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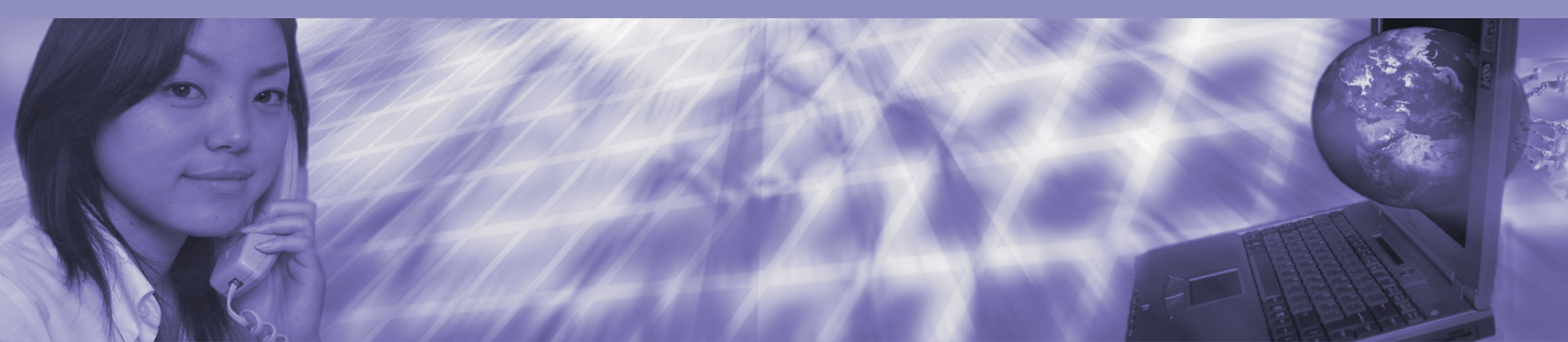
VoIP...Equipped & Ready to Go



. . . information you can do business with

VoIP . . . Equipped & Ready to Go

VoIP as a Disruptive Technology

VoIP is a disruptive technology. It provides sufficient functionality to replace existing methods of voice communications at radically lower costs - both to service providers and to end-users. As such, VoIP is transforming the telecoms landscape - vendors, service providers, and the way end-users communicate.

Clayton Christensen in his seminal book 'The Innovator's Dilemma', has noted how certain new technologies, often initially discounted by incumbent suppliers because they do not offer the same level of functionality or performance as their existing products, can by virtue of their low costs and flexibility, cause whole industries to be transformed and incumbent companies displaced. VoIP exactly fits this definition of a disruptive technology. Joseph Schumpeter's famous phrase "A gale of creative destruction", is sweeping through the telecoms industry.

The VoIP Business Equipment Market

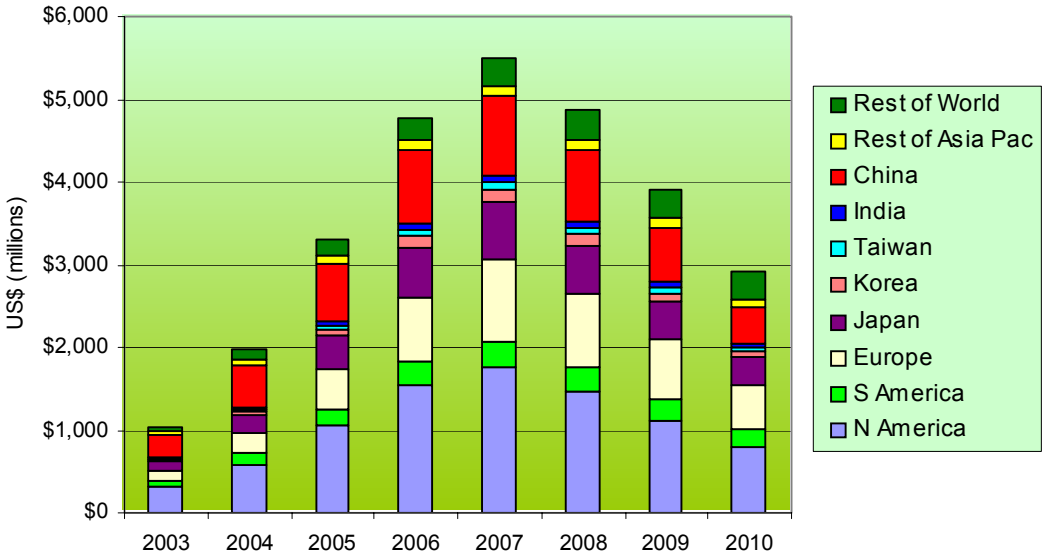
Juniper Research believes the total business VoIP equipment market will reach US$5.5 billion by 2007, falling back to US$3 billion towards the end of the decade.

