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PIPELINE | VOLUME 19 | ISSUE 6

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POWERING FIBER WITH GIS



IMPROVING CX
WITH AI

FEATURING:



THE NEW
DX
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PREVENTING
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MOBILE-FIRST **OMNICHANNEL CX**

STEAMING CONTENT TO THE EDGE

SCALING **NETWORKS AND SERVICES**

SIMPLIFYING

CX

COMPLEXITY

WITH:



COMMON
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CX

**DATA-
DRIVEN
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The Impact of Transformation



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END-TO-END SOLUTIONS FOR HFC Network Rebuilds

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Mobily Forms New Partnerships Across a Wide Range of Technology Fields

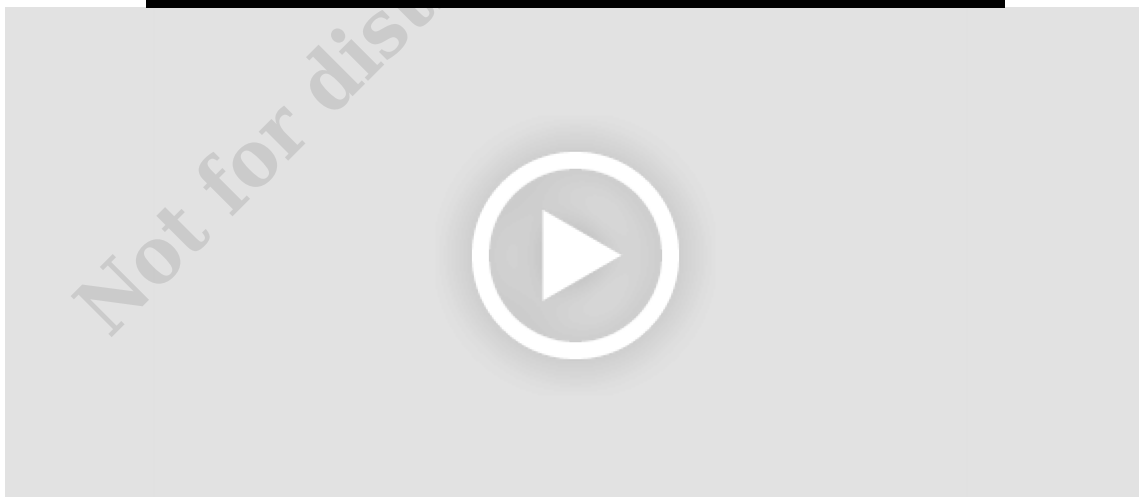
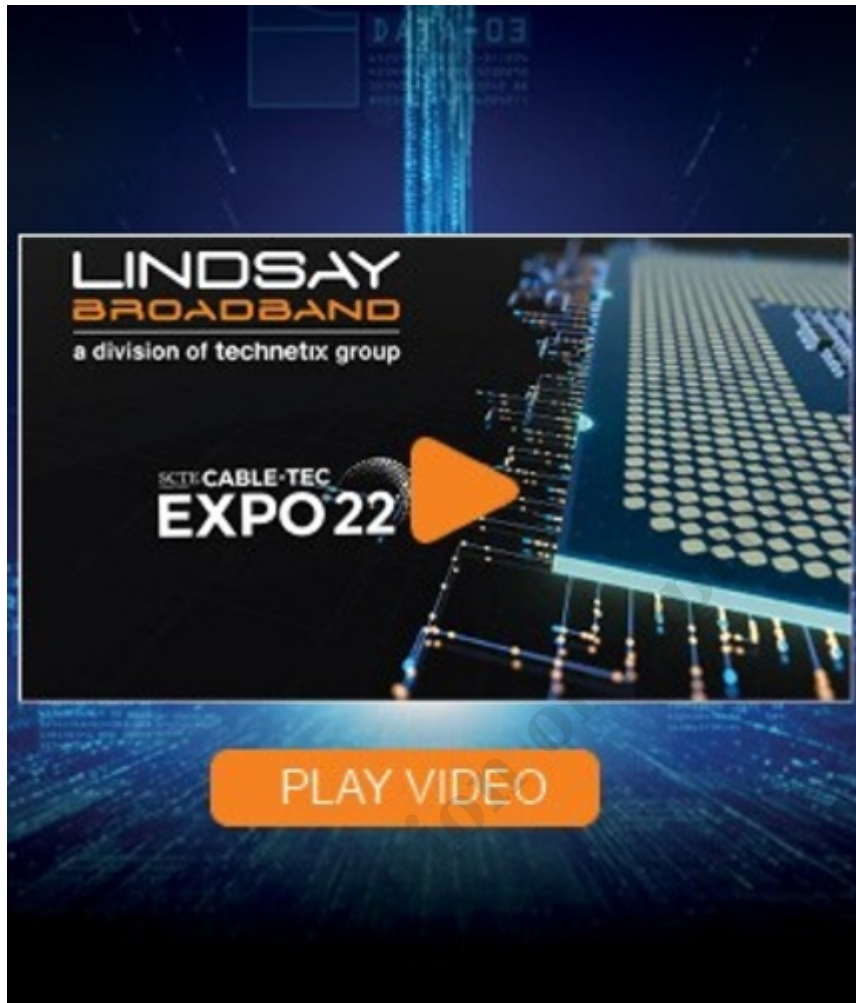
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AT&T and ServiceNow Help CSPs Manage 5G/Fiber Network Inventory

