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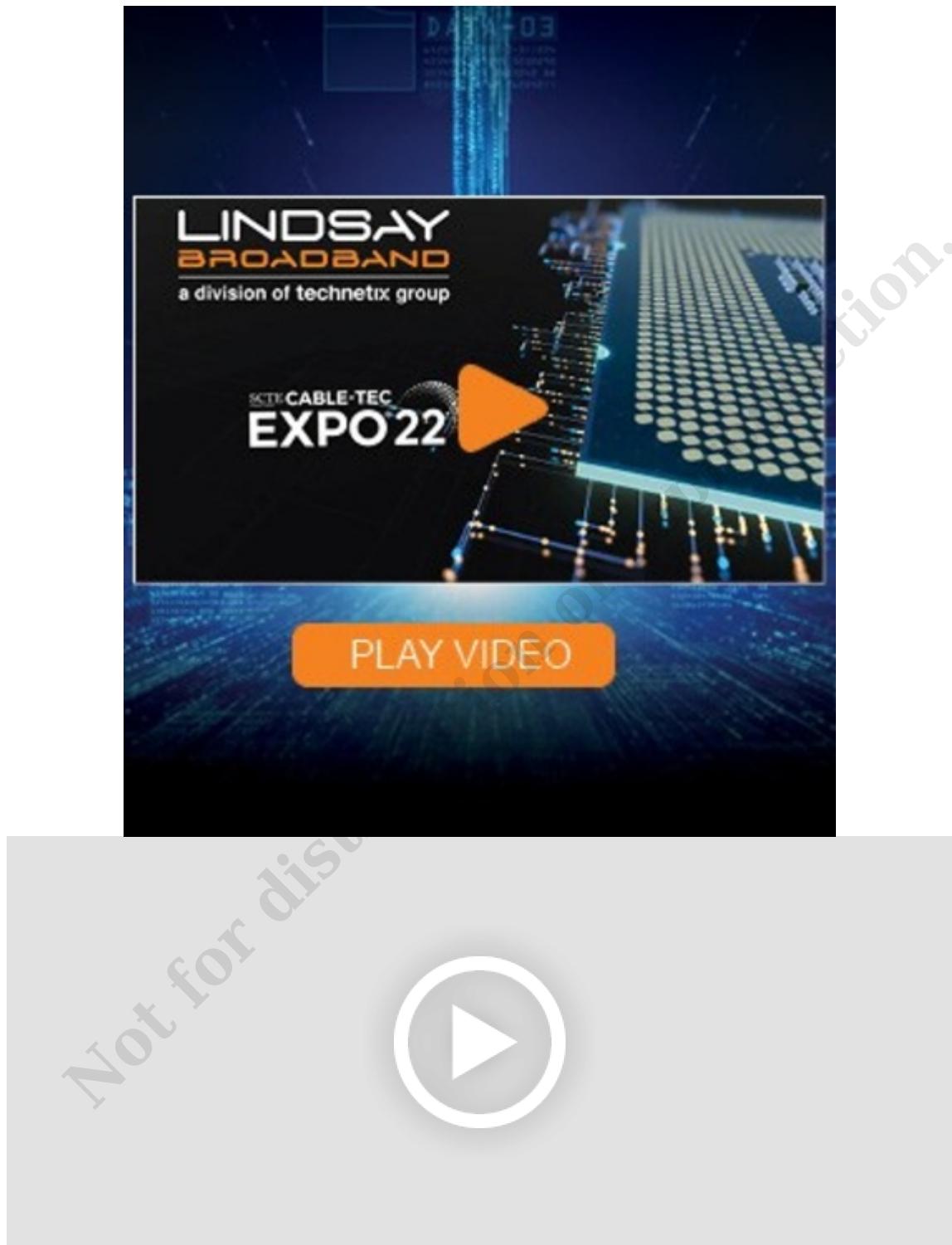
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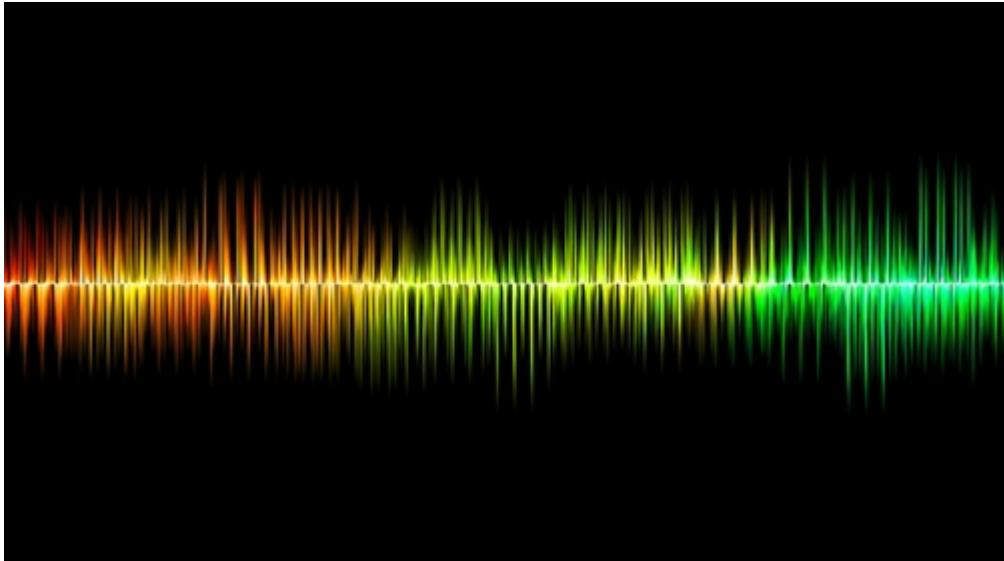
