



# When Fiber Isn't an Option: Multi-Gigabit Free-Space Optical Solutions for Service Providers

# Today's Panel



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verityaptus

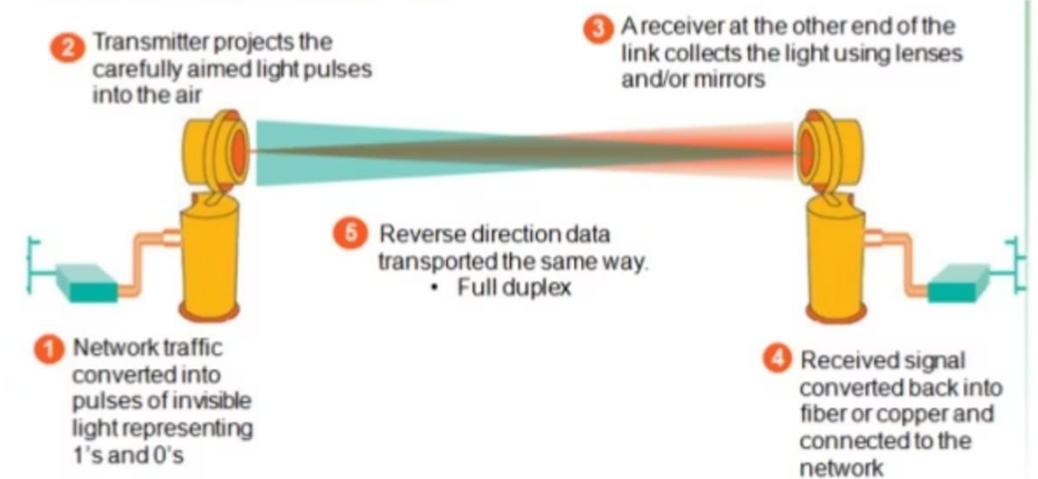
# What is free-space optical communications?

**Free-space optical communication (FSO)** is an optical communication technology that uses light propagating in free space to wirelessly transmit data for telecommunications or computer networking over long distances.

- "Free space" means air, outer space, vacuum, or something similar
- This contrasts with using solids such as optical fiber cable
- It also contrasts with rf-based wireless connections, such as 5G or microwave
- The technology is useful where the physical connections are impractical

## Why Free Space Optics?

### How FSO Works



Anything that can be done in fiber  
can be done with FSO

# Why Attochron?

## The Technology Advantage

- Short coherence length lasers
  - No CW laser
- Narrow beam point-and-tracking
- Highly secure data transmission
- Strong patent position



## The Business Advantage

- Ease of deployment—both time and cost
- Operates on rooftops, towers or thru windows
- No spectrum licenses are required (in contrast with radio communication)
- High bit rates
- Low bit error rates (BER)
- Interference free
- Full duplex operation
- Protocol transparency
- Eye safe (meets ANSI Z136.1 standard)





# FSO as a Network Tool for customer success: A carrier's perspective

Carriers/network providers are asked to solve network difficult problems for their customers:

