

Femtocell Market Shares, Strategies, and Forecasts, 2008 to 2014

Femtocells Support Wireless Calls With Local Infrastructure



Picture by Susie Eustis

MOUNTAINS OF OPPORTUNITY

WinterGreen Research, Inc.
Lexington, Massachusetts

www.wintergreenresearch.com

REPORT # SH29821665 303 PAGES 93 TABLES AND FIGURES 2008 \$3,300

CHECK OUT THESE KEY TOPICS

FEMTOCELL MARKET FORECASTS
SMB VOICE SYSTEMS
DIGITAL VOICE ROUTERS
UNIFIED COMMUNICATIONS
SESSION INITIATION PROTOCOL
SIP SERVERS
Femtocell Service Launches
Femtocell Wireless Backhaul
Femtocell

Clock over IP
Femtocell Protocols Supported by CCPU
Small Business Profile
Mid Size Business Profile
VOIP ENTERPRISE EQUIPMENT
VOIP HOME EQUIPMENT
VOIP HOME PACKET VOICE SERVICES

OPPORTUNITY ABOUNDS

WinterGreen Research, Inc.
Lexington, Massachusetts
www.wintergreenresearch.com

Femtocell Market Strategies, Market Shares, and Market Forecasts, 2008-2014

Femtocell systems provide modular value added services delivery of wireless communications and SIP based push technology presence implementing flexibility for people. The femtocells are designed for achieving automation of communications connectivity around the home and office. Adoption of advanced systems is anticipated to be rapid.

Femtocells, are they a secret gathering of female revolutionaries or a miniature mobile phone base station? Probably the latter, but it is intriguing to think about the former. Lets see, oh well, femtocell technology is an industry-changing innovation. Dual-mode WiFi/cellular phones are not nearly as cost effective as femtocells. Femtocells are emerging as the main technologies that will link the indoor and outdoor networks. Femtocells are particularly attractive to mobile carriers.

Femtocells are emerging as a technology that lets wireless phone use in homes and offices become a viable alternative to landline telephones. The ability to leverage the Internet makes femtocells an economic force in the marketplace; it brings the industry changes in the way voice is delivered.

Femtocells support SIP based broadband applications. Femtocells will most likely work in a telecommunications environment that has multiple co-existing technologies that are deployed by different carriers to address their specific customer bases, business models, and eco-systems.

IP Multimedia subsystems promise to play a significant role in the core network evolution. The consumer always prefers achieving control over the network as much as possible. The core backbone infrastructure is provided by the services providers, but the edge of the network is evolving functionality. Femtocells provide a way for consumers to go to the local store and purchase a device that optimizes the existing 3G handset ability to have better access to NGN IP services.

This aspect of optimizing packet services from the home gives the consumer better control. No one will defer to the service provider if they can go out and purchase their own device for somewhere between \$300 and \$100 as the volumes increase and the prices decline. Service providers may think that they can control the access to the devices, but in competitive markets, the customer will always choose control over his own environment vs. giving the services provider control over the network.

Femtocells improve the quality of service of 3G networks indoors. Even 2G and 2.5G coverage can be patchy. Mobile users can enjoy voice and data services from home. One barrier to rollout is the need to reduce the cost per unit of the hardware. Initially it may be that operators provide femtocells to customers as part of a service plan.

Carriers have realized that it would be three years before the cost of the femtocell will reach \$100. They are now considering renting out femtocells to users for a long contract period, rather than allowing them to buy it outright.

Cisco has interest in the emerging technology with an investment in ip.access, a Cambridge-based femtocell manufacturer. This is opening up the possibility of femtocells being integrated into other consumer entertainment hardware, such as set-top boxes, which Cisco already sells. Because femtocells provide a way for mobile operators to handle backhaul, calls would go from the handset, to the femtocell, down the broadband connection, back onto the cellular network. This beats having to set up lots more base stations.

Ubiquisys, the Google-backed company is providing the femtocells for O2, along with 12 other trials around the world. It provide a technology that listens in to the existing GSM and 3G network signals to establish if the licensee is allowed to transmit here. This provides the advantage of allowing network operators to lock the femtocell to one physical location or more, for a small fee.

Femtocells provide cheap calls, but with the cost of calling so low there has been a clear shift to data, with O2 citing the iPhone as a clear driver: Apple iPhone is already driving unheard-of levels of mobile internet usage, and the introduction of flat rate data tariffs is expected to increase this further.

Ironically, the iPhone does not work with the femtocells O2 is deploying as they are 3G-only devices O2 is looking ahead to the next generation handset from Apple. O2 uses femtocells to drive uptake of their broadband offering. Network operators can deploy the technology on cable or ADSL broadband connections. O2's DVB-H trials show that half mobile-TV viewing is done in the home, so a large-scale femtocell deployment provides them with the opportunity to become a major provider of video to the home.

Google has said it plans to bid in a planned auction of wireless airwaves. It could use femtocell technology to quickly roll out wireless services in the U.S. By deploying a femtocell-like system, in a matter of a year they might be able to reach more than 50% of the U.S. population. Google can deploy femtocells at malls, on city streets (by mounting femtocells on street lamps), and along major highways.

Then it might strike roaming agreements with other carriers to offer users wireless service outside the home while it builds out its wireless towers.

