Embedded DWDM and Distance Extension Solution

Data center operators are expanding data centers to deliver virtualized and cloud-based services including business continuity and disaster recovery solutions. These additional service and availability requirements lead to increased bandwidth and greater distances between geographically dispersed data center sites. As new services are added data center environments that were once fiber-rich can quickly run out of fiber and find the associated cost for adding more fiber to be prohibitively expensive. Cost-effective embedded DWDM and distance extension solutions can reduce complexity, operating costs and enable a rapid delivery of new services.

Connecting Data Centers with embedded DWDM

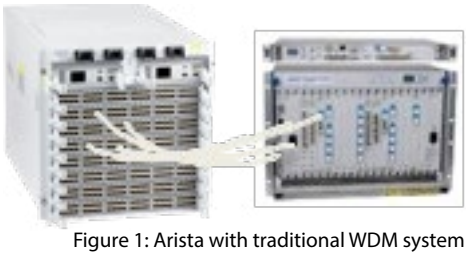

Figure 1: Arista with traditional WDM system

Today extending Ethernet networks over a Wavelength Division Multiplexing (WDM) connection is the data center managers' technology-of-choice for (Data Center Interconnect) DCI network architectures. Ethernet is preferred due to its familiarity and interoperability with the data center LAN, while WDM optimizes fiber utilization and provides low latency and distance advantages. Dense Wavelength Division Multiplexing (DWDM) has traditionally been associated as a technology used by long haul "active" DWDM platforms. However, with the advent of pluggable DWDM SFP+ transceivers which can be deployed directly into the Ethernet switch, users can now connect up to a maximum of 80 channels over a single pair of fibers with a maximum distance of 80 km without the need for complicated, bulky and expensive separate DWDM chassis systems.

The embedded DWDM solution combines DWDM SFP+ optics with a fully passive mux/demux system. Both operating and capital costs are now much lower and specially trained optical technicians are no longer required to implement such systems, freeing up much needed budget for the core switching activity of the network. Arista supports this embedded DWDM approach with its range of SFP+ DWDM transceivers and the SmartOptics embedded SFP+ DWDM platform.

The Embedded DWDM advantage:

- Up to 80x the capacity on existing single mode fiber with no need to lease or lay new fibers
- No bulky DWDM "transport" equipment
- Embedded DWDM introduces no extra latency
- Low Power DWDM SFP+ (typ. 1W, max. 1.5W)
- Plug & Play solution is easy to install and operate
- Fully passive platform provides highest MTBF
- Environmentally friendly low energy requirements
- Significantly reduced Capex with no specialized training and no Opex

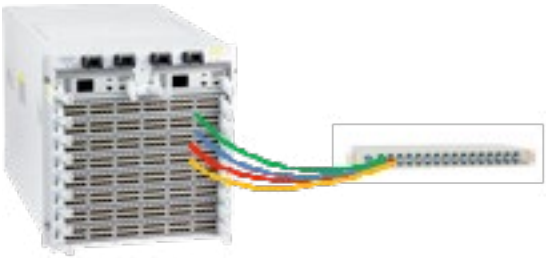

Figure 2: Arista with SmartOptics Embedded DWDM for distances up to 80km

When longer distances are required

A fully passive embedded DWDM works work well for many DCI scenarios, however it is not uncommon for multiple 10G signals to be transported beyond 80 km. There are cases where an active DWDM platform is needed to amplify the signal, to address longer distances or higher losses than a passive system can sustain. In cases where optical amplification is required traditional DWDM platforms introduce a high level of complexity for the user and require the optical power for each channel to be exactly compensated for dispersion to optimize the performance at a system level. Most solutions proposed by traditional WDM transport vendors are transponder- based systems relying on "Active" Optical-Electrical-Optical (OEO) conversion. These solutions still have all the disadvantages of complex systems and require specially trained personnel to install, operate and manage the system. In a data center environment the physical size and power consumption of a typical DWDM system is often larger than that of the Ethernet switching equipment.

