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Contents

Contents

Success Stories

Third Eye

News Brief

ZTE Profile

ZTE is a leading global provider of telecommunications equipment and network solutions. It has the widest and most complete product range in the world—covering virtually every sector of the wireline, wireless, service and terminals markets. The company delivers innovative, custom-made products and services to over 500 operators in more than 140 countries, helping them achieve continued revenue growth and shape the future of the world's communications.

ZTE中兴 ZTE CORPORATION

ZTE Banks on Upmarket Expansion

March 2, 2011
By Owen Fletcher, reporter of *Wall Street Journal*

Wei Zaisheng, ZTE Chief Financial Officer

China's ZTE Corp. has grown fast over the past decade selling low-cost telecommunications equipment largely to operators in China and other emerging markets. Last year, the firm also made waves in North America selling 14 models of handsets there, and became the world's No. 4 phone supplier by units.

Now the company, based in Shenzhen, is looking to move upmarket and expand sales overseas. In particular, ZTE's management has sights on North America, where the firm aims to broaden its device offerings with smartphones and tablet computers and to land higher-profile network-gear deals.

But the firm's ambitious plans raise new challenges. "We think our revenue growth last year was 16%–17%," said ZTE Chief Financial Officer Wei Zaisheng. "In the industry, our growth was relatively high…But there were a few situations last year."

The company has run into difficulties with governments in the U.S. and Europe over concerns about

> **It's more your products and service that determine your competitive status. Price is not a competitive factor we are relying on in the global market.**

ties to the Chinese government and, in India over official security inspections for network equipment from China.

Mr. Wei spoke to Owen Fletcher about challenges of managing a growing global telecom business.

WSJ: ZTE's preliminary results said operating revenue last year rose 17%. What drove the revenue growth?

Mr. Wei: Maintaining growth in the Chinese market actually meant our market share expanded. Overseas, the Indian government's security-inspections incident halted our market in India in the first half, but it was restored in the second half. This had some impact on our overseas results. There was also the European Union's antidumping investigation on certain wireless modems from China and the U.S. government's interference in cooperation with operators. Without these situations, our growth may have been faster.

WSJ: Have you directly communicated with the U.S. government on its political concerns about ZTE?

Mr. Wei: As a company we can't directly communicate with a government. Our goal is to sell equipment; we don't have any other thoughts. We hope the U.S. government can be accepting of us. We believe our technology and our service abilities will win the recognition of the major U.S. operators. At least for Sprint last year, we should have had the qualifications to become their key partner. The

government should promote a fair, equitable, normal and free commercial environment, and it shouldn't interfere in this.

WSJ: What measures are you taking in the U.S. to address the political issues and expand your business?
Mr. Wei: Right now mainly we hope to provide equipment for local operators, and for instance terminals for the big operators. We are waiting for more opportunities.

WSJ: ZTE is known as a low-cost producer. How will a rising yuan-dollar exchange rate affect you?
Mr. Wei: First, I don't accept the view that our prices are lower than our competitors'. Telecom-equipment prices should be at the same level for everyone. It's more your products and service that determine your competitive status. Price is not a competitive factor we are relying on in the global market. The yuan's appreciation will cause your prices to rise. But more important is your status in the market.

WSJ: What types of overseas investments are you considering to help reduce foreign-exchange risk?
Mr. Wei: As one measure in certain key countries we will build local factories. We hope to use the factories to extend the local market. In Brazil, Ethiopia and Venezuela we have mobile-phone factories.

WSJ: Will you build handset factories in Europe?
Mr. Wei: The timing isn't confirmed yet. We certainly must build them.

WSJ: Does ZTE hope to sell more own-brand phones?
Mr. Wei: We have a relatively open policy. We can use other brands or go dual-branded between ZTE and an operator. Overseas we hope to build ZTE's brand.

WSJ: Which markets will you focus on first for ZTE-brand phones?
Mr. Wei: High-end markets, like Europe and the U.S. In the U.S. we already have cooperation with the four big carriers on independently ZTE-branded terminals, mobile phones. We will increase the force of our investment on smart terminals like smartphones. Another thing is advancing from the middle and low end to the middle and high end.

WSJ: Will you use Android on all smartphones and tablets?
Mr. Wei: Android will have the leading role.

WSJ: Will you develop your own operating system?
Mr. Wei: We have no need to do that. Android has already become a very mainstream platform. It is competing with Apple.

ZTE *TECHNOLOGIES*

Transformation Oriented Core Network Development and Evolution

By Liu Jianye

Liu Jianye, chief architect of ZTE Core Network Products

The transition from Stone Age to Bronze Age gave birth to civilized societies and greatly liberated the productive forces in those societies. This is often considered the most important technological revolution in human history. Such a revolution is also happening in today's mobile communications as mobile services move from voice to data. The telecom revolution is having a great influence on operators and equipment suppliers, impacting the long-term survival and development of their core network products.

As the mobile Internet era approaches, operators are no longer core players in the service value chain. They are becoming pipe providers and the foundation of their existence is being shaken. Both traditional equipment suppliers and operators are now confronted with unprecedented difficulties and challenges.

Development Strategy for Core Network

Seizing opportunities and seeking a Blue Ocean strategy is the only option for equipment suppliers and operators. ZTE has stuck with the principle of "three integrations and two transformations" in developing its core network products and has achieved significant results.

Three Integrations
- Multiaccess integrated and flat 'smart pipe' solution
- Integrated voice and multimedia

bearer layers. The network control layer controls IMS, CS voice, and multimedia services in an integrated way, and unifies user data management. More importantly, it is an open platform for developing comprehensive network computation and storage capabilities. In this way, the application layer can utilize information and capabilities to help operators provide Internet application services and platform support for enterprise cloud computing.

In the transformation from service control to application capability provision, the core network acts as network middleware that abstracts infrastructure resources, network capabilities, and basic functions for all service applications. As its service

control function is weakened, the core network is evolving into an open platform that provides leased capabilities services.

Building a "Diamond Grade" Smart Pipe

The rapid growth of mobile Internet had generated great demand for smart pipes. Offering an experience beyond user expectation is essential to the core competitiveness of pipe providers. To really satisfy an operator's needs, a smart pipe must conform to the 4Cs of diamond quality:

- **Carat weight:** "Carat weight" bandwidth provides high bandwidth efficiency, flexible bandwidth expansion, and meets the challenge of bandwidth explosion in the mobile Internet era;
- **Clarity:** Clean and visible communication pipes give providers insight into hot services and user behaviours. They are the basis for making operational decisions. Clean pipes with antivirus function also protect user security;
- **Color:** Extremely fast, colorful, seamless access experience is provided to end users, and exclusive consulting services are provided to enterprise users;
- **Cut:** Low-value traffic is cut out to ensure quality and perfect service for high-value traffic. "Diamond

control network
- Unified and integrated data management

Two transformations
- Transformation from closed telecom structure to integrated telecom and IT architecture
- Transformation from product centred to service centred, from function oriented to user experience oriented

With a terminal-pipe-cloud architecture, a core network incorporates smart pipe layer and network control layer, as shown in Figure 1. The smart pipe layer is the core of a smart packet network that provides intelligent control over various wireline/wireless access and
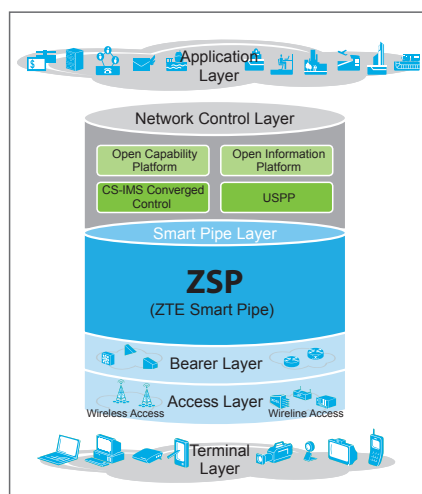

Figure 1. Position of a core network.

grade" smart pipes are built to create maximum value.

To fulfil the four Cs of diamond-quality smart pipes, ZTE has rolled out ZSP—a complete smart pipe solution that contains three sub-solutions: Optimized Operation and Management Solution (ZOOMs), Effective Routing and Offload Solution (ZEROs), and Content Optimizational Intelligent Network (zCOIN). These aim to improve user experience at lower cost.