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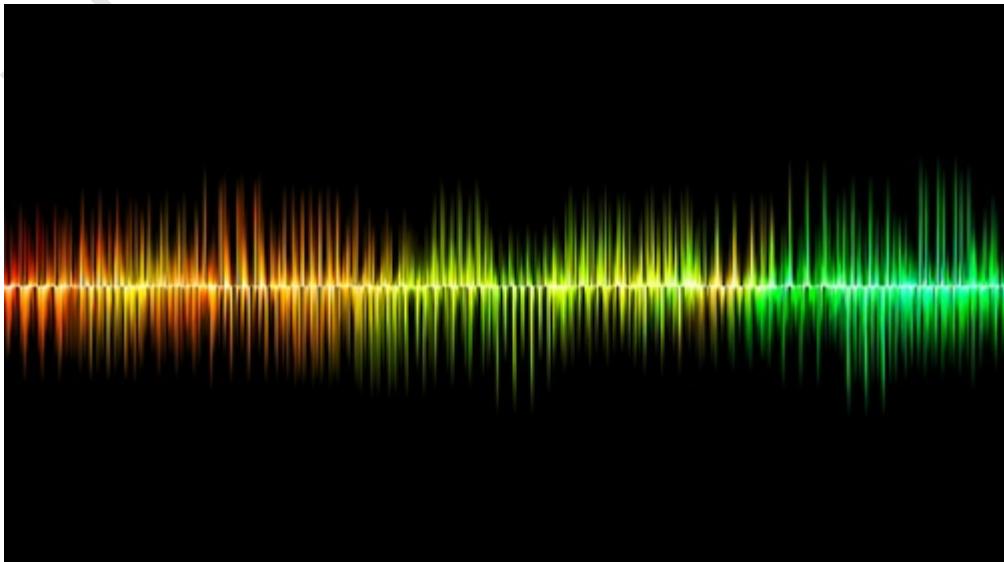
### End-to-End Solutions for Broadband Networks

