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The Internet of Things: A Double-edged Sword

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The Internet of Things: A Double-edged Sword



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Stuart Corner
Senior Editorial Manager
Telecom Review Asia Pacific

As we stand on the brink of 2014 and ponder what the coming 12 months hold for the communications industry in Asia Pacific, it is worth remembering that communications services are a means, not an end in themselves.

So we need to look beyond the industry at predictors for those it serves: the businesses and consumers of this hugely diverse and vibrant region.

Forrester Research, in its Asia Pacific Technology Predictions: 2014, forecast modest growth in IT spending throughout the region: 4% overall and 6% if Japan is excluded.

More importantly it makes two other key predictions that are not directly related to telecommunications; however, if these predictions are fulfilled, they will have major impacts on the providers of communications services to businesses.

Supporting increased customer knowledge and engagement will be growth in connected personal devices. "Smart fitness monitoring and motivation devices such as the Fitbit, Jawbone, and Nike FuelBand and associated smart body scales, blood pressure monitors, and heart rate meters are beginning to appear on wrists and in houses across Asia Pacific," Forrester says. "Organizations will

be looking for ways to connect their smart devices and retrieve data from them."

Smartphones are tipped to play a key role here. "As the smartphone begins to connect with fitness devices, smart watches, smart lights, smart locks and smart TVs, it will become the connected hub of people's lives. And with smartphone penetration in many Asian countries leading the world, this trend will play out quickly in Asia Pacific."

Cloud computing too is predicted to place increasingly heavy demands on communications services. Forrester predicts that demand for cloud based services will continue to increase for specific usage scenarios including storage, disaster recovery and cloud-bursting. However, in many Asia Pacific markets, lack of consistent download speeds and ongoing latency issues will hinder a more widespread migration of enterprise applications to the cloud.

These are just a couple of examples of major trends that will impact telecommunications markets in Asia Pacific.

Here, at Telecom Review Asia Pacific, we are looking forward to providing you with news and views on significant regional telecoms developments that will enable you to better understand and take advantage of the region's diverse and growing markets.

A stylized, handwritten signature in black ink, likely belonging to Stuart Corner.

Indian Government Wakes Up To Risk of Hotmail and Gmail



Worried by US spying revelations, India has begun drawing up a new email policy to help secure government communications.

IT security expert, Sunil Abraham, said the use of Gmail and the

like was highly risky since the American services had their servers in the US and the National Security Agency has been known to tap into their database systems. It is unclear how many state and federal public workers actively use popular email services for office, but some of the estimates are startling.

In September, Sibal's ministry announced a new "Email Policy of the Government of India" in the wake of spying allegations about the NSA revealed by former NSA

contractor Edward Snowden. NSA's tentacles not only crept into the Indian embassy in Washington and its UN office in New York, but also accessed email and chat messenger contact lists of hundreds of millions of ordinary citizens worldwide, according to media reports.

During a single day last year, the NSA's Special Source Operations branch collected 444,743 email address books from Yahoo, 105,068 from Hotmail, 82,857 from Facebook, 33,697 from Gmail

and 22,881 from unspecified other providers, The Washington Post said, according to an internal NSA presentation.

The \$11 million Indian project aims to bring some five million public employees onto the government's email domain powered by the National Informatics Centre (NIC) as early as mid-December. It is awaiting clearances and suggestions from all ministries before the proposal goes to the cabinet this month.

Lawmaker Reveals Scale of US Mobile Data Requests



US mobile carriers provided some one million records to law enforcement in 2012 related to warrants, wiretaps, location data and cell-tower dumps, documents released by a US senator showed.

The documents do not detail information handed over to the National Security Agency, which is classified, but the American Civil Liberties Union (ACLU) said

the figures nonetheless highlight concerns over privacy laws for mobile phones.

The documents released by Senator Edward Markey showed AT&T and T-Mobile each provided data in 297,000 instances and Verizon in more than 270,000.

Sprint said it had no aggregate count but that it provided real-time location data to law enforcement in 67,000 instances in 2012; it also provided emergency or public safety information in 53,000 cases, 22,000 pen register trap and trace requests and 17,400 wiretaps.

Smaller companies also provided data, Cricket/Leap Wireless in 59,000 instances and US Cellular in 20,000.

Among the requests are so-called cell-tower dumps, records from cell towers of all the phones connected, to allow law enforcement agencies to locate a subject.

AT&T said it received 600 such requests in 2012. Verizon said around 8% of its 30,000 cell-tower searches were dumps, or around 2,400.

AT&T said it collected \$10 million in 2012, and that it employs

around 100 people full time to handle law enforcement requests.

T-Mobile said it was paid \$11 million while Verizon said it received less than \$5 million complying with the many court orders or warrants it received for wiretaps, pen registers, traps and traces and text message content.

The data comes amid heightened concerns on privacy following revelations that the NSA is scooping up vast amounts of data from the Internet and mobile phones in the United States and around the world.

New Zealand's Telecom Sells Australian Arm



New Zealand's dominant telecommunications company Telecom Corp. announced that it was selling its Australian arm AAPT to Sydney-based TPG Telecom for Aus\$450 million (\$411 million).

Telecom said the sale was part of a restructuring that involves the company, which in August posted a fall in annual net profit of almost 80%, focusing on its home market.

Under the changes, Telecom is attempting to become more than a mobile and fixed-line infrastructure provider, branching out into areas such

as entertainment and cloud computing to meet evolving demand.

Telecom paid about NZ\$2.2 billion (\$1.8 billion at current exchange rates) for AAPT when it bought the company under a deal announced in 1999 at the height of the dotcom boom. However, its plans to expand into the competitive Australian

market never took off and the New Zealand firm was forced to make large write downs on its investment.

Telecom said the sale was expected to be completed by the end of February. Telecom shares were up 1.97% in early trading on the New Zealand stock exchange, with the market up 0.12% overall.



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At the heart of devices you love



PCCW Global wins Best Wholesale Ethernet Service

PCCW Global

PCCW Global, an international operating division of HKT, Hong Kong's premier telecommunications service provider, won the Best Wholesale Ethernet Service for its robust wholesale offering and global coverage at the Metro Ethernet Forum's (MEF) Global Carrier Ethernet Service Provider Awards 2013.

The MEF's annual awards recognize excellence and leadership in the development, marketing and delivery of carrier Ethernet business and wholesale services. The judging panel was comprised of senior analysts from independent research firms including IDC, Infonetics, Vertical Systems, Gartner, Frost & Sullivan and Ovum.

Nan Chen, President of the MEF, congratulated PCCW Global on its outstanding contribution to the industry and recognized commitment to delivering innovative

Carrier Ethernet solutions to customers throughout the world.

PCCW Global was also a finalist in the global categories for Best Carrier Ethernet Business Application, Best Marketing and Service Provider of the Year.

Ethernet is experiencing massive market growth globally and is rapidly becoming a cost-effective, scalable technology of choice for enterprises looking to extend their LAN internationally. Offering a simple convergence technology that can support true global coverage for the full range of voice, data and video applications, it allows users to make real cost savings by taking advantage of low cost and standardized premise equipment.

Jordick Wong, PCCW Global's Senior Vice President of Product and Vendor Management, said, "We have focused on developing our

carrier Ethernet offering because the number of sites demanding flexible high-speed data services is growing and Ethernet is a cost-efficient way to deliver connectivity for both carriers and their customers. We are proud to be recognized by the MEF and are similarly committed to accelerating the worldwide adoption of Carrier-class Ethernet networks and services."

PCCW Global's Ethernet services are transported over a redundant SDH and MPLS-enabled network infrastructure and connect geographically diverse Ethernet domains on all six continents.

Through more than 40 Ethernet-Network to Network Interconnection (E-NNI) compliant partners, PCCW Global is already able to extend Ethernet functionality and coverage to more than 70 countries worldwide. It has an Alliance Management team that manages and maintains

the operational aspects of the service with E-NNI partners.

Wong added, "Carrier Ethernet is a resilient technology and we take pride in our ability to offer Ethernet services throughout the world including Africa, Asia, the Middle East, Europe, and the Americas. In 2014, we will continue to develop our Ethernet offering and deliver the highest quality communications services wherever our customers are located."

HKT's domestic carrier Ethernet service in Hong Kong is MEF CE1.0 (MEF 9) certified and the PCCW Global worldwide carrier Ethernet network service is undergoing MEF CE2.0 certification, which is scheduled to be completed in December 2013.

PCCW Global has an ongoing program to assure certification by MEF sanctioned training structures which has already certified planning and network engineers, operations.

SoftBank's Subsidiaries eAccess Ltd. and WILLCOM Inc. to Merge

SoftBank

SoftBank Corp. announced that its subsidiaries eAccess Ltd. and WILLCOM Inc. entered into a basic agreement to merge. According to the press release eAccess Ltd. and WILLCOM, Inc. announced that the parties have entered into a memorandum of understanding to implement the merger which will become effective as of April 1, 2014.

eAccess and WILLCOM, both being SoftBank Corp. group

companies, are engaged in telecommunication businesses.

Since January 17, 2013, each of eAccess and WILLCOM have mutually handled the other's products at their respective outlets, "EMOBILE shops" and "WILLCOM plazas", and thereby they have built up alliances.

The companies have reached an agreement to implement the Merger as of April 1, 2014 aiming for more efficient utilization of business resources of both companies

and further business expansion.

The surviving company after the Merger will serve more than 10 million subscribers in mobile communication services, the sum of approximately 4.4 million eAccess subscribers and approximately 5.7 million WILLCOM subscribers.

The surviving company will continue to expand the growth of both mobile and fixed broadband businesses provided by eAccess as well

as the PHS business provided by WILLCOM, while giving special attention to the smartphone market where there is big potential for growth.

Eric Gan, current Representative Director, President of eAccess, is scheduled to be President of the surviving company, and Hiroyuki Terao, current Executive General Manager and Corporate Officer of Marketing Division of WILLCOM is scheduled to be Vice-president.

Bangladesh Telco Summit Opts for Juniper Networks' Technology



Summit Communications, one of Bangladesh's two nationwide transmission network service providers, has deployed a seamless access-to-core network using technology from Juniper Networks.

According to Juniper this has enabled Summit Communications to radically simplify its network and provide the scalability to accommodate massive growth in mobile data traffic following the issuance of the country's first commercial 3G mobile network licenses.

"Summit Communications currently provides transmission



and mobile backhaul services to all of Bangladesh's major Internet service providers, mobile operators, WiMAX operators, cable TV operators and several government agencies," Juniper said.

"The successful completion of a radio spectrum auction in September has resulted in the country having four new 3G mobile service providers in addition to state-owned Teletalk, which launched a 3G service last year on a trial basis."

Bangladesh has about 109 million mobile phone users

among a population of 160 million but it lacks Internet services: there are only 36,000 subscribers across fixed and mobile networks.

Juniper says the transition to 3G handsets and networks is, expected to result in a massive increase in data traffic over Summit Communications' network.

"Faced with this prospect, Summit Communications needed to scale mobile backhaul capacity to support the five mobile operators, who have more than 20,000 base station sites between them. At the same time, it wanted to transition away from SDH-based legacy transports to an end-to-end network based on a single architecture that

would support new revenue-generating services."

It added: "The Juniper Networks solution, implemented by systems integrator AGC Networks, has enabled Summit Communications to radically simplify its network to not only accommodate an exponential increase in users over its network but also pave the way for new services aimed at enterprise market as well as the small and medium sized businesses."

"Summit Communications is now able to provide backhaul connectivity over a seamless Multi-Protocol Label Switching (MPLS) network that extends all the way from the point of customer access to the core."

Singapore and Malaysia Flagged as Ideal eCommerce Test Markets



Singapore and Malaysia have been flagged as ideal testing grounds for merchants who want to use e-commerce to expand their business internationally and explore the potential of the Asian market.

According to the Amsterdam based Financial Study Association, which undertook the study, "Even though the e-commerce markets in Singapore and Malaysia are relatively small compared to Asian giants like China (\$US190b) and Japan (\$US64b), the study illustrated that these two smaller countries stand out with respect to the size of the cross-border share

of the e-commerce market, offering unique e-commerce propositions which will help merchants to adapt locally and understand the particularities of this rapidly growing ecommerce region."

The study entitled "Cross-Border eCommerce in Asian Markets: Singapore and Malaysia" is the result of joint efforts by Payvision, an independent payment solution provider specializing in global card processing for the ecommerce market, and the FSA Research Project, an initiative of the Financial Study Association of Amsterdam. The study focused on the benefits offered by cross-border e-commerce in Singapore and Malaysia to ISOs, PSPs, acquirers and their worldwide merchants. FSA estimates that 55% of e-commerce in Singapore and

40% of Malaysian e-commerce is cross-border, an extremely high percentage compared to cross-border e-commerce figures for Japan (18%) and South Korea (25%).

FSA says: "Moreover, Singapore and Malaysia offer international companies a fertile entrepreneurial environment, a developed digital landscape and very advanced IT infrastructure to successfully test and adapt their products and marketing strategies, and therefore establish a strong foothold in Southeast Asia.

