



User Guide

15. August 2022

Table of Contents

Introduction.....	4
Requirements and Terms of Use.....	4
How to Access UCPH ERDA.....	4
Sign-up.....	5
Login.....	8
Overview.....	8
Home.....	9
Files.....	10
File Sharing and Data Exchange.....	16
Share Links.....	16
Workgroup Shared Folders.....	20
Workgroups (VGrids).....	21
Workgroup Web Pages.....	22
Archives.....	23
Jupyter.....	28
Jupyter Notebook Customization.....	40
Python.....	40
R / RStudio.....	41
Other Packages and Install.....	41
MATLAB programs on DAG and MODI.....	41
Helloworld example.....	43
Settings + Setup.....	44
2-Factor Authentication.....	46
Logout.....	51
Advanced Data Access.....	52
WebDAVS.....	52
Windows File Manager.....	53
Adjust Windows WebDAVS Transfer Limit.....	58
Mac OSX File Manager.....	64
Linux File Manager.....	66
SFTP.....	68
FileZilla.....	69
WinSCP.....	72
PuTTY SFTP.....	72
Linux File Manager.....	73
SSHFS.....	73
FTPS.....	74
FileZilla.....	75
WinSCP.....	76
WebDAVS/SFTP/FTPS Access to Share Links.....	76
Seafile.....	77
Automatic Backup to ERDA.....	82
Scripted Server Backup to ERDA.....	102
Schedule Tasks.....	104
Data Import/Export.....	107
Courses and External Collaboration.....	115
External Users / Peers.....	115
Personal Copy of Material / Import Sharelink.....	118

Introduction

ERDA or Electronic Research Data Archive at University of Copenhagen (KU/UCPH) is meant for storing, sharing, analyzing and archiving research data. The intended audience is employees, their collaboration partners and students. ERDA delivers safe central storage space for own and shared files, interactive analysis tools in addition to archiving for safe-keeping and publishing. You can use ERDA as a secure network drive from anywhere and it also comes with a stand-alone file synchronization service similar to Dropbox, but with the data safely stored locally at UCPH.

The latest version of this guide is always available from <https://erda.ku.dk/> in different languages.

Requirements and Terms of Use

You only need a web browser to use the fundamental features of the ERDA system. In case you want to use the advanced features, you may have to install additional client software.

ERDA comes with few restrictions and rules, and you can always find them on

<https://erda.ku.dk/terms.html>

In short the terms should follow common sense, e.g. it is your responsibility to only store data that you actually have the right to store, and to keep your login safe and secret to prevent others from access to your account.

IMPORTANT: Please carefully read about data replication and backup in our FAQ on the [front page](#) to make sure you are fully aware exactly what we do and don't offer and what your own responsibilities are regarding data safety. This is relevant both in regard to our terms of use and fulfilling the requirements of the [mandatory data classification at UCPH](#).

IMPORTANT: Please note that handling and storage of so-called *personal data* typically comes with strict regulation set out in The Act on Processing of Personal Data as described on [GDPR and Research](#) on KUnet and the [information from the Danish Data Protection Agency](#). Thus you are *not* generally permitted to just store them on your PC or on remote storage solutions like ERDA. Please contact us about rules and requirements prior to storing any such data on ERDA, or use the sister system, [SIF](#), which is officially approved for exactly that purpose.

How to Access UCPH ERDA

Everyone associated with UCPH has a username consisting of six characters, like *abc123*. The username is popularly known as the Swedish number-plate, and it's generally used to access intranet facilities like KU Webmail KUnet.

You can use that same login to sign up for and access your account on ERDA¹.

Externals can in some cases also sign up as outlined in Courses and External Collaboration.

¹ We also provide a 'digital signature' login method for users who prefer that solution or just don't have a KU login, but that is *not* covered in this guide. Please refer to our FAQ on https://erda.ku.dk for details.

Sign-up

TIP: We recommend following our new Sign Up Intro from <https://erda.ku.dk> but include the steps here as well.

For KU/UCPH-employees and students signing up is just a matter of clicking **sign up** from the *KU / UCPH Users* tab on <https://erda.ku.dk>

Electronic Research Data Archive
University of Copenhagen

Welcome to ERDA

KU / UCPH Users External Users Advanced Access

Sign up to ERDA using your KU / UCPH account?

I'm already signed up to ERDA with my KU / UCPH account?

About ERDA

ERDA or Electronic Research Data Archive at University of Copenhagen (KU/UCPH) is meant for storing, sharing, analyzing and archiving research data. The intended audience is employees, their collaboration partners and students. ERDA delivers safe central storage space for own and shared files, interactive analysis tools in addition to archiving for safe-keeping and publishing. You can use ERDA as a secure network drive from anywhere and it also comes with a stand-alone file synchronization service similar to Dropbox, but with the data safely stored locally at UCPH. ERDA is delivered by SCIENCE HPC Center and is formally for the faculty of Science, but others have access mainly for data archiving and publication with UCPH DOIs. A roll-out to all of UCPH is underway to support the general UCPH [Data Management Guidelines](#).

Sensitive and Personal Data (GDPR)

Please note that while ERDA comes with a strong security focus, it is *only* a solution approved for general scientific data and *not* for highly sensitive data. In particular it is not for personal data classified as sensitive in the EU General Data Protection Regulation (GDPR). In case you need to work on such sensitive data we recommend the ERDA sister facility [SIF](#), which is intended and approved for exactly that purpose.

Getting Started

We've gathered information about ERDA in a few short intro guides and a more thorough user guide

- [Sign Up Intro for UCPH and external users](#)
- [Workgroup Intro](#) about creating, managing and accessing Workgroups
- [Network Drive Intro](#) about using ERDA as a network drive on your computer (only covers Windows for now)
- [Seafile Intro](#) about Seafile sign up and file synchronization
- [Seafile Collaboration Intro](#) about Seafile data sharing and exchange
- [ERDA Overview](#) if you're not sure whether to use ERDA's main storage or Seafile
- [User Guide](#) with general usage instructions

We strongly recommend reading and following at least the first intro guide if you want to use ERDA.

Status and News

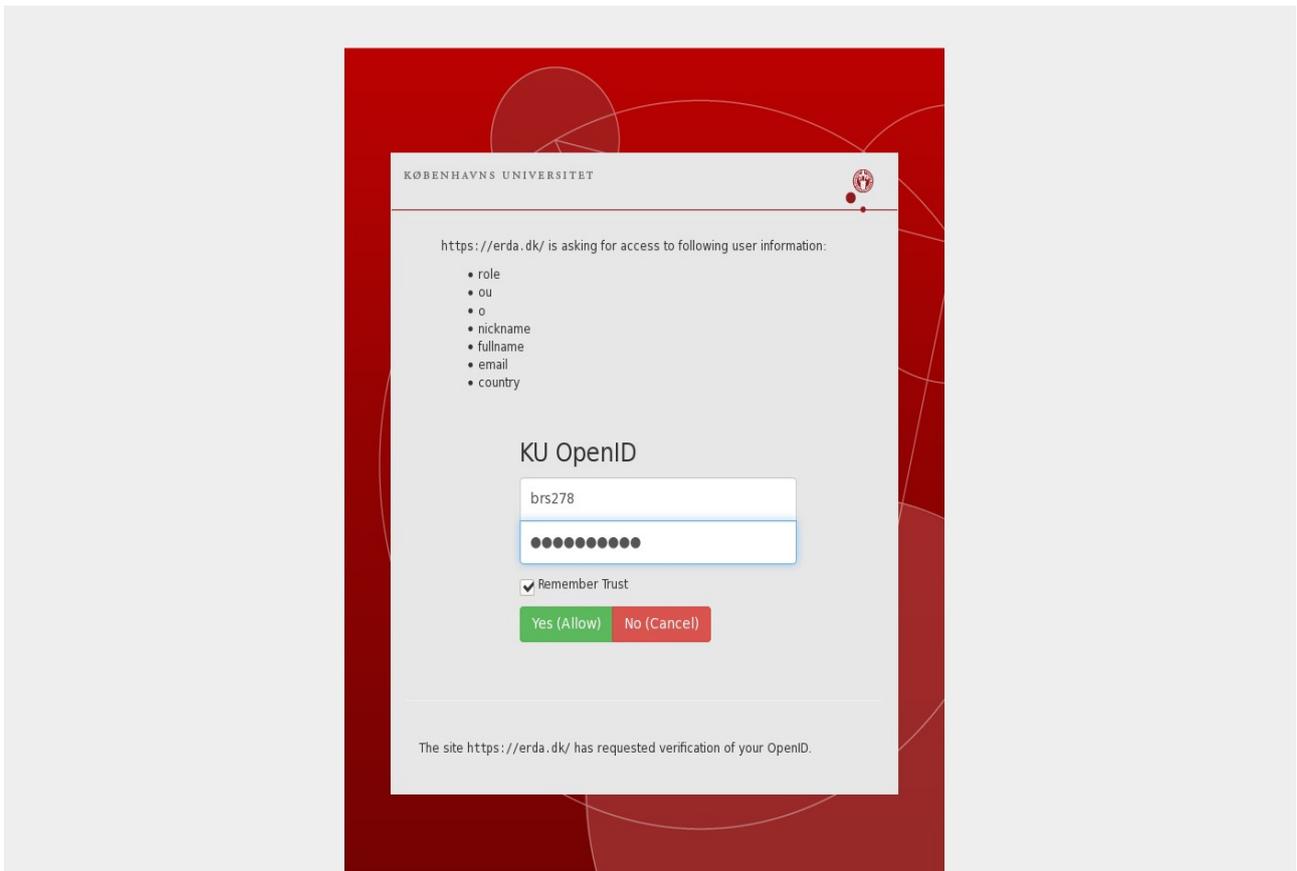
You can always refer to our separate [status and news overview](#) for a.o. the latest ERDA system status as well as information about new or changed features.

Frequently Asked Questions (FAQ)

- + How much storage space do I have on ERDA?
- + Is My ERDA Data Replicated and Backed Up?
- + How do I Transfer Entire Folders to/from ERDA?
- + Can I Share, Exchange and Publish Data in e.g. a Read-only Fashion on ERDA?

and entering your KU login when prompted.

As an example we show it for the user with KU username *brs278* below, but please use your own KU login.



When you click **Yes (Allow)** your account on ERDA is created and you will see a link to your personal entry page like this:



Automatic UCPH ERDA sign up

Creating your UCPH ERDA user account and sending welcome email ...

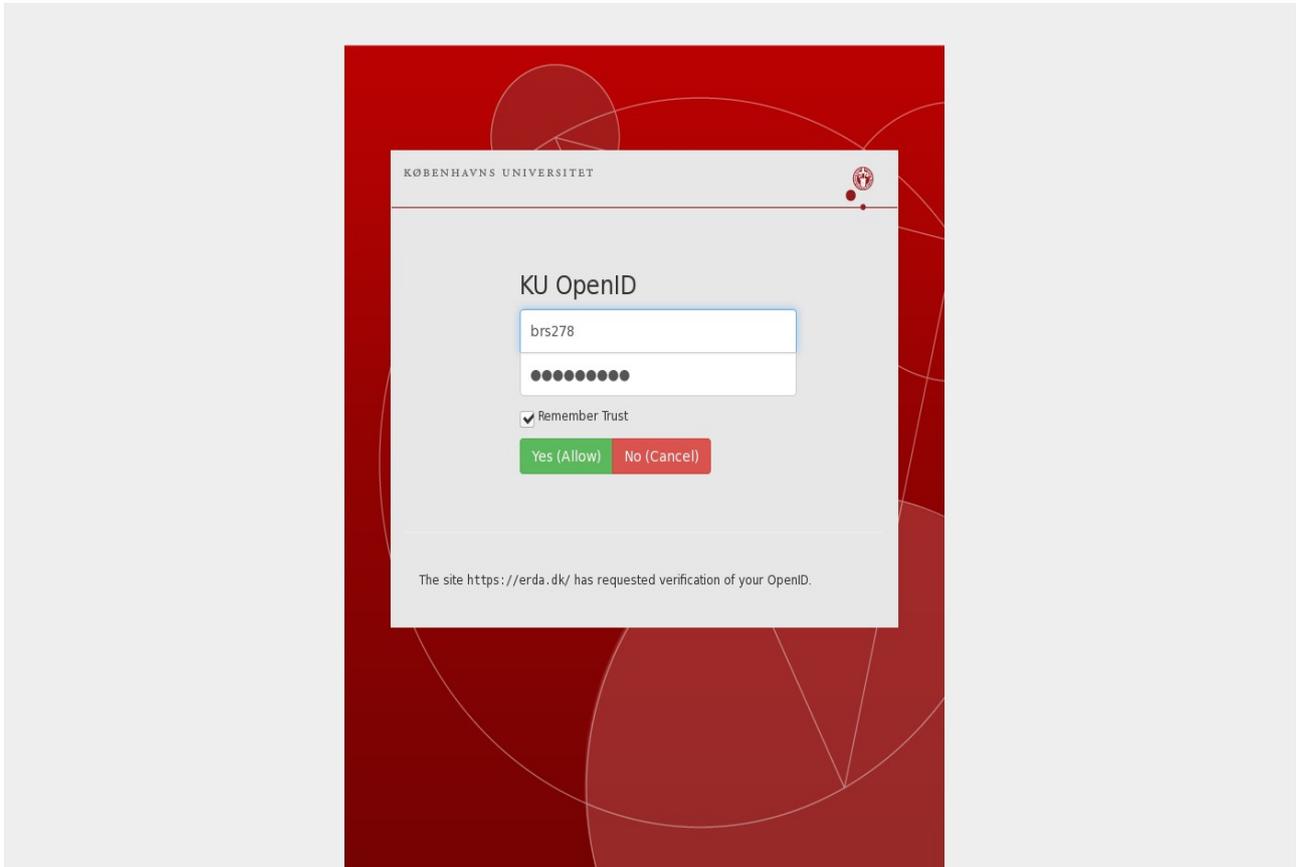
🔄 redirecting to your [personal pages](#) in a moment.

[Support](#) [About](#) [🔔](#)

Automatic redirection should kick in but otherwise just click the *your personal page* link to go start using your account.

Login

After signing up you can always access your account by pointing a web browser to <https://erda.dk> and entering your KU login as shown below if prompted



After entering your login and clicking **Yes (Allow)** you will reach the actual ERDA site.

The web browser remembers your login for a while, so you don't have to repeat the login every time. You can explicitly log out inside ERDA after use. This is generally recommended, and particularly if you share your computer with anyone else.

Overview

When you open ERDA you will start out on Home where you can access and manage your ERDA Apps. Use the navigation menu to the left to access to your **Home, Files, Workgroups, Archives, Setup, Settings and Jupyter** pages. Each of those pages is described more thoroughly in the following sections.

Home

On your Home page you can navigate between the available ERDA **Apps** and modify which apps to enable in your web interface.



Welcome to UCPH ERDA!

Tools from UCPH ERDA helps you with storage, sharing and archiving of data. UCPH ERDA delivers centralised storage space for personal and shared files.

+ Quick Tip: Easy data Analysis and Presentation ...

Your apps & app-setup



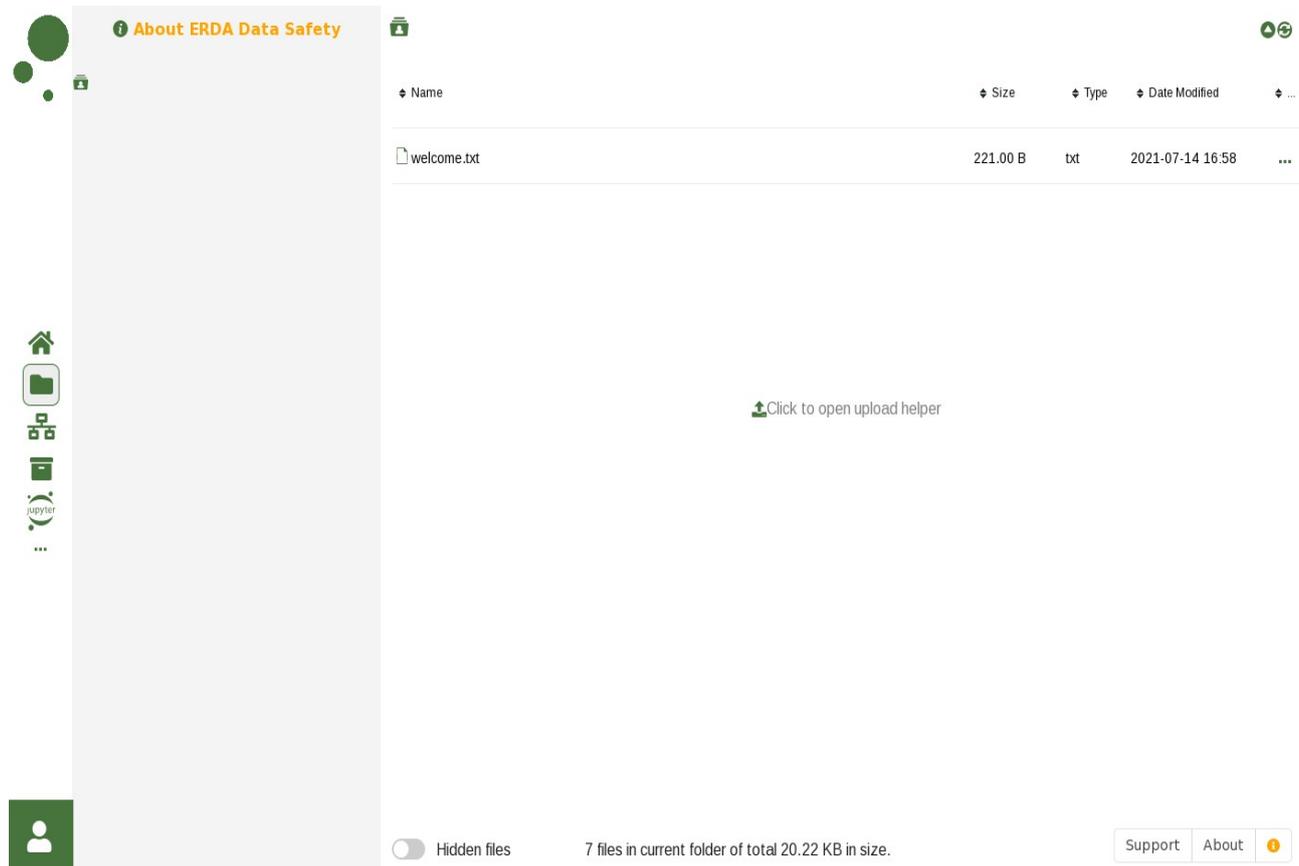
[Support](#) [About](#)

Click the **Add** tile with the white/green plus icon to add or remove apps from your personal pages.

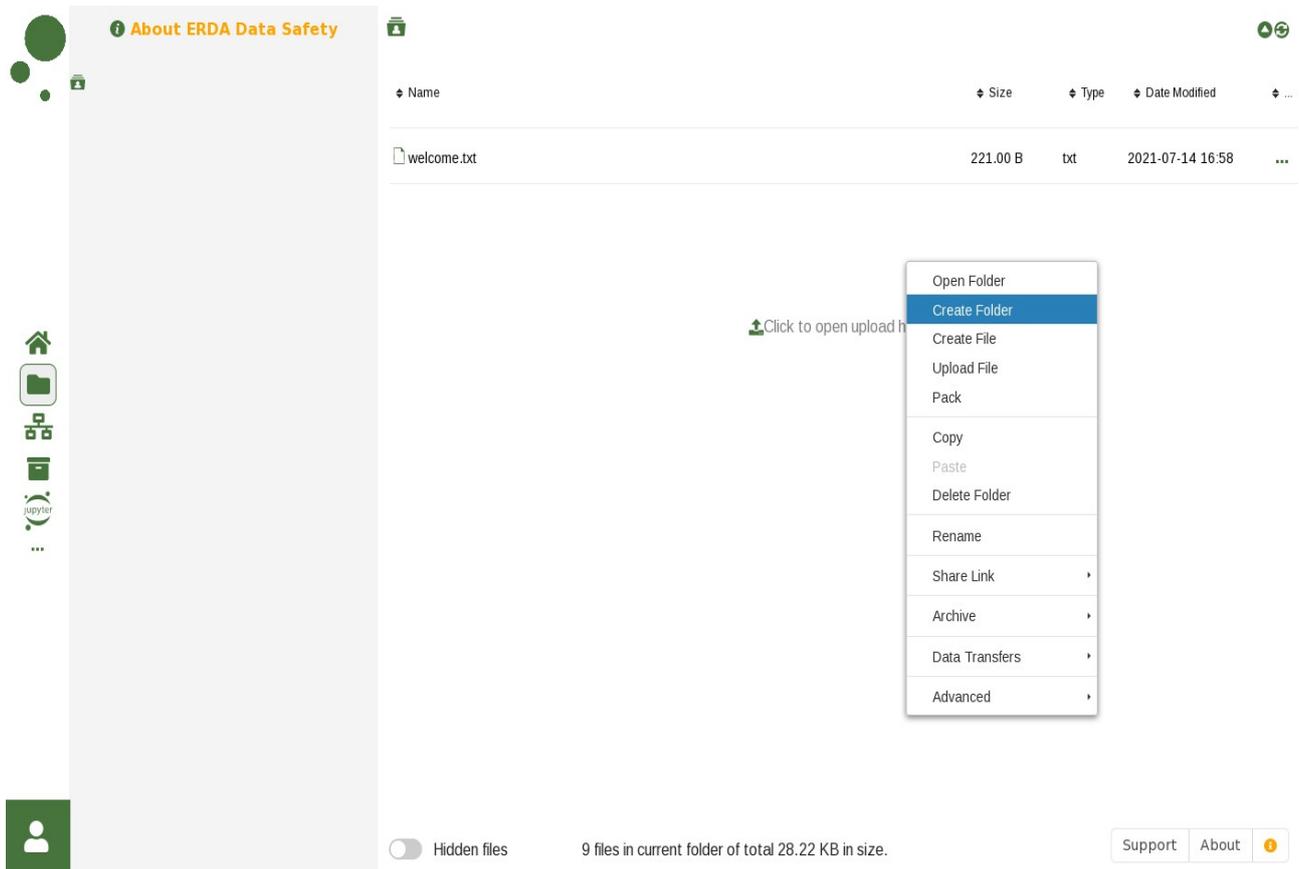
Files

This is your main area on ERDA when it comes to data and it's where you manage your personal and shared files. The directory tree in the left pane takes you quickly to a specific sub-directory and the right pane shows the files and directories in the current directory.

The location bar right above the two panes shows the path to the current directory with quick navigation links to parent directories.



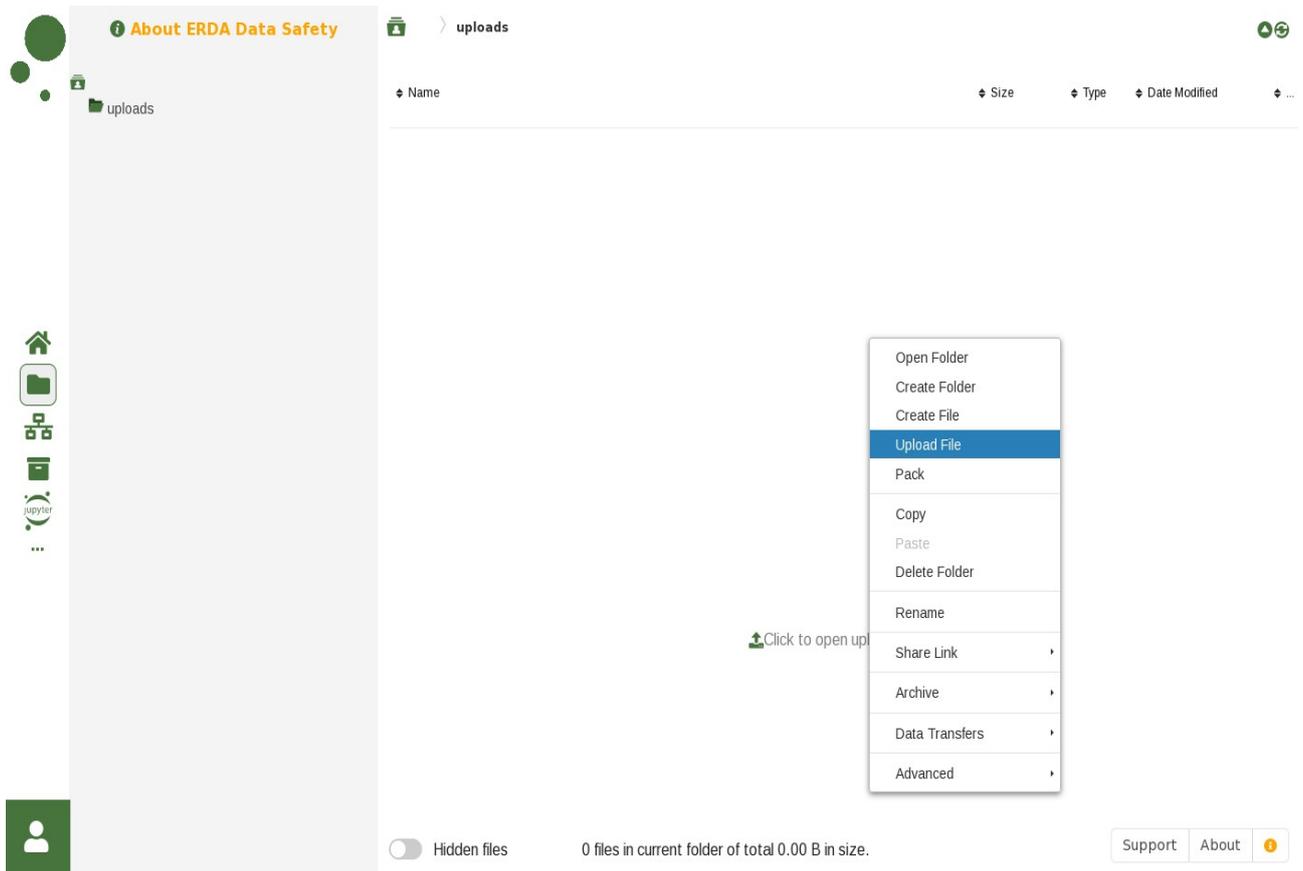
Right-clicking a directory or file brings up a context menu in which you can select common actions on the item that you right-clicked. For files the actions include e.g. download, edit and rename. For directories you get the choice of e.g. uploading or creating files in-line. Right-clicking in the empty space below the entries in the right pane brings up the context menu for the current directory.



You can add new text files in-line with the **Create File** entry from the right-click menu or upload with the **Upload File** entry there.

The latter opens the upload dialog where you can drag and drop local files from your desktop or click **Add files...** and point files out for upload.

As an example you can select **Create Folder**, enter the folder name *uploads* and click **OK**. Then double click the new uploads folder to open it.



Inside the uploads folder you can again right click and now select **Upload File** to open the upload helper. Click **Add files...** to select the files you want to upload.

Upload Files ✕

Fancy Upload Legacy Upload

Optional final destination dir:

Add files... Start upload Cancel upload Delete

uploads/ucph-erda-user-guide.pdf	<input type="text" value="11.35 MB"/>	Start	Cancel
uploads/ucph-erda-overview.pdf	<input type="text" value="3.90 MB"/>	Start	Cancel
uploads/ucph-erda-brugervejledning.pdf	<input type="text" value="11.41 MB"/>	Start	Cancel
uploads/update-index.py	<input type="text" value="1.55 KB"/>	Start	Cancel
uploads/ucph-erda-webdavs-mapped-view.png	<input type="text" value="44.07 KB"/>	Start	Cancel
uploads/ucph-erda-seafile-client-add-account.png	<input type="text" value="58.30 KB"/>	Start	Cancel

Close

 Hidden files 0 files in current folder of total 0.00 B in size. [Support](#) [About](#) 

When you are done selecting files for upload you can click **Start upload** to actually upload.

Upload Files ✕

Fancy Upload Legacy Upload

Optional final destination dir:

Add files... Start upload Cancel upload Delete

57.86 Mbit/s | 00:00:02 | 24.25 % | 6.49 MB / 26.77 MB

uploads/ucph-erda-user-guide.pdf	<div style="width: 10%;"></div> 11.35 MB	Start Cancel
uploads/ucph-erda-overview.pdf	<div style="width: 30%;"></div> 3.90 MB	Start Cancel
uploads/ucph-erda-brugervejledning.pdf	<div style="width: 10%;"></div> 11.41 MB	Start Cancel
uploads/update-index.py	<div style="width: 15%;"></div> 1.55 KB	Start Cancel
uploads/ucph-erda-webdavs-mapped-view.png	<div style="width: 25%;"></div> 44.07 KB	Start Cancel
uploads/ucph-erda-seafile-client-add-account.png	<div style="width: 35%;"></div> 58.30 KB	Start Cancel

Close

 Hidden files 0 files in current folder of total 0.00 B in size. Support About !

wait for them to complete or click **Cancel** if you change your mind.

Upload Files ✕

Fancy Upload Legacy Upload

Optional final destination dir:

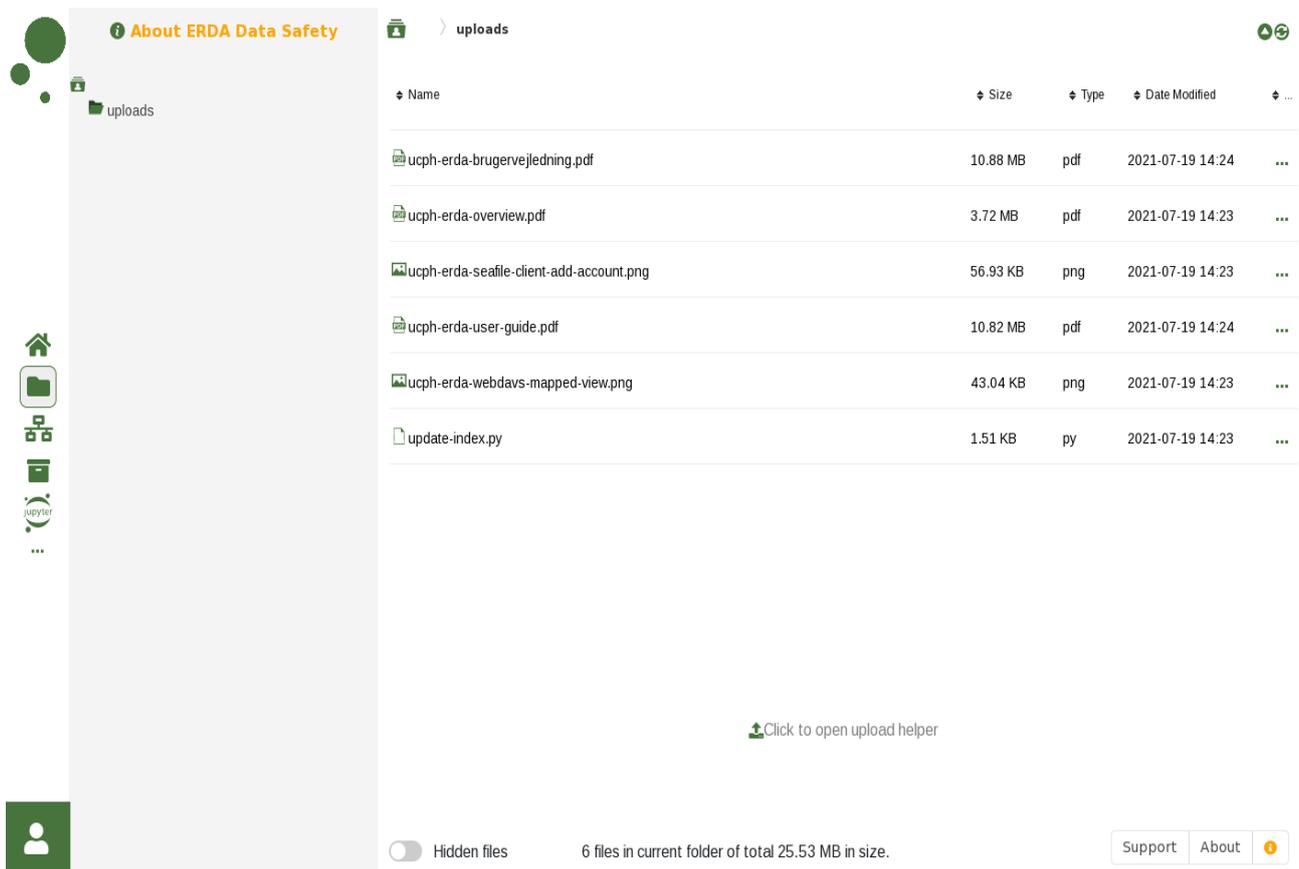
Add files... Start upload Cancel upload Delete

uploads/ucph-erda-user-guide.pdf	11.35 MB	Dismiss	<input type="checkbox"/>
uploads/ucph-erda-overview.pdf	3.90 MB	Dismiss	<input type="checkbox"/>
uploads/ucph-erda-brugervejledning.pdf	11.41 MB	Dismiss	<input type="checkbox"/>
uploads/update-index.py	1.55 KB	Dismiss	<input type="checkbox"/>
uploads/ucph-erda-webdavs-mapped-view.png	44.07 KB	Dismiss	<input type="checkbox"/>
uploads/ucph-erda-seafile-client-add-account.png	58.30 KB	Dismiss	<input type="checkbox"/>

Close

 Hidden files 0 files in current folder of total 0.00 B in size. [Support](#) [About](#) 

Finally click **Close** when finished and your uploaded files show up among your other files.



Double click files to open them directly in the browser if possible but with fall back to download and open in a suitable local application otherwise. In the latter case any changes will only be saved locally and not in ERDA. Therefore it is necessary to upload the modified file again in that case.

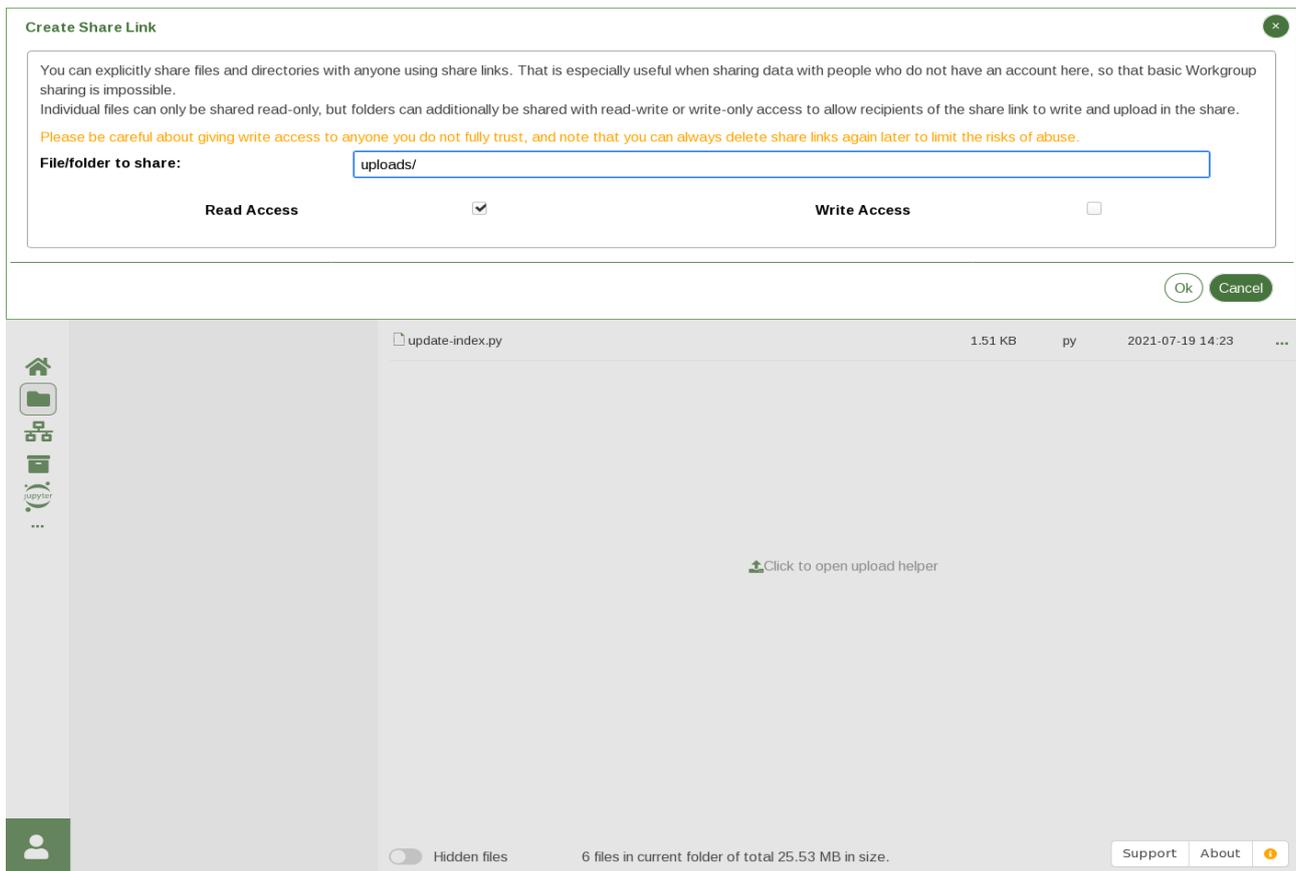
It is possible to edit simple text files with **Edit** from the right click and please refer to the sections about Advanced Data Access for a guide to the possibilities of mounting and easily working directly on files in your ERDA folder without worrying about the upload step.

