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Alcatel scores one of the biggest nextgen network deals

SBC plans to accelerate its \$4 billion 'Project Lightspeed' aimed at providing 18 million households with services like VoIP, IP TV and ultra-fast Internet access by 2007. The project will use both Fiber To The Premise (FTTP) and Fiber To The Neighborhood solutions.

The announcement was made after the FCC issued rules to keep advanced networks and services free from regulations.

Alcatel has been chosen as the primary supplier of network infrastructure including access and fiber technologies, IP routing and Ethernet switching solutions. The contract awarded by **SBC** is worth \$1.7 billion over a period of five years.

SBC has also selected Alcatel as the network and video services integration partner for the entire project. Alcatel has experience in deploying video networks with more than 20 customers around the world. The company has also obtained similar integration projects from **Telecom New Zealand** and another company in Austria. A key role on the video side will be played by technology that Alcatel acquired from **TiMetra**, an IP routing company.

Alcatel also has a five-year period of exclusivity for supplying DSLAMs, routers and Ethernet switches to **SBC**.

There are other parts of the network like residential gateways, set top

boxes and video middleware for which **SBC** has yet to announce their vendor of choice. Currently **SBC** is also running an IP TV trial with **Microsoft**.

Alcatel has a large portfolio of VoIP products ranging from applications that are hosted in an open service platform environment through to softswitches, and media and access gateways. Apart from the **SBC** deal, we believe **Alcatel** is working with a customer which is planning to deploy a network covering one million end users, which would be one of the largest VoIP networks in the world.

Alcatel has incorporated gateway functionality in access devices such as its multiservice access node. It is incorporating voice capabilities into its DSLAM portfolio and turning that product into a multiservice access node with a heavy focus on broadband rather than narrowband.

The company is undergoing a few changes with its softswitch platform. It has a media gateway capability on its existing universal gateway switches. Its longer-term direction is to consolidate this capability with its existing multimedia softswitch into a single multimedia platform.

Among the incumbent legacy telecom equipment vendors, **Alcatel** and **Nortel** have had major VoIP deployments.

A tale of two numbers

In the PSTN numbering system, phone numbers have geographical orientation which enables subscriber tracking. For example, if you dial 911, the police or ambulance can find you. In addition, service providers know where to levy taxes based upon location.

E-911, CALEA and taxation are problematic for VoIP due to the lack of geographical information. A subscriber having an IP Phone account, for instance, can log into the Internet in any state (or any place in the world) and make a call.

If an operator simply replaces or augments its existing legacy Class 5 infrastructure, it can maintain the same numbering scheme since the migration does not involve edge devices. However, when the packetization is pushed to the edge, as in case of Voice over Broadband (VoB), subscribers can have IP addresses substitute for phone numbers. In such scenarios, the challenge for the operators is how VoIP fits within existing numbering plans that do not cater to IP addresses.

The general view is that users should not be discriminated against because they have VoIP lines instead of regular landlines. In other words, a VoIP user should be able to receive a geographic phone number if a VoIP service is used as a replacement for a landline. For a mobile or a nomadic user, the industry is looking at some form of non-geographic numbering. Regulators in particular are coming up with guidelines and different numbering schemes for these types of users.

The UK telecom industry watchdog, **Ofcom**, announced in September 2004 a new VoB non-geographic numbering prefix '056' to identify VoIP phone connections. VoIP customers will also be able to have geographical numbers allocated (beginning with 01 or 02), thus facilitating the migration from PSTN telephony services without having to change phone numbers.

RegTP, Germany's regulatory authority, has ruled

that local network call numbers for Internet telephony services may only be allocated to customers within their relevant local networks. The regulator has issued orders providing locality-based local network call numbers to two VoIP service providers. One is Sipgate and the other is Nikotalk. Like its UK counterpart, **RegTP** is providing (0)700 numbers for use as locality independent personal call numbers.

As an alternative to fiddling with the codes, certain countries are also planning to put their national numbering plans into ENUM (Electronic Numbering) databases. Austria, Sweden and Korea have already started to put their national numbering plans into ENUM databases. Germany and UK are currently running ENUM trials. It is expected that North America and other regions will follow soon. ENUM is an addressing protocol that enables a range of communications mechanisms to be identified for a participating customer by mapping that customer's telephone number into the Internet domain name system, using a simple algorithm defined by the IETF (Internet Engineering Task Force). Put simply, ENUM can be used to map regular phone numbers to IP addresses and vice versa.