FSA researcher, Marrit Teirlinck, said: "The multicultural, multilingual nature of both societies and their developed e-commerce ecosystem represent a perfect landscape for e-commerce companies with the ambition to expand

into Southeast Asia and, in a next phase, to tap into well-established Asian e-commerce markets.

The report also showed that credit cards are the preferred payment method for about 80 percent of the cross-border transactions, and more than half of the products bought overseas are purchased from online stores based in the USA.

Another key conclusion of the report is that in order to successfully expand into these new markets, merchants need to partner with an international card processor with a global acquiring network, who has expertise in all aspects of cross-border e-commerce and extensive understanding of rules and regulations, multi-currency processing and risk management.

A Call to Restore Order



"Chaos was the law of nature; order was the dream of man." - Henry Adams

On November 7th 2013, 20:40 UTC, Yolanda, the typhoon, made the first landfall at Guiuan, Eastern Samar in the Philippines. The newly dubbed super typhoon had the Visayas island and nearby places on its deadly path. Packed with a humongous 315 km/h wind (196mph), this weather disturbance was anything but ordinary. It was the strongest tropical cyclone on record to make landfall. The increasing numbers brought about by its gruesome aftermath including lost lives, displaced citizens and destruction to properties, only attested to the very disturbing violence that nature can bestow on mankind.

Nature's wrath left its marks everywhere, shedding an aura of havoc everywhere in the region. Cities and towns were

left in absolute devastation, desolation and chaos.

While the rest of the country was still experiencing a subtle rainy condition, the rest of its citizenry was trying to helplessly hold on to whatever rays of hope they had as the super cyclone continued to pound the embattled Visayan region. The government was left to surmise for a few days so as to where to create order in the midst of confusion. The said typhoon dissipated somewhere in Guangxi Province in China, where the mayhem it has created remains inconceivable up to this date.

The Visayas Island is known for its beautiful beaches, particularly Boracay, which is the most famous of them all. The island will be always known

for its picturesque and pristine beaches; however, the serenity and beauty of nature in that region can also bring chaos in unsettling weather conditions.

According to a situation report by the National Disaster Risk Reduction and Management Council (NDRRMC) on November 8, several towns were still experiencing the heavy pounding of the storm. Under the section Status of Lifelines, wherein two of the most basic necessities that have been severely affected or damaged were the power supply (electricity) and communication services. Based on a report published on November 7, power interruption was already being experienced in Regions IV-B (MIMAROPA), V (Bicol Region), VII (Central Visayas) and VIII (Eastern Visayas). In

addition to that, communication lines were severely affected, particularly in the heaviest hit regions including VII and VIII, which were classified as regions where there were no cellular phone signals. In addition, there were some other 24 municipalities in Cebu that suffered the same unlucky fate. This was the condition of several towns, hours after the cyclone had hit.

Destitute and devastated, people were left in the middle of darkness without a means to communicate, as they were searching amidst the ruins for what was left of their properties and who was still breathing among their friends and families.

The aftermath took a while before it sank in for both the citizens and the authorities as the number of casualties continued to increase. During the first two days, the task at hand emerged to be impossible, but in the midst of all the chaos, order was needed to be established. Hence, the journey began.

The archipelago was surrounded by valleys of water, and that meant everything was heavily depending on cellular communication as the only means to stay in touch with the rest of the world. However, with the absence of mobile services, all hopes for those who were still alive were somewhat lost.

Getting Back Up

As soon as the skies cleared up, the National Telecommunication Commission (NTC) ordered telecom providers to fire up their networks. However, Smart

Communications and Globe Telecoms, which cover 99% of the archipelago, knew the daunting task at hand.

Smart mentioned that almost 15% of its network in the Visayas region was destroyed by the typhoon. While Globe Telecom Inc., mentioned that around half of its network in the region was affected. According to NTC, at least 67 cellular sites related to these major mobile companies were affected by the strong winds brought by Yolanda, causing the degradation of services if not, total disruption. In addition, they reported that some sites were not able to power up due to the lack of commercial electricity. Thus, there was a dire need to dispatch generation sets to augment the loss of power.

The first two days relief operation took center stage as people were rushing and cramming to get hold of the most basic necessities including food. In the meantime, networks gradually started to work again, providing basic means of communication, particularly in the affected provinces.

Teams of engineers were prepositioned prior to the and start restoring the networks as soon as the skies cleared up. In fact, according to Rolando G. Pena, Head of Technology Services for PLDT and SMART, they were able to put back Ormoc City in good condition hours after the storm. Then, they started scrambling municipalities after municipalities to get their service up and running again. At the same time, they were able to set up "Libreng Tawag" (Free Call) stations in numerous towns

and municipalities in order to address the communication needs of the people.

On the other hand, Globe Telecom was able to reconnect Tacloban City with the rest of the world. This was done with 1 cellular site serving critical communication requirements for the local government units and agencies that were involved in the disaster response and coordination efforts. The temporary site was put up near Hotel Alejandro along Paterno St. in Tacloban. Tacloban was among the hardest hit areas of Typhoon Yolanda, and it was the last isolated area where Globe mobile signals were fully disrupted. Around 26 sites from Calbayog, Samar to Catarman have been also repaired and been brought back to operations.

Of the total sites affected including those in southern Luzon and Mindanao, 471 sites, or 30% of the total affected sites were restored. In the Visayas region, close to 20% of all 2G/3G sites affected were brought back to life. Parallel with efforts to repair base stations, Globe also mobilized Libreng Tawag stations in 3 sites in Iloilo as well as "Libreng Charging" stations.

A week later, 90% of the network in Cebu and Bohol was also restored, 97% in Negros Occidental, 97% in Negros Oriental, 90% in Leyte, 75% in Northern Samar, 76% in Iloilo and 60% in Antique.

At the same time, Smart was able to restore its high speed internet access using LTE technology at the downtown area of Tacloban City in Leyte, while cellular coverage was

brought back to the city airport to provide vital communication links to aid emergency response efforts. Smart was able to reactivate a total of 83% of its affected sites in the Visayas region. Meanwhile, network services were restored 100% in Palawan. Cellular service was also fired up in Daan Bantayan in Northern Cebu.

Both companies worked hard to improve and restore their coverage, as well as provide the basic needs of communication in the municipalities. They were able as well, to create facilities for cash donation using SMS.

Their efforts was not only in terms of infrastructure restoration, but they had actively participated in humanitarian efforts like in the case of Smart partnering with Vodafone Foundation for their instant network, wherein they powered up their Borongan coverage to expedite things for Eastern Samar. In addition, through the Smart Satellite Services, vital communication links were provided to key agencies that were involved in post disaster response in many areas.


International efforts were also manifested to provide at least the basic needs for communications. Télécoms Sans Frontières was one of the first NGO responders on the ground and had three functioning satellite connections: one for the NDRRMC, the second for UN agencies and the third for other NGOs.

The Emergency Telecommunications Cluster was deployed; the Ericsson Response team provided its

wireless LAN system. In addition, Vodafone deployed two Instant Networks to Palo, a region south of Tacloban. The portable network, weighing 100kg was transported via commercial flights within 24 hours after the typhoon hit the country.

The ITU as well, provided satellite equipment that would quickly ensure that essential telecommunications services were being provided through satellite. It deployed 50 Thuraya satellite phones equipped with GPS to facilitate search and rescue efforts, along with 30 Iridium satellite phones, 20 Inmarsat Broadband Global Area Network terminals and a Qualcomm CDMA base station.

ITU experts worked with the authorities to train first responders in the use of the equipment during search and rescue operations and for logistical support as well. Satellite Operator, Thuraya Telecommunications Company, worked with Smart to provide satellite based communications; they deployed more than 100 units of Thuraya's SF2500, SatSleeve and the Thuraya XT for use by government agencies as well as relief organizations such as the Red Cross.

The devastation brought grief and sadness, especially to those who had lost a loved one. But as the country is now trying to recuperate from the pain of the storm, its citizens remain resilient. Restoration was and is still a tumultuous task, but with all the nations of the world holding it up, there is still hope that in the midst of all the turmoil, there is a call that would restore order. 

Telecom Review Summit: It's All About Networking

In its third consecutive summit, It's All About Networking, Telecom Review proved to be an undisputed leader in bringing together the frontrunners of the telecom and ICT industry from across the globe. The event closed successfully in Dubai on December 8, 2013.



Etisalat, UAE



PCCW Global



MYCOM



datamena by du



REDKNEE



apps2you, Lebanon



Qualcomm



du, UAE



Huawei



Moov Benin by Etisalat



Zain Jordan



Alfa, Alfa-4-Life Program, Lebanon



TRA, UAE



Zain Jordan



Anders Lindblad, President, Ericsson, ME



In a dedicated full day conference, more than 150 attendees listened to interesting keynotes from the region's leaders and international industry experts, and assisted to 4 extensive panels tackling the operators' new business model, the best techniques in deploying new technologies, wholesale market opportunities and monetizing media content.

The summit was followed by a gala dinner and the Telecom Review Industry and Leaders Merit Awards.

Telecom Review Awards Honor the Industry's Best Leaders for 2013

Every year, Telecom Review presents the Telecom Review Industry Awards to key people in the ICT business.

The awards honor firms based on their innovative business practices, business excellence and overall business success.

The award is meant to recognize the vital contribution made by these individuals and their companies.

After extensive deliberation the winners have been selected, and we are pleased to announce the Telecom Review Award winners:

1. Best Wholesale Service Provider: Etisalat, UAE

2. Best Submarine Cable Operator: PCCW Global

3. Best Customer Experience Enabling Solution: MYCOM

4. Best Cloud Provider: datamena by du

5. Best OSS/BSS Provider: REDKNEE

6. Best Mobile Application Developer: apps2you, Lebanon

7. Best Application Developer Program: Qualcomm

8. Best VAS provider: Mahindra Comviva – EcoCash Mobile Money Service

9. Best Enterprise Solutions: du, UAE

10. Best Vendor: Huawei

11. Best African Operator: Moov Benin by Etisalat

12. Best Customer Service Provider: Zain Jordan

13. Best Corporate Social

Responsibility Initiative: Alfa, Alfa-4-Life Program, Lebanon

14. Best Middle Eastern Regulator: TRA, UAE

15. Best Middle Eastern Operator: Zain Jordan

Leaders' Merit Awards 2013

The award committee has chosen recipients for the Leaders Merit Awards based on achievements during their career, and their milestones of service to the Telecom industry.


1. Regulators' Telecom Leader of the Year:

H.E. Mohamed Nasser Al Ghanim, Director General, TRA, UAE

2. Operators' Telecom Leader of the Year:

Ahmad Abdulkarim Julfar, Group Chief Executive Officer, Etisalat, UAE

3. Vendors' Telecom Leader of the Year:

Anders Lindblad, President, Ericsson, Middle East 

CE 2.0 from A to Z



Kevin Vachon, Chief Operating Officer, MEF

Kevin Vachon, COO of MEF, talks to Telecom Review about CE 2.0 objectives and certification.

How is it going from the first certification to the second certification? Where are we on that?

We are happy with the way the industry has accepted CE 2.0 since we launched the program in April 2012. It is really designed to be a framework by which service providers can fill out their service portfolios with high performance features based on the latest generation of test-proven network technology. We wanted to

make sure that it is very well substantiated and the specific functionality is well defined and well received.

CE 2.0 has met its objectives thus far both on the network equipment front and on the services front. While it takes some effort to align with standard specifications and stringent testing requirements, more than 100 networking platforms from 27+ equipment vendors based in 9 countries already have been CE 2.0 certified.

MEF

Meanwhile, 21 services from 11 providers in 5 countries have been certified.

Over the next few months, we expect quite a few more equipment vendors and service providers will receive CE 2.0 certification. And looking beyond that, industry analysis suggests a large number of carriers intend to have one or more of their services certified by the end of 2014.

Are there any particular areas of interest for CE 2.0 that you'd like to highlight?

There are three main ones to draw attention to. These are emerging markets, Ethernet access and the enterprise sector.

I meet a lot of service providers, especially in emerging markets. I like to emphasize that CE 2.0 can make it much easier for these service providers to evaluate and deploy some of the most advanced equipment available because they don't have to invest in the resources to figure this out on their own. They don't have to start from scratch. A lot of the heavy lifting work on the testing front already has been done in the certification process. We're talking here about hundreds of test cases replacing many months of expert test development.

With regard to CE 2.0 services certification, operators whom I have met around the world

are all paying attention, trying to figure out timing and discussing whether they should certify now or wait and make service enhancements.

Another area gaining interest is Ethernet access service certification. As more large Tier 1 service providers announce that they are certified, it is logical to expect that they probably will put out requests for their local access partners to be certified. We are not seeing that quite yet. Large operators are asking whether their access providers are MEF-compliant, but they are not demanding that they be certified right now. But we see them moving towards that direction.

Another interesting thing is that we are starting to see some awareness of CE 2.0 at the enterprise level. We have seen awareness especially in the large enterprises that we have talked to, and they are trying to understand what that means to them. They are still figuring out whether it will improve their service or whether it will improve the performance consistency of services they buy from multiple providers, some of whom they have issues with today.