The reasons for the rise in demand are:

- The emergence of business VoIP as a brand new and viable business solution
- The growth of the Chinese economy and the even greater growth of telecoms connectivity in China
- The purchasing cycle associated with replacing year 2000 time-expired equipment purchases

This market opportunity is significant for vendors and many are reporting sales growth rates of over 100% year on year.

Figure 1: Total VoIP Business Equipment Market by Region



Source: Juniper Research

The anticipated fall in the business VoIP equipment market towards the end of the decade will in part be due to the VoIP business market maturing, but also because:

- Telecoms growth in China will have to ease at some stage
- The year 2000-echo equipment replacement surge will have passed
- Most importantly, existing vendors can expect aggressive pricing competition from Far Eastern and Indian manufacturers of business VoIP equipment, and from VoIP business software suppliers writing to open-standards

Juniper Research therefore anticipates:

- Further significant relocation of Western telecoms equipment manufacturers and software suppliers to China and India
- Significant consolidation in the industry. Some of the big players such as Cisco and Juniper Networks will most likely survive, and indeed it is these and Far Eastern companies, such as Huawei that are likely to be acquiring some of the more household telecoms equipment vendors
- The emergence of new players based on low-cost open-source technologies, based in low cost manufacturing economies

The ICT vendor industry will essentially move East, and by the end of the decade, will begin to be shaped by different vendors.

There does remain a bright spot for vendors who are prepared to embrace the challenges of integrating VoIP into business applications, but this is more likely to be achieved by IT companies than traditional telecoms vendors.

The VoIP Opportunity

Voice over IP (VoIP) technologies have, over the last few years, become an increasingly credible option for delivering voice connectivity to business users. Services based upon broadband connectivity, hosted VoIP managed services, peer-to-peer technologies and converged network solutions in enterprises, combine to fuel a new market which has now crossed the marketing chasm, and has penetrated the early mass market for business communications voice connectivity.

The opportunities and benefits to businesses of adopting VoIP for voice services include:

- Lower call charges, reductions in mobile telephone calls and costs for roaming users
- Convergence of voice and data onto a single network, along with reduced network management costs
- Simplification of deployments including the cost and organisational impacts of moves and changes, location independence of end-users and ease of extending networks to new sites
- Integration with other applications and the ability to easily add multimedia functionality to VoIP terminals

Barriers do, however, remain to the adoption of VoIP within businesses:

- Cultural - the overall conservative nature of many large and small enterprises towards new technologies, cultural and organisational issues surrounding the convergence of voice and data facilities and concerns about the negative impact on performance and capacity if new deployments do not go well
- Technology – the challenges of deploying a sufficiently high quality-of-service capable network, security and meeting power requirements
- Connectivity - for small companies, non-availability of broadband

Nonetheless, by the end of the decade, Juniper Research anticipates it will be the exception for large and small companies not to connect using VoIP technologies in some form or another. Entwined with other substantive changes in the telecoms industry, including massive fibre capacity, penetration of broadband access, increasing speed of routers, open-source technologies, deregulation and privatisation, VoIP is helping to redefine business communications and its associated costs.

