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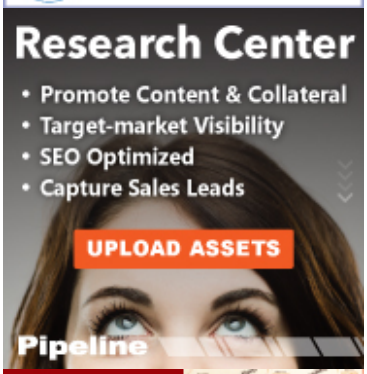

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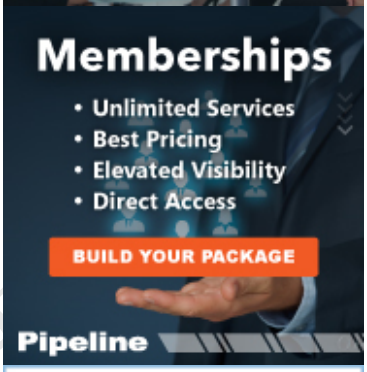

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## Featured Content

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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.

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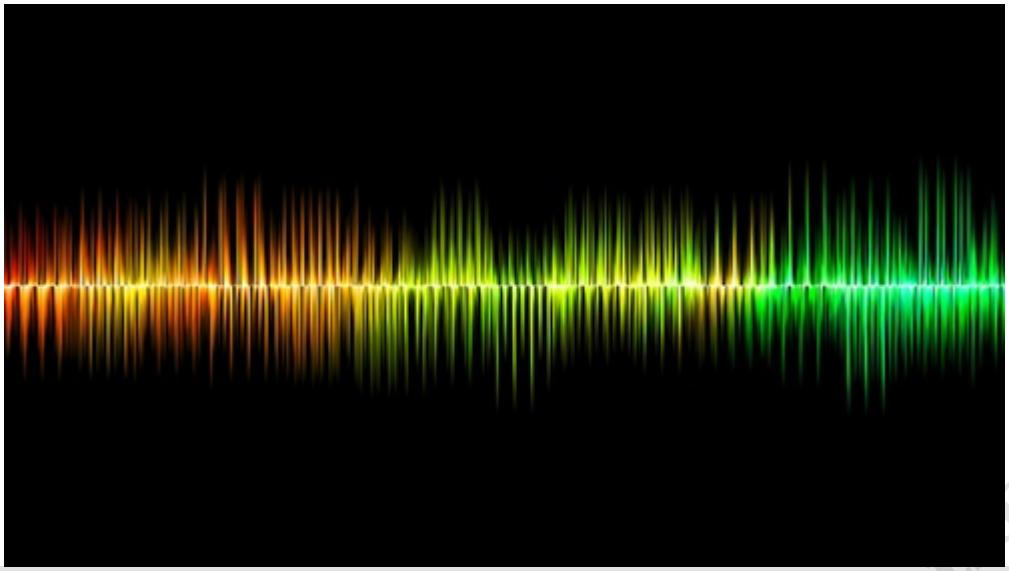
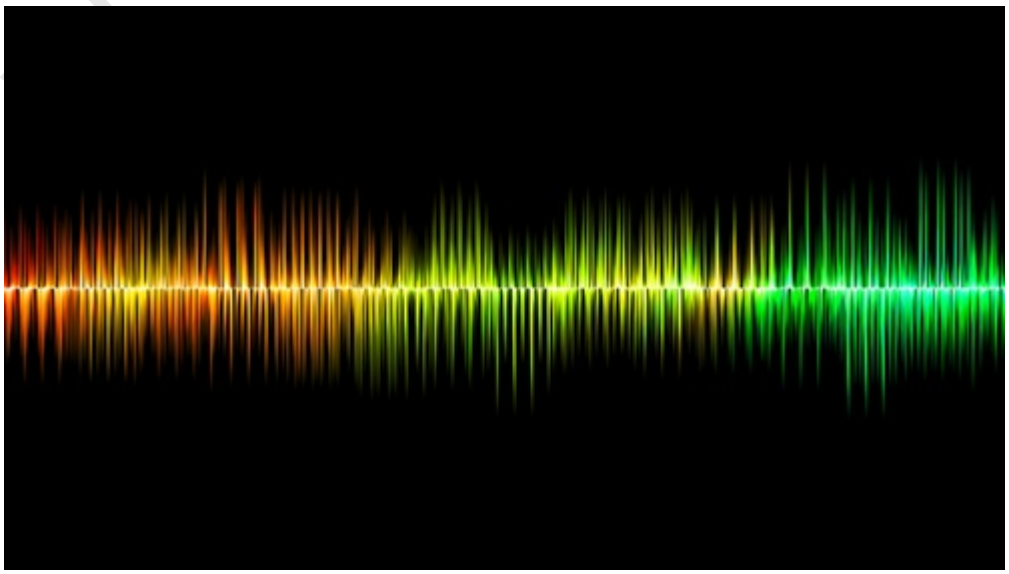


**Predicting Colonial Pipeline: Mitigating Risk and Compliance**

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.



