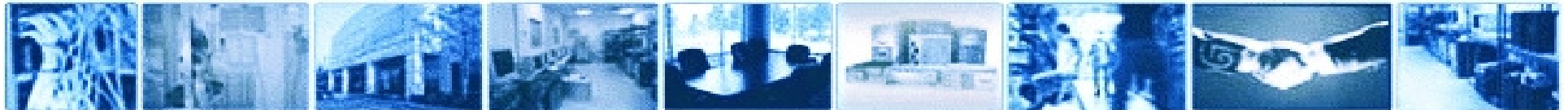




Aria Networks



MPLS & Ethernet World Congress 2008
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Next Generation Network Management
Demonstrating Centralized PCE control of Optical & Ethernet Transport Networks

Daniel King – Aria Networks Fabien Verhaeghe – MARBEN

Today's Demo

- About Aria Networks & MARBEN
- Next Generation Network Management
- What is a Path Computation Element (PCE)?
- Scope of the PCE Interop
- PCE Demonstration
- Conclusion

Aria Networks & MARBEN

- **Aria Networks**

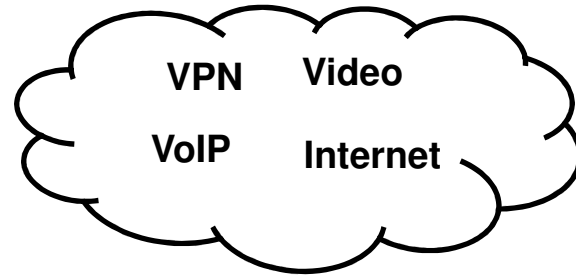
- The leading provider of offline, online and real-time network planning and path computation solutions for Next Generation Networks.
- iVNT is an advanced and powerful solution suite for designing, planning, and operating NGNs and includes support for PBT, MPLS-TE, IP, GMPLS, WDM and VPN technologies.

- **MARBEN**

- Recognized as a leading provider of standards based protocol software for Service Providers, Equipment Manufacturers and Software Development Companies.
- Marben Products delivers highly robust and efficient signalling, routing and AAA solutions for the network control plane of Next Generation Networks (NGN) and the service control plane of IP Multimedia Subsystem (IMS).

NG Network Management

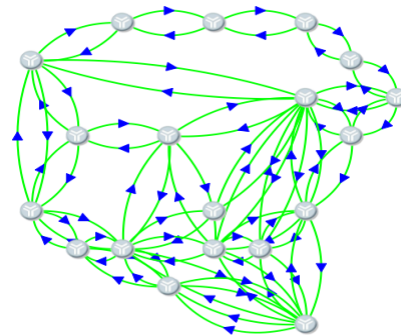
NGOSS
Service Aware
Converging Services



**Drives: New planning,
path computation
and traffic-engineering**



Converging NGNs
Multi-technology
Multi-layer
Multi-domain
Multi-vendor



Competitive Differentiation
Flexible service design
Per-instance service definition

<u>Bandwidth</u>	<u>QoS</u>	<u>Business Policy</u>
Required	CoS	Cost
Desired	Delay	Lead-time
Peak	Jitter	Inclusion/exclusion
Committed	Availability	User-definable rules
	Hops	

Operational Efficiency

Reduce complexities
Improve time-to-market
Reduce reliance on personnel
Avoid over-build/over-spend
Fully leverage deployed assets
Avoid SLA penalties/exposure
Manage Planned Engineering
Works

What is a PCE?

- A new functional network component
 1. Performs sophisticated path computation.
 2. Preserves network confidentiality.
 3. Avoids abstraction/aggregation issues.
 4. Off-loads computational complexity from switches and routers.

- THE IETF's PCE working group defines...

