

OMERO Storage Manager

A new tool for OMEMO/Columbus users developed by DAX Archiving Solutions B.V.

Supported by Perkin Elmer GmbH

Launching customer: Berlin Brandenburg Center for Regenerative Therapies (BCRT) at the Charite - Universitätsmedizin Berlin

What ?

- Tool showing of storage usage per user/group.
- Tool enabling archiving to/from secondary storage
- Archiving can be integrated in existing infrastructure.
- Works with all OMERO versions 2.3 and upwards.

dax Archiving Solutions
OMERO Storage Manager

[Home] [Reload this page] root root [logout]

Manage Omero Projects

Filter:

ID equals

Description contains

Username is

Group is

[apply filter] [add filter rule]

Summary of results:

- Total projects found : 23
- Total project files : 16197 Files (20.98 GB)
- Total archived files : 39 Files (80.02 MB)
- Total online files : 9987 Files (20.90 GB)
- Total offline files : 6210 Files (83.92 MB)
- (available in archive) : 27 Files (0.00 MB)
- (available in deep archive) : 0 Files (0.00 Bytes)
- (not in archive) : 6183 Files (0.00 Bytes)

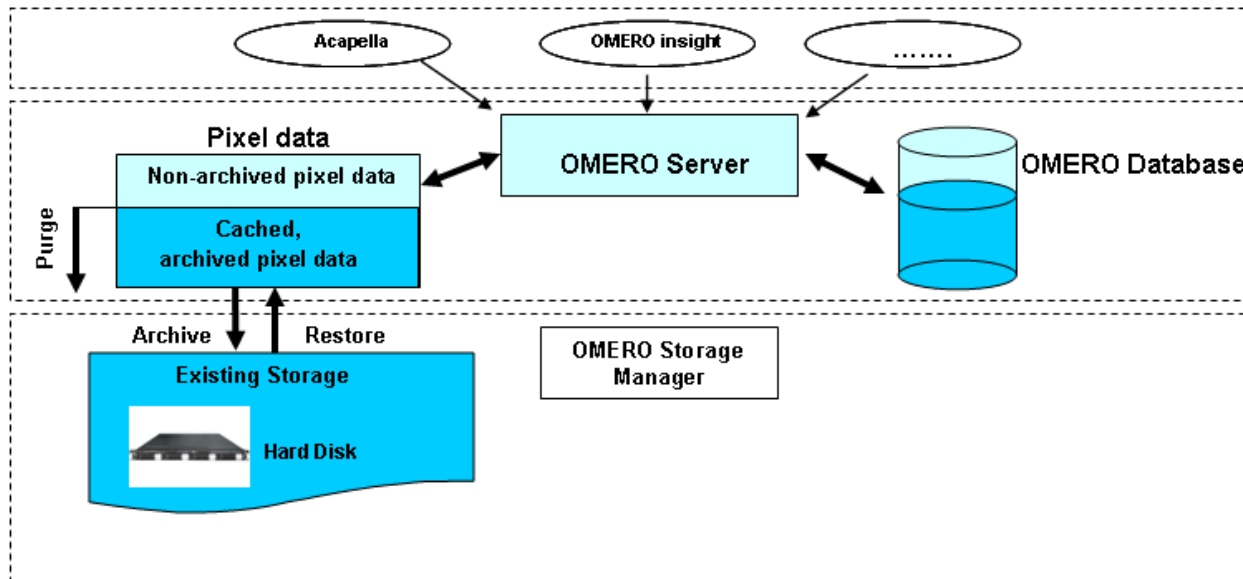
<-----[previous page]--- Page 1 / 3 ---[next page]-----> Number of results per page 10

Projects found:

ID	Status	Group	User	Project Size	Archived Size	Online	Missing	Last Accessed	Last Scanned	Description
<input type="checkbox"/> 60	Online and not archived	2:default	1:columbus	152 / 710.99 MB	0 / 0.00 Bytes	152 / 710.99 MB	0	22-07-2009	23-07-2009	Trainingsplate_081205_cytochalasin-1-2008-12-05T16:35:26+0000
<input type="checkbox"/> 59	In online archive	2:default	1:columbus	27 / 83.92 MB	27 / 0.00 Bytes	0 / 0.00 MB	0	01-01-1970	23-07-2009	P005-A Caspase3 Apoptosis-1-2009-02-13T09:43:11+0000
<input type="checkbox"/> 58	Online and not archived	2:default	1:columbus	108 / 389.25 MB	0 / 0.00 Bytes	108 / 389.25 MB	0	22-07-2009	23-07-2009	Row D-1-2008-12-10T13:39:15+0000 13:15:36archive file /home/columbus/OMERO/OMERO_data/Files/Dir-005/5372 32.74 MB/389.25 MB (8 %)
<input type="checkbox"/> 57	Online and not archived	2:default	1:columbus	384 / 475.19 MB	0 / 0.00 Bytes	384 / 475.19 MB	0	22-07-2009	23-07-2009	KM 080208 HeLa Mito-Cytoskel 60x-2-2008-02-08T14:02:58+0000 queued
<input type="checkbox"/> 56	Online and not archived	2:default	1:columbus	384 / 475.18 MB	0 / 0.00 Bytes	384 / 475.18 MB	0	22-07-2009	23-07-2009	KM_080208_HeLa_Mito-Cytoskel_60x-1-2008-02-08T13:54:22+0000
<input type="checkbox"/> 55	Online and not archived	2:default	1:columbus	5760 / 5.10 GB	0 / 0.00 Bytes	5760 / 5.10 GB	0	22-07-2009	23-07-2009	kp_ETAR_200707_LX_1-1-2007-07-20T12:32:31+0000
<input type="checkbox"/> 54	Online and archived	2:default	1:columbus	3 / 73.19 MB	3 / 73.19 MB	3 / 73.19 MB	0	23-07-2009	23-07-2009	(archived)KM_080125_A1_lmim_30steps-10-2008-01-25T16:21:44+0000
<input type="checkbox"/> 53	Online and not archived	2:default	1:columbus	864 / 750.46 MB	0 / 0.00 Bytes	864 / 750.46 MB	0	22-07-2009	23-07-2009	cam1cam2-1-2008-07-09T13:42:11+0000
<input type="checkbox"/> 52	Online and not archived	2:default	1:columbus	864 / 731.51 MB	0 / 0.00 Bytes	864 / 731.51 MB	0	22-07-2009	23-07-2009	cam1cam3-1-2008-07-09T14:04:54+0000
<input type="checkbox"/> 51	Online and not archived	2:default	1:columbus	72 / 1.87 GB	0 / 0.00 Bytes	72 / 1.87 GB	0	22-07-2009	23-07-2009	KM_080707_pRb-H2AX_60x_Stack-col18-1-2008-07-07T14:01:45+0000

