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MAXIMIZING MOBILE CONNECTIVITY

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SOLVING MOBILE LATENCY REALLY, REALLY SMART PHONES AI & NETWORK TRANSFORMATION



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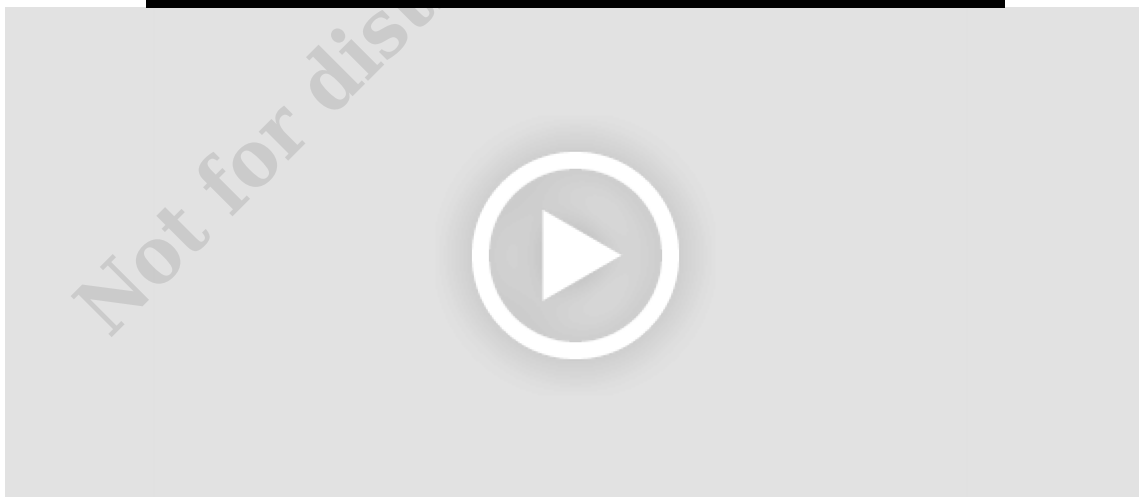
