Myirods

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Myirods overview

- The company
- Release Highlights
- Demo

The Company

- March 2013
- A retirement project
- One man company
- Focused on software development
  - Based on Open iRods
    - Track development up to 3.3.1
  - Add features, both client and server
  - Goal : Enterprise Cloud Storage
- Web site - www.myirods.com

Four Myirods Releases

- 1.0 (4/2013) – Federated iCAT System (FIS)
- 1.1 (6/2013)
  - SSL Client/Server Communication Encryption
  - Data transfer compression with Google's Snappy library
  - Bulk operation for iput and irsync
  - Restart option for irsync
- 1.2 (11/2013) – Restful Web Server and Browser
- 1.3 (6/2014) – Java Applet for Upload/ Download
  - Recursive Upload/Download of directories

Federated iCAT System (FIS)

- Motivation
  - Scalability – use of multiple iCAT vs single iCAT
  - Performance
    - Performance issue - number of connections > 60-100
    - Place iCAT where users are located – east/west coast

FIS - Implementation

- Divide namespace in a Zone into a number of Sectors
- Each Sector is managed by a iCAT/IES
  - Similar to mount points in Unix File system
  - Except multiple paths (directories) can be assigned to a sector

FIS – System Metadata Architecture

- How does the System Metadata is divided among the Sectors ?
- System metadata is divided into 2 types
  - Data type - Information on Data Objects and Collections
    - Naming, position in the logical name space
    - Other associated properties - Physical path, Data type, Data mode, ACL, time stamps, etc
    - AVU metadata
  - Non-data type : everything else
    - Resource, user, quota, zone, token, etc

FIS – System Metadata Architecture (cont)

- Most data in an iCAT is **Data type** metadata
- Non-data type – small and slow changing
- System metadata partitioning scheme
  - Data Type is partitioned
    - each sector iCAT maintains the Data type metadata in its name space
    - No overlapping of Data type metadata among sectors
  - Non-data Type is NOT partitioned
    - Each sector maintains a full copy of Non-data type metadata
    - None-data type is replicated among sectors

FIS implementation

- One iCAT is designated the Federation iCAT
  - Has up-to-date Non-data type metadata
  - Used to sync to other iCATs
  - Can be a sector iCAT
- Two new iCAT tables
- Four new iCommands
  - Create/delete sectors
  - Map/remove paths to sectors
  - Move Data-type metadata from one sector to another
  - Sync Non-data type metadata from one sector to another

RESTful Server and Browser

- REST – A simple Web Service interface based on HTTP protocol
- Server design
  - A new server/agent pair – iRestServer/iRestAgent
  - Similar to irodsServer/irodsAgent
  - Can be iCat enabled or non iCAT enabled
  - Understand RESTful requests
  - HTTP or HTTPS
  - Serve simple web pages, Javascripts and Applets
  - No need for a traditional web server (Apache)
  - Very light weight

RESTful Browser

- Browser Design
  - Based on iRODS Web Browser
  - Replace all PHP calls with REST calls
  - Add several improvements
    - Recursively Upload/Download of directories
    - Add Replicate, Rename, Chmod and Refresh functions
    - AVU metadata improvements
      - AVU for collections, recursive replicate/delete AVU
    - Search improvements
      - Search based on parent collection AVU
      - Wild card search of file name and AVU values
    - Checksum verification for Upload/Download, file mode preservation

RESTful Server and Browser

- A light weight but full featured iRods Web Browser
- A binary release for iRODS 3.3.1
  - No change to 3.3.1 internally is required
  - Very easy to install – copy 3 files and a directory