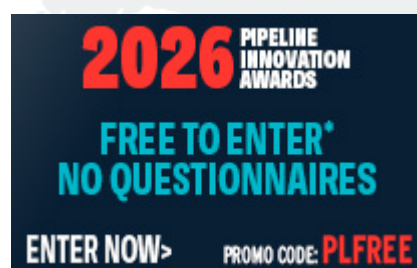


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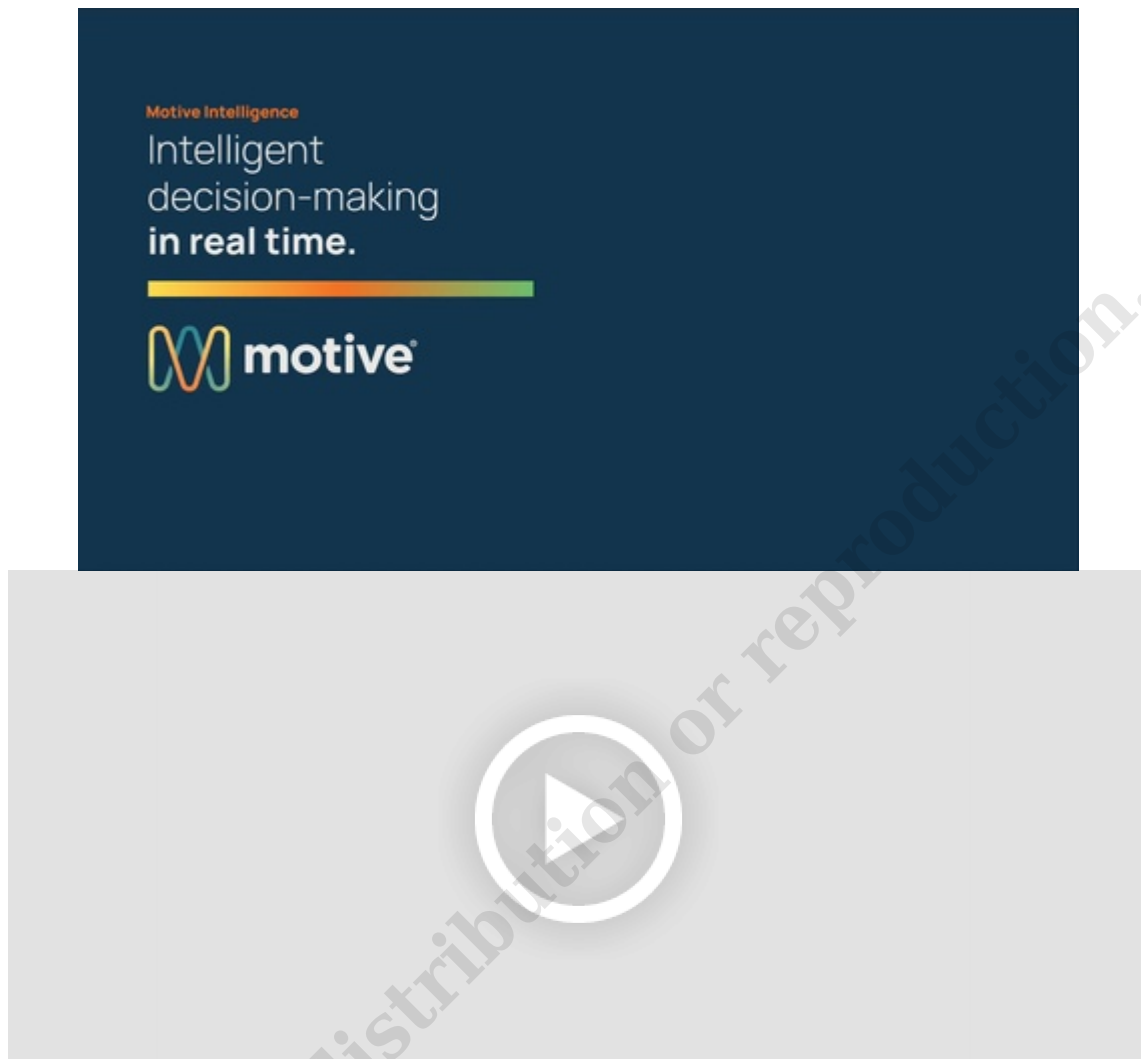
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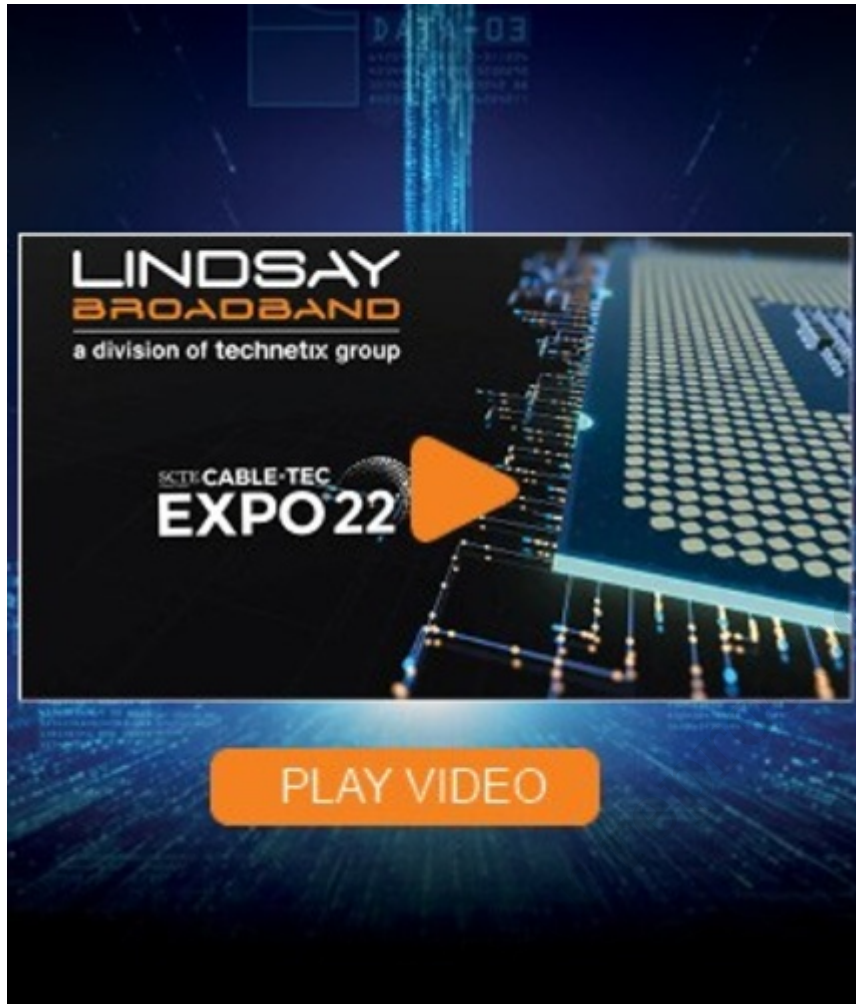
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In case you missed Lindsay Broadband - a division of Technetix group at the SCTE Cable-Tec Expo, this video highlights the must-have, end-to-end solutions for your network.

