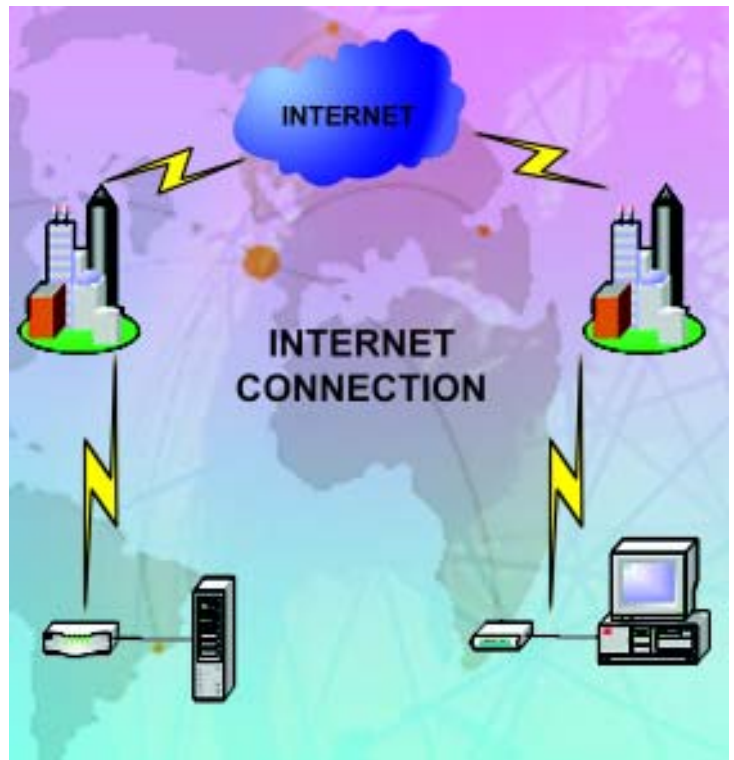


Virtual Private Network-Internet Protocol (IP-VPN) services with their ability to provide an alternative to expensive dedicated links, present a good revenue potential to the service providers. The businesses too find it a viable option for bolstering their productivity. No wonder the service providers are flooded with ever increasing demand for IP services to outsource Internet, Intranet, and Extranet services, Managed Network services, and content-related services such as web hosting, mail service, and secure remote access. With IP-VPN, a service provider connects two IP addresses located at geographically dispersed sites. These two locations thus appear within a private IP network. It offers a variable degree of security that ensures privacy to all the parties. It is founded on the idea of leveraging on the wide reach and presence of Internet in combination with its cost-effectiveness.



