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## Tekelec targets small range Class 5 switch market with Taqua acquisition

On February 25, 2004, Tekelec, a developer of telecom switching and signalling equipment, agreed to acquire Taqua, a provider of nextgen Class 5 switching systems, for \$85 million in cash. This along with last year's acquisition of Santera, will position Tekelec as one of the leading suppliers of switching equipment to small and mid sized service providers in the US.

At the end of 2003, Tekelec had \$340 million of cash and cash equivalents, of which \$85 million will be used to finance the Taqua acquisition.

Upon completion of the transaction, Tekelec will have more than 110 nextgen, voice switching customers. 85 of these will be from the Taqua acquisition while the remainder will be from the earlier acquisition of Santera. In terms of the number of systems deployed, Taqua had 140, while Santera had a little over 30. Tekelec plans to cross sell its signalling solutions, such as the SS7 solution, to its newly acquired customers.

Taqua's solution is optimized for the small switch market. On a global basis, approximately 90% of worldwide wire line switches are classified as Class 5, of which 70% are small switches, serving less than 5,000 lines.

Although tapping the small switch market represents a large opportunity for Tekelec, service providers are still under considerable financial pressure to keep tight controls on capex spending. There is little impetus under the current economic conditions for carriers to deploy nextgen Class 5 switches. Leaving aside new and Greenfield deployments, switch replacement is usually being carried out if an existing Class 5 switch is outdated or if it has become too expensive to maintain.

Additionally, incumbents have been inclined to use their existing Class 5 switch vendors such as Nortel, Alcatel and Lucent to help them migrate gradually to a packet based network. Therefore, we do not see a rapid increase in the number of Tekelec's deployment of nextgen class 5 switches among incumbents in the near future.

However, there is a market for the company's switching equipment among smaller independent local exchange carriers. There are currently close to 2,000 independent carriers in North America who serve between 300 to 1,000 lines. These carriers are well funded and majority of them are looking to roll out new packet-based networks.

Established in 1998, Taqua is the first nextgen switch maker to secure RUS (Rural Utility Service) certification, which is required to supply equipment to small independent rural telephony providers.

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## Telica announces port shipments

Telica reports having shipped 3 million softswitch ports since inception. The vendor has over 100 switch deployments in operation for 60 service providers.

A competitor of Santera and Sonus, Telica makes high density Class 4 and Class 5 switches. One of its earliest customers was Verizon that deployed Telica switches for its PRI offload.

Telica timed the launch of its product well. It avoided being a supplier to small, early stage VoIP carriers and is primarily focused on sales in US market.

The company has managed to add several large customers despite the depressed economic conditions over the past two years.

The company opted to concentrate on developing Class 4 equipment even though there are more Class 5 switches deployed. This strategy paid off because service providers have chosen to upgrade the international links to long distance trunks which require Class 4 switches and then upgrade the local loops second. Several vendors had put heavy bets on nextgen Class 5 replacements/augmentation alone but failed to capitalize on this investment.

Tekelec / Taqua Contd ...

Taqua's solutions could also be deployed overseas particularly in developing countries with low telephone penetration rates. Several adaptations will however be required to make Taqua's solutions viable in these markets.

The company also serves a handful of cable customers but is mainly focused on the incumbent carriers. Until last year, Taqua did not have any IP capability but it has since added this feature. With IP capability established, it has been able to quickly develop and offer enhanced applications as part of its Class 5 solution, including IP Centrex solutions.

There seems to be very little overlap between existing Tekelec and Taqua solutions. Tekelec does not have low density access switches. In the US, of the approximately 13,000 Class 5 switches in service, over 50 percent are small switches. The acquisition of Taqua's low density access solution and Santera's high density access solution will allow Tekelec to serve a broad range of customers with various types of local access deployments.

Taqua's switch is a 5,000 line, Class 5 solution while Santera offers switches which start from a capacity of 5000 lines to the mid-to-high density space, in both Class 4 and Class 5.

Although Taqua's revenues were not disclosed when the transaction was announced, the expected impact of revenue on Tekelec will likely be positively to net income by 2005. Tekelec's switching units will stay in Richardson close to where Santera unit is located. Taqua has 110 employees, while Santera has approximately 275. Tekelec will retain Taqua's current employees and management team.