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## 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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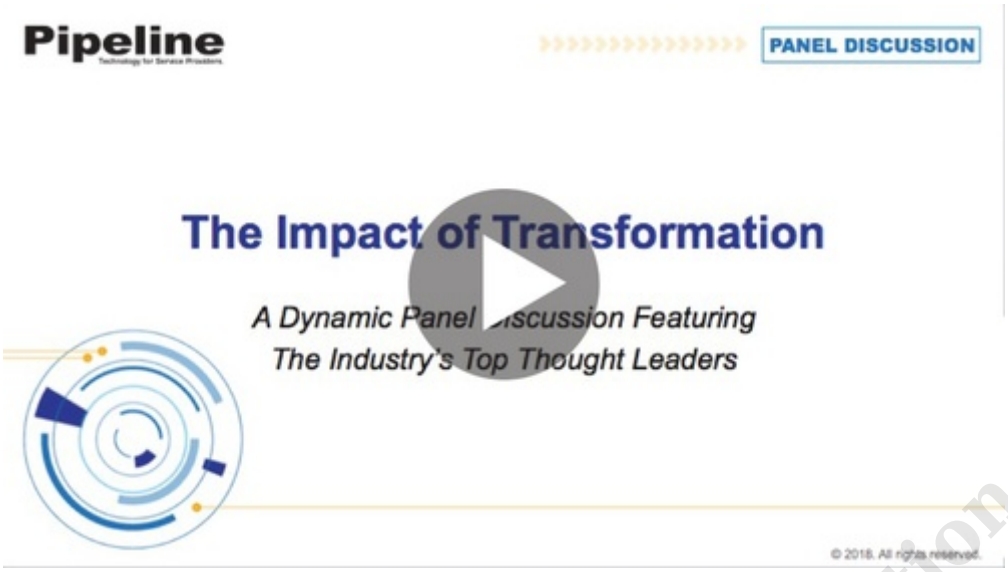

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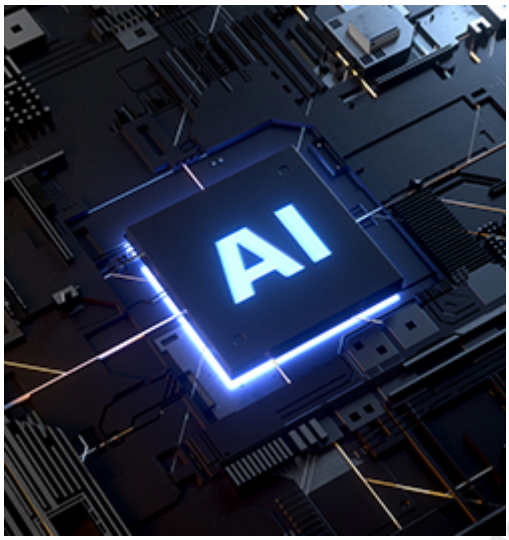


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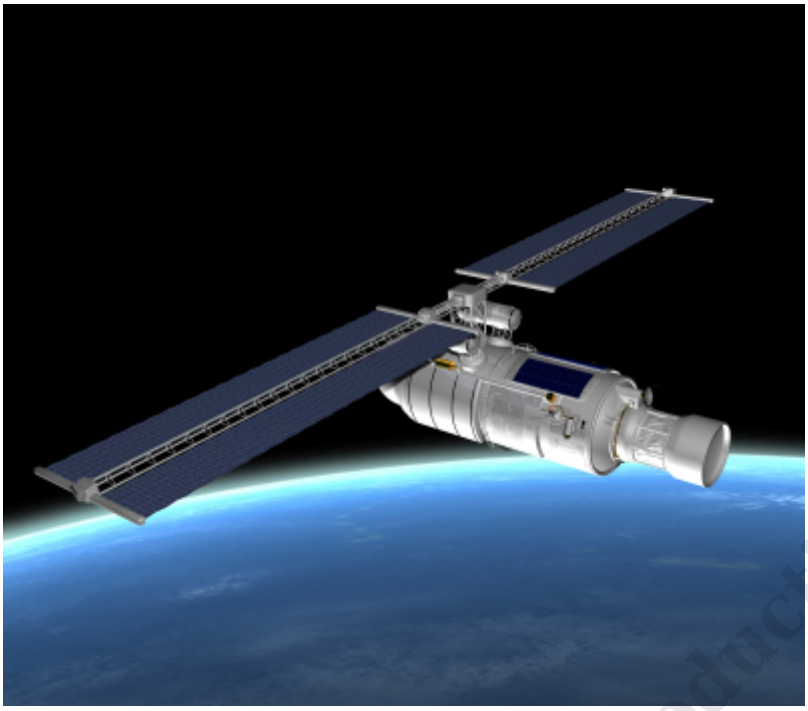

