



# MARMOT TEST REPORT

## SOFTWARE TEST AND VALIDATION REPORT

### WP4 TASK4 - Verification and Quality Control

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Abstract: This report describes the validation performed on the package MARMOT developed by CrossGrid WP 2 task 2.2. The tests were performed by Rafael Marco on the behalf of the CrossGrid task 4.4 testbed verification and quality control.



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**Delivery Slip**

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## 1. CONTEXT

Test and validation of the package MARMOT developed by CrossGrid WP 2 task 2.2.

### 1.1. TEST REQUEST

There were some issues in the Test Request.

Source code is in X# CVS. Autobuild generates RPMs. Software download is provided. The list of RPMs produced provided is an obsolete version, it should be:

<http://gridportal.fzk.de/distribution/crossgrid/autobuilt/i386-rh7.3-gcc3.2.2/wp2/RPMS/cg-wp2.2-marmot-1.1.11-1.i386.rpm>

<http://gridportal.fzk.de/distribution/crossgrid/autobuilt/i386-rh7.3-gcc3.2.2/wp2/RPMS/cg-wp2.2-marmot-g2-1.1.11-1.i386.rpm>

Changes: List of bugs fixed by this release and backward compatibility issues are provided, but without dates.

Documentation: Installation and User Manual is the same README file. The URL Link to Users Manual and Software requirements fails (anyway the URL Text description is ok). Password is required to access the Software design URL. The Development Manual is under construction.

Files: instead of a list of configuration files there is a reference to the file CONFIG-EXAMPLES. Logs, LCFGng configuration objects, daemons and init.d scripts fields are empty. I assume that these fields do not apply in this case.

Deployment: The affected machines field is not complete. It should be: DW (for compilation), CE and WNs (since MARMOT may be linked not statically, then dynamically compiled libraries are needed on execution nodes). Since many users compile programs in the UI, it should be installed also there (?).

Testing and validation: The file CONFIG-EXAMPLES contains detailed info to help testing the software. The test programs download URL is provided (the text is ok but the link does not work since it merges two urls). The RPMs install the compiled test program but not the source. To perform additional tests download was necessary. I suggest adding the test programs source code to the RPM distribution.

It is commented that the RPMs could not be in place because they were checking autobuild, I found all the files fine without problems (apart from some html formatting problem).

Test Requester: Bettina Krammer (krammer\_AT\_hlrs.de) , WP2 , Task 2.2 .

## 1.2. TEST TEAM

The tests were performed by task 4.4 members from CSIC

- David Rodríguez (drodrig\_AT\_ifca.unican.es)
- Rafael Marco (rmarco\_AT\_ifca.unican.es)

## 1.3. RESOURCES INVOLVED

DW is used for compilation. UI+RB+CE+WNs are used for job submission and running it in the testbed.

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## 2. TEST AND VALIDATION

### 2.1. SOFTWARE INSTALLATION

Installation by hand based on configure+makefile is described in the documentation but I have not checked it for this release.

The software installation using RPMs is very easy.

You can just download the RPMs and install them:

```
wget http://gridportal.fzk.de/distribution/crossgrid/autobuilt/i386-rh7.3-gcc3.2.2/wp2/RPMS/cg-wp2.2-marmot-1.1.11-1.i386.rpm
```

```
wget http://gridportal.fzk.de/distribution/crossgrid/autobuilt/i386-rh7.3-gcc3.2.2/wp2/RPMS/cg-wp2.2-marmot-g2-1.1.11-1.i386.rpm
```

```
rpm -ihv cg-wp2.2-marmot-g2-1.1.11-1.i386.rpm
```

```
rpm -ihv cg-wp2.2-marmot-g2-1.1.11-1.i386.rpm
```

For LCFGng installation it is needed just to add two RPM lines to the rpmlists of each affected node.