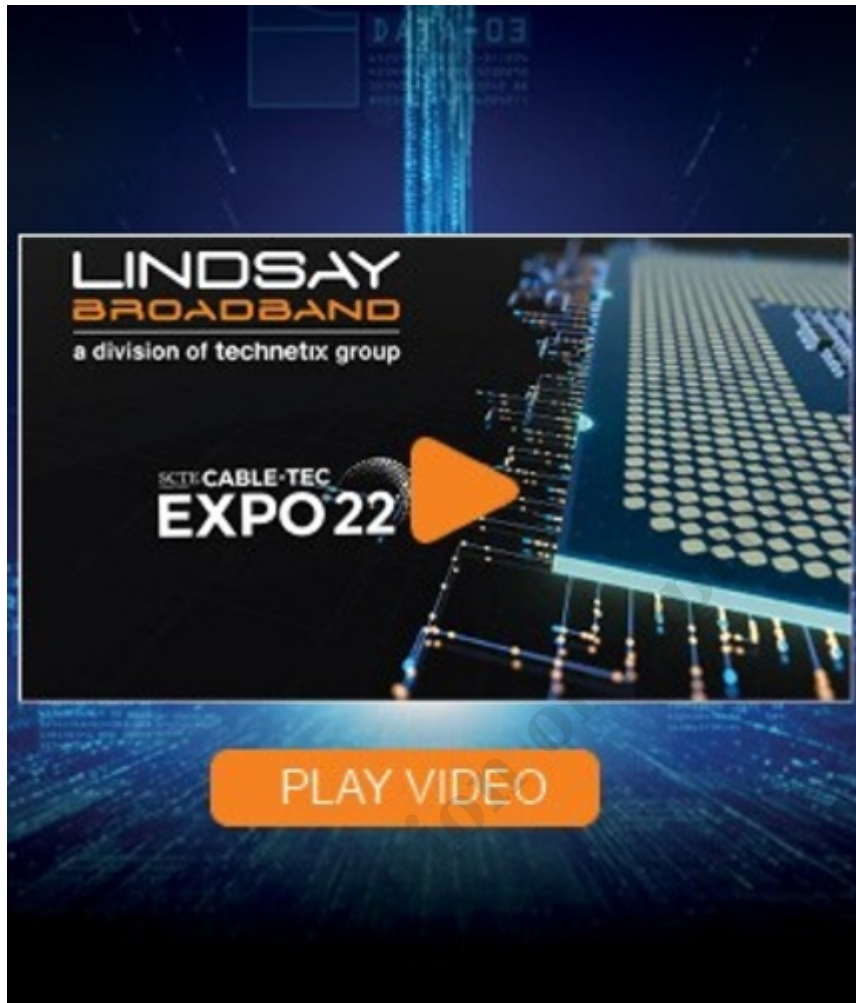
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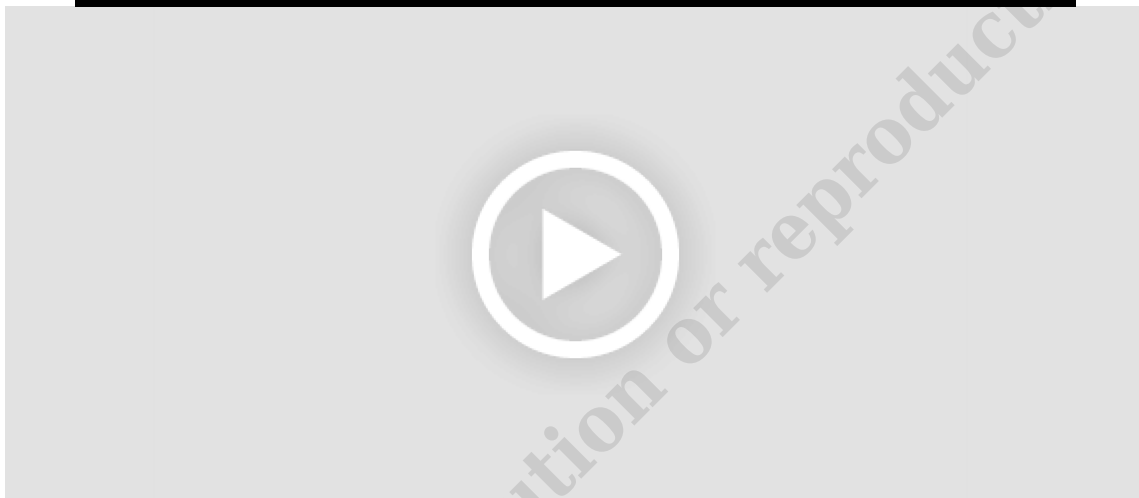
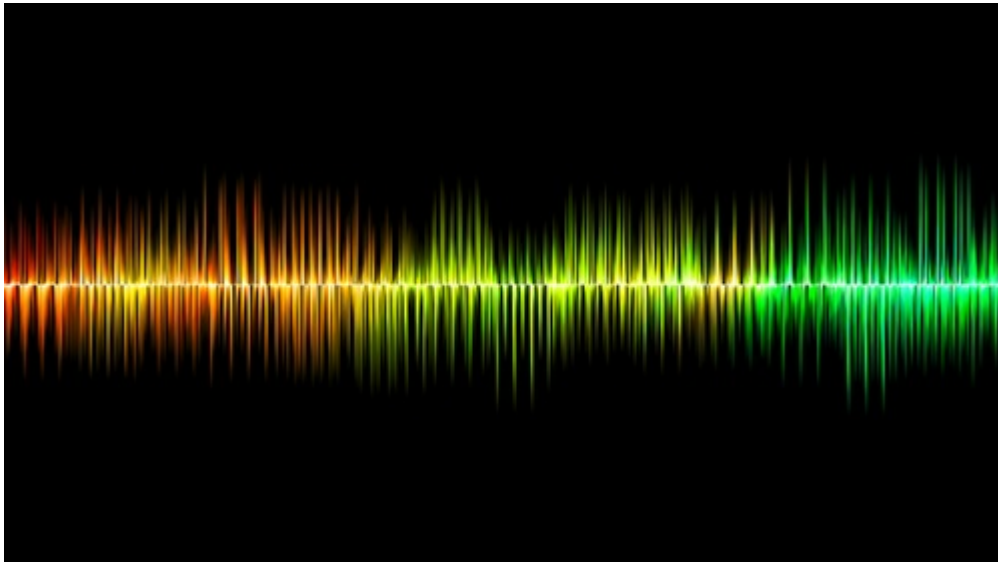
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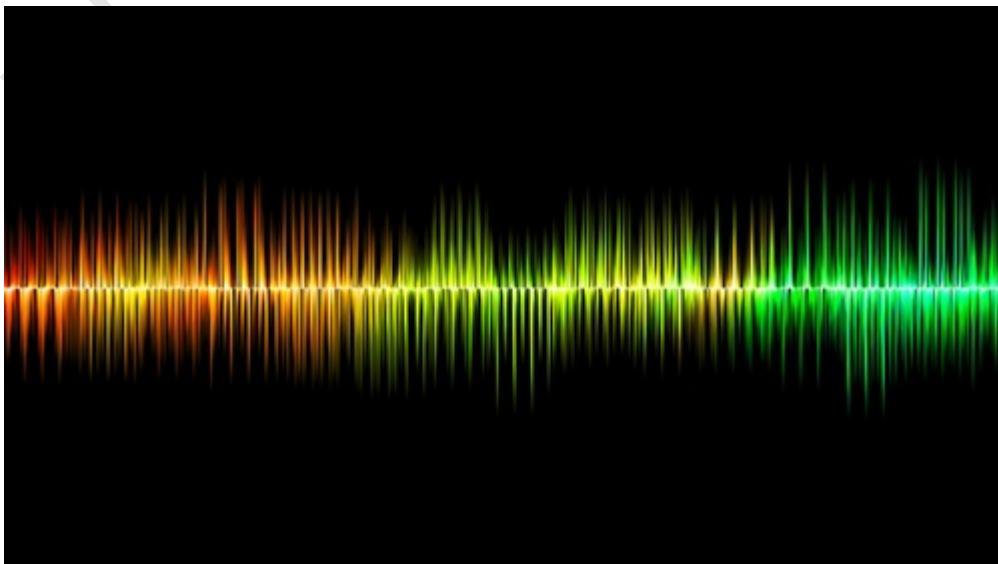
End-to-End Solutions for Broadband Networks

