Introduction & Technical Product Overview

Vardin Amiri
Senior Sales Engineer

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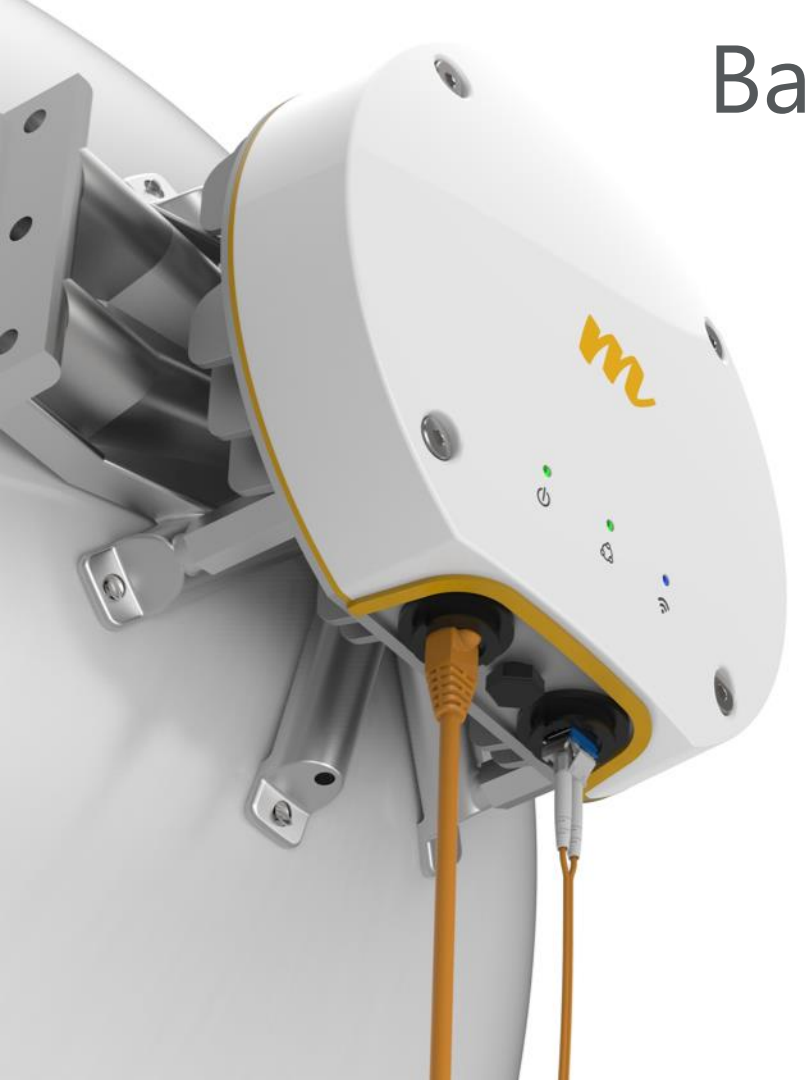
@GoMimosa
Mimosa Networks

mimosa

Worldwide Leader in Hybrid Fiber Wireless (HFW) Solutions

Mimosa HFW Provides:

- Fiber-fast broadband connectivity in suburban & urban, and hard-to-reach rural areas
- Price/Performance far superior to copper, fiber, and alternative wireless technologies
- Unprecedented levels of efficiency, sharing scarce spectrum concurrently across an entire network
- Rapid, easy deployment of voice, video, and data services



Background

- Founded in 2012
- Funded by NEA and Oak
- 4000+ ISP & enterprise customers
- Deployed in 175 countries
- Global operations
  - Santa Clara Headquarters
  - Istanbul Development Office

Our Heritage & Mission

Carrier-centric DNA from the beginning:

- Grew up in times of ADSL, VDSL2, & FTTH
- Designed for industry-best CAPEX
- Focused on OPEX reduction & Spectral Efficiency
- Passionate about subscriber experience, support, and our customer satisfaction
- **Mimosa Mission: to be our customers' strategic, value added partner; enabling them to successfully, and cost effectively implement Hybrid Fiber Wireless (HFW) Access Networks**

mimosa

Executive Team

FOUNDER

Brian Hinman
CEO, President and Chairman

Oak Investment Partners Venture Partner
2Wire President/CEO/Founder
Polycom President/CEO/Founder
PictureTel VP Eng, Co-Founder

FOUNDER

Tabetha Hinman
CMO/CAO
Sugar Publishing Chief Operating Officer
2Wire General Counsel
Gunderson Dettmer Associate

Jaime Fink
CTO, FCC BDAC
Pace SVP Tech Strategy
2Wire CTO
Zhone Director PM
Polycom PM & Care

FOUNDER

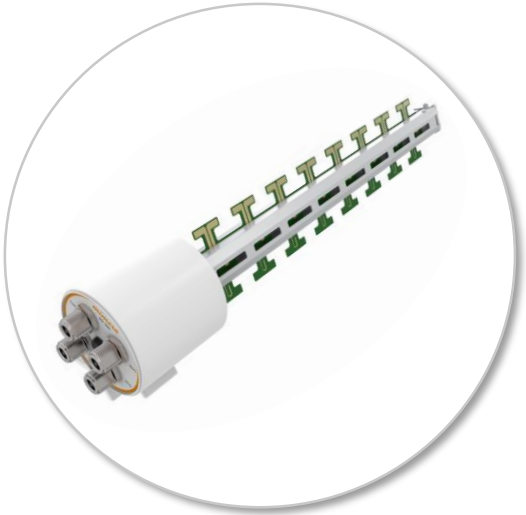
Eric Williams
Chief Financial Officer
SORAA CFO
Flex VP Finance
Rambus VP Finance
LSI VP Finance

Eric Presworsky
Chief Product Officer
Zhone/DZS CTO
Lucent/Ascend VP Carrier Systems
XCOM/Level 3 Dir. Product Development

John Colvin
SVP Global Field Operations
Calix SVP Sales Americas
Cisco Sr. Director WW Tech Operations
Cerent Dir. Sales National Carriers
Alcatel Account VP AT&T

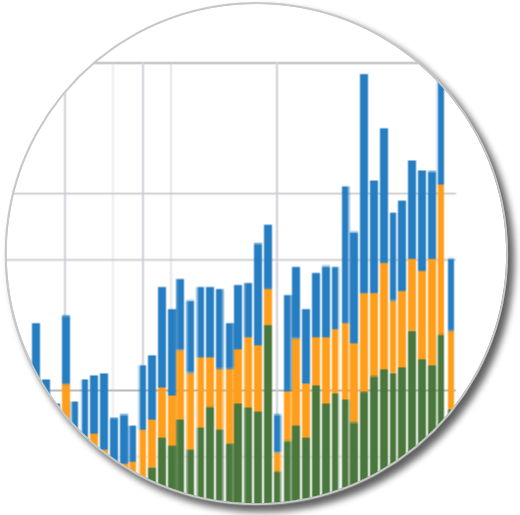
Aon Mujtaba
SVP Engineering
Apple Director Wireless Systems
Infineon Sr. Dir Wireless Concept Eng.
Agere Dir. Wireless Systems Eng.
Bell Labs Research Director

Why Mimosa?



Leading Technology

Highest spectral efficiency at 1/10th the cost of LTE-based solutions



Winning Share

Steady growth rate with 135K+ units in use in over 175 countries

Proven Executives

Experienced growth phase executive team with numerous startup exits

Award-Winning Technology

PRODUCT OF THE YEAR
TMC

BEST CUSTOMER SUPPORT
Wispapalooza

BEST USER INTERFACE
Wispapalooza

LOWEST COST/ BIT 40 & 80 MHz
Wispapalooza

BEST FEATURES AND FUNCTIONS
Wispapalooza

TOP 100 COMPANY
Red Herring

MANUFACTURER OF THE YEAR
Wispapalooza

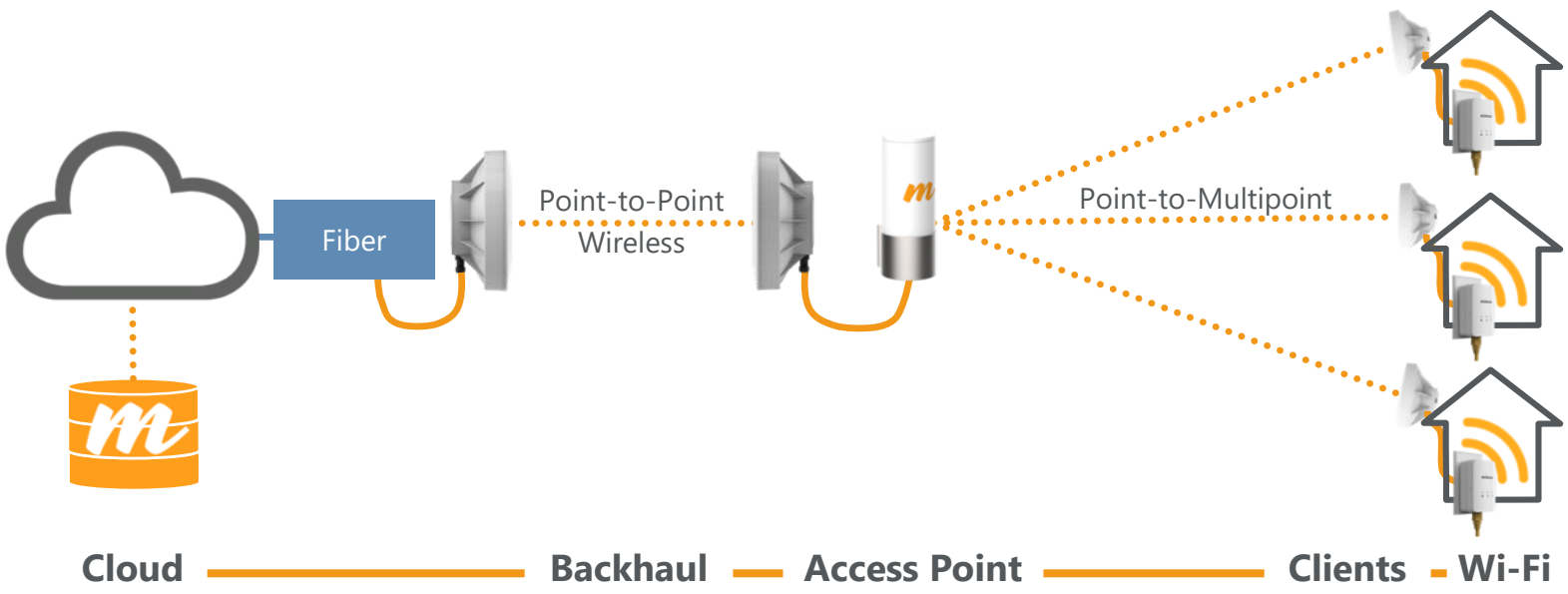
TECHNOLOGY PIONEER
World Economic Forum

HIGHEST CAPACITY 80+ GHZ
Wispapalooza

BEST NEW VENTURE
Wireless Broadband Alliance

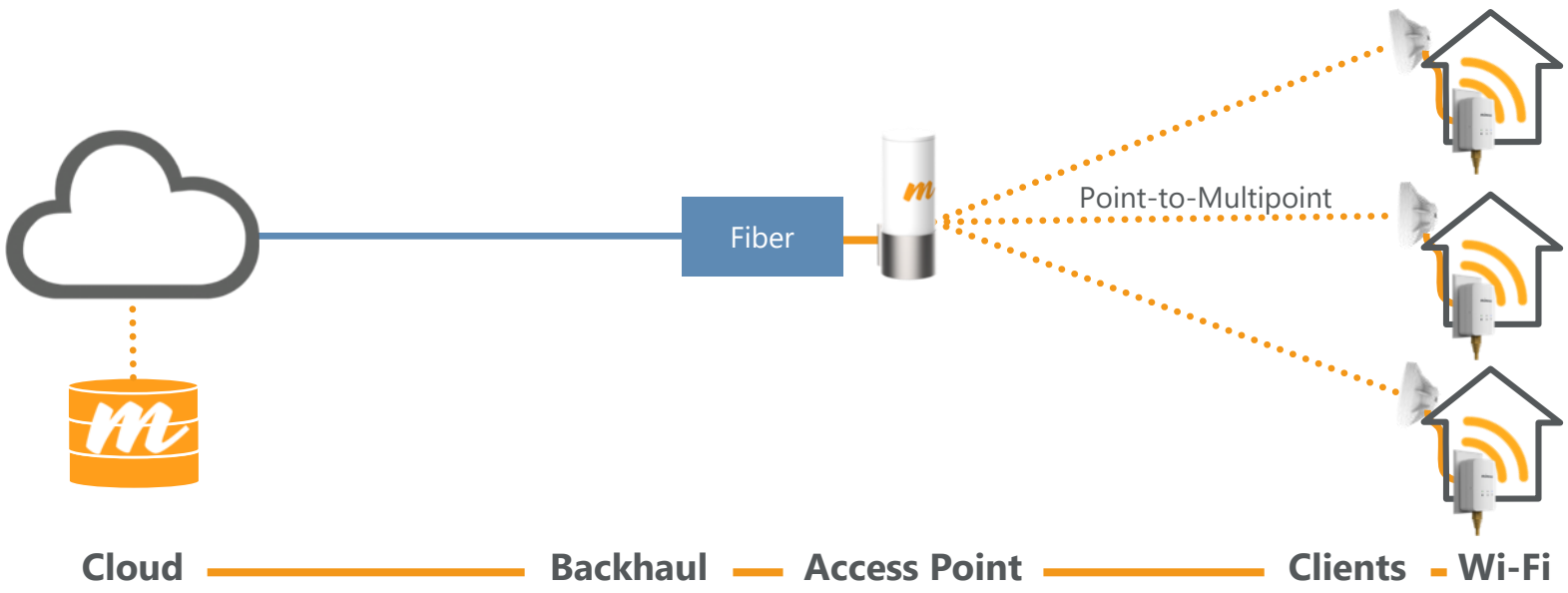
mimosa

Our HFW solutions connect dense urban and hard-to-reach rural homes with the fastest deploy time and ROI.



mimosa

Our HFW solutions connect dense urban and hard-to-reach rural homes with the fastest deploy time and ROI.




Rural
Broad tower coverage fiber alternative for high-cost broadband rural areas


Suburban
Low-cost alternative in suburban dense markets to FTTN & FTTP. Competition to Cable.


Building-to-Building licensed and unlicensed solution with advanced distribution to units
Urban


Public-Private and Utilities, city-wide Wi-Fi, and Digital Divide
Central Av
Smart Cities

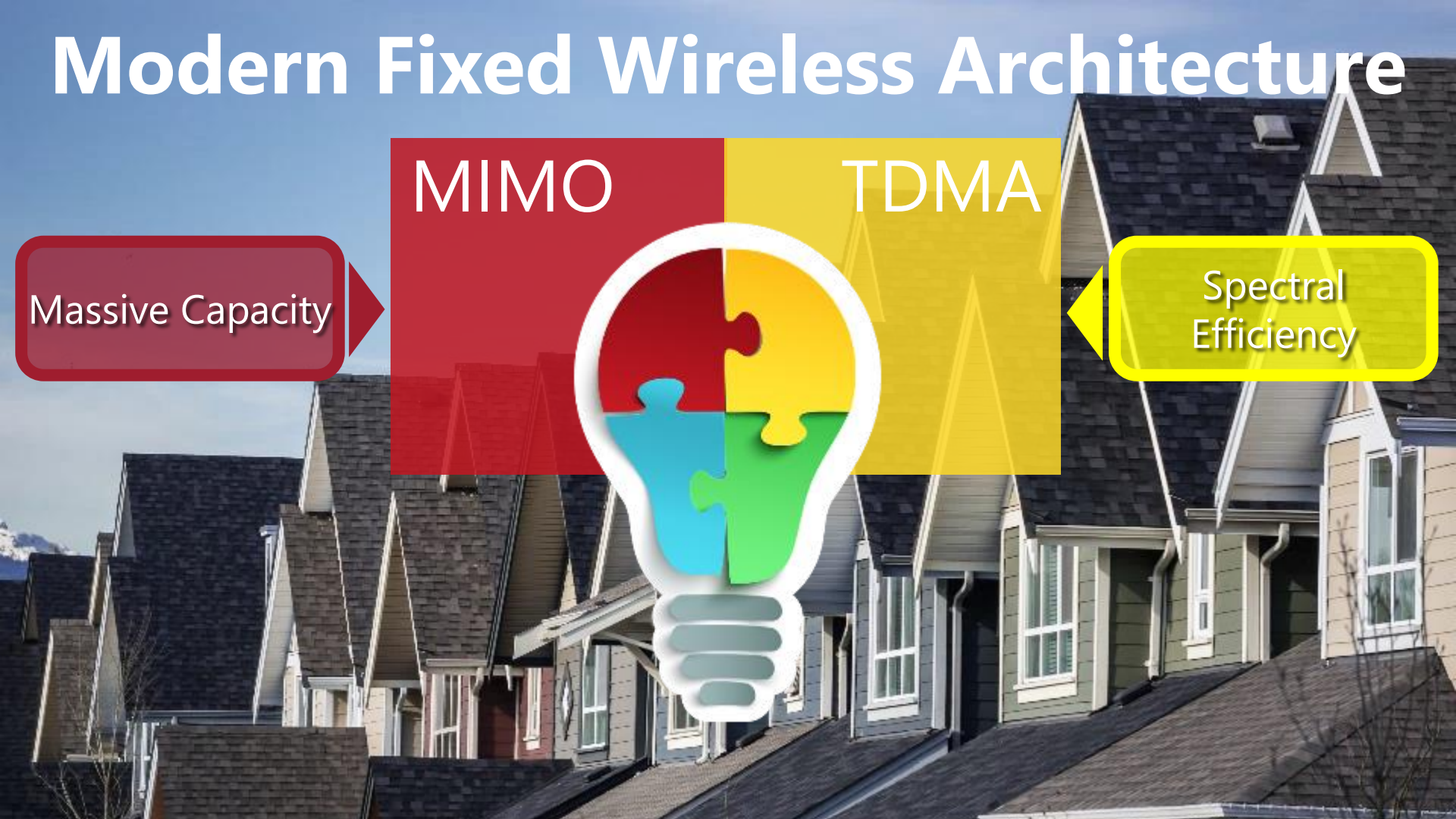
Modern Fixed Wireless Architecture

Modern Fixed Wireless Architecture

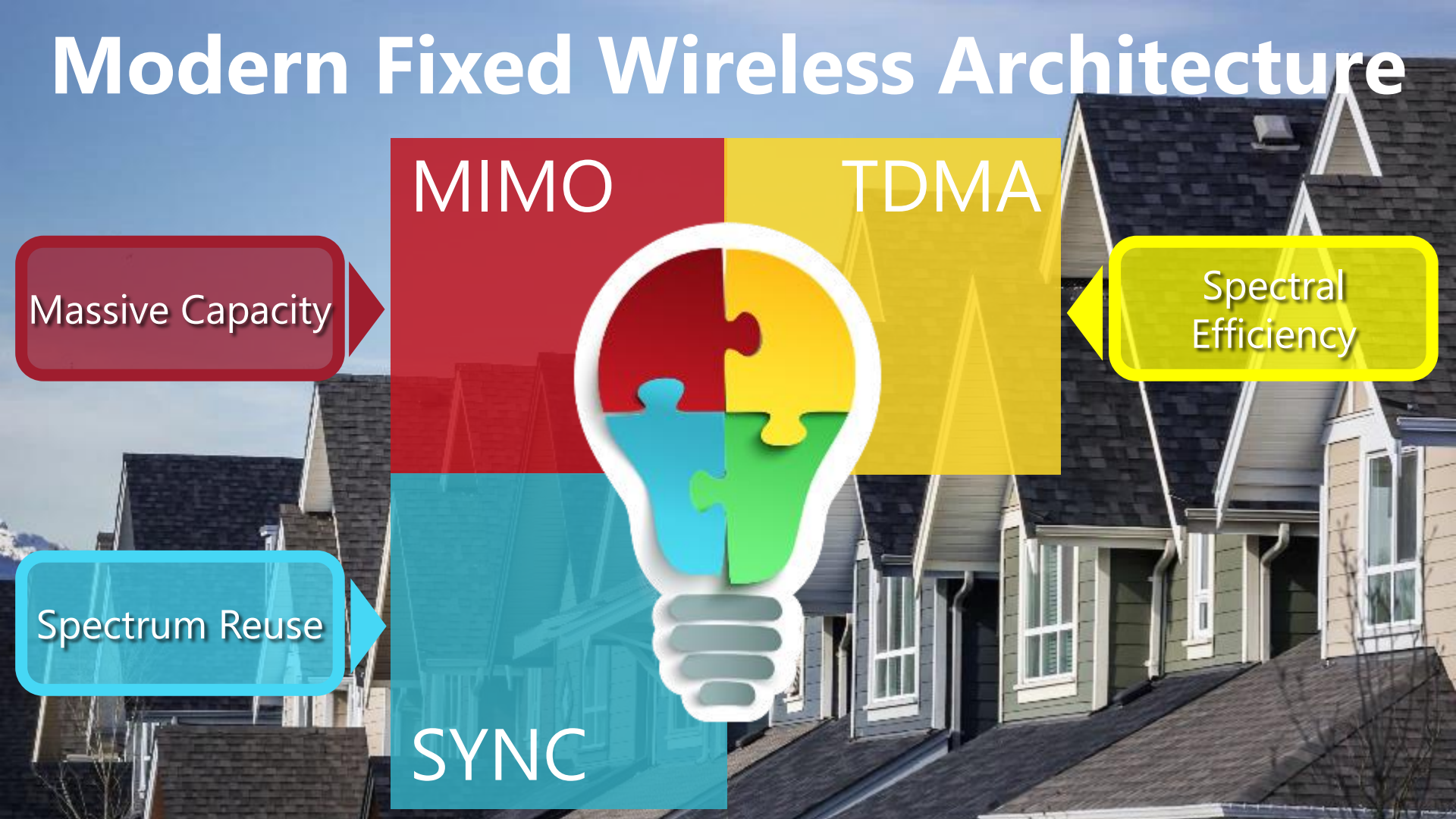
MIMO

Massive Capacity

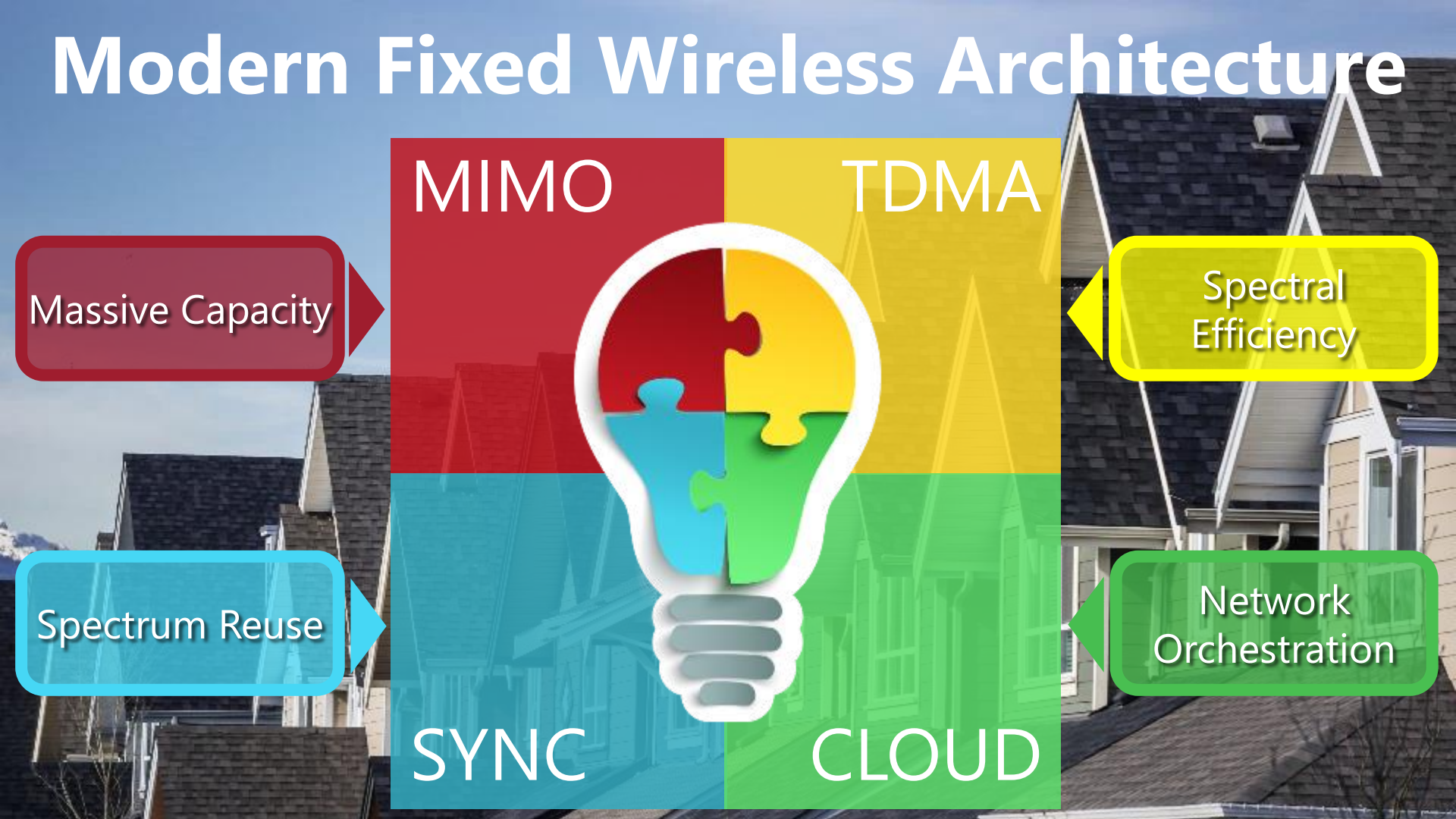
Modern Fixed Wireless Architecture



Modern Fixed Wireless Architecture



Modern Fixed Wireless Architecture



Products

Mimosa Solution Nomenclature

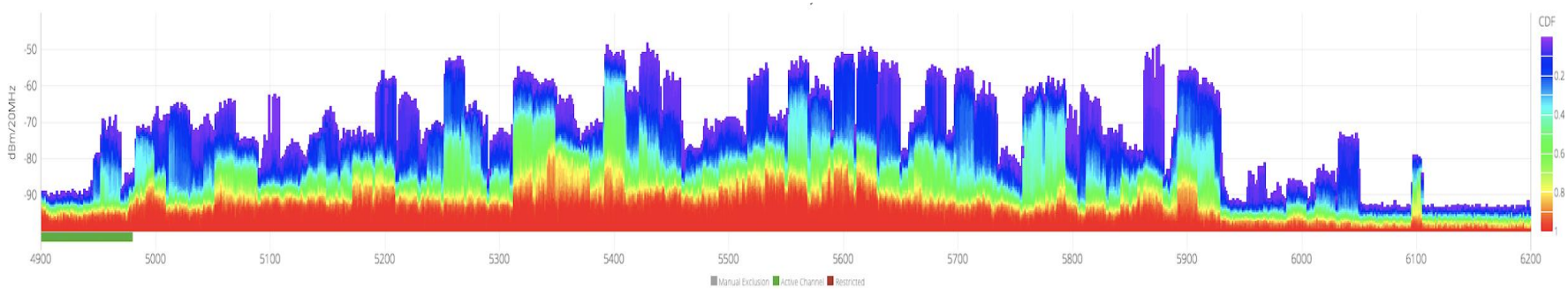
- A = Access | A5, A5c
- B = Backhaul | B5c, B5, B24, B5 lite, C5c, B11
- C = Client | C5, C5c
- G = Gateway | G2
- N = Antenna | N5-360, N5-45x2, N5-45x4
- NMS = Cloud Management System
- NDT = Network Design Tool

Mimosa Backhaul Differentiators

- Industry Leading Price Performance
- Short, Mid and Long-haul Solutions
- Extended Frequency Support
- Spectrum Saving GPS Sync that Works
- Incredible Link Resiliency
- Rugged Designs

Why Does Extended Frequency Operation Matter?

