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**PLUS: Big data gets its own lobby group, Grahame Lynch praises the NBN FTTP decision**

# COMMUNICATIONS DAY

30 September 2016/3 October 2016

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ISSUE 5228

## The end of 2G in Australia: Vodafone announces shutdown timetable

2G is set to disappear from Australia completely, with Vodafone becoming the last of the mobile carriers to announce that it is switching off its 2G network.

Having launched 2G GSM services in 1993, Vodafone said that the legacy service now carried less than 1% of its data traffic and around 2% of its voice traffic; 4G, by contrast, currently bears 80% of Vodafone traffic. The cellco will pull the plug a year from today – 30 September 2017 – giving it time to run a twelve-month awareness campaign to migrate customers off the 2G network.

“We’ll be proactively contacting customers through SMS and the MyVodafone [portal] to encourage them to switch as early as possible,” acting CTO Kevin Millroy told CommsDay. “These customers have been with us a long time; it’s going to take a long time to move [them] over.”

The move will complete a winding down of 2G that, in a sense, started back in 2014 when Vodafone refarmed some of the 900MHz spectrum it uses for 2G as part of a broader reshuffle to increase its 4G spectrum. “We’ve got about 180,000 active users on the 2G network at the moment, and clearly that’s not a good use of the spectrum we have left in 2G,” said Millroy.



More generally, next September will mark the end of 2G in Australia. Two years ago, Telstra announced that it would shut down its 2G GSM network at the end of 2016; at that point, as with Vodafone now, it said that 2G traffic accounted for less than 1% of its total network load and that it had not sold a 2G phone for several years. In August last year, Optus followed suit with news that it would turn off its own GSM assets from 1 April 2017, with 2G again accounting for a “fraction” of its network traffic and declining each year.

**This is a double issue of CommsDay dated for both Friday and Monday due to the public holiday today in Victoria and the public holiday across much of the rest of Australia on Monday. Our next issue will be on Tuesday October 4.**

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Ian Martin



ACCAN  
CEO  
Teresa Corbin

# COMMSDAY MELBOURNE CONGRESS - 2016

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**Chair** Renee Bowker of TelcoTogether

## **Day 1 Tuesday 4 October**

- 9.00 Australian Competition and Consumer Commission chairman Rod Sims
- 9.25 Symbio Networks CEO Rene Sugo
- 9.50 Telstra group director, corporate affairs Tony Warren
- 10.15 Cisco Head of Architecture, SP Cloud and Software Rada Stanic
- 10.40 Refreshment break
  
- 11.15 Macquarie Telecom national executive, industry & policy and OzHub chair Matt Healy
- 11.40 Equinix director Market Development, Asia Pacific Gareth Bridges on realising revenue growth with an Interconnection-First strategy'
- 12.05 New Street Research senior telecommunications analyst Ian Martin
- 12.30 Nokia Oceania head of mobile networks Mark Barnett
  
- 12.55 Lunch

## **2 NEXT GENERATION TELECOM STREAM**

- 2.00 Ciena Senior Director, Blue Planet Division Abel Tong
- 2.20 TBA
- 2.40 Ericsson head of portfolio management, PA Cloud Systems Jonathon H. King on digital industrialisation and powering the network economy
- 3.00 FutureSumo's Skeeve Stevens
- 3.15 Mellanox ANZ country manager Sudarshan Ramachandra on 100GE and beyond
- 3.30 Break
- 4.00 **PANEL: HOW TELCOS CAN ENABLE THE INTERNET OF THINGS**

Telcos are an essential part of the IoT foodchain in terms of connectivity. But is existing fixed and mobile infrastructure fit for purpose or are new topologies combining current tech with dedicated platforms such as SigFox, LoRA and others necessary for IoT success? Does IoT offer sufficient economic incentive to encourage telco investment? How can telcos work with device, application and other providers to ensure IoT success? What legal and regulatory hurdles stand in the way? Panelists include Nokia Oceania CTO-Warren Lemmens, Cisco dir, engineering service provider, APJ Chia Tan, Optus Business IoT practice lead Anthony Stewart and KPMG national IoT leader Piers

Hogarth-Scott

- 5.00 Day 1 closing keynote: How To Save The NBN with iMediate Consulting's Robert James
- 5.30 Drinks
- 6.30 Close

