CONTRACT NUMBER 508830

DEISA

DISTRIBUTED EUROPEAN INFRASTRUCTURE FOR SUPERCOMPUTING APPLICATIONS

European Community Sixth Framework Programme
RESEARCH INFRASTRUCTURES
Integrated Infrastructure Initiative

HSM Functionality for AFS
Deliverable ID: D-SA2-5B

Due date: October, 31st, 2006
Actual delivery date: November 24, 2006
Lead contractor for this deliverable: RZG, Germany

Project start date: May 1st, 2004
Duration: 4 years

Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)		
Dissemination Level		
PU	Public	
PP	Restricted to other programme participants (including the Commission Services)	X
RE	Restricted to a group specified by the consortium (including the Commission	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Table of Content

1. Introduction 3
1.1 Executive Summary 3
1.2 References and Applicable Documents 3
1.3 Document Amendment Procedure 3
1.4 List of Acronyms and Abbreviations 4
2. Work on HSM Functionality for AFS 5

1. Introduction

1.1 Executive Summary

The Service Activity 2 within the DEISA project deals with the connectivity of all DEISA-sites on the file system level. Two strategies are pursued in parallel:

- Deploying IBM's Multi-Cluster GPFS. See deliverable D-SA2-5A [2].
- Implementing a distributed file system structure for heterogeneous environments.

This document discusses the research into hierarchical storage management features of the AFS.

1.2 References and Applicable Documents

[1] DEISA home-page: http://www.deisa.org/

[2] Deliverable D-SA2-5A

[3] Deliverable D-SA2-1B

[4] Deliverable D-SA2-2B

[5] Deliverable D-SA2-3B

[6] Deliverable D-SA2-4B

[7] Acronyms and Abbreviations:

http://cgi.snafu.de/ohei/user-cgi-bin/veramain-e.cgi

1.3 Document Amendment Procedure

The initial document amendment procedure is via communication between members of DEISA SA2 team. The document is then submitted for review to the DEISA Executive and an Executive appointed DEISA reviewer. The document is then amended according to comments received from the Executive and the DEISA appointed reviewer. It is subsequently re-submitted to the DEISA Executive for submission to the EU.

1.4 List of Acronyms and Abbreviations

AFS	Andrew File System, used in the open-source implementation OpenAFS
AIX	Advanced Interactive eXecutive (IBM's derivative of UNIX OS)
DEISA	Distributed European Infrastructure for Supercomputing Applications
GPFS	General Parallel File System, proprietary FS from IBM.
MC-GPFS	Multi Cluster GPFS
MR-AFS	Multi-Resident AFS; enhanced AFS, providing hierarchical storage management

2. Work on HSM Functionality for AFS

Due to the availability of MC-GPFS on all major computer-platforms used within the DEISA-project, the work on AFS has been continued only on a reduced priority. Since currently there are no requirements for a second Grid File System in DEISA beside the high performance MC-GPFS, installation of AFS clients on other sites beside RZG have not been enforced.

Nevertheless, AFS plays an important role in the local RZG environment and is therefore constantly improved. This includes upgrades of the software and also introduction of additional features, like the hierarchical storage management functionality.

Although in DEISA there is presently no need for huge amounts of disk space beside the one provided with MC-GPFS, at RZG a local implementation of HSM functionality for AFS has been activated and been tested.

HSM functionality in AFS is provided for local AFS users at RZG. Under a special path each local user has an AFS-subtree on a MR-AFS server where large files automatically are migrated to tape. The amount of data stored in MR-AFS is growing at a rate of more than 1 TB per week.

Presently RZG can offer this service only in the local AFS cell because MR-AFS is not open source. The project to connect OpenAFS with object storage will in the future replace MR-AFS and will also offer HSM functionality. First servers with this new technology are being tested at RZG, however still without HSM.

By the time the request for an HSM functionality of AFS in DEISA is raised, RZG is confident to be able to quickly react and provide such functionality not only for RZG users but also for the servers providing disk space for DEISA users.