Enterprises are starting to ask for CE 2.0, and as a consequence, they will in turn accelerate demand that service providers progress on that.

Beyond services and equipment certification, you also have professional certification. Can you share an update on that?

The professional certification has grown rapidly, with more than 1,100 MEF Carrier Ethernet Certified Professionals (CECPs) in 47+ countries. But then, you know the process to certify an individual is much less demanding than certifying services of a large Tier 1.

The MEF-CECP program is interesting to watch as we are seeing companies certifying people for great reasons – what I call the right reasons. It's not just for the piece of paper. We have a lot of MEF member companies and non-member companies saying that they need to raise the level of expertise across the board. It is an opportunity to do that.

One of our accredited training providers has set up an in-house training course through which they will start testing people. We see some organizations that have certified professional trainers now. They really feel that they are getting the overall level of expertise they need.

So, to sum up the MEF-CECP program, we exceeded our growth expectations last year and have also done well so far in the first quarter of this fiscal year.

When a service provider is certified, what are the benefits that they will reap other than faster connectivity?

It depends on their position in the market. Some companies use certification effectively in the marketing. PLDT is an example. Globe is another

good example. They have really done a good job of representing our certification. They always make sure that they build these services based on global standards. It is always Ethernet-ready, a high quality, high end offering.

So if you are going to be aggressive in terms of marketing, certainly that will be a big advantage on a retail side. And then of course, on the wholesale side, it would surely look more favorable for large buyers.

The other thing though, when it comes back to the complexities, it costs money to get certified and do the testing. To test all these resources is presumably about 600 test cases and the test plan. To conduct this test, to configure that, is equivalent to hundreds of man hours. And once you've gone through that process, you are confident that you now have a scalable infrastructure. When you build a service offering against the tested standards, you will have a scalable situation. So it is improving your platform.

How are SDN and Network Functions Virtualization panning out in your certification?

At this stage, they're not connected to certification. Conceptually with regard to NFV, if you have a new breed of devices or virtual devices and a dynamic network, you will be able to turn things on more quickly in different locations. The bandwidth will be up all the time. And the virtual functions will be able to turn off and on quickly.

We see that as the cloud story. It would definitely put more pressure on Carrier Ethernet and force it to be more agile. So MEF work will continue in that area. We have to release work in stages, otherwise, it will take too long to put too much in one spec. We support the virtualization story, and we just see NFV as a sort of complementary enabler to Carrier Ethernet.

On the other hand, the hype over SDN is more due to confusion or lack of understanding. It is a new approach from a management perspective. Whether you are developing or implementing a more sophisticated OSS, provisioning or managing an internet service or whatsoever, you are managing it through the SDN concept. We'll seek to work with whatever the management approach is. We also see it as complementary to Carrier Ethernet.

What can you tell us about the wholesale side?

It remains very much a growth market, with many service providers anticipating year over year wholesale Ethernet sales to be above 10%. If you look at large markets, they offer the opportunity to have wholesale access in mobile backhaul, so that helps fuel market growth.

I think it is coming along with the growth and the awareness of certification. Service providers are looking into E-access certification. So, we are moving in that direction.


Also, several months ago we launched a new services

operations committee focused on streamlining and standardizing the process for buying, selling, delivering and operating MEF services. Among other things, this promises to help accelerate negotiation and deployment of wholesale services.

After CE 2.0 certification, is anything coming out soon?

It will take quite some time. If you consider how long it took us to get 151 companies in CE 1.0, you will understand. Certainly, we think that there is a lot of longevity there with CE 2.0.

On the MEF-CECP side though, the MEF will likely bring out a new certification within 9 months. We haven't made a firm decision on what exactly it's going to be. We are looking at two possibilities. A cost-oriented certification one is more technical, and we want to add a more sales-oriented certification. We are building the profile of the certification.

Beyond certification, we've been putting new internal tools in place. As the MEF globalizes, we need better tools for people here in Asia to work more easily with people in North America on projects without constantly being on calls during bad times in your day. So we've been doing a lot of development to create a very modern and fully featured collaborative environment for our members. Once we crossed the 200 member mark last year, clearly some of the old tools that were in place ceased to be of benefit to us. 

Indonesia Telecommunication: A Story of Hits and Misses



Diversely challenging is the best way to describe Indonesia. This archipelago, by its sheer size, is considered as one of the most promising nations in the telecommunication industry in South East Asia. From the range of complexities brought about by its subscribers and the different service requirements, one can see the transition going from one end of the spectrum to the other.

Services range from the legacy fixed line, which covers most parts of the cities. While in between and towards the other end, there are the fast growing and ever evolving 2G and 3G wireless subscribers who are the fuel of this sector.

In addition to that geographical footprint,

having full coverage in the nation is so demanding as it is comprises of 17,508 islands with about 238 million people, which makes the country the 4th most populous nation in the world.

Although these numbers may pertain to huge requirements, these same numbers

“ There are 10 telecom operators in Indonesia, all of which provide services ranging from fixed lines, wireless in both GSM and CDMA standards ”

constitute a big opportunity that would serve the

Indonesian telecom market and drive it to flourish.

For this reason, there are 10 telecom operators in Indonesia, all of which provide services ranging from fixed lines, wireless in both GSM and CDMA standards.

According to reports, mobile penetration rate in the country was about 117% mid 2013, and the country is poised to take a big leap as 2014 approaches. In fact, Indonesia is expected to offer 4G services by next year.

As this year comes to a close, it is worth reviewing some of the hits and misses in terms of the country capturing the telecommunication industry headlines this year.

Hits

Although it was not a secret that Axiata Group through PT XL Axiata, from the start was considering a bid for mobile network operator PT Axis Telekom Indonesia, it was only few months ago that the agreement pushed through.

By the third quarter of 2013, Axiata Group of Malaysia announced that it has entered into a conditional sales purchase agreement (CSPA) with current owner of Axis, Saudi Telecom Company (STC) and its unit Teleglobal Investments.

These actions were undertaken to acquire 95% of Axis. Once the deal was finalized, XL Axiata took advantage of the LTE frequencies. XL owns 7.5MHz

of spectrum and Axis has 15MHz ownership.

In addition to the takeover bids, the telcos are exerting continuous efforts to evolve and move on to the next generation 4G LTE phase.

On another hand, last October, ooredoo Group and PT Indosat launched a very fast mobile broadband access. Dubbed as IM3 Super Internet Service, the service runs on UMTS 900MHz network. Indosat boasts mobile broadband services with stronger signals catering to both outdoor and indoor.

In addition, it features far wider network coverage with faster internet access speed. IM3 Super Internet initially covers Bali, as it is a hub of tourists, and there is always high demand for reliable communications as well as data services.

Although it was initially in Bali, they mentioned that installations are being done on a continuous basis. And said service (IM# Super Internet Service) will be soon made available to whole of Indonesia, including Jabotabek (Greater Jakarta) and other major cities in Java.

XL Axiata announced plans to deploy additional base transceiver stations (BTS) and fiber optic cables by December of 2013. They likewise look forward in improving the overall quality of their wireless data services in the country.

“ The telcos are exerting continuous efforts to evolve and move on to the next generation 4G LTE phase ”

Further to this, it was reported that XL Axiata was in the process of installing an additional 9,000km of fiber to add to its current 21,000kms.

The company noted that it does not only aim at upgrading its infrastructure, but it also aims to provision a future proof network that can handle 4G. It also noted that it is currently waiting for the government's green light to start building its planned 4G network.

In other news involving 4G LTE, Telkomsel has successfully conducted a live testing in Bali during the Asia Pacific Economic Cooperation (APEC) Summit.

According to an Adita Irawati, spokesperson of Telkomsel, it has already obtained the required special permits from the Information and Communication Technology Ministry to conduct the test.

Indonesian telecoms operator PT Indosat has likewise submitted a limited set of financial results for the first nine months ending on 30 September 2013.

The group noted that its consolidated revenues increased 9.4% year-on-year to IDR17.80 trillion (USD1.54

billion), and earnings before interest, taxes, depreciation and amortization (EBITDA) of IDR7.97 billion compared to IDR7.67 billion, to same period last year. Indosat confirmed that 81% of revenue is cellular, 14% is from fixed data and 5% is from fixed voice operations.

Misses

Despite the bold statement at the beginning of the year from Indosat and its expectations to have its data users increased, revenues rather fell short. Reports of foreign exchange losses brought about by the weakening rupiah had only haunted the CDMA operator.

In fact, according to reports, the number 2 player PT Indosat, posted net losses of IDR1.8 trillion in January-September 2013, as compared to a profit of IDR476 billion in 2012. Although Indosat posted an operating profit of IDR1.5 trillion, it took an IDR2.3 trillion hit from depreciation related to the rupiah.

In addition to unperceived events, the carrier's poor performance has also contributed to erosion of its market base to other GSM operators. Its subscriber base fell to 53.8 million from



55.5 million at the end of September.

Mobile voice and data users were switching in an increasing number to competitors such as state-owned PT Telkomsel and

XL Axiata, according to Telegeography.

Earlier this year, Indonesian mobile operators PT Telkomsel and PT XL Axiata have each won frequencies in the final phase of bidding

for 3G spectrum by the Ministry of Communication and Information Technology (MoCI).

Telkomsel won the spectrum at 1970MHz-1975MHz, while XL Axiata bagged the

runner up with spectrum at 1975MHz-1980MHz.

Despite the bidding, four months later, Jakarta Post reported that several telcos were frustrated with the lack of allocated spectrum in the country. And in a bid to address this, they were looking for a possible merger. According to the MoCI Chief, after merging, the telcos will be able to secure a greater share of the frequencies. XL Axiata noted that its allocation is insufficient, thus prompting it to consider a bid to take control of Axis Indonesia, which has two blocks of spectrum.

Bakrie Telecom has reported a net loss of IDR292.7 billion (USD25.9 million) in the first six months of 2013. Although said figure was slightly lower as compared to the same period last year of IDR749.7 billion. Bakrie is one of the telecom firms that is fighting for a space in the crowded telco space in Indonesia. The firm has twelve million wireless subscribers, mostly prepaid users.

The Indonesian Telecommunication landscape is the most diverse. The industry thrives with virtues and vices just like any other. However, with about a dozen players providing different types of services to different people, it is predictable that not all of these would be profitable. And as compared illustratively to a race with hundreds of participants competing, some will simply stop, some will just sit by the race track side and very few will reach the finish line. **TR**



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Asian Carrier Conference 2013: The Most Vibrant Telecom Event in Asia



In the Philippines, September is the country's most extraordinary month. It is that time of the year when the archipelago experiences quite a few unprecedented downpours.

September is the time of the year when the nation prepares and braces itself for the challenges of what Mother Nature will likely bring: heavy rain! Surprisingly, this year was exceptional, especially in the first week of the month; in an unprecedented turn of events, the sun was out. Amidst the jolly atmosphere, the Asian Carrier Conference took center stage. The country was honored to host this premier telecom conference in Asia.

The Opening

The 9th Asian Carrier Conference opened its doors to delegates and visitors on September 2, 2013, at the Shangri-la Mactan Cebu. The most anticipated event was a combination of numerous activities and was full of result-oriented activities and opportunities for partnerships

to unlock further growth opportunities for carriers, particularly in the wholesale business.

On September 3, the conference formally opened its doors with a welcoming address by none other than the Philippine's Long Distance Telecommunication (PLDT) President, Napoleon L. Nazareno. The PLDT president highlighted in his welcoming speech that as we go through the normal progression and development in the telecommunication industry, the most important thing is to better serve the end users and customers. He also added that telecom operators as well as companies within the industry should work together in sharing knowledge and best practices in the industry. Adding further, he stressed the importance of



working hard to overcome the technological challenges which the industry faces.

Speakers

The opening speech was followed by a number of presentations given by some delegates and speakers including Philippe Millet, Chairman of i3Forum, Kevin Vachon, Chief Operating Officer of Metro

Ethernet Forum (MEF) as well as Matthew Howett, who presented his piece from Ovum Regulation and Policy Advisory.

TeleGeography's Research Analyst Cody William also presented and made the Group's presence felt. Discussing the business model innovation in telecoms and IT, Martin Geddes stepped onto the stage to be followed by Expereo's Managing



Director, Ivan Langden, who discussed Expereo's experience in the Asia Pacific.

Day 1 and 2

The morning's discussions were capped by a well participated roundtable discussion moderated by Joseph Waring, Group Editor of Questex Asia.

The highlight of the afternoon started with the opening of the ACC 2013 Exhibit and Shopping Village. It featured different companies from the telecom sector showcasing their vast products and services. It also showed their flexibility and competency in the modern telecoms industry.

One of the exciting parts of the first day was the Broadway theme dinner hosted by PLDT, Orange, PCCW Global and ZTE. The evening was crowned by extravagant Broadway music with delegates singing and dancing along with the stage dancers.