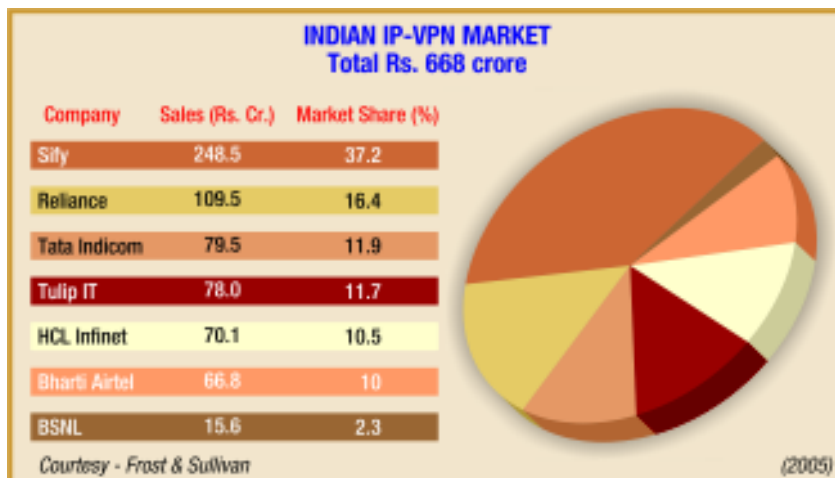
GAINING MOMENTUM

Most of the enterprises are scaling up their businesses and adopting enterprise solution to leverage on the existing opportunities. The enterprises can connect all their offices allowing solutions like ERP, SCM, CRM and other applications to be centralized and investment in them fully utilized. The current VPN user segment is primarily composed of large enterprises and is most popular in the manufacturing vertical. As per RBI guidelines, in order to ensure security the online banking and e-commerce based services, banks and financial institutions must avoid any direct connection between the Internet and their core system. The best option available to them is of placing their core network on IP VPN. Business Process Outsourcing (BPO) and Knowledge Process Outsourcing (KPO) are other upcoming verticals which are likely to adopt VPN services.

The Indian VPN market is going through a technological metamorphosis with its different types of access technologies. Predominantly, the leased line based multi protocol label switching (MPLS) VPN is the first preference for connecting to all critical sites like data centers. MPLS VPN, owing to its ability to offer frame relay at lower cost is anticipated to play the key market driving force. Currently alternate VPN access technologies like dial up VPN, or access through DSL (broadband) at remote backup link are perceived as a cost effective solution.

The Indian market trends appear to be quite promising for IP VPN. Nearly every enterprise, including banks, other financial institutions, stock brokers, petroleum companies, IT companies, SMEs, government agencies, educational institutes, or medical institutes are demonstrating interest in connectivity through VPN. Even large enterprises that already have their own IP VPNs are now installing data warehousing software which adds to the demand for the increased bandwidth.

The IP-VPN market in India in 2005, estimated at Rs. 668 crore, witnessed a growth of 53 percent over the previous year. The IP-VPN market is expected to grow at a Compounded Annual Growth Rate (CAGR) of 30.9 percent through 2005 to 2011. Sify continues to be the dominant player with a market share of 37.2 percent followed by Reliance Infocom and Tata Indicom with 16.4 percent and 11.9 percent respectively. Tulip, HCL Infinet, Bharti Airtel and BSNL are other major players that jointly constitute the balance 36 percent of the VPN market.



Sify acquired many important clients from different market segments during the fiscal year 2005–06. The company used its wireless reach advantage to gain new customers and its aggressively priced Internet service to retain its position in a fiercely competitive market. It also made its foray into the voice over Internet protocol (VoIP) space. In the forthcoming fiscal year, the company plans to aggressively exploit the SME market, which is spending hugely on IT and looking for connectivity solutions. It further wants to explore the VoIP opportunity with corporates and IT/ITeS companies. In addition, Sify plans to tap on the revenue potential of infrastructure management services.

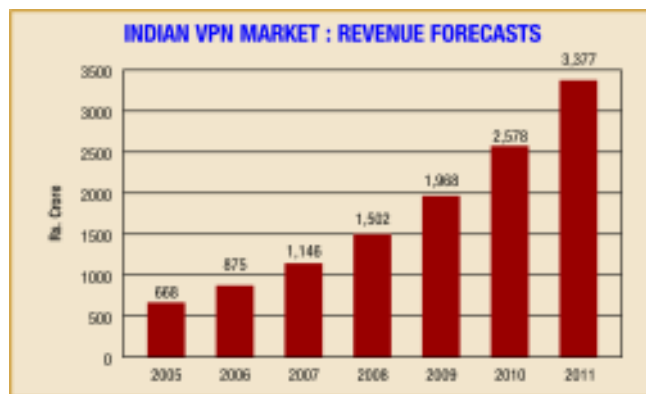
Reliance Infocom bagged a multiyear agreement with GE Money in the last fiscal year. As a part of this agreement, Reliance will initially connect 122 locations on its pan-India MPLS optical fiber backbone, enabling GE Money branches across India to go online. Reliance IP-VPN caters to the requirements of business-class network service and provides a secure and reliable IP internetworking. It creates a private secure network over Reliance’s optic fiber based broadband infrastructure. It is a next-generation VPN that combines the quality and security of ATM or Frame Relay with the flexibility and simplicity of IP and addresses all the requirements of an e-business enterprise.

