

FMC : UMA Femtocell

FMC Service Case Analysis: UMA and Femtocell

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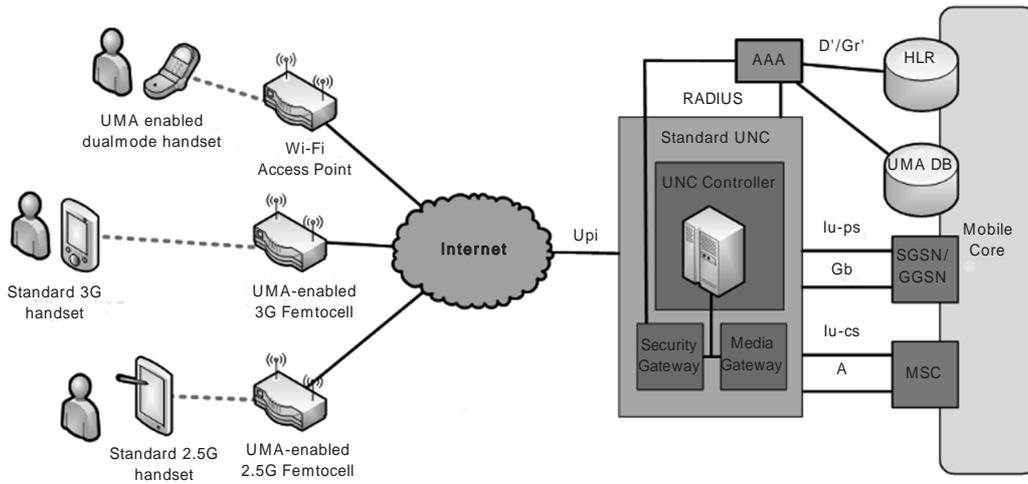
가
 / 가
 가 PMP(Portable Multimedia Player), , UMPC(Ultra Mobile PC),
 Mobile Convergence) 가 TPS(Triple Play Service) FMC(Fixed
 Play Service) 가 QPS(Quadruple
 UMA Femtocell / / 가 가
 : UMA, Femtocell, FMC, QPS

In this paper, we explain UMA(Unlicensed Mobile Alliance) and Femtocell as a key driving factor for FMC(Fixed Mobile Convergence) and QPS(Quadruple Play Service). Both are targeted to mobile device based home or SOHO(Small Office Home Office) environments especially for indoor. UMA was originally proposed as a GSM/WLAN dual-mode handheld device based approach. And, Femtocell is a WLAN AP like home cellular base-station using high speed internet backhaul. These technologies are hot issue at now due to its technical and cost side problems are almost closed. Low cost base-station at home is economically feasible, and dual-mode devices are widely deployed in the market. Based on this trend, we will explain about UMA and Femtocell in view of its concept, standardization status, market & vendor status and issues.

Keywords: UMA, Femtocell, FMC, QPS

I.

‘08 Mobile World Congress , 가 가
 LTE(Long Term Evolution)/M-WiMAX(Mobile WiMAX) 가
 가 /SOHO(Small Office Home Office)/ (Macro/Public Network)



1. UMA

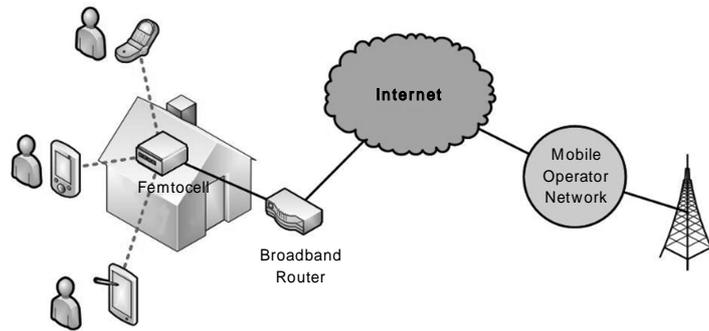
가
가
WLAN(Wireless Local Area Network) GSM
UMA
WLAN AP(Access Point)
가
Femtocell
III
IV
Femtocell UMA
SoC(System on Chip)
Femtocell 가 가
가
[1].

1. UMA
1
UMA WLAN
UMA가
WLAN GSM
가 가
가 WLAN AP GSM
가
GSM Protocol WLAN
GSM Protocol
가 가 UNC(UMA
Network Controller) UNC
SGSN/GGSN MSC
/ UMA
2.5G/3G
[2].