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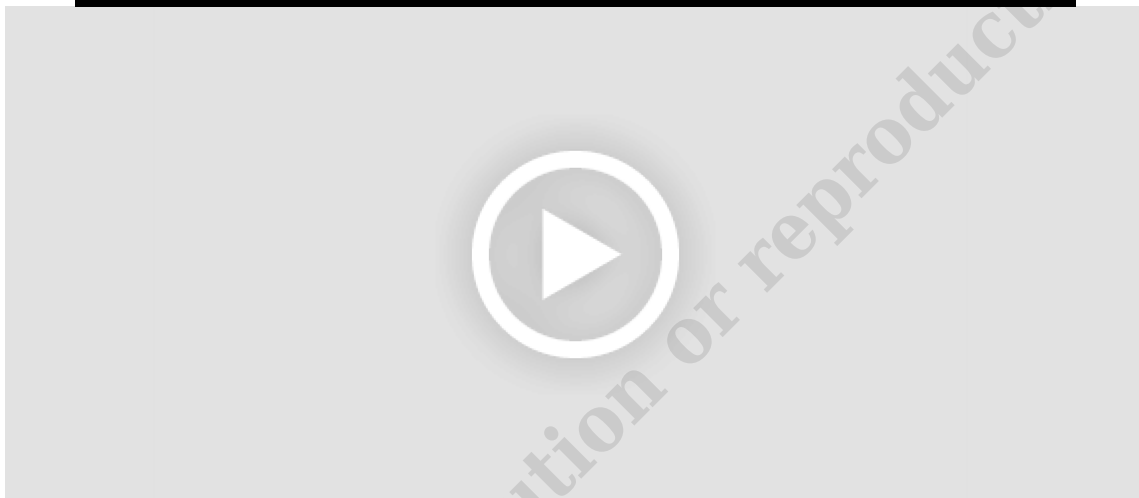
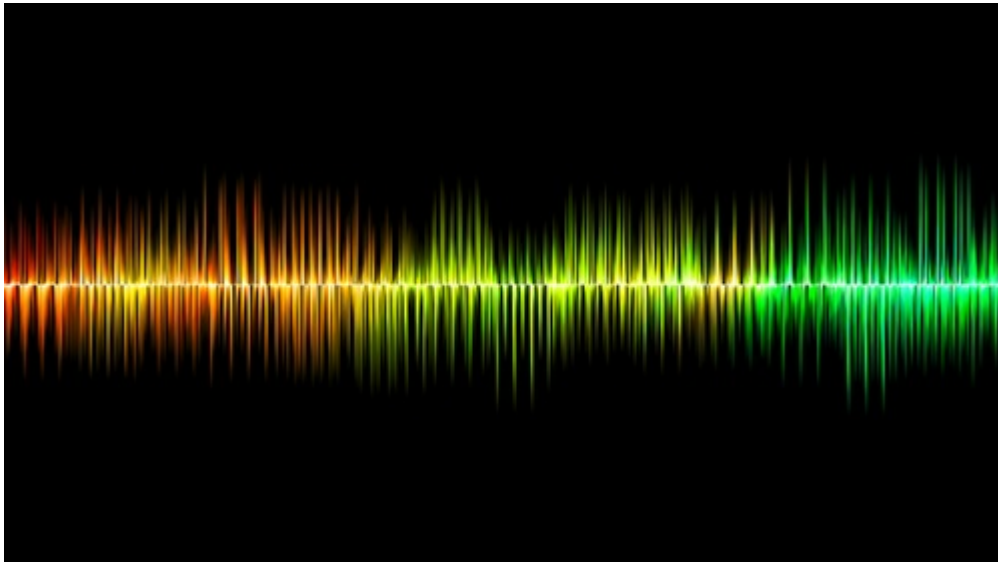
