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Jan-Feb 2019

Edge Computing and AI are key to making TV pay

Headlines

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• TV pay • Cable Broadband Will Keep Edge Over 5G • Wi-Fi 802.11ax • Quantum Computer
• 11 Myths About SMART Monitoring and SSD Data Protection • Video streaming services
• Huawei's 4G kit to be ripped out of BT, 5G kit banned

In this Edition:

Daniel Dierickx
CEO & co-Founder
at e2mos
Acting Chief Editor

Over 3 Decades Semiconductors & Computer Systems Market Expertise

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Edge computing and AI are key to making TV pay

01 FEBRUARY 2019 | By: Mobile Europe

Video streaming services will achieve 585 million subscriptions in 2019, according to new analysis from ABI Research.

Mobile broadband penetration together with consumers' demand for TV anytime, anywhere are the driving factors of video consumption on mobile devices.

Khin Sandi Lynn, Industry Analyst at ABI Research, said, "5G network deployments will be a catalyst in the mobile video consumption driving the requirement of efficient video delivery solutions. Higher resolution video content such as ultra-HD 4K, and latencysensitive services such as augmented reality (AR)/virtual reality (VR) video applications are also expected to drive the deployment of edge computing platforms for content delivery."

Telecoms companies account for a substantial and growing share of the traditional pay-TV market, with several occupying leadership positions in their respective countries. According to Ovum, around half of the world's largest domestic pay-TV operations (in terms of subscriber base) are currently owned or controlled by telcos.

User experience

As pay-TV services proliferate, user experience will increasingly be the competitive advantage.

ABI Research pinpoints edge computing and artificial intelligence (AI) as key technologies to deliver the required quality of service (QoS).

Edge computing can help to solve the problem of buffering, which can put people off streaming content. The technology dramatically reduces latency by moving the data source closer to end users.

AI and machine learning can also be deployed to optimise video content delivery.

ABI Research explains, "AI-assisted Adaptive Bitrate (ABR) streaming and encoding systems significantly improve video delivery efficiency. Pay-TV and video streaming service providers can deploy AI for optimisation of content summarisation, personalisation, and content recommendation, all of which are essential for revenue generation."

Service providers can also improve customer engagement and user experience by integrating AI into set-top boxes and video streaming devices to enable voice control and voice searches.

SOURCE: Mobile Europe Click Here

Edge Computing, Artificial Intelligence for Better QoE Critical for the Future of Video Services

Oyster Bay, New York - 31 Jan 2019 | By: ABI Research

The worldwide Pay TV market is getting increasingly competitive with a wide choice of services available among pay TV and video streaming platforms. As the competition intensifies, deployment of next-generation content delivery solutions to provide the best user experience across different video platforms is crucial for the success of service providers. ABI Research, a market-foresight advisory firm providing strategic guidance on the most compelling transformative technologies, forecasts that video streaming services will achieve 585 million subscriptions in 2019.

Mobile broadband penetration together with consumers' demand for TV anytime, anywhere are the driving factors of video consumption on mobile devices. "5G network deployments will be a catalyst in the mobile video consumption driving the requirement of efficient video delivery solutions. Higher resolution video content such as ultra-HD 4K, and latency-sensitive services such as Augmented Reality (AR)/ Virtual Reality (VR) video applications are also expected to drive the deployment of edge computing platforms for content delivery," commented Khin Sandi Lynn, Industry Analyst at ABI Research.

Edge computing is an effective solution for the delivery of next-generation video since latency can be greatly reduced by moving the data source closer to end users. Buffering while streaming the video content can result in negative user experience and can even lead to churn.
Leveraging edge and cloud content delivery platforms are essential to improve the quality of experience (QoE). Several video delivery solution vendors including **Ericsson**, **Anevia**, **Limelight Networks**, **Saguna** etc., leverage edge platforms to deliver low-latency, broadcast quality video streaming services.

Artificial intelligence (AI) and machine learning can also be deployed for optimization of video content delivery. AI-assisted Adaptive Bitrate (ABR) streaming and encoding systems significantly improve video delivery efficiency. Pay TV and video streaming service providers can deploy AI for optimization of content summarization, personalization, and content recommendation all of which are essential for revenue generation. Service providers can also improve customer engagement and user experience by integrating AI into set-top boxes and video streaming devices to enable voice control and voice searches. Anticipation and deployment of the next innovative technologies are essential for service providers to offer the best quality of service for long-term success in the pay TV market.

These findings are from ABI Research's Next Generation Video & Content Delivery technology analysis report. This report is part of the company's Video & Cloud Services research service, which includes research, data, and Executive Foresights. Based on extensive primary interviews, Technology Analysis reports present in-depth analysis of key market trends and factors for a specific technology.

About ABI Research

ABI Research provides strategic guidance for visionaries needing market foresight on the most compelling transformative technologies, which reshape workforces, identify holes in a market, create new business models and drive new revenue streams. ABI's own research visionaries take stances early on those technologies, publishing groundbreaking studies often years ahead of other technology advisory firms. ABI analysts deliver their conclusions and recommendations in easily and quickly absorbed formats to ensure proper context. Our analysts strategically guide visionaries to take action now and inspire their business to realize a bigger picture.

For more information about ABI Research's forecasting, consulting and teardown services, visionaries can contact us at +1.516.624.2500 in the Americas, +44.203.326.0140 in Europe, +65.6592.0290 in Asia-Pacific or visit www.abiresearch.com.

4U Network Appliance 19" - CSA-7400

Cloud - Edge - Security

APPLICATIONS

- High-end Network Security
- Telecom DPI, IDS/IPS, DDoS, NGFW, vBRAS/vCPE
- Hyper-Converged Platform (HC)
- Cloud Edge, Cloud Interconnection, Cloud Security

4U 19'' Network Appliance
CSA-7400 Click Here

KEY FEATURES

- Based on **Open Compute Carrier-grade Edge Reference Architecture** (OCCERA)
- 4U high density platform powered by four dual Intel® Xeon® E5 or Scalable processors
- Up to 8 CPU with 160 Cores in one CSA-7400 system
- DDR4 2666/2400 MHz memory ECC, 48 DIMMs, up to 1,536 GB
- Flexible IO combinations via choice of switch sleds (MXN-3610, MXN-4100) and Network Interface Modules (NIM-1610, NIM-0440)
- Advanced chassis management
- Redundant AC/DC PSUs (N+1)
- Optional integration of **Wind River Titanium Server software to provide carrier grade NFV service** for **5G**
- Support for hardware acceleration for Open vSwitch and OpenFlow protocol processing, accelerating **SDN services**

AI Training Platform 19" - ALPS-4800

Artificial Intelligence - HPC

APPLICATIONS

- Machine Learning (ML)
- Deep Learning (DL)
- High Performance Computing (HPC)

AI Training Platform
ALPS-4800 Click Here

KEY FEATURES

- 8x PCIe x16 Gen3 **GPGPU** slots (300W/slot)
- Validated with **NVIDIA® Tesla® P100/V100** accelerators
- Dual **Intel® Xeon®** Scalable processors
- 24x DDR4-2666 RDIMM
- 8x SATA 6Gb/s hot-swappable 2.5" drives
- 1x FHFL and 2x Low Profile PCIe x16 Gen3 add-on slots
- 1600W AC/DC Platinum PSU, 3+1 redundancy
- Separate airflow for CPU and GPU

Contact ADLINK

World Wide Offices

Envivio founder Julien Signes joins Synamedia

January 10, 2019 11.19 Europe/London | By Chris Dziadul | Broadband TV News

Synamedia has appointed Julien Signes senior VP and general manager of its Video Processing business unit.

