PLUS: Amdocs buys Brite:Bill, Pontis and Vindicia ■ InfoVista acquires Ascom’s TEMS business including test and optimisation ■ Netrounds and Ciena collaborate to assure full network lifecycle ■ Volaris buys Active Broadband Networks OSS unit ■ Xura sale completes for US$643m ■ Tbaytel chooses Redknee to monetise its multiplay ■ Sigos selected by Tele2 in Russia ■ Vestberg quits at Ericsson ■ Network Performance Management and Virtualisation Supplements ■ Read the latest news, opinion, blogs and features now at www.vanillaplus.com

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ANALYST REPORT
Heavy Reading urges CSPs to create greater understanding of customers

TALKING HEADS
Abdelkrim Benamar says it’s time CSPs extracted proper value from their data

VIRTUALISATION
Beyond proofs of concepts and into real-life telco cloud deployments

What are the next most important steps for CSPs' data driven transformations?
See across your network.

3D Analytics

EXFO 3D Analytics solutions make it possible for CSPs to quickly detect and repair problems before customers are impacted. We deliver the industry’s richest analytics for a meaningful, end-to-end view of your infrastructure’s performance from all three dimensions: **network**, **service** and **subscriber**.

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EDITOR’S COLUMN
All these virtualisation efforts are making George Malim physically exhausted.

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InfoVista to buy Ascom TEMS business, Volaris adds to OSS investments with ABN OSS deal

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VIRTUALISATION SUPPLEMENT
Fran Heeran, the vice president and general manager of SDN/NFV at Netcracker, explains how the virtualisation focus is moving from cost savings to revenue generation

NFV STANDARDISATION
Nick Booth asks who are the standards bearers for NFV virtualisation

NETWORK PERFORMANCE SUPPLEMENT
Marcus Friman explains why testing and service assurance must be both active and automated

CLOCKING OFF!
Nick Booth analyses the analysts
The virtual world is exhausting me – physically

This issue neatly brings together three key functional areas – analytics, network performance management and virtualisation. The first two are vital parts of making the third happen but the list of tasks to complete to achieve virtualisation is long.

There’s a danger that the length of this list could cause a kind of paralysis. There’s just so much to do, so where to start is bewildering and then we come back to the idea of communications service providers’ transformation efforts being like trying to eat an elephant with a fork. I don’t think we’re in that situation anymore. Yes, there is an ocean to boil, but we have large vats and industrial burners so we can at least make parts of the ocean hot, rather than attempting to do it all at once.

This breaking down of the virtualisation into manageable, measurable and achievable chunks is partly what analytics and network performance management are enabling. These technologies provide the checks and balances to ensure virtualisation deployments are working as expected, the quality of experience is there and the lessons are being learned – often by machines – to enable tested4 systems to scale up for the mega-volumes of the virtualised era.

The era of the proof of concept is over. There have, probably, been too many but now we’re in the time of the request for proposals. We’re on the launchpad at last, and that can only be a good thing, especially now we’re armed with the technologies that are automated and have intelligence.

We must now let the machines go out and learn this new terrain. Unfortunately that doesn’t mean we’ll be sitting back while the machines take the strain. The virtualised world, though automated and increasingly managed by machines, still has stresses to exert on the physical world.

Enjoy the magazine!

George Malim
InfoVista to buy Ascom’s TEMS business including network testing and optimisation

InfoVista has announced a binding agreement to acquire Ascom’s TEMS business which incorporates the vendor’s network testing, monitoring and optimisation offerings. Deployed by the world’s top 20 mobile network operators, major infrastructure suppliers and network engineering services providers, TEMS solutions monitor wireless networks and assure quality of service while optimising performance. InfoVista’s acquisition of TEMS will strengthen its ability to offer innovative solutions for mobile network performance analytics, indoor network design and optimisation, and active service testing.

InfoVista was recently acquired by private equity investment firm Apax Partners, with the stated aim of establishing InfoVista as a leader in the network performance orchestration software market. The acquisition of TEMS will be a significant step towards that goal. It will see InfoVista nearly double in size, with approximately US$200m in revenue and improve the group’s global presence, particularly in the USA and in Asia.

The acquisition of TEMS will complement InfoVista’s recent acquisitions of Mentum, Aexio and Ipanema, broadening the amount of network data and intelligence that can be used to improve network, applications and user experience.

“TEMS is a well-established and well-respected business that already helps most of the world’s largest mobile network operators to manage and optimise the capacity and quality of their wireless networks,” said Philippe Ozanian, the chief executive of InfoVista. “By bringing the TEMS portfolio into InfoVista, we are creating the most scalable, powerful and flexible platform for network performance orchestration to CSPs, mobile operators and enterprises.”

Volaris acquires Active Broadband Network’s OSS business

Volaris Group has acquired Boston-based Active Broadband Networks (ABN) Operations Support Systems (OSS) solutions business. The acquisition is Volaris’ third acquisition in the communications vertical market. ABN develops OSS solutions that help communication service providers (CSPs) analyse subscriber-based broadband habits and dynamically bill them based on their usage. ABN has customers in North America, Latin America, the Caribbean and Europe.

The deal sees the ABN business line become a business unit of Incognito Software Systems which is part of the Volaris Group and is headquartered in Vancouver, Canada.

“We are eager to grow our solution suite and customer base through acquisition,” said Stephane Bourque, the chief executive of Incognito. “ABN’s products provide us with the opportunity to offer innovative new solutions to help our customers analyse and monetise the very high demand for data services from their broadband subscribers.”

Philippe Ozanian: Adding TEMS to InfoVista creates a more scalable platform for network performance orchestration

Stephane Bourque: Eager to grow through acquisition
Netrounds and Ciena collaborate to assure full lifecycle for network operators

Netrounds has announced that it has joined Ciena’s Blue Orbit SDN and NFV Ecosystem. Part of Ciena’s Blue Planet division, the ecosystem is comprised of industry partners who are focused on delivering real-world, multi-vendor solutions for next-generation networks.

Netrounds’ active test and assurance platform will be integrated with Ciena’s Blue Planet orchestration solution to allow network operators and CSPs to deploy a programmable assurance solution that can be easily integrated in automation loops and provide multi-layer support for business critical network services.

The demand for Blue Planet integration is driven by operators ready to take advantage of market opportunities with agile service creation and deliver assured services to their subscribers.

“As the degree of virtualisation increases within our customers’ networks, the importance of deploying a software-based, automated test and assurance solution that can dynamically assure the full service lifecycle becomes imperative,” said Mats Nordlund, the CEO and co-founder of Netrounds. “This proven integration with Ciena’s Blue Planet allows CSPs to utilise Netrounds’ complete API to automate end-to-end assurance in their networks, decreasing operational and capital expenditures by reducing the need for support and field visits, as well as reducing the need for proprietary, single-service test equipment.”

Acquisition of Xura completes for US$643m

Xura, a provider of digital communications services, has confirmed the completion of its acquisition by affiliates of Siris Capital Group in a transaction reflecting an equity value of approximately US$643 million.

The transaction, which was initially announced on 23 May 2016, was approved by a majority of Xura’s shareholders on 16 August 2016. In connection with the closing of the transaction, the company, which will continue to operate as Xura will be wholly owned by affiliates of Siris Capital. Siris’ investment underpins Xura’s mission to accelerate the development of digital communications solutions for CSPs that will transform future engagement experiences across all networks, channels and devices.

At the heart of this acquisition is a commitment to continue building a company positioned for longevity and growth, which is focused on customers, product development and fostering technology innovation across messaging, data, network security and virtualisation services.

Commenting on the transaction closure, Hubert de Pesquidou, Siris Capital executive partner and Xura’s new executive chairman, said: “With its broad product portfolio and industry-renowned technology, which has underpinned mobile messaging for many years, Xura is well-positioned to continue to bring value to the 300+ customers it supports and the broader digital ecosystem. We look forward to working with the management team and employees to further advance the company’s value proposition, investing and innovating to help its customers succeed.”

Philippe Tartavull, the CEO of Xura, added: “By partnering with Siris Capital and its experienced leadership team, we will now be able to accelerate our strategy to bring best-in-class messaging, voicemail, security, and monetisation solutions to our customers.”

NEWS IN BRIEF

Huawei renews MoU for OSSii with Ericsson and Nokia

Huawei has announced the signing of a prolongation of the Memorandum of Understanding (MoU) for the Operations Support System Interoperability Initiative (OSSii) along with other major telecoms network equipment players Ericsson and Nokia Solutions and Networks.

The new MoU extends the duration and scope of OSSii to interfaces from IP multimedia subsystem (IMS) domain and MANO. This milestone promotes integration of northbound interfaces from the core network and virtualised networks and facilitates multi-vendor interoperability for operations support system (OSS). The incorporation will further reduce time and costs required for multi-vendor interoperability for new services such as VoLTE.

Yan Ye, the general manager of the SingleOSS field of Huawei Cloud Core Network, said: “As LTE and VoLTE rapidly develop, the integration period and costs for IMS interoperability become a key focus for operators. As a major player in the OSS field, we are committed to reducing customers’ operational costs, simplifying network management and shortening the time to market for new services introduction. OSSii will effectively unleash innovations in the network management field, improve integration efficiency and reduce customer costs. We are happy to renew our commitment to this initiative.”

UXP Systems secures US$8m to continue user lifecycle management innovation

UXP Systems has announced the closing of its Series B round of financing led by cable and telecoms industry leaders John Malone and John Risley. This financing culminates a fiscal year that has seen the addition of significant new customers including Vodafone and Cable & Wireless and year-on-year sales growth of more than 180%.

“We are extremely pleased with the strong interest in this financing round,” said Gemini Waghmare, the chief executive and founder of UXP Systems. “This investment will support our global expansion and continued innovation of our User Lifecycle Management platform.”

UXP Systems’ User Lifecycle Management platform helps CSPs transform by managing individual user relationships and delivering user control, role management, delegation and personalisation. With User Lifecycle Management, CSPs can innovate on top of existing systems to bring new services to market rapidly while fully enabling digital transformation.

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Viavi introduces InterferenceAdvisor for automated interference hunting

Viavi Solutions has launched InterferenceAdvisor, an automated interference hunting solution which can dramatically reduce the amount of time it takes to locate mobile network interference sources. InterferenceAdvisor is designed to help mobile network operators and device manufacturers identify interference quickly and easily, without the need for manual tests or specialized equipment.

The InterferenceAdvisor solution includes a lightweight, portable Omni antenna; an automated interference area indication and navigation guide; and voice prompts to direct the cell technician to the suspected interference location. The tool also includes built-in accessories for detailed interference signal monitoring – all managed from a Wi-Fi enabled Android tablet.

“InterferenceAdvisor is a game-changer for mobile network operators and device manufacturers,” said Richard Stiennon, chief strategy officer of Viavi Solutions. “Success hinges on delivering maximum value for customers and improving the customer care experience across every channel. This new tool helps mobile network operators and device manufacturers understand the expensive implications of improperly diagnosing and repairing mobile devices – and ultimately, the importance of implementing the right mobile diagnostics solution to reduce NTF returns.”

InterferenceAdvisor is an automated interference location solution with directions and navigation claims low total cost of ownership (TCO). It features a lightweight, portable Omni antenna; an automated interference area indication and navigation guide; voice prompts to direct the cell technician to the suspected interference location; full spectrum control; and display for detailed interference signal monitoring – all managed from a Wi-Fi enabled Android tablet. It also includes built-in accessories to minimise the cabling requirement.

“InterferenceAdvisor is the perfect tool to help mobile network operators and device manufacturers with a better understanding of the financial repercussions of improperly diagnosing and repairing mobile devices. In addition, it should help mobile service providers create more streamlined and efficient device diagnostics processes. Its creation was inspired by the considerable value and savings being seen from the deployment of the SmartChk solution for some of the world’s most notable mobile network operators.”

Stiennon added: “The more commonplace mobile adoption becomes, the more necessary it is to make the post-sale customer care experience as convenient, efficient and hassle-free as possible. If our SmartChk mobile diagnostics solutions can help mobile network operators and device manufacturers simultaneously correct those issues, reduce the likelihood of unwarranted device returns and minimise customer churn, then we’re doing exactly what we set out to do.”

Blancco launches no trouble found savings calculator

No Trouble Found (NTF) returns are a persistent and expensive problem for the telecoms industry, costing $4.5 billion a year. At the root of the problem is the improper diagnosis and repair of mobile devices when they are brought into retail stores of mobile network operators and device manufacturers.

To remedy this problem, Blancco Technology Group has released its NTF Savings Calculator, a tool that mobile network operators and device manufacturers can use to assess the high costs that are needlessly incurred from making inaccurate diagnoses of device performance issues and, as a result, unnecessarily processing NTF returns each year.

“No Trouble Found (NTF) returns are a financial burden for the telecoms industry, with mobile device returns costing billions of dollars each year. Our NTF savings calculator helps mobile network operators and device manufacturers understand the expenses of improper diagnosis and repair, and identify areas for improvement,” said Michael Szabados, chief operating officer and president of the enterprise business unit at Blancco. “The calculator is a valuable tool to help mobile network operators and device manufacturers mitigate this problem and improve customer experience.”

The tool is designed to provide mobile network operators and device manufacturers with a better understanding of the financial repercussions of improperly diagnosing and repairing mobile devices. In addition, it should help mobile service providers create more streamlined and efficient device diagnostics processes. Its creation was inspired by the considerable value and savings being seen from the deployment of the SmartChk solution for some of the world’s most notable mobile network operators.

The tool asks mobile network operators and device manufacturers to input the following items in order to calculate the projected NTF savings on an annual basis if the SmartChk diagnostics solution is used to diagnose and repair mobile devices.

1. The total number of devices returned each year.
2. The cost of repairing each device.
3. The cost of doing a manual diagnosis of each device.
4. The number of devices that cannot be properly diagnosed.

The calculator helps mobile network operators and device manufacturers implement the right mobile diagnostics tools and ultimately, the importance of diagnosing and repairing mobile devices – and the customer experience unless operators move to mitigate interference aggressively.”