- 5GHz spectrum has become extremely congested
- Better filtering, running sync, and better antennas help
- But you're fighting against too many people on the same highway



- New "lanes" are being created in markets where regulations are open
- Already in CALA, 76% of C5c radios operate outside 5.1 – 5.9GHz

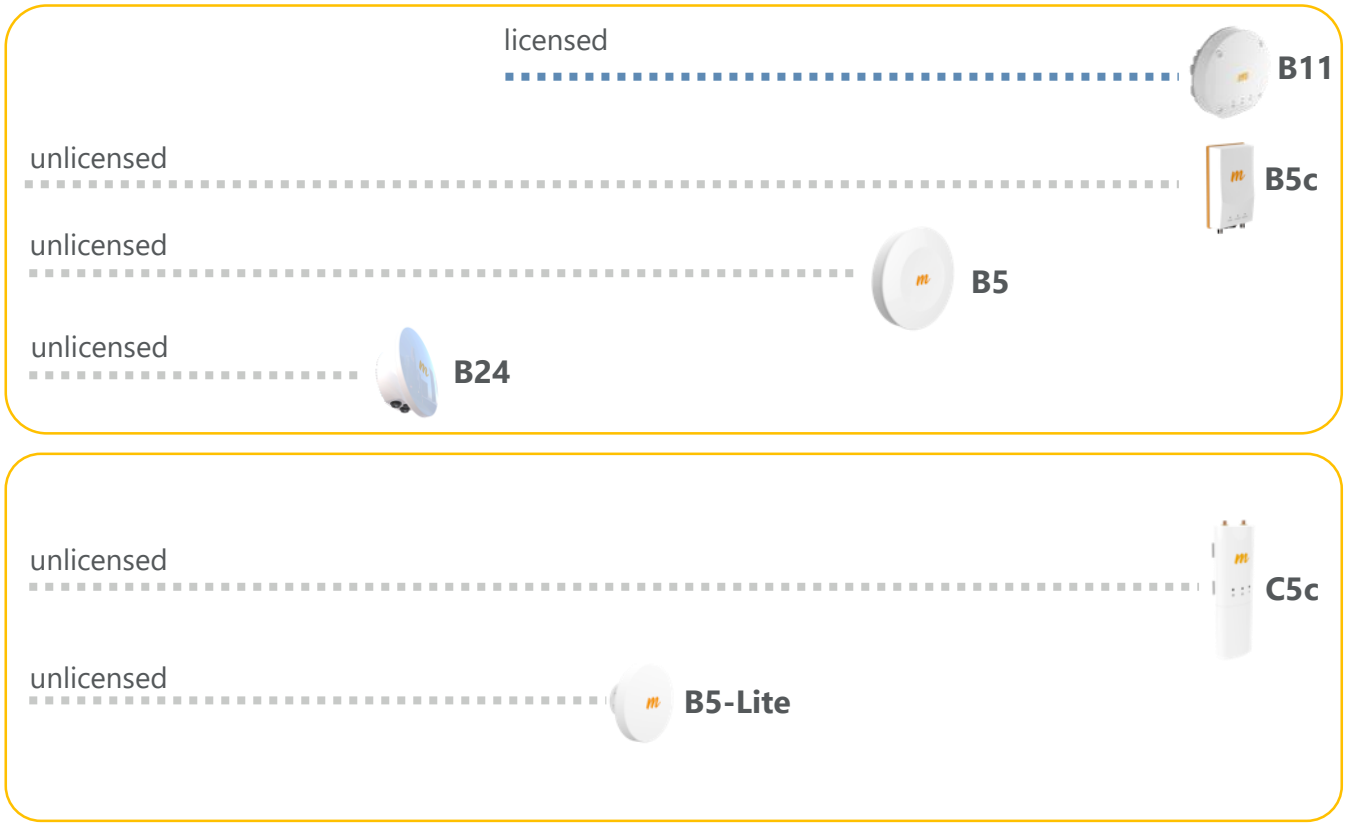
Backhaul Portfolio

HIGH RELIABILITY

- 1.7 Gbps (PHY)
- 1.5 Gbps (IP)
- GPS Sync
- IP 67

COST EFFECTIVE

- 866 Mbps (PHY)
- 700 Mbps (IP)
- Low Power Draw
- IP 55



High Reliability Backhaul – 1 Gbps+

B5
DualLink Integrated

Mid-Haul
- Up to 10 km

Collocation
- Integrated RF shroud + GPS sync

Resilient
- Dual Link for stability in noise

5150-5850 MHz

B5c
DualLink Connectorized

Long-Haul
- Tower sector deployments

Customize
- Flexible panel/shield options

Collocation
- AP channel reuse via GPS sync

4950-6200 MHz

B11
Licensed Reliability

Licensed Long Haul
- 50 km+

Flexible Bandwidth
- Dynamic up/down traffic

Low Latency
- 1 ms round trip

10.0-11.7 GHz

B24
Unlicensed Integrated

Short-Haul
- Up to 3 km

Compact
- Small form factor (250 mm, 6 lbs)

Resilient
- Auto Interference Mitigation

24.00-24.25 GHz

1+ Gbps

IP67

SRS

2x2 | 2x2 DualLink

B24 Reliable Unlicensed Gigabit

Unlicensed 24.00 – 24.25 GHz

Shorthaul	3 km (2 mi)
GPS Sync	Reuse spectrum at sites
Flexible	Dynamic bandwidth vs. FDD
Compact	Smallest form factor (250 mm, 6 lbs)

1.5 Gbps

< 1 ms Latency

19.5W | IP67 | Protect | GPS sync | SFP

Gain	33 dBi
Beamwidth	3° Slant 45
Power	48V DC 802.3at compliant
Wind Survivability	200 km/hr (125 mi/hr)

B11 Licensed

Full 10.0-11.7 GHz Support

Long-Haul	5 – 100 km
GPS Sync	Reuse spectrum at sites
Flexible	Dynamic bandwidth control

1.5 Gbps

< 1 ms Latency

20 – 30W | IP67 | Protect | GPS sync | SFP

Cost-Effective Backhaul – 700 Mbps+

700+
Mbps

IP55

1 ms
latency

C5c
Connectorized PTP

Long-Haul
- Customizable antennas
- 50km and beyond

Low Latency
- 1 ms round-trip

Affordable
- Industry best price performance

4950-6400 MHz

B5-Lite
Simple PTP Link Kit

Short-Haul
- Up to 5 km

Easy Kit
- Contains 2 full systems + mounts

Affordable
- Best integrated price performance

4950-6200 MHz

Mimosa Access Solutions

- Industry Leading Price Performance
- Rural, Suburban & Urban Solutions
- Spectrum Saving GPS Sync that Works
- Industry Leading Throughput
- Client devices under $100 USD
- Business Grade. Consumer Affordable.

Access Points

A5
Quad Sector Access Point

Short-Range GPS-Sync

- Suburban applications at 300m*
- Collocation and network-wide sync enabling channel reuse

A5c
Connectorized 4x4

Long-Range GPS-Sync

- Rural, tower long distance
- Collocation and network-wide sync enabling channel reuse

4900-6200 MHz with Spectrum Reuse Synchronization (SRS)

* For best performance

Scalable, Unlicensed Multipoint Solutions

- Increased capacity at each site
- Ultra-high client capacity
- Network scalability perfected
- Fiber-fast speeds
- Add subscribers with ease

A5 Quad Sector Access Point

4900-6200 MHz with GPS-Sync

Short-Range	Suburban applications at 300m*
GPS-Sync	Collocation and network wide sync enabling channel reuse

1 Gbps

14 dBi

24 dBm

15 - 25W

IP67

Protect

GPS sync

4x4:4

* For best performance

A5c Connectorized 4x4

4900-6200 MHz with GPS-Sync

Long-Range	Rural, tower long distance
GPS Sync	Collocation and network wide sync enabling channel reuse

1 Gbps

30 dBm

15 - 25W | IP67 | Protect | GPS sync | 4x4:4 | Beamform

Clients

C5
Multipoint Client

Short & Mid-Range Client
- Up to 2 km

Ultra Compact
- Discrete installations

Mimosa Sync Compatible
- A5 GPS-Sync client

C5c
Connectorized Client

Long-Range Client
- Antenna gain defines distance

Bring Your Own Antenna
- Dual RP-SMA

Mimosa Sync Compatible
- A5 GPS sync client

4900-6200 MHz with Spectrum Reuse Synchronization (SRS)

Blazing fast, rugged clients

- Fiber speeds to the home
- TDMA GPS sync client
- Rugged and affordable
- Mounting options galore
- Compact and powerful
- Flexible antenna options

C5 Multipoint Client

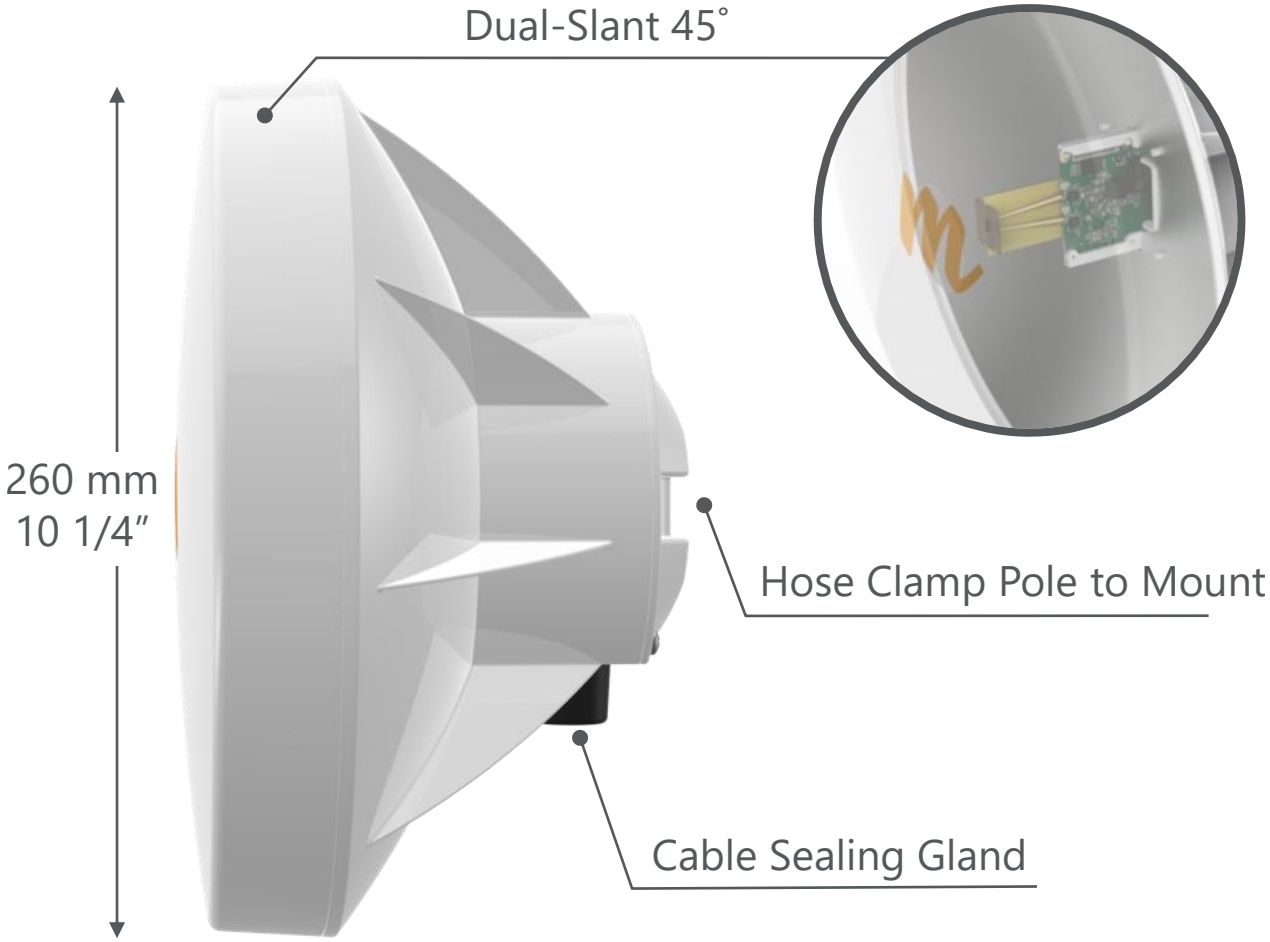
4900-6200 MHz with GPS-Sync

Short & Mid-Range Client Up to 1 km
Ultra Compact Discrete installations
Mimosa Sync Compatible A5 GPS-Sync client

500+ Mbps	20 dBi	24 dBm

7 – 15W	IP55	2x2 11ac	260 mm	0.72 kg

C5


Dual-Slant 45˚
260 mm
10 1/4”
Hose Clamp Pole to Mount
Cable Sealing Gland

C5c Connectorized Client

4900-6200 MHz with GPS-Sync

Long-Range Client Antenna gain defines distance
Bring Your Own Antenna Dual RP-SMA
Mimosa Sync Compatible A5 GPS sync client

500+ Mbps

27 dBm

7 – 15W

IP55

2x2 11ac

2 RP-SMA

N5-45x2

Frequency 4.9 – 6.4 GHz

Gain	19 dBi
Azimuth	42° (HPBW)
Elevation	9° (HPBW)
F/B	43 dB
Downtilt	2°
Polarization	Dual Slant 45°

For use with Mimosa or any 2x2 radio

N5-45x4

Frequency 4.9 – 6.4 GHz

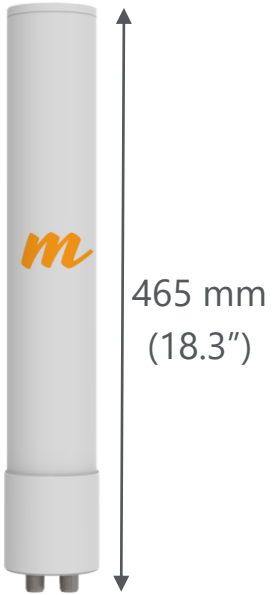
Gain	22 dBi (with 3 dB BF gain)
Azimuth	42° (HPBW)
Elevation	9° (HPBW)
F/B	43 dB
Downtilt	2°
Polarization	Dual Slant 45°

Designed for beamforming with Mimosa 4x4 A5c
or two 2x2 radios on separate channels

N5-45 Benefits

- **Side lobe suppression like a horn**
- **Gain and ground coverage of a sector**
- **World’s best front to back ratio in a sector**
- **Enables 2x spectrum reuse**

N5-360° 15 dBi MicroPoP Antenna



4900-6400 MHz with GPS-Sync

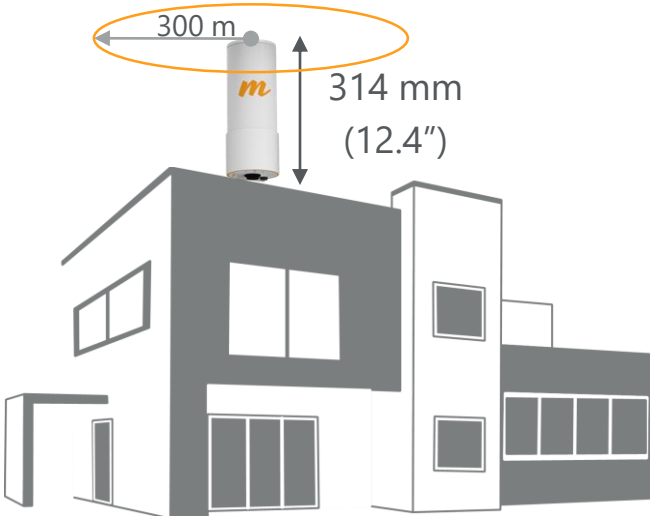
- 4 stream beamforming 360º antenna
- Ensures 2 equal MCS streams/client
- Beamforming via even patterns across antenna polarizations
- Longer range 500m coverage
- Similar cost structure to A5 but with A5c

Designed for Mimosa's A5c Access Point

A5 / A5c With N5-360 Comparison

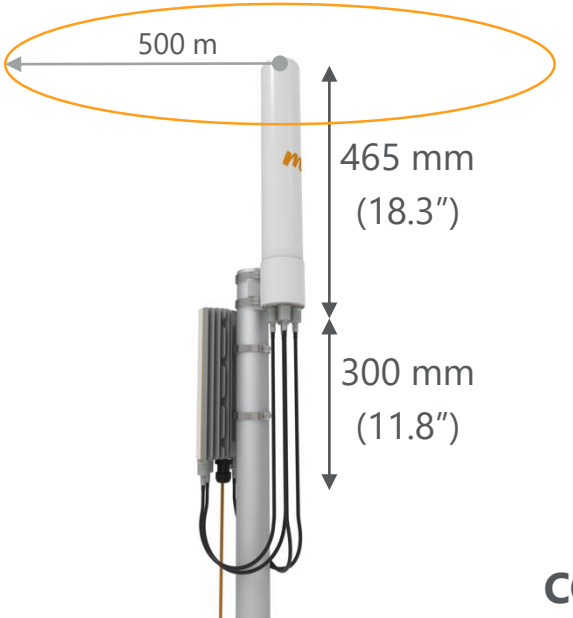
A5

- Small residential MicroPoP
- Coverage radius of 300m
- Discrete deployments



A5c+N5-360

- Larger MicroPoP (40% more coverage)
- Coverage radius of 500m
- Maximum performance where space allows



CONFIDENTIAL

G2 2.4 GHz Wi-Fi PoE Gateway

Simple Integrated PoE + Great Wi-Fi
Add Multiple G2 Devices to Expand Coverage
Cloud Monitoring for In-Home Wi-Fi Support
Totally Integrated Experience with Mimosa C5

100+ Mbps

2.4 GHz

PoE 48V

GigE

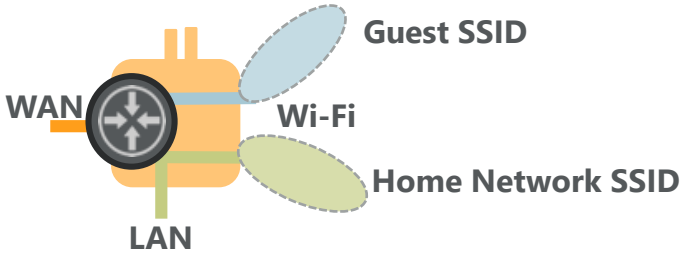
Router

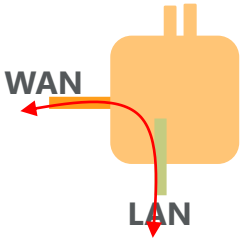
2x2 11n

Repeater

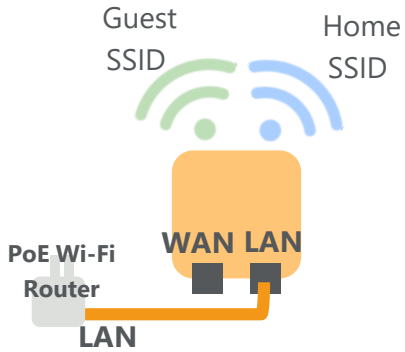
G2 Modes of Operation

PoE Wi-Fi Router
(default)

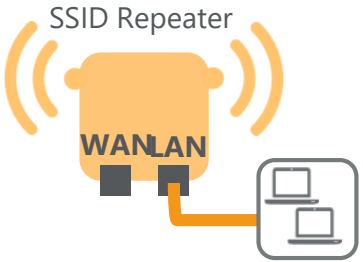




PoE Pass-through



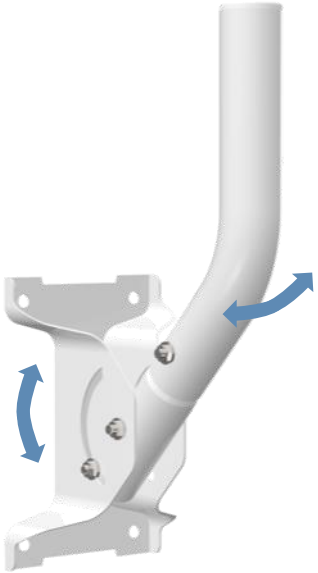
Wi-Fi Extension



Range Extender

Accessories

J-Mount



Flat surfaces
Extra tilt angle

FlexiMount

Flat surfaces
Vertical/Horizontal poles
Angled poles

Gigabit NID

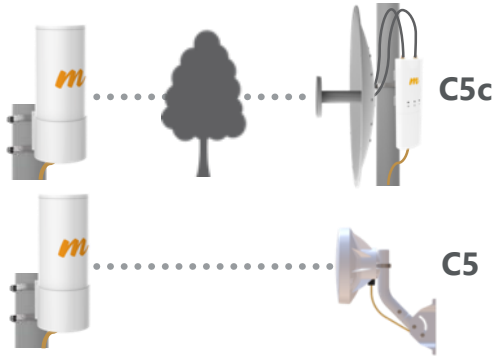
Outdoor tech access
ESD protection
Grounding

Gigabit PoE

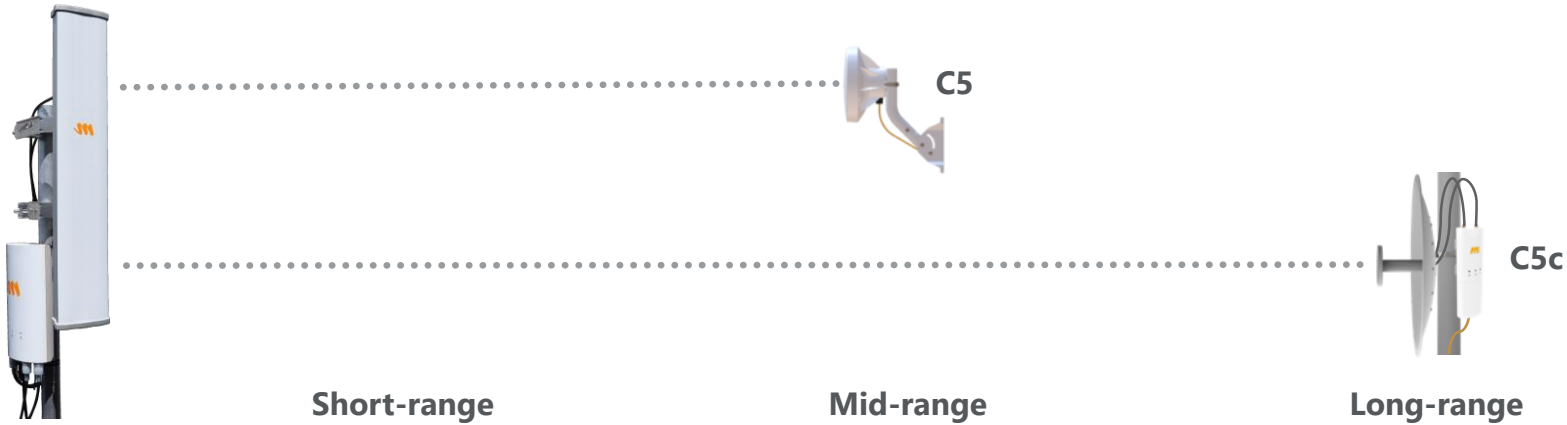
Compact indoor
Wall-plugged
Simplifies PoE cabling

Access Product-Distance Relationships

A5
or
A5c+N5-360
(Suburban)



A5c
(Rural)



Solution Summary

- Best price performance in the industry
- Robust, carrier class design and testing
- Licensed and Unlicensed Solutions to optimize applications
- Point-to-Point Backhaul and Point-to-Multipoint Access allowing end-to-end solutions

Applications and Technology


Backhaul

Business Grade

Cost Effective Multi-Client Services

B5 series

Supports multiple clients with “backhaul grade”.
Unique 2-channel tech offers incredible reliability.

