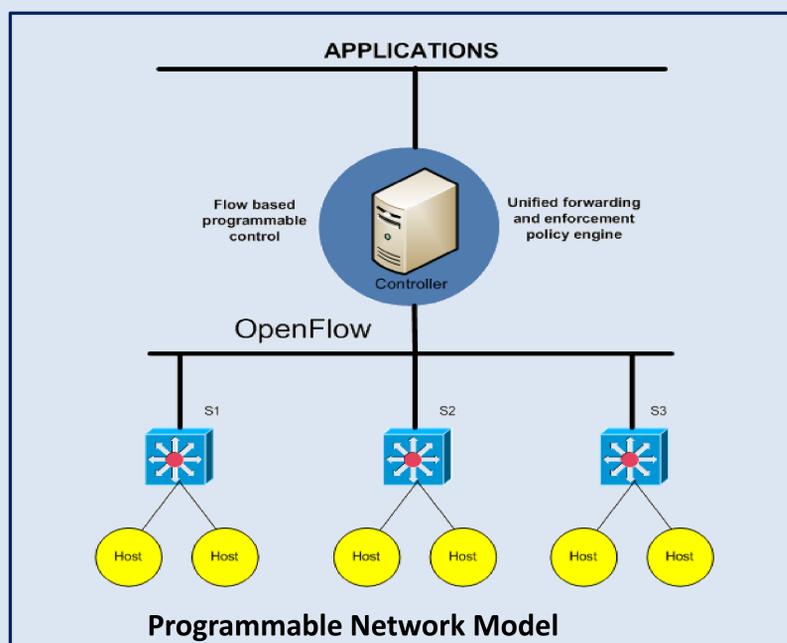


S&T Campaign: Computational Sciences Advanced Computing Architecture

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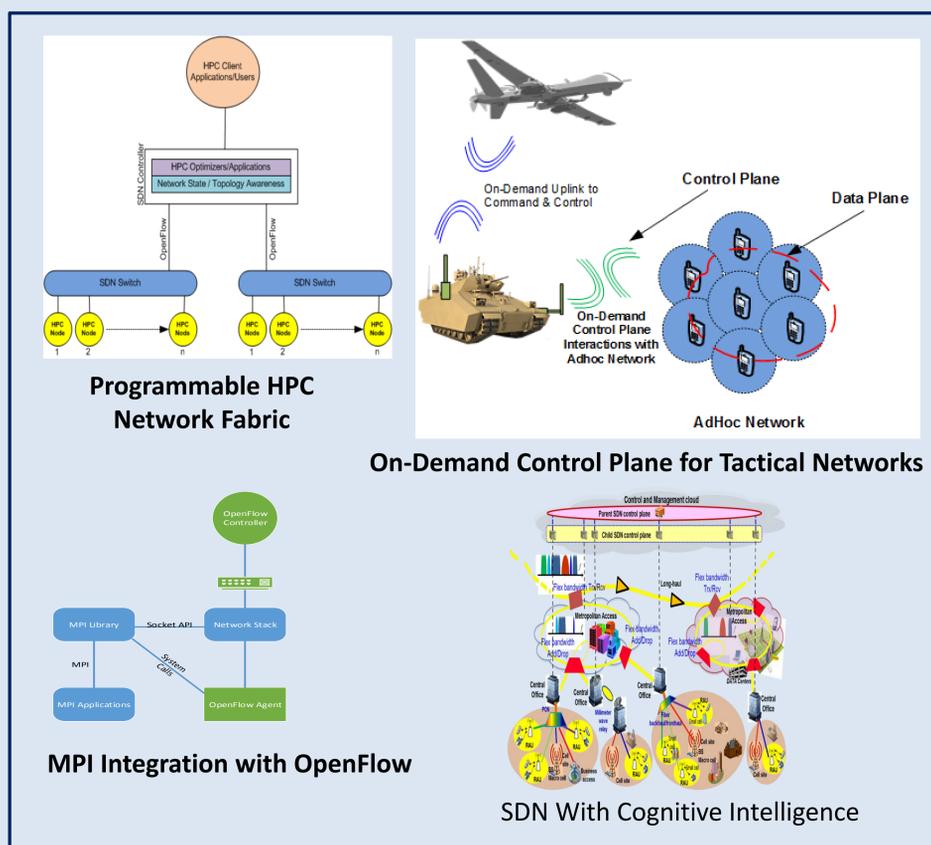
Research Objective

