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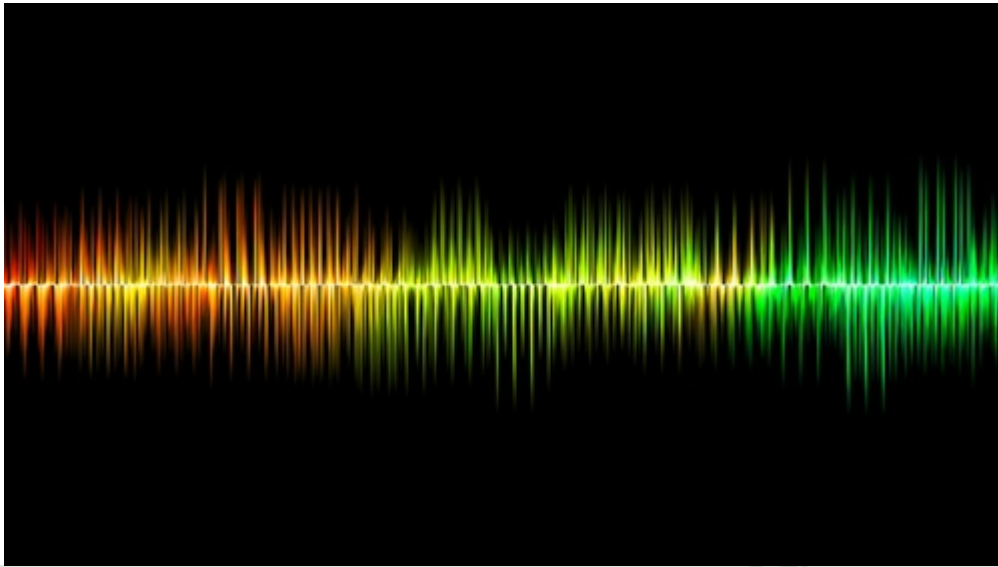
Predicting Colonial Pipeline: Mitigating Risk and Compliance

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.
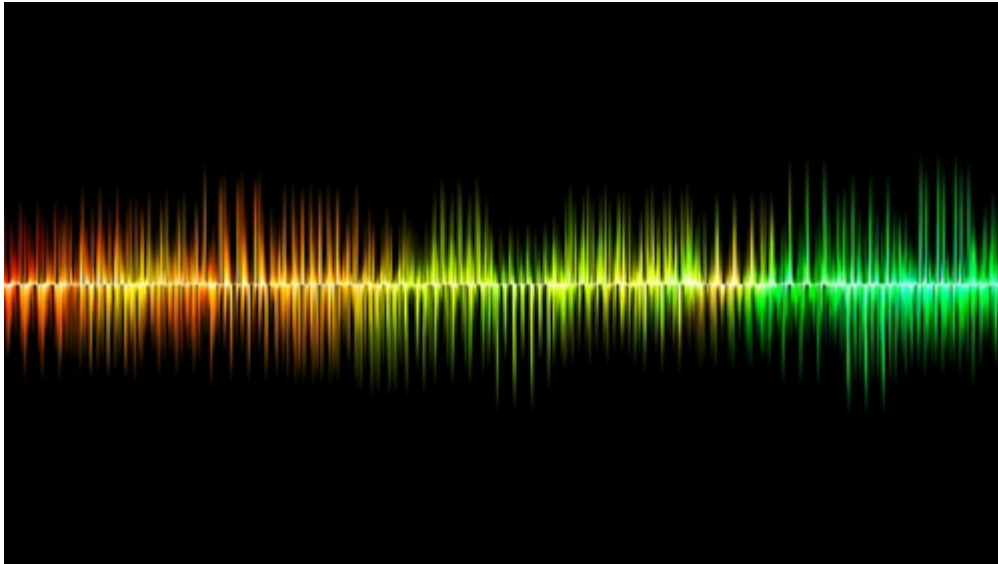
Podcast: The Evolution to 6G

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.

Podcast: AI Gets Personal

Providing an AI-driven network and customer experience and a 360-degree view of the customer journey, including use cases such as gaming, is explored in this Pipeline article by Nokia.

