



Migration to next generation architectures through infrastructure upgrade

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Broadband Endpoints

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The ever-changing facet of the Indian information and communication technology has been attracting a lot of investment from around the world. Intel Corp has plans to invest more than one billion dollars in India over the next three years for enabling easy availability of PCs and broadband internet and AT&T had shown interest to invest for the forthcoming 3G technology in India. The availability of Internet and the considerable reduction in the cost of handsets, mobile services, the telecom equipment and ease of installation, operation and maintenance for service providers has brought about a tremendous change in the industry.

Migration to next generation network architectures by way of infrastructure upgrade is the critical requirement of present. The various equipment vendors see this as the single most important aspect that can help change the fortunes of service providers and carriers and, in-turn, impact the user's lives in a positive manner. The integration of Carrier Ethernet into existing carrier networks can help operators accommodate the growing number of bandwidth-hungry applications more economically and leapfrog India's stature in the broadband space.

MARKET DYNAMICS

The Indian broadband equipment market

recorded estimated market sales of Rs. 1500 crore in 2007-08. UTStarcom was the clear leader with little over 30 percent market share, followed by Cisco that achieved a market share of almost 16 percent. Huawei and ZTE fell into the Tier III category of broadband equipment vendors (tier segmentation is done on the basis of sales performance and contribution to the Indian broadband equipment market in 2007-08) and collectively accounted for slightly over 25 percent market share. Nokia Siemens Networks and Alcatel-Lucent together accounted for almost 18 percent of the market share and were placed in Tier IV. Other major players included Ericsson, Nortel, Motorola, and Beceem.

UTStarcom's contract with United Telecom was its first Gigabyte Ethernet Passive Optical Network (GEAPON) deal in India and it will add more than 100,000 subscribers to new services such as IPTV. Aksh Optifiber and UTStarcom are working together for supply of IPTV solutions. Aksh is running the IPTV services on the MTNL broadband network. These services are also being run on installed base of broadband equipment with other operators: Bharti, BSNL, Reliance, HFCL, Shyam Telecom etc.

Cisco's major revenues from this market segment came from the BFSI, IT/ITeS, re-

tail, education, manufacturing, and government sector.

Huawei Technologies signed a USD 150 million deal with Bharti Airtel's unit in Sri Lanka to build and manage mobile infrastructure in the island nation over three years. Bharti, India's largest mobile services provider in terms of revenue, had in January 2007 received an offer from the Sri Lankan telecom regulator to provide 2G and 3G mobile services in the country, the company's first foreign venture.

Nokia Siemens Networks has partnered with BSNL to provide broadband access for 25,000 villages in India.

UT STARCOM

UT Starcom is a global leader in the manufacture, integration, and support of IP-based, end-to-end networking and telecommunications solutions. Its customers include the largest and

INDIAN BROADBAND EQUIPMENT MARKET - RS. 1500 CRORE (TIER-WISE)*

Tier I	Tier II	Tier III	Tier IV	Others
UTStarcom	Cisco	Huawei, ZTE	NSN, Alcatel-Lucent	Ericsson, Nortel, Motorola, Beecem

* segmentation done on the basis of sales performance and contribution to the Indian broadband equipment market in 2007-08

Alcatel-Lucent has entered into an agreement to deploy the Atlantic-Mediterranean segment of the 15,000km (9,000 mile), Europe India Gateway (EIG) submarine cable system. EIG is the first direct, high-bandwidth optical fiber submarine cable system from the United Kingdom to India, and will significantly enhance capacity and diversity between the countries and territories of three continents.

The Indian broadband infrastructure market has witnessed a growth of over 60 percent in 2007-08. However, the telecom equipment market grew by more than 20 percent during the year, as the carrier equipment manufacturers' revenue made up more than the half of the total telecom equipment revenue. Thus, this market segment is growing at a much faster pace than then overall telecom market. ●

MAJOR PLAYERS

most respected service providers in emerging and established telecommunications markets worldwide. The company's strategic focus is on three core markets: Internet Protocol TV (IPTV), Next Generation Networks (NGN), and Broad-

band. UTStarcom developed the industry's first and only end-to-end IPTV solution and is the leading IPTV provider in Asia today. Deep IP experience, an entrepreneurial culture, and a global heritage make UTStarcom uniquely



“Covering million subscribers in next 1-2 years”

— Manish Gupta

Vice President, Marketing and Alliances, Aperto Networks

lions of subscribers in the next 12-24 months. number increasing number of service providers have started focusing on triple play. Aperto's equipment has started supporting triple play delivery. We believe that the target of 20 million broadband connections across the country set by the government is achievable.

On major market trends:

WiMAX will be the key to broadband penetration globally with particularly major impact on

emerging markets. No other wireless technology can deliver bandwidth at the economics offered by WiMAX. And certainly no wireline technology can be as ubiquitous as WiMAX.

On connectivity of different segments

Aperto's WiMAX solutions are a great fit for such end user segments as SMEs, educational institutes, and rural populace. In fact, our current and active deployments are addressing the need for broadband connectivity for these end users. Aperto's focus is on the access networks.