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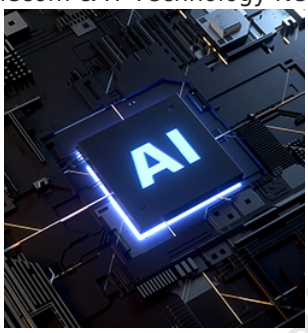


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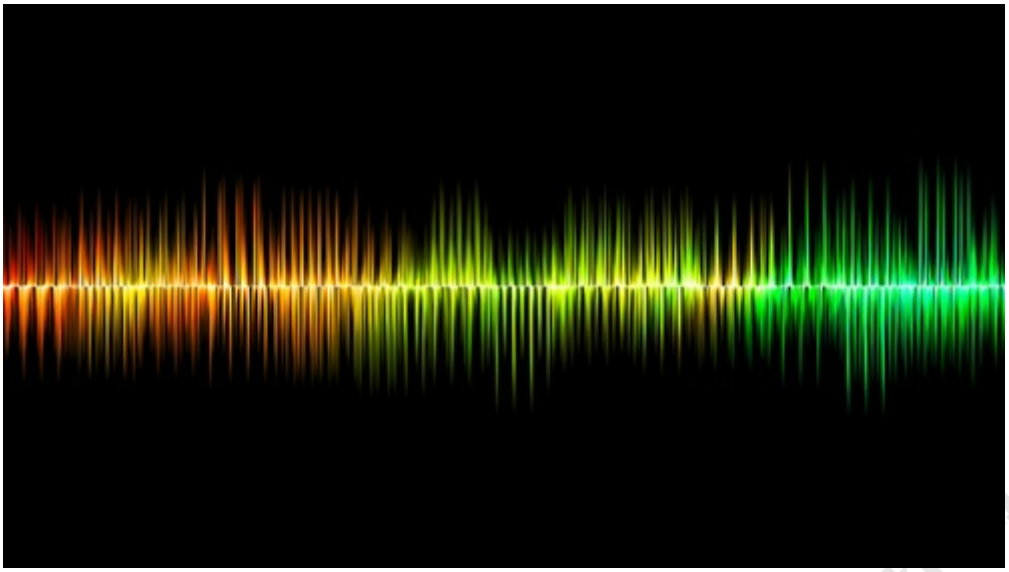