Enterprise Access

Affordable Fiber-like Licensed Solution

Transform “unlit” enterprise buildings with licensed metropolitan ring gigabit services

Farallon Islands Project

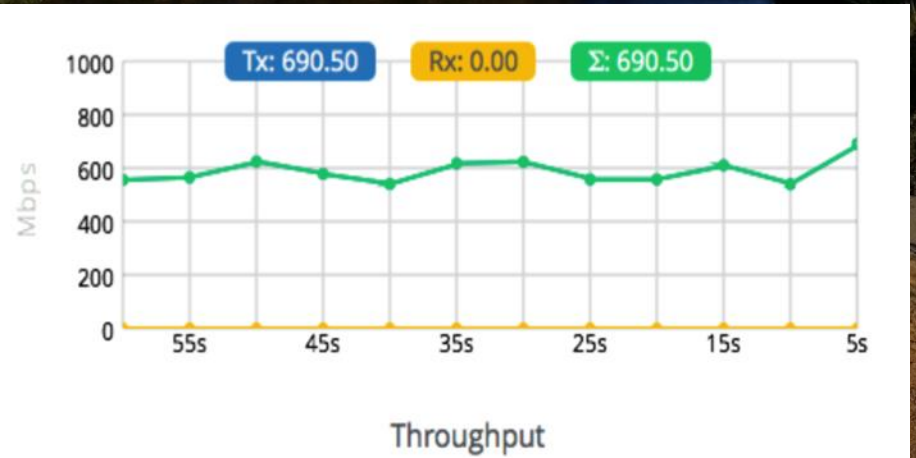
200 Mbps+ @ 30 miles for wildlife monitoring, video for Academy of Science and VoIP for USFWS

Long Distance

100 km / 60 mi

2 X 80 MHZ

> 600 Mbps Throughput



Mimosa Backhaul Applications

Fixed Wireless
Broadband Backhaul

Campus Building
Connections

Smart City
Connectivity

Business and MDU
Rooftop Connections

Video Surveillance and WiFi
Hotspot Distribution

B24 Reliable Unlicensed Gigabit

Unlicensed 24.00 – 24.25 GHz

Shorthaul	3 km (2 mi)
GPS Sync	Reuse spectrum at sites
Flexible	Dynamic bandwidth vs. FDD
Compact	Smallest form factor (250 mm, 6 lbs)

1.5 Gbps

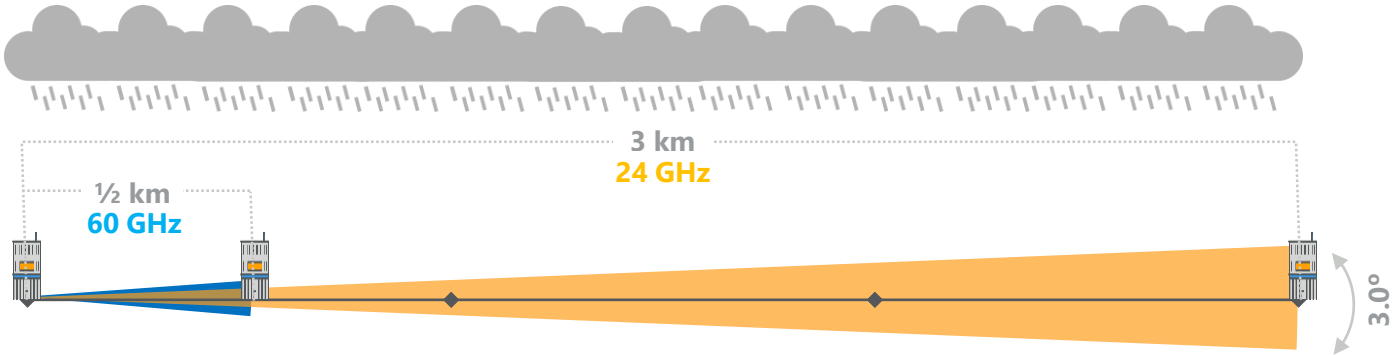
< 1 ms Latency

19.5W | IP67 | Protect | GPS sync | SFP

Gain	33 dBi
Beamwidth	3° Slant 45
Power	48V DC 802.3at compliant
Wind Survivability	200 km/hr (125 mi/hr)

Unparalled Reliability

RAIN RELIABILITY



6x the usable distance in the rain

AUTO INTERFERENCE MANAGEMENT

Modulation, channel width and power

CHANNEL MANAGEMENT

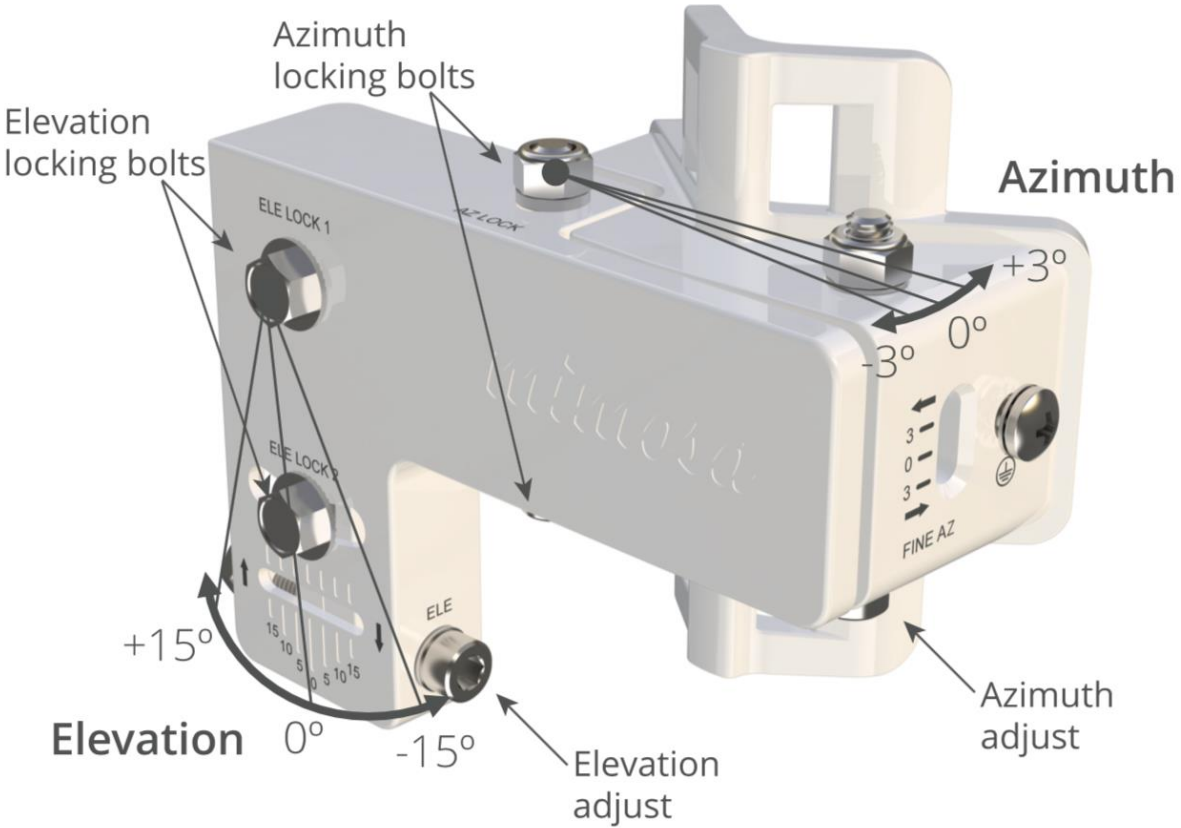
20/40/80 MHz non-contiguous

Single our dual channel

Fiber Support

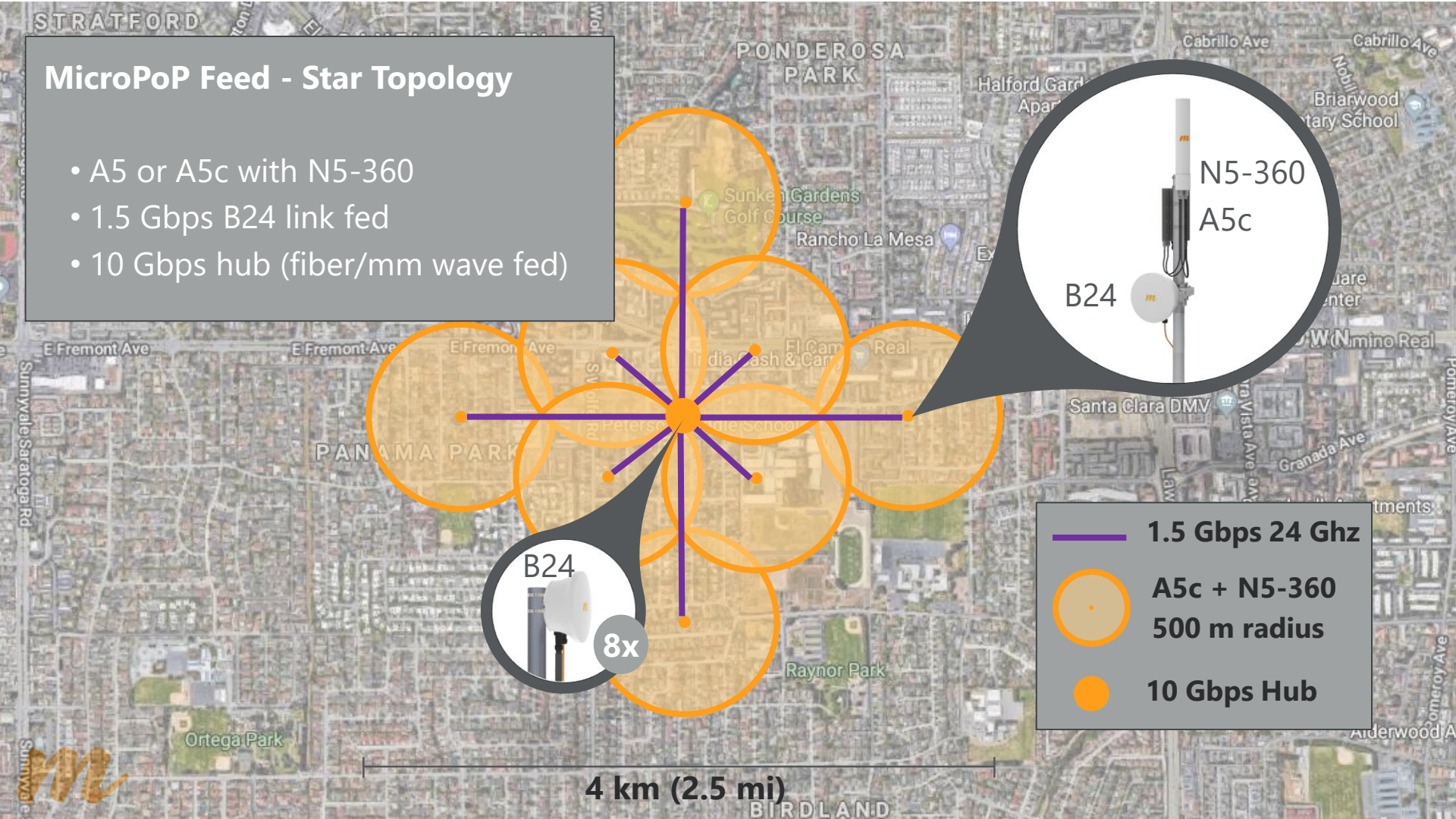
Supports 1 Gbps SFP fiber

Easy Installation

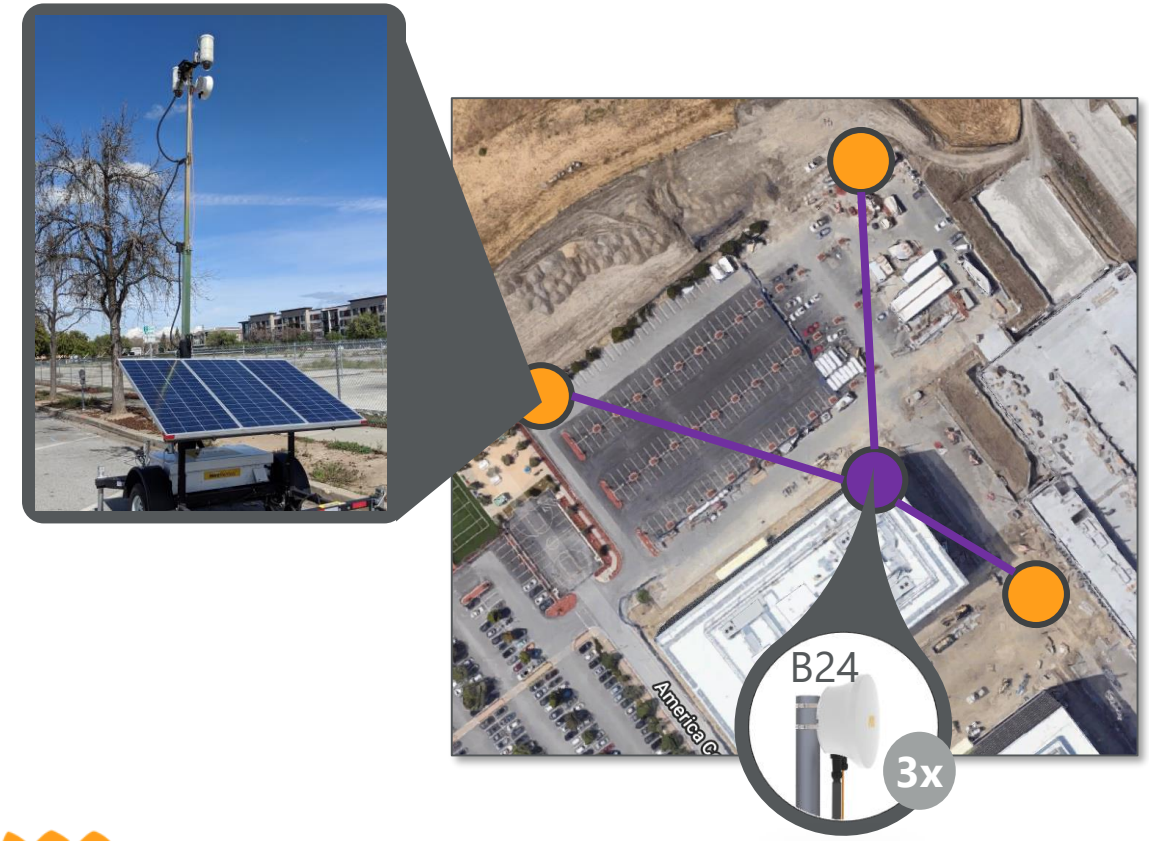


MicroPoP Feed - Star Topology

- A5 or A5c with N5-360
- 1.5 Gbps B24 link fed
- 10 Gbps hub (fiber/mm wave fed)



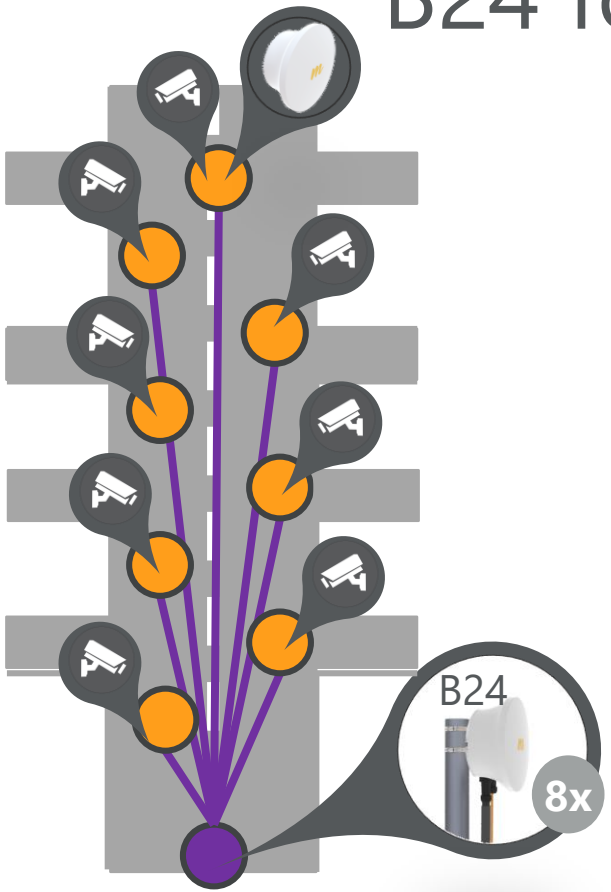
B24 for Video Surveillance



Temporary Site Security

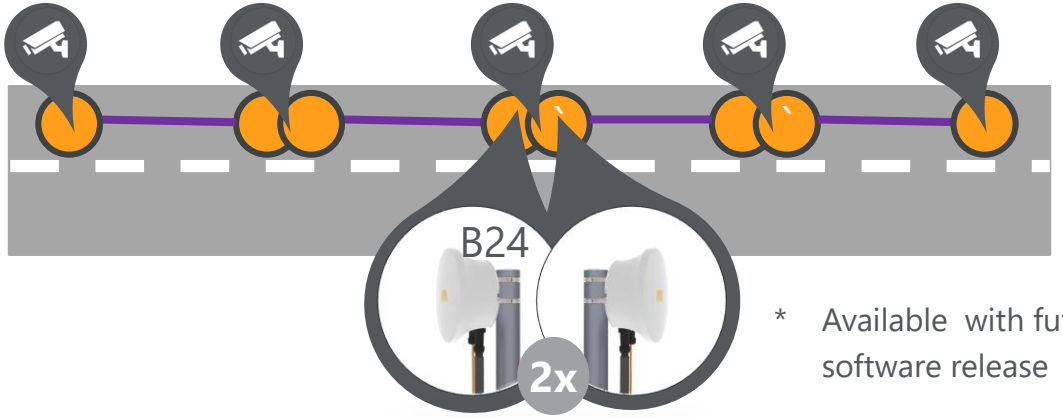
- Efficient power for solar backup (19.5 W)
- GPS Sync for collocating up to 8 B24s @ 1.5 Gbps (160 MHz channel width)
- Unlicensed for quick deployment

B24 for Video Surveillance



Street Surveillance

- 24 GHz to avoid crowed 5 GHz spectrum
- GPS Sync for up to 8 collinear B24s @ 150 Mbps (20 MHz channel width)*
- Long range where needed, up to 3 km (2 mi)
- Lightweight and compact (6 lbs)



* Available with future software release

Stephouse Networks

“The introduction of the Mimosa B24 improves our price/performance ratio yet again. We love the lightweight and low-power design that perfectly suits our neighborhood multipoint installations and helps us remain ahead of the competition.”

Tyler Booth, CEO

Sail Internet

"The B24 hits a sweet spot for performance, range, power consumption, cost, aesthetics and ease of deployment. With the B24, Sail can profitably deploy service in locations that were previously either not possible or didn't meet our ROI requirements."

Kevin Fisher, CEO

"The B24 bridges the gap which other alternatives in the 60 GHz band can't reach. With reliability out to two miles, I have more flexibility to quickly reach new areas and extend Gigabit speeds throughout the neighborhood and MDU buildings."

Snappy Internet

Faisal Imtiaz, CEO

B11 Licensed

Full 10.0-11.7 GHz Support

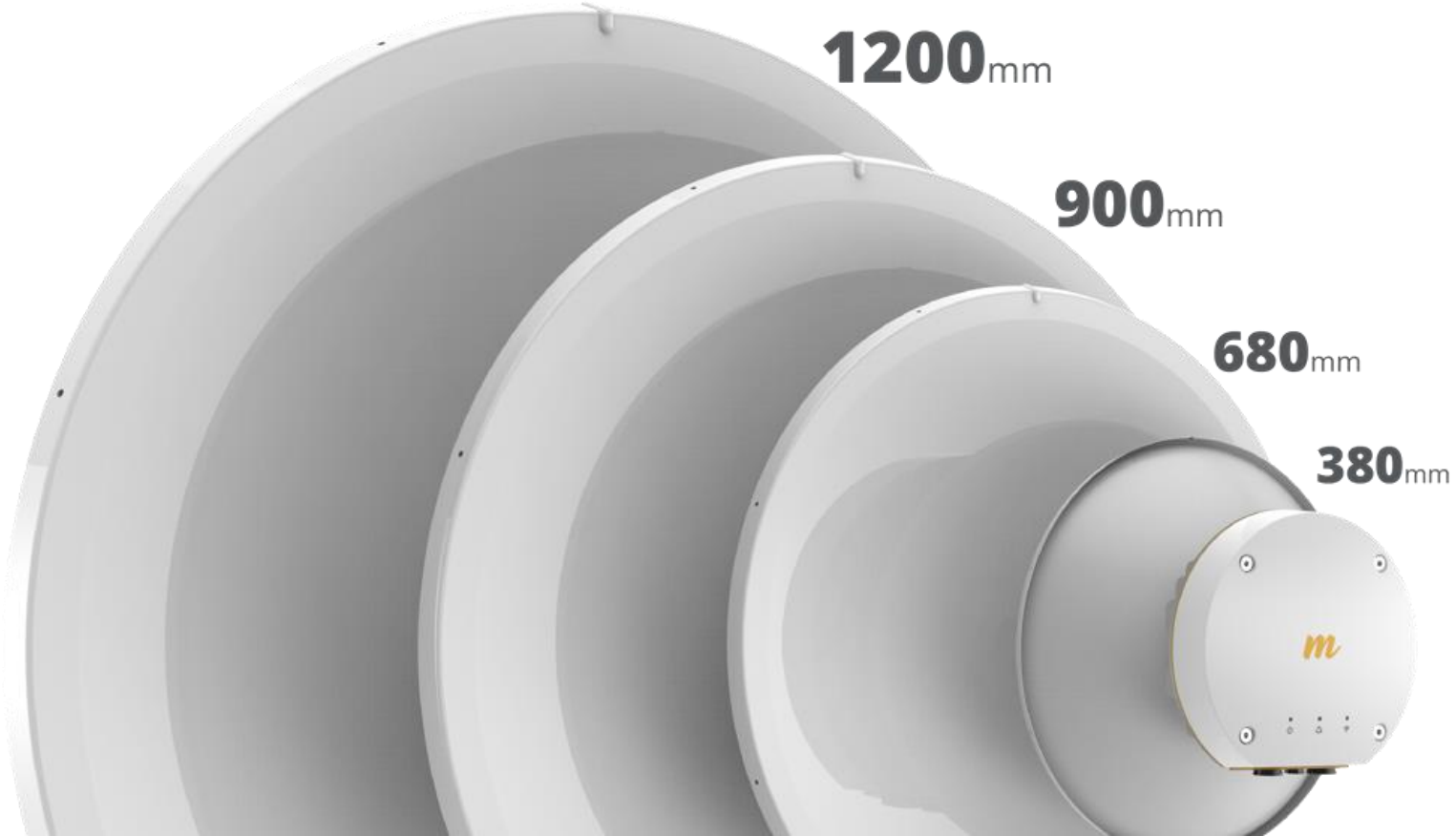
Long-Haul	5 – 100 km
GPS Sync	Reuse spectrum at sites
Flexible	Dynamic bandwidth control

1.5 Gbps

< 1 ms Latency

20 – 30W | IP67 | Protect | GPS sync | SFP

B11 Supports All the Sizes



Super Sync

Reuse channels till the cows come home!

1 PPS GPS Sync
B5, B5c, B11 & B24

Collocate links per channel in different directions

Case Study: City of McDonough

Achieves Increased Speeds with Mimosa

> Mimosa reduced our costs, added specific disaster recovery pathways and a more robust infrastructure allowing us to offer new services in the future

Company
The City of McDonough wanted to upgrade their network infrastructure. Key goals were to provide a redundancy network, offer free Wi-Fi to visitors and improve Public Safety

The Challenge
The City of McDonough wanted a high capacity solution that could take advantage of existing fiber assets.

What they Used
The city deployed Mimosa B5 and B11 backhaul radios

How Mimosa Helped
The city saw increased speeds and added new services as a result. The new network is so reliable they have been able to cancel some leased fiber lines

Case Study: OSNet

Deploys Mimosa for Huge Cost-Savings

> Mimosa is a great addition to our network. We have seen huge cost-savings!

Company
OSNet is a leading wireless internet service provider operating in Puerto Rico.

The Challenge
The WISP wanted to augment its existing fiber network with reliable, flexible wireless broadband solutions, to support broadband speeds for residential and business customers.

What they Used
OSNet used Mimosa B11, B5-Lite backhaul radios, B5c connectorized radios and C5c (PTP) client devices.

How Mimosa Helped
OSNet has seen huge cost savings due to the efficient handling of traffic. The Mimosa products are rugged which is a great advantage for Puerto Rico's tropical location and climate.