One of the industry's foremost experts on video processing, Signes founded the video compression specialist Envivio in 2000 and as CEO led the company through private equity financing and a NASDAQ IPO. Ericsson acquired the business in 2015. Since 2017, he has been advising emerging video technology businesses on strategy, investment, and helping them scale to global markets. He has also provided advice to Atlantic Bridge, a global venture capital firm and one of the early shareholders in Envivio. Prior to Envivio, Signes worked at France Telecom (now Orange), leading a team that worked on the development of MPEG-4.

Commenting on his appointment at Synamedia, Signes said: "As video consumes an increasing volume of the global IP traffic, successfully monetising the opportunities around 4K and 8K requires a flexible video processing infrastructure that can scale cost effectively. Synamedia meets this demand thanks to its impressive portfolio of video processing solutions with market-leading encoding and transcoding technologies including those originally developed at Cisco, Scientific Atlanta and NDS as well as the cloud expertise developed at Cisco".

Yves Padrines, CEO of Synamedia, added: "Julien is one of only a handful of people to combine technical prowess in video processing with acute business acumen. At Envivio, Julien spearheaded the evolution of video processing from a hardware focus to the softwareand cloud-based video businesses emerging today. His deep understanding of cloud architectures for video processing will ensure Synamedia customers have access to the most advanced techniques for fast, efficient delivery of both OTT and live TV to their subscribers."

Editor Notes

Synamedia customers include:

• **VODAFONE:** providing Vodafone's consumers access to a vast selection of channels and VOD offers via a next-generation cloud video service, on any device and at any time, based-on Synamedia Infinite Platform multi-screen experience supporting GigaTV OTT and GigaTV Cable-IP Hybrid Pay TV service tiers
• **SKY:** best-in-class video security solution to protect all advanced services in SkyQ offering including broadcast, streaming, and downloading of video to a range of screens. Sky is now an investor Jan 2019. **Please visit** Synamedia

About Envivio: Envivio is a software-based video processing and delivery company. It was founded in 2000 in San Francisco (and Rennes, France) by Julien Signes, the president and CEO, with a focus on developing technologies supported by the MPEG-4 standard, a standard for audio and video coding formats and related technology.
Envivio is headquartered in South San Francisco with offices in Singapore, Beijing, Denver (Colorado) and Rennes en was acquired by Ericsson.

History: Envivio was created in 2000 as a spin-off of the France Telecom R&D Labs in San Francisco and Rennes. The co-founders were contributors to the specification and development of MPEG-4, which is available on most consumer devices. The company holds 17 patents dating as far back as 2000. Envivio went public on April 25, 2012.

Envivio, a Video target customer: I had the pleasure to lead the efforts of several vendors targeting Envivio especially for new designs using CompactPCI as CPU board, High Availability Middleware and Real-time Linux with services.

Daniel Dierickx www.e2mos.com

What's Next In Enterprise IT

By: CBINSIGHTS

NExTT FRAMEWORK

Enterprise IT Trends to Watch in 2019

TRANSITORY

Trends seeing adoption but where there is uncertainty about market opportunity.
As Transitory trends become more broadly understood, they may reveal additional opportunities and markets.

NECESSARY

Trends which are seeing widespread industry and customer implementation / adoption and where market and applications are understood.
For these trends, incumbents should have a clear, articulated strategy and initiatives.

EXPERIMENTAL

Conceptual or early-stage trends with few functional products and which have not seen widespread adoption.
Experimental trends are already spurring early media interest and proof-of-concepts.

THREATENING

Large addressable market forecasts and notable investment activity.
The trend has been embraced by early adopters and may be on the precipice of gaining widespread industry or customer adoption.

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What's Next In Enterprise IT

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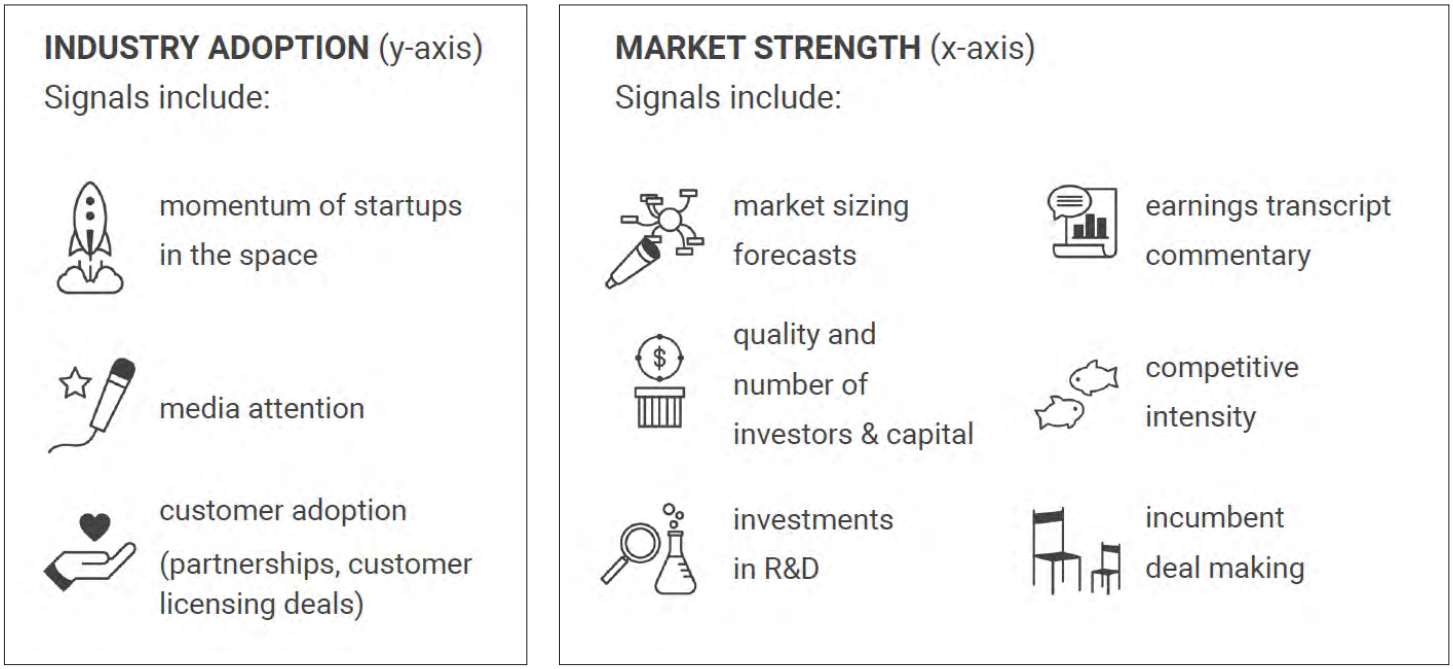
The NExTT framework's 2 dimensions:



Necessary

SD-WAN

The widespread adoption of software-defined wide-area networking will support the proliferation of internet of things sensors and the deployment of the next generation of wireless systems.