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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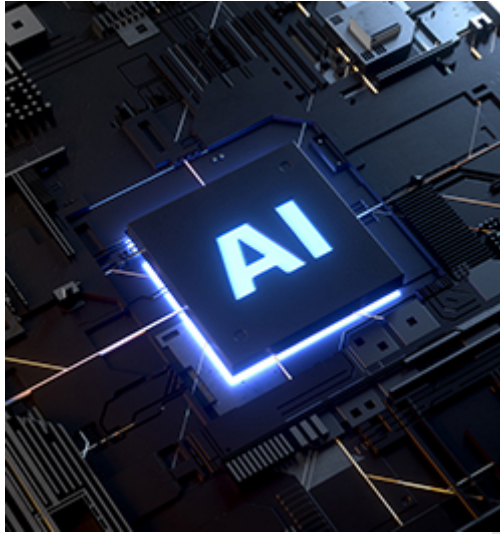
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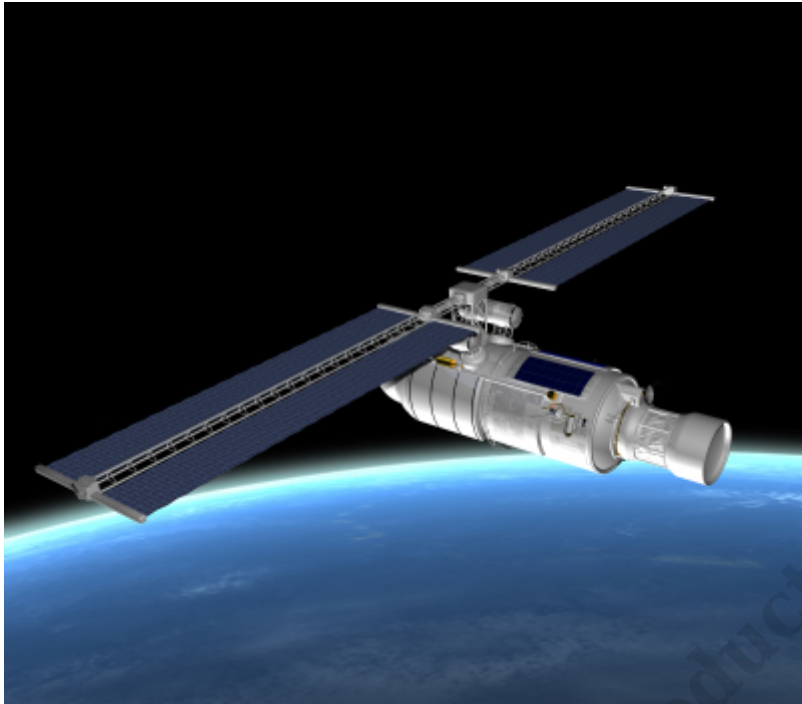
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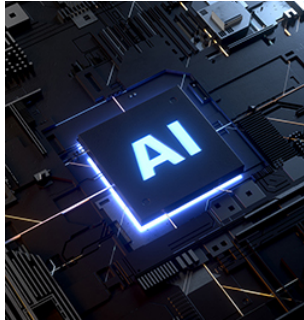
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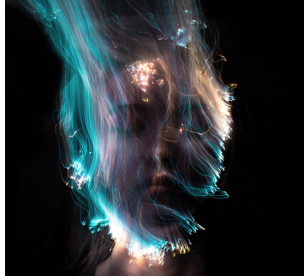
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Living on the (Network) Edge:

