



# ACCELERATING THE ROUTE TO CASH WITH GIGABIT OVER THE AIR

David Turner, Head of Product, CCS

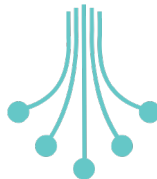


BRINGING THE WORLD TOGETHER

# Our Business Focus



**Connected Home &  
Enterprise Connectivity**



**Fiber Access &  
Fiber Extension**



**Professional Services &  
Solution Integration**



2020 © ADTRAN, Inc.  
CONFIDENTIAL

General Business

YOUR NETWORK. THE WAY IT SHOULD BE.

# Broadband Challenges



## Trenching

Regulations, necessary permits and install that there is no business case for doing so.



## Density

Population density (remote and rural areas) may not make the case for fiber.



## Terrain

Manmade or natural obstructions to laying fiber.



## Spectrum

Scarce, costly and time-consuming to obtain.

An aerial photograph of the London skyline at sunset. The Shard is the most prominent building on the left, its glass facade reflecting the orange and red light of the setting sun. The city extends to the horizon under a dramatic, cloudy sky. A semi-transparent purple rectangular box is centered over the image, containing white text.

# Gigabit society is coming

Next generation gigabit connectivity powering homes, businesses and mobile devices everywhere



# Global demand for gigabit capable connectivity is accelerating ....

Fixed Wireless  
access market:

**\$46bn**

by 2026\*

\* <https://www.marketsandmarkets.com>

Global Wireless  
backhaul market:

**\$63bn**

by 2025\*

\* <https://www.verifiedmarketresearch.com>

# .... supported by government stimulus packages

US

Rural Digital  
Opportunity Fund  
(RDOF)

\$20.4bn

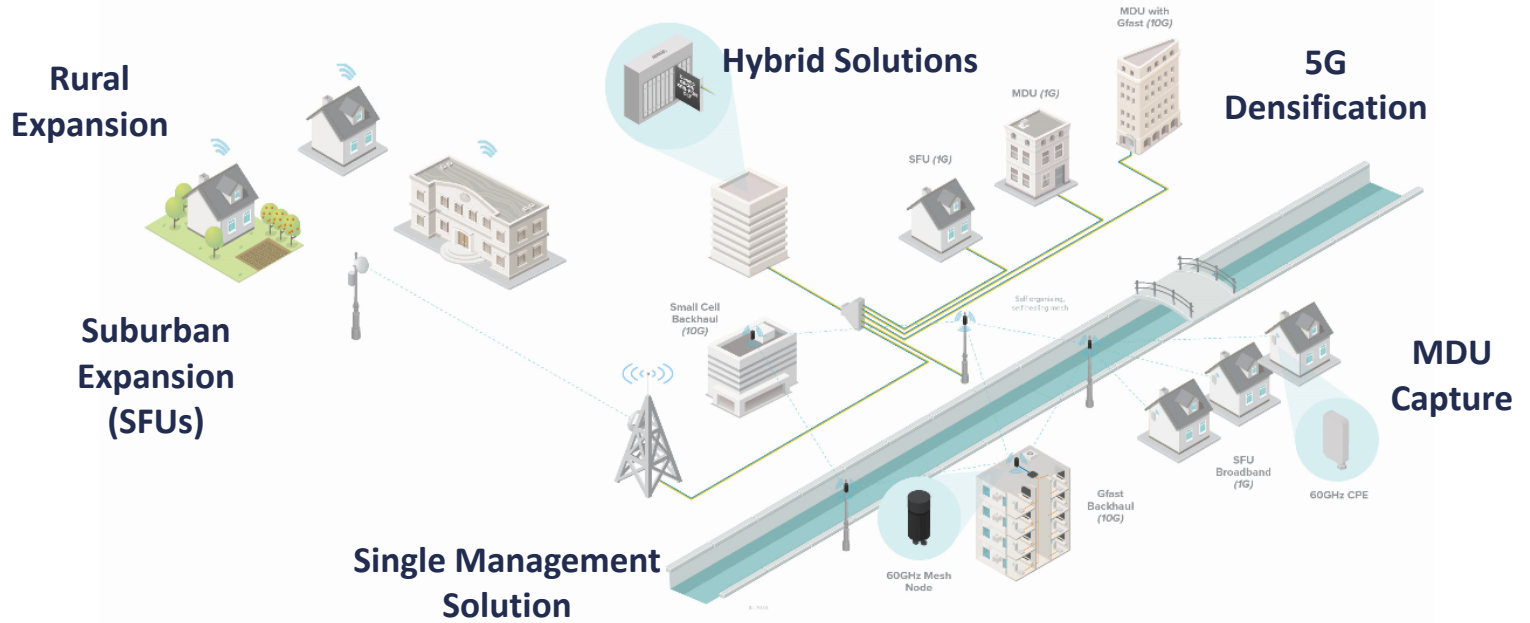
UK

National Infrastructure  
Strategy (gigabit  
component)