Tata Indicom offers MPLS-based VPN services. The MPLS network is the first in India to be considered a Cisco-powered network. VSNL’s network encompasses a highly redundant MPLS global core of 15 super PoPs and over 350 PoPs at the edge of its core. Its network covers the entire country and even overseas with business centers in 12 countries across 4 continents. VSNL’s expert and experienced resources support the entire enterprise network lifecycle for MPLS VPN WAN solution.

Tulip IT Services offers MPLS based network, offering wireless based Last-Mile connectivity in 550 cities in India. In March this year, the company had launched its Tulip Connect, an MPLS enabled IP-VPN. This data network has been set up with an investment of Rs. 180 crore. This will focus on providing data connectivity for banks/ATMs, connecting corporates with their branches, dealer/distribution networks across the country, stock brokers, media companies and government agencies. Some of Tulip’s large customers include HDFC Bank, Bharti, NDPL and Tata Motors Finance.

HCL Infinet offers VPN services on three different technology platforms of MPLS, IP, and Frame Relay. In the year 2005–06, the company consolidated its market share in managed VPN and

Internet services by acquiring new accounts across all verticals including the aviation industry, manufacturing, education, and financial sector. A few of its major achievements during the period include contracts from Vizag Steel Plant (VSP), Indigo Airlines, Go Airlines, IIPM, Hindustan Sanitary, Way 2 Wealth, RPG retail, Rashtriya Chemical Fertilizers (RCF), and Parle. HCL is offering end-to-end solution to all these customers. In the forthcoming fiscal year, the company plans to expand its reach in niche verticals by superscripting its vertical centric solutions with improved coverage and service availability in Tier 2 states and other remote locations.



In the fiscal year 2005–06, Airtel Enterprise Services completed the first phase of the all India TAXNET project of the Income Tax Department. The TAXNET project is an initiative of the Ministry of Finance undertaken by the Government of India. On completion it will be India's largest ever VPN connecting all the Income Tax offices, 745 locations in 510 cities, on the Bharti MPLS backbone. Airtel is partnering with IBM for implementing the project. The network, with an uptime of 99 percent on end-to-end basis extending from PC node to National Data Centre, will ensure secure encrypted data flow. The first Phase of the project connects 170 locations, which will go up to 745 locations under Phase -II. The 5 year contract is valued at Rs. 240 crores.

BSNL has deployed state-of-art multi-protocol, multi-gigabit network (NIB-II) to offer a wide range of services like VoIP, video conferencing and data on a single pipe with each application assured of its quality. There is an increased customer demand for such a converged pipe. Only exception to this is the Internet service where an exclusive pipe is taken. Though there are no technical constraints in providing Internet service on converged pipe but security reasons do not make it a viable option.

The major customers won by BSNL this year include New India Assurance, United India Insurance, National Highway Authority of India, Indian Bank, Citi Financial, and Customs. The company's strategy to increase its share in the Indian market and to secure corporate tie-up through MoU, empanelling system integrators to offer turnkey solution, marketing and targeting prospective customers through customized seminars and workshops.

Despite VPN holding tremendous untapped business potential, it is facing some tough challenges. Lack of customer awareness and misconceptions about security continue to be the major concerns haunting the IP-VPN service providers. Internet service providers are prodded for pricing too. Another area that requires attention is the ability to meet the SLA commitment, particularly for availability. The importance of introducing value-added services on demand is also noteworthy. Regulation is yet another aspect, for until now only Voice over Internet Protocol is allowed on the same network. Interoperable issues across multiple operators also need to be addressed. Equally important is the issue of spreading the benefits of IP-VPN services vis-à-vis conventional mode of communication like leased line. Both the development of new technologies and the improvement of the existing technologies are of great importance.

