MDCStore™ Xchange

Updated May 2021

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UNLEASH YOUR BRILLANCE™

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MDCStore™ Xchange overview

- Function and Components
- Supported image formats
- Current OS and web browsers
- How does it work?
- Getting started: Starting the program
- Web interface

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Overview: Function

- Scheduled image import
- Scheduled image export
- Scheduled measurement export
- Import of images from 3rd-party hardware/software
- Export of images to various formats

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Overview: Components

- The software consists of 3 components:
  - Xchange Web interface
    - Scheduling interface for the end user
  - Xchange server
    - Manages the jobs and scheduling
  - Xchange client
    - Performs the actual importing/exporting

- Licensing is controlled by the USB software license key for MetaXpress software
  - Xchange (part # 9500-0159) must be enabled

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Overview: Supported Image Formats

- Current formats:
  - Reads BMP, JPG, DIB, TIFF, PNG, and GIF formats, as well as OME single and stack image files.
  - Imports image data from HTD, InCell 1000, InCell 2000, Cellomics TIFF, Cellomics DIB, Leica, and BD formats.
  - Exporting supports converting image files into BMP (4, 8, 16 bit), JPG (8 bit), DIB (4, 8, 16 bit), Tiff (4, 8, 16 bit), PNG (4, 8, 16 bit), and GIF (8 bit) file

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Overview: OS and web browser support

- Supported on Windows 10 & 7 64-bit OS

- Supported web browsers:
  - Mozilla Firefox
  - Google Chrome
  - Apple Safari
  - Microsoft Internet Explorer (version 9 and later)

  - Installation instructions are in the MetaXpress 6 & 5.1 Installation and update guides

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Overview: How does it work?

- Jobs can be scheduled as a one-time job or as a recurrent job via the web browser interface.
- When a job is scheduled, the application monitors the designated folder and processes the job.
- Notes:
  - The application does not know when the entire plate is available, hence there is a waiting timeout implemented (default is 30 minutes). Once the waiting time is over, the application should pick up all accumulated plates in the specified folder.
  - Only one client can run at once (if you try to manually schedule two together you will get an error on the second one). If set to a recurrence, it will start the next import job after it finished the last import job.

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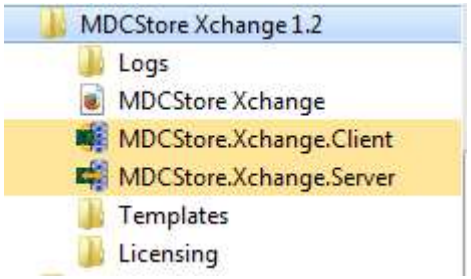
Overview: Getting started

- Start > All programs > Molecular Devices > MDCStore Xchange 1.2.
- Start the MDCStore.Xchange.Client and Server first (right-click and use the option “Run as Administrator”)
- Then start the MDCStore Xchange (web interface)
- Login to the database



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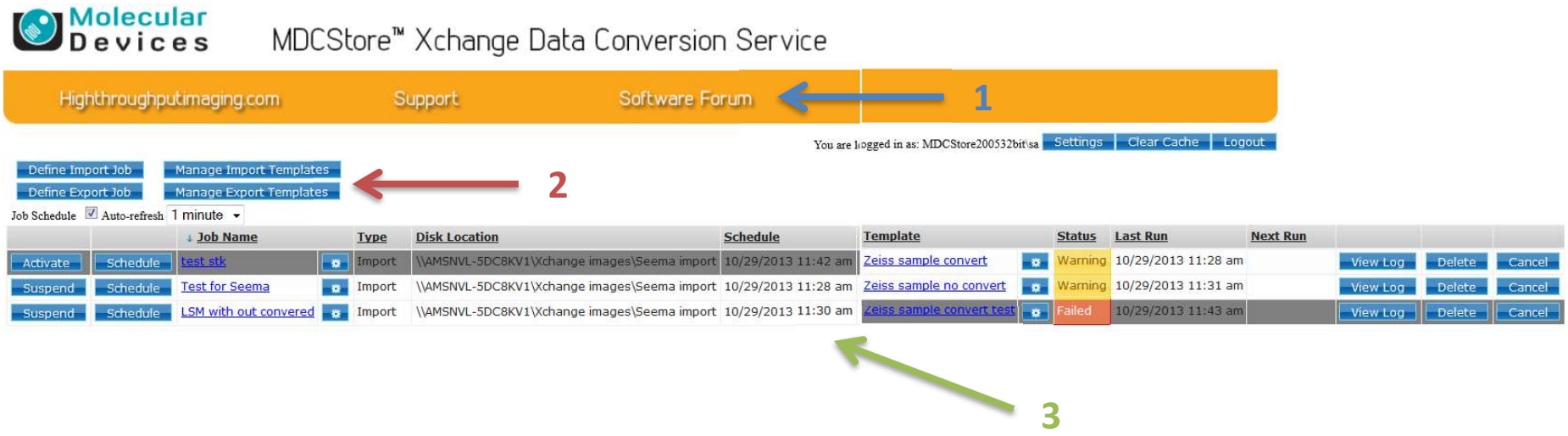
Overview: Web Interface

1. Hyperlinks to different parts of our website
2. Options to create and manage import and export jobs/ templates
3. Overview of jobs that have been scheduled/ completed



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Create your first import job

- Steps
- Prep work
- Modify template
- Verify template
- Save template
- Schedule import job
- Interpret the scheduler
- Resolve Common mistakes

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Create import job: Steps

- Create a plate to import from MetaXpress software
  - Note: For this example we are using an image set that was created in MX. Other image formats might work, but would need to be tested to verify compatibility.
- Modify a template
- Save the template
- Schedule an import job
- Review common failures/errors

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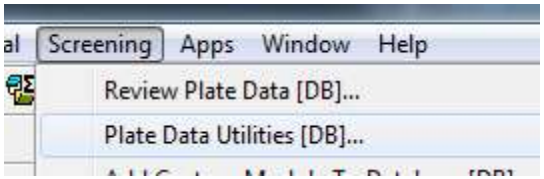
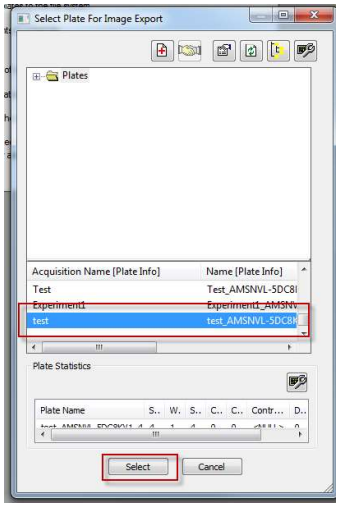
Create import job: Prep work

- Export a plate in the MetaXpress software (**Screening > Plate Data Utilities > Export Images**)





- Select a small plate > **Select**
- Specify the location for export.
- Note: This location must be shared for Xchange import to find it. If necessary, turn on sharing once the export is complete.