- ZOOMs transforms traditional naked pipes into visible, manageable, and controllable colourful pipes from the perspective of terminals, users, time, locations, services, and access modes. This maximizes pipe efficiency in a given bandwidth.
- For long-term network development and smooth evolution, ZEROs adopts innovative technologies—GRP and MAB—for multiaccess bind capability and flat network structure. This allows low-cost traffic offload and expands bandwidth without changing existing network architecture.
- zCOIN adopts content storage, compression, aggregation technologies as well as unilateral TCP optimization and end-to-end flow control to improve mobile Internet user experience. To offer a complete wireless application delivery solution, optimizations are made to address the last mile access bottleneck. QoS-based content delivery is also implemented along with Policy and Charging Control (PCC). zCOIN changes the traditional forward charging mode and builds an open pipe platform that helps operators obtain more revenue from the Internet.

Building a CS-IMS Converged Service Control Network

Despite a decline in both mobile and fixed voice revenues, voice service is still an important percentage of operator revenue. Traditional mobile softswitch will continue to play an important role in voice services.

Currently, major IMS applications are driven by the fixed VoIP market—where standard VoIP services are provided and Class 5 switches are replaced. As mobile operators evolve towards full-service provision and new wireless technologies (HSPA+, WiMAX, and LTE) are used, wireless VoIP and multimedia services have become a focus of attention of operators.

The two modes of voice service delivery need to coexist and evolve over the long term. Due to the aging and high TCO of existing mobile softswitch equipment, operators seek to adopt new-generation equipment utilizing high integration and low-TCO IT technology for building their networks. Because numerous IMS devices are used, their interfaces are quite complicated. This results in difficult equipment maintenance and high operation costs. Therefore, it is imperative to adopt a highly-integrated new-generation platform that allows for full convergence of CS and IMS.

ZTE has developed a Voice & Video over Any-access solution (zVOA) that can help operators achieve sustainable network development while enhancing competitive edge of existing networks. Using zVOA, the traditional CS voice services and IMS services can be operated in a unified manner, and various multimedia and voice services over broadband access can be expanded by leveraging the advantages of the CS network. Based on ZTE's advanced ETCA hardware platform and TULIP

middleware platform, zVOA is fully compatible with all standard CS and IMS interfaces. It uses virtualization and cloud computing technologies to introduce intelligent Controller eXtensive (iCX) and integrative Media Gateway (iMG). iCX integrates functions of control plane network elements such as CSCF, MGCF, MSC, MSS, MMTel, AGCF, mAGCF, and MRFC, while iMG integrates functions of media plane network elements such as MGW, MRFP, and VIG. By inheriting traditional CS functions and using standard IMS implementation, zVOA provides VoIP and multimedia services with carrier-grade QoS. iCX and iMG with unified software and hardware platforms support smooth upgrade from MSC and MGW to mAGCF, CSCF, MMTel, and MRFP. This helps operators with unified operation and smooth evolution.

Conclusion

Facing network transformation, operators are seeking to develop smart pipes for their core networks. ZTE has rolled out ZSP—a complete smart pipe solution that helps operators build low-cost, best-experience diamond-grade smart pipes that support sustainable development. With the growth of mobile Internet, the transformation concept of platform + pipe will certainly be strengthened. This is the driving force for long-term development of core networks.

CS and IMS will continue to be major contributors to service revenue in the long run. Assisted by iCX intelligent controller and iMG integrative media gateway, zVOA will help operators provide quality application services to individuals and enterprises, and rise to the challenges of mobile Internet in the telecom field. **ZTE TECHNOLOGIES**

Asia-Pacific FTTx Business Model

By Chen Zongcong

The telecom industry escaped the worst effects of the 2008 global financial crisis and is now experiencing robust growth. In Asia-Pacific, telecom investment has generally become more diversified, but broadband is still the central focus for investment in network construction.

Broadband consumption is fragmenting, and demands for video, social networking, and location services are growing rapidly. Because users require high-bandwidth access anytime and anywhere, a broadband long-tail effect is taking shape. Changes in telecom consumption are accelerating the transformation of traditional ICT services into a complex ecological system of services. Video services are the most bandwidth-hungry services.

The Asia-Pacific telecom sector has moved from being a fledgling competitor on the international stage to being a mature, all-out competitor. The position of operators in countries such as China, Malaysia, and Indonesia is diversifying. But although they are developing into modern operators, they still retain vestiges of their role as government agencies. Some of these operators have a semi-monopoly on technology, capital, management expertise, and telecom regulation.

> 66 Most Asia-Pacific operators are boosting bandwidth by shortening the length of copper cables and adopting GPON/EPON or even NG-PON technology. "

And this gives them advantages over competitors.

Telecom operation models have undergone major transformation worldwide, and this has been brought about by the development of broadband services. Asia-Pacific operators have chosen the following path for network development:

- **Network transformation:** Building a manageable, controllable transmission pipe so that transmission is capability adaptable rather than traffic transparent.
- **Value extension:** Leveraging advantages in capital, technology, and management to extend value to both the cloud (service) and terminal (home network) sides.

FTTx Business Model

ZTE cooperates closely with all major Asia-Pacific operators and understands broadband trends in the region. The company has conceived an Asia-Pacific FTTx business model with the following characteristics:

Fast broadband connection to support multiplay services

Video has become a popular multimedia service driven by the growth of HDTV and 3DTV. So operators in Asia-Pacific have a clear objective of broadband development. In the short term, bandwidth capability needs to reach 20Mbps, with a view towards 50Mbps in the mid-term and 1Gbps in the long term. To reach this goal, existing copper networks need to be immediately reconstructed. Most operators in this region are boosting bandwidth by shortening the length of copper cables and adopting GPON/EPON or even NG-PON technology.

3G traffic offload and fixed-mobile convergence at the access layer

User information consumption habits are becoming more fragmented, so operators need to integrate the network at the terminal and access layers to provide high-bandwidth access anytime, anywhere.

- 3G traffic offload: PON + WLAN covers homes and public places and provides supplementary Internet access for mobile broadband users. This reduces data traffic pressure on 3G networks and improves the quality of broadband services.
- Mobile backhaul over GPON: PON is used at the access layer for accessing mobile base stations. This reduces bearer pressure on 3G networks and increases PON utilization.

A manageable and controllable network

Changing business models mean greater requirements on networks. These requirements include smooth end-to-end service flows, fast and flexible service configuration and provision, fast fault location and diagnosis, and an end-to-end implementation mechanism for network alarms and testing. A manageable and controllable network enables equipment plug-and-play, immediate service activation, early alarms, and bandwidth speed prediction. These reduce user complaints and enhance satisfaction.

A low TCO and green network

Building green networks has become central to the corporate social responsibility of Asia-Pacific operators. Networks must save energy, and this can be achieved through good equipment design and network optimization. Broadband networks must also allow for sustainable and smooth evolution. In the future, TCO can be reduced by adopting IPv6, cloud computing, and NG-PON technologies.

Uni NGA Solution

ZTE's Uni NGA solution is tailor-made for operators in Asia-Pacific

and meets network requirements of Asia-Pacific business models. It is designed to help operators build high-value cutting-edge broadband networks based on a terminal-pipe-cloud architecture. The solution focuses on network planning, operation, and green communications.

- **High-speed broadband connection:** ZTE's future-proof unified broadband access platform allows full-service access and full-scenario coverage. It is designed to deliver bandwidth-intensive video services such as high definition TV and 3D TV. It is also designed to accommodate bandwidth planning for 20Mbps in the short term and 50–100Mbps in the mid to long term.

- **Integrated platform:** ZTE's unified access platform addresses bandwidth bottleneck using xPON-based mobile backhaul. It also diverts 3G traffic in hotspot areas through xPON+WLAN, effectively meeting the growth needs of mobile Internet.

- **Easy O&M:** ZTE focuses on the manageability and operability of network terminals, end-to-end automatic service activation, and all-round service guarantee so that broadband networks can be easily operated and maintained.

- **Green communications:** Working on the principle of "less consumption, lower cost, and better life," ZTE helps operators build low-TCO networks with green technology and equipment solutions.

Speeding up broadband connection is a core goal for operators. ZTE's Uni NGA solution integrates mobile backhaul and WLAN, allows for automatic end-to-end service activation and easy O&M, and has energy-saving and emissions reduction features. This helps operators build low-TCO, high-value broadband networks.

Success Cases

Many operators in Asia-Pacific are using the FTTx business model. By building smart pipes and extending the value of "cloud and terminals," they have successfully transformed their broadband networks.

ZTE has provided Telecom Malaysia (TM) with a tailor-made MSAN integrated access solution for unified access to both broadband and narrowband services. This solution includes a unified network management platform that effectively manages all network elements as well as a line detection system that accurately locates network failures. These greatly boost TM's efforts to build an integrated broadband network.

In Indonesia, ZTE has provided a number of solutions that cater for the different scenarios and requirements of TELKOM's GPON project. ZTE has assisted TELKOM in building a full-service network that incorporates traditional voice services and new multimedia services with particular focus on the mobile backhaul application. These help TELKOM raise customer loyalty and ARPU.

