CONTRACT NUMBER 508830

DEISA
DISTRIBUTED EUROPEAN INFRASTRUCTURE FOR SUPERCOMPUTING APPLICATIONS

European Community Sixth Framework Programme
RESEARCH INFRASTRUCTURES
Integrated Infrastructure Initiative

Third Release of DCRMP

Deliverable ID: DEISA-DSA3-7
Due date : October, 31, 2006
Actual delivery date: November 24, 2006
Lead contractor for this deliverable: IDRIS-CNRS, France

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	X
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RE	Restricted to a group specified by the consortium (including the Commission	
CO	Confidential, only for members of the consortium (including the Commission Services)	

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1. Introduction

1.1 Executive Summary

This deliverable describes the development effort carried out by the DCRMP task. DCRMP Package Creator (DPC), an extension to the DCRMP software, is capable to distribute a public domain software application as an executable file. Its scope is to support the distribution of applications that are part of DEISA.
The deliverable is structured in two main sections. The first one (Chapter 2) presents the work performed with the collaboration of the SA4 team in creating packages for some DCPE components. Section 2 (Chapter 3) describes the results achieved in packaging SA3 applications. Finally chapter 4 reports conclusions and indicates the future direction of DCRMP task.

1.2 References and Applicable Documents

[1] http://www.deisa.org

[2] D-SA3-6: “Activity report and roadmap evaluation”

[3] D-SA3-5: “Second release of DCRMP”

1.3 Document Amendment Procedure

The initial document amendment procedure is made internally among members of the SA3 team. The document is then submitted for review to the DEISA Executive Committee and an Executive Committee appointed DEISA reviewer. The document is then amended according to the comments received from the Executive Committee and the appointed reviewer. It is subsequently re-submitted to the DEISA Executive Committee for submission to the EU [1].

1.4 List of Acronyms and Abbreviations

Term/Acronym	Definition
DCPE	DEISA Common Production Environment
DCRMP	DEISA Cluster Resource Management Package
DECI	DEISA Extreme Computing Initiative
DPC	DCRMP Package Creator
GDBM	GNU dbm
RMIS	Resource Management Information System
SA3	DEISA Service Activity n.3: Resource Management and Middleware
SA4	DEISA Service Activity n.4: User Support

2. Jointly Development with SA4 for Distribution of DEISA DCPE Components

The jointly development effort between SA4 and SA3 produced its results in mid June 2006. Due to their intrinsical complexity and their significant required installation time, the following two packages have been released:

- Python 2.4.3 64-bit version with included:
  - Readline 5.0
  - GDBM 1.8.3
- omniORB 4.0.6 64-bit (CORBA implementation)

Final release 0.7 has been obtained by improving sequential versions of the software and by correcting several bugs as they were being discovered during the development of the packages.

The packages have been initially tested by the two sites involved in the development of DCRMP: CINECA and IDRIS. After that, two more sites, EPCC and FZJ, were particularly interested to investigate whether DCRMP distributions could be a possible easier way to install software packages, and offered to test these two first application oriented releases. Both partners found that this way to distribute and install software is really convenient, easy to use and dramatically reduces the required installation time. During their experiments, they found a few portability issues and some minor imprecisions in the initial documentation. Their feedback helped to improve and correct the two packages, to enhance the documentation and the consistency of the DPC package creator, nonetheless to clarify some other issues and to avoid some pitfalls to its users.

2.1 Structure of the Packages

The two packages have been built in order to produce a unique file accordingly to the philosophy of the DPC [3]. For example, the installation of Python to be consistent with the specification of the DCPE, would have required to download and to compile two additional libraries, Readline and GDB. While the DPC Python package can be downloaded as a single file that, once downloaded on the target system, needs only to be executed and will automatically install the two prerequisite software (Readline and GDB). The table below reports the output of a successful installation, with the bold characters representing the unique input of the user during the installation process.

```
-bash-3.00$ ./python.bin

Packager self-installing utility
Using /scratch/tmpdir/dcrmp-15269 as a temporary directory.
Unpacking done.
Processing configuration file.
Please insert value for parameter DCRMP_INSTALLATION_DIR
The path where the application will be installed
[/tmp/foodir/install]
$DEISA_HOME/dcrmp/test
Executing the pre-install script.
Creating directory
Pre-Install script executed.
Executing the install script.
Installing python 2.4.3 for AIX 5.2 on Power
/deisa/cne/home/cne0cin0/cne0cin9/dcrmp
```

```
Python 2.4.3 installed successfully
Install script executed.
Executing the post-install script.
Post-Install script executed.
Cleaning up
Installation successful.
-bash-3.00$
```

Figure 1 – Installation Example of the Python Package

This installation example clearly shows how easy can be the installation of a package produced with the DPC.

2.2 Future Directions

Following the requirement of a new DECI project, SA4 and SA3 are currently developing new application oriented packages. In this way, the required applications will be distributed to the DECI hosting sites by means of DPC packages lowering deployment time and therefore project start-up time. The new required applications will be:

- NAMD (a Molecular Dynamics software)
- LAMMPS (another Molecular Dynamics software)

3. Development for SA3

The DCRMP task has also developed a set of packages to distribute the second version of the RMIS. The architecture of the RMIS v2, as described in [2], is composed by the following main components:

1. Ganglia MBean
2. LoadLeveler MBean
3. eXist database
4. MDS 4 front-end

The eXist database can be downloaded from the Apache web site and can be installed with a small effort. Hence the RMIS v2 DCRMP distribution will be composed only by three DPC packages containing each one the remaining components (Ganglia MBean, LoadLeveler MBean, and MDS 4 front-end). The decision to create three different packages instead of a single one was taken considering that this application can be deployed on multiple hosts accordingly to the adopted deployment strategies. Therefore it is better to distribute each component in a separate package.

3.1 Future Directions

During the incoming months, new packages will be developed for the installation of the New Accounting System. This new tool is still in the testing phase and some minor developments are still in process. When it will be sufficiently stable, it will be possible to pack it using the DPC, but to achieve that, it is mandatory having the tool installed at all the sites. This application is based on the same technologies stack than the RMIS v2, therefore it will be necessary to create the following new packages:

- Acct MBean
- MDS 4 front-end for accounting

4. General Conclusion and Future Directions

Considering that the second release of the DCRMP has been more successful with the DPC, major efforts have been concentrated on this new tool. The collaboration

with SA4 has increased the quality of the application and contributed to its diffusion within the DEISA grid. At the same time, additional internal work has been carried out to deliver the SA3 new software with the DPC.