## **Day 2 Wednesday 5 October**

- 9.00 Federal minister for regional communications Fiona Nash
- 9.25 Shadow communications minister Michelle Rowland
- 9.50 Optus vice president corporate and regulatory affairs David Epstein
- 10.15 NBN chief engineering officer Peter Ryan
- 10.40 Refreshment break
  
- 11.15 Australian Communications and Media Authority acting chairman Richard Bean
- 11.40 Vodafone Australia chief strategy officer Dan Lloyd
- 12.05 Ruckus Wireless head of engineering, ANZ David White
- 12.30 Cyient Sr. Vice President - Communications BU & President - Asia-Pacific Sanjay Krishnaa
- 12.55 Lunch

## **2 REGULATORY AND POLICY STREAM**

- 2.00 Australian Communications Consumer Action Network CEO Teresa Corbin
- 2.20 Coutts Communications managing director Professor Reg Coutts on USO reform
- 2.40 Comms Alliance director of program management Christiane Gillespie-Jones
- 3 Break

## **3.20 PANEL: GOING SUPERFAST AGAINST THE NBN**

A number of telcos have decided to resist the "natural monopoly" of the NBN and offer high speed broadband over their own infrastructure. This panel looks at the various business models that may succeed against the NBN as well the regulatory settings that distort the playing field. What will the ACCC to change the superfast regulatory regime, if anything? And what can the NBN do to discourage competitive bypass and attract back custom from the renegades. Panelists include Thomson Geer's Tony Dooley, Opti-comm's Phil Smith and dgTek's David Klizhov.

- 4.00 Close

**SPECTRUM, INFRASTRUCTURE ASSETS:** The year-long period through which Vodafone will manage its residual customer base off 2G will also give it time to look at how to re-use the spectrum freed up when the old network is finally shut down.

After the 2014 restack, the firm currently only has a small amount – about 3.6MHz – of 2G spectrum left in the 900MHz band. Some commentators around the world have suggested that smaller portions of spectrum released from decommissioned 2G networks could be repurposed for dedicated Internet of Things usages, given that many IoT devices are likely to use only very limited amounts of bandwidth. Millroy, however, would not be prematurely drawn regarding Vodafone’s current thinking on the subject.

“We want to get the spectrum out to repurpose it; we’re going to look at how best to utilise that spectrum,” he said. “We’ve got various strategies... it’s part of a much bigger piece of work as to how we repurpose it in the future.”

What could prove more difficult to re-use, however, is the infrastructure used to deliver 2G services. Even decommissioning the hardware represents a substantial logistical challenge. “It’s a big job; our coverage footprint for the 2G network is 94.5% population coverage, which gives an [idea] of the size of network we’re talking about!” said Millroy. He added that it would likely not be possible to repurpose the 2G radio hardware itself but “saying that, we always explore being able to re-use equipment... antennas on towers, given they’re band-specific, we may be able to. But it’ll be [a matter of] when we start recovering this equipment, just how re-usable it actually is.”

Petroc Wilton

## **Melbourne gets free Wi-Fi service ahead of weekend's AFL grand final**

The Victorian government has turned on a long-awaited free Wi-Fi service across Melbourne in time for this weekend's AFL grand final. The project is being built and managed by TPG.

The project was first announced in 2014 by the state Liberal government and its then technology minister Gordon Rich-Phillips. The initial contract was signed with iiNet before it was acquired by TPG.

State minister for small business, innovation and trade Philip Dalidakis launched the revamped A\$11 million project at Southern Cross Station. The VicFreeWiFi service is now available at all Melbourne CBD train stations, the Bourke St Mall, Queen Victoria Market, and South Wharf Promenade at the Melbourne Convention and Exhibition Centre.

The minister said more access points would be switched on over the coming months, with the full network to be up and running by the end of the year.

“Whether visitors are coming into town to go shopping, eat in Melbourne’s famous laneways or head to the AFL Grand Final this long weekend, they’ll all be able to access and enjoy the fastest free Wi-Fi in the country,” Dalidakis said.



A free Wi-Fi pilot, also set up by TPG, has been running in Bendigo and Ballarat since December 2015 and has recorded one million sessions in the two regional cities during the nine months it has been operational. Once the Melbourne network is complete, it is expected to be the largest free public Wi-Fi network of its kind in Australia, covering an area of 600,000 square metres across the three cities.

TPG will run the network for a period of five years. Users are allowed up to 250 MB per device, per day and do not require personal logins.

