



UNIFYing carrier and cloud networks: mixing SDN and NFV

www.fp7-unify.eu

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SDNRG@IETF91, November 10, 2014



Agenda

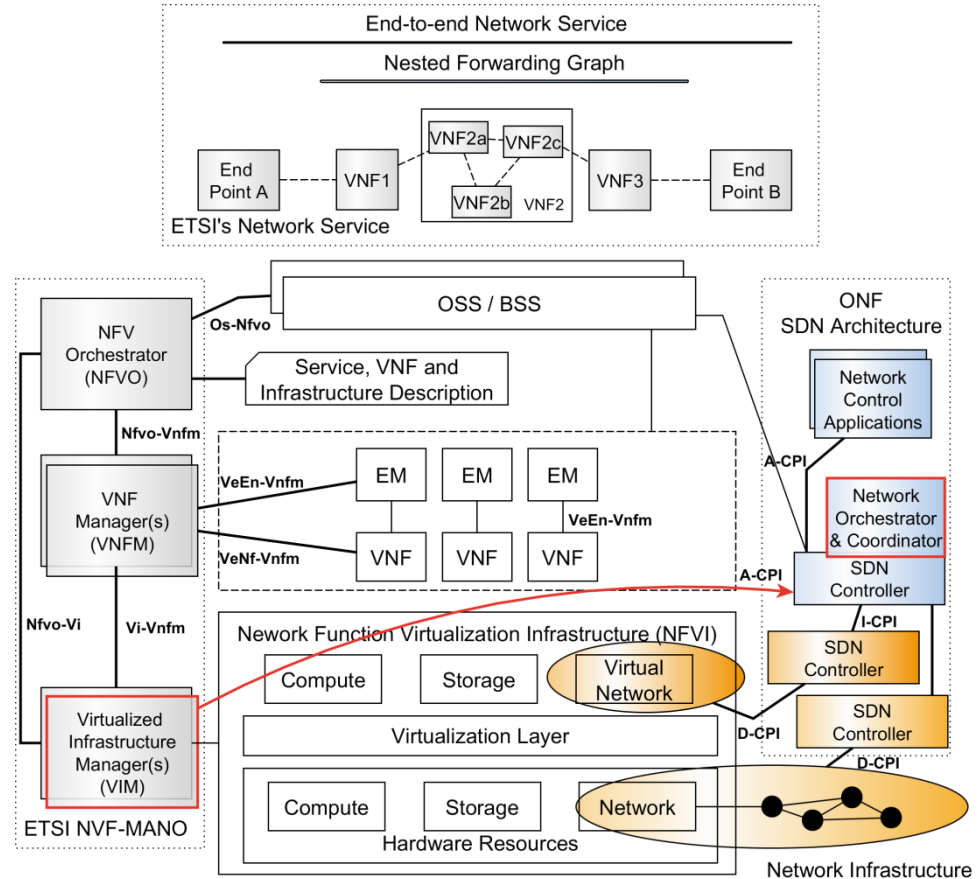
- Motivations
- Related Work
- UNIFY
 - Value proposition
 - Approaches
 - Architecture proposal
 - Highlights
- Summary

