The HetNet Bible (Small Cells and Carrier WiFi) - Opportunities, Challenges, Strategies and Forecasts: 2013 – 2020 – With an Evaluation of DAS & Cloud RAN

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Abstracts

Driven by in-building wireless coverage requirements and the growing influx of mobile broadband data traffic, a traditional macrocell based cellular network deployment is not deemed to be a sufficient solution to address the coverage and capacity needs of today's wireless subscribers.

Wireless carriers are thus exploring options to offload additional coverage and capacity to alternatives such as strategically deployed small cells and WiFi access points, which have so far been deployed by more than 150 global wireless carriers. Adding further to the heterogeneity are alternative deployment models such as Distributed Antenna Systems (DAS) and the emerging Cloud Radio Access Networks (RAN) architecture which concentrates the processing of the RAN segment of a mobile network in one or more centralized data centers.

Driven by the thriving ecosystem, we expect small cells and carrier WiFi deployments to account for nearly $352 Billion in mobile data service revenues by the end of 2020, while overall spending on HetNet infrastructure is expected to reach $42 Billion annually during the same period.

This report presents an in-depth assessment of the global small cells and carrier WiFi market, together with an evaluation of the DAS and Cloud RAN technology. In addition to covering the technology, business case, the challenges, standardization initiatives, the industry's roadmap, value chain analysis, deployment case studies, vendor service/product strategies and strategic recommendations, the report also presents comprehensive forecasts for the market from 2013 till 2020, including individual revenue and shipment projections of small cells, carrier WiFi, small cell backhaul, Small Cells as

a Service (SCaaS), DAS, Cloud RAN, Self-Organizing Network (SON) and mobile data services across six geographical regions.

Also provided are historical figures for 2010, 2011 and 2012. The report comes with an associated XLS datasheet covering quantitative data from all figures presented within the report.

Topics Covered

The report covers the following topics:

Small cell, carrier WiFi, DAS, Cloud RAN, Mobile Content Distribution Networks (CDNs) & HetNet technology and architecture

Integration and offloading technology for carrier WiFi and small cells

Market drivers and key benefits of small cells and carrier WiFi

Challenges and Inhibitors to the small cells and carrier WiFi ecosystem

Small cell and carrier WiFi industry roadmap: 2010 – 2020

Small cell and carrier WiFi value chain

Vendor landscape and acquisitions

Small cell and carrier WiFi deployment models

Vertical markets for small cell and carrier WiFi deployments

Small cell backhaul technology, requirements and key issues

Standardization and regulatory initiatives

Small Cells as a Service (SCaaS)

Small cells, SCaaS and carrier WiFi deployment case studies

Industry, wireless carrier and vendor commitments to small cells and carrier

WiFi

Self-Organizing Network (SON) technology

Profiles and market positioning assessment (current strategy, target market and products/services) for the following players in the HetNet market: 'Pure-Play' and specialist small cell vendors, DAS & repeater solution providers, carrier WiFi focused vendors, Cloud RAN solution providers, HetNet focused SON solution providers, Wireless network (Macrocell, Core) infrastructure vendors, chipset, software & component vendors, technology providers, WiFi network providers and small cell backhaul solution providers.

Conclusion and strategic recommendations for HetNet solution vendors, wireless carriers and macrocell infrastructure vendors.

Market analysis and forecasts for the industry's revenue, including the following submarkets:

Small Cells

Carrier WiFi

Small Cell Backhaul

Small Cells as a Service (SCaaS)
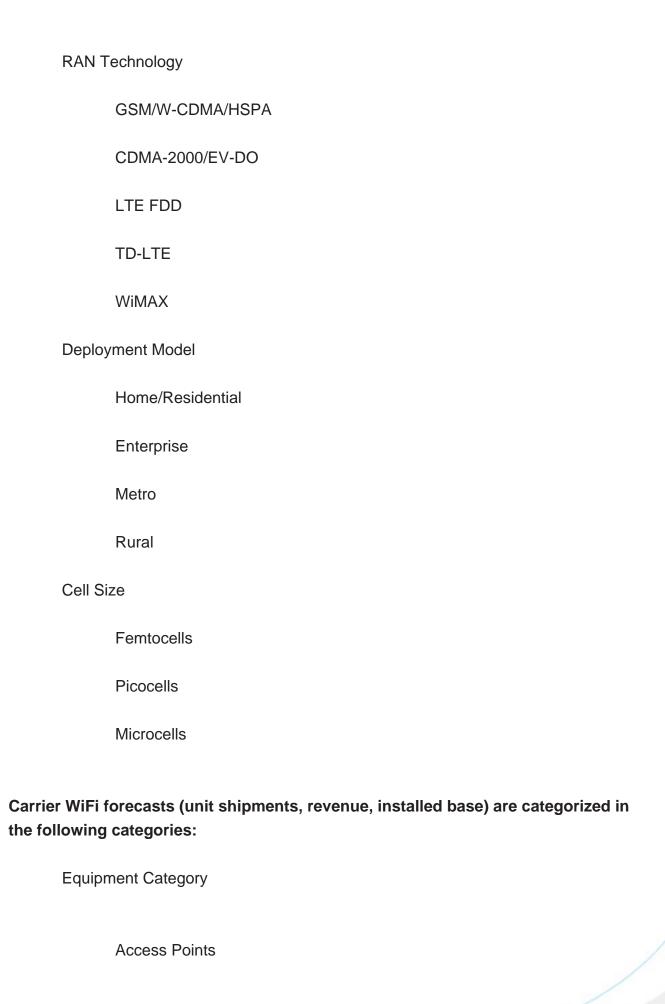
Distributed Antenna Systems (DAS)