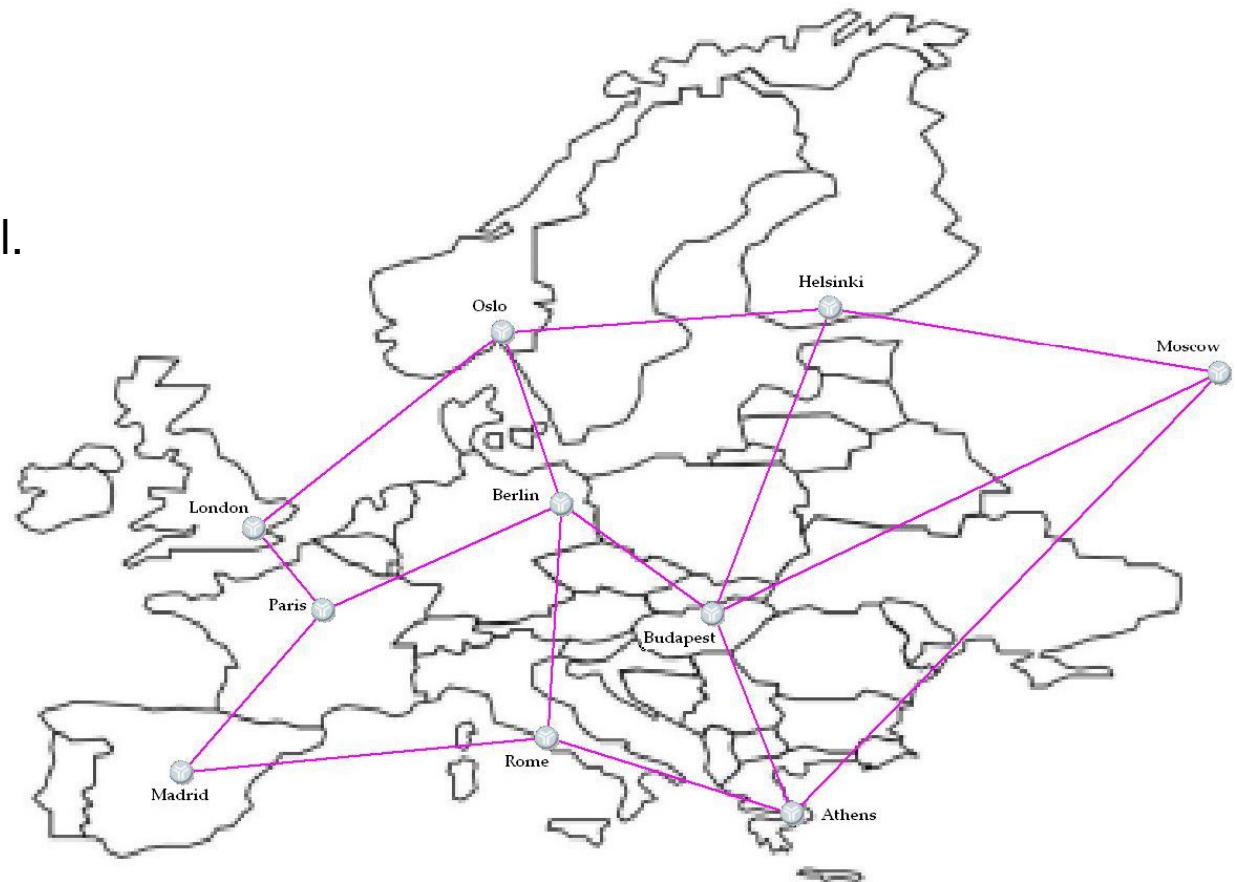
Path Computation Element: an entity (component, application or network node) that is capable of computing a network path or route based on a network graph and applying computational constraints.

Scope of the PCE Interop

- Interoperability of Aria Networks Advanced Computation Engine (iVNT) with a PCE (PCEP implementation) from MARBEN Products.
- Demonstrating the use of a PCE to compute and control Next Generation Optical and Ethernet services.
- Showcasing advance PCE path computation functions, including Global Concurrent Optimization (GCO), to reoptimize network resources and place Ethernet services concurrently.

