Green IT: Integrating Sustainability Practices Into Your Network Infrastructure

There are a number of important cabling regulations that exist today for limiting hazardous materials and promoting safety. However, when it comes to sustainability efforts, few industry standards exist for structured cabling, even as sustainability becomes an increasingly important requirement for many IT and network decision makers.

That said, there are ways to take a more “green” approach when choosing and installing an IT cabling system. The following are examples of specific manufacturing practices, product choices, and installation methods that can contribute to greater energy savings, create less waste, and reduce your overall carbon footprint.

Fiber Optic Patching: Open or Closed Environments?

When it comes to choosing fiber patching in a structured cabling system, there are a variety of product options available, but they all fall under two general categories: open or closed. Open patching typically means that connectivity is installed in a standard 19” or 23” patch panel, with patch cords, trunks, and cables easily accessible from the front and the rear. Closed patching involves an enclosure that provides extra protection and security at the connection point.

When it comes to rack-mount patching, which do you choose: open design patch panels or enclosures with a closed design? Keep reading for patching suggestions, based on the type of environment or application.

LEVITON POLL

Leviton recently asked 100 customers

- Lighting: 42%
- Building Controls: 26%
- Wireless Access Points: 27%
- Other: 5%

What PoE applications do you feel will grow the most rapidly in the next three years?
Sustainable Manufacturing Practices

Take a closer look at the cabling system vendor and how they manufacture their products. Evaluate the cabling manufacturer’s green practices in their facilities. Some companies even adhere to emission reduction and carbon neutrality standards. For example, Leviton’s European headquarters and production facility achieved carbon neutral status in 2011. Part of this effort meant reducing the amount of water in the production process. They reduced water use by 89%, and now more water is used in making coffee and tea at the facility than by manufacturing.

Also, many manufacturers work to integrate sustainability into research and development efforts, using computer modeling, analysis, and prototyping prior to physical modeling, greatly lessening the amount of material waste. When prototypes are verified through several layers of quality control before they can continue to each next step, it ensures that incorrect iterations are revised prior to committing large amounts of raw materials.

More Efficient Packaging and Shipping

Smart logistics and better packaging options will conserve fossil fuels throughout the entire process. Smaller, lightweight products will take up less space in the warehouse and trucks, and one way to improve in this area is through packing density. For example, by reducing the diameter of its cable reels, a manufacturer can increase the number that can be transported on a shipping pallet. That means more products can be shipped per delivery, reducing travel and the associated carbon emissions. Also, as opposed to individual packaging, bulk packaging options such as pre-loaded fiber panels or bulk packs for jacks will reduce waste at the jobsite.

Finally, it’s worth considering where products are made, as products that are manufactured locally or regionally will greatly reduce the amount of transportation and use of resources.

Smart Product Designs and Choices

Consider the following product choices and design approaches to help reduce material waste, improve airflow, and save energy.

- **Higher Performance Solutions**
  Higher quality cable and connectivity may come with a higher price, but they can contribute to greater sustainability efforts and a lower total cost of ownership. Higher performing systems generally have longer life cycles and lead to fewer cable upgrades, reducing materials and waste. Connectors that can handle multiple re-terminations will also reduce new material use, and higher quality cabling also contributes to fewer abandoned cables in pathways, improving overall airflow.

- **Pre-terminated Assemblies**
  Pre-terminated fiber and copper trunk cables create very little product packaging or termination waste at the jobsite. Since they are factory terminated, waste is easily contained and recycled, and there is no termination scrap material created at the jobsite.

- **Small Diameter Cable**
  Slimmer diameter cable is particularly helpful in data centers as it can improve airflow in racks and cabinets for better cooling and less energy consumption. Reduced cable size is also important in existing pathways where additional channels are added and space can become an issue — smaller cables may avoid the need for additional cable trays and associated mounting materials.

- **Fiber Advantages**
  Choosing high density, higher-count fiber cabling offers environmentally friendly and cost savings advantages. Array cables that utilize 12- or 24-fiber MPO/MTP® connectors potentially reduce the amount of FEP, PVC and other cable jacketing materials by employing fewer cables, fewer breakout pigtails, and less bundling material.

  In data centers, consolidating all cross-connect patching in a centralized patching field has the potential for additional energy savings. This patching design — often using high-density distribution frames that house thousands of connections — does not require power or cooling. That means it can be located away from active equipment, allowing facility or data center managers to isolate cooling to only the equipment that requires it, as opposed cooling the entire area.

Get Help

With the right solutions and designs, you can significantly extend the lifecycle of your structured cabling system and create a more environmentally responsible network. However, this will require upfront planning and a clear network migration strategy. Fortunately, you don’t have to do it alone. Look to network experts for help with more efficient infrastructure designs. Take advantage of consultants, specification engineers, or data center infrastructure experts who can find ways to meet your environmental objectives.
### Fiber Optic Patching: Open or Closed Environments?