In the Development Testbed it was done adding the lines:

```
cg-wp2.2-marmot-1.1.11-1
```

```
cg-wp2.2-marmotg2-1.1.11-1
```

to the files:

DeveloperWorkstation-CG-rpm.h, ComputingElement-CG-rpm.h , WorkerNode-CG-rpm.h

Of course if you want to really use MARMOT also other components like gcc compiler and mpich or mpich-g2 are needed also.

- The software installs correctly.

The installation can be checked ie. verifying that the MARMOT library files that should be linked to the user code are in place:

```
# ls /opt/cg/lib/cg-wp2.2-marmot/
```

```
libdmpi.a libfmpo.a libmpo.a
```

```
# ls /opt/cg/lib/cg-wp2.2-marmot-g2/
```

```
libdmpi.a libfmpo.a libmpo.a
```

Of course if you use RPMs you can use “rpm” to see the file list and verify them, ie:

```
rpm -qil cg-wp2.2-marmot cg-wp2.2-marmot-g2
```

```
rpm -V cg-wp2.2-marmot cg-wp2.2-marmot-g2
```

- The installation procedure is compliant with the CrossGrid guidelines.
  - The package follows the CrossGrid developer’s manual following the environment and the guidelines for the CrossGrid middleware and tools defined there.

- There are no dependencies for the rpm installation but to be really useful gcc and mpich-p4 and/or mpich-g2 are also needed.
- The installed files are installed in the correct places (under /opt/cg) and with the correct ownership and protections. It was checked that there aren't SUID files.

## 2.2. ADDITIONAL TESTBED MODIFICATIONS

No additional changes or configurations were necessary in the testbed elements for the software to be usable.

## 2.3. TEST DEVELOPMENTS

No new software was developed by the test team to test and validate the software.

## 2.4. USABILITY

The Marmot output is sent automatically to the standard error in plain text format. Sometimes it is not easy to use it since it can be a very long text string and it could be mixed with text from other sources, some tool to make easier to analyse would be very useful.

Usability issues:

- Deployment is easy. I did it in a test machine, just doing downloading and rpm -ihv.
- The software is easy to understand and use. Having a look at the documentation is enough to start using it. The complex part is to understand and handle the output.
- The user interfaces produce correct output (the expected) but it is not easy to handle it.
- I do not know how to obtain an interactive response; maybe it could be done sending somehow the stderr to a output file that could be watched by the user while program is running.

## 2.5. FUNCTIONALITY

The basic."c" program was compiled and send to the Crossgrid development testbed. The output was the expected.

Also the HEP ANN application from WP1.3 was tested.

### 2.5.1. Unit tests

Some test programs were compiled and linked to Marmot successfully.

### 2.5.2. System tests

MARMOT was tested with the HEP ANN application inside the X# development testbed finding the expected behaviour for both mpich-p4 and mpich-g2.

In order to use Marmot it is necessary to have the mpich-p4 and/or mpich-g2 part ready and use also an adequate "gcc" version. In the X# testbed I used the gcc installed in /opt/gcc-3.2.2.

The following line and JDL file was used to compile the ANN from WP1.3:

```
/opt/gcc-3.2.2/bin/g++-3.2.2 -o ../../bin/p4/cg-ann.exe -static DistApplication.o MLP.o  
ANNTest.o ANNApplication.o ANNGraphics.o GnuplotGraphics.o mlp_gen.o mlp_inter.o  
mlp_sigmoide.o -L../../lib/p4 -lcg_wp13_common -lexpat -lm -llapack -lblas -lg2c -lz -  
L/opt/cg/lib/cg-wp2.2-marmot -ldmpi -lmpo -L /opt/mpi/mpich-p4/lib -lmpich
```

```
Executable      = "cg-ann.exe";  
JobType         = "mpich";  
NodeNumber      = 6;  
VirtualOrganisation = "cg";  
StdOutput       = "std.out";  
StdError        = "std.err";  
Arguments       = "4 16 10 10 1 100";  
InputSandbox    = {"cg-ann.exe", "trainset.xml.gz"};  
OutputSandbox   = {"std.out", "std.err", "weights_out.xml",  
"ann_fun.f", "ANNFun.c"};
```

Probably these lines will be useful for testing MARMOT in next validation reports. IMPORTANT: note that in the compile command line the Marmot part should be at the end.