\$5bn

BROADBAND DEMAND

# Fixed Wireless Access



2020 © ADTRAN, Inc.  
CONFIDENTIAL

General Business



# Introducing Metnet 60G

60GHZ

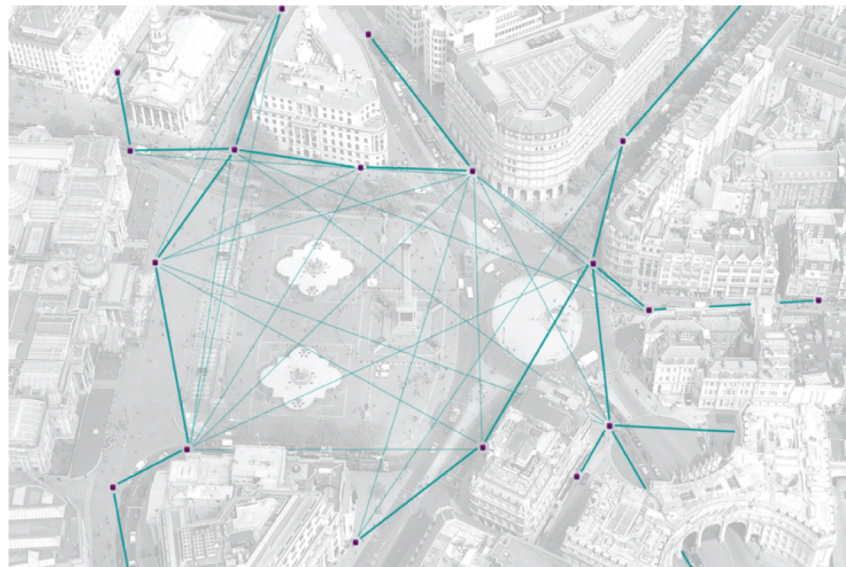


General Business

## TOPOLOGIES

# Mesh (Multipoint-to-Multipoint)

- Typical Service Offering
  - Up to 12Gbps Mesh
  - Gbps Drops (dynamic Backhaul or Service Offering)
- Deployment Model
  - Pole
  - Lamp post
  - Rooftop
  - Non-specialist install
- Line of Sight (LOS) required



60GHZ

# Unique Capabilities

- Industry leading 10+Gbps capacity with SON interference management
- Self-configuring, self-optimising, self-healing
- Mesh enables flexible connectivity and higher network resilience
- Carrier class QoS
- Low latency
- No RF planning or antenna alignment
- Simple one-unit installation, 30min



2020 © ADTRAN, Inc.  
CONFIDENTIAL

General Business



60GHz

# Unlicensed 10Gb Mesh

- Dynamic use of 57 GHz to 71 GHz
  - v1 Mesh Node 4 channels, v2 Mesh Node 6 channels
  - 802.11 ad/ay TDD/TDMA
- 4 radios 300° Horiz, 20° Vert phased array sectors
  - v1 Mesh Node MCS9 2.5Gb, v2 Mesh Node MCS12 4.6Gb
  - Mesh range at full rate ~ 300m
  - Zero frequency planning, interference avoidance
- 2 x 1Gbps + 2 x 10Gbps optical Ethernet interfaces
- AC or DC/PoE



2020 © ADTRAN, Inc.  
CONFIDENTIAL



General Business

60GHZ

# Metnet 60G CPE

- Enterprise/Residential CPE
  - Wall or Pole Mount options
- 1 x 1Gbps Ethernet with PoE
- Single phased array
  - Up to 500m range
  - 30 CPE per radio



2020 © ADTRAN, Inc.  
CONFIDENTIAL

General Business



60GHZ

# QoS/SLA Support

- Native Ethernet
- DHCP Option 82
- 802.1Q
- 802.1P COS
- DSCP
- 8 priority traffic q
- 802.1ad QinQ
- 802.1x
- Northbound Alarm interface



2020 © ADTRAN, Inc.  
CONFIDENTIAL

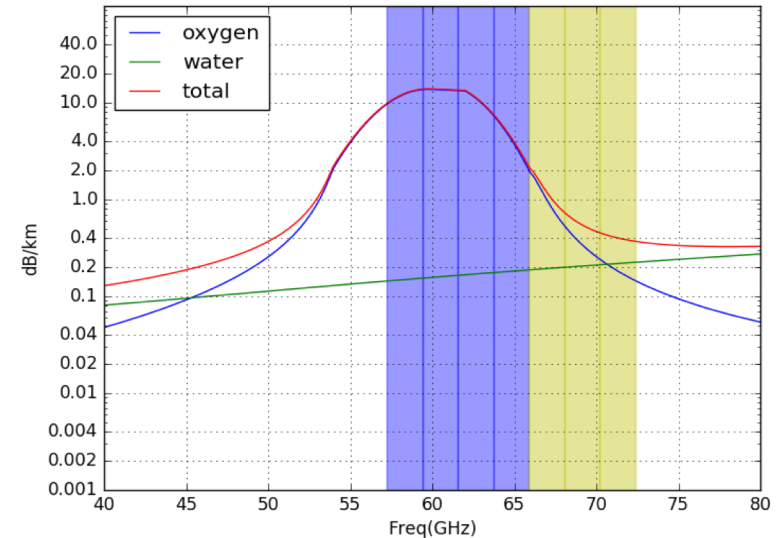


General Business

60GHZ

# 60GHz Band and Link Performance

- 300m link budget calculation
  - Tx EIRP = 40dBm
  - Ch 4 = 64.8 GHz
  - O2 absorption = 1.31dB
  - Path loss = 119.52 dB
  - Rain margin = 2.45 dB (Rp 0.01)
  - Rx SNR = 12.54 dB
  - MCS = 11 = 3.8Gbps @ L1
- Manageable impact from rain and O2 at short distances