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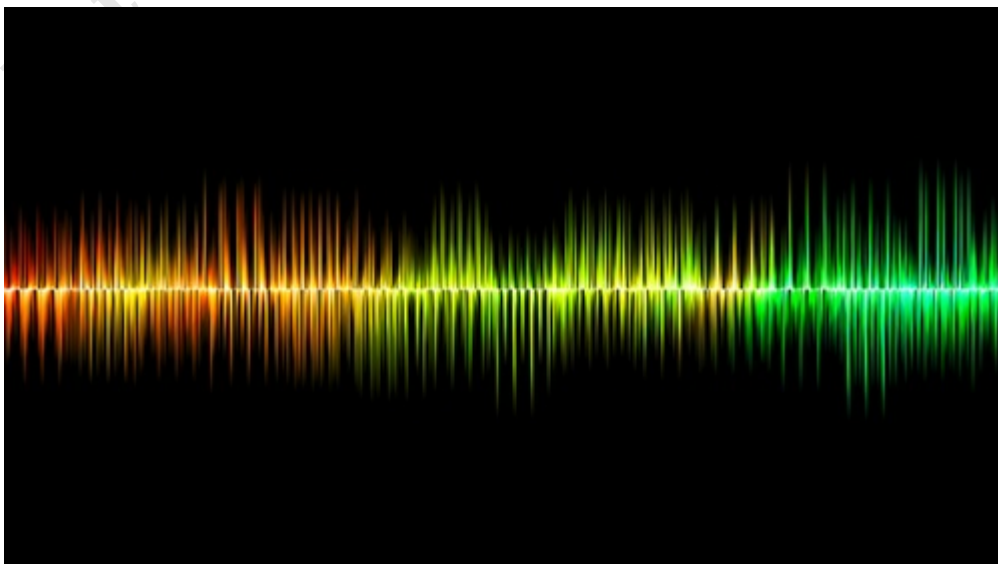
The Network Transformation Imperative

A Dynamic Panel Discussion Featuring
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TOP TEN PREDICTIONS FOR THE TELECOMMUNICATIONS INDUSTRY IN 2011

For B/OSS, Managing the Manager is #1, says Progress Software

Progress Software Corporation (NASDAQ: PRGS), a leading software provider that enables companies to be operationally responsive, predicts that telecommunications service providers will increasingly be able to detect technology problems that might affect customers, solving them before the customers even know they exist.

Sanjay Kumar, Industry Vice President for Communications and Media at Progress Software, said, "The telecommunications field is very competitive, and service providers have to do what they can to differentiate their offerings. Solving problems before they happen goes a long way toward managing the customer experience." The firm also predicts that mobile service providers will have to build stronger relationships with customers, mainly by providing unique offerings to grab and hold their attention.

Progress Software's Telecommunications predictions for 2011:

1. **For B/OSS, managing the manager is key.** Traditional business and operational support systems (B/OSS) will require systems to manage the systems. Most service providers have invested so much in their B/OSS infrastructure assets that they cannot be easily replaced and need an adapted layer to respond to real-time business demands and reenergize the existing B/OSS infrastructure's value.

2. **You will predict problems before they come to light.** Telco service providers will be able to predict when there is a potential issue that will affect customers—and correct it before it happens. The pre-emptive correction of problems before the customer knows they exist will become a key factor in differentiating service providers and improving the customer's level of service.

3. **Loyalty program.** Mobile service providers facing mounting competitive forces will have to build stronger relationships with their customers. They will need to provide customers with unique, interactive experiences to build stronger loyalty by tapping into customer call patterns and locations, correlating with customer preferences and providing value-added services to customize each customer's experience in a unique way.

4. **Partly cloudy.** As communication service providers head for the cloud, they will struggle with data interoperability between cloud and non-cloud environments. Operators will need advanced data transformation and adaptive technologies to take full advantage of cloud-based applications.

5. **Mind the gap.** Operators will be increasingly trapped in the gap between customer expectations for flexibility and speed, and the limitations in existing B/OSS infrastructure. This will drive demand for new business user toolsets to overlay B/OSS, enabling service providers to respond and deploy new solutions faster.

The 2014 COMET Executive Summit
November 5 - 7, 2014 —San Diego, California

Pipeline
Technology for Service Providers.

