



Disruptive Analysis

Don't Assume

VoIPo3G Business Models

Forecasts & scenarios for wide-area wireless
VoIP for mobile operators & their challengers

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Highlights

- The use of VoIP over 3G networks is inevitable in the medium term, as cellular operators move towards future all-IP systems like LTE & UMB.
- There are multiple scenarios for interim short-term deployment of VoIPo3G before that point, both for operators and independent VoIP specialists.
- Operators will deploy VoIP to improve voice capacity, gain synergies from FMC networks and counter competition from WiMAX or other VoIP providers.
- VoIPo3G will be more important than VoWLAN, for operators and 3rd parties.
- Disruptive Analysis forecasts 255m active VoIPo3G users by the end of 2012, with the figure dominated by mobile operators' own 3.5G+ voice services.
- Despite this growth, penetration will still be below 10% of total global mobile subscribers, and around 20% of all 3G+ users, by 2012.
- Even where VoIPo3G is deployed, circuit voice will still endure for years. Few users will see all their voice traffic transfer to IP; handovers will be critical.
- CDMA operators face fewer threats from independent VoIPo3G than their HSPA carrier peers. Carrier VoIP is designed-in from EVDO Rev A onwards.
- Most 3GPP / UMTS operators will need to wait until at least 2011-12 before starting broad migration of circuit telephony to standardised VoIP. In the interim they will have to compete or partner with pre-standard VoIP players.
- Operators expecting to deploy LTE networks need to consider gaining prior experience of mobile VoIP. Simultaneously rolling out a new radio technology and a new voice architecture is a huge risk.
- The key catalysts for independent VoIPo3G are the increasing penetration of smartphones, coupled with the growing availability of flatrate 3G data tariffs.
- 3G-connected laptops are an important VoIPo3G constituency, as operators' rival services to home fixed broadband will generally need to support users' expected applications - including VoIP - to be competitive.
- In the medium term, operators will drop VoIP-hostile 3G terms-of-service, on the grounds of competition, regulation and difficulty of enforcement.
- Too much emphasis is placed by 3GPP on unproven 'multimedia' telephony concepts rather than 'plain' VoIPo3G.
- It will be more important to embed mobile VoIP into new devices, services or web applications (Voice 2.0) than adding video or other media streams.
- There is scope for partnership between VoIPo3G innovators and incumbent operators (and other parties), especially on HSPA networks. Initial reticence will be countered by awareness of the threats of outright competition.
- Operators have sizeable opportunities for standards-based, non-telephony VoIPo3G applications like push-to-talk and person-to-server communications.
- Although many software and infrastructure vendors are focused on VoWLAN, an increasing proportion are devoting resources to VoIPo3G, although awareness remains weak in sectors like enterprise mobility.
- Improved indoor coverage of 3G through femtocells may catalyse VoIPo3G.
- Operator-based VoIPo3G can fit better with prepaid tariffs than VoWLAN.
- HSPA+ will be a major VoIP platform, especially for operators without sufficient spectrum allocations to roll out LTE.

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For handset manufacturers & silicon suppliers
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For investors
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This report has been written through mid- and late 2007, based on interviews and desk research conducted over that period and the preceding 2 years. Disruptive Analysis has covered the Wireless VoIP market since 2002, and has conducted hundreds of briefings and interviews during that time, with operators, vendors, regulators, consultants and other market participants. The early findings have been discussed with many of the same group, and iterations made to the analysis where appropriate. Very detailed assumptions, a clear modelling methodology and possible scenarios are given in the Market Analysis and Forecasts chapter.

Structure of this report

- **Executive summary**
- **Recommendations:** This chapter gives quick and actionable take-outs of the report for various different stakeholders, such as incumbent operators, device and network equipment vendors, or VoIP challengers and new entrants.
- **Use cases & demand drivers of VoIPo3G:** This section assesses why VoIPo3G is going to be used, including migration of existing circuit-based mobile telephony and a broad range of innovative new services and functions.
- **VoIPo3G technology: requirements and enablers:** This chapter considers the key developments that underpin VoIPo3G, including radio techniques and application architectures. This section focuses on more generic enablers, rather than those specific to a particular mobile network family.
- **Operator VoIP over CDMA EVDO/UMB networks:** This section looks at the evolution of the 3GPP2 family of technologies, including EVDO and UMB, assessing their capability to support operator VoIPo3G, and the likely determinants of rollout and service availability.
- **Operator VoIP over 3GPP HSPA / LTE networks:** This section focuses on the evolution of UMTS radio networks, as well as scrutinising closely the standards development process around areas like IMS and Multimedia Telephony. It tackles the issue of when 3GPP operators will be able to offer fully standardised VoIPo3G telephony, and the scenarios that may occur as existing 3G services become better-capable of supporting non-operator VoIP.
- **Independent and preloaded / partnered VoIPo3G:** Considers the development of non-operator variants of VoIPo3G, typically using a software client on a smartphone or laptop with a suitable 3G tariff. It considers the impact of different elements of handset technology and operators' attitudes to third-party VoIP traffic. It also considers various partnership possibilities.
- **Market analysis & forecasts:** This section gives detailed forecasts to 2012 of the uptake and active use of VoIPo3G in a variety of scenarios – operator vs. independent, primary telephony vs other applications, CDMA vs UMTS and laptop vs handset. It also puts VoIPo3G into context against VoWLAN.

Companies and organisations mentioned in the report include 3GPP, 3GPP2, Airvana, Alcatel-Lucent, Apple, Atelier, AT&T, CDG, Challenger Mobile, Cicero, Cisco, Comneon, Ecrio, Ericsson, FaceBook, FarEastone, FCC, fg Microtec, Firsthand, Fring, GIPS, Gizmo, Google, GSMA, HelloSoft, Huawei, HTC, Hutchison 3, KDDI, Movial, Microsoft, Motorola, NGMN, Nokia, Nokia Siemens Networks, Nortel, NTT DoCoMo, OMA, OMTP, Optimobile, Qualcomm, Samsung, Sonus, Sprint Nextel, Siemens Communications, Skype, Sonim, Symbian, T-Mobile, Telefonica, Tivi, Truphone, Verizon, Vodafone, WiFiMobile, Yeigo, ZTE.

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Disruptive Analysis is a technology-focused advisory firm. Founded by experienced analyst Dean Bubley in mid-2002, it provides critical commentary and consulting support to wireless companies, telecoms/IT vendors, investors and intermediaries.

Disruptive Analysis focuses on mobile communications, wireless technology and IP networking industry trends, particularly in areas with complex value chains, rapid technical/market evolution, or labyrinthine business relationships. It provides its clients with advice and analytical opinion on topics such as technology business models and go-to-market strategies, "addressable market sizing", planning validation and due diligence.

Currently, the company is focusing on the wireless and mobility marketplace, alongside additional research on networks, VoIP, telecom OSS and enterprise IT. Recently, it has focused on the potential for convergence of cellular, WLAN and fixed communications in a new breed of devices, services and networks. Other hot topics currently being researched include IMS, cellular picocells, WiMAX, in-building wireless, mobile handset software, MVNOs, and VoWLAN products and business models.

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Disruptive Analysis attempts to predict - and validate - the future direction and profit potential of technology markets - based on consideration of many more "angles" than is typical among industry analysts. We take into account new products and technologies, changing distribution channels, customer trends, investor sentiment and macroeconomic status. Disruptive Analysis' motto is "Don't Assume".

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