- Development of Programmable network interfaces to create intelligent & adaptable networks with unified control plane
- Modify and Extend OpenFlow to adapt SDN Architectures to Army Network



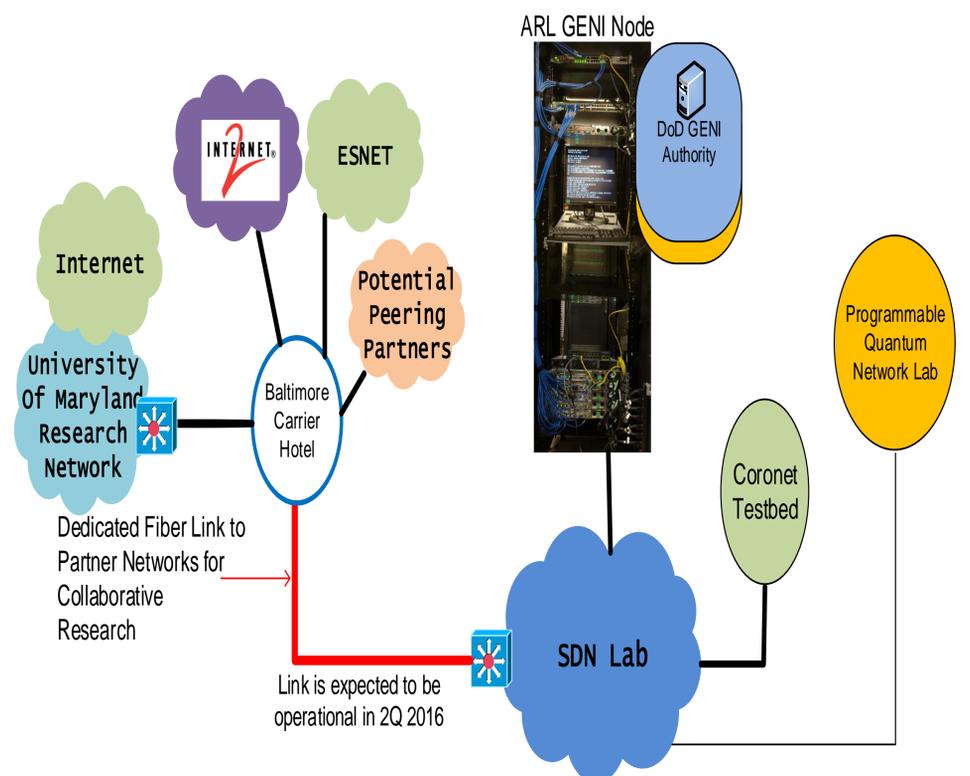
Challenges

- Implementing programmable network fabrics in existing Army Networks demand significant modification
- Significant modifications to OpenFlow are required to achieve intended functionality
- Integration of MPI with OpenFlow is highly challenging



ARL Facilities and Capabilities Available to Support Collaborative Research

- HPC facilities and support staff
- Experimental laboratory facilities
- Specialized modeling/simulation and visualization tools
- Expertise in SDN networking
- Research networking facilities



Complementary Expertise/ Facilities/ Capabilities Sought in Collaboration

- Extensive experience in the development of programmable network frameworks
- OpenFlow Programming, experience with Ryu controller
- Control plane programming
- Modeling and Simulation of large scale SDN Networks

Related Work

- "A Unified MAC Layer Model for Heterogeneous Wireless Networks": Saleil Bhat, Venkat Dasari, and Vinod K. Mishra (ARL Technical Report, 2015)
- "Analysis of Cisco ONE OpenFlow Controller Implementation": Curtis Tade, Venkat Dasari, and Vinod K. Mishra (ARL Technical Report, 2014)
- "GENI Deployment and Research at US Army Research Laboratory", Vinod K. Mishra, Ph.D. and Venkat R. Dasari, Ph.D. (MILCOM Proceedings, 2015)
- "Programmable Control Planes in Tactical Wireless Networks". MILCON 2016. Venkat Dasari and Brain Jalaeian (2016)
- "A Generalized Optimization Framework for Programmable Control Plane in Tactical Wireless Networking". Venkat Dasari, Brian Jalaeian and Mehel Motani (2016) IEEE-GLOBECOM