InterferenceAdvisor allows one engineer to quickly and easily locate interference sources, even in an urban environment. The limited resource requirement, reduced time, and minimal training all contribute to a low TCO.
**MOBILE ANALYTICS**

*Network - Service - Customer*

- Network performance optimization
- Impact of new apps and devices
- Dormant SIM identification
- Customer base segmentation
- Churn detection

**Astellia** is a leading provider of network and subscriber intelligence enabling mobile operators to drive service quality, maximize operational efficiency, reduce churn and develop revenues. Its vendor-independent real-time monitoring and troubleshooting solution optimizes networks end-to-end, from radio to core. Astellia’s unique blend of products and services provides automated optimization, actionable geo-located insights and big-data analytics to Network Operations, Service Operation Center, Customer Care and Marketing teams.

Astellia has close partnerships with more than 120 telecom operators. Headquartered in France, Astellia is based in Canada, India, Lebanon, Mexico, Morocco, Russia, South Africa, Spain and the USA.

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Redknee selected to monetise Tbaytel’s multiplay services and support its digital transformation

Redknee has signed a new multi-million dollar digital transformation contract with Tbaytel, the largest independently owned telecommunications service provider in Canada.

The Redknee deployment will consolidate Tbaytel’s existing multi-play service offerings onto a single monetisation platform, including fixed line, internet, TV, mobile and security services; improving efficiencies and laying the foundation for Tbaytel’s transformation into a digital service provider.

Redknee’s product catalogue and order management system – acquired from Orga Systems – will allow users to select a combination of services and enable the omni-channel customer experience. This new customer win adds to Redknee’s growing business in North America, while the company says that it highlights Redknee’s ability to support complex multi-play business models and perform large-scale IT transformations.

Redknee will utilise its project management methodology to modernise Tbaytel’s business support systems so they can more easily create new service offerings and revenue streams, speeding up the launch of new digital and multi-play converged services and real-time marketing offers. It will also allow Tbaytel to create a more consistent, omni-channel experience for their customers.

Dan Topatigh, Tbaytel’s president and CEO, said: “We are thrilled to be embarking on this project with Redknee, which I have no doubt will be truly transformative for the way we conduct business throughout every level of the Tbaytel organisation. The solution will provide Tbaytel with the tools our employees need to better serve our entire customer base while at the same time helping to provide an exceptional experience at each and every touch point we have with our customers.”

Lucas Skoczkowski, the chief executive of Redknee, added: “Redknee is proud to support the ambitions of such an innovative Canadian company. This is an exciting opportunity that will have a big impact on the entire market, as Tbaytel will be able to deliver the latest in digital services while creating a more seamless user experience for its customers.”

Tele2 chooses Sigos for test environment in Russia

Tele2, an alternative mobile operator in Russia, has integrated SITE – the SIGOS Integrated Test Environment, for assessing the quality of connections. The system monitors voice, data and value-added services (VAS) on 2G, 3G and LTE networks. The SITE architecture includes central server databases, SIM multiplexers and test probes supporting 2G, 3G and LTE technologies. Test units located in regions of Tele2 operations provide consistent and reliable testing of the company’s services, Sigos claims.

Each day the SITE system makes more than 50,000 tests and Tele2 infotainment and base services account for around 50% of all measurements. The system is assessing the correct function and accessibility of popular services such as Gudok and Geoposk 24/7, for example. In each region, the system is monitoring the voice quality, SMS/MMS delivery, performance of USSD and the accessibility of the company’s online services. If a certain test case shows a failing or degrading service, SITE will automatically report the issue to the support desk.

In addition, the test system is used to check accessibility of domain names and website references restricted by Roskomnadzor (the Russian Federal Service for Supervision of Communications, Information Technology and Mass Media). Such data access tests reflect 30% of all measurements carried out by SITE. When the system detects any errors or malfunction, employees in charge rectify routing mistakes and block the content forbidden under Russian law.

The latest SITE installation allows Tele2 to manage the labor needed to test new tariffs and services efficiently. Thanks to SITE, Sigos claims that Tele2 now has access to accurate data collected 24/7 which is equivalent to around 5,000 hours of work per week.

Umniah Jordan ensures improved mobile data services with Astellia

Astellia, a provider of network and subscriber intelligence for mobile operators, has announced that Jordanian CSP is to implement Astellia’s 3G service assurance solution. Umniah acknowledges that delivering excellent quality of service is vital to its success, especially in a market with 146% mobile penetration and 33% prepaid subscriptions. By implementing Astellia’s 3G monitoring solution, Umniah will be able to deliver a consistent customer experience, hereby securing long-term customer satisfaction.

“...we pride ourselves in upholding our promise to provide high quality services at competitive prices...” commented Sadi Idibies, engineering director at Umniah.

QBoCel goes live with FTS MVNO system

QBoCel, an MVNO and MVNE operating on Teléfonica Mexico’s network, has successfully implemented a turnkey MVNO and MVNE solution from FTS. Using the FTS MVNO platform, QBoCel can now independently configure and deploy personalised, application-based plans. This enables the rapid delivery of new services to market, supporting QBoCel’s fast growth and enhancing its customers’ experience.

At the heart of FTS’ MVNO solution is Leap Billing, which provides real-time, convergent charging, billing, policy control, and customer and partner management. FTS’ turnkey implementation at QBoCel also includes core network, messaging, voicemail, IVR and other network elements from multiple vendors.

Looking to the future, QBoCel plans to introduce personalised services to different sectors of the Mexican market as well as to launch and support new MVNOs by expanding its MVNE back-office and network operations.
Amdocs spends US$260m buying Brite:Bill, Pontis and Vindicia

Amdocs has closed the acquisition of three privately owned companies – Vindicia, Brite:Bill and Pontis – in line with the company’s digital strategy. The three similarly priced companies were acquired for a combined amount of approximately US$260 million in cash, net, and may be subject to certain adjustments including small earn-outs. Together, these acquisitions are expected to contribute 1.5% to 2.0% to total company revenue for the full fiscal year 2017.

“Communication and media service providers, including those with over-the-top offerings, are transforming to capture the world of on-demand services and digital immediacy. When combined with business-driven analytics behind the scenes, this ensures a simplified, intuitive and engaging customer experience,” said Eli Gelman, the Amdocs Management Limited president and CEO. “These acquisitions, alongside Amdocs’ existing platforms which include multi-channel, digital care and commerce, customer management and big data analytics solutions, position Amdocs as the market leader to help communication and media providers on their journey. I am excited by these companies joining Amdocs, as their cloud-based technologies will augment Amdocs’ rich offering and shorten our time to market,” added Gelman.

Brite:Bill’s design-led, user-experience experts turn the customer bill into a unique, customer-centric engagement channel. Brite:Bill’s technology and services transform invoices into a personalised, digital, interactive billing experience in the channel of the customer’s choice. The invoice’s customised and engaging design reduces customer confusion around the bill, thereby cutting service provider costs around inbound inquiries, and also provides an engagement opportunity for service providers to promote new services. The Dublin-based company counts several large North American CSPs, some of which utilise Amdocs BSS, among its customer base.

Pontis is a provider of contextual digital engagement solutions. Pontis’s real-time decisioning and learning technology enables service providers to offer their customers personalised contextual interactions relevant to where that individual customer is in their journey with the service provider. With Pontis, Amdocs is uniquely positioned to help service providers determine the next best action for customer engagement and then to offer the customer, across outbound and inbound channels, the most appropriate service at the right time and the right touch point.

Vindicia is a market-leading provider of software-as-a-service (SaaS) subscription management and payment solutions. Vindicia makes it easy, flexible and frictionless for digital enterprises to onboard customers and process payments for digital content, over-the-top (OTT) entertainment, online subscriptions and on-demand services. Utilising cloud-based operations for greater business agility, Vindicia’s ultra-fast time to market allows customers to easily experiment with various service offerings and pricing schemes to quickly introduce offers and attract new users. In addition, Vindicia’s advanced retention capabilities reduce user churn and increase top-line revenue for online service providers. 

VanillaPlus Hot List: September / October 2016
The Hot List below shows the companies informing us of recent contract wins or product deployments. If your contract is not listed here email the details to us now marked “Hot List” <editorial@vanillaplus.com>
Ericsson’s Board of Directors has announced that Hans Vestberg has stepped down as president and CEO and member of the Board of Directors of the company with immediate effect. Jan Frykhammar, the executive vice president and CFO, will assume the CEO position until a new CEO is appointed.

Chairman of the Board Leif Johansson said: “Hans Vestberg has led the company for seven years through significant industry and company transformation. Hans has been instrumental in building strong relationships with key customers around the world and his leadership and energy have been an inspiration to employees and leaders across Ericsson. However, in the current environment and as the company accelerates its strategy execution, the Board of Directors has decided that the time is right for a new leader to drive the next phase in Ericsson’s development.”

Vestberg said: “I have had 28 fantastic years at Ericsson, the last seven as CEO. As the industry enters a next phase, driven by 5G, IoT and cloud, it is time for a new CEO to step in and continue the work to ensure Ericsson’s industry leadership.”

In conjunction to presenting its earnings report for the second quarter on July 19, the company presented a strong action plan to significantly reduce cost and adapt to the current market environment. Vestberg will be available to support the Board and management during his term of notice of six months.

Hans Vestberg: After 28 years at Ericsson and seven as CEO, it’s time for a new CEO

Openet has announced the appointment of Shira Levine as product management director for policy. Regarded as a leading analyst on policy management Levine will oversee the development, direction and business performance of Openet’s Policy Manager product.

Prior to joining Openet, Levine was directing analyst at IHS (formerly Infonetics), responsible for its service enablement and subscriber intelligence research service. As a consultant to service providers, vendors and the investment community, she helped clients identify new market opportunities and advised on positioning, product development, business plans and M&A activity.

“Shira has the extensive telecoms and BSS/OSS knowledge needed to oversee our policy portfolio as the market transforms to digital,” said Niall Norton, the chief executive of Openet. “She is a widely recognised as a leading expert on policy management, with the proven ability to build profitable programmes and grow businesses globally. Shira will help us identify and drive new opportunities within the policy market.”

Levine’s previous experience includes senior analyst roles at both IDC and Stratecast, where she led research for various segments of the market including telecoms analytics, service delivery platforms, mediation and revenue assurance. Before becoming an analyst, Levine was executive editor of America’s Network magazine covering OSS/BSS, network and service management, provisioning, customer care and billing.

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Openet Levine joins Openet policy team

Jeff White has been appointed group vice president of Global Sales for Syniverse’s Service Provider Group business unit.

“Syniverse is pleased to serve more than 1,000 mobile service provider customers, including nearly all of the world’s mobile network operators. As the mobile ecosystem continues its rapid evolution, these customers expect us to provide solutions that address their challenges and propel their success,” said Stephen Gray, the president and chief executive of Syniverse. “Jeff’s addition and customer-first mindset ensure we’re equipped with the leadership to deliver on those expectations while accelerating our business. With his extensive background in mobile, including nearly two decades at Cisco, Jeff is an exceptional fit to lead our co-ordinated sales efforts around the globe.”

White brings to Syniverse more than 25 years of experience in telecom, including 17 years with Cisco. While with Cisco, he served in a variety of leadership roles, including president of India, senior vice president for service provider for Asia Pacific and global account responsibility for AT&T. In addition, White served in senior leadership positions with Extreme Networks, Ameritech and Anixter.

“From enabling the transition to LTE and beyond to innovative approaches within policy, risk management and more, this is an exciting time to be joining Syniverse,” White said. “I’m looking forward to what’s ahead and to helping our customers deliver the innovations their end users demand.”

White appointed to lead Syniverse service provider sales
We all know now that, to measure customer satisfaction (CSat), writes Mark Mortensen, a practice head at Analysis Mason, one has to ask the customers' opinions. Various measures of CSat are in use in CSPs, usually measuring on a zero to ten-point scale. The new measure of Net Promoter Score, a simplified method, is gaining in popularity.

But these are after-the-fact metrics and are difficult to manage against. CSPs, therefore, are moving to new measures that try to use the operational Key Performance Indicators (KPIs) that they use to manage their business every day. These ‘customer experience index’ (CEI) solutions, algorithms that incorporate the KPIs, enable CSPs to manage the experience of each customer, as well as to manage their overall customer satisfaction scores.

To read the rest of Mark’s article visit www.vanillaplus.com.

Search Keyword: Mortensen

Executive Snapshot

Mats Nordlund braves the interviewees’ chair for our latest executive snapshot, sharing the challenges of his first job selling Christmas cards on freezing doorsteps and the delights of the computing power of a Commodore VIC-20 at the age of ten.

A narrow miss with tennis player John McEnroe queue jumping at flight check-in, reminded him of regretting giving up tennis. Something he hopes to take up again in the future.

To read the interview in full visit www.vanillaplus.com.

Search Keyword: Nordlund

Readying OSS/BSS for the DSP world

As the world goes digital, the evolution to digital service provider (DSP) creates new business challenges that most traditional communication service providers (CSPs) have yet had to face, writes Paul Hughes, the director of strategy at Netcracker Technology.

The new ecosystem of OTT providers creates a new playing field of partner services and revenue sharing, with seamless delivery and management expected by both businesses and consumers. DSP transformations should focus on creating the right digital user experience (on-demand, online, real-time) that are now becoming a core for CSPs and enterprises around the world.

A successful DSP strategy for communications providers enables newfound agility to address market changes, greater proactivity around customer needs, and ensuring a rich customer experience across increasingly complex product and service lines.

Read Paul’s complete blog at www.vanillaplus.com.

Search Keyword: Paul Hughes

Webinar: The role of service assurance in hybrid and NFV networks

Over the past years, we have witnessed how the service assurance (SA) practices of CSPs have started to transform from network oriented to service and eventually customer-oriented operations. One of the newest key elements in this transformation is the introduction of end-to-end analytics, including geo-location, radio network, on-device, signaling, and user data and transmission analytics.

In this webinar, EXFO presents its vision on how Service Assurance will evolve from a physical to a hybrid and eventually to a fully virtual network. EXFO’s vision is complemented with real-life use cases and proofs of concept, plus analyst input.