Motivations

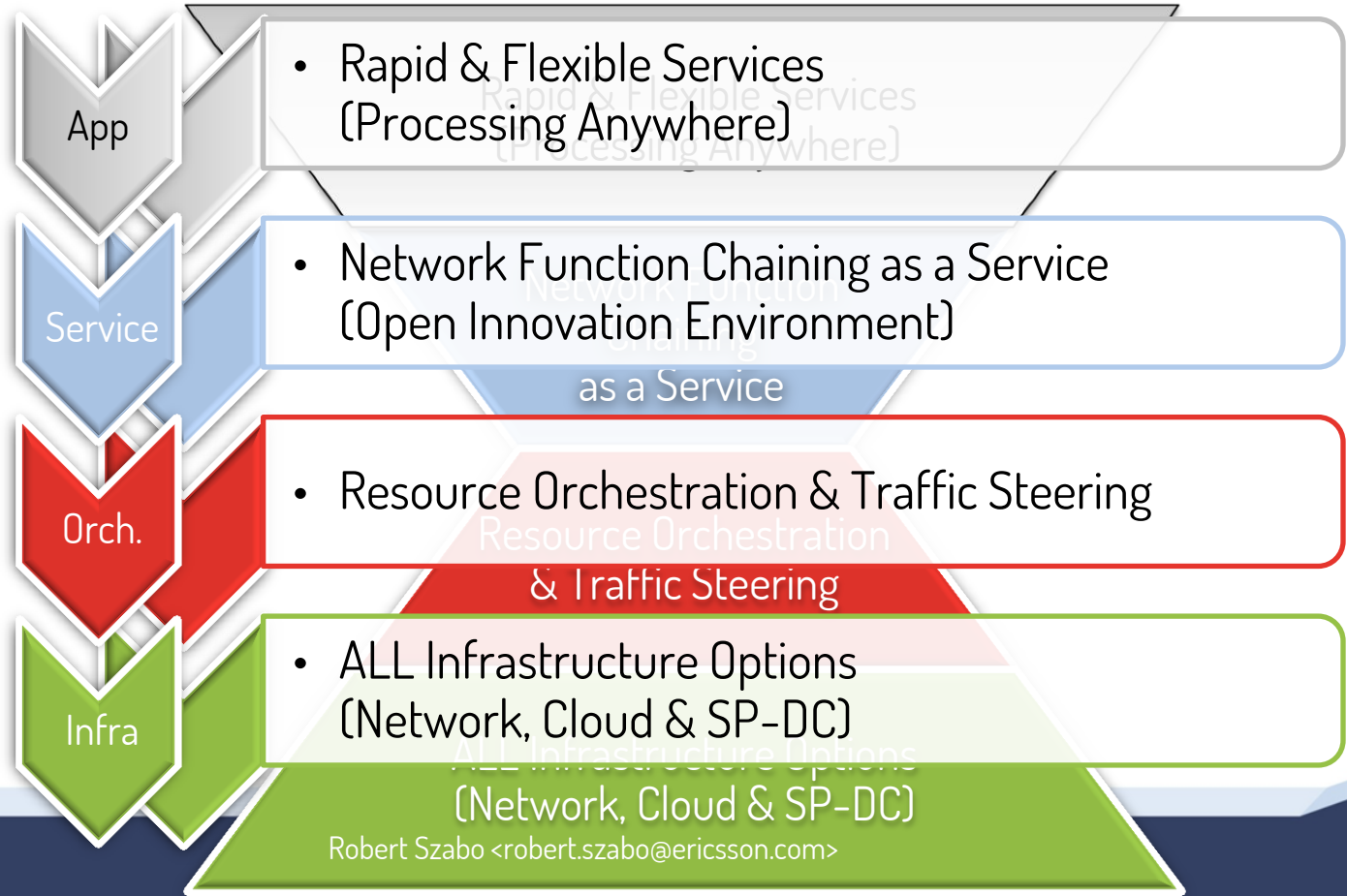
“Today, rigid network control limits the flexibility of service creation”

Related Work: SDN & NFV

- SDN supports
 - multi-level virtualization
 - Control – data plane split
- NFV
 - Appliance-based NF to Virtualized NFs