If Google set up the wireless telephone business, they could offer communications free, basing the revenue model on advertising. If calls go out of the Internet through the femtocell, they could be handled in the same way that Google Talk works now, and there would be no need for a wireless services provider.

Services providers cannot service devices in the home the cost of truck tolls is too high. Just as Verizon started out offering routers to the home owner for fiber services, those devices were not supported and customers are told to go to the local store and purchase a router.

Femtocell trials are achieving success. Rolling out a femtocell-based service is dependent on building an end-user initiative that would create demand for a femtocell. Improved indoor coverage can be delivered by repeaters or additional macro-cell base stations. Improved capacity would follow. Femtocells create the need for subscribers to purchase home based devices. The value in FMC services comes when strong 3G users need more capacity to transmit to the internet from inside the home or office.

Markets initially at \$434 million in 2009 reach \$9 billion by 2014. The rapid growth occurs because of the large size of the wireless handset markets, the billions of subscribers that must be supported. The femtocells provide core infrastructure at a lower price than other alternatives. The local home base station gives the consumer a measure of control over the network that is useful.

Companies Profiled

Market Leaders

Ubiquisys
Ip.access

Market Participants

2Wire
Alcatel-Lucent
Airvana
AirWalk Communications
Aricent
Cisco
Continuous Computing
Ericsson
Fujitsu
Google
Huawei
InfiNet Wireless
Juniper Networks
Kineto
Motorola
NextPoint
Nokia-Siemens
Nortel
picoChip
RadioFrame Networks
Rakon
Samsung
Sonus Networks

Market Participants (Continued)

Texas Instruments

ZTE

Femtocell Market Shares, Strategies, and Forecasts, 2008-2014

REPORT METHODOLOGY

THIS IS THE 367TH REPORT IN A SERIES OF MARKET RESEARCH REPORTS THAT PROVIDE FORECASTS IN COMMUNICATIONS, TELECOMMUNICATIONS, THE INTERNET, COMPUTER, SOFTWARE, TELEPHONE EQUIPMENT, HEALTH EQUIPMENT, AND ENERGY. THE PROJECT LEADERS TAKE DIRECT RESPONSIBILITY FOR WRITING AND PREPARING EACH REPORT. THEY HAVE SIGNIFICANT EXPERIENCE PREPARING INDUSTRY STUDIES. FORECASTS ARE BASED ON PRIMARY RESEARCH AND PROPRIETARY DATA BASES. FORECASTS REFLECT ANALYSIS OF THE MARKET TRENDS IN THE SEGMENT AND RELATED SEGMENTS. UNIT AND DOLLAR SHIPMENTS ARE ANALYZED THROUGH CONSIDERATION OF DOLLAR VOLUME OF EACH MARKET PARTICIPATION IN THE SEGMENT. INSTALLED BASE ANALYSIS AND UNIT ANALYSIS IS BASED ON INTERVIEWS AND AN INFORMATION SEARCH. MARKET SHARE ANALYSIS INCLUDES CONVERSATIONS WITH KEY CUSTOMERS OF PRODUCTS, INDUSTRY SEGMENT LEADERS, MARKETING DIRECTORS, DISTRIBUTORS, LEADING MARKET PARTICIPANTS, OPINION LEADERS, AND COMPANIES SEEKING TO DEVELOP MEASURABLE MARKET SHARE. OVER 200 IN DEPTH INTERVIEWS ARE CONDUCTED FOR EACH REPORT WITH A BROAD RANGE OF KEY PARTICIPANTS AND INDUSTRY LEADERS IN THE MARKET SEGMENT. WE ESTABLISH ACCURATE MARKET FORECASTS BASED ON ECONOMIC AND MARKET CONDITIONS AS A BASE. USE INPUT/OUTPUT RATIOS, FLOW CHARTS, AND OTHER ECONOMIC METHODS TO QUANTIFY DATA. USE IN-HOUSE ANALYSTS WHO MEET STRINGENT QUALITY STANDARDS. INTERVIEWING KEY INDUSTRY PARTICIPANTS, EXPERTS AND END-USERS. OUR RESEARCH INCLUDES ACCESS TO LARGE PROPRIETARY DATABASES. LITERATURE SEARCH INCLUDES ANALYSIS OF TRADE PUBLICATIONS, GOVERNMENT REPORTS, AND CORPORATE LITERATURE.

Mission Statement:

WinterGreen Research is an independent business research organization funded by sale of market research, competitive analysis, and return on investment studies all over the world. Research is conducted with integrity and independence that is supported by the revenue from the sale of studies by a distribution network. The company seeks to support its distribution network. The company is dedicated to its customers, to helping those customers grow and understand markets as the markets change and evolve. Automation of process is a central focus for the WinterGreen Research company.

Research is centered on new markets, evolving markets, and change in markets. Markets for new products depend on successful trials. Initial trials create a sounding board for a new product direction. Market growth for new products and services depends on completion of 100 successful trials with real paying customers. WinterGreen Research tracks those trials in various industries and the impact of the trials by talking to people.