To listen to the webinar and the Q&A that followed, visit www.vanillaplus.com.

Search Keyword: Webinar
Upcoming events

**Total Telecom Congress 2016**
4-5 October, 2016
London, UK
Organiser: Terrapinn
www.totaltelecom.com

**NGMN Industry Conference 2016**
12-13 October, 2016
Frankfurt, Germany
Organiser: NGMN
www.ngmn.org

**Broadband World Forum 2016**
18-20 October, 2016
London, UK
Organiser: Informa
www.tmtknect365.com/bbwf

**Self Organising Networks Conference**
18-19 October, 2016
London, UK
Organiser: Informa
www.tmtknect365.com/self-organising-networks

**Telco Data Analytics Europe**
25-26 October, 2016
Madrid, Spain
Organiser: Informa
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Astellia’s Abdelkrim Benamar says communications service providers (CSPs) are refining their operations so they can extract proper value from their networks, services and subscribers.

Our specially-commissioned analyst report, authored by Sandra O’Boyle, a senior analyst at Heavy Reading.

Vic Bozzo says big data analysis is easy to talk about but hard to bring to life with measurable impact.

Amit Sanyal advocates managing customer value across the entire lifecycle.

Nick Booth asks if the big bang big data plan was simply too much information for CSPs to take.

Anssi Tauriainen on 3D analytics and the benefits of passive monitoring plus active verifier data.

Dr Rado Kotorov shares seven requirements for successful mobile data analytics.

Chris Menier on the importance of automation and machine learning for customer-aware operations.
Abdelkrim Benamar is chief executive of Astellia, the provider of monitoring, troubleshooting, network optimisation and, more recently, analytics solutions. A long term telecoms industry executive, Benamar has been putting a transformation plan in place at the company to position it for virtualisation, 5G and the business intelligence capabilities enabled by data analytics. Here, he tells VanillaPlus that Astellia’s mission is to help its communications service provider (CSP) customers to refine their operations and processes so they can extract the proper value from their networks, services and subscribers.

vanillaPlus: You’ve recently moved up from chief operating officer to chief executive of Astellia, what is your vision for the future of the company?

Abdelkrim Benamar: I joined Astellia about 17 months ago to help initially drive improvement of the company’s operational and commercial performance. I came up with a transformation plan that has now been adopted. Essentially I was told that my ideas were good and I’ve been given the opportunity to implement them as chief executive.

I believe Astellia has unique assets, talents and the right attitude and culture to be successful in the marketplace. When I look at the company, I see that we have the means to deliver unique intelligence to help CSPs, specifically mobile operators, to properly manage the value generated throughout their networks, services and subscribers. That, in essence, is my vision for Astellia in the future.

There are three main domains within the company that enable this. One is our historical activity around monitoring and troubleshooting. This was the foundation of Astellia and it has grown over time by adding intelligence, monitoring new network technologies and expanding our customer base. Another domain is network optimisation. A key component of this capability came with our acquisition of Ingenia Telecom in Spain two years ago which brought in unique expertise in radio network optimisation. We now have optimisation capability from end to end, from the radio to the core. The third domain is analytics. Here, we’re enabling CSPs to monetise the diversity of their data with algorithms to develop very powerful analytics.

Our plan is to continue with all three complementary activities and support these with our professional services to make the best of our solutions. All of these capabilities come together to help our customers by optimising their investments to make sure they have the right network quality and capacity at the right places. Technologies that enhance quality of service and quality of experience have become vital because they reduce churn and develop new revenues. It’s the old pitch of save money, make money.

Beyond that, there’s a massive trend towards having a Service Operations Centre (SOC) in addition to a Network Operations Centre (NOC). It is a centralised structure which allows divisions such as Marketing, Customer Care and Network Operations to work more closely together and get a holistic picture of the customer experience in order to drive it efficiently. We’re well positioned to help with that transition. Furthermore, Astellia’s analytics can be used by these different teams to drive service quality, reduce churn and develop new revenues.

VP: Please can you tell us more about how you are developing your analytics capability?

AB: When it comes to Astellia’s solutions the first thing to say is that we’ve built them on a future-proof big data architecture. We provide analytics based on various sources of information: Astellia probes, other vendor probes, call traces and systems such as billing and CRM. Another important benefit is that we can monitor
100% of the traffic so we have a real-time, holistic view of the network, service, handset and customer. We have such breadth and depth of data available to us on top of which we can apply advanced algorithms for geolocation. Our predictive analytics capability opens up use cases for churn prediction, congestion prediction and assists capacity planning.

Last but not least, we’re preparing the ground for the future by getting ready to perform analytics in network functions virtualisation (NFV) and software defined networks (SDN) environments.

VP: Astellia has a substantial CSP customer base for its assurance systems and has increasingly been focusing on providing analytics. How important is this analytics capability for Astellia and your customers?

AB: It’s extremely important because there are so many opportunities. For instance, with mobile video consumption exploding it is crucial for CSPs to understand video QoE. Astellia provides analytics which can, for instance, detect video freeze and geolocate the area where this happened. We can then perform deep root cause analysis and prioritise areas for optimisation. There are also some promising activities in IoT (Internet of Things), especially with geolocation use cases, which we are engaged in.

Another benefit for our customers is that we can use analytics to improve fraud prevention capabilities. For example, we can establish whether the owner is present when their credit card is used by determining whether their mobile phone is in the same location. That’s just one example, there are many others.
Added to that we have deep and recognised expertise in generating insights from telecoms data. Our team of telecoms data scientists have profound business and telecoms experience and expertise. This allows them to create an extensive big data use case factory.

VP: Do you have any examples of how Astellia has helped its customers with analytics solutions?

AB: I can think of three examples that represent our capabilities. One is with Orange in Spain and demonstrates how using intelligence and analytics can drive optimisation. When the CSP acquired Euskatel, a mobile operator in the Basque region of Spain, it had to migrate the customer base to Orange Spain. We supported Orange Spain with analytics insights into where customers were located and identified the problems such as bottlenecks in network capacity. This meant Orange Spain was able to improve coverage in weak areas and make the migrated customers feel they were immediately receiving a better experience. The proof of the success is that net promoter score (NPS) increased by 9%.

Another great example is our project with Zain Bahrain. The CSP has 90% prepaid subscribers and evolves in an extremely competitive market with more than 180% mobile penetration so we helped Zain improve customer segmentation so it could build better targeted offers. Through the analysis of customers’ current application usage by looking into the number of sessions, session duration, bandwidth usage, geolocation and others, Astellia could distinguish different types of behaviour. For instance, subscribers using a lot of Facebook and other social media, others using their phone mainly to watch and share videos and so on. This allowed Zain to revise its current, socio-economic-based segmentation and offer new data plans after having implemented a new, usage-based segmentation. The results speak for themselves; offer prices increased by 30%, sales increased by 17%, 26% of current broadband subscribers adopted the new offer and ARPU of these subscribers increased by 34%.

A final example is related to the creation of a service operations centre at Smart, a CSP in the Philippines. It is the country’s leading mobile operator and has 67 million customers, 97% of which are prepaid. The challenge was to improve quality of experience and have an end-to-end visibility in service quality of its major services like voice, SMS and data. Smart required this holistic view per region, sub-region and cluster and per network technology, either 2G, 3G or 4G. At the same time, the CSP wanted to identify high value customers impacted by service quality degradation. We designed a service quality management platform to monitor the end-to-end service quality from a user point-of-view with service-oriented real-time dashboards. That solution is now being used 24/7 by more than 50 employees at Smart. It enables proactive network management and early warning of service quality degradation.

VP: How do you see Astellia developing its business over the next 24 months? Which areas do you see as the next logical targets for Astellia?

AB: We have high ambitions across the four pillars of our business – the three domains plus the services part. What we want to do is strengthen and consolidate our customer base, especially in monitoring and troubleshooting. We also want to support our existing customers as technology moves to SDN/NFV and 5G.

Our ambition is to significantly develop our ability to serve larger deals so we can be out-tasked to optimise a complete network. We want to grow our business by double digits in analytics.

To achieve this, our main focus geographically will be to strengthen our base in EMEA, to grow our base in Central and Latin America and to win more customers in North America. We will focus on analytics and network optimisation using the developments in virtualisation and 5G as a springboard. We’re already investing in NFV and SDN by virtualising our applications and introducing virtual probes for monitoring NFV networks.

Astellia has very appealing assets and I believe the company is a jewel. I didn’t come here for a title and I’m hopeful the transformation we’re putting in place will mean that in two years Astellia will be even more successful.
Communications service providers (CSPs) have an advantage in many ways by having lots of rich customer data from network usage, devices, applications, customer behaviour to location data, CRM and billing data – and if joined up and analysed, can provide end-to-end insight into operations, services and customers. The challenge is that there is such a thing as having too much data, it’s overwhelming, it’s complex and hard to know where to begin.

Service providers are wisely taking a use case approach to analytics in order to solve key business problems, particularly around customer experience management. This can range from understanding churn predictors to gaining insight into a customer’s actual experience with services in real-time and taking proactive action if a service is degraded – or even better predicting where service could be impacted and fixing the problem before a customer even notices.

### Defining analytics

Analytics is data mining, algorithms, identifying anomalies, trends, predictions, associating semantics and making actionable conclusions from the data. Big data analytics involves analysing huge volumes of structured data – that is, data from a database, and unstructured data from social media usage, mobile application, location data, network quality data, payment data, device data and
channel interactions, to uncover patterns and trends, but still requires intelligent algorithms and logic to uncover insight.

Large service providers are actively recruiting data scientists, though they are still not so easy to find, with universities and colleges adding new big data analytics courses to meet growing demand from the business sector. Service providers are also buying in vendor solutions with proven algorithms and expertise that support real use cases and business results. In addition, vendors are seeing demand for professional services to customise use cases and algorithms and provide data science resources to solve ad hoc problems.

Big data analytics, in the case of CSPs, bridges four key areas including the network data from probes – the mediation layer, combined with data from IT systems such as CRM, billing, customer care and channel data; the big data analytics platform for data storage, including streaming engine for real-time analytics; the vendors that bring value in terms of adding logic/algorithms to support key use cases or applications and recommendations; and visualisation, reporting and business intelligence tools.

A Hadoop-based open source big data platform is quickly becoming the de facto standard for CSP analytics platforms. Many service providers are also pushing vendors of OSS, BSS and network probes to make it far easier to ingest the data from their systems in support of real-time data analytics modules, as well as SQL access to the data to support ad-hoc queries. Ideally, service providers want to get to the point where they are analysing data in real-time, understand the customer context and can for example send customers a personalised offer at the right time, such as when a customer is trying to watch video or running low on mobile data, and can immediately offer a top-up or a better plan if they see a customer watching lots of videos on mobile.

![Figure 1: How big data analytics feeds CSP management dashboards](image-url)
Market drivers

There are a number of business drivers behind why service providers are keen on using analytics: revenue is stabilising, Average Revenue Per User (ARPU) is not increasing at past levels, competition is increasing and customers are becoming more demanding, more savvy about the latest apps and harder for CSPs to engage.

- **Cost reduction and efficiency**
  The prices that consumers are willing to pay for voice, mobile data, IPTV and broadband stays around the same or even goes down every year, while the cost of network infrastructure keeps climbing. CSPs are under pressure to reduce operating costs in order to maintain profits. Analytics can be applied across a service provider’s entire business to run it more efficiently. For example by reducing calls to customer care, increasing quote to cash in enterprise sales cycles, increasing cross-sell and upsell potential, reducing customer churn or improving efficiency of marketing budget.

- **Revenue growth**
  Digital transformation, digital services, cloud services, digital ecosystems and partners – it’s about innovating, changing legacy business processes and figuring out how CSPs can generate revenue with new products and services. There is competitive pressure to deliver real-time digital services with a better customer experience and, in general, reduce the time it takes to launch new services or co-develop services with new partners. Analytics play a key role in terms of understanding opportunities, what new services customers may want, segmenting customers for personalised real-time marketing, and in general customer experience management and joining up the channel experience.

- **Network and IT transformation**
  The transformation of IT systems, such as operational and billing systems (OSS and BSS), as well as migrating networks to software and open standards with network functions virtualisation (NFV) and software defined networking (SDN) are also related to overall business goals to reduce costs and grow revenue. The new IT and network infrastructure have to support business goals and be:
    - Scalable and application-aware, IT and networks can’t live in silos
    - Less expensive to maintain using standard servers and containers
    - Faster and easier to launch new services
    - More open in that network and IT systems talk to each other so data can be shared with big data and analytics platforms
    - Easier to run with automation and analytics.

Key trends and use cases

Broadly speaking, analytics use cases break down into two areas – operational (network planning and customer care) and revenue generating (marketing and commercial teams) – but the lines are starting to blur as analytics is becoming a more strategic, horizontal function in the larger CSPs, and frequently has a CEO-level mandate. Interest in
analytics from small operators is there but may have a more narrow view such as an emphasis on analytics for purposes of revenue generation or incremental ARPU.

1. Analytics to identify churn predictors and reduce churn
Reducing customer churn and retaining customers is the top reason cited by one-third of service providers for better understanding the customer experience. Not surprisingly as it is significantly more expensive to win a new customer than to maintain an existing one. Churn reduction is closely related to the need to improve customer satisfaction and net promoter scores (NPS) or voice of the customer improvement.

Improving monetisation of customer interactions is among the top three CEM initiatives. This requires CSPs to build a better relationship with their customers by personalising engagement. In order to do this effectively, insight about the customer is key and real-time contextual analytics are needed to understand when for example it’s appropriate to send an offer to customer, and what type of offer: cross-sell/upsell, free minutes or something else. Creating third party revenue offers based on customer data and customer micro-segmentation are still relatively small at 6%, although Heavy Reading research finds these are emerging areas that will become more important in personalising marketing offers and services in the future.

