



Advisory Report

Femto Fray: Today's Femtocell Vendors

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■ Summary

Issue

We might all agree that the femtocell concept, in general, makes sense. We might even agree on the basic obstacles (technical, business, or otherwise) to making femtocells a success. Ultimately, however, vendors are the key link in turning any new technology into a marketplace reality, and they often represent one of the biggest obstacles to success. Smaller vendors, for example, often lack the scale, capabilities, or credibility to create a new market. Larger vendors, in turn, often lack the R&D flexibility to jump on new opportunities. Regardless, any new market requires the presence of several vendors – vendors delivering product diversity, targeting diverse operator demands, and, more broadly, pointing to larger market demand.

Despite the obstacles facing femtocell launches outlined earlier, the logic of femtocells as a fixed-mobile convergence (FMC) solution has piqued the interest of operators around the world. Operator interest, not surprisingly, has resulted in a healthy stable of vendors ready to build a name for themselves by delivering on the femtocell promise. Which raises several obvious questions: who are today's femtocell vendors and how do they stack up against each other?

■ Current Analysis Perspective

While there are surely many vendors that have yet to announce their femtocell product plans, five have already begun to market their products: 3Way Networks, Ericsson, ip.access, RadioFrame, and Ubiquisys. Clearly, there are several ways to segment these players and their femtocell products. On the technology front, 3Way, Ericsson, ip.access, and Ubiquisys have launched HSPA and RadioFrame is building a GSM solution. Ericsson, RadioFrame, and Ubiquisys, however, all plan to address both technologies. From a historical perspective, 3Way and Ubiquisys are greenfield femtocell vendors while RadioFrame and ip.access have focused on the sub-compact base station market for several



Current Analysis

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years. Ericsson, on the other hand, is an established 2G and 3G vendor, claiming the number one market share position for wireless infrastructure and a leading WCDMA device chipset business (Ericsson Mobile Platforms). Product plans further help to differentiate the vendor space in terms of network integration options, channel partners, applications, etc.

	3Way Networks	Ericsson	ip.access	RadioFrame	Ubiquisys
Product Name	Home Base Station (HBS)	Home 3G Access Point	femto3G	S-Series	ZoneGate
Product Introduction	38961	39022	38961	38749	38749
WCDMA	Yes	Yes	Yes	Planned	Yes
GSM/EDGE	No	Planned	No	Yes	Planned (June 2007)
Baseband Silicon	"Off-the-shelf" DSPs and FPGAs	No information	picoChip	No information	picoChip
Core Integration	SIP interworking (Rel. 99); IMS call control	Home 3G Access Point RNC	femto3G Access Controller	In-house traffic aggregator	UMA; IMS call control
Founded	2004	1876	1999	2001	2004
Company History	Low-capacity WCDMA specialist focused on residential and enterprise solutions	World's number one mobile infrastructure vendor with GSM/UMTS, IMS, and fixed-line solutions	Picocell specialist originally focused on GSM; originally, subsidiary of TTPCom (device silicon vendor)	In-building specialist originally focused on iDEN with subsequent GSM and WiFi offers	Femtocell specialist focused on WCDMA with standalone and integrated (consumer electronic) strategies.
Partners	"Various" (Rel. 99, IMS)	No information	OEM with Siemens (nanoBTS picocell)	OEM with Nokia	Manufacturing with Sony UK Tech Center; UMA with Kineto; IMS with Tatar
Misc.	Enterprise, aviation, and maritime applications available; claims profitability since shipping product in Q4 2005	Claims to support 50%+ of comm. WCDMA launches; infrastructure backed by leading professional services unit	Plans for support of IMS call control for core integration	H-Series planned to address residential market better	\$12M in funding announced September 2006

Product plans and company histories aside, it is too early to pick a femtocell market leader. That said, it is never too early to highlight the strengths of today's vendors... and then draw on those strengths (and weaknesses) to predict the likely winners.

Of course, it is no exaggeration to suggest that every femtocell vendor will claim formidable assets. 3Way Networks, for example, claims a tight focus on the femtocell market and the financial stability necessary to drive effective R&D and sales efforts. On the other hand, RadioFrame and ip.access both have a much longer history with building and developing

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compact, low-capacity wireless solutions, not to mention established picocell and femtocell channel partners.

Ultimately, however, Ericsson and Ubiquisys promise the most compelling mix of strong capabilities and strategies. Ubiquisys cannot claim a long history in the wireless market. Yet, it can point to a strategic focus (not even stretching beyond residential applications) that is important for keeping R&D and sales efforts on track. Likewise, despite a lack of announced sales partners, Ubiquisys has smartly outlined a deep set of solution partners, including picoChip, Kineto, Tata, and the Sony UK Technology Center, all of which lend credibility to its solution. Beyond the femtocell itself, network solutions will be critical for commercial traction. In addition, for its part, Ubiquisys has been more active than any of its competitors in terms of building (and creating messaging for) its solution ecosystem.