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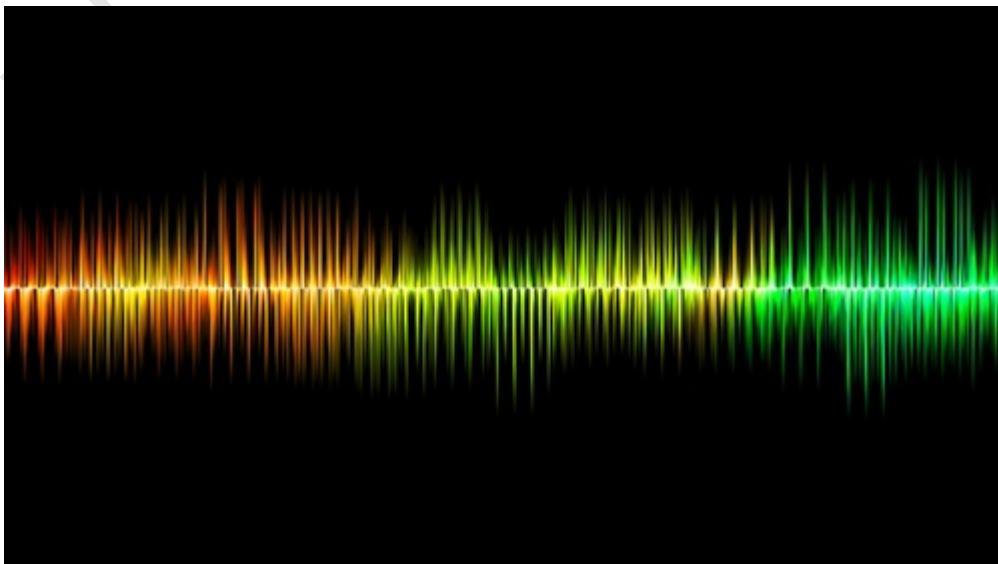
End-to-End Solutions for Broadband Networks