2. Analytics focus shifts from network to customer QoE
Leading service providers are setting up Service Operating Centres (SOCs) and using real-time analytics to monitor the actual end user service experience not just layer two and three network QoS monitoring. This can then be correlated into a real-time Customer Experience Index (CEI), an inside-out proxy NPS score that is calculated based on different interactions with the CSP. The CEI can be monitored by segments of customers, such as high value business customers and by location. A key trend is that QoE across all services – mobile and fixed – that a customer buys is being monitored, as a bad experience with one service, such as IPTV can impact overall satisfaction and likelihood to churn. The CEI can then be monitored by the SOC in real-time across different customer segments, for example, enterprise or VIP customers.

The SOC also plays a key intermediary role between the customer-facing departments such as customer care, sales and marketing and network teams such as network operations and engineering. The main goals of moving to a Service Operating Centre are to:

- Improve the customer perspective of network performance
- Prioritise customer-affecting issues
- Monitor the customer view of real-time service experience
- Gain a unified view of customer experience

The application of advanced methods of predictive analytics and machine-learning techniques will make it possible to anticipate service-quality degradations with a reasonable level of accuracy, enabling service providers to take proactive action or even automated pre-emptive action.
3. Network planning and optimisation
Analytics are being used for network planning as service providers look to invest in network infrastructure in terms of value such as where is there network congestion and where are VIP customers being most impacted. Analytics can also be applied to identify which network element is mostly affected by degradation, which devices and services are being used at cell sites to prioritise fault resolution and network planning, as well as for assessing dropped calls, VoLTE and video quality. Also for network planning forecasts, service providers can correlate customer mobile data usage and behaviour with location patterns and predict coverage needed in six months, in one year or another timeframe.

4. Proactive care
Proactive care has several dimensions. One one hand it’s about empowering customer care agents (Levels one and two) with diagnosis and insights into an individual subscriber’s recent activities in order to improve fault resolution time and customer service. Another cost efficiency advantage is that Level two agents can solve problems without needing to refer calls to smaller Level three technical teams.

It also can be about reducing inbound calls to call centres, for example many of the calls to call centre agents are around billing, and this could be resolved by improving how bills are presented, enabling customers to understand them more easily, improving digital self-care, or by communicating when customers are close to using their mobile data limits to avoid bill shock.

Proactive care also relates to proactive monitoring, solving problems before they impact customers and applying analytics and machine learning to identify patterns and resolve frequent errors. If for example, an error relates to a subscriber’s particular handset configuration, send them the solution of course, but what about other customers in same situation that are likely experiencing the same problems? CSPs that care about the customer experience can take a further proactive step to identify other subscribers with the same issue that are having a bad experience with roaming – they may not have complained, since only about 1 in 20 people experiencing problems actually bother to call, but the risk of them churning can be reduced.

5. Marketing analytics and data monetisation
By implementing big data analytics, marketing teams can develop targeted use cases, such as: creating granular customer segmentation; providing personalisation-based differentiated offers; and introducing real-time marketing campaigns such as top up mobile data or tailored content. By enriching CRM data with analytics on customer behaviour, application usage, location and devices, mobile operators are seeing improvements in marketing campaign effectiveness, uplift in revenue and are beginning to expand this across channels.

According to Heavy Reading research, 86% of CSPs say location data is important to customer data monetisation, with nearly half (48%) stating it is or will be the main focus of their monetisation strategy. Customer location data is key for service providers in enabling mobile advertising and for example sending real-time offers and coupons to
customers based on mobile location from third-party businesses in the vicinity.

Another strategy could be to sell anonymised/aggregated customer data to third parties. Some CSPs do that today, for example to the transport and travel/hospitality sector who want to understand subscriber demographic and movement patterns. Data privacy is always a concern as well as persuading customers to opt-in, but service providers believe these challenges can be overcome if there is an exchange of value such as discounts or reductions in restaurants and retailers and customers trust the terms of usage—that data will be anonymised and aggregated.

**NFV and SDN analytics**
The other area that is getting attention in CSPs is the increasing relevance of analytics in service testing, orchestration and assurance, especially in virtualised NFV/SDN networks where real-time and proactive analytics are needed to ensure service quality.

The move to virtualised network functions with NFV and software defined networks (SDN) will have a huge impact on how service providers manage the service lifecycle, how services are created, how customers consume services, how services are tested and monitored and how the end-to-end customer experience is managed. 85% of service providers say analytics will be important in managing NFV, with more than half saying it will be essential.

NFV and SDN highlight the need for new approaches and tools both for fulfilling services and assuring them in a dynamic environment. CSPs need to be able to assure the compositions of virtualised network functions (VNFs) they instantiate on demand to support customer-facing services so that they can guarantee service performance and availability. Services and the virtualised infrastructure they depend on must be assurable as soon as they come into existence or the speed advantages of virtualisation are lost. Real-time contextual analytics will be key in determining performance, policy and assurance of services.

This will require tightly integrated and automated insight and analytics of virtualised network infrastructure, devices, customer profiles and application and service provisioning and assurance, customer usage and behaviour and of course real-time service experience monitoring.

This will be a real catalyst in changing where and how network and service data is collected, what type of data is collected, where it is stored and for how long, how it is analysed and will force a more strategic, horizontal discussion on the role of analytics in service providers. This will be key as most of the challenges to using analytics effectively are not so much the tools, as many are available from vendors today, but organisational and culture issues, lack of skills and clarity around ownership and strategy within the service providers.

**Looking ahead**

**Who’s responsible for analytics?**
It depends. Part of the problem for service providers in terms of driving a master customer data management strategy is a lack of clarity around ownership and a leader with authority to drive that across the organisation. Big data analytics platforms tends to be managed by IT or a big data organisation in the larger service providers, others have established a CEM office, but marketing and sales are also buying analytics tools and systems to support their needs.

When Heavy Reading asked CSPs who in the organisation has the main responsibility for
customer profiling initiatives, the responses were across the board, with responsibility across sales and marketing, product/service management and customer care. Just one in five (19%) CSPs said that the customer experience management (CEM) function is in charge of customer profiling initiatives, which typically takes charge in other industries. This could also be a sign of the early stages and relative immaturity of customer profiling and analytics within communications service providers. The structure and responsibility is still very much in silos and driven by departmental use cases rather than coordinated at a strategic level with common organisational KPIs and processes and a central customer profiling hub.

Customer data profiling is still a work in progress. CSPs are collecting service quality of experience and customer care data, but getting to a single view across services is tricky because as one service provider says “we’ve got so many systems to bridge across.”

As one CSP put it: “We capture customer responses to factors such as price, customer service and billing in different ways but we are thinking about coupling them with network metrics in the same model because when customers change networks, they look at price and the network quality together as a single value proposition.”

There is no shortage of data to be collected and analysed as service providers continue to build a richer picture of customers in order to drive effective personalisation and monetisation and improve the user experience. There is a strong desire in the future to add psychographic and behavioural, personality insights, social media data, smartphone app and content usage and IPTV viewing habits.

Overcoming barriers to monetising customer data, customer data privacy legislation and persuading customers to opt in top the list of concerns. Data privacy legislation is something the entire industry has to deal with and will vary by region. Customers are more likely to opt in if they see value for them, for example, mobile coupons with retailer discounts, and trust the service provider with their data. Younger internet consumers are accustomed to sharing their data in return for freely using internet services. A big issue is that regulations around data privacy will vary in local markets as governments roll out privacy regulations and CSPs have to be on top of what they can collect, store and use, and ideally have these rules built into their analytics systems and processes.

Digital transformation is disruptive and there’s a fair degree of uncertainty around how all the systems will work together in the end, opensource and cloud-based sytems, and while ongoing transformations of legacy OSS and BSS systems are worthwhile to deliver omni-channel engagement or improve service onboarding, the changes can complicate analytics strategies. Also reorganisations and creation of digital transformation teams can change the operating model of how network and business departments work and impact analytics, business intelligence (BI) platforms, metrics and KPIs within the network teams.

Predictive analytics, machine learning and automation undoubtedly are the future for service providers. The general consensus is that real-time telemetry, analytics, optimisation and policy will be required to enable orchestration of network services in virtualised software defined networks. This has to be automated to monitor the service experience and visibility of configured network state in real-time. Machine learning can be applied to network traffic, QoE service metrics, calls to customer care, device problems, video viewing
patterns, among others. The possibilities are endless and some of the largest CSPs are bringing machine learning experts from other industries in-house. Machine learning is already being used today for example to predict problems in the network or services, or identify bottlenecks or recurring issues and problems that customer care appear to be dealing with.

Conclusion
CSPs are at a critical point where an intimate understanding of customers is needed to win their loyalty, as well as drive further value from the customer relationship. On the other hand, big changes are underway in terms of how virtualised software-defined networks will operate and the IT systems needed to support how services are created, managed and billed are being transformed. Service providers are starting to see the value of analytics to help them both deliver a better customer experience and also making data more insightful and useful to departments across the organisation. Ideally all teams are using the same data and analytics in customised views, though this remains a work in progress as service providers try to overcome data silos, organisational challenges and who has responsibility for customer experience management and customer data analytics. Big data analytics strategies are still at early stages, mainly around customer experience management and marketing use cases but as value is proved, analytics will become a more critical business enabler that can provide insights and common KPIs across network, commercial and management teams.

Astellia provides a real-time network and subscriber intelligence solution called Nova to mobile operators which correlates probe-based data with network vendor’s call traces to identify low-performing network elements, measure device impact on the network, benchmark handsets, analyse application usage and understand customer mobility through advanced geolocation algorithms. Founded in 2000, Astellia is headquartered in Rennes, France and has 480 employees globally and over 120 mobile operator customers.

Analytics credentials
Nova Analytics focuses on capabilities to detect, correlate, analyse, report and troubleshoot issues related to network performance management, service quality management, subscribers application usage and device performance. Key use cases are customer experience management and Service Operating Centre (SOC) tools, monitoring service quality or QoE, troubleshooting issues related to network performance, handset behaviour and subscriber usage. Astellia’s solution is built on a big data architecture and provides analytics based on various sources of information: Astellia’s probes, other vendor probes, call traces and systems such as CRM and billing. Astellia supports a common data platform with different analytics applications for network operations, marketing and customer care. For example, the customer care application enables Level 1 and 2 support teams to understand the meaning behind subscriber KPIs and suggest possible solutions to reduce handling time as well as the number of tickets that need to go to Level 3 support.

Key differentiators
- Experienced in mobile network monitoring and troubleshooting solutions and can provide a full end-to-end view across different network elements.
- Combines network data with user plane data, deep packet inspection (DPI) data on subscriber application and device usage and geolocation to support big data analytics and insight on subscriber behavior and service quality.
- Provides analytics tools to support a SOC team including correlating service QoE with geolocation, as well as professional services.
- Acquired Ingenia Telecom, a provider of a radio network optimisation solution, which advanced its geolocation capabilities to support RAN optimisation and marketing teams.
EXFO provides communications service providers (CSPs) with test orchestration and performance intelligence solutions to ensure the smooth deployment, maintenance and management of next generation, physical, virtual, fixed and mobile networks. EXFO serves more than 97% of the world's top 100 communications service providers. Headquartered in Canada, EXFO has a staff of more than 1,500 people with operations in over 25 countries.

Analytics credentials

The core functionality of EXFO Xtract is retrieving, correlating, aggregating, enriching, storing, analysing and processing massive volumes of source data in real time to form a consolidated view into service experience. EXFO Xtract also contains advanced analytics capabilities for service modeling that enable CSPs to automate the linking of any given service with its physical and logical resources. This in turn makes it possible for CSPs to easily recognise network elements, services and subscriber groups that have been impacted by service degradations, and to minimise efforts to keep the service up-to-date. EXFO Xtract offers pre-packaged solutions that include predefined integrations to necessary KPI, KQI and Service Experience Index (SxI) definitions, data sources, service models, data-processing rules and predefined dashboards designed to solve domain-specific use cases in the most efficient way.

Key differentiators

- EXFO Xtract is a comprehensive E2E analytics solution thanks to its ability to collect and combine data from various data sources, including active, passive, network and third-party sources, and from mobile agents.

- EXFO Xtract can be deployed in conjunction with any other technology, network architecture or equipment vendor. CSPs can count on EXFO's industry expertise to use data from these sources to rapidly deploy new services, analyse performance baselines and accurately pinpoint service-affecting events.

- Total cost of ownership (TCO) is predictable, thanks to EXFO Xtract's self-service architecture. After the initial investment, operator teams or third-party developers can add their own data sources, analytics logic, dashboards and reports on top of the EXFO Xtract analytics platform.

Guavus provides big data analytics applications for operational intelligence. Guavus software collects, enriches and correlates massive volumes of structured and unstructured data analysed by machine intelligence techniques to trigger contextualised actions for real-time decisioning. Guavus offers analytics applications for communications service providers, cable and media companies and Industrial Internet of Things (IIoT) verticals. Founded in 2006, Guavus is headquartered in California, employs 500 employees and has offices in Mexico, Montreal, Singapore, the UK and India.

Analytics credentials

Guavus Intelligent Data Mediation analyses data in real-time as it streams from the network, devices and fault monitoring systems and correlates that with data from customer care, social media, as well as data from CRM and billing systems to create real-time analytics and insight. This provides real-time intelligence to improve the customer experience and support the transition to Service Operating Centres (SOCs). Guavus also applies predictive analytics to network, care and field operations data to quickly detect and prioritise network and service anomalies by customer impact and provides more informed and personalised customer service, such as pushing a likely reason for call insight to call centre staff. Guavus also supports marketing with next best offer applications for customer retention or upsell.

Key differentiators

- Common analytics framework that ingests and correlates high volumes and a wide variety of streaming and stored business, operational and sensor data, regardless of source or type, in real-time.

- Offers a new breed of analytics and machine learning techniques that goes beyond traditional monitoring of service availability to ensure the health of the network and quality of experience of subscribers across a more complex operational environment.