Software-Defined Networking (SDN) is a modern network architecture that provides advantages over traditional architectures, such as reduced costs, increased bandwidth, greater security, and improved application performance. It is the ideal deployment for today's data-hungry and dynamic software deployments.

While the concept of SDN has been around for quite some time, adoption didn't take off until Facebook introduced the Open Compute Project (OCP) in 2011. The OCP promotes the redesign of hardware technologies to efficiently support the growing demands on today's compute infrastructure.

What's unique about SDN is the separation of the network planes — the application plane and the data plane. This separation makes the network programmable and therefore more flexible and customizable to an enterprise customer. Software-Defined Wide-Area Networking (SD-WAN) soon followed the introduction of SDN. SD-WAN is simply an extension of SDN, and brings the programmability and flexibility of software-defined networking to wide-area networks.
In addition to flexibility, SD-WAN also provides greater network bandwidth, better network performance, and extended network reach (for remote, underserved locations).

It does so by using the public internet to connect disparate locations of the network together (as opposed to a VPN). As a result, SD-WAN can use a variety of different internet service providers (ISPs) throughout the network, allowing it to achieve each of these benefits at low cost.

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What's Next In Enterprise IT

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While there are certainly advantages to traditional SDNs, the benefits of SD-WAN are more suitable for today's evolving businesses.

For example, a multi-national bank may leverage SD-WAN to connect its disparate branches together, without having to worry about which ISP is used by each respective branch.

And although SD-WAN uses the public internet instead of a private network, all data is encrypted, end-to-end, which provides even greater security over traditional private networks.

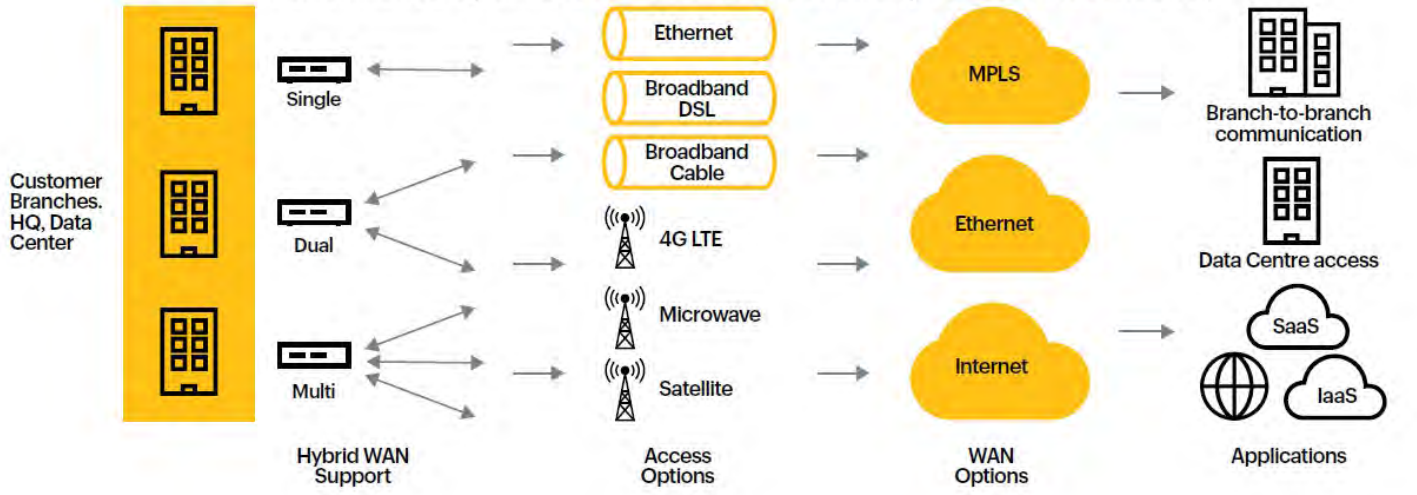
SD-WAN has already seen significant adoption by enterprises over the past few years. This adoption is expected to accelerate in 2019 and beyond, pushed along especially by expanded IoT use and the introduction of 5G networks.

These networks will ensure security, reliability, and performance all while keeping costs low despite growing data consumption.

In November 2018, Oracle acquired SD-WAN company Talari Networks in a effort to ensure these advantages for its enterprise software customers.
The SD-WAN market is expected to reach over $8B by 2021.

Software Defined Wide Area Network (SD-WAN)

Performance Optimization - Business Continuity Failover redundency



Source: Jules Bartow

Download the 42 pages Report from CBINSIGHTS

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Huawei's 4G kit to be ripped out of BT, 5G kit banned

By Ian Scales | Dec 2018 | Telecom TV

- Security concerns doom Huawei to exclusion from Anglophone world
- UK follows the US, Australia and New Zealand
- Will Canada be next?

Things took a turn for the worst for Huawei today when it was announced that not only would it not be in the running for any 5G gear contracts for BT and the UK, but that its existing core 4G infrastructure (not access network) was to be ripped out due to security concerns.

The huge Chinese infrastructure supplier has had similar setbacks in both Australia and New Zealand.

Both of those countries are close security allies to the US, first through the ANZUS (Australia, New Zealand and US) pact, forged in the wake of World War Two after the three countries had fought side-by-side to win the war in the Pacific. That relationship was strengthened as Australia and New Zealand became part of the so-called 'Five Eyes' security pact through which, along with Britain and Canada, they share intelligence.

Five Eyes is basically an Anglophone intelligence network born out of WW2 and ANZUS, but is now reportedly being revived to keep all five of the eyes trained on China and its expansionist (it's alleged) policies.

It doesn't take much dot-joining to spot the security impetus behind these decisions. The Five Eyes intelligence exchange is apparently (all top secret of course) deep and continuous, so the US military would argue that a security breach in telecoms infrastructure in any one of the countries would put the entire apparatus at risk.

If this story was a cold war thriller it would surely allege that Huawei's amazing rise to telecoms behemoth was specially engineered to have Huawei install kit in all five countries for espionage purposes

Has it?

Given Huawei's prominence in the global telecoms market it might be expected to have kit in just about every telco in the world, so probably not.

In any case the UK's BT group has undertaken to remove core Huawei 4G network equipment within two years, according to information published in the Financial Times, and has been excluded from future 5G contract bids.

The remaining eye, Canada, has yet to join the Huawei ban.

[**Correction**: The original story was incorrect (now corrected). BT has not excluded Huawei from 5G contracts in the access network, just in the core, which it says, is in line with its wider architectural principles]

Editor note

Thanks to Ian, it is an interesting update and a great precision.
Generally speaking, it would be nice to see this kind of update from others too.
See a few examples in our ezine Embedded Systems World of Jul-Aug 2018 on page 2, 3 & 4

Daniel Dierickx - www.e2mos.com

11 Myths About SMART Monitoring and SSD Data Protection

Self-Monitoring, Analysis and Reporting Technology, or SMART, has its advantages in protecting industrial-grade solid-state drives and securing their data—but it also has its limits.

