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iRODS 4.2: Increasing Data Management Programming Productivity and Capability with the Pluggable Rule Engine Architecture

iRODS, the Integrated Rule-Oriented Data System, is open source data management software for finding, annotating, sharing, and protecting files throughout an organization's entire storage infrastructure. In this talk, we describe a new feature that makes iRODS both easier to use and more versatile: the pluggable rule engine architecture.

A key focus of iRODS Consortium-led development has been making the software modular, which has fueled the growth of a broader developer community and further enhanced iRODS' versatility and reliability. The pluggable rule engine architecture, featured in the upcoming release of iRODS 4.2, will enable administrators to define data management rules in standard programming languages and to enact efficient, certifiable auditing of file activity, while maintaining compatibility with rules written for earlier versions of iRODS.

We will present a Python rule engine plugin to demonstrate how automated data management workflows can be implemented for high programming productivity. We will also present a high performance C++-based auditing rule engine to demonstrate low-level trapping of user and system activity. Each of these rule engine plugins is written with fewer than 100 lines of code. The plugins can run in parallel, and they interoperate with one another.

The pluggable rule engine architecture paves the way for iRODS rule-based automation in practically any programming language, and it will play an important role in the further development of a data management ecosystem and converged infrastructure powered by iRODS.

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