YOU MUST HAVE THIS STUDY

REPORT # SH29821665 303 PAGES 93 TABLES AND FIGURES 2008 \$3,300

Femtocell Market Shares, Strategies, and Forecasts, 2008 to 2014

Table of Contents

FEMTOCELL EXECUTIVE SUMMARY

FEMTOCELL EXECUTIVE SUMMARY	ES-1
Femtocell Base Station	ES-1
Femtocell Forecasts	ES-3
Femtocell Service Launches	ES-5

FEMTOCELL MARKET DESCRIPTION AND MARKET DYNAMICS

1. FEMTOCELL MARKET DESCRIPTION AND MARKET DYNAMICS	1-1
1.1 Femtocell Base Station Services	1-1
1.1.1 Traditional FMC Model Support VoIP Calls Over The IP Network	1-3
1.1.2 Femtocells Support VoIP Calls Over The IP Network	1-5
1.1.3 Session Border Controller (SBC)	1-5
1.1.4 SPIT Attack Simulation Project	1-5
1.2 T-Mobile Strategic Ubiquisys 3G Femtocell Positioning	1-7
1.3 Femtocells Small Consumer Devices	1-8
1.4 Femtocells Improve Cellular Coverage	1-9
1.4.1 Units The Size Of A Paperback Book	1-12
1.5 Increased Exposure To Radiation Is A Concern	1-12
1.6 SIP- Deployment	1-13
1.6.1 Telephone First Point Of Contact	1-14
1.6.2 SIP Application Server	1-15
1.6.3 SIP Applications	1-16

FEMTOCELL MARKET SHARES AND MARKET FORECASTS

2. FEMTOCELL MARKET SHARES AND FORECASTS	2-1
2.1 Femtocell A Base Station	2-1
2.1.1 Femtocell Can Achieve Wireless Backhaul	2-4
2.1.2 Femtocell Advanced Functionality	2-8
2.2 Femtocell Forecasts	2-8
2.3 SMB Business Femtocell Market Forecasts	2-17
2.4 Femtocell Service Launches	2-25
2.4.1 Ubiquisys Google-Backed Company	2-27
2.4.2 T-Mobile's HotSpot@Home Service	2-28
2.4.3 Sprint Femtocell Trials	2-28
2.5 Carrier Adoption of Femtocells	2-29
2.6 Femtocell Market Participants	2-30
2.6.1 Ubiquisys	2-30
2.6.2 Ubiquisys Femtocell	2-31
2.6.3 Nokia Siemens	2-31
2.6.4 Netgear	2-31

2.6.5	Linksys	2-31
2.6.6	NextPoint Networks / ReefPoint Systems Announces A Distribution Agreement With Samsung Electronics	2-32
2.6.7	Huawei	2-33
2.7	Femtocell Market Convergence Of Services	2-33
2.8	Femtocell Potential Benefits To Wireless Service Providers	2-35
2.8.1	Google	2-36
2.9	Broadband Subscribers	2-37
2.10	Business Use of Broadband	2-38
2.10.1	Challenges of 3G wireless broadband technology	2-41
2.11	Femtocell Business Case	2-43
2.12	Femtocell Pricing	2-43
2.13	Femtocell Regional Analysis	2-44
2.13.1	N. America	2-44
2.13.2	Western Europe	2-45
2.13.3	Asia-Pacific / Japan	2-45

FEMTOCELL PRODUCT DESCRIPTION

3. FEMTOCELL PRODUCT DESCRIPTION	3-1
3.1 ipaccess	3-1
3.1.1 ipaccess Oyster 3G	3-1
3.2.1 Architecture of Oyster 3G	3-2
3.2 Fujitsu Ultra-Compact Femtocell	3-6
3.3 Samsung	3-6
3.3.1 Samsung CDMA UbiCell	3-6
3.3.2 Samsung HSPA UbiCell	3-8
3.4 Airvana	3-11
3.3.1 Airvana CDMA HubBub	3-11
3.5 Ubiquisys	3-14
3.5.1 Ubiquisys ZoneGate Services Platform	3-15
3.5.2 Ubiquisys ZoneGate for Operators	3-16
3.5.3 Ubiquisys ZoneGate for Consumers	3-17
3.6 CCPU	3-17
3.6.1 CCPU's Trillium Femtocell software	3-17
3.6.2 Example of Trillium Femtocell Solutions	3-19
3.6.3 Femtocell Protocols Supported by CCPU	3-20
3.7 Airwalk	3-21
3.7.1 Airwalk EdgePoint	3-21
3.8 Aricent	3-24
3.9 RadioFrame Networks	3-26
3.8.1 RadioFrame OmniCell@Home	3-27
3.10 Nokia Siemens Networks	3-28
3.11 Huawei	3-30
3.12 picoChip	3-32
3.12.1 picoChip PC82x8 series	3-32
3.12.2 picoChip PC8209 series	3-33
3.13 Ericsson	3-36
3.13.1 Ericsson Home 3G Access Point	3-37
3.14 Kineto Wireless	3-37
3.15 Juniper Networks	3-37
3.16 Sonus Networks	3-38
3.17 2Wire	3-38
3.18 NextPoint	3-39