Scott Phillips | Jan 24, 2019

1. Standard SMART is good enough.
Typical SMART (Self-Monitoring, Analysis and Reporting Technology) implementations don't provide sufficient visibility into solid-state drive usage, data patterns, or even data retention at end-of-life. And they rarely provide data in a graphical form that can be easily interpreted. These shortcomings are particularly glaring in Industrial Internet of Things (IIoT) storage because IIoT SSDs are often deployed in remote, difficult-to-access locations. Such environments call for embedded SSDs for extreme conditions supported by remote monitoring and analysis.

2. Standard SMART utilities like Smartmontools and CrystalDiskInfo adequately manage SSDs.
While those utilities may be adequate for the casual user, most such utilities only extract attribute data and don't sufficiently parse or interpret the data. In other words, they don't necessarily provide immediately usable data. A good SMART utility should monitor more than just the standard SMART attributes and feed them into advanced algorithms that provide more details about the SSD's health and performance. Then it should display the data in an easy-to-view format that allows users to make informed decisions.

3. SMART features aren't supported on interfaces and protocols such as USB, SD, or even eMMC.
Most off-the-shelf monitoring tools only support ATA-based (SATA, PATA) embedded storage devices with native SMART support. More advanced monitoring tools such as vtView SSD utility software can capture and translate SSD data from other protocols and interfaces, such as SCSI and USB, and translate to standard ATA data that can be reported and viewed just like native SMART attributes.

SMART data is collected, analyzed, and then reported graphically through vtView.

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11 Myths About SMART Monitoring and SSD Data Protection

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4. Because there's no standard for a SMART structure, each SSD is unique.
Those same monitoring tools cited above provide flexibility to adapt to other SMART structures to deliver a side-by-side comparison of varying industrial SSD manufacturers' solutions. This comparison continues to provide the most accurate and reliable method for comparing SSDs in a given application or environment.

5. Typical secure-erase mechanisms take too long and use too much power to be practical in most applications.
The crypto-erase feature provides perhaps the fastest and lowest power means for rendering an SSD unusable. While not technically "erasing" the SSD, the crypto-erase feature provides a potentially viable alternative as it can destroy the AES cipher keys within milliseconds and at a fraction of the power required by a full secure-erase, thus making the SSD unusable. A full secure-erase can also be implemented after the crypto-erase and is even persistent over power loss. Therefore, if power is halted during the secure-erase, the erase will resume as soon as power is restored.

6. Data encryption is a sufficient security measure to protect data.
Encryption only protects data at rest, but it doesn't protect against unauthorized access to the SSD. An authentication implementation such as AES-256, the strongest among the Advanced Encryption Standard ciphers, is a solid step toward data security. However, it should be complemented by an authentication scheme such as a simple ATA password-protection mechanism or a more advanced Trusted Computing Group pre-boot authentication. Both security measures can be coupled with a crypto-erase (instant destruction of cipher keys), as well as an ATA-compliant secure-erase command to wipe data from the SSD.

7. Data encryption and secure-erase are basically the same and provide the similar levels of security.
Encryption makes the data illegible if the corresponding encryption key isn't present, but the data still resides within the media. The secure-erase mechanism, on the other hand, actually conducts an erase/write/erase routine to wipe data from the media. In addition, secure-erase can follow a crypto-erase routine to provide extra levels of security.

8. Data encryption is generic and the various "flavors" have basically the same effect.
There's encryption and then there's encryption. Low-level encryption serves a basic purpose: Making it difficult, though by no means impossible, for bad actors to access data stored on SSDs. However, SSDs using the AES-256, regarded as the de facto security standard for the U.S. government, ensure that data at rest is nearly impossible to breach. The 256-bit key size of AES-256, an option for all Virtium SSDs, provides an astounding 1.1 × 1077 number of possible combinations.

9. Secure-erase is only relevant to military and other highly sensitive, mission-critical applications.
While it's true that secure erase is probably most appropriate for such applications, it's also used for more than just security. It can also be used to return an SSD to an empty, "clean" state as a sort of refresh before reusing the drive, such as for backup storage.

10. Using high-endurance NAND flash is the only way to ensure SSD longevity.
Judicious NAND selection is the arguably most straightforward approach to ensuring longer SSD endurance. However, an SSD's firmware, combined with integrated intelligent data-management software features, can dramatically improve the drive's endurance—even those already using special, high-endurance NAND flash.

11. SSDs are prone to data loss from power failure.
Technology already exists—in fact, it's often built directly into SSDs—that automatically protects against data loss from power failures that would jeopardize SSD integrity. Technology such as vtGuard, which adds power-fail protection circuitry as well as software redundancy, protects against data loss and SSD "bricking" in the event of an unexpected loss or severe "droop" in power like that experienced in electric grid "brown-outs." These power-fail events can also be monitored and accessed by vtView SSD-monitoring software.

Scott Phillips is Vice President of Marketing at Virtium Solid State Storage and Memory.

Reference:

White paper: www.virtium.com/wp-content/uploads/2016/03/WP014-0316-01-Virtium-SSD-SMART-Attributes.pdf

Virtium®
Solid State Storage and Memory

Cable Broadband Will Keep Edge Over 5G – Comcast CEO

26-Feb-2019 | 5G networks are positioned to deliver cable-like broadband speeds into the home, but HFC networks are already gearing up to raise the bar well beyond the reach of the next-gen wireless standard.

That sums up how Comcast Corp. Chairman and CEO Brian Roberts views 5G as a competitive, in-home broadband alternative to cable.

"We know 5G's coming and what its implications will be," Roberts said Tuesday at the Morgan Stanley Investor Conference in San Francisco, noting that Comcast has people on the ground at Mobile World Congress in Barcelona. "They [the 5G service providers] are hoping to get to the speeds we're offering today, and by the time they do, we're hoping to be ten times faster or beyond."

Roberts appeared to be alluding to DOCSIS 3.1, which today is being used to deliver downstream speeds of up to 1-Gbit/s, as well as Full Duplex DOCSIS, an annex to D3.1 now being branded by the cable industry as "10G" that is shooting for multi-gigabit symmetrical speeds up to 10 Gbit/s. (See CES 2019: Cable's 10G Tech 'Will Work'.)

Roberts also questioned whether 5G, as an in-home broadband alternative, will offer improvements with respect to costs, as VoIP did for the long-distance telephone market, or in areas such as quality or reliability. He said he takes "great comfort" in believing that 5G won't represent a similar leap in those important areas.

At the same time, he said this doesn't mean that 5G won't provide competition in some pockets and certain scenarios. But, he argued that it isn't something that cable won't be prepared to contend with.

"I believe if you have a great wired network, you're going to be super-relevant and super-valuable," he said.

That also fits in with Comcast's bigger pivot toward being a "connectivity" company focused on broadband more so than video.