**Patching in Open Frame Racks**

**Enclosures**
As racks leave mounted equipment more exposed and accessible, it may be prudent to install fiber enclosures in racks. Enclosures provide extra protection, preventing fiber connections from bumping or jostling. They keep out potential dust or debris, and locking options are usually available for extra security, if necessary.

**Patching in Rack Cabinets**

**Panels**
Unlike racks, network cabinets provide more protection from the elements and added security. While the protection enclosures provide makes sense for open racks, that protection becomes redundant in a cabinet with doors. For this reason, panels may make more sense for cabinets.

### Additional Security

**Enclosures**
Most enclosures offer doors with a locking feature, limiting access to only those who are authorized, giving them an advantage over panels. However, there are cases where this added security might be redundant, such as in a high-security data center where access is already limited to a few network managers or technicians.

### Networks Requiring Fast Deployment or Frequent MACs

**Panels**
Patch panels allow for faster installations, especially when deploying panels with snap-in fiber cassettes. That said, some manufacturers — including Leviton — offer preloaded enclosures to help speed up deployment and installation. The open nature of patch panels also make them easier and faster to access during network maintenance. However, there is also a case to be made for enclosures in high activity areas, as the extra protection they provide can eliminate the potential for accidental bumping or mashing of connection ports and patch cables.

### Splicing

**Enclosures**
Field splicing creates a more fragile environment for the fiber, and it usually results in a length of loose fiber slack that is better tucked away. While splices are often housed in modules, cassettes, or trays, they are best housed in an enclosure for additional protection.

### Field Terminations

**Enclosures**
As with field splicing, field terminations of fiber connectors require careful installation and handling, and are better maintained in the protection of an enclosure instead of an open patching field.

### Pre-terminated Connectivity

**Panels**
Pre-terminated plug-and-play trunks, harnesses, and patch cords come with the assurance of high-quality factory assembly, and are ideal for those who need fast deployment. For these reasons they are a strong fit for a more accessible open patching environment.

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Leviton added the **USB 2.0 Extender** to its expanding line of IT/AV Systems. It extends signals from a computer to a device or hub up to 100 meters (328 feet) over a single category-rated cable to overcome the distance limitations of standard USB cables. It is ideal for interactive short-throw projectors, displays, HD web cameras, and printers in classrooms and conference rooms.

The USB 2.0 Extender Transmitter and Receiver supports high-speed (480 Mbps), full speed (12 Mbps) and low-speed (1.5 Mbps) devices. It also supports xHCI (eXtensible Host Controller Interface) for enumeration with USB 3.x devices. The 2-port receiver is capable of supplying up to 1 amp of power per port, or 1.5 amps total shared.

Leviton also offers a USB 1.1 signal extender as a low-bandwidth connectivity option, extending reach up to 50 meters. It works for interface devices such as a wired or wireless mouse, keyboard, touchscreen connection, or webcam.

Learn more at [Leviton.com/ITAV](http://Leviton.com/ITAV)
TECH TIPS

Network Connectivity for DIN Rail Mounting

Metal DIN rails have become a very popular method for mounting electrical components that support industrial applications. The rails are typically used inside equipment racks and control panels. If you’re looking to integrate network patching locations into an industrial environment, Leviton has fiber and copper patching solutions that can mount on DIN rails.

Our compact DIN Rail-Mount Box (41089-6DN) provides an ideal network patching solution for Cat 5e or Cat 6 cabling systems. The box accepts a Leviton QuickPort® Decora® Insert, available with 1, 2, 3, 4, or 6 ports.

The box allows for orientation of the cable access port at the top or bottom, increasing flexibility of cabling within a tight control enclosure.

If you require fiber cabling to network your equipment, you can use the Leviton SDX Mini Wall-Mount Enclosure (SWMNT-01C) for DIN rail mounting. The mini enclosure houses up to 24 fibers (LC), and can accommodate field terminated connectors, splicing, or pre-terminated fiber trunks and assemblies. It can also be mounted in a variety of other ways, including to walls, ladder racks, and workstations or cubicles.

INDUSTRY

In the second quarter of 2017, 100 GbE data center switch shipments surpassed 40 GbE shipments for the first time, according to Crehan Research. The company predicts that 25 and 100 GbE data center switches will comprise over half of all shipments by 2021.


PRODUCT

In September, Leviton launched a new line of wall-mount enclosures. The Opt-X SDX enclosures are designed for entrance facilities, telecommunications rooms and remote network hubs that require patching, cross-connect or splicing while using a minimum of space. This flexible line of fiber optic enclosures — available in mini, small, medium, and large — simplifies the selection, installation and maintenance process for contractors and IT managers. Learn more at Leviton.com/SDX.

ASK THE EXPERTS

Q: When choosing MTP® adapters, what key configuration should we order if we are using single-mode fiber?

A: All single-mode MTP connections employ an Angled Physical Contact (APC). Therefore, it is required that they use a Key-up/Key-down adapter.

YESTERDAY’S NEWS

1977: General Telephone and Electronics (GTE) sends its first live telephone traffic through fiber optics in Long Beach, California, at 6 Megabits per second.