# StorNet: Integrating Storage Resource Management with Dynamic Network Provisioning

Arie Shoshani, LBNL, and Dantong Yu, BNL (2011)

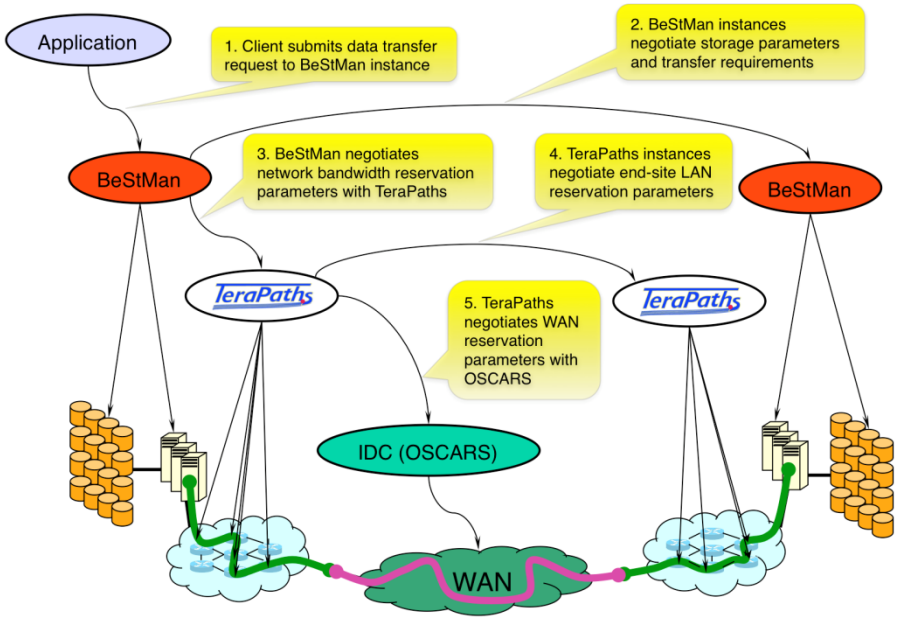
**ASCR- Network Research and Development Highlight**

## Objectives

- Design and develop an integrated end-to-end resource provisioning system for high performance data management
- Improve resource utilization by co-scheduling network and storage resources and ensure data transfer efficiency
- Implement a proof-of-concept software system to allow high-level application to have data-on-demand services

## Impact

- Enabled applications to transparently interact with network and storage for high performance data transport
- Provided network, storage, and data management capabilities commensurate with exascale computing
- Improved data transfer efficiency and avoid impact of network congestion




## Accomplishments

- Coordination of source and destination storage systems for space and bandwidth
- Coordination of network resource provisioning systems with advance reservations
- Negotiation of storage and network reservations and management of end-to-end configurations
- Design and publication of intelligent multi-domain bandwidth allocation algorithms
  - M. Balman, E. Chaniotakis, A. Shoshani, A. Sim. A Flexible Reservation Algorithm for Advance Network Provisioning. SC 2010
  - J. Gu, D. Katramatos, X. Liu, V. Natarajan, A. Shoshani, A. Sim, D. Yu, S. Bradley, S. McKee. StorNet: Co-Scheduling of End-to-End Bandwidth Reservation on Storage and Network Systems for High-Performance Data Transfers. High Speed Networks (HSN) Workshop, INFOCOM 2011