2. Femtocell
Femtocell 2 가
가
가
(Licensed Spectrum)
가 /
[3].
FMS(Fixed Mobile Substitution)

II. UMA Femtocell

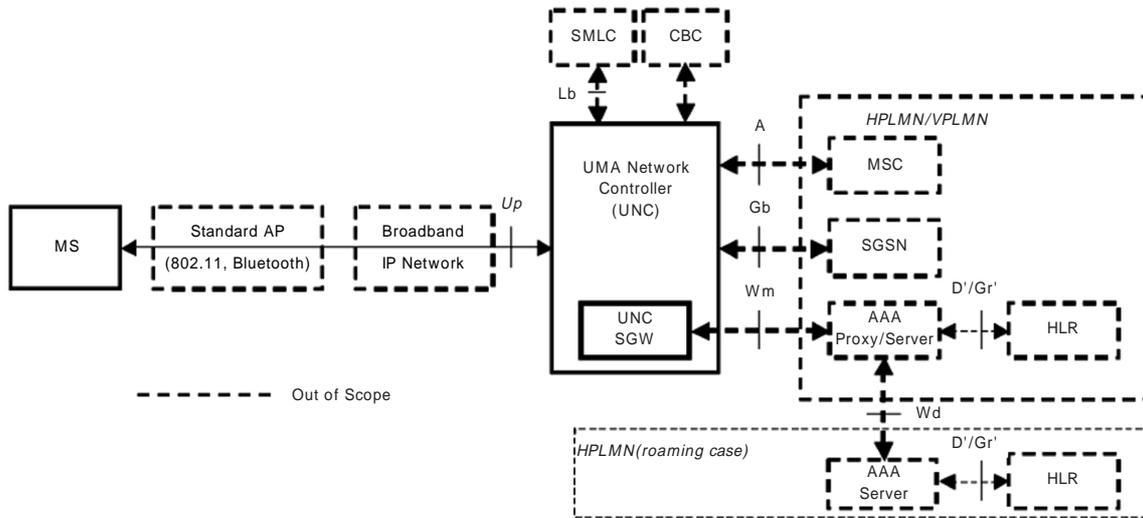
가
Femtocell UMA



2. Femtocell

3.

가 . . . 가 . . . M-
 WiMAX/LTE ,
 가
 가 WLAN 가
 가 , 가 Femtocell [4].
 가 1/3 . , '07 10
 , 57% 가 가 39 , 61
 , 29 USB PMP(Personal
 가 2011 75% 3G Media Player) [5].
 TPS 가 DSL 가 (EDGE/WCDMA/HSPA) 08
 가 가 가 2 M-WiMAX
 가 가 Atom
 가 가
 가 MVNO(Mobile Virtual 가 ,
 Network Operator) 가 ,
 TPS 가 QPS
 가
 LTE/M-WiMAX III.
 QPS 1.
 1.1. UMA
 2G/2.5G/3G UMA 2005 2005 4



3. UMA

3GPP Release 6 Generic Access Network (GAN) TSG RAN
 가 . 2007 11 3GPP GERAN , ,
 Working Group CR(Changed Request) / ,
 3G UMA/GAN . TSG
 UMA/GAN Stage 2 3G RAN 가
 UMA Femtocell
 [6],[7]. , B
 3 UMA UNC(UMA Network , B B , B
 Controller) UMA / /
 GSM/EDGE 가
 (GERAN) TSG SA 2007 12 3GPP
 GSM/GPRS TSG SA 3GPP
 IP UMA B
 GSM/GPRS B
 UNC GSM
 A GPRS Gb , .
 [8],[9]. 1.2.2. Femto Forum
 1.2. Femtocell 3GPP Femtocell
 Femto Forum
 1.2.1. 3GPP . 4 Femto
 Forum , ,
 Femtocell 3GPP [11].
 Femtocell B(Home Node B)
 B 2007 3 2.
 가 3GPP TSG RAN 2.1.
 B
 FMC
 3GPP 8 [10]. WLAN 가

1. /

	<ul style="list-style-type: none"> • KTF가 '09 3G Femtocell • KT, SKT, LGT KTF/ 가 , SKT/ , LGT/ QPS '09~ '10 • QPS • ()
	<ul style="list-style-type: none"> • AT&T, Sprint, Verizon Femtocell ('08~) • QPS • 가
	<ul style="list-style-type: none"> • FT UMA WLAN ('08.06 47) • T-Mobile, O2 Femtocell ('08/ '09~) • 가 가
	<ul style="list-style-type: none"> • DoCoMo, KDDI Femtocell ('08/ '09~) • WLAN SOHO/ • MS IP

WLAN 가 UMA 가 Alcatel-Lucent, AT&T Wireless, BT PLC, Cingular Wireless LLC, Ericsson AB, Kineto Wireless, Motorola, Nokia, Nortel Network, O2, Rogers Wireless, Siemens AG, Sony Ericsson T-Mobile USA 가 [15].
 FMC 2010 7 4 가 Femtocell , AT&T ip.access Sprint-Femtocell Nextel Femtocell [16]. 가
 3G IP 가 IMS Femtocell Verizon 2008 T-Mobile USA dual-mode GSM/WLAN WLAN [17]. Telefónica O2 Europe Femtocell [18]. T-Mobile Ubiqisys Femtocell [19]. Chunghwa Telecom Nokia Seimens Networks Femtocell [20].
 IMS IMS Femtocell 가 가
 WLAN GPRS/WCDMA FMC 가 가 [12].
 Femtocell Femtocell
 Femtocell (: ,)
 가 Femtocell
 Femtocell 가
 [13]. ABI
 2008 100,000 Femtocell 가
 2009 2010 Femtocell 가 [14].
 Femtocell 1

2.2.

