

The Siklu logo consists of the word "Siklu" in a white, sans-serif font, positioned on a dark purple rectangular background.

HOW MMWAVE WIRELESS IS A COST EFFECTIVE WAY TO PROVIDE GIGABIT SPEED INTERNET

Alex Doorduyn – VP & GM Americas

Josh Kinabrew – CTO Ascent Broadband

Aug, 2023

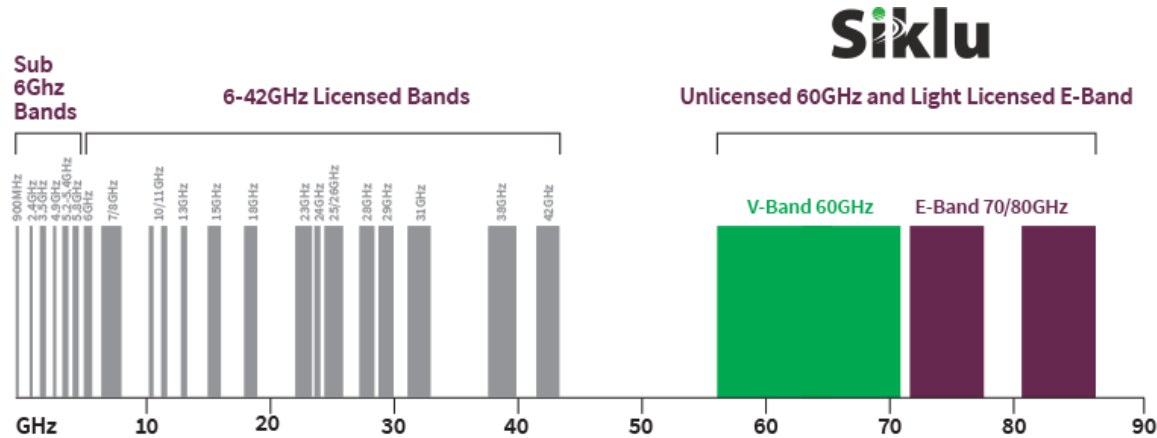




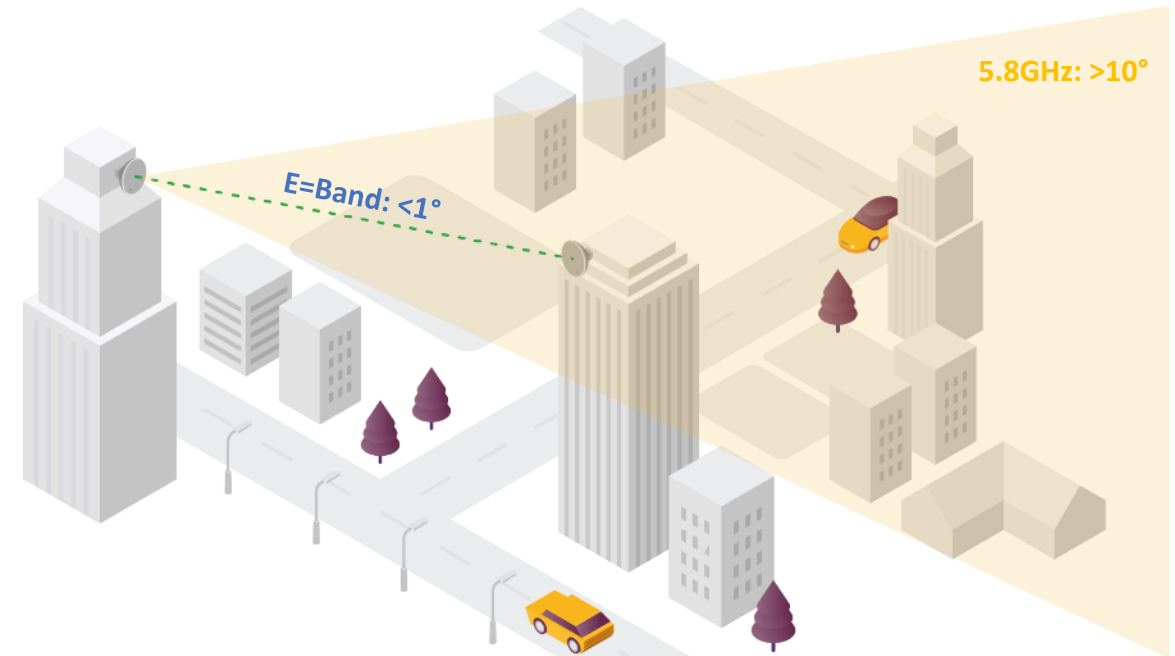
What is mmWave Wireless?

- Understanding mmWave

Widest spectrum - High capacity!



Narrow beams - No Interference!