C5c Connectorized Radio

PTP: 4900-6400 MHz*

PTP Mode 700+ Mbps

Dual Purpose PTP and PTMP

Bring Your Own Antenna Dual RP-SMA

Flexible PoE Powering 24-56 VDC Passive PoE

700+ Mbps	27 dBm

7 – 13W	IP55	2x2 11ac	2 RP-SMA	1 ms latency

* Restricted by country of operation
FCC DFS (U-NII-2a, U-NII-2c) availability pending certification

Access

Highest industry tower scalability maximizes user subscriber capacity and speed

Only high-density residential wireless solution to deliver fiber-fast at a fraction of the cost


MicroPop
Perfection
N5-360
+
A5c
A5
Quad
Sector

A5-14 Quad Sector Access Point

4900-6200 MHz with GPS-Sync

Short-Range Suburban – optimal 300m range

GPS-Sync Collocation and network wide sync enabling channel reuse

1	14	24
Gbps*	dBi	dBm

15 - 25W | IP67 | Protect | GPS sync | 4x4:4 | SU-MIMO

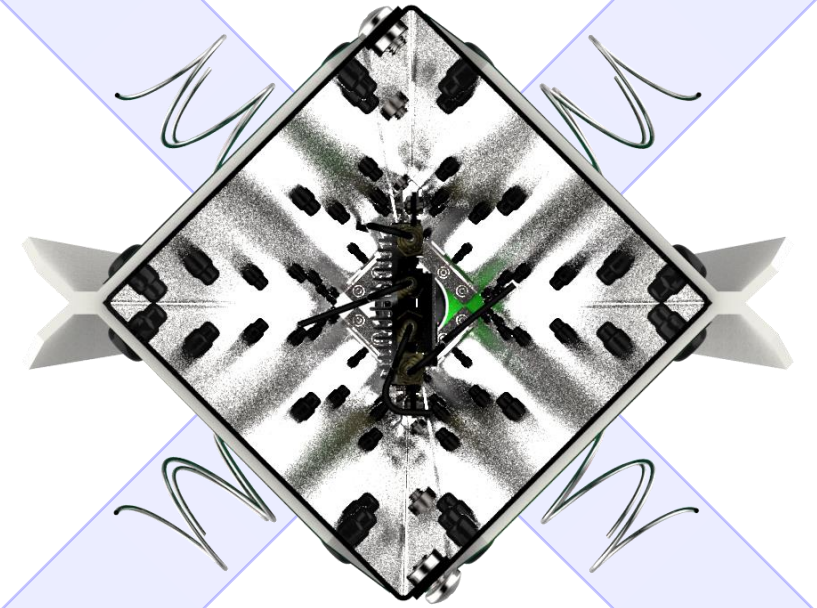
* Up to 600 Mbps aggregate client speed in SRS

Quad Sector Revolution

Quad Directional Smart Sector

Only TX in necessary client direction

Isolates RX noise to listening direction



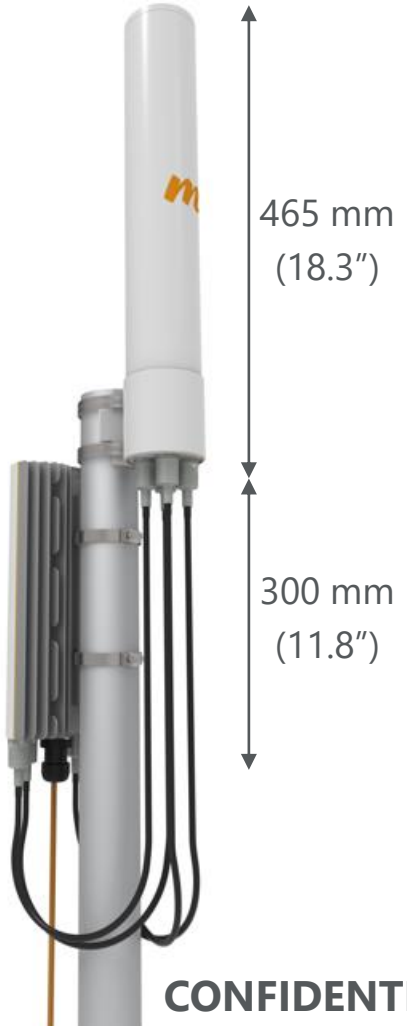
A5c + N5-360° MicroPop

4900-6400 MHz with GPS-Sync

Short-Range	Suburban – optimal 500m range
GPS-Sync	Collocation and network wide sync enabling channel reuse

1	15	30
Gbps*	dBi	dBm

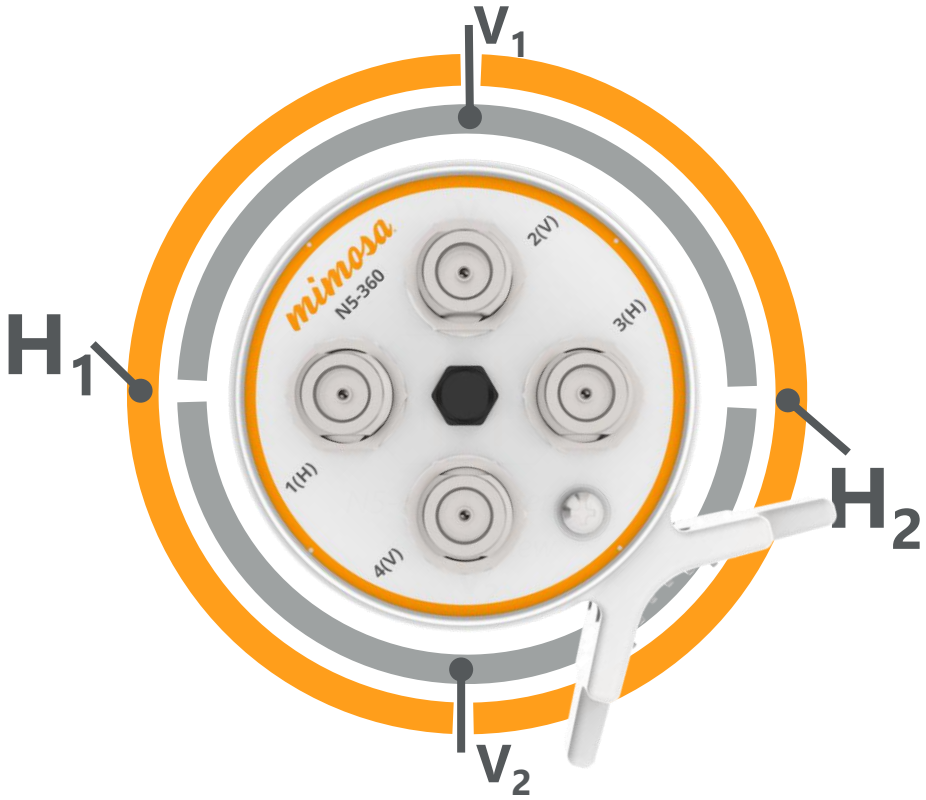
15 - 25W | IP67 | Protect | GPS sync | 4x4:4 | Beamform | SU-MIMO



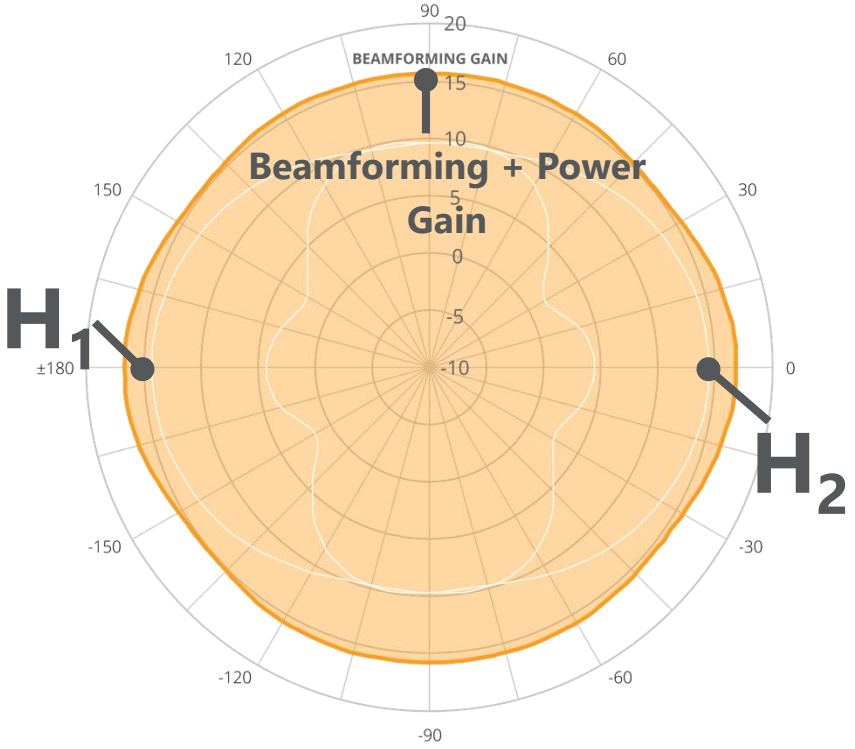
* Up to 600 Mbps aggregate client speed in SRS

CONFIDENTIAL

Advanced 180º Overlapping Patterns



Overlapping V & H patterns
Ensure balanced dual stream



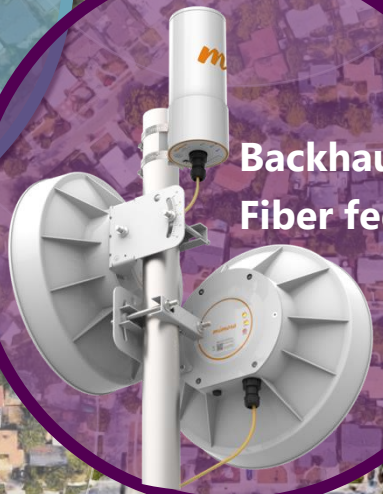
Uniform pattern for both H & V polarizations
15 dB Beamforming Gain

GeoCapacity for High Population Areas

Up to 500m

Coverage cells

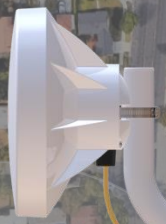
>400 hh/km^2 markets



Backhaul or Fiber fed

250 Mbps+

Client Speeds



SRS

Spectrum Reuse Sync (GPS+GLONASS)

The Business of MicroPoPs

Competition

Overbuild current ADSL markets

Fiber >$1k / household

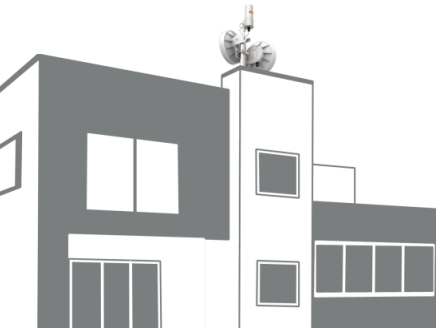
LTE not an option in high-density market due to over-capacity towers

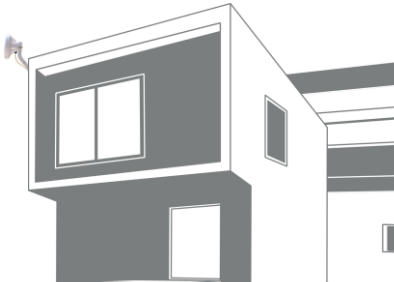
Return on Investment

Capex $200-300 / household

Payback within 6 months @ $50/month

Very fast deploy speed, viral neighborhood sales and focused area installations

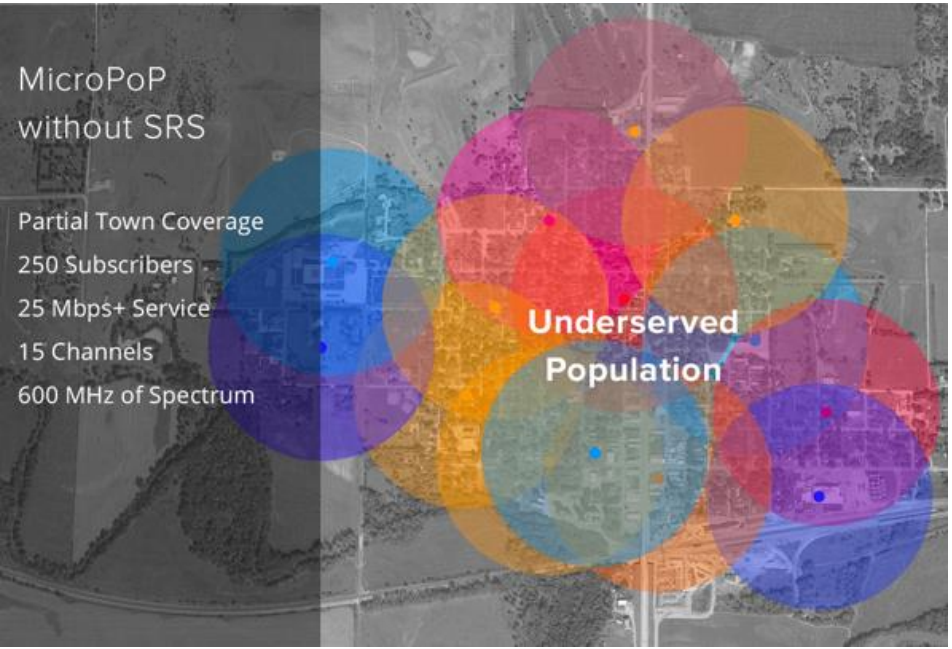


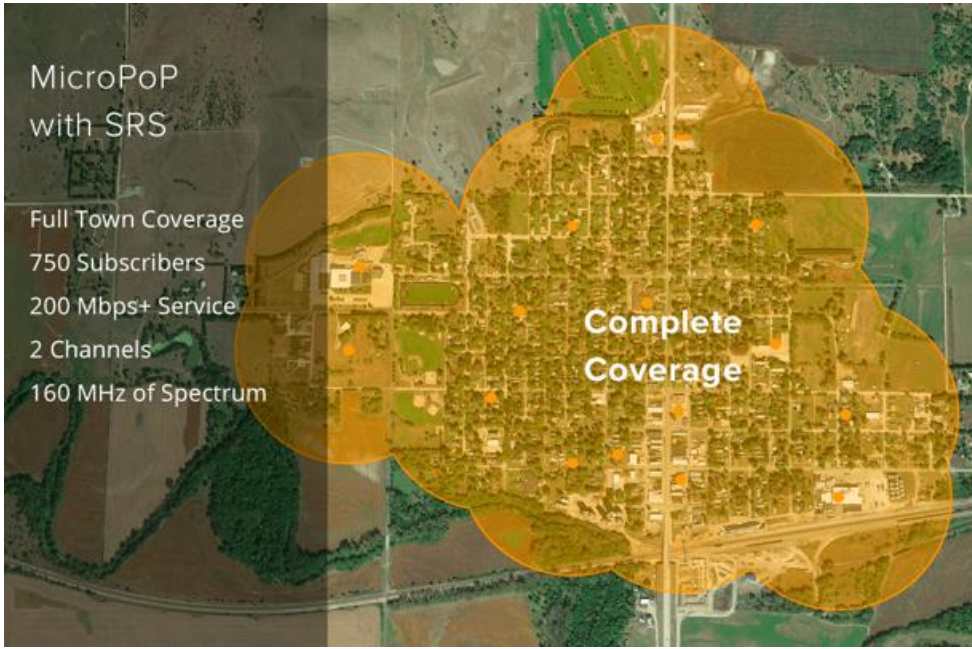


Spectrum
Reuse
Sync

Multipoint
GPS+GLONASS Sync

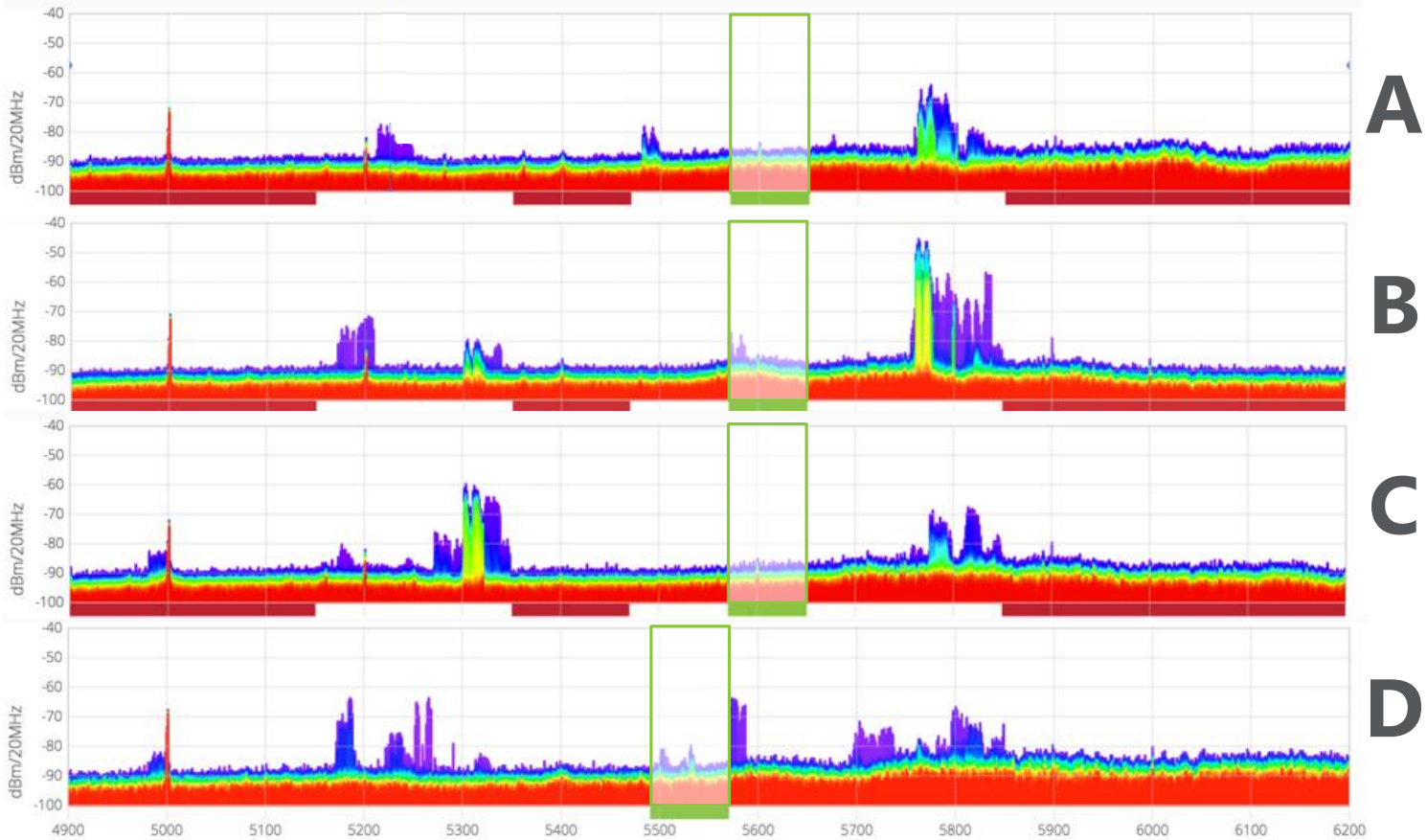
The Power of Spectrum Reuse
Prairie Hills, NE



