



Navigating Operator Business Model Concerns for Femtocells





Contents

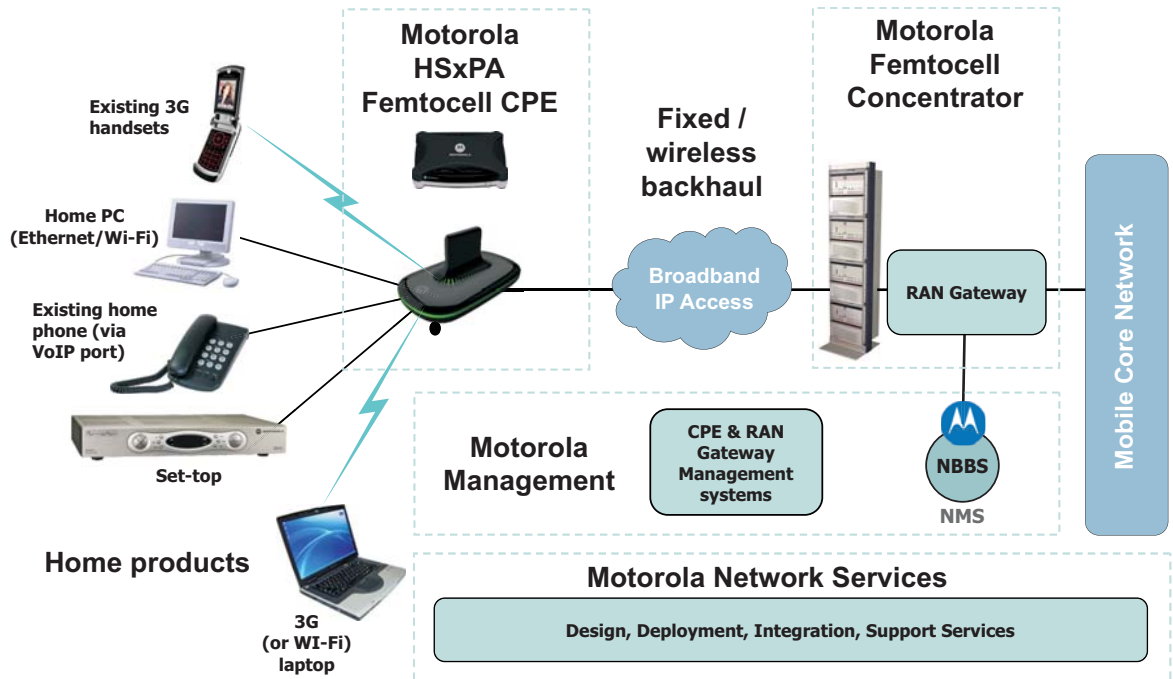
Introduction	3
The Motorola End-to-end Femtocell Solution	3
The Parameters Driving an Operator Business Case for Femtocell Rollout	4
Sample Output of the Femtocell Model for a Small Femtocell Operator	4
Model Sensitivity to CPE Price and Subscription Revenue	5
Model Sensitivity to Backhaul and Macro Cellular Savings	5
The Importance of Value-added Services	6
Lessons Learned	6
What is Different in a Cable or Telco MSO with an MVNO Rollout Plan?	7
Conclusion	7
Acronyms and Abbreviations	7
About the Author	8

Introduction

Femtocells have enjoyed a lot of media attention in the last 12 months. As a result, the industry has built a lot of momentum around the Femto forum, at which several key carriers engaged in soft-launches or market trials. However, the analyst forecasts for 2007 fell far short of the actuals, and most analysts have brought down their 2008 and 2009 forecasts from last year while positioning 2009 as the year for commercial success with reasonable volumes. The revised forecasts are primarily due to the lack of a solid operator business model at today's price points. This white paper outlines the different parameters that play into an operator's business model for Femtocell rollout and how we can differentiate our offering to make it work for the operator.