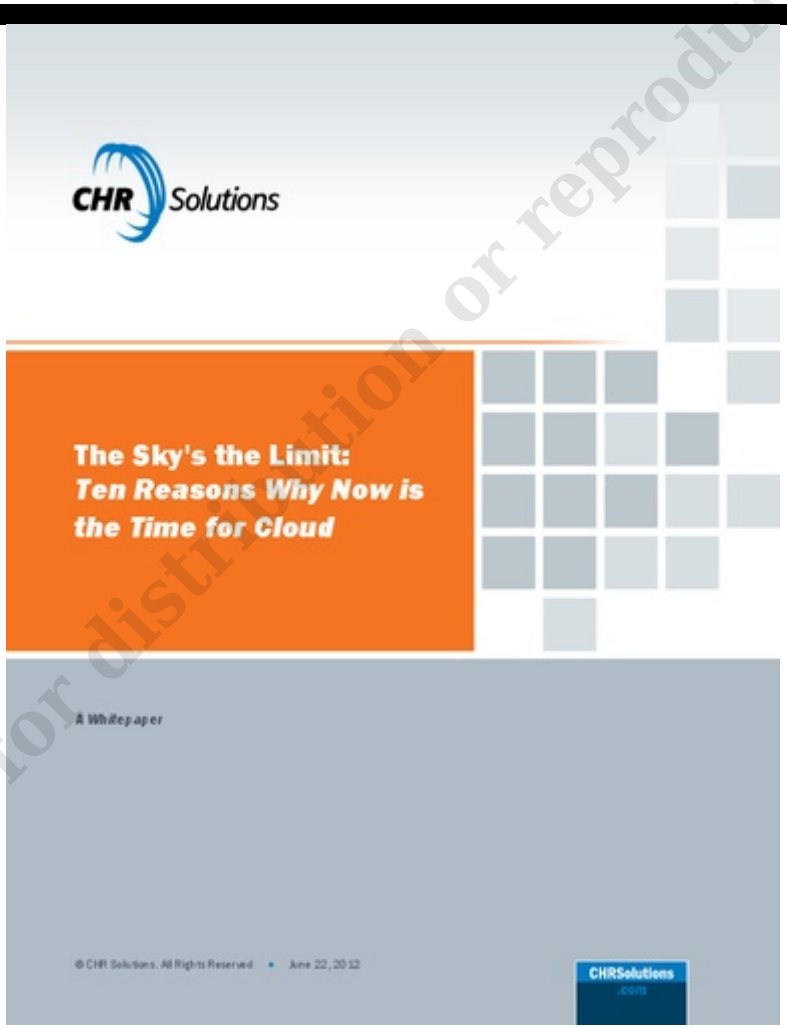


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## Inventory Discovery & Reconciliation

**If you want to get where you're going, you need an accurate map. Nakina Systems' Inventory Discovery & Reconciliation solution provides a true picture of your network's physical and logical inventory, so you can see beyond the horizon.**

### Setting sail

In today's hyper-competitive environment service providers are tasked with rolling out new services quickly — and delivering a superior customer experience. Yet rapid network expansion presents new challenges. Discrepancies between inventory and the real network are the norm, causing reduced order processing capacity, slower fault isolation and provisioning failouts. Nakina Systems' Inventory Discovery & Reconciliation solution discovers optical, Ethernet, IP/MPLS, and other network equipment and reconciles against industry standard inventory systems to reduce failouts and provisioning times. Without an automated discovery and reconciliation solution like Nakina's, the investment in network-wide inventory systems is impossible to monetize.

### Staying on-course

A true picture of your network topology is an absolute necessity for rapid rollout of new services, efficient operation, and a predictable customer experience. Nakina's continuous reconciliation capabilities ensure the highest levels of network integrity. The discovery engine is constantly in contact with the network, performing regularly-scheduled inventory discovery and reconciliation with network inventory databases. This constant feedback loop helps highlight inconsistencies before they become difficult problems. Nakina's customers can identify poor capacity management, lack of redundancy and many other challenges before they cause outages or other problems.

### Finely tuned instrumentation

Nakina Systems' network integrity solutions enable our customers to accelerate time-to-revenue through faster deployments. Without a high integrity image, matching capacity to demand is a hit-or-miss affair: work orders and customer orders fall out due to non-existent or oversubscribed ports; scarce capital resources are consumed when spare capacity is unused elsewhere. With an accurate and current picture of the network, there is no destination too far.

### Key Functions

Nakina Systems' Inventory Discovery & Reconciliation replaces ad hoc data with a true network integrity solution. With an accurate picture of the network, you can feel more confident about the state of the network and your ability to deliver new services on-time and on-budget.

**Multi-Vendor, Multi-Domain Topology Discovery**
- Discovers Optical, Ethernet & IP/MPLS NEs (L0/1/2/3 networks)
- Reduces provisioning times

**Full Discovered Physical & Logical Inventory**
- Topology, Lines, Protection Groups, End-End Circuits
- Eliminates fall-outs due to inaccurate inventory

**Pre & Post Circuit Qualification**
- On the fly qualification of resource availability to support Assign & Design process

**Integrated Security Solution**
- Eliminates fall-outs due to access issues and password issues
- Profile-based protection of access to network information

**Standards-based Interfaces**
- Simple, Cost-Effective Integration with 3rd Parties

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Application Note 278

# Cloud Connectivity Management Made Simple: Your Cloud Services Are As Good As Your Network

Bruno Giguère, Advisor – CTO Office, EXFO

## INTRODUCTION

Cloud services are the Holy Grail for service providers. As enterprise customers look to reduce IT expenses, cloud services are looking more promising than ever in terms of achieving these savings. Although multiple stakeholders are increasingly involved in the delivery of cloud services, none have as much impact as cloud carriers.