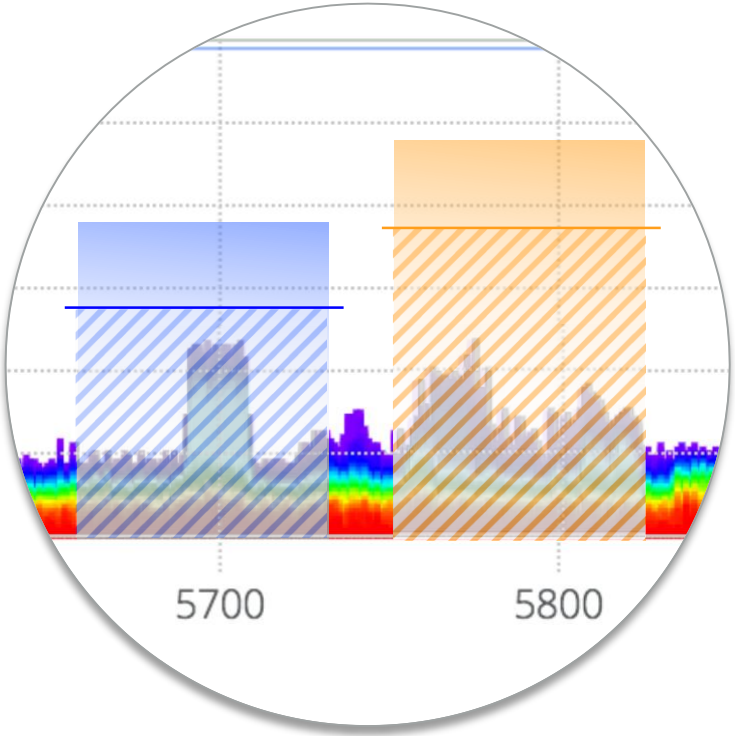


AP Spectrum BEFORE SRS

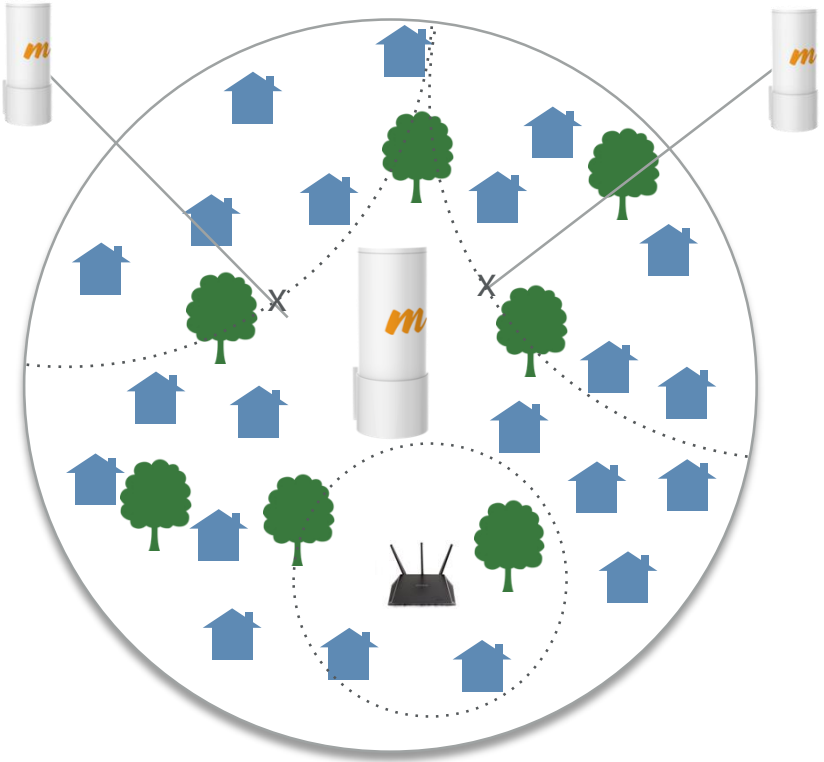
AP Spectrum AFTER SRS



Working Above the Noise

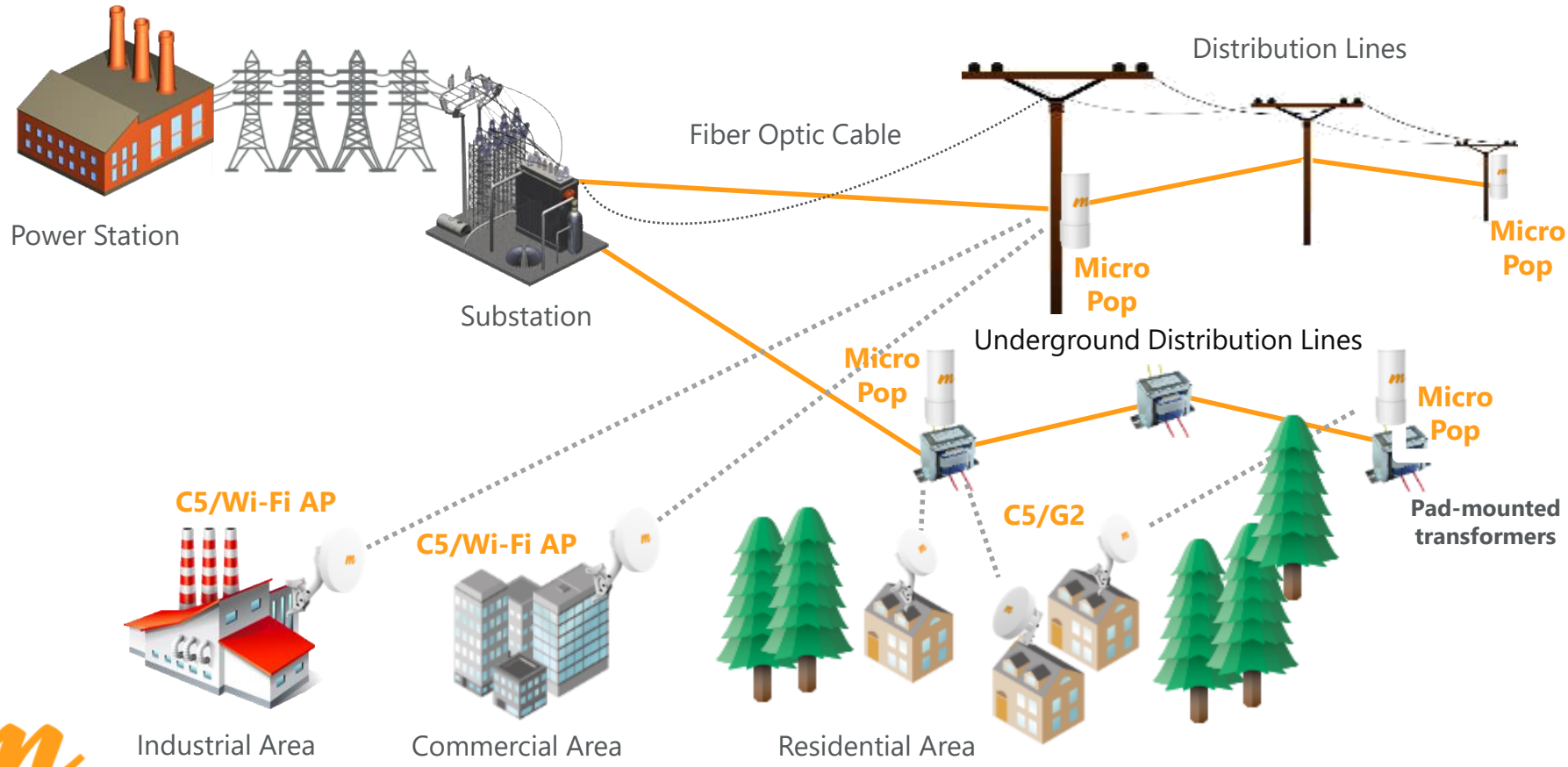


Short range design & advanced AGC
10 dB SNR needed for service

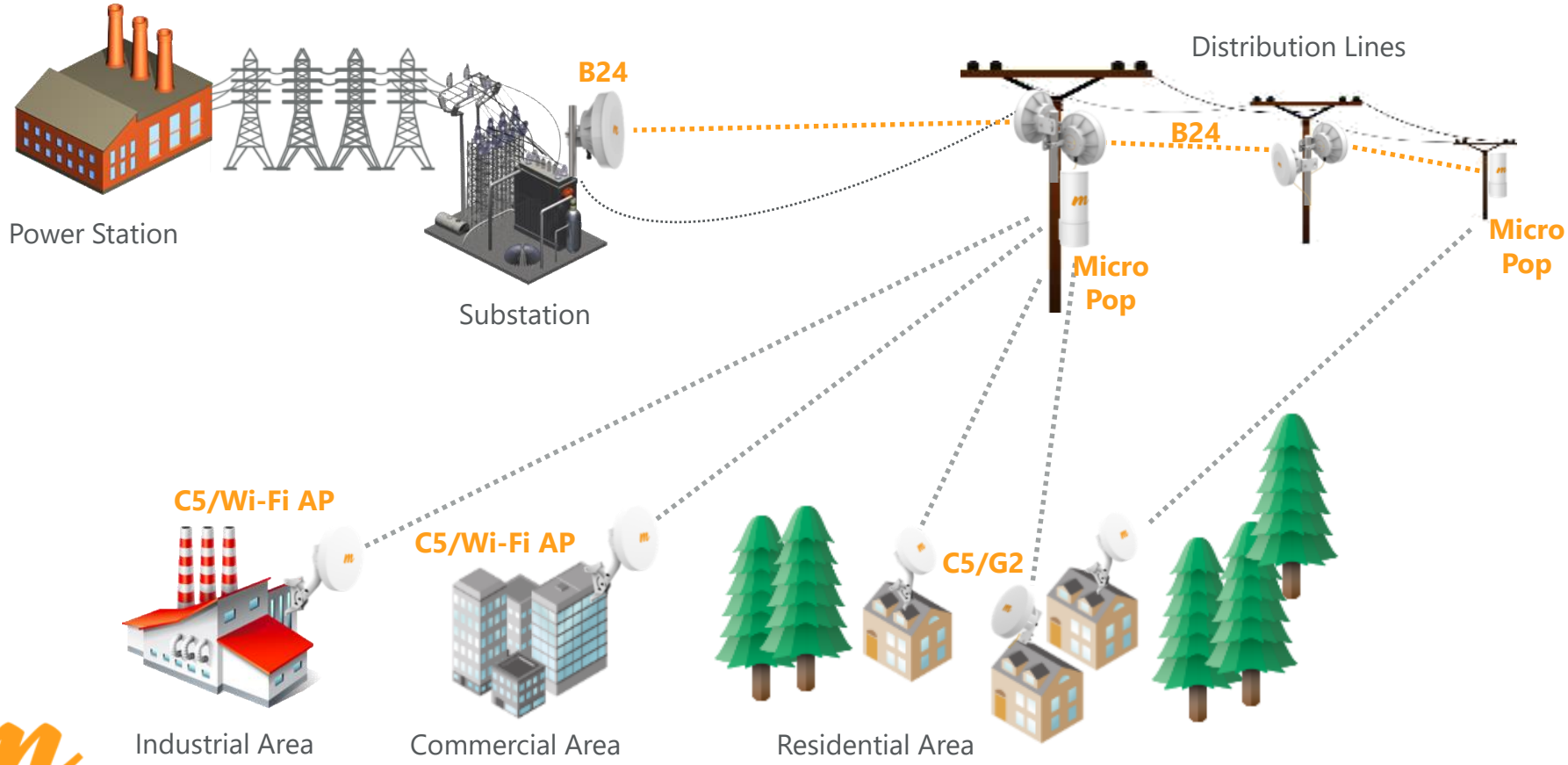


High immunity to lower powered nearby
indoor Wi-Fi and planned self-interference

MicroPoP Network – Fiber Backbone



MicroPoP Network – Wireless Backbone



Manage from the ground up

2.4 GHz Local Wi-Fi
for easy configuration and management

To Protect & Serve

Enables Public Safety use cases in 4.94 – 4.99 GHz

Easy license process for Police, Fire and First Responder services

Certified Products
Backhaul: B5c, B5-Lite
Access: A5 & C5
FCC Part 90 Y certified
IC RSS-111 certified

<u>Applications</u>
Incident Management
Surveillance
PTP/PTMP Broadband
Wi-Fi
VoIP

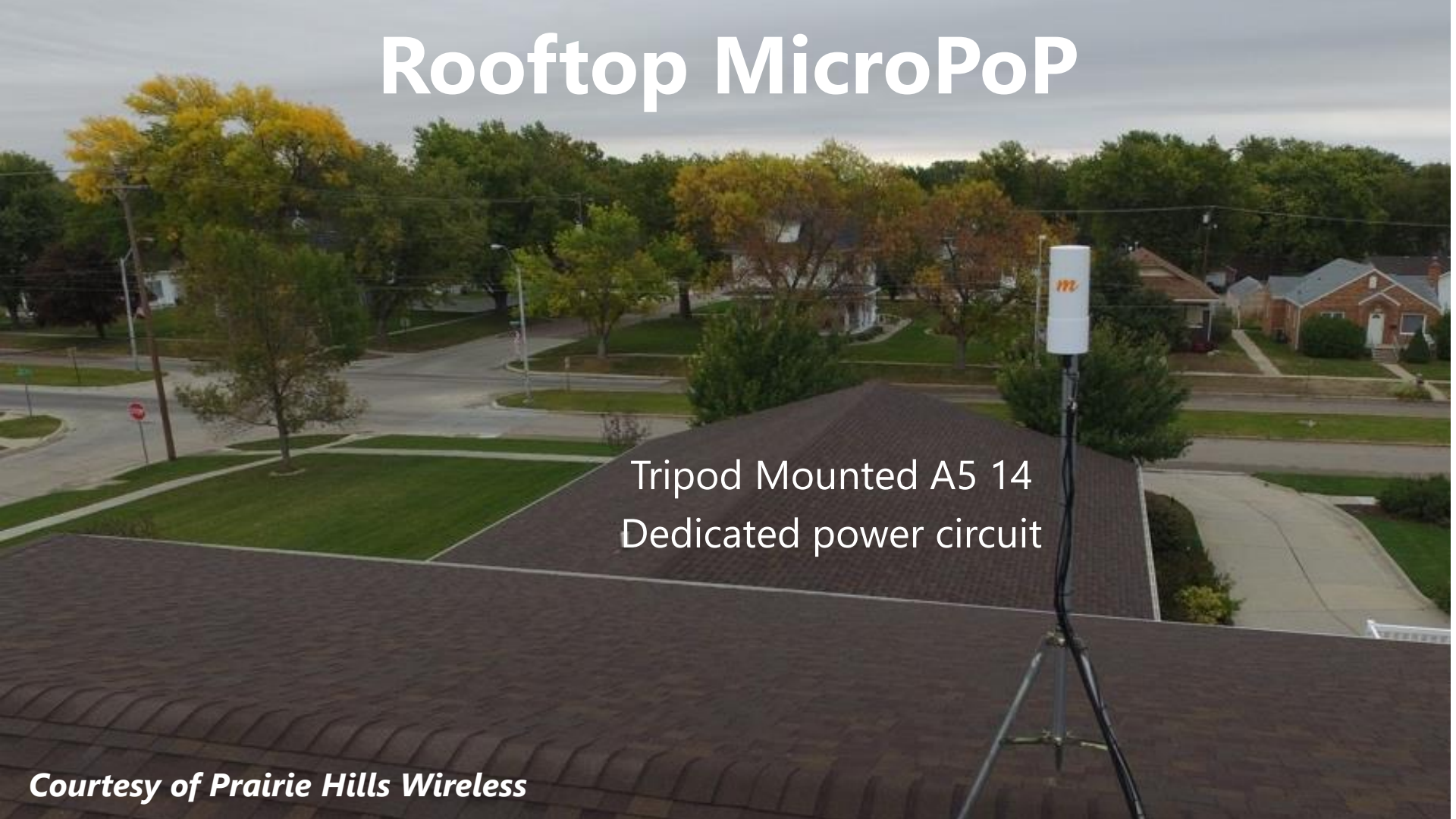
Municipal Pole MicroPoP

Fiber Fed

Minneapolis, MN

C5-to-A5 250m range design for summer foliage

Rooftop MicroPoP



Courtesy of Prairie Hills Wireless

Street Corner MicroPoP

Courtesy of Prairie Hills Wireless

mmWave & 5 GHz Backhaul

Courtesy of Prairie Hills Wireless

Suburban Dense Areas

- Residential broadband in the Chicago suburbs
- 1000 households/mi^2
- Offering services competitive with incumbent Cable Co

“Last 1/4 Mile” Access

"It's transformed my network. It was a new kind of risk, but Mimosa enabled me with fiber like speeds to beat the local cable and DSL guys"

- Evan Galvin, Owner

Tower Sites

A5c Connectorized 4x4

4900-6200 MHz with GPS

Long-Range — Rural, tower long distance

GPS Sync — Collocation and network wide sync enabling channel reuse

1 Gbps

30 dBm

15 - 25W | IP67 | Protect | GPS sync | 4x4:4 | Beamform | SU-MIMO

* Up to 600 Mbps aggregate client speed in SRS

Ultra Rugged

- Built to withstand the harshest conditions
- IP67 Rated
- Gas Discharge Tube ESD Protection
- Industrial Temperature Specification Components
- GPS + GLONASS Redundancy

N5-45x2

Frequency 4.9 – 6.4 GHz

Gain	19 dBi
Azimuth	42° (HPBW)
Elevation	9° (HPBW)
F/B	43 dB
Downtilt	2°
Polarization	Dual Slant 45°

For use with Mimosa or any 2x2 radio

N5-45x4

Frequency 4.9 – 6.4 GHz

Gain	22 dBi (with 3 dB BF gain)
Azimuth	42° (HPBW)
Elevation	9° (HPBW)
F/B	43 dB
Downtilt	2°
Polarization	Dual Slant 45°

Designed for beamforming with Mimosa 4x4 A5c
or two 2x2 radios on separate channels

Unique Antenna Pattern

Coverage like a sector

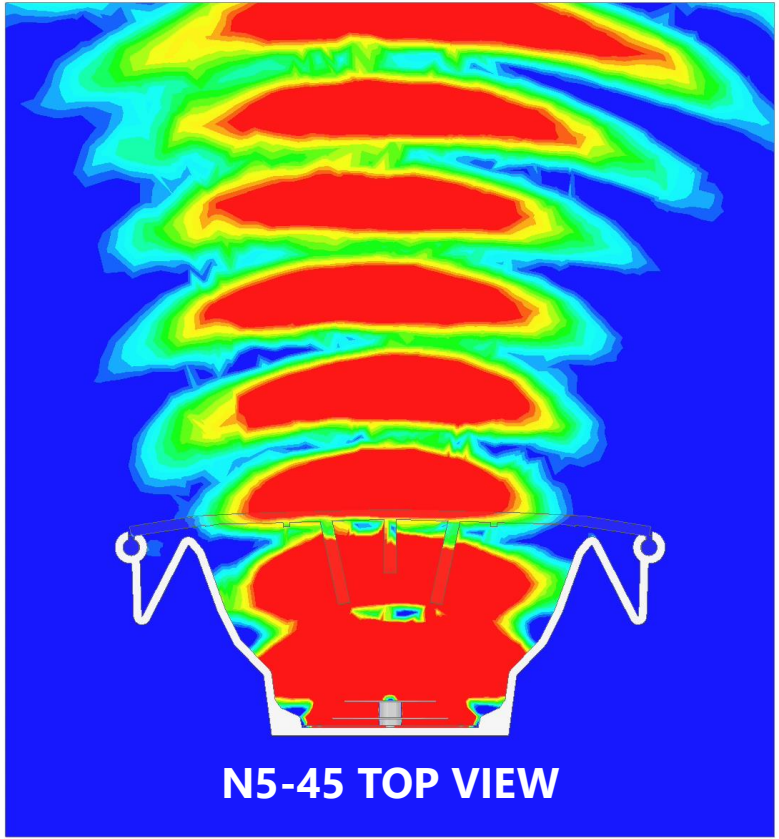
- High Gain
- 42º Azimuth
- 9º Elevation

Noise fighting like a horn

- Massive side lobe rejection

Industry Leading F/B ratio

- 43 dB



Mimosa Confidential - Not for Distribution

N5-45 Deployment Models

Long Range High Capacity

N5-45x4

Mimosa A5c

Cost Effective Coverage

N5-45x2

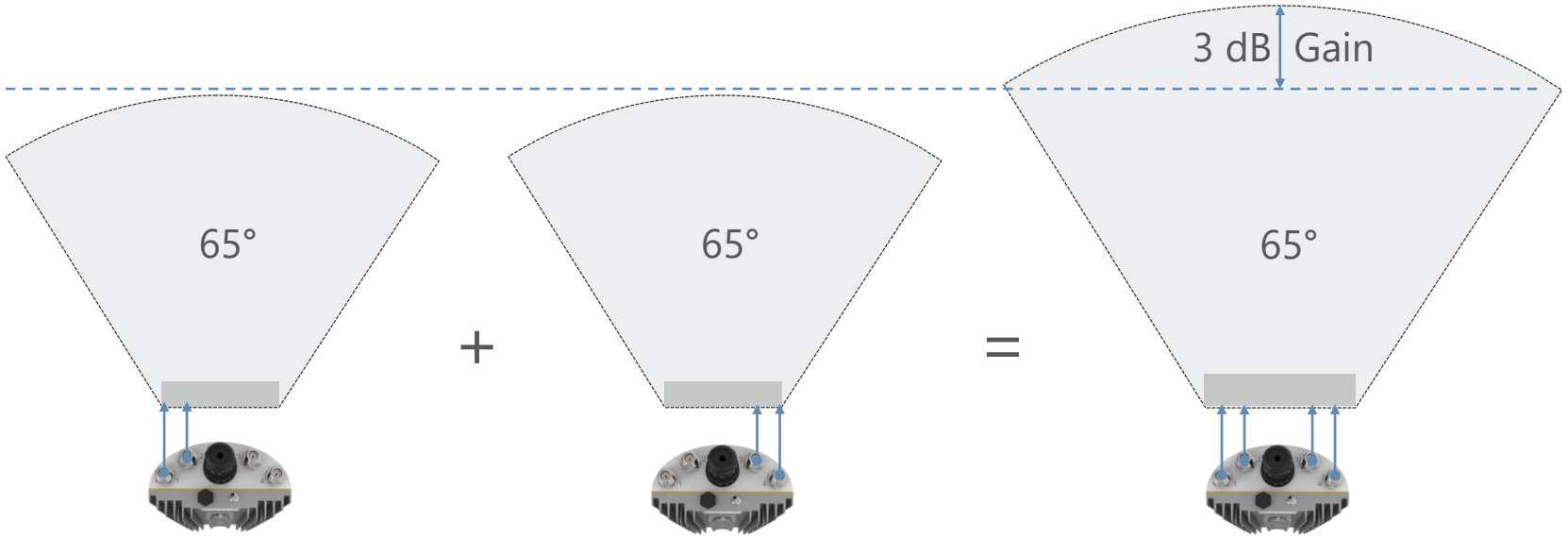
Mimosa A5c

3rd Party Access Point

N5-45x2

3rd Party 2x2 AP

Advantage of Using 4x4 Sectors

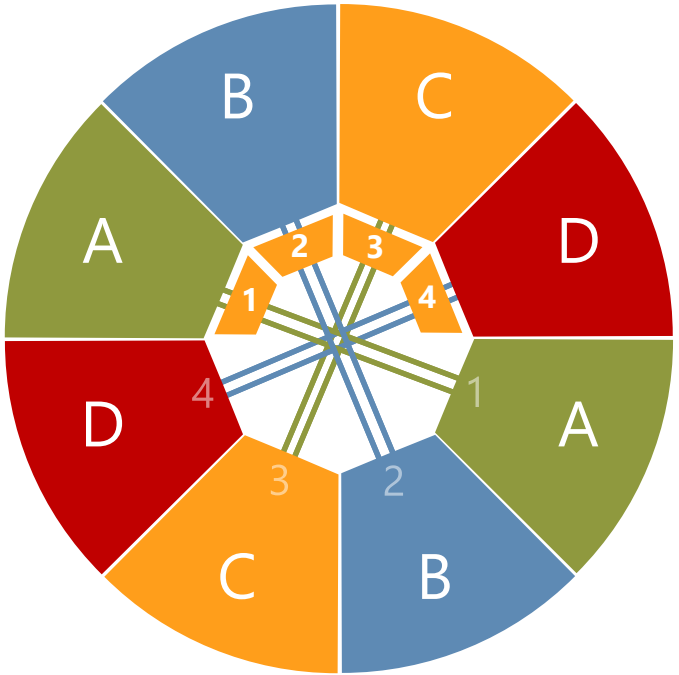


+3 dBi Beamforming
Processed Antenna Gain

TX EIRP must conform to regulated limits

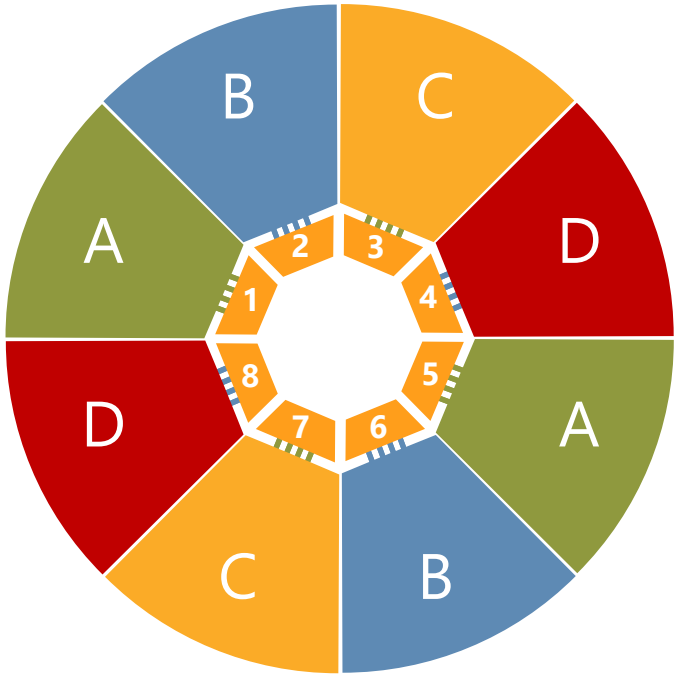
N5-45 Tower Deployments

Cost Effective Coverage (x2)



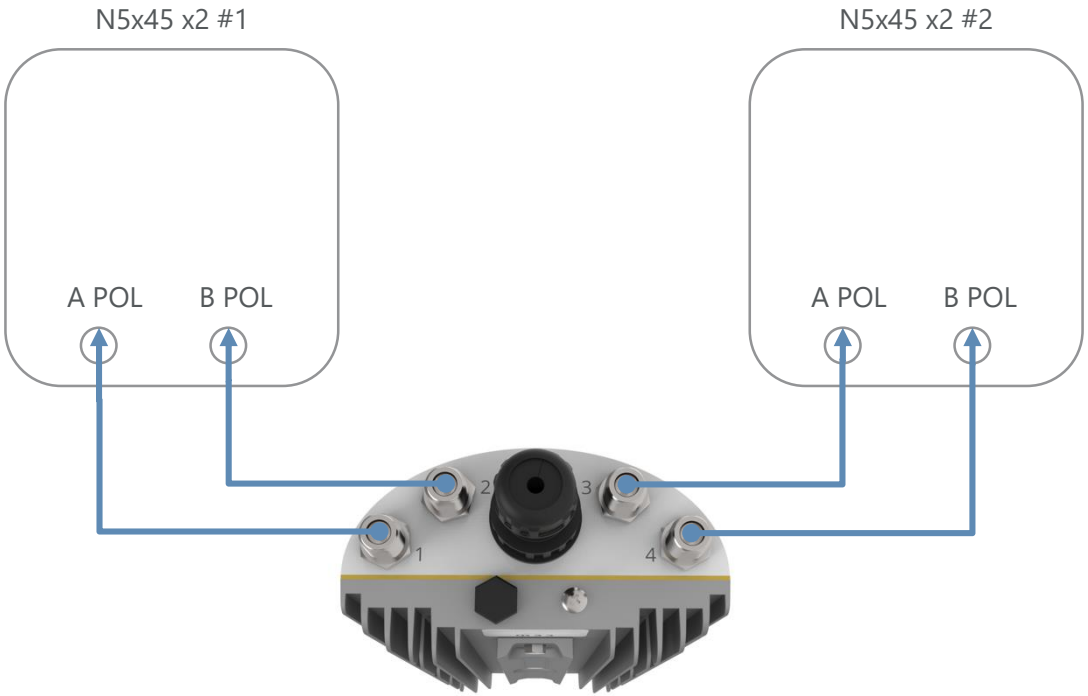
8 sectors – 4 A5c - 4 channels
160 subscribers (SRS)

High Capacity Beamforming (x4)



8 sectors – 8 A5c - 4 channels
320 subscribers (SRS)

A5c with 2 Sector Antennas



Sector Sync

Easy back-to-back channel reuse for highest spectrum efficiency

Reuse channels across tower locations and eliminate self-interference

Integrated high precision GPS + GLONASS
1 PPS disciplined oscillator

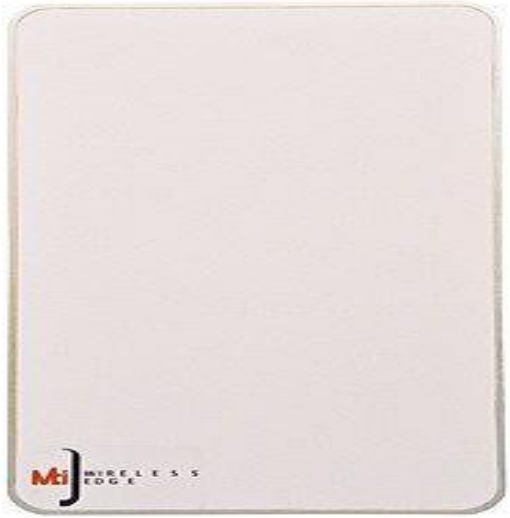
x4

17 dBi

65° sectors

x8

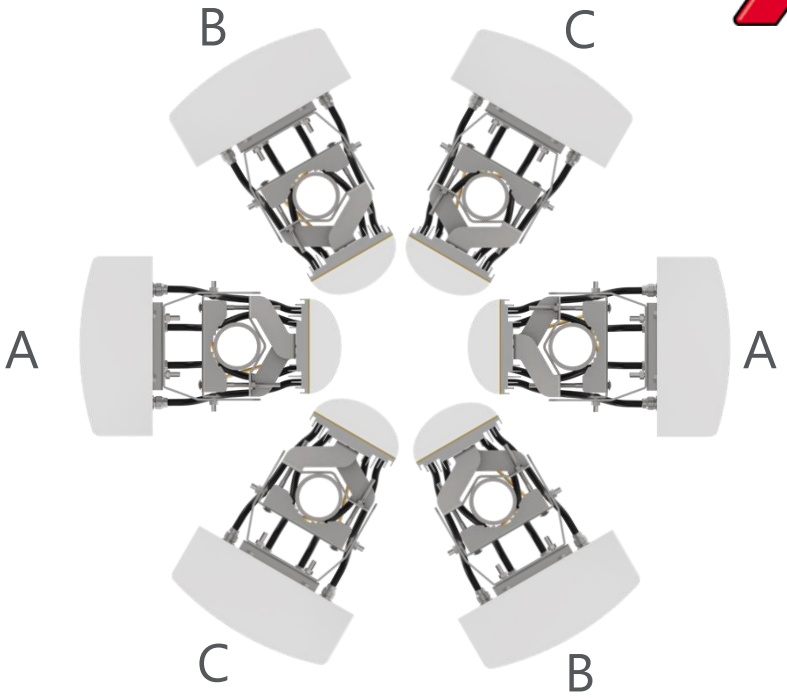
WIRELESS EDGE LTD.

