CONNECTION
RESURRECTION

**David Cooper has big plans
for building up the technology
infrastructure at Silver Birch Ranch.**

Silver Birch Ranch builds
a modern network in a
remote setting designed
for spiritual learning,
religious enlightenment
and outdoor fun.

At a Glance

ORGANIZATION: Silver Birch Ranch

LOCATION: White Lake, Wis.

YEAR FOUNDED: 1967

EMPLOYEES: 22 full–time

MISSION: Silver Birch Ranch offers an
outdoor camping experience in the
North Woods of Wisconsin that creates a
positive environment to develop the next
generation of Christian leaders.

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— David Cooper, Technology Manager, Silver Birch Ranch

Technology has become so ingrained in modern society that truly getting away no longer means totally unplugging, even at a summer camp and retreat in the North Woods around White Lake, Wis.

David Wager, president of Silver Birch Ranch, looks forward to the day when he can broadcast original radio and video programming out of a broadcasting studio at the camp. He also recognizes that people who come to spend time at the camp throughout the year need Internet access to take care of last-minute tasks.

"We understand that people may have some loose ends to tie up before they come here to study," Wager says. "While we want to offer the technology and give people wireless access, we still want people to walk around these beautiful grounds and not be distracted."

Founded in 1967 by Wager's parents, Pastor Richard Wager and his wife, Joyce, Silver Birch Ranch today runs across 100 acres and serves 400 campers and volunteers per week during a seven-week summer session and roughly 250 people weekly for weekend retreats throughout the year.

The camp offers hiking, water skiing, swimming, a 100-foot zip line, a climbing wall, horses and whitewater rafting. Silver Birch Ranch also runs a one-year college at the camp, Nicolet Bible Institute. While people come from all over the world, Wager says the vast majority of attendees come from Wisconsin, Indiana, Iowa and the Chicago area.

"The point of our ministry is to develop the next generation of Christian leadership," says Wager. "We want them to serve the greater community. It's also exciting to see young people take a year of their lives and study scripture."

Tech Overhaul

David Cooper, the camp's technology manager, has taken on the task of modernizing Silver Birch Ranch's technology operations over the next couple of years.

Cooper has a long history with the camp, having been both a camper and a summer staff director at the camp as a college student. Cooper says one of the reasons the camp wanted him back to manage the technology operation was his five-year relationship with CoVantage Credit Union in Antigo, Wis.

"It was during that period that we completely revamped the network at CoVantage," Cooper says. "CoVantage is a very large company, so I like to say I have $1 billion in networking experience."

Cooper worked primarily with CDW Account Manager Will Bradley while at the credit union. Then, he transitioned to CDW Account Manager David Myers, who looked at proven HP solutions for the camp, which needed high performance at a lower cost point.

"CDW really took the time to put us in touch with all the right technology people," Cooper says. "I'm a one-person shop, so it's impossible for me to have the time and staff to know everything. CDW really understood who we were and what we were trying to accomplish with the technology upgrade."
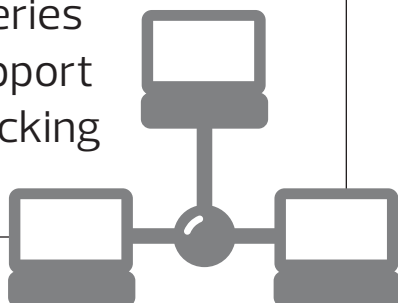
Cooper had worked closely with CDW for years. When Bradley heard that Cooper had taken the job with Silver Birch Ranch, he connected him to Myers to evaluate the camp's requirements and direct them to technology they could afford that would still deliver high value.

Cooper says he also got help from an HP sales engineer, who provided him with an HP CLI reference guide that walked him through translating the other vendor's network terminology to HP networking gear.

336GBPS

The maximum bandwidth an HP 3800 Series switch can support with mesh stacking

SOURCE: Hewlett-Packard

Infrastructure Behind the Scenes

Silver Birch Ranch has many ambitious plans for its students, campers and guests using technology in the future, but it all depends on the successful deployment of HP infrastructure. Here are the two main switches that Silver Birch Ranch deployed for its upgrade.

HP 2920 Switch Series: These switches are cost-effective, scalable networking equipment for organizations building high-performance networks. IT managers typically deploy these switches at the enterprise edge, remote branch offices and converged networks. At Silver Birch Ranch, Technology Manager David Cooper deployed them in a wiring closet in several of the camp's 50 buildings.

The 2920 switch series supports up to four optional 10 Gigabit Ethernet ports, as well as a two-port stacking module. These options offer flexible and easy-to-deploy uplinks and stacking.

On the power front, the 2920 switches can easily scale to 1440 watts with a simple connection to an external power supply or redundant power supply.

HP 3800 Switch Series: These switches are designed for enterprise edge, SMB and branch office deployments. Silver Birch Ranch uses two 3800 switches as its core in its data center.

The 3800 offers mesh stacking with a Layer 3 feature set that includes support for IPv6, IPv4 and policy-based routing. The switch can be managed with HP Intelligent Management Center and comes SDN-ready with support for OpenFlow.

Capacity Buildout

The upgrade project started with installing HP 2920 Power over Ethernet (PoE) switches in several of Silver Birch Ranch's 50 buildings, as well as laying fiber in the ground across the camp.