In case you missed Lindsay Broadband - a division of Technetix group at the SCTE Cable-Tec Expo, this video highlights the must-have, end-to-end solutions for your network.



Predicting Colonial Pipeline: Mitigating Risk and Compliance

Mitigating risk and compliance for lawful intercept using lawful intelligence is explored in this Pipeline article feature SS8. Learn how CSPs can comply with lawful intercept regulation, while empowering law information with critical, real-time data.





The Network Transformation Imperative

*A Dynamic Panel Discussion Featuring
The Industry's Top Thought Leaders*



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Agile Architecture for Digital Innovation

*A Dynamic Panel Discussion Featuring
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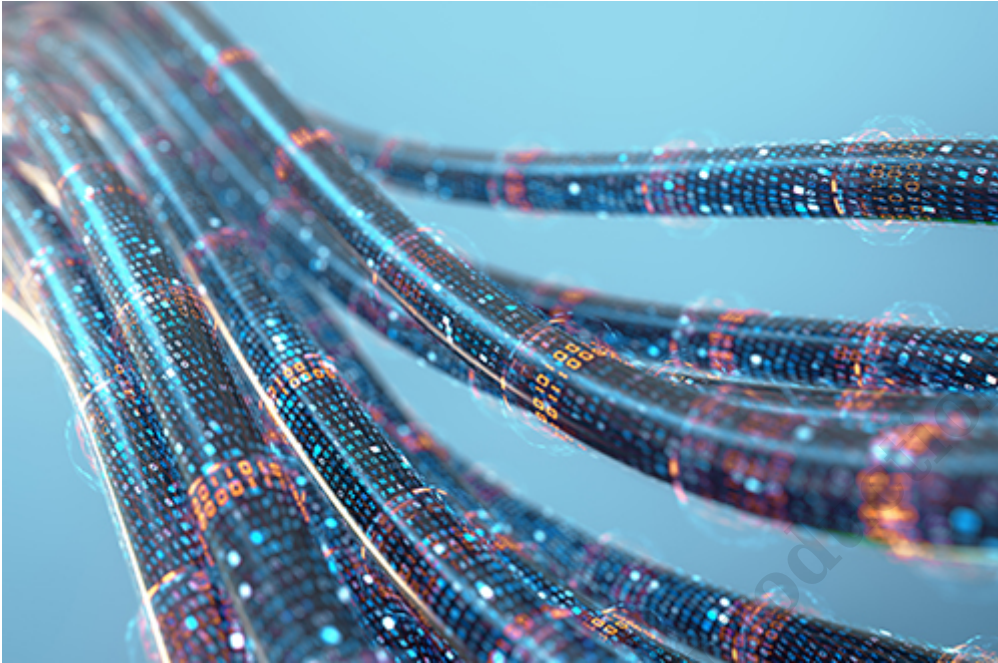
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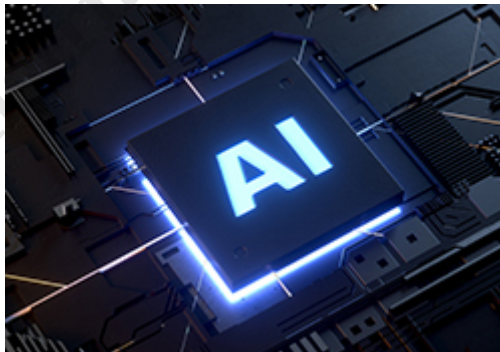
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Sigma Systems and NDS

Orchestrating New and Unified Entertainment Experiences

Upgrading traditional offerings and deploying new hybrid IP platforms are an increasing focus as service providers look to evolve to offer a truly personalized video entertainment experience to subscribers – anytime, anywhere and on any device. Sigma Systems and NDS have developed an integration partnership to help service providers achieve this goal by provisioning and delivering advanced video and entertainment services that attract subscribers and generate new revenue.

One Managed View of Video Access Entitlements

Critical to the success of leveraging the NDS solution portfolio for advanced TV/video services is the ability to seamlessly enable customers to access and view premium content. Sigma Systems provides the service orchestration for the necessary authorizations, entitlements and provisioning of NDS systems for subscribers through a single OSS solution – managing video conditional access rights, entitlements for premium content, VOD, DVR/PVR and also provisioning IP set-tops and residential gateway devices.

TV Anywhere Authorized to Enable Multiple Devices

Subscribers are increasingly demanding anytime anywhere access to their premium content on multiple devices from their TV, personal computer, and personal tablets such as the Apple iPad®. Sigma Systems provides comprehensive subscriber entitlements management, which is key in seamlessly delivering the multi-device, multi-room, TV anywhere entertainment experience to subscribers. Service providers benefit from service fulfillment that extends beyond subscriber service plans and profiles with a completely integrated view and management of users, devices, and cloud-application entitlements.

