technetix

Fiber to the Tree House! Major infrastructural expansion at 600-acre luxury woodland resort

WILDERNESS RESORT

Size: 300+

Industry: Holiday, Leisure & Hospitality

Location: Wisconsin, USA

The Wilderness Resort, situated on 600 acres in Wisconsin Dells, WI, is the USA's largest waterpark resort, with four indoor and four outdoor waterparks spanning more than 500,000 ft2. In addition to this, the resort offers a variety of other attractions, including championship golf; indoor and outdoor go-karts and mini golf; Take Flight Aerial Adventure theater and Aquavia Lumina Night Walk.

The resort opened in 1995 and has grown over the years to include: 446 guest rooms at the main resort, 108 condo units at Wilderness on the Lake, 460 condo units at Glacier Canyon Lodge, 40 vacation villas, 76 Frontier condominiums, 36 cabins and eight five-bed treehouse cabins which opened in 2023.

Like all of the freestanding lodging options at the Wilderness, the guests staying these new upscale treehouse accommodations need access to reliable Wi-Fi services so they can remain in connect with their workplaces, friends and family while on property.

The challenges

Limited distance stretch of existing cable infrastructure: The existing traditional copper-based telecoms technologies performed well at servicing the central hotel complex and nearby accommodation buildings. However, these cables presented potential issues around distances they could reliably reach as the campus expanded.

Adverse and extreme weather conditions at location: The location's humid continental climate, distinct seasons and lake network meant it was imperative that the resort's critical infrastructure was resilient enough to withstand winter storms and occasional springtime wildfire. While the community is used to power outages during extreme weather conditions, Wilderness needed to ensure that crucial services such as emergency

phone lines and fire alarm monitoring were functional and reliable at all times. Furthermore, the capacity to bring non-critical service, such as entertainment, back online rapidly and without intervention following power restore was vital criteria.

More specifically, the customer requirements included support for:

- Existing GPON services – VOIP, fire systems, and broadband up to 2.5 Gbps
- Upgrading existing coax-based broadcast TV services to fiber using RFoG, with option to support 1610 nm return path
- Enablement of new XGS-PON services – broadband up to 10 Gbps symmetrical data rates

The Technetix approach

Wilderness's commitment to investing in quality technology and infrastructure was fundamental to their growth strategy, reinforcing competitor differentiation,

and assuring the ability to meet guest connectivity needs for bandwidth and data growth over the coming decade. As such, they were keen to explore alternative fiber-based options.
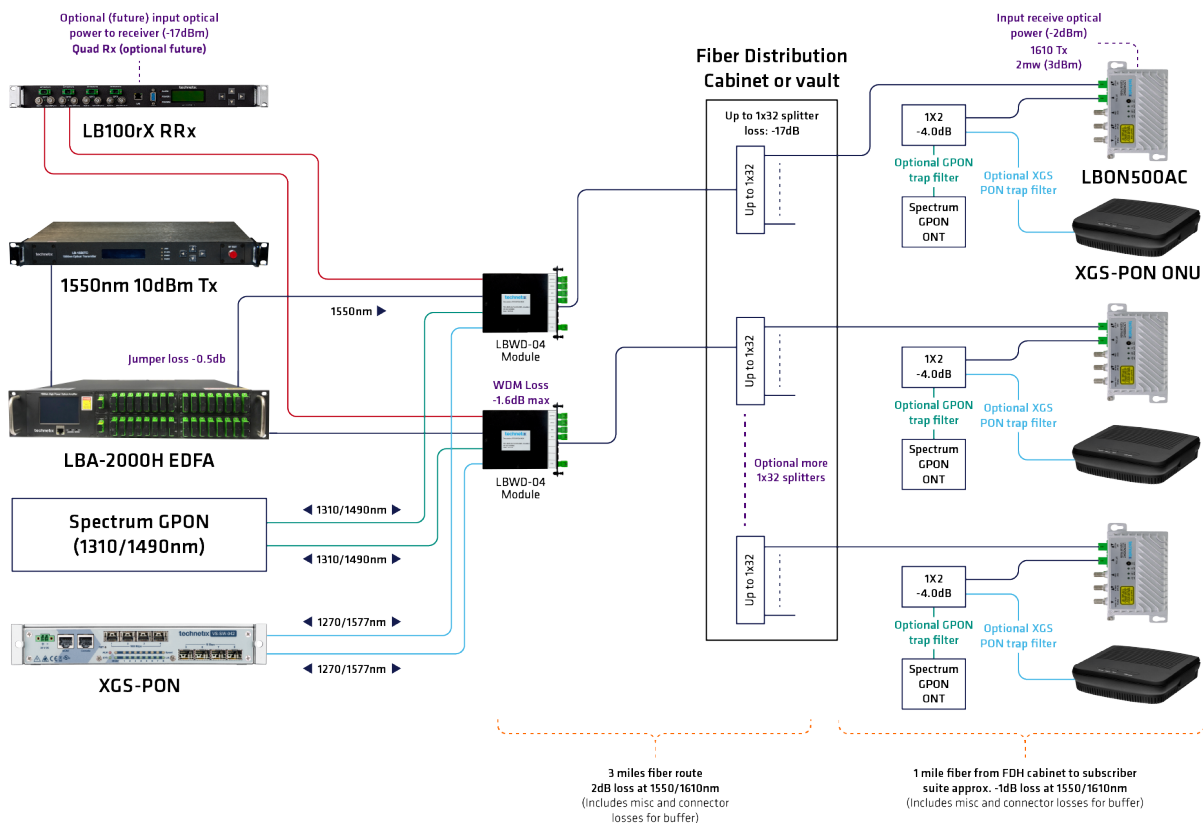
Recognizing our 30 years of expertise in the telecoms industry, and recent innovation in the legacy-to-fiber crossover, the Wilderness Group engaged us for the project, trusting the Technetix touch to elevate the class of amenity on offer to their guests.

