Release Notes 3.3.1

Release Notes for iRODS 3.3.1, released on February 24, 2014.

The following is a brief summary of the additions and improvements made to iRODS 3.3.1 compared to the previous version, 3.3.

As usual, this release contains many new features developed in response to needs expressed by the user community and which supplement the base iRODS functionality in various ways. Each is very important to some sites but may be unneeded by others and can be configured and used as needed. Also see:

- Release Notes history of iRODS
- Release Notes 3.3
- Jargon Release Notes 3.3.1
- iDrop Release Notes 3.3.1
- PHP Release Notes 3.3.1

Contents

New Features

- **Security Vulnerabilities Fixed.** A related set of security vulnerabilities have been analysed and various fixes applied. A work-around for 3.3 and earlier versions of iRODS is described on the the irod-chat thread 'Configuration change needed for secure operation' but installing 3.3.1 is recommended as a more complete solution. As is best practice for vulnerability responses, details were kept confidential and response information carefully disseminated. Also see the Secure_Installation page that was developed as part of this. Thanks to the NASA NCCS computer security team for finding and reporting these problems and making some recommendations.
- **SHA2 File Hashes** SHA2 (SHA256) can now optionally be used for the iRODS data-object (file) hashes, informally called 'checksums'. MD5 is still the default and is available for backward compatibility. The File_Hashes page describes command-line options and the build procedure to enable. This was SVN revision r5612 and many others.
- **FUSE symlink** The FUSE client now supports symlinks. iRODS provides the capablity of symlinks but was not supported by FUSE in previous releases. So the FUSE command for creating symlink would not work. In this release this feature is supported.
- **Add simple json parsing microservices, requires jansson** Microservices for parsing JSON objects are added to the URL module. This feature requires jansson.
- **Rule language** Support for looping over keyValPair_t is added to foreach. Variables or expressions can now be used as keys in the dot expression. A "temporaryStorage" object is added to the rule language. It is a keyValPair_t which is valid throughout the whole irodsAgent process. Language integrated gen query now supports the "order" keyword.
- **Much improved performance of 'ichmod -r' at scale**. The ICAT code now uses SQL that creates and uses a temporary table to significantly improve the performance of the recursive ichmod command. Previously, these operations could be quite slow for iRODS instances where large numbers of access-control rows, users, and data-objects were being used. This is implemented for Postgres only, for now,

but this approach is likely to benefit MySQL and Oracle too and it is hoped that testing with them can be done soon. Thanks to iPlants staff for providing a copy of their ICAT DB (minus the password table, of course) for extensive testing at DICE-UCSD. Also see the [Postgresql Tuning](#) page for an introduction to Posgresql tuning developed as part of this. Also see the SVN log message (r5640) for more information.

- **Improved performance for some 'ticket' operations at scale**. Three SQL statements in the ICAT component (in icatMidLevelRoutines.c) used in handling tickets have greatly improved performance now. A subtle problem with cross joins is now avoided by using some sub-queries on 3 SQL statements. Without these there could be significant memory and processor loads when run in large ICAT instances. Thanks to Tony Edgin of iPlant for these improvements. See svn commit r5537 and r5438 for more.
- **New igroupadmin mkgroup sub-command**. Groupadmins can now create and manage new groups. To perform other groupadmin operations, the restrictions are as they were before, the user must be of type 'groupadmin' and be a member of the group. But with these changes, the groupadmin is allowed to create a group and there's a 'igroupadmin mkgroup' command to do so. Also, a user of type 'groupadmin' is allowed to add themselves to a group as long as that group currently has no members. Thus the groupadmin still has fairly limited powers but can now create and manage new groups. This was requested by Sanger. See irod-chat thread 'Group administrator' for the discussion.
- **Easier setup for interzone server authentication**. The logic was modified so that when a SID (server ID) is defined (LocalZoneSID or RemoteZoneSID) it will, by default, require that the remote server authenticate itself (also have the LocalZoneSID defined). This makes it easier to enable server authentication as you no longer need to also update a define (requireServerAuth 0) and rebuild to make sure that the remote server authenticates itself. This was recommended in email discussion with Michael Keller of the U of Canterbury. Also see recent updates to the [Server Authentication](#) page on irods.org. This was SVN revision r5591.
- **Mods for Hadoop File System 1.2.1**. The HDFS driver has been tested with the new hadoop release and is now compatible with version 1.2.1. Testing was also done to confirm that more than one HDFS system can be used and that they can be used for moving files between each other. These were SVN revsions r5607-r5611.
- **Workflow Structured Object (WSO) driver extensions**. Extensions have been made to the Workflow Structured Object (WSO) driver to handle workflows calling other workflows. Sample tests are available in the icommands/test/rules3.0 directory.
- **Software Defined Networking support**. Two policy enforcement points are added to pre and post parallel transfer. As demonstrated at SC'13, iRODS can be configured to make use of SDNs. See the [Software Defined Networks](#) page for more.
- **acPreProcForExecCmd parameter changes**. acPreProcForExecCmd now has extra parameters which match those of msiExecCmd. Rules written for the previous releases should be upgraded in core.re. See the core.re file for details.
- **ac(Pre)PostProcForModifyAVUMetadata refactored**. acPreProcForModifyAVUMetadata and acPostProcForModifyAVUMetadata have been refactored into three rules for different imeta commands and to make sure that the arguments align with the parameters, based on Tony Edgin's suggestions. Rules written for the previous releases should be upgraded in core.re. See the core.re file for details.
- **FUSE Client bug fixes**. Several bugs have been fixed for the FUSE client.