Snom, a Germany based SIP phone manufacturer, which participated in the German ENUM trial has phones that can be reached both over PSTN and VoIP with the same number.

Major service providers in the US have established a group named Country Code 1 ENUM LLC to promote the development of ENUM technology throughout North America. Founding members include **AT&T, GoDaddy.com, MCI, SBC Laboratories, Sprint, and Verizon.**

The Austrian organization for administering Internet domains (**ccTLD**) is currently establishing a generic gateway to route calls to a geographical number range. The organization brings all major carriers into one place, and essentially sells ENUM zones to their users. As the service is fully based on ENUM, a user may solely register an ENUM zone and receive free incoming routing/calls.

'A tale of two numbers' Contd ...

Austria has interesting VoIP numbering plans including a geographic one, a mobile one and a private numbering plan i.e. the area codes they assign to corporations. The numbering scheme introduced for corporate users comes with corporate specific codes, so that companies can share a common VoIP area code at multiple locations within Austria.

However, setting up separate sets of numbers or codes to VoIP services does not solve all the related problems. Number conservation, directory services, and number portability requirements create another set of regulatory issues. These are being debated in the context of applying VoIP numbering plans.

Number portability is a requirement in most deregulated markets. The inclusion of geographic VoIP numbers will make it easier for customers to switch from a traditional service to a VoB service, for example, without having to change telephone numbers. However, the reverse is tricky. How do you change to another carrier and still keep your IP based VoB number?

Another related issue that needs to be addressed by regulators is whether to have a publicly available VoIP directory. Should it be a separate directory or the one linked to a national directory database? A likely solution is for the operator to provide this service itself or to arrange for a third party to provide it. VoB service is a new and emerging market. As the market develops, consumer demand will dictate how and what services are offered.

Certain startups contend that any form of distinction between PSTN and VoIP users can be harmful for the market. "All numbers should be listed in all directories. Even today certain countries have mobile and PSTN numbers in the same directory. Why make a difference now for VoIP numbering," says Thilo Salmon at **Sipgate**.

Ofcom is planning to consult separately on conservation measures to ensure sufficient geographic numbers are available to accommodate the additional requirement for new voice services. Regulators have to ensure that telephone numbers are used efficiently (e.g. allocating numbers in smaller blocks and careful management of numbers) and that the chances of running out of telephone numbers (and having to carry out a number change) are minimized.

Incumbents draw plans to integrate new VoIP networks with PSTN

There are operators who are known to be capping their existing Class 5 network, and rolling out nextgen technology in new geographic areas. But in their core markets they seem to want to protect their legacy PSTN infrastructure. Rather than thinking along the lines of deploying softswitching technology, certain incumbents are more concerned about how they migrate the access layer. They seem to be building out two access network infrastructures, one which is focused on broadband and the other which is already there, the PSTN (narrowband) infrastructure.

So rather than migrating the PSTN infrastructure to VoIP based infrastructure and also paralleling that with broadband, they are looking at rolling out some form of multi-service access node technology, which has the ability to accommodate both narrowband and broadband simultaneously.

One of the first iterations we are seeing in this area is **BT's** 21st Century project. The key functionality will be the ability to handle PSTN and broadband on the same line card. The service provider can then software-switch between the two. It does not need to have manual disconnect (disconnecting a customer who wants to migrate from narrowband to broadband) and a reconnect of the wiring frame. This reduces a service provider's operating cost significantly with respect to

'Incumbents' Contd

customer transition from one technology to the other. As for other capabilities, the multiservice access node technology will be able to handle multiple traffic types so that the carriers are able to handle large deployments of triple play.

Payback periods for deploying new technologies (such as softswitches) are significant so operators are not always keen to deploy new technologies. Discussions with operators revolve around looking at new opportunities to add incremental services. They can achieve this is by rolling out broadband aggressively and looking at migration in the longer term which encompasses the broadband overlay network they have, and integrating that with the PSTN; hence the philosophy of the multiservice access node in the longer term. So a tactical approach seems to be that of delivering VoIP services to broadband market and - as that broadband market develops and the carrier gets significant penetration (say 20 to 30 percent) - then looking strategically to integrating broadband rollout with the existing PSTN installed base and doing a change out in the Class 5 environment.

Multiservice access nodes can integrate on the same plane a suite of services including traditional analog voice, digital voice and data over ISDN, analog and digital leased-line services, broadband data over DSL, and several other access methods such as Wi-Fi. The solution connects to the PSTN on V5.2, V5.1, or two-wire interface and supports ATM and IP for data services.

