

ADTRAN

Metnet 1200

Self-organising mmWave Access and Backhaul Node



1.2 Gbps



Mesh



Weather-Hardened

Key Applications

- Fiber Extension and Gfast Backhaul
- Small Cell Backhaul
- Pre-5G FWA and Enterprise
- Wi-Fi Backhaul
- CCTV Backhaul

Overview

Metnet nodes connect autonomously to form flexible Multipoint-to-Multipoint (mesh) self-organising (SON), self-healing links that dynamically reconfigure to optimise performance and spectral efficiency as loss of sight or non-line of sight circumstances or traffic levels change. The CCS Metnet system enables mmWave deployment in a flexible, organic manner allowing customers to start small and grow as they go.

The Metnet system operates in a single frequency channel with no radio frequency planning required. Frequency reuse in the entire network is one. Each node has a wide 270-degree field of view, so only one unit is required per site,

rather than multiple radios. There's no need for any manual alignment and each node supports multiple connections for higher resilience.

The nodes poll the network continually and automatically determine the optimal topology to deliver capacity where needed. Each cluster runs a Spatial-time division multiple access transmission schedule, which allows links to operate simultaneously to increase the overall capacity delivered to each node.

1.2 Gbps throughput is achieved using a dual channel Time Division Duplex radio (in a single 112 MHz channel pair) operating at 256 quadrature amplitude modulation. The radio features a wideband diplexer which is software configurable for any channel between 24-29 GHz.



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Product Specifications

Metnet 1.2 Gbps

- **Technology:** Self-organising (SON) multipoint-to-multipoint (MPtMP) and point-to-multipoint (PtMP)
- **Capacity:**
 - ◆ 1.2 Gbps single node
 - ◆ 2.4 Gbps dual node
 - ◆ UL and DL ratio 100% dynamically configured
- **Latency:** <1mS
- **Topology:** Flexible MPtMP (Mesh), MultiHop, PtMP or PtP
- **Scalability:** Interference management enables the system to scale infinitely

Radio

- **Frequency bands:**
 - ◆ 26 GHz band (24.25-26.5 GHz)
 - ◆ 28 GHz band (27.5-29.5 GHz)
- **Channel sizes:**
 - ◆ 56 MHz and 112 MHz ETSI, and 100 MHz FCC
 - ◆ Single frequency channel used across all nodes
- **Radio access method:** Dual-TDD
- **Radio transmit power:** +18.5 dBm with adaptive power control
- **Modulation and coding:** Hitless Adaptive Modulation QPSK ½ FEC to 256 QAM 4/5 FEC

Services

- **Ethernet services and QoS:**
 - ◆ Native Ethernet
 - ◆ 802.1Q (VLAN tagging)
 - ◆ 802.1p (Class of service)
 - ◆ Differentiated Services Code Point (DSCP)
 - ◆ 802.1ad (QinQ)

■ Synchronisation:

- ◆ GPS-derived synchronisation providing local master SyncE and 1588v2 PTP clock to the small cell (G.826x/G.827x)
- ◆ 1588v2 Transparent Clock (G.8273.2)
- ◆ Recovery from core network SyncE and 1588v2 PTP
- ◆ Proprietary distributed radio synchronisation to overcome GPS failures

Antenna

■ Antenna gain:

- ◆ Standard node: +19 dBi integrated sectors
- ◆ High gain node: +33 dBi (20 cm) or +43 dBi (60 cm)

■ Antenna coverage:

- ◆ Standard node: 270° horizontal x 20° vertical using 16 antenna array
- ◆ Each sector azimuth is 34°
- ◆ High gain node: 4° horizontal x 4° vertical

■ Range:

- ◆ Standard node: 2km
- ◆ High gain node: 6km

Node Characteristics

■ Size:

- ◆ Standard node: 185 mm height; 202 mm diameter, 2.3 litres
- ◆ High gain node: 260 mm height; 535 width; 270 mm length

■ Power requirements:

- ◆ 100V – 240V AC / 50 – 60 Hz
- ◆ 48 V DC and PoE (1 x PD interface IEEE 802.3bt)
- ◆ 35W consumption
- ◆ Power connection via IP67-rated connector

■ Interfaces: 2 x GE electrical interfaces via IP67-rated connectors

■ Node MTBF: 25+ years. System MTBF approaching infinity due to self-healing mesh



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