

Networks that revolutionize the way we teach, learn and think



Your connection to academic-strength cabling infrastructure



A GenStone and General Cable Joint Venture Company

Revolutionizing Network Cabling Infrastructures...

It's no wonder that the campus network has become an essential asset for colleges and universities. Driven by information technology, institutions of higher learning have taken research and development to new heights, providing communities and society with significant contributions in engineering, medicine, science and humanities.

Through sophisticated applications, collaborative learning and advanced multimedia capabilities, colleges and universities are improving the quality of education for the Millennium Generation. This *technologically-switched-on* group of 60 million young people will one day spawn breakthrough technologies that continue to better our daily lives.

Information technology has become a strategic asset for stakeholders and alumni to maintain an institution's reputation in the educational community.

Fundamental Foundation at the Core

From on-line student services and coursework to improved campus-wide productivity, and research and development, the network infrastructure is embedded in every facet of academic life. Strategic network planning therefore requires the buy-in of all stakeholders.

As the core foundation, all aspects of the network rely on the physical cabling infrastructure. Consisting of copper and fiber optic cabling that interconnects all network equipment, the infrastructure supports the volume and speed of all data traffic and allows the network to connect every location where students, faculty and administrators live and work. Although a small portion of total network investment, a properly designed infrastructure outlasts the applications, hardware and equipment it supports by at least ten years [Figures 1 and 2].

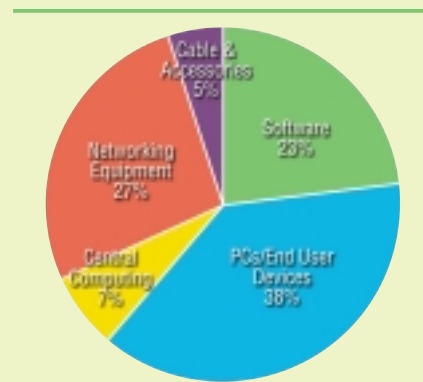
Investment in a long-term, quality cabling infrastructure enables an institution to support future applications and keep up with demands for expanded network connections, greater speeds and unlimited bandwidth. A well designed cabling infrastructure enables high throughput and flexibility, ensures constant access and availability, and reduces the need for costly, disruptive upgrades.

Maximum Performance for New Technologies

The power of computers and the flow of data double every 18 months. Campuses are moving toward converged networks that support a variety of voice, data and video applications. Wireless connections are bringing full network access to remote locations throughout the campus.

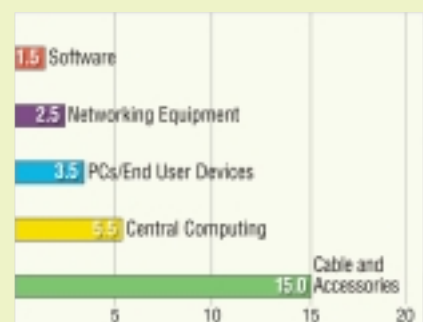
In keeping with their academic vision, colleges and universities today are providing applications such as distance learning, video conferencing, video on demand and medical imaging. With the promise of future bandwidth-intensive applications and the movement of even larger-scale files, academic network infrastructures require Gigabit Ethernet (1000 Mbps) or 10 Gigabit Ethernet (10,000 Mbps) for maximum performance. The cabling infrastructure must be designed to accommodate this progression [Figure 3].

Total Network Investment [FIGURE 1]



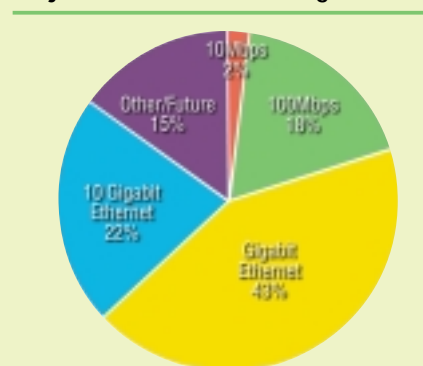
The cabling infrastructure is the core foundation that supports all other aspects of the network, yet represents only 5% of the total network investment.

Network Component Lifecycle [FIGURE 2]



A properly designed cabling infrastructure outlives the applications, hardware and equipment it supports by at least 10 years.

