

A User-oriented Secure Filesystem on the Grid

Background

Grid is a promising technology to realize large-scale data sharing over the Internet. Currently and however, most of data access services provided by the grid lack user convenience and therefore make it difficult to benefit from the grid.

Purpose

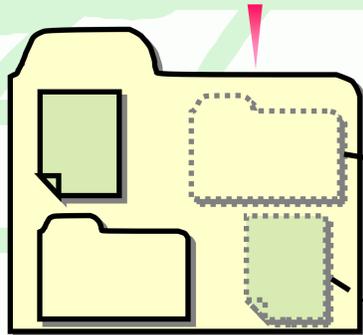
We aim to provide a convenient and secure method of sharing data for the users without detailed knowledge of the grid. As the grid is built via the untrusted public network, encryption and cryptographic authentication are indispensable to secure data.

Flexibility and Privacy

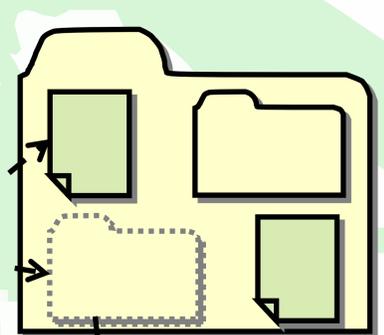
Each user can create an exclusive virtual directory structure without an administrative privilege.

Single disk image

The directory structure in the GSI-SFS looks the same for the user wherever the user works. The path name contains the host name of the GSI-SFS server.



`/sfs/gsi/host.biogrid.jp/home/`



On-demand authentication

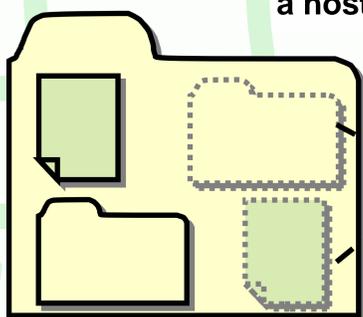
Mutual authentication between a user and a host is performed on demand.

Portability

The GSI-SFS works on many systems supporting NFS functionality.

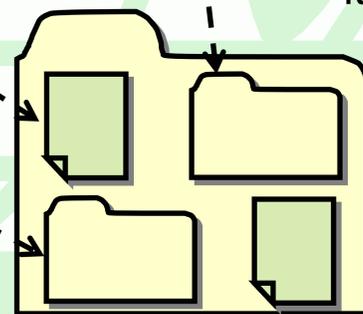
Single sign-on

A user can transparently access to the grid services by activating a proxy with the user's passphrase.



Confidentiality and Integrity

All data in transit on the network are encrypted and authenticated automatically.



Approach

To provide transparent access to the storages on the grid, we propose a new filesystem. We have combined the de facto standard authentication method of the grid (GSI) and the secure network filesystem (SFS) so that the synergy of the two technologies is produced.

Achievement

We have developed a new filesystem, **GSI-SFS**. It allows users to access transparently and securely to the storages distributed across the grid. We expect the GSI-SFS enables global-scale data sharing and enhances interorganizational collaboration.

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