

# #WiFiDesignDay

by Ekahau and Open Reality



**Cambium Networks™**

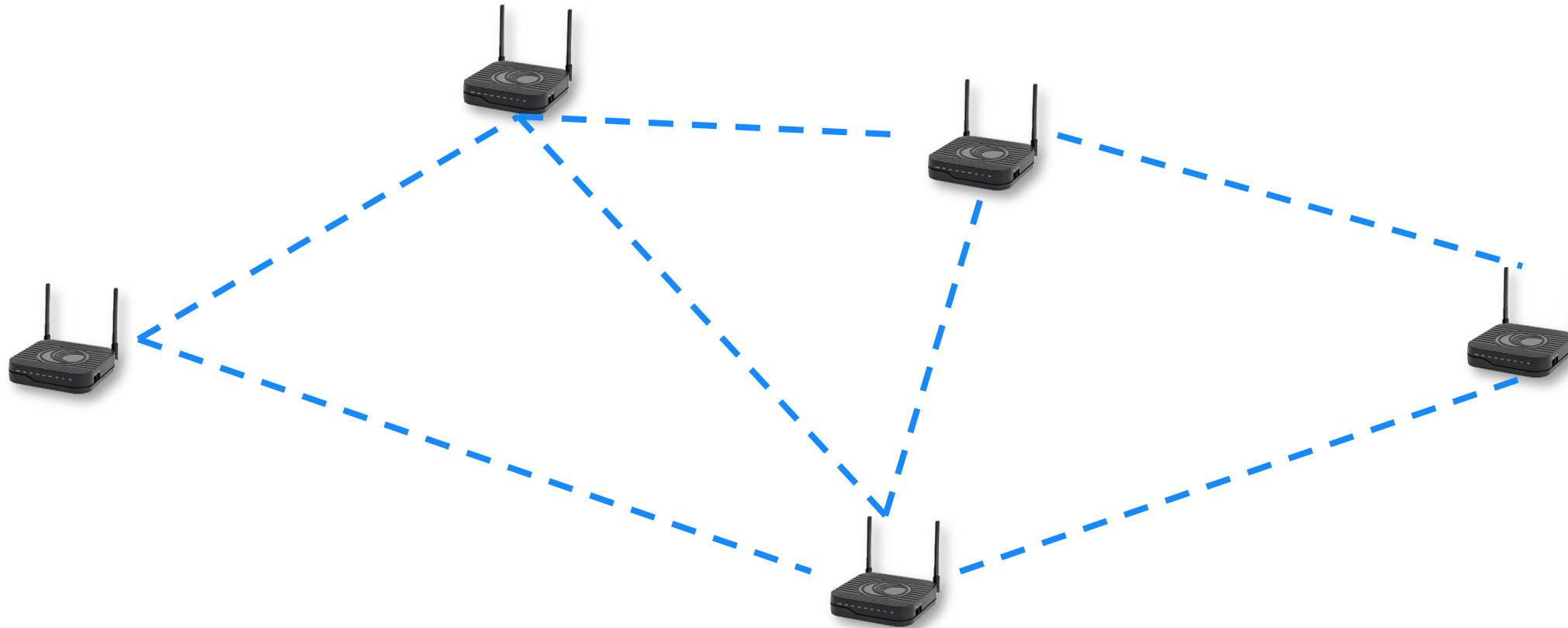
**Mesh Wi-Fi and How 802.11ay Can be Used to Improve Outdoor Deployments.**

Marc Jackson

EMEA - Regional Technical Manager

UK, Ireland & Nordics.

