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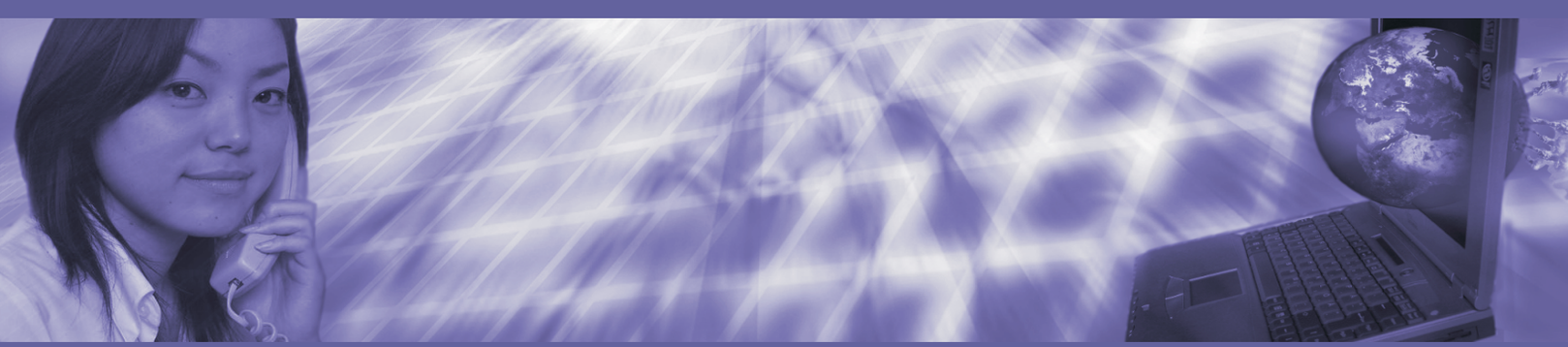
VoIP Services ...Deep Impact



. . . information you can do business with

VoIP Services . . . Deep Impact

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 Service Market

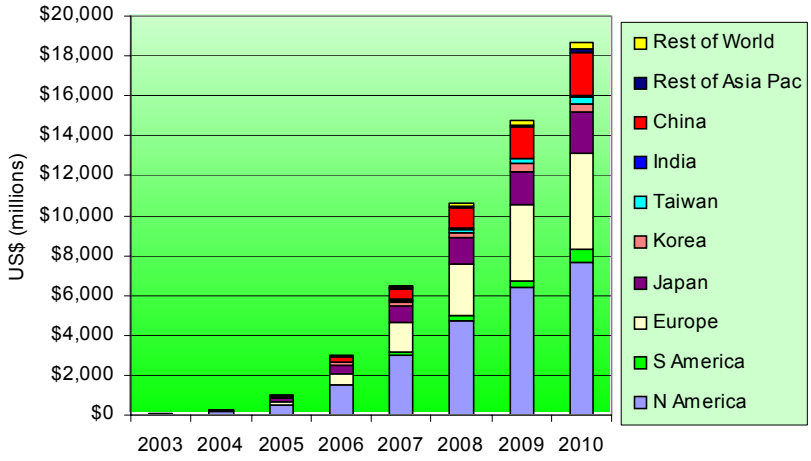
Juniper Research believes revenues from business VoIP services will reach US$18 billion by 2010:

This growing market will be driven by:

- Expiration of existing business circuit switched equipment, and its replacement with VoIP equipment
- Lower costs of VoIP calls
- Massive growth of the Chinese telecoms market
- Businesses reaping the efficiencies of carrying voice and data traffic over one high quality network

- Realisation that integrating voice functionality into business critical IT applications will improve business productivity

Figure 1: Total Business VoIP Revenues



Source: Juniper Research

Different business users will obtain their VoIP connectivity in different ways:

- Very small businesses will utilise either business broadband services or fully hosted VoIP services
- Some small and medium businesses will replace their key systems with small IP-PBX servers
- Larger enterprises will either adopt fully managed hosted VoIP solutions from service providers, or replace their existing circuit switched internal networks with IP-PBX technologies running over high quality converged voice and data networks
- Many users will explore and adopt peer-to-peer VoIP services, either as a primary or secondary way of connecting to partners, colleagues and customers at little cost
- Business users will increasingly connect their VoIP infrastructures through low cost VoIP peering and interconnect services, bypassing established telco PSTN infrastructures entirely. Such connectivity is only just becoming established but is likely to prove very popular

