



Case Study

GRACE CHRISTIAN SCHOOL

Grace Christian School Supports Digital Learning with Deployment of DZS Passive Optical LAN Solution

The staff and administration at Grace Christian School have a mission: to prepare their graduates for college, and for life. As a leading college preparatory school, teachers are tasked with the responsibility of preparing their students — from kindergarteners all the way to high school seniors — to be leaders in their community and to go on to college.

The administrators at Grace Christian School realized that in today's competitive job market, preparing young people for the 21st century meant moving beyond traditional educational tools. Recognized as the top scholastic K-12 school in Alaska with a 99% graduation rate and 95% of its graduates going on to college or trade school, Grace Christian School is serious about the quality of the education their students receive.

"We have a responsibility as a school to prepare our students to succeed at whatever endeavor they undertake," says Dr. Terry Thornhill, Chief Technology Officer.

"Higher education today demands that students know how to succeed in a digital environment and the university won't teach them that. It's here, at Grace Christian School, that they learn those skills — how to use spreadsheets, make presentations and use technology like it's second nature."

To achieve this, the school invested well over \$100,000 on new technology to support teachers and students. This included: Smart Boards, interactive projectors, in-classroom computers, workstations, computer labs and Apple TV modules.

UPGRADING YESTERDAY'S NETWORK FOR TODAY'S TECHNOLOGY

The challenge was that Grace Christian School had an existing infrastructure built by the kindness of volunteers, but without an eye toward growth.

"We were using Cat 5/5e cables, which didn't have the signal range we needed for our campus layout," Dr. Thornhill said. "We ran into so many issues — signal degradation, dropped connections, signal loss. The result was our teachers wouldn't use the technology for fear of losing valuable class time. In short, the signal latency was really affecting our student's learning."

The school examined its overall technology needs and determined that the campus needed an infrastructure upgrade that would support the current size of the school as well as long-term growth. Grace Christian School needed a solution that would support nearly 600 students, 60 teachers and 15 administrative staff across more than 40 classrooms and offices. Ideally, parents would also have access to the campus' Intranet. Finally, in order to gain campus-wide adoption, the network would have

to connect the first time, and every time a teacher started a lesson, otherwise the educators wouldn't invest their time in using technology-based teaching.

The administrators turned to DSI, Inc., a Woman Owned Business Entity (WBE) in Anchorage, Alaska, known for their expertise in implementing communications infrastructure. After assessing the current infrastructure and developing the most cost effective blueprint, the team had a plan.

The Challenge

Update an existing, not-to-code LAN to a system that could support 500+ students and 60+ administration and staff across a 45-room K-12 campus.

Solution

- Deploy DZS MXK-198 platform in conjunction with the DZS Management Solution (ZMS) to ensure always-on, always-available connectivity.
- Implementation included installation of a high-density 1U form-factor GPON OLT as the foundation of the infrastructure, ensuring long-term growth as the campus population evolves.

Benefits

- Teachers and students have always-on access to the Internet and other Wi-Fi-based technology.
- IT staff no longer spends hours a day maintaining and repairing the system.
- The school has future proofed their infrastructure to support the growing needs of the campus as new generations of technology emerge.
- Teachers are incorporating more technology into their teaching strategy because it now works all the time, every time.
- DZS equipment worked within the structural limitations of the school building, so no construction was needed.



LEVERAGING EXISTING INFRASTRUCTURE WHILE EXPANDING NETWORK ACCESS

The first phase of Grace Christian's project included deploying DZS MXK-198 platform, a high-density 1U form-factor Gigabit Passive Optical Network (GPON) Optical Line Terminal (OLT) as the foundation of the infrastructure. DZS MXK-198 was an ideal solution for the Grace Christian School project because the unit can be stacked for larger deployments, reducing overall costs and streamlining future product deployments.

Initially, the Optical Network Terminals (ONTs) were deployed in existing wiring closets and connected to existing Cat 5/5e cabling. ONTs provide triple-play service – voice, cable and video streaming services – to each classroom. In phase 2 of the project, the ONTs were moved and stacked in lower level classrooms in lieu of pulling new cable.

DZS MXK-198 platform was selected for this project because the system provides trouble-free delivery of LAN services, thereby satisfying the teachers' needs of consistent and reliable connectivity. Ultimately, the final phase of this project will include supplementing text books with tablets using a high-speed wireless infrastructure supported by the DZS MXK-198 platform. Additionally, Grace Christian School plans to implement the DZS Management System (ZMS), a standards-based, carrier-class network management solution that provides management support for DZS multi-service networks. ZMS automates complex, error-prone tasks, thereby raising productivity, improving accuracy and reducing costs.

BROADBAND NETWORK EMPOWERS TEACHERS TO EMBRACE TECHNOLOGY

School administrators reported that the implementation was easy, as the

administration opted to upgrade the infrastructure during the summer, reducing the burden on teachers and students. The DZS-based technology plan allowed the school to finally install a fiber-based system that would serve them for many years while eliminating the need to install a complicated, mixed solution of fiber and copper. Unexpected advantages included freeing up valuable space and providing enterprise-level services. Further, the DZS GPON reduced the daily maintenance issues that previously plagued Grace Christian's understaffed IT group. With the reliability of GPON, operating and maintenance issues were virtually eliminated, allowing Grace Christian's limited IT resources to focus their time elsewhere.

"The DZS solution gave us connectivity everywhere - it's like being on a new campus," reports Dr. Thornhill. "I don't have to spend two or three hours of every day working on the infrastructure. I haven't had a single ONT fail and I don't have to deal with a fiber connection not working like it's supposed to. Teachers don't have their workstations dropping off the network. Everything works like it's supposed to, every time."

Contact DZS to request a customized assessment identifying how a Passive Optical LAN (POL) can reduce operational investments, increase energy efficiency and reduce storage space for your next project.



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DZS Inc. (NSDQ: DZSI) is a global leader of access, optical and cloud-controlled software defined solutions. Our software and network innovations are empowering communications service providers to reimagine their EDGE and transform their businesses and network infrastructure to become the experience providers of tomorrow. DZS systems, platforms and services are leveraged by over 400 service providers globally in over 70 countries and connect to over 70 million homes and businesses and are relied upon by more than 30 of the world's top 50 telecom providers.

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