Tekelec has equity positions in two other VoIP vendors: Telica and Broadsoft.

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## Softbank BB to deploy a packet based long distance network in Japan

Softbank BB, Japan (SBB) is establishing a packet based long-distance telephone network. The long distance telephone service is to be made available to residential customers in Japan first and later to enterprises customers.

SBB which provides its services in Japan through service provider Yahoo BB, will deploy a Class 4 packet voice infrastructure supplied exclusively by Sonus Networks. Sources suggest that there are plans to roll out a Class 5 switch later. Sonus has been working with SBB on the project for several quarters.

Japan seems to be moving a faster than the rest of Asia in terms of its VoIP deployment, although China is not far behind. In fact, China and Japan represent the majority of the VoIP activity in the Asia Pacific region. In Japan, Fusion and SBB are the two largest customers of Sonus' products. Although Sonus derives an average of 75% of its revenue from North America, majority of the remaining revenue comes from the Asia Pacific region.

SBB's Class 4 deployment is not a replacement or augmentation situation. In fact, the service provider did not have an existing circuit switched network prior to the Sonus contract and relied instead on outsourcing a portion of its voice service to NTT Docomo.

SBB is one of the most successful VoIP-over-Broadband service providers. The company has 4 million DSL subscribers, of which over 3 million use its VoIP based telephone service. The service branded BB Phone was started in April 2002 and is very similar to what Vonage is offering in the US or FastWeb in Europe. Vonage provides its service over third party DSL and Cable lines, whereas SBB owns its own infrastructure.

As of September 2003, some 2,330 central offices in Japan were made ready by SBB for its broadband service. The company has been very aggressive in marketing its VoIP service. Representatives of the company can literally be seen standing on streets selling the relevant adaptors with a free trial of the service to the public. SBB's favourable outlook is also aided by the rapid acceptance of IP telephony by Japanese regulators. There are currently over 9 million IP telephone numbers issued in Japan. IP telephone numbers typically have a unique code countrywide and facilitate communication between regular phones and PCs or IP phones. Several value added services are possible with IP telephone schemes that are being evaluated by regulators worldwide. Each scheme takes a unique form depending upon the extent to which the regulators wish to promote the service.

SBB is planning to offer several value added services including IP Centrex for enterprise users (solution from NEC), Voice VPN and conferencing. These value added services will be launched following the deployment of Class 5 switches.

SBB was formed in 1981 and was originally a distributor of PC related equipment. Over the last 23 years, the company has expanded its operations into a broad range of businesses lines including publishing, satellite broadcasting, exhibitions, software services, and venture capita. In 2000, it started its broadband services division and the following year it teamed up with Yahoo Japan to establish Yahoo BB, a portal site selling broadband services and content.

## Videoconferencing-Over-IP gains momentum

Since the September 11 attacks, the use of videoconferencing has been on a steady rise.

Videoconferencing over IP is now reported to represent almost 10 percent of the overall videoconferencing traffic in the US, the rest being attributed to ISDN service. The sharp increase in Videoconferencing-Over-IP is due to lower IP based tariffs, better manageability and security. Demand for the service is highest from financial institutions, consulting firms, marketing and advertising companies and academic institutions.

AT&T launched the world's first videoconferencing technology in 1964. This technology was based in the legacy ITU H.320 standard for video communication. The formation of a new standard, H.323, released in 1996 enabled allows IP-based Videoconferencing to develop.

Once video goes over IP it is easier to administer. IP is simple and can be managed by IT managers and is less costly if integrated into a larger communications strategy (voice, video, and data). Unique applications such as web collaboration and desktop conferencing can be developed around Videoconferencing-over-IP.

Videoconferencing over ISDN is relatively unreliable. According to Global Crossing, 6 to 10 percent of calls get disconnected because of problems such as 'Frozen Panes', and 'Ghost Shadows'. The occurrence of these problems is significantly reduced when the service is run on an IP VPN network.

Return on Investment is an important consideration in deciding whether to switch from an ISDN solution to an IP solution. Over two-thirds of legacy videoconferencing vendors have developed IP based equipment but there is reportedly little uptake of the products.

Customers also view IP as messy and unmanageable because they confuse Videoconferencing-over-IP is often confused with Videoconferencing-over-the-Public-Internet.