Cloud RAN

Self-Organizing Network (SON) Solutions

Mobile Network Data Service

Small cell forecasts (unit shipments, revenue, installed base) are categorized in the following categories:

RAN Technology

    GSM/W-CDMA/HSPA

    CDMA-2000/EV-DO

    LTE FDD

    TD-LTE

    WiMAX

Deployment Model

    Home/Residential

    Enterprise

    Metro

    Rural

Cell Size

    Femtocells

    Picocells

    Microcells

Carrier WiFi forecasts (unit shipments, revenue, installed base) are categorized in the following categories:

Equipment Category

    Access Points

Access Point Controllers

Integration Approach

Managed WiFi Offload

Unmanaged 'Open Access' WiFi

Small cell backhaul forecasts (revenue) are categorized in the following technology categories:

Ethernet over Copper

Ethernet over Fiber

DSL modems and DSLAMs

Non Line of Sight (NLOS) Microwave (Sub-6GHz spectrum)

Point to Point (PTP) Microwave (6-60GHz)

Point to Multipoint (PTMP) Microwave (6-60GHz)

Millimeter Wave (Unlicensed 60GHz spectrum)

Millimeter Wave (Licensed 60GHz spectrum)

Satellite

Mobile network data service forecasts (throughput and revenue) are categorized in the following access network technology categories:

Macrocell Network

Small Cells

Carrier WiFi

DAS

Regional forecasts are categorized in the following 6 categories

North America

Asia Pacific

Western Europe

Eastern Europe

Middle East & Africa

Latin & Central America

Key Questions Answered

The report answers to the following key questions.

What are the key market drivers and challenges in the small cells and carrier WiFi market and the wider HetNets ecosystem?

How big is the HetNet ecosystem, and how much revenue will it generate in 2020?

What will be the installed base of small cells and carrier WiFi access points in 2020?

Which geographical regions offer the greatest growth potential for HetNet deployments?

What is the service revenue for mobile data services delivered over small cells and carrier WiFi, and how will this vary overtime?

How are investments on DAS technology impacting the small cells and carrier WiFi market?

What is the Cloud RAN concept, and how does it affect the small cells and carrier WiFi market?

Which technology will be predominant in the small cell backhaul ecosystem and is there a market for satellite based small cell backhaul?

Is there a market for rural small cell deployments?

How big is the opportunity for Small Cells as a Service (SCaaS)?

How is the HetNet value chain structured and how will it evolve overtime?

What opportunities does the HetNet ecosystem offer to infrastructure vendors and other players involved in the value chain?

What strategies should infrastructure vendors and wireless carriers adopt to capitalize on the HetNet opportunity?

Key Findings

The report has the following key findings.

Small cells, carrier WiFi, DAS and Cloud RAN infrastructure investments will account for a $42 Billion HetNet ecosystem by 2020.

Small cells and carrier WiFi deployments are expected to carry more than 60% of all mobile network data traffic by 2020, which will account for $352 Billion in mobile data service revenue.

At present, the small cells and carrier WiFi infrastructure value chain is highly fragmented with 'pure-play' vendors and incumbent macrocell vendors battling to gain a higher share of the market.

SNS Research expects the value chain to consolidate over the coming years following several future acquisitions such as the recent acquisition of Ubiquisys

by Cisco.

Eyeing the momentum behind small cell deployments, several DAS vendors (such as BTI Wireless) are now entering the small cells market.

While it is a preferred opinion among wireless carriers, aggregating outdoor small cell backhaul with macrocell infrastructure may prove to be a well challenging task. Consequently the demand for small cell backhauling has opened a new opportunity for investment, which will be a market worth nearly $6 Billion by 2020.

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About

Driven by both technical and economic incentives, the next performanceleap in mobile networks is coming from an evolution of network topology whereby wireless carriers will utilize a mix of macrocells, Distributed Antenna Systems (DAS) 1, small cells as well as WiFi access points in both licensed and unlicensed part of the wireless spectrum.

Small cells and carrier WiFi deployments bring a unique set of advantages to both mobile network carriers and their subscribers alike.

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Annual Global Throughput of Mobile Network Data Traffic by Region: 2010 – 2020 (Exabytes)

Some of the key issues and challenges in the small cell backhaul market segment

Backhaul Sharing: Can Small Cells and Macrocells Share Resources?

While it is a preferred opinion among wireless carriers, aggregating outdoor small cells with macrocell backhaul may prove to be a well challenging task. Consequently the opportunity for small cell backhauling has opened a new opportunity for investment, which will be a market worth nearly $6 Billion by 2020.

Coverage Challenges

Wired backhaul solutions are required to have to reach the small cell sites along or below ground or within buildings. Coverage will be closely tied to the presence of existing infrastructure, since the costs of installing new wired connectivity is high. Similarly, wireless solutions require consideration of the propagation environment between backhaul transceivers at the small cell and the other end point.

Capacity/Peak Throughput Challenges

Compared to macrocells, small cells have fewer users with a high likelihood to cluster around macrocell sites. This increases opportunity to achieve peak throughputs. Peak user throughput may therefore be backhaul rather than air interface limited.

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