Projected Backbone Cabling [FIGURE 3]



By the year 2015, 80% of campus backbones will support Gigabit Ethernet or higher.

Too Much Bandwidth is Never Enough

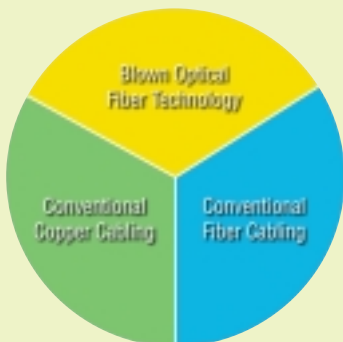
As institutions continue to implement advanced teaching and learning technologies, expectations for network performance, reliability, speed and bandwidth will continue to challenge the cabling infrastructure. Colleges and universities must recognize that too much bandwidth is never enough [Figures 4 and 5].

Guaranteed Service and Support Essential

Backed by years of technical expertise and manufacturing excellence, General Cable/NextGen's copper and fiber solutions are ideal for campus infrastructures, meeting and exceeding applicable standards. As a world-class manufacturer, General Cable/NextGen stand behind their products with independent third party testing to confirm quality and performance. Through leadership and a focus on cultivating strong relationships, General Cable/NextGen provides higher education customers with premier technical support and a technologically competitive advantage.

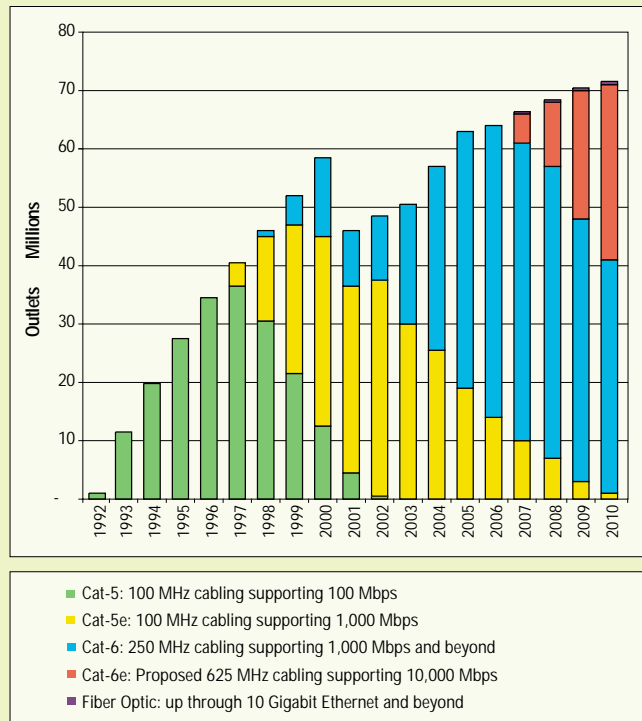
Designing and implementing a reliable, robust cabling infrastructure minimizes disruption and downtime, saving substantial amounts of money. At General Cable/NextGen, we embrace your academic vision of improving and strengthening higher education through information technology. *We understand the challenges facing today's colleges and universities, and we respond by providing tomorrow's solutions* [Figure 6].

Cabling Solutions [FIGURE 6]



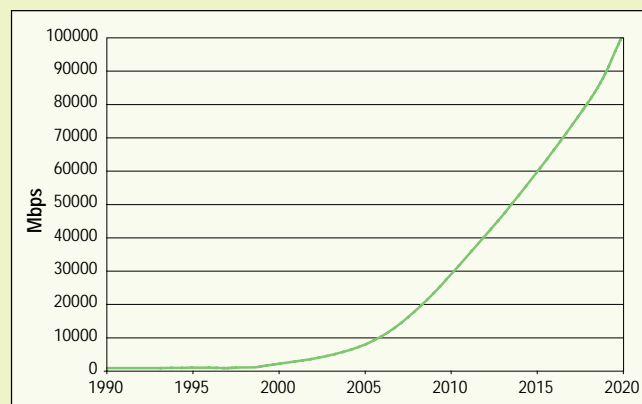
While fiscal limitations can often impede initial spending, proper planning and implementation of an optimum cabling infrastructure solution is essential.

Cabling Media Connections [FIGURE 4]



As the demand for bandwidth increases at the workstation, higher speed horizontal cabling will become more widely deployed.