Figure 2: Firefly Soft-phone

Source: Freshtel

VoIP Technology and Security

VoIP technology has matured significantly over the last few years. However, different instances of VoIP work on entirely different network architectures, which it appears, will co-exist for some time:

- Within highly structured environments, such as within the core networks of large telco's or enterprises, the preferred approach appears to be to deploy VoIP onto a high quality underlying converged network. Technologies such as DiffServ, Multi Protocol Label Switching (MPLS), traffic shaping and call admission control, are all techniques which may be applied to ensure the quality of real-time voice calls is of a high standard and indistinguishable from traditional switched circuit calls.
- Many new entrant service providers are utilising their high bandwidth access connectivity and the quality of their Internet connectivity to ensure the quality of VoIP calls, simply by the over-provision of bandwidth such that no traffic in networks becomes delayed or lost.
- Peer-to-peer VoIP technology, based upon file sharing applications, provides free voice connectivity over whatever network is available, in a totally decentralised and highly resilient manner, and in many cases with remarkable call quality.

Some service providers are seeking to control the integrated VoIP and multimedia experiences of customers using technologies such as IP Multimedia Subsystems (IMS), however it is not clear whether this strategy will be successful, with many customers preferring to make their own choices on content and cost by accessing services from ISPs who do not engage in IMS roll-outs.

Some areas of VoIP technologies have begun to stabilise, and the Session Initiation Protocol (SIP) appears to be the signalling technology that will underpin VoIP regardless of the methods of implementation in the long run.

End-users are increasingly being offered a wide choice of VoIP terminal devices. These range from simple on screen soft-phones used in conjunction with a PC's audio devices, through to VoIP handsets which may simply emulate simple office 'phones, more complex fully featured enterprise handsets for 'power users', and the early emergence of real-time video-phones.

VoIP services can increasingly be supplied either as out-sourced managed platforms provided to telco's by an increasing number of software developers, or equally via IP-PBXs which are sufficiently scalable to service the needs of only a few users, through to full large enterprise deployments.

Of great interest is the emerging integration opportunities created by the convergence of business critical IT applications, such as customer resource management systems, with VoIP functionality, linked through service orientated architectures. Such integrated solutions promise to greatly enhance the productivity of businesses.

Security of business VoIP services in terms of interception of calls, spoofing of identities and denial of service attacks on business VoIP networks is of concern to business customers, as is VoIP telecoms fraud to business customers and service providers. However, the industry is aware of the importance of security issues and has set up security forums to develop strategic roadmaps for tackling potential security issues. To date, it appears the use of existing data network security approaches will be sufficient to protect networks from attacks.

The separate area of VoIP spam is also being studied and carefully monitored. There are few reports of this phenomenon happening as yet, but the industry is mindful of the effect substantive VoIP spam would have on VoIP adoption if not controlled.

Business VoIP Deployment

It is essential that businesses and their service providers take a structured approach to the deployment of VoIP in order to avoid disappointing results and difficult voice service migrations.

The key common stages for successful VoIP deployments are:

- Evaluation of requirements, including business change needs
- Implementation of organisational changes and removal of voice and data organisational silos
- A VoIP design phase
- LAN upgrading to necessary QoS standards
- Physical deployment
- System testing
- Training – including user training in the use of IP phones
- Integration of VoIP functionality into critical business applications
- Operation and ongoing performance monitoring

The extent to which the above steps are formally undertaken will depend upon the size of the business that is considering the adoption of VoIP.

Key technology deployment considerations include:

- Network requirements – LANs and WANs must be engineered appropriately to provide the necessary quality-of-service to support real time traffic, along with the availability of sufficient bandwidth .
- Security – it is necessary to deploy VoIP in a well protected facility with both good physical and data security measures in place.
- IP-VPN's – must be configured to provide the necessary quality-of-service to support real-time traffic.
- Open-standards or proprietary solutions - businesses need to decide not only on their preferred vendor for VoIP equipment, but also on whether they wish to follow a proprietary route or open-standards VoIP adoption route.
- Hosted or purchased IP-PBXs - businesses need to decide whether they are going to purchase and run their own VoIP equipment, or out-source their needs to a service provider.
- Thin client technologies - many organisations have embraced thin client technologies such as those supplied by Citrix as a method of managing the diversity of IT infrastructures. Thin client technologies can now be combined with VoIP solutions to deliver further productivity benefits.
- Power over Ethernet - an important part of deployment strategies is to decide how end-points will be powered. Products that allow power to be provided to IP phones through Ethernet cables allow for easier VoIP infrastructure roll-outs.
- VoIP as a replacement for cellular business telephony – there are cost advantages to businesses deploying VoIP over 802.11 radio networks within organisational premises, and in requiring staff to use VoIP over 802.11 hot-spots where available when travelling.