The result is a reduced operational cost, a reduced Capex, greater flexibility, integration and control, and faster new application and service deployment. The solution can also address scalability issues well by enabling an operator to grow the network as user requirements mandate.

Vendors offering multiservice access node technologies include **Marconi**, **Alcatel**, **UTStarcom**, **Fujitsu**, **RAD** and **Zhone**.

Marconi has shipped over three million

multiservice access node lines, with signed contracts for over nine million lines. Its solution is being utilized in over 17 countries. **BT** is expected to be **Marconi's** main customer in this area.

Alcatel has struck deals with **HanseNet Telekommunikation**, a German CLEC, and **Slovak Telecom**. **HanseNet** has deployed **Alcatel's** multiservice access node solution to offer its residential and business customers advanced broadband services. This multi-million Euro deal includes the supply of **Alcatel's** multimedia access and optical transport solutions. **HanseNet** currently holds over 40 percent of the DSL market in Hamburg.

The multiservice access node solution has also helped **Alcatel** to earn a contract worth about Euro 25 million from **Slovak Telecom**, which is planning to upgrade aging analog infrastructure with next generation VoIP technology. **Slovak Telecom** will be completely replacing its Class 5 voice network infrastructure and immediately begin delivering new broadband services such as Voice over IP, multimedia conferencing, unified messaging including gaming and music downloads, and integrated personal computer and phone applications.

One of the largest deals in the multiservice access node market has been that of Japan Telecom, which has awarded **UTStarcom** a contract valued at approximately \$290 million to supply its new iAN-8000 multiservice access node equipment. With this deployment **Japan Telecom** will support approximately ten million existing and new subscriber lines, and shall be able to offer new services to these subscribers.

Growth in VoB is one of the motivating factors for deploying multiservice access node technology. There are other compelling reasons such as the ability to offer new services and to integrate and manage various access technologies. Nevertheless, we expect VoB (and VoIP in general) to be the main market driver for multiservice access node technology.

Making TV an all-encompassing communications platform

For Italy's **Fastweb**, perhaps the only successful triple play provider so far, broadband is much more TV centric than PC centric. The most interested consumer segment, and hence the target market, for them are non-PC users. Considering the fact that Italy has only a 50 percent PC penetration, if broadband providers just target the PC customers they are neglecting 50 percent of the potential customers.

As of June 2004, **Fastweb** had sold over 150,000 set-top boxes for TV users. The TV based subscribers accounted for nearly one-third of overall broadband subscribers for the company.

According to **Fastweb**, the TV is something that is present in every family. The average is 2.5 TV sets per family in Italy. So the 'platform' is something which customers are very well familiar with. It is quick and easy.

Among the **Fastweb**'s residential customer base,

20 percent of the customers do not have a PC. Out of those who own a PC, 20 percent use it only three to four times a month. The satisfaction of being right in terms of market strategy has emboldened **Fastweb** to continue to enhance the services available on the TV rather than on the PC and to make it simple, and easy to use.

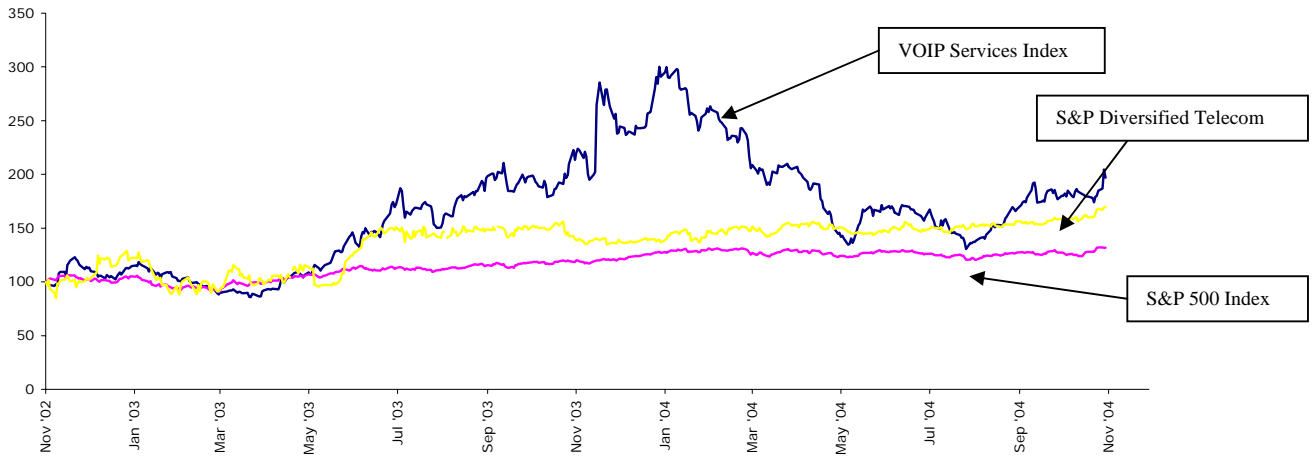
Fastweb already offers TV based full video communication service, not just video chat. It's a full screen, full motion, high quality videoconferencing service. Customers maintain a small camera on their TVs through which they can video communicate. **Fastweb** has recently added messaging accessible through TV. It is contemplating the integration of unified messaging (including voice mail and email) with the same television interface.

