Contact us at info@sdn-solutions.net
More details at http://www.sdn-solutions.net

SDN Solutions: Introduction

About the company

SDN Solutions specializes in consulting network operators, equipment vendors and sub-system vendors in the area of multi-layer WAN networking, agile optical networking and SDN.

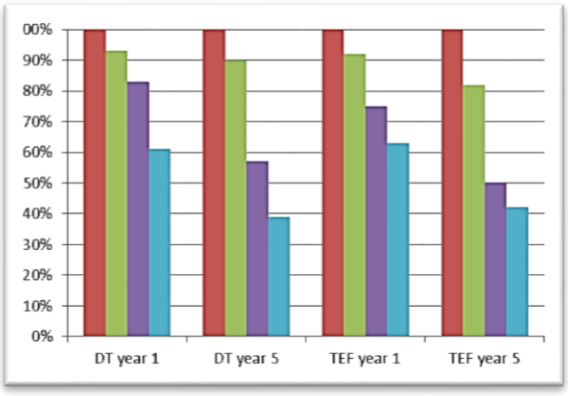
A brief analysis of trends in the core

Network architecture at a break point. Core networks are on the verge of a major architectural change, fueled by a mix of economic and technological factors. The main trigger is the combination of exponential traffic growth (at 30%-50% per year) and slow revenue growth. Another – often overlooked – trigger is the reduced ability to predict future traffic, due to possible changes in peering with major traffic sources, the emergence of cloud computing and the Internet of Everything. This requires a more flexible network that can adapt to unforeseen circumstances, without significant over-provisioning and further strain to the business model.

Operators are ready for a change. As a result carriers worldwide are increasingly willing to entertain novel network architectures that can significantly reduce CAPEX and OPEX, while maintaining or improving availability. To this end many carriers have deployed reconfigurable optical networks and are considering an increased level of elasticity, using programmable transceivers and flexible use of spectrum.

Limited deployment has yielded limited results. Until now, such flexibility has only been used to support a slightly more automated version of the traditional network, and the value that such an incremental approach brings is quite limited. To extract the full potential of an agile network, one needs to automate the network via distributed control planes and centralized intelligence, while giving the operator the required tools to control and understand the behavior of his network. The emergence of SDN provides the required "glue" that enables the desired network architecture.

Multi-layer networking is the likely solution. A major factor that influences the effectiveness of the solution is the interaction of the optical layer with the client layer. Using such interaction, the network can quickly move optical capacity to where it is needed by the client layer, instead of today's approach, of over-provisioning static client links to address different possible traffic scenarios. For example, we have shown that multi-layer restoration can save 40-60% of the resources in several European core SP networks (see figure). However, this is just the tip of the iceberg: with the help of a multi-layer and multi-vendor SDN architecture, the network can enable sophisticated optimizations that extend the usefulness of the existing assets and increase the availability of the network in the face of disasters and other unexpected scenarios.



Check out ACP'13 plenary talk for a more detailed analysis. The above graph will be published in a Comm. Magazine paper in 2/2014.

Contact us at info@sdn-solutions.net
More details at http://www.sdn-solutions.net

How can SDN Solutions help?

This major shift in the architecture implies that network operators must assess whether they are ready to adopt the change and when. They must also assess which ingredients of the solution fit their needs and what value they provide in their specific circumstances. Likewise, equipment vendors must assess which parts of the solution are they ready to invest in and when, and identify missing parts in their solution. Given our extensive exposure to multi-layer networking and all its facets, we believe we can help in both cases.

We can provide network operators an unbiased implementer's perspective on questions of the following type:

- What is the optimal optical architecture for my network?
- Do I need OTN switching? CDC ROADMs? FlexGrid? Adaptive transponders?
- What is the value of multi-layer networking in my network?
- What are my specific operational challenges of adopting the architecture?
- What do different vendors offer? How do they stack up against each other?
- How do I build a highly functional multi-vendor solution?
- Separating hype from reality: what can Transport SDN offer, beyond my network management systems?
- What are the resiliency and security risks associated with adopting SDN?

We can help equipment vendors answer questions of the following type:

- Is my current solution architecture extendible to meet likely future scenarios?
- How much switching flexibility do I need in my DWDM layer and OTN layer?
- What are the pros/cons of different centralized and distributed control architecture?
- What value does interaction with the IP layer bring to my transport-only solution?
- How do I turn my transport only solution into a multi-layer solution?
- How do the various emerging standards relate to each other? Are they all needed?
- What disruptive technologies in this space do I need to pay attention to?
- Which SDN applications do I need to develop? How to I quantify their value?

Principal Consultant profile

Dr. Ori Gerstel is a seasoned systems and network architect with over 20 years of experience in development and introduction of system and network architectures for telecom/datacom products. Over the last 8 years he led the innovation and architecture around various multi-layer projects at Cisco – mainly combining IP and optical networks. As a result, he has a unique interdisciplinary understanding of both layers and deep insights of how to combine them to achieve an efficient and operationally feasible solution. Additional details:

- Architect for Multi-layer control and SDN, IPoDWDM & SONET/WDM at Cisco, photonic crossconnect at Nortel and mesh DWDM systems at Tellabs
- Extensive exposure to thought leaders and architects of large SPs and equipment vendors world-wide
- Proven track record as innovator in the areas of multi-layer networking and agile optical networks, with 36 granted + 35 pending patents, some of which fundamental in the field
- Accomplished publication track record: 90+ papers at top international conferences and journals, plenary speaker, course instructor, book chapter author
- Editor in Chief for the main journal of the field (IEEE/OSA JOCN), steering committee member for OFC
- IEEE Fellow (2008), OSA Fellow (2013).