Service providers who are offering Videoconferencing-over-IP include Fastweb (Italy), Network-1 (UK), Global Crossing (USA) and Packet 8 (USA). Incumbents worldwide also seem to have the offering in their respective service portfolios. Global Crossing is one of the latest entrants in to the videoconferencing market. The company's target customers are large enterprises mainly in the financial and medical sectors.

### Signaling Technology

Global Crossing and A+ Conferencing use the H.323 standard and not the H.324 standard for the videoconferencing-over-IP application. H.323 is a combination of elements from the H.263, H.263+, H.263++ and H.264 standards. These elements are based on a Common Interface Format (CIF), which is compatible with multiple video formats such as NTSC and SECAM. H.324 uses the MPEG format, and is more robust than H.323 standard.

SIP technology has been present for some time but its success is limited to voice applications. At present, SIP solutions in the market are perceived not to match the level of reliability that H.323 provides, even though SIP is seen to have better potential than H.323 when it comes to Videoconferencing-over-IP.

The quality of video depends on the codec used. The clarity of video and voice depends on the degree of compression of the packets of data. There is a trade off between the quality of transmission and the time taken to transmit the packets.

## Pricing and Durations

Scotty a videoconferencing vendor develops its own codec. The name of their codec is zybacron. Scotty uses H.261, H.263, and H.264 for video, and for audio it uses G.711, G.728, and G.722.

Vcon, another videoconferencing company, uses G711 for voice and G728, G723.1, G729, G722. The company also uses H.264, H.263 and H.261. H.264 is a new algorithm, which provides better compression/quality, and takes up less network bandwidth and resources.

Radvision, one of the leading vendors for Videoconferencing-over-IP technology, has gateways that support connectivity between IP (H.323 and SIP) endpoints, ISDN (H.320) endpoints, and 3G (3G-324M) mobile videophones. As the market for residential video telephony service emerges, innovations in endpoint equipment are emerging. Major providers like Microsoft are also beginning to enter the market with products tied to the Instant Messaging platform.

A+ Conferencing's video conferencing traffic over ISDN is 5 million minutes per month. The IP traffic is less but is increasing. It charges 70 cents per minute per port for 128 kbps bandwidth, 90 cents per minute per port for 384kbps, and \$1.10 per minute per port for 768kbps. The company also offers a customers option of bulk usage rates which cost \$4,995 per month, per host for unlimited conferencing.

UK based Network-I Ltd has a flat monthly tariff package. The company charges 750 pounds sterling (approx \$1350) per month for unlimited use in the UK and \$800 per month for a similar service in the US.

For ISDN users Global Crossing charges its customers by the number of minutes and bandwidth used. The charge is basically a per-channel-per-minute scheme. Over IP, the company charges a fixed monthly fee for transport and a variable fee for the actual bridge time. The bridge fee applies to IP based or ISDN customers.

An estimated regional breakdown of videoconferencing over IP traffic for Global Crossing is 70% for North America, 20% for Europe and 10% for Asia. Out of the US-originated IP videoconferencing traffic, 65% is national or domestic long distance within the US, while the remaining 35% traffic crosses international boundaries.

The table below gives the average duration of Videoconferencing-over-IP conversation as reported by service providers. Since some providers such as AT&T only manage the customer Videoconferencing equipment and the IP VPN, which the service uses, there is usually no record of duration from the service provider's (or integrator's) point of view.

