Without Femto
This is just a room

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The Story
- What is femto and how does it work

Offerings out there
- commercial deployments

Why femto
- What in it for operators

Opportunity
- for Femto aspirational applications

Sweet Spot
- where & who?
What are femto cells

- Low-power & cost access points...
- Using exciting mobile technology
- Operating in licensed spectrum
- Delivering hotspot coverage and capacity
- Utilising public internet for backhaul
- Simpler to install than a Pico cell with full operator management
- Self organizing / self managing...
Femtocells in action

1. **Auto Download**
   - Femto BSR receives parameters from management system

2. **Auto Scan**
   - Femto BSR checks the RF environment

3. **Auto Configuration**
   - Femto BSR confirms RF environment is suitable, selects frequency & primary scrambling code, populates sticky cell profile

4. **Auto Activation**
   - Femto BSR enables femtocell and is ready to handle calls

5. **Auto Optimisation**
   - Femto BSR continuously user profiling for maximum performance @ minimum RF power

6. **Auto Adjust**
   - Femto BSR regularly scans RF environment and dynamically reconfigures
1. Strong Growth Forecast
2. A Win-Win for Wireline & Wireless Service Providers
3. Bringing the network indoors is a 3-stage approach
4. Positive outlook for femtocell services
1. **Mobile Broadband** is this a fixed replacement—or do people see mobile broadband as something different?

2. **Add-on to fixed service** roughly 2/3 of mobile broadband connections are being used alongside fixed broadband connections, not in place of them.

3. **Femtocell** have been shown to have great benefits for mobile broadband

4. **Fixed plus Femtocell** being talked about at industry conferences.

commercial deployments

Sprint AIRAVE
Enhanced coverage and unlimited calling* – at home or in the office.

AT&T on Track for Femto Launch
JUNE 23, 2009 | Michelle Donohue | Comment (1)

AT&T is on track for a national femtocell launch by the end of this year, according to a senior executive speaking at a conference in London Tuesday.

Source: Unstrung, June 23, 2009

Home Zone
For one flat fee, your family can enjoy unlimited SMS and phone calls from home.

Chunghwa Picks AlcaLu Femto
As of 1st September 09

Verizon Wireless “Network Extender” Enhances In-Home Call Capabilities
“Like Getting A Million-Dollar Call Site In Your Home For $249.99”

Vodafone Access Gateway
Boost the signal in your home

The Gateway is available free as part of an inclusive price plan from as little as £15 a month. It is also available as a one off purchase for £160 or a monthly charge from as little as £5.
Improve coverage and capacity

Current macro-only approach will be insufficient for data service expansion

- Poor high-speed data coverage on voice-optimized networks
- Holes in basic radio coverage requiring further granularity
- Data loads can exceed capacity given only limited macro expansion
Starting Point

Simple Secure Setup → 5 bars at home + cheaper calls → Fast easy to use data experience at home → Femto Sphere Services → Digital Life “home connectivity solution” → IMS Value Add

Network Quality A Key Differentiator

Recent Arthur D. Little analysis shows a strong correlation between consumer price sensitivity and network quality i.e. people will pay more if service quality is good

“The paradigm of offering best effort access to every customer has passed its sell-by date and needs to be refined”

“Tariffs that incorporate a ‘quality of service’ element could increase usage and deliver new revenues streams for operators”

Source - Arthur D Little Technology & Media INSIGHT Feb 08
Evolving value chain?

New players are leveraging their **brand** and **agility** to deliver innovative & **personalized** content and applications.
User Identification, Authentication, Presence, Behaviour & Location

Femto Application Enablement

- **Breakout**
  - Unsuccessful registration attempt
  - Initial Registration in the AP area

- **Presence**
  - Initial Registration in Macro cell network or other network

- **Location**
  - CS call origination (outgoing call)
  - CS Call Termination (incoming Call)
  - N+1 call

- **Service Mgmt**
  - Direct Gi Kbyte block count
  - Direct Gi connection request

- **Call Control**
  - SMS or MMS origination
  - Insert Tone in CS call
  - multiple ring

- **Security**
  - Hand In
  - Hand out (to 2g or 3g)

- **Network**
  - PS Origination (context connection)
  - PS connection end (context termination)
  - N+1 data connection

- **Emergency call origination**

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Expanding Service Provide Role in Value Chain

- Allowing applications to request ‘on-demand’ functionality they need from the network and the ability of the network to provide that functionality
- Ensuring low cost delivery for content
- Guaranteeing that quality meets what is paid for
- Enabling targeting of clusters of customers with relevant content/advertising

Service Provider expand their role ...

New revenue from content provider

Content Provider → Service Provider → End User
Stimulus – Femtocell introduction

Femtocell + Additional Services

- Better Voice Quality
- No dead spots
- Faster more reliable data connection
- Longer Battery life

- Unlimited Calling Plan
- Content sharing
- Presence Applications
- One Family Phone
- Gaming
- Unlimited domestic video calls and SMS

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13 | 2009 ASC Impact of Femto Cells | Primary Research | June 2009
Take the basic value prop - USA

Overall Appeal for Femto in USA

**Perceived value of Femtocell:**

- Extremely appealing: 16%
- Very appealing: 28%
- Appealing: 40%
- Somewhat appealing: 10%
- Not at all appealing: 6%

**Reasons/Aspects:**

- (Better) Coverage at home: 29%
- Advanced telecommunication service: 27%
- Convinced of every feature: 16%
- Combination of a lot of services in one device: 12%
- Price advantage: 12%
- Convenience / simplicity: 9%

*Multiple answers possible*
Q. Based upon the description you have just read, how frequently would you use your mobile to...?

**Femto would stimulate usage of messaging application and sync of mobile with PC**

High appeal of femto in multi person households, the presence application to informed when family members arrived home
Just focusing on improving indoor coverage is not a promising entry strategy for femtocell

1. Basic Femtocell service gets the lowest preference
2. Simultaneous market entry of 4 packages captures 50% market share
To Summarise

**Overall Appeal for Femtocell is Strong . . .**

Stronger among families, Teens and Customers with Poor Indoor Coverage

**Drivers** Improved Coverage at Home. Potential cost reductions, recognised as advanced service and compelling feature set. Unlimited calling plan popular across the board, One Family Phone leading femto service.

**Barriers** need for clear articulation of solving unmet needs. Education required to address any issues around complexity, particularly among older users.
Alcatel Lucent Wireless Access

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