Effectively Migrate Subscribers from Standard to Premium Entertainment Packages

Delivering new entertainment experiences to subscribers doesn't have to involve an immediate and costly video network evolution. Sigma Systems empowers service providers to leverage existing video networks in order to move beyond linear for services such as digital TV, PPV, VOD, and DVR/PVR through support for next-generation IP TV IP video platforms, like NDS, on a single integrated OSS service management platform. This co-existent service fulfillment environment manages the provisioning and activation of all enhanced entertainment services, helping service providers to launch new premium video services and bundled packages that drive new revenue and reduce customer churn.



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Rural America needs access to broadband. But closing the digital divide can be complicated—and with so many service providers facing increased competition, mounting costs, supply chain issues and eroding revenues, you need more than a quick fix.

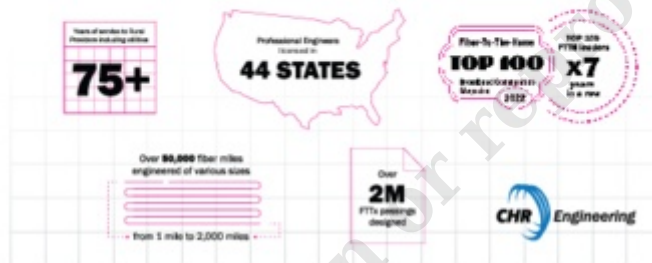
CHR Solutions has the technology and the expertise to help you make informed decisions that enable you to get the job done efficiently, on budget and on time. From feasibility studies to network design to construction, we partner with you every step of the way to optimize your operation and increase your speed to market.

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CHR helped to train and guide us through the fiber-to-the-home design, engineering and permitting processes. They have become my go to liaison with city, county and state permitting authorities. If you want to work with people that are willing to help and get your foot in the door in your state right-of-ways, I highly recommend CHR (they even do wireless & tower engineering too)!

-Jason Pond, CEO, Grizzly Broadband, LLC

Our Experience. Your Advantage.



White Paper

Orchestrating the Evolution to Cable IP Video

Written by:

Alan Breznick, Senior Analyst, Heavy Reading



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Design, Deliver and Manage Triple-Play Services



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PTP Test Applications

Harmedoun Douki, Product Specialist, Transport & Datacom Business Unit

4G/LTE deployments and increased bandwidth requirements in Carrier Ethernet services are the driving force behind the new backhaul network technology. Synchronization is required for cellular and wireless network operations because base stations must be synchronized in order to hand off calls between base stations, minimize dropped calls and ensure proper billing. Since precision time protocol (PTP) provides both phase and frequency, it is quickly becoming the synchronization technology of choice for packet networks.

WHAT IS IEEE 1588V2/PTP?

PTP provides high clock accuracy in a packet network by continuously exchanging packets with appropriate timestamps. In this protocol, a highly precise clock source, referred to as the grandmaster clock, generates timestamp announcements. It also responds to timestamp requests from boundary clocks, thus ensuring that the boundary clocks and the slave clocks are precisely synchronized with the grandmaster clocks. By relying on the holdover capability, the precision of the integrated clocks and the continuous exchange of timestamps between PTP-enabled devices, the frequency and phase accuracy can be maintained within a submicrosecond range, thus ensuring synchronization throughout the network.

The objective of PTP deployment is simple: by exchanging timestamps, the slave clock can determine its offset from the grandmaster clock and thus adjust itself. This provides frequency and phase synchronization through packet distribution.



Figure 1. PTP network

PTP USE CASES

PTP is a packet-based technology. As the synchronization packets used by PTP are forwarded throughout the network between the grandmaster and hosts, they are subject to delay (latency), delay variation (packet jitter) and frame loss. Despite applying high priority to synchronization flows, synchronization packets will still experience congestion as well as routing and forwarding issues (e.g., out-of-sequence packets and route flaps). The host clock's holdover circuit must be stable enough to maintain synchronization in the event that synchronization packets experience these network events.