The success of growing Indian economy rests on four pillars of VPN connectivity-the ability to successfully transact critical data in real time, security, cost effectiveness and hassle-free maintenance of the IT infrastructure. Even the government owned agencies, which were hitherto considered to be isolated from outside technological revolution, are now developing a taste for

technology. They too are going in a big way for VPN, aiming to connect various sites spread across the country. Gone are the days when one used to have a dedicated pipeline for individual application. The present mantra is to provide a ubiquitous access to the end customer facilitating seamless converged transport of voice, video and data.

MAJOR PLAYERS

BHARTI AIRTEL

Bharti Airtel offers cost-effective VPN services that link up enterprises across the nation. The higher bandwidth capabilities help to send larger data, faster, without incurring higher access costs. The company's lower upfront and recurring costs combined with a host of other cost-saving advantages greatly reduce the cost of ownership of an Airtel VPN solution. These and other technology benefits of a Airtel VPN is backed by Bharti Airtel

Ltd.'s 24x7 customer service and a team of highly trained engineers.

BSNL

BSNL has the largest MPLS based VPN network and capability to provide VPN services spanning the entire length and breadth of the country. It offers MPLS VPN services by a mix of access technologies of leased line, with speed varying from 64 kbps to 155 Mbps, broadband with speed ranging from 256 kbps to 2 Mbps, and dial

up with speed ranging from 56 kbps (PSTN) to 256 kbps (ISDN). In future, VPN can be accessed even on both GSM and CDMA mobiles. The salient features of VPN services provided by BSNL are as follows:

- Services: Managed Layer 3 VPN and Layer 2 VPN with different class of service pertaining to throughput, latency and packet loss, VPLS Service, Any to Any VPN or Translational VPN, Multicasting, IPSc, Network Address Translation (NAT), and Firewall;

exclusive interview

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Kindly elaborate the major market and technology trends witnessed in the Indian VPN market for the year 2005-06?

Associate VP-Telecom & Networking, HCL Infinet

One of the major market trends is the increased adoption of MPLS technology. The market is slowly assimilating the knowledge about the benefits that MPLS as a WAN technology brings forth. If one conducts the requirement analysis of customers, they are still unsure of the benefits of MPLS technology for their VPN services. MPLS deployment is still in a nascent stage and it will take some time before customer realizes what he needs to ask for while consulting a service provider for MPLS VPN solution.

Another market trend is the increased demand for end-to-end products and services. Cus-

tomers now prefer their network provider to offer and integrate other related IT infrastructure as well. For example, integrating a security appliance like a Firewall or Antivirus, supplying and installing servers and PCs on the LAN, and complete facilities management for entire IT infrastructure set up.

The market is witnessing a reduction in bandwidth prices. This will enable customers to source high bandwidth capacities.

Please comment on the major challenges before the Indian VPN service providers.

The market has become very competitive and extremely price sensitive. VPN being looked at as just another plain vanilla network offering has underplayed the importance and benefits a Managed VPN service could offer.

What growth prospects do you foresee for the Indian VPN services market in 2006-07?

More and more foreign MNCs will set-up domestic networks in the country. People will

start adopting IP over leased lines. There will be an increase in the adoption of ERP and other mission critical applications. There will be an increase in the adoption of Voice over IP and Video over IP, as a part of convergence. The VPN market is presently growing at a CAGR of 27 percent as estimated by Frost & Sullivan; and we expect a similar growth rate through 2006-2007 as well.

What is the future of converged services (voice, video and data) on VPN?

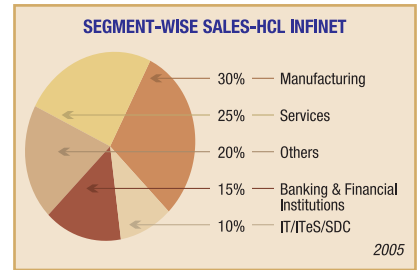
VPN provides a flexible and scalable network platform for organizations. These two aspects make it highly conducive for a customer to transfer all voice and video applications on to a VPN. More and more organizations are acknowledging the benefits in adopting a converged network rather than a disparate network for each application. IP based VPN helps organization use a single IP based network for sending data, voice and video traffic. This reduces the cost and complexity involved in maintaining two different networks for data and voice.