The minister said the infrastructure will also be available for piloting future connected city projects and for state and federal disaster response in the event of an emergency over the five-year pilot.

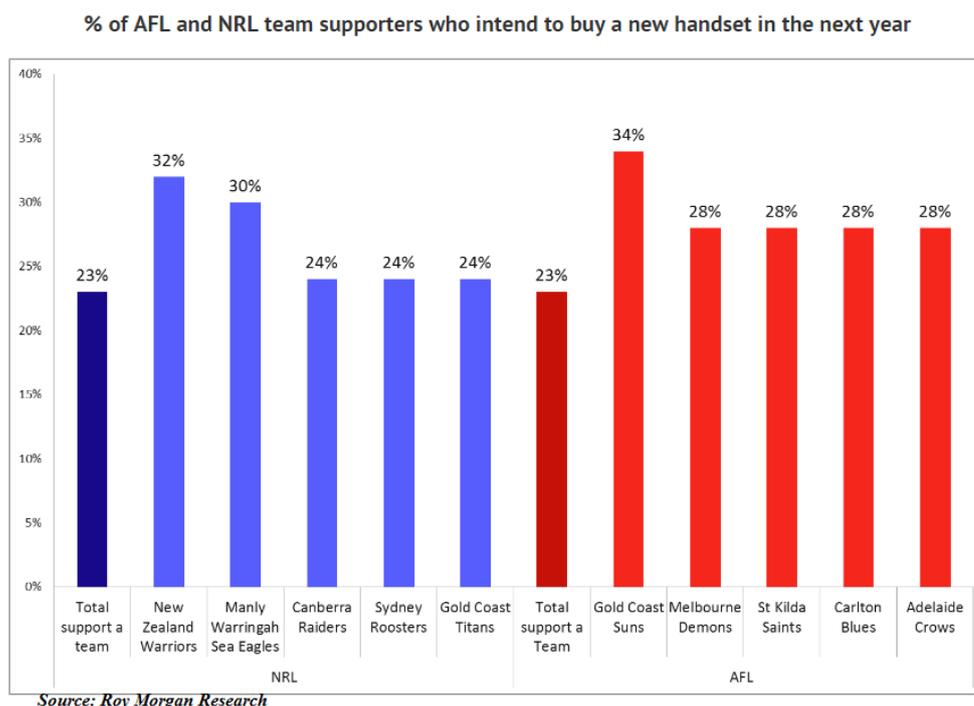
Geoff Long

## Huawei tips well in AFL/NRL: Roy Morgan

While Huawei-sponsored teams are out of the running for this weekend's AFL and NRL grand finals, the company has latched on to supporter bases that have a strong intention to buy new mobile phones in the next 12 months, according to data from Roy Morgan.

Huawei is currently the only handset maker backing either code: it is a major sponsor of the NRL's Canberra Raiders and a partner of the AFL's Gold Coast Suns.

According to Roy Morgan, NRL and AFL club supporters are more likely than the average Australian to be in the market for a new handset, with 23% intending to buy one in the next 12 months. And Huawei's clubs are both among each code's top five by the proportion of fans in the market for a new mobile phone.



The Gold Coast Suns top the AFL in terms of its fans being the most likely to purchase a new mobile handset (34%). The rest of the top 5 – the Demons, Saints, Blues and Crows – are tied with 28% of supporters in the mobile market. On the down side for Huawei, Suns fans are also more likely to look for an Apple iPhone for an upcoming mobile purchase.

In the NRL, 24% of Canberra Raiders supporters plan to buy a handset in the com-

ing year. Raiders fans are also almost 20% less likely than average to want one of the two dominant handset brands, an iPhone or Samsung Galaxy.

The New Zealand Warriors (32%) and the Manly Warringah Sea Eagles (30%) have the highest buying intention. Tied with the Raiders on 24% to make the top 5 are the Sydney Roosters – which Samsung sponsored until 2009 – and the Gold Coast Titans.

Roy Morgan Research CEO Michele Levine noted that since Samsung split from the Roosters in 2009, Huawei has been the only mobile phone handset brand to sponsor a team. However, the teams still in premiership contention may not necessarily be the best teams for branding.

“If another mobile handset brand is keen to back a Premiership winner, analysis of supporters of the Sydney Swans and Melbourne Storm shows they have just average mobile phone purchase intention this year (21%), while Sharks fans are below average (19%), and the Western Bulldogs are bottom of the ladder with fewer handset buyers among their supporters than any team in either code (15%),” Levine pointed out.