Day 3 and 4

With Day 3 beginning early in the morning, September 4 events kicked off with the ACC 2013

Golf Tournament sponsored by GENBAND. Executives belonging to different telecom companies participated in the exciting event at the Alta Vista Golf and Country Club.

The formal conference started with the keynote of Azmir Hussein Mahmood, Head of Wholesale Business Solution, Asia Pacific. His keynote involved topics about innovation in wholesale development. In addition, Matther Howett, an Ovum Practice Leader, discussed the openness of the internet and its current trends. The morning event was concluded by a sumptuous lunch courtesy of IDT Asia and Deutsche Telekom.

The afternoon session started with a presentation from Andreas Hipp, CEO of Epsilon. It is a company that is known for its connectivity expertise. Hipp discussed Epsilon's Intelligent Packet Exchange (eIPX) and highlighted their success story and how the largest global network exchange came to evolve.

Later, ACC presented their ACC CSR Project WINNERS. It's an acronym which stands for and



is about Women In Need Now Entrepreneurs & Role Models. Then late in the afternoon, the Ciena Group sponsored a workshop.

A major highlight of the day was the unforgettable offsite dinner which was sponsored by Smart, Sun Cellular, Huawei and Synectiv and was held at Crimson Resort and Spa. With the scenic sprawling stretch of sand by the beach side, delegates and visitors enjoyed a 70s themed dinner party.

The 4th day opened early in the morning for the ACC 2013 Fun Run, with different distances ranging from a 1K, 3K and 5K race.

Brook Sneddon opened the conference with a discussion about how Cambium is connecting anywhere to everywhere wirelessly. Then it was seconded by a discussion by MEF Mobile on the impacts of social messaging apps on mobile operators. Airtel and Telekom Malaysia hosted the conference's lunch.

The afternoon discussion and activities included a workshop

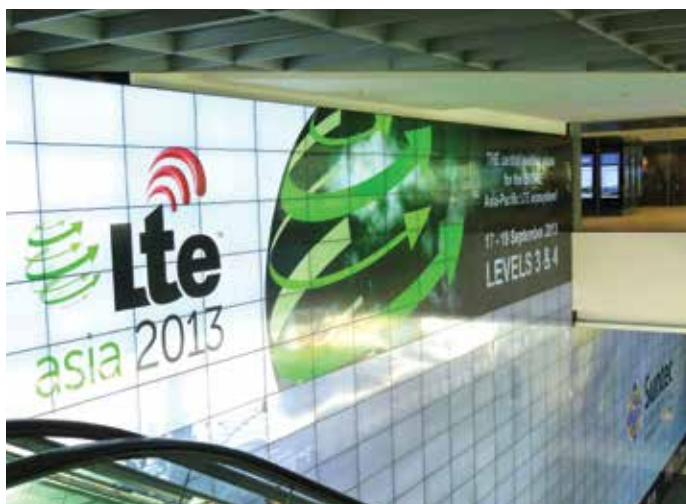
by Dialogic. Then, MEF's Kevin Vachon discussed Building Carrier Ethernet 2.0 services for the Global marketplace.

A closing dinner was hosted by key players in the industry including AT&T Wholesale, Bangla Trac, BICS and Tata Communication. Although it was the culmination of the conferences, exhibition and convention, the next day opened up with more social activities sponsored by Ascom, Telin and World Hub.

In a Glimpse

The 9th ACC 2013 has proved to be another significant achievement on the telecom calendar. The success of the event cannot be measured simply by counting the more than 2000 attendees from different sectors in the telecom industry; rather, its big waves are measured by how friendships and commonality of goals were gained in that short amount of time. The event affected the industry by creating small yet significant bridges that will see us through this ever changing world of telecommunication. **TR**

LTE Asia 2013: Highlights



Marking its 8th year in 2013, LTE ASIA is now firmly established as the central platform for the entire Asia Pacific LTE ecosystem. With Asia Pacific expected to grow over the next few years to become the largest LTE market in the world, LTE Asia has become one of the biggest events in the region as it brought together 1,000 attendees, 175+ visionary speakers and 80+ exhibitors, providing an unrivaled forum where they exchanged ideas and networked for the future of the LTE ecosystem.

The next generation of mobile computing is already here, knocking at our doors. The uptake of LTE is spearheaded by the US and the European markets. However, regions like Asia Pacific including Japan, as well the Latin America, are not lagging far behind. In fact, according to a report from Wireless Intelligence, the number of users in the region is expected to surpass 120 million by 2015. Moreover, it stated that LTE is expected to account for 3% of all connections in the mentioned region. Asian countries such as China, Japan, Indonesia and South Korea are already seen in the forefront when it comes to expanding their LTE footprints.

For countries like Singapore, Australia, New Zealand and Philippines, it is interesting and exciting to see how eventually these technological waves will change the landscape

of telecommunications in the region. Given such an enormous potential in driving the LTE market in this highly conceivable region, hurdles must be addressed by the industry itself.

The Asia Pacific is an exciting market; there is a huge challenge when it comes to serving the market in terms of geography; its core strength lies in its diversity, which has been the driving force which has created the momentum for the upswing in the telecommunication industry. Thus, it is only for a premiere conference like LTE Asia to be held right at the heart of the region, Singapore.

The discussion about the technology and its entirety has been in consistent dialogue for the past 7 years. From the advent of LTE when it was first seen taking its baby steps,

until today's uptake, LTE Asia has been revered as the only platform where decision makers meet and participate in shaping the next generation of telecommunications. This is also true for the 8th LTE Asia Edition held in Singapore this September.

Signaling Focus Day

The momentous event opened up with a whole day of discussion revolving around one of the most talked about topics in the industry that is Signaling Storm. Part of it dwelt more on how it may affect LTE in the near future. Dubbed as the Signaling Focus Day, the discussion opened up with a welcome address from Dominic Roberts from Informa Telecoms and Media. To set the stage further, Mike Thelander, Founder and CEO of Signal Research Group, started by giving a brief summary of

what the big picture includes regarding what is happening in the signaling market in the Asia Pacific region.

Sony Mobile Communication Business Director also presented data about the smartphone growth in the region. He also highlighted the possible implications of mobile growth in the signaling traffic in the region.

However, most speakers agreed that the increase in signaling is not all bad news for LTE. In fact, Doug Suriano, Vice President of Products of Oracle Communications, highlighted how to leverage this traffic and manage it through the new Diameter Network and further monetize it.

This new role of Diameter was further discussed by Anjan Ghosal, CEO of Diametriq. However, according to Peter



Nas, a Senior Solutions Architect at F5, diameter is not only a solution to signaling storm but also it holds the key to creating more revenue opportunities.

The morning event was capped with a discussion about security and an actively participated Q and A portion.

LTE Roaming Strategies

The afternoon discussion started about LTE roaming as well as signaling deployment strategies. This topic was delivered by Kim Fisker from Ulticom. A series of discussions about scalable network was also spearheaded by Jon Lejardi from Net Number. In addition, SIP routing took center stage as Jon Zarkower from Oracle Communications took control of the floor. The afternoon event capped off with a panel discussion evaluating the potential of signaling solutions. Participating in this part of the discussion was Jason Emery, Senior Director of Product Management for Oracle Communications and Mikael Schachne, Vice President of Mobile Data Business of Bics.

At the same time, Ericsson was holding its workshop which

kicked off with a discussion about turning data growth into profitable revenue. In this workshop, Ericsson shared its beliefs that we can learn from these frontrunners as we rethink mobile broadband. Experts also noted the crucial role of operators as a way of ensuring profitable growth. In addition, Ericsson discussed the ways of unlocking the value of superior performing network.

Ericsson also discussed the best practices and strategies for telcos. The discussion was moderated by Hanna Maurer Sibley, Global Director of Mobile Broadband, Ericsson, Annika Svensson, Global Head of Marketing Programs, Ericsson and Warren Chaisatien, Strategic Marketing Manager, Ericsson.

Shaping Up

The succeeding two days were even more fruitful as they witnessed in-depth discussions about monetizing LTE as well as Enriched Communications. Talking about LTE, panelists discussed how LTE would further evolve and impose the need to further optimize the network. Discussion also entailed the harmonization of spectrum as well as numerous



discussions about Het Nets and smarter networks.

Differentiated Participation
Aside from the numerous discussions and meetings, the thing that made LTE a premiere event was the presence of first-class exhibitors.

Numerous vendors exhibited their equipment as well as their solutions. GENBAND, F5 and CommScope were of the few participants and just some of the big names that were present at the event.

Then vs. Now

In the past years, LTE Asia was centered on the question

whether or not everybody is ready to evolve towards LTE.

However, what makes the 8th LTE Asia different was that instead of preparing for LTE, the event leaders opted to go to the next level as they shared their opinions about how to manage LTE, particularly its traffic, as well as how to monetize it.

With this aim in mind, the discussions and conferences did not just advance, but moved up in the value chain. With this, LTE Asia was surely a valuable opportunity for delegates not only to learn, but also to make a real difference in the next generation of communication, LTE. **ITB**

Epsilon: Enabling Connectivity



a cable every time they turn off the circuit. For this aim, we created huge nodes, networks interconnect.

Once interconnection is established, we just turn up on the provisioning side of services all the way from North America to Hong Kong. These processes are done only where needed; they have created a lot of momentum as they became like an electronic meeting room. Instead of going through a lot of patching and cabling, it's like a virtualization, or rather like a cloud service on network switching. This is our core business which stretches to over 170 countries around the globe.

Five years ago, we decided to expand in Asia, and we moved to Singapore 4 years ago. We had our first office in Hong Kong and our first license in Asia. We also bought a datacenter in Singapore. Because of this, we are now also able to offer co-location and physical hosting to our customers in Singapore.

We are not really involved in any of the typical carrier services like voice termination and IP transit. We try to stay very neutral in order to establish good relationships with all parties involved.

What can you tell us about DMARC system cross connect?

We also provide a lot of virtual POP services. For instance, customers might bring their own capacity from Malaysia to Singapore, and instead of having their own rack and equipment, they just come to our network

Andreas Hipp, Chief Executive Officer, Epsilon Global Communication PTE Ltd, talked to Telecom Review about his company's history in enabling connectivity services all over the world: back when the company first started and now as the company is expanding its footprint.

What can you tell us about your company in terms of its background, presence, services and strategies?

Epsilon is a 10 year old company founded in early 2003 in London with subsidiaries in Singapore, Hong Kong and the United Kingdom. The group holding, Epsilon Global Communications, is incorporated in Singapore and enjoys the support of a strong group of shareholders.

We have 65 points of presence globally. We cover the US, Europe and Asia. Recently, we expanded to the Middle East, and now we are covering that region.

We see ourselves as enablers of connectivity services to

communications service providers around the world. We operate the world's largest Global Network Exchange with 500+ network operators pre-connected and ready for their networks to be used to create tailor-made solutions for service providers globally. As a carrier neutral infrastructure provider, we operate and source the highest quality networks and services in more than 170 countries and build flexible network solutions for national, regional and international communications companies.

Our services include co-location and network system integration. Every time an operator needs an overseas point of presence for interconnectivity, they can

basically come to us. We can serve them from an engineering design point of view to a full implementation of providing the co-location, installing the equipment and operating the network. They don't have to go and build their own infrastructure; they take it as a service from us.

We have also created what we call a global network exchange; we have always wanted to connect our infrastructure. As I said, to date, there are about 500 networks. Our slogan is to make connectivity easier and simpler.

We wanted to relieve the hassle of field intervention when it comes to service activation so that users will not need to patch

exchange and we do the DMARC in cross connect.

Because we already have so many pre-connected organizations, virtual cross connect is executed rather than cable connect. This is really good when it comes to activation time. Compared to others, we can activate the service in just two days. Actually, this is a big advantage, and we are still expanding towards local access.

At the beginning, it was just point to point or datacenter to datacenter interconnectivity. But a lot of our virtual POP customers are demanding more such as procuring a local access for them. In such cases, we do the long haul and local access among those parting countries. So, they don't need to build on a specific supplier to get the international connectivity.

Can you elaborate more on your activities?

Last year we launched ECX, which is basically a monetization tool for third party capacity owners who are either sitting on idle capacity which they can't take to market, or they are looking for an additional sales channel.

We have a trading platform so that anyone, wherever they are, can buy our products and services online. However, we are always in the middle as sometimes the buyers and the sellers do not want to know each other. By being the liaison between them, trading is made faster.

On another hand, we completely transform our operation and business support structure. So what is actually seen as an easy export would be our enterprise business service portfolio being online next year. We really thrive towards an e-commerce business proposition for telecoms services.

This, however, does not imply that we do not want to talk to our customers. On the contrary, we have all the vital data that we need in terms of what the network possesses, its availability, delivery time and even the port assignments. With just one click, users will be able to choose everything. Adding to this feature, users can actually print their order. The good thing about it is that it takes away the email trail of quotation and conversation which takes time. So everything is automated, which is far more efficient. We have invested heavily in this technology venture.

