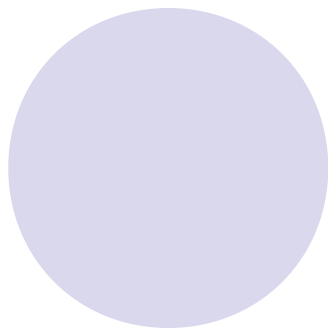


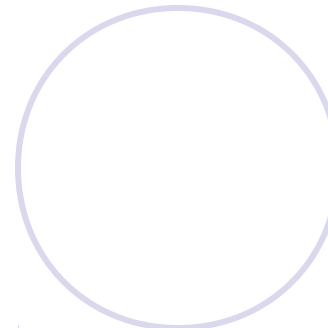
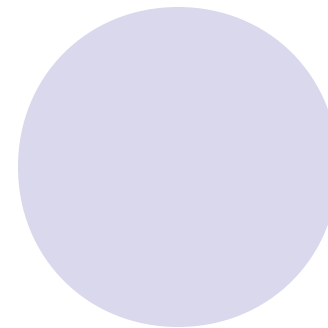
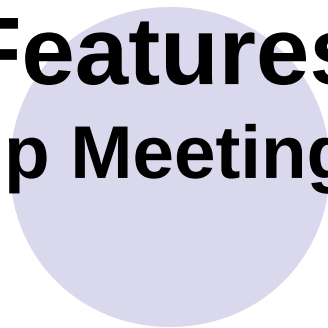


iRODS New Features

2011 User Group Meeting



Michael Wan





2.4 irods New features

- Multi-thread the irodsServer
 - Efficiency
 - Denial of service attack
 - One listening thread
 - In infinite loop
 - Listens on a well know port -1246 for incoming connection
 - Put connection socket in the ConnReq queue
 - Go back to listening
 - Very light weight
 - Handle large amount of connection



2.4 irods New features (cont)



• Multi-thread the irodsServer (cont)

- 5 Read worker threads
 - Woke up by the Listening thread when new connection queued
 - Read the startup packet from the connection socket
 - Quick sanity check of the startup packet
 - Check if user is allowed to connect
 - Put request in the SpawnReq Queue
 - Handle more request in the ConnReq queue or go back to wait state
- One Spawn manager thread
 - Woke up by the Read Worker threads
 - Unqueue a request from the SpawnReq queue
 - Spawn an agent (fork and exec an irodsAgent process)
 - Handle more requests in the SpawnReq queue or go back to wait state
- A reasonably robust system for handling incoming connections.





2.4 and 2.4.1irods New features (cont)



- 2.4
- Bulk operation (-b option) for iput
 - Upload up to 50 small files with a single call
 - 2 new APIs – rcBulkDataOnjPut and rcBulkDataObjReg added to support the implementation
- New icommand - ips
 - Monitor all connections to the iRODS Servers in the federation
- Allow imv a mounted collection to a regular iRODS collection
 - Data in mounted collection are not registered in iCAT
 - Data automatically registered after the move
- Memory leak fixes
- 2.4.1
- Multi-thread FUSE
 - Delay in one operation does not block other operations
- --link option for iput and irsync
 - Ignore symbolic link in the local FS





2.5 irods New features



- A new resource driver for WOS
 - WOS – Web Object Scaler of Data Direct Network (DDN)
 - Provide Web access to a large pool of storage
 - Data identified by a unique ID generated by WOS
 - No UNIX like file path
 - Library in C++
 - Write wrappers so they can be called by C functions
 - Implemented as a compound resource
 - Does not have POSIX I/O functions – open/read/write/lseek/close ..
 - Use UNIX FS resource as frontend
 - One major issue
 - 5-6 sec to initialize WOS library
 - IRODS fork/exec a new agent to service each connection
 - A new connection and WOS initialization for each iCommand
 - 5-6 sec to iput/iget a small file. More files - better
 - Looking for better solution





2.5 irods New features

- A -I option was added to iget
 - Similar to -I if iput
 - redirect connections to the best resource server for data transfer.
 - Scan first 10 data objects for the best resource server
- New options for ireg:
 - "--repl" option to allow the registration of files as replica
 - -f option to allow the registration new files in an existing collection already populated with files and subcollections.
 - Ignore files that have already been registered
- G option for irepl to only replicate data object stored in the resource group.
- Update the Resource Information (resource status, resource addition/deletion, etc) every 1 minute in the irodsReServer (delay exec).