### 2.5.3. Stress tests

The test application was send to several nodes (6). The output was the expected and no problem was found.

### 2.6. COMPATIBILITY

- Marmot is compatible with gcc-3.2.2 . Using gcc-2.96 version did not work during the tests.

### 2.7. SECURITY AND NETWORKING

MARMOT has no specific security and networking issues, since its use is based on established mpich-p4 and mpich-g2 use.

### 2.8. PREVIOUSLY REPORTED ISSUES

Not applicable, this was the first MARMOT validation.

### **3. ISSUES FOUND**

#### **3.1. ISSUES FOUND IN THE SOFTWARE**

No issues.

#### **3.2. ISSUES FOUND IN THE DOCUMENTATION**

There is not users, installation and development Manual (all software delivered for validation must have it). All info is summarized in a README file.

#### 4. RECOMMENDATION

This tool is very interesting to monitor and detect mpi behaviour and problems.

I found two main inconveniences:

- it is not easy to understand and use the information it provides,
- it is not easy to get the info while the program is running

I would include the test source files in the RPM package and a script to compile all of them in X# DW.

The README file is very useful but a stronger documentation would be acknowledged.

I suggest a package validation score of **OK** and as such that the package should be deployed.

## 5. REFERENCES

[.http://savannah.fzk.de/cgi-bin/viewcvs.cgi/crossgrid/crossgrid/wp2/wp2\\_2-verif/src/MARMOT/README](http://savannah.fzk.de/cgi-bin/viewcvs.cgi/crossgrid/crossgrid/wp2/wp2_2-verif/src/MARMOT/README)

[.http://savannah.fzk.de/cgi-bin/viewcvs.cgi/crossgrid/crossgrid/wp2/wp2\\_2-verif/src/MARMOT/CONFIG-EXAMPLES](http://savannah.fzk.de/cgi-bin/viewcvs.cgi/crossgrid/crossgrid/wp2/wp2_2-verif/src/MARMOT/CONFIG-EXAMPLES)

## 6. INTEGRATION/VALIDATION REQUEST

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**REQUEST ID: 108982424019.5131190893338****Component name:** MARMOT**Version (CVS tag):** v1\_1\_9 **Request priority:** 2**Package brief description:**

MARMOT is a portable tool for verifying the standard conformance of an MPI program (currently, complete MPI-1.2 is supported). This tool is a library linked to the application, no modification of the application's source code is required. MARMOT includes some simple programs to test the tool.

**Code:****Source code in X# CVS ? (Y/N):** Y**Autobuild generates RPMs ? (Y/N):** Y**Software download URL:** [http://savannah.fzk.de/cgi-bin/viewcvs.cgi/crossgrid/crossgrid/wp2/wp2\\_2-verif/src/MARMOT/](http://savannah.fzk.de/cgi-bin/viewcvs.cgi/crossgrid/crossgrid/wp2/wp2_2-verif/src/MARMOT/)**List of RPMs produced:**

If the next autobuild works (I don't know yet if it works for this new tag) there will be

<http://gridportal.fzk.de/distribution/crossgrid/autobuilt/i386-rh7.3-gcc3.2.2/wp2/RPMS/MARMOT-1.1.9-1.i386.rpm>

<http://gridportal.fzk.de/distribution/crossgrid/autobuilt/i386-rh7.3-gcc3.2.2/wp2/SRPMS/MARMOT-1.1.9-1.src.rpm>

**Changes:****List of all bugs fixed by this release:**

There are no bugs submitted via bugtracker, but there have been some bug fixes, e.g.

