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New *iGR* study examines how mobile backhaul affects small cell deployment costs

Lit and dark fiber and wireless backhaul can be implemented for small cell deployments

AUSTIN, Texas, March 28th, 2014 – The type of mobile backhaul deployed to support small cells not only impacts the performance of the solution but also the capital and operating expenses. Backhaul is critical to the overall success of the small cell architecture. Mobile operators are evolving their radio networks to use small cells, in addition to the macrocell network. Although small cell deployments are not as major as capital-intensive macrocell network deployments, everyone still wants to know: how does the type of backhaul used impact the cost of deploying small cells?

There are two basic types of last-mile backhaul options for any given small cell: wired or wireless. Within wired backhaul many options are possible. Fiber used for backhaul can be “lit”, in which it has active electronics or “dark”, without electronics. Additionally, fiber can be “aerial” - strung on a pole, or “trenched” - installed underground. Finally, mobile operators with significant fiber networks can use transfer pricing, which allows for backhaul throughput at a discounted price.

There are many types of wireless backhaul, including non-line-of-sight, near-line-of-sight, and line-of-sight, as well as point-to-point and point-to-multipoint. Several variations are also possible in terms of frequency – sub-6 GHz spectrum, microwave frequencies and millimeter wave. Combining these many wired and wireless variables, *iGR*'s small cell cost model has the following distinct backhaul cost scenarios: lit fiber aerial, lit fiber trenched, dark fiber aerial, dark fiber trenched, transfer pricing fiber aerial, transfer pricing fiber trenched, and wireless backhaul.

“Mobile operators are deploying small cells to provide necessary coverage to meet users’ rising demand,” said Iain Gillott, president and founder of *iGR*, a market research consultancy focused on the wireless and mobile industry. “*iGR* has found that the many mobile backhaul options

used with small cells, as well as other variables, have created a very wide range of costs for their deployment.”

iGR's new market study, *U.S. Small Cell Costs: How much will they cost to deploy?*, estimates the CapEx and OpEx of deploying small cells based on multiple variables, including location, type of small cell, type of backhaul, and scale. The report also provides a detailed discussion of het-nets, small cells, typical small cell installments, and different types of mobile backhaul.

The following key questions are addressed in the new research study:

- What is a het-net? What are small cells?
- What are network 'pain points'?
- What is driving the need for het-nets?
- How are pain points identified?
- What are different ways to address pain points?
- Where is it appropriate to deploy small cells (indoor and outdoor)?
- What are *iGR's* assumptions regarding small cell installations?
- What outdoor locations are best suited for small cell deployments?
- What are the average costs of these outdoor locations?
- What is an attachment? What is the average cost of an attachment?
- What are the different types of backhaul with regard to small cells?
- What types of backhaul are considered in the model?
- What is the average throughput needed for a small cell? What does that throughput cost?
- How much does it cost to deploy small cells?

The information in this report will be valuable for:

- Mobile operators
- Small cell equipment manufacturers
- Mobile backhaul suppliers
- Tower companies
- Antenna and tower equipment vendors
- Financial analysts and investors.

The new report can be purchased and downloaded directly from *iGR's* website at www.iGR-inc.com. Alternatively, contact Iain Gillott at (512) 263-5682 or at Iain@iGR-inc.com for additional details.

About iGR

iGR is a market strategy consultancy focused on the wireless and mobile communications industry. Founded by Iain Gillott, one of the wireless industry's leading analysts, in late 2000 as *iGillottResearch*, *iGR* is now entering its fourteenth year of operation. *iGR* continuously researches emerging and existent technologies, technology industries, and consumer markets. We use our detailed research to offer a range of services to help companies improve their position in the marketplace, clearly define their future direction, and ultimately improve their bottom line.

IGR researches a range of wireless and mobile products and technologies, including: smartphones; tablets; mobile wearables; connected cars; mobile applications; bandwidth demand and use; small cell and het-net architectures; mobile EPC and RAN virtualization; DAS; LTE; VoLTE; IMS; NFC; GSM/GPRS/UMTS/HSPA; CDMA 1x/EV-DO; iDEN; SIP; macro-, pico- and femtocells; mobile backhaul; WiFi and WiFi offload; and SIM and UICC.

A more complete profile of the company can be found at www.igr-inc.com.