The Siemon Cabling System Helps UPS Deliver

According to Bill Carroll, managing mission critical package data underscores UPS's need for a reliable, high performance structured cabling system: "A six minute delay with our network will result in a potential two hour delay getting planes in the air." With literally millions of customers around the world depending on their service, delays are not an option.

"This is a 300K facility," says Bill Carroll, "and with our expansion plans it will eventually be 500K." Bill is a Senior Telecommunications Analyst for United Parcel Service, and he is giving a tour of the UPS air hub in Louisville, Kentucky (USA).

What exactly does the 300K designation mean? A data transmission rate? Computer processing speed? Number of square feet? Actually, it is none of those, because in UPS parlance, "300K" refers to the fact that the facility handles 300,000 packages per hour!

Tim Suffridge inside the new UPS facility. Horizontal cross-connects are environmentally controlled to ensure reliability.

Do some quick math and that translates to about 83 packages per second. In that incredibly short time frame, the packages are not just unloaded and reloaded onto a new plane for their next destination, each parcel is digitally scanned and all of its critical data is captured and uploaded into the worldwide data stream.

The process is enabled by a proprietary labeling system developed by UPS that ensures packages are marked using "smart" labels. The labels contain vital information such as the zip codes, package weight, shipping cost, and insured value. As it moves through the system, each package is digitally scanned to make sure it is "smart". If not, it is diverted and a new "smart" label is created at one of several PCs through-out the system.

Although most of the six million people who receive packages from UPS every day have no idea what it takes to provide this service, everyone has the same expectation: reliable, on-time delivery. It is an amazing process that has become such a part of our daily lives that it is almost taken for granted.

"The concept of what we do is simple. We deliver packages from point A to point B." says Tim Thompson, a Telecommunication Project Leader. "But it is package data and tracking that is more demanding. It's really about customer service: our customers want to know what is going on with their packages. We need to provide timely, accurate information, and we utilize technology extensively to do that."

In fact, UPS collects electronic data on over 7.5 million packages each and every day, helping to improve efficiency and price competitiveness, as well as provide enhanced customer service. The ability to do this stems largely from a company-wide commitment to technology, manifested in continual investment and innovation.
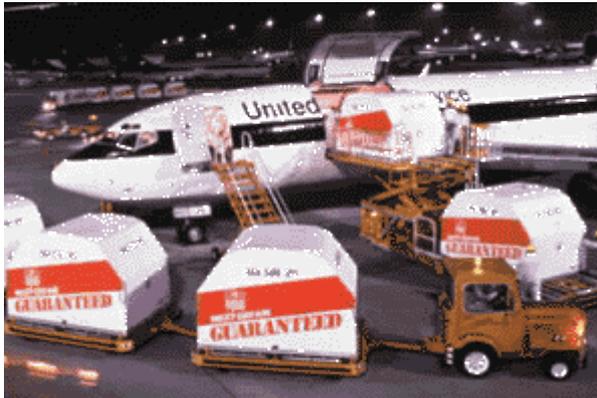

The UPS Louisville air hub will handle 300,000 packages per hour - that translates to about 83 packages per second! Their commitment to data management is critical and ensures that UPS maintains the highest level of service.

This reliance on technology is evident in the Louisville hub project, or "H2K" as it is referred to within UPS. The project is a massive undertaking with an overall budget of $1.2 billion. The building itself will be over 3 million square feet on 156 acres and, by 2001, there will be 750 construction workers on the site.

The cabling system that supports the facility is a crucial component of the overall functionality of the hub and it was chosen carefully. According to Tim Thompson, "A six minute delay with our network will result in a potential two hour delay getting planes in the air." With literally millions of customers around the world depending on their service, delays are not an option.

UPS also ensured that their staff was trained on the latest world-wide cabling Standards and sent them to training programs that emphasized the design essentials of structured cabling systems. These classes outline a number of "best practices" which can be incorporated into a system design. Fortunately, UPS was able to take advantage of these design criteria. As Tim Thompson explains it, "Because this facility was being built from the ground up we were able to say 'this is the way to do it.' Everything in here is designed and organized so that it will be accessible and flexible."
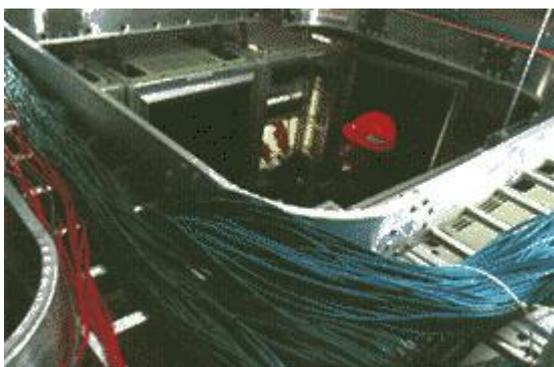

Bird's eye view of the computer room at the Louisville air hub.

