



The Ethernet Backhaul Difference

Russian network operator MTS taps Tellabs to power its mobile network with more powerful, flexible backhaul capabilities

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“More flexible, less expensive mobile backhaul bandwidth is needed to meet our customers’ demands.”

— Oleg Larionov, director of the transport, network department for the corporate center, MTS Group



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leading edge

Q&A with Dan Kelly, executive vice president, global products, Tellabs

Dan Kelly has been the executive vice president of global products at Tellabs since 2007. Here we ask him about this issue of Insight and more.

We feature 2 European customers in this issue (MTS and Vtesse). Are Tellabs customers in EMEA experiencing the same challenges as other providers around the world?

Dan: Yes, they are experiencing the same challenges. These operators are looking for the best way to deliver value to their customers while balancing cost and generating profits in a highly competitive environment.

In the case of MTS in Russia, it is expanding its mobile network to address the growing number of subscribers and explosive mobile Internet use. With Vtesse in the UK, it continues to build out its optical network to meet the expanding bandwidth and service requirements of its business customers.

MTS and Vtesse use the Tellabs® 8600 Managed Edge System and the Tellabs® 7100 Optical Transport System in their networks, respectively. What are Tellabs' plans for the mobile backhaul and metro optical markets in 2012?

Dan: I expect 2012 to be a successful year for Tellabs in the mobile backhaul and metro optical markets, as we're coming off a big year in 2011.

In mobile backhaul, we serve 200 mobile operators around the world—including new customers MTS and Megafon in Russia, Orange Moldova, and Yoigo in Spain. The Tellabs® 8609 Access Switch, our new Ethernet mobile backhaul device for cell sites, began to generate revenue in 2011. And



now, customers are testing our new Ethernet mobile backhaul device to aggregation sites, the Tellabs® 8611 Access Switch.

In the metro optical market, our customers use the Tellabs 7100 system to deliver mobile, video, Internet and business services. We're expanding our optical footprint as well—new Tellabs 7100 system customers include Vtesse and CELESTE in Europe, as well as Telmex Chile and UOLDIVEO in Latin America. And I'm excited about the third-generation Tellabs 7100 system, which is in customer trials now.

It's clear that the mobile Internet is changing the world, and this change is only the beginning. Personally, in what ways do you most often use the mobile Internet? How has it improved your life?

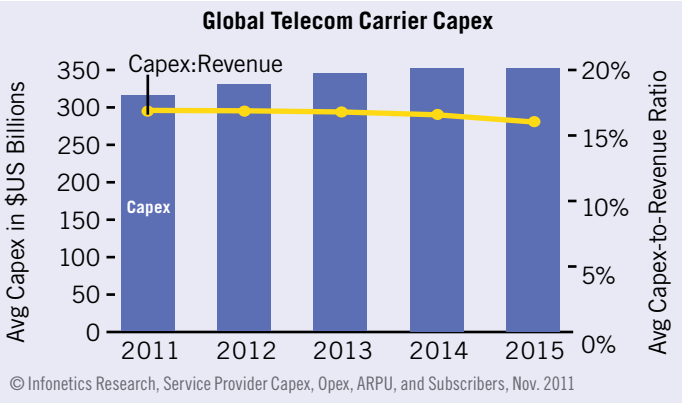
Dan: I travel frequently, visiting customers and Tellabs development locations, and I increasingly rely on the mobile Internet. I use my smartphone not only as an extension of my office but for other applications, like location-based services and to assist with itinerary changes.

Through my tablet, I use streaming video to stay in touch with my family. For the little downtime that I have, I stream my favorite TV shows via my tablet, too. We are just at the beginning of the mobile Internet and I expect that there will be many new exciting applications in the future that we haven't even thought of yet. ■

upload

Despite Downturn, Global Telecom Capex, Revenue Up for 2011

The economy may not have bounced back in 2011, but telecom spending and growth fared well, driven by strong demand for mobile broadband services, apps and devices, according to research firm Infonetics.



As part of its Service Provider Capex, Opex, ARPU and Subscribers report, Infonetics said it expected an increase in global telecom CapEx of 6% to \$311 billion in 2011 versus 2010, with global industry revenue increasing 8% to \$1.86 trillion.

Infonetics principal analyst Stéphane Téral cited several key activities as driving the spending growth, including AT&T's acceleration of its 4G spend in the U.S. (including ramped up LTE plans, HSPA+ upgrades and WiFi hot spot deployments).

Notable regions of high spending include Africa, with new network deployments across the continent, and Latin America, which is preparing its infrastructure to host the World Cup and the Olympics in coming years. That uptick is balanced out by spending delays in areas hit hard by the global debt crisis, including Greece, Italy and Hungary, as well as relatively stable spending across Asia Pacific (now the single biggest telecom market).

Other highlights:

- On the revenue side of the equation, telecom service provider revenue is expected to grow 7.6% in 2011, to \$1.86 trillion, and to \$2.17 trillion by 2015.
- Service-provider spending on every type of next-gen equipment is expected to increase in 2011, outside of TDM equipment. The fastest-growing areas are WiMax equipment (27.5%) and video infrastructure (20.7%).
- Spending by pure-play wireless operators—without landline holdings—is expected to grow to account for nearly 33% of all telecom capex spend by 2015. ■

IF THE INTERNET WERE A COUNTRY

There's no doubt that the Internet has had a tremendous impact on the global economy. But it's obviously difficult to get a handle on just how big of an impact.