In China, ZTE has provided China Telecom with a complete FTTx solution following close cooperation on issues such as standards, interoperability testing, and trial application. The solution is based on a unified OLT platform for access to EPON, GPON, and 10G EPON and includes a series of custom-made ONU terminals (MDU/MTU/SBU/SFU/HGU). It also includes measures to cut TCO, save energy, and reduce emissions. These will help China Mobile build a manageable, maintainable, and high-bandwidth green FTTx network.

Smart Pipe Solution
in Mobile Internet Era

By Lu Guanghui

Challenges Faced by Operators

It is forecast that by 2012, the number of mobile Internet users worldwide will exceed 2 billion, and revenue from global mobile data services will surpass $120 billion. This will account for more than half of global telecom revenue. A variety of new smartphones will also be introduced. Coda Research Consultancy predicts that 2.5 billion smartphones will be sold worldwide from 2010 to 2015, and sales will compound 24% annually by the end of this period. Network services will also grow rapidly. As of July 2010, sales of Apple's iPhone had topped 50 million, more than 220,000 applications were available in the App Store, and over 5 billion applications had been downloaded from App Store. Since the launch of iPhone, Apple has generated over $100 million in revenue each quarter from AT&T revenue sharing.

Telecom infrastructure networks have always been seen as a core asset of operators. Communication links, call duration, and broadband ports are all closely connected with networks. In the mobile Internet era, however, things are changing. The whole industry chain is shifting its attention to terminals and services, while the value of operator networks keeps decreasing. Operators are tending to become pipe providers.

At present, they cannot meet diverse user needs with their limited services, although they still play a key role in the traditional voice-dominated value chain. As portable smart terminals have a strong ability to access the Internet, a new operation model of mobile Internet can completely break the old industrial pattern. The IT industry represented by Internet is quickly penetrating into the telecom market. Internet companies such as Google, Apple, Sina, Alibaba and Tencent provide unique content and are service providers. They are the leading players in the Internet era. Large amounts of free content pushed on the Internet is attractive to users, and this poses a challenge to traditional telecom operators—who are gradually lowering their position in the value chain and become pipe providers.

What can operators do to avoid becoming pipe providers? They need to urgently adjust their operation model and network architecture to adapt to high-speed growth of mobile Internet. The key is to build a smart pipe featuring low cost, high bandwidth, manageability, differentiated services, and sustainable Return On Investment (ROI). To address this issue, ZTE has put forward ZSP—an integrated smart pipe solution designed for next generation packet core networks.

Operational Requirements for Mobile Internet

To keep pace with Internet growth, mobile operators need to build an open, garden-like Internet eco-environment in the way of Wal-Mart. As well as providing fast and easy Internet access, they also offer differentiated services to

content providers in diverse modes of supermarket management (retail store, franchise store, and supermarket's speciality store). By analyzing market and user behaviour, they provide consultation and advertising services for content providers and one-stop VIP services for end users. In this way, operators can complete their multichannel profit model. To achieve this goal, operators have to build a next-generation packet core network oriented to mobile Internet. The network has the following features:

Low cost

A low-cost network requires a next-generation mobile packet core network that provides:
- Convergence: Multiaccess capability accommodating 2G/3G/LTE, WiFi, and fixed access;
- Evolution: Supports smooth evolution from 2G/3G to LTE and LTE+;
- Little change: New capabilities (such as internet offload and multiaccess bind capability) are added without major change to the network;
- High integration: Provides high bandwidth, low power consumption, and small footprint.

Efficiency and intelligence

An efficient and intelligent network requires optimized operation and management of data services, so the next-generation mobile packet core network should provide:
- Service inspection: Differentiate services based on deep inspection and analysis of L3-L7 protocols. This is the basis for an efficient and intelligent network;
- Statistics and analysis: Analyze mobile data services and user

behaviour to determine network usage and user preference;
- Service control: Help operators make good use of network resources and promote healthy business growth;
- Content charging: Differentiate each service with independent charging modes to ensure every bit transmitted through the network generates revenue for operators.

Sustainable ROI

A network with sustainable ROI requires that the packet core network be incorporated into the Internet industry chain and sustainable benefits be attained from Internet innovation. So the next-generation mobile packet core network should support:
- Traffic flow optimization: Minimize traffic flow at the transmission and application layers, and continually cut down radio capacity expansion costs;
- Content acceleration and adaptation: Reduce access delay, and continually improve user experience;
- Content aggregation and distribution: Create a backward charging model, and continually increase ROI through Internet growth.

ZSP: ZTE Smart Pipe Solution

For sustainable business growth in line with Internet growth, ZTE has launched ZSP—a complete smart pipe solution that can help operators build an open, garden-like mobile Internet eco-environment. The solution consists of three sub-solutions: ZTE's Effective Routing and Offload Solution (ZEROs), ZTE's Optimized Operation and Management Solution (ZOOMs), and ZTE's Content Optimizational Intelligent Network Solution (zCOIN).

ZEROs

ZEROs focuses on building a low-cost pipe without any alteration to the existing network. It helps reduce investment in network construction caused by rapid growth in mobile Internet data traffic. It effectively enhances bandwidth access to improve user experience.

ZOOMs

ZOOMs focuses on building a visible, manageable pipe. Through accurate inspection of user behaviour and traffic distribution and a flexible policy making mechanism, ZOOMs helps operators deliver differentiated services. Through integrated statistical analysis and deep data mining, it helps operators further enhance their service innovation capability.

zCOIN

zCOIN provides content optimization and processing. Through storage, acceleration, compression, adaptation and aggregation of service contents, it can effectively improve user experience and help operators obtain more revenue from the Internet.

ZSP allows for open service access, effective content distribution, hot content storage, and shared service adaptation. It increases the speed of access to self-operated services and mobile Internet applications, improves user service experience, and saves storage and management costs. The three sub-solutions can be combined or separated as required. They are the basis for next-generation packet core networks, helping operators change their operation mode to accommodate mobile Internet and take lead in future mobile internet development.

zVOA:
Empowering Converged Voice and Multimedia Services

By Zhou Yuxiang

With the rapid growth of smart phones and mobile broadband, mobile networks have entered an Internet era. Mobile operators are lowering their positions in the industrial chain while Internet operators are gradually moving to higher positions. Almost all mobile operators adopt a two-core (CS+IMS) architecture for their core networks. Mobile softswitch is used to provide voice, SMS, and USSD services for 2G/3G terminals, and IMS is used to deliver multimedia services to 3.5G, LTE, and WiFi broadband terminals. As defined in 3GPP standards, CS will evolve into an access network of IMS, and IMS will control both voice and multimedia services.

Internet operators such as Google and Tencent have advantages over mobile operators. They adopt all-IP access and a single point of configuration for universal reachability. With service pipes provided by telecom operators, they can deploy services faster and at lower cost. Moreover, Internet operators can control terminal and service software by themselves, independent of specific terminals. This ensures continuous and consistent service experience for users.

However, mobile operators have unique advantages in terms of phone number and network resources. They have MSISDN and IMSI number resources. A mobile subscriber identified by a unique MSISDN and IMSI number can have global roaming and communicate anywhere and at any time. Internet operators, however, have closed most networks that are incapable of interoperability.

makes network convergence difficult and complicated. Although 3GPP has worked out IMS Centralized Services (ICS), which allows CS to access IMS, the cost of deploying this network is too high because of overly complicated architecture and an overextended control chain.

There are two difficulties in running CS and IMS networks simultaneously:

(1) CS service is a short to medium term cash cow for mobile operators, and this kind of revenue will decline in the long term. VoIP and Social Networking Service (SNS) networks will continue to absorb voice traffic, which worsens the competitive environment for CS.

(2) Although IMS delivers multimedia services and opens up telecom network capabilities, evolving existing networks is difficult because of overly complicated architecture. IMS fails to beat SNS in creating new cashflow.

Because evolving mobile networks from 2G/3G to 4G is a long process, CS and IMS networks will coexist for a long time. A converged CS and IMS core is needed to reduce both CAPEX and OPEX.

With ten years experience in mobile softswitch and IMS R&D, ZTE has put forward a Voice & Video over Any-Access (zVOA) solution for converging CS and IMS. In this solution, voice and multimedia networks are controlled in a unified way through one set of equipment. This provides services for both featured and smart terminals, as shown in Figure 1.

zVOA fully complies with standard interfaces for CS and IMS elements, satisfying user demands for multiaccess and service continuity. It employs state-of-the- art virtualization and cloud computing technologies

Mobile operators also have multiple access networks that support 2G, 3G, 4G, WiFi and LAN access modes. Changes in user location and service capability can be perceived in real time. These help mobile operators deliver appropriate services to users.