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.





## Podcast: The Evolution to 6G

The world's eyes are already looking forward to the potential of 6G. Demands resulting from innovative use cases, for instance specific requirements from different industries and other user groups, as well as overarching goals like sustainability, are driving the standardization and development of mobile technologies.

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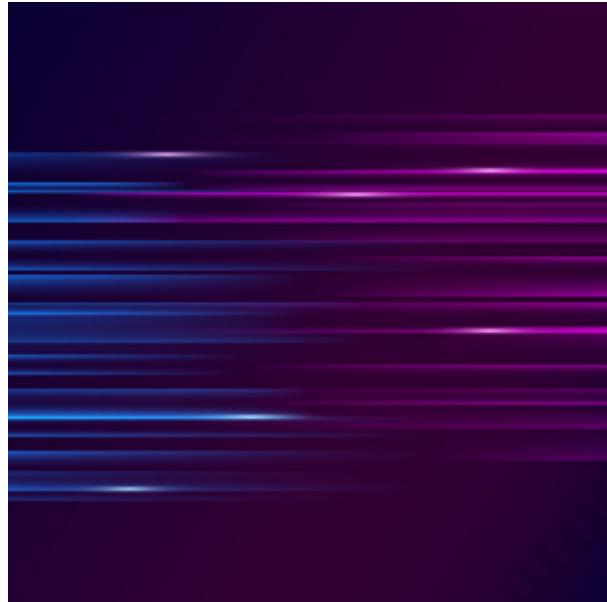
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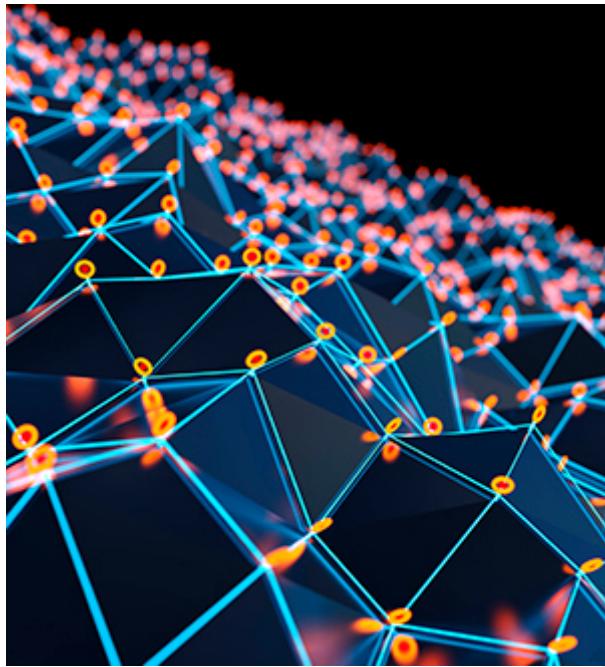
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## Embracing A Catalog Driven Social Network

By Faisal Ishaq  
Principal Solutions Architect & Regional Sales Director  
ConceptWave Software Inc

WHITE PAPER

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## Implementing a Scalable, Common Element Management System for Large Multi-Vendor Networks

### Verizon Business and Nakina Systems Case Study

In 2005, Verizon Business set out to build a state-of-the-art, ultra-long haul (ULH) transport network and converged packet access (CPA) network initially comprised of more than 20 different types of equipment from 10 different equipment vendors.

#### Service Delivery Challenges

In order to deliver a new service across multiple network equipment providers (NEP) devices and SONET/SDH, WDM, Ethernet, and IP/MPLS networking technologies, Verizon Business needed to integrate a complex set of networks and applications spanning up to thousands of network nodes.

Adding a new device type or application to this heterogeneous environment often required upgrading both hardware and software across the entire network. For a large scale networking environment, this can be an incredibly complex task since the new services need to be delivered via different NEP products and networking technologies.

The network initially comprised 20 different types of equipment from 10 different equipment vendors, spanning hundreds of thousands of network nodes.

#### Operations and Integration Challenges

Verizon Business used a mixture of operational and business support systems (OSS/BSS). These systems were deployed on unique platforms from different NEPs, operating with proprietary software applications and communications protocols.

NEP-provided EMSs tend use proprietary OSS interfaces with varying levels of security and lacking the scalability needed by a large, global network operator.

Substantial system and software integration work was needed to make each EMS function sufficiently for the network operations personnel to manage the network. The effort to maintain multiple systems including hardware, element management systems (EMSs), testing and training could not be easily elastically scaled to support the new services Verizon Business wanted to deliver.

The challenge facing Verizon is typical for a large, global communications service provider and can be summed up in a single word: complexity.





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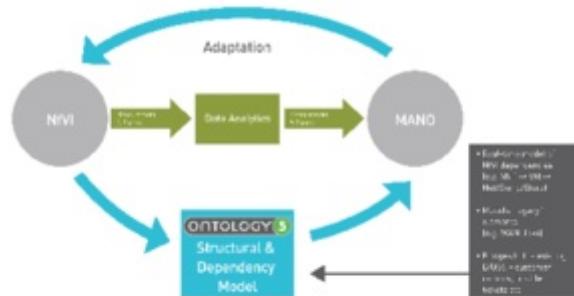
SS8's Xcipio platform ensures CSPs not only meet regulatory compliance, but are able to provide the most accurate data to intelligence agencies in real time.

As NFV moves from labs and trials into production, the need to assure the services it delivers has become urgent, but legacy tools struggle to deliver because they are unable to absorb the new reality of automated, high-speed orchestration.

Ontology 5 builds a real-time service topology across legacy, physical, logical and virtual service components and uses it to power next-generation service inventory and assurance functions for NFV, hybrid and multi-domain services.