From another perspective, we also do a lot of outsourcing. Carriers are slowly marching towards depending on people like us to not only to build their infrastructure, but even operate it. For instance, in Nigeria we carried the task from big mobile operators to the entire international network. We designed the network, sold and installed the equipment including the operator platform. So every time there is a need for a circuit to be activated, we provision and handle it.

We also did the same for a Malaysian IP, ISP, where we manned the whole international network on our equipment, no POPS overseas whatsoever. We almost did the same too in Iraq where we supported an Iraqi service provider in deploying its international connectivity.

Because new carriers do not want to be involved in building their own infrastructure, we see a lot of activity in terms of development in this area.

What can you tell us about your new cooperation with Etisalat?

Well, we strategically placed a POP in Fujairah. The Fujairah

deployment has been a very long discussion, but we finally found common grounds for cooperation. Fujairah seemed a very good place as all the cables connect there. Etisalat's strategic undersea cable landings in Fujairah will allow Epsilon to cross connect systems that bridge Europe, Middle East, Africa and Asia. The SmartHub facility offers access to 'The East African Marine System' (TEAMS), 'India-Middle East-Western Europe' (IMEWE), SeaMeWe3, SeaMeWe4, TGN Gulf, as well as other undersea and regional terrestrial cable systems.

Connectivity is your business. Is your new business coming from your credibility or is it more of a referral by the other carriers? How do you find new customers?

In the interconnect space, a carrier connects to a carrier; one is my customer and the other is a passive customer, but they also get the service experience. We started with one, then two, then at a certain level, we have more like a club. We just became bigger and bigger, and the next thing you knew, our customers started recommending one another. However, it is much better if they work with us and we do the DMARcing. We handedly took the main problem which they usually face, that which has to do with cabling, and provided them with cheap services and interconnectivity.

Moving into the cloud, do you see it growing on your end as well?

There is a lot of resistance and hindrances when it comes to the cloud business as laws are being rigorously implemented. There are still regulations that prevent data from being transmitted everywhere. However, with all


the service providers rushing to the cloud it has become cheap. So a lot of them are really doing their cloud exercise. About two weeks ago, we launched 2 new sites in London and remarkably, we already have 4 customers. Things are merging again, and people are looking for co-location. This is happening more and more as we move towards the cloud.

You have been in the market for 10 years. How can you summarize this growth and what message would you like to leave?

As I already mentioned, we started in 2003. It took us about half a year to get operational. The first year was a bit slow because we were still new as a company. Then, we started building momentum as we started selling our concepts.

From 2009 onwards, we started to leapfrog. Last year, we grew around 7% in our international expansions. This is top line growth. This year we have very similar ambitions. We are eyeing a growth target of about 25%.

We are expecting a lot from new service lines and online business, around 20%. We also aim to add revenue streams to that network. We have a mix and match of assets and ownerships, but basically, we will be focused on resale and outsourcing functions and procuring services for other people. We expect exponential growth as we will be adding new products.

From another perspective, we are also working on enforcing our manpower as we are enhancing and strengthening our human infrastructure as well. We grew about 15% to 20% during the last two years. This year, we have grown about 15%. We have the right people in the right place. 

Expereo: Worldwide Internet Access



Ivan Landen, Managing Director, Expereo, Asia Pacific

Telecom Review had the opportunity to sit down with Ivan Landen, the Managing Director of Expereo, Asia Pacific. Boasting an experience of over 18 years in the global ICT field, out of which 14 are in the Asia Pacific region, Landen, who is based in Singapore, discussed the technology at hand as well as the company's current status and undertakings.

Can you give us a brief introduction of Expereo?

Expereo is one of the voluminous corporations that handles and provides internet access. Expereo's technological prowess extends to almost everywhere. In this respect, Expereo provides internet access worldwide.

We concentrate on getting the best local internet access services in the market and make it available to the carriers. And so, we provide a unique portfolio of last-mile connectivity services to international carriers and integrators.

With an installed base in 170 countries, Expereo is the global leader in broadband and dedicated internet access, complemented with managed VPN services, managed hardware and on-site professional services.

Our strength in local sourcing and delivery, our indirect model and one-stop-shop formula offer our customers a low risk, flexible and cost-efficient way to extend network reach and increase service revenues from enterprise and government customers. We have plenty of enterprise

customers who need connectivity everywhere; these customers are usually based on MPLS. They have requirements on internet backup and internet VPN or just direct internet access. Nowadays, their demands for applications are constantly increasing.

We first started in the Netherlands, and then we expanded around the world and established our residence in Singapore, Dubai and the US; we just opened a new office in Argentina. We have been in this business for 10 years, and now we serve about 7000 end customers in around 170 countries.



What is your main role?

I am responsible for looking after and monitoring the entire processes in the APAC region. Currently, there are about 34 people based in Singapore. The biggest, or rather our ongoing challenge, is to get the right local service right in each market.

Recently, we expanded to Myanmar, where we are now in the process of installing our first service there. Frankly, we really differentiate ourselves, particularly in countries where opportunities are still an untapped well.

Our carrier customers come to us asking for business in countries like Papua New Guinea, Fiji, Myanmar and Nepal. These carriers are in a way, geographically challenged as the requirements for businesses in such regions do not fall on their standard footprint.

Our main role in helping these carriers is firmly establishing all their groundwork.

What is your role in the Philippines?

Just as for other countries in the APAC region, we likewise provide services in the Philippines. Expereo provides services in the Philippines, and at the same time, coordinates with local providers there. The

Philippines is growing steadily; however, it is not a huge market yet. Nevertheless, the country is expected to boom as a lot of manufacturing firms and some BPO customers are starting to establish businesses there.

What about your operations in Thailand, Hong Kong and Vietnam?

We have established and installed Expereo services in Vietnam, where carriers have their own presence in the field, while relying on our internet access service market.

What do you expect for broadband 5 years from now?

The good thing about broadband is that it is changing from the copper based DSL, unreliable low speed to fiber based broadband. This is a great development. Most countries now are adapting it as it becomes a primary product and service.

Because of its phase evolution, Broadband has now become a primary internet method.

Countries like Korea, Japan, Singapore and Australia are all now with NBN. However, they will all go forward with the industry's breakthrough which is the fiber broadband. Undeniably, that is the ideal method.

Do you see price going down?

I think the price level will always stay the same. It is just

more about reliability and flexibility as the speed goes up. For business packages, prices will not be dropping a lot because business needs require performance and reliability.

The issue is, in fact, that businesses are paying a bit more, yet they are getting much more than they were receiving in the past. As such, price is not the issue. It is really all about the performance.

How do you see internet access playing along with the cloud?

The cloud is a great development for us in this kind of business. Traditionally, most applications were on the corporate private network. To get there, you need an MPLS network in order to access the application.

But as these applications are moving into the public domain, moving into datacenters, whether they are private, public or hybrid, doesn't really matter.

The thing is, they are located somewhere, and internet is the way to get to those applications which are designed to be used over the internet.

They are not as sensitive or latency-driven as the old type of applications. In using Salesforce, Webex or any cloud application, I don't need my 2Meg MPLS connection. Rather, what I need is internet access. And because of cloud applications, more and more

customers need internet access rather than MPLS.

What about security issues in this respect?

All the applications are designed to be used on the internet itself. Security was a whole different valued area in the past. In the past, MPLS was secured and thus protecting users' parameters. Firewalls are designed to keep everything safe and in place.

Nowadays, applications are all out there on the internet. It is about making sure that the right user is logging in with the right authentication.

Applications have evolved. The internet of course, per definition, is insecure. It is a major cause for security issues and breaches anytime, anywhere.

What are the growth areas for Expereo?

They are actually two. First of all, the trend towards higher speed or high performance internet is continuing. When we started 10 years ago, it was more like we were running a DSL back up. Now, we get 100MB to 500MB. That speed is going up and so is reliability.

The other trend is that our customers' demands and needs are constantly increasing.

Besides internet access, they are further demanding us to provide them with WiFi hotspots at certain locations. We are providing some

customers with hotspots in their offices, factories or wherever they do business. They wanted the availability of these services to be reachable on a standard and low cost monthly basis. That is a new development and another area of growth for us.

I think the future is much simpler. By identifying our users' needs, we will be able to tailor our services.

Customers are now more concerned about the outcome rather than connectivity itself. They will go for a service depending on their requirements rather than just broadband.

Customers today are more interested in what a service can give them rather than the value of being connected to a service provider.

What message would like to leave readers with?

We will be focused on one thing, and we will try to do the best we can. That is why we are in the niche market, like internet access worldwide. We are not doing complicated stuff.

We are doing this in the best way we can, at a possible price while providing reliable services. This is one of our key strengths.

Other than that, business is going well. Last year, we grew about 30%. We are hiring more people and we are expanding. The future looks bright for Expereo. 

F5: More Security and Better Performance



Robert Pizarri, *Director of Service Provider Sales, F5 Networks, APAC and Japan*

Robert Pizarri, F5 Networks Director of Service Provider Sales, APAC and Japan, gave Telecom Review an insight into the company's portfolio in terms of background, differentiating factors and services.

Can you give us a brief background about F5?

F5 has been publicly listed on NASDAQ for quite a long time and its heritage has always been on application delivery or load balancing. F5 coined the phrase "application delivery controller". So, beyond our basic tasks of load

balancing and helping scale applications, we added to our core capabilities a whole range of new functions and features on different verticals and different markets.

The financial industry is an example of our largest verticals. It is then closely followed by telecoms and the

industry related businesses as well. One of the interesting aspects as to why the cloud is successful even in the telecom industry is our ability to help service providers scale up their infrastructures and create a highly available and reliable application environment.

From a technology perspective, the work we do is in particular around mobile networks or operators. There are three key focuses for F5. The first one is our focus on delivering optimization. This is where we help our customers optimize their assets and the performance of their assets so they can serve their subscribers' applications or data services.

The second area is around data security. F5 has fairly and consciously decided to embark on a journey through security. Our focus in this regard is obvious and there is quite a lot of market potential for us.

Three months ago, we provided a specific service for mobile operators when we announced the launch of the SGi firewall. This firewall helps mobile operators to address some of the potential security challenges that they might be experiencing within the industry.

The third and final pillar on which we are focused is monetization. Growth of data is happening at such a rapid rate; it is seen to be even doubling every twelve months. The challenge for us is that we should stabilize

the statistics. ARPU (Average Revenue Per User) figures do not necessarily match the data growth, so there is a revenue and cost imbalance between the investments and asset utilization.

Monetizing these services will not only give us a big push, but it will also help us understand what transactions are occurring over our infrastructure and over our pipe. With these realizations, we are reshaping some of the marketing offers or bundles.

We are currently working around a new initiative through which we will be able to identify and enrich the subscriber experience, and eventually create monetizable avenues for operators. Under this scheme, we know that the advertisers will pay more money if the advertising is targeted or aimed at particular demographics.

Would it be dependent on the data that is sitting on the network?

It is actually dependent on the profile of the subscribers who have opted to share as part of their mobile subscription.

What F5 sees in the process is that the subscriber has now opted for advertising and receives updates from certain advertising mediums which are less complicated. Service providers love to do this because the generic promotion across the market, and in particular, the demographic one is more emphasized.

As they are more focused on certain types of edge, they will be able to monetize in a larger extent.

We are also looking at the aspect of monetization in a way which enables us to collect analytics on subscribers so that we have a more thorough understanding of what subscribers are looking for.

Some operators are looking at ways to expand and monetize. For example, I want to offer a free Facebook access, but I still want to monetize other services. We can do this because we are an operator at a layer 7 perspective.

Because of this, a lot is geared towards customer retention as it offers a lot of revenue promise in certain demographics, especially when coupled with a lot of flexibility in certain services or values which they expect from operators.

Knowing that Asia Pacific is a fragmented market, how do you deal and cater to such a market, where some are still using 2.5G while others are already using 4G?

Based on the way our portfolio is structured, what we sell in a 3G environment is equally relevant to the 4G and LTE. That is our product portfolio based on big IP.

Last February, we announced that we acquired a company called TRAFFIX. They are a market leader in IP signaling, which is a requirement in LTE. Likewise, we are also seeing

some requirements on the 3G environment. Once again, our phase one in LTE deployment is to help operators monetize roaming subscribers and roaming traffic.

The F5 technology is spread around monetization, and it is basically built around the platform called policy enforcement which is equally important and relevant across 3G and LTE.

However, the common question which we encounter is that: If I'm going to launch LTE, 2 years from now, can I reuse this?

On this note, we are proud to say that we do have a common platform and have built a framework around that platform. Said platform will allow our customers to go for a seamless migration.

How big is your presence in Asia?

If we go back to F5's entry into the APAC market, it started more than 10 years ago from a service provider's perspective. We have been within value added service systems for a very long time through our partnerships with global network equipment providers that have used F5 load balancer as an element within their value added service stack.

Customers have a lot of concerns; we address these concerns by building our capability around DNS main service evolution, security and capability. When operators move from 3G to

“ We are proud to say that we do have a common platform and have built a framework around that platform. Said platform will allow our customers to go for a seamless migration ”

4G, they need to make sure that every part of the internal servicing will be able to keep up and overtake the increase in technology demand.