- control of execution flow was changed
- fortran interface was changed
- MARMOT's C/Fortran interface is set automatically now
- documentation was improved

**List of backwards compatibility issues (installation, configuration or run-time):**

installation changed some time ago (use autotools now)

**Documentation:**

**Installation manual URL:** [http://savannah.fzk.de/cgi-bin/viewcvs.cgi/crossgrid/crossgrid/wp2/wp2\\_2-verif/src/MARMOT/README](http://savannah.fzk.de/cgi-bin/viewcvs.cgi/crossgrid/crossgrid/wp2/wp2_2-verif/src/MARMOT/README)

**Users manual URL:** [cgi-bin/viewcvs.cgi/crossgrid/crossgrid/wp2/wp2\\_2-verif/src/MARMOT/README](http://savannah.fzk.de/cgi-bin/viewcvs.cgi/crossgrid/crossgrid/wp2/wp2_2-verif/src/MARMOT/README)

**Development manual URL:** [under construction, not in cvs yet](#)

**Software requirements URL:** [cgi-bin/viewcvs.cgi/crossgrid/crossgrid/wp2/wp2\\_2-verif/src/MARMOT/README](http://savannah.fzk.de/cgi-bin/viewcvs.cgi/crossgrid/crossgrid/wp2/wp2_2-verif/src/MARMOT/README) or <http://www.eu-crossgrid.org/Deliverables/M3pdf/CG-2.2-DOC-USTUTT005-SRS.pdf>

**Software design URL:** <http://www.eu-crossgrid.org/m6-drafts-login/M6deliverables/CG2.2-D2.2-v1.0-UST001-VerifDesign.pdf>

### Files:

**List of all configuration files (with full path):**

see CONFIG-EXAMPLES

**List of all log files (with full path):**

**List of LCFG configuration objects (and versions):**

**List of daemons provided:**

**List of init.d scripts and supported directives (start, stop, restart, etc.):**

### Deployment:

**Affected machine types (UI, WN, CE, SE, etc) and packages to be deployed on each:**

UI:

MARMOT-1.1.9-1.i386.rpm

**Component dependencies (required libraries, packages, etc.):**

mpich

**Credentials (if any) used by the service:**

**List of service ports (inbound,outbound):**

**Who communicates with the service and from where:**

**Range of temporary ports used by the service (inbound,outbound):**

**Testing and Validation:**

**Unit tests that have been performed on the package:**

see also MARMOT/README, MARMOT/CONFIG-EXAMPLES

Marmot has been built and used with test programs

**Features to be tested:**

mpich-p4 jobs with Marmot

**Features not to be tested:**

mpich-g2 jobs with Marmot  
(currently autobuild problem to build something like MARMOT-g2-\*.i386.rpm distribution)

**Test programs** [http://savannah.fzk.de/cgi-bin/viewcvs.cgi/crossgrid/crossgrid/wp2/wp2\\_2-verif/src/MARMOT/TEST\\_C/](http://savannah.fzk.de/cgi-bin/viewcvs.cgi/crossgrid/crossgrid/wp2/wp2_2-verif/src/MARMOT/TEST_C/)  
**download URL:** [http://savannah.fzk.de/cgi-bin/viewcvs.cgi/crossgrid/crossgrid/wp2/wp2\\_2-verif/src/MARMOT/TEST\\_F/](http://savannah.fzk.de/cgi-bin/viewcvs.cgi/crossgrid/crossgrid/wp2/wp2_2-verif/src/MARMOT/TEST_F/)

**Other considerations:**

- At the time of the submission of this request, the rpms are not yet there, hope they will build properly and be there at some time.... there are some older rpms there, don't use them.

- The most important documentation is the README and the CONFIG-EXAMPLES file in the MARMOT cvs directory, read them first, not the crossgrid deliverables.

good luck!

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