3.19	Rakon	3-40
------	-------	------

FEMTOCELL TECHNOLOGY

4. FEMTOCELL TECHNOLOGY		4-1
4.1	Technology Trends in Femtocells	4-1
4.2	Collapsed Stack	4-2
4.2.1	UMA core	4-2
4.2.2	SIP or IMS	4-3
4.3	IP Multimedia Subsystems	4-3
4.3.1	Fixed / Mobile Convergence (FMC)	4-7
4.4	Unified Communications	4-9
4.4.1	IP Can Enable Consolidation Of Fixed And Mobile Networks	4-13
4.4.2	SIP Protocol In Mobile Devices	4-14
4.4.3	Handoff Mechanism Between The Femtocell Mini-Base Station And An External Cell Tower	4-14
4.5	Converged Edge Platform	4-15
4.6	IMS Architecture Provides Session Services	4-17
4.6.1	Simplifying Network Operation at the Media Layer	4-18
4.7	Femto Forum Standards and Open Systems Initiatives	4-19
4.7.1	Femtocell Technology Open Standards	4-20
4.7.2	Femtocell Forum Members	4-21
4.8	SIP Integration With IP And Rich Media Applications	4-23
4.8.1	Standards Based Signaling Technology Session Initiation Protocol (SIP).	4-23
4.8.2	SIP Presence	4-26
4.8.3	SIP Actions	4-26
4.8.4	SIP Helps Sales	4-27
4.8.5	SIP Trunks & Benefits	4-27
4.8.6	SIP Reduction In The Cost Of Networking	4-27
4.9	SIP PBXs' Based On Linux	4-32
4.9.1	Cisco SIP	4-33
4.9.2	Cisco Unified Communication System	4-33
4.10	VoIP Gateways	4-34
4.11	Huawei Clock over IP	4-36

FEMTOCELL COMPANY PROFILES

5. FEMTOCELL COMPANY PROFILES		5-1
5.1	2Wire	5-1
5.1.1	Partners/Customers	5-1
5.1.2	Revenue	5-1
5.2	Alcatel-Lucent	5-2
5.2.1	Financials	5-3
5.2.2	Alcatel - Lucent Revenue by Region and Business Group	5-4
5.2.3	Alcatel--Lucent and NEC	5-4
5.2.4	Rationale for LTE Joint Venture Combining	5-5
5.2.5	Customer List	5-6
5.2.6	Partners	5-6
5.3	Airvana	5-6
5.4	AirWalk Communications	5-9
5.4.1	Partners	5-9
5.4.2	Customers	5-10

5.5	Aricent	5-10
5.5.1	Customers	5-11
5.5.2	Strategy	5-12
5.5.3	Investors	5-12
5.5.4	Partners	5-12
5.5.5	Finance	5-13
5.6	Cisco 5-13	
5.6.1	Cisco Net Sales:	5-14
5.6.2	BT and Cisco VoIP Connectivity To Cambridge University Users	5-16
5.6.3	Cisco SMB	5-16
5.7	Continuous Computing	5-17
5.7.1	Customers	5-17
5.7.2	Partners	5-18
5.8	Ericsson	5-18
5.8.1	Customers	5-19
5.9	Fujitsu	5-19
5.10	Google	5-21
5.11	Huawei	5-21
5.11.1	Huawei Next Generation Telecommunications Networks	5-22
5.11.2	Huawei Strategy	5-22
5.11.3	Huawei Partners	5-23
5.11.4	Huawei Global Operations	5-23
5.11.5	Huawei	5-24
5.11.6	Huawei Strategy	5-24
5.11.7	Partners	5-24
5.11.8	Global Operations	5-25
5.11.9	Financials	5-25
5.11.10	Huawei Files 26,880 Patent Applications	5-27
5.11.11	Huawei Standards & Patents	5-27
5.11.12	Huawei Core Technology Systems Architecture	5-30
5.11.13	Huawei Products	5-31
5.11.14	Huawei Key Partnerships	5-32
5.11.15	Huawei Technologies and 3Com Focus on Enterprise Data Networking	5-33
5.12	Ip.access	5-33
5.12.1	Ip.access Investors	5-34
5.12.2	Partners	5-35
5.13	InfiNet Wireless	5-35
5.13.1	Global Strategic Partners	5-36
5.14	Juniper Networks	5-36
5.14.1	Strategy	5-37
5.14.2	Customers	5-37
5.14.3	Partners	5-38
5.15	Kineto	5-38
5.15.1	Customers	5-39
5.15.2	Partners	5-39
5.16	Motorola	5-39
5.16.1	Financials	5-40
5.16.2	Partners	5-42
5.17	NextPoint	5-42
5.17.1	NextPoint Networks Global, Fixed-Mobile Convergence	5-43
5.17.2	NextPoint Networks / Reepoint Systems	5-45
5.17.3	Customers	5-47
5.18	Nokia-Siemens	5-48
5.18.1	Strategy	5-48
5.18.2	Financials	5-49

