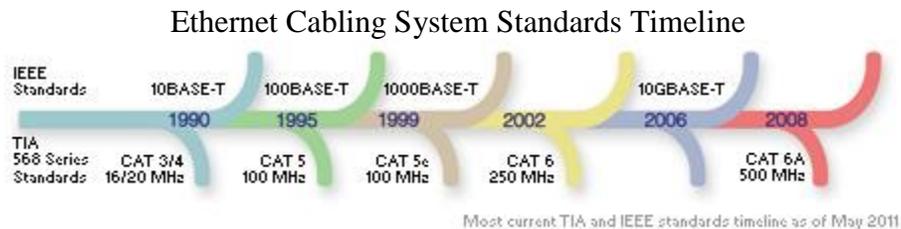


## Performance, Consolidation Trends Drive CAT 6A Adoption

In 1990, when the first category-rated structured cabling standards emerged, no one could imagine the need for 10G networks. Or 100Mb networks, for that matter. But with 20 years of hindsight, the trend is clear: Demand for greater network speeds is inevitable. The chart below shows the evolution and growth of copper Ethernet standards, the predominant networking protocol.



Since the release of the TIA standard three years ago, CAT 6A structured cabling has gained market traction among early adopters. As of 2010, it made up over 4% of the installed copper cabling base, and it's projected that by 2012 this will increase to 10%. 10GBASE-T applications, which use CAT 6A cabling, will also increase dramatically - tenfold over the next four years. What are the specific factors driving the adoption of CAT 6A?

### Performance

Organizations are deploying 10G electronics more and more. But for the equipment to deliver its promised performance, all network components must support the 10G standard- including the structured cabling system.

### Data Center

Data center customers have been a month the fastest to migrate to 10G. As the heart of the network, they must keep pace with the demand for greater processing speed and higher-bandwidth applications. And while fiber commonly connects much of the typical 10G DC, there is also a significant amount of copper, especially in the switching network.

### PoE/PoE+ Applications

Power over Ethernet (PoE), which sends electrical power over data cabling, eliminates the cost and complexity of running AC power to PoE-compatible devices. 10G cable is simply better able to support this simultaneous transmission of power and data. Why? With tighter twisted pairs and larger-gauge cable, CAT 6A cabling dissipates the excess heat that PoE generates more effectively. Otherwise, the heat reduces the cable's performance, and in worst case power simply never reaches the device.

### Testing Parameters

Because 10G operates at the higher frequency of 500MHz, vs. 250 MHz for CAT 6, it is more susceptible to alien crosstalk (AXT) (unwanted signal noise that can seriously impact system performance). To address this, the CAT 6A standard adds several alien crosstalk performance tests. Since 10G electronics cannot compensate for AXT, they must be run over properly designed and tested CAT 6A structured cabling to ensure sufficient AXT mitigation.

## Network Consolidation

IT managers have long sought to reduce the equipment and cabling footprint of their organizations' networks, but 1000BASE-T (1G) and earlier standards simply didn't have the bandwidth to make this a reality. Now with 10G and CAT 6A, network consolidation is feasible and gaining in popularity. Organizations that have consolidated their networks are realizing significant benefits:

- Decreased equipment, installation, maintenance, and power and cooling costs
- Increased network utilization
- Simplified IT training requirements
- Reduced cabling congestion

## Aggregation

Consolidating cabling between the desktop and the core is a well-established practice. With 10G, several 1G work area connections can be aggregated to transmit data to the core over a single CAT 6A cable, reducing cable congestion and data bottlenecks.

## Building Systems Convergence

In the past, each building system largely operated over a dedicated cabling system, resulting in crowded pathways and spaces; complicated moves, adds, and changes (MACs); and the need for specialized maintenance. Now, IP is enabling VoIP, PoE, IPTV, CATV, building automation, security, etc. to all be integrated over a single data network, driving a greater need for 10G bandwidth.

## Return On Investment

Structured cabling makes up only a small fraction of network hardware costs, which in turn are only 17% of total IT expenditures. Installing the highest-bandwidth structured cabling available on a new install or retrofit project has a relatively minor financial impact. Given this, it often makes sense for the infrastructure to be a generation ahead of the equipment in an Ethernet-based network. The network will function without modifications, at the speed supported by the electronics - which can be upgraded without having to recable the entire building. Simply put, installing the highest performance system available up front will help future-proof the network.



Resource:

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