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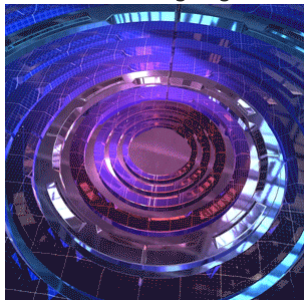
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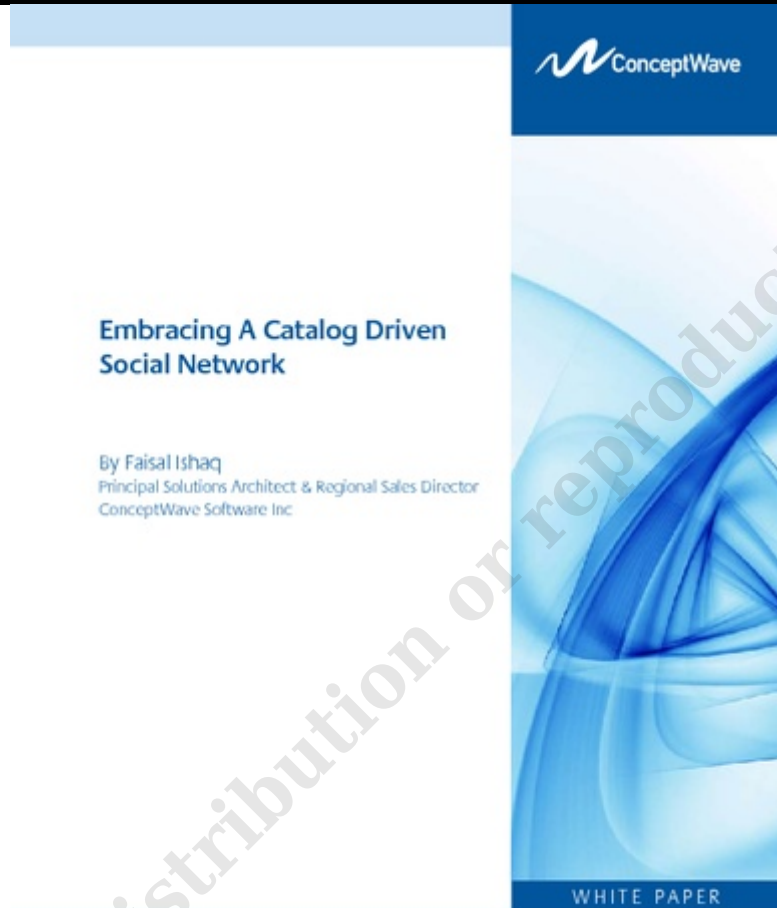
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Sigma Systems and TiVo

