

SC19 Network Research Exhibition: Demonstration Abstract

ProNet - OpenROADM SC'19

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Abstract

Our ProNET - OpenROADM SC'19 demonstration builds upon previous work demonstrated at SC18 and OFC19 on the matter of software defined optical networking and orchestration of layer1 optical through layer 7 networking components.

We will build our research, experience and depth in software defined optical networking by adding in two and a half times as many vendor's optical components as we did previously and orchestrating the gear using those OpenROADM capable devices along with our open orchestration software ProNET. In addition to local VM migration over our software defined optical networks this year we desire to build further experience in two ways: first by connecting our experimental optical research platform at the SC'19 show-floor back to the University of Texas at Dallas and the University's local software defined optical networking research test-bed thus we can further develop experimental research results and secondly with the growth from 2 to about 5 major optical vendor's ROADMs and about 10 optical transponders we can experiment with a greater amount network capabilities such as restoration, high availability and multiple degrees of optical connectivity when operating a software defined optical network.

Over the experimental optical networks we will show a variety of research that is being conducted at the University of Texas at Dallas and at AT&T with a variety of commercial optical vendors. We will most likely also demonstrate some research from our partnership with the U.S. Federal Reserve Banking system.

We certainly hope that our research partner students from Keio University are able to join us in our booth and share in producing some experiments as they did at SC'19. Keio students might perhaps bring their autonomous driving and or 5G networking or "tri-level networking" demonstrations back to SC'19 but with the addition of the last year of development of those projects. We are in discussion with our friends at Keio working on details.

Goals

1. Local show-floor optical SDN functional and demonstrating data center fail-over.
2. Local and wide area optical networks connected, orchestrated and providing research bandwidth.
3. Optical experiments live demonstrations running.

4. A variety of University of Texas at Dallas research is produced over the network and available to booth visitors.
5. Live video links between the show-floor and the campus optical networking research lab. Possibly live video links to Keio University in Japan.

Resources

We recieved SCInet/SC assistance with the difficulties and costs involved in creating a 100Gbps connection from the SC show-floor to UT Dallas. We are providing 8 flight racks of equipment which are required to utilize the 5 ROADMs, 10 Optical transponders, two simulated data centers and the supporting equipment. We received a point to point connection from the UT Dallas SC show floor booth to Keio University in Japan and we are set to experiment with virtual reality over the international wide area network.

Involved Parties

- Gi Vania, University of Texas at Dallas, gvania@utdallas.edu
- Andrea Fumagalli, University of Texas at Dallas, andrea@utdallas.edu
- Frank Feagans, University of Texas at Dallas, frank.feagans@utdallas.edu
- Martin Birk, AT&T, mb4962@att.com
- At least 5 major optical vendors
- Possibly a contingency of professors and students from Keio University in Japan