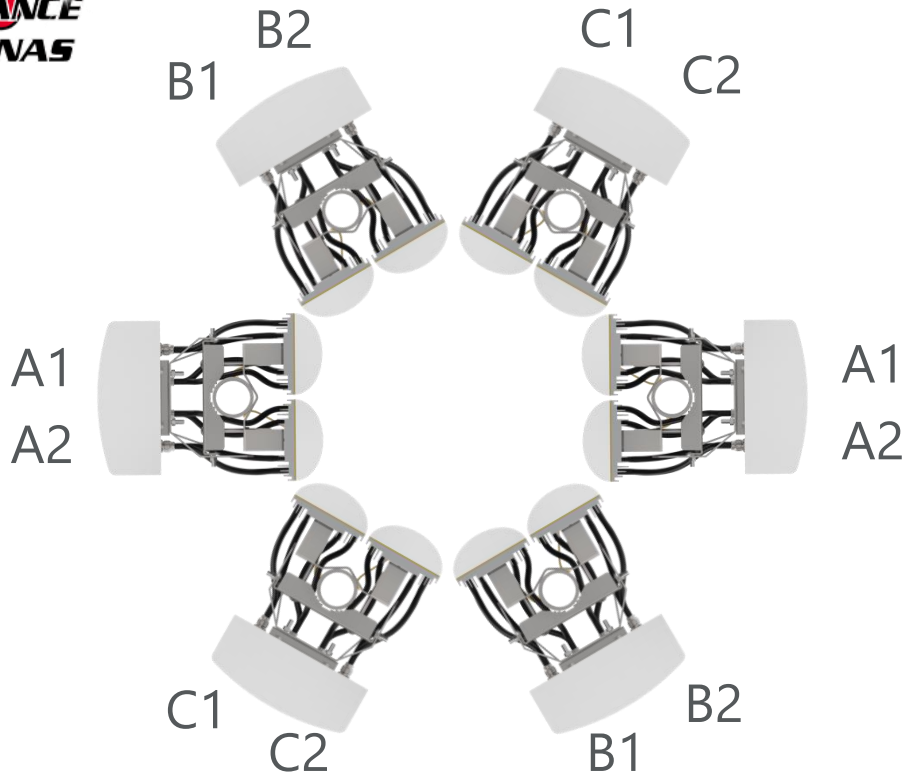


16.5dBi	**65°**	**MT-464042/ND**
14dBi	**90°**	**MT-463042/ND**

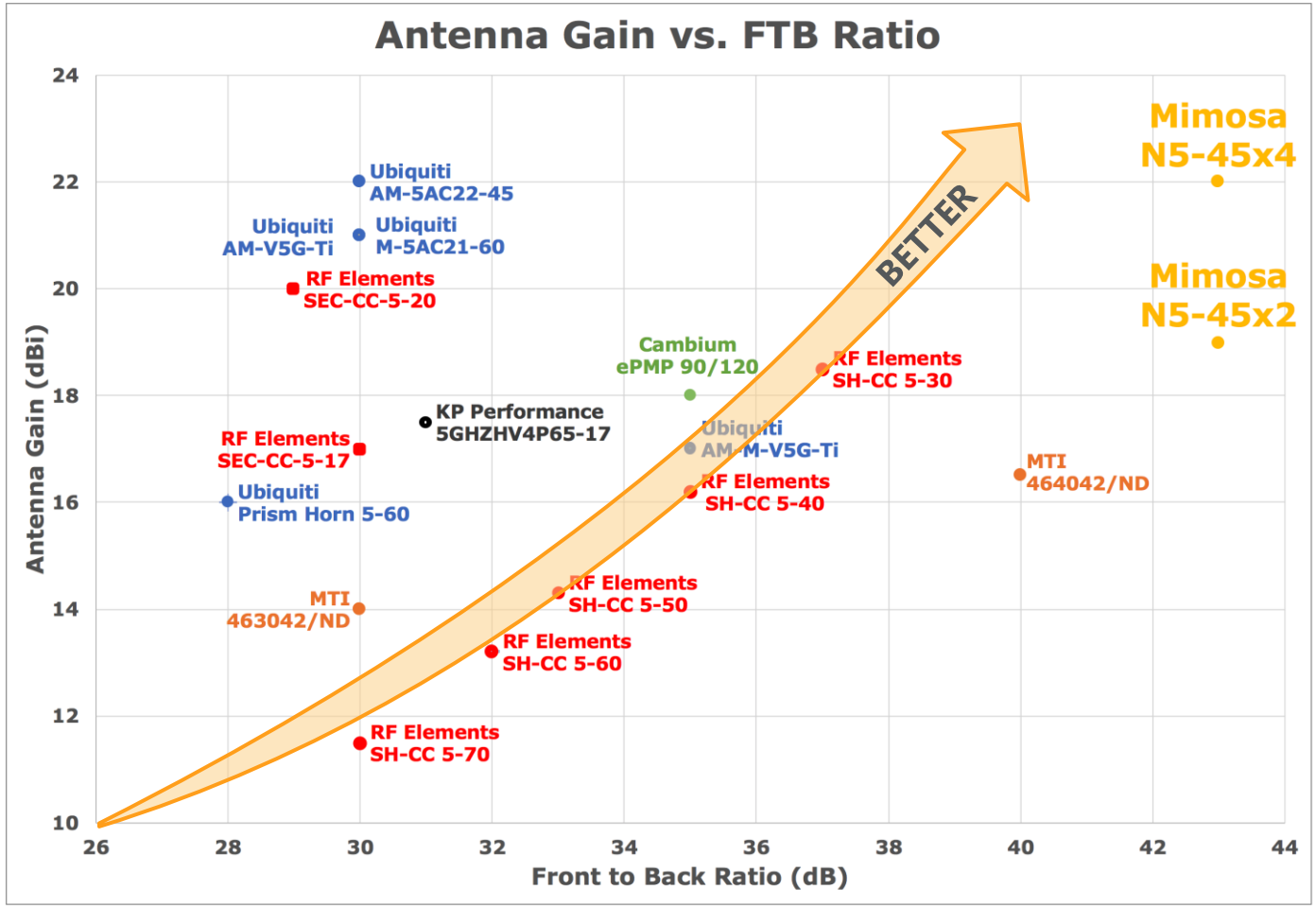
Coming soon:

13dBi 120°


B
C
A
A
C
B


B2
C1
B1
C2
A1
A1
A2
A2
C1
B2
C2
B1

Mimosa's N5-45 is the industry leader in F/B ratio and gain



Long Range Deployment

C5 Multipoint Client

4950-6200 MHz

Short & Mid-Range Client Up to 2 km
Ultra Compact Discrete installations
Mimosa Sync Compatible A5 GPS sync client

500+ Mbps	20 dBi	24 dBm

7 – 15W	IP55	2x2 11ac	260 mm	0.72 kg

PoE & mount choice sold separately

C5c Connectorized Radio

PTMP: 4900-6200 MHz*

PTMP Client 500+ Mbps

Bring Your Own Antenna Dual RP-SMA

Mimosa SRS Compatible A5 SRS client

Flexible PoE Powering 24-56 VDC Passive PoE

500+ Mbps	27 dBm

POE options (included in box)
- PoE Wall Plug or G2

7 – 13W	IP55	2x2 11ac	2 RP-SMA

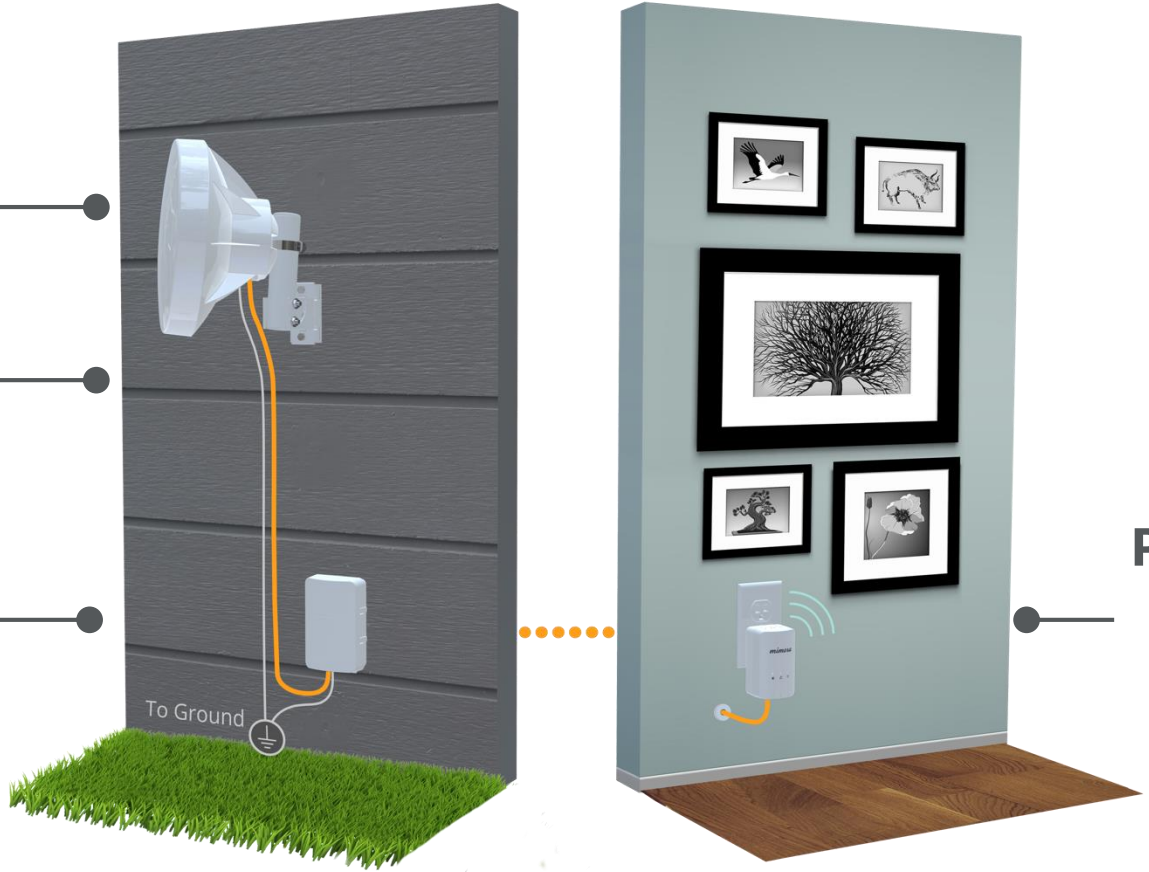
* Restricted by country of operation
FCC DFS (U-NII-2a, U-NII-2c) availability pending certification

Subscriber Client "Best Practices" Solution

Client Radio
C5 (shown) & C5c

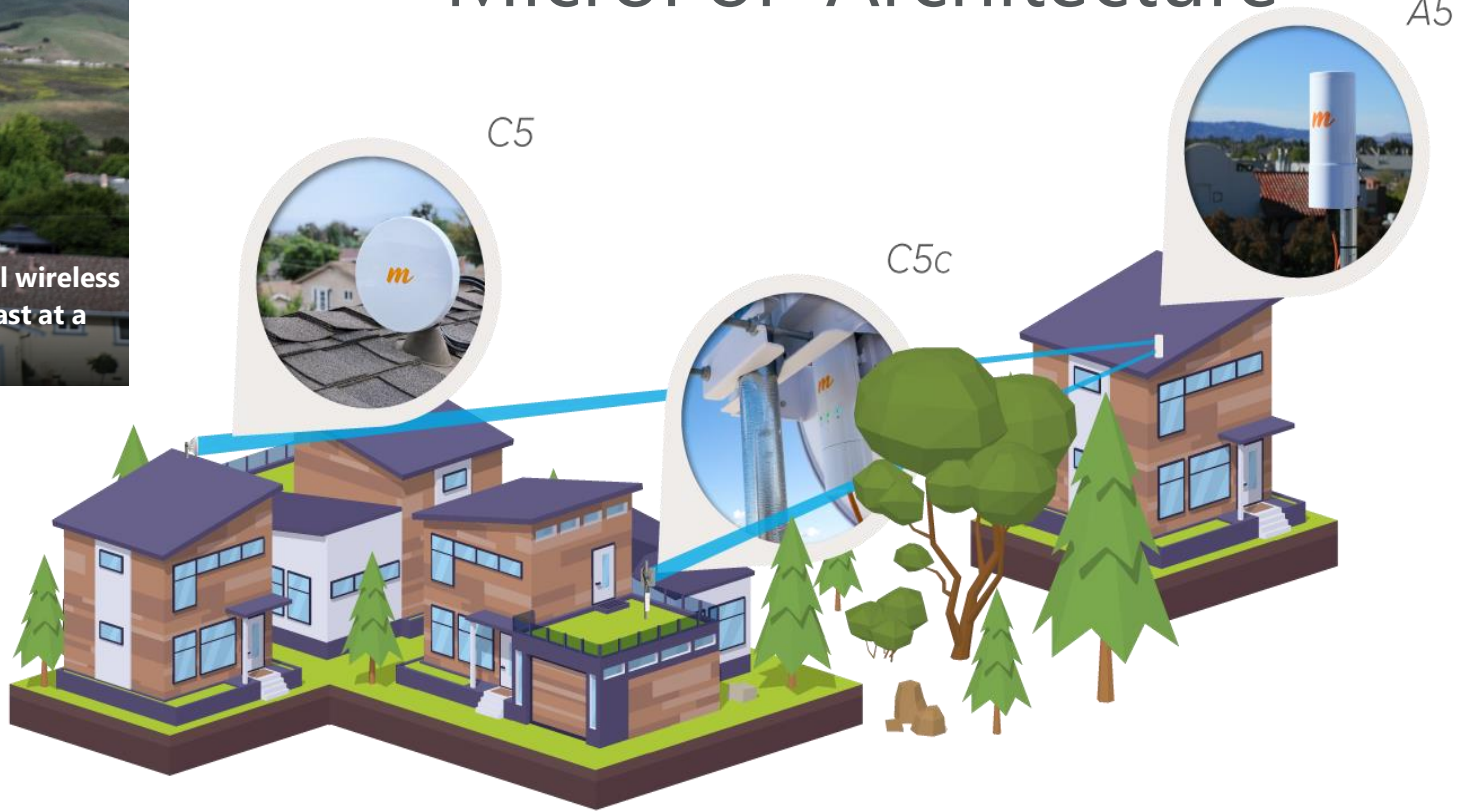
Mounting
FlexiMount
J-Mount

Gigabit NID
ESD Protection

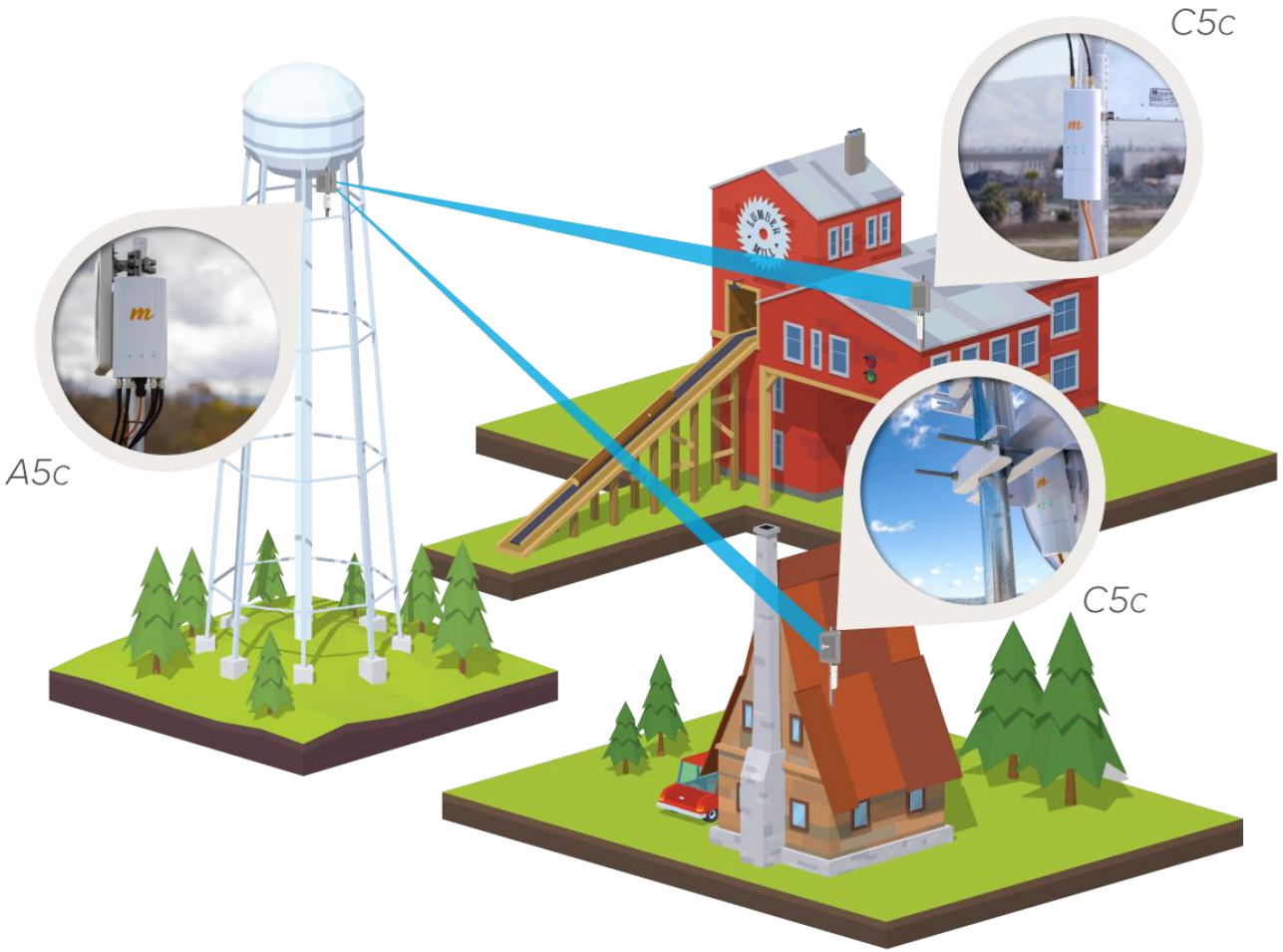


Power & Wi-Fi
G2 PoE Gateway
Mimosa PoE

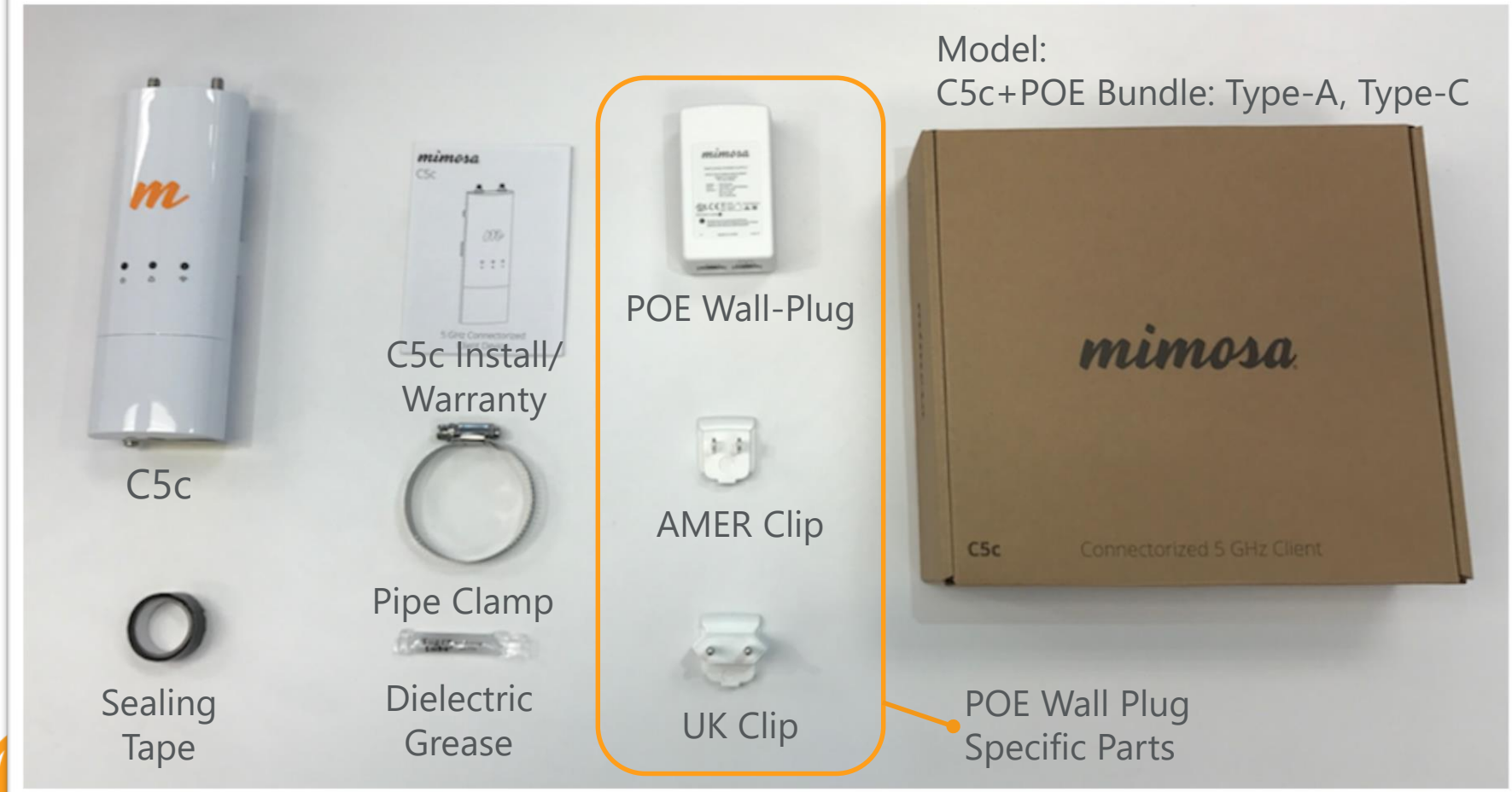
MicroPoP Architecture



Long Range Architecture



C5c – What's In the Box (POE)



C5c – What's In the Box (G2)

C5c Antennas Recommendations

MTI MT-465039/NVH/A
Dual Pole/Dual Slant Patch
24 dBi

Optional C5c quick mount

RF Elements
UltraDish27 - 27.5 dBi
UltraDish24 - 24.5 dBi

Requires TwistPort
C5c TP Adapter

KP Performance
Reflector With 5GHz
Feed horn - 27 dBi

KP Performance
Reflector With 5GHz
Feed horn – 30.5 dBi

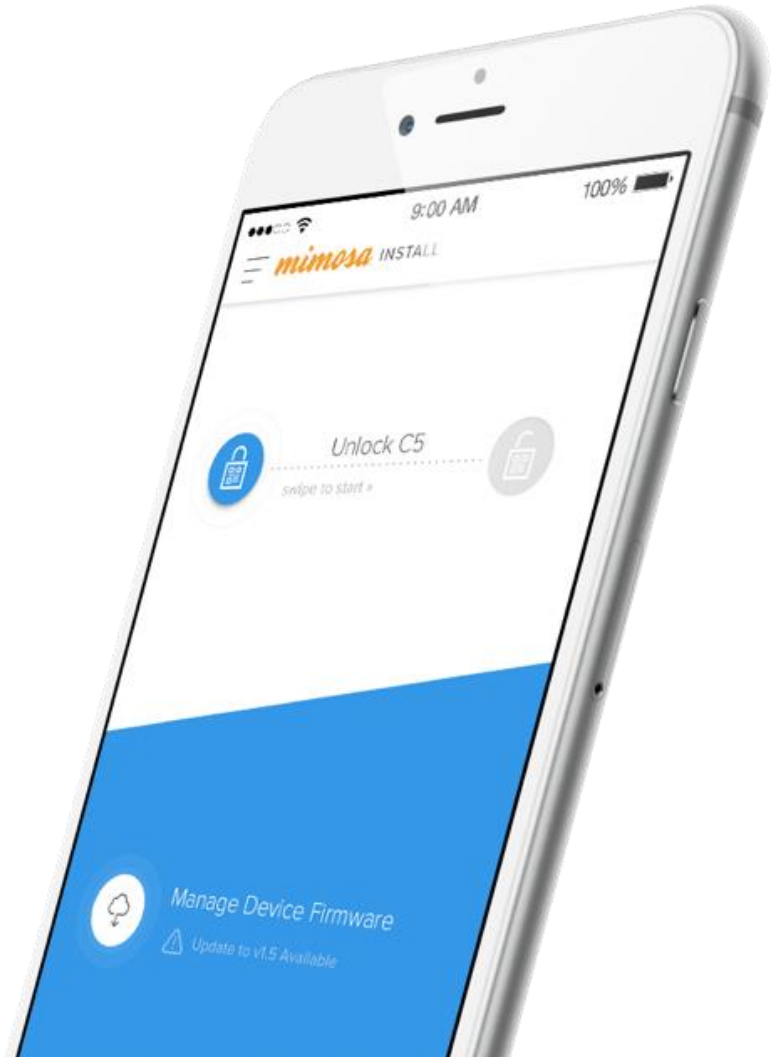
Ubiquiti
RD-5G30-LW 660mm - 30 dBi

C5c directly mounts into dish!