In addition to testing packet metrics to make sure they meet the service level agreement (SLA), in some cases, it may also be critical to validate the frequency measurements of the sync signal. A few use cases are detailed herein. Table 1 summarizes the different synchronization testing applications.

Service Turn-Up	When	Who	Tests	Duration	Product
Ethernet backhaul and PTP client turn-up	Performed every time a tower is put in service	Field technician	- EtherSAM (Y1564) - PDV GE measurements - Client emulation	30 minutes at 7 hour	NetFlaker Series
Sync network installation	Performed when a sync network is being deployed or when a new grandmaster is added	Network engineer	- Wander measurements - DC PDV offset - Slave/client emulation	24 to 48 hours	SyncWatch PRO
Troubleshooting					
Basic troubleshooting	Packet metrics issues/detective slave client	Field technician	- EtherSAM (Y1564) - PDV GE measurements - Client emulation		NetFlaker Series
Advanced troubleshooting	Incorrect clock output/detective grandmaster	Network engineer	- DE, MTE - DC PDV offset - Slave/client emulation		SyncWatch PRO

Table 1. Synchronization applications

EXFO | Assessing Next-Gen Networks

Customer Centricity in the Telecommunications Industry

Transformation from Product-Centric to Customer-Centric
and Creating Competitive Advantage Along the Way

TELECOMMUNICATIONS



Kayla McShane • Vice President, North America
Pitney Bowes Software

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TIME TO TAKE CONTROL

These are challenging times for the telecoms and media sectors. Fierce competition is lowering margins. Converging technologies are making product differentiation problematic. Cost pressures are mounting. Customers are treating products as disposable commodities while brand loyalty is fast becoming a thing of the past.

Facing these difficulties, Communication Service Providers (CSPs) are discovering that delivering innovative, profitable products is an increasingly demanding task, but one that has become paramount to their ability to effectively compete and deliver in this fast evolving industry.

Enterprise Product Management is about taking control over these challenges and providing the key to how CSPs go to market and with what products and services.

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Enterprise Customer Experience Transformation with
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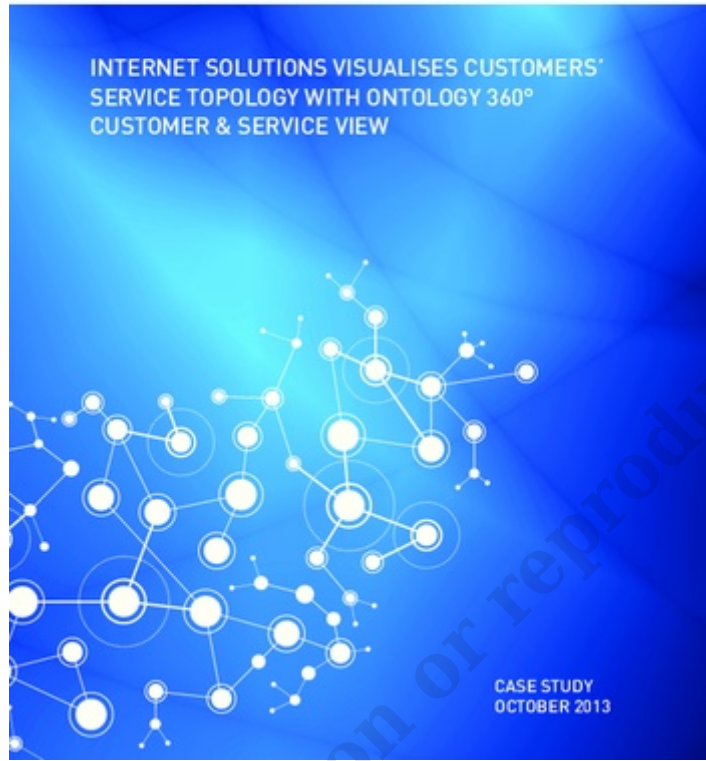
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The Cable Customer of the Future:
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Cable Industry Over the Next 5 Years
CSG International | May 2012

