

# Giving Customers the Speed they Need



“Customer demand for connectivity was beyond the capacity of our network infrastructure. The PTP 650 enabled us to effectively double our customer base by improving our backhaul equipment.”

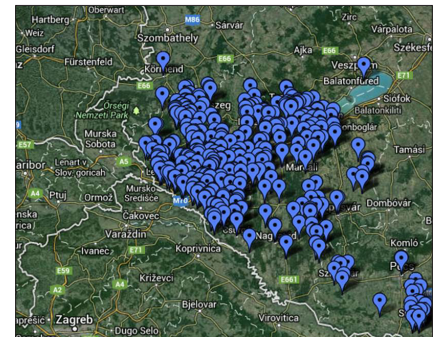
-GYULA ZUBER,  
GENERAL MANAGER  
AND OWNER, Z-NET

## Overview

**Z-NET IS A WIRELESS INTERNET SERVICE PROVIDER (WISP)** located in Keszthely, Hungary. It is one of the largest WISPs in Hungary with more than 10,000 subscribers. Z-Net started out offering wireless broadband connectivity in western Hungary, and as they satisfied customers they added business customers to their residential access offerings. In addition, their service offerings grew to include voice and video and the network expanded to cover 5,000 square miles (12,500 square km).

Today, Z-Net service offerings include:

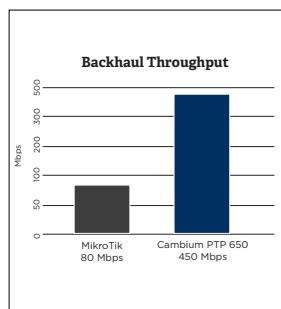
- Internet access for business and residential customers
- VoIP services
- HD-TV
- Video Surveillance systems



## Challenge

**WHEN SATISFIED CUSTOMERS SPREAD THE WORD ABOUT THE RELIABLE SERVICE**, many customers called asking to join the network. “Customer demand exceeded the throughput capacity of the initial backhaul infrastructure,” says Gyula Zuber, General Manager and owner Z-Net. “The MikroTik backhaul solution we started with provided a maximum throughput of 80 Mbps, and limited service to 150 subscribers downstream of the backhaul link.”

Z-Net needed a higher throughput infrastructure that they could rapidly deploy throughout the network to meet customer demand and grow the coverage area.



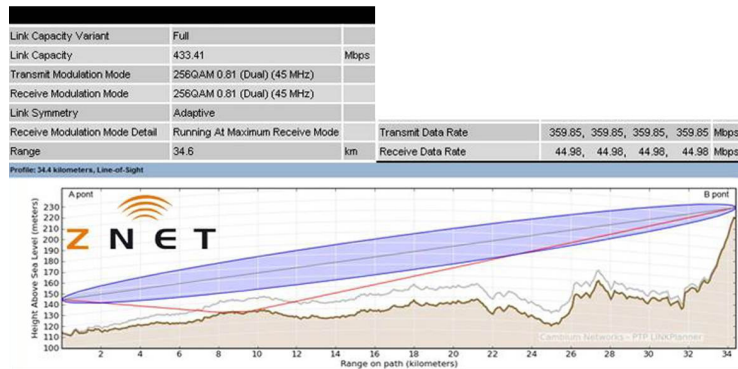
## Solution

**Z-NET CHOSE THE CAMBIUM NETWORKS PTP 650** to provide high throughput. “The PTP 650 provides us the maximum spectral efficiency in the 5 GHz frequency band,” says Gyula Zuber.

“This is important because spectrum availability is always an issue. Now we are providing 433 Mbps consistently on a 21 mile (35 km) link.”

Z-Net used the Cambium Networks LINKPlanner software application to design the link and predict performance. LINKPlanner showed the exact throughput to be expected for each location.

Installation in the pilot location was completed quickly.



LINKPlanner Path Profile Report

## Results

**450 MBPS OF THROUGHPUT ENABLED Z-NET** to provide more services to more customers, and increase revenue per customer while increasing the number of customers. While the MikroTik backhaul enabled them to provide services to 150 customers per link, the PTP 650 enabled them to provide more services to 250 customers downstream of each backhaul link.

“Business and residential users are satisfied, and they are spreading the word for us,” says Zuber Gyula. “The real reason they are satisfied is because the technology enables us to provide a reliable network that performs to high standards. Our customers are satisfied every day.”

Transmit Data Rate	359.85, 359.85, 359.85, 359.85	Mbps
Receive Data Rate	44.98, 44.98, 44.98, 44.98	Mbps
Link Capacity Variant	Full	
Link Capacity	433.41	Mbps
Transmit Modulation Mode	256QAM 0.81 (Dual) (45 MHz)	
Receive Modulation Mode	256QAM 0.81 (Dual) (45 MHz)	
Link Symmetry	Adaptive	
Receive Modulation Mode Detail	Running At Maximum Receive Mode	
Range	34.6	km



PTP 650 with External Antenna

## Z-Net

Z-Net provides connectivity for more than 10,000 business and residential customers in south-western Hungary exclusively using fixed wireless technology. [www.z-net.hu](http://www.z-net.hu)

### Challenge

As demand for connectivity grew, their 80 Mbps backhaul was not able to provide the throughput that end customers needed.

### Solution

- PTP 650 wireless backhaul to reach from their core network to the city providing 450 Mbps of throughput in the unlicensed spectrum.

## Why Z-Net Chose Cambium Networks:

- **High Throughput** – up to 450 Mbps per backhaul link for high speed data transfer.
- **High Spectral Efficiency** – with 450 Mbps throughput in a 45 MHz channel, PTP 650 delivers the most capacity when spectrum is limited.
- **Low Latency** – manage operating frequency for smooth migration to new technology.
- **Proven Performance** – reduce self-interference and enable frequency re-use in densely populated urban areas.
- **Easy Installation** – maximize customer satisfaction, reduce system down time, and reduce maintenance costs.