But first, let's start with a simple question: "What exactly is cloud computing?" According to the definition recently published by the National Institute of Standards and Technology (NIST), "Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction." The document further elaborates on its definition by providing a list of essential characteristics, in addition to service and deployment models. The essential characteristics are: on-demand self service, broad network access, resource pooling, rapid elasticity and measured service. A definition for each characteristic is provided in the following NIST publication. By applying a network view of these characteristics, it becomes immediately clear that a static and classic network is not able to deliver on these promises. An intelligent and dynamic network is mandatory to delivering on these essential characteristics.

*Figure 1. Cloud connectivity*

Figure 1 shows the data flow for delivering cloud computing services and the two types of connectivity required, as follows:

1. Cloud transport connectivity
2. Cloud application connectivity

Cloud transport connectivity can be described as the connectivity between cloud consumers and cloud content. This connectivity makes delivery of cloud computing services to the cloud consumer possible. In order to deliver this type of connectivity, cloud carriers need high-performance services with multiple classes of service and high availability.

Cloud application connectivity can be described as the connectivity between cloud content. This connectivity provides the ability to move data between the computing resources via different data centers. For cloud application connectivity, services must be high performance and be available at all times.

This application note discusses the technologies being used to deliver the different type of connectivity, and the management steps (e.g., activation, performance monitoring and troubleshooting) required to successfully deploy cloud computing services.

## GOT CONNECTIVITY?

To deliver cloud computing services, cloud providers must possess the computing infrastructure necessary to process and store very large amounts of data, and rely on cloud carriers to connect all the pieces together. This section covers the different types of connectivity used to deliver cloud computing services in more detail, and also covers the technology used to achieve this connectivity.

### Cloud Transport Connectivity

The original connectivity strategy for cloud computing was the Internet. What better a solution than the most ubiquitous WAN technology to access data centers? Although the Internet is great for consumer applications, it lacks the attributes mandatory for enterprises: security, network performance, data governance and regulatory compliance [MEF CS].

*Figure 2. Current challenges in Internet service delivery (Source: Metro Ethernet Forum)*

EXFO | Assessing Next-Gen Networks

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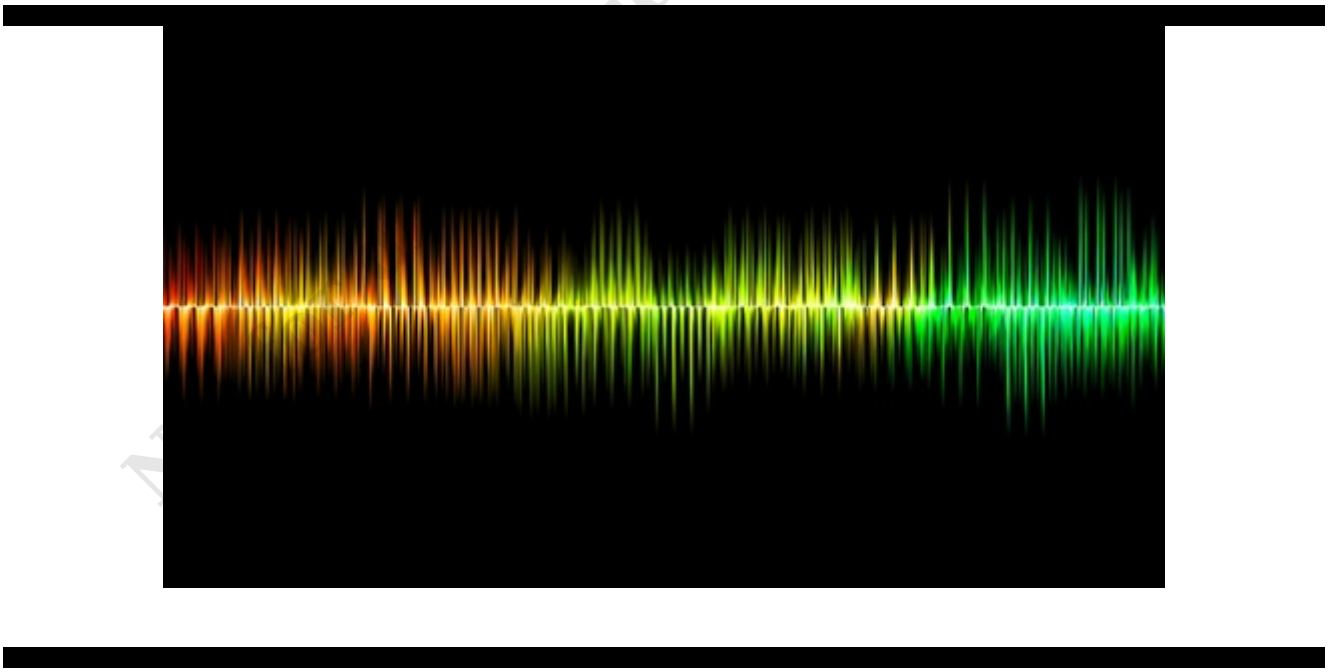