“With many deals lasting for years, even decades, sponsors must also find ways to develop metrics that monitor benefits and maximise every opportunity to turn fans into customers.”

Geoff Long

## **Telstra to build “80% of a new network” by 2020: report**

Telstra director of global enterprise product engineering Crispin Blackall says the firm will need to build “80% of a new network” to meet expected demand for capacity by 2020, according to Light Reading reports.

The site quoted Blackall, who spoke at the OpenDaylight Summit in Seattle, as saying that the telco had modelled future demand and realised that against the expected capacity requirements four years from now, “we have 20% of the capacity in our network today.” “We will have to build 80% of a new network in order to deliver what we see our customers needing in that four-year timeframe – and that is a fairly big change for us to go through,” Blackall added.

According to Light Reading, the Telstra exec also highlighted the need to develop a “catalogue of micro-services” built on a software-defined networking and network functions virtualisation open architecture. Blackall was presenting on Symphony, a joint initiative with Cisco to “co-create the next generation of network services.”

Telstra did not respond to request for further comment.

Petroc Wilton

## **IDC: Australian businesses see IoT as second biggest transformation initiative**

New research from IDC suggests that Australian organisations are starting to embrace the Internet of Things in practical terms, with many launching scalable deployments as

opposed to early proof-of-concept projects.

The third edition of the analyst firm's 'Global IoT Decision Maker Survey' surveyed more than 200 Australian organisations. According to IDC, the IoT emerged as "the second biggest transformation initiative in Australia after cloud transition," with 38% of organisations surveyed having already launched IoT solutions and 46% more looking to deploy in the next calendar year. 60% saw IoT as strategic to their business, as a means to compete more effectively; 72% said that it was very, or extremely important, in driving the strategic agenda of their company in improving productivity or cutting costs.

"Setting strategies, finding budgets, and supporting IoT solutions have contributed to an ongoing tussle between line of business executives and CIOs. In Australia, the line of business and the C-Suite are driving the IOT direction" said IDC APeJ IoT and telecoms associate VP Hugh Ujhazy. "IT departments remain significant contributors but the business outcomes are overwhelming the technology choices."

"This year we see confirmation that vendors who lead with an integrated cloud and analytics solution are the ones who will be considered as critical partners in an organization's IoT investment," added IDC mobility and IoT research manager Sabhari Balasubramanian. "We also note that network and traditional IT hardware vendors are slipping down the charts, as analytics and device/component manufacturers makes strides in customers' minds."

Petroc Wilton

## **Hawaiki signs up US landing partner for sub cable project**

Hawaiki Submarine Cable has named Alaska Communications as its United States landing and operating partner in Oregon. The company has also completed the marine survey of the 4,000km segment between Oregon and Honolulu, Hawaii.

The proposed 14,000km trans-Pacific cable will land in Australia, New Zealand and Hawaii as well as Pacific City, Oregon. Hawaiki North America Gina Bohreer said Oregon was probably the best state on the US west coast to land a submarine cable. "The coast is relatively safe, the state permitting process is efficient and most importantly, our customers like Oregon's diversity and easy access to US networks and datacentres," she said.

As part of the US permitting process for international submarine cables, Hawaiki has recently submitted its application to the Federal Communication Commission. Alaska Communications currently manages two existing submarine cables between Alaska and the Pacific Northwest.

"We have leveraged our expertise in submarine cable operations to provide landing station and network management capabilities to several other trans-Pacific submarine systems. Now, we are pleased to extend our network managed service capabilities to Hawaiki and its Oregon landing station," said Alaska Communications business markets

## **Big data to launch Comms Alliance-style body**

Big data sectoral players are moving to set up a new non-profit industry association called Data Governance Australia. The organisation is currently operating out of the Sydney office of ADMA, the Australian data marketing industry association. ADMA's commercial director Matthew Dean is listed as the contact for the new entity.

The association is planning to launch at a breakfast function in Melbourne next Tuesday. An invitation says former ACCC chair Graeme Samuel, Victorian state small business minister Philip Dalidakis, Coles CRM and Loyalty executive Adam Story, and Tabcorp analyst Kathryn Gulifa will be speaking at the launch.

At this stage, it is unclear who serves on its board. Its website gives little information and a press contact did not respond to a request for comment yesterday.