Management

Install

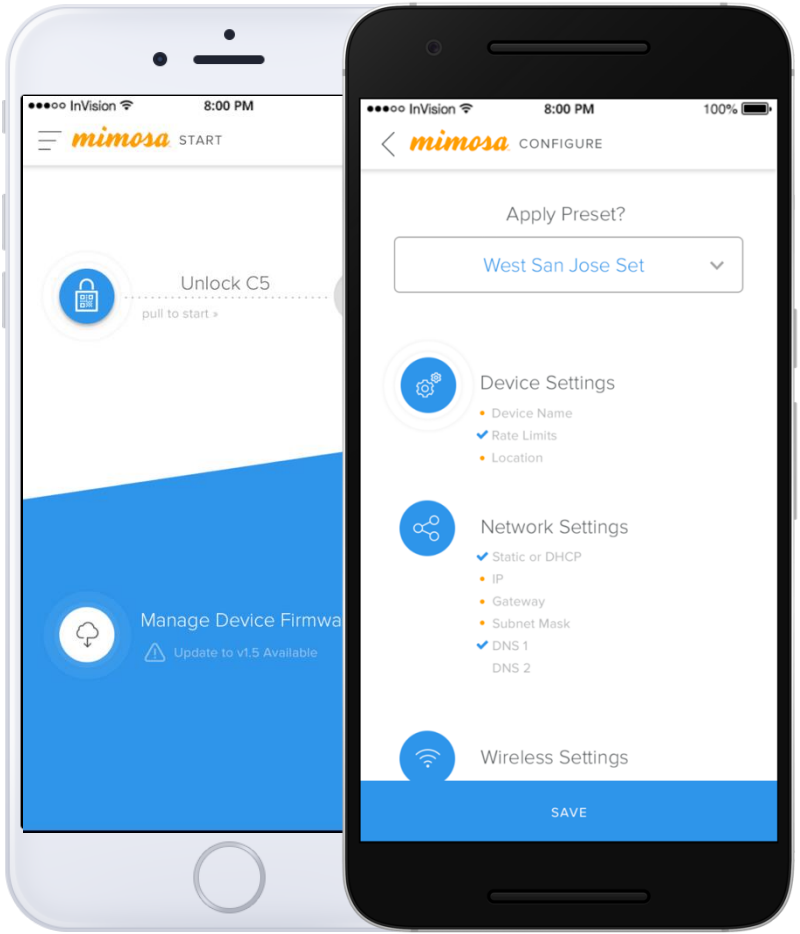
G2 POE Gateway required



Features

1. Easily unlock C5/C5c*
2. Manage and auto update C5 firmware
3. Quickly configure devices
4. Audible Aim and connect
5. Save configurations for future use

*G2 POE Required
Battery Pack Recommended



iOS Android

Mobile App Requirements

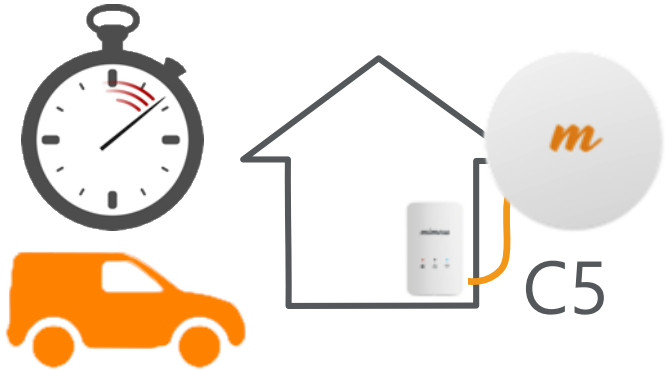
- Mimosa G2 to securely configure your C5/C5c
- Internet Connection Required
- Mimosa User Account Required

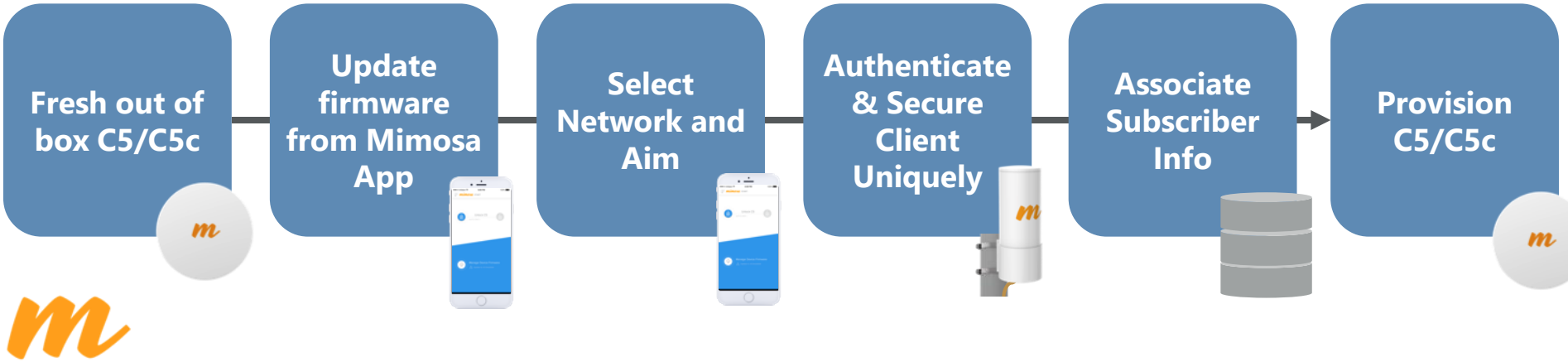
Operating System:	Android is 6.0+ and iOS is 10.3.1+
Supported Devices:	PTMP clients only - C5 and C5c
Firmware Update:	Auto Upgrade for any existing C5/C5c devices
C5 Configuration:	Requires 2.3+ Firmware

*Battery Pack Recommended (Tested with - Goal Zero Yeti 150 Portable Power)
http://www.goalzero.com/p/164/goal-zero-yeti-150-solar-generator/

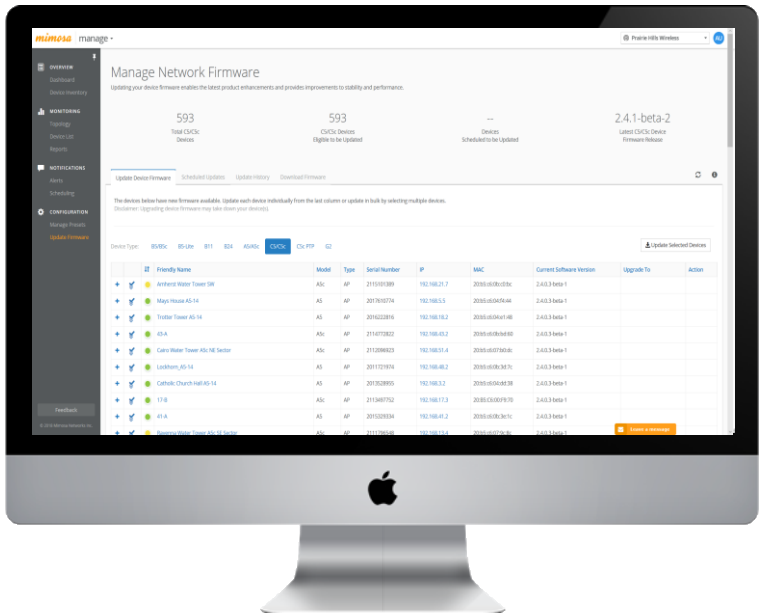
C5 Auto Configuration

- Dramatically shortens C5 installation time
- Enables Installation technicians of all skill levels
- Automates C5 unlock and configuration
- Integrates into customer billing system for subscriber provisioning & management
- RADIUS based





Mimosa Management Tools

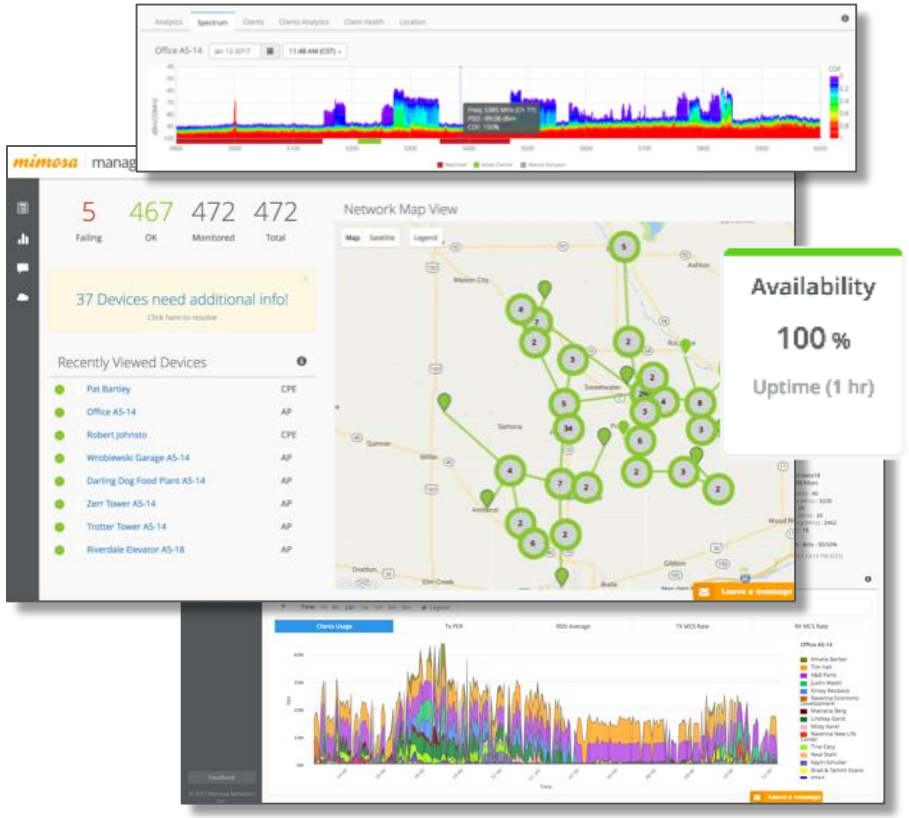


Cloud based policy & configuration for Mimosa devices

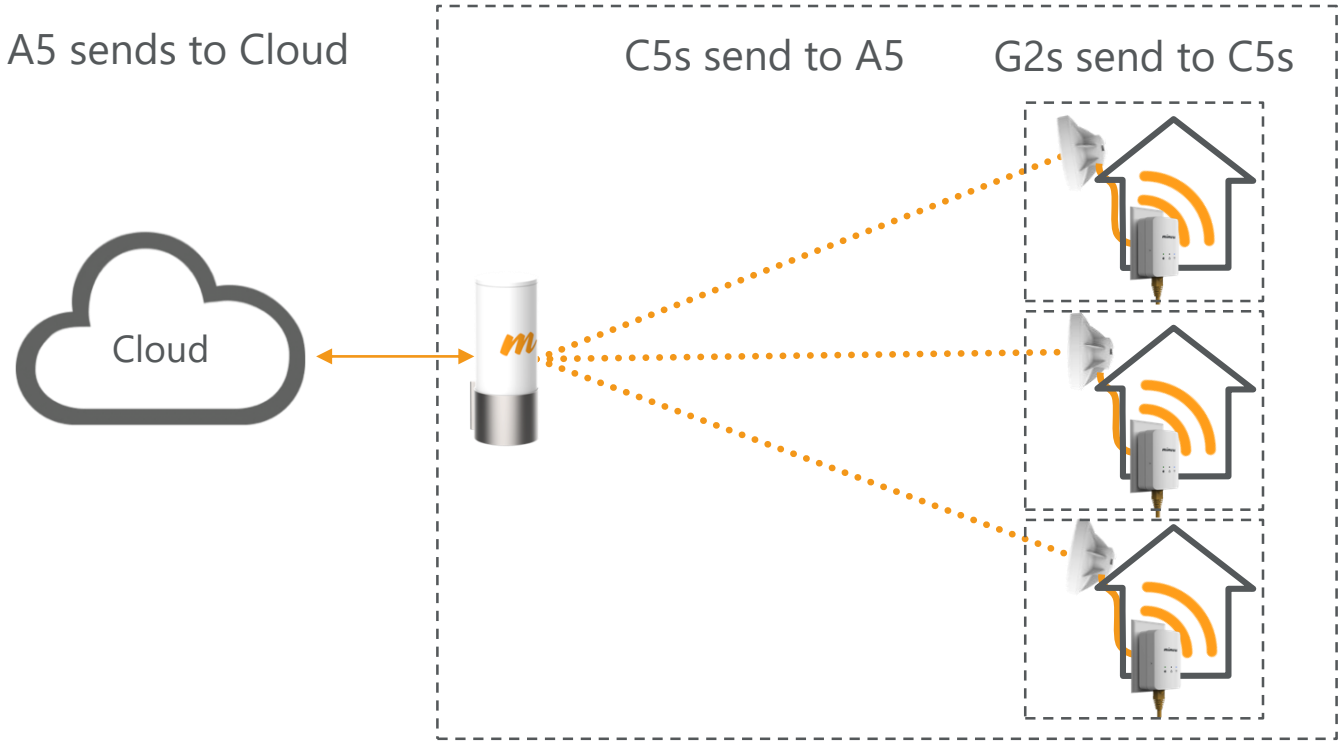
- Anticipate bulk of EMS and fault systems “on-net” with SNMP/API
- Define your ISP specific policies
  - Installer rules and Install App
  - Device global provisioning defaults
  - Setup pre-defined
- Network wide advanced spectrum and wireless maintenance
- Advanced Firmware management automation

Cloud Management

- Historical performance and RF data
- Network wide advanced spectrum and wireless maintenance
- Advanced Firmware management automation
- Device status monitoring
- In home Wi-Fi monitoring and Client Health statistics



Access Cloud Connectivity



OVERVIEW
Dashboard
Device Inventory

MONITORING
Topology
Device List
Reports

NOTIFICATIONS
Alerts
Scheduling

CONFIGURATION
Manage Presets
Update Firmware

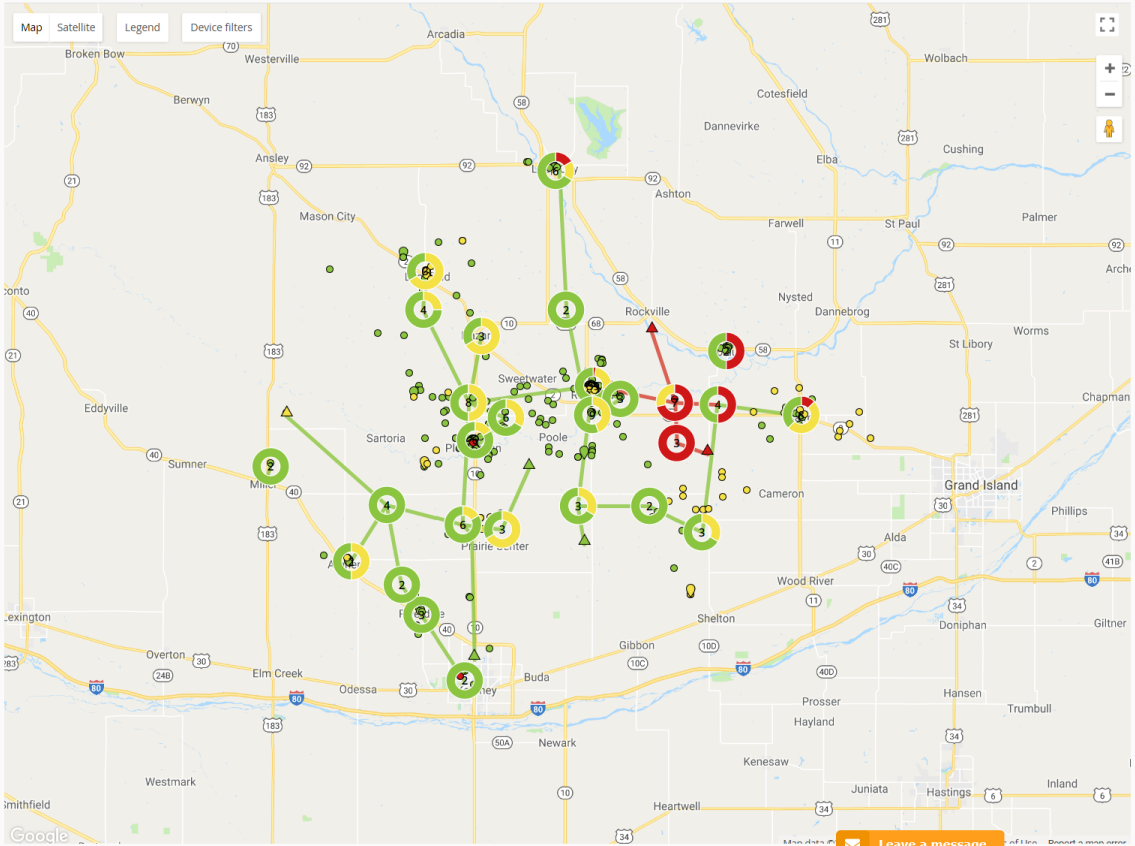
646 109 23

4 782 Total

Recently Viewed Devices

3062545540_Prairie Hills Wireless	CPE
Abby Henrichs	CPE
Kelsey_Slave	Backhaul
Diann Wackerla	CPE
Patricia Spotanski	CPE
Marlan Quaring	CPE
32_Master	Backhaul
Laurie Riessland	CPE

Network Map View



Leave a message

Feedback

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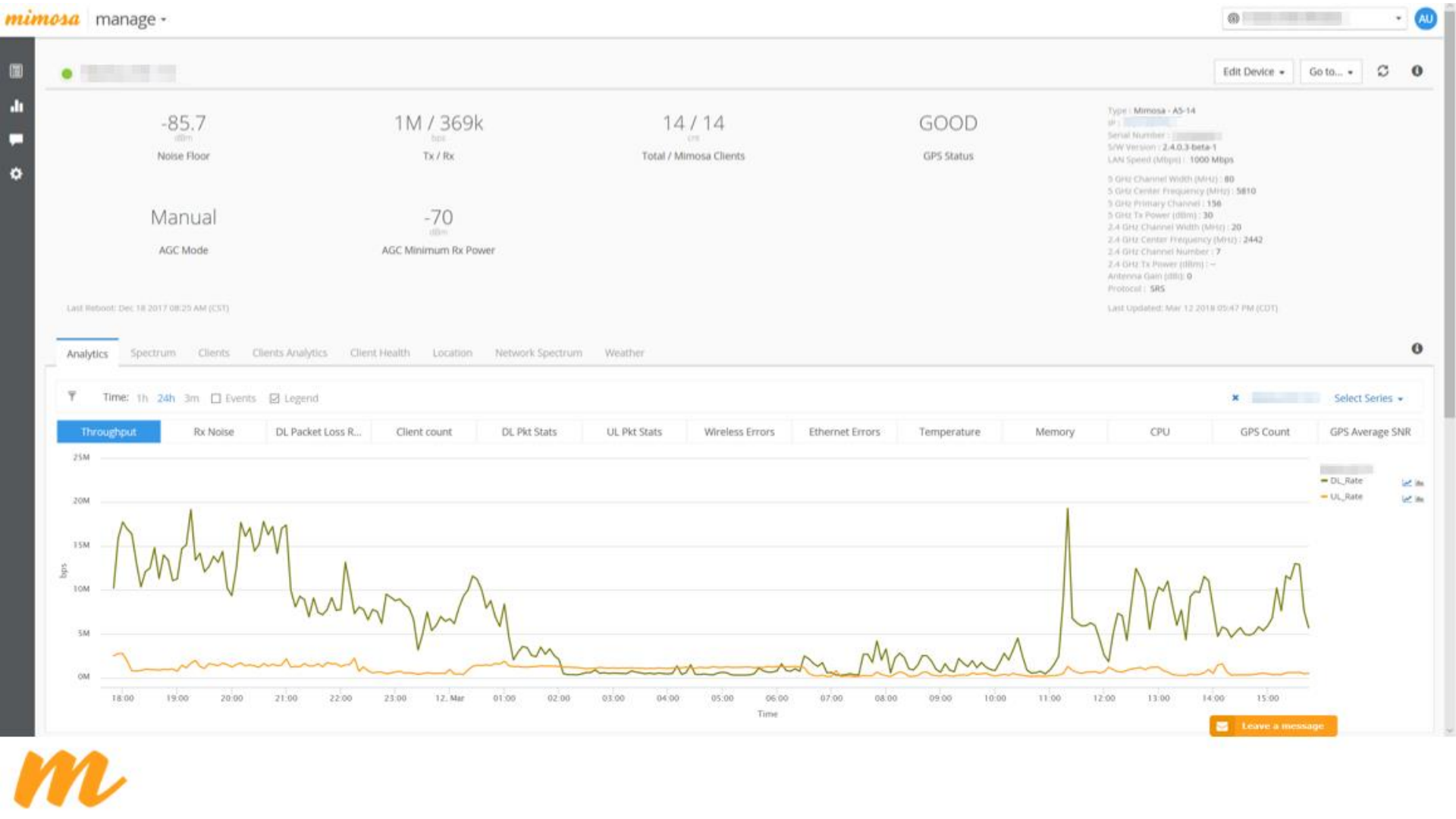

mimosa
manage
AU
Edit Device
Go to...
-85.7
dBm
Noise Floor
1M / 369k
bps
Tx / Rx
14 / 14
cnt
Total / Mimosa Clients
GOOD
GPS Status
Manual
AGC Mode
-70
dBm
AGC Minimum Rx Power
Type : Mimosa - A5-14
Serial Number :
S/W Version : 2.4.0.3-beta-1
LAN Speed (Mbps) : 1000 Mbps
5 GHz Channel Width (MHz) : 80
5 GHz Center Frequency (MHz) : 5810
5 GHz Primary Channel : 156
5 GHz Tx Power (dBm) : 30
2.4 GHz Channel Width (MHz) : 20
2.4 GHz Center Frequency (MHz) : 2442
2.4 GHz Channel Number : 7
2.4 GHz Tx Power (dBm) : --
Antenna Gain (dBi): 0
Protocol : SRS
Last Reboot: Dec 18 2017 08:25 AM (CST)
Last Updated: Mar 12 2018 05:47 PM (CDT)
Analytics
Spectrum
Clients
Clients Analytics
Client Health
Location
Network Spectrum
Weather
Time: 1h 24h 3m Events Legend
Select Series
Throughput
Rx Noise
DL Packet Loss R...
Client count
DL Pkt Stats
UL Pkt Stats
Wireless Errors
Ethernet Errors
Temperature
Memory
CPU
GPS Count
GPS Average SNR
25M
20M
15M
10M
5M
0M
bps
DL_Rate
UL_Rate
18:00
19:00
20:00
21:00
22:00
23:00
12. Mar
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
Time
Leave a message

mimosa manage

Edit Device | Go to...