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# Sigma Systems and TiVo

## Orchestrating New and Enhanced Entertainment Experiences

As consumer demands for a more personalized video entertainment experience continue to skyrocket, service providers are seeking new ways to remain competitive and seamlessly deliver over-the-top (OTT) content to subscribers. Today, Sigma Systems and TiVo have developed an integration partnership to help service providers achieve this goal by embracing and provisioning the TiVo video platform as a part of their bundled service offerings.

### One Managed View of Video Access Entitlements

Critical to the success of offering a service like TiVo to customers is the ability to seamlessly enable them to access and view subscribed content from the TiVo device. 'Sigma Systems' provides the service orchestration for the necessary authorizations, entitlements and provisioning of the TiVo service for subscribers through a single OSS solution – an essential element to delivering both on-network and 3rd party content and entertainment services. Subscribers receive the content they want, while service providers maintain customer satisfaction.

### Provision and Manage Premium Video Service Products & 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 video platforms, like TiVo, on a single integrated OSS service management platform. This co-existent service fulfillment environment manages the provisioning and activation of all video services, helping service providers to launch new premium video services and bundled packages that drive new revenue and reduce customer churn. In addition to viewing premium video and entertainment services offered by TiVo, service providers can also integrate with and deliver existing video products on the TiVo set-top box.

### Effectively Manage the Entire Video Delivery Chain

Sigma Systems is the only OSS vendor today that has created a TiVo solution adaptor. With this unique solution adaptor, we have extended our video service fulfillment expertise beyond linear TV by enabling the support, integration, and provisioning of the TiVo service. Our single, integrated OSS solution seamlessly provides order management, provisioning and entitlement management across all technologies and systems. This single integrated solution manages one image of the TiVo service delivery value chain for the subscriber, network, device and content from the cloud.

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NEW SERVICES | DELIVERED.

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CHR Solutions

**WiFi** solutions

For more than 75 years, CHR has designed, built, managed and monetized networks that matter– including one of the first five LTE networks in the nation and fully integrated **WiFi** networks for the Department of Defense.

Whether your goal is to implement a **WiFi** network that guarantees outstanding coverage for broadband Internet access or you're seeking new revenue streams by becoming a VoIP or Wireless Internet Service Provider, our experience enables the entire ecosystem.

CHR's **WiFi Solutions** include flexible end-to-end or a-la-carte options that range from concept, to construction, to customer management. Our certified engineers and best-of-breed partners stand ready to aid in every aspect of your WiFi project.

## Whitepapers

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**Cellular One of Northeast Arizona Selects Info Directions' Billing, CRM and Point of Sale Solution**

*Integrated OSS/BSS/POS solution to help frontier-based wireless provider improve operations and enhance service value throughout its customer support and retail units*

LAS VEGAS, CTIA WIRELESS (April 1, 2009) — Info Directions, Inc. (booth #5706), leading developer of net-centric billing, rating, order management, workflow and selling solutions for the telecommunications industry, is pleased to announce that mobile service provider Smith Bagley, Inc., dba Cellular One of Northeast Arizona has selected its CostGuard® OSS/BSS software application and Lexys Point of Sale module. Smith Bagley, Inc. will use the company's line of software solutions in the Info Directions ASP to manage rating, billing, CRM and retail operations for its growing subscriber base.

Smith Bagley, Inc. dba Cellular One of Northeast Arizona is a rural cellular communications company that provides voice and data service over a GSM network in northeast Arizona, southern Utah, and northwest New Mexico. Providing service since 1990, Smith Bagley, Inc. is committed to offering its more than 60,000 subscribers the latest in phones, accessories, content and services for mobile communications.

With the implementation of the CostGuard OSS/BSS and fully integrated Lexys Point of Sale module, Smith Bagley, Inc. will have the ability to secure a single view of customer activities and purchases from both its headquarters location and throughout its network of more than 20 retail locations. The company will leverage the shared CostGuard and Lexys Product Catalog to streamline the launch of new products and services and create upselling and cross-selling opportunities using CostGuard's patent-pending Guided Assignment feature.

