

SC19 Network Research Exhibition: Demonstration Abstract

[Toward SCinet DTN as-a-Service]

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Abstract

Recently, many data-intensive science workflows are emerging, which demanded different types of infrastructure to support different types of data-intensive science workflow. One of the solutions for supporting this trend is to provide Data Transfer Node (DTN) services at network exchange points.

The SCinet Data Transfer Node(DTN) project started at SC17 SCinet XNET as a Data Transfer Node community sharing prototype project. Based on the community feedback and conference user requirements, we have implemented the SCinet DTN software and hardware solutions to serve the community as prototype services in SC17 and SC18.

We are building on the past experiences from two projects at SC17: Data Transfer Node Service in SCinet and at SC18: SCinet Multi 100G Data Transfer Node for Multi-Tenant Production Environment. For SC19, we have made service improvement, hardened the workflow for implementing DTN hardware and software stack. We also prepare SCinet DTN as-a-Service hardware, software, and workflow reference implementation for SC20 to demonstrate an example of introducing new technology to the SCinet community.

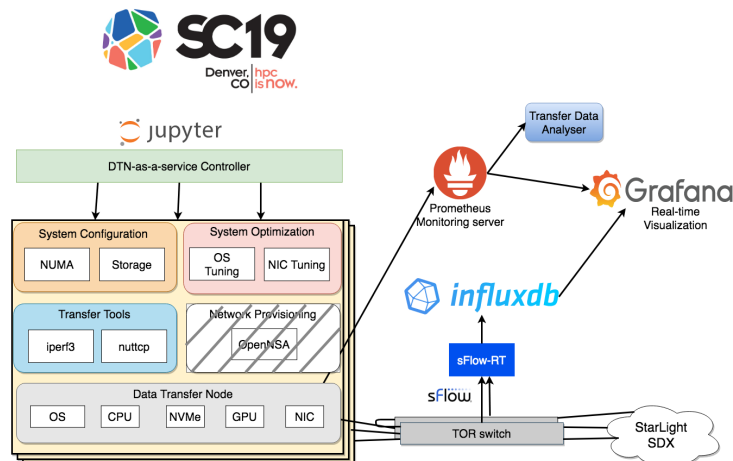
Goals

High-level goals for this project are:

1. Provide SCinet DTN services to SC19 conference participants, exhibitors, and research projects before and during the SC19 conference.
2. Consolidate and streamline the hardware selection, requesting, testing & tuning, set up & tear down for pre-staging, staging, conference.
3. Finalize the default software stack, design a workflow to support multiple projects running on shared hardware.
4. Create a service template to reduce year to year network modification.
5. Provide workflow to support integrating new network technology and new data movement technology with minimum operational impact.

Resources

1. Network uplink to SCinet core: 1x400GE + 4 x 100GE, with L2 and L3 services.
2. 7 U rack space in SCinet with power.
3. 4 x 100GE Data Transfer Nodes (Dell PowerEdge R740xd), one 400GE switch (Dell Z9332f-ON), and one 100GE network switch (Dell Z9264f).
4. Default software stack detail; see the following diagram.
5. WAN network connections specified by user projects



Involved Parties

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