A TELECOMMUNICATION PROVIDER'S GUIDE TO MAKING THE MOVE

The Internet of Things (IoT) is not new. Neither is the rapid rise of connected devices or customers' demands for instantaneous service. These are realities of digitalization. While they have become normalized, they are by no means the final destination on the journey to digital transformation. They are merely the first wave of the transformation process. In their wake, the next round of changes is brewing. These changes will require providers turn their focus to the periphery of their networks and get closer to their customers. This next frontier for providers to conquer? **The Edge.**

networktransformation.fntsoftware.com

Accelerating the deployment of 5G with simple and flexible transport networks



Mobile Network Operators (MNOs) are struggling to meet the demands of connecting their existing 4G/LTE networks, building out transport for new 5G networks, and laying the groundwork for distributed compute. ADVA can help with a proven solution that meets the operational requirements and the demanding business case.

Challenges faced by MNOs in their 5G transport network planning

MNOs aiming to deploy 5G face a fundamental question of how to design their transport network. This is the network connecting cell towers and small cells to their core network. It is referred to as Mobile Backhaul (Fronthaul, Midhaul and X-Haul, depending on the technology used).

MNOs plan to make a strategic investment in fibre for mobile transport, with microwave and mm wave radio deployed only where needed¹. Drivers for microwave include cases such as avoiding delays in fibre deployment and overcoming obstacles in geographic regions such as roads and railway infrastructure.

In addition to the physical medium for transport, MNOs face other questions in three broad areas:

- Support of existing 4G macro cells, and new 5G cells
- Architecture and technology selection
 - Architecture options such as the optimal location of edge compute
 - Technology options and protocol selection - such as use of small cells, massive MIMO, C-RAN, common radio public interface (CPRI), eCPRI, O-RAN, and backhaul
- Accommodating sharing of the transport network to bring cost per cell site down

¹ <https://www.gsma.com/spectrum/wp-content/uploads/2019/04/3-Mobile-Backhaul-Options.pdf>

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Introducing our New State-of-the-Art Geographic Platform

One of the ultimate goals of Broadband providers is to bring fast, reliable service to their customers, who are often located in rural parts of the country. Connecting unserved or under-served communities through broadband technology improves their way of life and closes the digital divide. But doing so can be costly and time consuming.

What if there were a way to make it all easier by streamlining each phase of your network implementation, improving decisions by using real-time data and therefore optimizing your current and future operations?

CHR Solutions is a proven industry leader with over 75 years of experience and we have found a way to expedite your builds, decrease labor costs, forecast in real-time, and increase monetization to speed up broadband access to rural America.