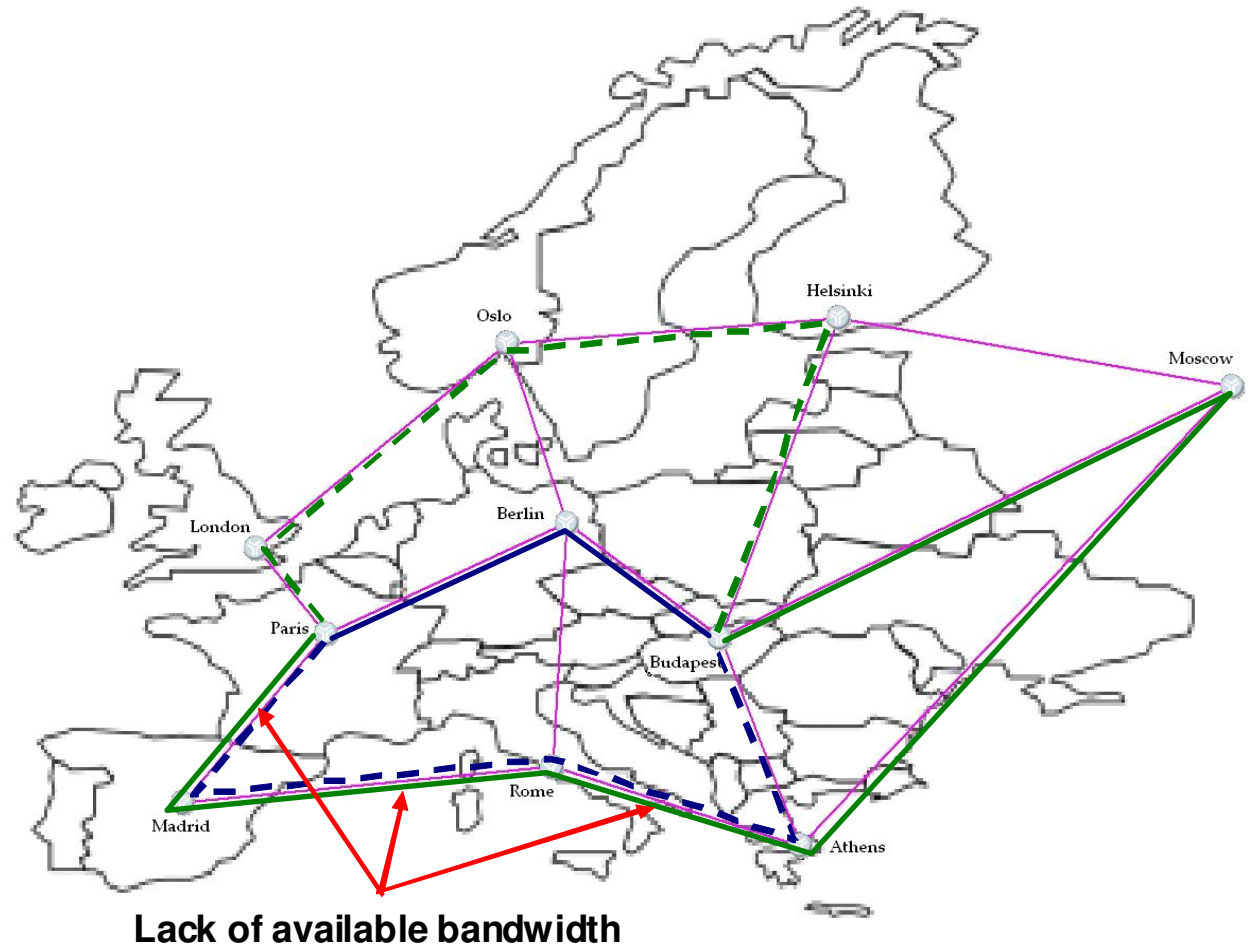
Demonstration Topology

- **Topology:**
 - All links have 1Gbit/s of bandwidth.
- **Services**
 - Ethernet over Optical.
- **Objectives:**
 - Open 2 500Mbit/s protected services Paris and Budapest.
 - Open 1 500Mbit/s protected service between Madrid and Budapest.



