabling, and often security and AV pre-wire. They are more likely to follow TIA/EIA standards for structured cabling and to own the test results that matter to your IT team.

In smaller office renovations, a single contractor might wear both hats, but you still want to see proof they can test and certify low voltage cabling, and that they understand California's permit and inspection environment for both trades. That matters when inspectors walk the site and start tracing cabling in plenum spaces or checking label schemes against plans.

When a client asks whether electricians install cable outlets, I usually parse it this way: if you mean power receptacles, yes, that is squarely an electrician's job. If you mean RJ45 data outlets, that is typically a low voltage contractor's responsibility, though in practice the two trades often coordinate to share device boxes and faceplates.

Is cabling difficult to maintain or change?

Installing new cable into an empty shell space is not particularly difficult for a competent team. The challenges appear later when you want to expand, reconfigure, or troubleshoot.

Two design habits make life easier:

1. Oversize and organize pathways from day one. In a California data center, that might mean extra ladder rack and vertical managers. In an office TI, that could mean adequately sized J-hooks, trays, or conduit runs with at least 30 to 40 percent spare capacity. It costs a bit more up front, but it makes later moves and adds significantly cheaper and less disruptive.
2. Label everything, then keep the records current. Every jack, patch panel port, and fiber cassette position should tie back to a documented plan. I have walked into too many “bargain” installations where a floor moves out and the incoming tenant has no usable documentation, so their only option is extensive tracing and testing before they can trust the existing cable plant. That is a hidden cost that never shows up in the original bid.

From a user perspective, cabling is only “difficult” when it is undocumented or undersized. Well planned systems are boring, and boring is exactly what you want when the CFO asks how fast you can reconfigure for a new team or expand a lab.

Planning a cabling project: a short checklist

For California offices and data centers, a little planning before you solicit bids saves time and money. Use this as a concise checklist:

- Define current and future bandwidth needs at the desk and in the data room, not just at the ISP handoff.
- Confirm local code requirements for plenum vs riser, seismic bracing, and firestopping with your design team or AHJ (authority having jurisdiction).
- Decide who will own documentation and test results, and make that an explicit deliverable in the contract.
- Coordinate early between IT, facilities, security, and AV vendors so you do not end up with four parallel, redundant cable plants.
- Budget for pathways and enclosures as real line items, not afterthoughts; cheap racks and overcrowded trays are expensive later.

These are simple questions but they shape nearly every cabling decision that follows.

Choosing types of cable for different spaces

Bringing it all together, here is how the five types of cable typically line up in real California projects.

In open office areas, Cat6 twisted-pair remains the default. You run cable from an IDF on the floor to each workstation location, often in 4 or 6 port faceplates to cover docking stations, phones, printers, and future devices. Where budgets and expectations permit, upgrading critical zones or entire floors to Cat6a provides a buffer against higher bandwidth applications and wireless APs that demand multigigabit uplinks.

For risers and inter-floor connections, multimode or single-mode fiber handles backbone links, often in combination with a smaller number of copper pairs for legacy POTS lines, elevator phones, or special circuits that still want analog.

In server rooms and data centers, twisted-pair and fiber share the spotlight. Short patching between servers and access switches may use copper, especially for PoE devices and where NICs are copper oriented. Longer switch-to-

switch and core links rely on fiber for density and speed. Power cabling in these environments is a discipline of its own, but from an IT perspective the goal is predictable, labeled feeds to each rack, with clear separation between power and data pathways.

Coax shows up primarily at demarc points and in any spaces that still rely on RF distribution, while low voltage specialty cabling threads quietly through doors, ceilings, and equipment rooms to support security and AV.

For homes and small offices, the same logic scales down. If someone asks what is the best wire for home use, a solid answer in 2026 is: run Cat6 or better to every room you care about, add coax where your ISP requires it or where you want TV flexibility, and keep power outlets plentiful and near where network devices live. Even in a world of Wi-Fi, wired backhaul and wired endpoints remain more reliable and often faster.

Good cabling is not glamorous. You will not see it on the front page of a proposal. Yet in California's expensive and tightly regulated construction market, it is often the most persistent part of your technology investment. Pick the right types of cable, demand proper installation and documentation, and you will likely forget about it for the next decade. Cut corners and you may spend that decade working around the limits of copper and glass you never see.