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DESHL v4.0

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1 Introduction

1.1 Executive Summary

The DESHL (DEISA Services for the Heterogeneous management Layer) has been developed by the DEISA Joint Research Activity JRA7 [1]. It provides standards-based access for users and their applications to manage jobs and transfer files in the DEISA heterogeneous supercomputing infrastructure.

This document, "DESHL v4.0", is deliverable D-JRA7-3.12 from Task T3.11 "Design and implementation of DESHL release 4.0" in Work Package 3 of the DEISA JRA7. This document reports on the release version 4.0 of the DESHL. This release provides improvements to the previous release in the areas of error reporting, installation and usability. The full list can be found in Section 4.

1.2 Document Structure

Section 1 of this document contains the executive summary, references, table of acronyms, etc. Section 2 indicates where background information on DESHL v4.0 can be obtained, with Sections 3 briefly describing the contents of DESHL v4.0. Section 4 indicates where the DESHL software can be obtained from. Section 5 highlights the major changes since v3.0. Section 6 itemises the issues that have been fixed since v3.0. Section 7 itemises the known issues with DESHL v4.0.

1.3 References and Applicable Documents

- [1] DEISA Annex I – "Description of Work", November 5th 2003.
- [2] "JRA7 Quality Plan v3.0", DEISA JRA7 Report, Deliverable ID DEISA-JRA7-1.3, May 10th 2006.
- [3] "Functional scope for DESHL v4.0", DEISA JRA7 Report, Deliverable ID D-JRA7-3.11, July 28th 2006.
- [4] "Final Design for DESHL v2.0", DEISA JRA7 Report, Deliverable ID D-JRA7-3.7, November 2005.
- [5] UNICORE, <http://unicore.sourceforge.net>
- [6] SAGA-RG OGF, http://www.ogf.org/gf/group_info/view.php?group=saga-rg
- [7] SAGA-CORE-WG OGF
http://www.ogf.org/gf/group_info/view.php?group=saga-core-wg
- [8] DESIA JRA7 Project page, <https://forge.nesc.ac.uk/projects/deisa-jra7/>

1.4 Document Amendment Procedure

The document procedure is covered in the Quality Plan [2].

1.5 List of Acronyms and Abbreviations

API	Application Programming Interface
CLT	Command Line Tool
DEISA	Distributed European Infrastructure for Supercomputing Applications

DESHL	DEISA Services for the Heterogeneous management Layer
GGF	Global Grid Forum
HPC	High Performance Computing
JRA	DEISA Joint Research Activity
JRA7	Seventh Joint Research Activity
JSDL2AJO	Job Submission Description Language to Abstract Job Object
NJS	Network Job Supervisor
PDF	Portable Document Format readable with Adobe Acrobat
SAGA	Simple API for Grid Applications
SSL	Secure Socket Layer
UNICORE	Uniform Interface to Computing Resources
URI	Uniform Resource Identifier

2 Background

The functional scope for DESHL v4.0 can be found in the DEISA JRA7 deliverable D-JRA7-3.11 "Functional scope for DESHL v4.0" [3]. The design is presented in DEISA JRA7 deliverable "Final Design for DESHL v2.0" [4]. (The v4.0 design document is included in the v4.0 release bundle.)

3 DESHL v4.0 Overview

DESHL aims to provide standards-based access to DEISA resources. In the extended heterogeneous DEISA infrastructure, sites have different HPC resources but all sites provide access to those resources via UNICORE [5].

DESHL release v4.0 contains the DESHL client, which is implemented as a layered stack with a SAGA-inspired API ([6],[7]) at its top and the UNICORE ARCON client at its base. The DESHL client can be used for data staging operations to, from and within the DEISA environment, and to submit, monitor and terminate jobs running on DEISA resources. Issuing a certificate for access to a DEISA site is the task of the certificate authority associated with the user's national location. These certificates are then held locally, and the DESHL client is configured via a single configuration file to allow seamless access to all such configured sites.

For more detailed information on the DESHL v4.0 architecture and the functionality available in this release please refer to the DESHL v4.0 Design document included in the release.

4 DESHL v4.0

DESHL v4.0 is a public release and is available from the DEISA JRA7 NeSCForge development site at <http://forge.nesc.ac.uk/projects/deisa-jra7/>.

The release is contained in an executable jar that can be run as a GUI installer or from the command line. It can be found under the DEISA JRA7 'Files' tab.

The instructions for running the installer can be found at the same site. The 'Installation and User Manual for DESHL v4.0' can be found under the 'Docs' tab.

5 Major Changes in v4.0

The following major changes have been made since the release of DESHL v3.0:

- Improved password entry eliminating possibility of password echoing.
- Improved user documentation that addresses a number of user issues.
- Job submission and management operations support shorthand aliases for SSL-based NJS URIs.
- GUI installer to guide user through installation of the DESHL, also supports command line installation.
- Numerical arguments have been mapped to more user-friendly flags.
- Improved exception reporting to user.
- Release documents in PDF.
- Submission of JSDL files.

6 Fixed Issues

The following issues from the DEISA JRA7 project [8] tracker have been fixed in v4.0 since the v3.0 release report.

6.1 Feature requests provided in v4.0

These are the feature requests that have been integrated into the v4.0 release.

182 *Certificate documentation is confusing*

The user manual documentation has been clarified.

218 *Documentation - submitting the same script to multiple sites*

There was a bug that stopped this feature from working that has now been fixed.

224 *Use of SAGA directives file vs executable on remote machine*

The documentation has been updated with clarifications in the tutorial to emphasise this.

225 *Use of #HOME in script is confusing*

A section on file conventions for job submission has been added to the user manual.