- Strong in the cable sector, particularly in supporting customer care. Pipeline application enables cable operators to collect and analyse IPDR data to better understand per modern bandwidth consumption and network activity.
Company summary

Mahindra Comviva provides analytics-based software and solutions to manage a mobile customer’s value across the lifecycle in order to improve average revenue per user (ARPU) and the customer experience as well as reduce customer churn. Founded in 1999, Mahindra Comviva is headquartered in India and is present in more than 100 countries worldwide and works with nearly all the tier one CSPs. Mahindra Comviva is part of the $17 billion Mahindra Group, a diversified group of IT businesses that includes IT group Tech Mahindra.

Analytics credentials

Mahindra Comviva’s MobiLytix software suite can manage different parts of the telecoms customer lifecycle irrespective of whether the customer is prepaid or postpaid. The platform has different modules to manage the customer lifecycle across digital and retailer channels, such as multi-channel campaign management and real-time marketing including Next Best Offer contextual marketing based on real-time analytics on customer behaviour and interactions. MobiLytix also offers predictive and prescriptive analytics around churn and customer engagement including loyalty management and winback solutions, as well as digital self-care and multi-channel solutions. MobiLytix also offers a retailer management solution to increase revenue from retail point of sale by using analytics to make real-time offers based on location of buyer and buyer history.

Key differentiators

• Experienced in customer value management. Mahindra Comviva works with over 100 mobile operators and has use cases that support incremental ARPU increases after deploying MobiLytix real-time personalized marketing solution.

• Analytics-driven software can analyse customer interaction data, whether it’s SMS, email, or digital, in real time and based on that insight take the most relevant marketing decision right at that moment.

• MobiLytix is an all-in-one common software suite covering the entire customer lifecycle that includes loyalty, campaign management and analytics packages.

• The software interface is easy to use and intuitive so a marketing department user can run a real-time campaign management package without needing IT or technical support.

Company summary

Telarix, a market leader in Interconnect Business Optimisation, provides wholesale billing, business intelligence, fraud management, least-cost routing and partner settlement to carriers around the globe. Telarix provides optimisation software solutions for global carriers to support wholesale carrier-to-carrier interconnects and billing settlements. iXLink, a global interconnect exchange, automates wholesale interconnect purchase processes. iXTools processes over 300 billion wholesale voice, SMS, content and data minutes each year, and provides insight into optimal routing, billing and audit, settlement, trading and managed services. Founded in 1996, Telarix is headquartered in Virginia in the U.S. and supports over 4,000 carriers globally.

Analytics credentials

Telarix brings big data analytics to the complex world of wholesale interconnects and billing. iXInsight is an analysis module for ad hoc reporting and visualisation of carrier data. The addition of a big data platform to iXInsight enables the real-time analytics of rating, routing and reporting data. The business intelligence derived provides vital feedback to Telarix’s existing route optimisation system within the iXTools Suite, enabling business intelligence, analytics and data mining to solve use cases such as fraud and dispute management. It also allows the creation of new bundled revenue opportunities for retail and wholesale service providers.

Key differentiators

• Experience in the global wholesale interconnect and billing settlement market and can add value to big data analytics through understanding the end-to-end business process, the players and roles, how they interact with the data and how actions feed into the lifecycle of the business.

• Telarix can effectively support carrier operations with valuable actionable insight. This includes data cleansing, checking errors, especially around complex price lists, promotions and dial codes.

• Using big data platforms such as Hadoop and Spark means Telarix can provide a powerful yet cost-effective open framework for carriers competing in the real-time BI-driven market.

• A single unified platform and process means a service provider can run its entire wholesale business off of one software system and one database. iXTools has workflow that can be used by the sales group, finance department, operations, routing, and billing.
The Intelligent Solution for Routing, Interconnect and Settlement

Telarix's innovative suite of solutions automate manual processes, speed up resolution, and reduce costly errors. Our fully automated solutions work seamlessly to manage and simplify your entire carrier-to-carrier business.

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Big data initiatives must provide quantifiable business value

Big data analysis is easy to talk about but hard to bring to life with measurable impact, Vic Bozzo tells VanillaPlus

The difficulty the vast pool of communications service provider (CSP) data presents is not so much in the sheer volume of data involved but in the transformation of the data into actionable intelligence. In these times of constrained investment, projects need to demonstrate a clear return on investment and big data analytics projects are no exception. Therefore CSPs need to demonstrate a measurable impact from their big data analysis in order to prove its value and the business case.

There are in essence two core business cases, one that addresses potential opportunities and one that acts as an insurance against negative impacts such as fraud. Telarix’s existing route optimisation system within the iXTools Suite, enables business intelligence, analytics and data mining to solve an ever-evolving set of use cases such as fraud and dispute management. It also allows the creation of new bundled revenue opportunities for retail and wholesale service providers. We therefore saw the need for business intelligence to provide vital feedback into the system and developed a new analysis module called iXInsight.

iXInsight is an analysis module for ad hoc reporting and visualisation of carrier data. The addition of the big data platform to iXInsight enables the real-time transformation of raw data into more actionable intelligence, providing CSPs with greater insights into their business operations.

As a provider of software automation for a dynamic customer base, with new entrants, an ever-emerging suite of services, competitive pricing pressures and a diverse regulatory landscape, Telarix has made the leap to a big data platform enabling analytics-as-a-service. To achieve this, we focused on seven core principles to ensure the new technology provides our customers with quantifiable business value.

The seven principles of big data business value

1. A system meant to provide value-generating insight, must first understand the end-to-end business process. This includes who the players are, what their role and responsibility is, how they interact with the data, and how their actions feed the lifecycle of the business.

2. The system has clearly defined the scope of use-cases for analytics, with quantifiable relevance to the business.

3. The system must allow for data exploration; allowing users to ask pre-defined and ad-hoc questions and explore answers.

4. The system must provide an ability to control the data-ingestion pipeline.

5. History is an old friend. The system must have the ability to utilise historical data for analytics.

6. The system must support action, based on the insight derived.

7. The system must be able to monitor, measure and report on its own performance.

The goal of big data analysis must always be to facilitate meaningful insights, while enabling fast, decision-making with clear key performance indicators (KPIs). These come in the form of operational optimisations that increase margins or improve performance, insights about new opportunities for revenue increase, or actions that rapidly arrest and mitigate revenue leakage because of abuse or fraudulent behaviour.

These goals rely on the integration of the analytics across multiple data sources and systems. One of our key principles is to get rid of the swivel chairs that made up the old architecture. These saw data received in one system transmitted to invoicing, for example, but now these steps can be taken away and replaced with a fully automated, end-to-end model.

iXInsight is supported by application programming interfaces (APIs) so it’s designed to be able to be personalised according to what the user wants to achieve. The same data can be parsed but it is sliced differently to achieve different insights.
iXInsight was built so it can provide feedback across different, distributed datamarts that is looked at as if it was a single database. The insights generated can feedback appropriate alarms, alerts and actions. For example, if you’re in a revenue assurance department and use Telarix for rating and billing and you have iXInsight there’s no reason why the revenue assurance department can’t use the same data.

Another example would be a wholesaler with a retail arm selling inbound calls. If one phone dials 10,000 minutes to a location in one day, it’s clearly a fraud and Insight would suggest an action of closing that number. Who is better placed to mitigate and manage these types of threats than a company that receives your rates and invoices, manages your policy, reporting and billing?

The business case for big data analytics, much like security, has a trigger event that unlocks the motivation to add this functionality. Fraud on the network is a trigger and, while the interconnect team at a CSP has never been measured on the content of traffic because their job is to take in traffic and send it out and make a margin, they are now being asked to view the content in order to address the fraud issues in the market.

The CSPs’ trigger event has been the need for better reporting to prevent fraud but a system to address that need also enables them to terminate traffic at the right quality. We sell so much billing and dispute management and audit capabilities so CSPs can address their compliance requirements so it’s not a big step to use the nature and content of that information to create actionable business insights.

Often the carrier department of a CSP has a limited budget but they need data and information to address new opportunities and protect their existing business. I see Telarix helping them go to other departments such as marketing and gaining budget for systems that can help CSPs create new products. Looking at the value proposition that unlocks helps carrier departments find the budget for the tools they need in their part of the business.

iXInsight encapsulates the seven principles of big data analytics and is able to feed into multiple business and use cases. CSPs can simply deploy it to access the benefits of new revenue opportunities while continuing to secure and protect their operations.
Sandra O’Boyle: Please can you provide some background on Mahindra Comviva?

Amit Sanyal: Mahindra Comviva was founded in 1999, so we are 17 years old and, as a subsidiary of Tech Mahindra, part of the US$17.8 billion Mahindra Group. At Mahindra Comviva, we focus on mobility solutions that span digital financial services, customer value management, messaging and broadband, digital lifestyle services and managed value-added services (VAS). We are present in over 90 countries worldwide and work with nearly all the tier one communications service providers (CSPs).

Every CSP we speak to is challenged with increasing customer revenue, improving the customer experience – and big data analytics enables that. We provide analytics-based software and solutions for example to manage customer value across the lifecycle to improve average revenue per user (ARPU), retention and customer experience.

SO: What demands are you seeing for analytics in the mature European market?

AS: We are seeing demand for actionable insight-based customer value management, in other words, managing the customer in a more data-driven personalised and insightful way. Managing the customer lifecycle helps CSPs to increase average revenue per user (ARPU), improve loyalty and customer experience by executing contextual and targeted marketing campaigns.

We also recognise significant similarities between CSPs in emerging mobile markets or in mature mobile markets such as Europe. Regardless of geography, customers are increasingly interacting with their CSP through IVR, web, app and social channels and thus generating huge amounts of structured as well as unstructured data. This provides the CSP with the opportunity to increase revenue and improve customer experience and loyalty by better understanding their preferences and behaviour.
Mahindra Comviva’s MobiLytix suite is a big data mobile analytics platform that can manage different parts of the telecoms customer lifecycle irrespective of whether the customer is prepaid or postpaid.

The platform has different modules to manage the customer lifecycle, such as multi-channel campaign management, real-time marketing, predictive and prescriptive analytics, loyalty and digital care solutions.

Real-time personalized marketing is in the highest demand not just in Europe, but globally. The sheer volume and variety of data being generated across the telecoms ecosystem and the number of attributes, interactions and touch points are ripe for big data analytics. Marketing coupled with data analytics addresses customer wants at the time of their need by understanding patterns in data.

Being able to analyse customer interaction data, whether it’s SMS, email or digital, in real-time and take the most relevant marketing decision right at that moment is a key requirement.

**SO: How do you sell the value of MobiLytix to operators?**

**AS:** What we provide is the big data analytics-driven customer value management based on actionable insights. In short, we sell software/analytical models to solve practical problems such as managing and monetising a diverse customer base that is moving to a digital world. CSPs are not looking to invest in doing all of those themselves as they focus more on their core competencies and hence, are looking at software solutions with third parties.

The value can be measured in two parts. First the value it adds to the business in terms of revenues, ARPU growth, and reducing churn rates. The second is how much value does it add in terms of reducing support overheads, for example trying to do this in-house vs. buying a proven package from us.

The actual business key performance indicators (KPIs) vary from region to region and CSP to CSP. What is common across all service providers is that the business value for customer data analytics is all about the incremental revenue that the solution adds. How much more does this add to the bottom line that we do not currently make today?

**SO: How is MobiLytix different from competitor offers?**

**AS:** We cover the entire customer lifecycle, compared to other competitors that may focus just on some aspect of the lifecycle and not the whole lifecycle. MobiLytix is one common suite that includes loyalty, campaign and analytics packages.

Mahindra Comviva is a company which has customer centricity as its key focus area driving everything from innovations to support and delivery to after sales support. This is in line with the wider Mahindra group DNA.

And last but not the least, usability, we hear from customers and prospects that most of the solutions out there are too technical and require huge efforts to work on them. If we are selling a real-time marketing management package to the business department, the software has to be easy to operate. It has to be easy for the business users to select models, run multiple campaigns, so we have designed MobiLytix to be easy to use with an intuitive interface.

**SO: What is next for Mahindra Comviva and MobiLytix?**

**AS:** Most of our efforts in big data and analytics are about the consumer side – how can CSPs improve targeting and personalisation. We see demand for digital channels based solutions growing as digital channels replace traditional interaction channels.

We also see ourselves as pioneers in the retail and channel space where you have people loading prepaid, renewing contracts and performing many other tasks. These channels are under-explored in terms of revenue potential. Our future plan is to generate cross-sell and upsell opportunities at the point of sale and improve the profitability of channel partners. How do we maximise the opportunity if a customer comes in to recharge five dollars – why not ten dollars? Our retailer management suite can recommend offers at time of purchase based on looking at customer locations, usage patterns and other factors.

Machine learning algorithms and predictive analytics and automation are areas where we will be deeply involved in the coming months. How do we make customer base management systems self-learn, understand and predict customer behaviour? How can we look at consumer behavior in real time and probable sets of outcomes for marketing teams?

**SO: What final words of advice do you have for operators when it comes to customer analytics solutions?**

**AS:** Be clear about the use cases before you get into analytics and consider that big data analytics is not always relevant, it depends on the use case and business problems and we are still at a nascent stage.

Consider interoperability and how easy it is to integrate customer value management solutions with existing legacy systems. Also, consider delivery timelines and whether the software supports a model with low total cost of ownership (TCO) and faster go to market. When it comes to choosing a software provider, trust is a key factor. Are they prepared to go the extra mile whether it’s ensuring the software is integrated and supports the use cases or being available to train the marketing and IT teams?

Mahindra Comviva is committed to gaining customers’ trust, by focusing strongly on quality and by meeting the expectations of the service providers by delivering world-class products and solutions, developed using well-defined processes and the best available technology.
There are no dumb pipes any more, neither in telecoms or the industries its infrastructures were likened to. In fact, there is an argument to be made that the thought processes of the communications service provider (CSP) are now muddled by too many information options, while there is massive pressure for them to start going over the top to take on their new digital competitors, writes Nick Booth.

When CSPs become as shape-shifting, self-healing, hyper intelligent and omnipotent as they have the potential to be, they will have achieved this extraordinary transformation on a big data diet. However, they are a long way from maturity and there are considerable growing pains, with CSPs being socially awkward and not nearly as intelligent as they think they are.