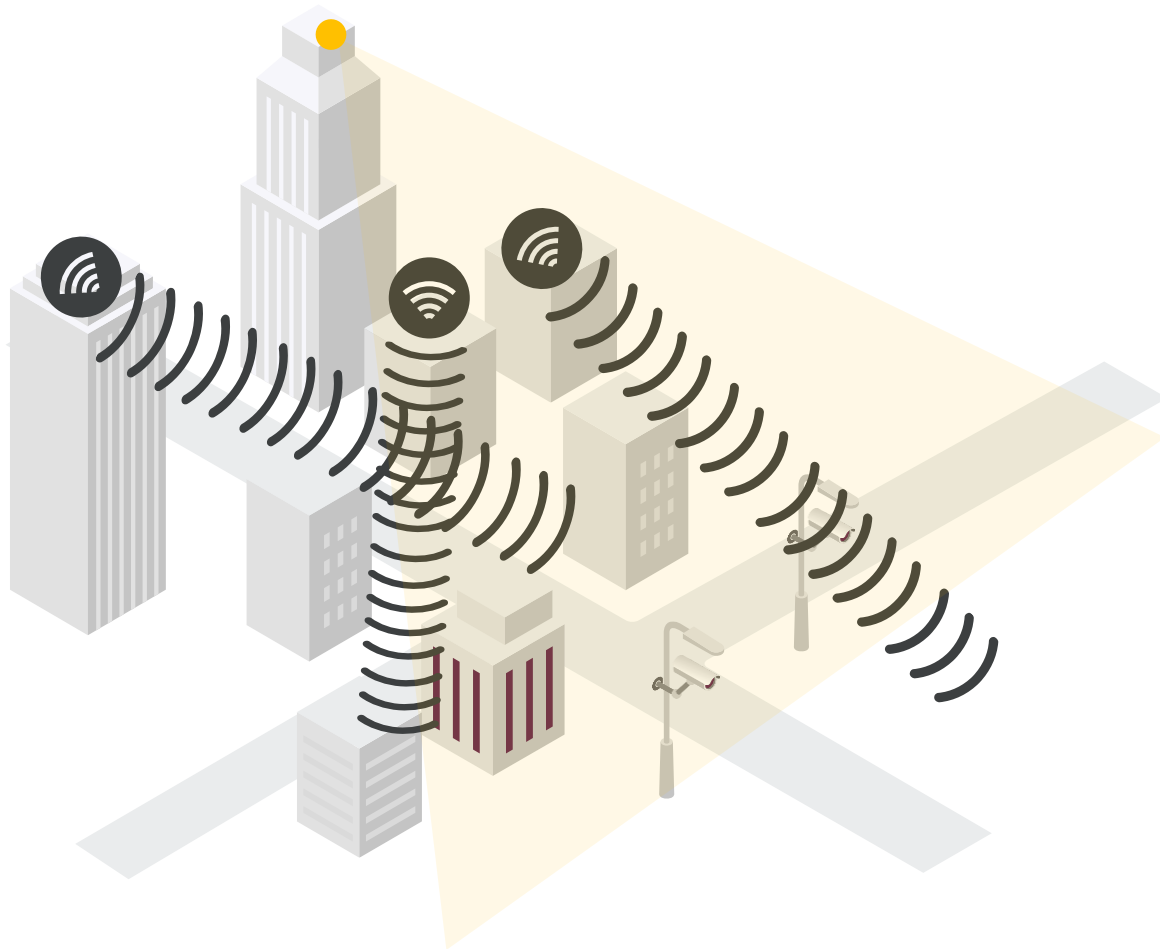
E-Band (70/8 GHz)
Lightly licensed , 10GHz