DWDM Distance Extension up to 200km using SmartOptics m:series

To make the deployment of amplified DWDM solutions for DCI applications as simple as passive WDM solutions, SmartOptics has developed and launched the industry's first next generation active-embedded DWDM platform. m:series combines all the features of a traditional DWDM system with the simplicity and cost effectiveness of an embedded WDM system. m:series contains all required multiplexer/de-multiplexer, amplifiers, dispersion compensation, in-band management and optical channel monitoring in a 1U form factor and is up and running in minutes. m:series supports all protocols up to and including 100G and is available with a choice of 4+4 and 16+16 channel models. Data center operators or managed service providers can lease DWDM wavelength services to their customers and use the built-in monitoring functionality to monitor these services.

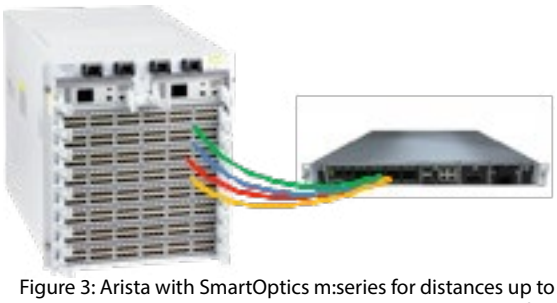

Figure 3: Arista with SmartOptics m:series for distances up to 200km

Summary

Data center operators can now take advantage of Arista Networks embedded DWDM capabilities to build simple and cost effective transmission networks between sites up to 80 km. Where longer distances are required, traditional complicated and expensive DWDM platforms are now replaced by SmartOptics m:series platform which fully integrates and automates complex DWDM functionality in a compact and cost effective platform.

About SmartOptics

SmartOptics is proud to be the leading provider of optical networking solutions based on Wavelength Division Multiplexing (WDM) technology. Our products allow telecom operators, network architects and ISP infrastructure providers to build simple, straightforward and cost effective solutions to fulfill their ongoing and future network capacity needs. In partnership with our team of international distributors and vendor partners, SmartOptics is revolutionizing the way networks are built throughout Europe, USA and Asia. At the forefront of new designs and technology, solutions allow cost reductions and increased data services in the network. Our customers can now really start to enjoy improved quality of service at exceptional service delivery price points.

Email: info@smartoptics.com, Web: http://www.smartoptics.com, Phone: +47 213 79180, SmartOptics AS, Stålfjæra 9, N-0975 Oslo, Norway

About Arista Networks

Arista Networks was founded to deliver Cloud Networking Solutions for large data center and computing environments. Arista's award-winning best-of-breed 10 Gigabit Ethernet switches redefine scalability, robustness, and price–performance. At the core of Arista's platform is EOS a groundbreaking new software architecture. Arista Networks markets its products worldwide through distribution partners, systems integrators and resellers.

Information in this document is provided in connection with Arista Networks products. For more information, visit us at http://www.arista.com, or contact us at sales@arista.com

Santa Clara—Corporate Headquarters
5453 Great America Parkway,
Santa Clara, CA 95054

Phone: +1-408-547-5500
Fax: +1-408-538-8920
Email: info@arista.com

Ireland—International Headquarters
3130 Atlantic Avenue
Westpark Business Campus
Shannon, Co. Clare
Ireland

Vancouver—R&D Office
9200 Glenlyon Pkwy, Unit 300
Burnaby, British Columbia
Canada V5J 5J8

San Francisco—R&D and Sales Office
1390 Market Street, Suite 800
San Francisco, CA 94102

India—R&D Office
Global Tech Park, Tower A & B, 11th Floor
Marathahalli Outer Ring Road
Devarabeesanahalli Village, Varthur Hobli
Bangalore, India 560103

Singapore—APAC Administrative Office
9 Temasek Boulevard
#29-01, Suntec Tower Two
Singapore 038989

Nashua—R&D Office
10 Tara Boulevard
Nashua, NH 03062