Execution Guide

SciCumulus/C²

This documents presents how to execute SCC. To do that, the process is divided into two procedures: SCSetup execution and SCCore.

1. SciCumulus Setup Execution

The first procedure is responsible to store the conceptual workflow definition in SCC database. To do that, the XML file of conceptual workflow needs to be executed with SCSetup.jar file, which can be downloaded in this portal.

The command line to run SCSetup is presented below:

```
java –jar SCSetup.jar -i |#conceptual workflow#|
```

The *conceptual workflow* setup value should be replaced by file path of conceptual workflow. Furthermore, it is important to mention that the delimiters "|#" and "#|" have to be replaced by the XML file of conceptual workflow. SCSetup also supports an operation to delete a conceptual workflow, as it is presented below:

```
java –jar SCSetup.jar -d |#conceptual workflow#|
```

2. SciCumulus Core Execution

The second procedure performs an instantiation of conceptual workflow with the XML file of execution workflow. In this part, this instance is executed using a SCCore.jar file, which also can be obtained in this portal.

The command line to run SCC is presented below:

```
java –jar SCCore.jar |#execution workflow#|
```

The *execution workflow* setup value should be replaced by file path of execution workflow.

In order to support MPI execution in different machines, SCCore needs to specify a mpj configuration file, as follows:

```
# Number of Processes
2
# Protocol switch limit
131072
# Entry in the form of machinename@port@rank
machine1@22000@0
machine2@22002@1
```

Moreover, the mpj configuration file needs to be saved as *machines.conf* and the SCCore has to add another argument in the command line (MPI rank). Thus, the following command lines represent an invocation of SCCore for 2 machines.

```
java –jar SCCore.jar SC.xml 0
java –jar SCCore.jar SC.xml 1
```

3. SciCumulus Query Processor Execution

This component performs query processing according to the database and query elements specified in XML file.

The command line to run SCQP is presented below:

```
java –jar SCQP.jar |#XML query specification#|
```

The *XML query specification* setup value should be replaced by file path of the configured XML file.

4. SciCumulus Starter Execution

This component can invoke all operations of SCCore, SCSetup and SCQP. Thus, SCStarter is a transparent layer between users and HPC environments.

The command line to run SCStarter is presented below:

```
java –jar SCStarter.jar |#operation#| |#XML file#|
```

The *operation* value can be defined according to the table below and the *XML file* value represents the file path of the configured XML file.

Operation	Argument
Create cluster of virtual machines	-cc
Delete cluster of virtual machines	-dc
Insert conceptual workflow	-icw
Update conceptual workflow	-ucw
Delete conceptual workflow	-dcw
Submit workflow execution	-swe
Query provenance database	-q
Monitor workflow execution, gathering the status of each activity	-mwe

5. Source code request

Finally, if you are interested to have access to SCC source code, please request it by a mail to Vítor Silva (vitor.silva.sousa at gmail dot com).