V-Band (60 GHz)
Unlicensed, 14GHz

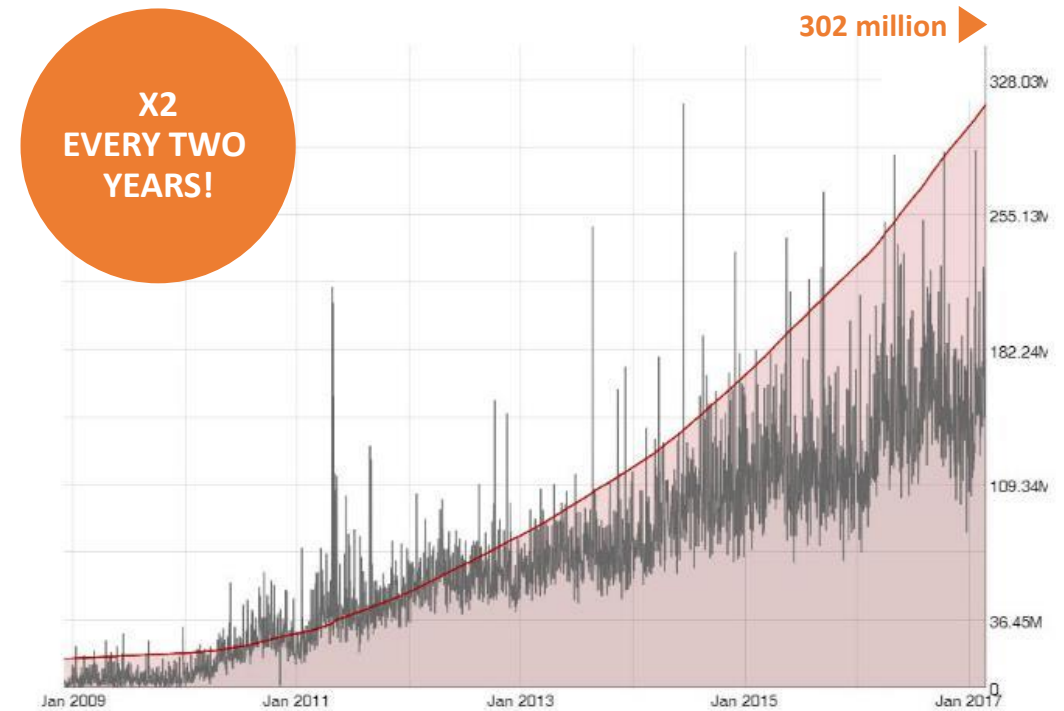


Legacy Wireless (4.9 to 6GHz) is Congested

- Issues with traditional wireless solutions



WiFi interference is growing fast



* www.wigle.net/stats



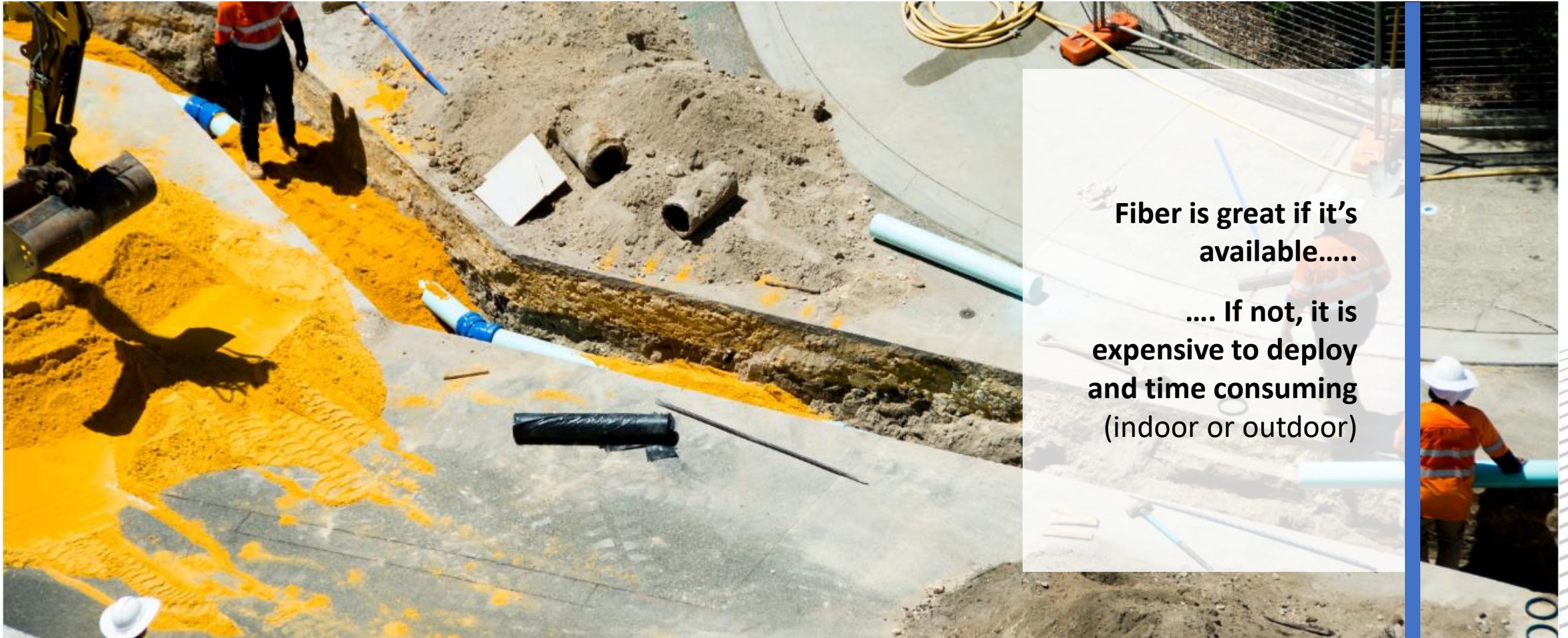
Connectivity Options

- Siklu's Fixed 5G offers the highest Capacity, most Reliable and Cost-effective solution vs. other Wireless options

CBRS	LEGACY (5.xGHz) WIRELESS	Cellular 5G NR	Siklu mmWave Fixed 5G
Secure	Easily hacked	Secure	Secure
Limited capacity	Limited capacity	Multi Gigabit capacity	Multi Gigabit capacity
Low cost	Low cost	High cost – Monthly Fees	Affordable
High Latency	High Latency	Low Latency	Very Low Latency
Free access is Lowest Priority	Interference	No Interference	Reliable, Immune to interference
Fast Time to market	Fast Time to market	Time to Market - carriers	Fast Time To Market

* Requires clear Line of Sight between radios

The Network Infrastructure Dilemma



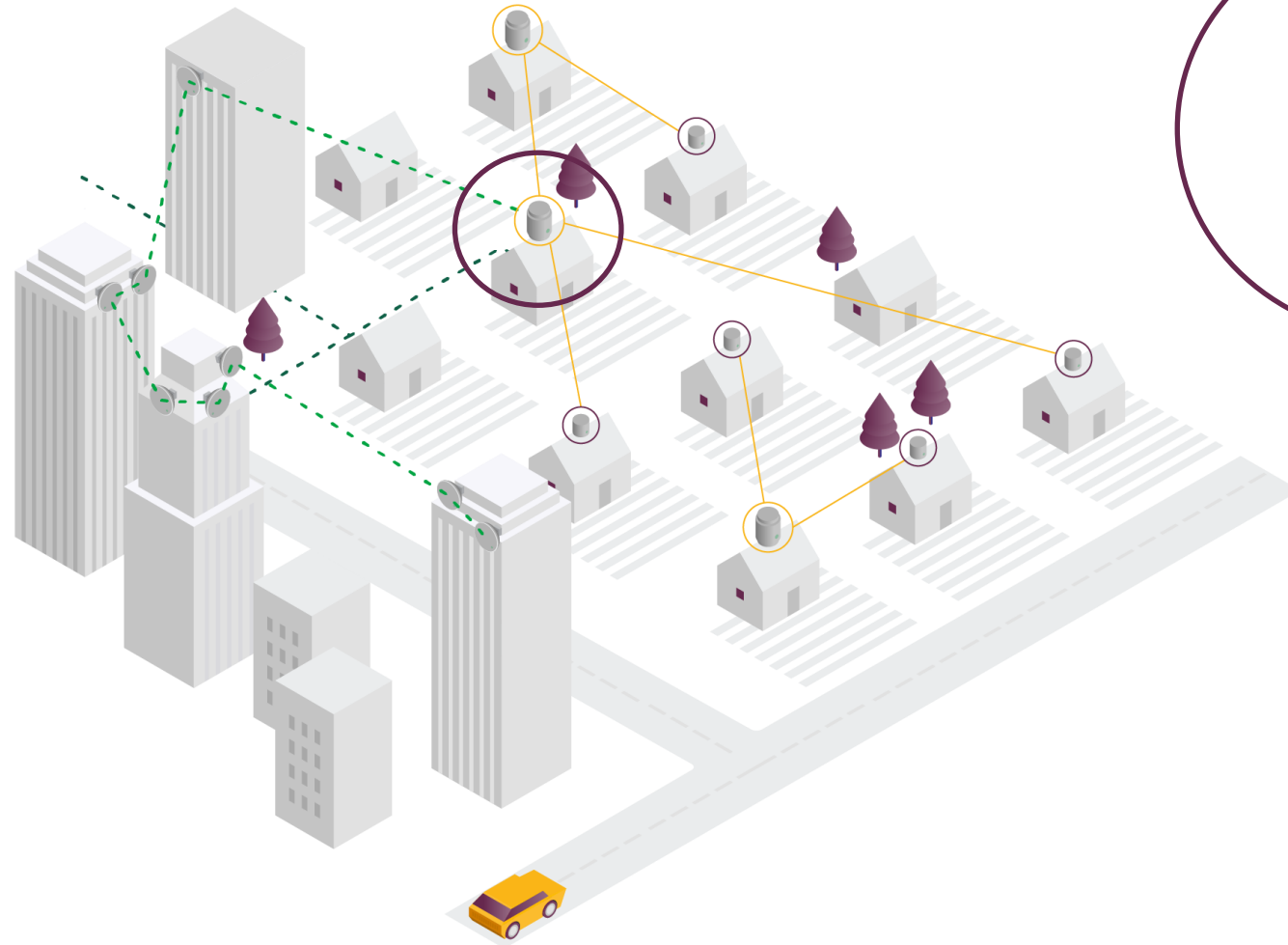
**Fiber is great if it's
available.....**

**.... If not, it is
expensive to deploy
and time consuming
(indoor or outdoor)**

Example: Business/Residential Internet Access (Rooftop)



Alternative to Fiber deployment (FTTH) → Faster deployment, Cheaper CAPEX/OPEX → Faster ROI