Data Transfer Rates [FIGURE 5]



Cabling infrastructures must support escalating data transfer rates.

"College campuses have leading-edge technology applications that will require broadband deployment for converged video, data and voice applications, beyond what typical business applications will demand."

—INVESTMENT ENTERPRISE

Today's Challenges

"With a Blolite™ blown optical fiber system, we're seamlessly integrating technology as part of our ongoing commitment to provide a cutting-edge learning and living environment."

—CREIGHTON UNIVERSITY, OMAHA, NE

"Integrated copper and fiber solutions provide advanced voice, data and video connections for multimedia instruction and distance learning opportunities that are vital to our students' future."

—BARUCH COLLEGE, CUNY, NEW YORK, NY

Strategic Cabling Solutions

The fundamental foundation at the core of every campus network is the cabling infrastructure, which consists of a variety of cabling media. Intended to serve a wide range of applications, the cabling media includes:

- Outside plant backbone cables that connect each outlying building to the campus central hub
- Premises backbone cables that interconnect telecommunication spaces within a building
- Horizontal cables that extend the campus network to each work area outlet

The campus cabling infrastructure is a combination of fiber optic and copper cabling solutions that should be strategically selected to provide ample bandwidth to handle today's and tomorrow's applications across all facets of the network.

The exploding demand for bandwidth over the past five years makes it one of the most significant criteria in the evaluation of the cable's performance. Traditional voice signals require very little bandwidth, while voice over internet protocol, data and video applications consume much higher bandwidth. Installing inferior cable that does not provide enough future capacity will require cables to be replaced and the original infrastructure investment to be compromised. General Cable/NextGen guarantees performance levels of all fiber optic and copper cabling solutions.

Combining the Best of the Best

General Cable/NextGen partners with colleges and universities by providing optimum solutions for the challenge of planning and implementing a campus network as a strategic asset. As the only manufacturer in the industry that can provide all cabling solutions — blown optical fiber, conventional fiber and conventional copper — General Cable/NextGen's value-added services include dedicated technical and sales support, engineering expertise and a network of industry-qualified contractors and distributors.

For more than a century and a half, General Cable/NextGen has proven their leadership by staying ahead of the industry's technology curve, investing time and resources into the future trends of cabling. With General Cable/NextGen, colleges and universities have immediate access to total end-to-end fiber and copper systems that offer maximum flexibility, expandability and reliability, ensuring colleges and universities remain technologically competitive for decades to come.

Tomorrow's Solutions

Flexibility

Total End-to-End Blown Optical Fiber Systems



Driven by the need to provide a state-of-the-art campus network in a fiscally responsible manner, colleges and universities benefit from the design flexibility and "pay as you grow" features of blown optical fiber networks. This system involves installing a network of empty tubes and then populating them with fiber via blowing methods on an as-needed basis for immediate or future network demands.

For premise and outside plant applications, General Cable/NextGen's Blolite™ and MicroBlo™ blown optical fiber systems enable colleges and universities to quickly and economically bring fiber from the campus hub out to academic buildings and residence halls, including Fiber-To-The-Desk and Fiber-To-The-Residence. With Blolite and MicroBlo, fiber is easily added, upgraded or restored with minimal disruption to the physical environment. Key benefits include:

- Deferred Network Investment
- Capacity On Demand
- Future-Proof Capabilities
- Minimal Campus Disruption
- Faster Disaster Recovery

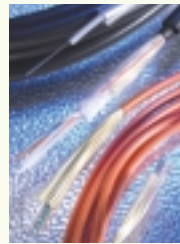
A blown optical fiber system provides flexible design control now and in the future, and is a financially strategic long-term approach. Blolite and MicroBlo provide colleges and universities with the highest value network at the lowest possible risk, ensuring maximum bandwidth for several decades.

Expandability

Conventional Fiber Optic Systems

General Cable/NextGen's full menu of fiber optic cables offer an ideal platform to support expansion to much higher data transmission rates as campus applications and network requirements increase. Because optical fiber provides higher bandwidth performance, installed fiber optic cables can typically support increased network traffic when transmission equipment is upgraded.