At present, mobile operators employ different control networks for different access modes. Mobile softswitch is deployed for basic voice and SMS over 2G and 3G networks, and IMS is deployed for multimedia services over HSPA+, EV-DO, LTE and PON broadband networks. This
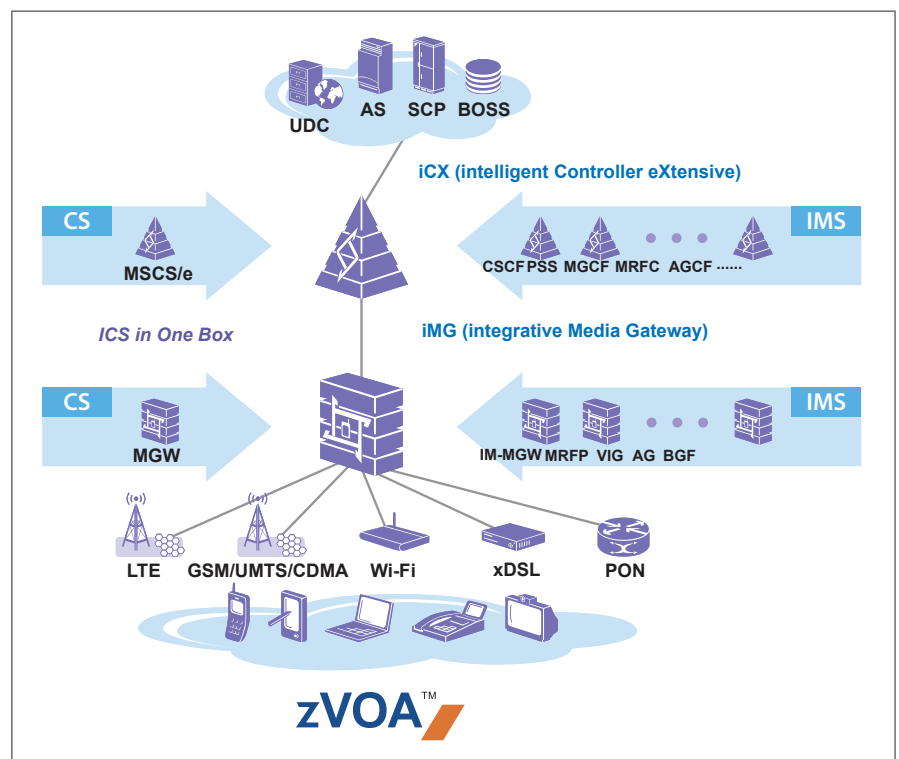

Figure 1. Schematic diagram of zVOA.

for use on ZTE's advanced ETCA hardware platform and TULIP software middleware. It also features intelligent Controller eXtensive (iCX) and integrative Media Gateway (iMG) products. iCX integrates standard mobile and fixed softswitches as well as IMS call control elements, while iMG incorporates media functions with integrated voice, video, and other content types. zVOA is designed for the migration of voice traffic from legacy phones to smart phones, greatly simplifying IMS deployment. IMS only needs two devices—iCX and iMG—to deliver voice and multimedia services as simply as CS.

ZTE's ETCA is an enhanced platform based on ATCA standards. ATCA has a computing-centred architecture with weak switching and storage capabilities. To enhance switching, storage, and interface capabilities, ETCA inserts blades in the front and switches, storage, and interfaces in the back. Therefore, the ETCA platform implements both control and media functions of CS and IMS elements.

ZTE's TULIP is system platform software based on advanced middleware technology. Multiple TULIP-based network elements are integrated in one blade through the "platform + service" components. A unified platform process is responsible for the platform part that includes system resource management, system control, lower-layer signaling process, OAM, and data configuration and can be shared by all network elements. An independent service process is responsible for the service part of each network element. Communication between network elements is changed into IPC between service processes.
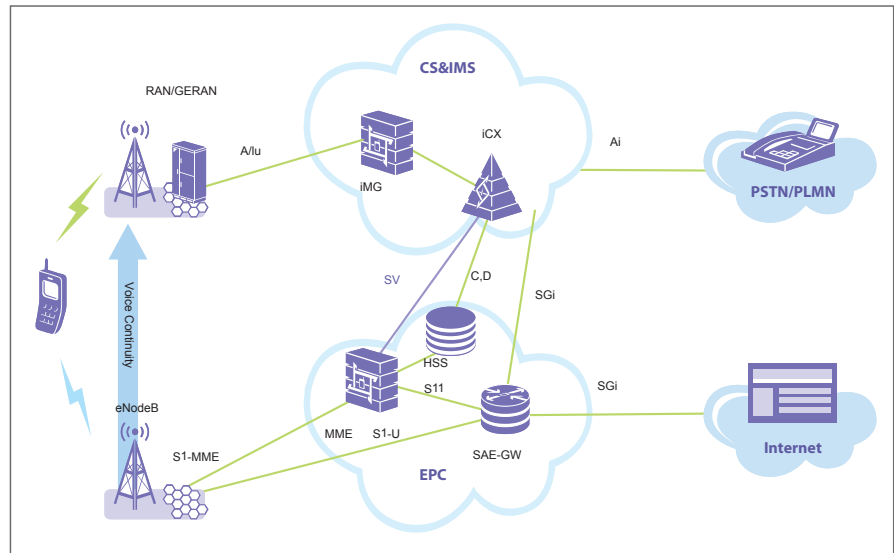
iCX and iMG based on ETCA

Figure 2. VoLTE demo using zVOA.

and TULIP can share hardware in both the softswitch and IMS domains. Hardware of the ETCA platform—including CPU, memory, and interfaces—forms a resource pool that can be shared by CS and IMS. Regardless of whether voice traffic occurs in the CS domain or will migrate to the IMS domain, system processing capability can be utilized. This helps minimize network adjustments and saves costs.

zVOA converges equipment and services of CS and IMS elements. It provides multiaccess modes such as 2G, 3G, 4G, WiFi, and PON. Whichever terminals are used and access modes are adopted, all system services are handled by iCX and iMG. This makes it easy to realize Converged One Number service and to enable user roaming between different access networks and terminals.

iCX also provides a Service Centralization and Continuity (SCC) function, including Dual Radio Voice Call Continuity (DRVCC) and Single Radio Voice Call Continuity (SRVCC). When services are switched

between different access networks or terminals, signaling procedures are greatly simplified, similar to handover between 2G and 3G networks. Moreover, iCX provides control functions such as MSCServer, Ehhanced MSC, CSCF, and VCC AS. iMG integrates MGW, IM-MGW, and MRFP media functions. iCX and iMG work together to implement Voice over LTE (VoLTE) and SRVCC. When voice calls are switched from IMS to CS, CS and IMS elements interact internally, and the signaling procedures seen from outside are similar to handover procedures between 2G and 3G systems.

zVOA will evolve to accommodate Social Networking Service (SNS) networks, providing abundant communication capabilities for terminals at different access networks. Mobile networks will be built into strong SNS networks that offer users a perfect communication experience. ZTE is poised to help operators enhance their competitive edge in the mobile Internet era.

ZTE TECHNOLOGIES

MAB: Building Low-Cost High-Speed Mobile Broadband

By Zhao Youchun

Data Services Challenges

The popularity of 3G terminals and widespread application of mobile Internet has brought about an upsurge in 3G network data. Operators are now seeing a ten-fold or even hundred-fold increase in their data traffic. Because revenues are not increasing in line with traffic growth, operators worldwide are deploying WLANs to provide high-quality data services at low cost.

In terms of user density, data bandwidth, and construction cost, WLAN has proven to be advantageous over wireless base stations for hotspot coverage. In hotspot areas covered by WLAN, users have an average bandwidth of 1Mbps. The cost per bit for WLAN is far less than that of 3G wireless networks using indoor distributed RRUs or repeaters. According to research

Table 1. Advantages of WLAN for hotspot coverage.

WiFi	802.11a	802.11b	802.11g	802.11n
Coverage	50~200m	50~200m	50~200m	50~200m
Rate	54Mbps	10Mbps	54Mbps	300Mbps
Frequency Band	5GHz	2.4GHz	2.4GHz	2.4/5GHz

	WLAN	EVDO	HSPA	TD
Frequency Band	Open Band	Limited Band	Limited Band	Limited Band
Security	WAPI	CHAP	AKA	AKA
Coverage	50~200m	<1KM	<1KM	<1KM
Number of Users	30	30	30	30
Rate	54~300 Mbps	3.1Mbps	14.4Mbps	2.8Mbps

firm Informa, a large proportion of data traffic is generated indoors. Therefore, WLAN has become an effective solution to the upsurge in data traffic on 3G networks.

