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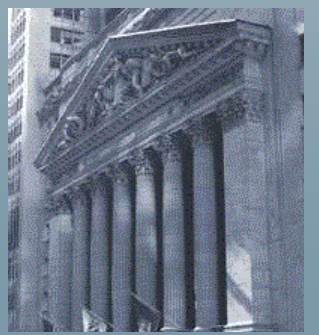
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## Global Crossing Completes 18 Billion VoIP Minutes in 2003

Global Crossing routed an impressive volume of 18 billion VoIP minutes of traffic during the year 2003. When the company announced last month that it had emerged from Chapter 11 proceedings, Global Crossing had reached a monthly traffic rate of 2 billion minutes, making it one of the leading VoIP carriers in the world. VoIP accounts for about one-third of overall voice traffic the company handles.

Global Crossing marked its emergence from Chapter 11 last month, commencing at the same time an initiative to re-establish its brand with new advertising. The advertising was launched in print media throughout the US, Europe and Latin America. A second phase of advertising is anticipated to debut in 2004.

### Financial Restructuring

Chapter 11 restructuring process concluded on December 9, 2003 with ST Telemedia - a subsidiary of the Singapore Technologies Group - investing \$250 million for a 61.5% equity interest in the newly reconstituted Global Crossing. The

remaining 38.5% of the outstanding equity has been distributed to Global Crossing's former creditors. Revenue base has largely been retained during its restructuring. At the same time the company has reduced operating expenses by 63% from \$2 billion at the beginning of 2001 to an estimated current annualized level of just over \$700 million.

Long-term debt has been reduced from \$11 billion at the end of 2001, to \$200 million. In addition to its \$250 million equity investment, ST Telemedia has agreed to take on the \$200 million debt as well, thus effectively investing \$450 million.

While in Chapter 11, Global Crossing undertook significant streamlining activities and is now well positioned to become a major player in global data and IP services. The company reduced the number of management layers enabling quicker decision making and increased accountability, and further reduced the number of sales divisions from seven to three (Carrier Sales, Enterprise Sales and Conferencing Sales).

Source: Global Crossing

|   | Pre-Restructuring | Post-Restructuring |
|---|-------------------|--------------------|
| <i>Service Revenue (2001 vs. 2002 actuals)</i>    | \$3.1 bn          | \$2.878 bn         |
| <i>Opex (Dec 2000 vs. 2003 annualized)</i>        | \$2.0 bn          | \$700m             |
| <i>Long-term Debt</i>                             | \$6.6 bn          | \$200m             |
| <i>Avg. Service Provisioning Time (PoP-PoP)</i>   | 69 days           | 18 days            |
| <i>Mean Time Repair - Priority 1 Transmission</i> | 3.7 hrs           | 2.08 hrs           |
| <i>Total Traffic Over IP Network</i>              | 10Gbps            | 68Gbps             |
| <i>Total VoIP Minutes (monthly)</i>               | 150m              | 2.0bn              |
| <i>IP Network Availability</i>                    | 99.994%           | 99.999%            |
| <i>Headcount (including Global Marine)</i>        | ~10,650           | ~5,300             |

## Big Guns Join VoIP Gold Rush

In separate individual announcements recently, big names such as AT&T, BT, Level 3, and Bell Canada have revealed their respective VoIP plans.

AT&T has announced that it will greatly extend its VoIP services portfolio in 2004. AT&T began offering VoIP service to select business customers in 1997. According to the service provider, it has experienced a fourfold increase in the number of business customers using its VoIP services in 2003. For consumer VoIP, AT&T has been involved in a customer trial since October 2003. Consumers will be offered call-management and web-based features of VoIP service.

Level 3, an IP company from day one is pushing the VoIP initiative by offering a more extensive termination service to its carrier customers and VoIP based toll free services for enterprises with intended use inside applications such as contact center. Level 3 has a proprietary softswitch solution, which it uses along with Sonus switches.

Across the border in Canada, Bell Canada has teamed up with Cisco to provide integrated IP services to enterprises. Bell will invest in a single nationwide IP MPLS network to offer an integrated suite of services that include VPN, VoIP, security and wireless LAN. On the other side of the Atlantic, BT started VoIP services over broadband connections. Fujitsu and UK based MetaSwitch are the vendors for the project.

Global Crossing Contd ...

## Focus on VoIP

Global Crossing counts 40% of Fortune 1000 companies as its customers. Those who send voice traffic to the carrier, hand over the traffic either in form of TDM or VoIP. Some of the TDM handoffs are converted into VoIP. There is a flat monthly rate for on-net calling between locations. With regard to VoIP carrier wholesale, presently there are six VoIP service providers that hand off traffic to Global Crossing in IP format (IP handoff). Rest of the carrier wholesale traffic that travels as VoIP is originated and handed off to the company in TDM form.