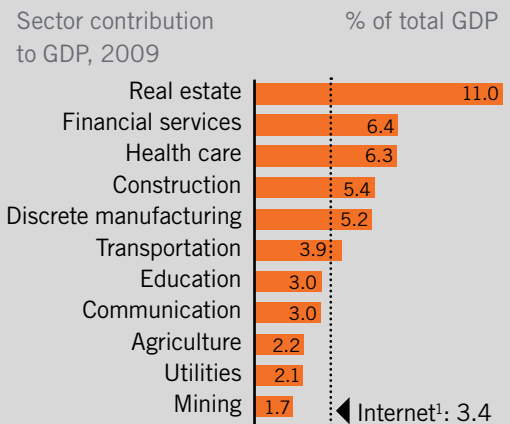
That didn't stop McKinsey & Co. from trying to wrap its arms around the problem in a recent white paper, declaring that the Internet has accounted for 21% of GDP growth in the world's largest economies over the past 5 years.

According to the report—created by the McKinsey Global Institute and entitled “The Great Transformer: The Impact of the Internet on Economic Growth and Prosperity”—there are more than 2 billion people connected to the Internet participating in e-commerce transactions, totaling more than \$8 trillion.

For the very largest countries, the Internet accounts, on average, for 3.4% of their GDP. In total, “Internet GDP” is bigger than the individual country GDPs of Spain or Canada and growing faster than the GDP of Brazil, the report found. In most large countries, the Internet now contributes more to the overall economy than established sectors like mining, utilities, agriculture or education.

To make those assessments, McKinsey limited its analysis to the online economies of the G-8 countries, plus 5: Brazil, China, India, South Korea and Brazil. It included private consumption, private investment, public expenditure and trade in measuring the “Internet economy.” ■

If the Internet were a sector, it would have a greater weight in GDP than agriculture or utilities



¹ Internet share includes parts of other sectors (e.g., communication). Source: Organisation for Economic Co-operation and Development; McKinsey analysis

VISIT TELLABS AT THESE
UPCOMING EVENTS

MOBILE WORLD CONGRESS

February 27-March 1, 2012
Stand 2A47, Fira Montjuic
Barcelona, Spain

MOBILE BACKHAUL ASIA 2012

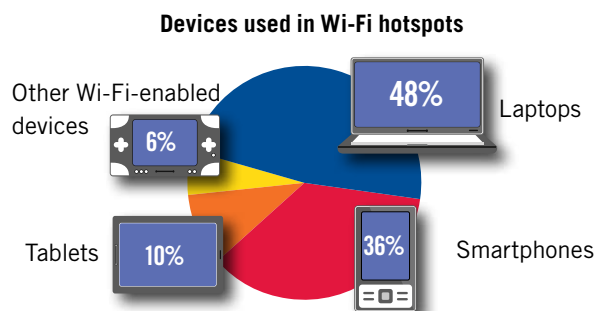
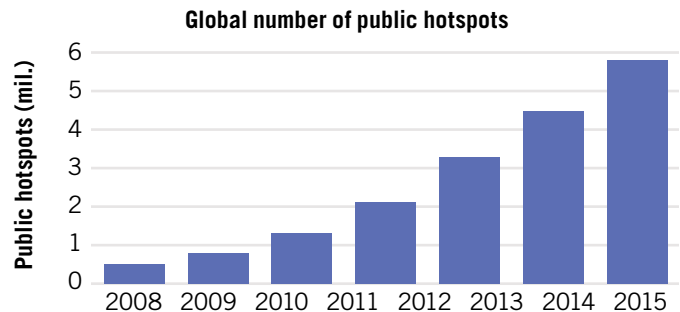
March 27-29, 2012
Stand #14, Conrad International Hotel
Bangkok, Thailand

Wi-Fi Offload on the Rise

With macro mobile networks under siege, operators will increasingly turn to a familiar technology—Wi-Fi—to help them ease their network load, with the deployment of public Wi-Fi hotspots expected to increase by 350% in the next 4 years.

That prediction comes courtesy of research firm Informa, as part of a report commissioned by the Wireless Broadband Alliance. According to the report, users worldwide will be able to connect to 5.8 million public hotspots by 2015.

The growth in public Wi-Fi reflects the larger trend among operators toward mobile data offload, leveraging not only Wi-Fi hot spots but pico- and microcells as well, plus new so-called small cell architectures to ease the load on mobile data networks. ■



BUZZWORD WATCH: ADDING CONTEXT TO THE USER EXPERIENCE

Gartner has been pushing the concept of context-aware computing—which at its core blends information from the mobile, social, digital and physical worlds into a powerful contextual mix—for some time, but given recent advances in computing and mobility, the concept seems closer than ever to becoming a reality.

How much a reality? At the Gartner Symposium event this fall, the research firm forecast that context-aware technologies will affect \$96 billion in annual consumer spending worldwide by 2015.

By that time, Gartner claims:

- 15% of all payment card transactions will be validated using context information.
- 40% of the world's smartphone users (or about 720 million people) will opt-in to "context service providers" that track their activities.

A major use of contextual information will be to reduce fraud and better authenticate commerce users. A very simple example today would be gas stations requiring a zip code at the pump. But it will also have a major impact on entertainment, advertising and all manner of more targeted digital services.

Gartner specifically points to several types of companies emerging as key players in the context-aware ecosystem:

payment card issuers, retailers, smartphone makers, social app providers, mapping data providers and healthcare firms. They mention Nokia, Microsoft, Baidu, Amazon, Google and Apple by name.