"Twenty-one years ago, [Microsoft founder] Bill Gates said to me, 'Someday you'll have more broadband customers than you'll have video customers,' " Roberts recalled (Comcast crossed that line in 2015). "Clearly, our largest, most profitable business is broadband."

That also fits into the video trends as streaming continues to take off. "Years ago, we said video over the Internet will be more friend that foe, and we're sitting here today experiencing that reality."

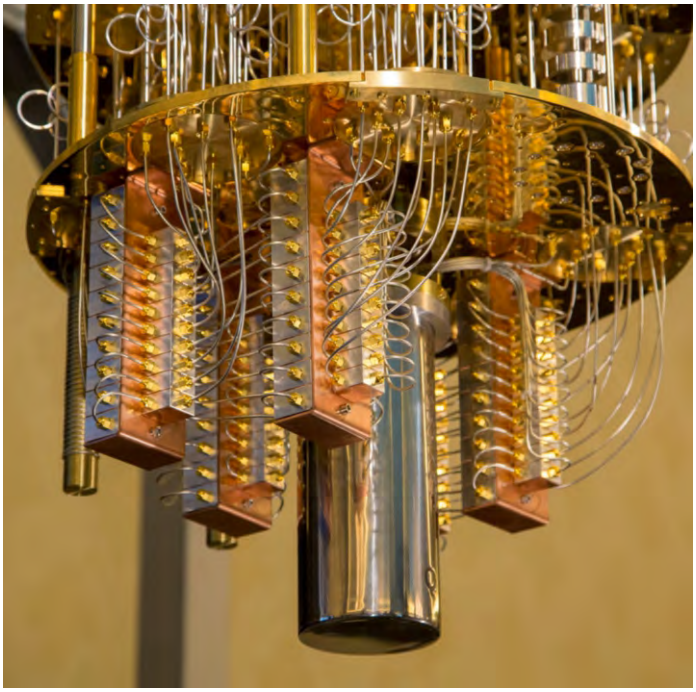
Some of that reality is taking shape with a direct-to-consumer OTT service that NBCU is developing that will be free (ad-supported, with targeting) to Comcast and Sky customers, along with ad-based and paid options for others. (See Can NBCU Crack the Economics of OTT?)

Comcast, meanwhile, will continue to invest in its own pay-TV product, as it's still a key part of the bundle. However, Roberts reiterated that Comcast won't spin its wheels chasing after unprofitable customers. (See AT&T's Pay-TV Biz Takes Big Hit as Promotional Subs Flee .)

— Jeff Baumgartner, Senior Editor, Light Reading

IBM taps European design for first commercial quantum computer

January 09, 2019 //By Nick Flaherty//eeNews



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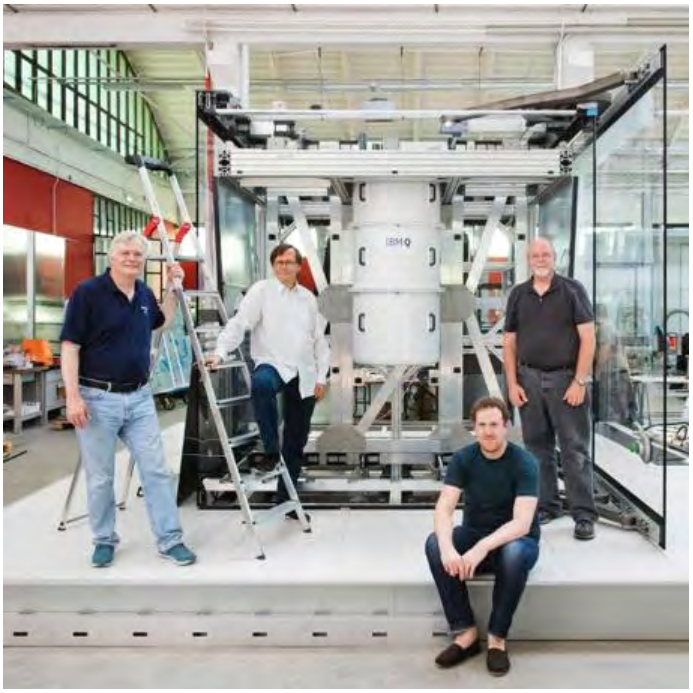

Team members
quantum computer IBM

IBM has tapped European design skills to launch the world's first commercial quantum computer at the Consumer Electronics Show in Las Vegas.

To design 20qubit Q System One, IBM assembled a team of industrial designers and manufacturers to work alongside IBM Research scientists and systems engineers, including UK industrial and interior design studios Map Project Office and Universal Design Studio and Goppion, a Milan-based manufacturer of high-end museum display cases that protect the Mona Lisa at the Louvre, and the Crown Jewels at the Tower of London.

The resulting design is a 3m by 3m case of 1cm thick borosilicate glass forming a sealed, airtight enclosure. Although the system was officially launched at CES on Tuesday, echoing the launch of the IBM PC, the Q System One is more like an early mainframe computer.

WHY COLD COMPUTING MATTERS FOR THE NEXT GENERATION OF COMPUTING

A series of independent aluminium and steel frames decouple the system's cryostat, control electronics and exterior casing, helping to isolate the system components for improved performance. The hardware is designed to be stable and auto-calibrated to give repeatable and predictable high-quality qubits.

Quantum firmware manages the system health and enable system upgrades without downtime for users, and a classical computer provides secure cloud access and hybrid execution of quantum algorithms.

"The IBM Q System One is a major step forward in the commercialization of quantum computing," said Arvind Krishna, senior vice president of Hybrid Cloud and director of IBM Research. "This new system is critical in expanding quantum computing beyond the walls of the research lab as we work to develop practical quantum applications for business and science."

In the second half of 2019 IBM will open the Q Quantum Computation Centre in Poughkeepsie, New York to expand IBM's commercial quantum computing program. The Poughkeepsie site was key to the development of IBM's first line of production business computers in the 1950s, the IBM 700 series, and the IBM System/360 in the1960s.

SOURCE: www.research.ibm.com

RELATED:
MEC, LETI FORM EUROPEAN HUB FOR AI, QUANTUM COMPUTING - See also AI World - Q4 2018 Page 5
VOLKSWAGEN TESTS QUANTUM COMPUTING IN BATTERY RESEARCH
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We are entering an edge-centric world – are you ready?

Hewlett Packard Enterprise

JANUARY 18, 2019 • BLOG POST • PHIL DAVIS, PRESIDENT OF HYBRID IT & CHIEF SALES OFFICER

IN THIS ARTICLE

• HPE is creating a world where everything computes, a world that's hyper-connected, where everyone and everything share data
• At HPE, we are committed to help our customers connect all of their data, across all their edges and all their clouds
• The IoT Innovation Labs are where customers, partners, and HPE experts collaborate to envision, design, and create unexplored areas of innovation

Phil Davis shares his thoughts from the grand opening of the IoT Innovation Lab in Geneva

One of the world's largest cloud providers offers a service which literally employs trucks to transfer data. It's not a joke - physical storage containers are sent to the edge to suck up data, then transport it to the cloud data center to discharge it.