There are 5 main cross-connects (MC) and 50 horizontal cross-connects (HC), which are located throughout the loading and unloading areas and contain both fiber and copper connections. (Layed end-to-end, the cable would stretch from Louisville to California.) Throughout the building both CT®6 and MAX® 6 outlets are used, depending upon the density required, with MAX® being utilized for higher density requirements. The HC cabinets are environmentally controlled and regulated to stay exactly 15 degrees cooler than the ambient temperature. This is to ensure reliability and functionality without creating any condensation. Each horizontal cross-connect room routes package data, flight details, and weather reports. There are 12,000 network devices, ranging from PCs (for address checks and corrections), to scanners (overhead or hand held), scales and cameras that are used to check packages as they move through the sorting process.

In addition to the package handling areas, the facility houses several training rooms and conference rooms, as well as a Building Services Work Area charged with the responsibility of ensuring that the system is up and running smoothly every minute. According to Bill Carroll, managing mission critical package data underscores UPS's need for a reliable, high performance structured cabling system.

Inside the hub
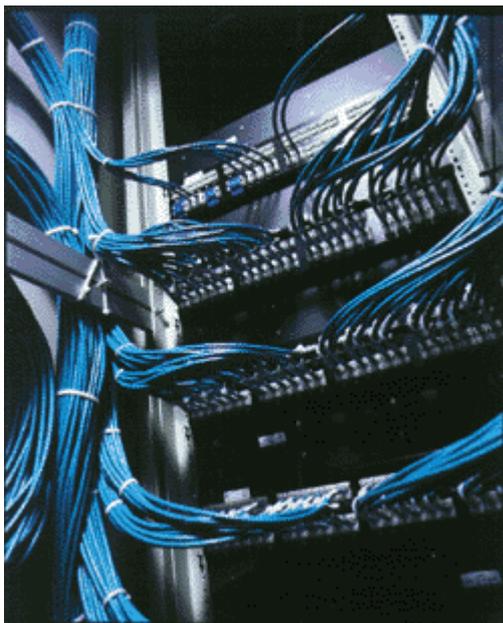
Each horizontal cross-connect room manages UPS's category 6 solution. Package information, flight details, and weather reports are all routed through control rooms similar to the one shown here.

"We knew that The Siemon Company is involved with developing the standards, and that they stand behind their products, so we decided to go with category 6 and be ready for the future."

The Service Center functions 24/7 and is staffed with experts on data networking, software support, programming, database management, and computer operations. Each workstation in the center is cabled with one voice outlet and two category 6 data outlets. Tim Thompson explained the decision to go with category 6: "We knew when we were designing this facility that we didn't have a need for category 6 right now, but we anticipate that, as technology evolves and customers ask for more shipment information, there will be applications we'll want to be able to take advantage of. We knew that The Siemon Company is involved with developing the standards, and that they stand behind their products, so we decided to go with category 6 and be ready for the future."

As the facility nears completion, the telecommunications team is getting ready to test systems and equipment. The plan is to make the hub operational in phases.

In summing up the project, Tim Thompson reflected, "Support from our vendors is the key to the success of a project like this. We need them to know our business, and to understand our goals and schedules. With millions of customers relying on us daily, it is important that every aspect of our new facility deliver the highest level of reliability."

Delivering Data vs. Delivering Parcels
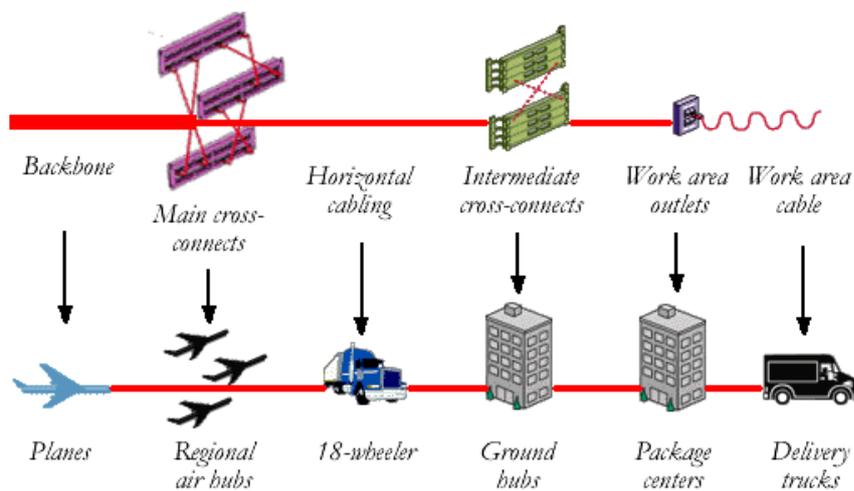
The system used by UPS for delivering packages is strikingly similar to a structured cabling system. UPS is the world's largest package delivery company, delivering over 12 million packages each business day to over six million consignees. In 1998, over three billion packages were delivered by UPS's 333,000 employees worldwide.