Surprisingly, there are no telecom operators on that list. But the telecom industry has the potential to be one of the most potent of all context service providers. Telecom carriers have deep information about individual consumers via their billing and service relationships. They are also gaining altogether new insights—often real-time insights—by watching, capturing and analyzing user behavior on today's increasingly IP-driven networks, leveraging tools like deep packet inspection and in-network analytics.

Those insights—including crucial context-aware data, such as where the user is, what they are doing and what content or applications they are consuming—can help drive more targeted entertainment, more personalized marketing and advertising and improve the customer experience online by making it more tailored to a user's particular likes and dislikes.

Telecom operators need to learn how to capitalize on context-aware computing, both for their own uses and as a new type of "service provider" in this larger, still emerging context-aware ecosystem. ■

Vtesse: Built for Speed

Over the past few years, Vtesse has grown so rapidly that it has struggled to keep up with existing customers' demands for service while responding to new opportunities. Vtesse executives decided they had to deploy an advanced networking solution that could enable the company to get—and stay—ahead of customer requirements.

“One of the big advantages that we have over larger competitors is our agility: our ability to react quickly to customer needs and turn up services just as quickly,” says Aidan Paul, Vtesse CEO. “As our growth accelerates, we needed a way to strengthen that advantage and Tellabs delivered just what we were looking for.”

The ROADM to Flexibility

Vtesse upgraded to a ROADM network based on the Tellabs® 7100 Nano™ Optical Transport System (OTS). The architecture enables a full-featured

optical network flexible enough that Vtesse can now turn up new, high-bandwidth services quickly across its entire network while reducing total cost of ownership. The operator now can go the distance—literally—when customers need connectivity to multiple locations scattered across the United Kingdom.

To enable those capabilities, the Tellabs 7100 Nano OTS combines multiple features into a compact footprint:

- Flexible, seamless growth from white light configurations to fixed optical DWDM configurations to full multi-degree ROADM configurations
- Capability to handle virtually any service type (SDH, Ethernet, SANs) from 100Mbps to 40Gbps
- Integrated SDH switching, OTN Switching and Layer 2 switching.

The Tellabs 7100 Nano system's design enables Vtesse to extend cost-effective optical transport at speeds ranging from 100Mbps to 40Gbps at the network's edge. By eliminating the need to purchase a separate ADM and Layer 2 switch, the Tellabs system also minimizes Vtesse's CapEx requirements.

Supporting a wide range of service modules, the platform can operate as both an OLA and a node for reconfigurable or fixed optical adds/drops of up to 88 wavelengths. Vtesse can add/drop any of those 88 wavelengths remotely or, if using the OLA configuration, amplify all 88. That flexibility, combined with service-delivery modules that are 100% tunable across the C band, means Vtesse can provision nearly any service at the optical layer.

The U.K. operator revamps its network with the Tellabs® 7100 Nano™ Optical Transport System

By M.J. Richter

What do you do if you're growing so quickly that your network can't keep up with demand? One good starting point is to enhance your optical network with more advanced technology—technology that can deliver the sophisticated services your customers need now and in the future.

Better yet, what if that new technology comes from a vendor that also helps you design new service offerings that take advantage of the capabilities of that technology? Capabilities such as helping capture new customers, increasing growth at those customers and improving customer retention? What if that vendor partner even has a lead-generation program to help kick-start your entry into new markets?

In a nutshell, that's the story of Vtesse Networks, a fiber-based carrier in the United Kingdom. Primarily serving enterprise customers, Vtesse's portfolio includes private optical networks, managed IP virtual networks, nationwide Ethernet connectivity, data centers, and co-location and hosting services.

The Tellabs 7100 Nano OTS also protects Vtesse's investment by using convergence at the optical layer to accommodate future expansion. As a result, at any site where it deploys the Tellabs 7100 Nano system, Vtesse can deliver up to 88 wavelengths of service (10Gbps or 40Gbps) without adding a whole new system or network connection.

The Tellabs solution also protects Vtesse's embedded investments by using a multi-layered approach that basically puts everything under a single roof. Vtesse can now retain multiple existing network elements and use the Tellabs 7100 Nano system as a bridge between all of them. The Tellabs® 7194 Management System also gives Vtesse engineers the end-to-end visibility they need to ensure topnotch performance and helps Vtesse reduce its OpEx with simpler configurations.

Fast and Cost-Effective

In March 2011, Vtesse launched the project's first phase: a 13-degree ROADM network across London. ROADM-based systems connect 6 Vtesse sites, while 2 fixed-optical ADM systems link 2 additional locations. Together, they support the delivery of high-speed services throughout the city, including high-speed access to the London Internet Exchange.

"The ROADM and fixed-optical systems work seamlessly together to give a more cost-effective deployment that enables service providers to reach more customers with more services," says Robert Shore, Tellabs' sales solution manager for Vtesse. "Each Tellabs 7100 Nano OTS supports virtually every type of business service across a dynamic optical



"We're excited about our growth prospects and our relationship with Tellabs."

— Aidan Paul,
Vtesse CEO

infrastructure. Vtesse can deploy any kind of service between any location and turn up those services quickly. This capability results in Vtesse being able to drive down OpEx costs and increase competitiveness."

The "rate-agile" interfaces of the Tellabs 7100 Nano system directly address Vtesse's need for highly flexible bandwidth provisioning. That design means Vtesse can software-provision the same physical interface for practically any type of service.

In addition, the Tellabs 7100 Nano system's dynamic optical-networking capabilities further enhance the ease and

PARTNERING FOR SUCCESS

Besides deploying the Tellabs® 7100 Nano™ Optical Transport System and using Tellabs engineering services, Vtesse is also participating in the Tellabs Enterprise Partnership Program. Tellabs designed the program to help service providers identify new opportunities and land new business. Tellabs also will train Vtesse's sales team to educate prospective customers about what the new network can do for them.