This complete view of service elements, at all layers in the infrastructure in complex and high-automation environments, is indispensable to operationalising NFV, enabling functions such as:

- Service assurance and service impact analysis in both next-generation and hybrid environments
- Fault Investigation
- Coordination of multiple orchestration components
- Close integration with the OSS/BSS - required for functions such as order and trouble ticket management



Building coherent and complete views of "legacy" infrastructure and services is a hard problem because of the variety and quality of the source data required to do so: it is spread out over many systems and is generated by processes with many manual steps that introduce noise. This is a problem that Ontology 5's Intelligent 360 for Networks Operators has already solved.

The high-automation in virtualised environments will mean that data is of much higher quality - within each of those environments - but it will nevertheless come from a range of sources - VMs, orchestration, data centre management and, of course, the OSS - and it will be much higher velocity data. OSS and network data will start to look like "big data": high velocity, high volume and high variety. Ontology 5's real-time features are ready to address this.

Cost-effectively combining these two worlds is what Ontology 5 does, so you can continue to know your network now.

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### **Navigating the Chaos: Identity Access and Configuration Management Strategies for SDN & NFV**



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## Whitepapers

## Use Semantics to Deliver Flexible Service Management and Avoid the Risks of OSS/BSS Transformation



by Arindam Banerjee | April 2009

### Executive Summary

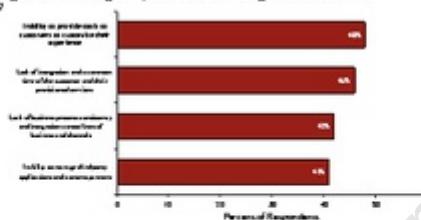
The customization and convergence of services across application silos and disparate networks are critical to communications service providers (CSPs) aiming to provide innovative services, reduce customer churn and drive average profitability per user. CSPs realize that providing innovative services is not enough; it is critical to offer end users customized services with consistent and flawless quality of service (QoS), which is impossible without an end-to-end unified customer- and service-level view. This is where most service providers falter. Our research clearly points out the glaring problem that exists with most service providers' back-office OSS/BSS systems, which are typically complex, disjointed and lack the agility necessary to present a coordinated 360-degree customer-centric view. In a recent global CSP survey conducted by Yankee Group, more than 60 percent of surveyed global CSPs agreed that improved customer experience is directly linked to improved ARPU.

Most service providers take a top-down approach to express customer and service views. However, they often adopt a service model that in most cases does not capture the complexity of integrated as well as heterogeneous underlying infrastructure. Only when the relationships among underlying systems, services and customers are mapped out in the infrastructure is it possible to achieve the goal of traditional service modeling. The reality, when it is needed today is a bottom-up approach that looks at how existing systems map to existing customers instead of a more traditional top-down approach.

CSPs have invested billions to streamline and modernize their OSS/BSS infrastructure to achieve the agility required to see all of their assets in one view, which in most cases has failed to deliver the desired service-level transparency. Exhibit 1 illustrates the critical factors inhibiting CSPs from being competitive and delivering innovative services to customers. Not surprisingly, the inability to have a common view of customers, lack of customized service delivery and business process inconsistency are the top factors that hamper service providers from rolling out innovative services.

**Exhibit 1.** Critical Factors Inhibiting CSPs from Being Competitive and Delivering Innovative Services

Source: Yankee Group, 2009



In light of current economic challenges, it is clear that telecom service providers are squeezing their capex budget to align with lower revenue growth expectations. Hence, although a unified end-to-end service model remains on top of their priority list instead of full-scale and expensive transformation roadmaps, CSPs and managed service providers are looking for an alternative low-risk incremental path toward a unified service model. In this report, we look at CSPs' current operational issues; take a deep dive on a unique, alternate semantics-based approach toward achieving a unified virtual service model; and investigate how such an approach can enable customer visibility by solving the problem of siloed infrastructure data.

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### IMPACT OF 5G ON LOCATION ACCURACY & LAWFUL INTERCEPTION

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Leveraging Microsoft Dynamics CRM, Omnia360 best-of-breed software platform delivers a comprehensive, turn-key back office solution for CSPs to monetize new untapped revenue opportunities.

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Omnia360 provides a holistic view of your customers. Within a single screen, service providers can view all billing, accounts receivable, orders, and service details. Our solution helps drive operational efficiencies by empowering you to enforce business-specific rules, create custom fields, and even integrate third-party applications with simple point-and-click customization.

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95% answer a call when they know it is from a trusted source.



**Identification Verifier**

I can assure my business customers know who they are speaking with, and consumers can have the confidence to trust their caller ID and answer the phone again.



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\$29B helping carrier providers recoup the \$29B annual revenue lost to fraud.



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Source: ICX Research, Oct 2012, pg. 10



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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 colocating 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 OSS/BSS 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," enabling 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).*

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