# What is Mesh WiFi & Why is it Used?





**Residential – indoors/outdoor**

**Enterprise – indoor/outdoor**

**External – high street / shopping village  
– pop up events / camp sites**

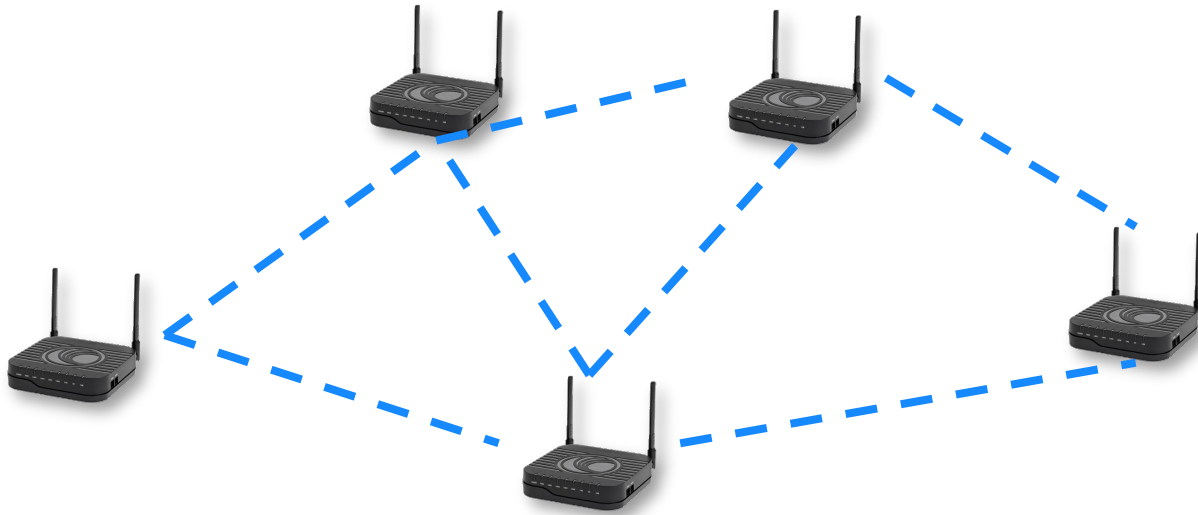


Plan images from <https://www.roomsketcher.com/>  
Plan images from <https://www.westlandscapemagazines.com/>

# Are there any downsides?

**Performance and Density:**

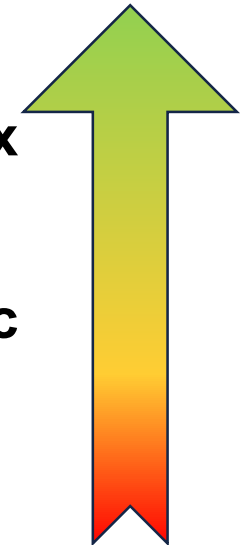
**But...**



**802.11ax**

**802.11ac**

**802.11n**



How can we improve deployments?

Cable

FWA

Operates in 57.24ghz to 70.2ghz

Divided into 6 channels (USA ch1-6 EU ch1-4)