Through joint public relations and marketing efforts, including attendance at trade shows and other venues, Tellabs will help market Vtesse's network and services. Tellabs also will work with a third-party company to help generate qualified leads for the Vtesse sales team.

"It's all part of the Tellabs mission to both deliver advanced networking solutions and to help service providers such as Vtesse build on success and ensure long-term growth," says Robert Shore, Tellabs' sales solution manager for Vtesse.

speed of service turn-ups. The platform's DWDM optics and its ROADM optical connectivity enable Vtesse to provision new services over an existing optical wavelength. Or, Vtesse can provision new services over a new wavelength established with simple insertion of interface cards at the end-points of the service.

"Vtesse can put cards in at either end of the network and then software-provision everything in between, including the services provided on the endpoints," Shore says. "That adds up to ease, flexibility and access to massive bandwidth."

Amid Construction, Customers Sign On

Even before the Vtesse-Tellabs engineering team completed Phase 1 in May, one customer had already gone live on some sections of the network. Vtesse confirmed that the rapid provisioning of services enabled by the Tellabs deployment was key to securing the business, given the customer's aggressive implementation timelines.

That initial win shows Vtesse already realizing its goals—including expanding the capabilities of its network and winning new business—while setting it up for even more success down the road. ■

ADM: Add/Drop Multiplexing

CapEx: Capital Expenses

DWDM: Dense Wave Division Multiplexing

OLA: Optical Line Amplifier

OpEx: Operating Expenses

POP: Point of Presence

ROADM: Reconfigurable Optical Add/Drop Multiplexer

MTS: The Ethernet Backhaul Difference



Sergey Zlobin and Oleg Larionov, of MTS, chat with Tellabs' Aleksandr Paulichek and Petri Markkanen

Russian operator taps Tellabs Mobile Solutions to improve economics and flexibility of its 3G mobile backhaul network.

By Joan Engebretson

Russian network operator Mobile TeleSystems (MTS) has big plans for its 3G mobile network based on HSPA radio technology. The network, which ultimately will cover virtually all of Russia as well as several neighboring countries, will support speeds as high as 21 Mb/s, enabling it to serve as the only broadband connection for many MTS customers.

MTS is not alone in addressing the mobile broadband market, however. Offering attractive pricing and services is key to retaining their competitive position.

To help achieve that goal, the company has chosen the Tellabs® 8600 Managed Edge System to drive IP-based backhaul throughout a large part of its network. MTS

estimates that the move has enabled the company to save about 40% on its access and aggregation costs—a number that will climb to 50% when the company moves both fixed and mobile traffic onto the network.

Moving to IP/Ethernet Backhaul

“Our main mission is to provide the best customer experience,” says Oleg Larionov, director of the transport network department for the corporate center MTS Group. “What we’re trying to highlight and to show by our advertising and our services is that we deliver the best services, the best speeds and the best product.”

MTS was founded in 1993 by a group of investors that included Moscow fixed-line operator MGTS, along with Deutsche Telecom and Siemens. Since then, the company has grown organically and through acquisitions. The company now offers service throughout Russia and many of the former Soviet Union republics, with subscribers topping 100 million.

The MTS 3G network, which is about 60% deployed, covers Russia, Uzbekistan, Belarus and Armenia. In addition, the company is trying to get a 3G license for Ukraine.

In large parts of MTS’s service area, fixed broadband penetration is quite low. As of 2010, only 9.6% of the Russian

population had mobile broadband, compared to 38% in Western Europe. MTS is projecting strong penetration for its mobile broadband service due to the comparatively low fixed broadband penetration in its serving area.

To achieve that goal, the company must offer service that is comparable with fixed offerings. MTS chose to deploy HSPA+ because it was impressed by the technology's strong track record and support from other mobile operators. MTS saw HSPA+ as the next step in the evolution of the globally trusted GSM technology.

As MTS planned its transition from earlier-generation mobile technology based on GPRS and EDGE, it faced a decision on how to evolve its backhaul network as well. That 2G network used TDM and ATM technology for backhaul, but it was expensive, and costs would only increase further as more traffic traversed the new 3G network. MTS needed a new approach to backhaul.

Tellabs had previously supplied SDH and PDH equipment to MTS. But when it came to the MTS 3G backhaul network, Tellabs proposed MTS to move toward transport based on IP and Ethernet.

"They explained how we could save operating expenses and capital expenses at the same time," recalls Larionov. The main driver behind these savings, Larionov says, was the ability of IP to multiplex traffic, thereby maximizing the amount of data that the backhaul network could carry.

Moving forward, MTS expects to see substantial traffic growth on its 3G network—an increase of more than 120% by 2015. Customers are expected to increasingly use the network to support bandwidth-intensive applications such as video and web applications, Larionov explains.

"More flexible, less expensive mobile backhaul bandwidth is needed to meet that demand," he adds.

MTS has a policy against using only a single vendor to supply a specific type of equipment. Accordingly, Tellabs was one of several vendors chosen to support the MTS 3G backhaul network. Tellabs equipment will comprise approximately one-third of that network.

Deploying the Network

MTS enlisted Intracom Svyaz, an international telecommunications systems vendor, to manage the deployment of the Tellabs 8600 system. MTS, Intracom Svyaz and Tellabs worked together closely on the deployment.

Both Intracom Svyaz and Tellabs went the extra mile in one of the initial rollout cities, where the backhaul network had to be deployed from scratch in a very short time frame.