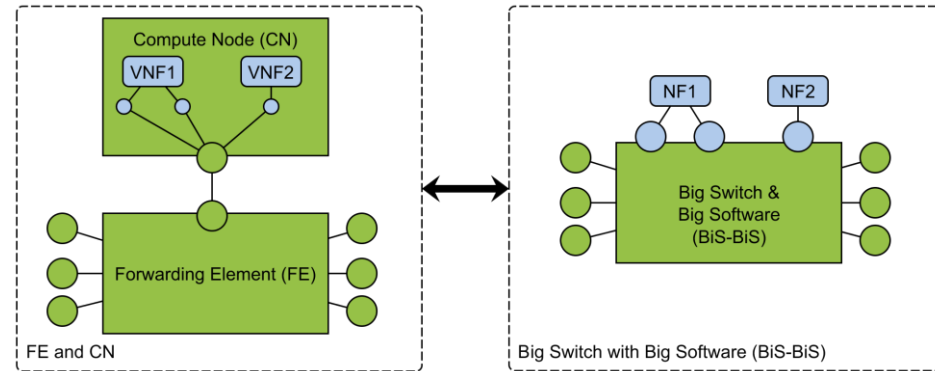


UNIFY's Value Proposition



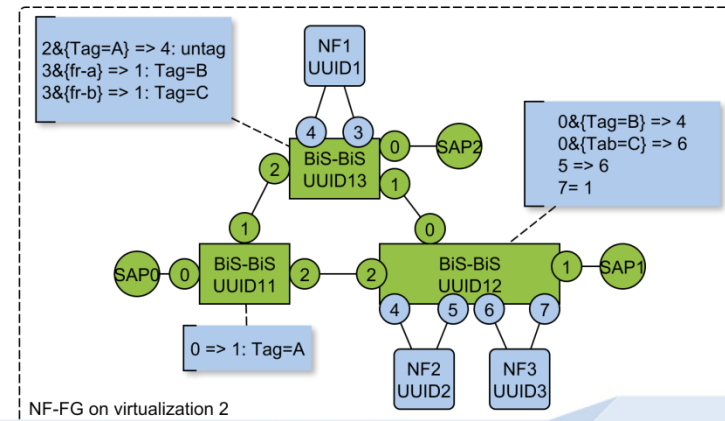
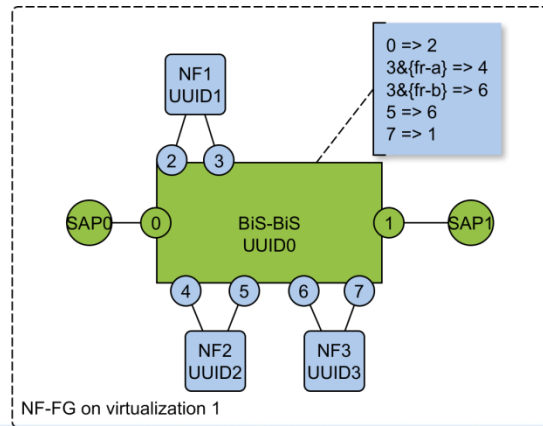
Approach: Virtualization (up)

- Big Switch & Big Software (BiS-BiS) Virtualization
 - Combined compute, storage and networking
 - Virtualized “infrastructure view”