MultiHaul™ TG for Scalable Networks

- Neighborhood Coverage
 - Fast, Flexible, Pay-as-you-grow

Self-backhauling

- Simple deployment

Redundancy

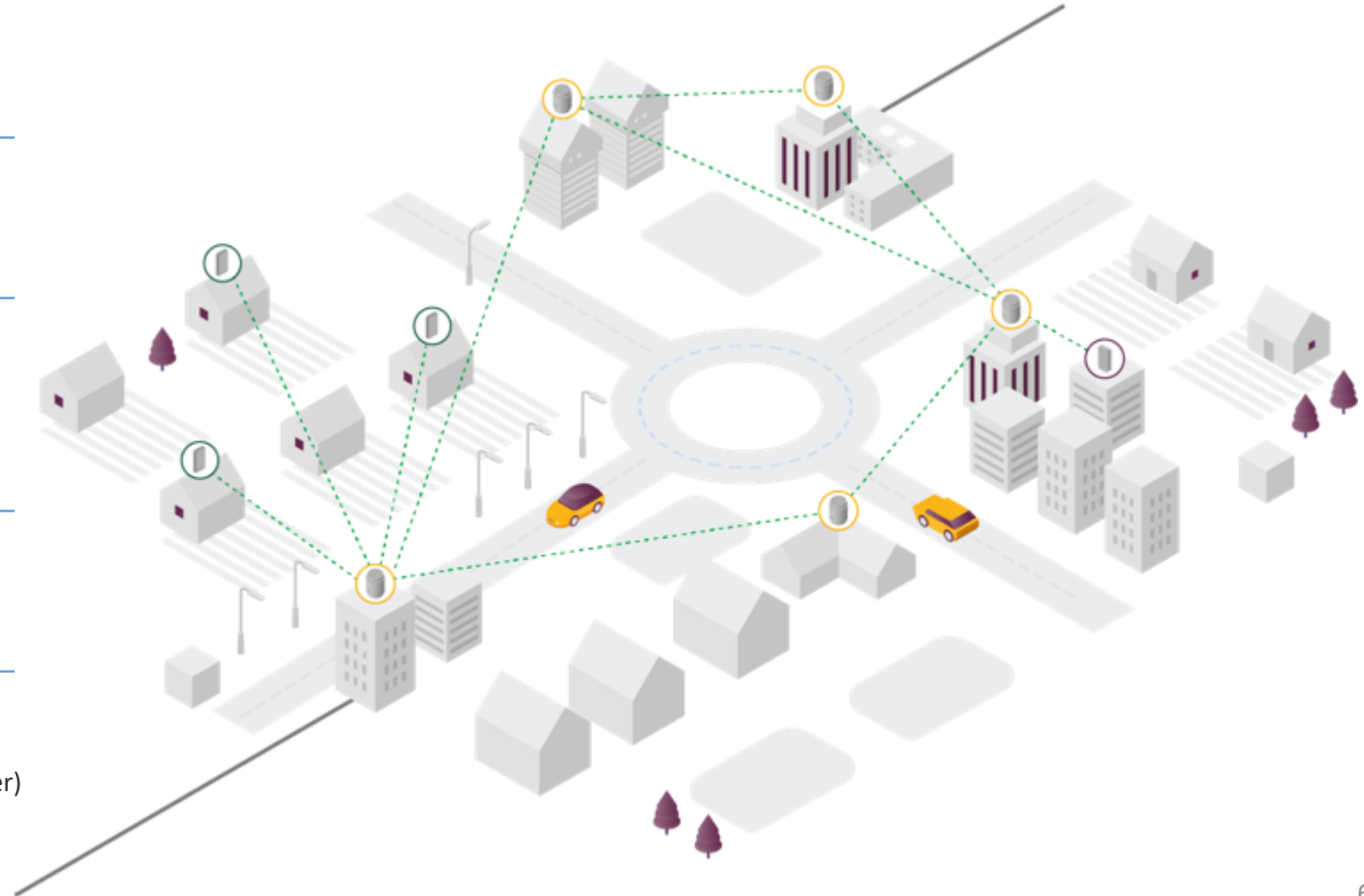
- Backhaul
- Access

Service with Nodes or TUs

- Series of TU models expanding

Cloud Ready SON

- Integrated with SmartHaul™ WiNDE, NMS (w/ Runner)
- Streamlined Planning, Deployment and Operations





Gigabit Internet Access

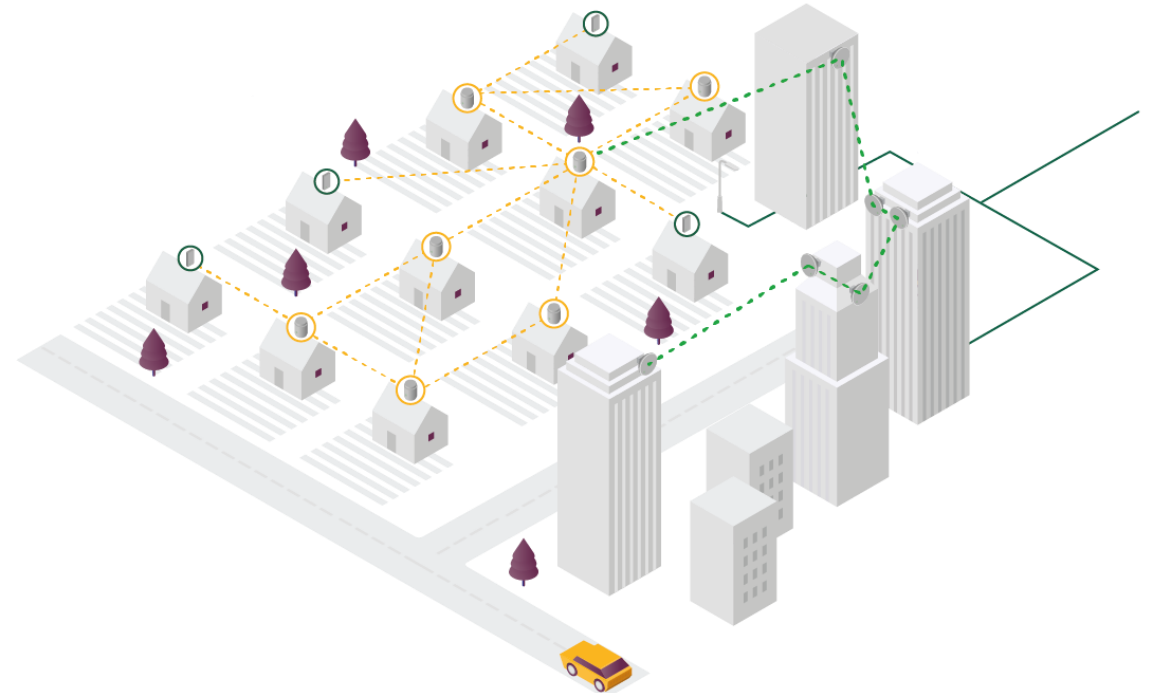
- End-to-End solutions with Siklu PtP / PtMP portfolio



