InfiNet Wireless vs. Cambridge Broadband Networks

A Competitive Analysis for Choosing the Most Valuable Wireless Solution Vendor

OVERVIEW

SUMMARY:

- ITEM 1: Carrier grade competitor
- ITEM 2: Weigh the benefits
- ITEM 3: Economic value




ITEM1: CARRIER GRADE COMPETITOR

About Cambridge Broadband Networks

General overview

- Privately held company
- 10.5, 26 & 28GHz wireless backhaul (licensed bands)
- Point-to-MultiPoint microwave transmission
- Operating from United Kingdom with regional headquarters in South Africa, Nigeria and Kenya
- Mobile backhaul, enterprise access and small-cell networks
- More than 50% of CBNL sales depend on the African region

Targeted segments

- Backhauling 2G, 3G, HSPA+, LTE and Enterprise Access Networks
- Government
- Utilities
- Municipal services

ITEM 2: WEIGH THE BENEFITS

Air protocol

- Proprietary air protocol with cross-layer QoS support
- More suitable for multiservice IP networks
- Adaptive Marker Access (minimized latency for priority traffic, less sensitive to interference, from 40 MHz per multi-sector BS, license exempt and licensed bands)
- Native TDMA support (reduced overall jitter, up to 40 MHz per multi-sector BS, licensed bands, use synchronization)

- Single Carrier FDD Full Duplex, TDMA uplink and downlink
- Dedicated for 2G/3G/LTE and Wi-Fi small-cells transport

ITEM 2: WEIGH THE BENEFITS

Performance vs. range

- Sector throughput per Base Station: up to 240Mbps (40MHz channel at 64QAM 5/6)
- CPE: up to 180MBps

- Range: up to 100 km, depending on the unit type

- Sector throughput per Access Point: up to 300Mbps Ethernet (28MHz channel at 256QAM) for 1+0 and 1+1 configurations

- Range:
  - up to 28.6 km @ 10.5 GHz
  - up to 7.4 km @ 26 GHz
  - up to 6.9 km @ 28 GHz

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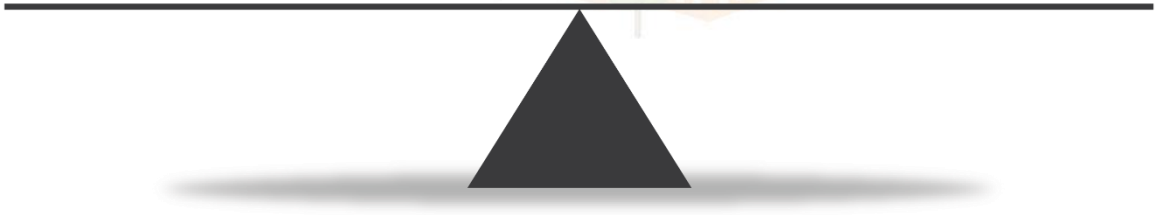

ITEM 2: WEIGH THE BENEFITS

Scalability

- Unlimited number of CPEs connected to BS (in PtMP)

- All InfiNet units can be used as CPE (in PtP) or as BS (in PtMP)
- Only license software upgrade is required

- Dynamically allocated uplink/ downlink ratio from 50:50 up to 95:5 depending on link load

- AP in Zero-footprint mode: Up to 8 RTs in a sector
- AP with Radio Controller: Up to 30 RTs per sector

- The unit type (from AP to RT) cannot be changed/upgraded in field

- Fixed, symmetric (50:50) uplink/downlink ratio

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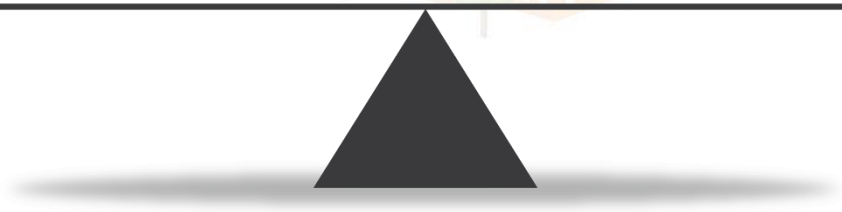

ITEM 2: WEIGH THE BENEFITS

Hardware reliability

- Power Consumption:
  - Up to 12W for BS
  - Up to 7W for CPE
- IP Rating:
  - IP66 (better protection against the powerful water jetting)
- Cold start temperatures:
  - -40°C to +60 °C (by default)
  - -55°C to +60 °C (extended)