5.18.3	Customers	5-50
5.18.4	Partners	5-50
5.18.5	Nokia Mobile Communications	5-50
5.18.6	Siemens AG	5-51
5.18.7	Siemens Networks LLC	5-54
5.18.8	Siemens	5-55
5.19	Nortel	5-56
5.19.1	Results of Operations	5-56
5.20	picoChip	5-62
5.20.1	Investors	5-62
5.20.2	Partners	5-62
5.20.3	Finance	5-63
5.21	RadioFrame Networks	5-63
5.21.1	RadioFrame Networks Investors	5-64
5.21.2	RadioFrame Networks Strategy	5-65
5.21.3	RadioFrame Networks Partners	5-65
5.22	Rakon	5-66
5.22.1	Financials	5-66
5.22.2	Partners	5-66
5.23	Samsung	5-67
5.23.1	Samsung	5-67
5.23.2	Samsung Strategy	5-69
5.23.3	Samsung Electronics Financials	5-70
5.23.4	Samsung Partners	5-70
5.23.5	Samsung Information Technology Division (ITD)	5-70
5.23.6	Samsung Electronics Global Leader	5-71
5.24	Sonus Networks	5-71
5.24.1	Customers	5-72
5.24.2	Partners	5-72
5.24.3	Revenue	5-72
5.25	Texas Instruments	5-73
5.25.1	Texas Instrument Femtocell Strategic Positioning	5-73
5.26	Ubiquisys	5-74
5.26.1	Partners	5-74
5.26.2	Customers	5-74
5.27	ZTE	5-75
5.27.1	Partners	5-75
5.27.2	Financials	5-76

FEMTOCELL MID MARKET BUSINESS SIZE AND GO TO MARKET STRATEGIES

6. WORLDWIDE MID MARKET BUSINESS SIZE AND GO TO MARKET STRATEGIES	6-1
6.1 Global Digital Environment Depends on Leadership and Partnering	6-1
6.1.1 Channel Partner Strategy	6-2
6.1.2 IBM Global Innovation Outlook	6-4
6.1.3 Cisco Leads with On Line Technology Message	6-5
6.1.4 Vision of Intelligent Information Networks to Leverage Technology Innovation and the Internet	6-6
6.1.5 Microsoft, Intel, and Hewlett-Packard Have A Small And Medium Enterprise (SME) Consortium	6-7
6.2 Enabling Small and Mid Size Business Environment	6-8
6.3 Growth Potential Of Small Businesses Becoming	

Mid Size Businesses	6-9
6.3.1 U.S. Small and Mid Market Size Business Revenue Growth	6-9
6.3.1 U.S. Small and Mid Market Size Business IT and Broadband Equipment Spending Growth	6-11
6.3.2 Worldwide Small and Mid Market Size Business IT and Broadband Equipment Spending Growth	6-13
6.3.3 Worldwide Small and Mid Market Size Business Communications and Network Spending Growth	6-14
6.4 Worldwide SMB Market Size and Growth	6-16
6.5 SMB As Percent Of Country / Region / World GDP	6-22
6.5.1 Asian Pacific SMBs Adopting IT at High Rate	6-27
6.6 Challenges Facing Small To Medium Businesses (SMBs)	6-30
6.6.1 Exporting	6-30
6.6.2 Mid Size Business Global Opportunity	6-31
6.6.3 Critical to the World Economy	6-32
6.6.4 Internet As An Integral Part Of The Global Economy	6-33
6.6.5 Internet-Based Businesses	6-34
6.6.6 Digital Inclusion	6-35
6.7 SMB Research And Analysis Highlights	6-35
6.7.1 What Constitutes A Small Business?	6-36
6.7.2 US	6-36
6.7.3 Germany	6-38
6.7.4 Economic Growth In Europe	6-38
6.7.5 SMB Broadband in Southeast Asia	6-41
6.7.6 BPM in SMBs	6-42
6.7.7 Broadband in SMBs	6-43
6.7.8 Hong Kong	6-44
6.7.9 Australia	6-44
6.7.10 South Korea	6-44
6.7.11 Japan	6-45
6.7.12 Russia	6-45
6.7.13 Exports	6-46
6.7.14 SME Requirements And How A Smart Marketing And Sales Executive Addresses Them	6-46
6.7.15 India	6-47
6.7.16 Pakistan	6-48

List of Tables and Figures

FEMTOCELL ENGINE EXECUTIVE SUMMARY

Table ES-1 Femtocell Market Advantages	ES-2
Figure ES-2 Worldwide Home and SMB Femtocell Market Forecasts, Dollars, 2008-2014	ES-5

FEMTOCELL ENGINE MARKET DESCRIPTION AND MARKET DYNAMICS

REPORT # SH29821665 303 PAGES 93 TABLES AND FIGURES 2008 \$3,300

Figure 1-1	1-2
Fixed Mobile Convergence Handset Illustration	
Table 1-2	1-7
T-Mobile Strategic Ubiquisys 3G Femtocell Positioning	
Figure 1-3	1-9
Femtocell Architecture	

FEMTOCELL ENGINE MARKET SHARES AND MARKET FORECASTS

Table 2-1	2-2
Femtocell Market Advantages	
Table 2-2	2-3
Femtocell Market Difficulties	
Table 2-3	2-5
Femtocell Market Driving Forces	
Table 2-4	2-6
Femtocell Market Aspects	
Table 2-5	2-7
Femtocell Technology Benefits	
Figure 2-6	2-10
Worldwide Home and SMB Femtocell Market Forecasts, Dollars, 2008-2014	
Figure 2-7	2-11
Worldwide Consumer and SMB Business Use of Femtocells Market Forecasts, Dollars, 2008-2014	
Figure 2-8	2-12
Worldwide Home Femtocell Market Forecasts, Dollars, 2008-2014	
Figure 2-9	2-13
Worldwide Consumer Use of Femtocell Market Forecasts, Dollars, 2008-2014	
Figure 2-10	2-14
Worldwide Femtocell Market Penetration Market Forecasts, Units, 2008-2014	
Figure 2-11	2-16
Worldwide Household Femtocell Market Penetration, Market Forecasts, Percent, 2008-2014	
Figure 2-12	2-18
Worldwide SMB Business Femtocell Market Forecasts, Dollars, 2008-2014	
Figure 2-13	2-19
Worldwide Small and Mid Size Business Use of Femtocell Market Forecasts, Dollars, 2008-2014	
Figure 2-14	2-19
Worldwide Femtocell Small and Mid Size Business Market Penetration, Market Forecasts, Number of Businesses, Units, 2008-2014	
Figure 2-15	2-21
Worldwide Femtocell Small and Mid Size Business Market Penetration, Market Forecasts, Number of Businesses, Units, 2008-2014	