WiNDE



NMS
(with Runner and SPE subsystems)



Long Range TU



PtMP Terminal



Compact Node 360°



Mesh Node 360°



Mesh Node 90°

Fiber

PtMP



PtP up to 10Gb FD



PtP up to 1Gb

06

Case Study - Ascent Broadband, Northern CO





Ascent Broadband, Northern CO

- Ascent Broadband Introduction:
 - Started in 2019
 - Coverage of over 40,000 homes
 - ~1000sq mi coverage
- Working with Siklu since 2020
 - (Philip Rose with DR introduced us!)
- Our first 8010 link:
 - 2' dish, DL antenna (AF5xHD for backup)
 - 3.97mi shot
 - Has gone mmWave down 3x in 3 years, total downtime: 27 minutes.



Josh Kinabrew
CTO
Ascent Broadband



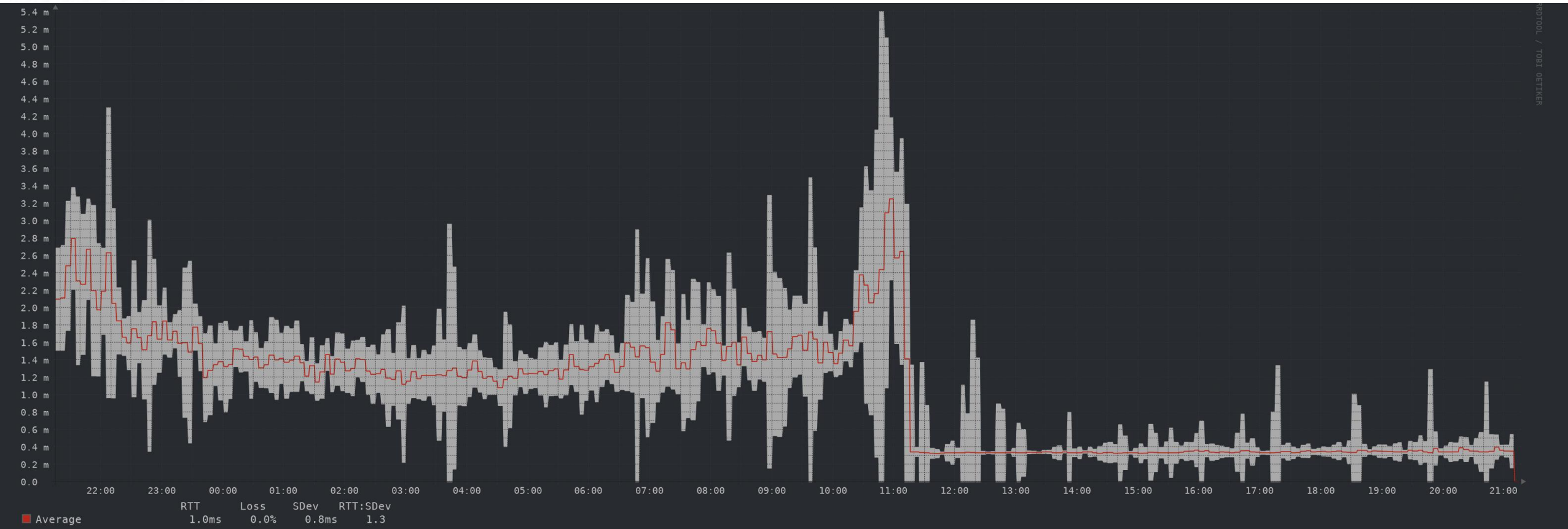


RSSI



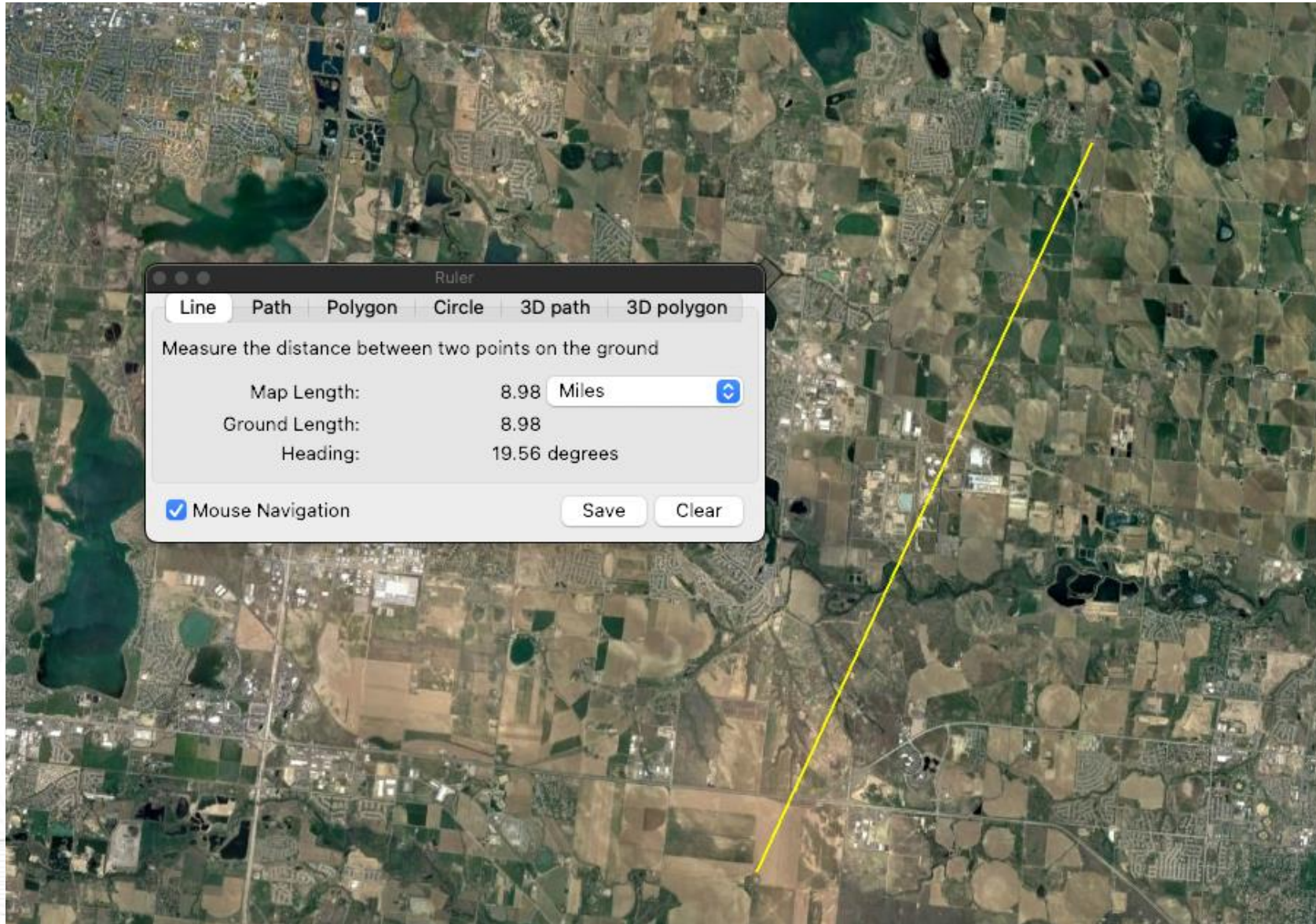


Latency from Ubiquiti mmWave link to Siklu link





9 Mile link

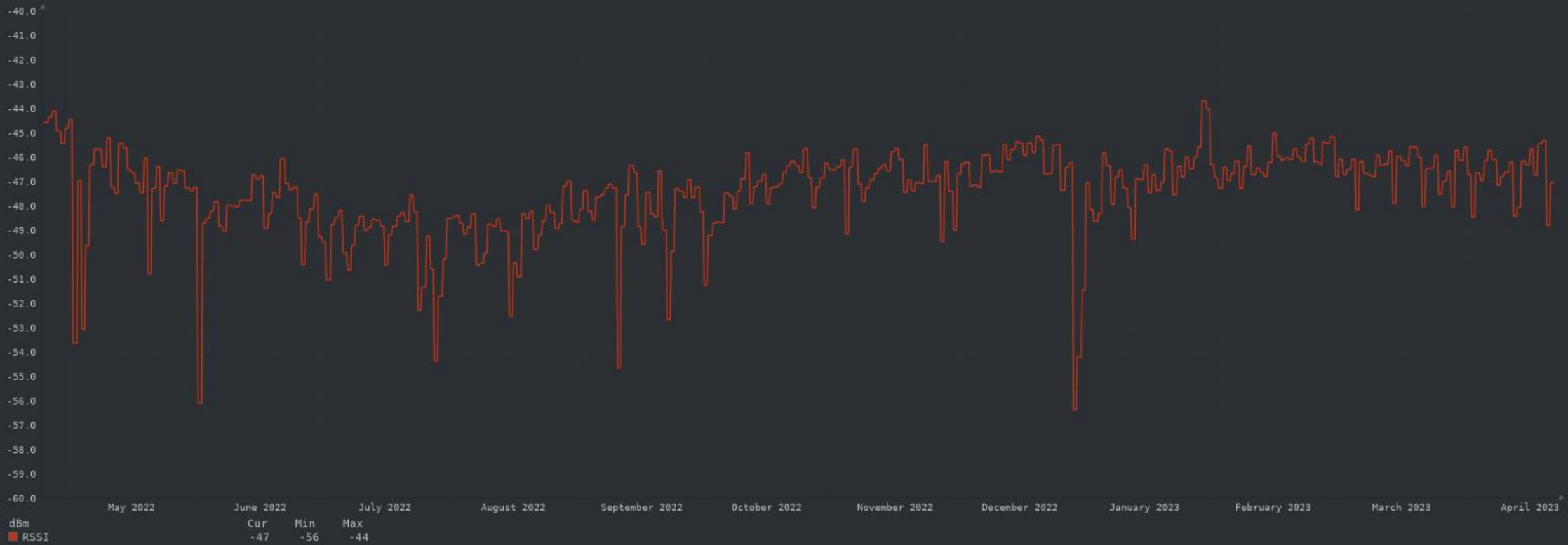




9 Mile link RSSI

Uptime: 99.99% over 12 months

Capacity: 8.1Gbps





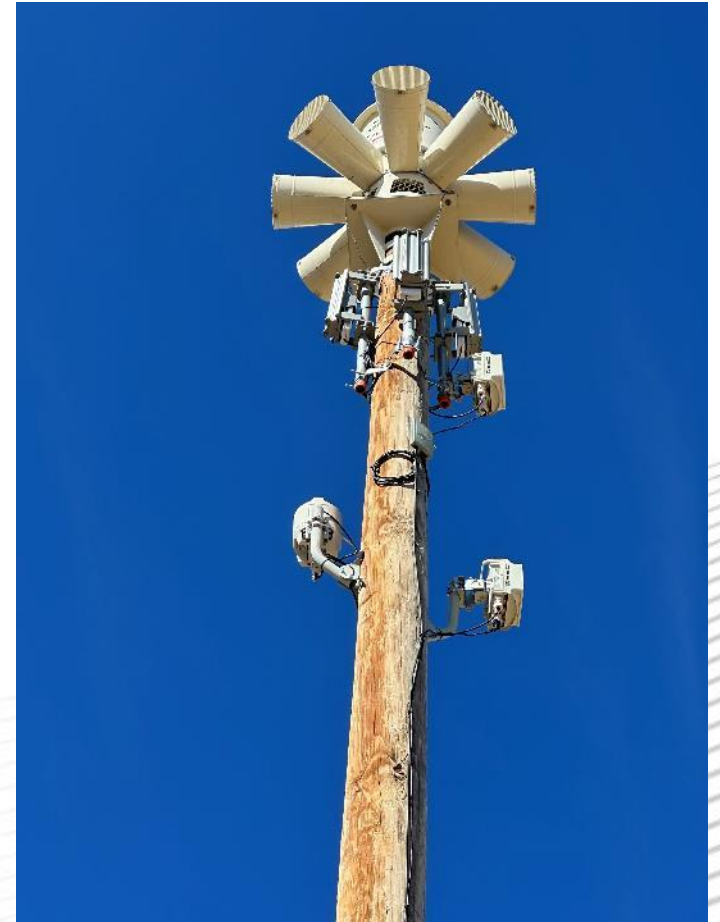
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Brand new tower