Studying data analytics will provide the best foundation for healthy revenue development and avoiding any debilitating resource wasting conditions. This is still a relatively new discipline and the first question of data analytics should be about where you actually apply it, says Manish Singh, the customer delivery head at Tech Mahindra.

There are so many layers on which you can get data from, says Singh, so priorities can be identified if they are categorised under three general areas of activity: the customer offering, execution management and finding out what’s happening on the network. While, in theory, data from analytics could be fed into policy engines which can orchestrate a redefinition of the CSP’s infrastructure, Was the big bang big data plan simply too much information for CSPs to take?
in practice nobody in the industry has achieved the capacity for that standard of software definition of networks yet.

A better policy for now might be to match the individual customers with their actual needs, says Singh. The level of data analytics skills available now makes it possible for much more through mapping of customers with their usage patterns, such as the types of application they typically use, the capacity they need, and how they vary by time and place. This is achievable now but, as with all analytics, it is only possible to expose this information if you ask the right questions.

The biggest data analytics mistake that CSPs make, says Singh, is to fail to use data to make the customer’s life better. The likely dissatisfaction that customers feel over a dropped call or a lack of throughput could be automatically predicted and nipped in the bud with an apology and counter offer. This not only quells customer unrest it saves the CSP a fortune on call centre calls. If a second was wiped off the average support call of a CSP, it could save US$1 million per year, according to big data analytics company, Mu Sigma.

By not using data analytics to be pro-active with customers, CSPs are not deploying it to its full effect, says Singh.

Get some tools, advises Astellia. According to its research 59% of CSPs quizzed have no access or tools to get the relevant customer data to take informed business decisions.

Astellia claims it achieved “remarkable results” when improving customer segmentation for Zain Bahrain by using customer usage analytics. In order to understand the main interests of its customers Astellia first analysed customers’ application usage patterns. This examined variables such as the number of sessions, session duration, bandwidth usage and geolocation.

“We could clearly distinguish different types of behaviour,” said Astelia’s communications manager Esther Duvall. This empowered Zain to revise its CRM-based segments and create a totally new customer segmentation regime. The CSP now uses segmentation to recommend more fitting offers to subscribers, which in turn helps it to optimise its network resources and enhance profitability of data services.

Segmentation is a perpetual process, says Duvall, so clients must continue to fine-tune the different segments in order to optimise revenues and control the impact on the network. Data analytics helped Zain Bahrain to increase offer prices by 30%, boost sales by 17% and encourage 26% of current broadband customers to adopted a new offer. The bottom line was that the average revenue per user shot up by 34%.

Before you can ask the right questions, you have to make sure you have the right data, claims Jeremy Perlman, the vice president for Europe at Trifacta.

“Mobile operators struggle to use data analytics tactically as they have to deal with extremely large and diverse quantities of data,” says Perlman. A typical CSP might have a billion incoming call detail records each day and it takes data analysts a long time to clean and transform the data, so by the time a picture emerges from this intelligence the chance to act has gone.

Trifacta specialises in getting diverse data standardised and claims it delivers it into the hands of business users in a tenth of the time. So a CSP can get vital data on app usage, networks and billing fast enough to take affirmative actions.

Yes, but which action do they take first?
Anssi Tauriainen is director of the Analytics and Advanced Services Business Unit at EXFO. Here, he tells VanillaPlus that analytics systems that can automatically derive insights across multiple network domains are vital for enabling communications providers to have visibility into their operations across physical, virtual and hybrid networks.

VanillaPlus: What role do you see analytics capabilities playing in enabling NFV?

Anssi Tauriainen: In our vision, analytics is going to play several key roles. There is the more traditional and well-established role of providing visibility into the Service Experience (SX). This becomes more complex as NFV rolls out because that visibility now has to be collected from physical, hybrid and virtualised networks. Today, we’re able to collect the needed information from all of these environments and create the closed loop analytics case and provide that visibility to service orchestrator, which in turn will use the information to configure and optimise the network. EXFO is differentiated because we have complete end-to-end view across all segments of networks, we are the only ones who have the visibility through user, signalling, IP and physical layers of network, and our analytics contains network topology and service modeling, which means we can analyse service, subscriber and network experience at the same time. We call this 3D Analytics.

We have components in our analytics platform that have a constant discussion with service orchestration so whenever new virtual network functions (VNFs) are deployed we can dynamically orchestrate tests, monitoring and SX management criteria for newly created instances. We have a portfolio of virtual verifiers and passive monitoring equipment so, depending on what is being done, we can provision the right testing and monitoring scenario for the situation.

VP: How important is the capability to be able to test and verify across the different types of network – physical, virtual and hybrid?

AT: It’s a mandatory requirement because there are not likely to be a large number of greenfield virtualised networks. All will be hybrid, whether that’s for ten, 20 or 30 years is a question, but it’s certain that fully virtualised networks won’t happen overnight.

VP: How can you measure service experience? Please can you give examples of indicators used to generate a Service Quality Index?

AT: We want to create the end-to-end view so instead of focusing on a specific subnetwork or part of the network, we want to cover the whole chain from one device to another across the different network layers: the user data, the signalling data, the IP traffic and the physical layer. That’s the starting point from which we’re building the end-to-end service experience. We have a hierarchy for this called the Service Experience Index (SxI) which extends across the layers and is conducted from Key Quality Indicators (KQIs), Key Performance Indicators (KPIs) and raw performance counters.

Instead of looking at values in real-time alone, we also have historical numbers available so CSPs can gauge also past performance, deviation and trends. This gives us the capability to put changes in experience into context. Just looking at today’s data isn’t enough. At the highest level, we look at for example availability, reliability and performance from service, subscriber and network points of view simultaneously.

As an example, with a data service we look at service availability as one of the service experience indicators based on accessibility and set-up time of the connection.

VP: How can you tell me what customers will be impacted by a performance degradation on a device?

AT: That is an easy question to answer. Every single call detail record (CDR) or xDR contains a subscriber ID. When you look at an individual service usage session you

3D Analytics plus passive monitoring and active verifier data will enable visibility into hybrid operations

IN ASSOCIATION WITH EXFO
combine the xDRs together and that tells you what’s being experienced.

A more challenging question to answer is what you’re going to do about discovered findings since there are likely tens of thousands of sessions with degraded service experience ongoing in the network at any given time. The situation becomes all the more challenging as new development such as Internet of Things (IoT) add millions of devices to the network. No one will have the manpower to analyse all of the data at the same time. Therefore we come back to segmentation to make the data meaningful to CSPs. For example, we can look for prioritisation criteria such as customer or service business value or common denominators such as combination of application, device or firmware versions, or network sub-segment or technology that may reveal the root cause of an issue.

There are endless number of variations in this equation and therefore traditional heuristic approach will not be sufficient to discover the denominators. More advanced analytics methods such as machine learning and pattern recognition will be needed.

VP: How can your product reduce Mean Time to Repair?

AT: As mentioned earlier, we’re the only player who can combine analytics of these different network layers – the mobility, IP transport and physical fibre networks. That ability to collect the end-to-end data from the different layers combined with advanced analytics methods, such as automated root cause analysis means that we can also make sense out of an issue much faster than partial or manual analytics.

For example, if a fibre link between the UK and Germany is cut, it’s a crisis for a CSP. They know immediately about it but they can’t tell which subscribers and services are impacted and if there is a way to mitigate the impact. In addition to user, signalling and IP traffic, our solution contains the network topology so we can see e.g. the subscribers who just lost their single connection and take this information to SOC for further actions.

They can then notify their customers that that they’re working on re-route or replacement connection.

VP: How do you integrate your product within a hybrid network composed of physical and virtual assets?

AT: In addition to analytics and EXFO Mobile Agent, our Service Assurance portfolio contains also passive monitoring products and active verifiers. Today, both are tapped into the physical network using physical interfaces but the approach will be the same for virtual networks. We’ll simply tap in using virtual interfaces. The internal function remains the same – the analogy is very similar but the execution is different.

VP: What’s the significance of active verifiers in contrast to passive monitors?

AT: Active verifiers provide very scalable and cost effective tools for ensuring service level agreements are met and various network functions are available and performing well. Passive monitoring of all connections that go through the network provides a lot of information but is also very intensive. Even in the cloud it takes huge processing power to manage that and processing power won’t be free, even in the virtual world.

Active verifiers provide a very cost effective means of ensuring the service experience is being provided to the expected levels. That’s why we’ve added them to our portfolio, which we believe offers the broadest range and scope for CSPs as they continue on their transformation journeys and embrace new technologies, new business models and new types of services.
Seven requirements for successful mobile data analytics

As communications service providers (CSPs) grapple with how to deploy mobile data analytics, Dr Rado Kotorov, suggests seven key requirements they should demand from their systems.

1. Integration
For BI to deliver added value, it is crucial that it integrates with existing applications and systems so that it can draw information from them. The best technologies enable organisations to rapidly and cost effectively build mobile BI capabilities that can be deployed anywhere.

2. Reliability
For its reliability rating, Ventana assesses products’ performance and scalability and the extent to which they support employees accessing BI data remotely on mobile devices.

3. Usability
Data analytics is moving beyond being the preserve of the data scientists. Its increased use by business people has driven the requirement for BI tools that are easy to use by technical and non-technical staff alike.

Ventana Research’s usability criterion examines how much effort BI vendors have put into the human interface of their products and the level of support for mobile, web and voice. Interestingly, Ventana also assesses the usability of BI products by employees from different generations.

4. Capability
This criterion involves assessing how well the product supports different roles within organisations, from c-level executives to line managers. Analysts also assess each BI product’s data access, integration and modelling capabilities. Analytic discovery, information optimisation, collaboration and performance management are also evaluated.

5. Adaptability
Ventana also rates vendors’ BI products on how well they can be customised and configured to the needs of a particular business.

6. Manageability
Vendors are assessed on how easy it is to install, deploy and administer their mobile BI products and the sophistication of IAM security measures built into their technologies.

7. Total cost of ownership (TCO) and return on investment (ROI)
More than two thirds of the organisations Ventana Research surveyed seek BI technologies that enable better decision making, through improved knowledge sharing and communication. Ventana Research believes that this, in addition to usability, helps to deliver better value.

As organisations work to gain maximum return on their mobile investment and operators strive to ensure the best user experience, mobile data analytics offers the opportunity to transform business data into business value.

Mobile BI and data analytics technologies are constrained by the processing and storage capacities of mobile devices, demanding lightweight technologies that allow mobile users to visualise relevant and timely data on small screens.

While previous versions of BI were not always optimised for mobile visualisation, Today’s mobile workforce demands BI tools that are designed for use on tablets with touch-screen capabilities, to enable easy access to BI analysis and visualisation tools.

As the mobile data market matures, it would appear that mobile data analytics is no longer a nice to have. In fact, Maribel Lopez, principal analyst at Lopez Research, believes that mobile data analytics is a crucial factor in the success of an organisation’s mobile strategy because it provides employees with the information they need to be able to make timely business decisions.
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The move from the network operations centre (NOC) to the service operations centre (SOC) is underway. At the same time, CSPs are transforming their networks and moving past the concept of big data as simply collecting and storing data in great volumes. It is now evolving to the next step, which centres on the insights and the business impact that can be harnessed from this data. The true paradigm shift will occur when CSPs use machine intelligence to gain contextual insights from this massive data set and apply them to business practices.

Global CSPs must employ this new breed of analytics that go beyond the traditional siloed way of monitoring service performance and availability to bridge the gap between existing OSS and today’s complex operational environment. By gaining a holistic view of service operations and adding context to this disparate data, CSPs can analyse events enriched with relevant factors. CSPs are empowered with an accurate understanding of the service function and which actions will have the greatest impact on improving the customer experience.

Make way for machine-learned KPIs

Most CSPs currently use static key performance indicators (KPIs) to define business goals and measure customers’ quality of experience. However, in an ever-changing operational environment in which virtualisation, new devices and applications are modifying customer behaviours, the static way of computing and measuring performance is no longer proving to be an accurate indicator of success.

Today’s operational complexity requires dynamic, machine-learned and nuanced indicators that consider contextual factors such as customer, seasonality, population density and other noise. CSPs can utilise machine learning to automatically detect meaningful anomalies and prescriptively identify the root cause of issues. They can then repair customer-impacting events with speed and agility.

Put out more fires

Today, CSP operations centres are overwhelmed with alarms and events. The traditional troubleshooting paradigm has meant thousands of alerts and KPIs are produced per software or element. Unfortunately, it is estimated that more than half of alarms received are not customer-impacting, or are simply symptoms of another, potentially bigger issue. Each false alarm detracts attention from the real issues. This alarm noise causes delayed responses to bigger and more severe issues, which cost millions per year in care interactions and churn.

However, eyes-on-glass, traditional monitoring of single-level alarms is time-consuming. One single alarm such as a service disruption or network
Component failure can result in cascading effects and multiple alarms across the system. A linear approach to alarms often identifies only the biggest-impacting issues, with additional time required to reconcile multiple alarms to one single problem.

A performance issue may look catastrophic from the network perspective, but customers may hardly be affected. Conversely, events that don’t look significant at an infrastructure or network level could be far more disastrous from the customer’s perspective if left unattended.

The goal, therefore, must be to view these alarms with the proper context. Using machine-learning, CSPs can consolidate alarms based on shared root cause and prioritise alarms based on potential impact to the customer experience. This can dramatically improve the customer experience and resource management while maximising the use of the alarm system already in place.

**Mitigate the impact of planned maintenance**

In this hyper-competitive environment, CSPs need to deliver new service capabilities and innovations at a faster pace without sacrificing service availability or performance. Customers with a volatile service experience are three times more likely to take their business elsewhere.

Unfortunately, deploying software upgrades/patches and making network or infrastructure changes often has unforeseen impact on the service that can be very difficult to detect. To make matters worse, digital transformation and the shift to DevOps environments can further obfuscate the true impact of change management events on services, and thereby, the customer experience.

Current methodology around change management deployment relies on interaction between multiple teams to understand any negative impact. Customer support teams might notice a spike in inbound requests or a rapid degradation of another customer experience indicator; Operations teams may investigate the details of those customers, and ultimately tie this back to a maintenance or upgrade.