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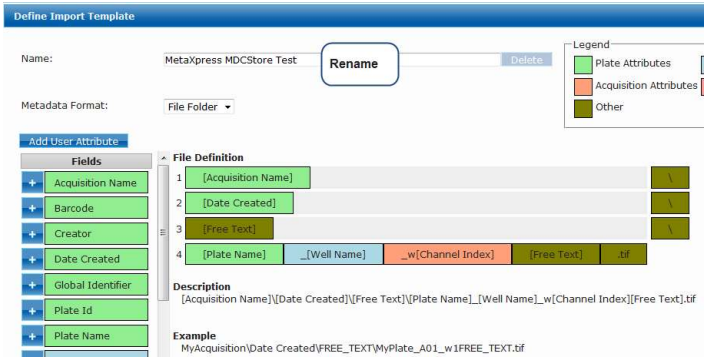
Create import job: Modify template



- In the MDCStore Xchange web interface, click **Manage Import Templates**
- Scroll down to **MetaXpress MDCStore MultiSite MultiWave**
- Click **Clone**
- Rename the cloned template

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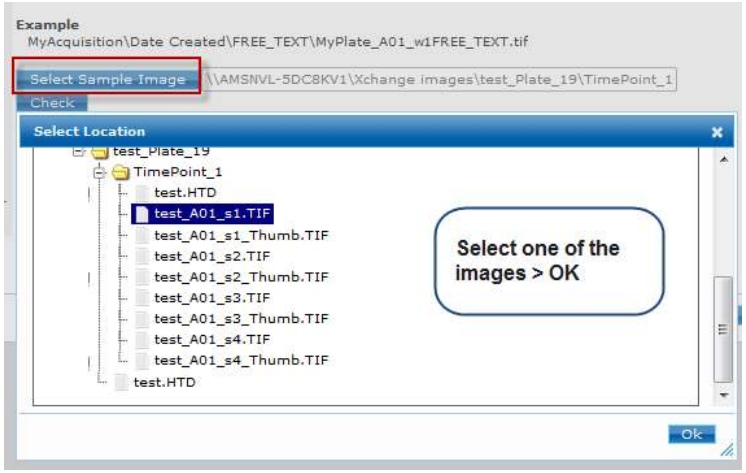
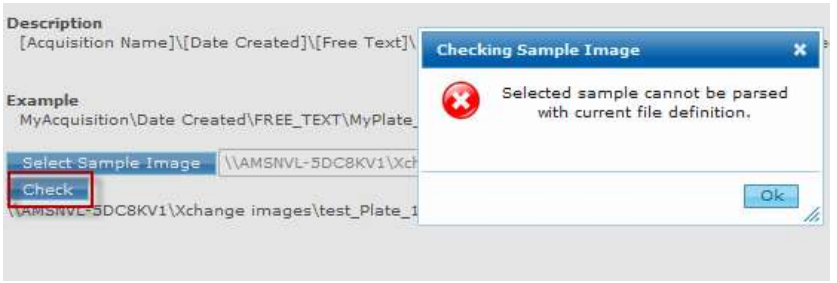
Create import job: Modify template

- Click **Select Sample Image**
- Browse through your shared location and select one of the images **> OK**
- Click **Check** to test the template definition.
- If the definition does not match the image, you will see the error "**Selected sample cannot be parsed with current file definition.**"





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Create import job: Modify template

- If you do not receive the error, proceed to the next step (**Verify Template,** slide 16)
- Click OK to clear the error.
- Compare the displayed example and the image file that you selected, starting from the right (file extension).
- In the example below, there are several differences:
  - _s = site indicator in the image but not the template
  - [Date created] = date indicator in the template but not the image
  - _w = wavelength indicator in the template but not the image

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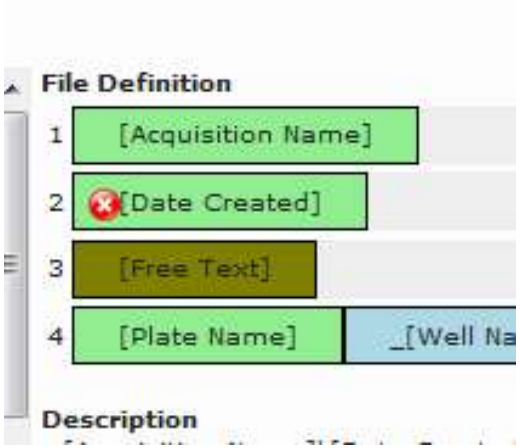
Create import job: Modify template

- Remove the unnecessary parts of the template definition by clicking the red X that appears.
- In our example, remove:
  - [Date created] = date indicator
  - _w = wavelength indicator
  - **[Free Text]** before the file extension
- Add attributes to appropriate part of the template definition as needed.
- In our example, add Site:
  - Select **Site Index** from left panel and drag it before the file extension
  - Enter the Prefix **_s** to indicate it starts with this and click **Save**



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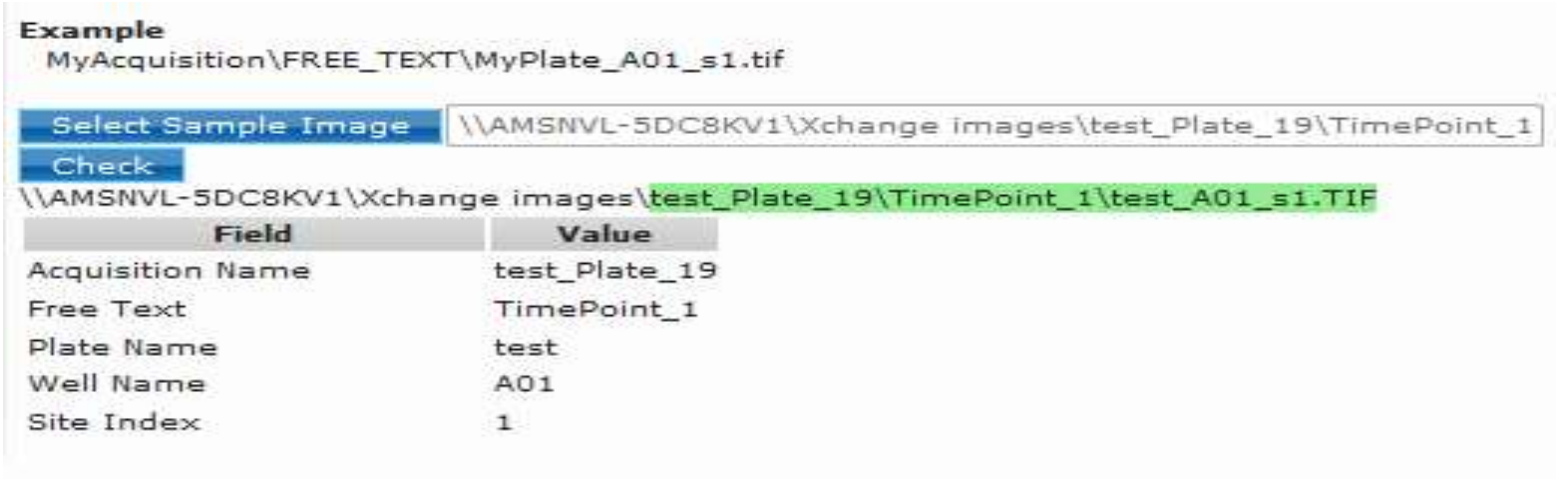
Create import job: Verify Template

- Click **Check** again to verify that the modified template definition is correct
  - If no error, you will see results parsed out to the different Fields
  - Verify that the values are matched correctly with the Fields
- Note:
  - The portion of the file path that matches the definition will be highlighted
  - When scheduling the job, browse to the folder that is just before the highlighted section (e.g. \\AMSNVL-5DC8KV1\Xchange images for the example below)



