

# XSEDE Capability Delivery Plan

## UCCAN-2 Managed File Transfer

### Last revised 2016-06-01

## Background

Use cases describe community needs, requirements, and recommendations for improvements to cyberinfrastructure “CI” resources and services. Engineers analyze Use Cases to identify which aspects are supported by production components and which constitute gaps in functionality. A Capability Delivery Plan “CDP” is an executive summary of use case support gaps and plans to fill those gaps with new or enhanced capabilities.

## Use Case Summary

Use case CAN-2 (“Canonical 2”) describes how files can be transferred to and from XSEDE resources. Significant requirements are that the system must be able to automatically recover from transient faults (reliability, robustness), reliably handle requests involving thousands to hundreds of thousands of individual files, reliably handle requests that require more than 24 hours to complete, and must be able to satisfactorily utilize high-bandwidth (~10Gb/s) wide-area network connections.

Use case document: <http://hdl.handle.net/2142/48673>

## CDP Summary

The functionality described in this use case is fully supported by the operational components listed below.

Gap(s) that will not be addressed at this time:

- Access timestamp
- Performance quality attribute
- Verification of quality attributes

Time and effort summary:

- None at this time

## Functionality Gaps

### 1. Access timestamp (suggested priority: low)

Quality attribute CAN-2.m (Preserving file metadata) describes a need to ensure that the file-system metadata on the destination system matches the metadata on the source when a transfer completes. (Metadata includes file attributes, such as date and time stamps or permission settings.) All attributes are supported except the “last accessed” timestamp. Most of the destination systems used by XSEDE users do not provide mechanisms for setting this attribute, so XSEDE does not support synchronizing the “last accessed” timestamp. *There are no plans to address this gap.*

### 2. Performance (suggested priority: low)

Quality attribute CAN-2.j (Performance) states, “The combination of transfer efficiency and impact of failures and restarts provides efficiency that is at least as good as 50% of peak theoretically possible throughput of optimal network path and storage systems.” In practice, all of the network and local storage connections that XSEDE provides are shared by many users, which means that each user only receives a portion of the total network and storage connectivity capacity. To satisfy this quality attribute, XSEDE would need to also provide a mechanism for reserving network and local storage connections for single use (e.g., for a file transfer request). *There are no plans to address this gap.*

### 3. Verification of quality attributes

Verifying many quality attributes require significant one time and ongoing testing. XSEDE has decided that the costs of this testing would not bring sufficient benefit. Instead XSEDE will monitor user satisfaction, usage, and available performance metrics and address quality issues when raised by users. *There are no plans to address this verification gap.*

## System Components That Support This Use Case

The following XSEDE system components currently support this use case.

Component	Supported Functionality
XUP	The XSEDE User Portal is the primary guide to XSEDE functionality and provides the starting point for the activity described in this use case.
Globus Transfer	The hosted web application accessed by users via a web browser to select the file transfer source and destination and initiate, monitor, or cancel transfers, as well as managing the quality attributes regarding reliability, performance, scalability, and history accessibility. It also

	supports synchronizing a source file or directory to a destination, Also provides an SSH-accessible command-line interface and a RESTful web API for application integration.
Globus Auth	Provides the ability for the user to authenticate to Globus Transfer using XSEDE-accepted credentials (including federated identity providers)
MyProxy, MyProxy OAuth2	Used by Globus Transfer to acquires tokens for authenticating to source/destination endpoints
GridFTP, Globus Connect	Used by XSEDE SPs, campus IT providers, and end users to create endpoints from which and to which Globus Transfer can transfer files