It takes a week to ship the data vacuum back and forth, and that's faster than transferring terabytes or petabytes of data via the network. When actual trucks are required to shuttle data between locations, it is time to explore fundamental alternatives.

We're entering a new era of decentralized IT

We're creating a world where everything computes, a world that's hyper-connected, where everyone and everything share data. The possibility to turn all of that data into action and value – to create new experiences, new products and services and drive efficiencies – is what's driving us to a faster, more intelligent world. We want to help customers connect all of their data, across all their edges and all their clouds.

We live in a world where everything computes, a world that's hyper-connected

The pendulous world of IT has swung between centralization and decentralization since its very beginning. From extremely centralized mainframe architectures, then decentralized client-server computing, then back to centralized cloud and mobile computing, each wave has brought with it significant changes – changes not only for IT, but also industry structures, market leaders and ultimately changes to the way we live and work. Now it's time for the next wave to begin: the intelligent edge. And it's shifting us to a whole new speed of business – one measured in microseconds.

The edge is where enterprises interact with their customers; where products are manufactured; where employees work each day; where everyday people interact, purchase, explore; where technology gets put into action – it's where action happens and where we live. The edge employs AI, machine learning and automation to continuously learn, predict and adapt to changes, needs and threats in real-time. It enables us to act locally, in the moment, in context – creating new possibilities in every industry.

Connecting these new insights from edge to cloud across the enterprise and then integrating the data with existing business systems (ERP, CRM and more) are what's driving value and growth.
We're at the forefront of developing technologies for the edge, and enabling real-time insights, personalized experiences and the ability to take action instantaneously.

Process data at the edge instead of moving it with trucks

As sensors are increasingly embedded into vehicles, machines, plants, venues and devices of all kinds, we see an exponential growth of data at the edge. This unprecedented volume of data is paired with a higher demand on speed and accuracy, as data analysis is driving ever-increasing important decisions. From autonomous vehicles to health record analysis, the need to process edge data, then act upon it in real-time, anywhere, can be a matter of life and death. The only way we can deal with the combined challenge of exponential data growth at the edge and high demands on speed and accuracy, is to process edge data right where it's created, directly at the edge, eliminating the detour via remote data centers. This requires the deployment of ruggedized high-performance IT infrastructure and intelligent, secure wireless networks. It also requires a new systems category that converges the technology of operational technology (OT) and of IT to enable a seamless, bi-directional and deterministic communication and control of devices and machines at the edge.

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We are entering an edge-centric world – are you ready?

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Hewlett Packard Enterprise

The edge-centric world is dawning, but that doesn't mean the sun in setting on the cloud

The edge-centric world is dawning, but that doesn't mean the sun in setting on the cloud. To capture the value of the data that's created everywhere, we need edge-to-cloud architectures that do the majority of processing at the edge – instead of just moving data with trucks. The deployment of such architectures is a highly complex technology transformation that involves a shift in how we manage business, processes, skills, and company culture.

Like many of our customers, at HPE, we have gone through our own transformation to be uniquely positioned to help our customers thrive in this ever-changing IT world. We are not selling IT infrastructure, but rather an outcome of IT infrastructure. These outcomes must be offered with consumption-based pricing, scalability up and down, speed and simplicity, regardless of where the technology runs: at one of the many edges, in a corporate data center, or in the data center of a service provider. The cloud is not a destination, but an experience. It's this experience we provide to drive innovation and growth in an edge-centric world. That experience can start in one of our IoT Innovation Labs.

HPE IoT Innovation Labs: collaborative environments to drive innovation

Our global IoT Innovation Labs are key tools we invest in to help our customers drive the transformation of technology, people, and economics – collaborative environments in which we work with our customers and partners to conceptualize, develop and test IoT and edge solutions that drive material business outcomes.

Considering the huge opportunity ahead of us in this new edge-centric, data-driven and cloud-enabled world, I was thrilled to be in Geneva, Switzerland for the opening of our fourth IoT Innovation Lab. Similar to the ones in Houston, Singapore, and Bangalore, the new lab offers immersive Edge Experience Zones that enable customers to digitally interact with "things" in their natural settings, featuring practical IoT use cases for industries such as oil and gas, manufacturing, engineering, healthcare, retail, smart city, and more. But our Geneva lab is more than a demo and test environment. It's a place where customers, partners and HPE experts collaborate to envision, design and create unexplored areas of innovation. We look at ways of developing products and services, managing operations, supply chain, creating new customer experiences and generating new revenue streams – all based on innovative ways of deploying the next generation of IoT and intelligent-edge solutions. I look forward to meeting your there!

HPE OneView for Dummies

Software-defined infrastructure management

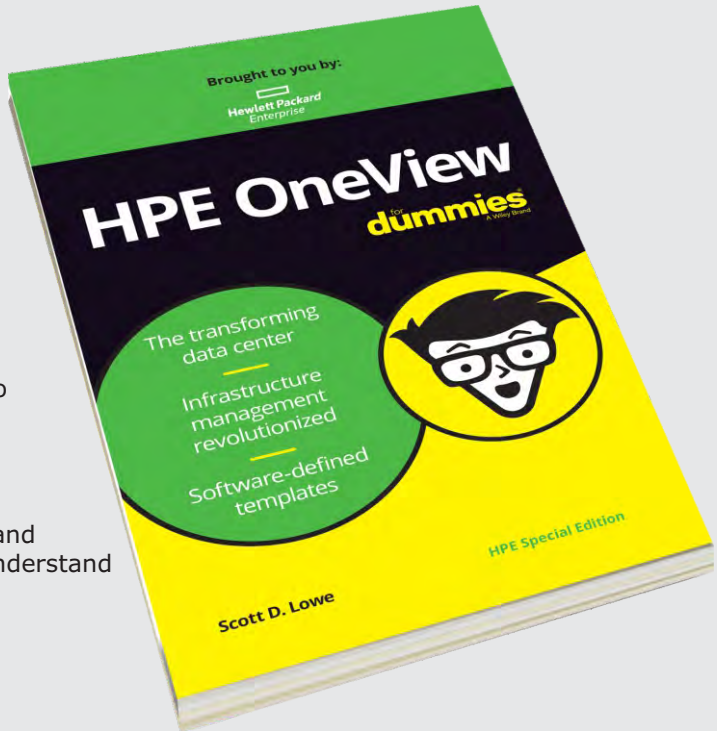
eBook | PDF 3.2 MB | 41 pages

Overview

HPE OneView is software-defined infrastructure management solution that takes a programmatic approach to managing infrastructure with efficient workflow automation, a modern dashboard, and a comprehensive partner ecosystem.

Transform your **HPE servers, storage, and networking** into software-defined infrastructure to eliminate complex manual processes, spur IT collaboration, and increase the speed and flexibility of IT service delivery.

This detailed guide provides an in-depth look at the features and benefits of HPE OneView and is ideal for anyone wanting to understand how HPE OneView can help their organization.