This manual process introduces large time latency so that more customers are impacted, and more operations resources are spending time on triage instead of remediation.

By applying machine intelligence to data that is collected and correlated across service tiers and customer experience indicators, organisations can better understand the real-time impact of change management events on all areas of their network.

**Transform the operations function**

In order to truly differentiate based on customer experience, CSPs need a predictive technology that can determine whether something is about to degrade or fail altogether – and how much that will matter to the customers. In this way, CSPs can address the issue before customers take notice.

Using advanced machine intelligence, CSPs can identify classes of behaviors that may portend customer experience issues in the near term. This enables service operation center staff to proactively improve customer experience by giving them likely consequence and impact for taking certain actions. With this enriched information, CSPs can make informed decisions about where to prioritise their resources and time to improve the customer experience.

The age of big data collection is being eclipsed by machine intelligence. By understanding critical context and predicting outcomes with deterministic data, CSPs can gain unprecedented insight into their operations. Using this new generation of machine-driven analytics, they can drive costs out of their business and prioritise fixes with a confident view on where to put valuable resources for the greatest impact on the customer experience.
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Exclusive interview with Fran Heeran, the vice president and general manager of SDN/NFV at Netcracker, on how the virtualisation challenge is now moving beyond proofs of concepts and starting to address telco cloud initiatives.
Fran Heeran is vice president and general manager of SDN/NFV at Netcracker. Here he tells George Malim that, while virtualisation has taken longer than expected to materialise into reality, the contributing technologies of network functions virtualisation (NFV) and software-defined networks (SDN) are in deployment. The challenge now becomes moving beyond virtualisation to cloud but, Heeran says, those that prepare their organisations and their technology for that move will differentiate themselves in the market and gain commercial advantages.

**vanillaPlus: How would you describe NFV development for communications service providers (CSPs) at this point in time?**

**Fran Heeran:** I think it’s maturing but maturing cautiously. I’ve been in the virtualisation market for more than five years now and it’s fair to say that it’s taking a little longer than expected. But I believe we’re now at the turning point when the industry goes from virtualisation in silos to true cloud. CSPs realise they need a better operational approach to fully embrace the benefits.

Having a business case for making this transition is still a critical issue, but it is much better understood now thanks to the proofs of concepts that have been done. A business case for NFV can be about reducing costs, increasing revenue or both, but a hybrid approach will be the norm. Transformation is typically happening by capping existing systems and growing capacity with new virtualised systems. In hybrid environments, physical network functions are left in place and new virtual network functions are built. Both need to be managed in a way that provides service-wide views across both physical and virtual elements.

New revenue streams are being built around monetising network services. We see internal network functions being virtualised to reduce costs and improve operations while network services such as virtual customer premise equipment (vCPE) and software-defined wide-area networks (SD-WAN) can be monetised directly, specifically to the enterprise market.

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**VP: In your view, what are the main drivers as to why CSPs are looking to deploy NFV?**

**FH:** I see four main drivers: reducing costs, optimising how existing resources are used, consolidating operations and opening up new revenue streams.

Cost reduction is a primary driver but it doesn’t necessarily apply to everyone. For smaller CSPs, NFV can produce immense, obvious benefits because systems can be smaller. For larger CSPs, however, virtualisation won’t necessarily reduce their footprint because they’ll still need a lot of equipment. For these companies, NFV will help with demand planning and provide a far more flexible service and network design. You used to see demand planning in two-year – or even longer – intervals, but NFV lets you view demand in much shorter time spans and grow rapidly as demand increases. It also provides a far more flexible platform for quickly introducing and evolving services.

**VP: Networks are becoming more fragmented and complex as more connected devices are coming online and more data is consumed. What is the impact of this on service providers deploying SDN/NFV?**

**FH:** I think it plays more to SDN than NFV. Our CSP customers will go to a range of different vendors. The bigger the CSP, the more fragmented they will be. On the network side, growth is being pushed by

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increases in traffic, so it’s very much a multivendor, multidomain situation with different fibre, middleware, radio and other equipment. This creates additional complexity and very significant management and orchestration problems.

We’re seeing our customers recognise the need to consolidate vendors across multiple dimensions and be able to compute paths that span multivendor, multidomain issues. Fragmentation is a growing problem in SDN, but that issue doesn’t have too much of an impact in NFV, which has been dealing with different infrastructure for a number of years.

VP: Why is it that so few SDN/NFV proofs of concept are going all the way to commercialisation?

FH: We’ve seen that trend, but we’re also starting to see a change. Proofs of concept were used, perhaps excessively, as tools for learning. Service providers needed to address the question of whether virtualisation was viable and they used proofs of concept to study the benefits and potential changes that new technologies would have on operations and the organisation overall.

We have probably gone through four phases in the journey of adopting virtualisation. First, there was the siloed introduction of virtual services. You can’t reap all the benefits of virtualisation in siloes. Once this is recognised, you can move on. Second, I think confidence was and still is an issue. CSPs need to know they can trust the technology and it will actually work.

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The third phase is the ‘cap and grow’ situation in which service providers implement new infrastructure but only in support of a specific service, creating a fragmented and hybrid architecture.

The fourth phase deals with organisational challenges. Traditionally there was a single view of the entire stack but now it is split into at least two: Infrastructure is often managed by one organisation while services and apps are managed by another. This means that organisational changes must also happen in order to successfully adopt virtualisation.

VP: Are you seeing signs that the SDN/NFV market is starting to mature?

FH: Yes, there’s no question about that. When the concepts first emerged, I thought the pickup would be relatively quick, but I think economic pressures and sensitivity to disruption resulted in a relatively cautious approach by many.

One thing to keep in mind is that virtualisation is a misnomer because, on its own, there’s little benefit. What we’re really talking about is the cloud and the ability to deploy and orchestrate functions flexibly and with a level of automation not seen before. I believe we are now entering the era of general-purpose cloud architecture as a new phase, built on the growing confidence in both the technology and its benefits.

VP: Are service providers ready to run hybrid operations to support SDN/NFV?

FH: I think they realise they need to. The cap and grow model can work for a lot of functions, and some, like vCPE, can be virtualised from scratch. But service providers also recognise that they have to apply it elsewhere.

This recognition is being driven from the top down and from what was the traditional OSS perspective, which takes a very different form in the cloud-enabled world. Vendors like Netcracker that are used to running and managing disparate environments are coming at this from the right direction and showing that the best way to manage these environments is from the top down vs. the bottom-up approach adopted by others.

VP: How is Netcracker addressing that need? Can you give us a few things service providers must do to take full advantage of SDN/NFV?

FH: First of all, I’d advise that you need to be able to operate your hybrid networks at scale. Then, you must have an end-to-end view of your environments in order to break down silos. The testing phase is over; SDN/NFV is entering the mainstream.

I would also say that you must provide a consistent environment in which your vendors can deliver their functions and services. We increasingly hear the requirement for DevOps as CSPs want to plug into the software factory of their vendors. Our customers are changing their environments to let the end-to-end software development process flow into their service launch processes.

When it comes to network planning and design, you can use NFV to take a nearer term view because, with it, you have the agility to plan ahead. In order to enable this agility, however, the base infrastructure needs to be right. The traditional planning and deployment process absolutely needs to change.

Next we come to commercialisation. While the market is weighing the cost-saving opportunities, there hasn’t been much talk around building new revenue streams with value-added services, e.g. taking core network functions and creating additional, monetised offerings for customers. A whole new way to do rapid service iteration exists and includes offerings such as security, enhanced firewalls and cloud-based network services. That commercialisation is gathering pace. I believe there is a window of opportunity here and virtualisation provides a key foundation for differentiation.

I cannot emphasise enough the need to reconsider organisational processes. You need to look at your culture and strategy as you move to SDN and NFV and consider how managing and operating processes and services will be different from what you’re used to. The recognition that you’re going to operate in a world that is more horizontal than vertical requires a different way of thinking. Service providers that have adopted new processes are the ones that have experienced the greatest success. To those considering adopting SDN and NFV. Do not overlook the organisation change requirements.
It’s small wonder that CSPs fail to keep pace with their agile ‘frenemies’ at Amazon, Facebook and Apple who are going over the top at speed and mopping up revenues.

While the telecoms industry loves to meet its obligation to create universal standards there is an argument that this is folly and that adherence should be modified if CSPs are to reap the benefits of software defined networking before it’s too late. Currently the standardisation approaches for network functions virtualisation (NFV) fall between two stools. The de jure standards created by industry bodies are pure but are avoided like the plague by vendors, as they do not play to their strengths. The de facto standards are only decided by the exclusive group of vendors acting in their own interest.

The European Telecommunications Standards Institute (ETSI) has pulled in enough vendors to make its NFV standards a strong de facto platform. The Open Networking Foundation (ONF) isn’t quite as strong, say analysts below. The Internet Engineering Task Force (IETF) and the Alliance for Telecoms Industry Standards (ATIS) are both struggling to drive de jure standards because of a lack of overall agreement and are several years behind where they need to be, according to Bernt Ostergaard:

NFV is an orgy of hardware and software vendors.

The difference between communications service providers (CSPs) and the IT industry is like the difference between First World War infantrymen and a modern coalition of crack special forces units. One set plods along in formation, getting picked off at will, while the others make rapid advances, capturing territory while constantly keeping tabs on the other teams and ready to regroup, writes Nick Booth.

Who are the standards bearers for NFV?
Ostergaard, the service director at telecoms analyst firm Quocirca. “However, whatever these groups do come out with will be nominally embraced by the likes of ETSI and the ONF – because it is good form to do so,” he says.

This leaves one more group of NFV standard bearers, the open source camp. Again this is fractured with the two biggest groups, OpenDaylight (OD) and the OPNFV, each having backing from different vendors. “It’s most likely that the standards developed will find their way into the underpinning software layers, and so will be the base layer of the NFV stack,” says Ostergaard. On top of the OD or OPNFV standards will be extras – the elements that ETSI and ONF want to see, says Ostergaard. This makes it likely that the IETF and ATIS will be bogged down and so far behind that they have nothing to show for their work.

Two noteworthy initiatives are OSM and the Open Orchestrator Project.

OSM has emerged from the combined efforts of Telefónica, Telenor and BT around OpenMANO. “The Mano options could give you great savings, but most CSPs don’t think the technology is quite there yet,” says Jonathan Bell, the vice president of marketing at OpenCloud, which develops software for telecoms NFV.

The Open Orchestrator Project (OPEN-O) has big-name support too with China Mobile, China Telecom, Ericsson and Huawei some of its more prominent supporters.

The end result of this diversity is confusion. "NFV is an orgy of hardware and software vendors. Standardisation means customers can more easily switch suppliers for best-of-breed environments, but keeping up is a much bigger challenge," says Ostergaard.

Though software defined networking and NFV changes the game for the dominant hardware manufacturers – it doesn’t make them go away. They are still the major solution providers with the extensive integration-tested partner ecosystem to provide complete multi-brand NFV packages. Virtualisation has greatly reduced the hardware footprint in the data centre, but with a host of new providers customers face complex software update tasks and scalability challenges.

A lot of patience is needed among CSPs, says Giuseppe Monteleone, senior technical marketing engineer for Italian vendor Italtel. “Almost four years since the start of the ETSI group we share a common vision and a reference framework but we still miss the precise definition of important protocol interfaces,” says Monteleone, “on the other hand, we have de facto standards consolidated with the work of open source communities.”

Another issue to be confronted is licensing, says Greg Collins, an analyst at Exact Ventures.

CSPs are justly resentful of paying for network capacity licences that are superfluous. With NFV and cloud network elements, having pay-as-you-go or post-pay licensing seems to make the most sense, says Collins. With NFV and cloud, network capacity is dynamic and elastic, yet traditional licensing requires CSPs to buy a static..."
The pace of progress in the CSP sector is relatively slow. Each other at intervals, as happens in the IT industry. As it is, the variety of fronts, could all be cross-referenced and catch up with advance faster. These advanced parties, that progress on a

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more lightweight and less encompassing approach, led by AT&T and advancing all parties together, says Bell at OpenCloud. A there was less obsessiveness about unifying every last aspect of it

Ultimately, NFV could be more successfully brought to market if there was less obsessiveness about unifying every last aspect of it and advancing all parties together, says Bell at OpenCloud. A more lightweight and less encompassing approach, led by AT&T in the OpenStack camp, would enable individual projects to advance faster. These advanced parties, that progress on a variety of fronts, could all be cross-referenced and catch up with each other at intervals, as happens in the IT industry. As it is, the pace of progress in the CSP sector is relatively slow.

amount of capacity. If they could pay for just the capacity they used, CSPs could save on licensing costs and avoid the headaches associated with managing the various licensing models.

The CSPs need an open ecosystem and the current scenario is still too fragmented, says Monteleone. A more realistic approach would focus on basic interoperability between entities from different vendors, such as VNFs and MANO systems, in order to orchestrate a wide catalogue of tools. You don’t have to standardise everything right away. It might be better to regularly consolidate on a continuous process of innovation and experimentation.

“The initiatives taken around standardisation have helped significantly to advance the NFV architecture definition and identify NFV implementation and deployment challenges,” says Amol Phadke, global network virtualisation and transformation lead at Accenture.

Market activity so far has shown vendors and service providers how to develop and deploy NFV. They should trust the evidence of their own success, rather than the guidance of standards committees, according to Phadke.

“We are about to change our mental software,” says Dr Francisco-Javier Ramón, head of Telefónica’s NFV Reference Lab. “These results are allowing us, as network operators, to aggressively change our perspective regarding what is possible with software-driven networking in order to accelerate the adoption and deployment of these revolutionary technologies.”

SK Telecom

South Korea’s largest wireless carrier SK Telecom (SKT) is currently being defined by the mental software of its chief technology officer Dr. Alex Jinsung Choi, whose vision is for an all-IT telecoms infrastructure.

All telecoms network functions will run on its cloud core in its software defined data centre. When complete, all components in the core networks in data centres and local network operation centres will be running as virtualised network functions in an OpenStack cloud infrastructure.