Wednesday November 5, 2014				
TIME	SESSION	SESSION TYPE	DEMO AREA	BOARD ROOMS
7:00pm - 11:00pm	Speed Networking Cocktail Reception	Networking		

Thursday November 6, 2014				
TIME	SESSION	SESSION TYPE	DEMO AREA	BOARD ROOMS
8:00am - 9:00am	Networking Breakfast	Networking		
9:15am - 10:00am	Opening Remarks	General	Setup	
10:00am - 10:45am	Service Provider Perspectives: Contending with Key Challenges (featuring: AT&T, BT, Comcast, Level 3 and Verizon)	General		
10:45am - 11:15am	Networking Break	Networking	Open	
11:15am - 12:00pm	Advanced Customer Experience Management (featuring: Amdocs and ICT Intuition)	General		
12:00pm - 12:45pm	Leveraging Big Data for Enterprise Business Intelligence (featuring: Microsoft and Skype)	General		Open
12:45pm - 1:45pm	Topic Roundtable Luncheon	Networking	Open	
2:00pm - 2:45pm	The Agile Architecture (featuring: Dr. Tom Wise, ICT Intuition and Tukl)	General		
2:45pm - 3:30pm	Delivering Elastic Services (featuring: Appledore, Comcast and TEKINE)	General		
3:30pm - 4:00pm	Networking Break	Networking	Open	
4:00pm - 4:45pm	The New Network (featuring: Nokia and AT&T)	General		
4:45pm - 5:30pm	Transformation: Managing the Evolution to Virtual Networks (featuring: ICT Intuition and AT&T)	General		
5:30pm - 6:00pm	Pre-Dinner Break	Break	Open	
6:00pm - 7:00pm	Networking Dinner	Networking		
7:00pm - 10:00pm	Evening Entertainment	Networking		

Friday November 7, 2014				
TIME	SESSION	SESSION TYPE	DEMO AREA	BOARD ROOMS
8:00am - 9:00am	Networking Breakfast	Networking		
9:15am - 10:15am	Market Analysis: Industry Insights (featuring: Appledore, ICT Intuition and NPRG)	General		
10:15am - 11:15am	Risk Mitigation: Advanced Security Planning (featuring: Level 3, NPRG and Verizon)	General		
11:15am - 12:15pm	Competitive Edge: Leveraging Content and Web RTC (featuring: Appledore and Genband)	General	Open	Open
12:15pm - 1:15pm	Networking Lunch	Networking		
1:15pm - 2:15pm	Lions Den - Sessions 1 & 2	Interactive		
2:15pm - 3:15pm	Lions Den - Sessions 3 & 4	Interactive		
3:15pm - 4:15pm	Lions Den - Sessions 5 & 6	Interactive		
4:15pm - 5:00pm	Editorial Calendar Input	Interactive		
5:15pm - 5:30pm	Closing Remarks	General		

* Note: Agenda is subject to change based on input from Pipeline's Industry Advisory Board (IAB), attendee feedback, and presenters. Please check for updates.

Included with regular admission.

Not included with regular admission. Additional participation required. See the How To Participate page for more information.

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 CSI].

Figure 2. Current challenges with cloud service delivery.
(Source: Metro Ethernet Forum)

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

by Ariedam 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 problems that exist with most service providers' back-office OSS/BSS systems, which are typically complex, disjoined 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 misaligned as well as heterogeneous underlying infrastructure. Only when the relationships among underlying systems, services and customers are mapped out of the infrastructure is it possible to achieve the goal of traditional service modeling. Therefore, what 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
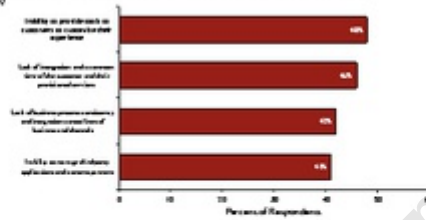
In light of current economic challenges, it is clear that telecom service providers are squeezing their capex budgets to align with lower revenue growth expectations. Hence, although a unified end-to-end service model remains on top of their priority list, instead of full-scale and expensive transformation exercises, 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, alternative semantics-based approach toward achieving a unified virtual service model; and investigate how such an approach can enable customer centricity by solving the problem of siloed infrastructure data.

This custom publication has been sponsored by Ontology Systems.