Download the eBook

Using Network Analytics Tools to Boost Performance

By: SearchNetworking

In this e-guide: Network performance and analytics tools provide several key benefits for networking managers, including performance visibility and assistance for related areas, such as security and troubleshooting for root cause analysis. But, as network traffic and the number of mobile devices continue to rise, network management has become more complex, and existing oversight tools are facing limitations. To meet these demands, a new generation of network analytics software is emerging. Read on to explore these new products that offer a blend of machine learning, artificial intelligence and cloud-based data processing to help enterprises monitor their networks and troubleshoot problems.

New generation of network analytics software starting to emerge

Dan Conde, Independent Analyst

Network performance and analytics tools provide several key benefits for networking managers, including network performance visibility and assistance for related areas, such as security and troubleshooting for root cause analysis.
Network analytics software is an established product category, with both commercial and open source tools.
But, as network traffic and the number of mobile devices continue to rise, network management has become more complex, and existing oversight tools are facing limitations.
IT managers need a new generation of network analytics software, as enterprises need to understand how the entire network is operating. Relying on a device-by-device view of switches, servers or client devices is not holistic and doesn't scale. Add the adoption of cloud services to the mix, and it becomes readily apparent why enterprises need new ways to view systems and empower their networking staff to work more effectively.
To meet these new demands, a new generation of network analytics software is emerging. These products offer a blend of machine learning, artificial intelligence and cloud-based data processing to help enterprises monitor their networks and troubleshoot problems. Some even learn how a network is supposed to operate and can flag managers for potential problems and offer ways to solve any issues that may occur.
Let's take a look at products from three vendors -- ExtraHop Networks, Nyansa Inc. and Savvius Inc. -- and examine how they can help monitor and analyze network performance.

Network analytics tools deepen with machine learning and AI

Jean DerGurahian, Features and E-Zine Editor, SearchNetworking

David Morton, director of networks and telecommunications for the University of Washington, manages a wireless network for three college campuses, three hospital sites and 30 additional clinics; several research locations; and up to 85,000 users connecting up to 200,000 devices.
If anyone asked, he could pinpoint a single device and single user and know whether that person was standing inside a building or was walking outside on the way to class. What provides Morton such deep visibility are network analytics tools driven by machine learning and artificial intelligence principles.
Users of the university's network expect it to always work, no matter how much usage grows, Morton said. Applying new network analytics tools provides a much better look into network performance and helps the university keep up with demands.

How to set up network analytics tools for successful monitoring

Alan Earls, Contributing Writer, SearchNetworking

Network managers are often in a bind. In order to gather sufficient information to get to the bottom of network problems, they need data, lots of it. And gathering and transmitting that data can contribute to the very problem they aim to solve. Furthermore, by their nature, networks often span different functional areas, departments and business units. Gathering information from network analytics tools and through other means, across all those domains, often requires buy-in from others for whom network management is not a priority.

The benefits of machine learning in network management

Terry Slattery, Principal Architect, NetCraftsmen

It's important to understand the distinction of machine learning versus other forms of automation analytics. Older-generation network management systems relied on rule-based systems. These systems are relatively easy to build, because they rely on simple rules network experts can use to diagnose network problems. Rule-based systems define an action to take when a rule is matched. Actions range from generating an alert to launching more complex remediation tasks.
The problem with rule-based systems is they require maintenance and frequent updating as new rules are needed. It is often too cumbersome to create rules where numerous changes in the conditions require very different results. In addition, these systems are not very flexible. The rule sets may miss a problem if the rule set in question doesn't exactly match the problem's symptoms.

About SearchNetworking

SearchNetworking.com is one of the largest and most active online communities dedicated to the enterprise network. IT professionals in almost every industry rely on SearchNetworking.com for industry news, technical tips and valuable best practices on topics like routing, switching, network security, network/systems management, convergence/VoIP and wireless LANs, so they can keep their networks up to date and cope with constant change.

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5G NETWORK & SERVICE STRATEGIES SURVEY REPORT

INTRODUCTION

This report analyzes the results of the survey in the following thematic sections:

- Deployment Timelines & Services
- Radio Access Network (RAN) Evolution for 5G New Radio (NR)
- Mobile Edge Networking & Cloud
- 5G Transport & Backhaul
- 5G Network Slicing
- 5G Core Network

The largest respondent groups were technical, engineering, and network operations personnel from large operators in advanced markets. The U.S. was the dominant region, with as many responses as the Rest of World (RoW) combined; however, all major global regions were well represented.

Report Authors:

- Gabriel Brown, Principal Analyst Mobile Networks & 5G, Heavy Reading
- Sterling Perrin, Principal Analyst, Heavy Reading

SPECTRUM AND NETWORK DENSITY PAVE THE WAY TO 5G SUCCESS

By: Chris Pearson, President 5G Americas

Transformation and Innovation are the foundation of a technological revolution! This wave of revolution is being embraced by the ICT community in the latest generation of mobile technology. 5G is set to change everything. With growing anticipation, countries around the world are rapidly progressing to address the opportunities of a smart connected world.

The technology advancement is fueled by the convergent work of operators, vendors and regulators, particularly in the U.S., helping to achieve several major milestones toward making 5G a commercial reality. In order to support development and deployment of 5G, the Federal Communication Commission's (FCC) September 2018 ruling helped mobile operators in deploying 5G cell sites more efficiently, more timely and with more predictable costs.

Here are key highlights from the FCC ruling:

• When processing applications such as zoning requests and managing deployments in public rights-of way deployments, state and local governments must make their fees transparent and reasonably priced. This helps address the red tape and bureaucratic uncertainty that frequently delayed 2G, 3G and 4G deployments and often resulted in surprise costs.

• The FCC created 60- and 90-day "shot clocks" that state and local governments must follow when reviewing applications for small cells. These ensure that mobile operators and site companies have predictable regulatory timetables when developing and executing their buildout plans.
• State and local governments now have FCC guidance for determining when their aesthetic and undergrounding requirements are onerous to the point of effectively prohibiting 5G sites.

By addressing these and other regulatory roadblocks, the FCC placed the U.S. on a path toward creating 3 million jobs and $500 billion in economic growth that Accenture expects 5G to enable. Also, more than twenty states have done their part by providing similar guidance to encourage the development and deployment of smart cities and rural connectivity through 5G networks.

Yet, there is much work left to be done.
The U.S. and the rest of Americas risk falling behind other countries—not just in terms of 5G coverage and subscriptions, but also in respect to the economic and societal benefits that 5G will enable.

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5G NETWORK & SERVICE STRATEGIES SURVEY REPORT

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Ample Spectrum and Unprecedented Network Density are Key

Twenty years ago, practically every industry presentation had a "hockey stick" slide predicting that mobile data traffic would skyrocket. Precisely that happened and the trend shows no signs of abating. AT&T, for example, says its data traffic increased more than 360,000 percent from 2007-2017.

According to the 5G Americas' white paper, LTE to 5G: The Global Impact of Wireless Innovation by Rysavy Research released in 2018, 5G uses spectrum much more efficiently than 4G. But that will go only so far in enabling operators to keep up with customer demand. Operators require increased spectrum to efficiently deploy 5G and to deliver its transformational capabilities. This is a key reason for which 5G Americas and its operator and vendor members are encouraging the FCC and National Telecommunications and Information Association (NTIA) to study, allocate and auction various low, mid and high bands.

