XSEDE Canonical Use Case 3:
Remote File Access

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Version 1.0
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A. Document History

Overall Document Authors:

Ian Foster
The University of Chicago
and Argonne National Laboratory
Argonne, IL 60439
foster@anl.gov

Morris Riedel Jülich
Supercomputing Centre
Forschungszentrum Jülich GmbH

Felix Bachmann
Carnegie Mellon University
4500 5th Avenue
Pittsburgh, PA 15213
fb@sei.cmu.edu

Andrew Grimshaw
University of Virginia
PO Box 400740

Charlottesville VA 22904
grimshaw@virginia.edu

David Lifka
Cornell University
512 Frank H. T. Rhodes Hall
Ithaca, NY 14853
lifka@cac.cornell.edu

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Changes</th>
<th>Author</th>
</tr>
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<tbody>
<tr>
<td>First use case draft</td>
<td>0.1</td>
<td>3/21/2013</td>
<td>Document created</td>
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<tr>
<td>Formatted draft</td>
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<td>Applied standard formatting</td>
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<tr>
<td>Revised draft</td>
<td>0.2</td>
<td>04/25/13</td>
<td>Cleaned up draft; ready for archiving</td>
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<tr>
<td>Revised draft</td>
<td>1.0</td>
<td>08/29/13</td>
<td>Separated from UCCAN 2&amp;3; ready to be archived</td>
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B. Document Scope

This document is both a user-facing document (publically accessible) and an internal working document intended to define user needs and use cases that fall within the overall activities of XSEDE. The definition of use cases is based on a template from Malan and Bredemeyer\(^1\). In general it is in keeping with the approaches and philosophy outlined in "Software architecture in practice."\(^2\)

This document is one component of a process that generates at least the following documents, some of which are user-facing, some are as of now intended to be internal working documents:

- **This document** - A description of use cases [User facing]
- A set of level 3 decomposition documents, which include:
  - Quality Attributes descriptions
  - Connections diagram in UML

The use cases are presented here using the following format, derived from the Malan and Bredemeyer white paper\(^1\) as follows:

<table>
<thead>
<tr>
<th>Use Case</th>
<th>Use case identifier and reference number and modification history</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Goal to be achieved by use case and sources for requirement</td>
</tr>
<tr>
<td>References</td>
<td>References and citations relevant to use case</td>
</tr>
<tr>
<td>Actors</td>
<td>List of actors involved in use case</td>
</tr>
<tr>
<td>Prerequisites (Dependencies) &amp; Assumptions</td>
<td>Conditions that must be true for use case to be possible</td>
</tr>
<tr>
<td></td>
<td>Conditions that must be true for use case to terminate successfully</td>
</tr>
<tr>
<td>Steps</td>
<td>Interactions between actors and system that are necessary to achieve goal</td>
</tr>
<tr>
<td>Variations (optional)</td>
<td>Any variations in the steps of a use case</td>
</tr>
<tr>
<td>Quality Attributes</td>
<td></td>
</tr>
<tr>
<td>Non-functional (optional)</td>
<td>List of non-functional requirements that the use case must meet</td>
</tr>
<tr>
<td>Issues</td>
<td>List of issues that remain to be resolved</td>
</tr>
</tbody>
</table>

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\(^2\) Bass, L., P. Paul Clements, and Rick Kazman
C. Glossary

**File system:** A file system accessible via a file access service, that may be the source from which files are to be moved and/or the destination to which files are to be moved.

**File transfer service:** Receives and processes requests to initiate, monitor, and control transfers between file systems.

**File access service:** Receives and processes requests to create, destroy, read, and write files.

**Compute resource:** A computer system on which the job actually runs.
# D. Canonical Use Case 3

<table>
<thead>
<tr>
<th>Use Case UC CAN 3</th>
<th>Remote File Access</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>The user creates, reads, updates, and deletes files and directories from one site at another using POSIX operations, e.g., creat, read, write, unlink. Note that “site” can refer to an XSEDE SP, a local campus, a research lab, a desktop computer, or even a home computer.</td>
</tr>
<tr>
<td><strong>References</strong></td>
<td>References and citations relevant to use case: Global Federated File System.</td>
</tr>
<tr>
<td><strong>Actors</strong></td>
<td>User: The user initiates the file and directory access. Data owner: The user or system administrator who makes the remote data accessible.</td>
</tr>
</tbody>
</table>
| **Prerequisites (Dependencies) & Assumptions** | a) The client is properly authenticated, and has required permissions.  
b) The client is familiar with Unix file commands, and applications use the standard POSIX file system commands.  
c) The file(s) and directory(s) being accessed exist.  
d) There is sufficient space for those file(s) and directory(s) on the destination file system.  
e) The file and directory services, source file system, destination file system, and intervening network do not fail during execution of the file transfer. |
| **Steps**         | The user issues a POSIX compliant file system call on the remote file system. |
| **Variations (optional)** | a) The user accesses the remote file system or storage using command line tools.  
b) The user accesses the remote file system or storage using a GUI.  
c) The user accesses the remote file system or storage using an API other than POSIX.  
d) The authorized user changes the access control list on a file or directory. |
| **Quality Attributes** | a) Availability of the file and directory services is at three Sigma.  
b) Unauthorized access of a file or directory will result in an error message that is consistent, meaningful, and helpful.  
c) Changes to the remote file system are visible to users within 30 seconds.  
d) Consistency and update semantics must be clearly defined for the |
<table>
<thead>
<tr>
<th><strong>Non-functional (optional)</strong></th>
<th>e) Disconnected operation is not a requirement.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Issues</strong></td>
<td></td>
</tr>
</tbody>
</table>