Bug Fixes and Other Features

- **Improved 'iinit' handling of missing environment variables**. If PAM or GSI is enabled and iinit creates some missing .irodsEnv information (perhaps the whole file), it now also prompts for and sets irodsAuthScheme. Since password is default, it will not prompt if the auth scheme is the only setting that is missing, but otherwise, if GSI and/or PAM is enabled it will prompt for the ones available and set the authentication scheme in the user's .irodsEnv file for them. This was suggested by Andreas Lindqvist and Giacomo on irods-chat, This was SVN revision r5581.
- **GSI fixes for Mac Installation**. For Macs, when GSI is enabled, irodssetup will now use 'lib' as the Globus directory even on 64-bit hosts. For other OSes, it continues to use lib or lib64. This was suggested by Petr Danecek on irods-chat. This was SVN revision r5584.
- **rsModAccessControl**. rsModAccessControl was changed to call acPostProcForModifyAccessControl only if the chlModAccessControl call succeeds. This was recommended by Tony Edgin of iPlant on irods-chat. r5585

- **New Error Message for missing acCheckPasswordStrength**. A more specific error message is now returned to the user when the acCheckPasswordStrength rule does not exist. This was suggested by Pete Clapham of Sanger. This was SVN revision r5587.
- **ModAVUMetadata rule called only on success**. rsModAVUMetadata was changed to call acPostProcForModifyAVUMetadata only if the chlSetAVUMetadata call succeeds. This was recommended by Tony Edgin of iPlant on irods-chat and matches a recent change for rsModAccessControl. A correction to the initial DICE update was provided by Dennis Roberts also of iPlant. These were SVN revisions r5588 and r5593.
- **irodsctl.pl fix for logging intervals**. A check was added for the environment variable set for LOGFILE_INT/logfileInt in irodsctl.pl so that the interval days for log files works. There's a 'define LOGFILE_INT "logfileInt"' which is used in the server C code so this script needs to set environment variable 'logfileInt', not 'LOGFILE_INT'. It looks like this was never working properly in irodsctl.pl when implemented (r3878 mwan 2011-03-28). The logfileInt feature was implemented long before that and so was likely working fine, it was just the irodsctl.pl setting that failed. Thanks to Robert Verkerk of surfsara.nl for finding, reporting, and providing a fix for this problem. This was SVN revision r5595.
- **Updated Databook Rules**. An update to datebook rules was done, to change the message format to be consistent to the new Databook Java code. This was SVN revision 5467.
- **irodssetup now handles additional ODBC installation locations**. A subscript in 'irodssetup' will now look for and use a system-installed (package manager) ODBC library (.odbc.ini Driver) in additional places as needed for certain platforms and postgresql/odbc versions. The case in question was on CentOS 6.4. See the irod-chat thread 'irods 3.3 and external postgres 9.2 database' for more information. This was SVN revisions r5519 and r5520.
- **Bug fix for when there are large numbers of temporary passwords**. Logic was extended to handle more than a preset limit of temporary passwords better. If this now happens, the temporary passwords will get removed on a later iteration. These were SVN revisions r5550 and r5596.
- **imeta exit code improvements**. Changes were made to imeta so it will not exit with 0 when the user asks for metadata of a non-existent object. This also included some bug fixes where the code is determining if the object exists or not. Tests were also updated to cover this. This exit code change was requested by Sanger. This was SVN revision r5551.
- **Change iquest so it will exit with 0 (success) when the user's query results in no rows but is otherwise OK**. This was also requested by Sanger staff. This was SVN revision r5552.
- **A fix for building with GSI on MAC OSX.** Thanks to Peter Danecek of the National Institute of Geophysics and Volcanology (INGV) of Italy for this fix. This was SVN revision r5553.
- **Fix a double-free agent segfault when the user tries to replicate a data-object to a resource that already has a valid copy.** This was discovered by RENCI and a fix was provided which was then improved by DICE. This was SVN revision r5571.
- **Additional iadmin mkresc check**. For 'iadmin mkresc' if the user enters an empty string as the resource name, it will now return an error. Once created, it's difficult to remove. This was reported in email from a site.
- **Safer PATH recommendation**. Changes were made to the irodssetup recommendation on setting the PATH to put the new i-commands directory at the end of the PATH.
- **Addition to clientLoginWithPassword**. Code was added to clientLoginWithPassword, matching that in clientLogin, to save a signature of the session challenge for use in changing another's password. This signature is needed for the administrative function of changing another user's password. The problem is not seen in iadmin since it uses clientLogin. The clientLoginWithPassword code, including this change, is exercised via one of the ICAT tests under 'devtest' but only to confirm that it can successfully log in. To verify that this change works, I made a temporary change to iadmin.c to call clientLoginWithPassword instead of clientLoging and I verified that without this fix it does fail (gets a CAT_PASSWORD_ENCODING_ERROR error) and with this fix it seems to work fine. This was reported in bugzilla item 167 and was SVN revision r5626.
- **irods_completion.bash script fix**. The irods_completion.bash script was converted to Unix format as somehow it was DOS (CRLF). Thanks to Giacomo for noticing and reporting this. This was SVN revision r5628.
- **Documented a problem in imv** where moving and renaming in a single imv command is not always allowed. The 'imv -h' help text now explains the problem and workaround. This is Bugzilla item 165 and SVN revision r5594.