But its launch invitation suggests that the aim is to create a type of Communications Alliance for the big data industry. "It's time for an organisation that can be trusted to set standards, maintain best practice in data governance and advocate at the highest levels of state and federal government. An organisation that will ensure industry remains competitive and continues to drive innovation," it says.

For example, DGA plans to issue a member seal which can be used in corporate communications to "demonstrate your adherence to data governance standards, and differentiate yourself in the market." It also aims to develop university-standard credentials in big data learning.

Grahame Lynch

## **Apple teams with Deloitte for enterprise mobility push**

Apple is strengthening its push into the enterprise mobile space by partnering with consultancy firm Deloitte. As part of the joint effort, Deloitte will create a first-of-its-kind Apple practice with over 5,000 strategic advisors.

Apple and Deloitte will also collaborate on the development of a new service offering from Deloitte Consulting called EnterpriseNext, designed to help clients take advantage of the iOS ecosystem of hardware, software and services in the workplace.

"We know that iOS is the best mobile platform for business because we've experienced the benefit ourselves with over 100,000 iOS devices in use by Deloitte's workforce, running 75 custom apps," said Deloitte Global CEO Punit Renjen. "Our dedicated Apple practice will give global businesses the expertise and resources they need to empower their mobile workforce."

Jackdaw Research chief analyst Jan Dawson was positive on the deal, noting that Deloitte could provide much deeper expertise around horizontal business functions and for specific vertical industries than Apple could. He also pointed out that the rela-

tionship builds on several previous partnerships Apple has announced with IBM, Cisco, and SAP.

“Each of these partnerships is part of a strategy by Apple to augment its own skill set in the enterprise with help from partners. IBM brought enterprise mobile application development and a big sales team, Cisco brought networking optimisation, SAP brought massive reach through its back end software for business transactions, and now Deloitte brings business process transformation expertise,” Dawson said.

Geoff Long

## **SD-WAN: threat or opportunity for carriers?**

Despite the obvious threat to today’s managed enterprise networking business, software-defined wide area networking is a growth opportunity for carriers, according to a senior executive at the sixth largest US fibre operator Windstream.

While SD-WAN can conceivably replace traditional MPLS services, Windstream VP enterprise product marketing Michael Kozlowski says the potential upside far outweighs the threat.

“SD-WAN is definitely an opportunity for us, and will supersede any loss of the MPLS business. We view it as a continuation of a trend is already happening around hybrid WANs. Customers are starting to offload their traffic to the internet... we are always going to do what is best for the customers. Ultimately, that is where we are going anyway,” he said. “We view SD-WAN as a way to enrich both the public and private networking part of the services in our portfolio.”

Commenting on SD-WAN’s ability to take any internet connection and through the addition of a software package at the end, use it to replace a private WAN connections such as IP VPN, Kozlowski noted that the situation is far from as simple as cannibalisation of the operator’s enterprise networking business.

“We view SD-WAN as less about the network solve, it’s less about the limitation of where access is. The way we view it is, there’s a natural progression that is happening with our customers and the way they are buying services,” he said. “We see certain customers who put a higher emphasis on costs... that is kind of the early adopters – in retail, where they have fixed overhead costs, and they need to compress their expenses to meet the margin requirements for their business. We are going to work with these customers to make sure they have the right solution that meets their needs.

“There are other situations where you will be connecting to a datacentre, you are going to be running high volume, you need a low latency connection... That kind of plays out across different verticals and their risk tolerances as well as security requirements.”

Ultimately, SD-WAN will become a critical component of a carrier’s enterprise networking offering, Kozlowski said.

“The whole hybrid WAN, this is the next step of the hybrid WAN, it enriches existing VPNs, it provides our customers with a managed services, and it really packages it well at the customer point, the remote offices, due to the huge applications that are running there,” he said. “A lot of customers are making the transition. Some of them

have very clear cost imperatives where they are saying, 'I can take the risk in the remote office' and turn up a SD-WAN connections and do the dual broadband. That is kind of the logical fit because there isn't any critical information that is running over that network, so that is worth the risk.

"But that is not the whole story. A lot of the private networking players, they are doing it as part of the transition, they are putting it in for capacity, but they are keeping the private network to run their core business applications."

Tony Chan

## **€141bn annual benefit for Europe from 5G by 2025: EC report**

The introduction of 5G networks and services could bring an annual socio-economic benefit of some €141 billion for the European Union, according to a new report from the European Commission.