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 the entire image of the TiVo service delivery value chain for the subscriber, network, device and content from the cloud.



COLLECT. MONITOR. ANALYZE. VISUALIZE.

Actionable Intelligence for a Safe,
Secure and Connected World

SS8 Networks provides the fastest and simplest way to collect, monitor, analyze, and visualize lawful interception data. For more than 20 years, we have been evolving and innovating to match the changing needs of Communications Service Providers (CSPs) and Law Enforcement Agencies (LEAs), while delivering comprehensive solutions that are easy to use and optimized for the best results.

Our solutions make analyzing, enriching and managing complex data sets simple, helping LEAs stop organized crime, catch criminals, and prevent terror attacks. For CSPs, we provide a trusted foundation for meeting regulatory requirements efficiently and effectively.

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Kevin McShane • Vice President, North America
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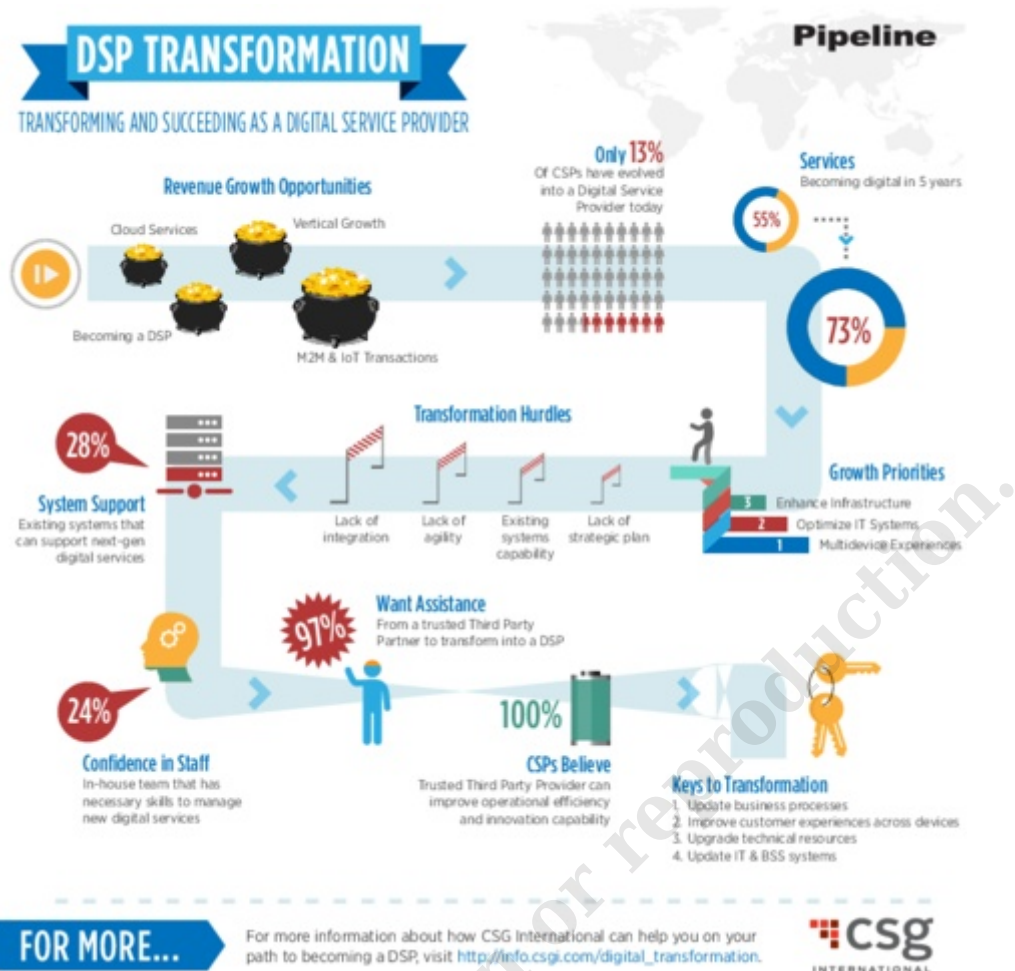
Going Global with M2M: What You Must Know to Control Costs