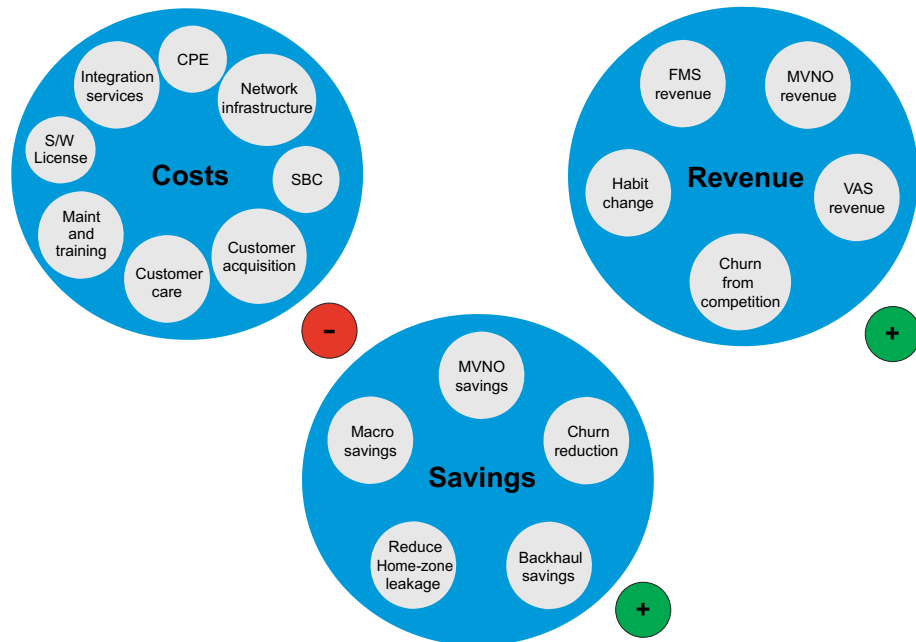
The Motorola End-to-end Femtocell Solution

Motorola's Femtocell CPE portfolio includes a UMTS standalone Femtocell bridge, a CDMA standalone Femtocell, and an Integrated UMTS Femtocell gateway product family with various WAN interfaces, including Ethernet and xDSL. The roadmap includes other integrated products with embedded cable modems and other wireless technologies, including WiMAX and LTE. The portfolio also includes an end-to-end solution that provides the Femto-concentrator and the Motorola CPE management solution NBBS (a TR069 based remote management subsystem). The Motorola Femtocell eco system includes our handsets and IP enabled set-top products, as well as our wireless backhaul and mobile core network products.



The Parameters Driving an Operator Business Case for Femtocell Rollout

The graphic below models the revenue impact, cost savings, and cost-related aspects of a Femtocell rollout by a typical cellular carrier. While this model can be used as the basis for a common business framework for a generic carrier, it can only serve as a starting point or template for a more detailed engagement with the carrier as a strategic partner. There are a host of operator-specific inputs and assumptions that need to be changed to run the model for a specific operator.

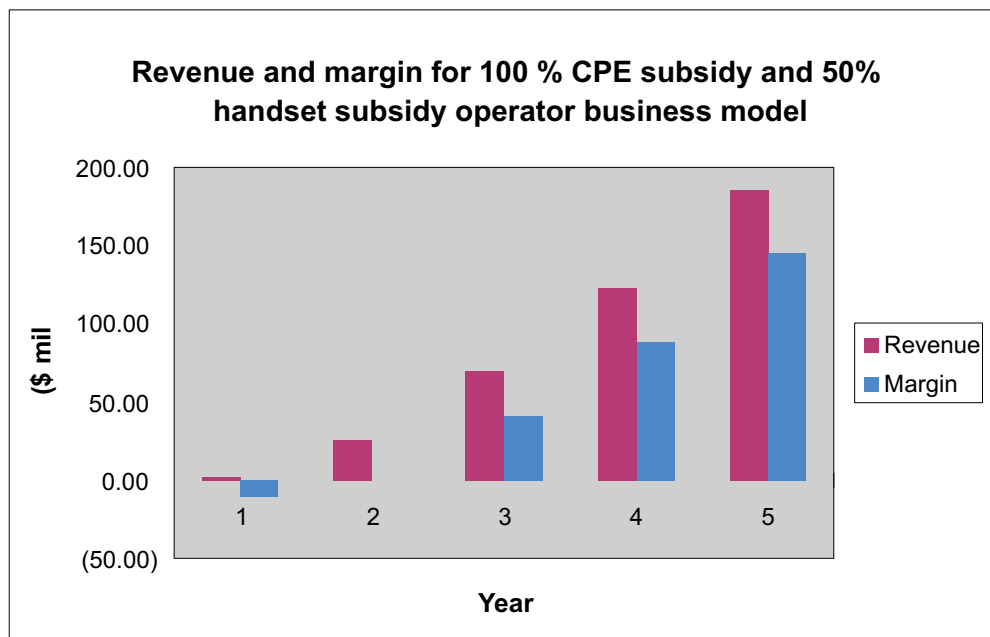


Sample Output of the Femtocell Model for a Small Femtocell Operator

The sample model shown here was run with the following assumptions (please note the following list is not exhaustive):