Test Network at Ascent HQ

Neighborhood relay on tornado warning tower





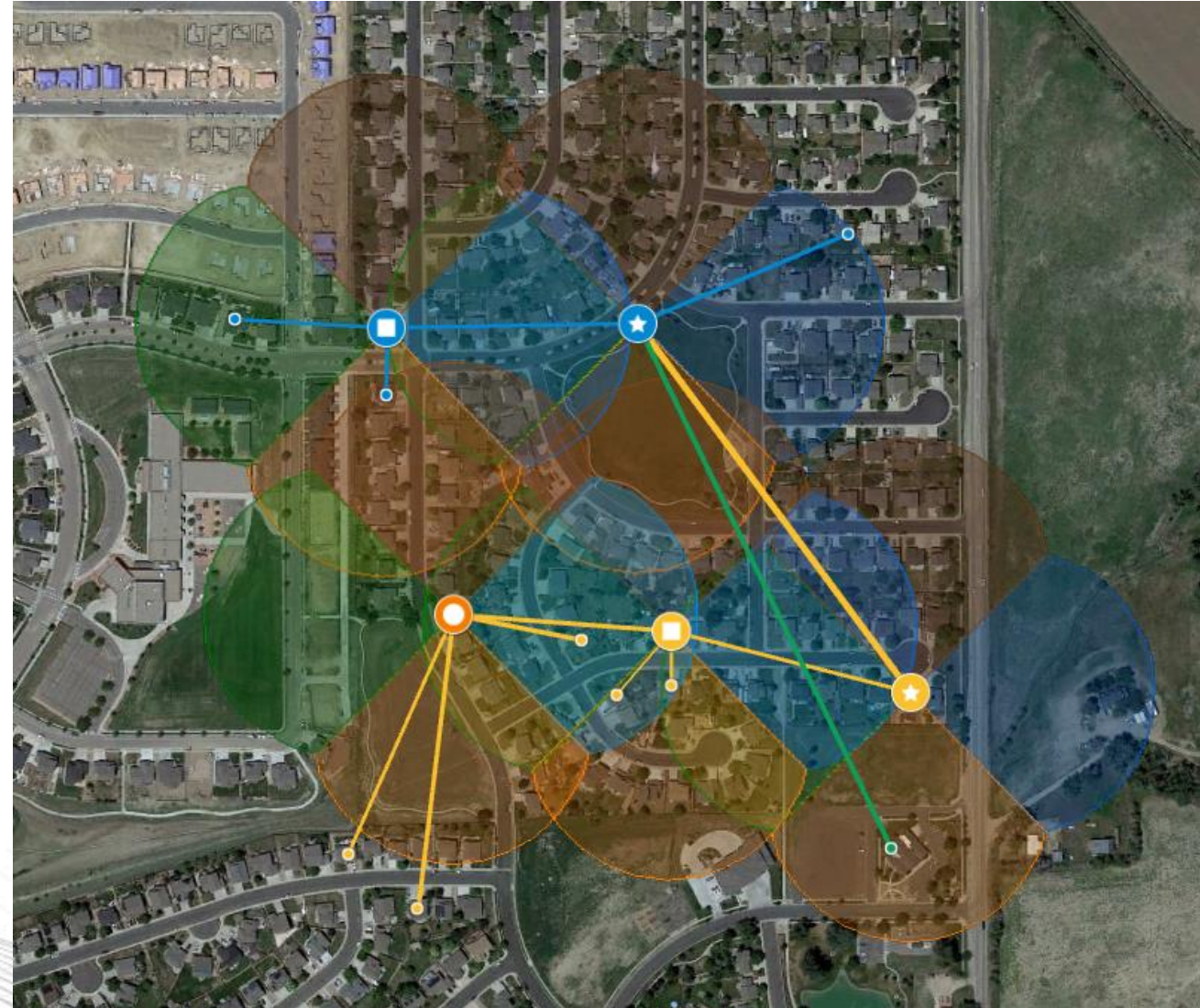
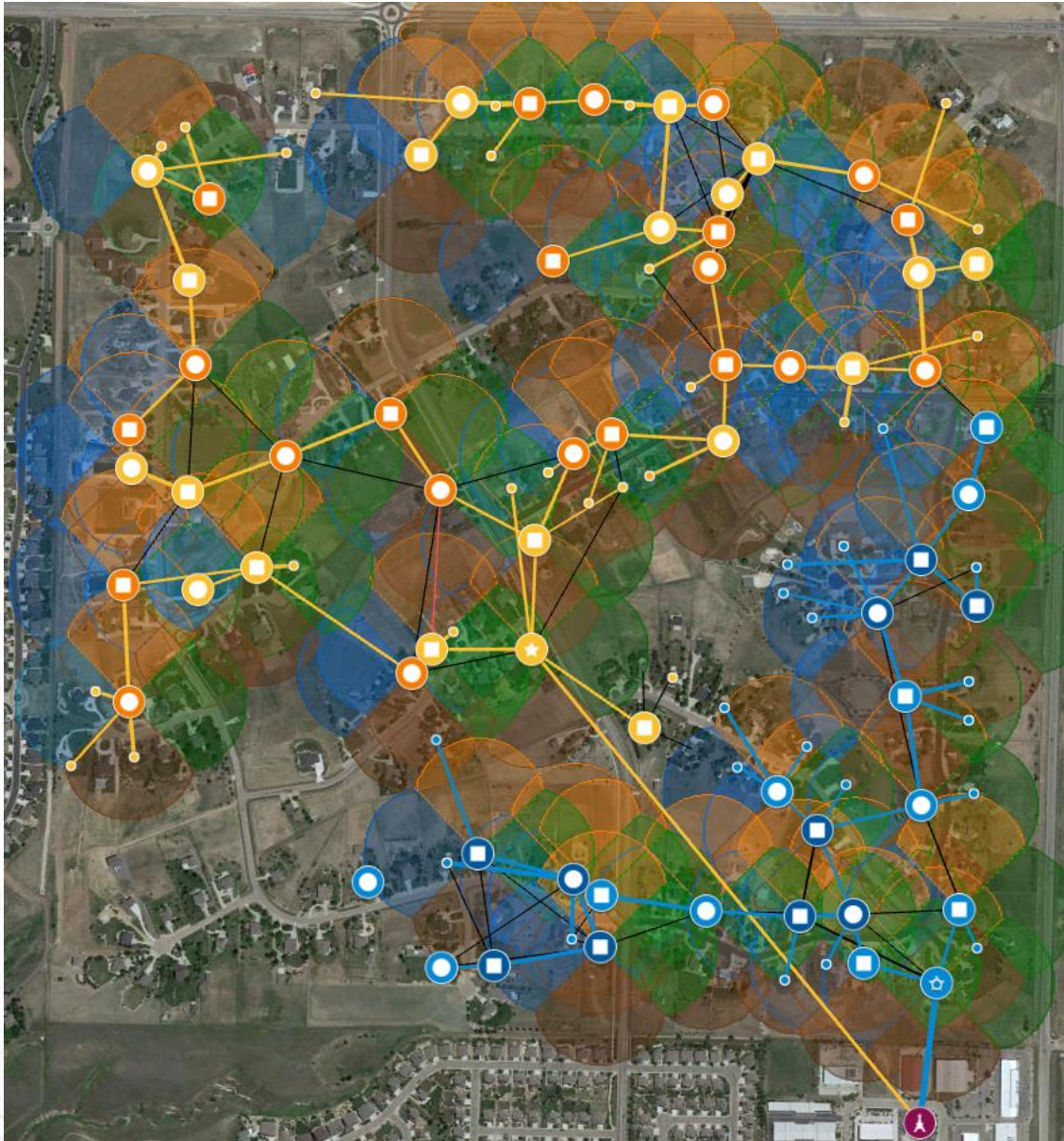
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Cobblestone Estates: A Gigabit-To-The-Home Subdivision