We also have other modules such as global traffic management. These are deployed actively around datacenters and other high availability type of solutions. We do have a very lengthy story and a rich history with service providers as our overall business as well.

F5 is known for being a load balancer. How do you compare your services to your competitors?

We have quite a lot of unique differentiators that were uncovered 2 years ago during the assessments which we carried out to evaluate our performance. We found that many operators have gone down the path of buying specialized devices for a certain function. It is great, but when you end up with 30 devices to deliver service to customers, you are left with all sorts of challenges.

Given our expertise in a multi-service environment, our key differentiator is that we consolidate a number of

functions to an F5 platform to simplify the architecture of our customers' infrastructure. The improved end user experience, the fact of having a lower cost of ownership plus our performance, are really major differentiators.

You've been active with Diameter. How do you see it panning out?

Diameter is standardized by 3GPP, so all the operators are aware of it even though they have different levels of interest at the moment. Over the last year and a half and since we made the acquisition, we have been educating our customers in areas where they may be facing certain limitations, particularly in their 3G environment.

Policy and charging domain is one example of the many limitations. There is a whole range of challenges around scalability. Part of the challenge is when you have a multi-vendor environment: talking in different dialects yet in the same protocol. In the middle of all of this, operators are caught. For these reasons, we accelerated and enhanced the educational role of F5. **TR**

Huawei Joins Homegrid Forum as Contributor Member



Huawei has joined the HomeGrid Forum, an industry alliance of over 70 members dedicated to promoting wired home networking using G.hn technology.

Huawei has joined as a contributor member, which means it can participate in HomeGrid's various working groups over a wide range of activities, including standards work, compliance and

interoperability, marketing and events.

HGF said the move underscored Huawei's growing commitment to home networking and G.hn technology.

"The company is focused on key business needs for the future, from cloud to terminal with home network connectivity, being one of the main areas for growth."

"The company has dedicated a large R&D team to the development of powerline and Wi-Fi products, and already has a strong market presence with its home networking portfolio."

John Egan, President of HomeGrid Forum, said, "Huawei is a truly global organisation that brings both Asian insights and global perspective to our growing G.hn activity. This is a significant step for HomeGrid and G.hn in Asia and worldwide."

"With the move of China Telecom and other operators to field trials and shortly to deployments, we welcome Huawei to the HomeGrid family and look forward to the company's active contribution to the growing success of G.hn."

Matthew Leung, Head of Huawei's Home Network Key-Tech R&D Department,

said, "We believe HomeGrid Forum is a highly influential organisation in home networking today. Home networking is one of the hottest markets in the telecom and consumer industries."

"With the maturity of G.hn and the growing demand we see worldwide, this is the right time for Huawei to join HomeGrid and focus our G.hn efforts."

"Huawei is looking forward to being an active member of HomeGrid and exchanging our research achievements with other members to work together towards greater telecom and consumer market adoption."

Alcatel-Lucent Stages First AsiaPac Demo of 400Gbps DWDM



Alcatel-Lucent has successfully demonstrated optical transmission at 400Gbps on a single wavelength - in an operational, commercial network.

The trial took place in Australia between Sydney and Canberra - a distance of 350kms - on the network of Nextgen. According to Alcatel-Lucent, it was the first demonstration of its 400Gbps DWDM demonstration in the Asia-Pacific region.

Sean O'Halloran, Alcatel-Lucent Australia president and managing director, said: "Alcatel-Lucent's success with Nextgen is the latest in a series of successful 400G trials

conducted this year in Europe and North America. It was our first 400G DWDM demo in the Asia-Pacific region and, unlike those of our competitors, it was carried out over a live network."

The trial demonstrated the ability of an existing optical network link to transmit up to 17.6Tbps - equivalent to 266 million voice calls or the transmission of 88 Blu-ray discs in a single second, Alcatel-Lucent said.

"The trial demonstrated transmission rates roughly double those possible over an existing 100G coherent network."

Nextgen Group CTO, Phil Martell, said: "This successful 400G trial over a live network is another indication of

our commitment to stay at the leading edge of optical transmission technology and our confidence in the equipment we have chosen.

"Nextgen is in the midst of a major network upgrade to all Australian capital cities with a high speed optical network optimized for services at 100Gbps and higher and providing increased flexibility and manageability. The trial is an important step on the path to offering our customers the differentiated services they want in the fastest and most economical way."

According to Alcatel-Lucent, "The ability to simultaneously support 100G and 400G services over a live network demonstrates how network operators can successfully manage the transitions

required to support future demands."

Alcatel-Lucent's 1830 Photonic Service Switch PSS with the 400G Photonic Service Engine (PSE) were the technology behind the trial.

According to Alcatel-Lucent, the trial successfully demonstrated Agile Optical Networking with adaptive 100G/200G/400G transmission on a live network through the live optical channel successfully adapting to different speeds, distances and spectrum.

Agile Optical Networking is a key element in The Shift Plan, Alcatel-Lucent's industrial strategy to become a specialist vendor of IP networking and ultra-broadband access.

Nokia Solutions and Networks 2020 Vision: 1 Gigabyte of Personalized Data per User per Day



With its Technology Vision 2020, NSN is implementing a hands-on innovation approach to enable mobile broadband networks to profitably deliver 1 gigabyte of personalized data per user per day by 2020. Recent advances, including a big data project, follow the Technology Vision 2020 blueprint for future mobile networks to help operators deal with extreme traffic growth, simplify network operations and provide the ultimate personal gigabyte experience.

The industry is facing a massive increase in data demand while needing to boost profitability and personalized experience at the same time. NSN is committed to meeting this challenge by implementing the following six pillars of its Technology Vision 2020 that have been defined in cooperation with operators globally:

- enable 1000 times more capacity
- reduce latency to milliseconds
- teach networks to be self-aware
- personalize network experience
- reinvent telco for the cloud and

- flatten total energy consumption.

"Until now, end users have learned how to use mobile broadband networks to enrich their lives. In the future, end users will teach networks and devices how to evolve and adapt to 2020 lifestyles. Technology Vision 2020 is a guide that equips mobile broadband networks to adapt to those lifestyles. We are working closely with customers, partners, top universities and research institutes to make Technology Vision 2020 a reality," says Hossein Moiin, Executive Vice President, Technology and Innovation, and member of the Executive Board, NSN.

Driving 5G Research

Cutting-edge research and innovation projects are well advanced across all six pillars.

To enable 1000 times more capacity, NSN is driving 5G research together with customers and industry partners and heading the HetNet stream in METIS, an EU funded 5G flagship research project. The company recently spearheaded the world's first live Authorized Shared Access (ASA) trial to dynamically access unused spectrum. The

small cell Integrated backhaul antenna, demonstrated earlier this year, radically simplifies deployment of small cells and meets backhaul challenges.

Reducing latency to milliseconds is an area where NSN has already taken significant steps by introducing liquid applications, which turns the base station into an intelligent part of the mobile operator's network to store, process and deliver local content in close proximity to the end user. The engagement with entrepreneurs, developers and application providers to create a new category of applications using capabilities of the liquid applications platform is an example of how NSN is encouraging an open environment for innovation.

In teaching networks to be self-aware and personalizing network experience, a global team of experts at NSN, working together with eight ecosystem partners at its innovation center in Silicon Valley, have developed the first working implementation of a linearly scalable big data platform for the telco environment. Completed in record time of just five months, this new technology is already capable of crunching one million

messages a second, which is close to the data processing volume a network in a country like Finland would need. This project is an example of how NSN is applying the best of IT and telco technologies to speed up innovation.

Reinventing telco for the cloud is a step by step approach where NSN has started "cloudification" of software elements from its Customer Experience Management and OSS offering, moving towards IMS, mobile core and ultimately towards radio access elements. Over time, the migration of network elements in combination with software defined networking (SDN) will transform today's networks into a fully software defined infrastructure that is both highly efficient and flexible.

Flattening total energy consumption despite heavy traffic growth is a growing concern for operators. In mature markets, energy consumption accounts for 10-15% of the total network OPEX already now and can reach even 50% in developing markets. The focal point for improving energy efficiency is the radio access, which accounts for around 80% of all mobile network energy consumption. Ultimately, the energy efficiency that can be achieved by 2020 depends heavily on the pace of network modernization. To improve energy efficiency massively, NSN drives advanced power amplifier innovations, deployment studies for customer networks, industry initiatives and standardization.

The Internet of Things: A Double-edged Sword



No, you are not watching Star Trek, Iron Man or any other science fiction movie. Welcome to reality! Yes, this is life now thanks to technology, and specifically what is called the Internet of Things.

You live in one of the far-fetched deserted villages somewhere in the rural side of your country. You have no access to proper medical care, or maybe you cannot afford it. Well, that is not a problem anymore. All you have to do is own a mobile phone. Thanks to mHealth and other similar technologies and applications,

medical consultations and treatments have never been easier. Latest technologies can relay patients' data to hospitals and doctors millions of miles away, and doctors can offer treatment and advice remotely. If something goes wrong, medical professionals can be alerted immediately and devices such

as pacemakers can be rapidly adjusted over the air. This is done through a smartphone, connected to the doctor's device through the internet. So, a smartphone links the patient's body to the doctor's computer, which in turn is connected to the internet. Isn't this great, especially if you are poor, old, or

living in some abandoned part of the world? Indeed it is! But, have you ever thought that these devices are putting the patients' medical records, cases and even internal organs in the hands of every other person connected to the internet? How many persons with a malign intent are out there?

Now, let us move to your new home. You just moved into the villa of your dreams. You are excited, especially that the engineers who have made your dream come true have made your villa the definition of a truly modern connected home. Through this technology, you do not have to worry if your fridge is out of juice or cheese or if your dishes are not washed or laundry not done. Before you get up from bed, you can turn on your coffee machine and toast your bread. While at work, you can turn on the air conditioner or even vacuum the house. You can do all of these house chores and much more just by a simple smart click; and life has never been easier. One more time, every single aspect and equipment at your home is connected to the internet. Don't you feel a bit exposed?

You are late to work, you are stumbling while making your way to your car, but hey, you can start your car's engines remotely. All you have to do is hop in and drive away. You locked yourself outside; that is not something to worry about; cars now offer telematics services which can do miracles and remotely diagnose engine problems, disable stolen cars, transmit text messages and phone calls and open doors for drivers who have locked themselves out.

Yes, cars, thanks to technology, are becoming increasingly sophisticated. You have never been happier. Your smartphone has become your alarm, your credit card, your car and house key. It has become your doctor, your personal trainer, your dietician, your banker and much more. It has even become a

housemaid! How brilliant is that! All of this is made possible due to the spread of networking technology into every aspect of life. This is what is called "The Internet of Things". There is no doubt that all of this is just amazing and mind-blowing. Nevertheless, people's lives are being constantly connected to the internet. How many hackers, online scammers and digital vandals exist in the abyss of cyber space? Doesn't it feel a bit Orwellian?

It is not only that. Let us look at things from a different perspective, a more skeptical one. Your uncle is an old rich millionaire; too bad he is dying. Because he cannot move, doctors are monitoring him remotely, yet all eyes are on his inheritance. Everyone is eager for that dark moment. What if some family member or even a smart neighbor either hired a hacker or hacked the smart device which is keeping your uncle alive and fiddled with his pacemaker or changed the dosage of his medication or even sent a wrong notification to the doctor. Would not this be murder? This analysis might be a bit way too skeptical; nevertheless it is possible.

Jack Barnaby, an IOActive Researcher who is paid just to look for trouble and possible means through which people could commit cybercrimes once said that there has not been a single device connected to the internet which people have not tried to break into. In other words, everything connected to the internet is a possible prey for cyber criminals.

Connected cars are also an easy target for committing crime

and even murder. Modern cars are one of the most obvious examples of the Internet of Things. They are all equipped with computers and Electronic Control Units (E.C.U.) which direct and monitor every aspect of the vehicle. The tire-pressure-monitoring system is an example.

Even though manufacturers claim that this technology is safe and secure, researchers from the University of Washington and the University of California, San Diego were able to fake the signals from a tire-pressure E.C.U. After hacking the system, the researchers called the cell phone built into the car network with a message supposedly sent from the tires, a message equal to "stop the car immediately". The car stopped even though nothing was wrong with the tire pressure.

Attempts at bringing about the flaws of such technologies aim to attract the attention of tech experts to try harder. Reality is not as safe and secure as they picture it when it comes to such technologies. The same researches who made the car stop said that a smart connected car could be reprogrammed while it is parked. They can ignite the engine by calling the transmitter with a smartphone, thus an initiation code is sent. The car takes off and sadly crashes! There, you got your vengeance!

Just as cyber criminals might carjack your vehicle, they can easily rob your smart connected home. Having that smart box which connects and controls everything you own and use is just as leaving your door

wide open, inviting robbers with a broad smile. True, smart registers help make homes more convenient and energy efficient, yet they are not 100% safe. They are a very alluring point of entry for cyber impostors.