"Tellabs and Intracom Svyaz did a great job—they met all the deadlines and brought all of the equipment on line on time," says Larionov. "The focus of the organizations helped us meet our deadline."

The MTS 3G backhaul network was planned in 3 phases. The first of these is now complete, and the second phase is roughly 75% complete. The entire project should be finished by the end of 2012. When fully deployed, the network will include thousands of Tellabs 8600 nodes. Based on MTS's experience to date, the company expects to see significant operational savings from using the Tellabs 8600 system.

"We gain operational flexibility," says Sergey Y. Zlobin, head of section for the transport network department at MTS. "The Tellabs 8600 system is versatile and provides good link utilization and flexibility with regard to different traffic types."

Larionov estimates that MTS has reduced its cost-per-bit by at least 40% by moving to the Tellabs 8600

platform compared with previous approaches.

But although the move from SDH to IP/Ethernet was a big one in terms of network efficiency, it did not create substantial new training requirements for operations personnel. The reason: the Tellabs 8600 system is managed by the Tellabs® 8000 Intelligent Network Manager, a system with which MTS operations personnel were already familiar, after having managed

Tellabs SDH equipment.

"When personnel are educated on traditional equipment, it takes time to move," says Larionov. "Because the Tellabs 8600 platform is based on the Tellabs management system, the migration path was easier."

MTS expects to see further operational savings beginning next year, when it plans to begin using the Tellabs 8600 backhaul network to also support the company's fixed line business. Larionov believes this will allow MTS's cost-per-bit to decline even further, halving costs in comparison to a traditional network approach based on TDM. Reducing network costs while keeping operational expenses in check places MTS in a strong position to win new broadband business across its many markets. ■



"The Tellabs 8600 provides flexibility [to handle] different traffic types."

— Sergey Y. Zlobin,
head of section for
the transport network
department at MTS

ATM: Asynchronous Transfer Mode
EDGE: Enhanced Data Rates for GSM Evolution
GPRS: General Packet Radio Service
GSM: Global System for Mobile Communications

HSPA: High-Speed Packet Access
PDH: Plesiochronous Digital Hierarchy
SDH: Synchronous Digital Hierarchy
TDM: Time Division Multiplexing

Know Your Content

Service providers probably wish they didn't have to think about over-the-top content at all, given the challenge it presents. The smarter approach is to better understand that traffic, for the sake of their network—and their customers.

By Rich Karpinski

While service providers offer some walled-garden services, users continue to leverage the open ecosystem of services, apps and products available to them. Over-the-top (OTT) content—such as Netflix streaming movies, Skype two-way video calls or graphics-heavy Facebook wall posts—presents telecom service providers with a great conundrum.

In many cases, access to that third-party content or those online (and increasingly mobile) activities is the reason users value their broadband connections in the first place. Yet today, providers have very little control over the content that runs over the top of their networks—both wireline and wireless.

That presents several key challenges for service providers: first, they are limited in managing how that content impacts their networks, and ultimately their bottom lines; second, they need fresh and innovative approaches for participating in these new revenue-generating services; and third, they are hamstrung in how they can ensure a superior, differentiated experience for customers accessing that content.

Overcoming those limitations is crucial. Operators must be able to manage the bandwidth demands on their networks to control costs and plan for the future. At the same time, they must be able to keep customers happy and expand their

service offerings or, in today's highly competitive market, they won't have much of a future at all.

How can operators address OTT traffic and simplify their networks, and do it all while offering new services and saving money? The answer, in a phrase, is they need to become more "content aware."

What exactly does that mean? Providers need capabilities to capture, measure, analyze and manage the content and services being consumed over the top of their networks. They need access to that crucial information in real time in order to respond rapidly to network hot spots. And they need it historically—to apply analytics and metrics against it that can help them plan their networks, discover new service opportunities build content partnerships.

The ability to deliver such capabilities sits at the center of the Tellabs SmartCore® 9200 Series, which couples strong IP routing functionality with enhanced tools and capabilities for providing insights into network content. Delivered via a new SmartCard architecture, the Tellabs SmartCore 9200 series lets service providers mix and match the technologies they need—such as flow-based or packet-based inspection and advanced security capabilities—to gain the insights that today's service delivery strategies demand.

What Does It Mean To Be Content Aware?

What is running over the top of telecom networks these days anyway?

The predominant answer is video, and plenty of it, along with loads of other high-bandwidth content. Netflix alone accounted for a staggering 32.7% of peak-hour network traffic in the United States this fall, according to a report from DPI vendor Sandvine. Video from Netflix and others will soon be overrunning mobile data networks as well, with mobile data traffic expected to increase 26-fold by 2015, driven largely by mobile video streaming, according to Cisco's Visual Network Index.

Different sorts of OTT content have different impacts on carrier networks—and different expectations from end users. Smartphone users have installed billions of mobile apps, illustrating the vastness of potential network impacts and ever-changing user preferences.

From a bandwidth perspective, most of the content delivered to those apps is relatively low-impact, though constant notifications and session start-ups offer additional challenges. The streaming of movies and TV shows, so popular today, places a heavier load on the network, as users are coming to expect near-flawless performance of those audio and video streams.

Two-way video—programs like Skype or Apple FaceTime video calling—presents an even steeper challenge. And with over-the-top HD streams becoming a reality, the network impact of OTT traffic will only continue to grow.

It is critical that telecom service providers understand those trends and become more aware of the content running over the top of their networks. When it comes to content awareness, 2 issues stand out: ensuring operator profitability and enhancing the user experience.