To meet explosive growth in data services, WLAN Access Points (APs) will be widely deployed at airports, chain restaurants, office buildings, and shopping centers. Large-scale WLANs deployed in hotspots can supplement existing 3G networks and LTE networks yet to be deployed. These networks coexist and complement each other to meet various requirements for data services, as illustrated in Figure 1.

With enhanced software, terminals can access several available wireless networks, and this provides users with high-aggregate bandwidths and improved service experience. A complete data operation mode can be established for ubiquitous connectivity. Through multinetwork convergence, more users will be attracted to mobile data services.

- WLAN encourages and attracts users to extensively access data services in urban data hotspots. This helps cultivate user loyalty;
- LTE provides high-speed data services in major urban data service areas to retain users;
- TD provides low and medium-speed data services in metropolitan areas, meeting ordinary users' needs for data services;
- GPRS is a supplement that provides data access services for users in suburban and rural areas.

Multinetwork Convergence for Mobile Data Strategy

Continuous Internet connection has become a major feature of mobile Internet applications. These services have the following features:

- **Bursts of interactive data traffic:** Interactive data traffic occurs in short bursts (like MSN and QQ). When not activated, a service is dormant.
- **Frequent occupation of wireless resources:** When a service is dormant, a keep-alive message is sent. Air links are activated for allocating wireless channels. This results in overloaded wireless signaling and affects voice quality.
- **High requirements for session continuity:** A service needs to maintain session continuity when users are on the move and their interactive messages occur in short bursts.

These features cause continuously connected online services to consume a large amount of 3G wireless resources. In addition, services with large traffic such as online videos lead to severe broadcast storms. Users often have a poor experience with data services because network quality cannot be guaranteed. Therefore, multiple networks need to be converged to solve data storm issues and improve user experience.

Multinetwork binding is a key mobile data strategy. An effective way for operators to expand the number of data subscribers is to enhance terminal capabilities, connect multiple data networks, aggregate wireless bandwidths, and offer higher bandwidth. The ability of networks to control terminals needs to be further optimized and enhanced so that data load can be shared by multiple networks without user experience being affected.

In the future mobile Internet, terminals supporting multinetwork convergence will determine the size of an operator's data subscriber base. Terminals decide networks. To significantly expand the number of data subscribers, operators urgently need to change their packet networks to accommodate their mobile data strategy.

Terminal requirements

To provide users with session continuity during seamless mobility, and to meet the requirements of continuous Internet connection, terminals must support unified authentication and must have access to 3G packet core networks. They can also support access to multiple wireless networks and establish one session binding. This satisfies the needs of large-traffic applications.

Packet core network requirements

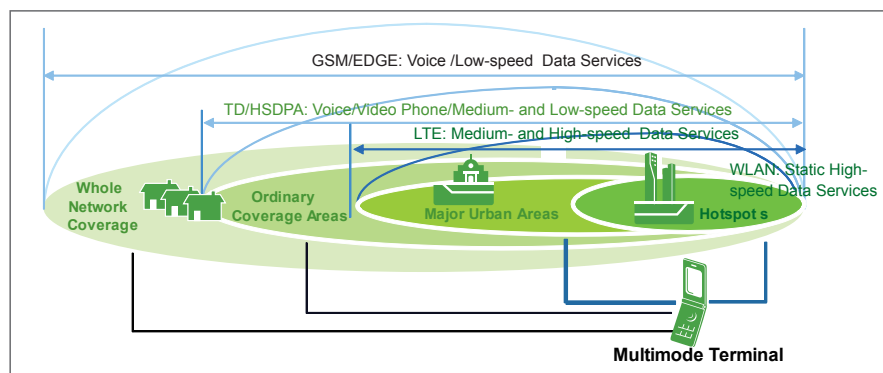Packet core networks must be further enhanced to provide terminals

Figure 1. Multinetwork convergence for data services.

with bandwidth binding and a unified IP session. Depending on service type and wireless network load, packet core networks can also dynamically guide the loads of multiple data streams on terminals so that they are shared across multiple wireless networks.

MAB Expands Data Subscriber Base

ZTE has developed Multiple Access Binding (MAB) solution for multinetwork convergence and session binding, as illustrated in Figure 2. The solution has:

- **Bandwidth aggregation by one IP session:** Terminals can locate multiple wireless networks and initiate access simultaneously. Bandwidths of multiple wireless networks are aggregated by one IP session. Users experience exponentially increased bandwidth and faster, smoother service access and data downloading without perceiving access modes and networks.

- **Application-based routing:** Terminals can select proper wireless networks for routing depending on application features—such as bandwidth and access requirements—activated by users. Continuously connected services

such as MSN and QQ that occupy a large amount of radio signaling resource can be routed through WLAN. P2P downloading services can also be routed through WLAN. Data services such as Social Networking Service (SNS) and online games that have higher real-time requirements can be routed through a TD network. For an interactive video application such as telepresence, voice can be routed through a TD network with QoS guarantee, and videos can be routed through a WLAN network with high bandwidth.

- **Session continuity during seamless mobility:** Depending on user location, a terminal can intelligently detect WLAN availability and can do so with low power consumption. When a user moves out of a WLAN hotspot, the online service is automatically migrated to TD/HSPA or LTE networks for session continuity. A good user experience can be maintained. When moving back into a WLAN hotspot, a user can automatically access WLAN. Designated services are automatically migrated to WLAN according to the operator's dynamic

traffic strategy, and data load is evenly distributed across multiple wireless networks.

- **Dynamic network resource allocation:** Depending on the distribution of access users, a core network dynamically analyzes the data loads of wireless networks, checks data hotspots (where there may be heavy data loads), and adjusts the routing of dynamic application services. Terminals are notified in real-time to adjust routing strategy of their data services so that load is balanced across multiple wireless access networks.

- **Network control over data service routing:** After accessing multiple wireless networks, terminals can obtain information from core networks about real-time routing strategy for all application service flows. Therefore, when data services are activated, the corresponding applications are routed through the designated access network. In this way, operators can enhance their control over terminal behaviors, divert and distribute data flows, and optimize utilization of network resources.

By enhancing terminal capability and following 3GPP I-WLAN standards, MAB integrates WLAN, TD, and LTE networks into one mobile broadband network. Operators can enable their core networks to interact directly with user terminals for dynamic routing. This means that networks are closely correlated to users, and networks can better control user behaviors. MAB helps operators provide quality, low-cost data services by introducing synergy between their access technologies and by supporting access bindings of WLAN, TD, and LTE. ZTE TECHNOLOGIES
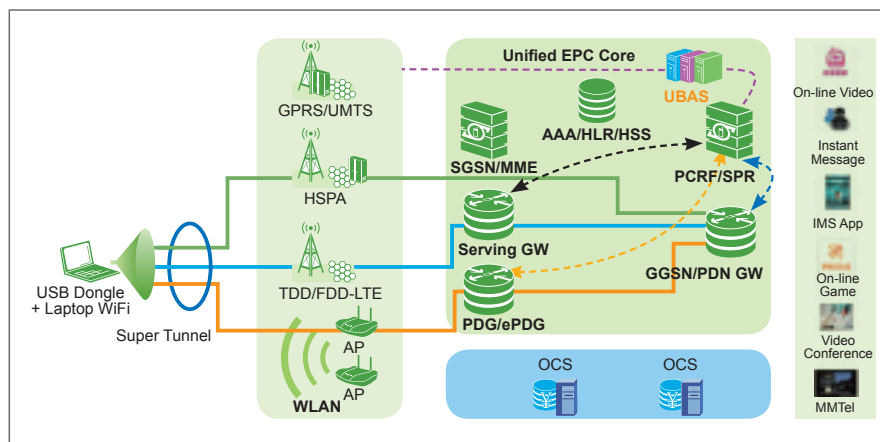

Figure 2. MAB architecture.

New Choices for Network O&M

By Zhou Yongkang

For long-term business development, an enterprise must have a plan to deal with different competitive environments. This plan is a strategy for the enterprise. According to Jack Welch, CEO of General Electric, strategy means making clear-cut choices about how to compete.

Most telecom operators face the same problems as other enterprises. They must make strategic decisions at different stages and different levels; that is, make choices about industry value chain, target customers, operation models, and opportunities implied by different business models.

To develop new services and attract more subscribers, operators are gradually transforming into full-service operators. This transition is itself a choice. Because full-service operation leads to more dedicated bearer networks, core networks, and access networks, O&M has become increasingly complicated. So how do operators choose their network O&M modes?

