Contribution ID: **14**   Type: **Demonstration**

SCI-BUS gateway technology for clouds, grids, clusters and supercomputers

Tuesday, 17 September 2013 09:00 (8 hours)

Description of Work

The demonstration will show several important features of SCI-BUS gateways and the 4 major gateway types that can be established basedon the SCI-BUS technology. The demonstration will contain the following major parts:

1. Demonstrating the generic purpose gateway types that are typically used by power users to develop grid and cloud applications and develop workflows. The demonstration will show the catch-all WS-PGRADE/gUSE gateway of the Hungarian NGI. We show the workflow developing and configuring capabilities of the gateway particularly concentrating on configuring workflows for cloud execution. Then we show how these workflows are executed in cloud systems connected to the CloudBroker Service. We show 3 autodock workflows as practical examples.

2. Demonstrating the end-user mode gateways. These are typically used by end-user scientists for running pre-registered domain-specific applications with robot certificates. A typical example is the autodock gateway jointly developed by SZTAKI and Univ. of Westminster: https://autodock-portal.sztaki.hu/. This gateway will demonstrate how the 3 autodock workflows demonstrated in the first part can be used by end-users via a simplified user interface that hides the workflow details.
We show how such an end-user mode gateway can automatically be derived from a generic purpose gateway without any development, by simply re-configuring the existing generic purpose gateway.
We demonstrate that the gateway can run the autodock workflows both in the EDGeS@home volunteer desktop grid and in clouds by a simple reconfiguration of the workflows.

3. Demonstrating the customized, domain-specific gateway types. These gateways typically enhance the WS-PGRADE user interface with domain-specific portlets using the ASM API developed by SCI-BUS. Most of the gateways developed by SCI-BUS partners, associated partners and sub-contractors belong to this class. Some selected SCI-BUS community gateways belonging to this class will be demonstrated here. One of them extends the Autodock gateway showed in the previous demonstration step with some molecule visualization ASM-based portlets providing even more user-friendly version of the autodock gateway for bio-scientists.

4. Demonstrating the workflow executor gateway type. This gateway has no user interface but able to execute workflows developed by the generic purpose SCI-BUS gateways submitting them from an existing domain specific gateway. This kind of gateway is recommended if the user community has already a gateway but would like to extend it with workflow execution on various DCIs. This idea is used by the e-Group and 4D-Soft companies to run their applications in commercial clouds. We will demonstrate these gateways.

5. Science gateways should enable the access of large files placed in different DCIs and eventually move them between these storages. The new Data Bridge service provides this facility for SCI-BUS gateways that are equipped with a new portlet supporting such file access and transfer activities. The demonstration will show how this kind of distributed file management and transfer between different DCIs is organized by SCI-BUS gateways. We will show how to transfer files between

6. to different cloud storages (one commercial and one academic)

7. a cloud storage and a gLite storage

Preferred Day if any (Demos - Mon, Tue, Wed)

Tuesday (all every day we can demonstrate different features)

Printable Summary

SCI-BUS develops a gateway framework technology that is application and DCI neutral, i.e., it can be used by many user communities for many different DCIs including clouds, grids, clusters and supercomputers. Of course, when a user community would like to apply the gateway framework technology they have to customize and adapt it according to their needs and hence SCI-BUS also provides the required customization technology. As a result user communities can easily and quickly create their own domain-specific gateways based on the framework and its customization technology.

The domain-specific gateways developed by these communities can access the following DCIs:
• Local and remote clusters accessed by queuing systems (PBS, LSF, SGE, MOAB)
• Local and remote supercomputers
• Local and volunteer DGs (BOINC)
• Grids (ARC, gLite, Globus, UNICORE)
• Academic Public and Private Clouds (OpenNebula, OpenStack, Eucalyptus, etc.)
• Public Commercial Clouds (Amazon, IBM)

In the demonstration we will show how the Autodock gateway developed by SZTAKI and running autodock workflows in the EDGeS@home volunteer desktop grid can be easily modified to run these workflows in OpenNebula and OpenStack clouds.

Gateways established based on the SCI-BUS gateway framework technology can be created as one of the 4 different possible gateway types:

1. Generic purpose gateway (typically used by power users to develop grid and cloud applications and develop workflows). The demonstration will show the catch-all WS-PGRADE/gUSE gateway of the Hungarian NGI. (Similar gateways are established for the Greek, Spanish, Turkish, Croatian, etc. NGIs.)

2. End-user mode gateways. These are typically used by end-user scientists for running pre-registered domain-specific applications with robot certificates. A typical example is the autodock gateway jointly developed by SZTAKI and Univ. of Westminster: https://autodock-portal.sztaki.hu/
The demonstration will show this gateway, too.

3. Customized, domain-specific gateways. These typically enhance the WS-PGRADE user interface with domain-specific portlets using the ASM API developed by SCI-BUS. Most of the gateways developed by SCI-BUS partners, associated partners and sub-contractors belong to this class. Some selected SCI-BUS community gateways belonging to this class will also be demonstrated.

4. Workflow executor gateway. This gateway has no user interface but able to execute workflows developed by the generic purpose SCI-BUS gateways submitting them from an existing domain specific gateway. This kind of gateway is recommended if the user community has already a gateway but would like to extend it with workflow execution on various DCIs. This idea is used by the e-Group and 4D-Soft companies to run their applications in commercial clouds. We will demonstrate these gateways, too.

Science gateways should enable the access of large files placed in different DCIs and eventually move them between these storages. The new Data Bridge service provides this facility for SCI-BUS gateways that are equipped with a new portlet supporting such file access and transfer activities. The demonstration will show how this kind of distributed file management and transfer between different DCIs is organized by SCI-BUS gateways. In fact, this kind of service can be considered as the generalization of the Globus Online service in the sense that it can transfer files not only between grid ftp sites but also between SRM, cloud and other type of storages.

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