

Cabling Systems & Standards in Healthcare Facilities, Part I

The need for fast, reliable data plays an increasingly important role in businesses, and nowhere is there more demand than in the healthcare sector. The U.S. market for health IT will expand to \$85 billion by 2014, according to market research firm Compass Intelligence. Part of this growth comes from a mass transition to electronic health records, as nearly all U.S. healthcare organizations are expected to have implemented some form of electronic health records by 2015. But beyond e-records, healthcare facilities are adopting all kinds of "connected" technology — advanced diagnostics, smart beds and pumps, IP telemetry — that will be IP-based and using Ethernet in the near future. This means that structured cabling is critical for implementing these emerging technologies.

Structured cabling standards that specifically address healthcare facilities exist, but are relatively new compared to other building standards. In July 2010, the Telecommunications Industry Association (TIA) published TIA 1179, Healthcare Facility Telecommunications Infrastructure Standard. However, there is no single document or standard that covers every aspect of a healthcare facility. Many standards and codes from BICSI, IEEE, NFPA, and others should be addressed, so installers and contractors should use multiple sources of expertise, not just TIA 1179.

Let's take a closer look at some general TIA 1179 recommendations, along with some Leviton solutions to meet installation needs.

Work Area

In work areas like patient rooms, nurse stations, and critical care, TIA recommends high-density wallplates in order to get multiple outlets in a small amount of space.

- Leviton wallplates allow up to 6 ports in a single-gang plate and up to 12 ports in a dual-gang plate in 7 different colors, as well as stainless steel. For these types of high-density wallplates, we suggest using extra-deep oversized back boxes.
- We also provide a simple way to integrate A/V outlets by using the Multimedia Outlet System (MOS), QuickPort® wallplates, and Decora® wallplates. These are ideal for patient suites, conference areas, and surgery rooms, since we have RCA, S-Video, DVI, and HDMI outlets to choose from.

Multi-User Telecommunications Outlet Assemblies (MUTOAs) — often used in work areas like emergency and ambulatory care — are a convenient way to distribute the last few feet of horizontal cabling in places that see renovations or frequent reconfigurations.

- Leviton VertiGO® patch panels are ideal for MUTOAs because of their flexible mounting capabilities. These 12-port panels accept copper, fiber, and A/V Quickport or Opt-X® adapters and can be mounted to a ladder tray, wire basket, directly to the wall, under a raised floor, or directly to modular furniture.

- The QuickPort 12-port surface-mount box is a more economical MUTOA but does not have the mounting flexibility or bend radius features of the VertiGO panels. They do provide a clean appearance if mounted to a wall, over a double-gang back box.

Horizontal Cabling

As opposed to a multi-tenant office building, hospitals are built to be hospitals for the lifetime of the building. That is why healthcare IT professionals tend to be early adopters of new technology, especially structured cabling. Once a hospital starts receiving patients it becomes a 24/7 operation, and disruptions for cabling upgrades create a significant negative impact on the workflow.

- The NextLAN Axi CAT 6A System — using Leviton connectivity and Superior Essex cable — offers the best performance for a healthcare facility seeking system longevity. The 10Gain® XP cable has a uniquely designed core wrap that performs like a shielded cable, but does not require grounding or bonding. Leviton eXtreme CAT 6A patch panels, QuickPort® connectors, and Slimline patch cords include many patented AXT mitigating technologies.

Shielded Twisted Pair

Healthcare environments may have areas within the facility with higher levels of EMI, magnetic fields, RFI, and radiation. Sources of EMI within a healthcare facility include microprocessor-based patient monitoring and therapeutic equipment. RF noise sources can be attributed to EEG/EKG/ECG equipment.

- Leviton offers fully shielded solutions that will help mitigate ambient noise. QuickPort shielded connectors are independently tested to meet TIA 568-C.2 channel requirements and provide EMI and RFI protection, signal isolation, and excellent AXT suppression. The CAT 6A shielded connector was recently redesigned with a narrower body to support higher density applications.

Backbone Cabling

Fiber

In order to meet the bandwidth demands from services to clients, more healthcare facilities are migrating to 10G, 40G, and even 100G Ethernet. The TIA recommends using OM3, OM4, and singlemode fiber cable and connectors.

- Leviton's Opt-X Unity 40/100G MTP® Fiber System provides a simple connectivity solution for migrating to higher speed applications. Unity trunks, harnesses, patch cords, and modules are available in laser-optimized multimode (OM3/OM4), and feature industry-leading 24-fiber MTP® connectors.

- Opt-X Ultra® fiber enclosures offer an innovative design, featuring a sliding tray that removes completely to facilitate field terminations and splicing. And you can custom order your enclosures to include adapter plates, pigtails, splice trays, and security options.

Copper

Since the evolution of voice over IP (VoIP) and IP paging systems, the need for CAT 3 UTP backbones has decreased significantly. The same is true in healthcare facilities, and TIA recommends CAT 6A cabling for all new copper backbones and a minimal amount of CAT 3.

- Leviton recommends the NextLAN AXi CAT 6A System for copper backbone, as it is a UTP-based system that also utilizes shielded features and will significantly mitigate AXT in risers. In addition, NextLAN has CAT 3 and CAT 5e multi-pair cables in riser and plenum options, along with voice-grade patch panels.

Resource

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