269 *Submit non SAGA jobs*

It is now possible to submit JSDL files.

347 *Documentation with a release should be pdf*

The v4.0 release will contain documents in PDF.

348 *The large job identifiers in DESHL v3.0 are awkward to work with*

Site shorthand aliases are supported for job submission and management.

368 *Map numerical data staging options to user-guessable flags*

This is implemented in the v4.0 release.

372 *Specify CA file name must finish with .pem*

This has been stated in the user manual.

6.2 Bugs fixed in 4.0

These are the bugs that have been fixed for the v4.0 release.

178 *copying an executable does not preserve execute permissions*

This has been clarified in the user manual, with a documented work around. However a complete fix to this remains ongoing.

232 *DESHL v3.0 works only for SUN JDK 1.5 on RedHat-like systems*

It is documented that the DESHL only works with SUN JDK 1.5 and any system that it is available on.

239 *Password being displayed on unix command line!*

This has been fixed using a third party library.

258 *User Manual - Pre-requisites*

This has been updated in the v4.0 user manual.

259 Error Reporting

The error reporting has been made consistent and attempts to provide the root cause to the user.

260 DESHL return code and output

The DESHL scripts now exit with the correct codes.

261 Help

The help feature is better documented and provides more information.

264 List

This has been fixed so that the `-s` argument is no longer necessary.

268 Submit

Shorthand aliases for job submission are supported.

270 Submit Null Pointer Exception

This has been fixed.

353 order of stats changes with job status

The stats now have a consistent order.

6.3 Feature Requests fixed in 3.0.1

These are the feature requests that were provided in the 3.0.1 intermediary release.

156 Reliance on Arcon client library raises concerns about multi-threaded use

This was found not to be an issue.

227 More job stats

Extended job information is now available.

228 List jobs at a particular site

This is now provided.

229 Weed out 3rd party library dependencies

The GUI installer is built with an explicit list of libraries so only the required third-party libraries are installed.

253 Easier installation of the DESHL

A GUI installer has been provided, can also be ran from the command line by filling in a template file.

350 DESHL command line shell

This will not be supported as it makes shell integration and scripting difficult.

6.4 Bugs fixed in 3.0.1

These are the bug fixes from the 3.0.1 intermediary release.

219 The deshl script in the release 3.0 needs dos2unix run on it before it works

Release is prepared such that all executables maintain execute permission.

221 documentation -Inconsistency in examples

User manual updated.

222 Documentation - Config file mismatch in release and documentation

User manual updated.

240 Move a file within a site fails

Fixed.

242 Upload a directory fails

Fixed

243 Download a file fails

Fixed

244 Moving a directory within a sites fails

Fixed

245 Copying a directory within a sites fails

Fixed

250 Deshl always prompts for the password of the FIRST entry in the config.cvs file

Now only prompts for password of the appropriate keystore if a password is not in the configuration file.

251 No error message when a site shortcut can not be resolved

Fixed

252 Not typing a key store password when prompted results in a null pointer exception

Fixed

257 Project Web Site has no visible documentation

The current user manual is now available under the DEISA JRA7 Project web page and the home page has been updated.

7 Known Issues

At the time of writing, the following are outstanding bugs and Feature Requests.

7.1 Feature Requests

148 JVM start-up overhead for each DESHL CLT command invocation

149 unencrypted passwords in the DESHL client configuration file

The user can opt to not store their password in the config file. This will be fixed in the next release.

Commentaire : please clarify

155 Data staging from local workstation to the DEISA Unicore/GPFS

The slowness of the copy using the Unicore UPL has been documented. It may be possible to use gridftp in the future.

158 Directory Export

Export of directories from DESHL to local storage is not currently supported. However, export of individual files is supported.

172 Typing password each time a DESHL command is executed is inconvenient

This was a workaround to 149, a proper fix for this is expected in the next release.

183 How do I find out the name of a particular Unicore vsite?

Currently not available through the DESHL, the user has to discover this themselves.

220 Quickstart documentation

The DESHL now has a GUI installer and the user manual has been improved.

246 alternative configuration via gateways.xml

This would allow the DESHL to pick up the Unicore client configuration, but doesn't include the Vsite information so would require a fix for 183.

247 Access via default home site

Allow the user to nominate a default site to be used if a site is not specified in a command.

263 Wildcards

Allow wildcards in file paths.

369 Provide a list of all DEISA gateways

It would be good to have a list of known gateways presented in the installer for the user to choose from.

370 Inclusion of the DESHL in the DEISA primer

371 Existence of Config.csv file or problem with permissions

373 Use of shortcuts in output

The use of shortcuts in job submission and management has been included in this release.

7.2 Bugs

174 Copy with option 3(recursive) does not create subdirectories

This is an issue with Unicore and for the moment this operation is disabled.

226 When copying to full disks, on error stray jobs left

This needs to be fixed in Roctopus.

236 Can not recursively copy a directory from a DEISA machine to a local disc.

This appears to be an Arcon issue and occurs with move as well

237 Can not overwrite a local file during an overwrite copy from a DEISA machine

256 Installer Bugs

There are useability issues with certain window managers and JVM combinations. The installer can be used from the command line if necessary.

The 'Test Connection' button does not test the validity of the user's certificates at the chosen site.

262 Client hangs

Fixed - but will not be included in DESHL v4.0

265 User Manual - File Space

This is partially fixed as Feature Request 368

266 Move - Null Pointer Exception

267 Remove fails

271 Listing extended job stats causes stdout output

359 Invalid SAGA job definition

It is possible for the user to create an invalid job definition by omitting required SAGA directives or giving bad values.

376 improvements to Roctopus error reporting

Fixed - but will not be included in DESHL v4.0