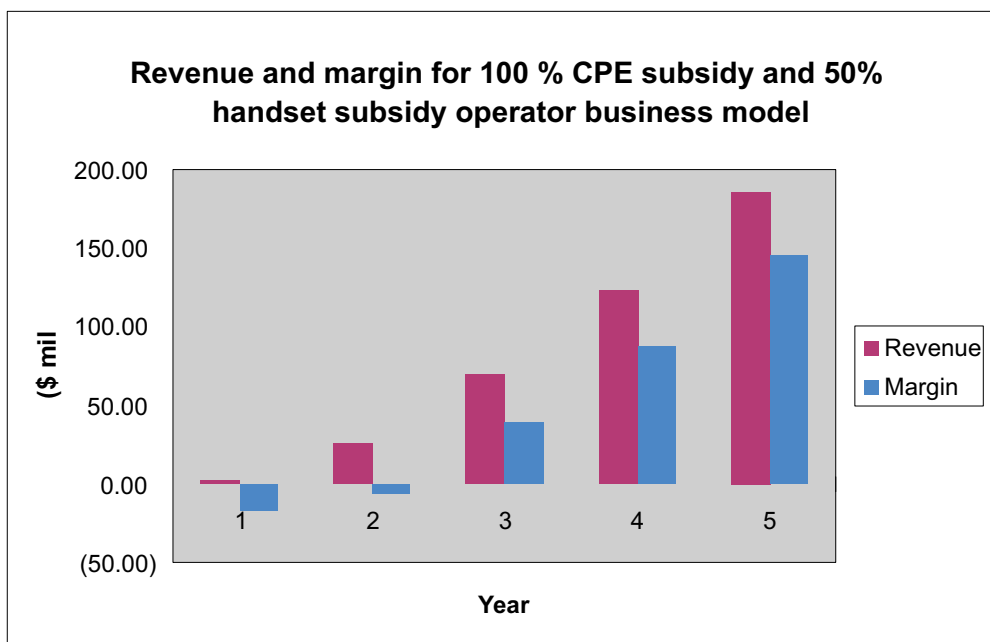
- A small operator growing to 1 million Femtocell subscribers over a five-year period of operation
- A moderate assumption of users per Femtocell, with a maximum growth of 2.5 users per Femtocell by the fifth year of operation
- Aggressive price reduction in Femtocell, starting at \$150 and ending at just below \$100
- TCO breakdown between fixed and recurring costs where the CPE represents close to 50% of the TCO
- Moderate FMS revenue, beginning at \$10 per month (the introductory price) and leveling out at \$15 per month
- 100% CPE price subsidy by the operator
- 50% handset subsidy for users upgrading from 2G to 3G
- Customers not covered, nor their capacity constrained, in the first and second year
- Some revenue from value-added services (with a VAS margin of approximately \$3)
- Churning 15% (going down to 4%) of new subscribers from competitors bringing in macro revenue as well
- Habit change assumptions, resulting in very moderate additional revenue
- E1 lease cost in the region and E1s per macro base-station

This model (even without accounting for some of the cost saving forecasts) predicts that the business just turns a profit in the second year of operation, and then experiences healthy margins in subsequent years.



Model Sensitivity to CPE Price and Subscription Revenue

To state the obvious (which we are obliged to do, since almost all vendors today are calling out price points in the \$200+ range), if we were to change the target in the graphic shown above to \$250 CPE, with a reduction to less than \$100 by the fifth year of operation, the business would not be able to turn a profit in the second year of operation at the same subscription fee (an introductory price of \$10, going up to \$15 per month). Clearly, a \$20 per month subscription fee would have helped turn a profit in the second year of operation. The business, however, looks very healthy as the TCO decreases across the board in years 3 through 5.



Model Sensitivity to Backhaul and Macro Cellular Savings

Adding the backhaul and macro cellular rollout saving makes the business even more lucrative in the third year of operation and beyond, but doing so does not help turn a profit in the second year of operation at the price points shown above. This is partly because it is not assumed that macro cellular rollout savings will kick in until year 3 of the rollout, when the network is expected to reach the saturation points and additional HSPA macro cellular rollouts would be needed. Also, even though it is assumed that backhaul savings will kick in during the first year of operation, it is a reasonable assumption that these savings will amount to little given the expected subscriber counts and levels of data usage. Backhaul savings, however, can become substantial if the operator offloads a massive uptake of all you can eat data plans to cheaper backhaul via Femtocells.

The Importance of Value-added Services

The sensitivity analysis discussed above and the current price pressures on FMS plans suggests that subscription revenue will not be able to go much beyond the \$15-20 mark, even in developed economies. The Femtocell handset is the gateway to incoming and outgoing media, enabling value added services. This capability can help make the service more than just “cheap voice” and worth more than the competitors’ \$9.99/14.99 FMS plan.