For operator profitability, content awareness enables operators to understand the specific types of traffic on their network, which enables them to make decisions about that traffic. That is critically important in today's world, where average revenue per unit (ARPU) remains flat while bandwidth demands continue to grow, challenging long-term profitability.

So if an operator can determine that a small number of users of OTT services account for the

majority of their traffic, they can deal with that reality. They can develop partnerships with those content providers in order to share the network costs or service revenues as a tradeoff for enabling a better user experience for those services.

Alternatively, they can identify extremely high-volume users and enforce stricter usage policies, within reason, on those customers. Or they can opt to up-sell larger data packages to those users, perhaps ensuring “premium level” service guarantees to these heaviest—and potentially most valuable—of users.

“In any and all cases, service providers cannot intelligently act on what they cannot see. Content awareness enables that visibility and control, which is paramount to long-term service provider success,” says Dave Morfas, Tellabs senior product marketing manager.

Indeed, content awareness enables visibility into the network and its performance. It enables visibility into customer behavior and likes and dislikes. And, ultimately it enables service providers to build new service and business models based on rationalizing the relationship between that network supply and demand.

And what happens if operator networks are not content aware?

Well, you've heard it before—when operator networks are not content aware, the network and the operator become marginalized as “dumb pipe” providers. Such providers, says Tellabs' Morfas, “are the conduit, but they are not capitalizing on the hot new app nor are they proactively participating in the user experience or revenue growth. They also are not conscious of user trends, which could enable service providers to better understand what personalized services users want, what their ordering and buying patterns are, and thus how they can better serve those users.”



Finally, content awareness is critical for analytics—a key but often overlooked capability that offers insights into both network optimization and marketing opportunities. Capturing and crunching network data enables operators to more efficiently optimize their networks while enabling new, more personalized marketing opportunities.

Building a More Content-Aware Network

While it is great to understand these big-picture traffic trends, carriers really need to understand the OTT traffic on a much finer level. That means building a network that is content aware to its very core.

That's one of the major themes that drove the design of the Tellabs SmartCore 9200 series, which uses a new SmartCard architecture for both basic routing functionality and enhanced content awareness. The SmartCard design delivers several capabilities to help service providers make their networks more content-aware.

First, Tellabs 9200 SmartCards have on-board content and security engines for enhanced flow-based and packet-based content awareness. This feature enables an operator to choose the amount of inspection, IPSec and advanced packet inspection density they need based on each unique application. Meanwhile, by combining high-density GigE and 10GigE line cards with intelligence on a single card, the Tellabs SmartCore 9200 series maximizes slot utilization and

simplifies network design, an important step toward lowering network complexity and cost.

Second, the Tellabs SmartCore 9200 series consists of 3 platforms, each with unique chassis designs. Yet they all share common SmartCards, with interfaces ranging from GigE to 100 GigE, enabling a service provider to interchange any SmartCard between any Tellabs SmartCore 9200 platform. This capability simplifies network planning and management and enables carriers to simply turn on the services they need on each card.

“With better visibility, providers can optimize their networks and offer what customers want, which opens up new revenue opportunities. This is a win-win scenario for both the customer and the provider.”

— Dave Morfas, Tellabs senior product marketing manager

Finally, SmartCards enable data collection and traffic identification that can feed into analytics systems, such as Tellabs Insight AnalyticsSM Services. When joined together, the Tellabs SmartCore 9200 series and Tellabs Insight Analytics help an operator better understand user and service traffic patterns. Providers can then better customize offerings based on user preferences and network trends—the very heart of content awareness.

“With better visibility, providers can optimize their networks and offer what customers want, which opens up new revenue opportunities. This is a win-win scenario for both the customer and the provider,” says Tellabs’ Morfas.

While the Tellabs SmartCore 9200 series and SmartCards can immediately serve many network applications—such as managing high-volume users or guaranteeing quality levels for certain services—it also helps to move operators closer to their long-term goal of building a more self-optimizing network. That requires having visibility to the applications and content on the network, a way to set and enforce policy on that content, and a means to share information among network elements so they can act on that information.

The result: it could enable an operator to throttle rogue peer-to-peer traffic at peak hours, or dynamically allocate mobile bandwidth to accommodate isolated and temporary traffic spikes, such as a huge sporting event or local disaster. Each of those scenarios are complex in nature, but ultimately, if handled correctly, can vastly simplify the network operationally. To accomplish that, operators must be able to see traffic on the network and react to it accordingly.

It all begins with improved content awareness, on the part of the network—and, ultimately, the operator. ■



The Tellabs SmartCore 9200 series includes a new SmartCard architecture that lets service providers more flexibility deserve the capabilities they need in their network.

OTT: Over-The-Top

HD: High Definition

ARPU: Average Revenue Per User

IPSec: Internet Protocol Security

GigE: Gigabit Ethernet

This article summarizes the findings of a research project that Tellabs commissioned from STL Partners. It is the result of STL Partners' research over many years, interviews with a dozen operators across Europe, North America and Asia Pacific and a survey of 100 industry executives.

How Mobile Operators Can Build 'Smarter Pipes'

By Chris Barraclough, Managing Director, STL Partners

Faced with new competitors and ever-evolving demands from customers, there is no doubt that telecom service providers need to reinvent themselves. But how? While many call for providers to move beyond yesterday's "dumb pipe" business models, which limit their role in the communications ecosystem to mere conduit, the larger question is: what comes next?

At STL Partners, we have identified 2 possible ways in which telecom operators can substantially change how they do business. The first approach, driven by a focus on cost cutting, is dubbed "Happy Pipe"; the second approach, based on differentiation via strategic partnerships, we describe as "Full Service Telco 2.0."

