ARC as a computing platform

As a middleware to industry standard grid backends, ARC is easy to deploy into existing grid infrastructures. Through the use of certificates and virtual organizations, ARC offers fine-grained access control to grid and storage resources. By managing these storage elements using URLs, ARC provides location independent access to shared storage.

ARC is well suited for globally distributed computing, which led to ARC deployments in Russia, Norway, Finland, Sweden, Iceland, Estonia, Denmark, Germany, Ukraine, Slovakia, Hungary, Switzerland, Slovenia, Turkey and even Australia.

ARC for easy workflow management

Taverna 2.0 is a workflow management software which connects to ARC through a platform-independent plugin or through the new SOAP interface. Workflows can be created out of “use cases”, which provide a program along with a machine-readable description of its invocation parameters. Use cases can be used without technical knowledge of the program itself and since they are self-contained, they are easy to share, for example through a central public shared repository. To learn from others and to help you collaborating, whole workflows can be shared online on myExperiment.

Taverna in conjunction with the ARC plugin offers a managed computing platform where use case execution is automatically parallelized. ARC provides load balancing and by delegating the job to another node also silent failover.

Data is secured using a personal certificate and thus there is no risk to try out ARC + Taverna 2.0 as explained further on http://taverna.nordugrid.org.

ARC as a webservice container

Introduced in ARC 1.x, the Hosting Environment Deamon (ARCHED), offers a module based architecture to create HTTP and SOAP webservises which are based on ARC components. By relying on ARC’s grid certificates, one can easily deploy secure C++ webservises.

This also introduces the possibility to submit and control grid jobs using the AREX webservice, which offers a SOAP interface.

ARC for research

SOAP webservises can be easily incorporated, for example by using Taverna, into research workflows. However, a public webservice often faces problems coping with the huge workload that goes with a community of users. By deploying your application as a use case on the public repository or by providing an ARCHED-based webservice you can elegantly circumvent such problems, because every user brings his own computing resources, identified by his grid certificate.

ARC also offers an easy way to share unused local resources, such as computing power or storage space. A prime example of this is the ongoing deployment of virtual machines in the Hôpitaux Universitaires de Genève to harvest idle cpu time on workplace computers using ARC as the grid middleware.