

# SC18 Network Research Exhibition

## International WAN High Performance Data Transfer Services Integrated With 100 Gbps Data Transfer Nodes for Petascale Science (PetaTrans)

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### Abstract

The PetaTrans (high performance transport for petascale science) based on 100 Gbps Data Transfer Node (DTN) is a research project directed at improving large scale WAN services for high performance, long duration, large capacity single data flows. iCAIR is designing, developing, and experimenting with multiple designs and configurations for 100 Gbps Data Transfer Nodes (DTNs) over 100 Gbps Wide Area Networks (WANs), including Software Defined WANs, especially trans-oceanic WANs, PetaTrans – Recent developments will be showcased through demonstrations at SC18.

### Goals

1. The PetaTrans 100 Gbps Data Transfer Node (DTN) research project is directed at improving large scale WAN services for high performance, long duration, large capacity single data flows.
2. iCAIR is designing, developing, and experimenting with multiple designs and configurations for 100 Gbps Data Transfer Nodes (DTNs) over 100 Gbps Wide Area Networks (WANs).
3. One key focus is trans-oceanic WANs, PetaTrans – high performance transport for petascale science, including demonstrations at SC18.
4. These DTNs are being designed specifically to optimize capabilities for supporting E2E (e.g., edge servers with 100 Gbps NICs) large scale, high capacity, high performance, reliable, high quality, sustained individual data streams for science research.
5. Related research includes DTN components, such as NUMA and NVMe, kernel offloading/CPU by pass, in band network processing, DTN middleware, high performance transport protocols, in-band computational

processes, orchestration, pipelined workflows, RDMA, and other considerations.

### Resources

Required resources from SCinet are 12\*100 Gbps circuits from the StarLight facility in Chicago to the StarLight booth on the SC18 showfloor

### Involved Parties

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- StarLight International/National Communications Exchange Facility and Consortium
- Metropolitan Research and Education Network (MREN)
- SCinet