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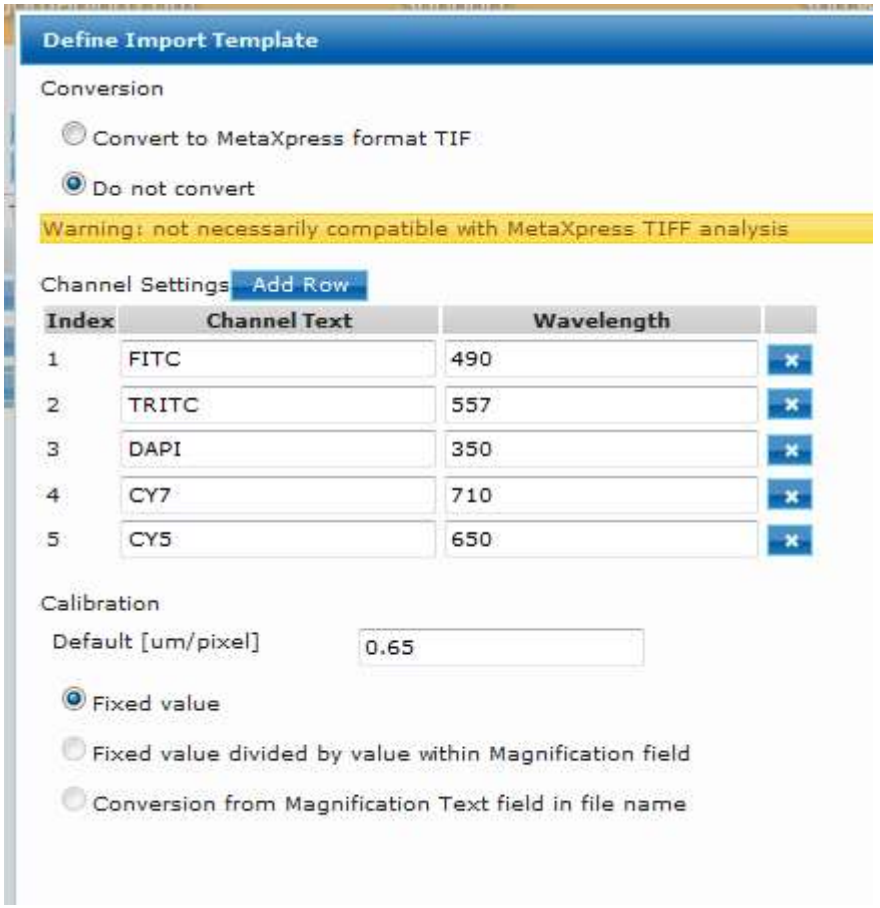
Create import job: Save template

- Select the option **Define Image Parameters** at the bottom right
- Select **Do not convert** (in this example, the images are already in MetaXpress TIF format)
- If your template includes Channel Index but not Channel name (as in our example), assign the proper names here. Remove any unnecessary channels as appropriate
- Select a calibration method and enter a value if needed
- Click **Save Template.** You will see a message that your template has been saved.
- Close the Manage Import Templates dialog box



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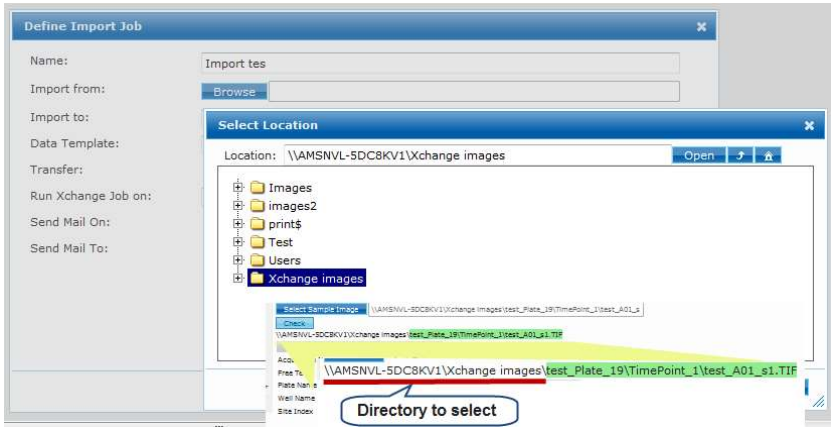
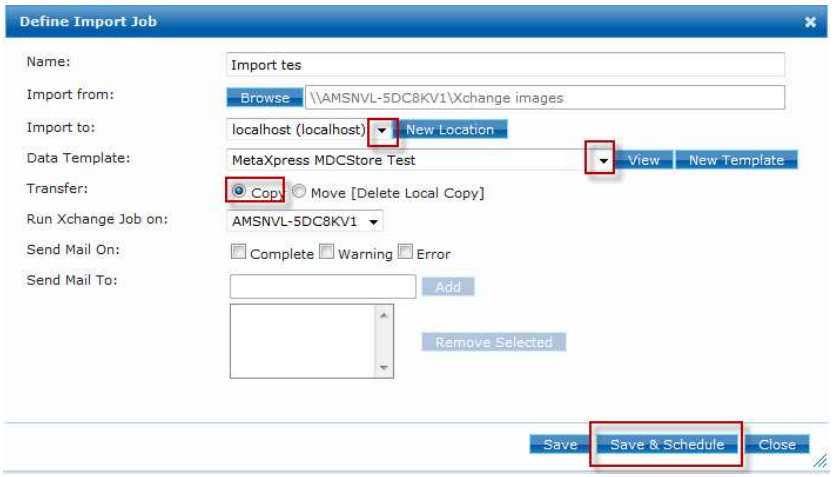
Create import job: Schedule the job

- In MDCStore Xchange data conversion service select **Define Import Job**
- Enter a name for the job
- Select **Browse** then browse to the storage location. Select **Open > OK**



- Select the location of **Import to**
- Select the **Data Template** that you just created
- Select **Copy**
- Click **Save & Schedule**



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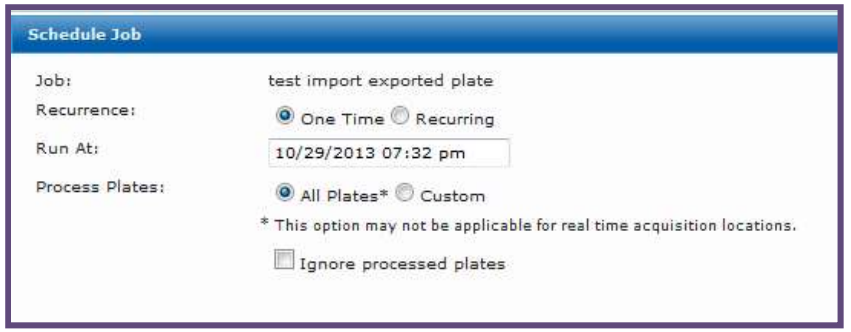
Create import job: Schedule the job

- For your first job select Recurrence: **One Time**
- Process Plates: **All Plates**
- You may see a warning: **"Import of all plates to the database may take a long time. Do you want to continue?"** Click **Yes**
- Disable option to Ignore processed plates > click **Save** > click **OK**
- The job will now appear in the list



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Create import job: Interpret the scheduler

Type	Disk Location	Schedule	Template	Status
Import	\\AMSNVL-5DC8KV1\Xchange images	10/29/2013 07:38 pm	MetaXpress MDCStore Test	Completed
Import	\\AMSNVL-5DC8KV1\Xchange images\test_Plate_19\TimePoint_1	10/29/2013 07:32 pm	MetaXpress MDCStore Test	Failed

- Select **View Log** at the end of the line to open the log
- Complete

- Failed

- Reason for failure: incorrect folder selected or incorrect setting

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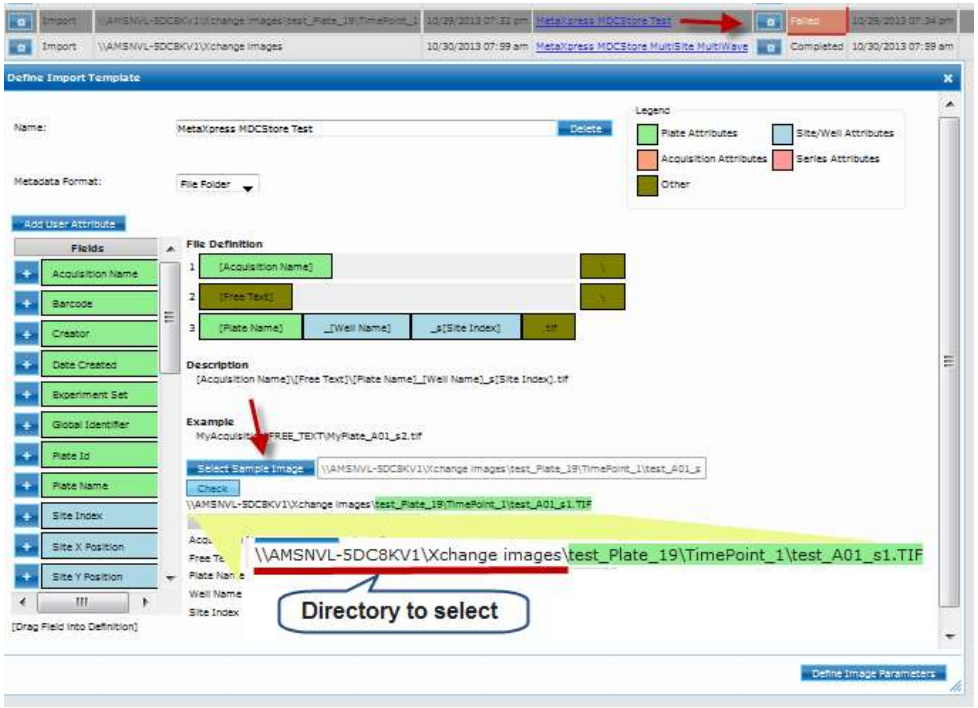
Create import job: Resolve common mistakes