-85.7 dBm
Noise Floor

1M / 369k bps
Tx / Rx

14 / 14 cnt
Total / Mimosa Clients

GOOD
GPS Status

Manual
AGC Mode

-70 dBm
AGC Minimum Rx Power

Type : Mimosa - A5-14
IP : 1
Serial Number :
S/W Version : 2.4.0.3-beta-1
LAN Speed (Mbps) : 1000 Mbps

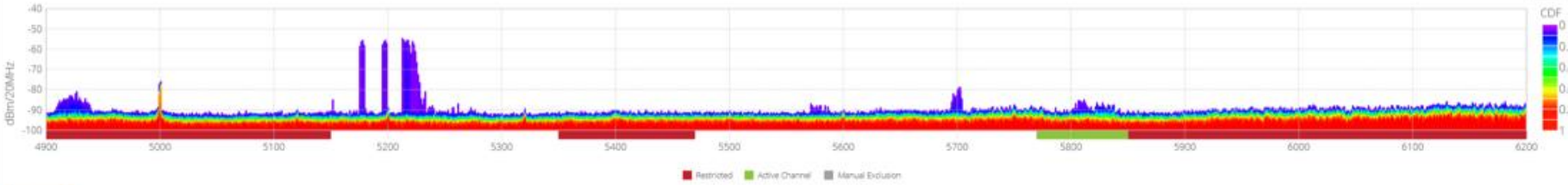
5 GHz Channel Width (MHz) : 80
5 GHz Center Frequency (MHz) : 5810
5 GHz Primary Channel : 156
5 GHz Tx Power (dBm) : 30
2.4 GHz Channel Width (MHz) : 20
2.4 GHz Center Frequency (MHz) : 2442
2.4 GHz Channel Number : 7
2.4 GHz Tx Power (dBm) : -
Antenna Gain (dBi): 0
Protocol : SRS

Last Reboot: Dec 18 2017 08:25 AM (CST)

Last Updated: Mar 12 2018 05:47 PM (CDT)

Analytics | Spectrum | Clients | Clients Analytics | Client Health | Location | Network Spectrum | Weather

Export as PDF



Compare

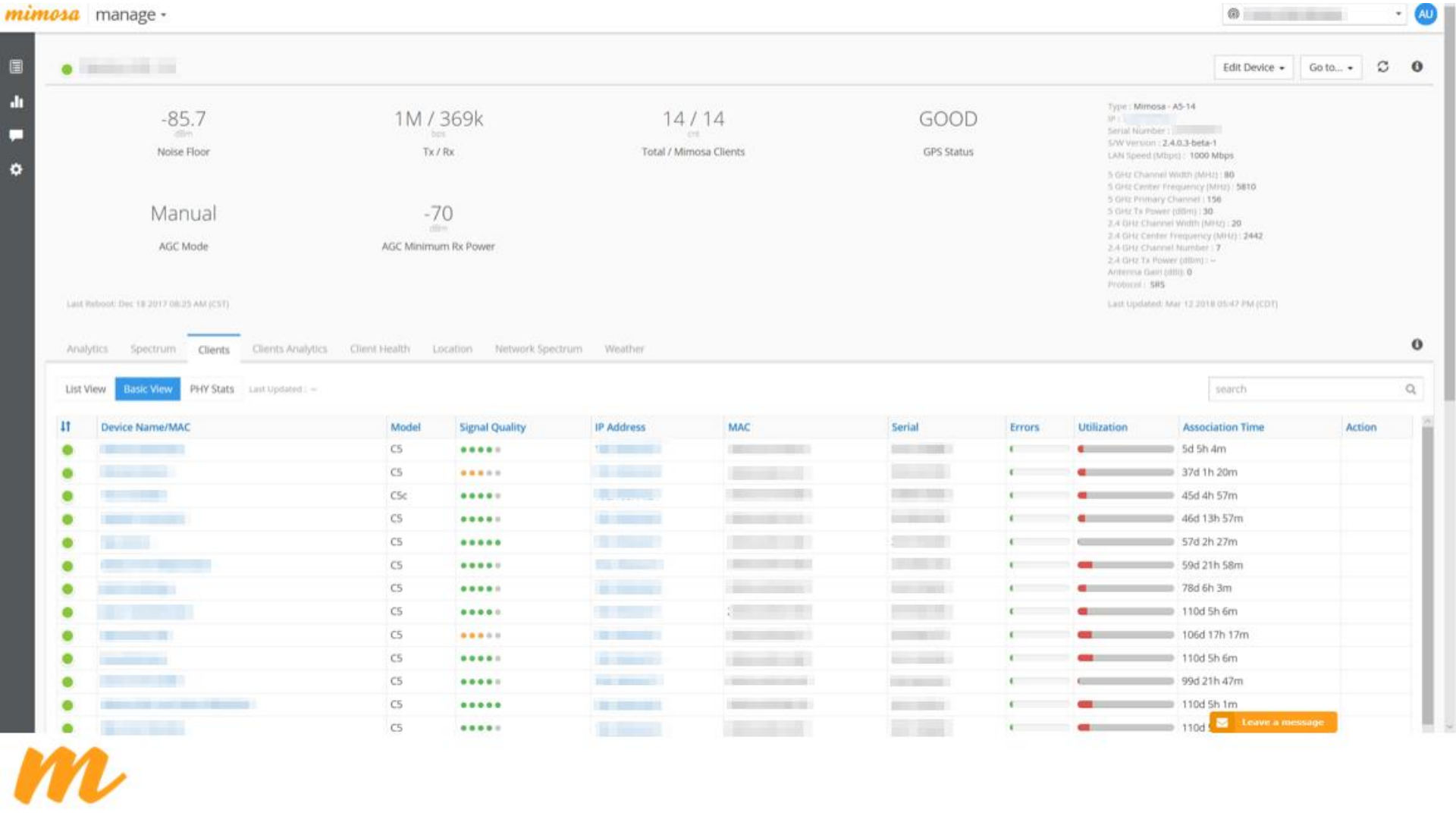
Recent Events

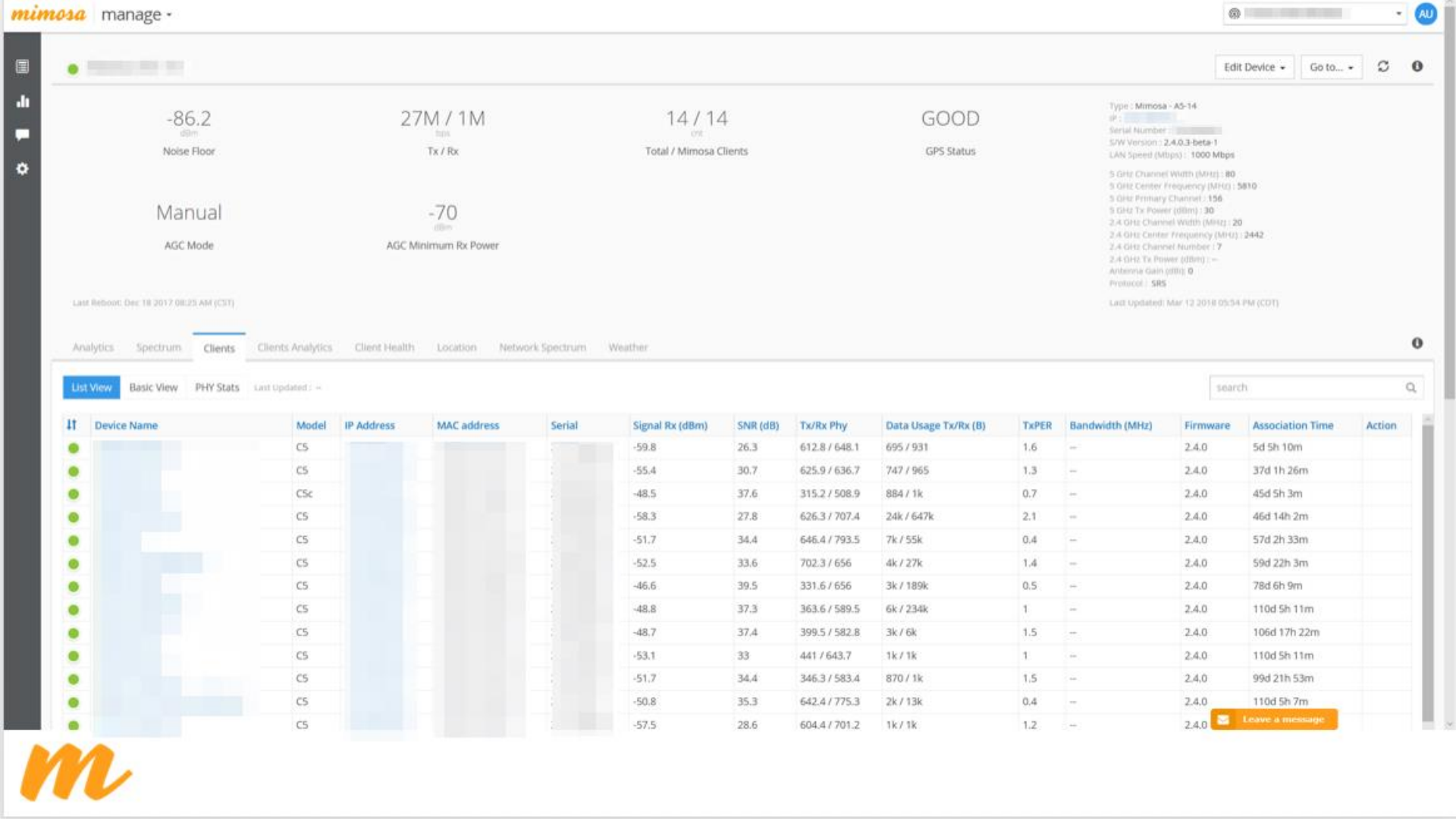
Event	Time

Notes & Comments

Nothing to see!
Post a note or comment using the text area below!

Leave a message


mimosa
manage
AU
Edit Device
Go to...
-85.7
Noise Floor
1M / 369k
Tx / Rx
14 / 14
Total / Mimosa Clients
GOOD
GPS Status
Manual
AGC Mode
-70
AGC Minimum Rx Power
Type : Mimosa - A5-14
Serial Number :
S/W Version : 2.4.0.3-beta-1
LAN Speed (Mbps) : 1000 Mbps
5 GHz Channel Width (MHz) : 80
5 GHz Center Frequency (MHz) : 5810
5 GHz Primary Channel : 156
5 GHz Tx Power (dBm) : 30
2.4 GHz Channel Width (MHz) : 20
2.4 GHz Center Frequency (MHz) : 2442
2.4 GHz Channel Number : 7
2.4 GHz Tx Power (dBm) : --
Antenna Gain (dBi): 0
Protocol : 5RS
Last Updated: Mar 12 2018 05:47 PM (CDT)
Last Reboot: Dec 18 2017 08:25 AM (CST)
Analytics
Spectrum
Clients
Clients Analytics
Client Health
Location
Network Spectrum
Weather
List View
Basic View
PHY Stats
search
Device Name/MAC
Model
Signal Quality
IP Address
MAC
Serial
Errors
Utilization
Association Time
Action
C5 5d 5h 4m
C5 37d 1h 20m
C5c 45d 4h 57m
C5 46d 13h 57m
C5 57d 2h 27m
C5 59d 21h 58m
C5 78d 6h 3m
C5 110d 5h 6m
C5 106d 17h 17m
C5 110d 5h 6m
C5 99d 21h 47m
C5 110d 5h 1m
C5
Leave a message


mimosa manage
Edit Device
Go to...
-86.2
dBm
Noise Floor
27M / 1M
bps
Tx / Rx
14 / 14
cnt
Total / Mimosa Clients
GOOD
GPS Status
Manual
AGC Mode
-70
dBm
AGC Minimum Rx Power
Type : Mimosa - A5-14
S/W Version : 2.4.0.3-beta-1
LAN Speed (Mbps) : 1000 Mbps
5 GHz Channel Width (MHz) : 80
5 GHz Center Frequency (MHz) : 5810
5 GHz Primary Channel : 156
5 GHz Tx Power (dBm) : 30
2.4 GHz Channel Width (MHz) : 20
2.4 GHz Center Frequency (MHz) : 2442
2.4 GHz Channel Number : 7
Antenna Gain (dBi) : 0
Protocol : SRS
Last Updated: Mar 12 2018 05:54 PM (CDT)
Last Reboot: Dec 18 2017 08:25 AM (CST)
Analytics
Spectrum
Clients
Clients Analytics
Client Health
Location
Network Spectrum
Weather
List View
Basic View
PHY Stats
Last Updated : --
search
Device Name
Model
IP Address
MAC address
Serial
Signal Rx (dBm)
SNR (dB)
Tx/Rx Phy
Data Usage Tx/Rx (B)
TxPER
Bandwidth (MHz)
Firmware
Association Time
Action
C5 -59.8 26.3 612.8 / 648.1 695 / 931 1.6 -- 2.4.0 5d 5h 10m
C5 -55.4 30.7 625.9 / 636.7 747 / 965 1.3 -- 2.4.0 37d 1h 26m
C5c -48.5 37.6 315.2 / 508.9 884 / 1k 0.7 -- 2.4.0 45d 5h 3m
C5 -58.3 27.8 626.3 / 707.4 24k / 647k 2.1 -- 2.4.0 46d 14h 2m
C5 -51.7 34.4 646.4 / 793.5 7k / 55k 0.4 -- 2.4.0 57d 2h 33m
C5 -52.5 33.6 702.3 / 656 4k / 27k 1.4 -- 2.4.0 59d 22h 3m
C5 -46.6 39.5 331.6 / 656 3k / 189k 0.5 -- 2.4.0 78d 6h 9m
C5 -48.8 37.3 363.6 / 589.5 6k / 234k 1 -- 2.4.0 110d 5h 11m
C5 -48.7 37.4 399.5 / 582.8 3k / 6k 1.5 -- 2.4.0 106d 17h 22m
C5 -53.1 33 441 / 643.7 1k / 1k 1 -- 2.4.0 110d 5h 11m
C5 -51.7 34.4 346.3 / 583.4 870 / 1k 1.5 -- 2.4.0 99d 21h 53m
C5 -50.8 35.3 642.4 / 775.3 2k / 13k 0.4 -- 2.4.0 110d 5h 7m
C5 -57.5 28.6 604.4 / 701.2 1k / 1k 1.2 -- 2.4.0
Leave a message

mimosa manage

Edit Device | Go to...

-86.2 dBm	27M / 1M bps	14 / 14 cnt	GOOD
Noise Floor	Tx / Rx	Total / Mimosa Clients	GPS Status

Manual	-70 dBm
AGC Mode	AGC Minimum Rx Power

Last Reboot: Dec 18 2017 08:25 AM (CST)

Type : Mimosa - A5-14
IP :
Serial Number :
S/W Version : 2.4.0.3-beta-1
LAN Speed (Mbps) : 1000 Mbps

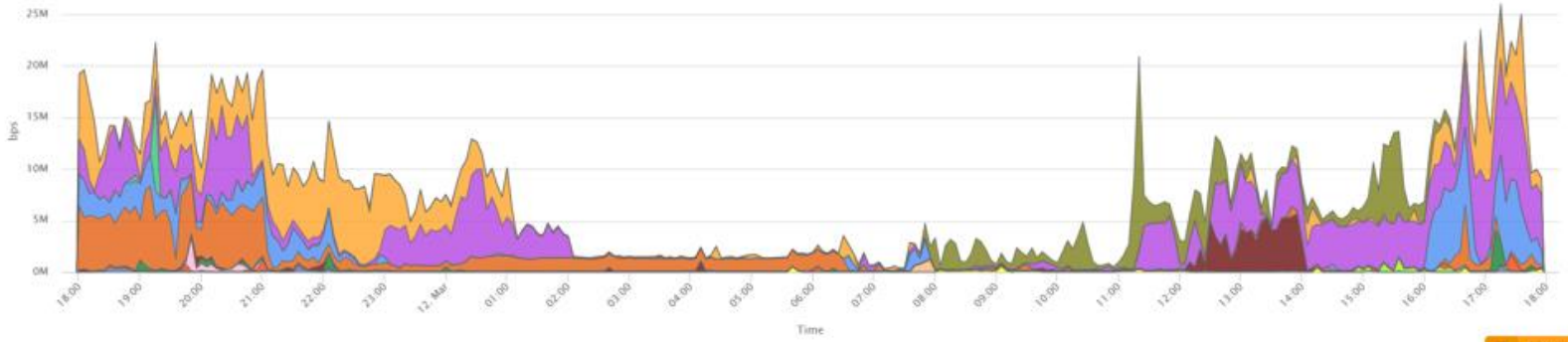
5 GHz Channel Width (MHz) : 80
5 GHz Center Frequency (MHz) : 5810
5 GHz Primary Channel : 156
5 GHz Tx Power (dBm) : 30
2.4 GHz Channel Width (MHz) : 20
2.4 GHz Center Frequency (MHz) : 2442
2.4 GHz Channel Number : 7
2.4 GHz Tx Power (dBm) : --
Antenna Gain (dBi): 0
Protocol : SRS

Last Updated: Mar 12 2018 05:54 PM (CDT)

Analytics | Spectrum | Clients | Clients Analytics | Client Health | Location | Network Spectrum | Weather

Time: 1h 24h Events Legend

Clients Usage | Clients PHY UL Rate | Clients PHY DL Rate | UL Packet Loss Rate | UL PER | DL RSSI Average | UL MCS Rate | DL MCS Rate



Leave a message


mimosa
manage
Edit Device
Go to...
-86.2
dBm
Noise Floor
27M / 1M
bps
Tx / Rx
14 / 14
cnt
Total / Mimosa Clients
GOOD
GPS Status
Manual
AGC Mode
-70
dBm
AGC Minimum Rx Power
Type : Mimosa - A5-14
S/W Version : 2.4.0.3-beta-1
LAN Speed (Mbps) : 1000 Mbps
5 GHz Channel Width (MHz) : 80
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Antenna Gain (dBi): 0
Protocol : SRS
Last Reboot: Dec 18 2017 08:25 AM (CST)
Last Updated: Mar 12 2018 05:54 PM (CDT)
Analytics
Spectrum
Clients
Clients Analytics
Client Health
Location
Network Spectrum
Weather
Time: 1h 24h
Events
Legend
Clients Usage
Clients PHY UL Rate
Clients PHY DL Rate
UL Packet Loss Rate
UL PER
DL RSSI Average
UL MCS Rate
DL MCS Rate
-50
-55
-60
-65
dBm
18:00
19:00
20:00
21:00
22:00
23:00
12. Mar
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
Time
Boelus AS-14
Select All Clients
Leave a message

Manage Network Firmware

Updating your device firmware enables the latest product enhancements and provides improvements to stability and performance.

593	593	--	2.4.1-beta-2
Total C5/C5c Devices	C5/C5c Devices Eligible to be Updated	Devices Scheduled to be Updated	Latest C5/C5c Device Firmware Release

Update Device Firmware | Scheduled Updates | Update History | Download Firmware

The devices below have new firmware available. Update each device individually from the last column or update in bulk by selecting multiple devices.
Disclaimer: Upgrading device firmware may take down your device(s).

Device Type: B5/B5c | B5-Lite | B11 | B24 | A5/A5c | C5/C5c | C5c PTP | G2

Update Selected Devices

Friendly Name	Model	Type	Serial Number	IP	MAC	Current Software Version	Upgrade To	Action
	A5c	AP				2.4.0.3-beta-1		
	A5	AP				2.4.0.3-beta-1		
	A5	AP				2.4.0.3-beta-1		
	A5c	AP				2.4.0.3-beta-1		
	A5c	AP				2.4.0.3-beta-1		
	A5	AP				2.4.0.3-beta-1		
	A5	AP				2.4.0.3-beta-1		
	A5c	AP				2.4.0.3-beta-1		
	A5	AP				2.4.0.3-beta-1		
	A5c	AP				2.4.0.3-beta-1		

Leave a message

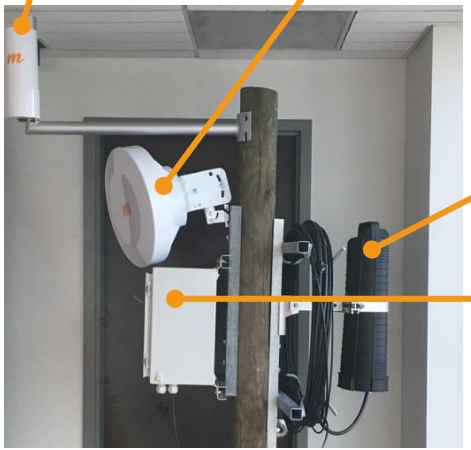
Best Practices

Operationalizing HFW

Site Engineering Practice Standardization

AP mounting or sector antenna recommendation

Wireless Backhaul where no Fiber



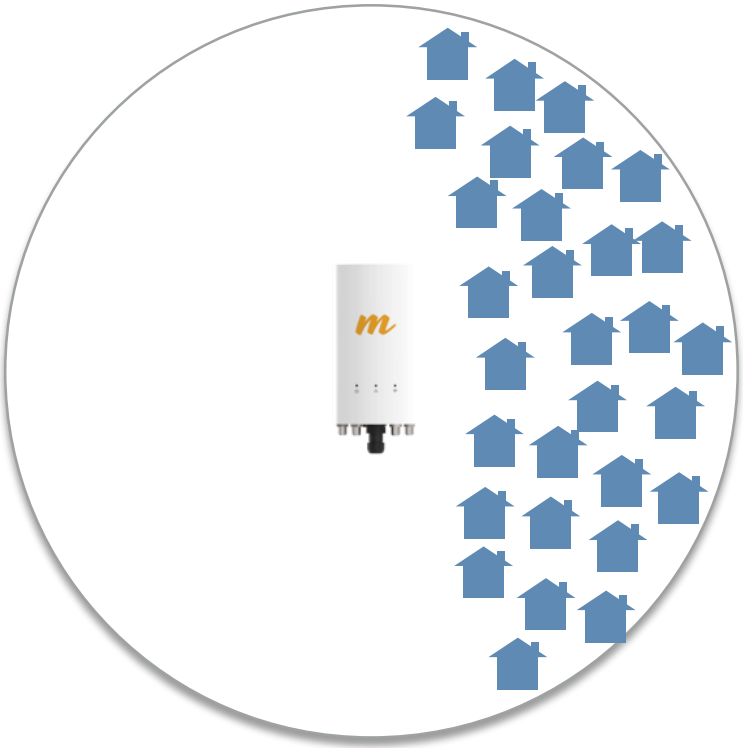
Fiber Splice

Media conversion
DC/PoE/Battery
Switching
Grounding

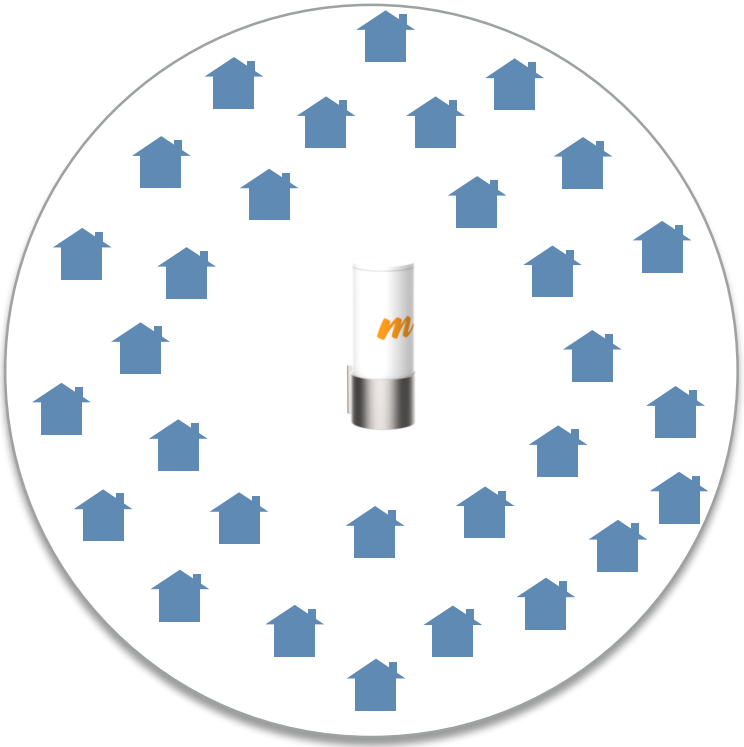
Best Practice Design for Reliability & OPEX

- Network planning
- Site engineering
- Installation optimization
- FCAPS for the Fixed Wireless world
- Dedicated support, training and response

Client Placement Relative to AP

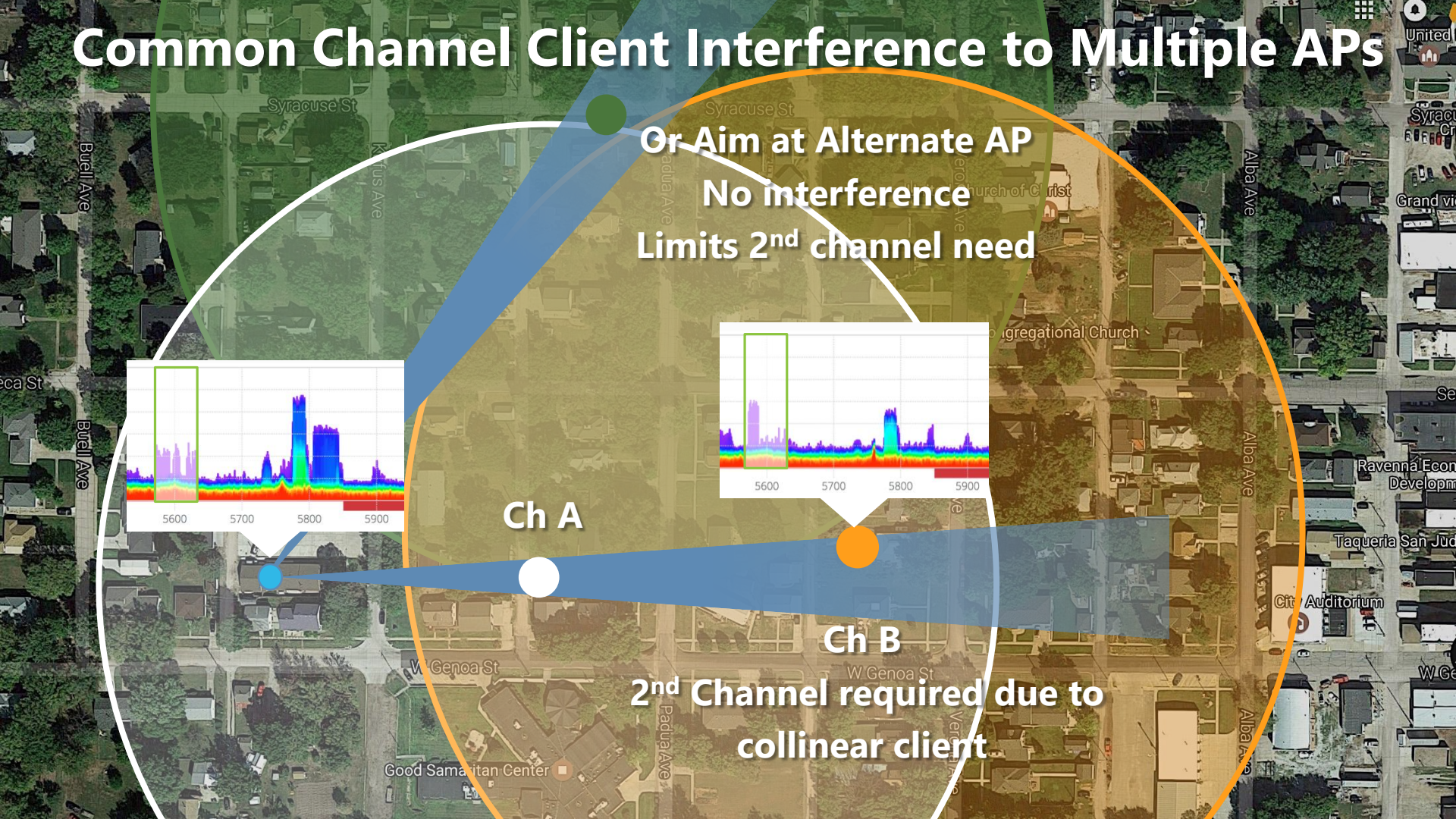


Use A5c with Sector Antenna



Use A5-14

Common Channel Client Interference to Multiple APs



Award-Winning Support Team

- Direct chat/email/phone support
  - RF experts
  - Networking experts
  - Most answers in 2 minutes
- Regional Field Engineers
  - Product qualification, training, etc.
- Extensive knowledge base
- 500+ technical design/support articles

TOP REASONS
TO CHOOSE

mimosa

Additional Resources

5G FIXED
Learn More About Fixed Wireless Networks

http://www.mimosa.co/5g-fixed

CASE STUDIES
Find Out How Mimosa Solutions are Helping Our Customers

http://www.mimosa.co/case-studies

TALK TO AN EXPERT
How Can We Help You?

http://www.mimosa.co/contact-us

Thank You

For more information: www.mimosa.co

Email: marketing@mimosa.co

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Blog: http://mimosa.co/blog