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The Business Potential of NFV/SDN for Telecoms

How a Network as a Distributed Cloud can Reshape Itself to Better Serve Customer Applications

What will you learn

- What are the potential benefits of implementing Network Function Virtualization (NFV) and software-defined networking (SDN)?
- How to transform the (access) network towards a distributed cloud platform capable to reshape itself dynamically to better serve customer applications?
- How to run network functions and customer cloud applications on the same hardware?
- What are the benefits of collocated network functions and customer applications for improving customer experience?
- Why is it essential to implement control via policies in the NFV/SDN scenario?
- How does BSS/OSS support NFV and why should OSS work in real-time?

Network Function Virtualization (NFV) appears to be a very promising, yet very disruptive, technology. At its simplest, NFV is about decoupling software from hardware and enabling the implementation to run on a farm of commodity hardware. In other words, it means placing network functions (NF) in the cloud.

The Potential Benefits of NFV/SDN technology

From the perspective of network operators, the new technology entails the ability to become a real cloud provider in a new sense, where a network is no longer simply an access network to data centers. On the contrary, the network can become a cloud serving as a platform for customer applications, and it can dynamically reshape its architecture to meet customer needs. This revolution is possible thanks to combining NFV and software defined networking (SDN) technologies, which means that networks can adapt by being reprogrammed. Moreover, network nodes can also become part of distributed data centers that not only can host network functions, but also host applications. From the perspective of customers, this means that applications can be moved "closer to the customer," entailing lower latency and higher speed, thus leading to better customer experience.

The technology also promises to open the network to innovation from the software developer ecosystem. Instead of rigid networks that are difficult to adjust to different application needs, the network is to be programmable, ready for the era of the Internet of Things (IoT), where applications can have their own virtual networks programmed.

From the cost savings point of view, the liberation from dedicated (expensive) hardware in favor of commodity (cheap) hardware promises to reduce CAPEX (capital expenditure). Also, the idea of a purely software-based network reconfiguration should reduce OPEX (operational expenditure). This may not be that obvious if one of the goals is to make the network more dynamic, reshaped to meet the needs of applications and thus be much more complex to control, when a traditional approach to network management is taken.



From the cost savings point of view, the liberation from dedicated (expensive) hardware in favor of commodity (cheap) hardware promises to reduce CAPEX (capital expenditure). Also, the idea of a purely software-based network reconfiguration should reduce OPEX (operational expenditure).

Weathering the Wireless Tsunami
**How MNOs Can Reach
High Ground in Today's
Communications Market**

By ConceptWave Software Inc.

WHITE PAPER

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NetDesigner Network Rollout, Resource and Asset Management

VISUALIZE your network
TRACK network rollout
DESIGN in hours not weeks
MAINTAIN accurate data

AUTOMATE network provisioning
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MINIMIZE costly errors

NetDesigner streamlines the complex process of planning, implementing, operating, and optimizing next generation networks. Components of NetDesigner can be deployed on a standalone basis or integrated to enable end-to-end automation.

NetDesigner is an Esri GIS-based geospatial network design and management solution for complex, multi-domain networks. NetDesigner optimizes resources, enhances workflow, improves customer service, and maximizes operational efficiency, allowing for unprecedented cost savings.



Centralized repository and single workspace

NetDesigner offers a consolidated workspace and a single, accurate data repository to enable planning, design, construction, and operations for a next generation network.

Automated design

Design automation within NetDesigner enables engineers to develop a baseline network design

within hours instead of weeks. Design parameters can be customized by changing business rules to meet unique requirements.