Choices for Network O&M

There are few choices for network O&M when a single service type is being offered and the network is simple in structure. But where multiple services are offered and network architecture is complicated, different network O&M modes come with different efficiencies and costs. This directly impacts an operator's profit and even their competiveness within the industry.

The following network O&M modes are currently available:

■ Independent O&M

When single-service operation is transformed into full-service operation, independent O&M is a natural and easy choice. However, dedicated networks are physically and logically separate and are often not effectively integrated. Many independent O&M systems may have been adopted that cannot be shared. This results in high O&M costs.

■ Managed Service

Managed Service is another O&M choice that is usually offered by a third party. To lower O&M costs, the third party manages networks of different

operators. So the O&M center may be far away, and perhaps only a limited number of networks can be managed.

■ **Centralized O&M**

For multiple dedicated networks, centralized O&M may be adopted. Different Element Management Systems (EMSs) can be integrated for unified management through unified interfaces. Centralized O&M has the advantages of high efficiency and low cost.

Unified Network O&M

To solve the problem of managing multiple dedicated networks and to reduce OPEX, ZTE developed NetNumen™ U31—a unified network management solution.

NetNumen™ U31 is a scalable carrier-class network management solution that can manage the whole network including access, bearer, core, and service layers in a centralized way. It helps operators achieve high O&M efficiency with lower TCO, and has become their preferred choice.

For seamless interconnection with OSS, NetNumen™ U31 supports a variety of northbound interfaces such as CORBA, SNMP, FTP, SOAP and CLI. It also provides configuration, alarm, and performance data for building a complete, flexible BSS/OSS. Its useful functionalities and tools help operators out of O&M trouble.

■ **Data check:** NetNumen™ U31 performs a data consistency check that lightens the workload of O&M staff. It also performs health checkup and intelligent inspection of all network devices to reduce O&M costs.

■ **High security:** NetNumen™ U31 provides complete access authority control and detailed log records. A highly secure networking solution
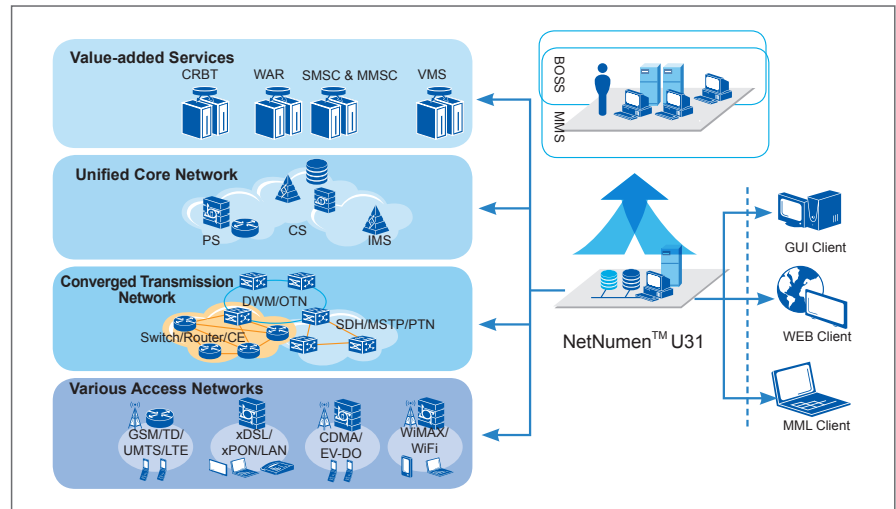

Figure 1. Position of NetNumen™ U31 in the network.

prevents malicious attacks. Data backup and disaster tolerance supports remote disaster recovery to guarantee high data security of the network.

■ **Intelligent networking:** NetNumen™ U31 supports three access modes: GUI, WEB, and MML. These are used to meet different scenarios, user behaviors, network requirements, and bandwidth restrictions. A highly reliable security control mechanism allows users to access the network management system anywhere and control the network remotely.

NetNumen™ U31 also provides effective tools to boost O&M service efficiency. Measurement Report (MR) replaces Drive Test (DT) for locating problems in coverage, interference, and adjacent cells quickly and accurately. This helps lower OPEX and boost working efficiency. A user-based end-to-end protocol trace tool is used to support multiple Network Elements (NEs), multiple signaling trace modes, and multiple presence modes. This helps speed up complaint

response time. Quick fault locating, network quality optimization, user behavior analysis, and industry trend forecast also improve network quality, increase business revenue, and enhance customer satisfaction.

NetNumen™ U31 supports flexible centralized or distributed networking modes to accommodate different operation scenarios. For a small-scale network, a unified network management system integrating multiple EMSs can be used to lower O&M costs. For a large-scale network, operators can choose to combine logically relevant EMSs or separate some management functions for the purpose of load sharing. In this way, users can manage all NEs through a single client.

Conclusion

A complete operation support system helps enhance an operator's competitiveness. With the distinct advantages of high O&M efficiency, low O&M costs, and modular structure for adapting to changes in network evolution, ZTE's NetNumen™ U31 is ideal for building a competitive O&M system.

ZTE *TECHNOLOGIES*

Telefonica Leads Broadband Growth in Latin America

By Su Honghai

Founded in 1924, Telefonica is a leading Multinational Telecom Operator (MTO) with headquarters in Spain. Its activities are mainly centred on fixed and mobile telephony with broadband as a key tool for the development of both. Telefonica has a presence in 25 countries and a global customer base of 280 million. Its growth strategy is focused on markets in which it already has a strong foothold: Spain, Europe, and Latin America. With distinct broadband advantages, Telefonica has long dominated the broadband market in Latin America and has become the biggest telecom player in the region.

As broadband technologies develop rapidly and new services are introduced, people in Latin America are enjoying the convenience of fast Internet. Broadband Internet is becoming a necessity in their lives. In recent years, the number of broadband subscribers has grown by double-digits in countries such as Brazil, Argentina, Peru, Chile, and Columbia. This represents a great opportunity for telecom operators in the region. The top 3 Latin American MTOs Telefonica, AM, and TIM as well as local operators OI, UNE, TA, ETB, and ANTEL are eager to grab the maximum share of profits from the lucrative development opportunity.

Facing aggressive challenges from other MTOs and competitive pressure from local operators supported by

branch offices in Brazil, Argentina, Columbia, Peru and Chile. Different countries have different requirements, and these products need to be customized to meet diverse needs. Complex customization, stringent equipment testing, and large scale equipment purchases over a short period was a big challenge for Telefonica.

After many technical discussions and field tests, ZTE was chosen as Telefonica's major CPE supplier. An expert team was quickly established that was responsible for analysing broadband business models and providing prototype tests and customized versions. Telefonica stipulated tens of customization requirements for home gateways, covering software and packing material. ZTE developed CPE products based on a unified platform that featured modular functionality and easy code transplanting. These features greatly shortened the product customization cycle, reduced development cost, and ensured fast product delivery.

In laboratory testing with Telefonica, equipment suppliers had to understand Telefonica's strict testing procedures and overcome communication barriers caused by different time zones and significant cultural differences. However, Telefonica had full confidence in ZTE for its professional and dedicated testing engineers capable of providing 24-hour remote technical support and tackling test problems fast and accurately. In cases of test failure, fault information would be fed as soon as possible to ZTE's R&D team for troubleshooting. This ensured smooth lab testing.

To meet broadband user demands in

Latin America and global broadband development trends, Telefonica has adopted a variety of custom-made CPE products supplied by ZTE. These include wired ADSL modem (ZXDSL 831), wireless ADSL modem (ZXV10 W300 and ZXV10 H108), wireless VDSL modem (ZXDSL 931), Ethernet uplink modem (ZXV10 H118N), and compact Q-type modem (ZXV10 W300S and ZXDSL 831II). The latest broadband technologies TR069, 802.11n, UPNP, and DLNA have also been used.

Benefiting from ZTE's efficient product customization and fast delivery capability, Telefonica succeeded in quickly expanding its broadband services throughout Latin America. After commercialization, the CPE products proved their outstanding performance, high network security, and good compatibility. The complete product portfolio addresses different networking scenarios. Abundant user interfaces meet various service requirements, and highly integrated PCB and software designs are eco-friendly. Telefonica was satisfied with ZTE and chose it as one of its most important strategic partners.

By cooperating with equipment suppliers, Telefonica fulfilled its target of deploying 2.5 million CPE units throughout Latin America. ZTE supplied 1.3 million CPE units to Telefonica, capturing more than 50% market share. Telefonica will strengthen its cooperation with ZTE. This will underpin Telefonica's business expansion throughout Latin America and increase its profitability in the region. In partnering with ZTE, Telefonica will continue to lead broadband growth in Latin America.