Geospatial Data is Not New— But the Way We Use It Sure Is.

By using Geospatial data in a unique way, we provide our clients with a platform that utilizes real-time information to improve efficiencies, take the guesswork out of decisions, and ultimately increase speed to market. The platform features a customizable dashboard that enables all aspects of your business to format and display the data in a way that optimizes its use in their specific operations.

CHR's Geographic Platform

- Improves efficiencies
- Takes the guesswork out of decisions
- Increases speed to market

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Info Directions Maintains Gold Certified Status in Microsoft Partner Program

VICTOR, N.Y. (March 10, 2009) — Info Directions, leading provider of net-centric billing, rating, order management, workflow and selling solutions for communications service providers, is pleased to announce it has maintained Gold Certified status in the Microsoft Partner Program with a competency in ISV/Software Solutions.

Recognizing Info Directions' expertise and total impact in the technology marketplace, the Gold Certification ensures Info Directions has demonstrated expertise with Microsoft technologies and has a proven ability to meet customers' needs. Microsoft Gold Certified Partners receive a rich set of benefits including access, training and support, giving them a competitive advantage in the marketplace.

"Solutions Competencies are an important way for Microsoft to better enable ISVs to meet customer needs," said Sanjay Parthasarathy, corporate vice president of the Platform Strategy & Partner Group at Microsoft. "They allow ISVs to keep and win customers with their deep knowledge of solutions-based Microsoft platform technologies. Microsoft has a long history of working closely with ISV partners to help deliver compelling solutions and applications to our mutual customers, and the Solutions Competencies are an important step in continuing to enhance vital relationships with ISVs worldwide."

The Microsoft ISV/Software Solutions Competency recognizes the skill and focus partners bring to a particular solution set. Microsoft Gold Certified Partners that have obtained this competency have a successful record of developing and marketing packaged software based on Microsoft technologies.

"We are extremely pleased to have maintained Gold Certified Partner status in the Microsoft Partner Program. Our organization is focused on developing products and services that support the evolution of the rapidly changing communications market, so we make it a priority to participate in the Microsoft Partner Program at the highest level," said Tim Wrona, Vice President of Product Marketing at Info Directions. "Being a Microsoft Certified Gold Partner helps us meet our commitment to our clients by giving them the products, tools and services they need to leverage new opportunities and compete more effectively in the communications market."



The 2014 COMET Executive Summit

November 5 - 7, 2014 — San Diego, California

Follow event highlights on Twitter: #COMETSUMMIT

Pipeline continues its legacy of bringing together the world's leading service providers and technology innovators this fall at the 2014 COMET Executive Summit.

This exclusive event is gathering key executives from the world's leading operators with key technology developers and enterprises in an intimate symposium to explore the latest trends and challenges in communications and entertainment technology (COMET).

The COMET Executive Summit is a flexible, highly interactive format that is filled with unprecedented networking opportunities designed to build relationships that can be carried forward to solve the issues and challenges facing service providers and industry today.

Register today to stay on the edge of topics to be covered at the COMET Executive Summit, such as:

- Network security
- Big data & analytics
- Agile Architectures
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- Exploring cloud offerings
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WHY TELCOS ARE GETTING BETTER AT DELIVERING INDIVIDUALIZED CUSTOMER EXPERIENCES?



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IS YOUR GLOBAL WAN DEVOPS FRIENDLY? SD-WAN: USE CASE



TELIA CARRIER'S SD-WAN SERVICE HELPS DRIVE NETWORK AGILITY AND CONTINUITY TO SUPPORT THE ENTERPRISE ADOPTION OF DEVOPS.

ENTERPRISE DEVOPS
Enterprise DevOps journeys are diverse. Some journeys start out as tactical risks, some due to a significant need to cut costs, and others begin with big investments to unlock new business opportunities. Whatever the reason, for large global enterprises, embracing DevOps is a transformative cultural technology journey, focused on agility and continuity of delivery.

SD-WAN: BOOST AGILITY
SD-WAN provides an opportunity for enterprises to build, control, and manage an intelligent overlay network for better integration with cloud and internet environments. Through application awareness, automated policy control, zero-touch provisioning, and other value-added services, enterprises can implement a modular and smart networking architecture to operate faster.