In order to reap those benefits, the 28 EU member states will likely have to spend €56 billion by 2020 to deploy 5G, added the report prepared for the EC by InterDigital Europe, Real Wireless, Tech4i2 and Trinity College Dublin's CONNECT programme.

According to the report, 5G will bring annual direct benefits of €113.1 billion by 2025 largely from four vertical industries and four so-called "environments."

5G's application across the automotive, healthcare, transport and utility verticals is expected to bring in annual benefits totalling €62.5 billion. At the same time, 5G is expected to improve four specific environments – smart city, non-urban, smart home and workplace – with annual benefits estimated at €50.6 billion by 2025.

Further, additional "trickle-down" benefits from 5G are expected to bring total annual socio-economic benefits across the EU to €141 billion while creating 2.3 million jobs.

While actual 5G services are still years away, the researchers based their projections on three variables. They assumed users will get ubiquitous coverage of 50Mbps connectivity and that "large scale machine-to-machine and Internet of Things networks" will be prioritised to support the vertical industries.

Lastly, they are expecting the emergence of the "ultra-tactile Internet," which they felt is "a step-change capability that has the potential to unlock futuristic applications and services."

"Many people are excited about 5G technology, but the goal of this study was to investigate what 5G might actually mean for industries, including the mobile industry, as well as various other stakeholders," said InterDigital Europe VP Alan Carlton. "This study should provide a basis for regulators, other public authorities and various stakeholders to plan future policy in areas such as spectrum allocation planning and future market regulation. The key in all this is to attain maximum benefit, both socially and economically."

Tony Chan

## **LTE signalling traffic to grow nearly 10x to 2020: Oracle**

The amount of Diameter signalling traffic on LTE networks, which helps set up sessions in LTE networks, will climb at a compounded annual growth rate of 53% between 2015 and 2020 to exceed over half a billion messages per second, according to latest data from Oracle.

According to Oracle, the amount of Diameter signalling traffic is escalating inside mobile networks as a result of not only the generic growth of LTE traffic, but also new applications from changing consumer behaviour, such as LTE-Broadcast, voice-over-LTE, and connected car services.

“LTE continues to gain momentum, fueled by new ways of transmitting and consuming information – from vine videos to car sensors that detect upcoming road hazards,” said Oracle Communications SVP and GM Doug Suriano. “Communications service providers need to continue to innovate and properly plan for Diameter signalling growth to meet changing industry and consumer demands, and leveraging the cloud is one of the clearest avenues for CSPs to achieve these goals.”

Citing data from industry sources such as the Global Mobile Suppliers Association and Cisco’s visual networking index, Oracle is forecasting a near-10-fold increase in Diameter signalling traffic related to basic policy (CAGR: 58.8%) between 2015 and 2020, from 38.5 million MPS to 389.2 million MPS.

Additionally, strong Diameter signalling traffic growth will come from LTE Broadcast, VoLTE, and connected car services.

“The strongest growth area for Diameter signalling continues to be LTE Broadcast,” Oracle said. “As service providers begin implementing eMBMS technology to handle the enormous demand for video on mobile devices, Diameter signalling supporting LTE Broadcast will grow from 1.7 million MPS to 21 million MPS.

Meanwhile, continual traction for VoLTE services and the emergence of connected cars will also drive growth.

“We are finally seeing VoLTE become reality worldwide. VoLTE will contribute 81 million MPS to global Diameter signalling by 2020 representing a CAGR of 42%,” Oracle said. “This is followed closely by Connected Car, which we believe will contribute 75 million MPS by 2020.”

Between 2015 and 2020, the overall number of Diameter signalling messages will surge from 67.8 million to a whopping 565.6 million per second.

**REPLACING SS7:** One result of Diameter signalling’s growth is diminishing reliance on traditional Signalling System 7 protocol. By 2020, Oracle predicts that Diameter signalling will account for 40% of signalling traffic on the world’s mobile networks.

The report added however that SS7 will be around for a while yet due to the continual popularity of HSPA, which relies on SS7.

“We are still seeing a lot of demand for SS7 signalling in many different markets. We do not believe that SS7 is going to be eliminated by 2020, nor do we believe SS7 will

go away by 2030. There is still a lot of use for SS7 signalling in the world's wireless networks, as well as fixed line," Oracle said. "There will be a co-existence between Diameter and SS7, where the Diameter signalling will be supporting premium networks while SS7 is relegated to non-premium networks."