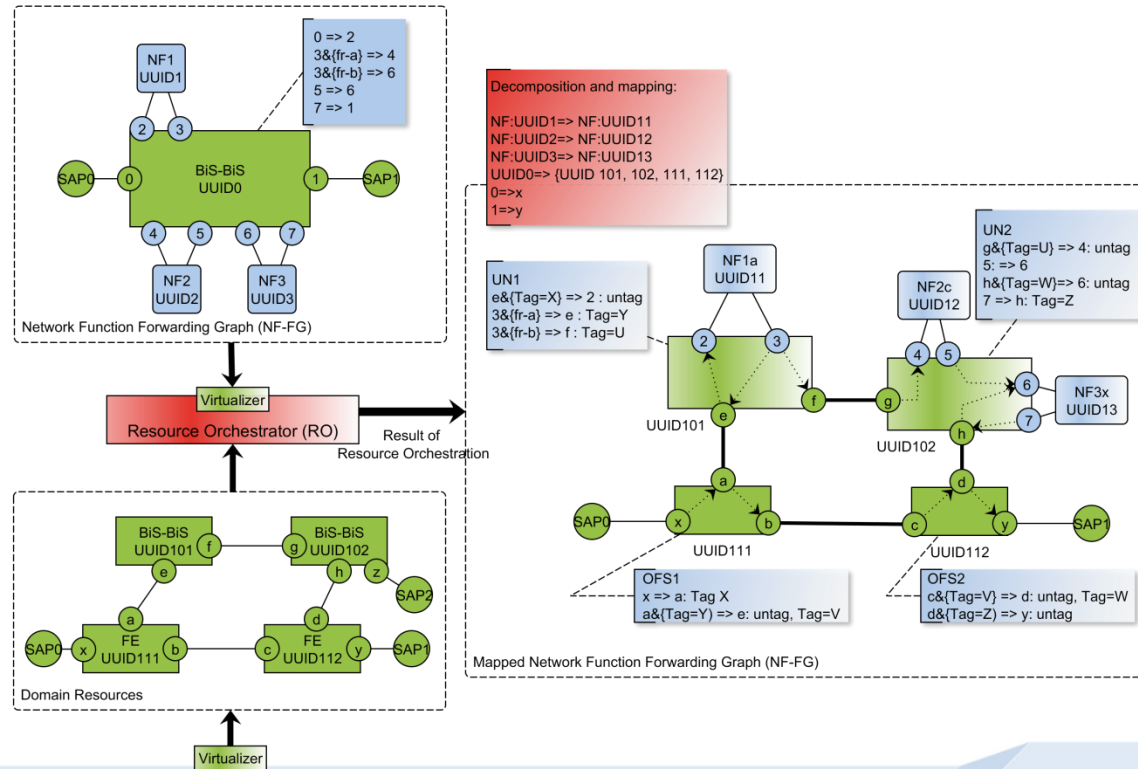
Approach: Service Requests (down)

- Network Function Forwarding Graph (NF-FG)
 - Combined software (NF) and forwarding overlay definition
 - Mapped to the “virtualized infrastructure”