Figure 2-16	2-23
Worldwide Femtocell Small and Mid Size Business Market Penetration, Market Forecasts, Number of Businesses, 2008-2014	
Figure 2-17	2-24
Worldwide Femtocell Small and Mid Size Business Market Penetration, Market Forecasts, Number of Businesses, Percent, 2008-2014	
Figure 2-18	2-25
Worldwide Femtocell Small and Mid Size Business Market Forecasts, Number of Businesses, 2008-2014	
Figure 2-19	2-39
Femtocell Architecture Installed Indoors	
Figure 2-20	2-40
Femtocell Home Architecture	

FEMTOCELL ENGINE MIDDLEWARE AND SERVICES DESCRIPTION

Figure 3-1	3-1
ipaccess Oyster 3G Femtocell	
Table 3-2	3-2
Advantages of Oyster 3G	
Table 3-3	3-3
Advantages of Oyster 3G Access Point	
Table 3-4	3-4
Advantages of Oyster 3G Access Controller	
Table 3-5	3-5
Services Provided by Oyster 3G Manager	
Figure 3-6	3-7
Samsung CDMA UbiCell	
Table 3-7	3-8
Advantages of Samsung CDMA UbiCell	
Figure 3-8	3-9
Samsung HSPA UbiCell	
Figure 3-9	3-9
Samsung HSPA UbiCell	
Table 3-10	3-10
Advantages of Samsung HSPA UbiCell	
Figure 3-11	3-12
Airvana CDMA HubBub Network Architecture	
Table 3-12	3-12
Features of Airvana CDMA HubBub	
Table 3-13	3-13
Operator Benefits Provided By Airvana Femtocell Solutions	
Table 3-14	3-13
Consumer Benefits Provided By Airvana Femtocell Solutions	
Figure 3-15	3-15
Ubiquisys ZoneGate	
Figure 3-16	3-16
Ubiquisys Home Zone Gateway	
Table 3-17	3-18
Services offered by CCPU Trillium Femtocell Software	

Figure 3-18	3-19
SIP Interface to Core Network	
Figure 3-19	3-20
Trillium 3G / 4G Wireless Product Family	
Figure 3-20	3-22
Airwalk EdgePoint	
Table 3-21	3-23
Operator Benefits of Airwalk EdgePoint	
Table 3-22	3-24
Residential Consumer Benefits of Airwalk EdgePoint	
Table 3-23	3-25
Advantages of Aricent Femtocell Solutions	
Table 3-24	3-26
Advantages of RadioFrame Base Station	
Figure 3-25	3-27
RadioFrame's OmniCell@Home	
Figure 3-26	3-29
Nokia Siemens Networks 3G Femto Home Access Points	
Table 3-27	3-29
User Advantages of Nokia Siemens Networks 3G Femto Home Access Points	29
Table 3-28	3-30
Operator Advantages of Nokia Siemens Networks 3G Femto Home Access Points	30
Figure 3-29	3-32
Femtocell Home Coverage System	
Table 3-30	3-35
picoChip Developments in the area of Femtocell	
Figure 3-31	3-36
Three Possible Femtocell Architectures	
Table 3-32	3-39
NextPoint FCG Features	

FEMTOCELL TECHNOLOGY

Figure 4-1	4-5
Motorola Service Provider Technology Positioning	
Figure 4-2	4-6
Motorola Femtocell Technology Evolution	
Figure 4-3	4-10
Unified Communications Exchange	
Figure 4-4	4-11
Unified Communications Voice Data Integration	
Figure 4-5	4-16
Converged Edge Platform Architecture	
Figure 4-6	4-18
IMS Architecture Session Service	
Table 4-7	4-25
Session Initiation Protocol SIP Benefits	
Table 4-8	4-29
avaya.com SIP Protocols	
Table 4-8 (Continued)	4-30

avaya.com SIP Protocols	
Table 4-9	4-31
Avaya SIP Creates System Flexibility	
Figure 4-10	4-33
Cisco Unified Communication System	
Table 4-11	4-35
Transitioning From Physical To Virtual Contact Centers	
Table 4-11 (Continued)	4-36
Transitioning From Physical To Virtual Contact Centers	

FEMTOCELL COMPANY PROFILES

Figure 5-1	5-4
Alcatel – Lucent Revenue by Region and Business Group	
Table 5-2	5-28
Huawei Standards & Patents	
Table 5-3	5-29
Huawei Key Telecommunications Technologies	
Table 5-4	5-32
Huawei Products And Solutions	
Figure 5-5	5-53
Siemens Addresses Market Shifts for IP PBX	
Figure 5-6	5-54
Siemens Reorganization Closer to Customer	