- Hybrid deployments - hybrid deployments of circuit switched and VoIP equipment may in the short term, provide better returns on investment than full-scale transitions to all VoIP infrastructures

The Way Forward . . .

. . . for Equipment Vendors

Equipment vendors have already realised the revenue opportunity to be gained by selling VoIP equipment. There are however, four key factors which vendors should be wary of:

- The transition to VoIP represents a one-off, large market opportunity, which once passed will result in the market settling to lower but steadier sales levels
- China is both an immediate sales opportunity, but also an opportunity that will reduce towards the end of the decade, as Chinese telecoms connectivity density catches up with Western levels of telecoms connectivity
- The echo of the year 2000 equipment purchasing bubble, will in this decade, cause a distortion to an otherwise flat replacement market
- VoIP can run on industry standard servers and is provided through software. As such, the barriers to entry for VoIP development companies are relatively low, and established vendors can expect to face fierce competition from VoIP products sourced from India and the Far East

Particular opportunities remain for hardware and software vendors:

- The deployment of integrated VoIP critical business applications
- Support for companies in their mission critical VoIP infrastructure transitions

. . . for Business Users

Business users are urged to adopt VoIP quickly, but in a highly controlled manner:

- It is essential businesses understand the benefits of VoIP to secure the full productivity and cost improvements available through the use of converged networks and integrated business applications.
- Converged voice and data services will, in any company which has resources dedicated to maintaining these functions, require organisational changes, and changes in responsibilities, as well as the acquisition of new skills. Such changes will need to be planned and resourced very carefully to ensure the success of migration projects.
- The importance of having in place viable internal high quality networks, prior to launching VoIP services is essential, otherwise VoIP services will clash with other traffic, and voice service quality will not be adequate.
- All VoIP deployments should be driven from a business case, in particular, having made the decision to upgrade to VoIP communications, it will important to consider whether to implement an own-build VoIP solution, or to out-source telecoms to a hosted VoIP provider.

Order the Full Report

Global VoIP – Hardware, Software & Applications: Business & Enterprise Markets, 2006-2010

This report provides five year forecasts, across five principal regions of the world. The Asian powerhouses of China, India, Japan, Korea and Taiwan are forecast separately due to the importance of their economies in the 21st century. VoIP equipment types forecast are IP-PBXs, VoIP applications, analogue terminal adaptors and VoIP handsets. Forecasts are provided for unit sales, price and market size in US$, and include projected revenue splits between hardware and software and the impact of vendor discounting. The report includes a detailed review of VoIP technologies, VoIP security measures and contemporary approaches to the deployment of VoIP in real situations. Research for this report involved interviewing senior managers at over 30 business VoIP vendor organisations, including:

- VoIP equipment and software vendors – Alcatel, Avaya, Citrix, Huawei UK, Juniper Networks, Microsoft, Siemens, and Tellabs
- Security vendors – Fortinet, Symantec and Sonic Wall

We also have a sister report available – offered at a 50% discount when purchased with this report: *'Global VoIP – Hosted & Non-Hosted Services: Business & Enterprise Markets, 2006-2010'*.

Juniper Research Limited

Juniper Research specialises in providing high quality analytical research reports and consultancy services to the telecoms industry. We have particular expertise in the mobile, wireless, broadband and IP-convergence sectors. Juniper is independent, unbiased, and able to draw from experienced senior managers with proven track records.

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Barry Butler is an Associate Senior Analyst with Juniper Research. He has nearly twenty five years experience in the telecommunications and Internet sectors. Specialist writing and consulting areas include IP services, broadband access and photonics. Barry previously worked as a telecoms research and development engineer for STC and as a product development, technology watch, strategy consultant and due diligence manager for a major UK telecoms company.

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