File Sharing and Data Exchange

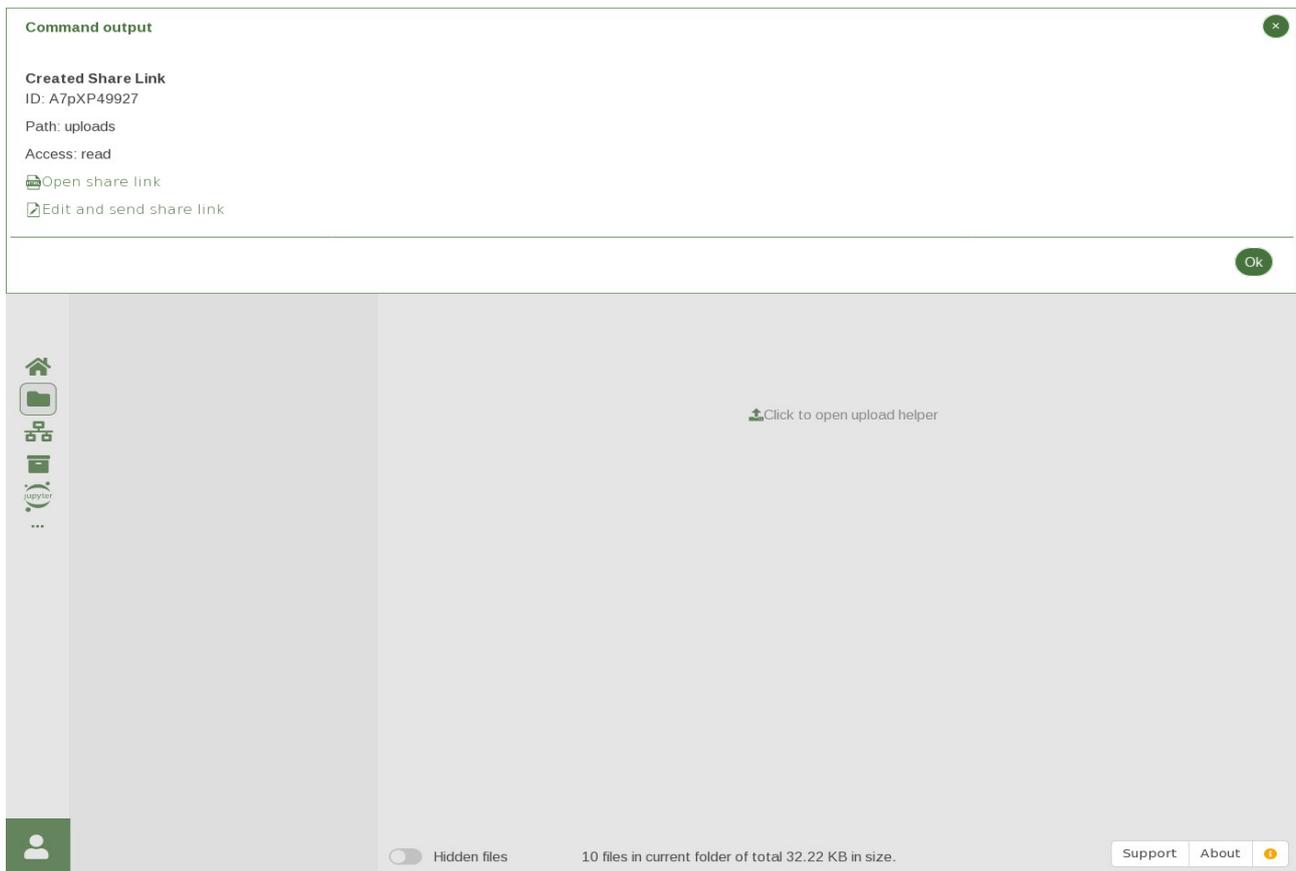
Research collaboration often requires some kind of data sharing/exchange. ERDA has a few convenient ways to provide that for common purposes. Explicit data exchange with the **Share Link** method is often the easy choice for one-time sharing or collaboration with external partners who are not ERDA users. For continuous transparent sharing purposes the **Workgroup Shared Folders** method is often more appropriate, because it automatically and dynamically shares the corresponding folder and contents with exactly the group of people maintained by the workgroup owner(s). More granular sharing is also possible using nested layers of workgroups.

Share Links

In ERDA you can use share links for quick and easy exchange of data. Just right click a file or folder on your Files page and select **Share Link** then **Create** beneath it. In this example the recently created uploads folder is chosen as the share link target.



Optionally tick the **Read Access** and **Write Access** check boxes in another combination to fit the kind of desired exchange and click **OK**. The three valid combinations result in read-only, write-only and read-write shares.



In this case it is the default read-only share, so that recipients of the share link can only view/download the files.

Once the share link is thus created you can **Open share link** to see how it will look to share link recipients.



Shared Files

Working directory:
A7pXP49927

11410317	Mon Jul 19 14:24:02 2021	ucph-erda-brugervejledning.pdf
3904060	Mon Jul 19 14:23:59 2021	ucph-erda-overview.pdf
58296	Mon Jul 19 14:23:58 2021	ucph-erda-seafile-client-add-account.png
11349543	Mon Jul 19 14:24:02 2021	ucph-erda-user-guide.pdf
44074	Mon Jul 19 14:23:58 2021	ucph-erda-webdavs-mapped-view.png
1546	Mon Jul 19 14:23:58 2021	update-index.py

Filter paths (wildcards like * and ? are allowed)

This is a read-only share so you do not have access to edit or add files, only view data.

<p>Support ERDA User Guide Questions about ERDA? Please contact us at support@erda.dk</p>	<p>Privacy and Rights Privacy Policy & Cookie Policy © 2003-2021, The MiG Project</p>
---	--

You can manually distribute the URL of that page by any means you like, or you can use the built-in email invitations available through **Edit and send share link** from the previous share link dialog.



Edit Share Link

Here you can send invitations for your share link A7pXP49927 to one or more comma-separated recipients.

ID	Action	Path	Access	Created	Active	Owner	Invites	Expire	Single file
A7pXP49927	uploadsread			Mon Jul 19 14:26:33 2021	Yes	/C=DK/ST=NA/L=NA/O=FAKSEK/OU=NA/CN=Jonas Bardino/emailAddress=bardino@science.ku.dk			False

Send Share Link Invitations

After creating a share link you can manually give the link to anyone you want to share the data with and/or use this form to send invitations on email. Please note that abuse of this service to send out spam mail is strictly prohibited and will be sanctioned.

Share Link ID:

Recipient(s):

Automatic Message:

Optional Message:

[Return to share link overview](#)

[Support](#) [About](#)

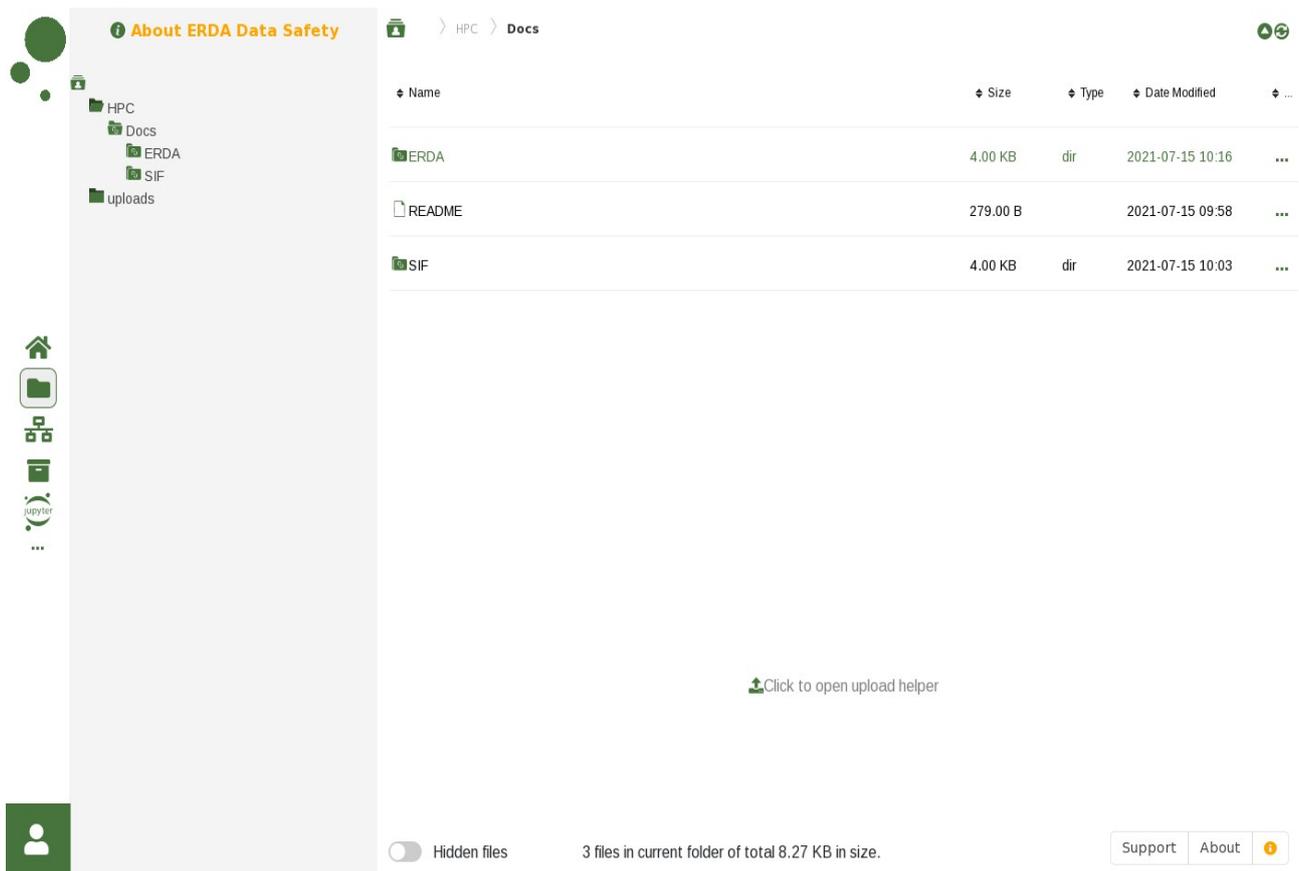
Enter one or more recipient addresses and optionally a message to send along with the link. Then click **Send Invitation(s)** to actually deliver the invitation.

If later you decide to invite more recipients or otherwise want to view, edit or remove a share link you can always use the Share Links app to do so. First navigate to **Home** and use the **Add** button with the plus to enable Share Links in the navigation menu. Then click the **Share Links** button in the navigation menu to the left to view and manage them.

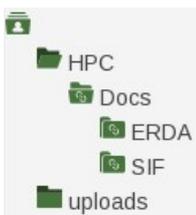
Please refer to the WebDAVS/SFTP/FTPS Access to Share Links section for further details about advanced uses of share links.

Workgroup Shared Folders

The other essential file sharing method for e.g. collaboration projects and research groups is workgroup shared folders. ERDA tightly integrates this workgroup sharing of files in the Files interface. For each workgroup you participate in there's a shared directory with the name of the group and a shared-folder icon . All files and directories inside such directories are automatically and transparently shared with all participants in the group. In this example the user participates in the HPC/Docs group so the associated shared directory is shown. As seen it has a plain README file and two nested sub-workgroups, namely ERDA and SIF.



In the example above *Docs* and each of the *ERDA* and *SIF* subfolders are Workgroup shared folders nested under the *HPC* Workgroup, as indicated with the chain folder icons. I only requested membership of the *HPC/Docs* sub-workgroup here, so the parent *HPC* folder is marked as an ordinary folder.



More information about signing up for groups is available in the following sections.

Workgroups (VGrids)

You can share files with your colleagues using the Workgroup features.

TIP: We recommend following our new Workgroup Intro from <https://erda.ku.dk> if you want to use Workgroups, but include the steps and further descriptions here as well.

On the Workgroups page you can see all such groups, and the ones you participate in have extra options like a link to the group shared files and web pages.



Workgroups (i.e. VGrids)

Workgroups share files, a number of collaboration tools and resources. Members can access web pages, files, tools and resources. Owners can additionally edit pages, as well as add and remove members or resources.

Please note that for historical reasons Workgroups are also referred to as VGrids in some contexts.

Workgroups managed on this server

1 to 25 of 820 rows 25 Workgroups per page

Name	Files	Web Pages
2PM_image_analysis		View
3D_image_analysis		View
8th International Ice Drill Symposium		View
2019 EastGRIP SC Meeting		View
A_workgroup		View
Abies-Adelges		View
AbigailMackey		View
Accessibility study		View

Support About

If you think you are entitled to participate in a group, that you are not already participating in, you can use the green request-membership icon to ask the group administrator(s) to give you access. The request-ownership icon can similarly be used to request co-administrator rights for a given group. When you click to request member or ownership a small dialog will open with a text field where you can write a message/reason, which the owners will receive along with your access request on email.

Privileged users can also add new groups using the **Create Workgroup** button at the bottom of their Workgroups page as shown in the example here.

Workgroup Web Pages

Workgroups come with a simple web hosting framework, which can be used e.g. to present your workgroup or project to the world at large and to the participants specifically.

When you create or become co-owner of a Workgroup, say XYZ, you automatically get two new directories in your ERDA home:

- A) private_base/XYZ
- B) public_base/XYZ

Any files you put in (A) are visible as web pages online but only to the Workgroup participants and any files you put in (B) are visible as web pages online for everyone. You can manage the web contents directly in those folders through your preferred ERDA file access method, or use the **Edit**

links in the Web Pages column on your Workgroups page for a simple online editor. The same location also has **View** links to the resulting web pages. It should be noted that the public web pages can be used without an ERDA account through the address:

<https://erda.ku.dk/vgrid/XYZ>

or on either of the aliases

<https://erda.ku.dk/workgroup/XYZ>

<https://www.erda.dk/vgrid/XYZ>

<https://www.erda.dk/workgroup/XYZ>

if case you have any preference for the naming used.

Archives

The Archives page provides a method to archive or freeze a snapshot of one or more files. This is required e.g. in relation to handing in PhD theses and in certain cases required or convenient when submitting a paper to a conference or journal. Initially your archives list is empty but after adding a few different archives it could look like the example below.

Frozen Archives

Frozen archives are write-once collections of files used e.g. in relation to conference paper submissions. Please note that local policies may prevent users from deleting frozen archives without explicit acceptance from the management.

Existing frozen archives

1 to 1 of 1 rows 25 frozen archives per page

ID	Name	Created	Flavor	State	Files
archive-fqLoQq	📄 Cph CT Toolbox - A Performance Evaluation	Thu Jul 15 18:16:55 2021	freeze	FINAL	23

Additional Frozen Archives

You can create frozen snapshots/archives of particular subsets of your data in order to make sure a verbatim copy is preserved. The freeze archive method includes support for persistent publishing, so that you can e.g. reference your data in publications. Backup archives can be used as a basic backup mechanism, so that you can manually recover from any erroneous file removals.

Choose one of the archive methods below to make a manual archive:

- + Create a new freeze archive
- + Create a new backup archive

Alternatively you can use Duplicati for traditional incremental backup/restore with optional encryption of all your backup contents. For further details please refer to the [Duplicati Settings](#) and the [UCPH ERDA documentation](#).

We recommend our Seafile sync solution for any small or medium sized data sets, for which you want automatic file versioning and easy roll-back support. For further details please refer to the [Seafile Settings](#) and the [UCPH ERDA documentation](#).

Support About ⓘ

You can inspect a frozen archive with the green info icon ⓘ, edit unfinished archives with the green wrench icon 🛠️ and if the system is configured to allow deletion of archives you can remove them again with the red remove icon 🗑️.

New archives can be created with the **Create a new frozen archive** link at the bottom of the page.

As an example we could create a new archive called *Article Data ...* by filling out the resulting form like this:

Please enter your archive details below and select any files to be included in the archive.

Name:
Article Data Fri Jul 16 14.21.08 2021

Author(s):

Description:
Article Data Archive

This is my sample freeze archive with some metadata describing the archive contents and a file inserted from my [ERDA](#) home.

Apart from this free text description archives also get a few fields like date and owner automatically assigned.

Freeze Archive Files:

Add file/directory Add upload

Remove Browse... welcome.txt

Make Dataset Publicly Available yes no

Support About

Existing private or shared ERDA files can be added with the **Add file/directory** button and new files can be uploaded directly to the archive with the **Add upload** button. The former button brings up a file select dialog in which you can select from your ERDA files: double-click individual files or right-click and choose *select* to pick entire folders. The latter button opens an upload dialog like the one from **Files**. When you are done adding files and have marked if you want the archive files to be published, you can click **Save and Preview** to inspect the current contents.



Create Freeze Archive

Saved *preliminary* freeze archive with ID archive-MmaRUE . You can continue inspecting and changing it until you're satisfied, then finalize it for actual persistent freezing.

- Preview publishing
- View details
- Edit archive

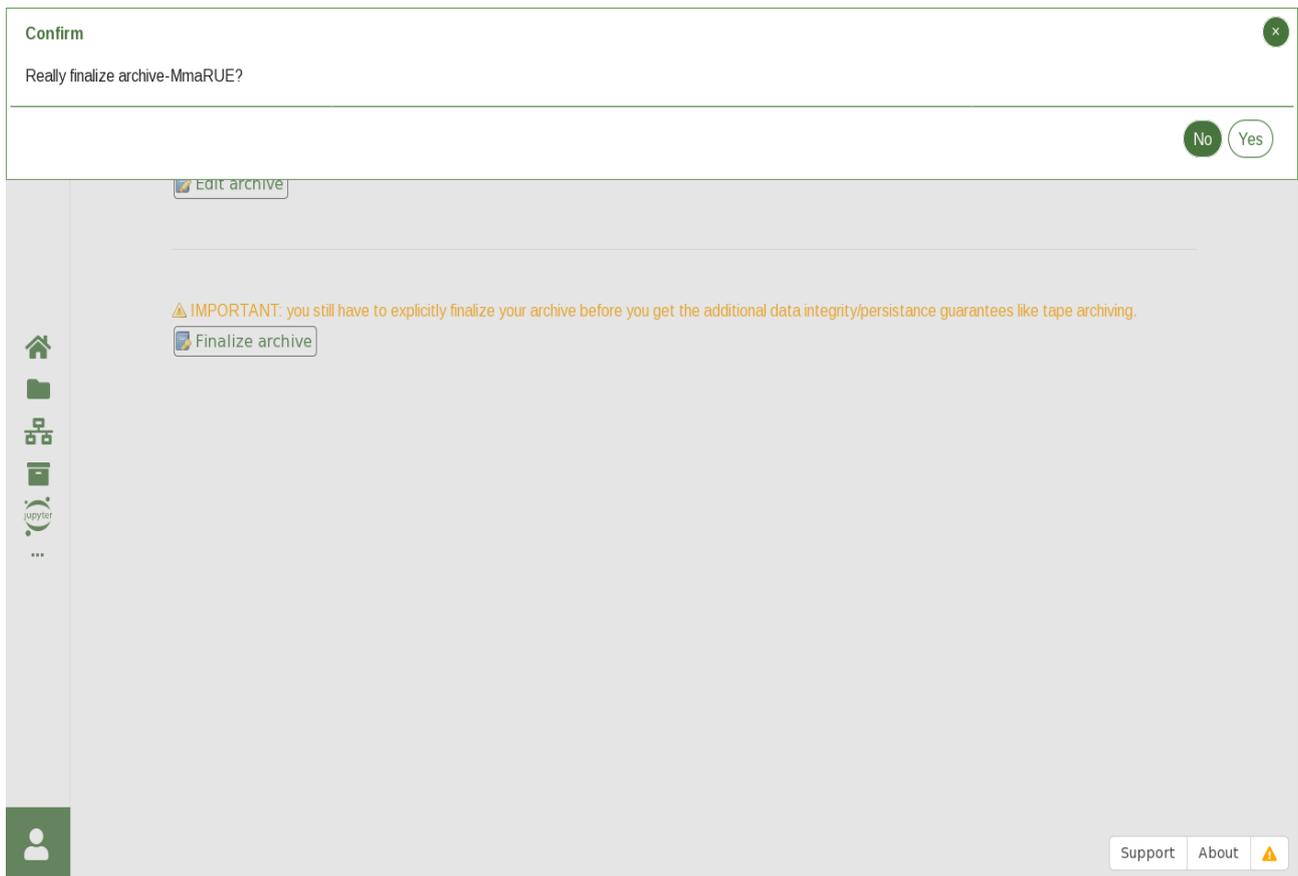
IMPORTANT: you still have to explicitly finalize your archive before you get the additional data integrity/persistence guarantees like tape archiving.

- Finalize archive

Support About ⓘ

If you selected *Make Dataset Publicly available* you can use the **Preview publishing** button to see a draft of the published archive. At this point you can continue modifying the archive contents like above through the **Edit archive** button, until at last you click **Finalize archive** to actually permanently freeze it and thereby mark it ready for additional tape archiving. This is necessary to get the extra data safety and guarantee that it will remain available for at least 10 years.

Please note that archiving does not remove the files you may have selected from ERDA, but only saves a snapshot of the current contents. That is, you are free to keep working on such files afterwards and without causing changes to the archived version.



After finalizing you can use the **View details** button to see all the details registered about it on the view archive page and use the links to access the associated files.



Show Freeze Archive Details

1 to 1 of 1 rows 25 frozen files per page

Name	Action	Date	Size in bytes
welcome.txt		2021-07-16 14:21:13	221

ID archive-MmaRUE
Name Article Data Fri Jul 16 14. 21.08 2021
Flavor freeze
Description Article Data Archive
This is my sample freeze archive with some metadata describing the archive contents and a file inserted from my ERDA home.
Apart from this free text description archives also get a few fields like date and owner automatically assigned.
Published Yes (<https://erda.ku.dk/archives/8969dbb184159c5268882a2402fa1370/published-archive.html>)
State FINAL
Creator /C=DK/ST=NA/L=NA/O=FAKSEK/OU=NA/CN=Jonas Bardino/emailAddress=bardino@science.ku.dk
Created Fri Jul 16 14:21:13 2021
On disk 2021-07-16 14:21:13

Show archive with file checksums - might take quite a while to calculate:

- Show with MD5 checksums
- Show with SHA1 checksums
- Show with SHA256 checksums
- Show with SHA512 checksums

Support About

For archives with publish enabled we also integrate access to request a Digital Object Identifier (DOI) after finalizing the archive. From view archive you click **Register Archive DOI** at the bottom to reach the central UCPH DOI registration portal. Typically this involves clicking through a standard UCPH login and small DOI intro dialog to get to the actual DOI metadata schema shown.



Data DOI - Metadata schema

RESPONSIBLE FOR THIS DATA REGISTRATION

CREATORS

Creator information
The main researchers involved in producing this data set.

▼ SAME AS RESPONSIBLE

Creator information

ⓘ

*

*

ORCID

*

ⓘ

+
▢
ADD MORE CREATORS..

Once filled and submitted the request is sent through the UCPH validation procedure and if everything is okay you receive a permanent <https://dx.doi.org/XYZ> URL alias for your published archive data. From then on you can e.g. use it as a reference in research papers or provide it to research colleagues interested in re-using your published data.

Jupyter

ERDA integrates a set of [Jupyter](#) services, which can be used to easily perform a wide range of data analysis and visualization tasks directly on your ERDA data. We rely on the [JupyterLab](#) web interface to provide interactive and flexible *notebooks* with direct and efficient access to your ERDA home directory. In the notebooks you can use various popular programming languages like [Python](#) and [R](#) to explore, analyse or present your data, e.g. for your own research, for interactive presentations or even for teaching purposes.

To get access to these services, ERDA provides a **Jupyter** button in the navigation menu. Upon clicking it, the page to **Select a Jupyter Service** appears. On this page you are presented with a set of horizontal service tabs at the top, and each tab presents and describes the individual service and how it is configured in the **Service Description**. Below the description there's a **Start SERVICE** button, which you can click to open a connection to that particular service in a new web browser tab or window



Select a Jupyter Service

DAG MODI

Service Description

Data Analysis Gateway or DAG provides a set of interactive data analysis nodes for intermediate computation, which can be completed in a short timeframe.

This means that any spawned instance is limited to 2 hours of inactivity before it will be terminated. DAG instances have access to 8 compute threads/cores and 16GB of memory

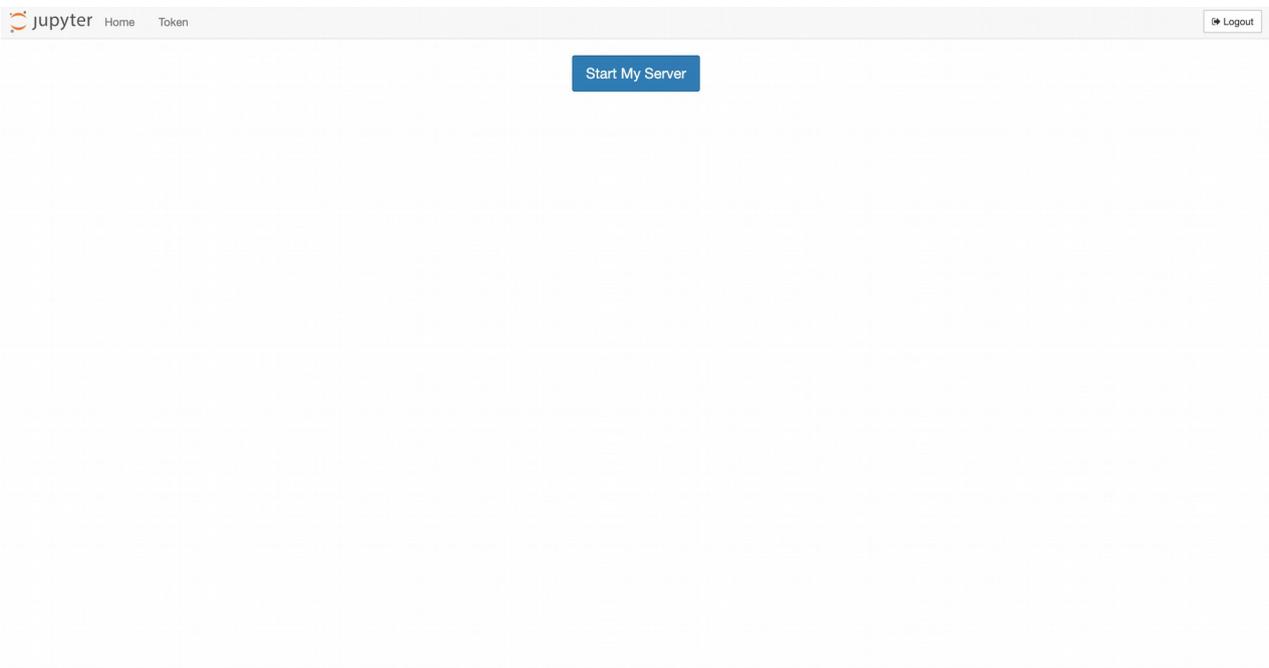
The spawned instances are non-persistent, meaning that any change made during a session is lost once the server is terminated. The only exception to this is the data that is saved in the provided mount directory (i.e. ~/work)

For more information about how you can ease the task of configuring your instances and our future roadmap for allowing customization, check out the FAQ section "How do I install and run software XYZ in Jupyter?" at ERDA FAQ

Start DAG

Support About ⓘ

like seen here after clicking **Start DAG**

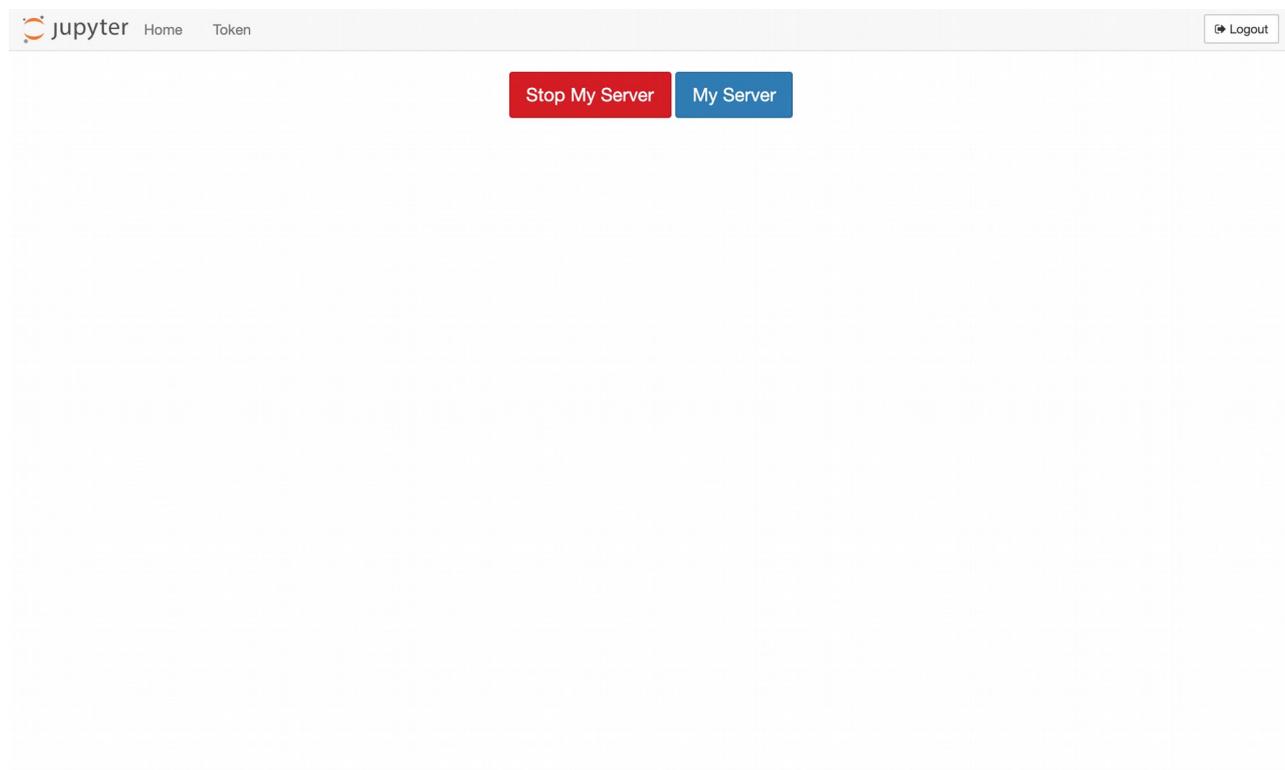


By default, it will take you to your personal home page on the Jupyter service as shown above,

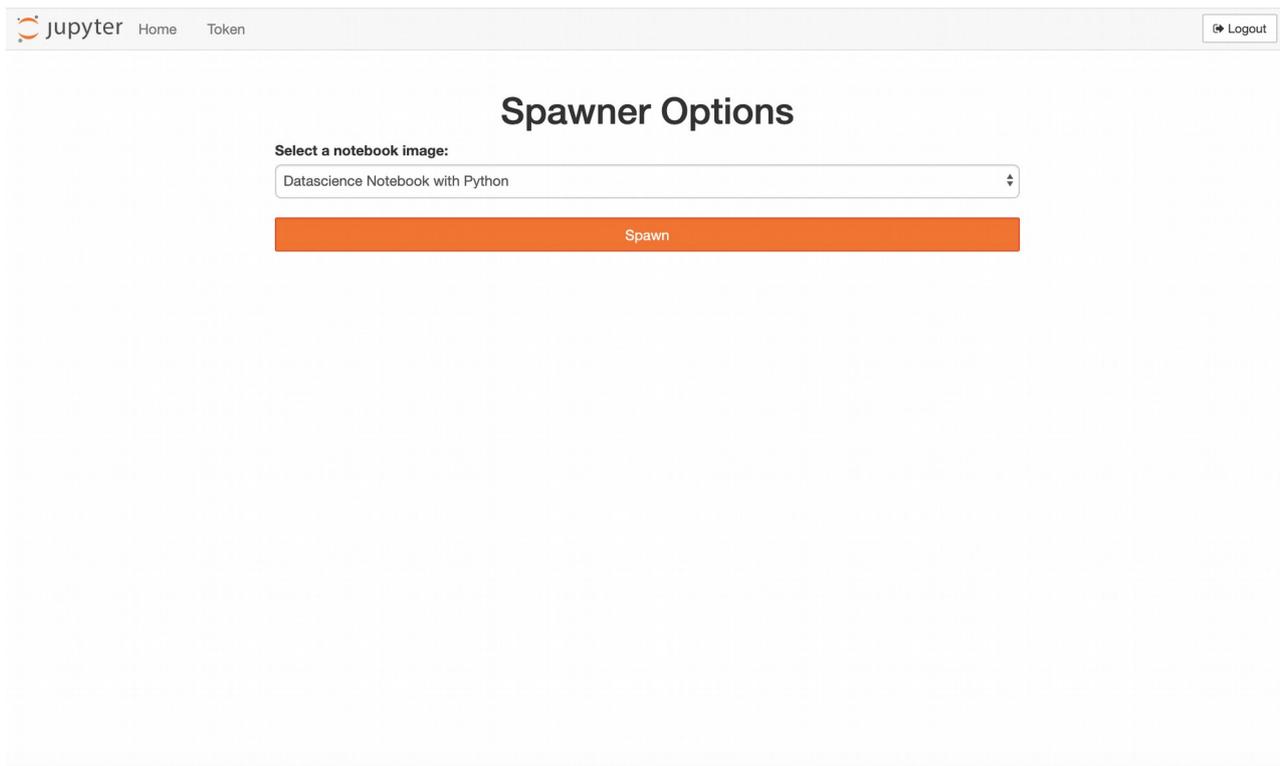
which is provided via our hosted version of [JupyterHub](#). That is, the standard infrastructure to provide individual isolated Jupyter *notebook instances* to multiple users sharing a pool of actual compute nodes.

In other words it is mainly used to keep track of your running notebook instances, to let you transparently access them from wherever you may be and to enforce the resource and life-time policy for the individual instances. The latter is a matter of sensible resource utilization and in practice it a.o. means that disconnected DAG notebook instances will be terminated after two hours as stated in the service description.

You may notice that the [JupyterHub](#) service page comes in two flavors depending on whether you have or haven't already spawned a notebook instance. If not you're presented with a **Start My Server** button, that takes you on to select which notebook flavor to run. Otherwise the resulting page will instead let you open your current active notebook instance via the **My Server** button, or to shut it down via the **Stop My Server** button as shown here.



Upon clicking the **Start My Server**, the site will give you an option to choose which Notebook image you want to **Spawn**.



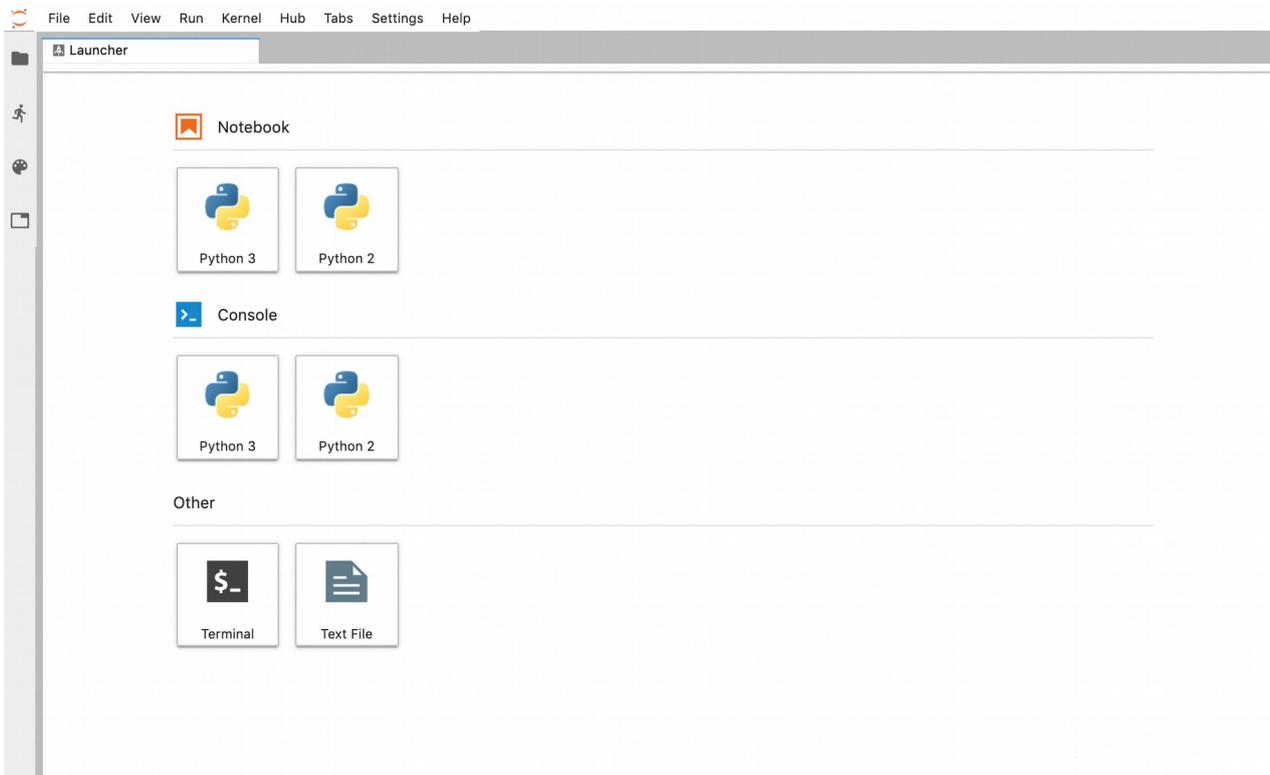
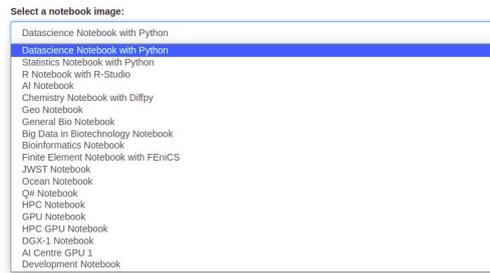
The dropdown menu here comes with a variety of images that will change over time as we introduce new ones or deprecate existing ones to each Service. The titles of each of these attempt to be fairly descriptive in terms of what purpose they imply to solve in terms of tasks that can be accomplished with them. For instance, the **“Datascience Notebook with Python”** is a Python specific Notebook image that has an extensive number of modules and libraries that from experience and user requests are common in doing tasks related to data science. This includes python modules such as numpy, scipy, and pandas.