ZTE TECHNOLOGIES

government, Telefonica must seize the opportunity for better growth. It needs to deploy more Customer Premises Equipment (CPE) for fast service expansion, adopt more competitive broadband products and solutions to lower CAPEX and OPEX, offer more service options and higher bandwidth to attract end users, and provide greener products to meet the energy saving requirements.

In 2010, Telefonica planned to purchase 2.5 million CPE units for its

SSTL Sets a Benchmark for Network O&M in India

By Jiang Shifeng

Sistema Shyam TeleServices (SSTL) is a joint venture between the Russian company, Sistema, and the Shyam Group of India. Sistema is the majority shareholder in the joint venture. SSTL has the spectrum to provide mobile telephony in all 22 circles within India.

In 2008, ZTE was chosen as SSTL's network equipment supplier and was charged with the responsibility of operating SSTL's networks in 16 circles within India. With a population of 52.85 million, Karnataka is one of the most populous circles in the country. Its capital, Bangalore, is so-called the "Silicon Valley" of India. Karnataka

accounts for the largest portion of Sistema's investment in India and is the benchmark for SSTL's network operation, user expansion, market share, and Return On Investment (ROI) in the country.

Karnataka—a key area for developing telecom business in southern India—has experienced fast user expansion and rapid increase in equipment use. However, because of limited investment, the speed of its telecom equipment expansion has not kept pace with market growth and the increased number of users. A newcomer to the market, SSTL is under great pressure to compete. It needs to

rapidly gain market share, attract more subscribers, and implement efficient operation and maintenance at low cost.

Network Operation Efficiency and Security

For high stability, high security, and high availability in its networks, SSTL adopted a network security evaluation solution supplied by ZTE. This guarantees secure, efficient network operation in four ways:

- **Spare parts management:** ZTE has built circle-level (state-level) and cluster-level (group-level) spare parts storehouses in addition to those already located at its Indian

headquarters and regional offices. This multilevel spare parts response system ensures fast changeover or recovery of faulty cards.

- **Expert resources:** Experts are available for MPLS reconstruction and transmission resource optimization. Third-party equipment vendors can be sent to adjust and optimize transmission links and ensure high availability of active/standby equipment and links.
- **Virus detection and prevention:** A complete antivirus solution is provided to prevent, detect, and remove network viruses. ZTE's antivirus was tested and proven effective and has been widely deployed across all SSTL networks.
- **Network security evaluation mechanism:** Network KPIs are analyzed and evaluated weekly, monthly, and quarterly. For capacity and security issues, network optimization and improvement solutions are also provided to protect against potential risks.

Three-Level Response Mechanism

Karnataka is SSTL's pilot area for network O&M and service expansion.

This circle is strategically important for SSTL's business expansion across India. To ensure fast response to network failures, ZTE established a three-level response mechanism: O&M at the site, O&M support at the Circle Operation Center (COC), and expert support at the Local Customer Support Center (LCSC). A team of 35 technical experts from ZTE are dedicated to Managed Service (MS) in Karnataka. This rapid response mechanism helps SSTL reduce its network failure

recovery time and continually improve user satisfaction.

High Network Availability

Fast market development but slow equipment expansion is a big problem for SSTL. Taking into account network conditions and equipment features, SSTL adopted Uni-POS—ZTE's professional network optimization tool—to optimize key network indicators and allocate network resources. After nearly a year of continual optimization, SSTL achieved their network KPI targets and enhanced customer satisfaction. SSTL specifically analyzes customer satisfaction and is meeting increasing user requirements with 100% network availability.

In network tests conducted by the Telecom Regulatory Authority of India (TRAI) in 2009, SSTL ranked first in network KPI. High-quality networks significantly increased SSTL's confidence in expanding its market and user base. Today, its subscriber base is 433,125 and its busy hour traffic is 17,363.28 ERL. With its professional MS team, ZTE has helped STTL secure a share of the Indian telecom market and achieve win-win results. **ZTE** TECHNOLOGIES

Insights on 2010 Market Performance

February 2011, selected from the global-growth consulting firm Frost & Sullivan

The global market and domestic market in China both have experienced a deterioration in 2010, with a declination of telecom investment on each market by 3% and 14% respectively, in contrast with 2009. However, even confronting tough times in the telecom markets, ZTE has made a remarkable achievement in 2010, with contract sales up to 100 billion RMB and growth rate of 26%. This enables ZTE to be the fastest growing vendor in the global telecom sector.

According to the survey by Frost & Sullivan, ZTE has the highest Compound Annual Growth Rate (CAGR) among the top 5 vendors (Ericsson, Nokia, Huawei, Alcatel-lucent) in the global market, with 28.01% CAGR from the year 2008 to 2010 and 37.48% among 2006-2010.

ZTE has achieved 29% growth of its contract sales in overseas markets, especially in European and North American market, which is creditable to its success in 2010. More and more tier 1 players such as France Telecom, América Móvil, MTN and Softbank embark on cooperation with ZTE, and appreciate its excellent delivery. ZTE's terminal products, Blade, Racer, Light, were out of stock in the Europe market for the first time, which witnessed ZTE living up to its reputation.

Despite this, the 3G investment in China market was facing a slowdown compared with the peak time in 2009, falling from 160 billion RMB in 2009 to 122 billion RMB in 2010. However, tri-networks integration boosted the investment in fixed-network which hoisted ZTE to achieve 22% growth in the domestic market.

Stabilization in its market share of wireless products and ambition towards the 3G terminal market will consolidate ZTE's market position and guarantee its steady and sustainable growth in the future. **ZTE TECHNOLOGIES**

ZTE Announces C-RAN Solution

Expected to lower TCO of wireless networks by 40%

15 February 2011, Shenzhen — ZTE launched today at Mobile World Congress 2011 a next generation Cloud of Radio Access Network (C-RAN) wireless networking solution, which is future-proof for the next 10 years.

The new C-RAN solution, which was firstly introduced by CMCC, will dramatically lower both CAPEX and OPEX for operators and greatly reduce power consumption through its new wireless-access network architecture. The solution is expected to lower the TCO of wireless networks by 40%.

ZTE believes that while creating new wireless broadband services for customers, it is a priority to also lower the per-bit data costs. Compared to equipment costs, such as chips and single boards, the percentage of costs associated with station sites, computer room and day-to-day operation is often over 60%. Therefore, delivering innovation at the wireless architectural level is more impactful, as operators need a new generation of the C-RAN solutions.

ZTE Showcases Industry's First MAB Live Demo

17 February 2011, Shenzhen — ZTE today announced it has successfully demonstrated the Industry's first ever Multiple Access Binding Solution (MAB) in a live demo at Mobile World Congress 2011 in Barcelona.

Branded ALL-JOIN, the MAB solution signifies how a UE can bind multiple RATs simultaneously. The live demo was witnessed by more than 35 top operators from around the world, in the VIP room of ZTE's booth at MWC. The Uni Core team successfully demonstrated binding of LTE & WiFi on a single UE through unified authentication by ZTE USPP (UDC). It then bound multiple access technologies using Integrated Serving Gateway (ISGW) built on the advanced service router platform.

During the live demo, operators showed great interest whilst observing a streamed video session established over LTE and FTP Download (P2P traffic case) over WiFi, carried out at the same time. The operators witnessed "the super tunnel" creation in the ISGW and significant bandwidth boost was recorded.

ZTE Exclusively Demonstrated LTE-A CoMP-based Services

17 February 2011, Shenzhen — ZTE today demonstrated video call, video streaming, FTP services based on LTE-A Coordinated Multipoint(CoMP) technology at Mobile World Congress 2011 in Barcelona, Spain, which makes ZTE the first and exclusive telecoms vendor to demonstrate LTE-A CoMP-based services in the world.

During the demonstration, the system achieved downstream peak speed of over 1Gbps, enabling participants to become the first to experience the blazing fast speeds offered by 4G wireless communications technologies. ZTE also unveiled plans to introduce commercial LTE-A products in 2012, to meet the growing need for high-speed data communication.

ZTE's LTE-A CoMP prototype incorporates a number of key technologies such as multi-antenna enhancement, MU-MIMO, and multi-point joint coordinated transmission. Through the use of CoMP technology in the solution, throughput on the edge is dramatically increased.

Partners ZTE and KPN Mobile International Announce LTE Trials

17 February 2011, Barcelona — ZTE and KPN today announced a joint development programme focused on the application of LTE technology in Germany and Belgium. KPN Mobile International and ZTE have scheduled a field trial program for 2011 to investigate the capabilities of ZTE's commercial equipment. The cooperation gives KPN the flexibility to speedily upgrade its network equipment to LTE in the future, if demand is there.

The 2010 spectrum auction in Germany put LTE network technology firmly on the agenda and gave KPN the opportunity to further enhance its competitiveness in the market.