To launch a successful global M2M deployment, service providers and enterprise customers should first develop a plan that takes into account diverse cultures, languages, regulations, technologies and pricing. This Aerus White Paper outlines how differing regions and individual countries can create challenges in certification, support, and cost control and recommends actions to avoid these pitfalls.



3 WAYS YOU WILL OVERPAY FOR YOUR MOBILE WORKFORCE MANAGEMENT SOLUTION AND 3 STRATEGIES TO AVOID IT





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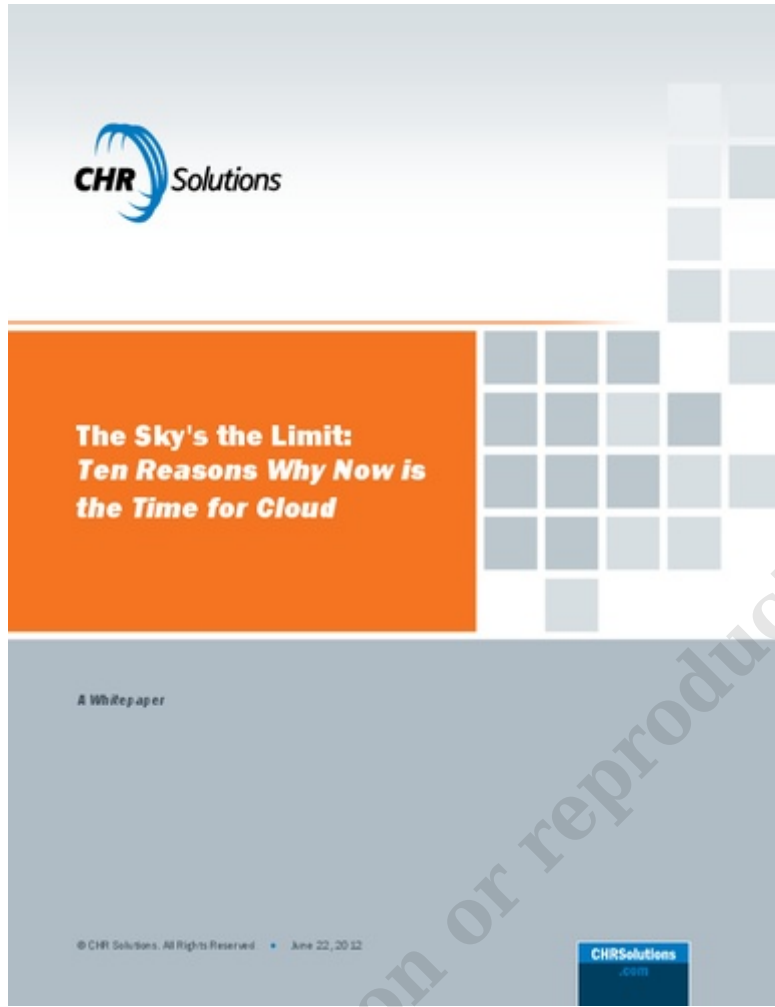
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MDS CareStream

Provide real-time access to accounts and services, give customers the tools they need to self-serve and reduce cycle time, offer personalized customer interactions, provide exceptional support and reduce churn.