In the following picture you can see a snapshot of images we had available on **DAG** at the time writing.

Currently, every user has the ability to spawn each of these. The only exception to this is the **DGX-1 Notebook** and the **GPU Notebook** image, unless so granted an attempt to spawn these notebook images will fail and present you with the following message **You don't have permission to launch that image**. This is by design, since the DGX-1 notebook image gives access to a special purpose DGX-1 machine, dedicated to GPU intensive tasks by the Machine Learning group at DIKU. Therefore access permission must be explicitly granted by [Erik Bjørnager Dam](#). Similarly the GPU notebook image is dedicated to a GPU host owned by the eScience group.

Upon spawning an available notebook image, you will be redirected straight to the JupyterLab interface as shown below.

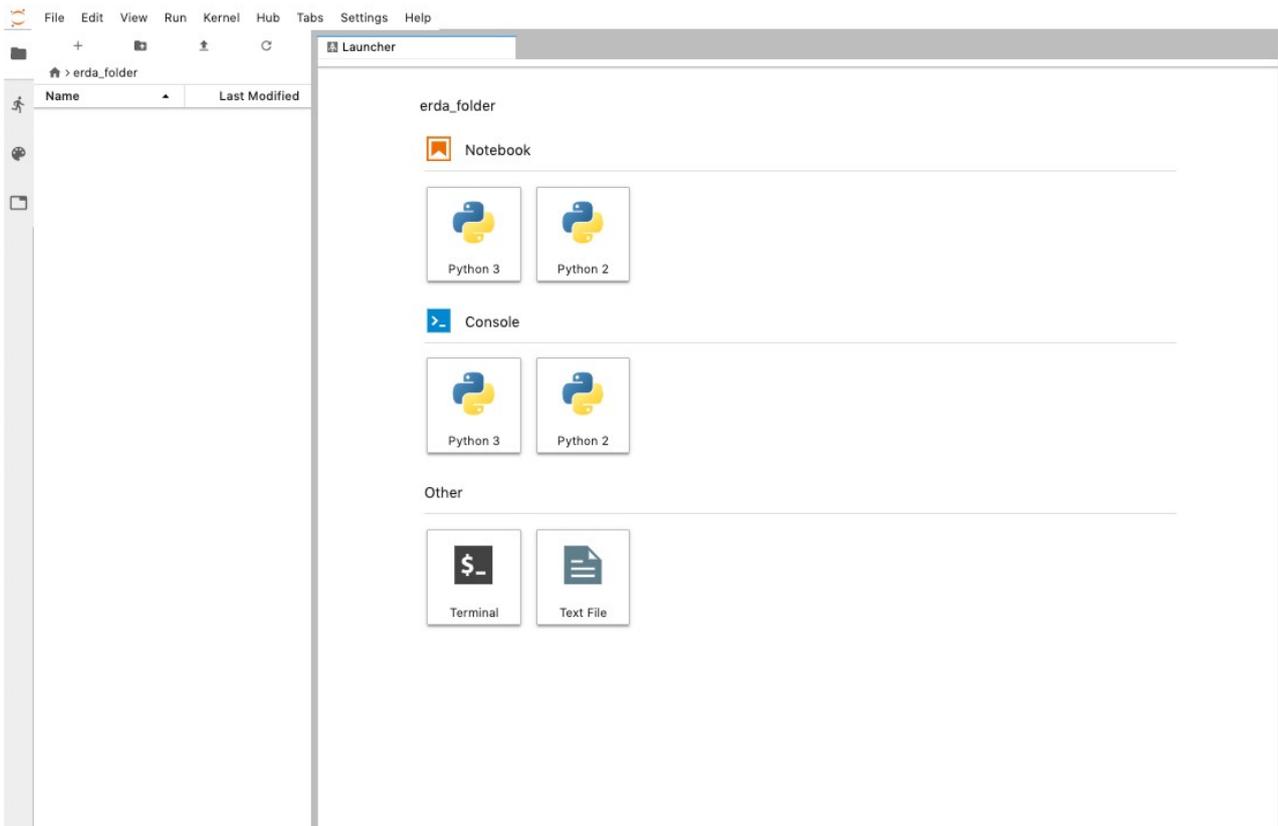
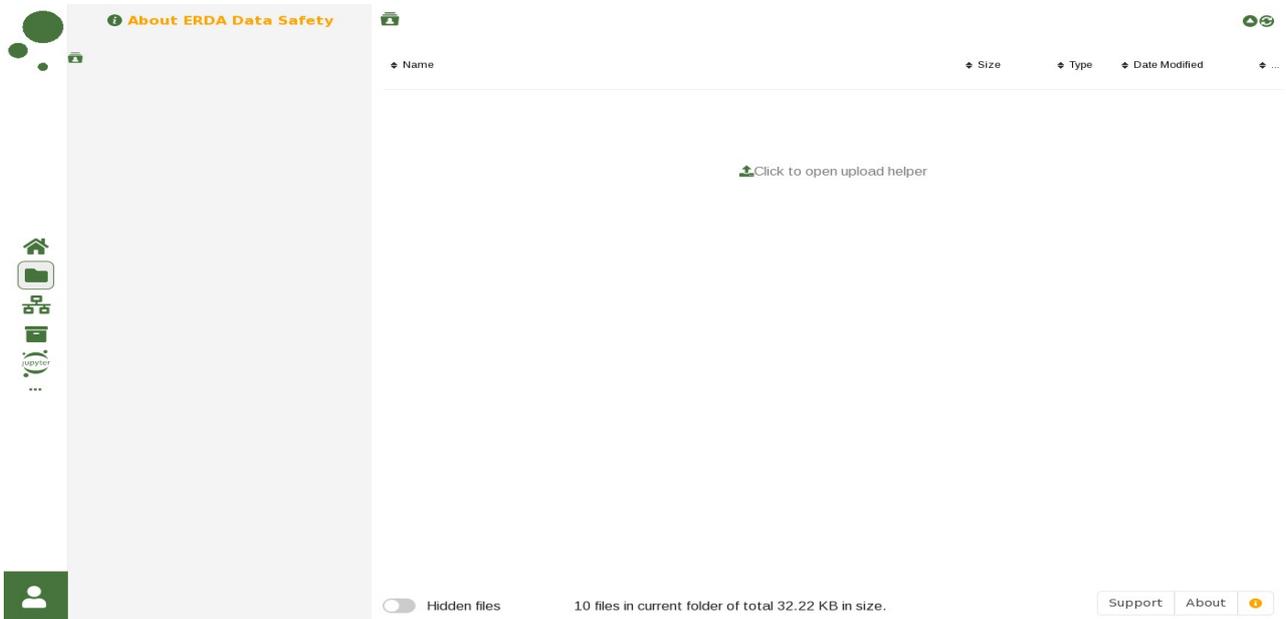
Server Options



For the **R Notebook** you can choose to launch **R Studio** from the JupyterLab top menu and for most of the other notebook images you have a selection of Python, R and C/C++ interactive notebook flavors to choose from in the Launcher window shown above. There’s also Console and Terminal buttons for those who prefer to work with low-level commands and scripting.

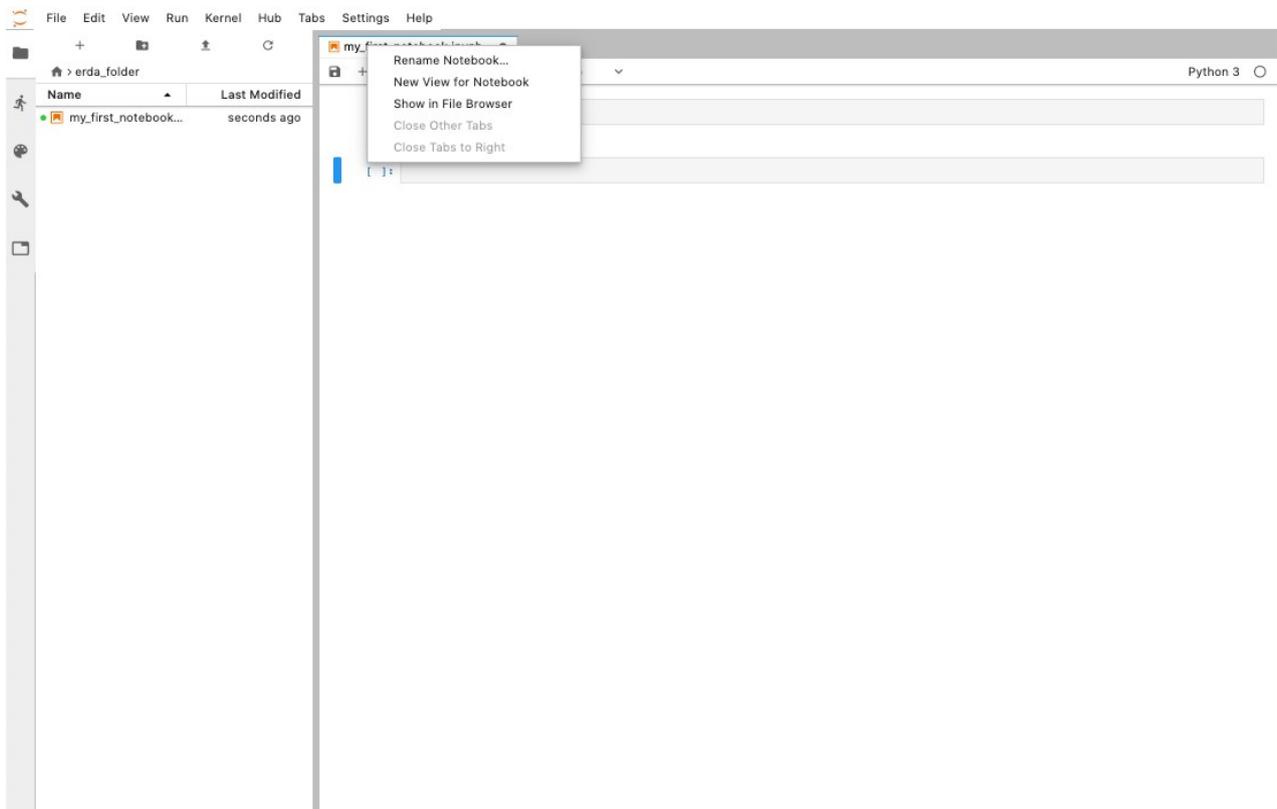
In the lefthand side of the interface, JupyterLab provides as per the documentation “a number of commonly-used tabs, this includes the file browser, the list of running kernels and terminals, the command palette, and a list of tabs in the main work area.”. The file browser on **DAG** by default contains the content of your ERDA home. An example of this can be seen below where

both the ERDA File manager and the JupyterLab file browser are currently inside the personal ERDA directory **/erda_folder**.



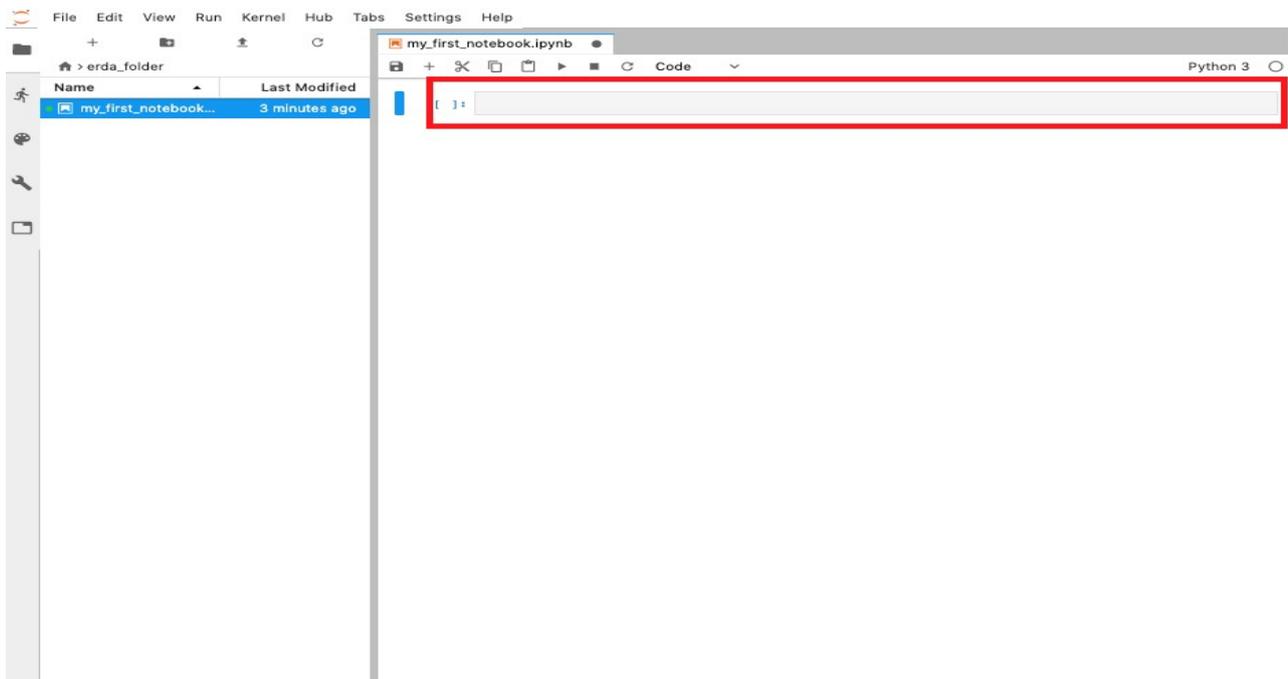
Any files created inside this directory, via the JupyterLab file browser will be reflected into your ERDA home. For instance, if you create a new **Notebook** file (.ipynb) by clicking the **Python 3** button in the **Launcher** window, by default a file called **Untitled.ipynb** will be created inside the

current file browser directory, which in this case is the **/erda_folder**. The name of the new file can be changed either by right clicking the file in the file browser, or by right clicking the new Notebook tab that appeared once the **Python 3** button was clicked. An example of rename via this new tab can be seen below. Here the **Untitled.ipynb** file was renamed to be called **my_first_notebook.ipynb**

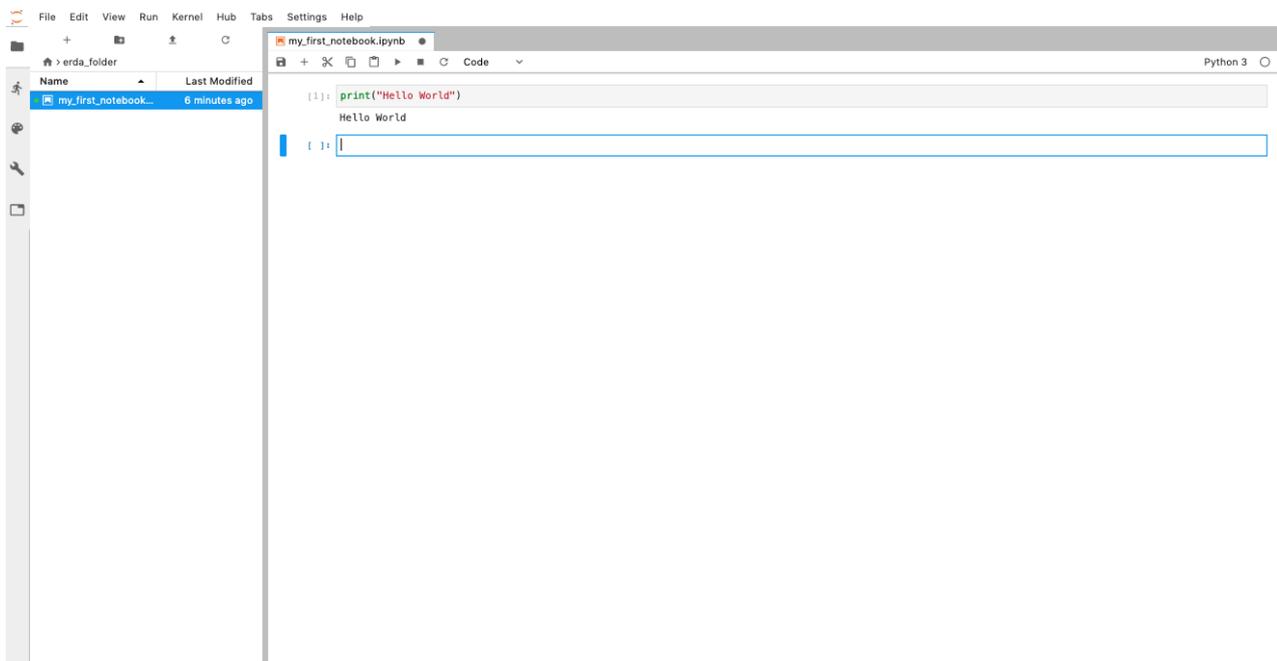


Since we selected that the new Notebook should use **Python 3** in the previous step this selection is reflected in which **kernel** the Notebook will activate, in this case it will be **Python 3** as can be seen from the “Python 3 O” logo at the righthand side of the Notebook's menu.

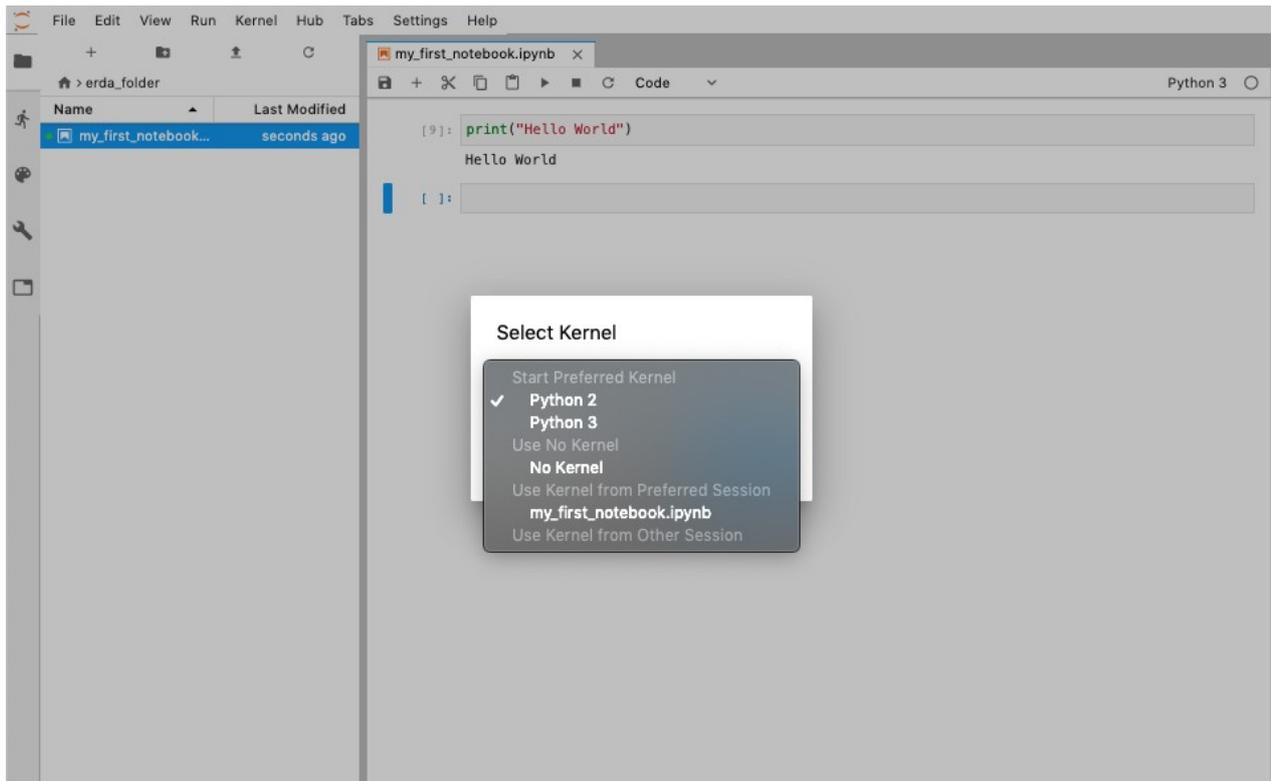
A **kernel** is a term for specifying how a particular **Code Cell** should be interpreted when it is run. A **Cell** is the rectangular input areas in which you enter text into a Jupyter Notebook via the JupyterLab interface. A highlighted example of an empty **Cell** can be seen below.



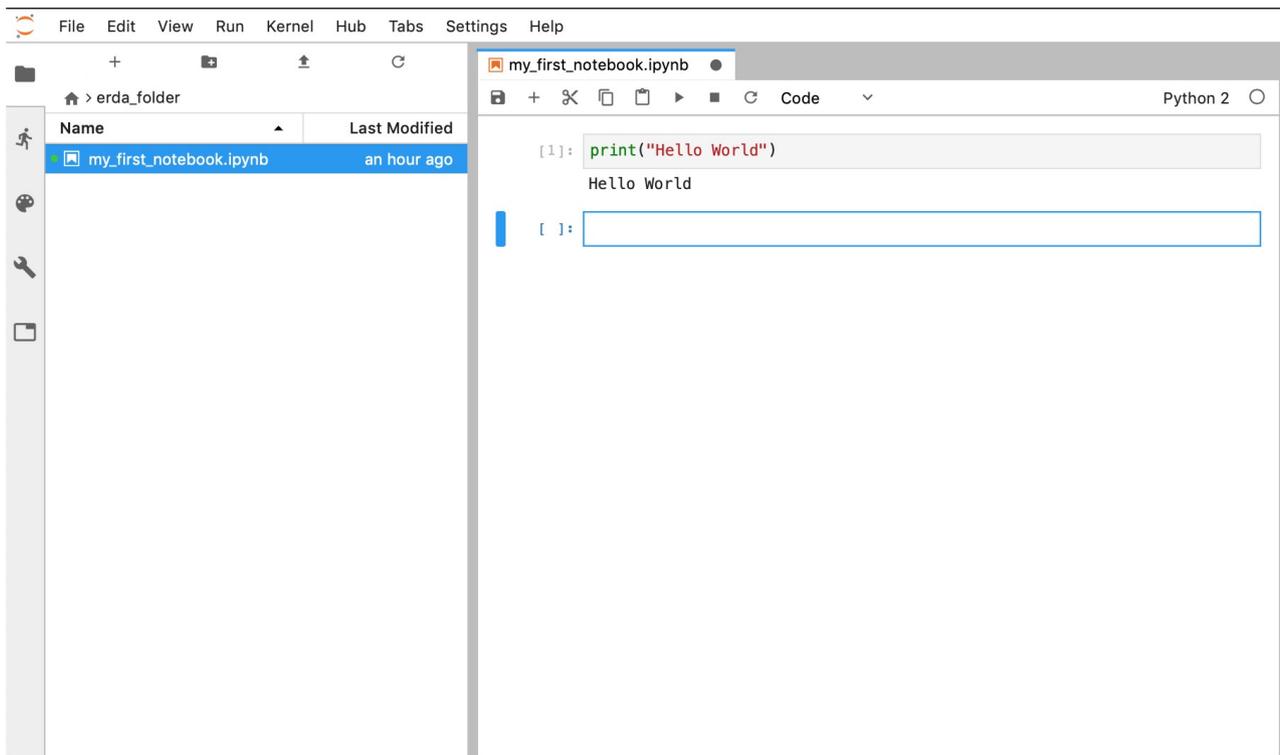
A **Cell** can contain any text that you input into it, however when a **Cell** is “**Run**”, either via the button or by the keyboard shortcut Shift-Enter, the **Cell** type decides how the contents should be interpreted. This is selected through the dropdown menu in the menu bar of the Notebook. By default it is set to **Code**, so that upon running the **Cell** the input will be interpreted by the active **kernel** which in this case means as **Python 3** code.



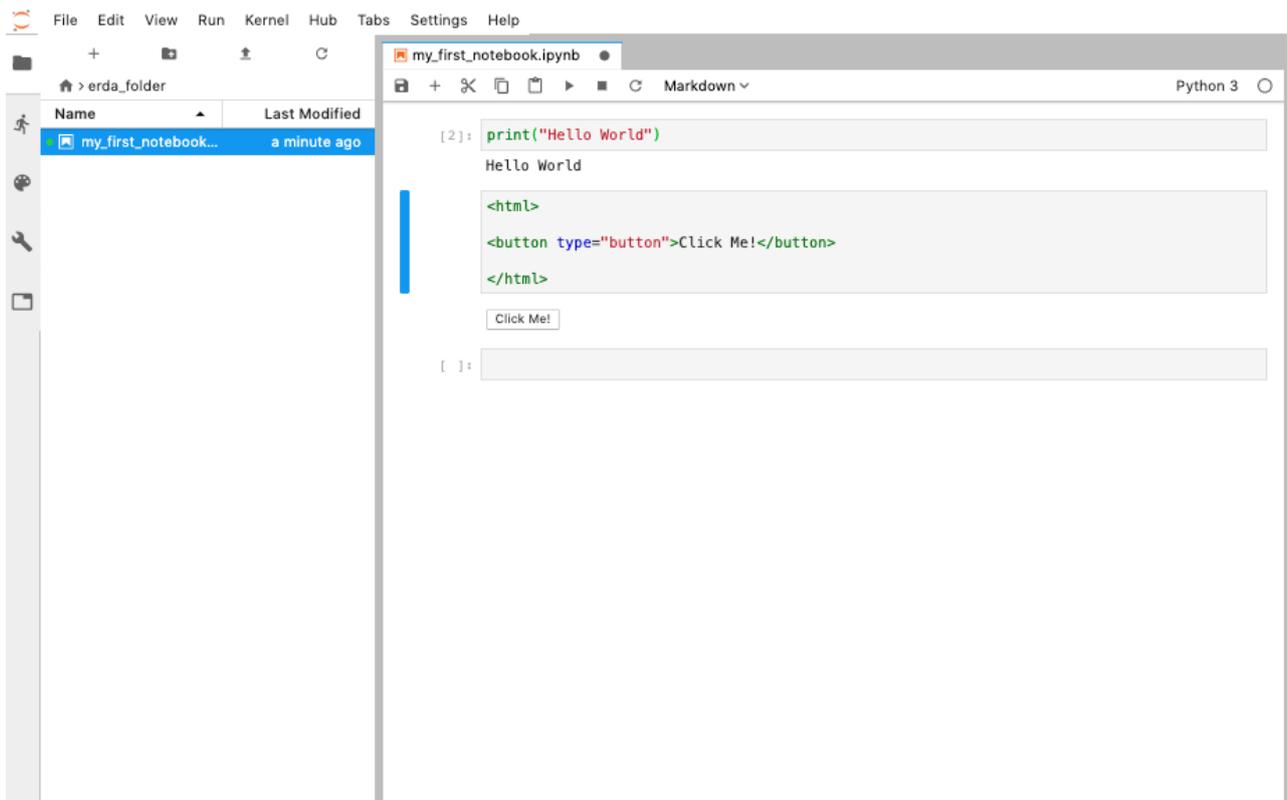
As seen the **print** call gave the expected result by outputting the “**Hello World**” message. The active **kernel** and thus how the **Code Cell** should be interpreted can be changed via the mentioned “**Python 3 O**” logo. By clicking the “**Python 3**” part, a menu will appear as shown below, that allow you to select which **kernel** this active Notebook should use.



The options here are limited to the **kernel** flavors that the Notebook image supports, which means that they will vary from image to image. In “**Datascience Notebook with Python**” we support Python2 and Python3 kernels. As shown in the picture below, when switching to the Python2 **kernel** the logo is updated accordingly to “**Python 2 O**” and when a **Cell** is **Run** it’s interpreted with Python2 instead.



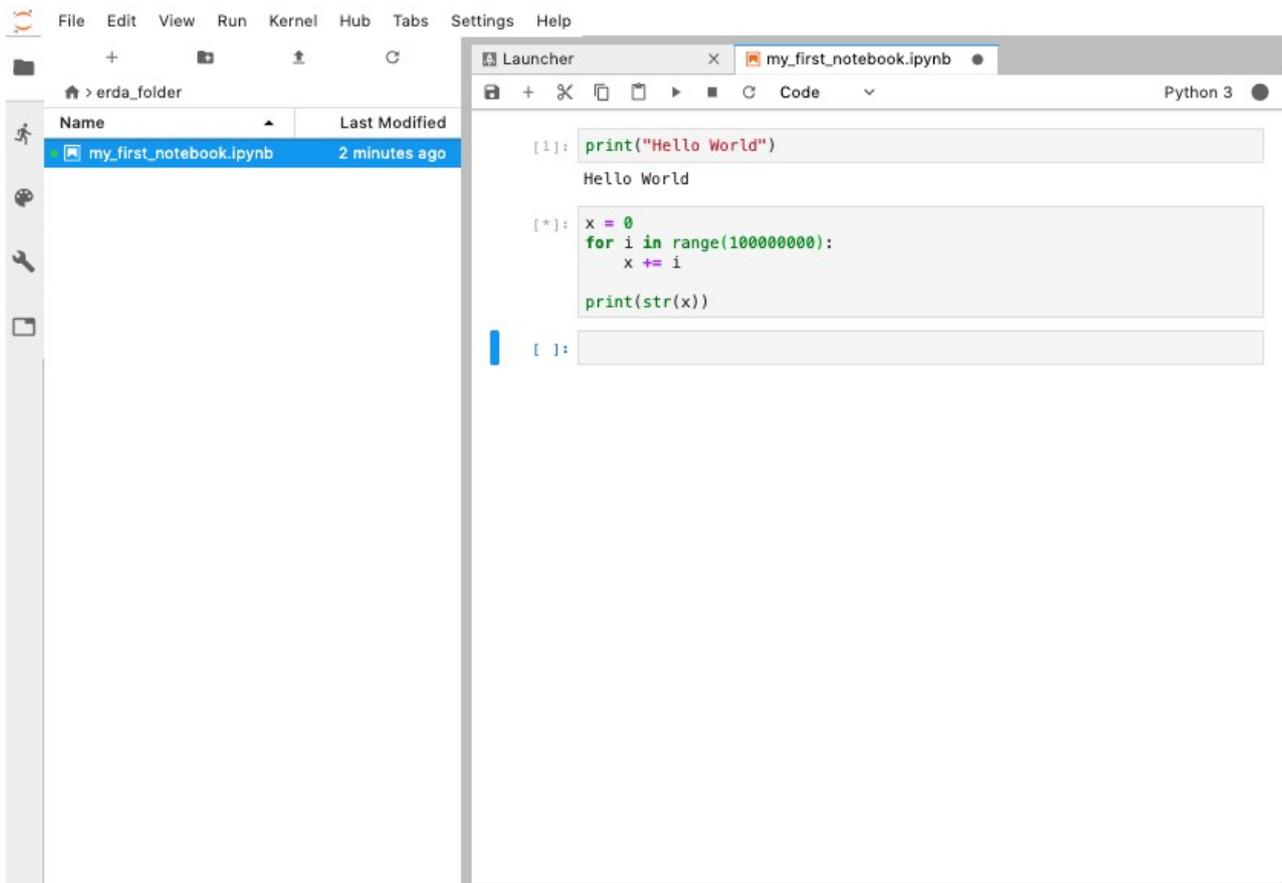
Beside the **Code** format, the **Cell** can be of two other types, i.e. **Markdown** or **Raw**. **Markdown**, for instance makes it possible to create HTML elements as shown in the picture below, where the 3rd **Cell** is an executed version of the 2nd. It can be used to format the Notebook as a textual structure with Headings, Sub-headings, Paragraphs, Lists etc. Checkout <https://guides.github.com/features/mastering-markdown/> for examples on how to do this.



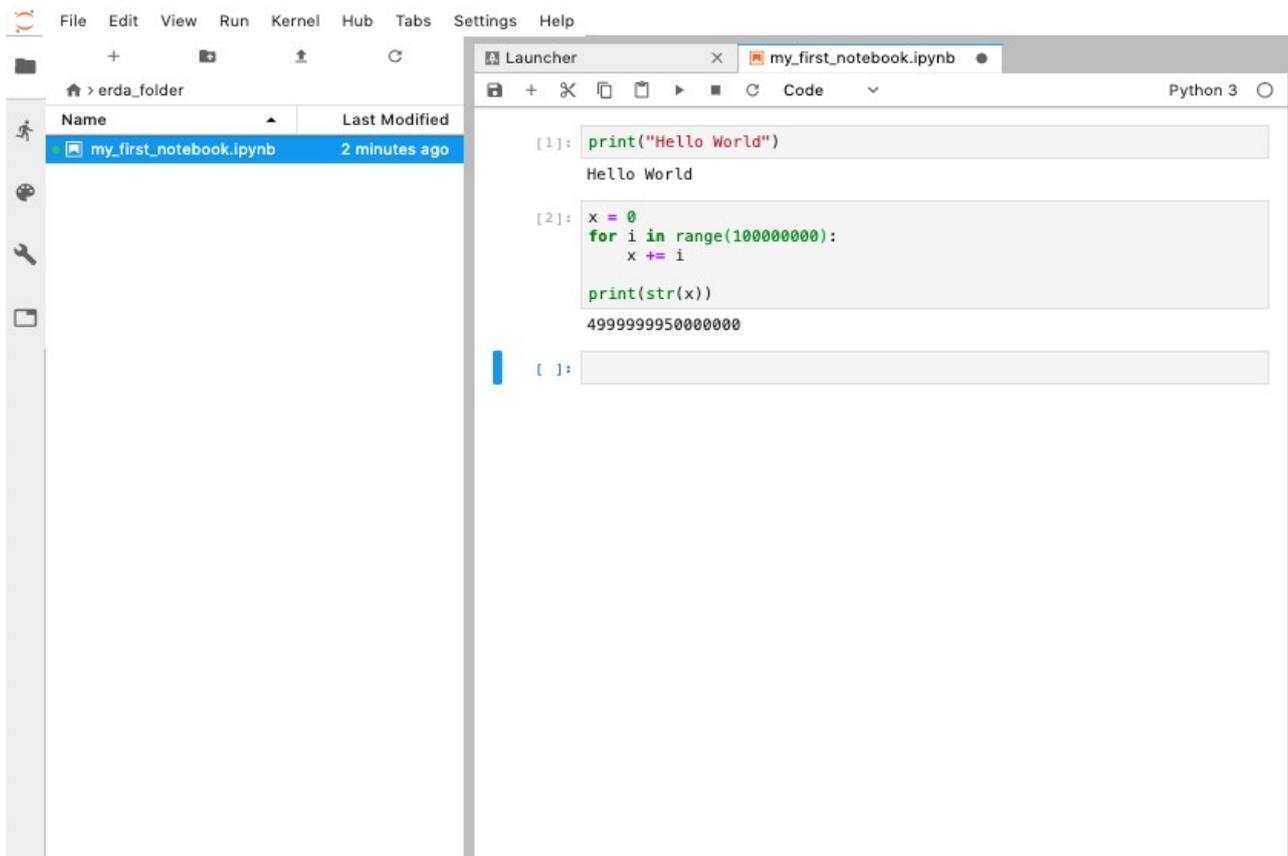
Finally **RAW** does what it says, it doesn't try to interpret the text but simply outputs it as is.

When a **Cell** is being run by the **kernel**, the JupyterLab interface will indicate this by updating the empty “[]” next to the **Cell** to a “[*]” as shown in the picture below. This means that the **kernel** is not finished running the **Cell**, which could either be because it is waiting for previous **Cell**'s to finish first or that the tasks just takes a long time to finish. If for some reason the **Cell**'s indicator changes state from “[*]” with no further activity “[]”, it is likely that a **Cell** has failed to run and the task was killed mid run. E.g. because the notebook reached the limit on maximum allowed memory use. We've added a little memory-meter top right as shown with 71MB used below to help detect such problems.





Upon a successful run, the * inside “[*]” will change to a number that is equal to how many **Cell**'s that were run before it and add 1 to it as shown in the page below.



Finally the **Logout** button is designed to end your authenticated session on a typical JupyterHub site, but since we transparently authenticate you via the ERDA service, clicking this button has no effect on your connection to the service.

For additional up-to-date information on the JupyterLab interface itself please see the [official documentation site](#).

Jupyter Notebook Customization

The provided notebook images offer a wide selection of software libraries for specific research areas, but in case you are still missing a particular software or library you might still be able to install it yourself or have us add it in general. Please note that commercial/closed-source software is usually difficult or impossible to integrate due to various licensing issues when used in a data center.

Python

For Python and Jupyter extension packages it may work to simply install temporarily with `pip` or `pip3` inside the session via the *Terminal* in the main Jupyter *Launcher* window, or by writing a standard Python *requirements.txt* file in your ERDA home and run it interactively like

```
pip3 install -r requirements.txt
```

from the Jupyter Terminal.

Please note that you need to use *python2* or *python3* specifically if you want to use such *pip* or *pip3* installed packages respectively directly from the Terminal.

Alternatively you can install Python software dependencies like e.g. the *scikit-image* package directly in the Jupyter Notebook itself by evaluating

```
!pip3 install scikit-image
```

in a cell.