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 sustained 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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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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Jeff Nicholson • Vice President of Global Marketing,
Customer Analytics & Interaction,
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CSP ENTERPRISE PRODUCT MANAGEMENT:
THE SOLUTION TO ORGANIZING THE FACTORY AND THE STORE

A model for getting organized

In running a retail store, there are some basic principles that everyone understands about products and inventory. For a start, the Sales staff rely on knowing exactly what they have to sell – what is in stock, what options are available and to whom, what the lead times are for special orders, etc.

Purchasing needs the same information to know when to source additional stock to match customer demands and to find suppliers that can deliver.

And Marketing and Product Management need to know which products are doing well, which ones need refreshing or retiring and where to focus their next product campaigns and development ideas.

The common thread across these departments is the need to service the customer with the right products.

To that end, the idea of product is at the center of the retail universe. The retail business is all about procuring, marketing and selling products, with business success clearly linked to product success. Retail success is therefore heavily dependent on factory supply – the product design, build, warehousing, and distribution tasks associated with making the products the retailer wants to sell.

Communication Service Providers (CSPs) certainly share the same challenges of the physical product retailer, especially when it comes to determining and then supplying the products that customers will find attractive and want to buy.

There a few important differences for a CSP, given the fact that CSP products are mainly service offerings that they often supply themselves. Services are not lined up in boxes on shelves. Services are not shipped from distant factories whenever stocks run low. Still, services _are_ products. They must be designed, manufactured and packaged.

The underlying service delivery capability must be in place before the services can be delivered, just as the factory for the retailer's product must be operational before a retailer can expect to have that product to sell. And like any other products, services are subject to supply limitations – their delivery is constrained by network and systems capacity and capability, and by the ability of the organization to manage the delivery and support of those services.

With this dual role as Wholesaler and Retailer, CSPs have all the same requirements as an automotive company for the manufacturing, management and supply of products, on a day-to-day basis as the orders flow in from the customers and on a longer term basis as products are created, delivered, and eventually retired. But while everyone in most any CSP company understands the primary importance of products, too many CSPs continue to manage products across this chain in a fragmented and unfocussed way. They simply do not have either the day-to-day or long term visibility of their products that is essential for profitable performance.
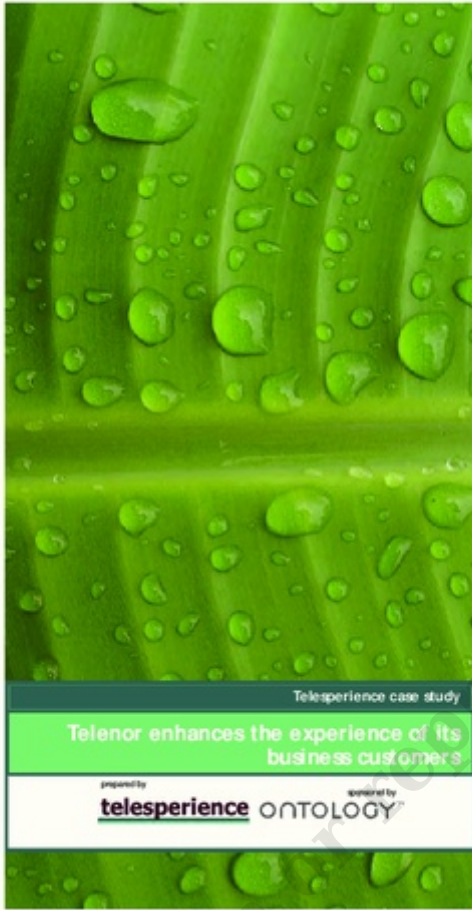
• • •

From wireless to wireline networks, CHR has the insight and expertise that empowers the services connecting customers and communities. We stand ready to partner with you on all your project needs—from concept to construction. Whether you're deploying new networks or launching next-generation services, from funding to field services, CHR is with you every step of the way.

CHR's Connected Services provide the platform for next-gen networks and brings them to life. Our expertise in execution enables IP evolution—guaranteeing improved network reliability and scalability to support the services that maximize ARPU, reduce churn and generate new revenue while achieving regulatory requirements and reducing CAPEX.

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telesperience ONTOLOGY

Enterprise Customer Experience Transformation with
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MDS 2010 White Paper Series

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CSG Point-of-View:
The Promise of
Television Commerce

Interactive Television Technologies Can Deliver New Ways to Engage Your Customers and Increase Revenue and Upsell Opportunities in Real Time.

