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## ShotLink Nerve Center Upgrade

Trailer's new technology improves speed, reliability and management for PGA TOUR data collection and scoring system.

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## It trails Sean O’Hair’s 301.9-yard drive to the fairway. It is capable of predicting with statistical accuracy the likelihood of him sinking a putt from 19 — or nine — feet away.

The data it collects not only allows professional golfers to zero in on their trouble spots, but can even help less-known players ink lucrative endorsement contracts by chronicling their strengths. Indeed, keeping track of the game’s infinite details has become par for the course with ShotLink, PGA TOUR’s state-of-the-art scoring system.

ShotLink relies on lasers, Personal Digital Assistants (PDAs) and wireless technology to capture and transmit — in real-time — every stroke by every player on the PGA TOUR, CHAMPIONS TOUR and NATIONWIDE TOUR.



CDW recently completed improvements on two of the ShotLink trailers’ rack and cooling systems, as well as enhancing cable management and power distribution.

The scoring system recently achieved an ace of its own, thanks to a series of upgrades completed on ShotLink’s technology trailers. The trailers serve as the nerve center for crunching scores and stats and distributing the data to TV, media and hospitality locations.

Executed by CDW — the official technology partner of the PGA TOUR and CHAMPIONS TOUR — the refresh included dramatic improvements to the trailers’ rack and cooling systems, as well as cable management and power distribution optimization.

### Every Shot Counts

Since debuting in 2001, ShotLink has transformed the manner in which golf enthusiasts are able to enjoy their viewing experience. Originally intended to catalog and archive statistical data for historical purposes, the information is now used by journalists, broadcasters, the PGA TOUR and more.

With the help of more than 250 volunteers who shadow players along each course, the scoring system collects everything from the

location of the ball, the lie, the distance it travels and the time it is struck — all reported in near real-time.

“With the implementation of ShotLink, we’ve taken the transfer of information from 15 minutes down to 10 seconds for global distribution,” says Jake Taylor, ShotLink administrator for the PGA TOUR and assistant manager of Technical Operations. “As soon as a ball drops into a cup, we are distributing that information literally around the world.”

And it’s not just speed that ShotLink brings to the course. Prior to its introduction, a golfer’s game assessment was limited to just 10 basic statistics. Now, more than 2,500 statistical references to ShotLink data are aired each year — stats that did not exist before.

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For example, using information generated by ShotLink in 2007, PGA TOUR officials ascertained that TOUR players holed 52.5 percent of their putts from 9 feet, averaged 17 feet, 4 inches from the hole when the ball was inside 100 yards and hit the fairway 62.8 percent of the time off the tee.

“The information available to talk about has increased one-hundred fold,” Taylor notes.

This wealth of data provides exceptional fodder for TV broadcasters, print reporters, satellite radio, onsite leader boards and other media. “It’s taken the guesswork out of announcing,” Taylor points out. “Broadcasters no longer need to say, ‘Well, that looks to be about a 25-foot putt.’ ShotLink tells them exactly how long it is.”

Golf fans aren’t the only group to benefit from the plethora of statistics assembled by ShotLink. Jeff Howell, manager of ShotLink Technical Operations for the PGA TOUR, recalls a tournament several years back where a player who was not performing well relied on ShotLink data to turn his game around.

“At the end of round three, he went into the locker room and looked at his putting stats,” Howell explains. “He noticed that on putts from 10-to-15 feet, he was terrible.”

So the competitor headed to the green and practiced putting solely from that distance. “He made a tremendous comeback the following day,” Howell reports, noting that the golfer jumped from 20th place into the top five.

### Tour Stop

Despite all of its advantages, ShotLink was not without its own handicap. A makeover was needed within the 53-foot-long trailers that house all of the equipment required to power the solution.

After seven years in its original configuration, which included several open racks filled with servers, networking gear and cables, ShotLink's mobile technology needed an upgrade.

In addition to addressing this issue, PGA TOUR officials sought to make the environment more organized and visitor-friendly by disguising the web of tangled cables that spilled throughout. Further challenged by the trailers' space constraints, the PGA TOUR turned to CDW to develop a game plan to resolve these core problems.

"The trailers really can't afford to have any downtime," points out Howard Weiss, CDW manager of field solutions and one of several individuals who contributed to the project. "They are the central point of the command center and if they lose any data, they lose all communication capabilities for how players are doing on the course."

Because the ShotLink trailers are constantly on the road, availability to schedule the technology upgrade was limited. The trucks roll into town approximately one week before each golf event for an extensive set-up process.

This includes surveying the sky for radio frequency signals and mapping the course. Then, digital images of each hole are created in order to calculate exact distances between coordinates.

CDW took advantage of two of the six ShotLink trailers being in close proximity to its Vernon Hills, Ill., distribution center to complete the revamp. A team of CDW specialists, led by Account Manager Craig Holzem, was assembled to execute the upgrade.

With the mobile command centers parked at the CDW corporate campus, technicians from the firm's Enterprise Configuration Center assisted with removing the trailers' existing equipment and installing the new, custom-tailored solution.



The Liebert Foundation MCR (Mini-Computer Room) features load-sized, computer-grade air conditioning which delivers cool air to sensitive equipment on all levels.

## Course Cool-Down

Prior to the upgrade, the PGA TOUR relied on two, 5-ton air conditioning units within each trailer, which provided both environmental and technical cooling. The failure of one of the units was a major concern.