At the moment installing software that requires compilation or come with other external dependencies is not generally supported.

To ensure that packages you install will stick around between different sessions, pass the `--user` flag to the pip or pip3 install command. This will ensure that the package is installed into your own home `__{service}_config__` directory, which persists between the individual Jupyter sessions.

R / RStudio

For R packages, DAG supports personal persistent installation into your own workspace. When utilizing the `install.packages()` command in the Terminal, Notebook, or R-Studio the designated packages will be installed into your local `~/work/__dag_config__/R/libs/` directory, which is hosted on ERDA and thus preserved across DAG sessions.

Subsequent to updates being released to DAG notebooks, issues might be encountered with version conflicts between your old persistent packages and the updates. The most straight-forward solution then is to clear out your old packages and install a new version of them. This can be done either through the Terminal with

```
rm -fr ~/work/__dag_config__/R/libs/*
```

or in an R environment with:

```
unlink("~/work/__dag_config__/R/libs/*", recursive=TRUE)
```

Afterwards the packages can be installed with the mentioned `install.packages()` command if needed.

Other Packages and Install

It is also possible to use the *conda* package manager to install additional software in running sessions. You can use

```
conda install -y -n ENV PACKAGE
```

from the Jupyter Terminal where ENV is typically *python2*, *python3* or *r* depending on the notebook and your working environment. Similarly use

```
conda search NAME
```

to search for available packages.

MATLAB programs on DAG and MODI

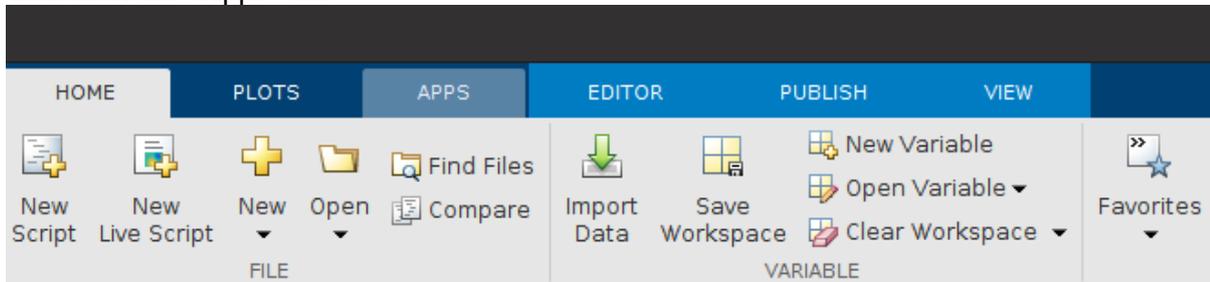
In order to run MATLAB programs on DAG/MODI, you'll need to compile your program to a standalone application without display. It must be built to run on the current Ubuntu LTS, which is at the time of writing version 20.04. If you don't already have Ubuntu 20.04 as default, you can use a VM with Ubuntu 20.04. Afterwards, you can install MATLAB and its compiler from MathWorks, which UCPH users have a site license to do.

We have tested the guide with success on a native (64-bit) Ubuntu 20.04 machine and on a Ubuntu 20.04 Virtualbox image. The latter image can be downloaded from <https://www.osboxes.org/ubuntu/>

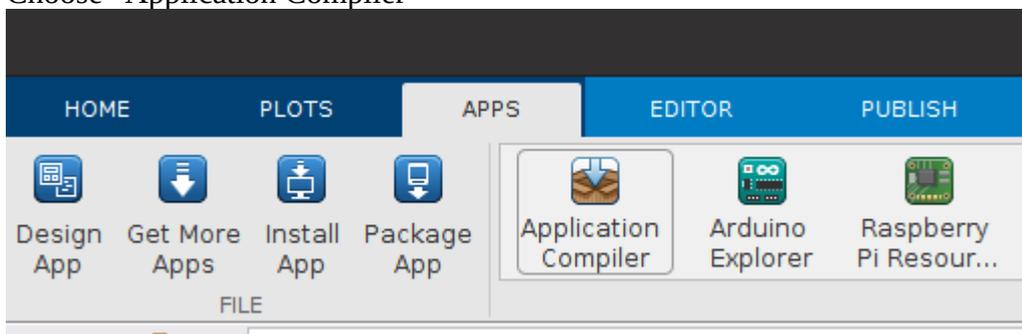
First you make any adjustments or wrapping of your MATLAB program, to allow it to run as a headless script on DAG and/or MODI. That part is outside the scope of this guide but you can find help from MathWorks or online searching e.g. for *MATLAB headless nodisplay*.

You then enter MATLAB, and do as shown in the following example:

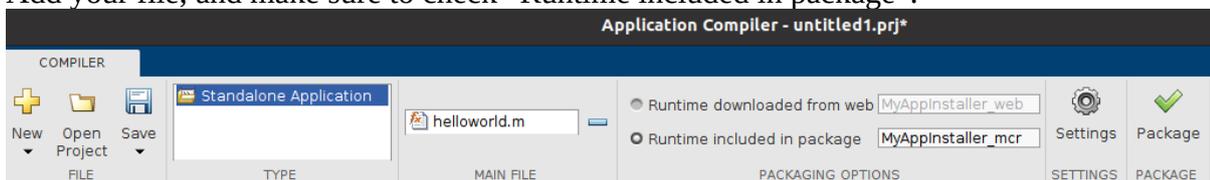
You click the “Apps” tab.



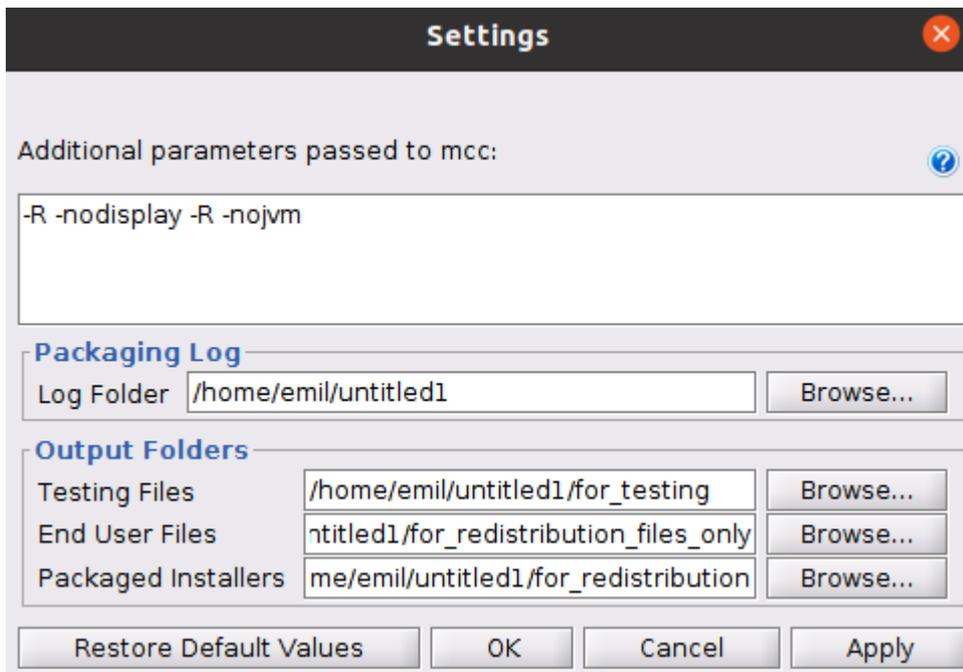
Choose “Application Compiler”



Add your file, and make sure to check “Runtime included in package”.



Go to settings and add the following parameters. Press “Apply” and “OK”.



Press “Package” and wait for the compilation. It might take some time.

Once your compilation and packaging is complete, you’ll only really need the resulting installer found in the folder “for_redistribution”, to run your application.

For easier implementation it is recommended to create some custom shell scripts, which you add to your upload folder. To get a feel about how this will look like, the next part of the guide will consider implementation of our simple “helloworld” example. You can find the location of the example installation folder at <https://sid.erda.dk/sharelink/b3HZc5HEqa>

Helloworld example

Start out with the common steps. If you perform them in ~/erda_mount on MODI or in ~/work on DAG, you don’t have to redo them every time you want to run the program, because the files will be stored on ERDA and exposed through the default network drive mapping.

Common

1. Start the terminal
2. Navigate to your desired installation folder. The root folder is used here.
3. `wget https://sid.erda.dk/share_redirect/b3HZc5HEqa/helloworld.zip`
4. `unzip helloworld.zip`
5. `cd helloworld`
6. `chmod +x *.sh`

Which looks like the following in the Jupyter Terminal

```
jovyan@b00a9aea06e5:~$ wget https://sid.erda.dk/share_redirect/b3HZc5HEqa/helloworld.zip
jovyan@b00a9aea06e5:~$ unzip helloworld.zip
jovyan@b00a9aea06e5:~$ cd helloworld
jovyan@b00a9aea06e5:~/helloworld$ chmod +x *.sh
```

After you've followed the common steps, you either run the DAG steps or the MODI steps based on which service you intend to use.

DAG:

- Locate helloworld folder
- `~/helloworld$./install.dag.sh`
- `~/helloworld$./helloworld.dag.sh`

MODI

- Locate helloworld folder
- `~/helloworld$./install.modi.sh`
- Run on frontend
- `~/helloworld$./helloworld.modi.sh`
- Run on node
- `~/helloworld$./helloworld.modi.slurm.sh`

In “~/helloworld” only the installer is generated from MATLAB. All the other files are shell files that give the installation of your program more structure. Even though they are designed for this specific example, a lot of the code is still reusable. Therefore, it is recommended to study them, so you can create your own. In this example they were included in the same folder as the installer.

Settings + Setup

On the **Settings** and **Setup** pages you can tweak your personal ERDA settings to your liking. This includes configuring the look-and-feel of the web interface and setting up advanced access methods like e.g. access with a SFTP/WebDAVS/FTPS/Seafiler client or mapping of your user home as a network drive on your local PC or workstation.

ERDA also includes a file synchronization service like Dropbox, but one which KU employees are permitted to use – unlike Dropbox.

Further description of the **SFTP/WebDAVS/FTPS/Seafiler** tabs and their use is available in the Advanced Access sections.

You don't need to edit the settings to just use the fundamental functionalities. So you can safely leave them alone if in doubt.



Settings

Select your UCPH ERDA settings

Please note that if you want to set multiple values (e.g. addresses) in the same field, you must write each value on a separate line but without blank lines.

Email

List of E-mail addresses

1	bardino@science.ku.dk
---	-----------------------

Language

Your preferred interface language

User Interface

Your preferred web interface

Default Page

Your preferred page opened on login

Site Base Menu

Which base menu to use.

Site User Menu

Additional menu items.

<input type="checkbox"/>	sharelinks
<input type="checkbox"/>	seafile
<input type="checkbox"/>	crontab
<input type="checkbox"/>	transfers
<input type="checkbox"/>	cloud

Site Collaboration Links

Which group collaboration components to use.

Save General Settings

Support About ⓘ

If you mostly use a particular page like e.g. Files on ERDA web, you can change Default Page to that in order to always launch it directly on login.

Changing Site Collaboration Links from *default* to *advanced* enables additional features on your Workgroups page.



Setup



2-Factor Authentication

We allow 2-factor authentication on UCPH ERDA for greater password login security. In short it means that you enter a generated single-use token from e.g. your phone or tablet along with your usual login. This combination makes account abuse much harder, because even if your password gets stolen, it can't be used without your device.

Preparing and enabling 2-factor authentication for your login is done in four steps.

[Okay, let's go!](#)

[Support](#) [About](#)

Setup provides access to a number of slightly more advanced ERDA features, which we will inspect closer in the second part of the user guide.

2-Factor Authentication

Recently there's been a general rise in automated password guessing attacks and *phishing* attempts to obtain login information from users on the Internet. So it is a good idea to take extra precautions about securing your login credentials against illegal access and abuse.

All ERDA services offer optional 2-Factor Authentication (2FA) as a means to let you do just that. In practice 2FA adds an extra step to your logins where you prove that you don't only know something – namely your username and password – but that you also possess something nobody else does. In ERDA the latter is in the form of a simple personal one-time token generator. So after entering your usual login you are asked to enter the current token to prove that it is really you and not somebody who somehow managed to get hold of your password.

ERDA uses the TOTP standard for the one-time tokens and you can use an app on your smart phone or tablet as the token generator.

Open the 2-Factor Auth tab on your Setup page and follow the four-step wizard there to prepare your device and enable this extra security measurement.

Start the setup wizard by clicking **Okay, let's go** and install a TOTP authenticator app on your phone or tablet using your usual app store. We've mainly tested with Google Authenticator and FreeOTP but any of the four listed plus a number of other TOTP authenticator apps should work.



Setup



2-Factor Authentication

We allow 2-factor authentication on UCPH ERDA for greater password login security. In short it means that you enter a generated single-use token from e.g. your phone or tablet along with your usual login. This combination makes account abuse much harder, because even if your password gets stolen, it can't be used without your device.

Preparing and enabling 2-factor authentication for your login is done in four steps.

1. Install an Authenticator App

You first need to install a TOTP authenticator client like [Google Authenticator](#), [FreeOTP](#), [NetIQ Advanced Authentication](#) or [Authy](#) on your phone or tablet. You can find and install either of them on your device through your usual app store.

I've got it installed!



Then click **I've got it installed** to proceed.



Setup

- SFTP
- WebDAVS
- FTPS
- Seafile
- Duplicati
- Cloud
- 2-Factor Auth**

2-Factor Authentication

We allow 2-factor authentication on UCPH ERDA for greater password login security. In short it means that you enter a generated single-use token from e.g. your phone or tablet along with your usual login. This combination makes account abuse much harder, because even if your password gets stolen, it can't be used without your device.

Preparing and enabling 2-factor authentication for your login is done in four steps.

1. Install an Authenticator App

You first need to install a TOTP authenticator client like [Google Authenticator](#), [FreeOTP](#), [NetIQ Advanced Authentication](#) or [Authy](#) on your phone or tablet. You can find and install either of them on your device through your usual app store.

2. Import Secret in Authenticator App

Open the chosen authenticator app and import your personal 2-factor secret in one of two ways:

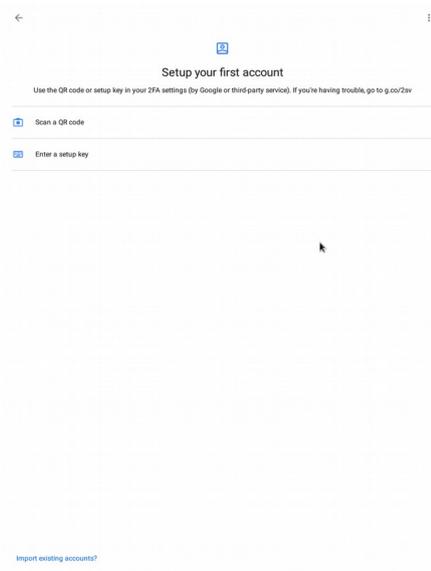
- A. Scan your personal **QR code**
- B. Type your personal **key code**

The latter is usually more cumbersome but may be needed if your app or smart device doesn't support scanning QR codes. Most apps automatically add service and account info on QR code scanning, but otherwise you can manually enter it.

Yes, I've imported it!

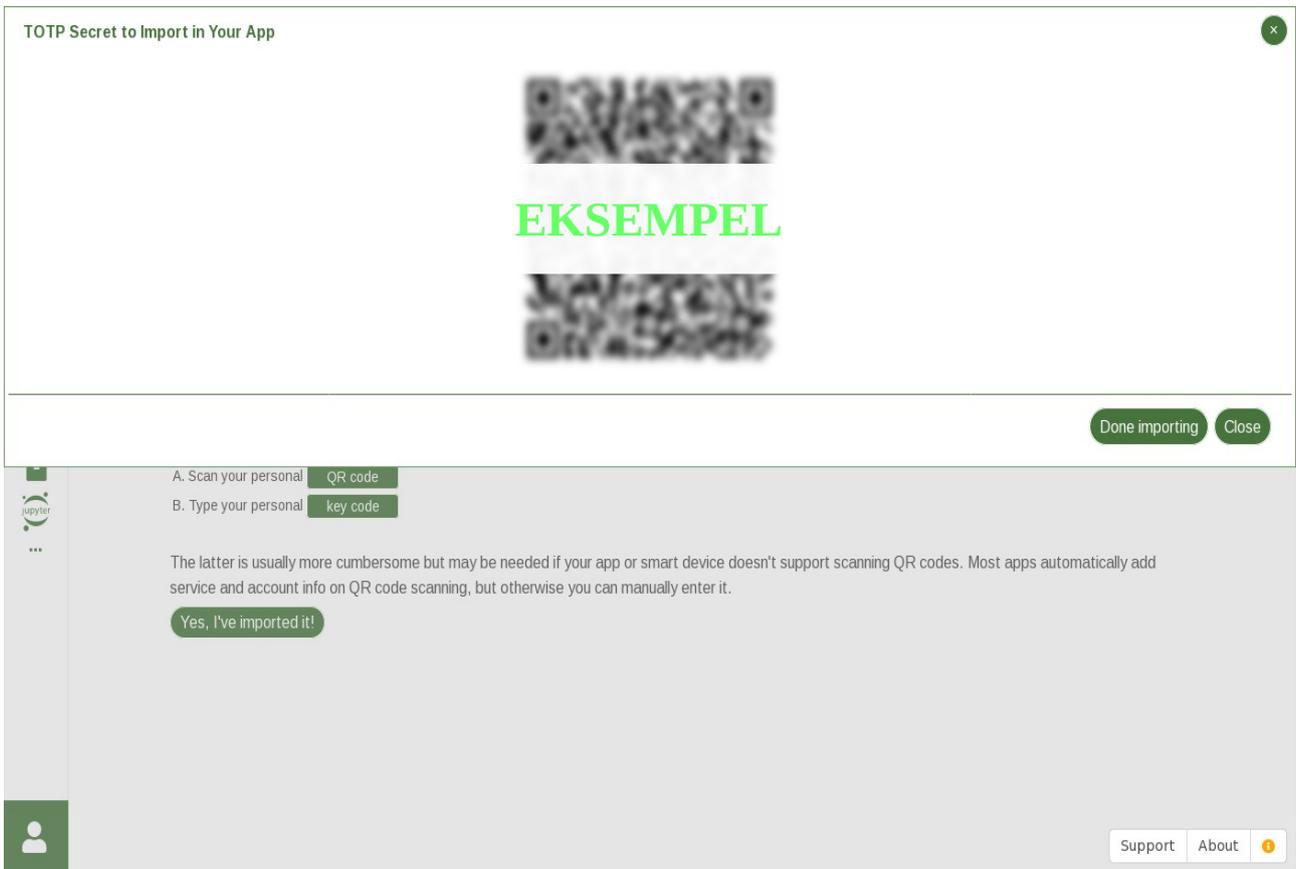
Support About ⓘ

You can now import your personal 2FA secret either by scanning a QR code or by typing the raw text code. The former is easier if your device has a built-in camera. Open the previously installed authenticator app and import the QR code e.g. by choosing **Scan a QR code** as shown for the Google Authenticator

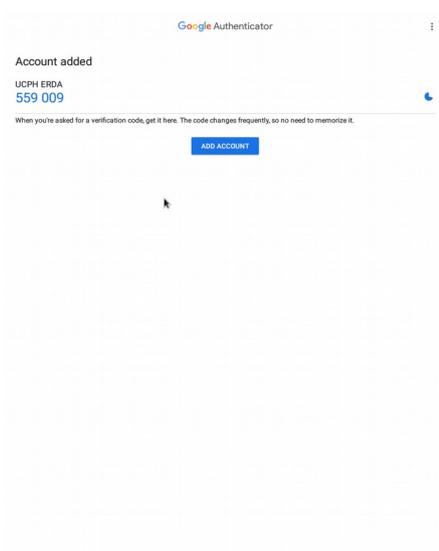


Please note that the exact method varies depending on the platform and app of choice.

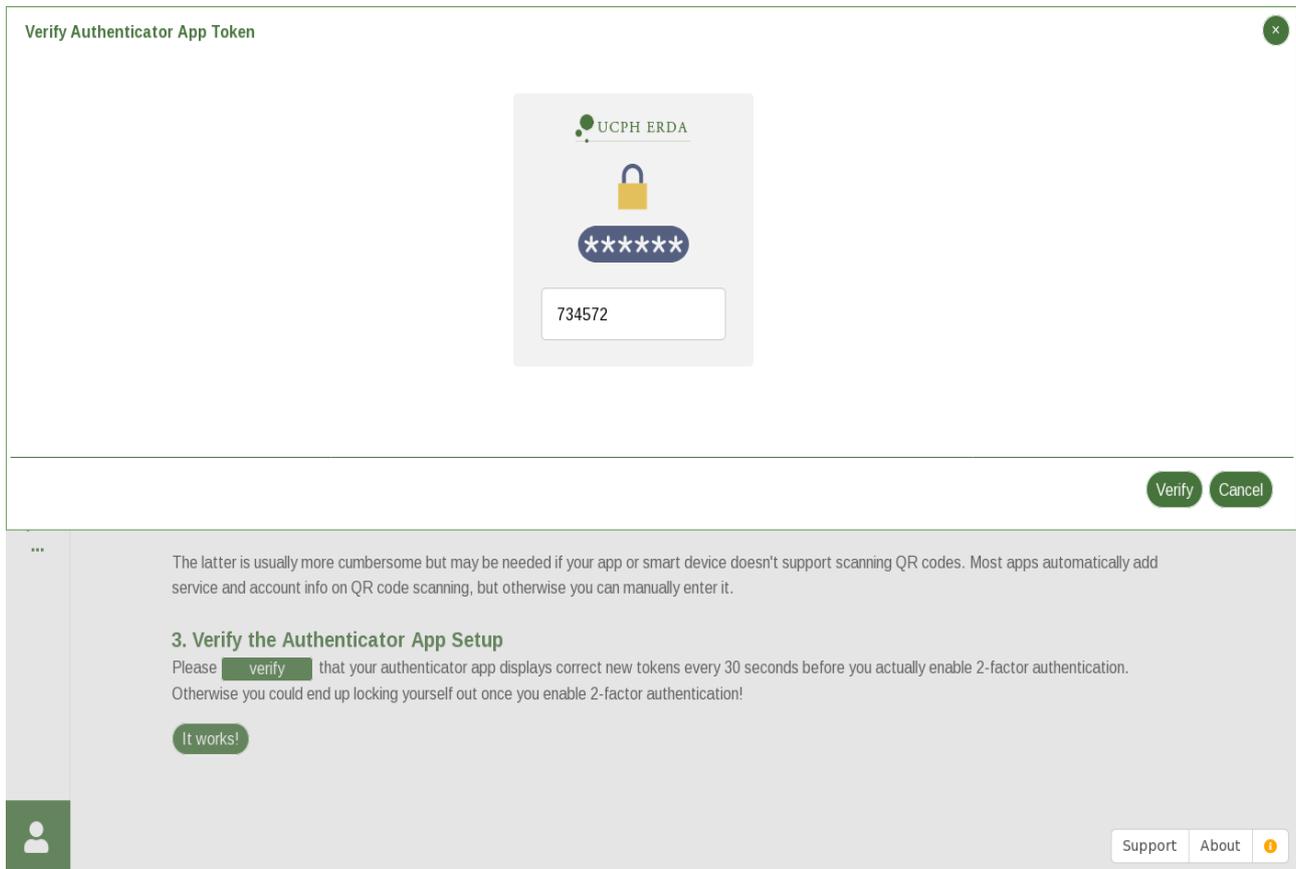
Click **QR Code** in the ERDA wizard to view your personal QR code and then point the device camera towards it to scan it.



The apps typically react by adding a new entry displaying the current token (a number) once the scan succeeds as shown below.



With your 2FA setup thus in your app you click **Done importing** and enter the 6-digit token currently shown in the app in the resulting token popup.



In this case the app showed the token 734572 and it was therefore typed in before confirming with **Verify**. Please note that the tokens are short lived and a new one is generated every 30 seconds. You can just try again if fails because it changed in between typing it and verifying.

Once accepted the wizard proceeds to the last step where you actually enable 2FA for one or more purposes.



your phone or tablet. You can find and install either of them on your device through your usual app store.

2. Import Secret in Authenticator App

Open the chosen authenticator app and import your personal 2-factor secret in one of two ways:

- A. Scan your personal QR code
- B. Type your personal key code

The latter is usually more cumbersome but may be needed if your app or smart device doesn't support scanning QR codes. Most apps automatically add service and account info on QR code scanning, but otherwise you can manually enter it.

3. Verify the Authenticator App Setup

Please verify that your authenticator app displays correct new tokens every 30 seconds before you actually enable 2-factor authentication. Otherwise you could end up locking yourself out once you enable 2-factor authentication!

4. Enable 2-Factor Authentication

Now that you've followed the required steps to prepare and verify your authenticator app, you just need to enable it for login below. This ensures that your future UCPH ERDA logins are security-enhanced with a request for your current token from your authenticator app.

SECURITY NOTE: please immediately contact the UCPH ERDA admins to reset your secret 2-factor authentication key if you ever loose a device with it installed or otherwise suspect someone may have gained access to it.

Enable 2-FA for KU / UCPH OpenID web login

Add an extra layer of security to your KU / UCPH OpenID web logins through a personal auth token generator on your phone or tablet.



Enable 2-FA for Non-KU/UCPH OpenID web login

Add an extra layer of security to your Non-KU/UCPH OpenID web logins through a personal auth token generator on your phone or tablet.



Enable 2-FA for WebDAVS network drive or client login

Add an extra layer of security to your WebDAVS logins through a personal auth token generator on your phone or tablet. Works by logging in to the UCPH ERDA web site with 2FA enabled to start an authenticated session and then logging into WebDAVS as usual.



[Support](#) [About](#) 0

The first two are for the basic web log in to ERDA, and four more choices will appear when you enable either of them. We recommend checking all the boxes for maximum protection. The last ones are used to enable 2FA for the efficient file access, which is mainly relevant if you want to use ERDA as a network drive.

Finally remember to **Save 2-Factor Auth Settings** in order to actually enable it, so that on future logins you will be prompted for the current 2FA token after the plain login with username and password.

Logout

When you are done using ERDA, we recommend using the *Sign Out* button from the user menu in the lower left corner and click Yes to actually end your current login session. This is of course particularly important if you share your computer or device with anyone else.

Advanced Data Access

In addition to the web interface ERDA also provides some advanced access interfaces for efficient and transparently integrated file access. These interfaces e.g. allow you to transfer many or big files more efficiently and to map your ERDA files and folders on your local PC or workstation like a network drive. In that way you can work with them remotely as if they were local files. All the interfaces use a secure connection to ERDA, so they are accessible from anywhere where you have an Internet connection. Thus, you do *not* need VPN or anything like that to access them from outside UCPH.

TIP: We recommend following our new Network Drive Intro from <https://erda.ku.dk> if you want to use ERDA as a network drive on Windows, but include the steps for all platforms here as well.

ERDA also offers a file synchronization service resembling Dropbox, but one that employees/students at KU are permitted to use in contrast to Dropbox.

TIP: We recommend following our new Seafile Intro from <https://erda.ku.dk> if you want to use ERDA Seafile, but include the steps further down as well.

WebDAVS

WebDAV is a popular protocol to access remote storage using extensions to the HTTP protocol, and it can be secured with TLS/SSL in the same way. In the following sections we refer to this secured version as WebDAVS. Recent versions of Microsoft Windows, Mac OSX and Linux support this protocol out-of-the-box, so with those it's possible to access such remote content like if it was in a local folder. That is, without the need to install additional software and still in a secure fashion. For that reason it is relatively straight forward to get started with working on your data through WebDAVS. However, it should be noted that WebDAVS was built for simple web page publishing, so it is neither particularly efficient for bigger data transfers nor robust against network glitches. Thus, we generally recommend looking at one of the SFTP-based solutions, especially if performance and stability is a concern.

You generally need to first open the **WebDAVS** tab on your **Setup** page at ERDA and configure how you want to authenticate to our WebDAVS server. Enter a password that you want to login with and click **Save WebDAVS Settings**. Please also note your Login Details including your automatic login username shown there.



Setup



WebDAVS access to your UCPHERDA account

You can enable WebDAVS login to your UCPHERDA account and use it for file and folder upload/download or even for seamless data access from your Windows, Mac OS X and Linux/UNIX computer.

Login Details

- Host `io.erda.dk`
- Port `443`
- Username `bardino@science.ku.dk`
- Password as you choose below

You may be asked to verify the server key fingerprint

`7B:0A:BA:D7:25:0D:70:B4:16:BA:21:31:0F:55:E0:32:20:60:BB:77:E2:D7:CD:03:46:A7:5E:0A:E4:CD:77:8B` (SHA256) first time you connect.

Password

Please enter and save your desired password in the text field below, to be able to connect with username and password as described in the Login Details.

(leave empty to disable davs access with password)

Save WebDAVS Settings

How to proceed after enabling login above ...

- ▶ WebDAVS Network Drive
- ▶ Graphical WebDAVS File Transfers
- ▶ Command-Line WebDAVS Access

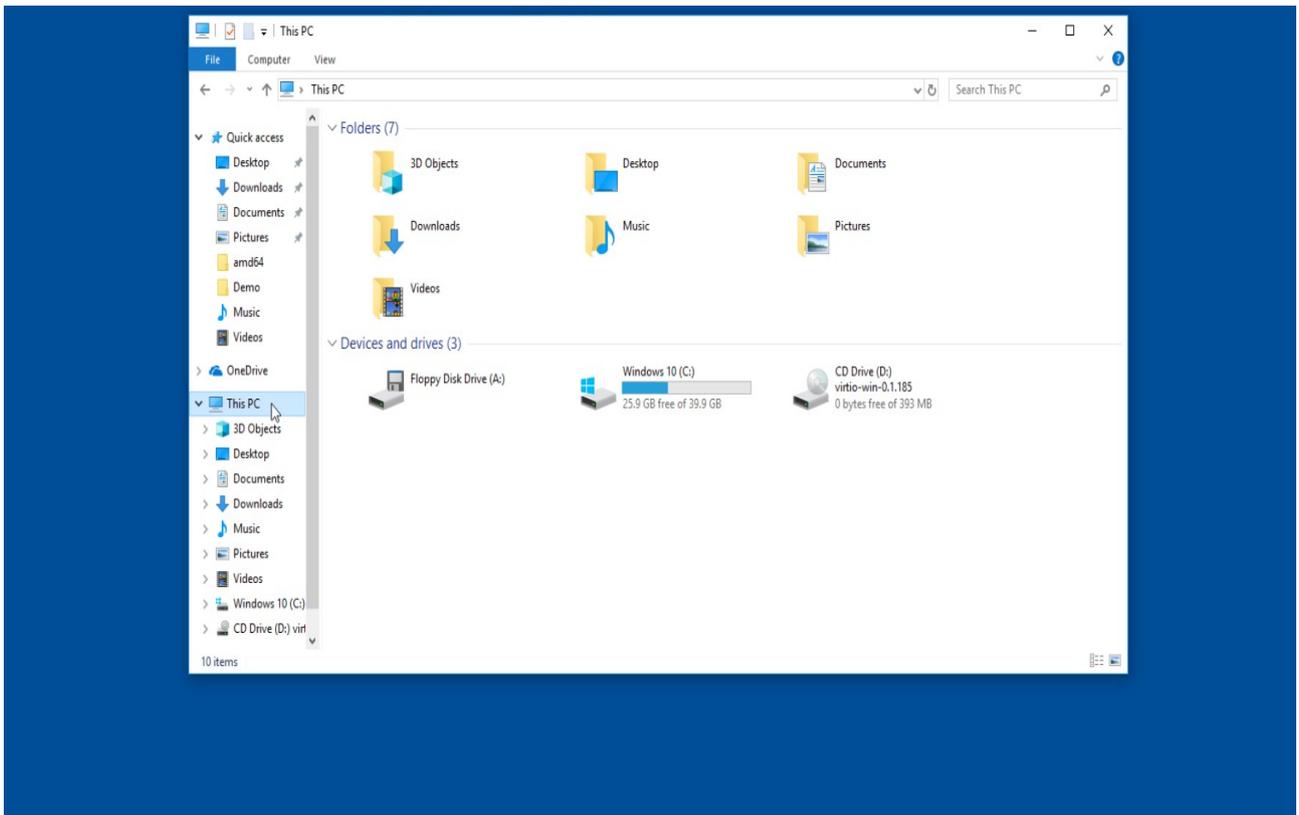
Support About ⓘ

You can also find the required server URL by clicking the **Show more WebDAVS client details...** link there. In this example the server URL is <https://io.erda.dk> and the automatic username is bardino@nbi.ku.dk, but please look up your own.

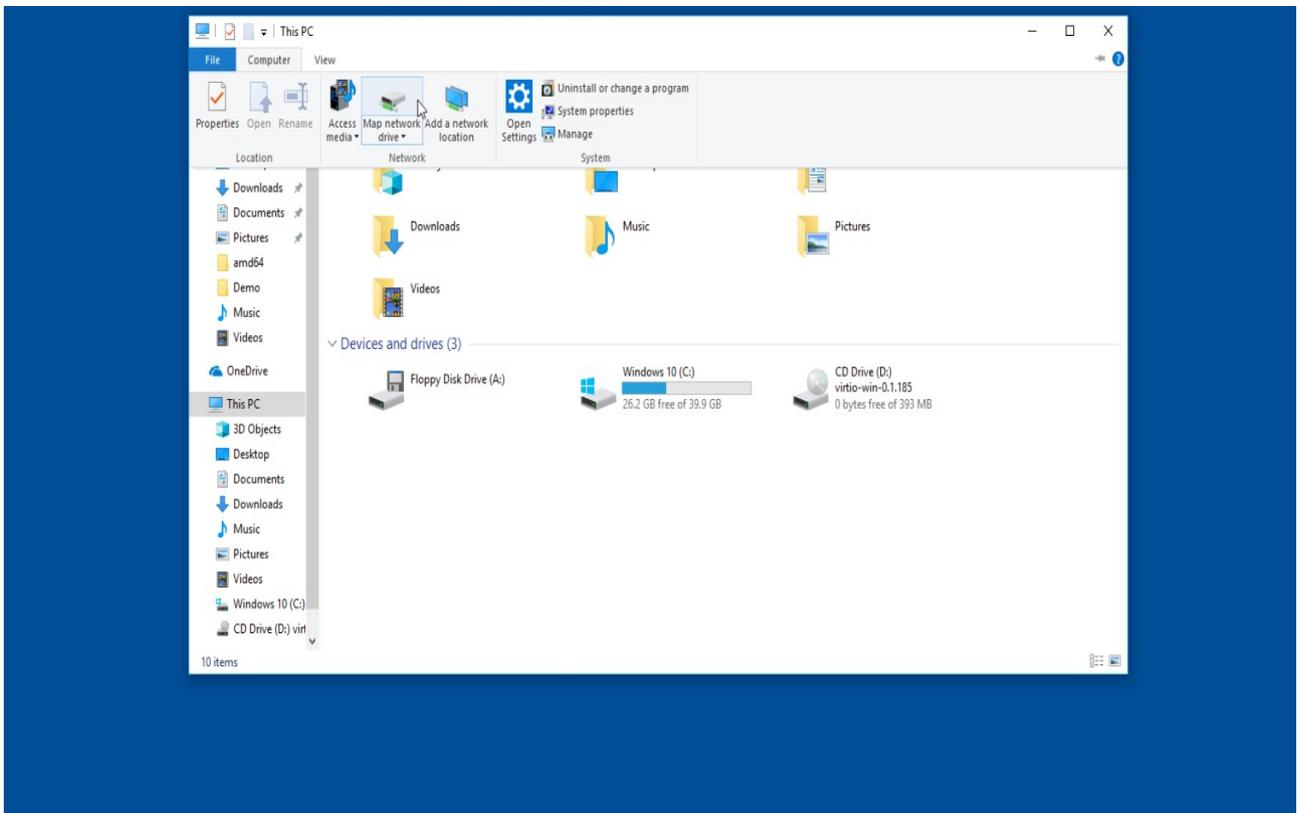
Windows File Manager

In Windows it is possible to access WebDAVS locations directly from the built-in file manager. E.g. with the **Map network drive** or the **Add a network location** button available when navigating to the **This PC** location as shown in the images below. Please note that the screens vary slightly with different Windows versions and it is also possible to use other commercial solutions than the built-in File handler.