- Select the icon after the job.
- **Select Sample Image** and select an image > **Check**
- If error, correct the template until the error disappears (slides 14-15)
- If no error, check the directory location, making sure the non-highlighted section is selected when defining your import job (see slide 16)



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Examples

- Import .png file
- Export to OME format

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Example: Import PNG file

- Select Metadata format: File Folder
- For the extension select the block

- Select the file type. If not present in the list, then enter manually.
- Select the option to Convert to MetaXpress format TIF. This will convert it to a16-bit TIF image which can be analyzed with a module.
- Define the channel settings appropriately for the proper selection of wavelengths

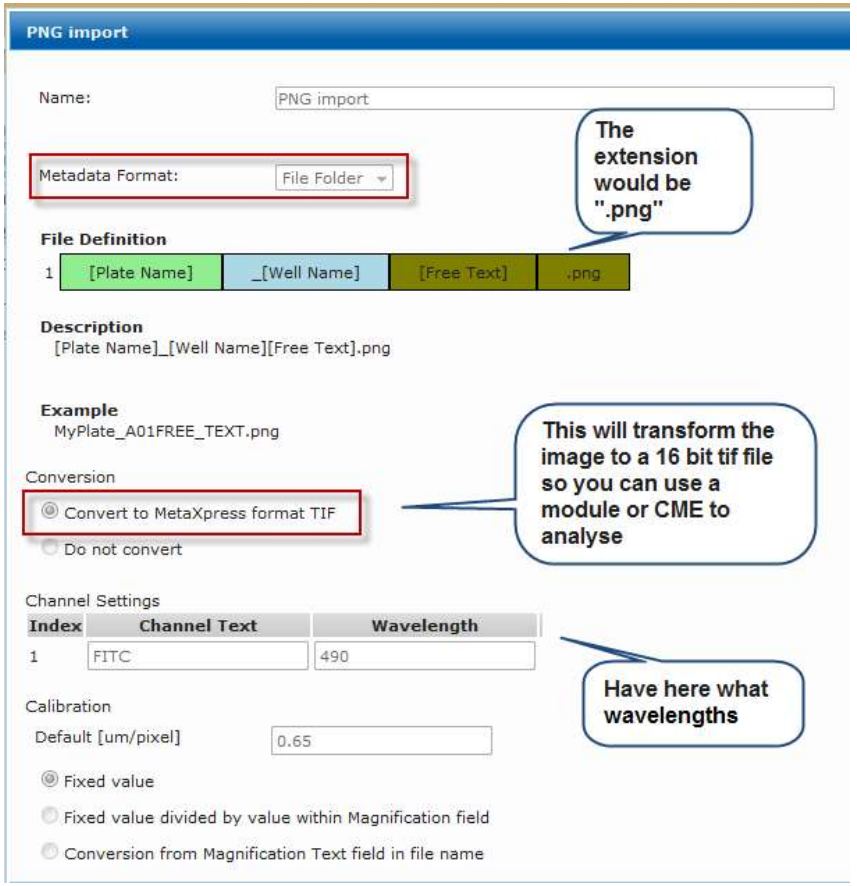

Image name is:
"exported images_D10f00d2.png"

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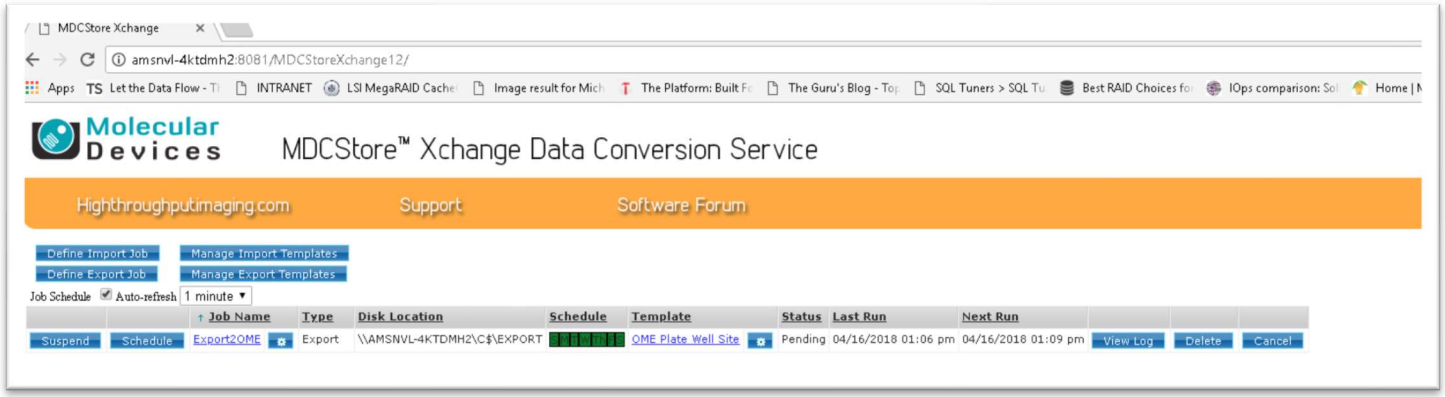
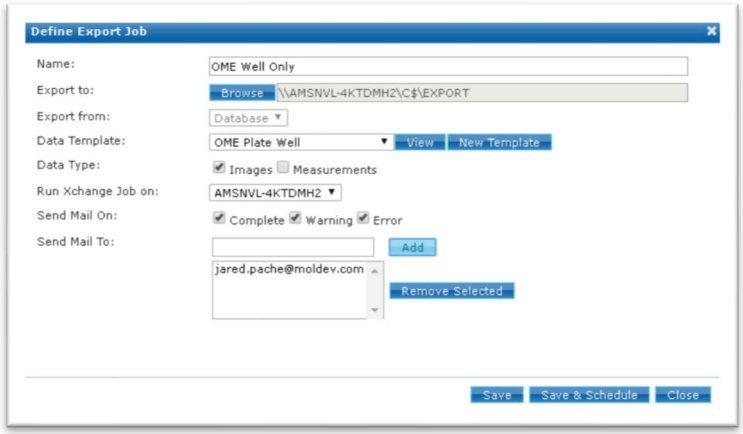
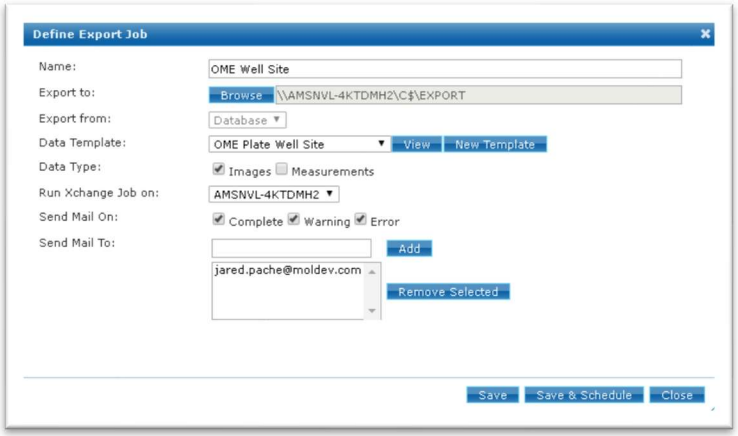
Example: Export to OME format