Bandwidth 2.16ghz

Low latency 1ms

Symmetric throughput

802.11ad

802.11ay

Terragraph

O2 absorption

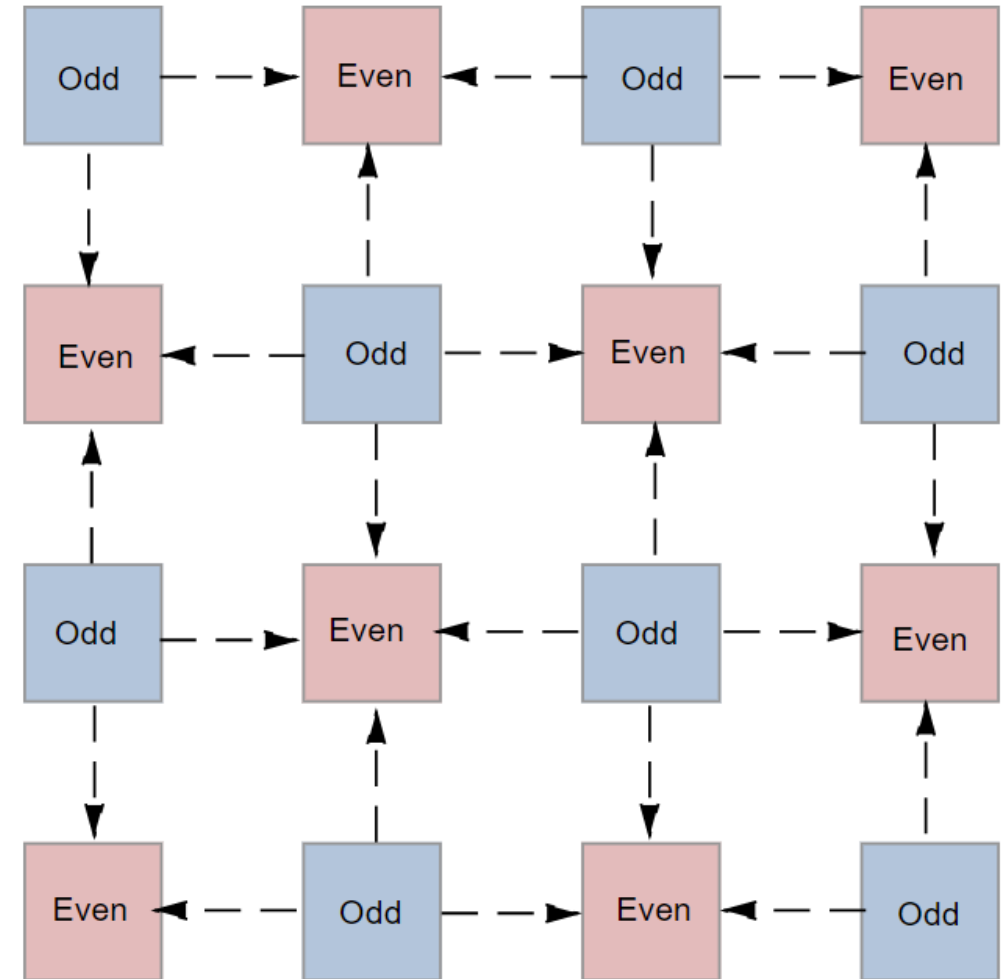
Rain absorption

Short range (upto 350m with beam forming 1.5-2km with high gain directional antenna)

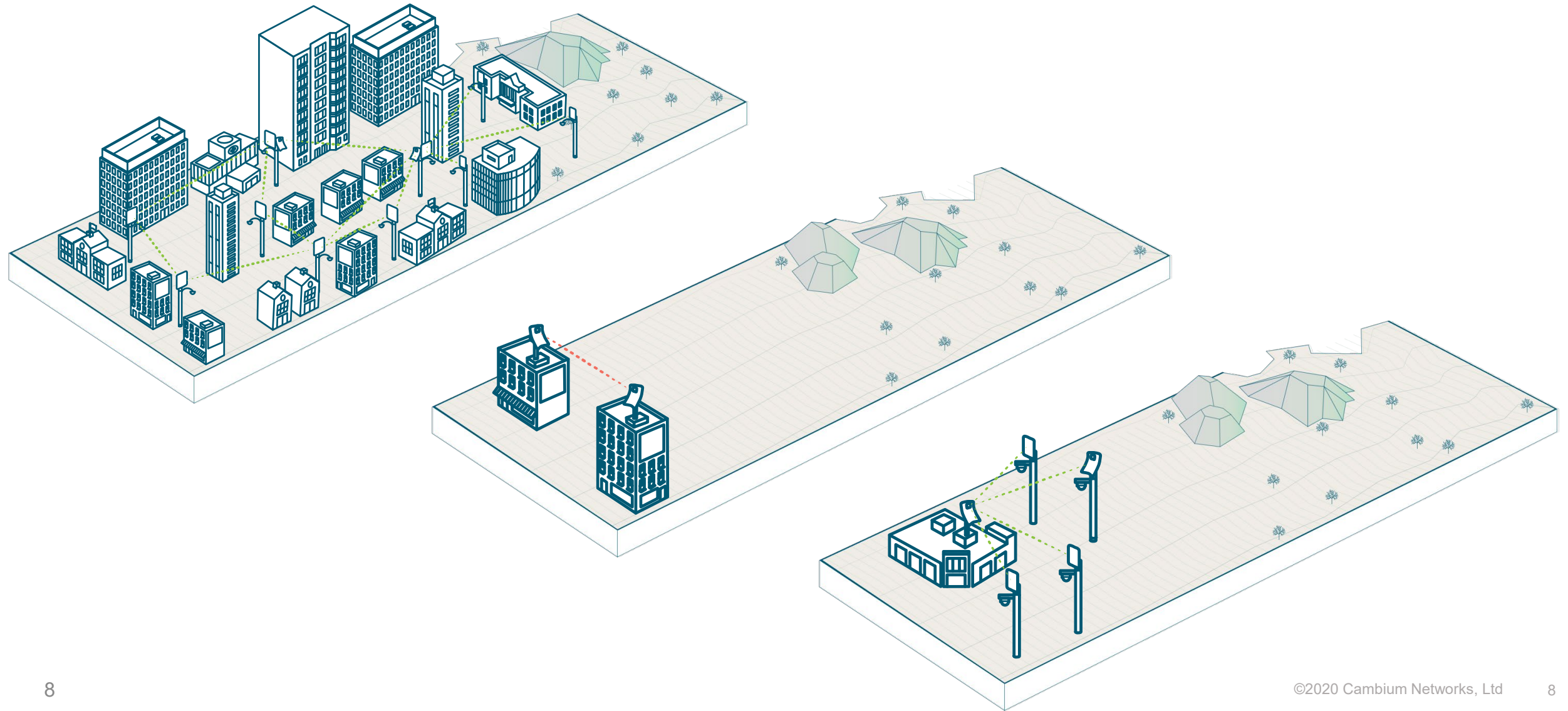
Requires line of sight.