The E-Plus Group, China Mobile and ZTE Collaborate for TD-LTE Field Trial in Germany

E-Plus Group, CMRI and ZTE have signed MoU on Mobile World Congress

17 February 2011, Barcelona — The E-Plus Group will launch a TD-LTE field trial in Germany in Q1 2011. The trial is based on 2.6GHz spectrum that E-Plus acquired in the German spectrum auction. China Mobile, with its leading position and rich experience in the operation and maintenance of TDD networks, will provide technical support to this trial. ZTE will provide base stations developed on the advanced SDR platform and co-siting solution of LTE FDD/TD-LTE, which is a breakthrough in the industry.

The E-Plus Group and ZTE agreed and scheduled a field trial program for 2011 consisting of several streams to investigate the capabilities of ZTE's commercial SDR equipment and best utilization of the spectrum holdings of E-Plus in 1.8GHz, 2.1GHz and 2.6GHz, both TD-LTE and LTE FDD.

ZTE Ranked Third Globally Among LTE Infrastructure Vendors

18 February 2011, Shenzhen — ZTE announced that it is now among the top three vendors in the LTE infrastructure industry, according to a recently announced market tracker report by Open Vista Consulting (OVC).

According to the report dated February 12, 2011, ZTE has achieved outstanding performance in the four categories of industrial contribution, market competitiveness, product competitiveness and solution competitiveness. The result enabled the company to become one of the top three LTE infrastructure vendors across the world.

ZTE to Build LTE/DC-HSPA+ National Network for Hutchison 3G Austria

16 February 2011, Barcelona — ZTE and Hutchison 3G Austria have announced that ZTE will build a nationwide LTE/DC-HSPA+ commercial network in Austria. This is an important breakthrough for ZTE's GSM/UMTS/LTE products in Europe following ZTE's wireless network deployment in Germany and Belgium with KPN, its initiatives in Hungary and Montenegro with Telenor, and also in Portugal with Optimus.

Under the contract, ZTE will build a nationwide wireless access network, core network and bearer network for Hutchison 3G Austria to swap the operator's existing network infrastructure. The network is scheduled to be finished by 2011, which will cover 94% of the country's population with HSPA+ services and provide LTE services in major cities. ZTE will also provide Hutchison 3G Austria managed services for six years.

ZTE Announces 2010 Annual Results

Sales surge 50% in US and Europe
Cloud Computing and Integrated Circuit strategy to be key in 2011

17 March 2011, Hong Kong — ZTE Corporation ("ZTE") today announced its annual results for the year ended 31 December 2010.

Based on HKFRS and PRC ASBEs, ZTE recorded revenue of RMB70.264 billion (USD10.609 billion) in 2010, representing an increase of 21% (in USD rate) against 2009. Net profit was RMB3.250 billion (USD490.74 million), representing an increase of 32.22% compared with 2009. Basic earnings per share were RMB1.17 (USD0.177).

The Board of Directors recommended payment of a final dividend for the year ended 2010: A bonus issue of two shares for every 10 shares held and a cash dividend of RMB3 (USD0.45) (before tax) for every 10 shares.

During the year, the Group's revenue from domestic operations amounted to RMB32.198 billion (USD4.861 billion), representing year-on-year growth of 5.90%.

This increase can be attributed to expansion of the 3G markets and ZTE's leading position in terms of CDMA and WCDMA market share. ZTE also gained 50% growth in the government and enterprise network markets which further enhances the Group's domestic market share. The Group's revenue from its international operations grew 27.45% to RMB38.066 billion (USD5.747 billion) and accounted for 54.18% of total operating revenue.

Tiscali Chose ZTE to Develop Its IMS Network

24 February 2011, Shenzhen — ZTE has announced the signing of an agreement with Tiscali for the development of an IMS network, a platform that can improve the multimedia functionalities of IP services and is compliant with every network technology. ZTE and Tiscali plan the launch of the first three commercial sites in Cagliari, Roma and Milano by the end of May and the migration of Tiscali subscribers to the new IMS platform by the end of the year.

ZTE will install a single platform in place of the two platforms currently utilised by Tiscali. By implementing the ZTE solution, Tiscali will make its network management easier and more efficient, reducing energy consumption and optimising operational costs.

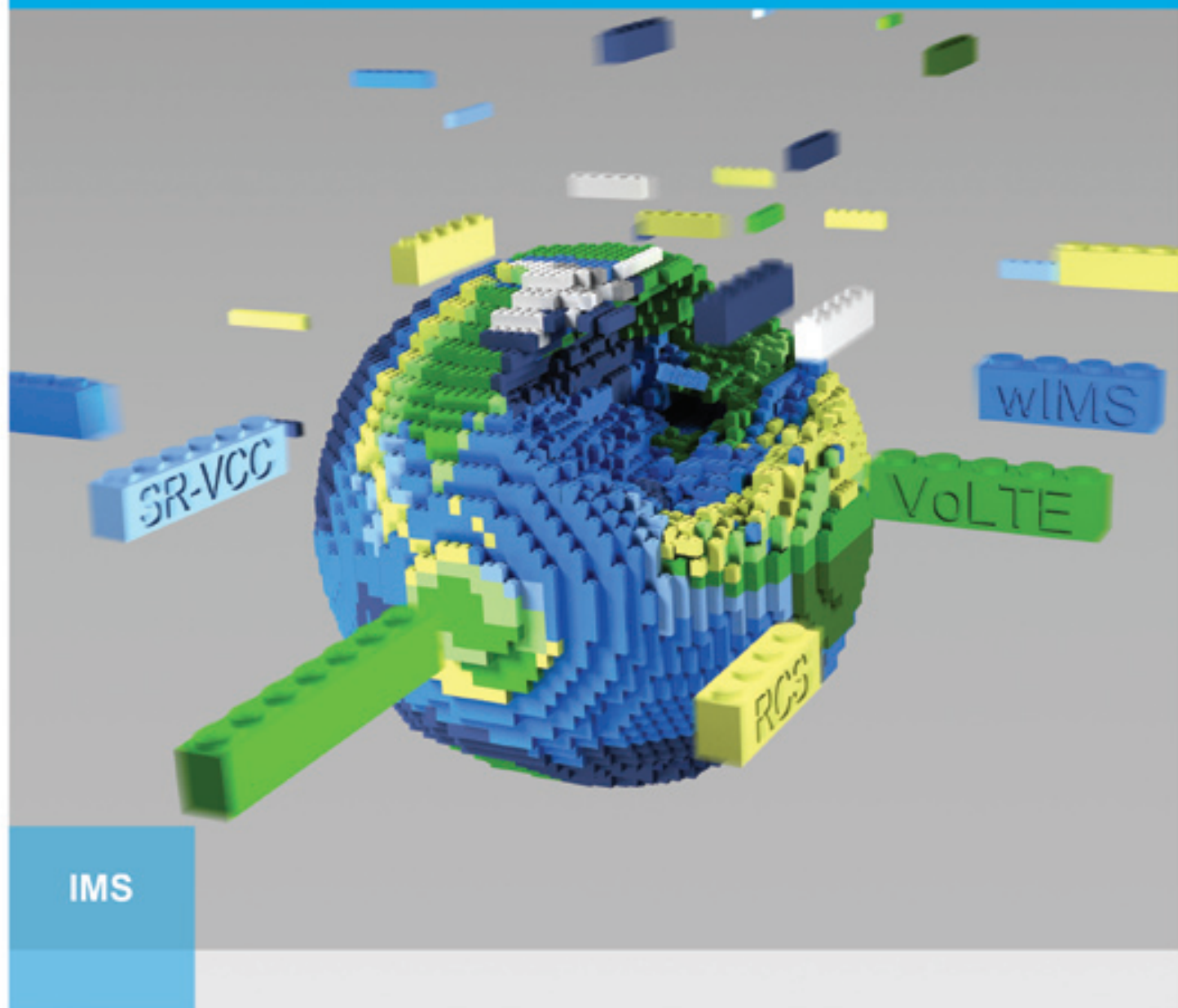## ZTE Launches World's Fastest 3G USB Modem in Greece

8 March 2011, Shenzhen — ZTE, along with COSMOTE, the leading mobile operator in Greece, today has launched the world's fastest 3G dual carrier HSPA+ USB modem in Greece.

The MF680 is a super high-performance modem that brings the speed of 3G data communications closer to the requirements of 4G networks (known as LTE), with download and upload speeds of up to 42Mbps and 5.76Mbps respectively.

The MF680 has been especially designed for HSPA+ networks, providing users with an extremely powerful mobile broadband experience. This stylish device allows COSMOTE customers to enjoy high-speed mobile broadband wherever the network is ready.

MF680