On challenges faced by equipment vendors

Constraint of spectrum availability is the single biggest hurdle for WiMAX growth in India.

On major customers

Some of our major customers for 2007-08 were BSNL, Sify, and Metamax. ●

On your plans for equipment deployment

Several of our customers (service providers and enterprises) are rolling out networks based on Aperto's WiMAX equipment (PacketMAX). These networks will cover mil-



“Blend of entertainment, communications, and Internet services”

— Vish Iyer

Vice President, Service Provider,
Cisco

On your plans for deployment of broadband equipments across the country.

We offer IP infrastructure to mobile, cable, wireline operators to deploy broadband access technologies ranging from Fiber, DSL, Cable, Wireless 2G/3G, WiFi and WiMax. We also provide components related to access technologies like Fiber to the Home, WiMax (with our recent acquisition of Navini) and Cable (with Scientific Atlanta).

In the consumer segment, we have Linksys and Scientific Atlanta portfolio of products.

On your plans for triple play services.

Today, service providers operate in a dynamic market which is user-driven and consumer-centric. Regulation, networking technology, and the ‘Empowered Consumer’ are pushing service providers towards a new way of doing business. Hence, it is imperative that service providers move away from the traditional ‘bundling’ and offer personalized triple play services. They are looking to offer a blend of entertainment, communications and Internet services.

Cisco is working closely with the service providers to build the next-generation networks with the IP NGN solutions. It will help the service provider network scale to millions of customers, maximize bandwidth resources, offer triple play services while providing quality of service and security on an end-to-end basis. Many of the world’s most successful triple play service providers - including Comcast, Fastweb, Hong Kong

Broadband, Neuf Telecom, and Surewest have built their next-generation networks (NGNs) with IP NGN solutions from Cisco Systems.

On major market trends.

The new Internet revolution will be characterized by 100 megabit speeds, two-way capabilities, and broadband-anywhere mobility. It will be delivered by an increasingly diverse range of technologies – fiber, EV-DO, cable, Wi-Fi, Wi-Max – from a wide range of providers. It will create opportunities for entrepreneurs, drive the next generation of consumer electronics and provide new creative outlets for content and applications.

On key role for connectivity of SMEs, rural India, and educational institutes.

Cisco understands the importance of connectivity to deliver strategic and financial benefits to a wide range of rural, SME and educational institutes. They are working with multiple businesses of all sizes in many regions across India to offer the advantage of Cisco’s scalable networking technology, on-site project management, solution development, and consulting services.

Education has always been one of the primary drivers for the economic growth and development of a nation. Many school districts, colleges, and universities are replacing aging private branch exchange (PBX) telecommunications systems with Cisco IP Communications and the flexibility and functionality it delivers. In addition, Cisco IP Communications allows school officials to

make public address announcements from any IP phone on the network and makes it possible for all employees to have unified voice- and e-mail services.

While larger enterprises rely on technology to improve efficiency and ensure future profitability, SMBs/SMEs rely on IT as a matter of survival, i.e. to stay competitive. Cisco has understood this and will continue to address this by developing end-to-end networking solutions customized for this sector.

On contribution to the upgrading core networks.

IP NGN is a journey and not a static change in network architecture. Practically, the entire industry is on the path of building the IP NGN roadmap and implementing it, simply because IP as a technology is capable of supporting all traffic types.

While there is a huge variation related to implementation of IP NGN technologies, depending upon each individual telecom carrier or service provider, our customers have implemented “Core and Access IP/MPLS network” or “Converged IP/MPLS network”. Virtually, every service provider customer is on the path of accelerating IP NGN architecture. Service Providers require innovative, converged infrastructures to improve delivery of current services and provide a scalable framework for tomorrow’s new, bandwidth-intensive services. Service providers have realized that solutions which provide greater network intelligence, integration, and flexibility will not only give carriers immediate relief but also position them to seize new market opportunities.

Service providers are transforming into experience providers and recognize the significant possibilities and profitability that a Cisco IP NGN can help enable. The Cisco vision of an IP NGN is really compelling because it helps service providers evolve their networks and business so that they can support both traditional and new services, and increase their profitability while lowering operational costs. Over time, the transformation to an intelligent IP NGN infrastructure offers customers a totally new way of interacting with the network and providers a better way to build their business. ●

qualified to deliver next generation solutions in existing markets and in the world's fastest-growing economies. UTStarcom has been at the forefront of the transition to broadband and IP-based next generation network with both NG voice and data network deployments in a host of emerging and established markets globally. For example when ATM-based DSLAMs were extensively deployed globally, UTStarcom revolutionized basic communications by launching the industry's first IPDSLAM platform in 2001

CISCO

Cisco Systems, Inc. is the worldwide leader in networking for the Internet. Today, networks are an essential part of business, education, government and home communications, and Cisco Internet Protocol-

based (IP) networking solutions are the foundation of these networks. Cisco hardware, software, and service offerings are used to create Internet solutions that allow individuals, companies, and countries to increase productivity, improve customer satisfaction and strengthen competitive advantage. The Cisco name has become synonymous with the Internet, as well as with the productivity improvements that Internet business solutions provide.