Services that enable the handset to trigger content “cache and carry” applications are an example of what would make the Femtocell eco-system that much more valuable to operator.



Lessons Learned

A review with operators engaged in RFX for Femtocell resulted in the following lessons learnt:

- The operator business model needs to turn a profit in the second year of operation, preferably before 18 months.
- The price pressures on FMS are tremendous. Depending on the country in question's long distance tariff rules, the operator may or may not be able to competitively offer POTS line replacement. Some may just opt for an N for 1 minute usage of cellular plan when in femtozone rather than an all you can eat voice plan at home.
- Operators are wary of cannibalizing their own large minute pack cellular plans by offering cheaper alternatives. As an alternative to cannibalizing their own plans, operators should propose a solution that offers incentives to the end user while increasing the chances of churning from a competitor.
- While backhaul cost savings can be substantial, they are not always feasible in all markets. Because backhaul costs vary substantially by customer and geography, backhaul offload assumptions can be contested in some markets.
- While cost savings on macro rollouts are real and substantial, they are very much a function of how coverage or capacity constrains the current macro network of the customer. Such savings are also related to the customer's coverage or capacity-related churn perceptions. A true macro rollout savings analysis, therefore, should be supported by a traffic model and link-budget gap analysis.
- In order to negotiate the most advantageous CPE and infrastructure prices with vendors, operators should be prepared to present a strong business model that anticipates vendors' bargaining positions and answers them with factual analysis.

What is Different in a Cable or Telco MSO with an MVNO Rollout Plan?

When building a business model for an MSO planning an MVNO based wireless offering, specific factors to consider include (please note the following list is not exhaustive):

- What is the spectrum plan for Femtocell versus macro cellular coverage? Is there a handset impact due to the spectrum differences? Handset impacts may significantly weaken the Femtocell advantage.
- What is the macro-cellular network's in-building coverage performance? Is it available in the geography that the MSO wants to target?
- What kind of service rollout plan does the MSO have in mind — best effort data only, voice and data, QoS enabled data, etc.? What are the timelines for the service plan rollouts?
- What are the wholesale tariff rates that the MVNO has negotiated from the MNO for capacity usage on the macro cellular network? To be competitive, it is critical for the MVNO to separately negotiate night and weekend rates for voice services from peak wholesale rates.
- What are the tariff rates, if any, for traffic on a Femtocell? The points discussed in the previous two bullets, combined with the end user SLA and the TCO of a Femtocell solution, can determine the incentive to deploy Femtocells.

Conclusion

The operator business model for Femtocells works, but it has to be defined collaboratively by the operator and the Femtocell solution eco-system partners. Cost savings, Femtocell CPE price, and value-added services are some of the contributing elements of a complex model, which can be developed through an understanding of the customer's unique business situation and drivers. Motorola not only brings a complete eco-system of solutions to market, it can also work collaboratively with key customers in a strategic advisory role to help define the best approach to take Femtocells to market.

Acronyms and Abbreviations

3G	Third Generation Partnership Project
CDMA	Code Division Multiple Access
CPE	Customer Premise Equipment
DVR	Digital Video Recorder
FMS	Fixed Mobile Substitution
HD	High Definition
HSPA	High Speed Packet Access
IP	Internet Protocol
LTE	Long Term Evolution
MBBS	Motorola Broadband Server
MSO	Multiple Service Operator
MVNO	Mobile Virtual Network Operator
NMS	Network Management System
POTS	Plain Old Telephone Service
QoS	Quality of service
SBC	Session Border Controller
TCO	Total Cost of Ownership
UMTS	Universal Mobile Telecommunication System
VAS	Value Added Services
WiFi	Wireless Fidelity
WiMAX	Worldwide Interoperability for Microwave Access

About the Author

Neeraj Sinha is the Director of Business Development at Home and Networks Mobility business unit of Motorola. In his current role, he is responsible for Business Development and Strategy for their FMC (Femtocells and managed home gateways) and media mobility products and solutions. Neeraj has 16 years of progressive experience in various roles in the data-com and telecom industry both with Fortune 500 companies and with high technology startups. Prior to joining Motorola, he was most recently the Director of System Engineering at Arraycomm Inc., where he lead several departments including System Engineering, System Integration, Software development and Field Engineering of a 4th generation broadband wireless product line. He can be reached for comment via e-mail at neeraj.sinha@motorola.com or by phone at +508-786-7601.



MOTOROLA

Motorola, Inc. www.motorola.com/networkoperators

MOTOROLA and the Stylized M logo are registered in the U.S. Patent and Trademark Office. All other product or service names are the property of their respective owners. © Motorola, Inc. 2008. All rights reserved.

558186-001-a 08/08