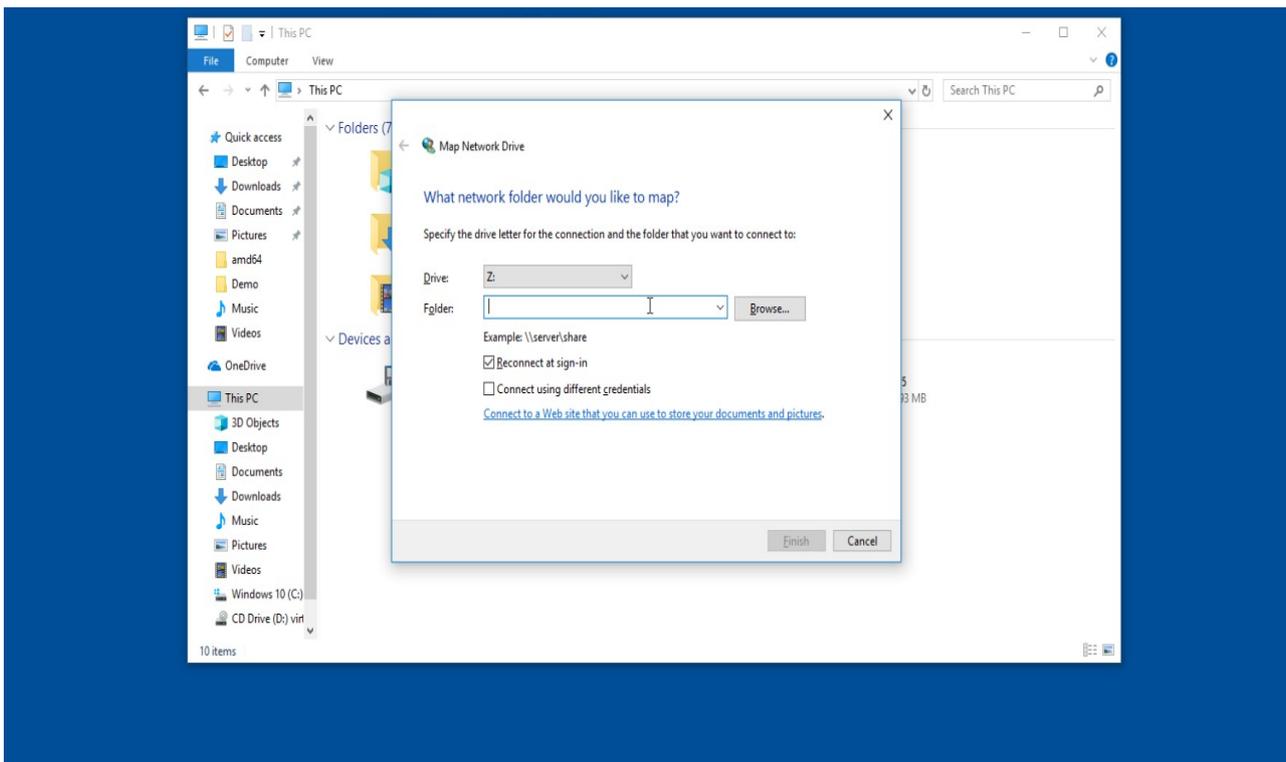
Below the procedure with the native Windows 10 File handler with **Map network drive** is shown.



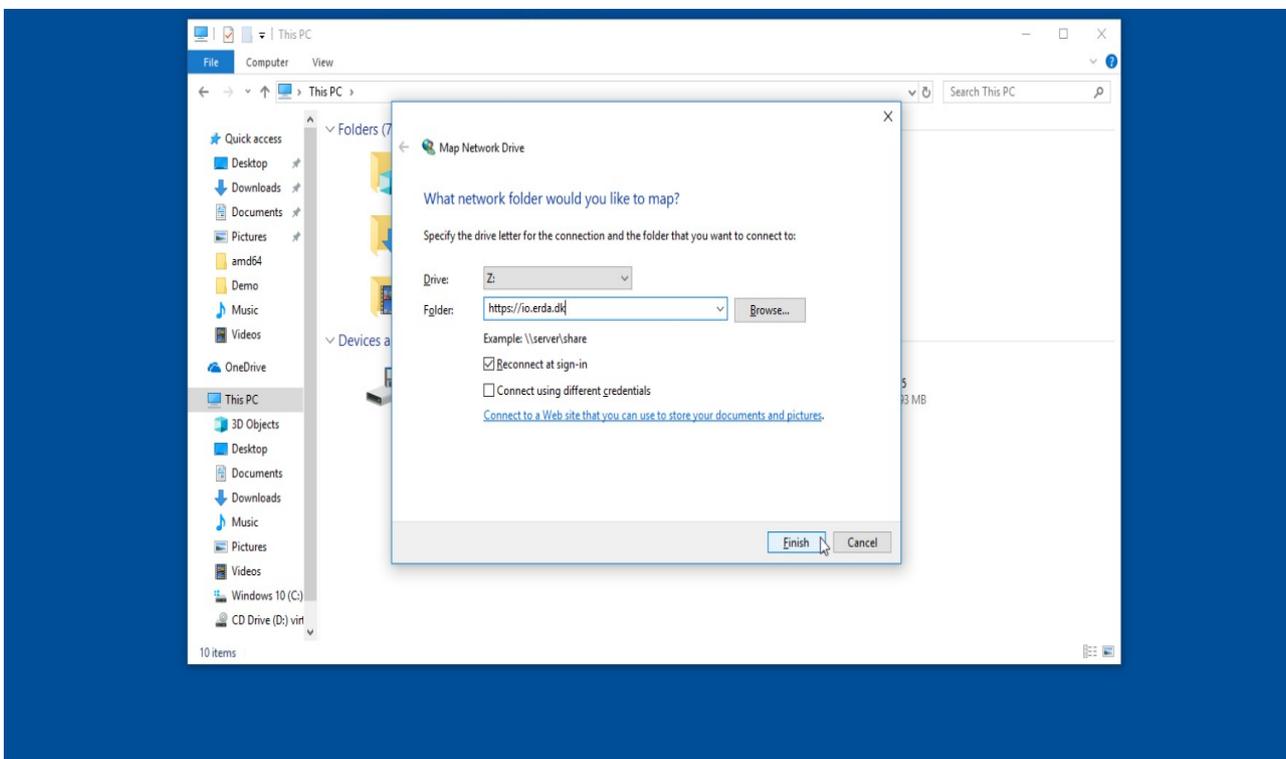
Click **Computer** in the top menu to expose the **Map network drive** button



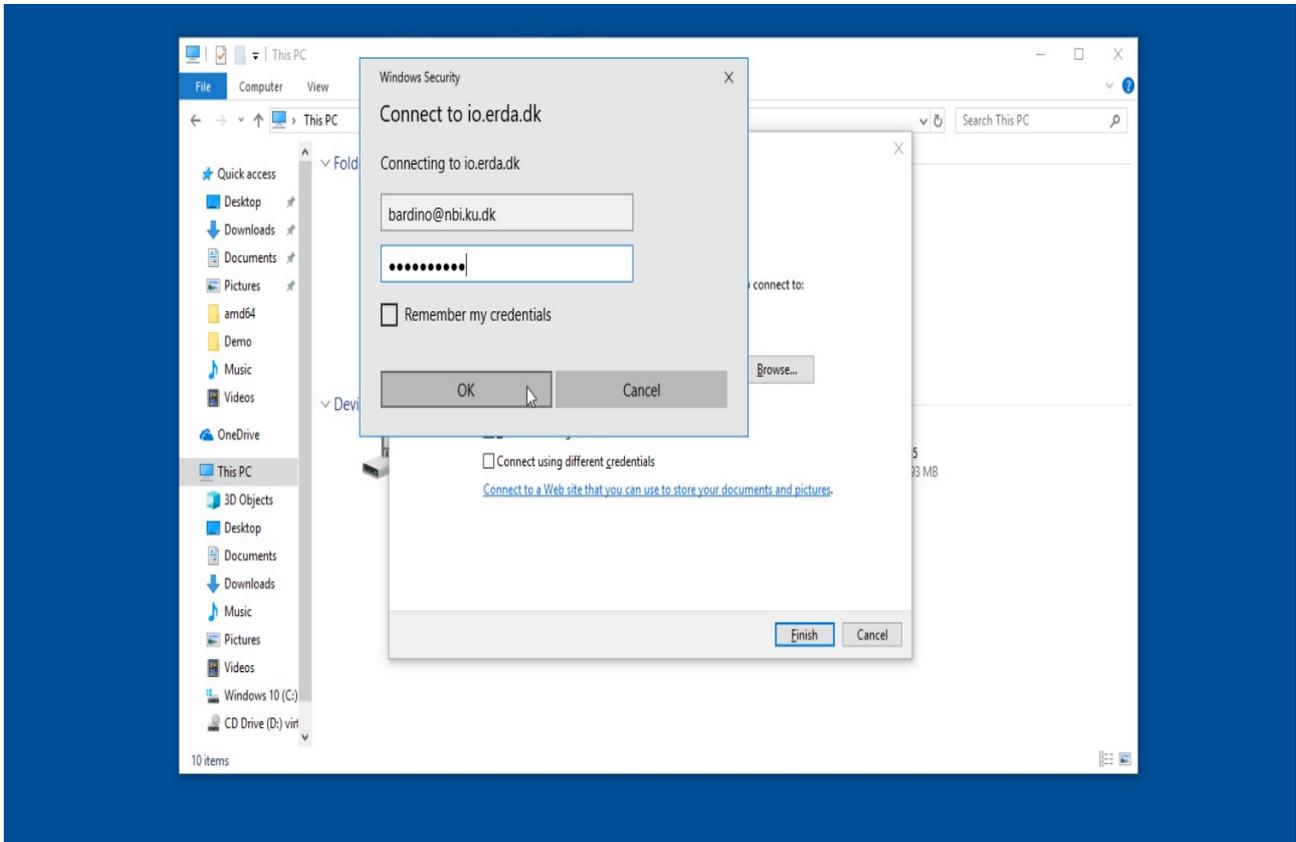
which is clicked to open the connect network drive wizard and connect to ERDA.



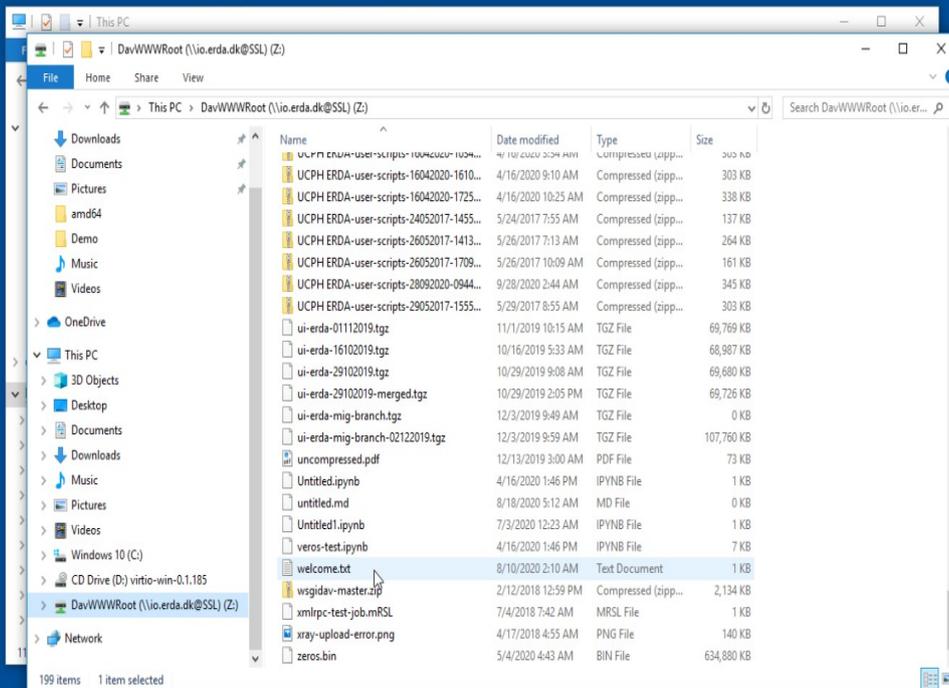
Enter server URL from the **WebDAVS** tab – in this case <https://io.erda.dk> – then click **Finish**.



You will then be prompted for your automatic username and the password you entered on the **WebDAVS** setup tab as described on page 52. In this case it specified the automatic username bardino@nbi.ku.dk.

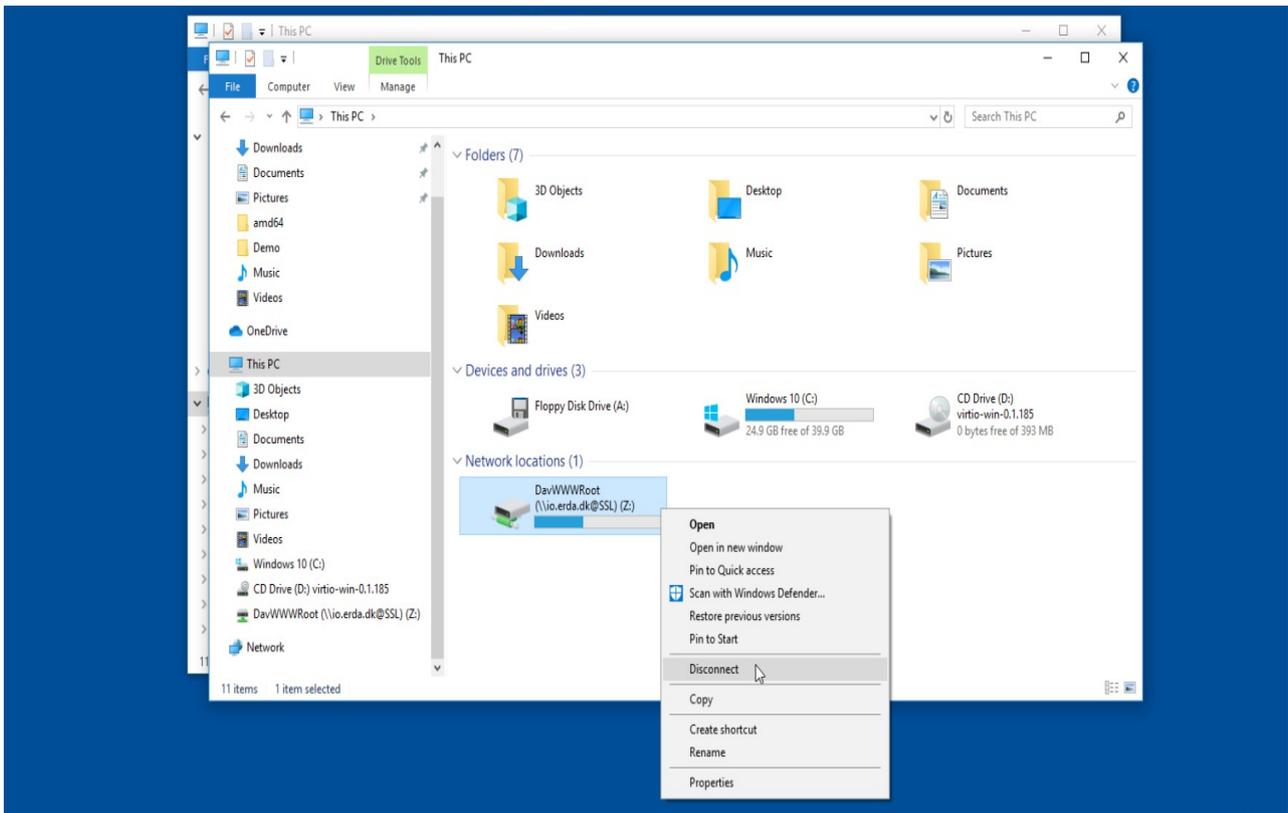


In case of correct log in ERDA is attached as network drive with the chosen drive letter (**Z:** here) and the drive is opened in a new window. That is, your files and folders on ERDA appear in the usual file handling.



As long as you are online you can use the files there just like your local ones. Next time you start your computer you can easily access the files again using the saved ERDA network drive from the same location as shown in the first screenshot in this section.

You can detach the network drive again by locating it as above (**Z:** here), right clicking and choosing **Disconnect**.

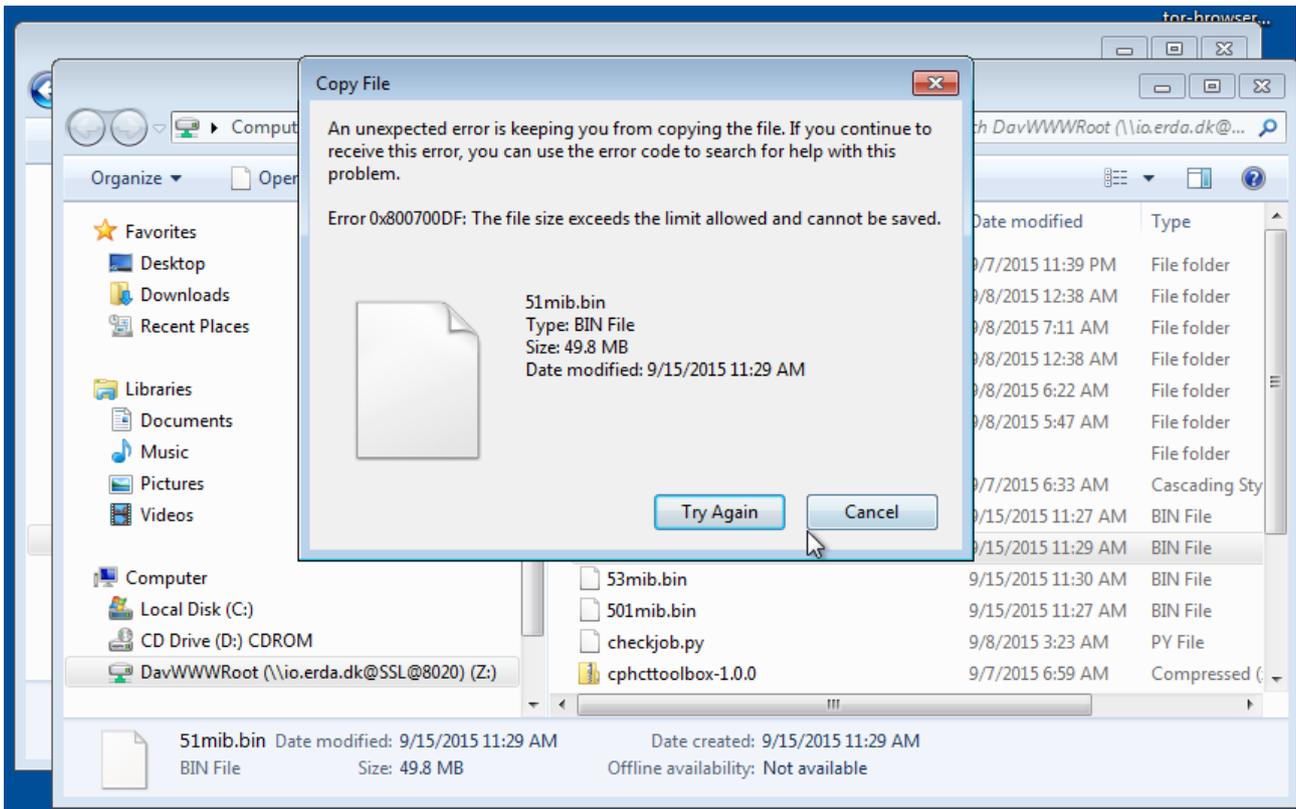


then the drive is detached and the icon disappears.

Adjust Windows WebDAVS Transfer Limit

Unfortunately, Microsoft decided to enforce a very low, artificial limit on the size of files that can be transferred to or from WebDAVS locations.

In practice, the limit implies that the user receives a rather uninformative error message e.g. if files larger than about 50MB are attempted downloaded from the WebDAVS folder. Example shown below.

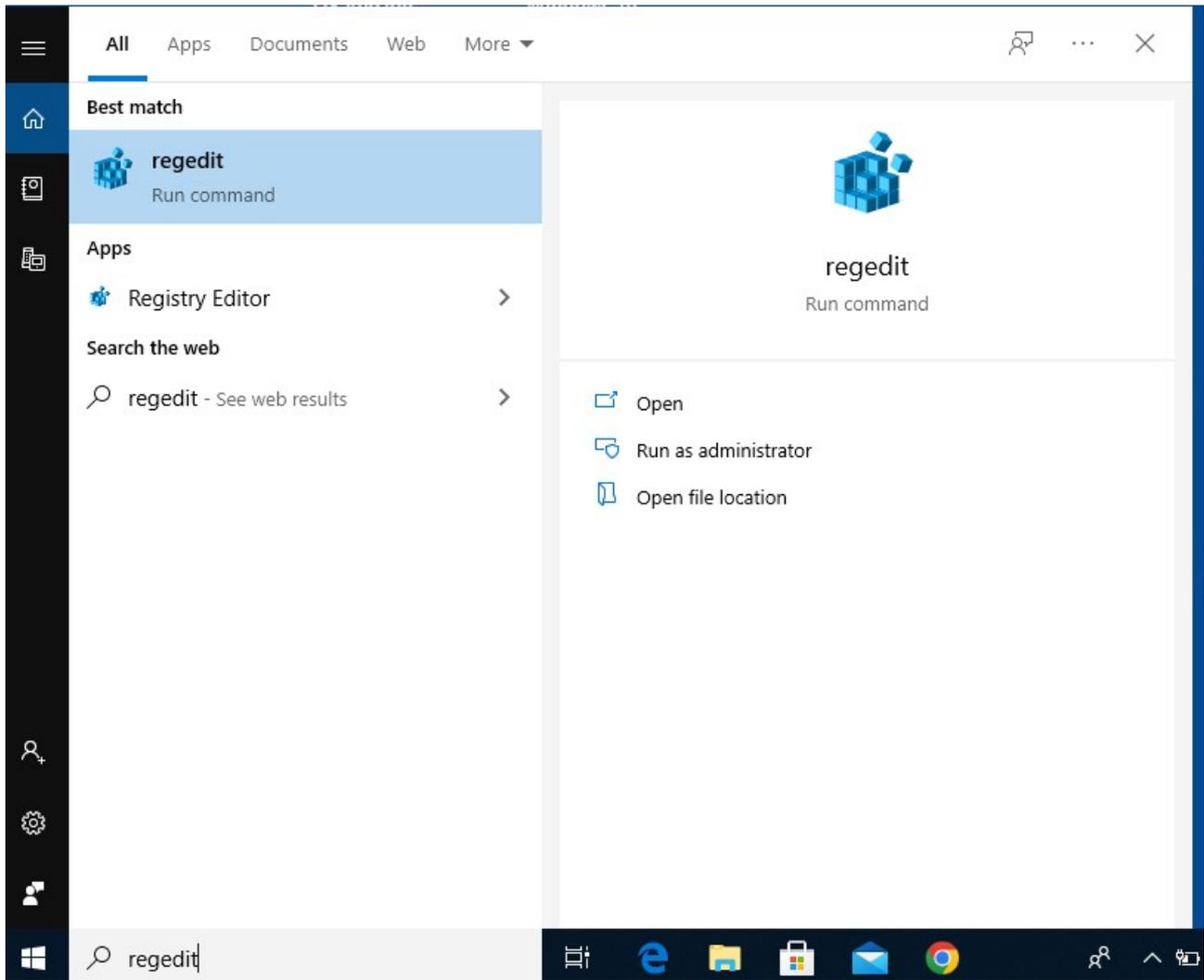


It is possible to increase this limit to 4GB by applying some modifications in the **Registry Editor**.

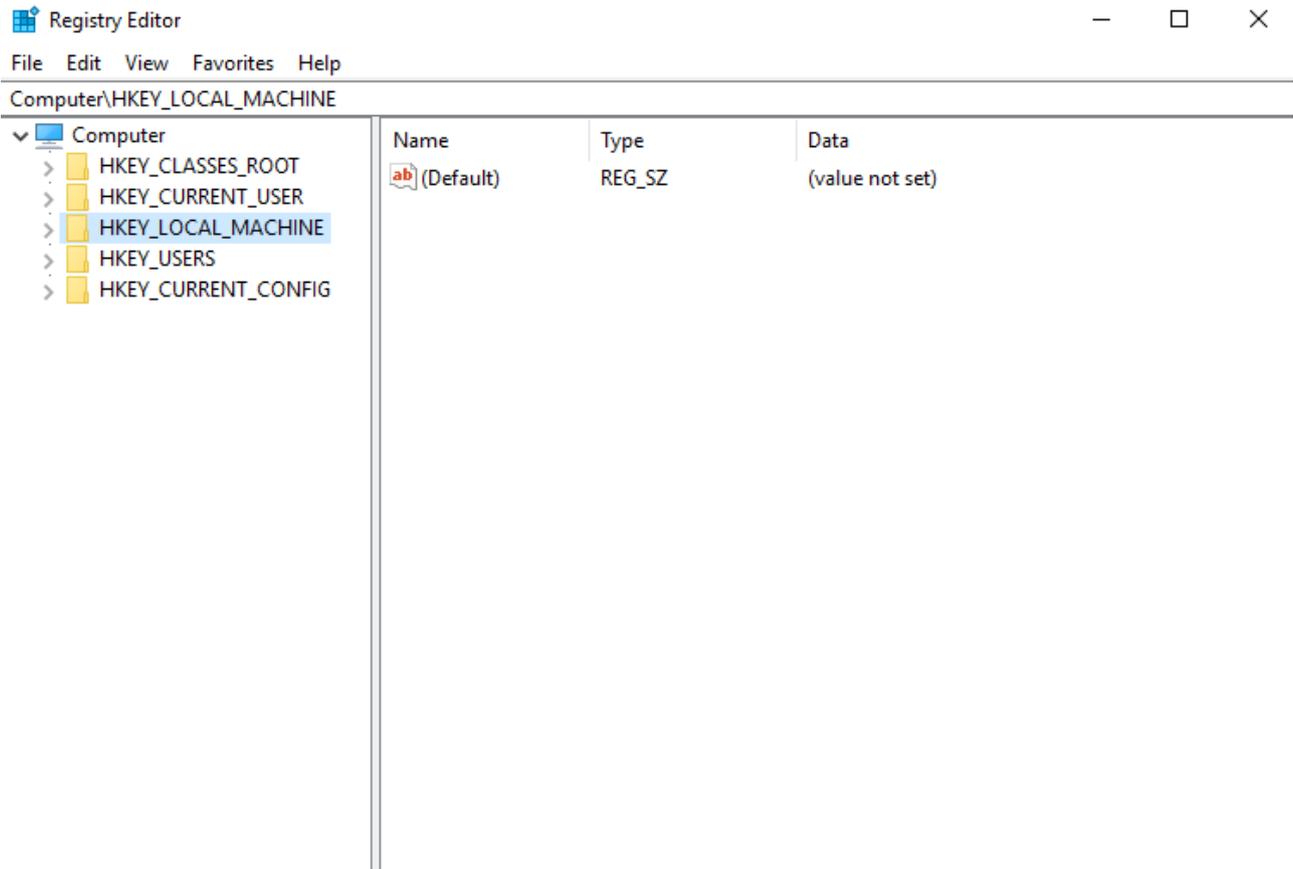
This can be done by replicating the following steps.

Reference: <https://www.wintips.org/fix-error-0x800700df-the-file-size-exceeds-the-limit-allowed-and-cannot-be-saved-in-sharepoint-webdav/>

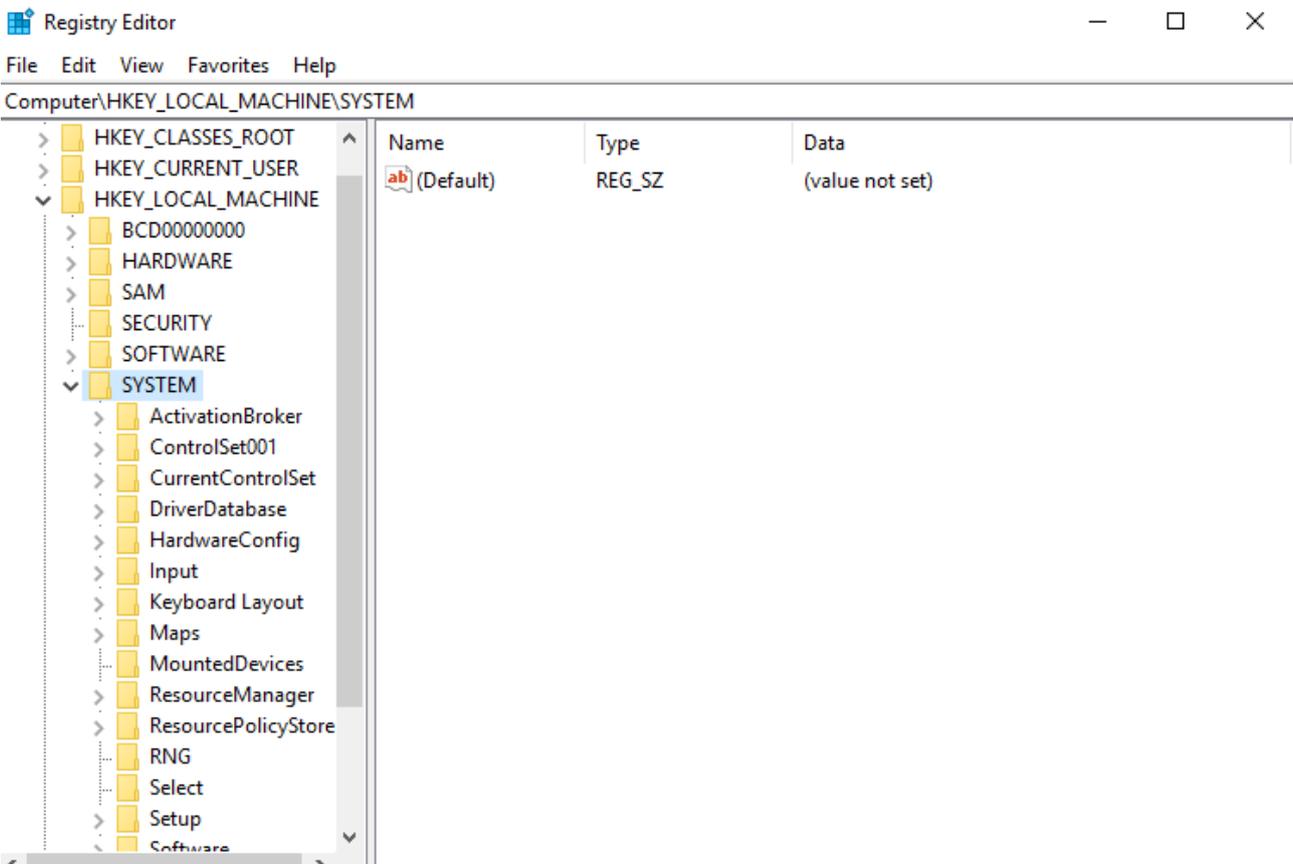
First, search for **regedit** and run the command.



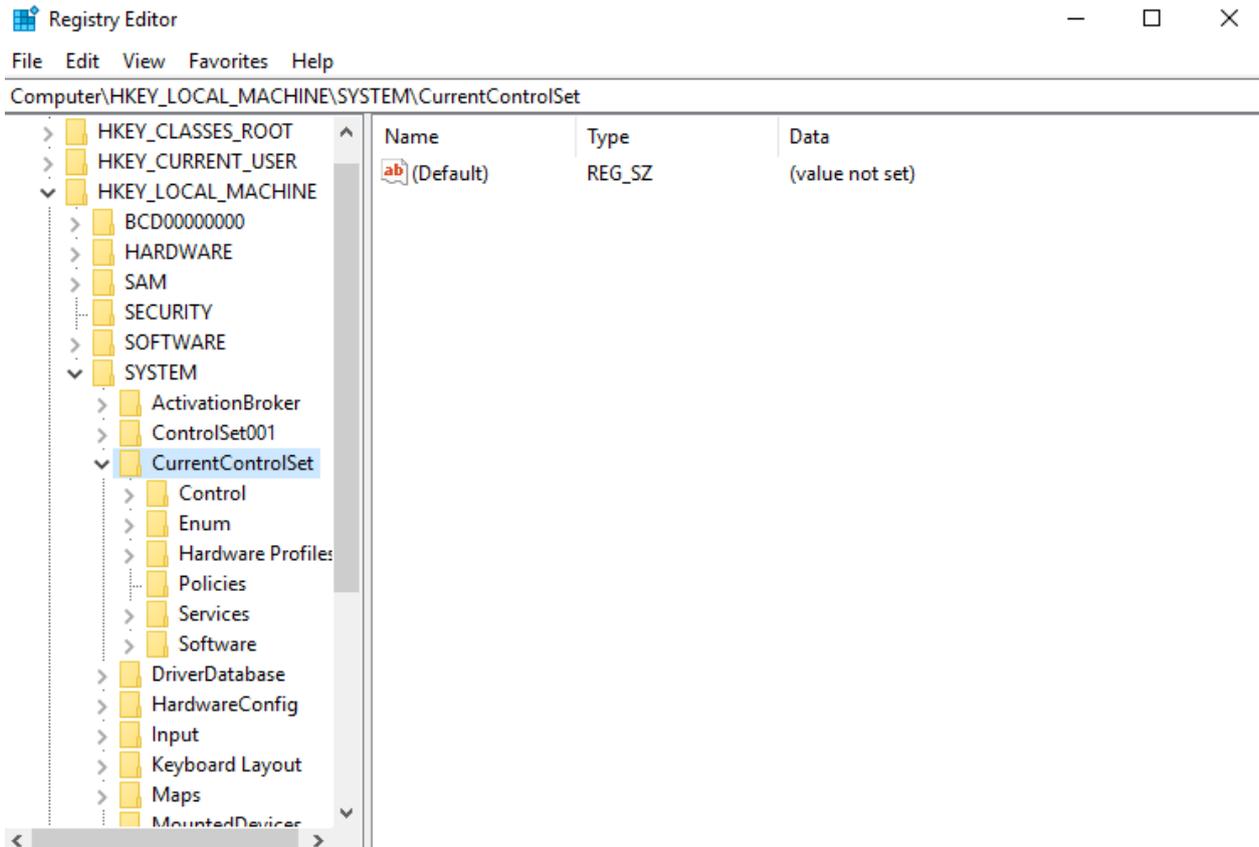
Afterwards, open the folder **HKEY_LOCAL_MACHINE**.



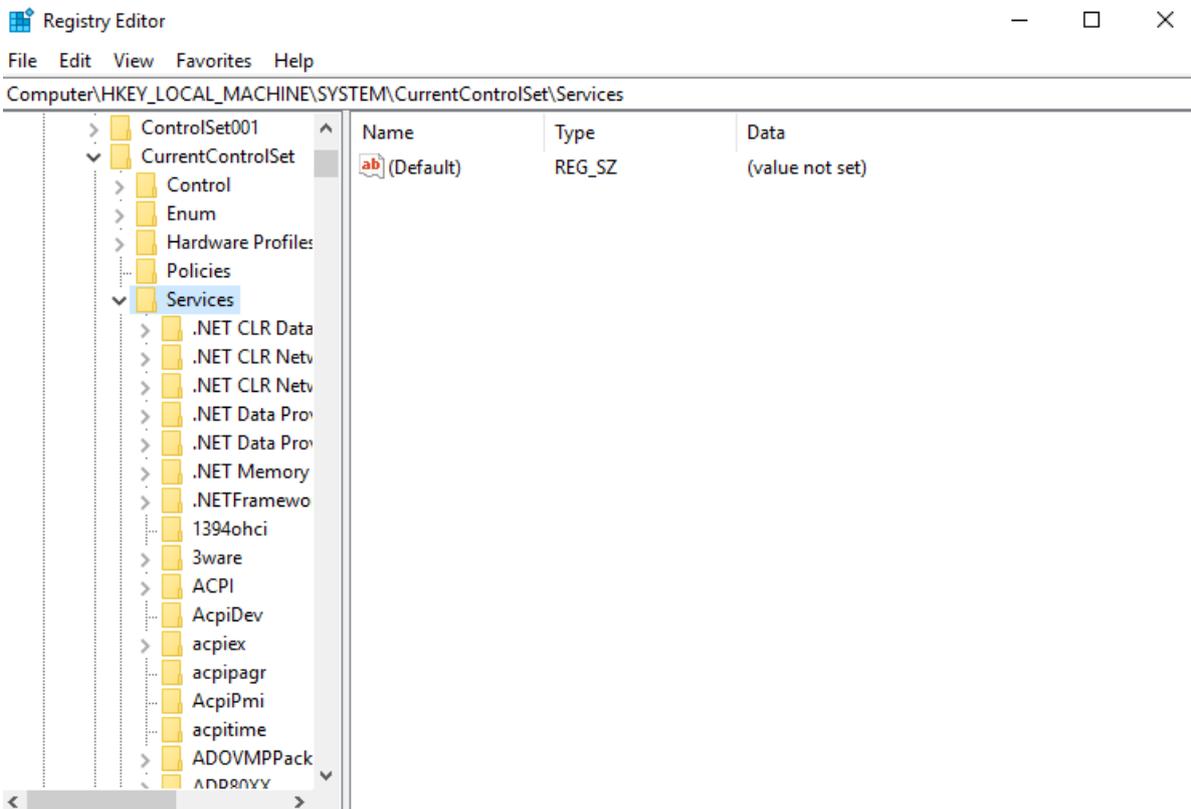
Open **SYSTEM**.



Open CurrentControlSet.



Open Services.



Open WebClient.

Registry Editor

File Edit View Favorites Help

Computer\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\WebClient

Name	Type	Data
(Default)	REG_SZ	(value not set)
DependOnService	REG_MULTI_SZ	MRxDAV
Description	REG_SZ	@%systemroot%\system32\webclnt.dll,-101
DisplayName	REG_SZ	@%systemroot%\system32\webclnt.dll,-100
ErrorControl	REG_DWORD	0x00000001 (1)
FailureActions	REG_BINARY	80 51 01 00 00 00 00 00 00 00 00 00 00 03 00 00 00 14 00...
Group	REG_SZ	NetworkProvider
ImagePath	REG_EXPAND_SZ	%SystemRoot%\system32\svchost.exe -k LocalSer...
ObjectName	REG_SZ	NT AUTHORITY\LocalService
RequiredPrivileg...	REG_MULTI_SZ	SelmpersonatePrivilege SeCreateGlobalPrivilege Se...
ServiceSidType	REG_DWORD	0x00000001 (1)
Start	REG_DWORD	0x00000003 (3)
Type	REG_DWORD	0x00000020 (32)

Open Parameters.

