Hardening iRODS for an Initial Enterprise Release (E-iRODS)

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Abstract

The iRODS community has developed a robust, feature-rich, and sophisticated codebase. The open source development process of iRODS has been largely driven by federal grants and feature requests and orchestrated by a relatively small team. The code quality is high, but the assurance level, support model, and visibility into the software development process itself has not been as strong. The iRODS@RENCI group has developed a complementary process of testing, packaging, and support for the iRODS codebase, namely E-iRODS.

Through a replicable automated deployment of server combinations (consisting of cpu type, operating system and version, iRODS version, database type and version, resource type, and build options), grid topologies (both single zone and federation), and feature testing (iget, iput, irepl, etc.), the testing framework behind E-iRODS provides confidence moving forward as iRODS continues to increase its global footprint.

The E-iRODS testing framework consists of a continuous integration server, a growing set of virtual machines, and scripts that deploy dynamically defined "gridbundles" and then execute tests with known outcomes. This combination allows for comprehensive testing and certification of features across any definable iRODS network topology as well as replication of bugs from bug reports that appear in the iRODS discussion forum.

The open source framework is written in bash, Python, and JavaScript and builds on an existing toolset including RabbitMQ, Celery, nose, and node.js.

Packaging of E-iRODS is handled by EPM and the initial release is binary-only and supports a general-use subset of the planned combinations of network and feature testing.

Future work includes expanding the reach of the server combinations, the feature tests, and the reporting generated by the framework. Additional goals include more virtualization of both the current system as well as the network links within a deployed network (for both disaster recovery and performance testing).
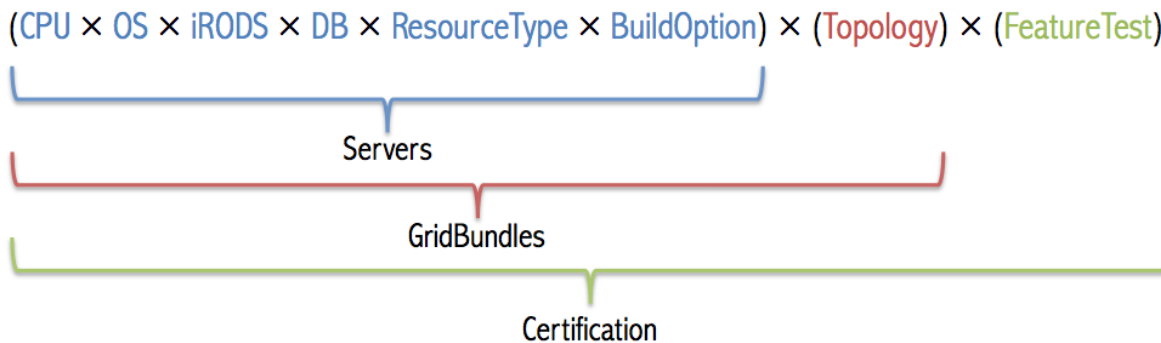
Downloads and documentation can be found at http://e-irods.com.

Figure 1: E-iRODS Testing Framework and Certification