From campus and backbone cabling all the way to the desktop, General Cable/NextGen provides a comprehensive offering of outside plant, premise and



indoor/outdoor fiber optic cables for voice, data and video applications. Cables are available with either single-mode or multimode

fiber, including the latest grades of premium performance 50/125 fiber, designed to deliver 10 gigabit performance at 850nm. Key benefits include:

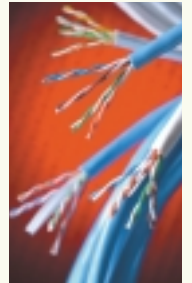
- High-Density Networks
- Optimum Multi-Purpose Solutions
- Installation-Friendly Cables
- Mechanically Protected Product Line
- Performance to 10 Gigabit Ethernet

General Cable/NextGen's fiber optic cables are ready to meet the expanding demands on campus for more bandwidth. With cable designs for every environment, fiber optic networks can provide colleges and universities with the ultimate solution for handling tomorrow's technology.

Reliability

High-End Copper Cabling Systems

Copper cabling for voice and data applications has been reliably deployed for many decades, and today supports a variety of high-speed network applications. From the outside plant, premises and campus backbone to enhanced Category 6 unshielded twisted pairs to the desktop or pillow, General Cable/NextGen's comprehensive offering of high-end copper systems responds to today's need for increased voice and data connections.



Optimally balanced for performance beyond Gigabit Ethernet and engineered to perform with headroom well above today's Category 6 standards, GenSPEED 6600 Enhanced Category 6 cable offers colleges and universities the greatest bandwidth potential available on the market. Key benefits include:

- Enhanced Product Quality
- Proven Robust Performance
- High-End Interoperability
- Supports Emerging Technologies
- Reduced Life-Cycle Costs

When planning for a campus network, it's important to not get boxed in by inferior cables that may not meet tomorrow's needs. General Cable/NextGen's reliable copper cables provide the highest performance at the best value for a competitive advantage.

Cross Reference Guide

Copper Cable

Premise Category Cable

Product Type	Range within Product Type	Standard Compliances	Applications
GenSPEED™ 6600 Enhanced Category 6	Plenum (CMP) Non-Plenum (CMR)	ANSI/TIA/EIA-568-B.2-1; ISO/IEC 11801 Ed.2.0 (Class E); UL & cUL	10 Gigabit Ethernet*; Gigabit Ethernet; 4.8 Gbps ATM; Digital & Analog Video; Power Over Ethernet; VoIP *TIA draft
GenSPEED™ 6500 Category 6e	Plenum (CMP) Non-Plenum (CMR)	ANSI/TIA/EIA-568-B.2-1; ISO/IEC 11801 Ed.2.0 (Class E); UL & cUL	10 Gigabit Ethernet*; Gigabit Ethernet; Digital Video; Power Over Ethernet; VoIP *TIA draft
GenSPEED™ 6000 Category 6	Plenum (CMP) Non-Plenum (CMR)	ANSI/TIA/EIA-568-B.2-1; ISO/IEC 11801 Ed.2.0 (Class E); UL & cUL	Gigabit Ethernet; 2.4 Gbps ATM; Digital Video; Power Over Ethernet; VoIP
GenSPEED™ 5500 Premium Category 5e	Plenum (CMP) Non-Plenum (CMR)	ANSI/TIA/EIA-568-B.2; ISO/IEC 11801 Ed.2.0 (Class D); UL & cUL	Gigabit Ethernet; 10/100BASE-T; 2.4 Gbps ATM; Video; VoIP
GenSPEED™ 5000 Category 5e	Plenum (CMP) Non-Plenum (CMR) CMX Outdoor-CMR	ANSI/TIA/EIA-568-B.2; ISO/IEC 11801 Ed.2.0 (Class D); UL & cUL	Gigabit Ethernet; 10/100BASE-T; 1.2 Gbps ATM; Video; VoIP

Outside Plant Wire & Cable

Product Type	Standard Compliances	Applications
Buried Service Wire Double-Jacketed, Gopher-Resistant Shield	ICEA S-86-634 RUS 7 CFR 1755.860 (REA PE-86) for 2 & 3 pair constructions	Intended for use in buried service application to the subscriber loops
Buried Service Wire Double-Jacketed, Aluminum Shield	ICEA S-86-634	Intended for use in buried service application to the subscriber loops
PE-39 AL Filled Solid Cable	Rural Utilities Service (RUS) 7 CFR 1755.390 (REA PE-39)	Intended for duct and direct buried installations where protection against water and moisture entry is required
PE-89 AL Filled Foam Skin Cable	Rural Utilities Service (RUS) 7 CFR 1755.890 (REA PE-89)	Intended for duct and direct buried installations where protection against water and moisture entry is required

