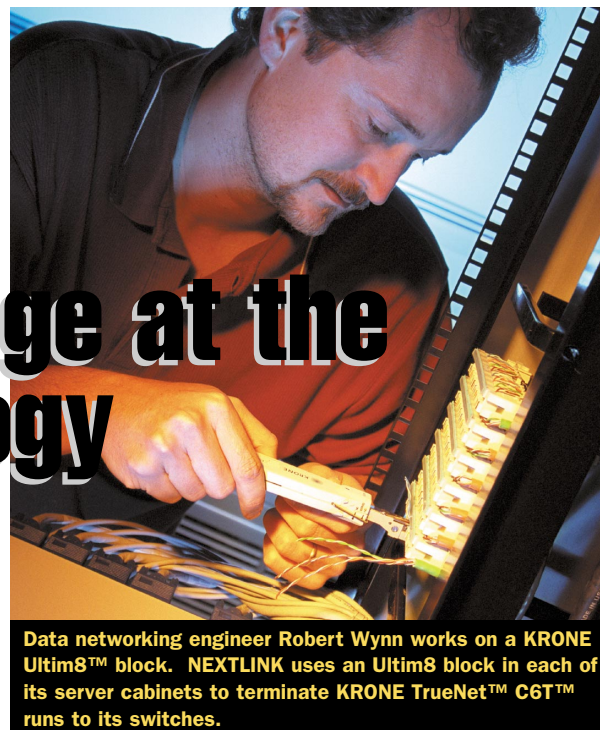


Planning for Change at the Speed of Technology

How a National ISP is Building the Data Centers of Tomorrow

BY BILL FETTER



Data networking engineer Robert Wynn works on a KRONE Ultim8™ block. NEXTLINK uses an Ultim8 block in each of its server cabinets to terminate KRONE TrueNet™ C6T™ runs to its switches.

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NEXTLINK Communications, founded in 1994, has assembled an unrivaled set of facilities-based, metro and national fiber and broadband wireless network assets. Once complete, these networks will serve much of the United States, Canada and Europe. Together with Concentric Network, a wholly owned subsidiary of NEXTLINK, the company offers end-to-end communication services, including local and long distance voice, digital subscriber line (DSL) access, Web hosting and e-commerce, virtual private networks (VPNs), dedicated access, global transit and application infrastructure services for delivering applications over the Internet or a VPN.

Growing Needs

Limitations in the data center infrastructure could have stifled NEXTLINK's growth. However, Paul Jasina, NEXTLINK's senior manager of data center communications,

with over five years tenure, proved to be skillful at managing the data center's infrastructure performance.

Five years ago, faced with the data center challenges of increased performance, higher availability, system upgradeability and unwavering system reliability, Jasina began to investigate different structured

cabling products. Now, NEXTLINK is still continually faced with an ever-increasing demand for system performance.



Key players outside the Plano, Texas, facility: Pictured are (l to r) Chris Hutchison, NDC senior branch manager; William O'Neil, vice president of IT/operations; and Paul Jasina, senior manager of data center communications.

NEXTLINK chose KRONE's TrueNet™ Structured Cabling System as the best solution for its data center infrastructure upgrades. Jasina said, "We found that the KRONE product proved to be the most reliable and had repeatable performance. Over the years, the performance, reliability and accountability of the KRONE organization has consistently exceeded expectations."

Not Just Another Upgrade

But the upgrades to the NEXTLINK data center infrastructure were far from ordinary. It was an investment in NEXTLINK's future growth. NEXTLINK's vice president of IT/operations, William O'Neil said, "We approached this initiative with the objective of boosting availability and performance of all of our business applications. This was our number one priority. But let's face it; we're also in an industry where we have to reduce the total cost of ownership. We were concerned about a vendor's continual product upgrades. The benefit of the KRONE TrueNet technology is that it has brought us years of growth, efficiently and effectively avoiding continual product upgrades required by this industry."

The Plano, Texas, data center was the first of many locations to be outfitted with the new structured cabling solution. The installer, Network Dynamics Cabling Inc. (NDC) garnered significant credit with NEXTLINK in its ability to work with KRONE products and NEXTLINK's projected needs. According to O'Neil, "Network Dynamics made recommen-



A front view of a KRONE Ultim8 block mounted in a CPI Megaframe cabinet rack. NEXTLINK uses these blocks to terminate KRONE TrueNet C6T runs from its server cabinets.

dations on how we could centralize and standardize the data center cabling infrastructure. With NDC's help, we were able to take our new cabling strategy and re-think the way we approached data center cabling." Jasina added, "The attention to detail from the first job to the last job has been consistent and without errors. That's what is important — NDC's repeatable performance of excellence."

