

DAS & Small Cell
Solutions: Improving
In-Building Wireless



Our Mission

- The HetNet Forum, formerly The DAS Forum, is dedicated to the advancement of heterogeneous networks. HetNets provide increased network coverage, capacity and quality through the use of a variety of infrastructure and technology, enabling seamless voice and data communications. The HetNet Forum is a membership section of PCIA – The Wireless Infrastructure Association.

The Problem

Bad In-Building Wireless Coverage Means Unhappy Customers

- 70% of wireless calls and data connections take place inside a building.
- A survey published in OSP Magazine stated that 54% of adults would consider switching hotels if they had poor cellular reception.
- People are demanding the same wireless experience they have at home on the road
- Hospitality industry has customers who use a variety of devices from a variety of wireless service providers
- LEED-certified buildings are designed in such a manner that makes it difficult to get strong RF coverage inside the building

Possible Solutions

Distributed Antenna Systems (DAS)

Best suited for large venues with diverse customer base (100 square feet and above for active DAS)

Small Cells (Picocells, Microcells, Metrocells)

Only serve one wireless service provider today and only a few spectrum bands and technologies

Wireless operator installs, owns and operates

Femtocells

Best suited for residential areas and smaller businesses

Can be installed by laymen

Wi-Fi

Pervasive, can be revenue driver

Enterprise owned and controlled

DAS & Small Cell Solutions: Improving In-Building Wireless

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DAS Value Proposition



Benefits to End-user

- Better voice quality, fewer dropped calls
- Faster Internet access
- Longer battery life
- Seamless handoff to & from Macro network
- Wireless coverage throughout facility, no dead zones



Benefits to Venue owner

- No more customer complaints re: wireless service
- Better wireless service offers a competitive advantage
- Add add'l wireless carriers without disruption



Benefits to Wireless Carriers

- Increased customer satisfaction resulting in lower churn
- Provides dedicated coverage & capacity to facility
- Multi-carrier, Multi-band & Multi-technology solution (2G/3G/4G & beyond)
- Offload traffic from existing Macro network



Carrier Requirements

▶ Equipment

- High reliability - 99.999%
- Neutral Host
- Support for Indoor & Outdoor venues
- High Capacity / High Coverage solution
- Technology & Frequency Support:
 - GSM, UMTS, LTE, Public Safety, MIMO
 - 700, 850, 1900, 2100, etc.
- Ability to remotely monitor & manage



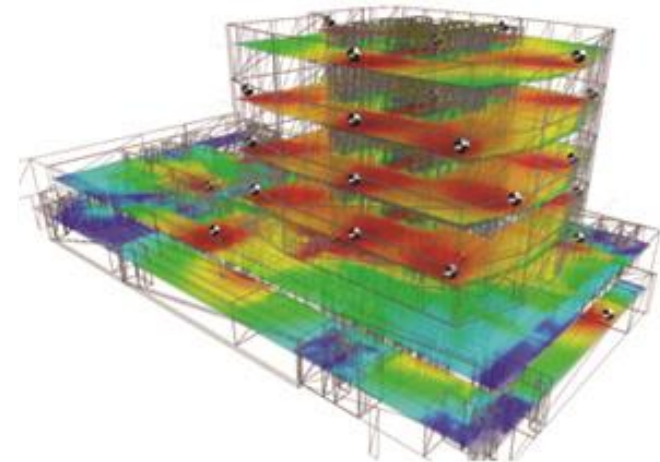
Neutral Host Perspective

- Design, build, own and operate shared wireless infrastructure (neutral host DAS system) capable of accommodating all licensed wireless carriers
- Handle all carrier negotiations, contracts, coordination
- No capital or monthly opex outlays required by hotel (facility)
- Opportunity for hotel (facility) to generate monthly revenue
- Minimum initial term (commitment) of 10 years
- Require approximately 1000 sq ft of space for hub room (either existing room or space to construct a new room)



Systems Integrator Perspective

- How to have a successful and cost effective design and implementation
 - Commission a Site Survey of RF and Physical environment
 - Have all concerned parties together before making final decisions
 - Manufacturer
 - Integrator
 - Carrier
 - Neutral Host
 - Understand Space requirements
 - Wi Fi does not take up much footprint
 - DAS can utilize up to 7 or 8 cabinets depending on carriers
 - Where possible utilize same integrator to design, implement and test
- What we do
 - Site Survey
 - Design, Heat Mapping, BOM creation
 - Manage mounting of Antenna and Access Points
 - Pull and test all cables and fibers
 - Coordinate with Carrier and Manufacturer
 - Test all components
 - Provide Documentation



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