Consolidated Account Management

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. In developed economies, market saturation is making it increasingly difficult for CSPs to attract net new customers, emphasizing the need for them to retain customers and optimize customer lifetime value. In response, many CSPs are focusing on customer experience improvement programs to increase customer satisfaction, loyalty, and profitability.

Businesses are demanding access to self-service tools that allow them to monitor their organizational spend, take direct control of their services and inventory and, get convenient access to help and support. Fortunately for CSPs, providing online self-service tools to business customers is a win-win situation, allowing CSPs to deliver personalized customer interactions anytime, anywhere and at lower cost.

MDS CareStream

MDS CareStream enables CSPs to provide business customers with online access to their account and service data. It delivers a presentation layer that consolidates information from multiple billing and CRM systems and provides the customer with a single view of services, allowing them to manage their convergent services at a time and place of their choice. Powered by a sophisticated business process engine, MDS CareStream can orchestrate and streamline the processing of service updates across existing infrastructure elements, providing process assurance.

Advantages for CSPs

Single View of Products and Services

MDS CareStream is billing-system agnostic. The powerful integration capabilities enable data aggregation from disparate BSS systems, allowing CSPs to provide business customers with a holistic view of their convergent services. In addition, CSP care staff can use MDS CareStream to provide them with a unified view of the customer's services and account information, enabling them to resolve customer inquiries faster and offer a better experience.



MDS CareStream Accounts and Usage

Light-touch Integration

MDS CareStream abstracts the presentation of customer information from the underlying BSS infrastructure. Its use of open standards and SOA-compliant services accelerates integration with legacy systems, reduces deployment time and eliminates the need for costly, and complex, billing transformation projects. The customizable business process orchestration capabilities enable MDS CareStream to control and co-ordinate the processing of service updates across existing infrastructure elements, offering robust business processes and service assurance.

MDS CareStream



Acumen CPQ™ Overview

Configurable CPQ built for the Digital Communications Service Provider.

Acumen CPQ is a powerful Product Catalogue and Configure, Price, Quote tool for Service Providers of all sizes - enabling an interface for both the Sales and Engineering teams, and the Enterprise Customer. It is an intuitive and easy-to-use shopping-cart style quotation tool that is rules and role driven for both sales teams and end-customers. It is fully configurable with a powerful admin section and comes with 30+ out of the box features.



Acumen CPQ™ | Core Capabilities & Features

Super Admin Capabilities	Core Features
• Products • Price Query • Reports • Product Configuration • Manage Roles and Workflow • Configure Generic S/O Parameters • Configure Supplier • Customer Association • Local Loop Margin/ Tax • Currency Conversion • Notes Configuration • Manage Widgets • Useful Information	• Guided, shopping-cart style sales UI. • Configurable product catalog supporting wide range of telecom products. • Configurable products and rules to support non-standard pricing. • Meaningful role specific dashboards and reports. • Roles and permissions-based access to features. • Multi-currency support and currency conversion. • Accurate and customizable pricing. • Customer specific rate cards. • Configurable discounts that can be customized for individual user roles. • Quick quote generation. • Quotation version management. • User friendly UI with the ability to create quick copies/ clones of line items and quotes. • Extensive audit logs. • Get prices for multiple bandwidths and contract terms in a single click. • Quick quote comparison for option analysis - create multiple copies of quotes with minor differences. • Google maps based local loop pricing UI. • Country and vendor specific tax and margins for local loop pricing. • Third party vendor management. • Support for last-mile pricing within the product database as well integration capability with third party providers. • Capability to host millions of local loop building lists and prices within the product database. • Real time margin analysis. • Automated and configurable pricing approval workflows. • Benchmarking data for competitive pricing. • Ability to present bundled prices i.e. customer quotation. • Parent-child relationships in related products. • Sales funnel and quotation data reports, price query reports. • Third party supplier management module.

Acumen CPQ™ Overview

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BROKER TRANSFORMATION





Network Integrity Controller

Set sail with total visibility of your network – and the journey ahead. Our Network Integrity Controller automates software audits of network devices in multi-technology, multi-vendor environments.

Check your gear regularly

As service providers build out new networks that provide new services—such as VoIP, video, and other high-bandwidth offerings—as accurate picture of the network can mean the difference between rolling out new services on-time, or being a market opportunity to a competitor. In today's environment, network managers are facing a conundrum: more traffic, more services, and more complexity have to be delivered with fewer people, fewer errors, and fewer outages.