UMA 13 WLAN Femtocell

2. Femtocell

Samsung	<ul style="list-style-type: none"> • Femtocell • M/S 2 • / • WLAN • WiMAX 	<ul style="list-style-type: none"> • WLAN / /WiMAX
Cisco	<ul style="list-style-type: none"> • WLAN M/S 1 (Aironet, Airespace, NetGear) • Navini WiMAX • ipAccess Femtocell • WLAN/WiMAX/3G 	<ul style="list-style-type: none"> • 가 /
Motorola	<ul style="list-style-type: none"> • M/S 3 • WiMAX (Wi4) • Symbol WLAN • Airvana Femtocell • Ubiquisys Femtocell • WLAN/WiMAX/3G 	<ul style="list-style-type: none"> • WiMAX
Nokia	<ul style="list-style-type: none"> • M/S 1 • NSN Femtocell • RadioFrame Femtocell • Thompson Femtocell 	<ul style="list-style-type: none"> • WLAN WiMAX / /WiMAX
Ericsson	<ul style="list-style-type: none"> • M/S 1 • Sony-Erocsson 	<ul style="list-style-type: none"> • WLAN / /WiMAX
	<ul style="list-style-type: none"> • 가 HSDPA Femtocell • / , , HSPA Femtocell 	<ul style="list-style-type: none"> • Total

2.3.

UMA 가 가 T-Mobile Femtocell Femtocell [22]. CDMA
 가 가 Femtocell AirWalk Communications
 DSL 가
 CDMA Femtocell [23].
 Femtocell WLAN
 가
 IV.
 2 . Femtocell
 Airvana Alcatel- 1. /
 Lucent Femtocell
 [21]. Femtocell , 1.1.
 , IP Multimedia Subsystem(IMS)
 Pirelli Broadband
 Solutions Nokia Siemens Networks UMA
 3GPP 가 . Femtocell
 Femtocell Ubiquisys . Femtocell

3. Femtocell

Iub over IP	<ul style="list-style-type: none"> • Node-B/BTS RNC/BSC • Iub • (RLC/RLP RNC/BSC 가) • ATM BSS
Concentrator	<ul style="list-style-type: none"> • Iu over IP • Femtocell RNC/BSC • RNC/BSC • concentrator Femtocell , GSN/PDSN
Standalone AP	<ul style="list-style-type: none"> • Femtocell GSN/PDSN • Femtocell • WLAN AP

4. Femtocell RF

	<ul style="list-style-type: none"> • Femtocell • Femtocell •
	<ul style="list-style-type: none"> • Femtocell • Femtocell • Femtocell /

3GPP [28].

가 . 가

1.2. RF Femtocell

UMA가 WLAN, Bluetooth Femtocell 5 가

WLAN AP

UMA가 3G Femtocell 가 [24],[25].

가 . 가

1.4.

RF .

Femtocell Femtocell (Private)

[24],[25],[7]. RF . IP-BSS가 IP

4 가 . 가

1.3.

3GPP2 IEEE 802.16 M-WiMAX BSS

6. Femtocell

Femtocell	<ul style="list-style-type: none"> • Femtocell • Femtocell • QoS
Femtocell	<ul style="list-style-type: none"> • Femtocell • ~ • Femtocell
Femtocell / /	<ul style="list-style-type: none"> • ' , ' , • / , ,

Bluetooth/ Bluetooth
 “ ”
 WLAN 가
 가 [24],[7].
 3. 가 BT Fusion FMC [24].
 6 가 Femtocell 8 FMC Kineto 가 UMA Unlicensed Mobile Access 가
 가 / / WLAN, Bluetooth +WLAN +Bluetooth UMA
 2 Universal Mobile Access /WiMAX , UMA
 V. 가 Femtocell , PC S/W UMA
 가 10 British Telecom(BT) UMA
 1999 BT GSM/DECT 16 [2],[27].
 GSM DECT 가 Swisscom, 가
 Mannesmann, Airtel Mobile 가
 가 가 UMA Femtocell 가
 , , GSM/DECT 가
 가, 1~2 가 \$100~\$200 가 3G/4G Femtocell

3G 4G M-WiMAX/LTE
가

UMA Femtocell 가 FMC
QPS

[]

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