- Fully redundant network with no single point of failure;
- Pan India presence;
- Service level agreement;
- State-of-art management and provisioning tools;
- Customer Portal; and
- Alternate access technology like access of VPN through DSL (broadband), dial up is also being offered for remote sites/ backup.

HCL INFINET

HCL Infinet offers VPN services on

three different technology platforms-MPLS, IP, and Frame Relay. It offers a carrier agnostic network thereby assuring higher uptimes. It also offers a comprehensive end-to-end package to any organization addressing its network, IT infrastructure, and communication needs. The company has consolidated its market share in Managed VPN and Internet services catering to new segments including aviation industry, manufacturing, education, and financial sector in 2005-06. Some of the major customers



that it has won include Vizag Steel Plant (VSP), Indigo Airlines, Go Airlines, IIPM, Hindustan Sanitary, Way 2 Wealth, RPG retail, Rashtriya Chemical Fertilizers (RCF), and

exclusive interview mohit madhok



On the segments driving the demand for VPN services.

The demand for VPN services has been witnessed across all the

Head - Marketing, Sify Enterprise Solutions, Sify Ltd.

verticals. In the last fiscal year 2005-06. Some of the segments include:

Manufacturing. Indian manufacturing is growing handsomely. In order to be globally competitive they are investing heavily in IT. A large part of this investment is in ERP applications which also drive the need for connectivity or VPN services. The major growth is due to globalization of the operations or export thrust, both of which drive the need for International Connectivity. Many Multinational manufacturing companies have their back office operations for their global operations in the area of design and engineering. This also drives the need for connectivity.

Banking & Financial Institutions (BFSI). For BFSI sector, this technology is their lifeline and investments are seen as a key strategic decision. BFSI has been the biggest spender in IT in the last few years and will continue to do so. This growth in IT spend is expected to in-

crease even further as we approach 2009, as foreign banks would be allowed to expand their operations in India without any need of approvals. All this will lead to requirement for high level of connectivity.

Government. With the introduction of e-governance in the offices of the Ministry of Company Affairs and the facility for e-filing of documents, a major change is visualized for the industry and the corporate sector in the country. The government sector is gearing for investment in this technology.

FMCG & Retail. FMCG is coming out of a period of sluggish growth. Retail is the single biggest growth segment in Indian economy. Retail depends on technology very heavily and thus investments will be very high and connectivity will form the backbone of these operations.

IT/Telecom. The emerging technologies like WiMax and 3G will influence the future trends and technology investment.

On the challenges in the VPN industry.

At present, the VPN service providers are having limited access to Telco's last mile, which restricts the network reach. The steep reduction in price is also impacting the profitability and ability to invest.

On your achievements in the last fiscal year.

We managed to gain entry into some very key large segments and succeeded in retaining the leading position in an aggressively priced

Internet services market. In addition, Sify also made its foray into the VoIP services market.

On your plans and strategies to increase market share.

We plan to focus on the Small and Medium Enterprises (SME), which is spending on IT in a major way and looking for connectivity solutions. We will also focus on VoIP opportunities with corporate and IT/TeS companies and on infrastructure management services.

Anything else that you may like to add.

Enterprises today face the challenge of profitable growth with limited resources and increased competition-both domestically and internationally. In this scenario, handling multiple vendors for complex IT needs is an added challenge. Enterprise solution providers play an important role in combating this challenge as well as helping the enterprises to achieve their business objectives. Sify Enterprise Solutions, the corporate services arm of Sify Ltd., is one such player in the enterprise domain. It is one of the India's largest end-to-end service providers in network, security, hosting, applications, and managed services. These solutions are based on its proven technology expertise and unique integrated business model. It has the ability to provide end-to-end solutions and thereby enhance productivity, reduce costs and lead to customer delight.