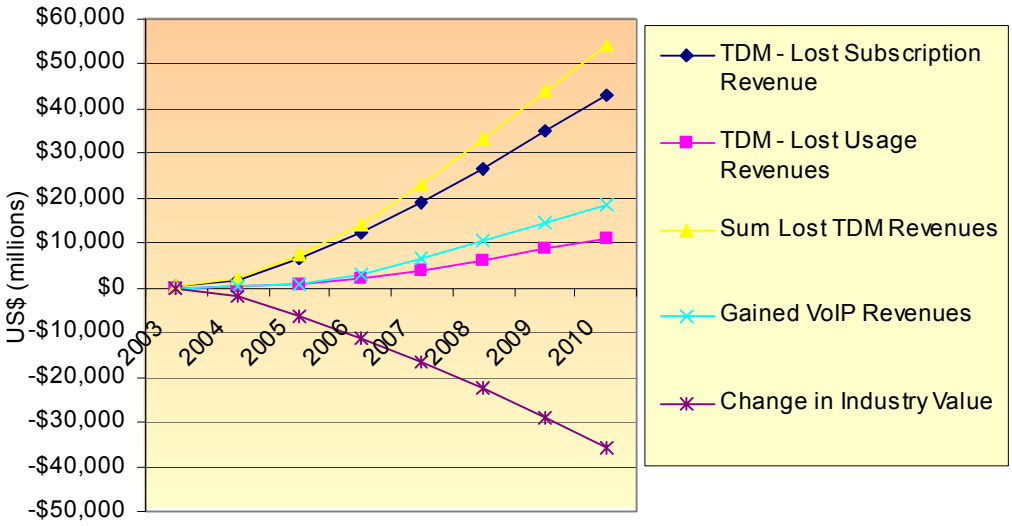
However, there will remain for some time, a legacy business customer base which will not want to replace their circuit switched services with VoIP services, and these businesses will continue to be serviced by existing service providers, even if such providers have migrated their own core networks to VoIP.

The Impact of VoIP on Telco Revenues

Whilst deregulation and competition in the telecoms industry have led to price and revenue erosion across many markets around the world, this trend is being exacerbated by the increasing penetration of VoIP into the telecoms environment.

Although by 2010, Juniper Research anticipates business VoIP services will generate US$18 billion in revenues, this will be at the expense of lost circuit switched business voice revenues of US$54 billion, a net loss to the industry of US$36 billion. Combined with further losses incurred in the residential and mobile markets, the combined losses will significantly impact upon both existing traditional telecom's operators, and state treasuries.

Figure 2: Net Industry Business VoIP Impact



Source: Juniper Research

The only way telecom's operators can avoid being driven into bankruptcy, is by either refocusing their activities on alternative revenues streams, or by driving costs out of their voice businesses. If voice is almost going to 'go for free', then it must cost virtually nothing to provide – it must in effect be just an application, which happens to use the same common infrastructure as other communications applications. This is the rationale for telco's investing in next generation all-IP based networks.

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 3: Gizmo Peer-to-Peer VoIP Client

Source: Gizmo web-site

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 Service Providers

Existing service providers must undertake five key actions in order to remain profitable:

- Recognise the efficiencies of VoIP as a communications technology and the opportunities for directly reducing costs through its use

- Recognise there will be increasing customer demand for VoIP based connectivity from businesses, and understand that only those service providers which meet these needs will win future voice service contracts. VoIP will at some stage soon become perceived by users as 'fashionable', leading to a rapid increase in adoption rates
- Understand that circuit switched based revenues and profits are associated with the last 100 years of telecom's services and not the next 100 years. To stay in business, service providers must radically reduce their infrastructure and operational costs by migrating all services to next generation IP networks
- Continue to realise that many customers would benefit from managed services and provide value-added services such as hosted VoIP at reasonable margins
- Alternatively, service providers can decide to be pure connectivity providers, but must then be extremely lean and focused to make a profit, if following this strategy

In addition, service providers should look to non-traditional suppliers of VoIP platforms, given that services can be delivered on industry standard servers using software that can be developed in low cost economies.

The rise of VoIP peering, direct VoIP interconnect and clearing houses has the potential to completely reshape telecoms connectivity, and to bypass existing service providers' carefully constructed infrastructures. This particular phenomenon could singularly create positive anarchy in the telecom's environment, to the detriment of service providers, but to the great advantage of business customers and consumers.

. . . 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

. . . for Regulators

Buoyant economies thrive on the free movement of information, including the ability to communicate internationally using the telephone, at minimal costs. VoIP technology offers the opportunity to deliver such low cost communications, together with the ability to improve business productivity. Although circuit switched voice revenues have been a major contributor to government treasuries over the last century, it is worth the loss of these revenues to ensure the international competitiveness of a country's businesses. It is therefore strongly

recommended that all forms of VoIP services should be freed from regulatory constraints of all kinds. In particular:

- Peer-to-peer VoIP should not be blocked - the immediacy and intimate nature of the application will add unknown benefits to communications between business colleagues
- Invasive constraints such as intercept and 911 emergency service requirements should be kept in perspective and not become a source of income for lawyers
- All voice based universal access charges should be eliminated. There are now other important ways of electronically communicating, and these, together with VoIP, require underlying high-speed broadband access networks. It is the latter broadband access which should be subject to universal service aspirations, and at a steadily rising access speed
- All reductions to barriers in electronic communications markets will reduce physical travel needs, an important factor as 21st Century energy shortage and carbon dioxide emission controls impact the business environment

Order the Full Report

Global VoIP: Hosted & Non Hosted Services, 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 service types forecast are enterprise VoIP, hosted VoIP services, peer-to-peer VoIP, and business broadband connected VoIP. Forecasts are provided for connection numbers, traffic in minutes and revenues. The impact of VoIP services on traditional telecoms revenues is projected. 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 20 business VoIP organisations, including:

- VoIP service providers – Skype, Tiscali, Masergy, Viatel, Thus, Telstra Europe, Telewest
- VoIP peering providers - XConnect
- Security vendors – Fortinet, Symantec and Sonic Wall

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About the Author

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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