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Data Transfer Node Resource Manager

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The Caltech team in collaboration with network, computer science and HEP partners at the DOE laboratories and universities, has developed high-throughput data transfer methods and cost-effective data systems that have defined the state of the art for the last 15 years.

The achievable stable throughput over continental and transoceanic distances using TCP-based open source applications, notably Caltech's Fast Data Transfer application (FDT), has risen by two orders of magnitude over the last decade. This has happened in concert with optimally engineered and configured server systems using the latest generation of motherboards, storage and network interfaces.

These developments constitute the basis for the Data Transfer Nodes (DTNs) used in the SENSE project. The SDN for end-to-end Networked Science at the Exascale (SENSE) project is developing Software Defined Network (SDN) based technologies to enable on-demand end-to-end network services which can be tailored to individual domain science application workflow requirements.

The overarching goal of SENSE is to enable National Labs and universities to request and provision end-to-end intelligent network services for their application workflows leveraging SDN capabilities. The specific areas of Caltech's responsibility and technical innovation within the full scope of the SENSE project are:
End-systems involving DTNs with high throughput capability and instrumentation software aimed at comprehensive end-system monitoring, auto-configuration and tuning Site orchestration and integration of end-to-end flows across the Science DMZ interface.
Real time system monitoring and optimization.

The DTN and its design play a crucial role in the overall SENSE project architecture both as the source and destination of data and as an integral part of the end-to-end network flows. A description of the DTNs and their resource manager (DTN-RM) will be given.

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