"We look forward to using CostGuard to further our mission of providing our customers with cutting edge products and services – from handsets to laptop aircards and everything in between. Having an integrated billing, CRM and point of sale solution gives us the infrastructure needed to improve our operations and respond quickly to the evolving demands of our subscriber base," said Melissa Covington, Director of Technical Operations of Smith Bagley, Inc. "We are pleased to find a partner like Info Directions that is committed to serving the rural wireless market. We anticipate building a long and mutually beneficial partnership with Info Directions."

-more-

## Brochures

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CHR Solutions

# Omnia360™ Product Bulletin

**PLATFORM**

- Centralized Customer Management
- Dynamic Product Catalog
- Powerful Business Analytics
- Market-Leading CRM

**MODULES**

- Account Management
- Billing
- Product Catalog
- Case Management
- Order Capture & Management
- Financials
- Service Activation
- Dashboards
- Facilities Management
- Sales & Marketing
- Capital Credits

Omnia360™

- **Improve Monetization Opportunities** with a unified customer view and increased pipeline visibility
- **Simplify Business Systems** with a complete, pre-integrated back office solution
- **Elevate Customer Experience** with consistent customer interactions

**A dynamic, pre-integrated billing and CRM solution that brings together your entire business ecosystem.**

Omnia360 transcends traditional billing platforms with a complete "out-of-the-box," pre-integrated customer relationship management and billing solution. Available as a fully-hosted cloud-based solution or onsite license subscription, our next-generation solution empowers communications service providers (CSPs) with a client-centric model for service differentiation and rapid deployment of new services, especially within the Enterprise space.

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.

**Centralized Customer Management**

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.

**Dynamic Product Catalog**

Omnia360 delivers a dynamic, centralized product catalog enabling the selling and fulfillment of next-generation products and services, such as cloud services, productivity solutions, unified communications, and Voice over IP products — all while enabling traditional voice, video, and data products. This unlimited product hierarchy capability helps optimize sales accuracy while reducing the time it takes to complete the entire concept-to-cash cycle.

**Powerful Business Analytics**

It is critical for management to be able to monitor business performance. Omnia360 maintains a single scorecard that covers sales, marketing, and customer service. This up-to-the-minute information provides in-line charts with drill-down intelligence to visually navigate data, identify trends, and uncover new insights.

**Market-Leading CRM**

Combine the familiar Microsoft® Office fluent user interface with powerful CRM software to maximize marketing effectiveness, win more sales, and enrich customer service interactions. Leveraging the power of Microsoft Dynamics® CRM, marketing and sales professionals are equipped with flexible segmentation tools, simplified campaign management capabilities, lead-to-cash visibility, real-time sales forecasts, and much, much more. Customer service specialists are empowered with tools that simplify case management, streamline escalations, improve knowledge sharing, and enable more effective account management, all while helping to contain service costs.

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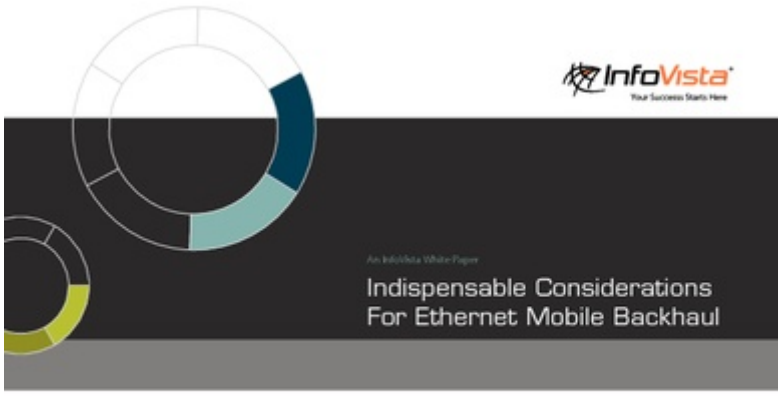