As a first step SKT is virtualising its traditional telecoms network functions such as IP Multimedia Systems (IMS) and Evolved Packet Core (EPC) so they can be ramped up in much greater volumes when demand for, say, video services booms. These virtual network functions (VNFs) will be used for providing customer-specific, dedicated multi-tenant telecoms services with orchestrated service chaining. The VNFs will also be used to boost service quality and reliability with elastic VNF resource management and load balancing control.

SKT’s network research and development centre has already succeeded in deploying parts of the operating IMS services as vIMS in its commercial operation environment with OpenStack and is currently operating them successfully. It also aims to commercialise more parts of the IMS services to vIMS and put them into production. The next target function for virtualisation is vEPC, says Choi.

Telefónica

The Spanish CSP group has invited Brocade, Intel and Red Hat into its NFV Reference Lab Framework in order to test and develop virtual network functions, as a means of upping its service orchestration for its 313 million accesses across 24 countries.

Ease of use was the main benchmark in its tests. “In less than two hours, we deployed the Brocade 5600 vRouter from a memory stick and completed our performance tests in our NFV Reference Lab,” says Francisco-Javier Ramón, head of Telefónica’s NFV Reference Lab. “These results are allowing us, as network operators, to aggressively change our perspective regarding what is possible with software-driven networking in order to accelerate the adoption and deployment of these revolutionary technologies.”

AT&T

The U.S. CSP claims it is well on its way to implementing a common infrastructure for all virtual network functions. By 2020, it plans to virtualise and control more than 75% of its network using new software defined architecture to meet the growing demands of data and video hungry users.

In the last eight years, data traffic on the AT&T network has increased 100,000%, driven primarily by video. As demand expands at this rate the vertical scaling of traditional hardware models will be impossible, no matter how sophisticated and complex the routers and switches may be. Software definition of simple, standard hardware is the only way to meet the growth in demand for performance and efficiency while minimising costs.

Half of AT&T’s networks are controlled by open-source SDN code, according to a statement by AT&T technology and operations vice president John Donovan. Millions of AT&T wireless subscribers are connected to virtualised network services with many relying on the AT&T Integrated Cloud (AIC), which was built using OpenStack.
Testing and service assurance must be active and automated to enable real agility, efficiency and great customer experience in emerging networks

The industry’s move towards virtualisation requires new automated approaches to active testing and service assurance. Here Marcus Friman, the chief product officer and co-founder of Netrounds, a specialist provider of automated active test and service assurance platforms with more than 270 customers, explains why the correlation between active and passive test data added to a DevOps style approach to testing processes can enable communications service providers (CSPs) to achieve true agility.
active testing to ensure that services are delivered right. Without testing after a change has been made many customers could be affected before the problems are detected.

Active testing will therefore no longer be a nice to have – it will be a must have. The transition from physical to hybrid networks will be reliant on active testing and service assurance to ensure customer quality of experience is maintained.

VP: How will test and assurance fit together with orchestration in virtualised and hybrid – physical and virtual networks – network operations?

MF: This is obviously a shift in the industry and I think most current test and assurance systems in general aren’t ready for managing these kinds of environments. Test and assurance vendors need to develop suitable solutions that are application programming interface (API)-driven so their operations can be automated through orchestration in an OSS workflow.

In our case, the Netrounds active test and assurance platform was originally built as software with no hardware legacy, but other virtualised variants of traditional, hardware-based testing solutions will require manual configuration steps. Manual configuration is fine for a proof of concept but for commercial roll-out all the steps must be automated, everything from deploying test agents in the NFVI (NFV Infrastructure), making them available for testing, triggering the tests using an API (application programming interface), retrieving the results, and even un-deploying them when done.

To introduce automation in general – not just for virtualisation projects – brings important benefits for CSPs. Automation in legacy networks is highly valuable and CSPs should already today consider investing in automated and software-based active testing and service assurance to see cost and time savings benefits immediately while also positioning themselves effectively for transition to tomorrow’s virtualised environments.

VP: What do you see as the greatest issues test and assurance needs to overcome?

MF: There are three main issues. The first is automation, which I’ve already spoken about. The second is the capability to address both legacy and virtual environments – this isn’t an either/or situation and both should be addressed with a single solution. The third is the test and service assurance processes within CSPs.

CSPs need a process that is efficient for both of these environments in combination with orchestration – and this is a challenge. CSPs also need to move towards a DevOps type of workflow in order to cope with frequent change.

VP: What impacts are the industry’s move to real-time, active measurements having on traditional passive testing methods?

MF: Active and passive methods are complimentary so even though there’s a move now to fast-changing networks, both methods are still needed. The connection between active and passive methods will increase in the next couple of years. Making sense of data from passive solutions is hard because it is difficult to correlate it with the end user experience and a vast volume of passive data is generated.

Improving the analytical correlation between passive test and active test data is helpful in enabling CSPs to make greater sense out of the passive data. For example, if you are passively monitoring virtual network functions (VNFs) and devices such as the central processing unit (CPU) load and other metrics as part of an end-to-end service, just making sense of the data and how it affects the end user experience is next to impossible. However, if you complement it with active monitoring you can start correlating the active with the passive and see, for example, that service quality issues started at the same time as when the CPU load increased. This enables you to scale up CPU capacity and then make sure, with an active solution, that has addressed the issue. If it does solve the problem, you can learn from it and become more proactive in future similar situations.

The combination of passive and active test data is the future but if you leave out the active part it will be impossible to achieve service assurance in a satisfactory way.

VP: How is testing changing to move away from function specific hardware to new models such as cloud-based deployment?

MF: Active testing plays a supporting role to CSPs achieving real agility, operational efficiency and customer experience in new, emerging networks. The automation of manual processes needs to happen and testing needs to change to reflect this.

I think testing will be closer to an OSS automation workflow in the future. It will be tied into the orchestration loop and therefore completely different from current, manual testing which is tied to service creation. Testing will be a part of orchestration and very closely linked with the turning up and modifying of services.

Activation testing has been lower on the list of CSPs’ priorities because today it involves expensive truck rolls and it takes time. In addition, the business case hasn’t been clear until now but the need for agility and automation makes it mandatory. With all technologies there must be a problem to really drive uptake. For automated active testing and service assurance, the virtualisation transformation makes physical and manual processes unsustainable and creates a problem for CSPs. The time for a new approach is now and Netrounds is extremely well positioned as part of the NFV ecosystem to enable our CSP customers to achieve their transformation goals and provide excellent quality of experience to their customers.
Customers want fast and reliable services and CSPs want to give those to them but attempts to do so require they tweak the best they can from their existing network infrastructure, hence industry momentum for effective network planning and optimisation, writes Jonny Evans.

Expectations are increasing and, as consumers look to big video technologies such as 4k and 8k, it’s clear network performance is still a foundational element of the communications service provider (CSP) proposition. However, while they have to support such demands, they are faced with continuing pressure on margins. “Operator margins are being squeezed, yet at the same time customers are demanding a better more connected service, and bandwidth is becoming scarce as more and more go online,” says Ravi Kumar Palepu, the global solutions head in the communications business unit at VirtusaPolaris.

Research from Viavi Solutions has shown that 50% of mobile data is consumed by less than 1% of users and in less than 1% of the network area. Paul Gowans, the marketing manager for Location Intelligence & RAN Solutions at the company, explains: “Planning and optimising is about making sure you deliver the best coverage and capacity to your end subscribers. This includes understanding where cell sites should be positioned, power levels, cell neighbor relationships… and what happens if a site goes down.”

Traditional performance metrics are expanding beyond old school tools such as loads, capacity and quality. They more include customer experience and use of virtualised networks to help handle peak demand. Some CSPs – Vodafone, for example – persuade customers to download apps that capture data about location, connectivity and call quality.

“The complex mix of overlaying network technologies, from small cells to Wi-Fi, to GSM, UMTS and LTE, means that to truly understand how to plan and optimise for superior customer experience, technologies need to be able to ingest any data, regardless of format, size and granularity to enable an end-to-end view of the entire network, across all previously isolated network domains,” says Mark Slinger, the head of product at SysMech.

The expanding network performance toolkit means CSPs must now monitor many variables, driving them to use...
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automation and intelligent network analytics technologies to deliver efficiencies in planning and optimisation.

Neil McKinlay, the head of product management at Anritsu Service Assurance says: “The key trend now is to utilise streaming analytics and of course a focus on the actual customer experience – why invest in capacity if no customer experience is impacted?”

Virtualised platforms with scalable network performance and QoE tools enable easy integration into big data, analytics, SDN control and NFV orchestration systems. “This provides a real-time feedback loop that sees the state of each network slice, and can optimise each – and the individual users’ experience against allowed policies – without human interaction,” explains Scott Sumner, the vice president of strategic marketing at Accedian.

Such emerging network technologies provide real-time feedback, enabling truly self operating networks that react in real time.

“Prediction is the next step,” adds Slinger. “CSPs are now beginning to introduce prediction scenarios that monitor trends to enable the prediction of potential issues before they occur, for example, when network equipment will need replacing or identifying customers that are a churn risk.”

These analytical tools also enable new efficiencies. “Network optimisation teams can see the user experience from an end-user perspective and tie that into network level parameters from the base stations,” says Mikko Hyvärinen, the director for CEM and platform products at Anite.

Network management and analytics tools can help CSPs identify issues such as misconfigured routers, faulty SFPs (small form factor pluggable devices) and routing paths that introduce excessive latency to VoLTE and other key services. They also help identify more opaque challenges, such as the impact of old or duplicate firewall rules that exist on a network.

“With intelligent security management systems, companies can deliver positive customer experiences while ensuring they are maintaining security and compliance effectively,” says Michael Callahan, the vice president at FireMon.

5G will bring more opportunity. Not only should it improve data rates by 30% in comparison to 4G, but its capacity to work as a unifying framework with other wireless standards should enable offloading of some traffic. “Which will provide a gateway to much more complex and interesting mobile data solutions,” says Palepu.

Gowans adds: “A properly optimised network delivers significant benefits to the subscriber as well as the CSP. The move towards smart networks will release very significant cost savings and game changing customer experiences … by delivering levels of network performance unattainable by manual means.”

The opportunity here is for CSPs to gather deep, analytics-driven insight into customer and network behaviour. This information should help them avoid network congestion by providing different treatment actions for each customer, based on specific customer data and company policy.

Big data analysis can deliver insights that can improve the effectiveness of the business and the network. “CSPs can gain insights into each customer in a congested area of the network, including their financial value to the service provider, the services being used, if they have been recently affected by similar congestion problems, their churn risk score, and more,” explains Joe Hogan, the chief technology officer at Openet.

On reflection when considering network management, it seems gently ironic that the very tools carriers are embracing to help them meet the demands customers make on their networks are themselves unlocking new opportunities to develop personalised solutions to meet individual customer needs.
One of the joys of reporting on the telecoms industry was that it was full of uncomplicated, no nonsense characters who didn’t feel the need to invent their own special secret language – unlike the IT world. Communications service providers (CSPs) were happy to connect people and let them get on with their lives. No dodgy software contracts packed with hidden licensing trojans. No built in obsolescence. No grandiose claims about saving the world, revolutionising business and bringing democracy to society. Granted, the CSPs and their dealers did charge huge amounts for managing moves and changes for their clients. But even that was a good discipline, as it stopped people moving about and over-complicating things.

The modern incarnation of the telecoms operator, the CSP, is mobile and data driven so, inevitably, they’re becoming more like IT companies. But, I’m relieved to say, they’re not quite the full Amazon, although many shareholders and equity holders won’t be pleased about that. They want their CSP investments to be omnipotent and ruthless.

Still, it’s obvious that data could save the life of the CSP by creating new opportunities, but then ruin it all over again by over-complicating things. The modern CSP has far too much complication to deal with, but they like to make life even more difficult for themselves by constantly moving their own goalposts.

The rapid growth by acquisition means that there seems to be a massive disconnect between the various departments of a modern CSP. The people in the call centre rarely have any connection with the intelligence available in their own data centres. John and Jane call centre operators only seem to be interested in two things. Getting you off the phone as soon as possible or selling you something you never knew you wanted.

There is a certain logic to this. According to David Zakkam, relationship head for data sciences company Mu Sigma, the average CSP could save a million dollars a year if it could shave a second off every support call. Zaikai advises 140 of the Fortune 500 companies on how to use data analytics to make each call more efficient and productive by giving call centre staff a better idea of who you are. However, having worked in a call centre myself, I suspect that many of the managers at shop floor level will take a much less sophisticated tactic. They’ll instruct their ‘here today, gone tomorrow’ minions to say anything to get the customer off the phone, once it’s obvious that they’re not going to buy anything.

Data analysts need to take a look at themselves

As data analysts and scientists become among the most in-demand experts, Nick Booth wonders what would happen if they analysed their own use of data analytics

Which brings us to the second option, up selling. Again, I will rely on the testimony on an expert witness from the telecoms industry, Eliano Marques, head of data science at the Think Big Partnership. CSPs constantly offer things to clients that they have no use for at all. “I often try to understand the logic of the sales people at service providers. Why do they offer me 200 channels when it must be clear from their data that I only use ten. And why would they keep shoving a Samsung offer on me, when it must be obvious from their data that I’m an Apple fan,” says Marques.

It would seem there is a massive schism between the people who think for the company, the data scientists, and the people who act for it, in the call centres and the support teams. They seem to have completely different and counter productive targets.

Every CSP aims to progress with use cases that have an instant pay off, says Marques. Data scientists, whether internal or external, are hired to identify the best action for increasing profitability for the company, either through cutting costs or boosting the revenue. But the gap between potential value and the achievable value is often massive. For example, the best way to cut costs would be to create a predictive maintenance model that would identify where problems will occur and nip them in the bud. But it’s also the hardest. Partly because the people who are sent to do the fixing jobs have their own agendas, which don’t align with the company’s. The fastest way to meet your targets, I discovered, was to pass the buck, tick your box and re-assign. The thoughtful few who actually tackled the hard jobs would get no reward.

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