Added to the above mentioned examples there are other cybercrimes such as credit card fraud and identity theft in addition to many other forms of vandalism. Let us not overlook the fact that terrorists have started using smartphones to trigger bombs remotely. Recap! Triggering bombs, shutting off and fiddling with medical equipment, stealing credit card and bank account details, identity theft, crashing and jacking cars, robbing houses, taking over entire systems and institutions as well as many other malignant acts, smartphones and devices in the absence of proper security measures will bring about new possibilities of mayhem and chaos in every mundane aspect of life.

When will security issues be taken more seriously? Maybe Stuart McClure, Executive Vice President and Worldwide Chief Technology Officer at McAfee, Inc. at some point has answered these concerns when he said, "Only when these embedded devices start to kill a few people, we will take it seriously."

It is time to act now. Connecting lives and worlds is not as easy as a simple click of a button. It requires responsibility and awareness. People's lives are being exposed and giant tech experts are only eyeing the sums they will make. Big Brother has a worldwide brotherhood now, congratulations! **TE**

CommScope: Eyeing Bigger Opportunities in Asia Pacific



Philip Sorrells, VP Strategic-Wireless (global), CommScope



Brendan Millard, Director-Wireless, Southeast Asia, CommScope

Telecom Review had the chance to meet with CommScope's Philip Sorrells, VP Strategic-Wireless (global) and Brendan Millard, Director-Wireless, Southeast Asia, during LTE Asia 2013. Below is a brief of the conversation Telecom Review had with them.

Which regions does CommScope cover in terms of operations?

Philip Sorrells: We run our operations globally, and Asia is considered as one of our most important and fastest growing markets, where we have a strong manufacturing presence. We have four factories in China and one in India, and have placed quite a lot of investments in the region. We also have sales offices all throughout the region. Our operation and distribution

activities are widespread across several countries such as Singapore, Hong Kong, Japan and Australia.

Brendan Millard: We have also established a design center in China and Australia; our investments are pretty heavy in this part of the world. The thing that I'm most proud of is that we have been playing an active part in helping the operator community in this region to adapt every new mobile technology that comes their way.

COMMScope®

When UMTS started rolling out in Taiwan, we were among the first manufacturers to provide training and help operators to understand the implications of the new UMTS technology all across this Taiwanese market.

Within the given scenario, we recently initiated that kind, with LTE workshops as an example. One of the key things that we are trying to do is take the global expertise that we have developed and share it with operators.

What do you think is the main difference between the first wave of operators who

adopted LTE and those who are just adopting this technology right now?

Brendan Millard: I think they are pushed by customer demands as well as device manufacturers, in addition to the fact that most of the applications used on the devices require LTE connectivity in terms of speed and efficiency. Another reason is that almost all devices on the market now are very much hungry in terms of data. So, if operators can't satisfy their users with what the 3G networks have to offer, they definitely have to move to LTE.

Operators around the region are waiting for spectrum to become available, on both the 700 MHz and 2600 MHz.

Another interesting thing is that operators are trying to predict what frequency to use, whether 700 or 2600. At the same time, operators are trying to free space on their towers so they can share the resources and the towers as well. This is done so that other operators will pay them or sell the tower to a power company and then lease back small space. This reality is really changing the physical equipment they are using onsite.

What is your perspective towards the markets that have initially adopted 2.5G and are now seen moving towards LTE?

Brendan Millard: Vietnam for instance, was one of the early adopters of 3G technology, yet they still rely heavily on text message. Hence, the resources are pretty much under-utilized. I believe is all about the pricing mechanism. When customers can afford to pay, you get the price point right. The demand for the services will definitely go higher.

Philip Sorrells: The penetration of smartphones in these markets is not that high. At some point, the penetration of smartphones will get to the tipping position, and when that happens, operators will start thinking and investing in LTE. Technology here is really driven by the data. Once you get enough of those users that have smartphone capabilities, then the inevitable will happen. LTE will come to be the right answer for increasing demands.

Today, one fact is persistent: the device leads the market. Presently, our market is driven mostly by 15 year old teenagers and 40 year old businessmen. This mixed global composition is what drives the mobile market.

What can you tell us about your presence at LTE Asia?

Philip Sorrells: Today, we see that the future is all about LTE. This conference is of importance to us because it addresses one of our main markets. As far as what we are promoting here, our presence is mainly focused on revealing the importance of the Radio Access Network as most of the problems that operators face have to do with RAN, and these problems can impact the network as a whole.

Since Quality of Service (QoS) is of great importance, operators are trying to avoid such problems, and we seem them trying to stick to a particular network or change to another network of their choice.

Brendan Millard: LTE is an interference limited technology. The performance of the network has to have a really good signal strength and really low noise level. And for us, that is exactly what we do; we try to improve the strength of the signal with antennas and decrease the noise of amplifiers. We are currently working on reducing noise in the system with filters. May it combine equipment or whatever, different approaches are being done. Our work is focused on noise reduction. We are helping operators to simplify their network and make their network more consistent. This is achieved by giving them some level of performance assurance and by helping them reduce signal noise reception.

In which ways are you helping operators? What is it exactly that you are offering them?

Philip Sorrells: First, we offer them network modernization. It is fundamentally about helping

operators implement LTE onto their existing site. From the existing site, they can add a new technology. Doing and offering this would be the best way to migrate all the technology to that of an existing cell site. In our network modernization strategy, we have a lot of different components that go on with that such as multiple port ultra-band antennas. We also have fiber optic cables, which are relatively new for us. We have a line of ten certified jumpers which are very important in LTE, and certified RF jumpers for network modernization.

Second, we offer capacity which is at the forefront of every operator's mind. We add capacity to the network by increasing sectorization and increasing cell site. A big part of our capacity issue is what I call sector sculpting. You have to make the antenna technology work to have a better pattern. Then, you link the RF where you want it. We've developed this technology in order to take one main beam and split it into a varied number of beams.

So the capacity strategy is really about taking the existing technology and bringing out every possible solution we can get out of it.


Third, we are truly focused on remaining one of the biggest suppliers of DAS in the world. Distributed Antenna System (DAS) is really the original small cell. When you go into high use venues, convention halls as well as sporting event, DAS is the way to go, for it is easier to scale the capacity. We think this is the ideal solution to this really hard to define, hard to scale capacity of multi-operator and multi-frequency venues.

Our fifth strategy is backhaul. This entails adding capacity on the access side. We are currently the largest suppliers of the macro antenna system in the world. For 2 years now, we have introduced a new line of macro wave antennas or class 4 antennas.

Having these would eventually sharpen the pattern, make the pattern more precise and further reduce the interference from all the stuff that is happening out there. And with our new class 4 antennas, users can use that new technology which is seeing 40% on their throughput rate for their backhaul. In addition, we also have fiber backhaul.

What other markets are you targeting and trying to tap into here in Asia?

Brendan Millard: Australia is pretty big for us. Indonesia has been a great market for us as it continues to grow and develop. Thailand, on the one hand, is quite promising as it is starting to grow. In Vietnam, they started 3G rollout; we see in this a huge potential as well. Fixed line penetration is very low, so wireless is really the smart way to get access. It is exciting and it's going to change peoples' lives. From what I've seen so far from the pricing, operators are quoting out. Because of this, it is quite doable that they should be able to afford it. We were likewise involved in the whole India technology revolution. We supplied the majority of the antenna system.

Lastly, we currently have a great user population in Taiwan. This was made possible because of the quality of our systems. We are eyeing bigger opportunities and wider horizons in Asia Pacific. 

Cloud Traffic: Growing by Leaps and Bounds



When talking about cloud technology, big names like Amazon, Microsoft, Google and Yahoo were among the first companies to take over every consumer's list. Cloud is more than just the legacy notion that it is a storage facility somewhere safekeeping the data of every individual user.

In today's parlance, cloud is more than just a big hard drive located elsewhere; in fact, since last year, cloud computing has been playing a crucial role not

only in the information and communication industries but in every other industry where its influence is significant through functions and roles such as

automating, streamlining and improved delivery of service.

With more and more people being accustomed to the

existence of the cloud, end users have been accustomed to its benefits too. Thus, a significant uptake is seen particularly on the latest index.

According to the third annual Cisco Global Cloud Index (2012 – 2017) issued in October 2013, Cisco forecasted that global cloud traffic, which is the fastest growing component of data center traffic, is expected to grow 4.5 times or about 35% combined annual growth rate (CAGR). This means that from 1.2 zettabytes of annual traffic last year, figures would increase up to 5.3 zettabytes by the year 2017.

In totality, the overall global data center traffic will grow three times to reach a total of 7.7 zettabytes annually by 2017. The former index would somehow let you see and give context so as to how big these data would multiply. For your awareness, a “zettabyte” is one billion terabytes. Arguably, this would be tantamount that by 2017, global data center traffic will be about 107 trillion hours of streaming music, or 19 trillion hours of business web conferencing or even 8 trillion hours of online high-definition (HD) video streaming.

But despite the clear uptake on the cloud as the index denotes, surprisingly about 17% of it can only be attributed to data center traffic that is fuelled by end users accessing clouds for web surfing, video streaming, collaboration and connected devices. In turn, this amount of traffic contributes to the Internet of Everything (IoE). It is further reckoned as the networked connection of people, data, process and things.

The other data center traffic is not caused directly by end users, but by data centers and cloud-computing workloads used in activities that are virtually invisible to individuals. For the period 2012–2017, Cisco forecasts that 7% of data center traffic will be generated between data centers. These

are primarily driven by data replication and software/system updates. An additional 76% of data center traffic will stay within the data center and will be largely generated by storage, production and development data in a virtualized environment.

From a regional perspective, the Cisco Global Cloud Index predicts that through 2017, the Middle East and Africa will have the highest cloud traffic growth rate (57% CAGR), followed by Asia Pacific (43% CAGR) and Central and Eastern Europe (36% CAGR).

These key findings of the Cisco Global Index will give everyone the big picture of data traversing these invisible highways. According to Doug Merritt, SVP, Product and Solutions Marketing, Cisco, “People all over the world continue to demand the ability to access personal, business and entertainment content anywhere on any device, and each transaction in a virtualized, cloud environment can cause cascading effects on the network.”

The exact amount of data, the report also showed, likewise highlighted important facts on whether a network is ready for the cloud environment or that network being cloud ready. Various fixed and mobile network attributes were analyzed and further taken into consideration. Average and median upload and download speeds and latencies were analyzed as well (median values were added this year to understand the variability of end user cloud readiness within each country).

Network performance characteristics were provided across each geographic region:

Asia Pacific, Central and Eastern Europe, Latin America, Middle East and Africa, North America and Western Europe. For a Cloud app to function well, the comprehensive report have presented figures and the required data on each type of user, which are the basic, intermediate and advanced ones.


The rigorous study showed that a Basic Cloud App or the network requirements for an ordinary consumer’s basic services would comprise of text communications (email and instant messaging), web browsing, personal content locker (non-multimedia), e-banking, single player gaming, social networking (text only), basic video or music streaming. The consumer’s business basic services on the other hand, follow text communications (email and instant messaging), VoIP, web conferencing. The required download speed is up to 750 kbps. The upload speed required for it to fully function is up to 250 kbps. Its latency should be above 160 ms.

Apart from the above data, the study also showed the figures for an intermediate consumer using an intermediate service. For them, the Cloud Apps and network requirements would consist of a smart home, personal content locker (multimedia), online shopping, multi-player gaming, social networking (multi-media/ interactive), HD video/ music streaming and IM video chat. Likewise, there is also an available data for business intermediate services. Such are: ERP/CRM, IP audio conferencing and video conferencing. For its required download speed, it must be 751 to 2,500 kbps. Its required upload speed should be 251 to 1,000 kbps. Latency, to

be fully functional, must likewise be 159 to 100 ms.

For advanced consumers, advance Cloud Apps or network requirements includes: connected education, connected medicine, HD video chat, Super HD video streaming and 3D video streaming. The needed download speed should be 2,500 kbps or more. Its upload speed must be higher than 1,000 kbps. The latency should at least be 100 ms.

The above data are their findings on their subject study. Said report also highlighted that various regions are able to support not just a single level of cloud service but multiple. Some do well in support of the basic and intermediate cloud applications. Networks belonging to those with performance that results a higher figure than their region’s average cloud readiness metrics can support advanced cloud applications. Such countries are Hong Kong, Singapore in Asia Pacific, and United Arab Emirates in the Middle East and Africa.

Needless to say the cloud has given a significant value not only as storage unit or a mere technological “dumpsite”, but overall, it gives an added advantage to any featured function on any given industry. The cloud is here to stay, and it is only best for every individual or enterprise to embrace it and include it in their next business plan. The significant traffic highlighted on the data presented is enormous. This gives us a clear understanding as to what normally an invisible part of daily cloud computing is. This particular technology will find its way through our wants and needs. The means of having a comfortable system will be no more than a dream. Cloud, it is. 

BT Global Telecom Markets: Shaping the IPX market



Beatriz Butsana-Sita, Managing Director, BT Global Telecom Markets

BT was one of the early adopters of IPX technology and as a result now boasts a significant customer base across the world. Beatriz Butsana-Sita, Managing Director of BT Global Telecom Markets, spoke to Telecom Review regarding the progress and expansion plans of the company's IPX solution.