The form in which handoffs are passed has become critically important. There has always been a need for IP peering in VoIP industry, whereby two VoIP carriers (or a large enterprise and a service provider) connect their respective networks to exchange voice traffic. Security concerns have kept them from connecting the two IP islands. With the advent of Session Border Controller (SBC) technology, the risks have been reduced to a great degree. SBC technology hides the topology of a network and enables voice to traverse through firewalls and other security systems. Having deployed Acme Packet's SBC technology, Global Crossing began offering IP interconnection – IP handoffs facility- in September 2003. SBC technology also cuts costs for a service provider – both opex as well capex.

In addition to providing VoIP to enterprises over dedicated leased lines, Global Crossing will also be providing VoIP over DSL. Through this access method, multinational corporations can significantly lower their access costs. VoIP services will be extended to these DSL connections in early 2004. The service will be available in the United Kingdom as well. In the US, Global Crossing has selected Covad Communications, a broadband service provider, to supply Global Crossing's US enterprise customers with DSL access.

Quality of VoIP on Global Crossing network, according to the company, is as good as TDM voice, if not better as shown in the Table below. According to a Network World fusion survey, Global Crossing network has one of the lowest latency levels. And this is consistent worldwide. Therefore the quality of VoIP is good even though the company is not doing VoIP on unmanaged public Internet yet.

## Lucent Awarded Major Contracts in China

Lucent has been awarded contracts by China Unicom and China Telecom worth more than \$350 million. Lucent is to supply a range of it's next-generation equipment including the recently announced Accelerate portfolio for VoIP.

The exact value attached to VoIP equipment has not been disclosed. Areas of the network – other than VoIP – where the equipment will be deployed include China Unicom's wireless and MPLS networks and China Telecom's optical networking solutions.

China has the largest number of GSM mobile users in the world. It has experienced an explosive growth in telecom services over the past decade. Lucent has eight regional offices in China with employee strength of approximately 3,000.

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|             | <b>Global Crossing</b> | <b>ISP Provider Averages</b> |
|-------------|------------------------|------------------------------|
| Globally    | 77.8 milliseconds      | 109.7 milliseconds           |
| In the U.S. | 52.6 milliseconds      | 69.6 milliseconds            |
| In Europe   | 150.0 milliseconds     | 161.0 milliseconds           |
| In Asia     | 61.0 milliseconds      | 221.7 milliseconds           |

Table: Latency data for backbone ISP providers around the world  
(Source: Network World Fusion)

Several IP network owners have approached Global Crossing to discuss exchange of traffic over the public Internet. It should be noted that Global Crossing's sole VoIP gateway vendor is Sonus Networks. The carrier has so far deployed over 120 large Sonus switches. Sonus gear was not designed with an unmanaged public Internet in mind. In fact, Sonus uses a high-bandwidth utilizing codec to transmit voice. As such, Global Crossing has to work on an adequate codec in order to cater to the exchange of traffic on the public Internet. Service providers who use public Internet for voice enjoy better margins.

Global Crossing has more than 55,000 carrier, enterprise and government customers worldwide -700 of which are carriers. The company is targeting ISPs, Cable Operators, and Wireless providers with its wholesale VoIP offering. In the enterprise segment Global Crossing is focussing on the finance sector. Other sectors targeted with VoIP offering include healthcare, IT, transportation, and the government. Global Crossing happens to be a key supplier to the UK government. Some 240 British Commonwealth offices worldwide are connected via Global Crossing network using it for data and voice. In the US, VoIP business from the government is improving especially with improvements in security standards driven by the use of SBC technology.

The traffic volume of 18 billion minutes in 2003 represented a 15-fold increase in VoIP traffic volume since 2001. The company expects to carry more than 4.5 billion VoIP minutes per month by the end of 2004. With 65 percent of its voice related expenditure being access charges, there is a strong motivation to use VoIP technology. That holds, however, only if the US government continues to exempt VoIP service providers from paying the Universal Service Obligation access charges. Though a strong motivation, the issue of access charges alone is not the reason why Global Crossing is bullish on VoIP. The service provider has also ventured into Videoconferencing-over-IP and is actively exploring IP Centrex offering.

## Verizon Decides to Migrate for Good

Verizon is set to speed up its migration to a converged VoIP network over the next five years, starting in 2004. The company is deploying VoIP and related technology in both local and long distance networks. All the new switches, whether trunk or access type, will be procured from Nortel Networks who is the sole supplier for the project through the initial period of 18 months.