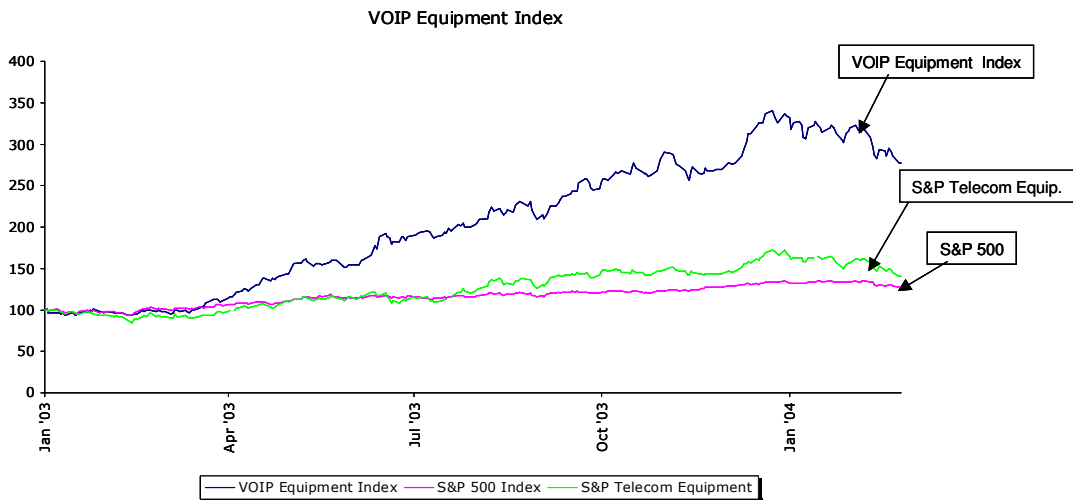
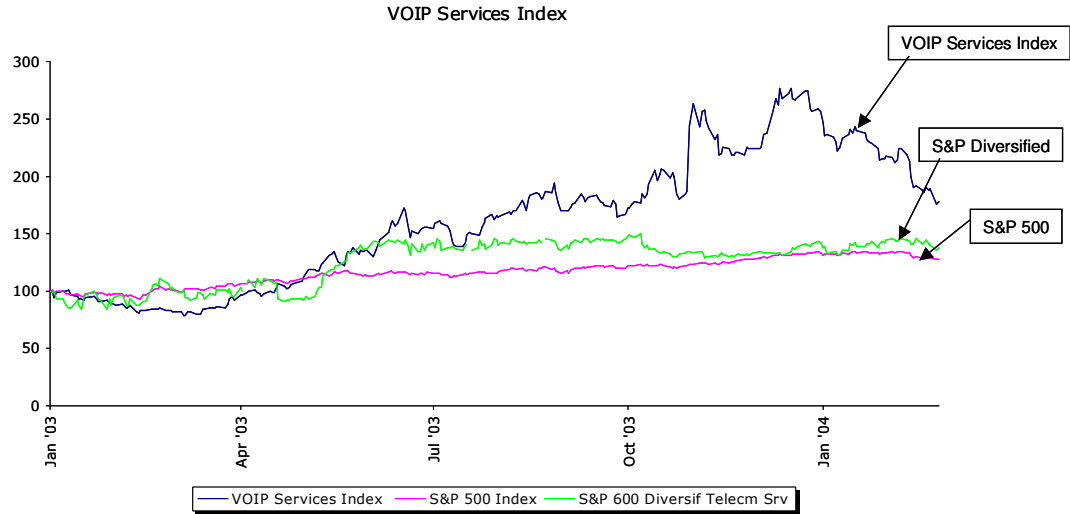
According to AT&T the average duration of a videoconference session is typically about an hour or so. Network-I of UK says the average duration of a videoconference session is about 1.5 hours. The average duration is about 2 hours for a typical videoconference session on Global Crossing's network.

For Point-to-Point videoconferencing, the average session is 75 minutes long. A Multipoint Conferencing session typically lasts 2 hours. It can last even longer depending on the number of simultaneous locations that are connected together and the intensity of the meeting.

Company	Videoconferencing over IP. Average Session Duration (in Minutes)
AT&T	60
Network-I Ltd.	90
A+ Conferencing	60
Global Crossing	Point-to-Point call 75 Multipoint call 120

Table: Videoconferencing-over-IP session durations of various providers

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## Major Finance Related Developments in VoIP Industry (February 2004)

Company	Products/ Services	Development	Details
Taqua	Class 5 switch	Acquisition	Acquired by Tekelec for \$85 million in cash
ITXC	VoIP based wholesale service provider	Quarterly results	Quarterly revenues of \$97.9m. Net loss \$11.1m.
Cirilium	VoIP vendor	Acquisition	Acquired by Royal Palm Capital Group. Amount not disclosed
MIND CTI	VoIP vendor	Quarterly results	Quarterly revenues of \$3.64m. Net income \$1.08m
Vonage	Service provider	Funding	\$40 million funding led by 3i

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