SDN at the Optical Layer

S&T Campaign: Computational Sciences
Advanced Computing Architectures

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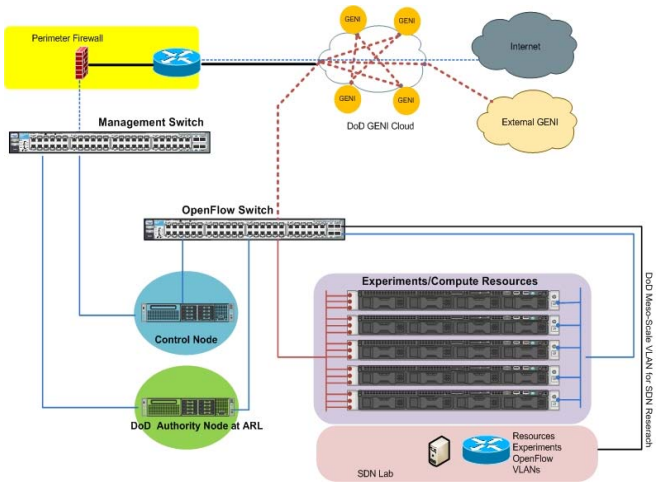
Research Objective

- **Integrate Software Defined Networking (SDN) with dynamic optical layer provisioning, DARPA CORONET protocols, and other network management capabilities for a secure high-performance optical network with novel capabilities**

Virtual CORONET Network

Challenges

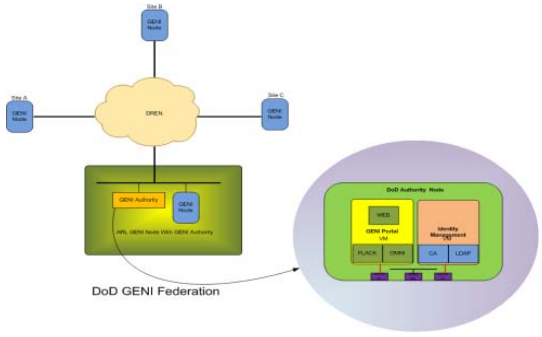
- Building a DWDM-based optical testbed for research and experimentation with transport-SDN
- Controlling DOD and non-DOD optical domains with same SDN-controller
- Working with proprietary optical software



ARL SDN Network

ARL Facilities and Capabilities Available to Support Collaborative Research

- DARPA CORONET test bed
- A 100+ node simulated optical network for experimenting with CORONET protocols (e.g. 3WHS and ROLEX)
- A GENI/SDN lab with OpenFlow enabled switches
- DWDM equipment for enabling optical transport layer integration with SDN
- HPC assets like Supercomputers connected to Defense Research and Engineering Network (DREN)



ARL GENI Network

Complementary Expertise/ Facilities/ Capabilities Sought in Collaboration

- Experience with Optical Physical Layer modeling
- Familiarity with SDN & Optical technologies (e.g., GMPLS, OTN, OpenFlow, OpenDaylight, OpenStack, Neutron, etc.)
- Python, C++
- Optical networking test bed