Parle. HCL would offer all of those customers complete end-to-end solution. HCL Infinet also plans to expand its reach in niche verticals with segment specific solutions. It aims to provide better coverage and service availability in Tier 2 and remote locations.

RELIANCE

Reliance global VPN services offer customers a simple, cost-effective transitional path from traditional data network to contemporary IP networking with the option of using their existing Frame Relay or ATM Wide Area Network (WAN) equipment. The IP-VPN solution offered by the company is based on the latest generation of routers and switches using MPLS at the core, which allows very fast transfer of IP data. Its label switching replaces most of the routing processes used in conventional IP-based networks. The MPLS foundation of Reliance Global VPN helps businesses in having better control over their networks and enhance their efficiency by leveraging the traffic routing and bandwidth utilization capabilities of MPLS. Reliance VPN offers six exclusive advantages, giving companies a vital competitive edge. Integrated VPN is an exclusive offering that can make the network available to executives on the move or key personnel posted in remote offices across India. Designed specially for the enterprise customer, it offers a totally private, scalable and secure network. VPN is the most effective way to achieve convergence of voice, video and data on a managed network.

SIFY

The different VPN services that Sify provides include IP-VPN services, Dedicated Internet Access services, and VoIP services. In the IP-VPN service category, the company's

offerings are:

SiteConnect is a comprehensive array of secure, reliable and scalable IP-VPN/MPLS solutions that meet mission-critical data, networking and converged voice, video, and data connectivity needs within India;

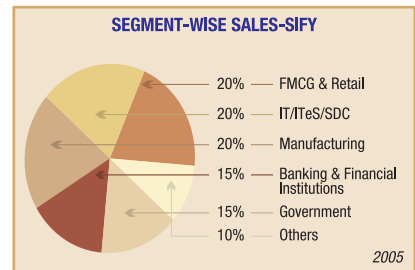
GlobalSiteConnect extends IP-MPLS virtual private network to client's global locations via world-class service partners;

RoamConnect offers a secure and reliable access to corporate Intranet to its roaming employees. This is a user-friendly package that ensures access to information or corporate applications from any location.

In the dedicated Internet access services category, Sify offers *ExpressConnect*, which is a premium range of secure and managed Internet access services that enables the enterprise with dedicated, high-performance IP connectivity to conduct business critical transactions over the public Internet.

In the VoIP services, Sify offers *ExpressTalk*, a premium service that leverages VoIP technology to deliver high-quality international/long-distance voice communications. Its long-distance IP telephony service with the features of good voice quality and high scalability allow the enterprises to call anywhere across the globe at a much cheaper rate.

Sify is the first MPLS-enabled network service provider in India. Some of the key features of the services offered by Sify are its bandwidth capacities from multiple carriers; international alliances with world-class players to provide connectivity solutions across the globe; multiple international gateways and multiple cable routes to provide Oceanic level redundancy at both transatlantic and transpacific route; and highly redundant



dual PoPs at multiple locations (countrywide network of over 150 PoPs). Sify is the recipient of IP VPN market leadership award from Frost & Sullivan consecutively for three years, 2003–05.

TULIP CONNECT

Tulip Connect provide both inter-city as well as intra-city connectivity based upon the clients' requirements. The inter-city network is based on optical fiber cable provided by multiple service providers. The network is created in mesh architecture so that if any link does fail, there are multiple alternate routes available. Consequently, Tulip network has an inbuilt redundancy and provides the highest levels of uptime. In addition, Tulip has expanded its network reach to more than 550 cities in India.

VSNL

VSNL's IP-VPN services ensure performance across the network while delivering return on investments (RoI) and total cost of ownership (TCO) benefits. VPNs enhance the security and availability of critical business processes. Collaborating with customers, the company delivers advanced and secure voice and data communications to enterprise employees on a global scale. VSNL's managed VPNs provide key benefits that include security for mission-critical applications and data, enhanced QoS to deliver network-centric applications performance, and convergence of voice, video, and data capabilities. ■