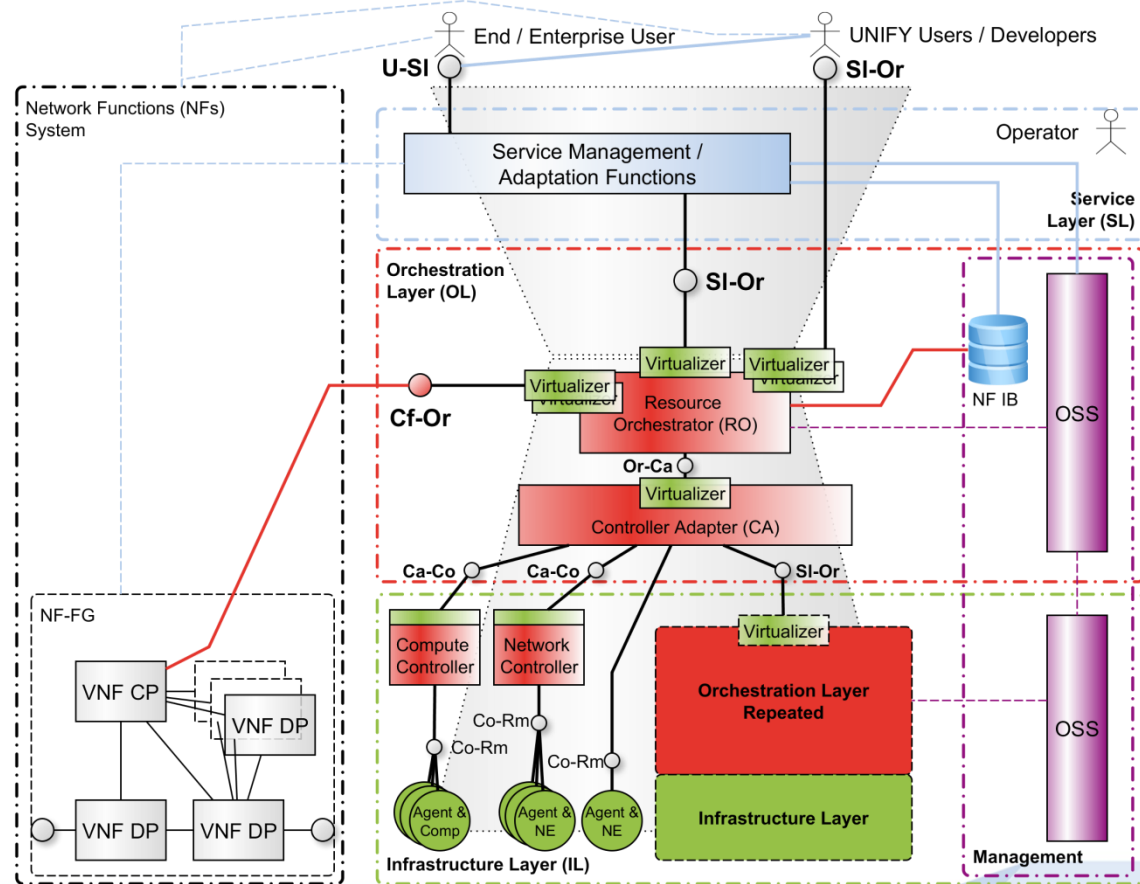
Service: Resource Orchestration with

- Isolation and
- service guarantees per NF-FG



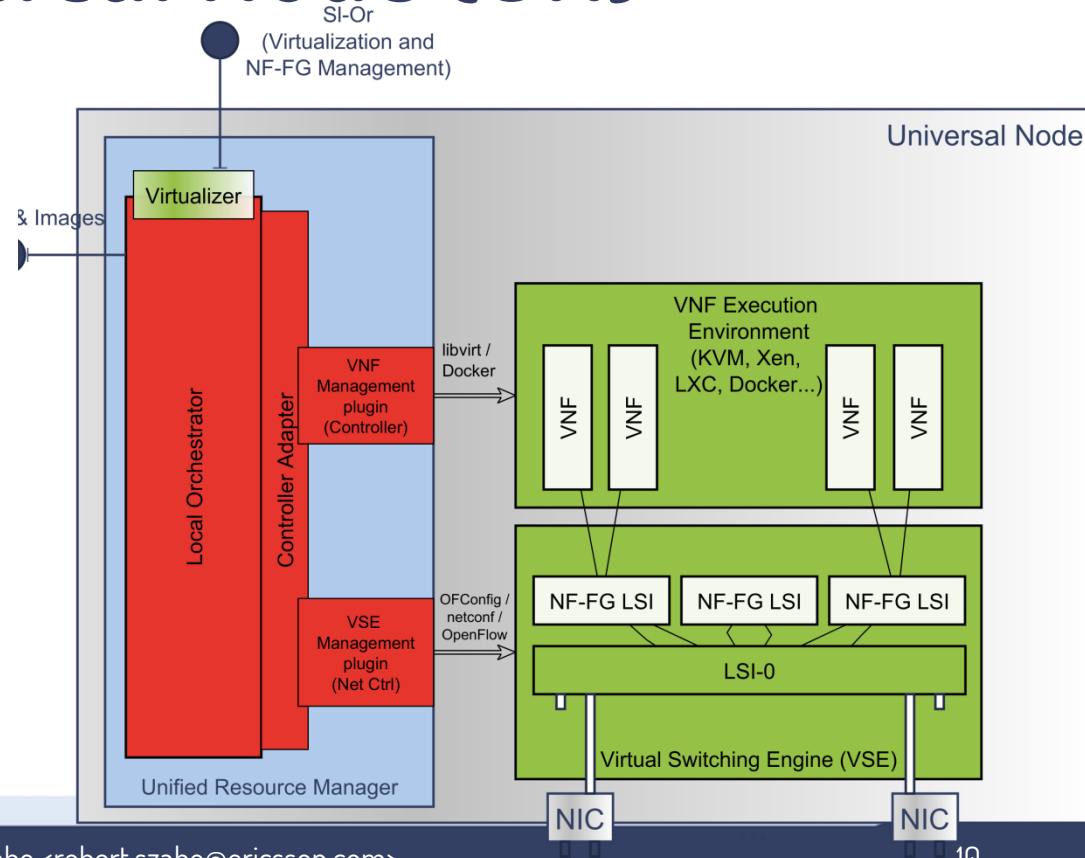
Architecture

- NF-FG @
- SI-Or, Cf-Or, Or-Ca
- Multi-level (recursive)
- A combination of NFV & SDN