1. Define Export Job
2. Select OME Plate Well or OME Plate Well Site template







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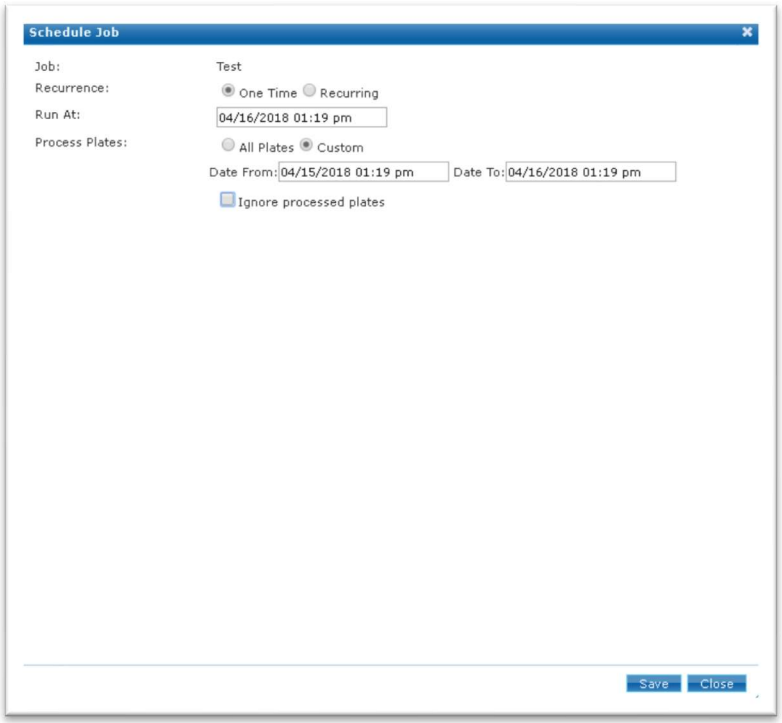
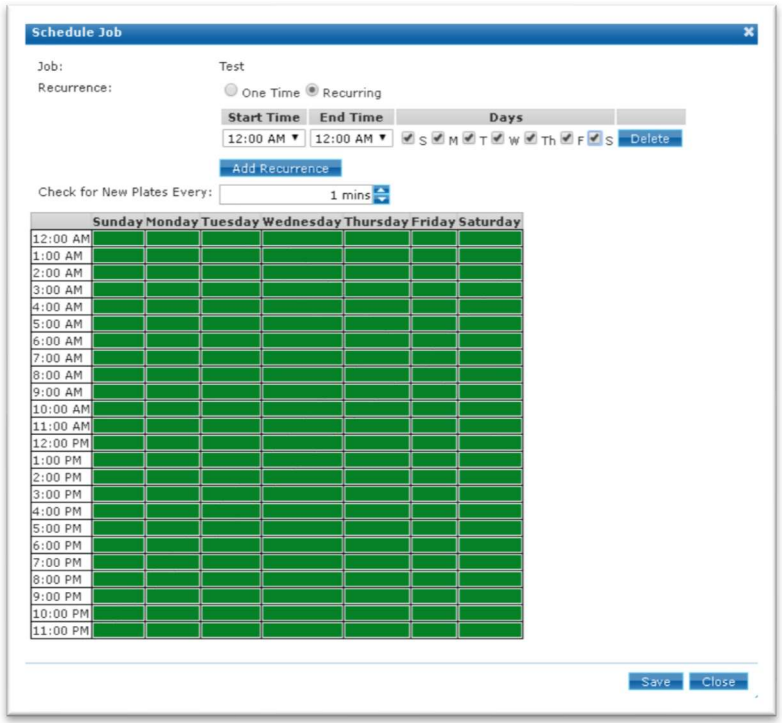
Example: Export to OME format

3. Schedule as One Time or Recurring job





Dataset	Processing Time*
96-Well Plate, 2 colors, unbinned	3-4min
384-Well Plate, 2 colors, unbinned	9-10min

*Processing time is an estimate and may vary from computer to computer

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Sharing Templates

- Locating templates
- Importing templates

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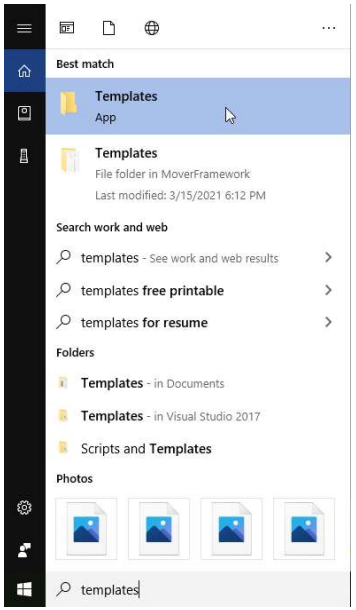
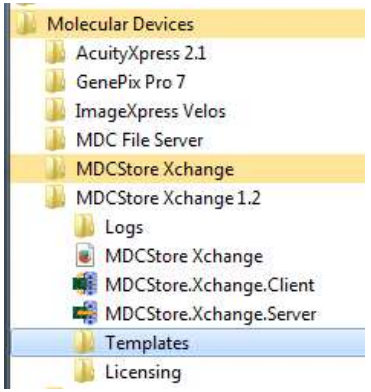
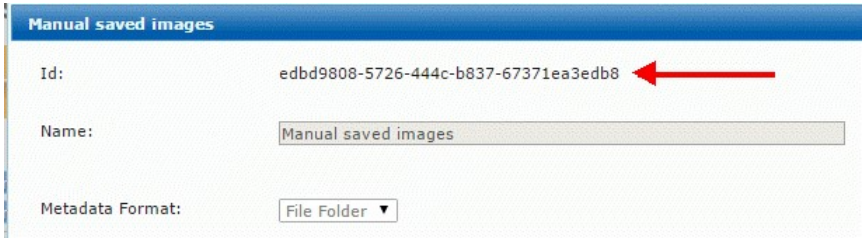
Sharing templates: Locating templates

- You can share templates with other users
- Templates are version specific (version 1.2 software requires version 1.2 templates)
- To locate a template, go to:
  - **Windows Search > Templates**
  - **Start menu > All programs > Molecular Devices > Templates** (Windows 10)
  - **Start menu > All programs > Molecular Devices > MDCStore Xchange > Templates** (Windows 7)
- The file name is the template ID (viewable in the template editor in the Xchange web interface)
- To confirm the template file:
  - Right-click and select Open With to open the file in NotePad or an XML editor
  - Name of the Template is displayed between the <Name> </Name> fields
- After adding a new template file, you may need to close and re-open the Xchange web interface to see the new template in the template list.







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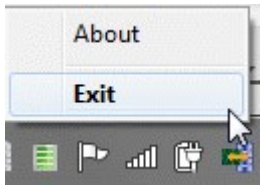
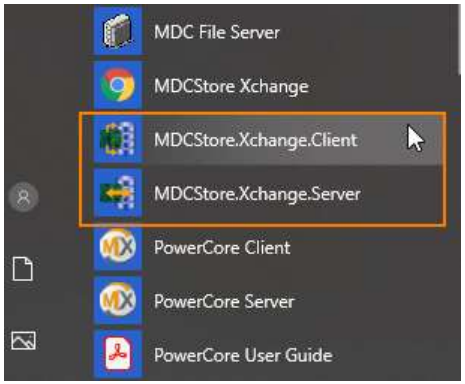
Sharing templates: Importing templates

- Close the Xchange interface
- In your Windows System Tray, locate the Xchange Server and Xchange Client icons. Right-click on each > select **Exit**.
- Copy the .xml file into your Templates folder
  - C:\Users\[Windows UserName]\AppData\Roaming\Molecular Devices\MDCStore Xchange 1.2\Templates
  - OR Start menu >Molecular Devices > Templates
- Select **Start menu > Molecular Devices > MDCStore.Xchange.Client** to restart the Client.
- Select **Start menu > Molecular Devices > MDCStore.Xchange.Server** to restart the Server.
- Open the MetaXpress Xchange interface and sign into the database.
- Click **Manage Import Templates** or **Manage Export Templates** and look for the new template. (see slide 9, #2)
- If you do not see the new template, try clicking **Clear Cache**.