Verizon has budgeted a total of \$3 billion for modernization to a data centric broadband network. One billion is going into Verizon Wireless, with the remaining two billion going into wireline. The two big initiatives in the wireline include softswitch and FTTP (Fiber To The Premises).

Verizon expects its long distance traffic to be primarily VoIP a couple of years from now. VoIP in the local loop is going to take a lot longer to evolve. By the end of the initial 18 month period, it is looking at a 'few million lines' to be converted to VoIP on the local loop side. Verizon has 139 million access lines, and 16 million long distance lines.

According to Verizon, the last time a phone company did as significant a transition as this,

was when it began the conversion from analog to digital in the 1980s.

Verizon's experimentation with VoIP began in 1999 when it offered PSTN breakout services along the east coast to wholesale VoIP carriers such as ITXC. It has since extended the use of this technology to its inter-city and long-distance networks.

### Reasons For Migration

The latest announcement, however, was not to do with a specific niche or a specific geography. What the company is looking at is a major transformation of its public network. The decision to migrate to VoIP is triggered by several factors. New service requirements are coming from large enterprise customers in particular. Some of them are traditional Centrex customers who want to migrate to IP Centrex so that they can migrate from TDM to integrated access using the IP bandwidth they get from Verizon. The critical issue there is to enable seamless migration at the pace the customer wants. For instance, some enterprises may wish to convert only a subset of their lines to IP Centrex for now and convert the rest later. Therefore, the technology has to have the capability to support a phased conversion.

Then there are various different types of handsets - old analog phones, the SIP phones and other VoIP enabled handsets - that need to tie into the network. According to Verizon, a VoIP infrastructure is not only capable of handling such requirements, but new multimedia conferencing and presence based services become possible.

Some other factors driving Verizon's migration to VoIP are related to the switches. Quite a number of its TDM switches are running out of capacity, while a few of its central offices have manufacturer-discontinued equipment. Rather than buy more legacy switches, the company has decided that all new equipment installed will be the next generation softswitch based technology. Next generation VoIP equipment occupies less floor space and consumes less power. An important new investment Verizon is involved in is FTTP (Fiber To The Premises). The service provider is looking at central offices that will become head-end for this fiber loop, with revenue generating applications to run over FTTP. A softswitch based enhanced applications infrastructure is expected to serve the purpose.

### Selection of Nortel

Treating voice as just another, application over a data network

Verizon is deploying voice over its nationwide QoS enabled IP MPLS network. Media gateways will be used to integrate the MPLS and PSTN networks.

Verizon also aims to integrate its wireless network in the future. PCs, analog phones, mobile handsets, PDAs, VoIP phones and several other edge devices connected to wireline or wireless networks will come into this converged network. IP phones and PCs will enable various types of enhanced services. Nortel is bringing both media gateways as well as

application servers for the project. The middleware integration is also being done by Nortel.

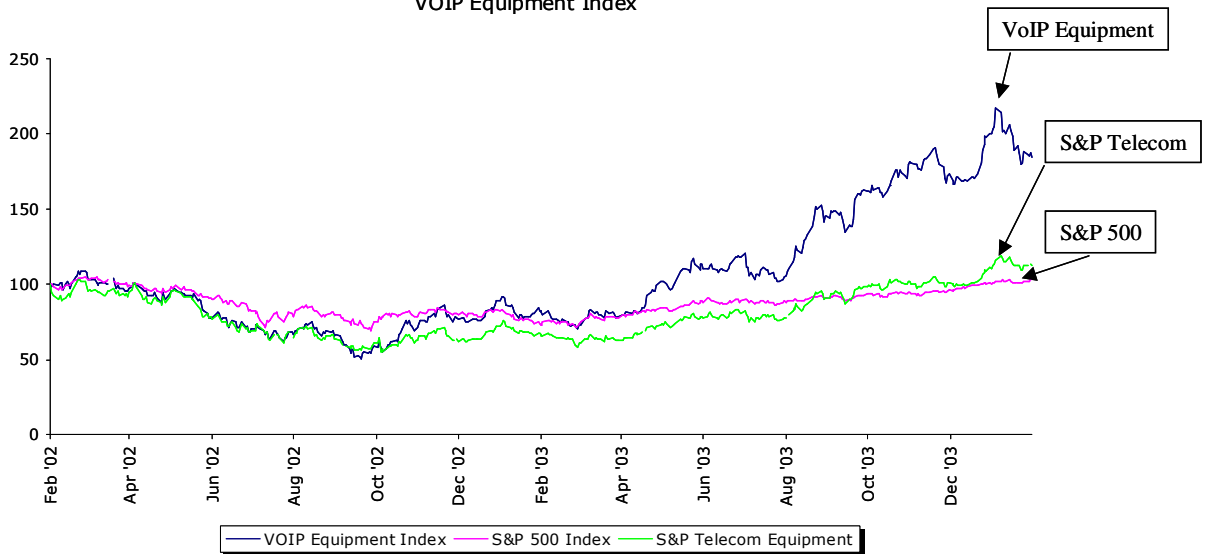
For the first 18 months of the project, Nortel will be the sole supplier. Historically, Verizon has been a multi-vendor company but given the complexity of the job, it has decided not to tackle a multi-vendor capability from day one. After 18 months Verizon will revisit the possibility of bringing in additional vendors. Another reason for selecting Nortel was