"If one unit went out, within 15 minutes we could go from a very comfortable 72 degrees within the trailer to a very uncomfortable 95 degrees," explains Taylor. "And it's almost impossible to cool it back down."

Even more, in order to sufficiently cool the IT equipment in the back of the trailer, the air conditioning units — situated at the front — were often run at full capacity, which proved chilling for ShotLink administrators working within the mobile office space.

"This is not a traditional data center," explains CDW's Weiss. "There was no room for air flow. All of the heat was just recirculating around the servers."

To address these challenges, the team tapped into the expertise of CDW Power Specialist Brandon Zimmerman, who helped customize a Liebert MCR (Mini-Computer Room) to the trailers' specifications.

The self-contained rack enclosure system features built-in computer-grade air conditioning, which delivers cool air to sensitive equipment on all levels. To meet the PGA TOUR's requirements, two racks — measuring 38 inches deep and 24 inches wide — were installed in each of the trailers.

"This eliminated the need to have the air conditioning running full blast, because everything in the racks is already cooled," notes Zimmerman.

The enclosed racks also resolve a secondary issue that had been a concern for ShotLink: protection against significant amounts of dust and dirt generated at TOUR locales.

"Before, we had dust all over everything," explains Howell. "It was not a pretty scene."

"This will significantly improve the longevity of the equipment because it won't be exposed to so much heat and dust," Zimmerman says of the MCR units

The Liebert MCR enclosure's small footprint is ideal for the space restrictions of the trailers. What's more, it allows for numerous customization options.

In addition to constructing the racks to the specified space dimensions of the ShotLink trailers, CDW was able to build other beneficial features into each rack. These include power distribution units with supplemental outlets to accommodate the power draw of all the equipment.

"There wasn't any other solution that we came across that could meet all of the PGA TOUR's requirements," says Zimmerman.

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## Network Upgrade

Also deployed within each rack were two IBM System x3650 servers, featuring 2.33GHz dual Quad-Core Intel Xeon processors for greater system performance. The servers also feature 25GB RAM and 204GB Redundant Array of Independent Disks (RAID 5) hard-drive space.

With a compact 2U footprint, the rack-optimized System x3650 servers help preserve valuable rack space and resources, and are packed with highly integrated, advanced server features designed for computer-intensive, web-based or enterprise network applications where space is a primary consideration.

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Dozens of new Cisco routers were also placed in the enclosures, as well as KVM (Keyboard, Video and Mouse) switches and Belkin patch panels to help organize the maze of CAT 5 and power cables. Unlike the PGA TOUR’s previous set up, each and every cable is now clearly labeled and organized.

“If something goes wrong, now they’ll know exactly which cable to pull,” explains CDW’s Holzem. “Before, there were cables everywhere.”

Furthermore, CDW optimized server-management capabilities by wall-mounting two 22-inch HP LCD monitors in each trailer. Finally, every work station was outfitted with a new keyboard and mouse.

“This allows PGA staff to work uninterrupted and be more efficient,” Holzem points out.

## Increased Scalability

The ShotLink trailer upgrades not only provide high availability and enhance the longevity of the sensitive electronic equipment, but also allow for scalability as the PGA TOUR’s technology needs evolve and change.

“We now have the ability to easily upgrade our infrastructure as technology improves,” notes ShotLink’s Howell.

Furthermore, the refresh has made the trailers’ appearance considerably more visitor-friendly for the TOURS. It also allows for much easier maintenance and troubleshooting capabilities, with accessibility to all equipment.

“This really helps the PGA TOUR to manage the equipment and provides the ability to quickly add, move or change something,” says Holzem. “It’s a nice, neat solution that they have never had. Before, they would have had to literally tear apart the truck to find out what was wrong.”

“Through building on the CDW team’s expertise, we now have the ability to identify and fix problems,” agrees ShotLink’s Taylor. “We have the flexibility to get into the racks and troubleshoot more easily and efficiently.”

## A Trusted Partnership

With the upgrades to the ShotLink trailers now complete, CDW is helping the PGA TOUR enhance other technology aspects of the scoring system, such as improving the speed of ShotLink and PGATOUR.com video highlights; bolstering the security and resiliency of the system while reducing costs; and building a portable scoring solution for events outside the continental U.S.

CDW is also working with the PGA TOUR on a wide variety of additional technology projects. These include digital-asset management, application security training, security assessments, digital signage, establishing a player laptop ordering process, file server centralization/consolidation, onsite services, establishing Wi-Fi in the TOUR’s media centers, network protection, and deploying personal computers and laptops to the TOUR staff.

“We are very happy with the CDW relationship,” reveals Taylor, who is quick to praise the management and coordination efforts of Holzem throughout the trailer upgrade process. “He has really been the thread that has brought this whole project to where it is today,” shares Taylor. “The trust and respect we have for him is simply amazing.”

Those positive feelings transfer to the PGA TOUR’s overall partnership with CDW. By working with a solution provider that offers such an expansive range of product lines from industry-leading manufacturers, the PGA TOUR can rely on a single source to outfit all of its technology needs. Furthermore, with CDW’s dedicated account team and technology specialists, expertise is never more than a short chip-shot away.

“We don’t have disconnected parties to help us solve our problems now,” Howell explains. “And with CDW, we’re not committed to one brand of products for all of our needs,” he adds. “Plus, the team here is much more capable of recommending new technology because they really understand us.”

Echoes Taylor: “We have a dedicated partner who knows what we have in our truck, and who can completely support it.” ♦