Fiber Optic Cable

Indoor/Outdoor Cable

Product Type	Range within Product Type	Standard Compliances	Applications
Loose Tube Indoor/Outdoor	Riser (OFNR) Plenum (OFNP) Single Jacket Dual Jacket 2-144 Fibers	ETL and c(ETL) Listed Type OFNR, OFNP; CSA FT-4, FT-6; ICEA S-104-696	Inter- and intra-building voice or data communications backbone
Tight Buffer Indoor/Outdoor Distribution	Riser (OFNR) 2-144 Fibers	ETL and c(ETL) Listed Type OFNR; CSA FT-4; ICEA S-104-696	Inter- and intra-building voice or data communications backbone

Premise Cable

Product Type	Range within Product Type	Standard Compliances	Applications
Simplex and Duplex Interconnected	Riser (OFNR) Plenum (OFNP)	UL and c(UL) Listed Type OFNR, OFNP; CSA FT-4, FT-6; GR-409	Pigtails and/or Patchcords
Tight Buffer Distribution Interlock Armored	Riser (OFNR) Plenum (OFNP) 2-144 Fibers	ETL and c(ETL) Listed Type OFNR, OFNP; CSA FT-4, FT-6	Harsh premise environments requiring heavy duty protection
Tight Buffer Breakout	Riser (OFNR) Plenum (OFNP) LSZH 2-48 Fiber	ETL and c(ETL) Listed Type OFNR, OFNP; CSA FT-4, FT-6; ICEA S-83-596; ANSI/TIA/EIA 568B.3	Intra-building voice or data communications backbone

Outside Plant Cable

Product Type	Range within Product Type	Standard Compliances	Applications
Loose Tube	Single Jacket; Dual Jacket; Dielectric Armored; Dual Armored; Figure 8; 2-288 Fibers	ANSI/TIA/EIA 568B.3; ICEA S-87-640; Telcordia GR-20; RUS 7 CFR 1755.900	Intra-building voice or data communication backbone

Blown Optical Fiber Systems

Product Type	Range within Product Type	Standard Compliances	Applications
BloLite™	Riser (OFNR) Plenum (OFNP) Armored 2-12 Fibers	ETL and c(ETL) Listed Type OFNR, OFNP	Inter-building voice or data communication backbone; Fiber-to-the-Desk
MicroBlo™	Non-Armored Armored; 2-48 Fiber	ITU specification under development	Inter-building voice or data communications backbone

History Timeline

1840s Supplied the insulated wire to Samuel Morse for his historic communication between Washington and Baltimore.

1940s Produced 80% of the battlefield communications wire used by the Allies and 50% of the Navy's communications cable.

1960s Produced the communication cable for the first group of Minutemen Missile Bases.

1970s Supplied hundreds of miles of communications cable to link the control facilities with the launch platforms at Cape Canaveral.

Developed, manufactured and installed an optical fiber cable at the U.S. Air Force's Arnold Engineering Development Center to provide a high-speed data link connecting rocket engine test sites to a central data process facility.

Designed, developed and manufactured a 5.6 mile optical fiber cable that GTE installed in California as the world's first lightwave communications system to provide regular telephone service to the public.

1990s Supplied all of the communications cable for the National Museum of New Zealand. Te Papa Tongarewa, one of the most prominent and architectural stunning buildings in New Zealand and one of the largest museums in the world.

Supplied wire and cable to the Olympic Stadium for the 1996 Summer Olympic Games in Atlanta, Georgia.

Produced a hybrid cable containing copper power cable and fiber optic cable to provide electricity, communications and security to the guard station at the top of Mount Rushmore.

2000s Supplied on-board fiber optic cable for the ongoing requirements and maintenance of the International Space Station program.

General Cable was the first to introduce the "Next Generation" Category 6 copper cable with industry-leading attenuation performance — GenSpeed™ 6600.



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