	Product 802.11ad based	Product 802.11ay based
Protocol	802.11ad (2016)	802.11ay
CPE per Sector	8	15
Sector Maximum Throughput (L1)	5 Gbps	10 Gbps
Maximum Channel Width	2160 MHz	4320 MHz with Channel bonding
Channel Access	CSMA	TDMA
Network Synchronization	No	TDD
Configuration	PTP, PMP	PTP, PMP, Mesh

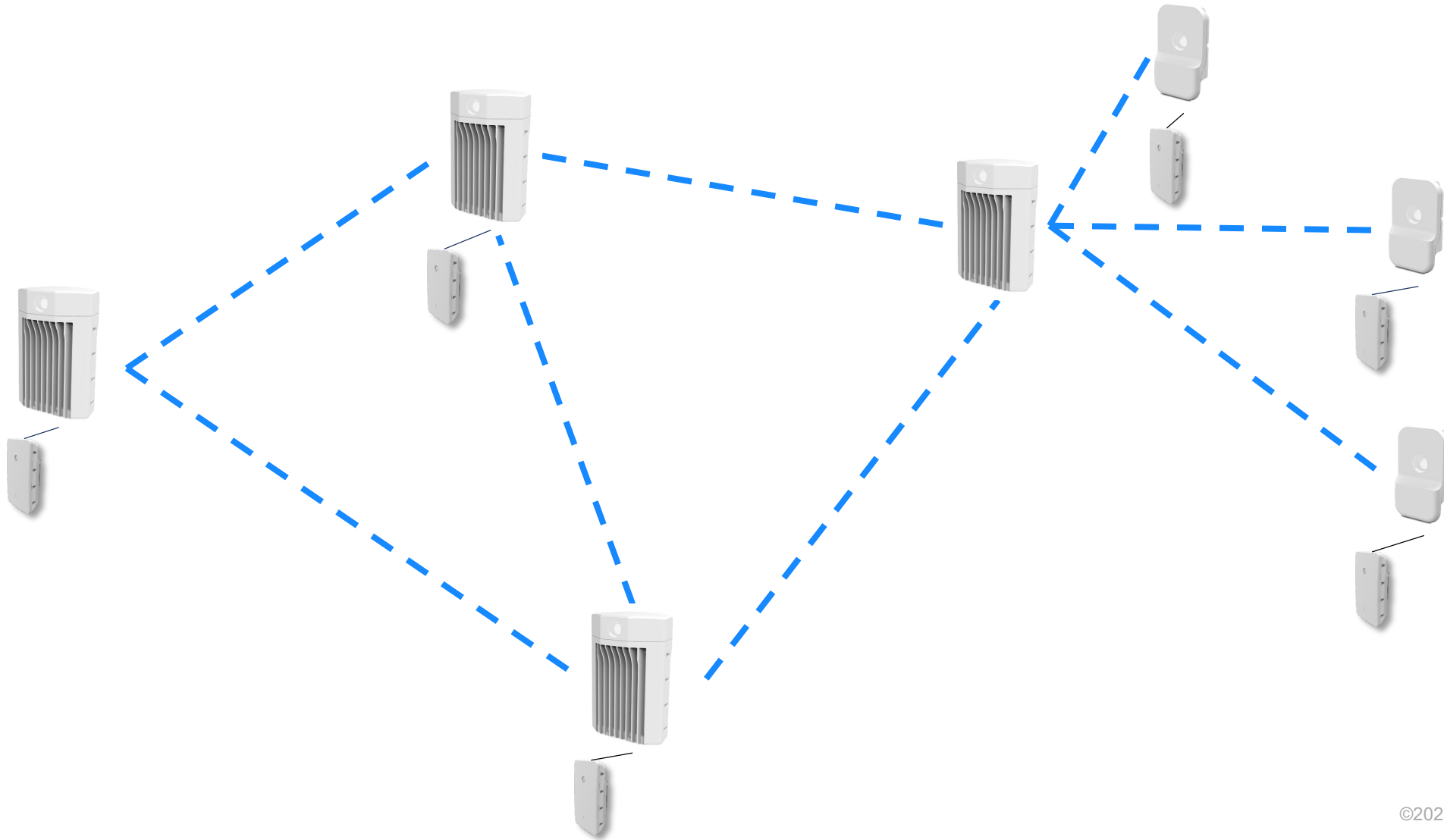
- Synchronization is used to control the transmit and receive of signal to prevent self-interference
- Radios assigned with same polarity will be transmitting and receiving at the same time.
- Two types of Polarity
  - Odd
  - Even
- cnWave support **single channel operation** across the network with TDMA-TDD frame structure. The requires precise time synchronization.
- All cnWave radio are time synchronized. The synchronization is achieved through GPS and Cambium Sync technology.



*Polarity: Sectors alternate between transmission and reception*







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