FEMTOCELL MIDMARKET BUSINESS ANALYSIS

Figure 6-1	6-10
U.S. Small and Medium Size Businesses, Number 2008-2014	
Figure 6-2	6-11
U.S. Small and Medium Size Business IT and Broadband Equipment Spending, Market Forecast, Dollars, 2008-2014	
Figure 6-3	6-12
U.S. Small and Medium Size Business IT Spending Forecasts, Dollars, 2008-2014	
Figure 6-4	6-13
Worldwide Small and Mid Market Business Forecasts, Dollars, 2008-2014	
Figure 6-5	6-14
Worldwide Small And Mid Market Business Communications And Network Spending Forecasts, Dollars, 2008-2014	
Table 6-6	6-15
Worldwide Small and Medium Size Business IT and Broadband Communications Spending Market Forecast, Dollars, 2008-2014	
Figure 6-7	6-16
Worldwide Small and Medium Businesses by Region, 2006	
Figure 6-8	6-17
Worldwide SMB Small and Medium Business Regional Segments, 2007	
Table 6-9	6-18

Worldwide Small and Medium Businesses by Region, Number, 2006-2006 Table 6-10	6-19
Worldwide Small and Medium Businesses by Region, Number, 2007-2014 Table 6-11	6-20
Worldwide Small and Medium Businesses by Region, Percent, 2006 Figure 6-12	6-21
Worldwide Revenue of Small and Medium Businesses by Region, Dollars, 2006 Table 6-13	6-22
Worldwide Small and Medium Businesses As A Percent of GNP, 2006 Table 6-14	6-23
Worldwide Small and Medium Businesses As A Percent of Regional GNP, 2006 Table 6-15	6-49
GDP Analysis of Indian Economy	

ABOUT THE COMPANY

REPORT # SH29821665

303 PAGES

93 TABLES AND FIGURES

2008 \$3,300

WINTERGREEN RESEARCH, IS AN INDEPENDENT RESEARCH COMPANY FOCUSING ON DETERMINATION OF MARKET SHARES AND MARKET FORECASTS OF SEGMENTS WORLDWIDE. THE COMPANY IS FUNDED BY THE DIRECT SALE OF STUDIES AND THROUGH A WORLDWIDE NETWORK OF DISTRIBUTORS THAT INCLUDES THOMPSON FINANCIAL, GLOBAL INFORMATION, MARKET RESEARCH.COM, AND RESEARCH AND MARKETS.COM. THE COMPANY HAS A RETURN ON INVESTMENT ANALYSIS TOOL BASED ON MODELS THAT REFLECT THE FEATURES AND BENEFITS OF A PARTICULAR PRODUCT OR SERVICES SET.

BUSINESS ROI MODELS ARE EVOLVED FOR A PARTICULAR PRODUCT SET. THESE WILL ARTICULATE THE COMPETITIVE MESSAGE IN ROI TERMS FOR THE PARTICULAR PRODUCT SETS AND SHOW THE FUNCTIONAL AND TCO ADVANTAGE OF PRODUCTS VS. COMPETITORS. THE MODELS ARE VERY USEFUL FOR COMMUNICATING THE PARTNER MESSAGE.

A COMBINED SOFTWARE AND PARTNER SOFTWARE AND SERVICES SOLUTION CAN BE ARTICULATED AS A MARKETING MESSAGE IN THE MODELS. THE MODELS ARE A VERY SIGNIFICANT ASPECT OF THE OVERALL PARTNER PRESENTATION, PROVIDING THE CAPABILITY OF USING THE MODELS IN COMBINATION WITH A POWER POINT MARKETING MESSAGE TO BE USED FOR CLOSING THE SALE.

PARTNERS CAN USE A POWER POINT THAT REFERENCES THE ONLINE ROI TOOL SO THAT CUSTOMERS GET THE MARKETING MESSAGE IN A CLEAR AND CRISP MANNER ABLE TO BE PRESENTED WITHIN 10 MINUTES, AND YET HAVE THE GRANULARITY OF THE ROI TOOL SO THAT A POTENTIAL CUSTOMER CAN DIG INTO THE ROI NUMBERS IF THEY WISH BY BUYING A USER NAME FROM WINTERGREEN RESEARCH AND GOING TO THE WGR SITE TO GET THE NUMBERS INDEPENDENTLY OF IBM.

THE ROI MODELS ARE GOOD AS A BASIS FOR THE POWER POINT PRESENTATION AND SO ALSO, IT IS GOOD THAT THE NUMBERS EXIST AND COME FROM A CREDIBLE INDEPENDENT SOURCE.