- **iadmin changes for interzone setup** . iadmin help text was updated to explain that a remote zone definition needs to specify the IES, not a non-IES. When a non-ICAT-Enabled-Server is used, the error returned to remote zone users trying to connect is CAT_INVALID_USER (even if they have a valid local user account defined). This is inaccurate and misleading but it would be difficult to do better (to determine if this is caused by a non-IES remote zone definition). What happens to the server is non-fatal, but prevents proper authentication. Hopefully, this warning in the iadmin help text for mkzone and modzone will be sufficient. This was SVN revision r5639.
- **Tests updated** The 'devtest' and related test suites have been updated to cover many of the new 3.3.1 capabilities and bug fixes. The DICE Tinderbox continuous build/test system has been extended to include a daily sha2 file hash build/test. See the revised Testing iRods for more. Although not part of the release itself, this is closely related.
- **Other bugs**. As usual, a number of additional bugs were fixed.
- **Compiler warnings fixed**. As usual, some fixes were made in avoid compiler warnings on some platforms.

Upgrading from 3.3 to 3.3.1: Note that no patch to the iCAT database is required in support of the new features but server/icat/patches/patch3.3to3.3.1.sh should be run to define some new specific-queries (see the script for more information). The 'irodssetup --upgrade' (equivalent to 'irodsupgrade') script will warn and prompt you about this. The 3.3.1 clients will work properly with a 3.3 server except, of course, when a new feature is involved. To install, unpack the tar file, cd iRODS and run './irodssetup' or './irodsupgrade'.

Additional Credits

Some of the development done for the iRODS 3.3.1 release was supported by the DataNet Federation Consortium, NSF grant #0940841 "DataNet Federation Consortium". The development support included:

- Much improved performance of 'ichmod -r' at scale
- Improved performance for some 'ticket' operations at scale
- Updated DataBook rules
- Hadoop File System upgrade
- Part of the enhancements for SHA2 file hashes
- FUSE symlink and bug fixes
- json parsing micro-services
- Software Defined Networks support
- Rule Language updates
- acPreProcForExecCmd and ac(Pre)PostProcForModifyAVUMetadata changes

The other items in the iRODS 3.3.1 release that were developed by the DICE group were supported by the NSF grant #1032732, "SDCI Data Improvement: Improvement and Sustainability of iRODS Data Grid Software for Multi-Disciplinary Community Driven Application".

Future Releases

This is likely to be the last release of iRODS from the DICE group. The next planned release is iRODS 4.0 which will be a merger of the E-iRODS branch with iRODS 3.3.1 which will be released by the RENCI iRODS team and supported by both RENCI and DICE. See the iRODS_and_E-iRODS_Merger_Plan for more information.