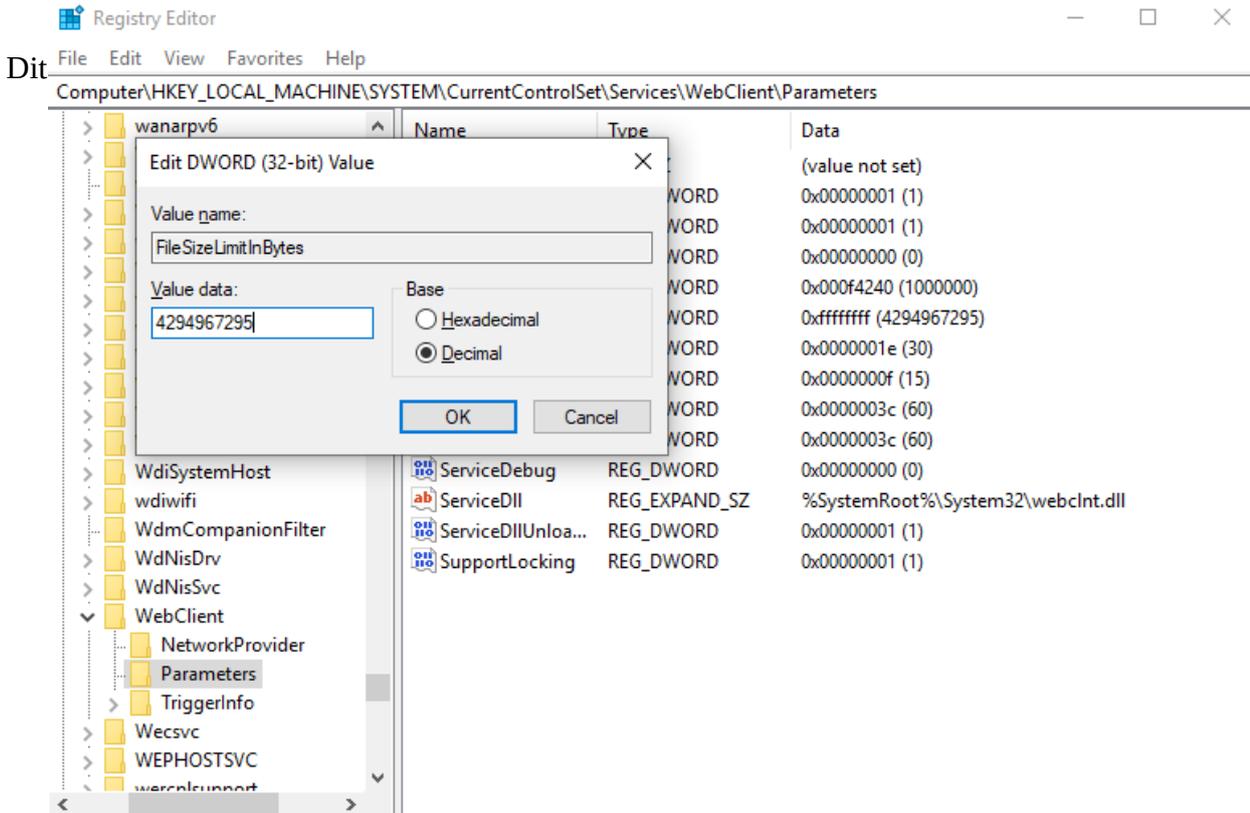
Registry Editor

File Edit View Favorites Help

Computer\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\WebClient\Parameters

Name	Type	Data
(Default)	REG_SZ	(value not set)
AcceptOfficeAn...	REG_DWORD	0x00000001 (1)
BasicAuthLevel	REG_DWORD	0x00000001 (1)
ClientDebug	REG_DWORD	0x00000000 (0)
FileAttributesLi...	REG_DWORD	0x000f4240 (1000000)
FileSizeLimitInB...	REG_DWORD	0xffffffff (4294967295)
InternetServerTi...	REG_DWORD	0x0000001e (30)
LocalServerTime...	REG_DWORD	0x0000000f (15)
SendReceiveTim...	REG_DWORD	0x0000003c (60)
ServerNotFound...	REG_DWORD	0x0000003c (60)
ServiceDebug	REG_DWORD	0x00000000 (0)
ServiceDll	REG_EXPAND_SZ	%SystemRoot%\System32\webclnt.dll
ServiceDllUnloa...	REG_DWORD	0x00000001 (1)
SupportLocking	REG_DWORD	0x00000001 (1)

Set the value in **FileSizeLimitInBytes** to 4294967295 in Decimal base.



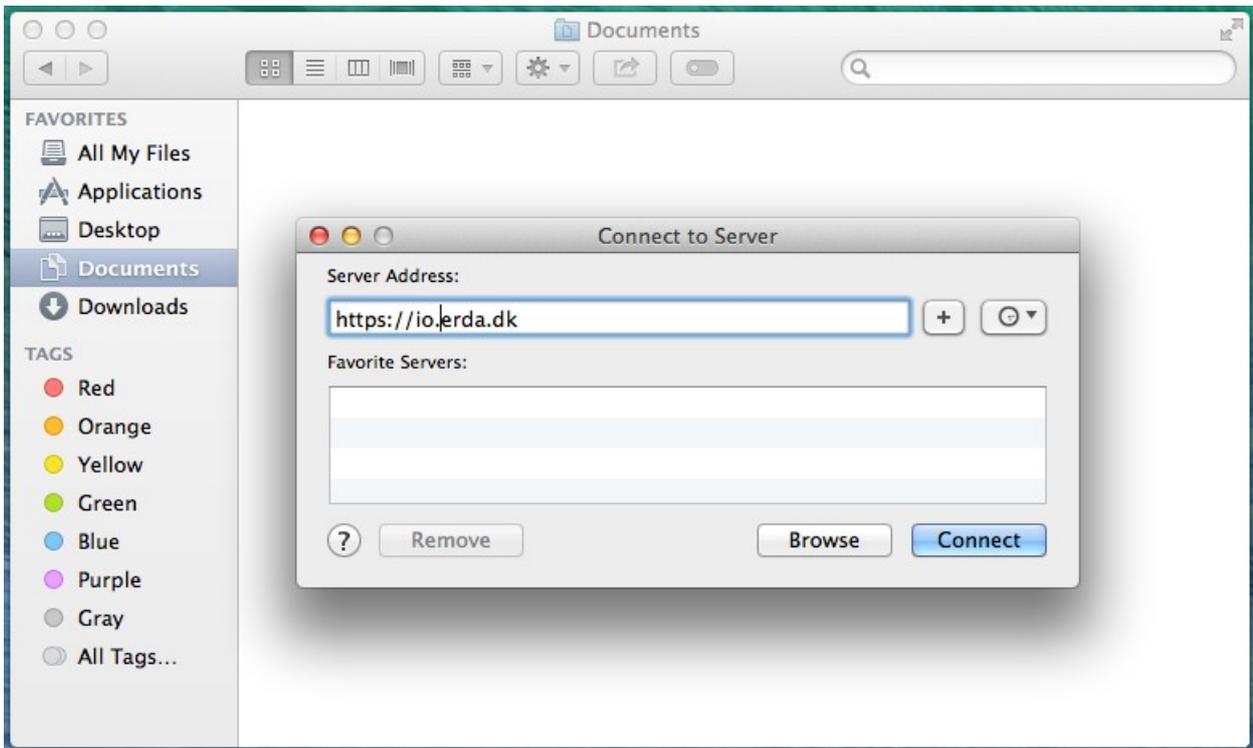
ERDA WebDAVS network drive now allows upload/download of files up to 4GB.

In general, we still recommend to use SSHFS over WebDAVS, especially if you work on large amounts of data.

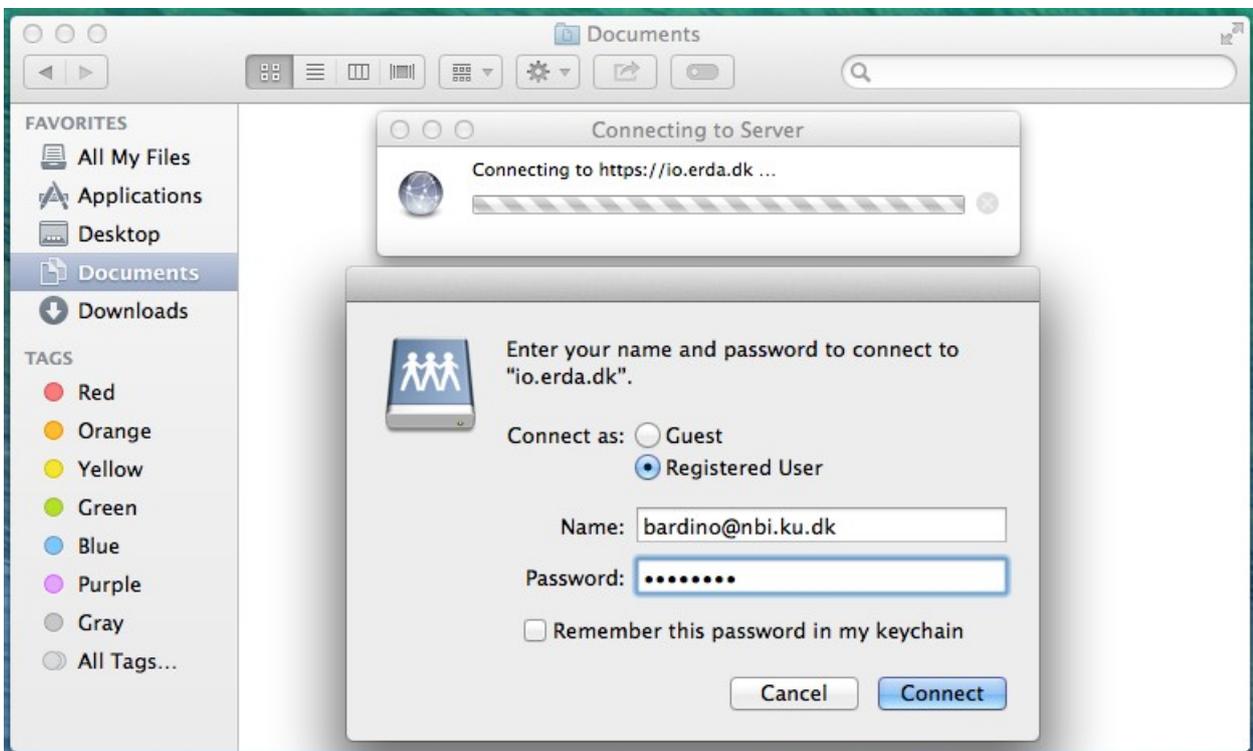
Mac OSX File Manager

On Mac OSX you can access remote WebDAV(S) content with the built-in file manager, Finder. In the menu under **Go** you select **Connect to Server**.

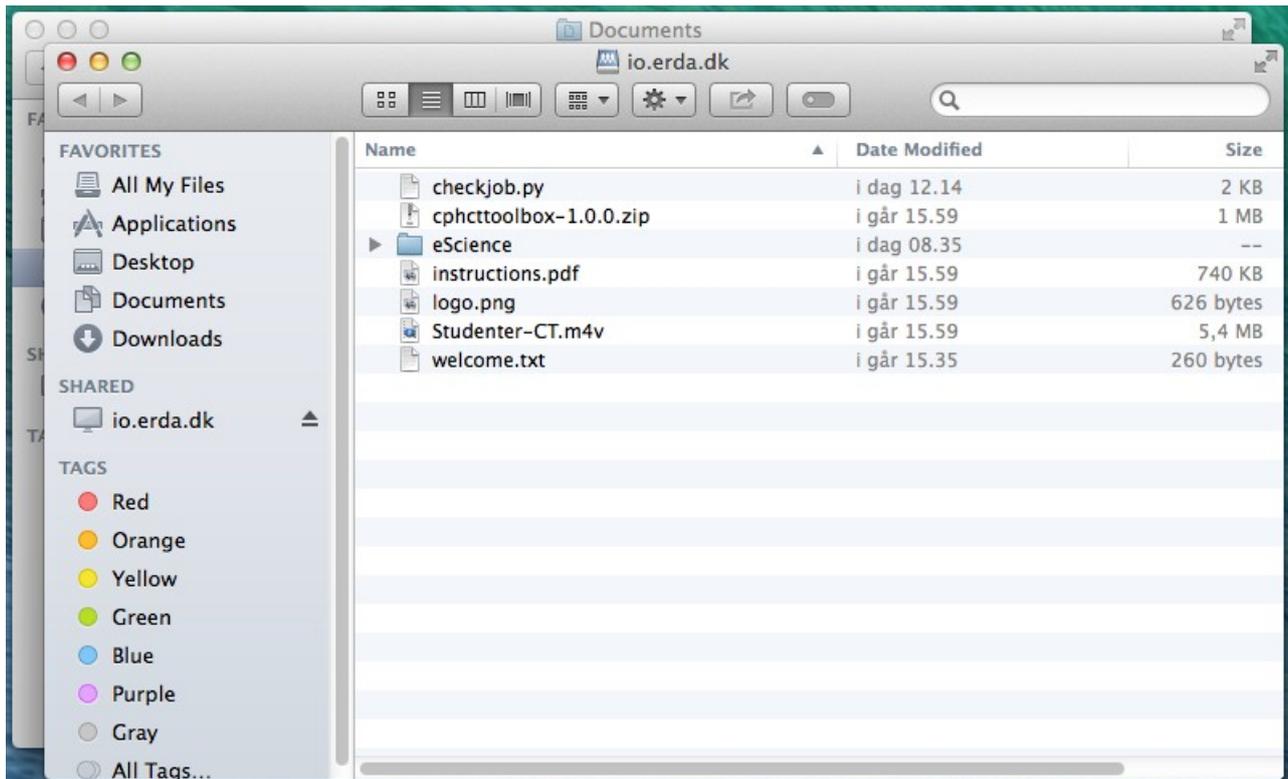
Enter the server URL from the **WebDAVS** setup tab and click **Connect**.



You will then be prompted for your automatic username and the password you entered in the **WebDAVS** tab as described on page 52. In this case it specified the automatic username bardino@nbi.ku.dk.



On success you will see the remote contents which could look like this

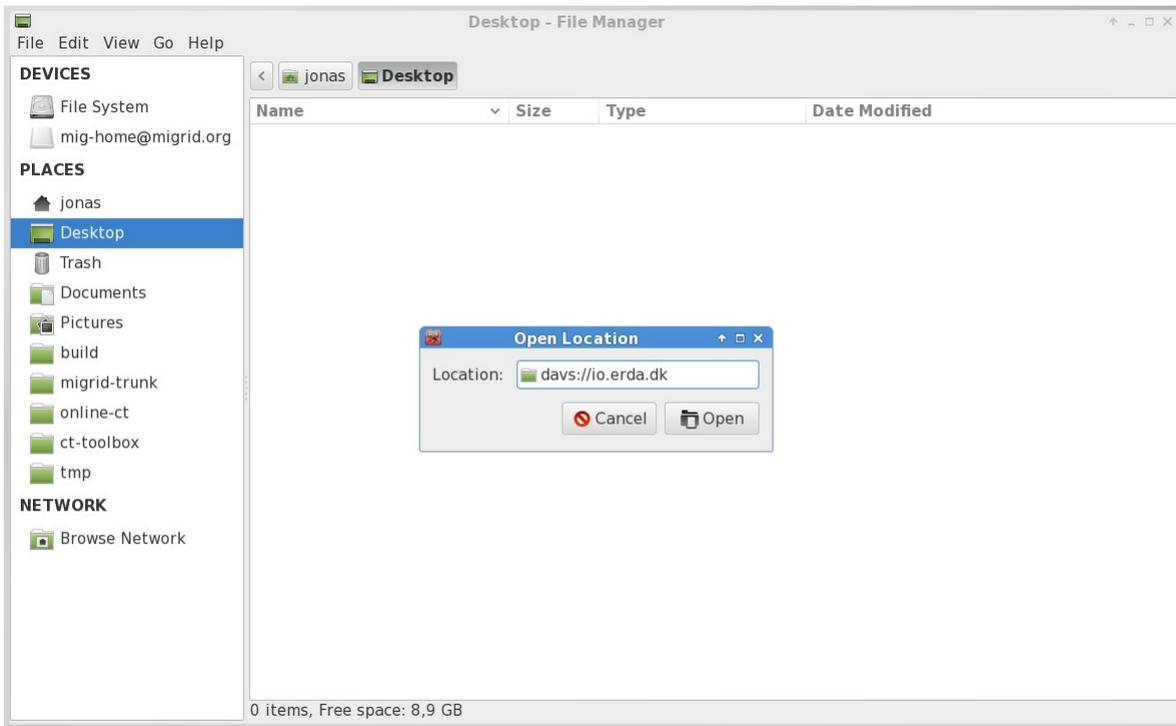


Linux File Manager

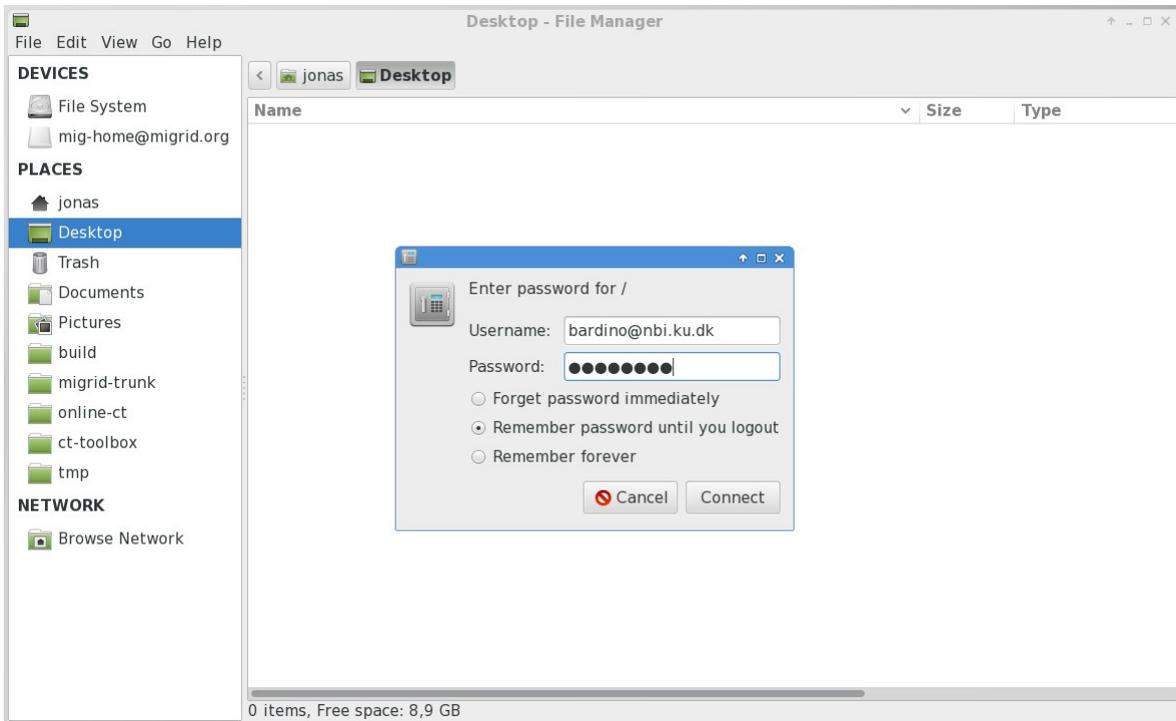
On most modern Linux distributions you can access remote WebDAV(S) content with the native file manager - be it Nautilus, Konqueror, Dolphin, Thunar or something else. In the file manager menu typically under **Go** you select **Open Location**.

Enter the server URL from the **WebDAVS** setup tab (possibly replacing *https* with *davs* in the URL if it complains) and click **Connect**. You find the server URL

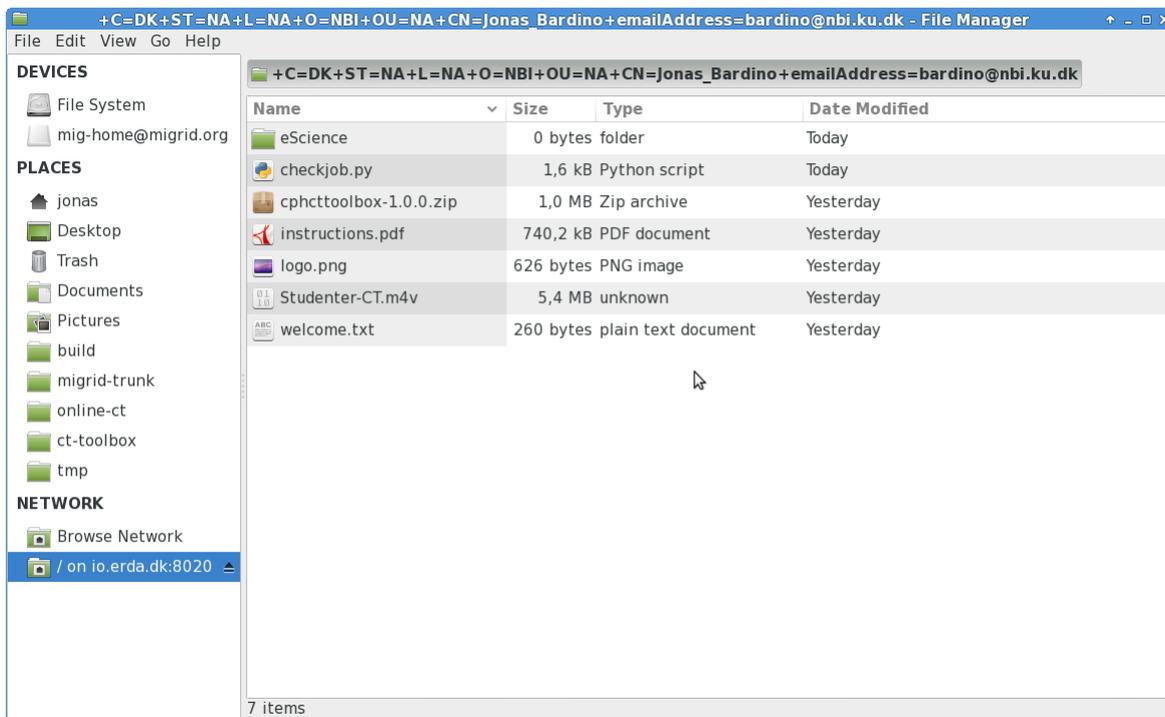
In XFCE with the Thunar file manager as shown here you need to use the *davs* rather than the *https* prefix in the URL.



You will then be prompted for your automatic username and the password you entered on the **WebDAVS** setup tab as described on page 52. In this case it specified the automatic username bardino@nbi.ku.dk.



On success you will see the remote contents which could look like this



NOTE: The Nautilus/Thunar file managers rely on the GNOME gvfs library, which had a known bug at least until recent versions. Thus upload of files bigger than 1GB would simply hang. You can try to upgrade to a working version of gvfs (e.g. 1.22.2) or use another client if you experience this problem.

SFTP

SFTP is a secure and efficient file transfer protocol similar to the old FTP protocol, but with proper security built in. It relies on the security mechanisms of the [OpenSSH](#) suite of applications and it is supported by a number of clients on all popular platforms. Some platforms even integrate it natively in the general file manager, so that no extra software is required.

You generally need to first open the **SFTP** tab on your **Setup** page at ERDA and configure how you want to authenticate to our SFTP server. Either by inserting one or more SSH public keys² or entering a password that you want to login with and click **Save SFTP Settings**. Please also note the Login Details including the automatic username shown there.

2 How they are used is outside the scope of this guide but a good starting point could be https://support.cs.ncl.ac.uk/Advice/Secure_Shell/PublicKey/



Setup

- SFTP
- WebDAVS
- FTPS
- Seafile
- Duplicati
- Cloud
- 2-Factor Auth

SFTP access to your UCPH ERDA account

You can enable SFTP login to your UCPH ERDA account and use it for efficient file and folder upload/download or even for seamless data access from your Windows, Mac OS X and Linux/UNIX computer.

Login Details

- Host `io.erda.dk`
- Port `22`
- Username `bardino@science.ku.dk`
- Publickey / Password as you choose below

You may be asked to verify the server key fingerprint `09:3a:2e:a1:46:10:38:f0:24:21:38:8a:e6:a4:37:5d` (MD5) or `FBCiNwWlHg8mpS9GA6TRoadjWEvkq7H0BQjRavtx1A` (SHA256) first time you connect.

Public Keys

You can use any existing RSA key, or create a new one. If you signed up with a x509 user certificate, you should also have received such an `id_rsa` key along with your user certificate. In any case you need to save the contents of the corresponding public key (`id_rsa.pub`) in the text area below, to be able to connect with username and key as described in the Login Details.

```
1 ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQCeAAqizEc+arGr6gIB1QFQmM0excMITFDfPscmNKf4yAtIoyKv5Wf0V0Wq9pBZ8IBpj
2 ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQCoz91GixHdRE3aT/h2kwJMCCiypePkVhIWZ3FEA+0u4m0Ym0VyJXLn6ZkD0dtwXLv57j
3
```

(leave empty to disable sftp access with public keys)

Password

Please enter and save your desired password in the text field below, to be able to connect with username and password as described in the Login Details.

(leave empty to disable sftp access with password)

Support About ⓘ

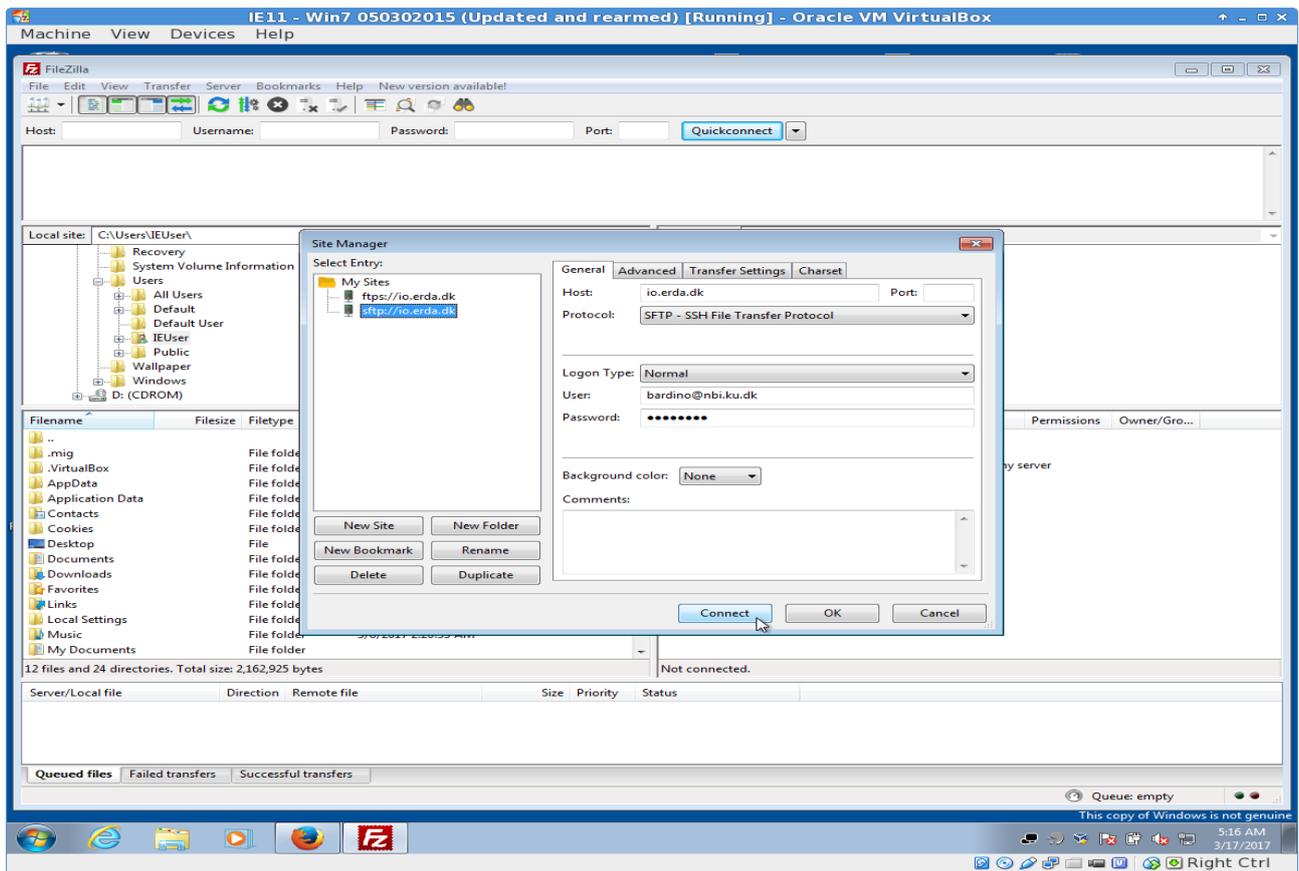
We recommend one of the following clients known to work with ERDA but it is possibly to use others.

FileZilla

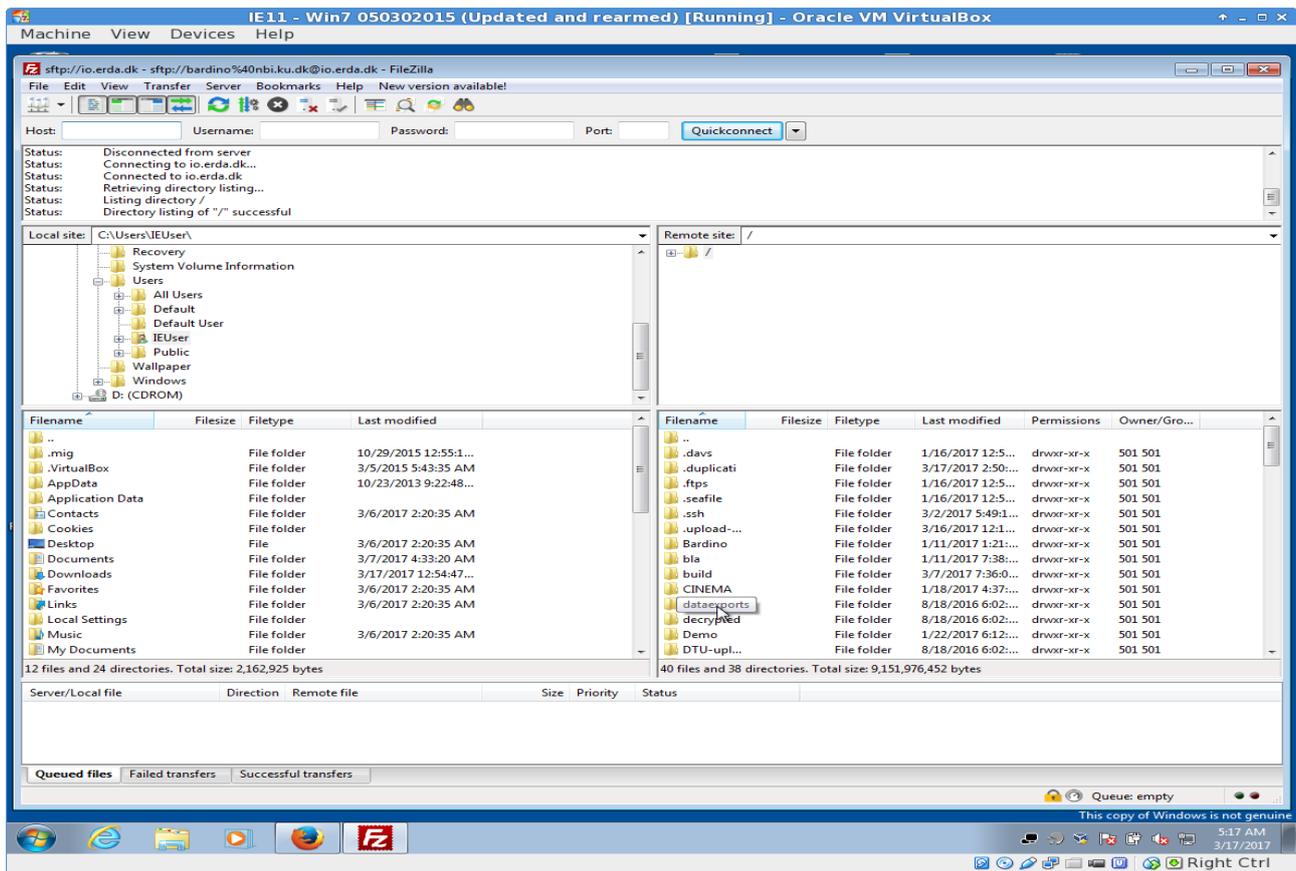
FileZilla is a stand-alone FTP/FTPS/SFTP client available on all popular platforms. It includes a *synchronized browsing* feature, convenient for manually synchronizing folders between your computer(s) and ERDA. Additionally FileZilla comes in a *portable* version, which runs from anywhere without the need to install it first - and thus no need for administrator privileges:

https://portableapps.com/apps/internet/filezilla_portable

Open the **Site Manager** e.g. from the **File** menu in FileZilla and add a New Site with the ERDA details filled in as shown below, but just using the automatic username and the password you entered on your **SFTP** Setup tab:



First time you connect you are asked to verify the ERDA server *fingerprint*, which you can find on your ERDA SFTP Setup page tab as described on page 68. If you don't want to repeat this every time, you can tick the *Always trust certificate in future sessions* box before you choose OK to connect.



Please refer to the project page for further information:

<https://filezilla-project.org>

WinSCP

WinSCP is another popular stand-alone FTP/FTPS/SFTP client available only for Windows. The ERDA configuration is not that different from the FileZilla one, and likewise it comes in a *portable* version which doesn't require installation and administrator rights. Additionally it has a semi-automatic *sync* feature which eases synchronization of files and folders between your computer(s) and ERDA.

Please refer to the project page for more information:

<https://winscp.net/>

PuTTY SFTP

PuTTY is a popular stand-alone SSH client originally developed for Windows, but now also available on other platforms. It is used under the hood for a number of other clients and comes with a SFTP command line client that can be used to interact with ERDA.

IMPORTANT: due to security concerns you need a recent version to connect to our SFTP service. Version 0.67 and later are known to work, whereas older versions *at least* up to 0.64 fail to connect with the error “Couldn't agree a key exchange algorithm: available ...”. If you look at the PuTTY

[Changes](#) page you'll see that there are a number of recent security fixes, which motivate upgrading to version 0.68 or later anyway.

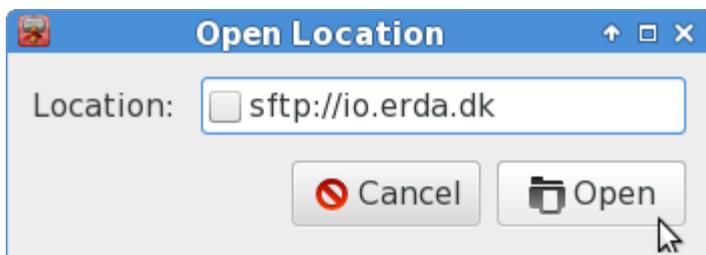
Please refer to the project page for more information:

www.chiark.greenend.org.uk/~sgtatham/putty/

Linux File Manager

On most modern Linux distributions you can access remote SFTP content with the native file manager. The steps are the same as described in the corresponding section about Linux File Manager for WebDAVS, just with the URL changed to point at the SFTP service.

Enter the server details from the **SFTP** setup tab (possibly replacing sftp with ssh if it complains) and click **Connect**. In this example it would be just sftp://io.erda.dk as port 22 is implicit.



Then proceed as for the WebDAVS case, but again with the login details from your SFTP Setup tab as described on page 68.

SSHFS

On Linux and Mac OSX it has already for a long time been possible to map/mount remote storage with SSHFS as a kind of network drive, so that the remote contents look just like if they were in a local directory. Recently a fully functional and client for Windows gained momentum to finally complete SSHFS support on all three major platforms. SSHFS uses SSH/SFTP connections underneath, so it inherits a number of the advantages like efficiency plus network robustness from there, and it works directly with ERDA SFTP.

You can install SSHFS on Windows by downloading and running *WinFsp* and *SSHFS-Win* from [Win-SSHFS](#). That extends the usual *map drive* functionality in the file manager (Windows Explorer) to support SFTP like it does natively for WebDAVS. That is, similarly to the description in the Windows File Manager section for WebDAVS, but without the cumbersome extra system tweaks needed for WebDAVS.

There's a little video on the aforementioned Win-SSHFS page briefly showing a practical example. As it shows you can use the format [\\sshfs\USERNAME@SERVER](#) in map drive, where USERNAME and SERVER are as described in SFTP above, and you are then prompted for your chosen password during login.