Underpinning those 2 business strategies are 2 "smart pipe" approaches to delivering telecom solutions, which we dub "smart network" and "smart services" (see chart). The Happy Pipe strategy is driven by a smart network—a well-functioning network that operates cost-effectively. By comparison, the Full-Service Telco 2.0 strategy focuses on smart services, driven by a network that offers a strong customer experience. But its market approach focuses on delivering services in partnership with an extended ecosystem of partners.

It is important to note that having a smart network is a precursor to offering smart services. It would be impossible for an operator to implement a Full-Service Telco 2.0 strategy without having significant network intelligence in the form of a smart network.

Smart network strategy is good; a smart services strategy is better

Assuming that most mobile operators currently have limited "smartness" in either network or services, our analysis suggests significant financial upside from using either a Happy Pipe or Full-Service Telco 2.0 strategy. Most mobile operators generate Cash Returns on Invested Capital of between 5% and 7%. For the purposes of our analysis, we assumed a baseline of 5.8%. The lower capital and operating costs of a Happy Pipe strategy could increase cash returns to 7.4% and the successful implementation of a Full-Service Telco 2.0 strategy has the potential to increase these returns to a handsome 13.3%. The financial rewards should provide a strong incentive for service providers to consider these strategies.

Porter strategy	Telco 2.0 strategy	Nature of smartness	Characteristics
Cost leadership	Happy Pipe	Smart network	Cost efficiency—minimal network, IT and commercial costs. Simple utility offering.
Differentiation	Full-Service Telco 2.0	Smart services	Technical and commercial flexibility: improve customer experience by integrating network capabilities with own and third-party services and charging either end user or service provider (or both).

Telco 2.0 strategy	Nature of smartness	Cash Returns on Invested Capital
As is—Telco 1.0	Low—relatively dumb	5.8%
Happy Pipe	Smart network	7.4%
Full-service Telco 2.0	Smart services	13.3%

Source: STL Partners

Overall, STL Partners has identified six opportunity areas for mobile operators to exploit using a Full-service Telco 2.0 strategy.

Opportunity Type	Approach	Typical Services
Core services	Improving revenues and customer loyalty by better design, analytics and smart use of data in existing services.	Access, Voice and Messaging, Broadband, Standard Wholesale, Generic Enterprise ICT Services (inc. SaaS).
Vertical industry solutions (SI)	Delivery of ICT projects and support to vertical enterprise sectors.	Systems Integration (SI), Vertical CEBP solutions, Vertical ICT, Vertical M2M solutions and Private Cloud.
Infrastructure services	Optimizing cost and revenue structures by buying and selling core Telco ICT asset capacity.	Bitstream ADSL, Unbundled Local Loop, MVNOs, Wholesale Wireless, Network Sharing, Cloud - IaaS.
Embedded communications	Enabling wider use of voice, messaging and data by facilitating access to them and embedding them in new products.	Comes with data, Sender pays delivery, Horizontal M2M Platforms, Voice, Messaging and Data APIs for third parties.
Third-party business enablers	Enabling new Telco assets (e.g., customer data) to be leveraged in support of third-party business processes.	Telco-enabled Identity and Authorization, Advertising and Marketing, Payments. APIs to non-core services and assets.
Own-brand OTT services	Building value through Telco-owned online properties and 'Over-the-Top' services.	Online Media, Enterprise Web Services, Own Brand VOIP services.

Source: STL Partners

Regional approaches to smartness may vary

As global operators continue to experience a slowdown in revenue growth, they tend to focus on maintaining margins by reducing costs. It should not be surprising, then, that most operators in North America, Europe and Asia-Pacific appear to be pursuing a Happy Pipe/smart network strategy.



Those carriers aim to maximize capital, reduce operating costs and improve network performance through approaches such as:

- Physical network sharing
- Peering data traffic rather than charging (and being charged) for transit
- Wi-Fi offload
- Distributing content more efficiently through the use of multicast and CDNs
- Efficient network configuration and provisioning
- Traffic shaping/management via deep-packet inspection and policy controls
- Advanced device management approaches.

Vodafone Asia-Pacific is a good example of an operator pursuing a Happy Pipe strategy. Yota in Russia and Lightsquared in the United States are similarly content being Happy Pipers.

In general, Asia-Pacific has the most disparate set of markets and operators. Markets vary radically in terms of maturity, structure and regulation, and operators seem to polarize into extreme Happy Pipers (e.g., Vodafone APAC, China Mobile, Bharti) and Full-Service Telco 2.0 players (e.g., NTT Docomo, SK Telecom, SingTel, Globe).

In Europe, Telefonica represents the operator with the most complete Telco 2.0 vision. Telefonica has built and acquired a number of smart services that appear to be gaining traction, including O2 Priority Moments, Jajah, Tuenti and Terra. Recent structural changes at the company, including the creation of Telefonica Digital to focus on opportunities in the digital economy, further indicate the company's focus on Telco 2.0 and smart services.

The sheer scale of the 2 leading mobile operators in the United States, AT&T and Verizon, means that they are taking a different approach to Telco 2.0. Although they are collaborating in one or two areas, there is a high degree of what one interviewee described as "Big Bell dogma"—the

API: Application Programming Interface	IaaS: Infrastructure-as-a-Service
CDN: Content Delivery Network	ICT: Information and Communications Technology
CEBP: Communications-Enabled Business Process	M2M: Machine-to-Machine
DSL: Digital Subscriber Line	MVNO: Mobile Virtual Network Operator

view that each company is big enough and powerful enough to take on the over-the-top players and “control” the experiences of end users in the digital economy. Even though the U.S. market is more consolidated than Europe, it seems unlikely that either AT&T or Verizon can keep customers using only their services—the lamented walled garden approach.