Cobblestone Estates

>100 GTTH connections and growing



Unique Challenges in Cobblestone Estates for mmWave



- Neighborhood built circa 2003
- Incumbent Internet Providers:
 - Qwest/Centurylink DSL (~1Mbps if the Sun is shining)
 - Large Fixed Wireless operator (~15Mbps if a blood sacrifice has been made)
 - T-Mobile Home (100Mbps, >150ms latency)
 - Ascent Broadband (Sub-6GHz Up to 150Mbps, <15ms latency)
- Fiber:
 - Very costly
 - Easement complications (front/rear depending on lot type)
- Siklu Terragraph:
 - Low cost
 - Short Range (N367 tested to ~1200ft)
 - Requires hub/host homes
 - Low latency (<8ms after 17 hops)





Ascent Broadband

Cobblestone Estates: Winter 2023



Summary



Siklu is the **leader** in mmWave solutions



It's a gigabit **world** and **mmWave** is the only frequency that can **deliver**



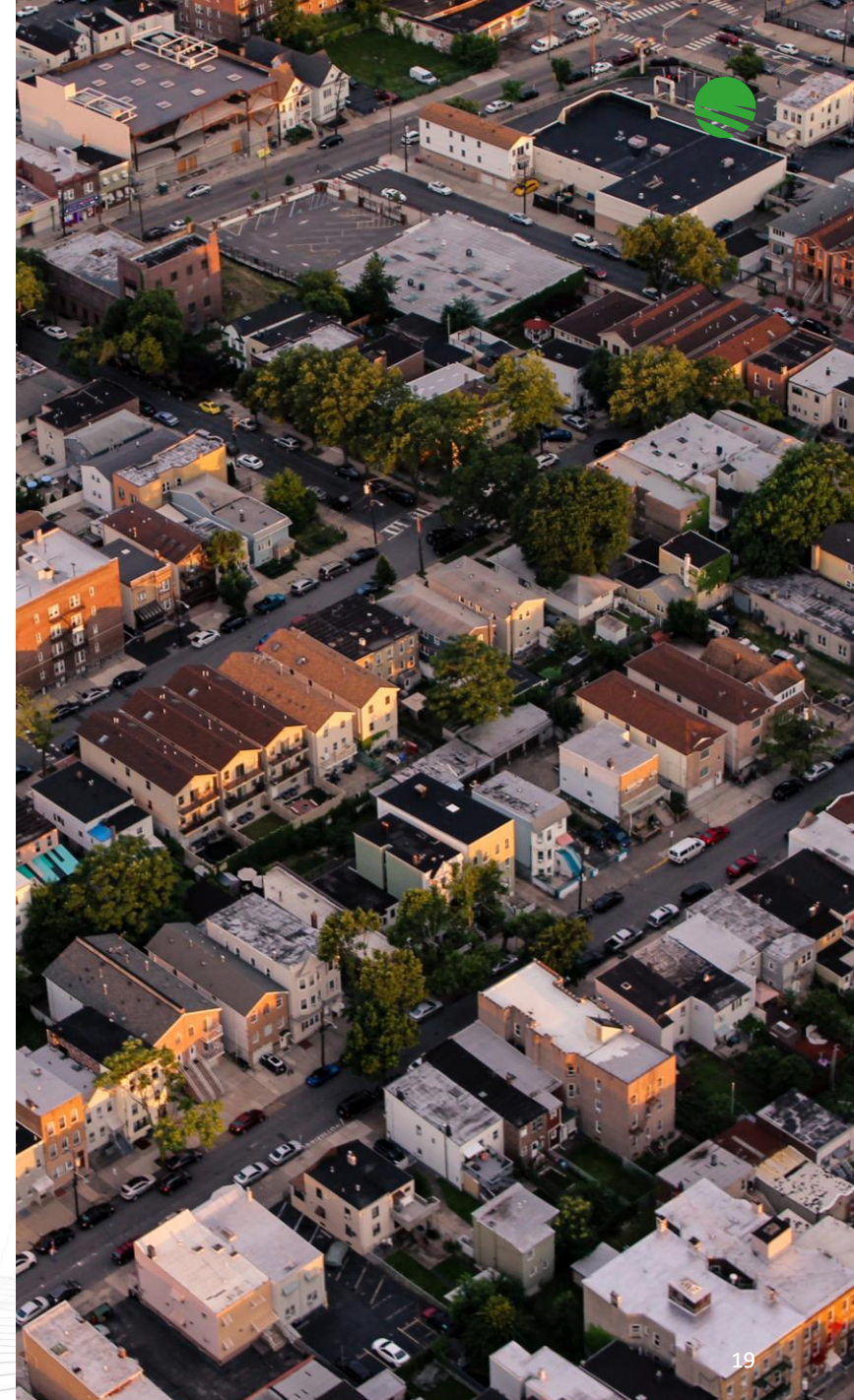
Key Applications are **Smart Cities, Video Surveillance, and Internet Access**



Successfully deployed +100,000 units globally



Fiber performance with Wireless flexibility and cost saving



Q&A

The background of the slide is an aerial photograph of a city, likely New York City, showing a dense urban landscape with numerous skyscrapers and buildings. Overlaid on this image is a network of white, glowing lines that connect various points across the city, symbolizing a communication or data network. The lines are most prominent in the foreground and middle ground, creating a sense of connectivity and flow.

Thank you