Setting New Standards

NEXTLINK not only specified KRONE's TrueNet C6T™ cabling in an Ultim8™ block to HighBand™ jack solution, but NEXTLINK created a new standard around it. Why? According to Jasina, "Our goals are straightforward. NEXTLINK needs the highest level of application performance and availability. We need-

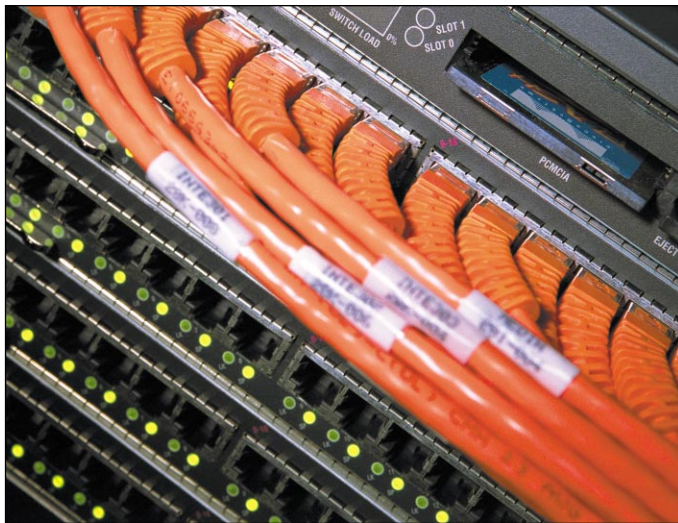
ed something that once it was in service, it was going to stay in service."

NEXTLINK has pushed its company standard beyond the traditional method of a feed-thru block to a HighBand jack or a HighBand block to a HighBand jack. Instead, a new higher level of performance is achieved by specifying KRONE's Ultim8 blocks exclusively. The advantages of this configuration include increased pair separation at termination, more throughput and a reduction in attenuation.

Chris Hutchison, one of Network Dynamics' senior branch managers, said, "This installation is basically future proofed. In other words, NEXTLINK won't have to worry about upgrades and expandability. They won't have to worry about what cabling is in the cabinet. They can be assured that the cabling is capable of doing anything they want."

A Universal Solution

One of the key benefits of NEXTLINK's new cabling initiative is in its universal standard. As NEXTLINK offers its services, alterations need to be done quickly. This is achieved with little interruption, while maintaining the high application availability to support its customer base. Both KRONE and Network Dynamics applaud NEXTLINK for its requirements of universally compatible products. Although the talk of universal products and solutions is common, the implementation and investment in a completely universal solution are rare



KRONE TrueNet C6T cables with RJ-45 ends connect to Cisco switches. The other end of the cable is terminated at an Ultim8 block, which routes the cable to the server cabinets in the room.

indeed. According to Network Dynamics, lots of companies move in the direction of universal compatibility, but just don't complete the ideology when it comes to implementation. This letdown is typically attributed to the small premium in cost and the added complexity of coordinating equipment needs.

NEXTLINK's totally universal solution alleviates the worry over whether or not a new item will connect to another item via a specific channel. With a true universal system, any particular piece of technology in the data center can connect to any other technology with a simple and quick patchwork.

The flexibility to use any kind of technology for any kind of application without special compatibility needs gives NEXTLINK a significant advantage in addressing its rapid growth. This is just another way NEXTLINK is able to meet the demands of a quickly changing marketplace.

Extra Oomph

NEXTLINK, with its advanced strategic planning, also made an investment in fiber that wouldn't even be considered for most data centers. Although it is standard for data cen-

ters to run a fiber backbone for the main incoming lines (in combination with horizontal copper cabling for inner-room connectability), NEXTLINK "turbo charged"

both its voice and data applications by specifying KRONE fiber within its cabinets as well.

NEXTLINK

added additional fiber to a typical in-house copper application. This additional fiber has increased throughput within the data center. The plan specified a 50-micron fiber, rather than the industry standard 62.5-micron fiber. Higher bandwidth capacity is a valid concern for rapid growth, and the 50-micron fiber offers higher levels of throughput.