Implementing a Telco 2.0 strategy is important but challenging

Via industry interviews and a quantitative survey, STL Partners explored operator attitudes toward these next-generation operator strategies.

Overall, respondents felt that most operators would do best to pursue a Happy Pipe strategy, with only a few Tier 1 operators likely to be successful pursuing a Full-Service Telco 2.0 strategy. For both strategies, respondents were surprisingly skeptical about the ability of operators to implement the necessary changes. The key reasons for this were:

- Competition from Internet and over-the-top players
- Difficulty in building a viable ecosystem
- Lack of mobile operators’ skills
- Culture
- Organizational structure.

Looking at the specific activities required to build smarter networks and services, it was clear that those required for a Full-Service Telco 2.0/smart services strategy (exposing assets via APIs, differentiated charging and pricing, personalized and

differentiated services) were considered the most difficult to implement.

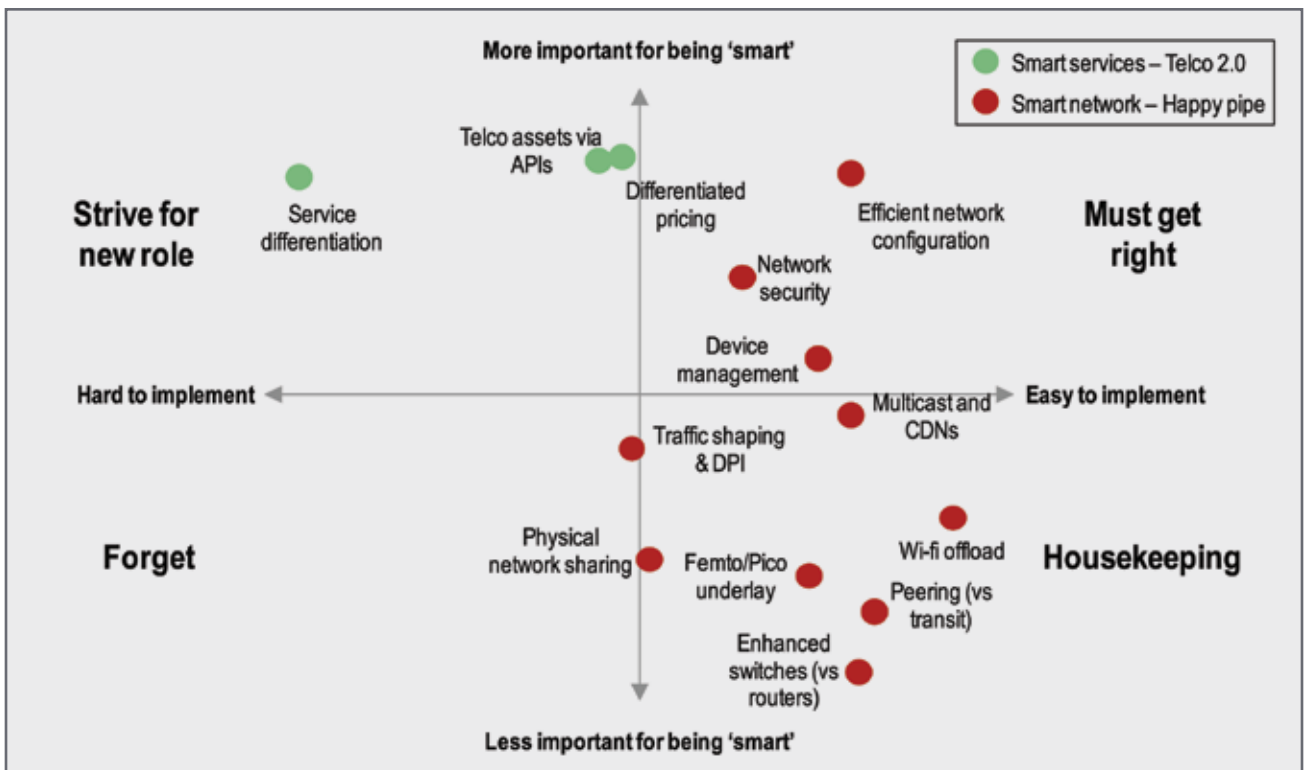
Conclusions and recommendations

By comparing the relative importance of specific smart network and service activities versus how easy they are to implement, we were able to classify them into four categories, ranging from capabilities that operators “must get right” to succeed to activities they must “forget” about in order to move forward (see chart below).

Overall, it appears that mobile network operators need to continue to invest resources in developing smart networks. But operators also must clearly prioritize those activities, given the multitude of moving parts required to deliver a successful Happy Pipe strategy.

Meanwhile, a successful Full-Service Telco 2.0 strategy is likely to be extremely profitable for a mobile network operator, resulting in a substantial increase in share price. But delivering on this strategy remains a major challenge. Operators must collaborate, experiment and invest to implement a full Telco 2.0 strategy. Given the demands of investors for dividend yields, investment is only likely to be available if an operator becomes more efficient, so implementing a Happy Pipe strategy that reduces capital and operating costs is a critical first step for operators ultimately pursuing a Telco 2.0 path. ■

Video: Tellabs’ Pankaj Shroff discusses STL Partners’ study at <http://www.tellabs.com/resources/multimedia/>



Source: STL Partners/Telco 2.0 & Tellabs ‘Smart pipes’ survey, July 2011, n=100

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