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Email notification

- Configuration

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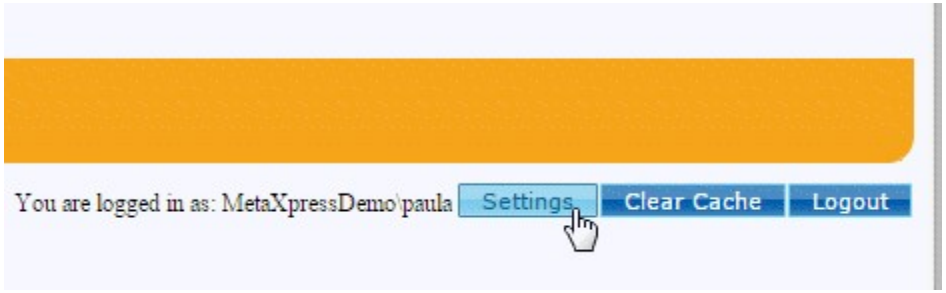
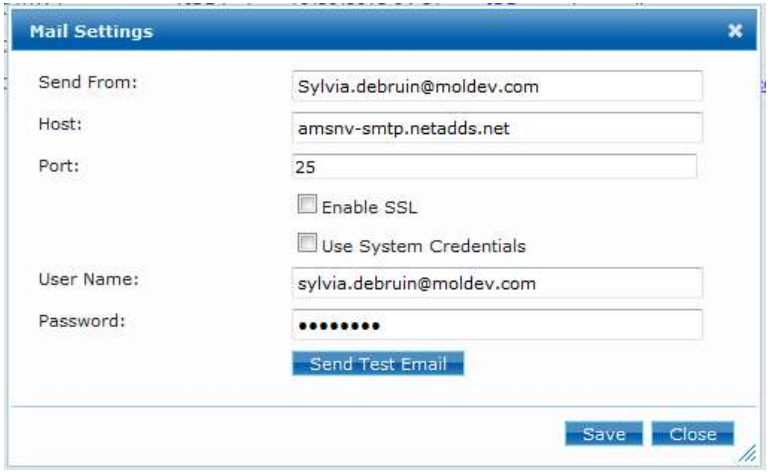
Email notification: Configuration

- Click on the Settings button (upper right corner of web interface)
- Contact your local IT department for the host name and port number to use





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Multiple Windows Users

- Installation

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Multiple Windows users: Installation

DS1

- MDCStore™ Xchange must be installed under an account with local administrative permissions
- If the computer is used by multiple Windows users, the computer must be started with the Windows account that Xchange was installed under. Then switch the Windows account as needed.

- Note:
  - Permissions: Make sure the folder C:\Users\USERNAME\AppData\Roaming\Molecular Devices\MDCStore Xchange 1.2\temp\ is accessible to "Everyone" otherwise the processed images will not be deleted from this temp folder.
  - Note: Alternatively it is possible to start the Xchange application with a batch file under a different windows user account, but this would require the password of the main windows account. Contact Tech Support for details.

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Slide 34

DS1 @Paula check this page
De Bruin, Sylvia, 10/5/2018

Licensing

- Configuration
- Errors

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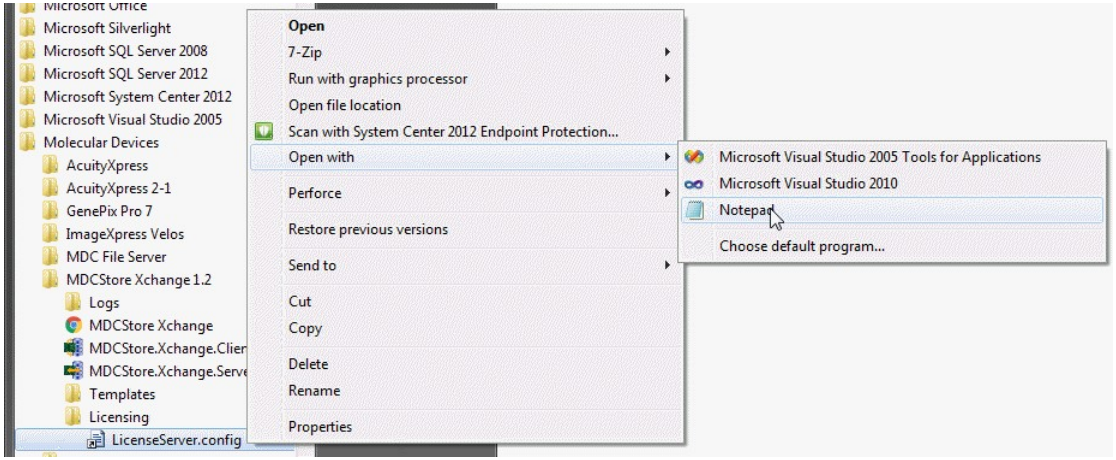
Licensing: Configuration

Connect to a remote license key:

1. After XChange is installed, open Licensing Config file from Start menu > All Programs > Molecular Devices > MDCStore Xchange 1.2 > Licensing > Right-click on LicenseServer.config file and select Open With > Notepad
2. If file does not exist, create file LicenseServer.config within this folder: C:\ProgramData\Molecular Devices\MDCStore Xchange 1.2\MDCStore Xchange Client
3. In notepad, type the static IP address of the computer that hosting the license, e.g. 10.133.15.15. Save the file. **NOTE**: If the license key is local, the file should be blank.
4. Restart Xchange Server and Client, or reboot the Xchange computer.



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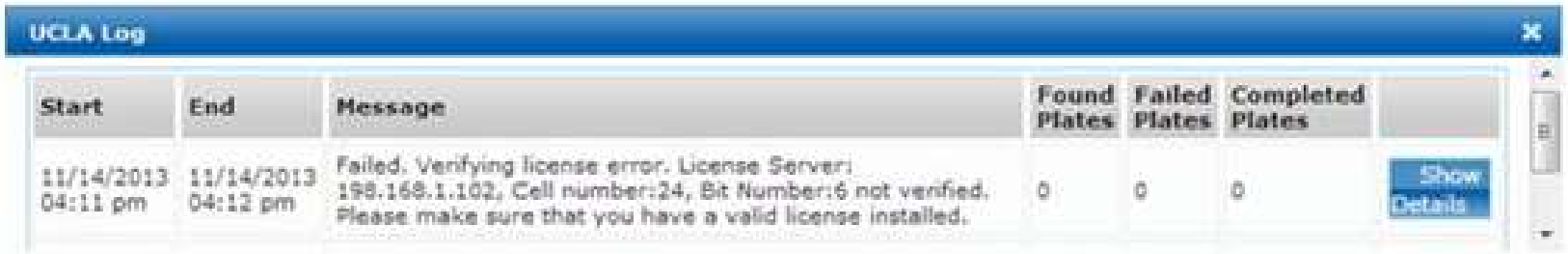
Licensing: Errors

- If you get the error: Failed. Verifying license error.
  - Check if the software key you are using has Xchange enabled. (You can ask Tech support).
    - If recently added feature perform an update to the MetaXpress to enable it on the key.
  - Make sure there are no other license keys on the computer hosting the key, such as PowerCore or CellReporterXpress
  - If the key is on an external computer: Follow instructions on previous slide