The switches, backed by an HP 3800 Series core switch/router at the data center, have the ability to deliver 10 Gigabit Ethernet to all the facilities. In addition, when the time comes in the next year, Cooper says the PoE switches will make it easier for him to add 802.11ac access points as well as video security cameras.

"For a nonprofit like us to have that capability is really exciting," Cooper says. "Now, I can run the access points and security cameras and get power by just running Ethernet cable. It will make it much easier for us to expand our capacity."

Most of the main buildings at the camp are covered by 802.11n wireless gear, Cooper says. Now, he's waiting for the second wave of 802.11ac products before he adds new access points.

"We're hoping that by the end of next summer we'll have the entire camp upgraded with 802.11ac access points," he says. "The industry promises some added coverage," he says, as well as enhanced beamforming that will improve performance by leveraging multiple antennas.

The added networking capability has been a godsend for Silver Birch Ranch. Cooper says staff can now more readily use Adobe products to develop marketing projects, and all the food ordering for the kitchen happens electronically. In addition, the 30 students at the Bible college have reliable Internet access and can use the web for research and to run Skype sessions to talk with parents or for school projects.

The Year Ahead

The remote location at the edge of the North Woods makes for some gorgeous vistas, but it also presents some bandwidth challenges.

Cooper says the camp will explore two options. Silver Birch Ranch has applied for a grant with the Pubic Service Commission of Wisconsin to lay fiber in the ground from a regional Internet service provider out to the Silver Birch Ranch. They should hear from the state on the grant in late 2015.

If needed, the camp will also try to raise money through donations to build a 200-foot microwave cell tower.

Both Cooper and Wager prefer the first option because it could deliver 100 megabits per second of bandwidth to the camp. Realistically, Cooper says, the cell tower would start at about 50Mbps; anything more than that would be cost-prohibitive.

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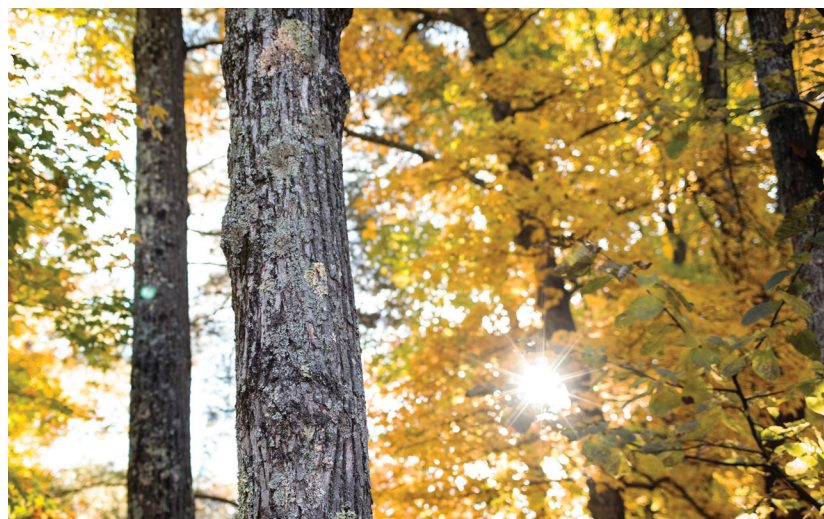>
> — David Wager, President, Silver Birch Ranch

Darren Hauck

"Right now, we're running our operation with three T1 lines," Cooper says. "There's no question that a lot of our plans for leveraging cloud-based services, replacing our antiquated phone system, and doing more video and broadcasting from the camp grounds depend on us resolving our bandwidth issues over the next year or two."

That's not to say that the camp isn't making good use of the Internet right now. They post thousands of pictures during the summer and provide services to guests through an online POS system. Silver Birch Ranch also produces promotional videos. For example, as a training tool, they recently developed a video about what it's like to be a camp counselor. They've also done videos to help prospective counselors learn their way around the camp. One video teaches them that the "Fix-It" refers to the building where campers and counselors can receive medical attention.

But Wager has big plans to do more broadcasting at the camp, with an eye toward building a professional broadcasting studio at Silver Birch Ranch by 2017, the camp's 50-year anniversary. Today, he drives to the Green Bay area twice monthly for a one-hour radio show on Bible topics. He also does a two-hour show on Sunday night that focuses on emotional subjects families may cope with, such as depression and suicide. Currently, the Sunday shows are mostly podcast and posted on the radio station's website.

"Once we work out our bandwidth challenges, our plan is to do live streaming from the studio at Silver Birch Ranch, with more interactive call-in sessions," Wager says. "Even with our limited capacity, we've done very well. The podcasts have more than 40,000 downloads."

Given the daily and weekly videos and Wager's dream to expand into broadcasting, Silver Birch Ranch plans to increase its storage. Cooper adds that the video takes up a lot of space, and as the industry goes from high-definition to 4K video, Silver Birch Ranch has to figure that into its plans as well.

"We're still deciding whether we will go with a storage area network or network-attached storage," Cooper says, adding that he'll look for CDW to offer some guidance on storage as well.

Both Wager and Cooper consider themselves blessed. Cooper has returned for a second time to work at the camp he enjoyed as a camper and college student. And Wager inherited his mother and father's legacy, taking the ministry into the future. Based on their dedication to creating a positive experience at the camp, there's little question that they will strike the balance they seek between the requirement for technology and convenience, and the need to seek a deeper spiritual life.

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