Why did BT decide to develop its IPX platform and what services are you now offering over it?

BT has been in the IPX business for more than five years. The IPX exchange is an IP interconnect platform that enables carriers and services providers, like Skype, to exchange traffic and other services with a good sustainable business model. Having started in the UK, we expanded internationally

by launching a major hub in Singapore and now we are set to add to this with another hub in North America. We recognized early on that there is a huge trend towards IP and believe that there are a lot more opportunities we can exploit with these services than in the traditional TDM world. The services we believe will enable us to improve are business models and include High Definition (HD) voice, data and other value added services surrounding

4G like LTE signaling and WiFi roaming.

What types of customers have signed up to BT's IPX so far?

We have a whole range of customers from wholesale carriers to pure IP niche companies and OTT players. Our IPX customer base is 300 strong, stretching across various regions with traditional telcos, data companies and also mobile operators. We are particularly

keen on having mobile players connect to our platform because of the huge amount of traffic now being generated by smartphones. Our customer base stretches across the world with over 100 customers in Asia, Middle East and Africa alone.

What types of services do OTT players come to your IPX service for?

Because IPX is actually a business grid platform to exchange IP traffic OTT, players can continue to operate regardless of being connected to a provider such as BT or our competitors. So it all depends on what they want to offer their end customers and their own roadmap. If you're currently having a conversation with someone over Skype based in Peru or Lebanon, you will have to be happy with a certain type of quality, but in the B2B market, for example, you need a better quality service. You may be discussing a contract or so on, where you will be looking at better end to end connectivity with certain service level guarantees. That's something that an IPX provider can give to those customers. It all depends what the end consumer wants.

How much of an opportunity is HD voice as part of your IPX offering?

Being able to conduct a voice conversation in high definition is an amazing experience and we have done a number of trials with certain carriers. We looked at the length of a call while conducting a conversation in high definition and the calls were regularly up to three times

longer than in standard voice because the quality was so much better. Therefore, the carrier who offers HD voice will be able to make more money because the call is longer, multiplied by the premium price for minutes or seconds, generating more revenue. HD is already available in singular networks, for example, Orange is already providing high definition voice on the networks it is running.

Where an IPX exchange like ours will add value is in the ability to interconnect to singular networks. HD voice only works with an HD enabled device, operated on an HD enabled network and if the call is transferred onto another network that is also HD enabled. So, transcoding is needed and the end to end route needs to be completely HD enabled to experience the full value.

Is BT looking to form IPX peering agreements like other providers?

We are evaluating some federation options in the marketplace. At the end of the day, what we do with global IPX is provide international connectivity. But when you start wanting to offer domestic IP connectivity then a federation agreement or peering agreement is extremely important. We are actually conducting a number of trials for voice with likeminded international carriers, which are extremely important for providing good quality end to end IP connectivity. It also requires a lot of transparency between the IPX providers as well.

What criteria would you be looking at to select which carriers you would partner with?

We are building big international hubs, for example in Singapore and North America, and we want to have carriers that can provide large-scale domestic termination as well. If we're going to do a peering agreement, we want to do so with a carrier that has a lot of critical mass and is part of many more federation agreements. I'm not going to mention names, but clearly if we can do a peering agreement with a large US carrier with a deep US or Canadian network that would appeal to us. It is easier for us to work with traditional telco carriers rather than niche players. Although for value added services like signaling or GRX data we are working with non-telco carriers as well.

You expanded last year with a GIPX hub in Singapore and have recently launched in North America. Are there any other regions you are looking at?

BT already has a large MPLS network; we have phenomenal global reach and points of presence almost everywhere in the world and IPX services can be reached via MPLS, Ethernet Private Circuits, wavelengths or satellite. We are building these hubs in areas where we have a large concentration of traffic specifically in those regions, placing them in reach of the end customer via PoPs. Beyond Singapore and North America we will probably launch another node in the Middle East and Africa to complete our IPX footprint.

What is your opinion on the IPX initiative announced by the GSMA and i3 Forum? Was it needed to encourage IPX uptake?

BT participates in the GSMA and the i3 forum, and the platforms that we have launched are all aligned with their recommendations. I'm always happy to hear about these announcements; however, as I said, we have been in the IPX market for quite a while and have believed in this business for the past five years. We have a lot of opportunities and phenomenal growth with more than 300 partners on our platform and our IPX strategy, and investments are permanently imbedded in what we are doing over the next few years. I'm happy and I would have been very surprised if they would have said otherwise, but I don't think it was needed for us to continue to develop the services going forward.

Some analysts' projections state that IPX won't take off properly until 2014 or 2015. Do you agree?

I think it depends how you define "take off", because it is already there and we've already recruited quite a number of customers. The traffic we are carrying over IP exchanges is growing every single day. When precisely there will be peaks I don't know, but I can see a steady increase. If you look at our roadmap of value added services we want to be there before it takes off, so we are ready and will be able to sustain that business over the next five to ten years, or beyond. We consider ourselves to be a

market shaper, and although I won't be able to share with you our whole roadmap of value added services, we have some very exciting additions lined up. These are not on the roadmap of any other carriers I've seen, not on the scale that we are doing it, and I'm extremely excited by that. If we were to launch these services today, I don't think there would be a lot of uptake, but we want to be ready for when there is demand because we believe in this market.

How do you expect the BT IPX platform to develop over the coming years?

We are currently at the stage of having a very good geographical rollout of strong IP exchanges with a good service model and on boarding process for all the carriers and service providers. What we are building on top of that is a whole raft of other services surrounding signaling, data, GRX, LTE, billing, financial clearing, conferencing and maybe wholesale communications as well. We can provide a one stop shop to carriers and deliver those services in a very sleek and efficient matter via one SLA and one business relationship. Our relationship with these carriers will be stronger, enabling us to move away from making very small margins on selling minutes. That is not where we can add value, but instead through services enabling these carriers to offer strong propositions for their end customers, providing very good QoS and enabling them to compete better with OTT players, while, most importantly, actually making money. ■

ITU Calls for Global Prioritisation of ICTs



Delegates to the International Telecommunication Union's (ITU) World Telecommunication/ICT Indicators Symposium (WTIS), held at the beginning of December, sent a strong message calling for the international community to explicitly prioritise information and communication technologies (ICTs) as essential to every nation's future social development and economic growth.

According to the ITU, The three-day symposium, held in Mexico City, "represents the world's most important meeting of ICT data experts from around the world."

More than 300 delegates, ranging from government ministers and business leaders to regulators and ICT data analysts participated in the event, which is held annually by the ITU to review approaches to data gathering and processing and to try and harmonise global methodologies for measuring the key statistical 'indicators' that help government, industry, UN agencies and other international organisations measure progress and shape development strategies.

According to ITU secretary general, Dr Hamadoun Touré: "Without measurement we cannot track our achievements, identify gaps which still need to be addressed, or set new goals. It is absolutely essential as we move forward with our post-2015 development vision that the role of ICTs in social and economic development is properly recognised in the setting of new goals, targets and indicators."

The ITU is calling for greater recognition of the transformational power of technology in the shape of a new UN development goal designed to bring all countries up to a minimum level of ICT access and use at affordable prices to empower business and drive growth.

"Many now believe that, with hindsight, the catalytic role of ICT was not sufficiently recognised when the Millennium Development Goals were set back in the year 2000," the ITU said.

"At that time, mobile cellular penetration was just 12.1%; today, it stands at 96%. At the same time, the percentage of the world population online has increased from 6.5% to almost 40%. Now, the global technology and development community is pushing for much stronger recognition of the vital importance of ICTs to socio-economic growth."

According to Brahim Sanou, director of ITU's Telecommunication Development Bureau, "In today's hyper-connected world, accurate statistics are the only way we can set benchmarks to help us measure the progress of our development initiatives."

The ITU collects ICT statistics for 200 economies and over 100 indicators, in partnership with its 193 member state administrations, over 700 private sector members and more than 60 members from the academic and R&D community.

It publishes the world's most comprehensive global ICT database and produces the industry's ICT statistical reference report, Measuring the Information Society (MIS), which includes a unique global ranking known as the ICT Development Index (IDI).

China Imposes a Forceful Grip on the Internet



Using the internet, and more specifically, social networks as platforms for spreading rumors and false news, China has decided to execute a new internet policy in an attempt to save the nation and ensure its stability.

Tackling these threats, the Chinese authorities released a new blueprint for the country's future which covered economic and social reforms. Among those related to the internet,

the government was clear in changing its policy and imposing more censorship on the internet; this entailed monitoring and managing the flow of information on the web. In commenting about the flaws in the system, a governmental statement said that there are many different overseeing departments, resulting in inconsistencies and lack of efficiency in monitoring the information that goes online. The statement added, "At the same time, due to the rise of online media, the internet regulatory systems that manage the media and the industry are falling far behind to catch up with the new changes."

The government also referred to the growing popularity of Chinese social networking and instant messaging tools as a major threat to national security as these services can rapidly disseminate information and mobilize society. In providing example, authorities mentioned Weixin, a mobile chatting app developed by local internet giant Tencent. The app has taken China by storm, and boasts over 200 million monthly average users. Outside of the country, the app is better known as WeChat.

To make the internet more secure, China plans to boost its regulatory systems and increase the scope of their legal authority,

the government said without offering further details.

China has already gained notoriety for its strict censorship of the internet and has blocked foreign sites such as YouTube, Facebook and Twitter. Local social networking services, however, continue to operate, but self-censor content by sometimes deleting politically sensitive or anti-government posts.

Despite the already imposed censorship, Chinese authorities have been cracking down on internet users for allegedly fabricating rumors online. Just last September, China said it would sentence offenders to jail once found guilty.

GLOSSARY

Camp-on

CBC

CCITT

CDMA

CESoETH

Churn

CIBER

CLASS

Core diameter

CRYPTO

CWMP

Camp-on

In PBX and hybrid environments, a method of putting an incoming or outgoing call intended for a busy extension or line into a hold-like state where it remains until a line becomes available

CBC

Cipher Block Chaining

CCITT

Consultative Committee on International Telegraph and Telephone - the principle international standards-writing body for digital telecom networks (ISDN).

CDMA

Code Division Multiple Access; implemented in AMPS-compatible systems by IS-95

CESoETH

Circuit Emulation Services over Ethernet

Churn

The rate at which subscribers leave one wireless carrier to go to another. A major expense for carriers

CIBER

Cellular Inter-carrier Billing Exchange Record. Format used for exchange of wireless billing records

CLASS

Custom Local Area Signaling Services. A package of features offered by wireline carriers

Core diameter

In the cross section of a realizable optical fiber, ideally circular, but assumed to a first approximation to be elliptical, the average of the diameters of the smallest circle that can be circumscribed about the core-cladding boundary, and the largest circle that can be inscribed within the core-cladding boundary

CRYPTO

The marking or designator identifying COMSEC keying material used to secure or authenticate telecommunications carrying classified or sensitive information

CWMP

CPE WAN Management Protocol 

Telecom Events' Calendar 2014

Telecommunications Exhibitions And Conferences Where Telecom Review Is A Media Partner

TR SUMMIT 2014

Save the Date for Telecom's Review Annual Summit!

December 8, 2014 – Dubai, UAE

February 2014

Mobile World Congress



Mobile World Congress is the blueprint for the NEXT big innovation. Whatever is coming NEXT will likely be born at Mobile World Congress 2014.

Date: 24-27 February 2014
Place: Barcelona, Spain

March 2014

EurasiaCom



The 10th Annual EurasiaCom 2014, is the region's leading Telecoms, Media & ICT event. EurasiaCom is the key event to be at to glimpse what's round the corner in the coms sector.

Date: 25 -26 March 2014
Place: Istanbul , Turkey

April 2014

Broadband Asia



Broadband Asia & TV Connect brings together decision makers and buyers from the fixed, wireless and mobile broadband industry from across the Asia-Pacific region and beyond.

Date: 29-30 April 2014
Place: Suntec, Singapore

June 2014

CommunicAsia



CommunicAsia continues to strengthen and stay relevant to the ever changing info-communications technology industry. CommunicAsia2014 is the event that addresses the

ENTIRE ICT ecosystem from 4G / LTE, AR and Innovations, Content Security Management, FTTx, Mobile Apps, Mobile Broadband, Mobile Devices, RF & Cables, Telecom Energy & Power System and many others.

Date: 17 - 20 June 2014
Place: Marina Bay Sands, Singapore

LTE WORLD



The world's leading 4Gevent, will be relocating back to the popular city of Amsterdam for 2014! With its core values of creativeness, enterprise and innovation, Amsterdam is the ideal location for the world's only dedicated global LTE event.

Date: 23-25 June 2014
Place: Amsterdam RAI, Netherlands

September 2014

LTE ASIA



Now in its 8th year, LTE Asia is the must-attend event for Asian operators.

Date: 15 - 17 September 2014
Place: International Convention & Exhibition Centre, Suntec Singapore

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