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MOLECULAR DEVICES

Troubleshooting

- Template Errors
- Import/Export: Long path names
- Import/Export: Other
- Web interface error: Page can’t be displayed
- Jobs stop after certain amount of time
- Job always running and cannot be canceled

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MOLECULAR DEVICES

Template Errors: Cannot be parsed Error

- After selecting an image and clicking **Check** you see the following error:

"Selected sample cannot be parsed with current file definition"

- Indicates that the template is incorrect for the image
- Recommendations:
  - Start with a template that closely resembles your image file/folder format
  - Then remove or add any components as needed
  - Start from the right side of the image path: file extension

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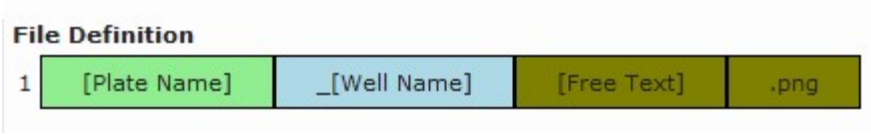
MOLECULAR DEVICES

Template Errors: Template saving error

- When saving the template, you see the following message “Plate Folder should contain at least one required field”
- Resolve by removing the \\



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Import/Export Errors: Long path names

The following errors were a result of too long UNC file paths

- Plate failed:ACQ_NAME:; PLATE_NAME:Test Xchange import with really super duper very long experiment base name to cause path length error abcdefghijklmnopqrstuvwxyzabcdefghijklmnopqrstuvwxyz12345; PLATE_ID:0; BARCODE:; GLOBAL_ID:. **Error:>>MDCStoreWriter Failed to create Blob 3006: Server reported an error - System Error Code: 3** Function Info: 'C:\ServerRoot\Test Xchange import with really super duper very long experiment base name to cause path length error abcdefghijklmnopqrstuvwxyzabcdefghijklmnopqrstuvwxyz12345\2015-08-14\20639\test custom 3_w1_s10_t1_Thumb19F8EACC-8F06-4D6D-887E-C4EDEB97F6FE.tif' **Error Message: The system cannot find the path specified.**
- Plate failed:ACQ_NAME:; PLATE_NAME:Test Xchange import with really super duper very long experiment base name to cause path length error abcdefghijklmnopqrstuvwxyzabcdefghijklmnopqrstuvwxyz123456789abcdefghijklmnopqrstuvwxyz; PLATE_ID:0; BARCODE:; GLOBAL_ID:. **Error:>>MDCStoreWriter Failed to create Blob 3006: Network connection reset - multiple attempts to connect have failed. Transfer aborted.**
- There was an error deserializing the object of type system.Collections.Generic.List`1[[Stheno.Common.JobLogRecord, MDCStore.Xchange.Common, Version=1.2.0.710, Culture=neutral, PublicKeyToken=null]]. **Unexpected end of file has occurred. The following elements are not closed: Message, JobLogRecord, ArrayOfJobLogRecord. Line 12, position 14.**
- Plate failed:ACQ_NAME:; PLATE_NAME:2015-08-04 Imcd3 anti-CD98hc Antibody uptake_Lamp1.40X_2015.08.04.13.14.04; PLATE_ID:0; BARCODE:; GLOBAL_ID:. Error:>>MDCStoreWriter **Failed to create Blob 3006: Logon failure: unknown user name or bad password.**

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Import/ export errors: long path names

- If plate name is slightly too long (perhaps some images can be created but not others), then you get the "**MDCStoreWriter Failed to create Blob 3006: system cannot find the path specified**" error. Resolve by using shorter Plate Name.

- If plate name is longer than that, you get the "**There was an error deserializing the object of type System.Collections.Generic.List**" error. Resolve by using shorter Plate Name.

- If plate name is even much longer, then you get the "**Network connection reset - multiple attempts to connect have failed. Transfer aborted**." error. Resolve by using shorter Plate Name.

- If the folder name is too long then you get the "**Failed. Job Runner Failed**" error. Resolve by using shorter Acquisition Name / Experiment Set / Folder.

- To Resolve: You may need to add an extra folder level with a short folder name and parse the Plate Name or Acquisition Name from the folder instead of from the image file name. Use the "Free Text" option to ignore long plate names that are part of the image file names.

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Import/ export errors: Other

- "**MDCStoreWriter Failed to create Blob 3006: access is denied**". This may require a computer reboot to resolve.

- "**Failed. Verifying license error. License Server: , Cell number:24, Bit Number:6 not verified. Please make sure that you have a valid license installed."** The MetaXpress dongle does not have Xchange enabled, or is not plugged in, or the LicenseServer.config file is not pointing to the correct computer. Note: If you have recently purchased Xchange, you may need to run a MetaXpress software update to finish activating Xchange on your license key. (See also slide 26).

- "**Plate failed:ACQ_NAME:; PLATE_NAME:My plate name here; PLATE_ID:0; BARCODE:; GLOBAL_ID:. Error:>>HTDReader HTD file not found**." Template is using the HTD format but there is no .HTD file present. Change template to use File Folder format instead.

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Import/ export errors: Other

- "**MDCStoreWriter No imaging component suitable to complete this operation was found**". The image files are in an incompatible format (e.g. BigTIFF).

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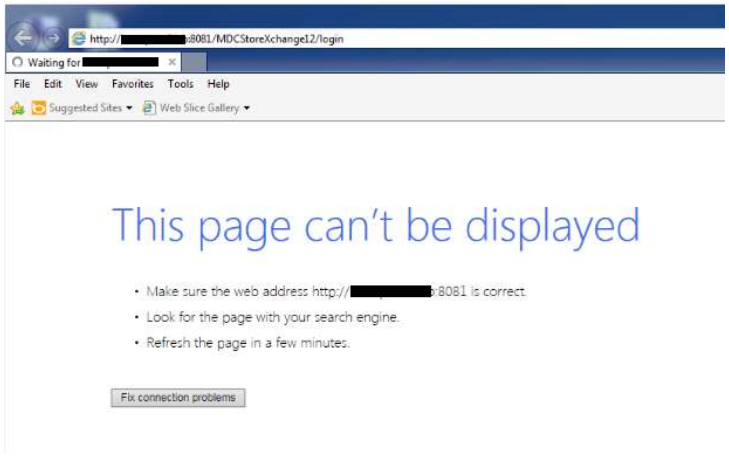
Web interface error: Page can’t be displayed

- Opening MDCstore Xchange web interface results in an error: *This page can’t be displayed.*
- Reason: The port has been blocked or computer name changed
- Possible resolutions:
  1. Update computer name (if local computer replace it with localhost)
  2. Reinstall the server
     - Uninstall MDCStore Xchange Server via Add and remove programs.
     - Reinstall MDCStore Xchange Server.



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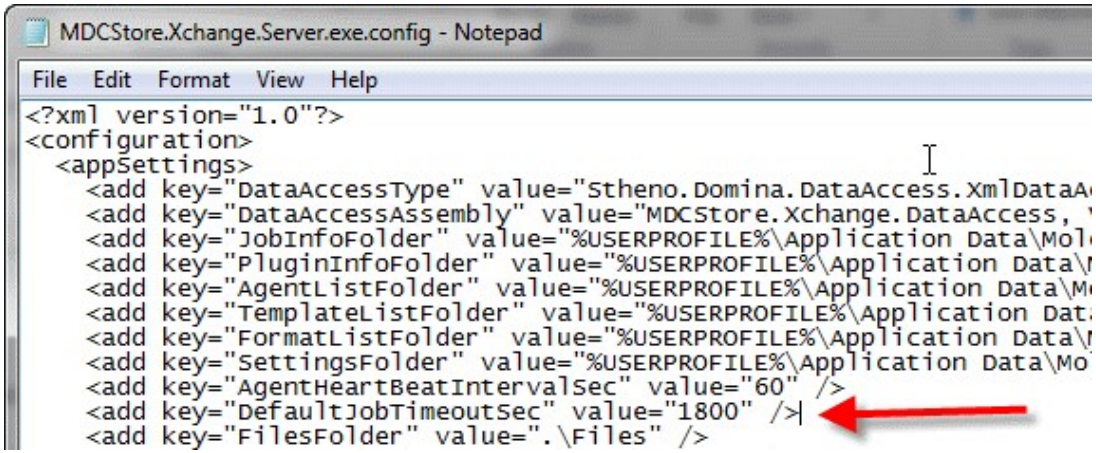
Jobs stop after certain amount of time

- The default maximum time allocated for running a job is 30 minutes
- To change the value, modify the **MDCStore.Xchange.Server.exe.config** file, found in the **C:\Users******\AppData\Local\Molecular Devices\MDCStore Xchange 1.2\MDCStore Xchange Server** folder.