Powerful business intelligence and planning

NetDesigner allows users to plan "what-if" scenarios, simulating what it would mean to bring network resources to underserved communities and targeted businesses. Users can integrate with visual, schematic map elements, and third-party data (e.g. ARRA, Connected Nations, demographics, census data, wire-center information, FCC data, flood plain barriers, environmentally sensitive areas, etc.) to get a comprehensive and visual overview of a proposed or as-built network. The Bill of Materials functionality allows users to quickly acquire project costs and/or material costs of any design and generate equipment reports.

Modular, flexible, standards-based solution

NetDesigner is modular and can be deployed as a standalone solution or integrated with other applications to manage fiber, wireless, copper, coax, and hybrid networks, structures, and other assets. Using standard out-of-the-box APIs, NetDesigner may be integrated with systems such as OSS, BSS, ERP, Facilities Management, and many others to automate end-to-end service provisioning, customer relationship management, and network operations.



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*An Excerpt - BRIDGING THE OSS/BSS GAP –
STRATEGIES FOR DYNAMIC ORDER MANAGEMENT
(OSSCS 11-11)*



January 2011

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"We Accelerate Growth"

Digital transformation, which is the key for higher agility, efficiency, cost reduction and improved customer experience, is inevitable for CSPs to survive in the new digital economy. However, large-scale digital transformation projects are expensive and risky and may take years to complete. Meanwhile, agile competitors are eroding your market share. Speed to digitalization is imperative.

Why Etiya's Digital Business Platforms??
 Etiya Digital Business Platforms, unlike legacy BSS, will create real value for your business. They do not only provide technical capability, but offer an infrastructure to create an all-digital customer experience, with the personalization and flexibility demanded by Connected Customers. All this in a matter of months, while ensuring business continuity and, at the same time, reducing traditional BSS costs.

Advanced technology to enable better customer focus
 Etiya's AI expertise and platform capabilities are used to differentiate the BSS platform via better customer insights, more personalized customer experiences and increased process automation. Knowing your customers' behaviour and needs allows personalized customer interactions and service targeting, and supports smart decision making during the customer journey, that will ultimately drive both customer and employee efficiency and satisfaction.

Etiya uses innovative AI technologies, including natural language processing (NLP) techniques and predictive analytics in its platforms to help companies transform their businesses and reduce costs.

Modular, flexible, cost effective and scalable digital solutions
 Etiya Digital Business Platforms are 5G ready, agile, end-to-end, and fully virtualized digital platforms. They are cloud-native, full-stack platforms that are pre-integrated into partner solutions and include all Etiya's product portfolio: Customer Relationship Management (CRM), Customer Service Management (CSM), Configure, Price, Quote (CPQ), Product Catalog, Order Management, OmniChannel Management, Billing and Charging and API gateways. They support both B2C and B2B customer segment operations.

Since the platforms use a modular, API-driven architecture, they are flexible. CSPs can select to launch a full-stack new BSS platform, to replace their legacy platform, or modernize it step-by-step, by choosing which platform components they want first and add new solutions, as needed, later.

Its cloud-compatible implementation significantly reduces up-front CapEx, and all this enables fast implementation and a cost-effective digital transformation. And easy scalability also means, that the costs grow as the business grows.

Etiya real-time, automated digital platforms use microservices to speed time-to-market for new products and enable easy experimentation with new business models and service concepts.

How does it work??
 Etiya Digital Business Platforms contain three main layers: Experience, Engagement, and Enablement. Data analytics, AI, and business intelligence functions are used to add intelligence to these layers and enable personalization, process automation, and efficiency.

Etiya Digital Business Platform Solutions			
Digital Experience	Online self-care, E-commerce, Mobile App, Content Management	Open APIs	Data Analytics, AI, Business Intelligence
Digital Engagement	CRM, CPQ, Offer Management, Rewards & Loyalty, Community Management, CSM, Recommendation Engine, Order Management		
Digital Enablement	Product Catalog Management, Charging & Rating Management, Billing Management, Partner Management, Policy Management		

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The Ultimate Edge: Building a Lunar Network

Robert Brumley, co-founder and chairman of Commstar

The Uplift Advantage

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