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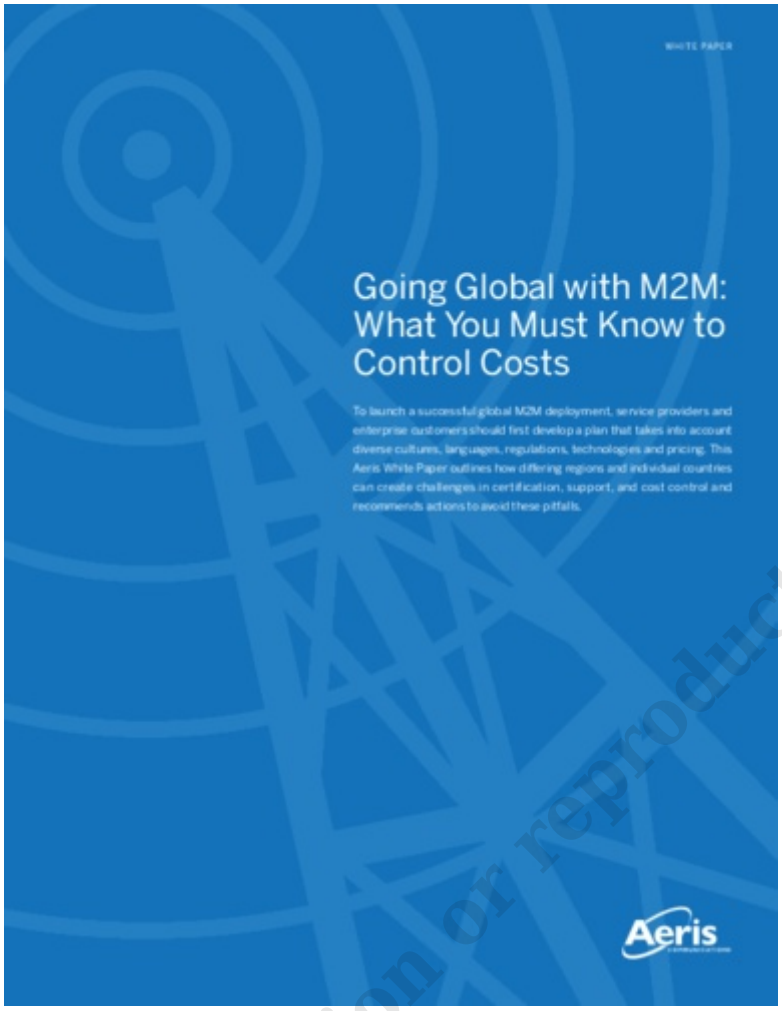


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# MDS BillAnalyzer

Deliver clear e-bills to business customers, provide the management information and customized reporting they need to effectively manage their accounts and services, simplify integration with existing infrastructure, improve ROI and reduce risk.

## Consolidated e-billing and Analytics for Business Customers

Communication Service Providers (CSPs) are faced with the challenge of how to increase revenues and drive up profitability despite intense competition and slow growth in core markets. One revenue growth strategy being pursued is to expand into new business areas and increase the range of products offered. However, this expansion can increase billing complexity and have a negative impact on customer experience. As business customers represent a significant source of revenues for CSPs, it is imperative to deliver increasing levels of value to customers while reducing complexity and minimizing the cost to serve.

Businesses are demanding access to tools that enable them to view their consolidated bills, analyze usage, leverage business intelligence reports and control the cost of the services they use across their organization. CSPs need to satisfy this need to differentiate from the competition, attract and retain key customers, and efficiently deliver a superior customer experience.

## MDS BillAnalyzer

MDS BillAnalyzer is a sophisticated e-billing and analytics application that allows you to present an integrated view of products and services to business customers. It provides a seamless customer experience from disparate billing systems and allows business customers to manage their consolidated bills in a convenient manner that eliminates the need for paper bills. Powered by the Lavastorm Analytics Engine, MDS BillAnalyzer provides light-touch integration capabilities to deliver rapid go to market and low-risk deployment that capitalizes on existing infrastructure.

MDS BillAnalyzer Analysis Dashboard

## Advantages for CSPs

### Single View of Products and Services

MDS BillAnalyzer has been designed to be billing-system agnostic. It streamlines the task of bringing together information from multiple billing systems, presenting the customer with a single, converged view of their services. Its non-intrusive ETL functionality and standard APIs simplify the capture of data from multiple sources, provide data synchronization and assurance, support data enrichment for presentation, and offer rapid system integration with low project risks and costs.

### Single View of Customer

With MDS BillAnalyzer, CSP care staff and relationship managers can view bill and usage data in the same way as customers. It provides them with a holistic view of the customer and their services, enhancing first-time call resolution and helping staff to have a better understanding of the true value of the customer.

MDS BillAnalyzer

MDS

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Pipeline

Technology for Service Providers

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

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Forrester Consulting
MAKING LEADERS SUCCESSFUL EVERY DAY

FORRESTER

Prepared for Progress Actional
February 2009

# The Total Economic Impact™ Of Progress Actional Management For Interconnected Applications

Implemented by a communication and media service provider

Project Directors: Paul Devine and Sebastian Selhorst

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