Ericsson is obviously a newer player in the femtocell space, having just announced its Home 3G Access Point in November 2006. The infrastructure behemoth's size, history, and capabilities, however, cannot be ignored. Consider the vendor's core network strategy. While ignoring IMS or UMA options, a femtocell-specific RNC (built from existing RNC assets) delivers the functionality and security that operators have come to expect while promising an extremely simple integration with Ericsson-based networks. EMP provides a proven silicon solution for future 2G products. Selling into many of the market's top GSM and WCDMA operators, Ericsson has a satisfied base of customers into which it can drive the new femtocell... backed by service and support capabilities that no femtocell competitor can rival. Though less successful, the Swedish vendor's fixed line business even gives it channels in this space.

There can be no assurances that any femtocell vendor will be successful. Potential strengths could even turn out to be weaknesses; Ubiquisys and Ericsson's strategy of targeting GSM and HSPA could spread them too thin, for example. To turn these "promises" into credible femtocell assets and commercial momentum, trials and launches must be forthcoming. Competitors will need to follow suit while beginning to talk about their femtocell solutions beyond the access point.

Recommended Actions**Vendor Actions**

- RadioFrame and ip.access need to develop messaging that speaks to the value of low-capacity RAN expertise. While it can be argued that femtocells are a completely new business, they are essentially ultra-low capacity base stations. Experience with picocells and in-building solutions are an important asset for both vendors; they need to highlight how this asset delivers a more credible, more capable femtocell product.
- RadioFrame needs to execute on its H-Series and WCDMA products in the near-term. Enterprise-grade products (higher reliability, higher quality) for GSM-only operations will have a place in the market. The size of this market is likely to be small when compared to the residential opportunity. Likewise, as most vendors seem to understand, a combination of 2G and 3G assets is necessary for meeting operator demands.
- 3Way Networks needs to consider retrenching on a smaller set of markets. To its credit, a focus on WCDMA avoids dual R&D efforts. In addition, multiple target applications

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could deliver a larger volume of sales than any one application alone. However, developing products for multiple markets demands a broad sales force and still requires multiple R&D efforts. A tighter focus should improve the company's odds of success in the prized residential market while still leaving existing deployments as proof of the company's expertise and credibility.

- Ericsson needs to consider developing femtocell core products beyond the Home 3G Access Point RNC. Ericsson's customer base and proven RNC assets clearly lend the product instant credibility. Yet, outside of Ericsson's WCDMA customer base, the RNC loses some of its luster; if an operator lacks Ericsson's RNCs (or a mobile network, in general, for fixed-line operators), integration of a new RNC platform promises to be more painful than options based on SIP or even UMA.
- Ericsson needs to announce a silicon vendor for its Home 3G Access Point. It could be argued that baseband chipsets do little to differentiate one product versus another. This would be wrong. As the heart of the femtocell, the modem is directly linked to product credibility, reliability, and flexibility going forward. End users may not care if their phone has a QUALCOMM or EMP chip in it. Operators want to know that a vendor's femtocell is built on a solid foundation. Until Ericsson can announce its silicon strategy, its femtocell may lack credibility.
- Samsung should consider leveraging its low-capacity CDMA2000 and WCDMA base stations into femtocell products. While the Korean vendor has not been particularly successful in the larger wireless infrastructure market, it does have ultra-compact products that could be leveraged into a femtocell solution. More importantly, Samsung has the device and consumer electronics expertise necessary to push femtocells into the hands of eager customers.

User Actions

- Would-be femtocell operators need to focus on solution and support capabilities when choosing a femtocell vendor. Beyond the capabilities of a given femtocell, issues such as integration tools, integration support, business modeling support, and even manufacturing scalability will be critical for any solution's success. Whether or not a vendor has actively highlighted these capabilities, customers must be sure that they are ready to deliver – whether on their own or with credible partners.
- Solutions and support assets aside, operators must still verify the performance of any femtocell before taking a chance on the vendor. Yes, complete network solutions are necessary for femtocell services. However, many solution components (including professional services) will be delivered by vendors with a track record of successful network deployments. The femtocell, on the other hand, will be a new and relatively unproven product; operators must run them through a gauntlet of tests (and even look to other deployments) before even moving on commercial trials.
- Fixed-line and mobile operators investigating the femtocell market should engage established infrastructure vendors on their plans. While smaller vendors have stirred the market's interest, larger vendors are preparing products; Ericsson is just the first. In an attempt to jumpstart their work, they should also be eager to support early trials and business modeling needs.
- CDMA2000 vendors need to start conveying any interest they have in femtocells

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– loudly. The market's focus on GSM and WCDMA is a function of market size. CDMA operators could benefit from femtocells as well. However, vendors need to jump onboard. More importantly, they need to do it soon if they hope to keep CDMA operators from trailing GSM-track competitors for long. Given its reliance on EV-DO, Airvana is probably the best vendor to pressure in the near term.