60GHz

# 60GHz WiGig Channels

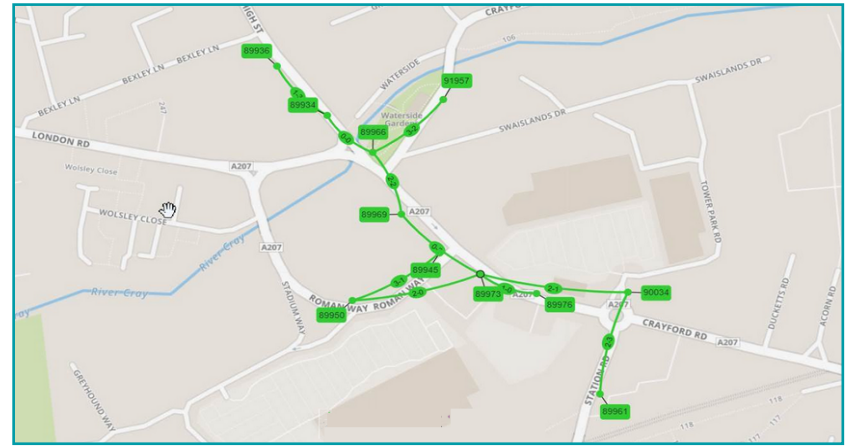
Channel	Centre GHz	Min GHz	Max GHz	Bandwidth GHz	O2 Absorption dB/km
1	58.32	57.24	59.4	2.16	12.91
2	60.48	59.4	61.56	2.16	15.01
3	62.64	61.56	63.72	2.16	12.25
4	64.8	63.72	65.88	2.16	4.36
5	66.96	65.88	68.04	2.16	1.1
6	69.12	68.04	70.2	2.16	0.44

US FCC 47 CFR Part 15.255  
ETSI EN 302 567 CEPT ERC 70-03  
UK Ofcom IR2030/7/4



2020 © ADTRAN, Inc.  
CONFIDENTIAL

# EMS

**ADTRAN**

## General Business



## SINGLE MANAGEMENT PLATFORM

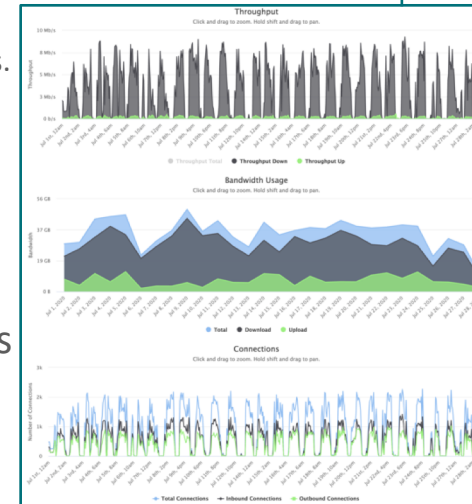
# Mosaic Analytics

- CCS FWA Integration into Mosaic Subscriber Insight (MSI) currently on going (4Q20)
- Learn what the problem is in seconds:
  - See all the circuits for a subscriber and dive in for more details.
  - View information from CCS EMS in the same view for situational awareness.
  - Quickly access equipment port / line stats from the access equipment from the same page.
- Everything you need to understand your network is in one place

**Service Address:** 9046 Twins St, Brainerd, MN 56401, USA  
**Site:** Node 01 DSL  
**Port:** Port: 1/1/2, CID:  
**Port Speed:** 6MB/1MB (Provisioned: 6198K/998K)  
**Max Attainable:** 21372K/12372K  
**Device Type:**  
**Device Serial #:** EA841  
**Learned MACs/IPs:** 14:54:47:3e:56:ff 18.78.133.242 0  
1 leases Lease History

**SMART/RG:**

**Name:** SR515ac - 963168\_OT142C\_B  
**Serial:** 3C90664E7004  
**Firmware:** 2.6.1.5  
**Devices:** 5 View Devices  
**Public IP:** 218.161.180.54  
**Link Speed:** 21.38 Mbps down / 3.55 Mbps up  
**Last Inform:** 0d, 0h, 18m and 51s ago  
**First Inform:** Oct 20th, 2017  
[Open in Device Manager](#)



General Business

60GHZ

# Discrete Profile



2020 © ADTRAN, Inc.  
CONFIDENTIAL

Metnet 60G City of London – ONTIX network Currently >100 nodes

General Business



Visit

[adtran.com/FWA](https://adtran.com/FWA)

[adtran.com/RDOF](https://adtran.com/RDOF)

for resources, case studies, and more  
information