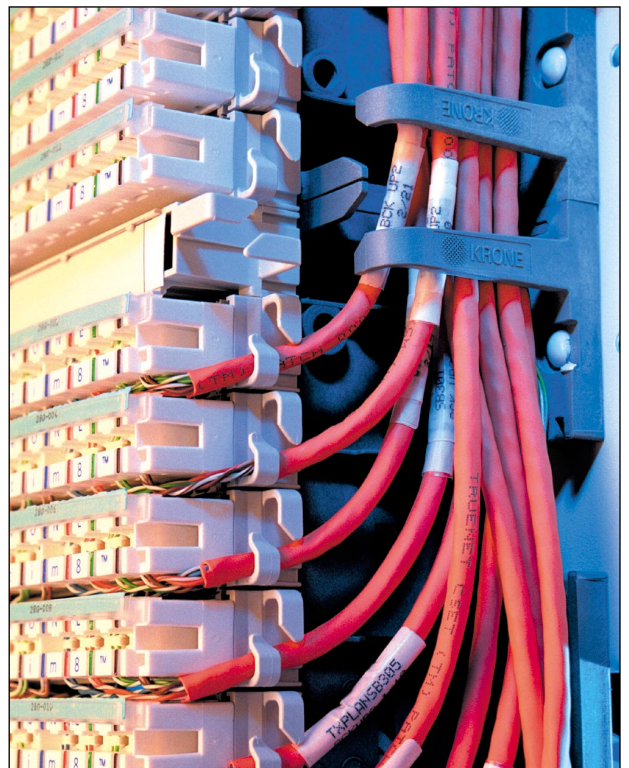
In addition, the copper cabling installed was TrueNet's impedance-matched C6T cabling. This is a key component in the TrueNet zero-bit error rate warranty since it allows data to travel throughout the entire network with minimum reflection and loss. The TrueNet Structured Cabling System is an integrated system that solves the problem of network retransmissions. Currently, it is the only cabling system that provides a clear path for uninterrupted data throughput. A non-TrueNet system can be analogous to

putting skinny tires on a racing car. You can build-in a ton of power, but if you have continuous error packet retransmissions bringing your 100BASE-T Ethernet to its knees, your end users won't get throughput. End users will never realize any performance gains as their skinny tires, or cabling, can't translate power into speed.

To further exemplify its commitment to rapid, future growth, NEXTLINK installed cabling capacity at a minimum of 10 percent over projected needs. And yet it still met goals in the total cost of ownership. Not only did NEXTLINK add oomph; it added capacity for future growth.

Room with a View

Investment in advanced technology translates into a better service offering for customers. NEXTLINK's commitment to a superior service offering via advanced technology has proven a valid market strategy, as exemplified by its rocketing growth. But as new challenges arise, how do you commu-



A side view of the Ultim8 block with TrueNet cable runs.

nicate that investment in performance and service availability? How do you show that to your customers?

NEXTLINK's answer came in a simple yet powerful approach – let the customers see it for themselves. Every one of NEXTLINK's intermediate distribution frames (IDFs) and main distribution frames (MDFs) are encased in glass so customers can see for themselves the level of installed technology. What makes this so unique is the rarity of a data center opening up its wiring closets and cabling installations.

It is attention to details. It is showcasing the latest technology in a very purposeful way. It is an intentional decision, even a strategy at NEXTLINK. NEXTLINK's clients, especially the larger ones, want assurances that high availability and performance will be deliverables they can count on. What better way to promote a company's commitment to its advanced technology investment than to make it visually accessible to customers from the moment they walk into the lobby.

According to Dan Cox, senior project manager at Network Dynamics, "This visual approach is really a reflection of the NEXTLINK company as a whole.

Think of the potential comparisons where you walk into a company's cabling plant, its IDF or its main situation room, and it's a real disorganized ball of cable. Anyone knowledgeable in this industry would look at that and think 'these people are handling all of my technology, and how dependable could it be looking at the mess they have in the IDF.' "

Attention to Detail

It's all in the details. It's the nickel part. It's the o-ring on the Challenger.

We've all heard it before and for good reason: details do make a difference. NEXTLINK takes its commitment to details to every level of its operation. Whether the IDF is one of the smallest or one of the largest in the country, every situation has the same goals and technology objectives. Every data center, every critical location, is paid an equivalent, high-level of attention.

For example, attention to detail is paid in the way its cable is dressed, a detail often overlooked. The way cabling is dressed can have a direct impact on cable performance because there are requirements and specifications to meet on cabling bend radiuses. Every NEXTLINK installation

utilizes wax string lacing to keep the cabling in a neater format. It prevents diver cables and alleviates any risk of choking a cable. Choking a cable is a risk associated with the widespread use of zip ties.

NEXTLINK specified wax string ties and a zero-tolerance policy for diver cables as a de facto standard for all of its installations. How does this translate into an end user benefit? Improved application performance and reliability. Every single cable has improved trackability and traceability. A zip tie can be the o-ring on a network, crimping a cable and hobbling throughput, but not at NEXTLINK.

Where It All Pays Off

A commitment to high performance, availability, quality connections and robust throughput, combined with attention to detail, should be enough to make any client happy and NEXTLINK is betting its future on it.

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