Highlights: Universal Node (UN)

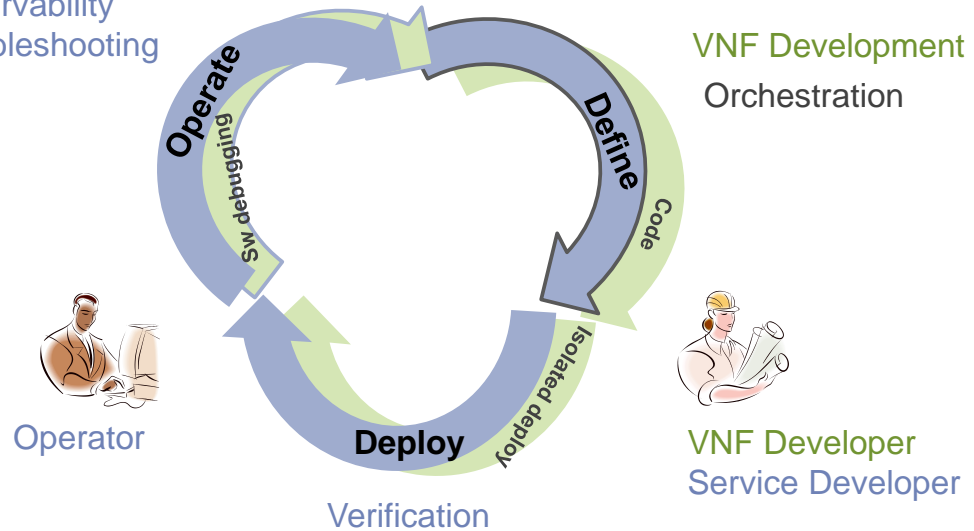
1. The UN can host VNFs as **full VMs**, **lightweight isolated containers** or **enhanced logical switch instances**
2. Intel® DPDK is used to achieve **high performance** in the UN Virtual Switching Engine as well as optionally in the various VNFs.
3. VNFs of the incoming NF-FG are logically mapped to the internal network and to traffic steering between the VNFs



Highlights: SP-DevOps

- Analyze applying DevOps principles for telecom software-defined infrastructure
- Develop a set of APIs for the UNIFY Architecture, common to Developer and Operator roles
- Build an integrate tools addressing specific research challenges
 - Scalable monitoring
 - Forwarding plane verification
 - Network debugging as a service

Observability
Troubleshooting



“Service Provider DevOps for Software-Defined Telecom Infrastructures” [draft-unify-nfvrg-devops](#) @NFVRG