The readers may be aware that **Fastweb** is also one of the most successful VoB service providers in Europe. Its customer base is almost twice what **Vonage** has been able to achieve with all the publicity in the US.

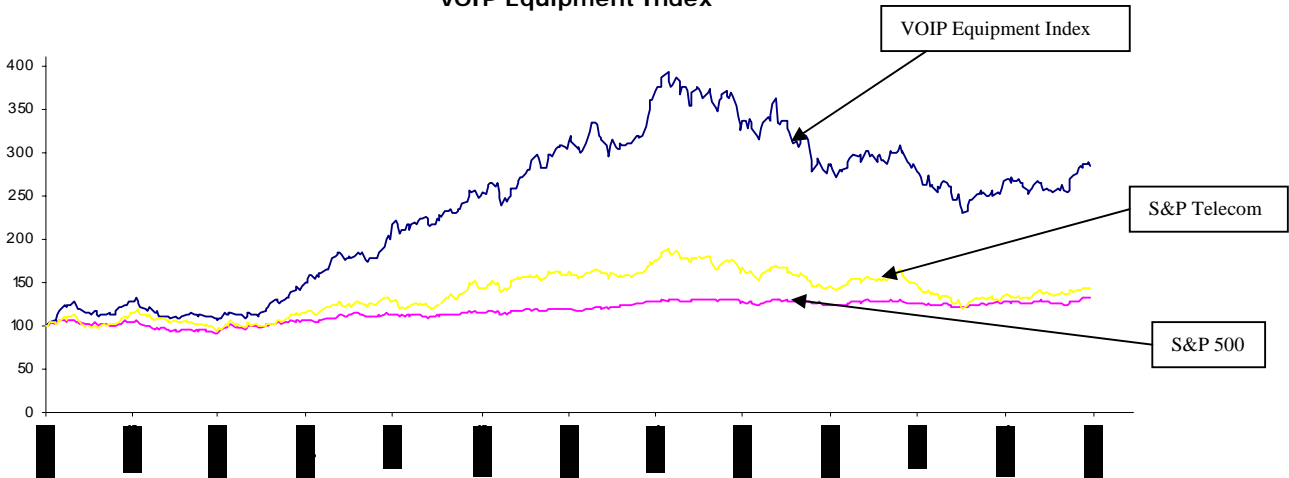
Financial developments October 2004

Company	Products/Services	Development	Details
Deltathree	VoIP retail	Quarterly results	Revenue \$5.5m. Net loss \$671,000
8x8	VoIP hardware, VoB service	Quarterly results	Revenue \$2.5m. Net loss \$3.7m
Audiocodes	VoIP hardware	Quarterly results and private offering	Revenue \$23.1m. Net loss \$1.6m. Private offering of \$100m
iBasis	VoIP Wholesale	Quarterly results	Revenue \$70.4m. Net loss \$1m
Vocaltec	VoIP hardware	Quarterly results	Revenue \$1.2m. Net income \$2.9m
Sonus Networks	Softswitch	Quarterly results	Revenue \$46.8m. Net income \$10.3m

VOIP Services Index



VOIP Equipment Index



	Average Returns				
	<u>VOIP Services Index</u>	<u>VOIP Equipment Index</u>	<u>S&P 500</u>	<u>S&P 600 Diversified</u>	<u>S&P Telecom Index</u>
LTM	(0.05%)	(0.03%)	0.04%	0.07%	(0.04%)
Monthly	0.47%	0.44%	0.16%	0.31%	0.18%

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Our clients rely on our deep understanding of technological vision and financial expertise to assure the successful execution of their strategic initiatives.

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