Network integrity is the key to making sure that your gear will get you where you want to go. In spite of quantum leaps in network architecture and technology, maintaining configuration integrity has remained a manual, time-consuming, and error-prone craft. Design standards for device configuration to support VoIP, a new wireless data app, or a fifth-generation service may be painstakingly developed in the lab, but actual implementation in the field drifts rapidly through error, repair, replacement, and provisioning processes.

Use accurate maps

The only way to achieve complete network integrity improvement, in spite of the opposing forces of network expansion and operations

resource contraction, is to automate the quality feedback loop of network audit, discrepancy check, and gold standard maintenance. Nakina's Network Integrity Controller is designed to show exactly which equipment is present, ensure that the firmware, patches and operating systems that run the equipment are correct and up-to-date, and that all software parameters are set as intended.

Set sail with confidence

Most network outages are like navigation errors—they are the result of human error. The Network Integrity Controller minimizes the risk of outages by reducing inadvertent errors through sophisticated online auditing and parameter checking. It can scale to support the auditing of thousands of parameters in hundreds of thousands of network elements and network-attached servers. Because it is automated, and works in any environment—LTE, Ethernet, Fiber, IMS, or others—with equipment from a wide range of vendors, the Network Integrity Controller streamlines tedious spreadsheet maintenance with automated table and report creation. With the data generated by the Nakina Systems solution, you can bring services to market faster, reduce outages as these services scale, and realize significant cost savings.

Key Functions

Nakina Systems' Network Integrity Controller automates the most tedious and error-prone part of your job—maintaining network integrity. 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.

Data Import

- Store gold standard data in a common baseline data repository
- Import data or manage the life cycle of the gold standard input

Data Collection

- Extract real-time settings from networks

Audit

- Compare planning tool reports or templates to live network views using specified tolerance criteria
- Display and report discrepancies
- Provide notification of any service-affecting change

Parameter Baselineing

- Create hierarchical templates of parameters based on groupings
- Compare and commit settings across a network

NE Resource Audit

- Select by NE or group of NEs
- Customize and filter output

Reconcile and Configure

- Apply override network view with planning tool data
- Configure specific parameters on specific elements
- Re-audit to confirm changes

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TRIBOLD 3.0™

The communications industry's most advanced
Enterprise Product Management software solution

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.

tribold
product • performance • profit

...

Artificial Intelligence (AI) has become one of the most powerful, transformative technologies that enable the development of new business models, new product/service offerings, and business ecosystems in many industries. AI technologies help organizations to enhance performance and productivity by enabling effective automation which provides larger revenue increases, greater cost reduction, and higher customer loyalty.

Why Etiya's AI Platform?

Etiya uses the building block of future technology, artificial intelligence technologies, and enables automation between service and operation processes. It allows companies to be able to offer personalized services and propositions through emotional, contextual predictions and recommendation mechanisms.

Advanced capabilities with ML & NLP

Etiya AI Platform, Cognitus, is an advanced artificial intelligence platform that provides standardization, simple and centralized management, monitoring and improvement, easy ROI detection and measurement, fewer implementation failures, and scaling with its advanced capabilities along with advanced machine learning and natural language processing services.

Multi-language Support

The platform currently supports Turkish, English, French, and Spanish languages. In addition to these, developments continue to support more languages in a short time.

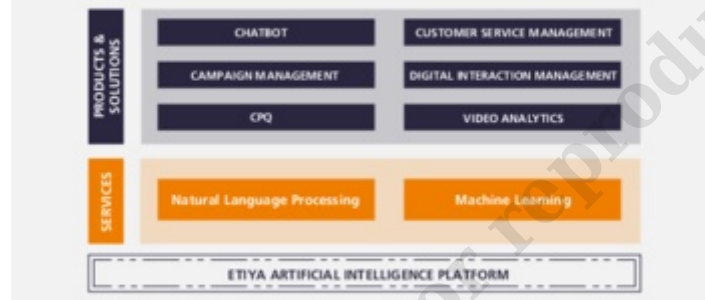
Increasing Revenue & Reducing Costs

Etiya also offers innovative and experience-oriented approaches that will contribute to the digital transformation of the corporate processes of companies and create cost advantages with Artificial Intelligence-Cognitus supported products and solutions in its product portfolio.