INTERNET: GUARANTEE CONTINUITY
Modern enterprises should build internet-scale operations and manage distributed, globally accessible applications and cloud services that are critical to the DevOps flow and set of practices based on continuous experimentation and feedback loops. Telia Carrier's SD-WAN service will help enterprises avoid persistent internet underlay problems. We offer a choice of internet access services that provide high bandwidth, dedicated connections to reach specific sites, applications, and cloud services around the world.

THE OVERLAY AND UNDERLAY: A FUNCTIONAL BOND
A sustainable alignment between the internet underlay and the intelligent SD-WAN overlay will bear the potential to optimize network stability and performance while scaling flexibility for DevOps deployments.

Data generated by DevOps pipelines can traverse our internet backbone network with fewer hops compared to other internet service providers. We directly connect more than 99% of the global internet routing table, making us the world's best-connected internet backbone network.

PARTNERSHIP: CULTURAL FIT
Technology partnerships are critical for building the right DevOps environment. We understand that enterprises expect flexibility, responsiveness, and expertise from us. We ensure customers are always close to the technology of SD-WAN with no unnecessary layering in between.

We help accelerate DevOps journeys with better internet access and a structured onboarding process to help customers deploy a functioning SD-WAN solution and experience a multitude of benefits.

TOP 3 DEVOPS NEEDS

TEST ENVIRONMENTS
Using zero-touch provisioning DevOps can have a new secure connection for testing environments within minutes.

CI/CD PIPELINE
Deploy applications in minutes, on any platform, with consistent user experience.

AUTOMATION
Automation of manual networking tasks helps DevOps on their own automation journey.

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Brochures

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.

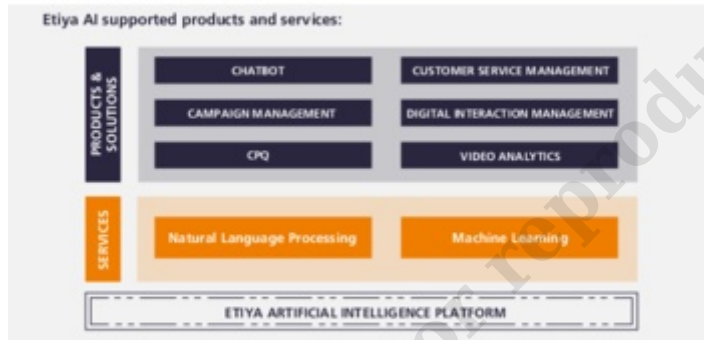
Why Etiya's AI Platform?	Etiya uses the building block of future technology, artificial intelligence technologies, and enables automation between service and operation processes. It allows companies to be able to offer personalized services and propositions through emotional, contextual predictions and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



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Network and Service Quality Visualization Supports Service Offering Differentiation

**Integrating to Mediaroom: Using
Media(n) to Simplify the Experience
A White Paper**

Document Version: 1.0

Date: July, 2011

Author: Fredel Thomas, Director of Product Management



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Turning call centers into profit centers through the power of real-time decisioning

WHITE PAPER
COMMUNICATIONS

Jeff Michelson - Vice President of Global Marketing,
Customer Analytics & Interaction,
Pitney Boves Software



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Know Your Customers, Keep Your Customers: Five Key Benefits of Using Automated Surveys to Gauge Customer Satisfaction

CSG International | September 2011

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PTP Test Applications

Harmadoun 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 in service	Field technician	- EtherSAM (Y1564) - PDV GE measurements - Client emulation	30 minutes at 7 hour	NetFlacker 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		NetFlacker Series
Advanced troubleshooting	Incorrect clock output/detective grandmaster	Network engineer	- DE, MTE - DC PDV offset - Slave/client emulation		SyncWatch PRO

Table 1. Synchronization applications

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“CHR's IT team is consistent, skilled and extremely knowledgeable about what they do. Having them here and being proactive in what we need, plus the time-saving factor without us trying to “fix” our own IT needs allows us to be so much more productive and happy.”

— Terri B., Haddington Ventures

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