Crossing rivers

Crossing railroad tracks

Crossing highways

Dense urban areas

Access to telephone poles for aerial fiber

Mountainous or rocky terrain

Desert conditions

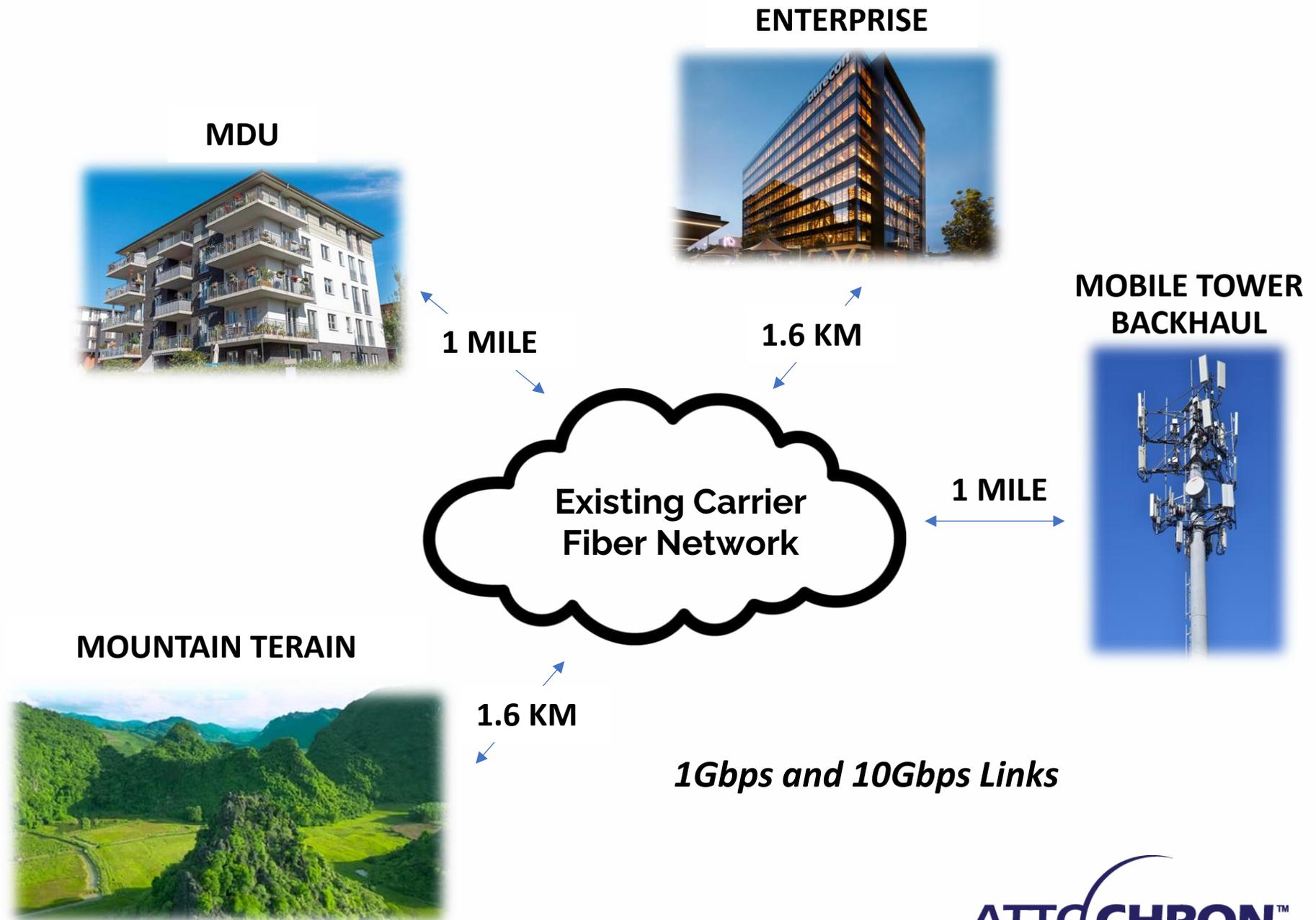
Military/defense

Government services

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# High Market Demand Use Cases – “Where the Fiber Isn’t” Market Sweet Spot – 1 Mile (1.6Km) Links

- "Last Mile" and "Middle Mile"
- Fiber back up
- RF link back up
- Tower backhaul
- Rural network extension
- Military applications
- Satellite communications
- Temporary installations
- Rapid installations
- Disaster recovery
- Healthcare applications
- Cell Tower Backhaul
- Mountain Terrain



# Connection between buildings

**Situation:** A common use case for FSO is the need for a high-speed connection between two office buildings in a metro market.

In this use case, the high-speed connection could be fiber or RF.

The expense of permitting, construction, and materials might be prohibitive and the timeframe for the installation might be long.

An FSO link was installed quickly and through the windows to provide the 1 Gbps+ connection between the offices.





# Back up link for a large retailer

**Situation:** A large retailer has tested back-up optical services to their stores using FSO.

When their Point-of-Sale systems are down, they auto-approve all cc transactions

During one hurricane season, they lost millions in fraudulent transactions when their fiber was impacted

This retailer validated the use of FSO to back-up the fiber connections to their stores in the event of outages or disasters.

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# 9/11 temporary network

**Situation:** A major NY financial firm had computer equipment in one of the buildings still standing near the World Trade Center.

With their quadruple redundant OC-48 rings all knocked out, an FSO ring was created between a building that was still standing in the crater, a data center near the Holland tunnel, and an office in Jersey City.

This remained in place for months until the fiber service was restored.



# A Quick Audience Poll..



# Attochron Roadmap

- 1 Gbps and 10 Gbps available now
- 25 Gbps to 100 Gbps, future development
- Earth-to-Space FSOC, future development

An aerial photograph of a city skyline, likely Atlanta, Georgia, featuring several prominent skyscrapers and a mix of urban and green spaces. The sky is blue with scattered white clouds. The text "Q & A" is centered over the image.

# Q & A

# What Next?

- More information – Contact Jim
- Field Trial / Demo Opportunities – Contact Jim
- A copy of this deck – Contact Jason
- Podcast Video with Tom Chaffee -  
<https://www.youtube.com/watch?v=6w41Du5aHiY&t=32s>

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**Early Bird Registration is NOW OPEN!**



**Canada's Rural & Remote  
Broadband Community  
Eastern Conference  
& Expo 2026**

**June 9 - 11, 2026**

**Casino Rama Resort, Rama (Orillia)**

**[CRRBC.ca](http://CRRBC.ca)**





# *“The Infinite Build”*

For over a decade, the mission across rural and remote Canada was singular: **connect the unconnected**. We chased specific speeds and raced toward government-defined targets. But as foundational builds near completion, a new reality is setting in - in the digital age, there is no "done". Connectivity was the destination; now, it is just the **starting block**.

The **Canada's Rural and Remote Broadband Community (CRRBC)** is proud to present our landmark event series: **The Infinite Build**. This is more than a conference; it is a call to action for the architects of Canada's remote economy to move beyond "**Basic Access**" and prepare for an era of "**Infinite Demand**".

## **The CRRBC Secret Sauce: A True Cross-Section**

What sets CRRBC apart is our refusal to operate in a silo. We are the only forum in Canada that intentionally assembles a true cross-section of the ecosystem: **Public Sector leaders, Indigenous Pioneers, Community Partners, and Industry Visionaries**. Our power lies in our inclusive and expansive nature. We don't just host attendees; we cultivate a passionate, niche community that understands it takes every stakeholder -from the government funder to the local technician - to build and support a resilient region.

Since our first event, we have seen **consistent growth** because we provide the only space where these distinct groups speak a common language.

We are looking for like-minded participants who want to be an integral part of the problem-solving process. At CRRBC you are a vital voice in the room.

You belong at the table because:

•**For Indigenous & Municipal Leaders:** We provide the framework to pivot from passive recipients of technology to active managers of local digital ecosystems.

•**For Government & Funders:** We move beyond "one-and-done" grants to architect collaborative environments where permits and conduit become permanent community assets.

•**For Industry & Vendors:** We move past the "build it and forget it" model to explore how your solutions serve as the nervous system for an interconnected future.

Join us as we bridge the gap between what is built and what is possible. The goalposts have moved, so let's navigate the new horizon as a unified community.

***Contact us for  
more information***

***info@crrbc.ca***





Thank you!



CANADA'S RURAL & REMOTE BROADBAND COMMUNITY