

Femtocell

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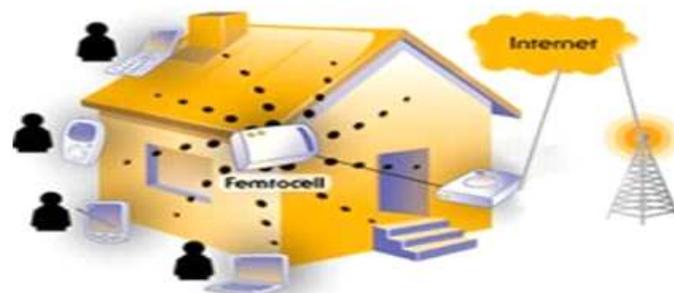
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Mobile cellular and 3G networks normally often suffer from poor penetration and reception in certain areas, like indoors. This decreases the quality of voice and video communication and slows down high-speed services. A femtocell is a small device that is used to improve wireless coverage over a small area, mostly indoor. It is a small cellular base station, also called a wireless access point that connects to a broadband Internet connection and broadcasts it into radio waves in its area of coverage. As a result, mobile handsets can handle phone calls through the femtocell, via the broadband Internet connection. The name femtocell has the prefix 'femto', meaning a very small cell (area of network coverage). Small is rather a big word here, because femto denotes a division that is mathematically represented by 10 raised to the power of -15, or a quadrillionth. In plain English, it is one divided by a figure with fifteen zeros. Well, close to infinitely small. The first interest in femto cells started around 2002 when a group of engineers at Motorola were investigating possible new applications and methodologies that could be used with mobile communications. Further after 2yrs. In 2004 more attention was given to this technology and it was enhanced further. A femtocell is a small device that is used to improve wireless coverage over a small area, mostly indoor.

Third-generation cellular technology suffers from inadequate indoor-signal penetration, leading to poor coverage in the environment where consumers spend two-thirds of their time. Poor coverage diminishes the quality of voice and video applications, and slows down high-speed data services. To keep customers satisfied, 3G carriers have increased capacity by building additional microcell sites. This strategy is becoming much less attractive. Site acquisition costs are exorbitant and continue to mount as space on viable towers and buildings fills up, landlords exact high rents and regulators impose onerous permit requirements. Public opposition to the building of large-scale base stations is increasingly common.

Femtocell



Problem-3G Coverage Issues

- 3G cells are smaller by virtue of supporting higher data rates
- 3G infrastructure needs to Proliferate
- Femtocells are a vehicle for expanding 3G coverage and improving indoor coverage
- Infrastructure must evolve to support millions of small cells

Third-generation cellular technology suffers from inadequate indoor-signal penetration, leading to poor coverage in the environment where consumers spend two-thirds of their time. Poor coverage diminishes the quality of voice and video applications, and slows down high-speed data services. To keep customers satisfied, 3G carriers have increased capacity by building additional microcell sites. This strategy is becoming much less attractive. Site acquisition costs are exorbitant and continue to mount as space on viable towers and buildings fills up, landlords exact high rents and regulators impose onerous permit requirements. Public opposition to the building of large-scale base stations is increasingly common. Acquiring a site is only half the battle: Sophisticated base station equipment must then be purchased, installed, insured, operated and maintained. The net present value of a cell site in the U.K. is estimated to be \$500,000. Carriers thus face a serious dilemma.

Well it's clear more and more consumers want to use mobile phones in the home, even when there's a fixed line available. Friends and family usually call a mobile number first, and it's where messages and contact lists are stored. However, it is often the case that providing full or even adequate mobile residential coverage is a significant challenge for operators. From a competitive perspective, femtocells are important because mobile operators need to seize residential minutes from fixed providers, and respond to emerging VoIP and WiFi offerings. Improving user experience in the home is also essential for reducing churn and gaining marketshare and new revenues. However, high deployment costs ensure that 3G networks rarely extend beyond the regulatory minimum.

Using femtocells solves these problems with a device that employs power and backhaul via the user's existing resources. It also enables capacity equivalent to a full 3G network sector at very low transmit powers, dramatically increasing battery life of existing phones, without needing to introduce WiFi enabled handsets.

- Indoor cellular coverage
- Can "talk" with any handset device • Low cost backhauling
- More than 50% voice calls and more than 70% data traffic are originated indoor
- The 3Cs--coverage, churn and capacity--are stifling 3G adoption.
- Femtocells produce cost savings as well for the carriers. Consumer's home in essence becomes a cell site and there is no site acquisition costs involved.
- Electricity bills can be minimized.
- Unlimited mobile minutes for a fixed monthly fee.

Why Femtocell?

The 3Cs--coverage, churn and capacity--are stifling 3G adoption. Femtocells produce cost savings as well for the carriers. Consumer's home in essence becomes a cell site and there is no site acquisition costs involved. Electricity bills can be minimized. Unlimited mobile minutes for a fixed monthly fee. The call charges can also be

reduced based on which subscriber we are using. Provides better coverage and also prolonged battery life compared to others. Portable and easy to install and use.

Concept of Femtocell

- Indoor cellular coverage
- Can “talk” with any device
- Low cost backhauling