Cisco was founded in 1984 by a small group of computer scientists from Stanford University. Since the company's inception, Cisco engineers have been leaders in the development of Internet Protocol (IP)-based networking technologies. This tradition of innovation continues with industry-leading products in the core areas of routing

and switching, as well as advanced technologies in areas such as Home Networking, IP Telephony, Optical, Network Security, Storage Networking and Wireless LAN

HUAWEI

Huawei Technologies provides next generation telecommunications networks for operators around the world. The company is committed to providing customized products, services, and solutions to create long-term value and potential growth for its customers. Its products and solutions cover wireless products, core network products, application and software, as well as terminals. It has product portfolios including mobile network, broadband network, IP-based, optical network, telecom value-added service, and terminal. Huawei has an advantage

In India, Nokia Siemens Network with its strong market share and footprint within operators, focuses on innovation, end-to-end technology solutions and strong execution capabilities positioned to tackle the socio-economic disparities and infrastructure challenges and deliver the power of communication to the common man, whether urban or rural. Currently the company is working with all of its operator customers in India to test innovative solutions depending on their business models and strategy

in the transition toward future-oriented development and can provide competitive communication solutions and services for our customers.

ZTE

ZTE Corporation is China's largest listed telecommunications equipment provider specializing in offering customized network solutions for telecom carriers worldwide. The company develops and manufactures telecommunications equipment for fixed, mobile, data and optical networks, intelligent networks and next generation networks as well as mobile phones.

ZTE in India has been a member of the Indian telecom industry for more than 4 years. From a small beginning, ZTE today has more than 200 employees primarily in Delhi, Bangalore, and Mumbai. From Basic Telephony, GSM, CDMA, Intelligent Networks, Datacom, and the most advanced computer telecom integration to mobile office applications ZTE offers a complete spectrum of telecom solutions.

NOKIA SIEMENS NETWORK

In India, Nokia Siemens Network with its strong market share and footprint within operators, focuses on innovation, end-to-end technology solutions and strong execution capabilities positioned to tackle the socio-economic disparities and infrastructure challenges and deliver the power of communication to the common man, whether urban or rural. Currently the company is working with all of its operator customers in India to test innovative solutions depending on their business models and strategy. The company comprises the former Networks Business Group of Nokia and the carrier-related businesses of Siemens. Some of its major customers in the Asia Pacific region include Bharti Airtel (India), MobileOne (Singapore), DTAC (Thailand), Vodafone (Australia and New Zealand), Maxis (Malaysia), Smart (The Philippines), Softbank (Japan), Korea Telecom (Korea) and Telkomsel (Indonesia).

The Asia Pacific region covers India, Indonesia, Singapore, Malaysia, Brunei, Nepal, Thailand, The Philippines, Cambodia, Laos, Vietnam, Sri Lanka, Bangladesh, Japan, Korea, Australia, and New Zealand

ALCATEL-LUCENT

Alcatel-Lucent offers the end-to-end solutions that enable communications services for people at home, at work and on the move. With 77,000 employees and operations in more than 130 countries, Alcatel-Lucent is a local partner with global reach. The company has the most experienced global services team in the industry.

The Carrier Business Group serves fixed, wireless and convergent service providers - as well as enterprises and governments for their business critical communications. The Enterprise Business Group focuses on meeting the needs of business customers. The Services Business Group designs, deploys, manages and maintains networks worldwide. The company's geographic regions are the Americas and Asia-Pacific, Europe, Middle East, and Africa.

ERICSSON

Ericsson is one of the major players in India. Over 1,000 networks in more than 175 countries utilize our network equipment and 40 percent of all mobile calls are made through our systems. The company is one of the few companies worldwide that can offer end-to-end solutions for all major mobile communication standards.

Headquartered in Gurgaon, Ericsson today has more than 2000 employees across 24 offices in the country. From basic telephony, intelligent networks, datacom and the most advanced telecom integration and services to mobile office applications and multimedia communications, Ericsson offers a complete spectrum of telecom solutions in India.

Ericsson is also leading the Broadband revolution in India. Ericsson has successfully implemented the Broadband infrastructure contracts from MTNL, Bharti and VSNL. Some of Ericsson's customers in the cellular domain in India include (in alphabetical order), Airtel, BSNL, Idea Cellular, Hexacom, Hutchison, Maxis, Reliance and Tata Teleservices. Ericsson's GSM equipment supports cellular services in license areas of Delhi, Mumbai, Chennai, Tamil Nadu, Andhra Pradesh, Karnataka, Maharashtra, Gujarat, Rajasthan, Himachal Pradesh, Madhya Pradesh, West Bengal, Bihar, Assam, Orissa, Punjab, J&K and the North East. Ericsson is present across the entire cellular footprint of India. ■