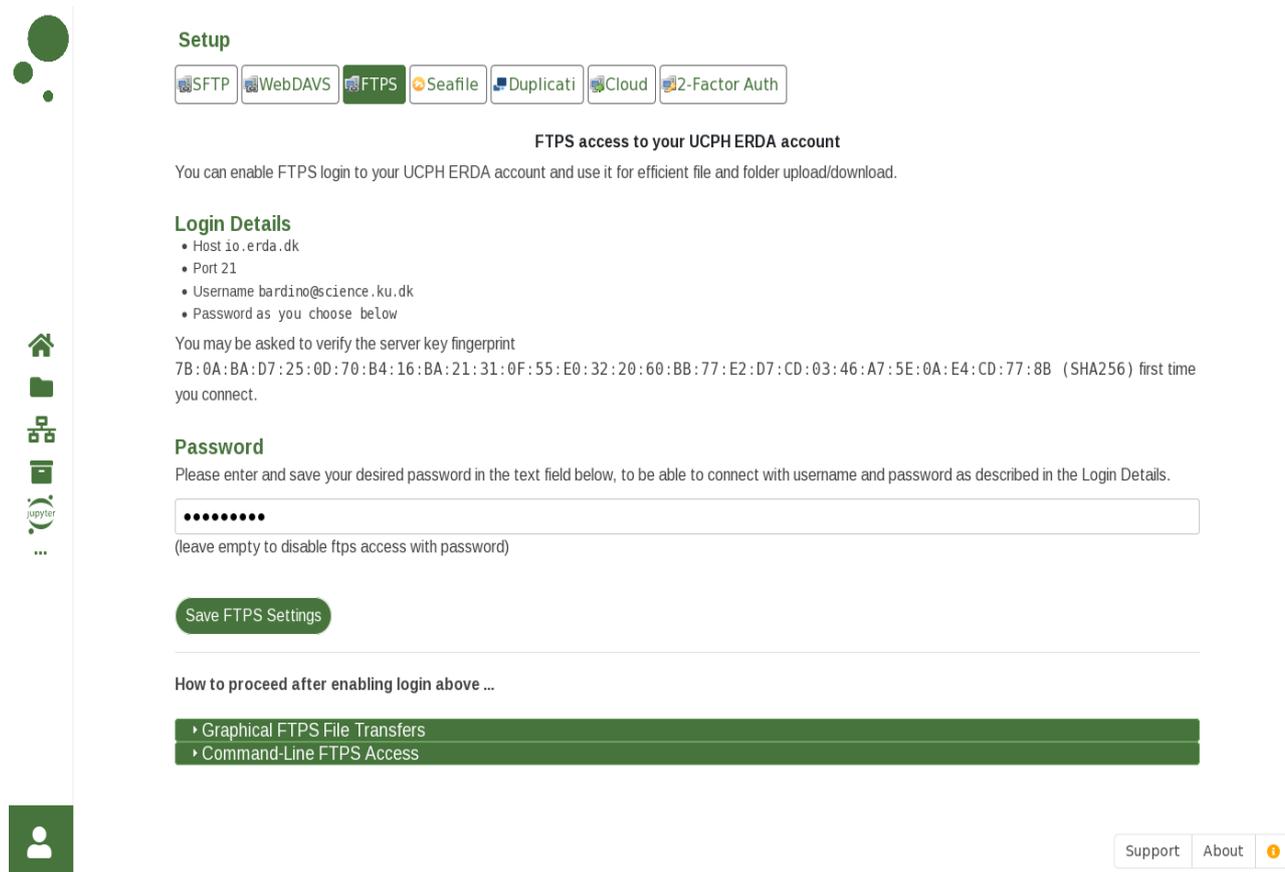
On Mac OSX you can install SSHFS by downloading and opening *FUSE For OS X* and *SSHFS* from [OSXFuse SSHFS](#) or via MacPorts/Brew commandoes. With the former you can additionally add MacFusion for a pretty graphical wrapping of SSHFS instead of using terminal commands.

On Linux you can install SSHFS in your Software Center or through the APT/YUM commands, where the package is simply known as *sshfs*. In addition to the usage example in your **SFTP** tab on **Setup** at ERDA, there are a number of tutorials online, if it's not trivial to get it working. You can of course also just choose to rely solely on the built-in SFTP support from Linux File Manager, if you don't feel like installing *sshfs* and figuring out how to use it from the command line.

FTPS

FTPS is another secure and efficient file transfer protocol built on top of the old FTP protocol, but with proper security added. It relies on the security mechanisms of TLS/SSL and it is supported by a number of clients on all popular platforms. As far as we know none of the major platforms integrate it natively in the general file manager, so you probably need to install a dedicated client to use it.

You generally need to first open the **FTPS** tab on your **Setup** page at ERDA and configure how you want to authenticate to our FTPS server. Enter a password that you want to login with and click **Save FTPS Settings**. Please also note the login details including the automatic username shown there.



The screenshot shows the 'Setup' page for enabling FTPS access. At the top, there are navigation tabs for SFTP, WebDAVS, **FTPS** (selected), Seafile, Duplicati, Cloud, and 2-Factor Auth. Below the tabs, the heading is 'FTPS access to your UCPHERDA account'. A sub-heading reads: 'You can enable FTPS login to your UCPHERDA account and use it for efficient file and folder upload/download.' Under 'Login Details', the information provided is: Host `io.erd.dk`, Port `21`, Username `bardino@science.ku.dk`, and Password as you choose below. A note states: 'You may be asked to verify the server key fingerprint' followed by the fingerprint string: `7B:0A:BA:D7:25:0D:70:B4:16:BA:21:31:0F:55:E0:32:20:60:BB:77:E2:D7:CD:03:46:A7:5E:0A:E4:CD:77:8B (SHA256)` first time you connect. The 'Password' section has a text field with masked characters and a note: '(leave empty to disable ftps access with password)'. A 'Save FTPS Settings' button is present. Below, a section titled 'How to proceed after enabling login above ...' contains two links: 'Graphical FTPS File Transfers' and 'Command-Line FTPS Access'. At the bottom right, there are 'Support', 'About', and an information icon.

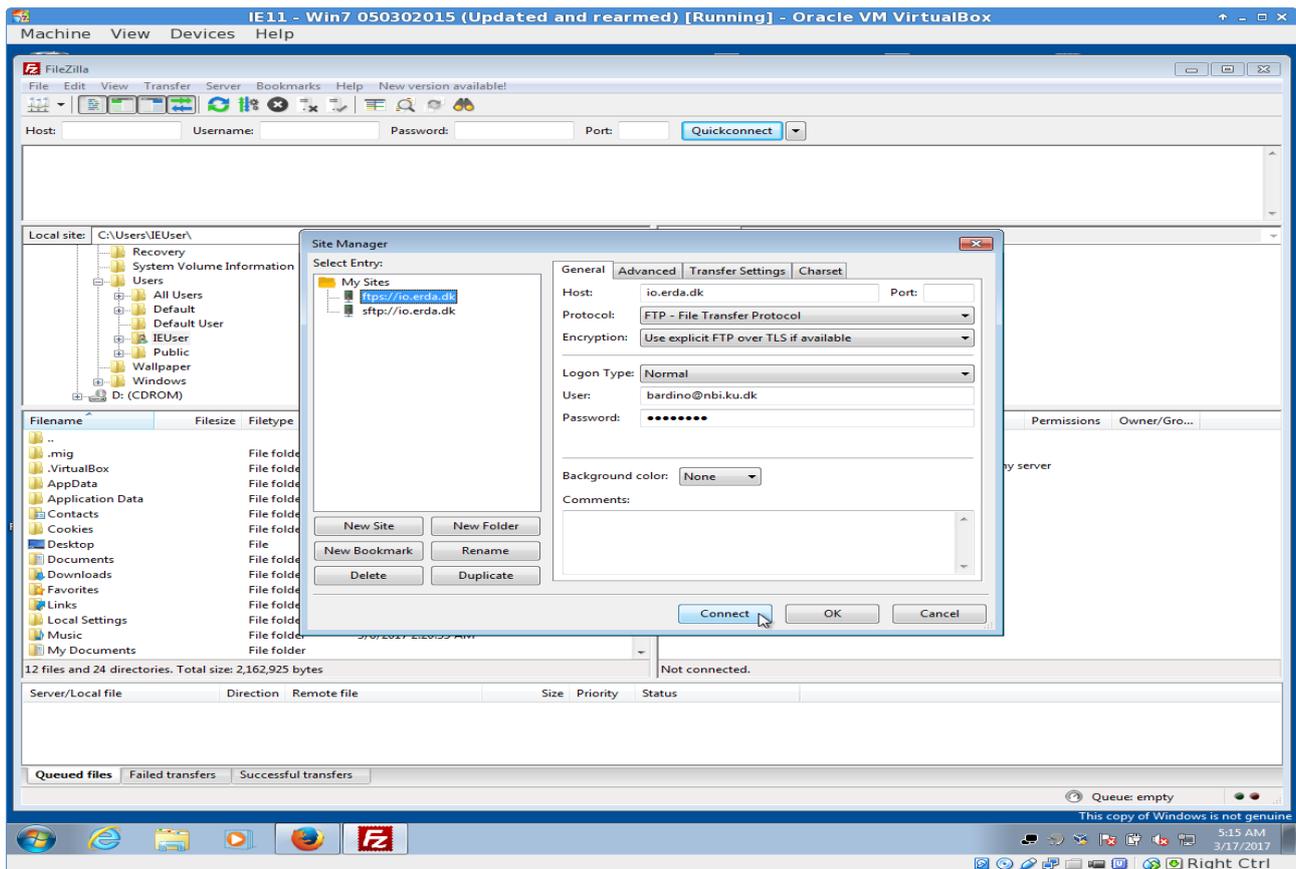
Our SFTP server is more thoroughly tested and allows the stronger public key authentication, but our FTPS server may deliver higher throughput, so feel free to use either in accordance with your needs.

You can use the clients that we mentioned in the SFTP section, but other FTPS clients may also work.

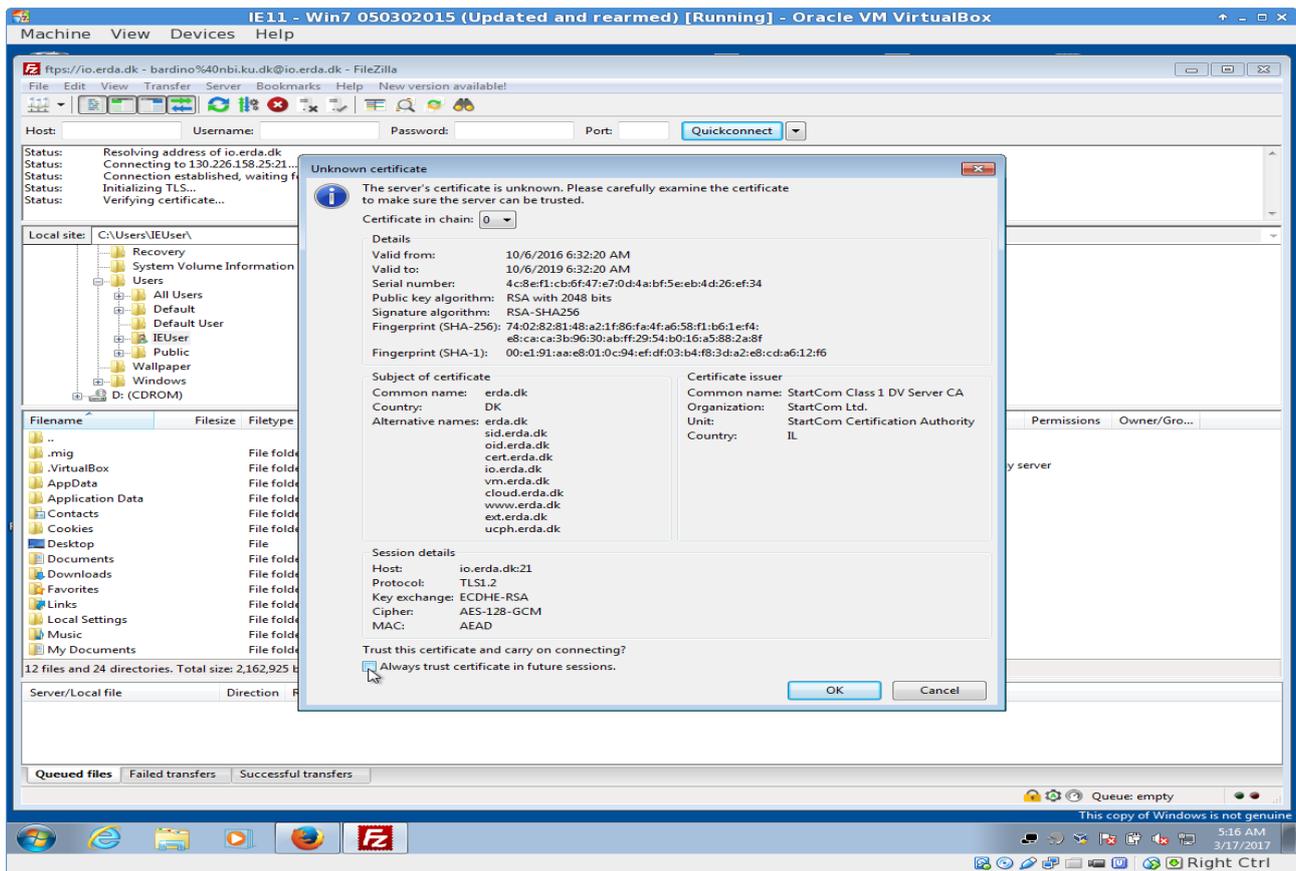
FileZilla

FileZilla can be used to interact with FTPS on ERDA. It is done much like for SFTP, so please refer to the FileZilla SFTP section for more details.

In FileZilla open the **Site Manager** e.g. from the **File** menu and create a New Site with the ERDA details as shown below, but just using the automatic username and the password you entered on your **FTPS** Setup tab as described on page 74:



First time you connect you are asked to verify the ERDA server *fingerprint*, which you can find on your ERDA FTPS Setup page. If you don't want to repeat this every time you can tick the *Always trust certificate in future sessions* box before you choose OK to connect. Please note that the fingerprint changes occasionally so you may need to repeat this step some months later.



Then your ERDA files should appear on the right side pane as for the SFTP case.

WinSCP

WinSCP can also be used for FTPS. Please refer to the WinSCP SFTP section for more details.

WebDAVS/SFTP/FTPS Access to Share Links

It is possible to combine the ERDA Share Links with the efficient file access from WebDAVS, SFTP and FTPS. Thus share links created with read **and** write access are additionally accessible through these protocols, and can be locally mapped as a network drive. In that way even collaboration partners *outside* ERDA can use efficient file access to exchange data with you.

Similarly a share link on a personal/workgroup folder can be used to share it as a kind of common network drive on e.g. lab-PCs and such, where you don't want to leave your own ERDA account logged in.

Please refer to the details about mapping from different platforms in the previous sections and just note that instead of supplying your personal credentials you have to provide the 10 character share link ID as username and password. As an example you can access the share link with ID gBf51LXf4T by connecting with WebDAVS/SFTP/FTPS as previously described, but enter gBf51LXf4T as username and as password.

Seafile

Seafile on ERDA is a file synchronization service much like Dropbox – but since ERDA is located at UCPH physically and network-wise it comes without the UCPH restrictions on the use of Dropbox **only** for public data. All data are sent through a secure connection to the ERDA storage, and users can additionally choose to have their synchronized data encrypted locally before ever sending it over the network to the storage. This means that data are significantly better protected against eavesdropping by strangers. The optional encryption is done with the AES 256 algorithm, which 'Datatilsynet' and other authorities define as a suitable algorithm for strong encryption.

Seafile provides sharing capabilities which can be used to share data with internals and externals, and in that context it is left to the users to adhere to rules and regulations about confidentiality and sensitive private data.

You generally need to first open the **Seafile** tab on your **Setup** page at ERDA and register your Seafile account on ERDA. Enter a password that you want to use for Seafile login and click **Register**.

Setup

SFTP WebDAVS FTPS **Seafile** Duplicati Cloud 2-Factor Auth

Seafile Synchronization on UCPH ERDA

You can register a Seafile account on UCPH ERDA to get synchronization and sharing features like those known from e.g. Dropbox. This enables you to keep one or more folders synchronized between all your computers and to share those files and folders with other people.

Register UCPH ERDA Seafile Account

Seafile Username

Choose Password

Confirm Password

Register and wait for email confirmation before continuing below.

Login and Install Clients

Once your UCPH ERDA Seafile account is in place **log in** to it and install the client available there on any computers where you want folder synchronization. Optionally also install it on any mobile device(s) from which you want easy access. Then return here and **proceed** with the client set up and UCPH ERDA integration.

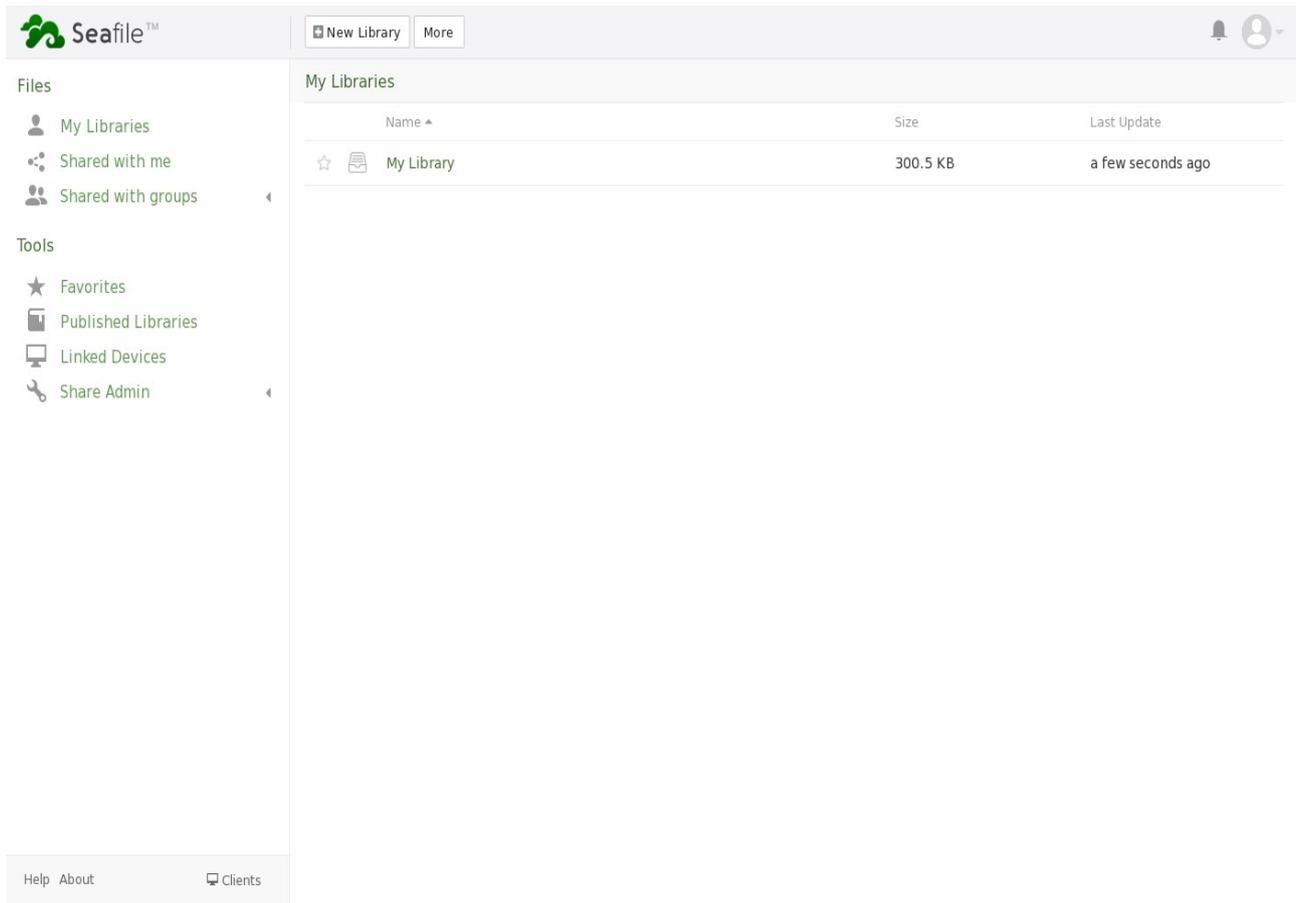
Seafile server status: **online** (your are either not registered yet or not currently logged in)

Support About ⓘ

The registration will proceed and inform the ERDA administrators to activate your Seafile account.

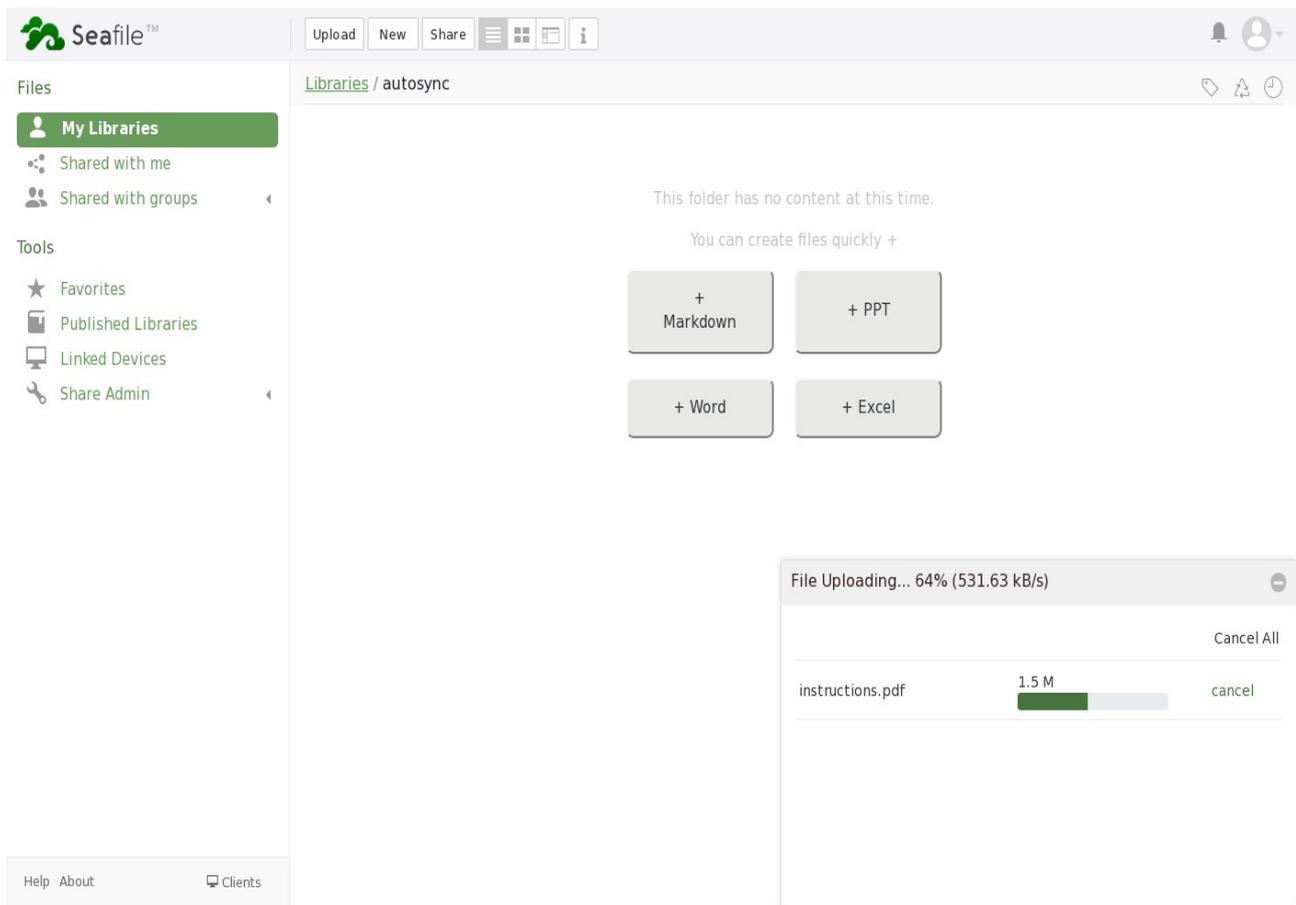
Registration complete, please wait for administrator to activate your account.

You'll receive an email once your account is activated, and then you can use the **Login** link there to login with your email and the password you chose in the previous register step as described on page 77. Then proceed creating *libraries* of files and folders for synchronization and/or sharing.

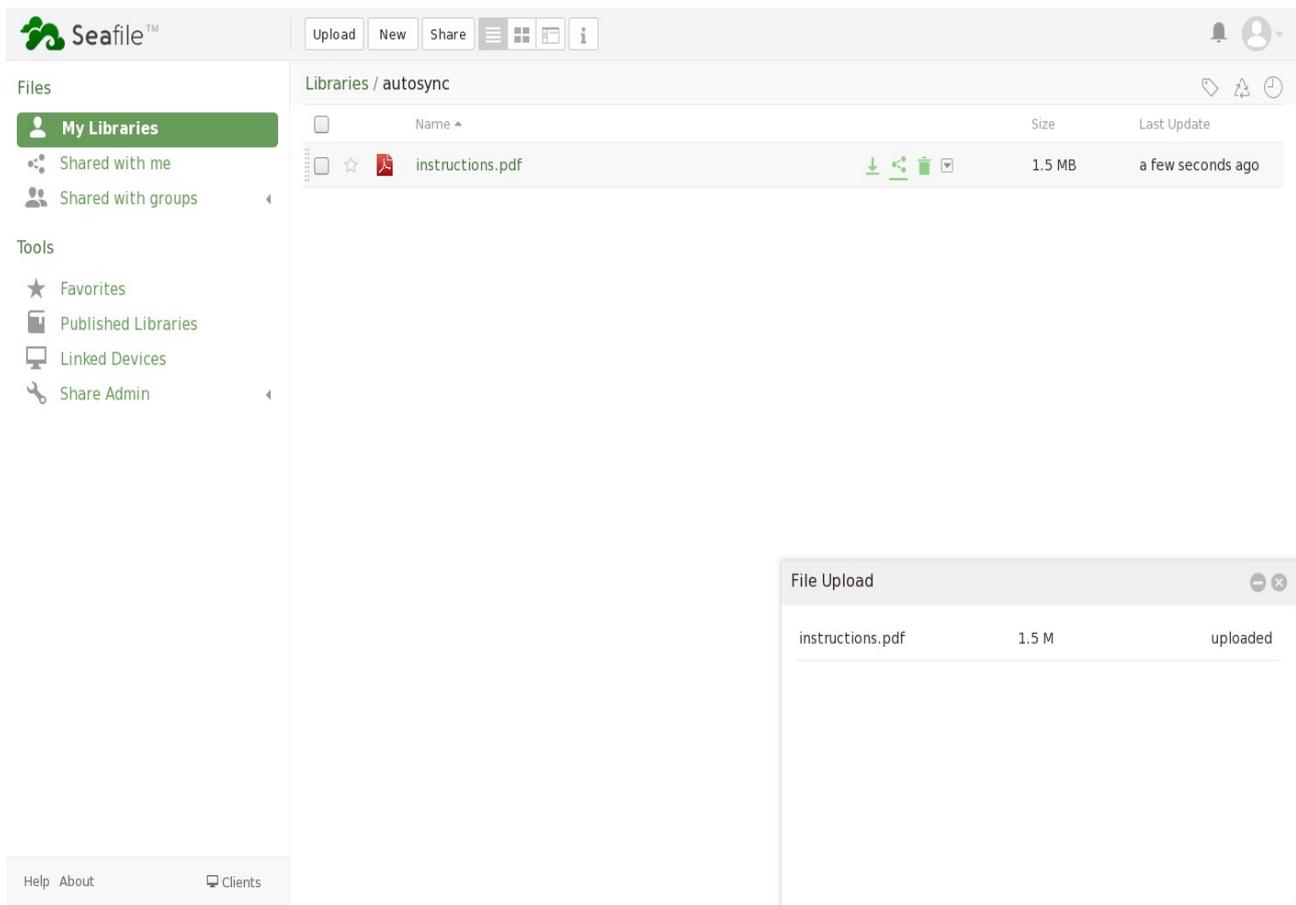


As an example you create a library called *autosync* by clicking the **New library** button shown above and filling the pop-up with just that name before clicking **Submit**.

Then you can click on the newly created *autosync* library and upload files using the **Upload** button and selecting one or more local files as shown with the *instructions.pdf* file below.



Once you have data in your Seafiler library you can share them with others by moving the mouse over the file or folder and clicking the **share** icon appearing.



This will open a short sharing wizard pop-up where you first **Generate** a sharing link and then enter email addresses of people to share it with. You can password protect the share and include a small message with the link email if you like.

To actually synchronize one or more libraries to your PC(s) or workstation(s), you need to install the client. When you login to your Seafile page there's a link to the downloads page at the bottom. The client is available for all common platforms, including Windows, Mac OSX and Linux in addition to clients in the app stores for mobile devices.

Download and install the one for your platform to proceed. Then add your account as shown here but with your email and password from the Seafile registration.

Add an account

Server: ▼

For example: https://seacloud.cc
or http://192.168.1.24:8000

Email / Username:

Password:

Automatic Login

Computer Name:

e.g. Jim's laptop

[Single Sign On](#)

When you click **Login** you will get a list of libraries for your account. You can right click on a library and select **Sync this library** to make a local version for synchronization. You will then be asked where to store the synchronized folder locally. Once chosen the client should start actually synchronizing your library to that folder.

Any future changes or additions you make to that folder will also automatically be synchronized to your library.

Seafile also includes automatic file revisions, so that you can always fetch older versions of synchronized files on your Seafile web page. This includes files that you deleted from your local synchronization folder, making it work as a backup as well.

You can install the client on as many devices as you want and repeat the **Sync this library** to always have files synchronized between them.

Automatic Backup to ERDA

It is possible to combine Advanced Data Access with the free and open backup program [Duplicati](#) to achieve automatic backup of your computer(s) to ERDA. Duplicati stores backup files in a special container form, which allows it to store e.g. special files and exotic file names, that may otherwise be a problem to save directly on ERDA. It also means that it's easy to encrypt the entire backup, so that no one else can read it, even if they should illegitimately obtain access to the ERDA storage.

Duplicati exists in a user-friendly graphical flavor as well as a command-line flavor better suited for backup of e.g. servers and certain NAS-systems. In this guide we only cover the graphical flavor.

In short setting up Duplicati requires two steps, namely creating the ERDA-specific configuration at

your ERDA Duplicati Settings followed by import of the resulting configuration(s) in the Duplicati client on your computer.

First you go to your ERDA **Setup** page and choose the Duplicati tab.

Setup

SFTP WebDAVS FTPS Seafiler **Duplicati** Cloud 2-Factor Auth

Duplicati Backup to UCPH ERDA

You can install the Duplicati client on your local machine and use it to backup arbitrary data to UCPH ERDA. We recommend the most recent version of Duplicati to be able to import the generated configurations from here directly.

Configure Backup Sets

You can define the backup sets here and then afterwards just download and import the configuration file in your Duplicati client, to set up everything for UCPH ERDA backup use.

Backups

List of backup set IDs.

1

Protocol

Which protocol to use for communicating with the server.

SFTP

Username

Username for given protocol when communicating with the server.

bardino@science.ku.dk

Schedule

Optional scheduling of automatic runs this often.

Daily

Save Duplicati Settings

Support About



We recommend the most recent version of Duplicati to be able to import the generated configurations from here directly.

Configure Backup Sets

You can define the backup sets here and then afterwards just download and import the configuration file in your Duplicati client, to set up everything for UCPH ERDA backup use.

Backups

List of backup set IDs.

1 Documents

Protocol

Which protocol to use for communicating with the server.

Username

Username for given protocol when communicating with the server.

Schedule

Optional scheduling of automatic runs this often.

[Save Duplicati Settings](#)

Import Backup Sets

Your saved UCPH ERDA Duplicati backup settings are available for download below:

No backup sets configured

After downloading you can import them directly in the most recent Duplicati client versions from the link above.

[Support](#) [About](#)

Enter one or more names you want to use for your backup(s) in the Backups field. E.g. the name of the computer or the folders you want to backup.

The remaining fields are optional and can just be left as is. Please note that you need to have configured password login for SFTP or whichever Protocol you choose for Duplicati, however. How to set up password login for the individual protocols is covered in the previous sections. Click **Save Duplicati Settings** when done and wait for the automatic page refresh



We recommend the most recent version of Duplicati to be able to import the generated configurations from here directly.

Configure Backup Sets

You can define the backup sets here and then afterwards just download and import the configuration file in your Duplicati client, to set up everything for UCPH ERDA backup use.

Backups

List of backup set IDs.

1 Documents

Protocol

Which protocol to use for communicating with the server.

Username

Username for given protocol when communicating with the server.

Schedule

Optional scheduling of automatic runs this often.

[Save Duplicati Settings](#)

Import Backup Sets

Your saved UCPH ERDA Duplicati backup settings are available for download below:

[Documents.json](#)

After downloading you can import them directly in the most recent Duplicati client versions from the link above.

[Support](#) [About](#)

where links to a *.json* file now appear for each backup name you entered in the Backups field. In this case we just entered *Documents* and got *Documents.json* as a result. You can download the json file(s) by right clicking on the link(s) and then something like **Save link as** or **Save target as** depending on which web browser and language you use.

The second half of the setup is to import the resulting json file(s) directly in Duplicati.

Download and install the latest 2.x release from

<https://www.duplicati.com/download>

Prepackaged versions for a wide range of platforms are available there. So download and and install the one which fits your computer. In this example we used the file with the *-x86.msi* suffix since it is suitable for 32-bit Windows systems like the one used here. For 64-bit Windows one would instead use the file with the *-x64.msi* suffix, and for Mac it would be the *.dmg* file.

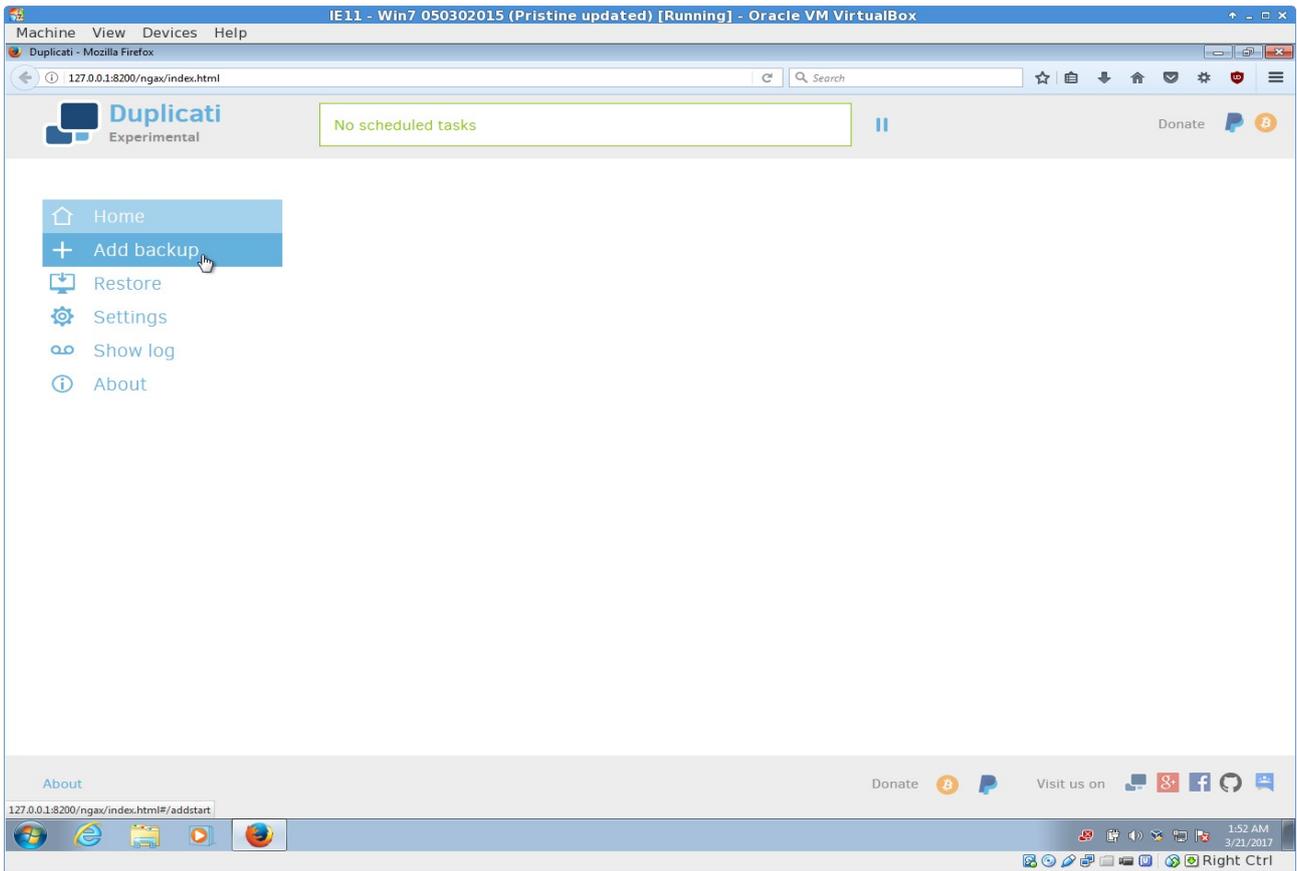


On most platforms installing is a matter of double clicking the downloaded file and clicking through the install wizard. For Windows platforms the Windows Update utility should already have installed the required .Net 4.5+ libraries. On other platforms it may be necessary to install the corresponding Mono 3.0+ libraries before the installation will proceed³.