- Power Consumption:
  - 38W typical for 10.5 GHz AP & RT
  - 35W typical for 26 & 28 GHz AP & RT
- IP Rating:
  - IP67
- Cold start temperatures:
  - -45°C to +55°C

ITEM 2: WEIGH THE BENEFITS

Antennas

- Wider range of dual polarized integrated antennas (from 14 to 27 dBi, 90°) which can be used to build PtMP solution across long distances up to 50 Km
- IW models with dual polarized external antennas (for example 34 dBi) allow you to design +100 Km city-to-city WISP backhaul links and other types of applications

- VectaStar Metro:
  - AP-M: 18 dBi (beamwidth: 30°x5°)
  - RT-M: 27dBi (5°x5°) Vertical or Horizontal (factory configured)
- VectaStar Gigabit:
  - AP-S: 16 dBi (90°x8°) @ 10.5GHz
    18 dBi (90°x6°) @ 26&28GHz
  - RT-S: 26.8 dBi (6°x6°) @ 10.5GHz
    33.7 dBi (3°x3°) @ 10.5GHz
    35.3 dBi (2.5°x2.5°) @ 26GHz
    40.7 dBi (1.4°x1.4°) @ 26GHz
    35.8 dBi (2.2°x2.2°) @ 28GHz
    41.8 dBi (1.3°x1.3°) @ 28GHz

ITEM 2: WEIGH THE BENEFITS

Connectivity

- Wired connections:
  - BS: 1xGigabit Ethernet
  - CPE: 2xFast Ethernet, 2nd PoE port (2nd PoE-enabled port can be used to ease the CCTV setup or to power up another InfiNet unit)

- Wired connections:
  - AP: 1 x 100/1000BaseT Ethernet **or** 1 x 1000BaseLX
  - RT: 1 x 10/100/1000BaseT

ITEM 2: WEIGH THE BENEFITS

Networking features set

- L2 switching (VLAN, QinQ, STP, LLDP, any kind of VLAN tag manipulation)
- IP routing (static, RIP, OSPF, ODR)
- Multicast friendly (IGMP snooping, multicast server)
- QoS (16 priority levels, IP ToS, 802.1p, DiffServ)
- Automatic over-the-air firmware upgrade
- Spectrum analyzer (special MAC-sniffer mode)
- Diagnostic tools (enhanced tools to diagnose almost all levels of functionality from network side to radio)

- 802.1D MAC Switching with RC, 802.1Q (VLAN tagging), 802.1p (Class of Service), 802.1ad (QinQ)
- Up to 256 services in a sector (up to 64 services per RT)

ITEM 3: ECONOMIC VALUE

Choose Flexibility

InfiNet Wireless

- Up to 240 Mbps (asymmetric UL/DL ratio)
- Much higher distances (up to 100 km), NLOS radio transmission technology
- Reasonable TCO
- Suitable wireless broadband solution for a wider area of applications (including multicast applications)
- Easier installation and RF planning

Cambridge Broadband Networks

- Higher capacity (fixed, symmetric 50:50 UL/DL ratio) and lower latency
- Short distances, LOS radio transmission technology, much higher antenna gain
- Higher TCO
- Dedicated wireless broadband solution for specific area of applications
- Complex installation and RF planning

3.5 GHz vs. 10.5, 26 or 28 GHz for small-cells access

- Emerging as a key band for 3G/4G small-cells
- Most operators prefer to deploy small-cells in the same band used for macro access (using interferences mitigation techniques)
- The band's short range allows operators to use the spectrum efficiently in the small-cell and keep interference down
- Spectrum in the 3.5 GHz band is available and underutilized in many markets

Choose efficiency for small-cells backhauling

- Service providers are continuously looking for solutions to keep users happy, providing better services
- One of their challenge is to deploy more small-cells in many more locations (public venues, airports, highways, rural areas, etc.)
- The challenge is how to cost efficiently transport data from the small-cells to the core network (considering license-exempt solutions in some cases)
- InfiNet Wireless products:
  - fully meet the capacity, functionality and reliability requirements of small-cells backhauling
  - successfully resolve the cost efficiency problem (including cost of equipment, cost of spectrum, cost of planning and deployment and ongoing cost of maintenance)

InfiNet wireless

THANK YOU!