

## A Brave New (Connected) World

By Jesse Cryderman

As we stand on the cusp of an all-IP world, it's hard to imagine a world without the internet or a land before mobile. The flammable combination of Web 1.0 with the launch of the mobile era set off a communications network big bang that has literally changed the world in 20 years. Much like the universe itself, global communication networks are expanding rapidly; so fast that IP addresses ran out this year, necessitating a change to IPv6. Astronomy students can bicker about whether the fabric of space itself is expanding at 71 or 74 km per second per megaparsec, but the speed of global network growth is fairly certain.

According to Melanie Posey, Research Vice President at IDC, "The worldwide base of consumer broadband subscribers will expand from 485 million in 2010 to 666 million in 2014, and consumer mobile data connections will jump from 2.1 million to 3.84 million during the same timeframe...Internet traffic, on a worldwide basis, is set to grow from a daily average of 168 petabytes to nearly 794 petabytes in 2014..."

If framing the scope of network growth in terms of petabytes doesn't work for you, this might: by 2015 the following will occur:



470% growth in global internet traffic; the equivalent of 204,100,000 people streaming Internet HD video simultaneously, all day, every day.

- Global IP traffic will be equivalent to 28 million DVDs downloaded per hour.
- Mobile data will experience a 26-fold increase.
- Globally, there will be 15 billion networked devices, up from 7 billion in 2010.

To keep up with this explosion, carriers will ramp up average broadband speeds by about 300-500%, and mobile broadband in 2015 will match current fixed line speeds. As Sandvine Executive Marie Fiala Timlin summarized, "Undoubtedly there will continue to be

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demand for more Internet coverage, at higher speeds, as applications continue to evolve and consumers get hooked on the “Internet anytime anywhere” lifestyle.”

All of this presents some major challenges for CSPs. As Carlos Rodriguez, Manager of Regulatory Affairs at Telefónica USA pointed out, telcos need to make changes to keep revenue ahead of costs. “Costs grow as traffic across the networks grows, but revenues have been stagnating,” Rodriguez said, via the Cisco virtual forum in June. “If not changed, we may face a period where firms are simply unable to invest in improving network infrastructure due to a lack of funding.”

While the challenges are enormous, they are certainly not insurmountable, and standing ready on the sidelines are myriad OSS solutions that can ensure the global communications networks can continue expanding like our universe, and not a supernova.

#### **Crucial Functions**

As service providers stretch to deliver more services across greater geographical footprints, the OSS is a critical determinant. Not only can it standardize ordering, provisioning, and assurance, but it also can reveal extremely valuable subscriber data. It also is the lynchpin that connects the multiple technologies and systems inherent to a global network.

Specifically, crucial OSS functions that support global network expansion include, “discovery and multi layer and technology support like CORE/FTTx access/Layer 2 VPNs etc., across vendors and with a strong set of APIs for interfacing with other OSS systems,” says Anand Venkat, Director of Global Solutions, APAC, at Telcordia.

Marie Fiala Timlin, an executive at Sandvine, connected with Pipeline to discuss the importance of OSS regarding subscriber metrics:

“Carriers are recognizing that their Operations Support Systems are treasure troves of information regarding subscriber behavior. In the past, networking equipment was only needed to make the network run and effectively troubleshoot connectivity issues. Now, due to the rapid adoption of new devices (e.g. tablets, gaming consoles) and increase in demand for video and real-time applications, networks are experiencing a large strain on their capacity. Carriers need to be one step ahead of subscriber demand, in order to maintain and grow a loyal

**For global expansion, OSS is a key factor in the ability to enable multi-provider partnering and service catalog growth and delivery.**

customer base. That is only possible by understanding subscriber behavior and usage patterns, and this type of data is readily obtained from OSS, such as inline policy control devices.”

Michael Kearns, CEO of Amartus, sees the OSS as a key factor in the ability to enable partnering and service catalog growth. The OSS will also gain increased relevancy with cloud services, which will introduce a new layer to the equation.

“Going global is all about partnering, few service providers have the means to build their own global networks,” said Kearns. “Service Providers and Network Operators have an opportunity to differentiate and create new service revenue streams as both buyer and seller of ‘service reach’. The OSS is an important determinant in their ability to deliver and consume these services. Most of today’s OSSs were designed to deliver on-net services and lack the support required to actively manage or provide off-net services. The goal from a services perspective, should be to treat on-net and off-net services in the same way. This means to order, provision, and assure the service regardless of whether it is on your network or partners.”

“Furthermore, the rapid growth in cloud-based services is driving demand for dynamic end to end service fulfillment that goes beyond the traditional network as a service to incorporate the ICT components in a single service,” Kearns continued. “Cloud services introduce a whole new dimension for the OSS beyond the boundaries of the network.”

#### **Tall Hurdles**

Service providers around the world are preparing for the transition from legacy TDM and ATM technologies to all-IP/packet networks. They are simultaneously implementing plans to erase the seams between multiple partners and services, which will become more

pronounced as multi-vendor deployments proliferate. The operators are migrating to LTE networks, and IPv6 protocol. Congestion and service assurance will be prime customer-facing challenges, and recouping capital investments will be the topic of discussion in board meetings.

### **OSS Meets the Challenges to Expansion**

Since carriers are trying to meet a key goal of rapid introduction and delivery of new services as they expand globally, OSS solutions are in demand. According to Michael Kearns, vendors are “...seeing significant demand for automated service ordering & fulfillment solutions driven mainly by carriers wanting to extend their service offerings to deliver a diverse range of network and cloud services to customers and partners that transit not just their network and data centers, but also other carrier networks and data centers. The key to success for such systems is true service and network abstraction that is independent of vendors, carrier, and service type.”

Additionally, CSPs can, and should, leverage their OSSs to move from a reactive organizational model to a proactive one, says Jeff Parker, CEO, Monolith Software. “One of the biggest challenges will be instrumenting the infrastructure to be monitored for KPI’s and metrics,” Parker told Pipeline. “Historically, operations teams have been very fault driven and fault focused. That is reactive. The bad thing already happened. The customer has already had a bad experience. CSP’s need to migrate from a fault focused world to a metric based, SLA/KPI driven world. CSP’s need to spot problematic trends and degradations before customers experience a problem. This is why there is so much focus on CEM at this time.”

And no expansion effort is effective without proper planning and research; another OSS function. “Capacity planning and analytics are key for expansion efforts so that operators can decide the Rol and instruct their sales/marketing effectively on where and how to expand.” points out Anand Venkat.

Marie Fiala Timlin identified some additional areas where OSS can meet the challenge: “It is crucial to have network management policies that are consistent throughout their network, even across access networks (e.g. operators offering both cable & WiFi), and policy control components that can interoperate with other

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vendor network elements. Especially for usage-based billing, the requirement is to have credible accurate usage data throughout the network—no carrier wants to be in the headline news due to inaccurate over-billing incidents.”

### **The Future is Bright**

As we’ve seen, the overwhelming consensus is that communications networks will continue to expand globally at a very rapid rate, and recent research from Cisco, Infonetics, and even the FCC sings in unison. This much is certain. Whether or not carriers will keep pace with demand and customer satisfaction and continue to enjoy substantial year-over-year profits remains to be seen, as OSS solutions are critical in this evolution.

From his perspective, Amartus CEO Michael Kearns believes, “Mergers and acquisitions will continue as a means to expand networks and grow market share, however the emergence of interconnect and wholesale service offering, as well as local loop unbundling, means that carriers now have greater choice when it comes to delivering global services and compete on a level playing field.”