At this point, Cognitus which is also located at the heart of Etiya product architecture, works in harmony with all Etiya's products, solutions, and services and enhances their features with AI capabilities.

These AI-supported Etiya products and solutions enable effective automation and operational productivity by making information understandable in different business areas.

Etiya AI supported products and services:



PTP Test Applications

Hamadoun Dicks, 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 to service	Field technician	- EtherSAM (Y1564) - PDV GL measurements - Client emulation	30 minutes at 1 hour	NetBaker 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/defective slave client	Field technician	- EtherSAM (Y1564) - PDV GL measurements - Client emulation		NetBaker Series
Advanced troubleshooting	Incorrect clock output/defective grandmaster	Network engineer	- DE, MTE - DC PDV offset - Slave/client emulation		SyncWatch PRO

Table 1. Synchronization applications

EXFO | Assessing Next-Gen Networks

W²CM Smart Replay

Near-Sanad, Product Manager, EXFO

INTRODUCTION

Along with the phenomenal growth in volume of data on the mobile Internet, there has been an increase in the different types of data flowing through wireless networks. In addition to traditional types of data, such as file transfer protocol (FTP), hypertext transfer protocol (HTTP), voice-over-Internet protocol (VoIP), e-mail and video streaming, there has been a constantly increasing list of over-the-top (OTT) smartphone applications generating new types of data, including peer-to-peer (P2P) data from applications such as BitTorrent and Kazaa. In an effort to differentiate themselves, operators have also been offering their subscribers their own unique applications, which in turn contribute to the variety of data on wireless networks.

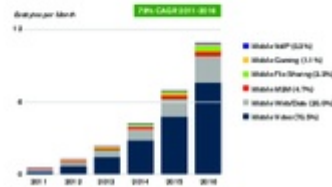


Figure 1. The explosive growth in mobile data.

This vast amount and variety of data has created a need for it to be managed effectively. There are several motivating factors to do so, chief among them being:

- Honoring service-level agreements (SLAs) and delivering committed quality of service (QoS) to customers
- Efficiently managing network resources
- Generating revenue as opposed to being just a "dumb pipe" for data
- Securing the network

Let's look at each one of these aspects in a little more detail.

HONORING SLAs

Operators have SLAs with their customers to guarantee a certain minimum performance from their networks. To be able to meet these commitments, the network elements have to be able to ensure that the required amount of resources is made available when needed. A recent study has shown that 5% of users consume 60% of bandwidth. This type of usage pattern can endanger an operator's ability to meet its SLA commitments to the rest of its subscribers. Operators have a strong incentive to manage the data usage of such heavy data users (e.g., by throttling the throughput rates available to such users).



Figure 2. Mobile network operators (MNOs) need to proactively manage network usage.

Honoring SLAs may also mean being able to identify data associated with key customers and giving it preferential treatment in the network. There are strict guidelines in the LTE specifications about the handling of data with different levels of QoS. Gateways in the network have to correctly implement these techniques to ensure that committed QoS is delivered.

EFFICIENT MANAGEMENT OF NETWORK RESOURCES

Another motivation for operators is to manage their CAPEX. Operators are making huge investments in building out their networks to keep up with the growth in data consumption. Unmanaged data usage coupled with the need to deliver on SLAs would result in operators having to deploy more equipment to handle the load. A better alternative is to manage the data usage. The LTE 3GPP specifications introduced the concept of maximum bit rates (MBR). The idea is to limit the maximum throughput used by a subscriber. This is a very critical technique for operators in order to prevent abuse of network resources by a few "bad" subscribers.

REVENUE GENERATION

With an explosion in over-the-top (OTT) applications on the Internet, operators risk becoming mere "dumb" pipes carrying user data back and forth. This is not an enviable situation for operators, considering the enormous investments in infrastructure required to keep up with growth in data usage. Operators seek to find ways to generate revenue from the data flowing through their pipes. They can do this by providing the same services as the OTT players, for instance voice-over LTE (VoLTE), but with significantly better and more predictable quality. Operators may want data associated with their own applications to be given preferential treatment as compared to equivalent OTT applications. Additionally, they can add value to the data already flowing through their network (e.g., by signing revenue-sharing deals with service providers in exchange for prioritizing their data, or through targeted advertising based on the content of user data, similar to what Google does with Gmail).

EXFO

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