21st International Conference on Computing in High Energy and Nuclear Physics **CHEP2015** Okinawa Japan: April 13 - 17, 2015

Contribution ID: **224**                                                Type: **poster presentation**

# Scalable and fail-safe deployment of the ATLAS Distributed Data Management system Rucio

This contribution details the deployment of Rucio, the ATLAS Distributed Data Management system. The main complication is that Rucio interacts with a wide variety of external services, and connects globally distributed data centres under different technological and administrative control, at an unprecedented data volume. It is therefore not possibly to create a duplicate instance of Rucio for testing or integration. Every software upgrade or configuration change is thus potentially disruptive and requires fail-safe software and automatic error recovery. Rucio uses a three-layer scaling and mitigation strategy based on quasi-realtime monitoring. This strategy mainly employs independent stateless services, automatic failover, and service migration. The technologies used for deployment and mitigation include OpenStack, Puppet, Graphite, HAProxy, Apache, and nginx. In this contribution, the reasons and design decisions for the deployment, the actual implementation, and an evaluation of all involved services and components are discussed.

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**Track Classification:**   Track4: Middleware, software development and tools, experiment frameworks, tools for distributed computing