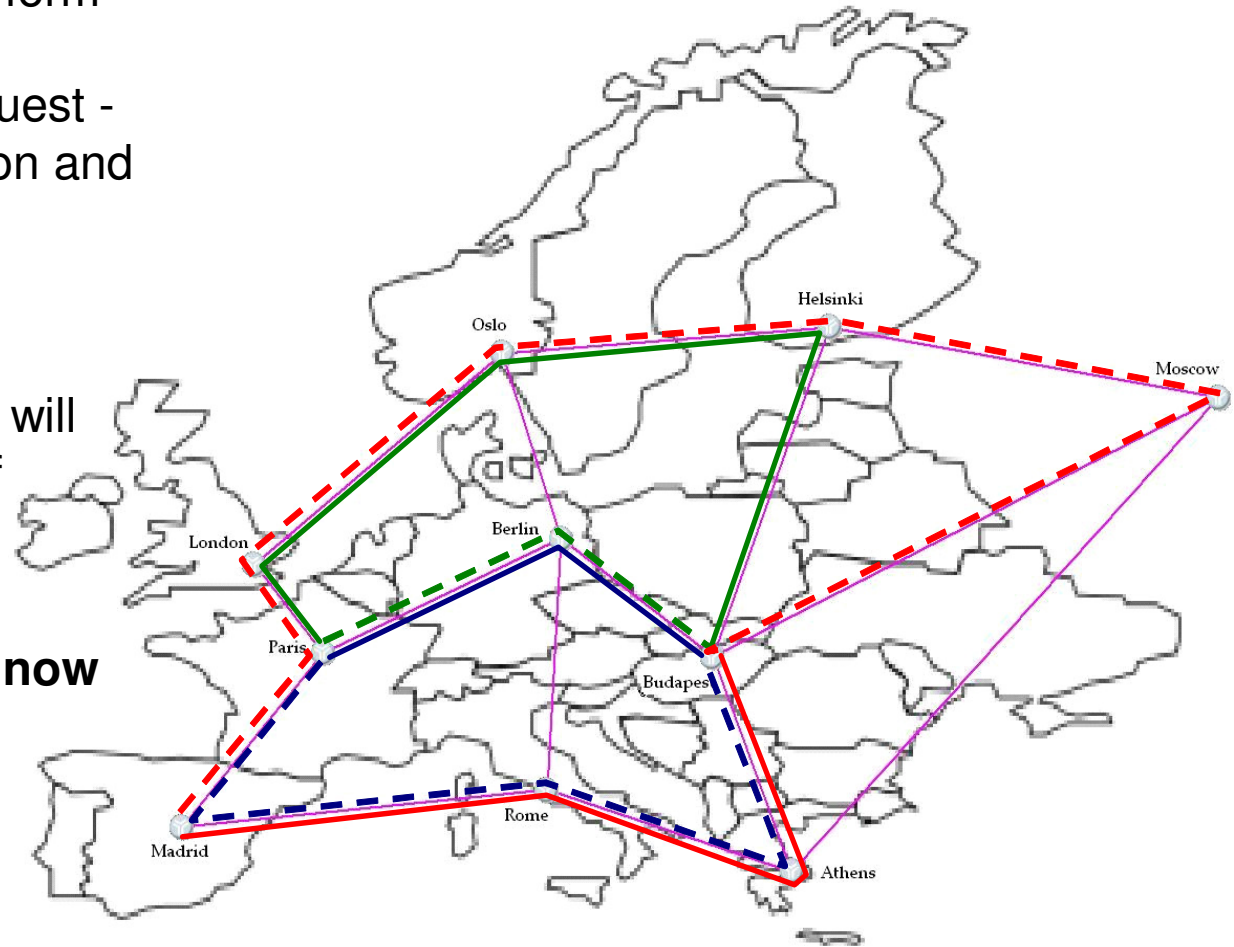
Distributed Path Computation

- Initiate 2 protected Ethernet services from Paris to Budapest.
- Not possible to create additional services between Madrid and Budapest due to a lack of network resources.



Centralized PCE Reoptimization of the network

- iVNT enabled PCE will perform a Global Concurrent Reoptimization (GCO) request - Parallel service computation and concurrent placement.
- The Make-Before-Break mechanism in the network will allow minimal disruption of existing services.
- **All service requests can now be met, with increased network efficiency.**



Conclusion

- **Aria' & MARBENS PCE Solution provides:**
 - Greater control of service computation compared to existing techniques.
 - Quicker and easier deployment of converged networks and services.
 - Reduces service deployment times, and minimizes operational expenditure.
 - Provides advanced network operations like global concurrent optimization to reduce and defer unnecessary capital expenditure and improve network resource efficiency.
 - Capable of managing multiple-technologies, multi-layers and multi-domains.