In essence, these U.S. agencies are laying the foundation for a futuristic connected smart and enabled country. Even though the U.S. is a leader in identifying and allocating millimeter wave (mmWave) high band spectrum, it needs to continue the leadership approach by being responsive and providing more spectrum below 6 GHz. Many countries are competing to lead the world in 5G are rampantly allocating and auctioning both mmWave and mid-band spectrum for 5G.

"Our chief responsibility will be finding enough spectrum to support competitive, ubiquitous and secure 5G in America," NTIA Assistant Secretary of Commerce for Communications and Information David J. Redl said in April 2018. "To get there, we need to have spectrum available across the low, mid and high bands. We have been very successful in leveraging existing interagency processes to assess which bands can be opened up – from the low bands all the way up through the millimeter wave range, and beyond."

Chronic spectrum shortage is one reason that 5G became the first cellular technology to use mmWave spectrum bands. FCC's September 2018 ruling proved to be a crucial milestone because the ultra-high frequencies are deemed significant for 5G. However, the higher the frequency, the shorter the distance a cellular communications signal will travel.

Thus, to provide seamless 5G coverage in cities and suburbs using mmWave bands, mobile operators need a much higher density of cell sites than they did previously for LTE at lower spectrum bands. The FCC's cell site streamlining ruling ensures that operators are enabled to deploy 5G sites faster than they could under most pre-existing traditional state and local regulations. Cell sites are critical to providing good coverage for customers.

Build It and They Will Come—Again

Spectrum and network density are principle ingredients for 5G success -- and that success provides for innovation to ignite positive change in our society. Tremendous growth came about because 4G changed the connected society by enabling new businesses and new ways for people to communicate. With 5G, the changes will be many times greater. For example, taking a look in the future:

Data will continue its' tremendous growth. In Cisco's November 2018 VNI report they forecast that global data traffic will grow at a CAGR or 46 percent between 2017 and 2022, reaching 77.5 exabytes per month by 2022

New business models will develop. Consider all the household brands that were founded after the first commercial 4G networks in the U.S. were launched in 2010, such as Instagram, Lyft and Snapchat. These are multibillion- dollar companies built on the ubiquitous broadband connectivity that 4G enables, and also examples of how businesses and consumers are increasingly making mobile their primary connection.

Wireless will be the future. In 2017, wired devices were already less than half of all global IP traffic, according to Cisco's Visual Networking Index. By 2022, mobile and other wireless traffic will grow to 71 percent. Connected devices will provide automation and smart everything – smart cities, homes, factories.

5G will innovate all areas of our lives. Whether through smart factories and industrial automation, smart cities, Ultra-Reliable Low-Latency Critical Communications (URLLC), Vehicle to-Everything (V2X) communication, wearables, Virtual Reality and Augmented Reality, enhanced security-- no one knows what will be the next Instagram, Lyft and Snapchat of the next decade.

But if history is our guide, 5G will be critical to enabling all of them. That is a connected future being built by innovative operators around the world today – for the benefit of society tomorrow!

Wind River to Showcase Edge Cloud Compute Applications at Mobile World Congress

ALAMEDA, Calif. – Feb. 20, 2019 – Wind River®, a leader in delivering IoT software to critical infrastructure, will be demonstrating edge cloud technologies with its partners from across the Wind River Titanium Cloud ecosystem at Mobile World Congress taking place February 25-28. Showcasing a variety of use cases, Wind River Titanium Cloud virtualization platform will be featured in demonstrations at partners' booths.

Through the collaboration of industry-leading software and hardware companies, the Titanium Cloud ecosystem ensures the availability of interoperable standard products optimized for NFV deployment with Titanium Cloud to help accelerate time-to-market for service providers and telecom equipment manufacturers (TEMs). The Titanium Cloud ecosystem program currently includes more than 50 members.

"It is exciting to work with fellow industry leaders across the ecosystem to showcase innovative edge cloud computing solutions," said Paul Senyshyn, vice president of telecommunications at Wind River. "By validating and pre-integrating their offerings with the Titanium Cloud virtualization platform, our ecosystem can deliver optimized solutions that are ready for deployment in live networks to service providers and TEMs."

Demonstrations with ecosystem partners include:

Amdocs: This demo highlights the Intel TrueVR application that utilizes Titanium Cloud with Amdocs NFV powered by ONAP service orchestration to enable service providers to deploy services faster, at lower cost, with guaranteed uptime to extend the benefits of virtualization form the core the edge.

Altiostar: This demonstration from Altiostar includes one of the industry's first virtualized 5G cluster, highlighting vRAN utilizing mmWave.

Blue Planet, a division of Ciena: A showcase of 5G orchestration and automation, this demo features Blue PlanetÒ multi-domain service orchestration from Ciena, edge cloud infrastructure from Titanium Cloud, CDN technologies, and a data center running vEPC technology to show an end-to-end 5g environment.

Intel: Intel's FlexRAN reference architecture is providing connectivity to a variety of demonstrated use cases at the Intel booth. These FlexRAN based demos are using Titanium Cloud to deliver reliable service uptime, security, and low latency communication.

Kontron: Kontron's commercial-off-the-shelf hardware platforms combined with Titanium Cloud demonstrates how a branch office deployment can be done in a more cost effective, easier to operate and flexible way, with ultra-reliability, performance and security.

Lenovo: Combining technologies from Lenovo and WiZR AI-enabled video analytics along with Wind River Titanium Cloud, this Multi-Access Edge Computing (MEC) demonstration showcases how Lenovo's edge servers can help monetize network assets and accelerate time to revenue. In this MEC use case, a high bandwidth application (eg: WiZR video processing) is migrating to the edge of the network, closer to where data is created and illustrate how service providers can more effectively offer new services.

Mavenir: A leader in transforming mobile network economics, Mavenir will be showing demonstrations of its packet core solutions which will be powered by Titanium Cloud as the NFV infrastructure platform.

RIFT: RIFT.ware showcases Zero Touch Provisioning of a Carrier Grade Geo-Redundant Launch with Palo Alto FW VNF in Active/Standby mode across Multi-Cloud Wind River Environment. 8.0H16.

Sandvine: Highlighting Sandvine's cloud-ready network policy control solutions with Titanium Cloud, this demo shows how business intelligence can be added to a network, as well as increase revenue, reduce network costs, and improve subscriber quality of experience.

In addition to the work we are doing with our partners and customers, the Wind River meeting room will also have a demonstration available, by appointment only, of StarlingX, a fully-featured open-source cloud for the distributed edge based on seed code from Titanium Cloud.

The Titanium Cloud portfolio comprises a fully integrated, reliable, and deployment-ready virtualization platform that enables service providers to deploy virtualized services faster, at lower cost, and with high uptime. Titanium Cloud provides an ideal software infrastructure for the rigorous demands of critical infrastructure applications such as telecommunications networks and industrial control.

More information about Wind River telecommunications solutions and technologies is available at http://www.windriver.com/markets/telecommunications/.