1. Back up the file
2. Right-click on the file to edit in Notepad
3. Look for the attribute **DefaultJobTimeoutSec** and modify the value assigned to it. For 1 hour, enter 3600.
4. File > Save
5. Restart Xchange.



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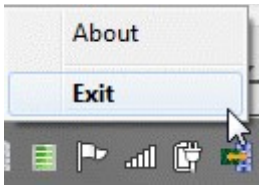
Job always running and cannot be canceled

- Occasionally, a job status may indicate Running, even if the job has completed or failed. When this happens, the Xchange interface may not allow you to Delete, Cancel, or Suspend the job.

- To remove this, you can delete the job manually:

1. In the Xchange interface, find the job and look at the name and the schedule time.

2. Stop the Xchange Server by right-clicking on the icon and selecting Exit. This will ensure that you do not accidentally delete a job while it is really running).



3. Go to this folder: **C:\Users\[UserName]\AppData\Roaming\Molecular Devices\MDCStore Xchange 1.2\Jobs** where [UserName] is your Windows user account.

Note: A quick way to get to this folder is to go to **Start menu > All Programs > Molecular Devices > MDCStore Xchange 1.2 > Logs**.
Then go up one folder to the Xchange folder, and go to the Jobs subfolder.

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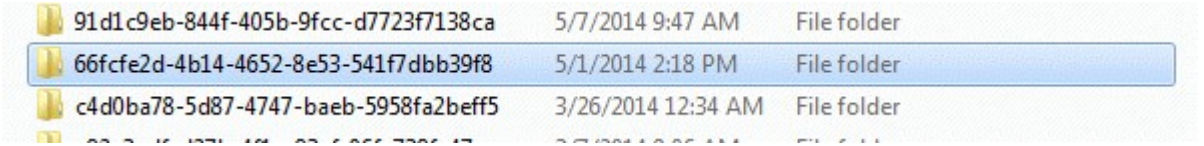
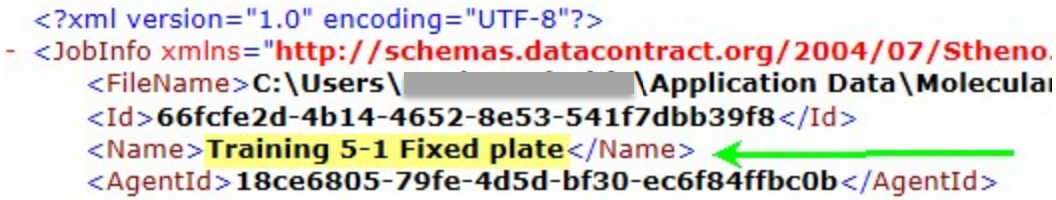
Job always running and cannot be canceled

4. Find the folder that has a time/date stamp that approximately matches your scheduled time. It might be off by a minute or so (more if you scheduled it in advance).



5. If you are not sure which folder is correct, or just to verify, open the job.xml file that is inside this folder and check the job name at the top.



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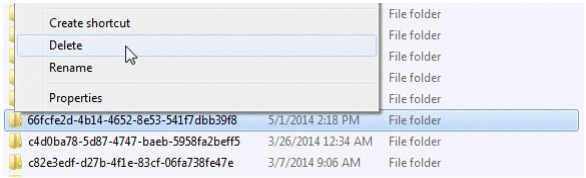
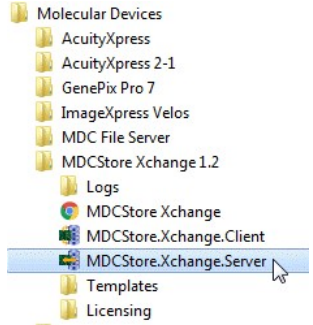
Job always running and cannot be canceled

6. Delete or move the specific job folder (moving is safer as you can easily restore it as needed).



7. Restart the Xchange Server by going to **Start menu > All Programs > Molecular Devices > MDCStore Xchange 1.2 > MDCStore.Xchange.Server**



8. In the Xchange interface, you will probably be prompted to sign back in. If not, or if the job is still showing in the list, click the Clear Cache button.

9. The job should now be gone from the list.

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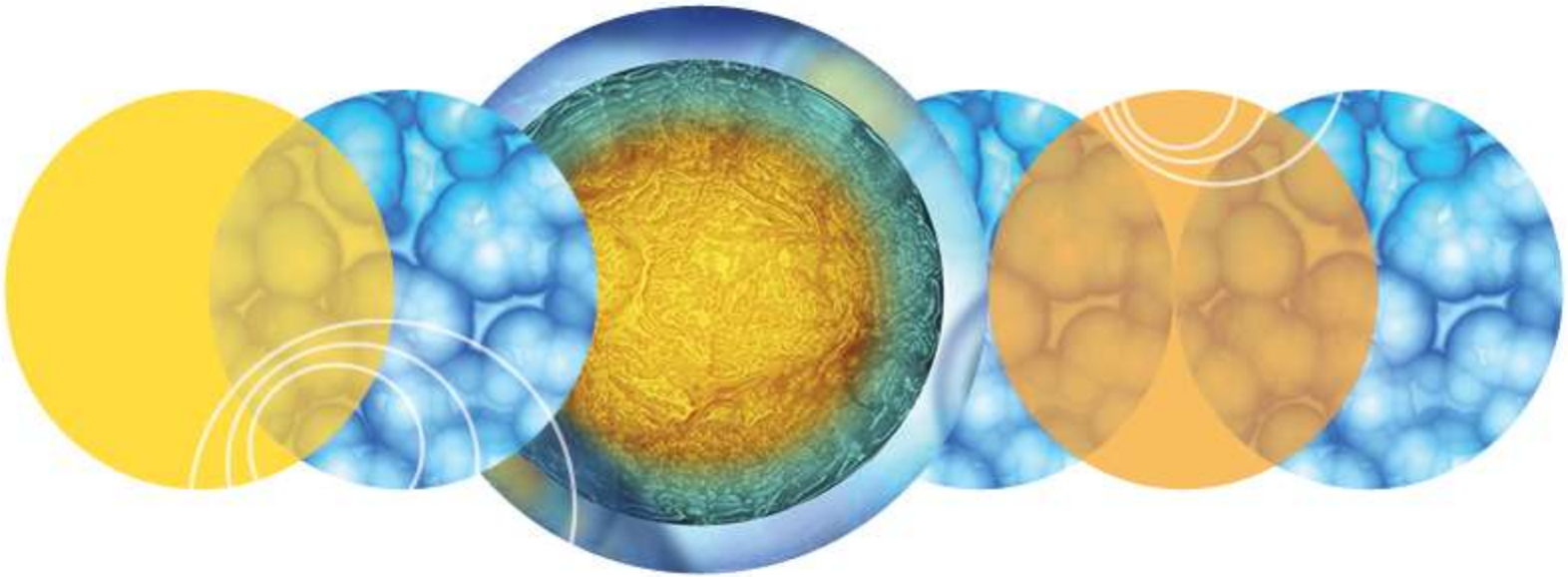

MOLECULAR DEVICES

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