Applying our high-level approach and innovation, we proposed a 10 Gbps-capable, future-proof XGS-PON FTTP solution that not only stretched the network to fulfil the parameters of the resort's expansion, but supported the existing TV, data and voice services.

Central to cataloging an end-to-end suite of PON passive components, fiber cables and splitters for the project was our rOLT: our ultra compact, IP68-rated remote optical line terminal developed specifically for rural residences and campus scenarios.

Bill of materials

- 1x LB1550TC-10-SA-2-A-N
- 1x LBA-2000H-8-20-SA-AC-A-D
- 1x LB100RA-SA-A-N (optional if 1610nm return is required)
- 2x LBWD-04-F-GXGS-5561-LG-44444
- 1x LB-LGX-CH
- 2x TXM-MPOLT-01E
- 2x 10GE-SR-SFP+
- 1x cX-SW-42-SE
- 2x rOLT software license one time purchase
- 2x Software charges annual
- 10x LBON500AC-2030-D2-SA-SA-61-45-00
- 10x 6506-055 15Vdc power pack
- 10x LBPM-102-MM-09-15-44
- 10x XGSPON ONT
- 10x GPON Trap Filter (optional)
- 10x XGS-PON Trap Filter (optional)

With mainstream OLTs designed and scaled for densely populated urban areas, the Technetix rOLT offers a highly cost-effective option for smaller, dispersed applications – an ideal match for the population profile at Wilderness.

Fiber to the Tree House!

To connect the new remote buildings, Wilderness Group deployed and commissioned their active PON components in a centralized hub, using the Technetix pluggable rOLT to distribute the network throughout the resort with a range of passive optical products. Owing to a variety of SLAs and support models, it was important for Wilderness to maintain separations between the active layer's different services and wavelengths.

Furthermore, supporting three different active systems – GPON, XGS-PON and CATV – required clear demarcation between active service components, preventing system sub-contractors and technicians from affecting or tampering with other services and technologies.

However, combining the wavelengths would drive a practical, cost-effective way of distributing the services. Our CWDM components enable multiple services to share the same passive optical distribution network. This reduces the number of cables and passive components required, which subsequently reduces labor and equipment costs, and improves sustainability.

The result

The Wilderness Group commissioned the entire Technetix bill of materials we put forward to accomplish co-existence of CATV video and data internet using XGS-PON rOLT. In combination with the site's pre-existing GPON system, the resort achieved a full triple-play system over a single fiber network infrastructure. Proving exceptionally popular with guests are the new Tree House experiences, and their Wi-Fi and connectivity have become an integral part of the overall customer vacation experience. Not only has it helped improve advocacy and bolstered the resort's positive review ratings, construction plans for additional accommodation are underway to meet enhanced customer demand.

> "The greatest thing is, I don't have to think about Technetix' equipment: it just works. The fiber network doesn't require any attention or intervention. If we lose power completely, it comes straight back online afterwards, unlike some of the older pieces of equipment.
>
> **Brad Hottman**
> **Information Systems & Technology Manager**
> **Wilderness Resort**

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For more information or to learn more about Technetix sustainability initiatives, visit our website or contact

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