Highlights: Proof of Concept Demos

SIGCOMM 2014

2 x EWSDN 2014

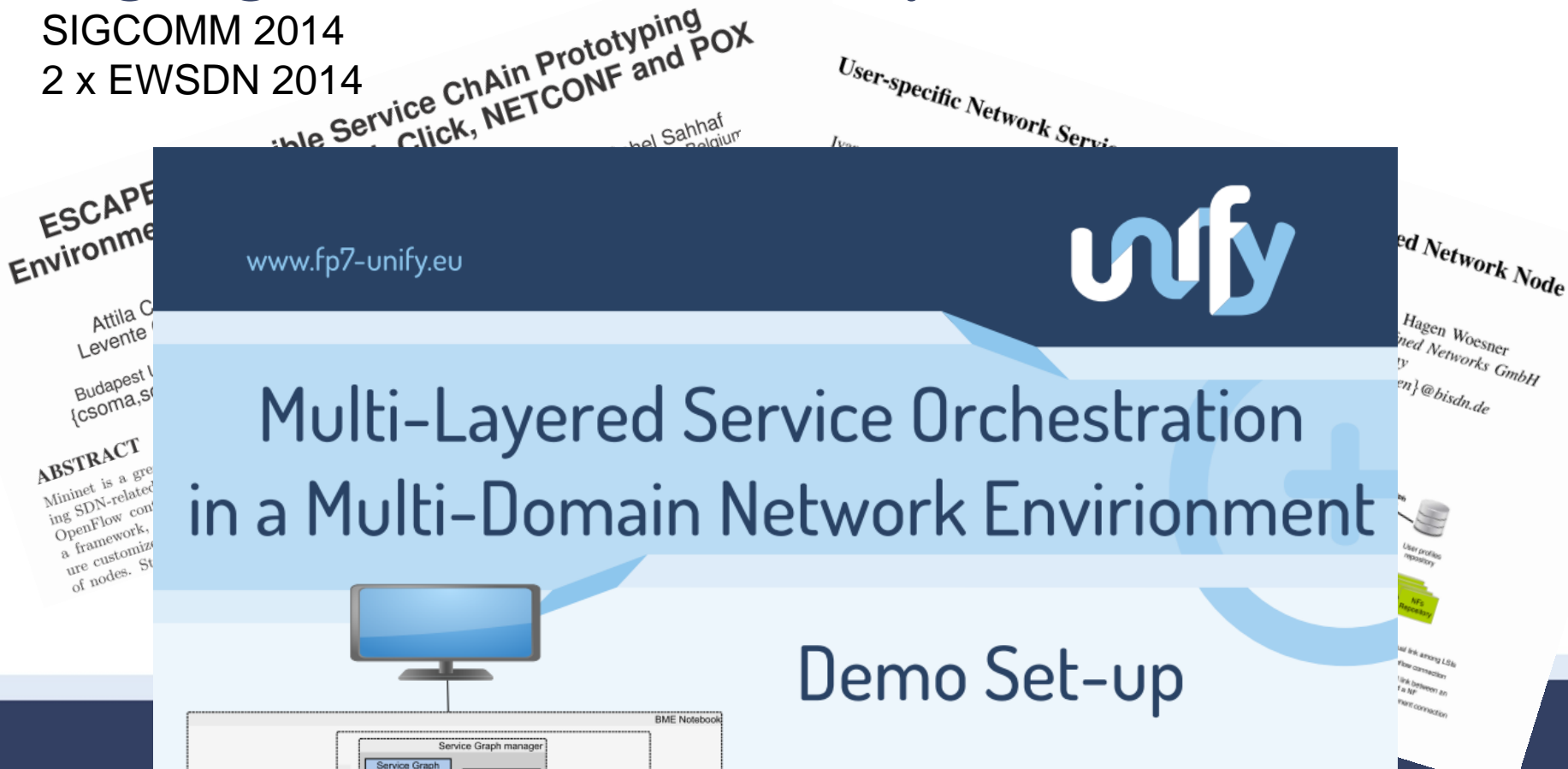
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Multi-Layered Service Orchestration in a Multi-Domain Network Environment



Demo Set-up



Summary

- UNIFY: solution for rapid and flexible services
- see NFVRG@IETF91
 - “Unifying Carrier and Cloud Networks: Problem Statement and Challenges”
[draft-unify-nfvrg-challenges](#)
 - For a joint programmatic interface for compute, storage and network resources
 - “Service Provider DevOps for Software-Defined Telecom Infrastructures”
[draft-unify-nfvrg-devops](#)
 - For VNF and Service Developer support in the UNIFY programmable infrastructure

UNIFY Consortium

2013 November - 2016 April

Major Service Providers:



Research Institutes:



Major Vendors:



Universities:



Project Management: **eict**

Acknowledgements

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