the fact that it is clearly easier converting an existing TDM Nortel office into a VoIP Nortel office. However, Nortel has committed to migrate other office types as well, including Lucent switches. This is made possible through various open industry standards. Approximately 40% of Verizon offices are Nortel based. Verizon also deals with Cisco users of IP PBX and IP Phones. However, three-fourths of the PBXs that Verizon installs are Nortel PBXs. Several of those customers want IP PBX capability.

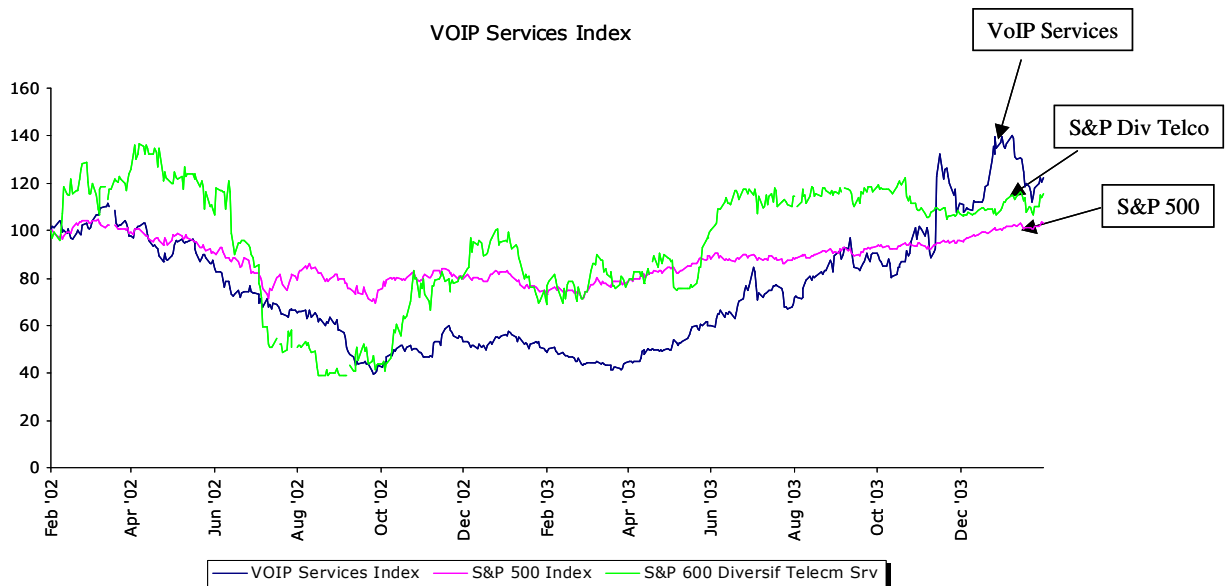
## Major Finance Related Developments in VoIP Industry

| Company            | Products/ Services                         | Development       | Details  |
|--------------------|--|-------------------|--|
| Narad Networks     | Access solutions for broadband IP services | Funding           | Raised \$17.5m in financing. Investors: Argo Global Capital, Polaris Venture Partners, Sofinnova Venture Partners, Vertical Group, and General Catalyst. |
| Netrake            | VoIP Session Border Controllers            | Funding           | Raised \$20m. Investors: Prism Venture Partners, TL Ventures, Austin Ventures and Trinity Ventures   |
| Mapletree Networks | DSPs for VoIP systems                      | Acquisition       | Acquired by Performance Technologies for \$8.25 million in cash.   |
| NMS Communications | Media gateways and telephony boards        | Quarterly results | Revenue \$23.5m, Loss \$1.8m   |
| Audiocodes         | Media gateways and telephony boards        | Quarterly results | Revenue \$13.5m, Loss \$2.1m   |
| Net2phone          | PC-to-phone mainly                         | Quarterly results | Revenue \$20.4m, Loss \$2.6m   |

### VOIP Equipment Index



### VOIP Services Index



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