[Select all] [Deselect all] [Archive selected projects] [Purge selected projects] [Restore selected projects] [Scan selected projects]

How?



All clients simply access the OMERO server.

The OMERO server manages all the data as usual. Incoming data is archived using a preset policy, i.e. archiving all new datasets created after 24 hours. In order to free up space or clean the database, projects are archived by purging them from the on-line storage.

In order to restore archived projects, clients go to the web interface and invoke a restore of the project. This restores the pixel data to the original location and restores the metadata in the OMERO database.

The archive back-end can simply be created on any existing storage infrastructure utilizing available resources. Extended archive solutions for automatic archiving to LTO or Blu-ray are also available.

- **Key features**
 - Scanning/indexing of projects/screens
 - Archive/restore
 - Purge
 - Quota management

Key objectives

- **Help users to manage storage used by OMERO/Columbus in a multi-user environment.**
 - Database usage statistics -> passive/active data.
 - Admin oversees the whole system
 - Group-owners can manage their own group
- **Archiving data that is no longer required to secondary storage.**
 - Keep the system clean.
 - Preserve data for future use.
 - Reduce backup requirements.

Archiving options : a variety of back-ends

- 1. Archiving to secondary hard disk storage.**
 - a. Requires network file system.
 - b. Completely automatic writing/restoring of datasets.

- 2. Integrating with a (Tape) backup system**
 - a. Writes to a write cache
 - b. Backup to Tape with standard (available) tools.
 - c. Retrieval requires admin intervention (restore dir).

- 3. Archiving to a Blu-ray archive system.**
 - a. Blu-ray archive system -> network file system.
 - b. Completely automatic write/restore of datasets.

Archiving Options compared

	Pro's	Con's
1. Secondary hard disk	Easy to integrate in large data centers	\$\$
2. Integration w/ backup	Cost effective because infrastructure is usually already available. Incremental solution, no new/additional HW required.	Tape is not an ideal archive medium. Restore can be more complicated Errors(data loss) possible.
3. Automatic Blu-ray system	Secure and true WORM storage. Fully automatic setup is convenient for users.	\$\$

Licensing

FEATURES / OMERO Storage Manager Version	LITE	STANDARD	EXTENDED
Solution	<i>Software Free</i>	<i>Software</i>	<i>Software + Hardware</i>
Storage statistics per project (or screen)	v	v	v
Summary statistics on the server or projects	v	v	v
Overview per group/user	v	v	v
Advanced filtering of projects	v	v	v
Quota management	v	v	v
Scan statistics of selected files	v	v	v
Archive projects to secondary storage		v	v
Purging archived projects from OMERO server		v	v
Restore projects from archive		v	v
Archive projects to removeable media (LTO/Blu-ray)			v
Automatic restore from LTO/BD			v

Development & testing

- **Basic version developed after discussions with Perkin Elmer.**
- **Perkin Elmer performed first tests on the Storage Manager.**
- **First version tested and operational @ Charite Berlin.**
- **Capacity Management Module was added on request of Charite.**

Summary

- More information and free download
– www.omerostoragemanager.com
- DAX offers free support for 2 months evaluation.
- Evaluation licenses can be applied thru website.
- Support requests thru website.

End of Presentation

Detail 1 : Archiving Options

- **Project/Screen -> archive & purge files from server**
 - **Three options:**
 1. Keep all metadata unchanged in OMEROdB -> error on file access
 2. Change project/screen name in OMEROdB-> add *–archived*
 3. Change user -> to Archive user (=> hides metadata for users in OMERO dB)

Detail 2: Integration in existing infrastructure

Archiving process:

- **OSM writes to write cache:**
 - directory structure w/ project/screen id + date
- **Backup/Archiving SW archives this directory and can delete directory after archiving.**

Restore process:

- **Restore checks read-cache for directory**
- **If present restore from directory & (change to appropriate user)**
- **If not present send email to Admin asking for directory.**

Detail 3: Quota Management

- Assign global max size for groups & users
- Possibility to add exceptions per individual group/user
- If size > max => send email to admin.
- Quota management => only in GUI, no intervention.
- Users can only manage their own projects/screens
- Group Owners can manage all projects in their group
- Manage = see, archive, purge, restore