WINTERGREEN RESEARCH, FOUNDED IN 1985, PROVIDES STRATEGIC MARKET ASSESSMENTS IN TELECOMMUNICATIONS, COMMUNICATIONS EQUIPMENT, HEALTH CARE, INTERNET AND ADVANCED COMPUTER TECHNOLOGY. INDUSTRY REPORTS FOCUS ON OPPORTUNITIES THAT EXPAND EXISTING MARKETS OR DEVELOP MAJOR NEW MARKETS. THE REPORTS ASSESS NEW PRODUCT AND SERVICE POSITIONING STRATEGIES, NEW AND EVOLVING TECHNOLOGIES, AND TECHNOLOGICAL IMPACT ON PRODUCTS, SERVICES, AND MARKETS. MARKET SHARES ARE PROVIDED. LEADING MARKET PARTICIPANTS ARE PROFILED, AND THEIR MARKETING STRATEGIES, ACQUISITIONS, AND STRATEGIC ALLIANCES ARE DISCUSSED. THE PRINCIPALS OF WINTERGREEN RESEARCH HAVE BEEN INVOLVED IN ANALYSIS AND FORECASTING OF INTERNATIONAL BUSINESS OPPORTUNITIES IN TELECOMMUNICATIONS AND ADVANCED COMPUTER TECHNOLOGY MARKETS FOR OVER 30 YEARS.

ABOUT THE PRINCIPAL AUTHORS

ELLEN T. CURTISS, TECHNICAL DIRECTOR, CO-FOUNDER OF WINTERGREEN RESEARCH, CONDUCTS STRATEGIC AND MARKET ASSESSMENTS IN TECHNOLOGY-BASED INDUSTRIES. PREVIOUSLY SHE WAS A

MEMBER OF THE STAFF OF ARTHUR D. LITTLE, INC., FOR 23 YEARS, MOST RECENTLY AS VICE PRESIDENT OF ARTHUR D. LITTLE DECISION RESOURCES, SPECIALIZING IN STRATEGIC PLANNING AND MARKET DEVELOPMENT SERVICES. SHE IS A GRADUATE OF BOSTON UNIVERSITY AND THE PROGRAM FOR MANAGEMENT DEVELOPMENT AT HARVARD GRADUATE SCHOOL OF BUSINESS ADMINISTRATION. SHE IS THE AUTHOR OF RECENT STUDIES ON WORLDWIDE TELECOMMUNICATIONS MARKETS, THE TOP TEN INTERNET EQUIPMENT COMPANIES, THE TOP TEN CONTRACT MANUFACTURING COMPANIES, AND THE TOP TEN TELECOMMUNICATIONS MARKET ANALYSIS AND FORECASTS.

SUSAN EUSTIS, PRESIDENT, CO-FOUNDER OF WINTERGREEN RESEARCH, HAS DONE RESEARCH IN COMMUNICATIONS AND COMPUTER MARKETS AND APPLICATIONS. SHE HOLDS SEVERAL PATENTS IN MICROCOMPUTING AND PARALLEL PROCESSING. SHE HAS THE ORIGINAL PATENTS IN ELECTRONIC VOTING MACHINES. SHE HAS NEW PATENT APPLICATIONS IN FORMAT VARYING, MULTIPROCESSING, AND ELECTRONIC VOTING. SHE IS THE AUTHOR OF RECENT STUDIES OF THE SERVICES ORIENTED ARCHITECTURE MARKETING STRATEGIES, INTERNET EQUIPMENT, BIOMETRICS, HEALTHCARE ROBOTICS EQUIPMENT, CLEANING ROBOTICS, EDUCATIONAL AND LEISURE ROBOTS, WORLDWIDE TELECOMMUNICATIONS EQUIPMENT, TOP TEN TELECOMMUNICATIONS, DIGITAL LOOP CARRIER, WEB HOSTING, WEB CAMS, WEB SERVICES, AND APPLICATION INTEGRATION MARKETS. MS. EUSTIS IS A GRADUATE OF BARNARD COLLEGE.

ORDER FORM

REPORT # SH29821665	303 PAGES	93 TABLES AND FIGURES	2008	\$3,300
----------------------------	------------------	------------------------------	-------------	----------------

Return To: WinterGreen Research, Inc.
6 Raymond Street
Lexington, MA 02421 USA
Phone: (781) 863-5078 --- Fax: (781) 863-1235

PLEASE ENTER MY ORDER FOR:

**Femtocell Market Strategies, Shares, and
Forecasts 2008-2014**

-ALL REPORTS ARE AVAILABLE IN EITHER PRINT OR PDF-

PDF PRINT

ENCLOSED IS MY CHECK FOR \$3,300 FOR SINGLE COPY, \$4,300 FOR WEB SITE POSTING

PLEASE BILL MY COMPANY USING P.O. NUMBER _____

PLEASE CHARGE MY MASTERCARD/VISA/AMERICAN EXPRESS—

CARD NUMBER _____ EXP. DATE _____

If charging to a Credit card you may e-mail the order form, but not the card information

Fax or Call with credit card information - Do not send card number as e-mail - You may send the order as e-mail

ADDITIONAL COPIES, @ \$375 (EXTRA COPY PRICE IN EFFECT ONLY WITH INITIAL ORDER)

NAME _____ TITLE _____

SIGNATURE _____

COMPANY _____ DIVISION _____

ADDRESS _____

CITY _____ STATE / ZIP _____

TELEPHONE _____

FAX _____

EMAIL _____

PLEASE NOTE: RESIDENTS OF MASSACHUSETTS AND CONNECTICUT MUST INCLUDE APPROPRIATE SALES TAX

SUBSCRIBERS OUTSIDE THE UNITED STATES MUST PROVIDE PREPAYMENT IN U.S. FUNDS

REPORT # SH29821665 303 PAGES 93 TABLES AND FIGURES 2008 \$3,300