Using Interactive Television to Build Revenues, Engage Customers

The television viewing experience has been forever changed by the Internet. Consumers want to engage and interact with their favorite television content— much like they do with content on their computers, mobile phones and other technology devices.

The mass adoption of web-enabled devices is transforming the way households access and consume media content on their televisions—and how they interact with businesses via the TV. Market research firm In-Stat projects that more than 200 million web-enabled devices will be in use in the United States by 2014, and the average household will own between five and 10 such devices—televisions included.

With the set-top box in millions of U.S. households, cable and DBS providers have a clear advantage in leveraging T-commerce models to seize new revenues and deliver new ways of interacting with customers that build loyalty and deliver a more personalized experience.

With new technology standards from CableLabs— namely the Enhanced TV Binary Interchange Format (EBIF)—T-commerce is a viable business model for cable and DBS providers.

The EBIF standard has already made its way into 25 million subscriber homes, offering an innovative and immediate way for providers to entice new consumers and retaining existing ones.

Interactive Customer Care Drives Loyalty

Interactive TV models enable cable and DBS providers to deliver a more enriched customer experience. What better and more direct way to communicate with consumers than through their television?

The beauty of interactive TV is that it enables two-way communication between a provider and their customers in real-time.

Providers can send messages directly to subscribers about their bill, and then prompt the subscriber to view and pay their cable bill right from the television screen using their remote control.

With direct integration from the set-top box to back-office billing, customer care and other applications, any changes a customer makes to their account from the comfort of their couch are updated in real-time.

W www.csgi.com

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FSP 3000 OLS
A versatile and truly open line system

5G and cloud-based applications offer enterprises, carriers and service providers enormous potential for growth. However, this continuous and rapid change also creates the need for more network capacity and flexibility. It's essential to build today's networks on an open, flexible and scalable optical layer ready to accommodate evolving demand and innovation. Featuring a fully modular and open design, our FSP 3000 open line system (OLS) provides complete versatility and best performance in metro, core and data center interconnect (DCI) applications.

Truly open

Open disaggregated optical networking is one of the industry's hottest trends. By decoupling terminal functions from the line system, this approach offers complete flexibility to adopt the latest technology when and where needed. Our FSP 3000 OLS is truly open, allowing total freedom to evolve and optimize each network layer separately. Network operators can leverage and expand their infrastructure at any time with the technology of their choice. What's more, with open and standard interfaces, our FSP 3000 OLS easily integrates into software-controlled networks.

Build your own OLS

Our FSP 3000 OLS empowers network operators to create the solution that meets their exact requirements. With a modular architecture, multiple amplification and multiplexing options, and different chassis sizes, our FSP 3000 OLS enables customized solutions. Operators can simply mix and match the optimum filters and amplifiers and pack them into the best-fitting shelf. This makes our FSP 3000 OLS ideal for any type of network infrastructure.

Future-proof investment

Coherent modulation schemes are becoming increasingly diverse to maximize transport network capacity and minimize the cost-per-bit of transport. Flexible terminals with variable modulation formats and baud rates enable highest capacity-reach ratio. The ultimate network performance relies also on line system capabilities, and that's why open line systems have increasingly become important strategic assets. With a combination of high-performance features, our FSP 3000 OLS transports any coherent modulation format as well as all varying signal baud rates with best performance. The high-resolution flexgrid and modular architecture of our ROADMs guarantee a future-proof OLS that can scale and accommodate any modulation format and baud rate. What's more, our FSP 3000 OLS provides a new level of flexibility with configurations able to support direct detect technologies.

Your benefits

▸ **Open hardware**
No technology or vendor lock-in, successfully tested in multi-vendor environments

▸ **Open programmable interfaces**
Easy integration into software-defined networks with open, programmable APIs

▸ **For any type of network infrastructure**
Modular design with multiple amplifiers and filter options to meet your exact requirements

▸ **Purpose-built components**
Amplifiers and filter options engineered for metro, core and DCI-specific demands, and optimum transport of latest innovation, e.g., 400ZR and high baud rates

▸ **Visualization and control**
Comprehensive monitoring and diagnostic tools, spectrum visualization and fiber surveillance

▸ **Ecodesign**
High-density design with low power consumption

▸ **Flexible footprint**
Chassis sizes from 1RU to 12RU, ETSI/data center racks, AC/DC power options

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