Tony Chan

## **NEXTDC COMPLETES A\$150M PLACEMENT OFFER**

NEXTDC has announced the successful completion of its 1 for 9.1 pro-rata accelerated non-renounceable entitlement offer, raising some A\$45 million. Together with the institutional component of the offer, which completed earlier in the month and raised A\$56 million, and a A\$50 million raising from an institutional placement at the same time, the datacentre specialist has raised around A\$150 million of additional capital.

## **BLACKBERRY TO OUTSHORE DEVICE PRODUCTION**

BlackBerry CEO John Chen has announced the firm will no longer produce its own phones, but instead outsource the production of their devices to third parties. BlackBerry will continue to market branded devices, Chen said, adding the strategy is "the way for me to ensure the BlackBerry brand is still on a device."

## **ON THIS DAY 10 YEARS AGO: FROM THE COMMSDAY 2006 ARCHIVES**

Australia's mobile operators were failing to overcome stubborn resistance to 4G, with research showing widespread apathy towards handheld multimedia and having to pay more for the privilege... Econet Wireless moved to quash speculation that the carrier's planned 3G network deployment in New Zealand had been aborted... broadband hardware provider NetComm won a significant new distribution agreement with Brightpoint Australia.

## **COMMENT BY GRAHAME LYNCH**

### **Bouquets and brickbats for NBN**

NBN and the Federal Government have been copping some flak—from informed observers who should know better—over their decision not to use the Optus HFC network and instead pursue the developing FTTP technology.

To my mind, Bill Morrow should be congratulated for diligently executing his brief to design a multi-technology network using platforms selected on the basis of both their cost and timeliness. For less than \$2,800 per premises, NBN has elected to use a FTTP platform that will support G.Fast multi-hundred megabit speeds in the not too distant future. To make the leap to FTTH would add a 50%+ capex impost with little to justify it by way of an improved product mix in terms of speed and likely adoption.

It was always apparent that the Optus HFC network wouldn't be as "user friendly" as Telstra's HFC network is for NBN adaptation. Optus nodes support as many as four time more premises as Telstra nodes, for a start. Ultimately the task of remediation proved to be great. NBN made a good call.

This hasn't stopped the snark. Malcolm Turnbull paid \$800m for the Optus network and all he got was egg was on his face, sneer the "experts." He did nothing of the sort. It was Stephen Conroy and Mike Quigley who pushed the deal to pay Optus \$800m to halt its preference for its own HFC network and transfer its customers to the FTTH NBN. Optus was essentially being paid to turn off its HFC service.

I am told that the definitive agreements were considered so important that they warranted a personal visit from the then-head of Treasury to the ACCC executive suite. All Malcolm Turnbull did was amend the agreement to allow use of the HFC infrastructure for no extra charge.

Last year, a leaked document describing some NBN wargaming showed there might be some problems with the Optus network. The critics pounced. Again, to its credit, NBN methodically and exhaustively tested the Optus HFC network, giving it every chance. After all it was bound to an \$800m commitment from a previous management. And as that process found fault with Optus HFC, other trials showed great promise in FTTdp and skinny fibre. Technology evolves. And so with it should, network deployment decisions.

But while I am full of praise for NBN management on this score, it may need to be more thoughtful and circumspect on its utterances about future products and pricing.

CEO Bill Morrow has engaged in a few thought bubbles with the Australian Financial Review which have incensed a few in the ranks of its major RSPs. One was his musing of a 2017 fix for the 121 POI issue, likely to take the form of some type of remote POI transit product.

For those wholesalers who have invested deeply in national POI coverage only to find themselves in potential competition with NBN mission creep, the lack of detail in this thought bubble was most disturbing. NBN might want to move quickly to clear this one up, especially since it is against the direct intent of the ACCC's deliberations.

The other issue was Morrow's CVC thought bubble last weekend where he spoke of "RSP-specific" CVC charges which might provide different weight on access/voice and data depending on the business model of the RSP.

To some, this screams discrimination and counteracts the whole intent of the NBN to be an open access wholesaler whose products and pricing should serve to minimise harm and distortion downstream. Again detail is promised in the future. Fair enough. But as TPG discovered earlier this month, share prices can head and stay down in the absence of certainty. Any fix to the CVC issue that creates winners and losers could prove a greater headache for NBN down the track.