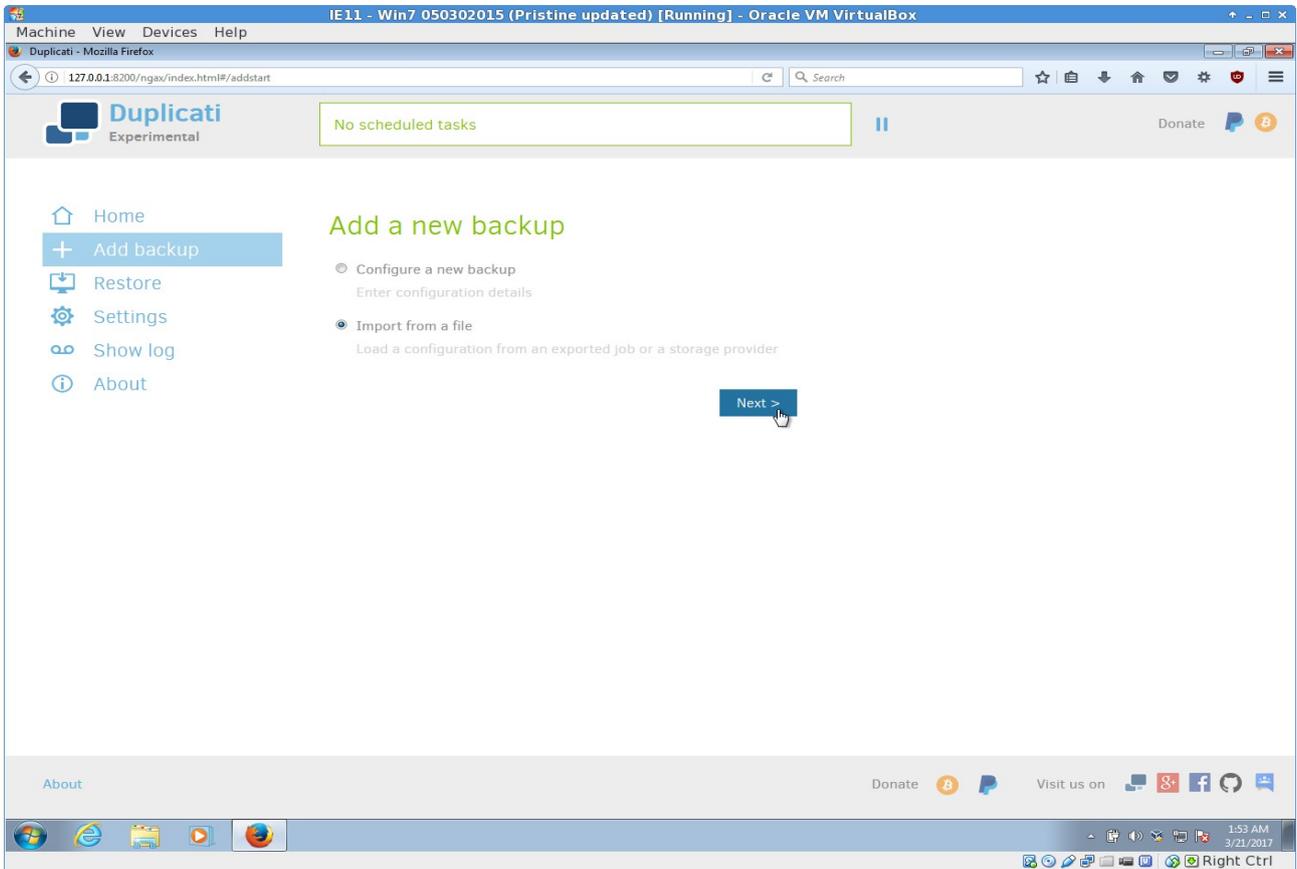
When installed Duplicati should automatically start and show the status overview. However, you can always open Duplicati by right-clicking the status icon in the system tray next to the clock and choose Open there.

Select **Add backup** from the menu in Duplicati

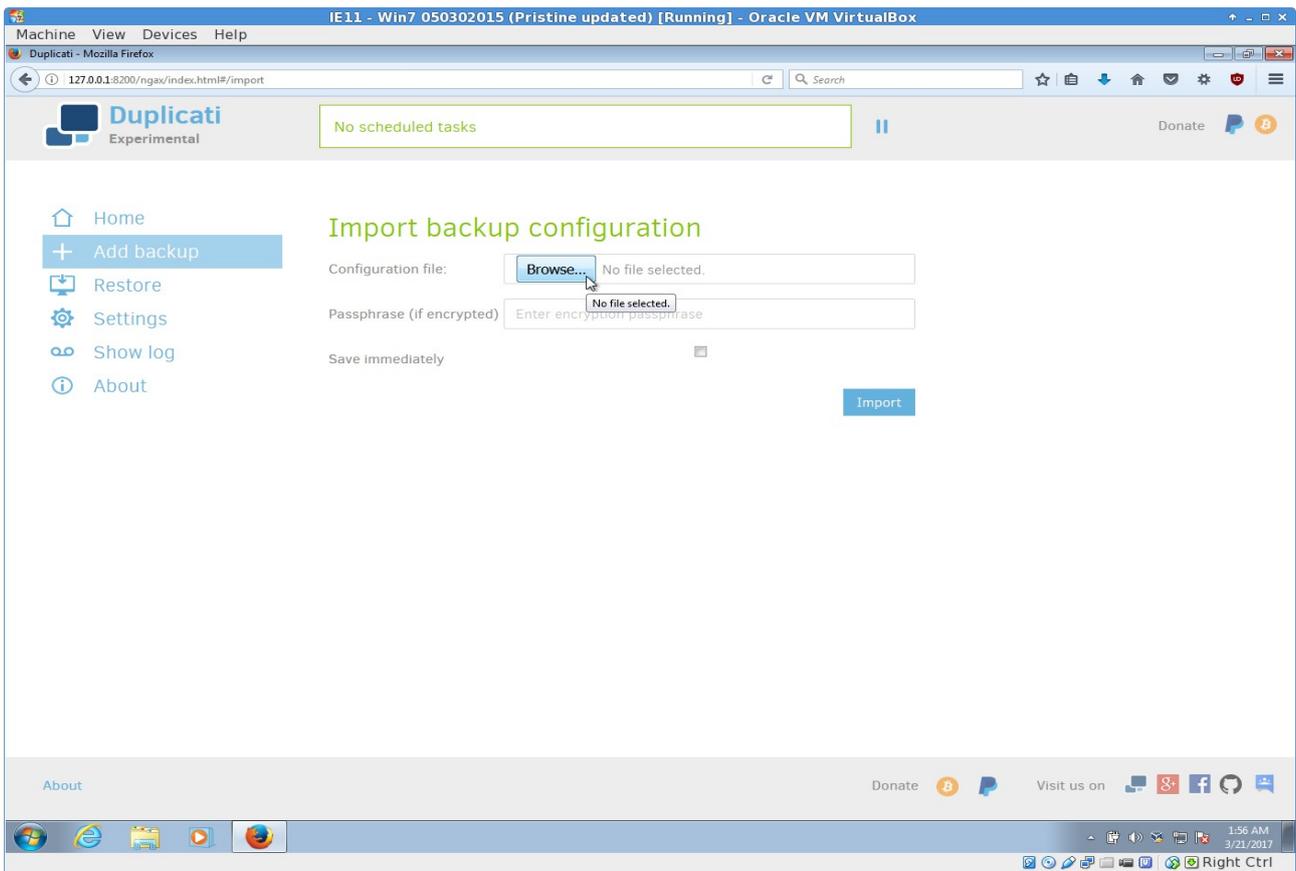
³ If you run into problems with Mono and security warnings, you may also want to have a look at <https://github.com/duplicati/duplicati/wiki/SSL-TLS-support-in-Mono>



and choose the Import from a file option before clicking Next.

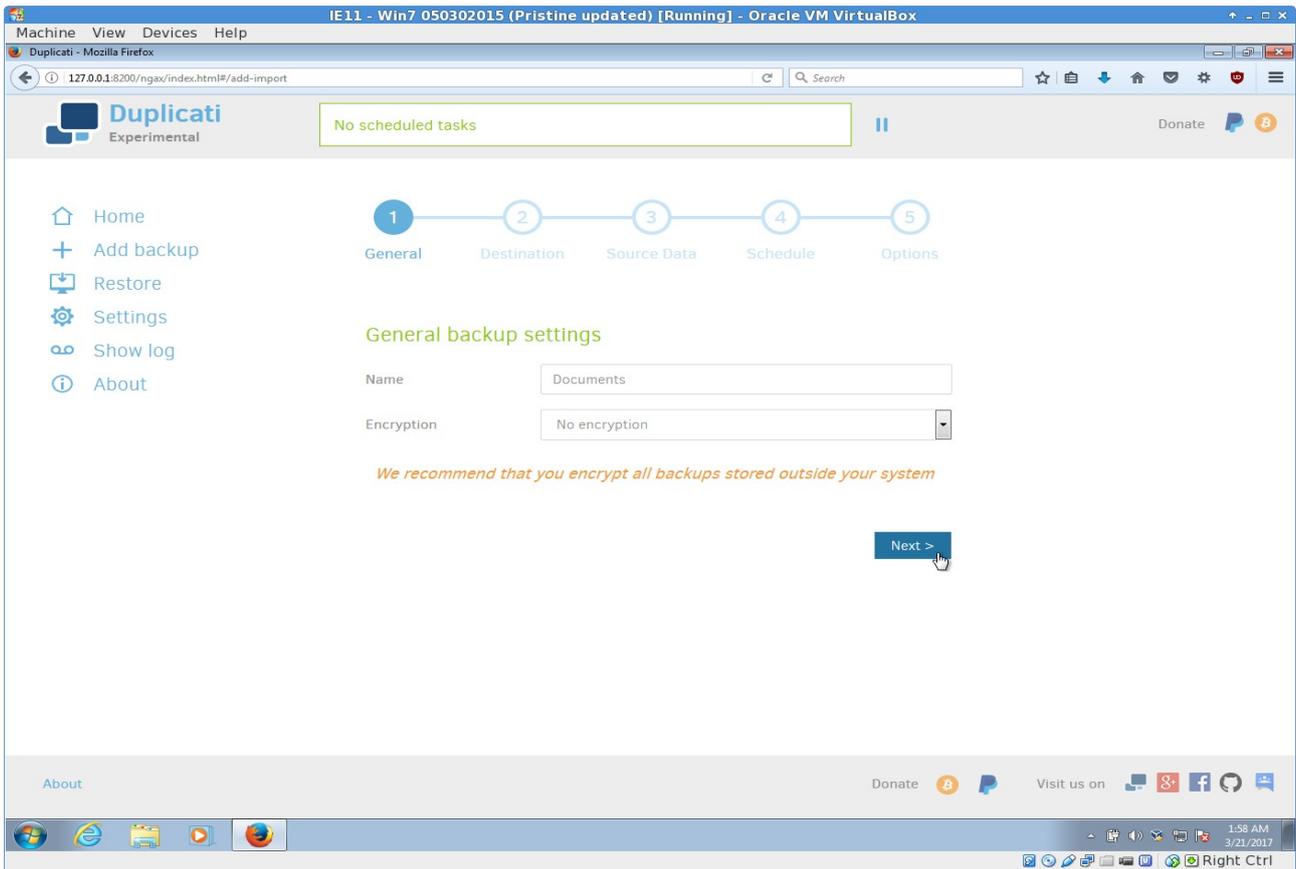


Here you **Browse** to the saved .json file in the Configuration file field and click **Import**.



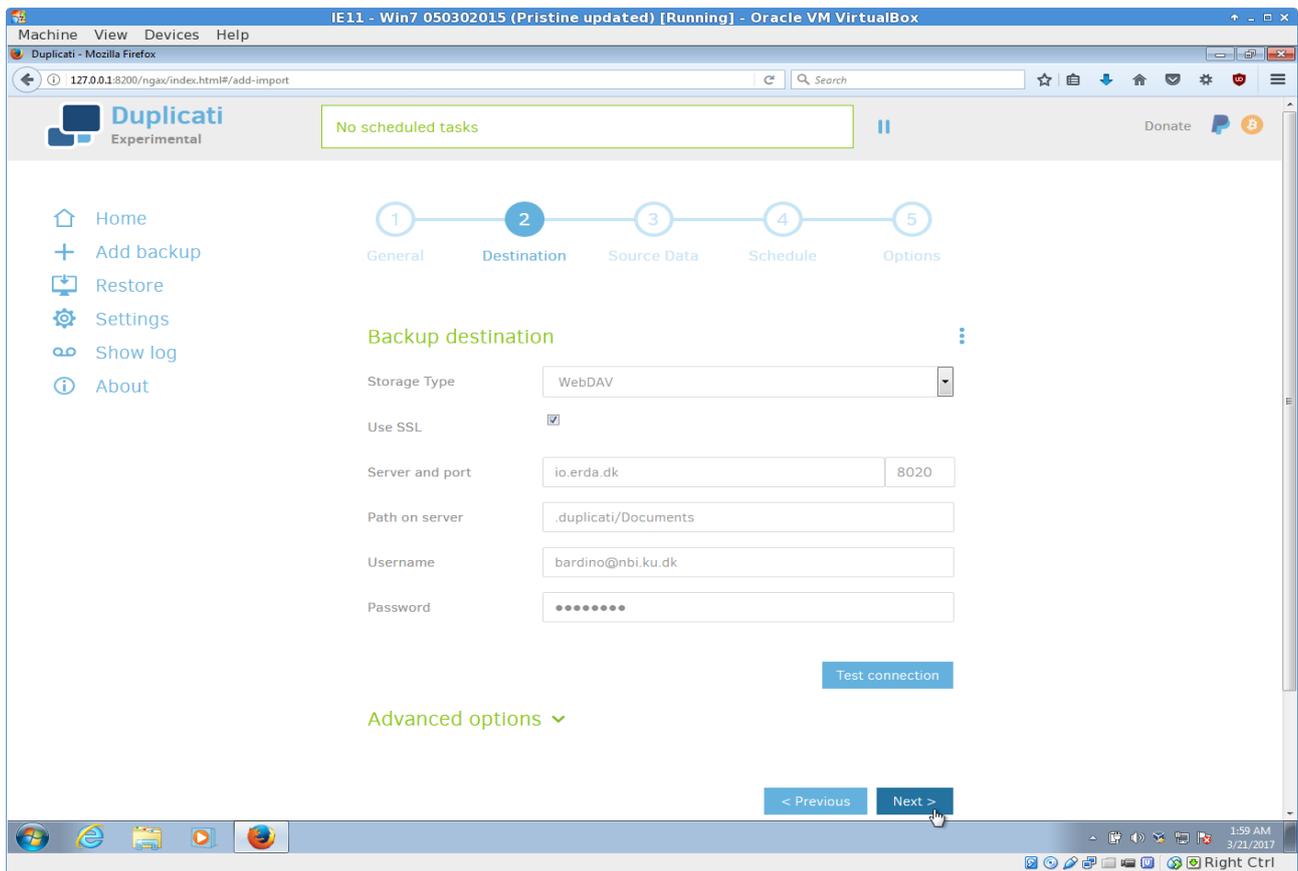
Optionally set up encryption for the backup before clicking Next. Here we show it without encryption.

It is left for you to weigh the need for encryption against the extra load it adds on your computer when encrypting and decrypting backup data. In case you backup confidential data it is definitely a good idea to encrypt it – possibly even a legal requirement in line with the guidelines from the [Danish Data Protection Agency](#).



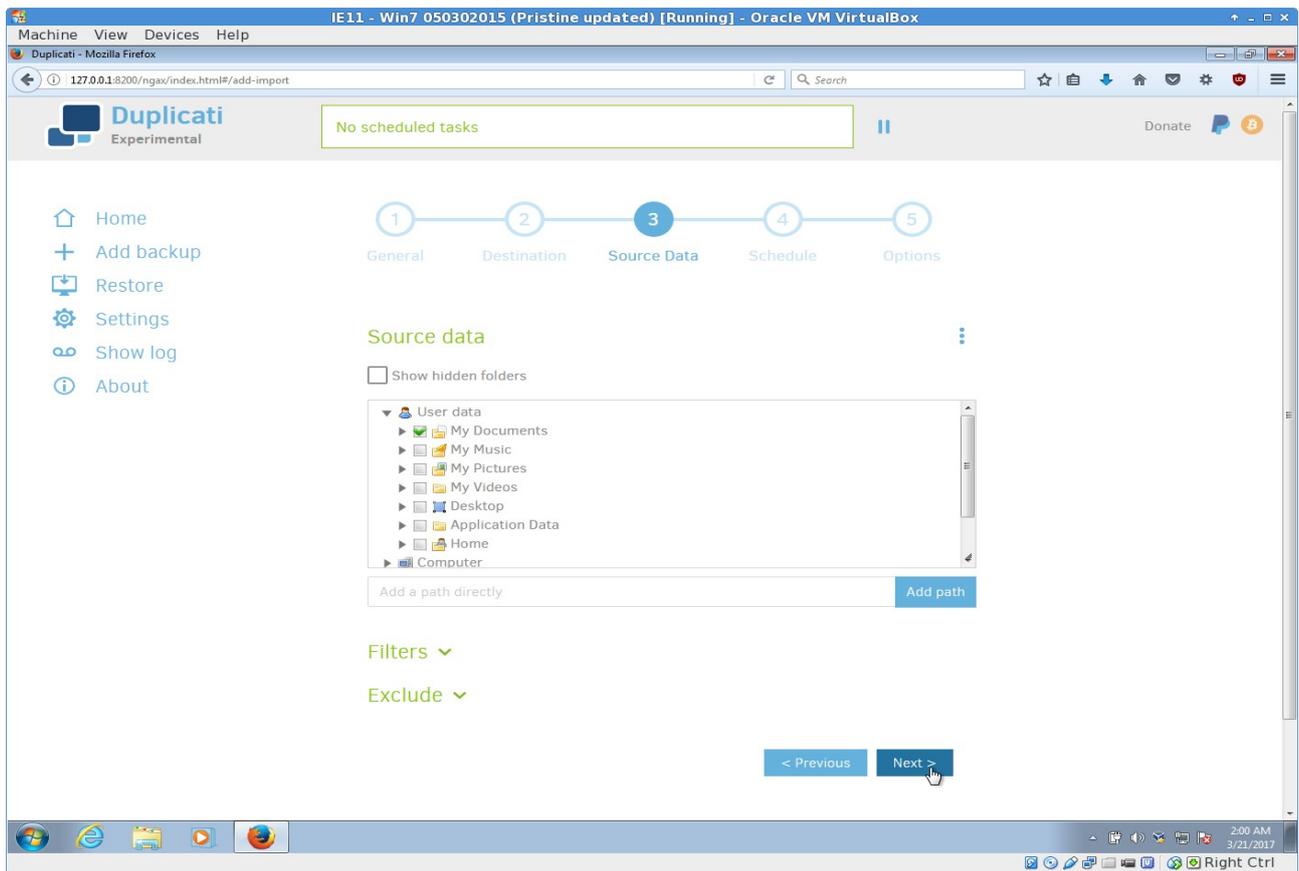
On the next page all ERDA settings are pre-filled from the configuration file – except the password field. This password is the one you previously configured for the selected protocol on ERDA. I.e. with the default choices, it is the SFTP password you set on your ERDA SFTP Setup page, and so on.

At this point you can click **Test connection** to verify that the connection and login is correctly configured before proceeding with Next.

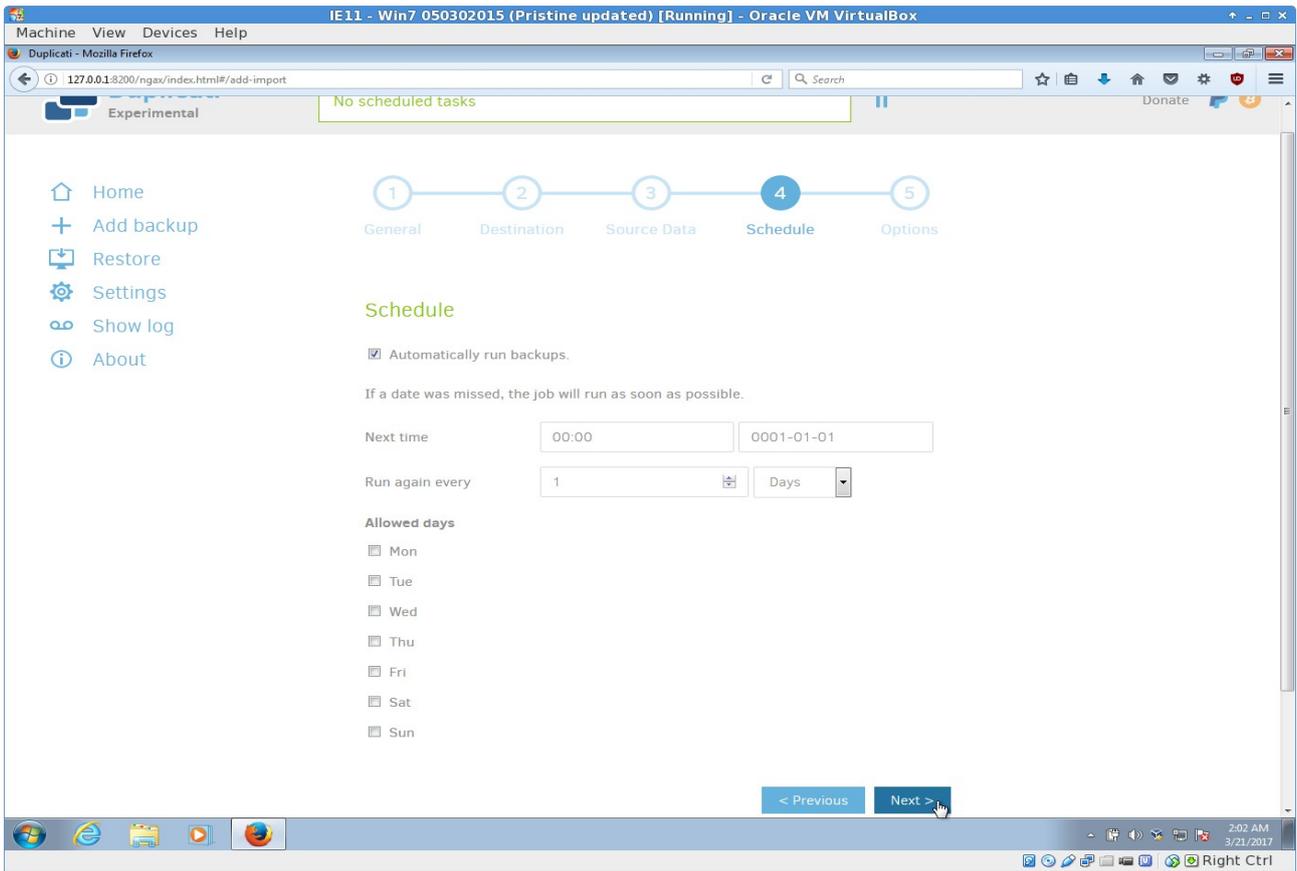


Select which local folders to include in the backup, like e.g. *My Documents* as shown here and click Next.

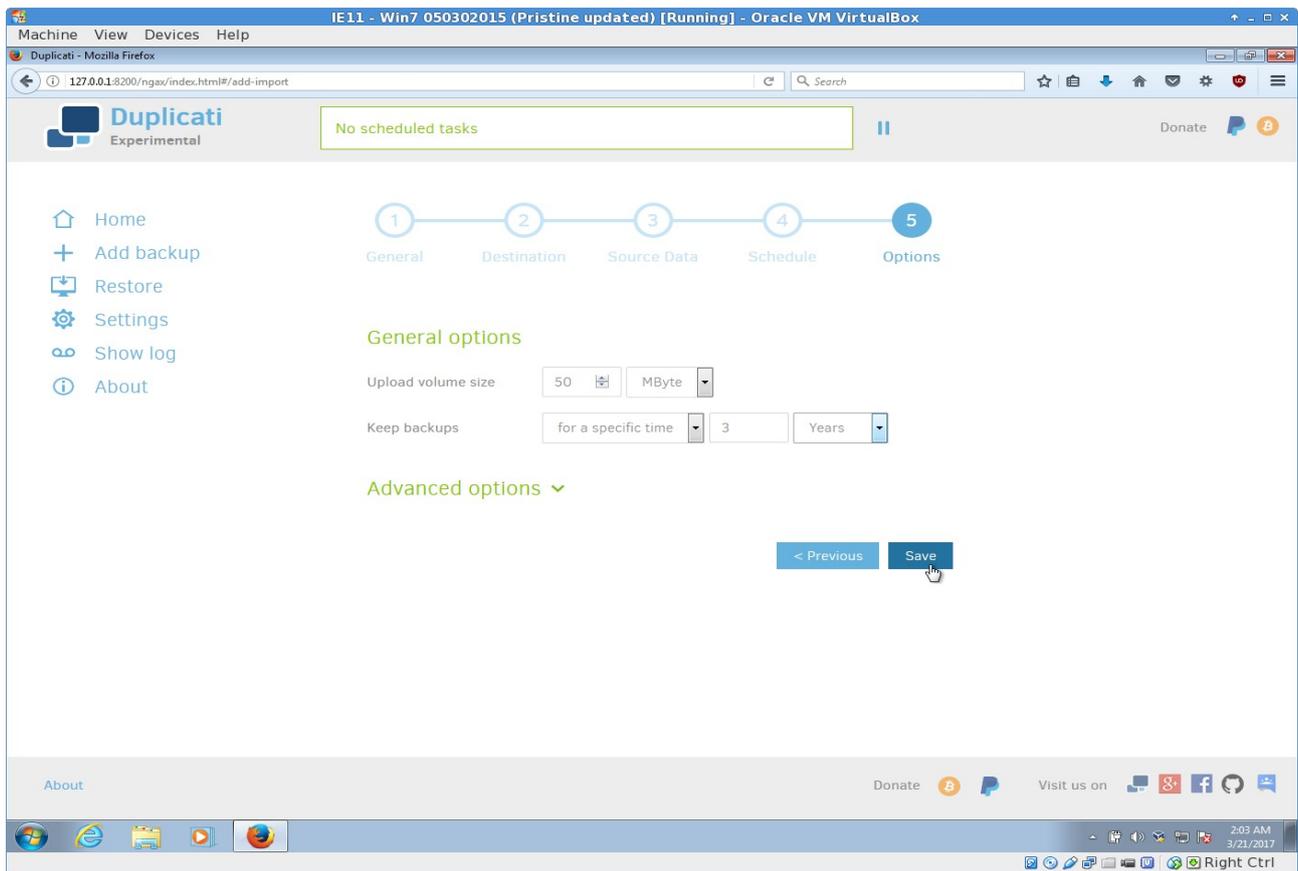
Please note that by default Duplicati runs on behalf of your regular user, so it may not have access to all system files or to shadow copy facilities available on some platforms. In effect this means that you may see warnings or errors if you select folders outside your user space or e.g. folders with application data in active use. Either leave out any such folders from your backup selection, or follow the Duplicati documentation on running Duplicati as a privileged user.



Optionally further tune the frequency for automatic backup runs and click Next. You don't need to touch the **Allow days** - no specific days selected has the same effect as ticking them all.

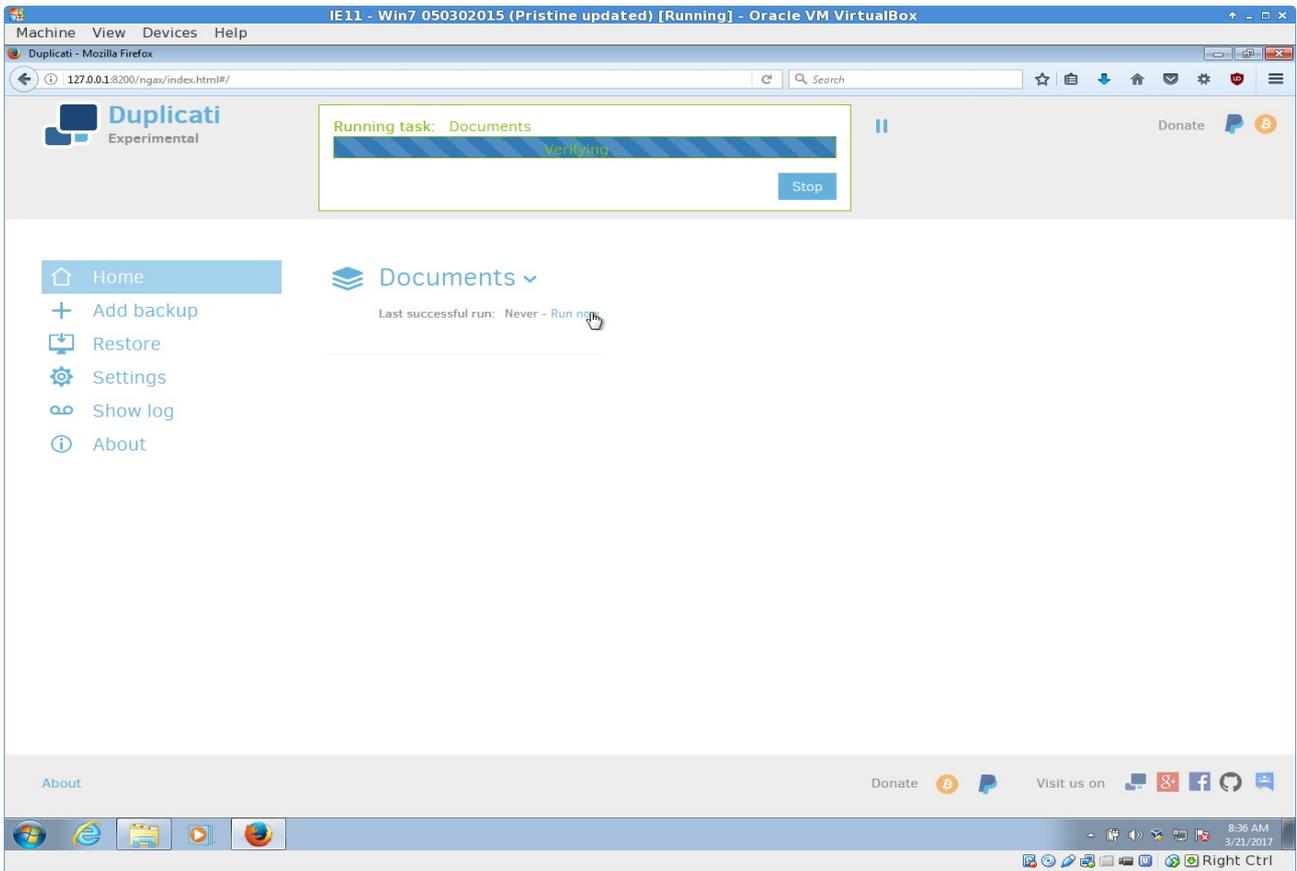


Optionally change **Keep backup** to e.g. 3 years or something and click **Save**.

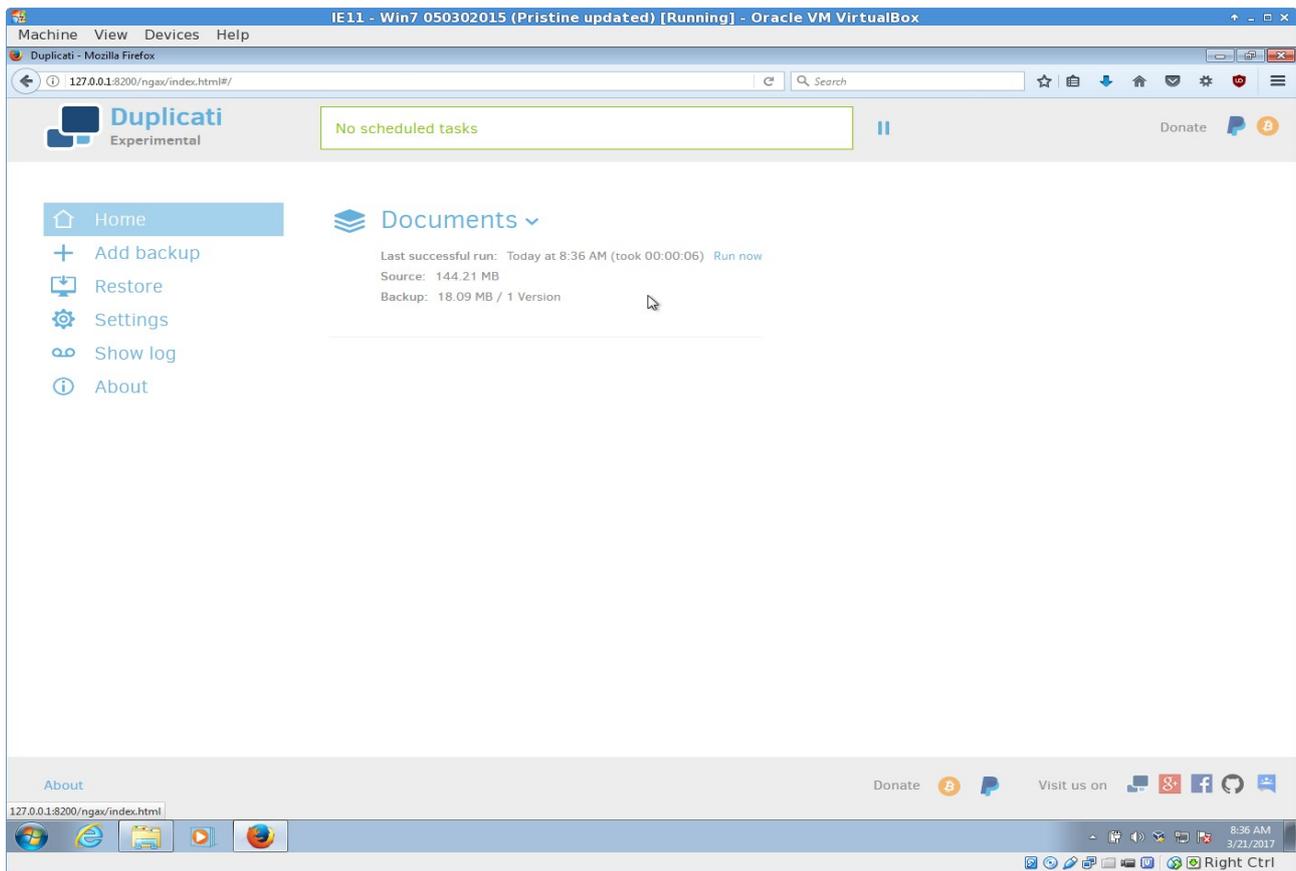


If you didn't choose encryption in the earlier step you will be asked if you are sure you don't want that. Either answer **Continue without encryption** to proceed or **Cancel** to go back and set up encryption.

Now backup is ready to proceed and you can click **Run now**, etc.

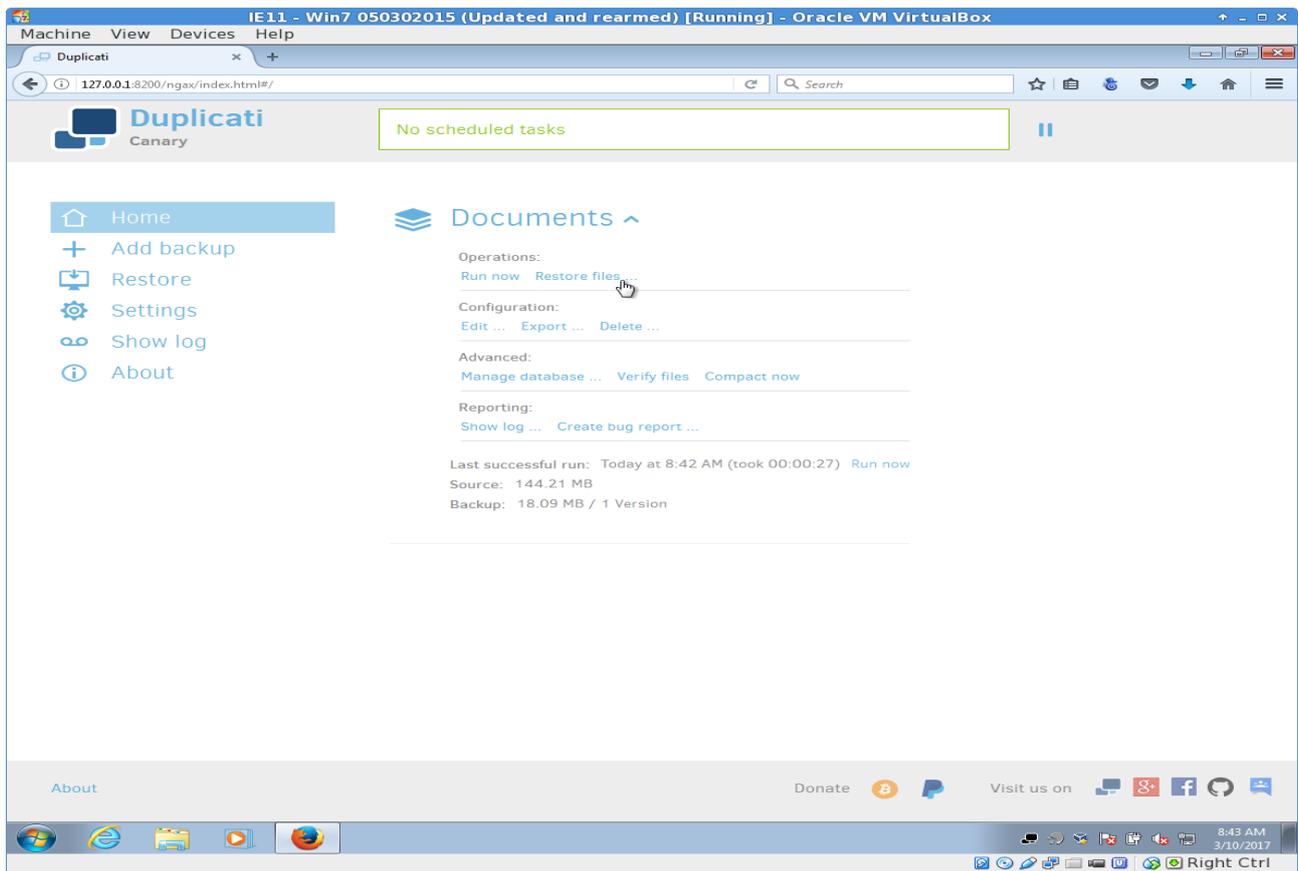


When the backup run is complete you should see a status like below.



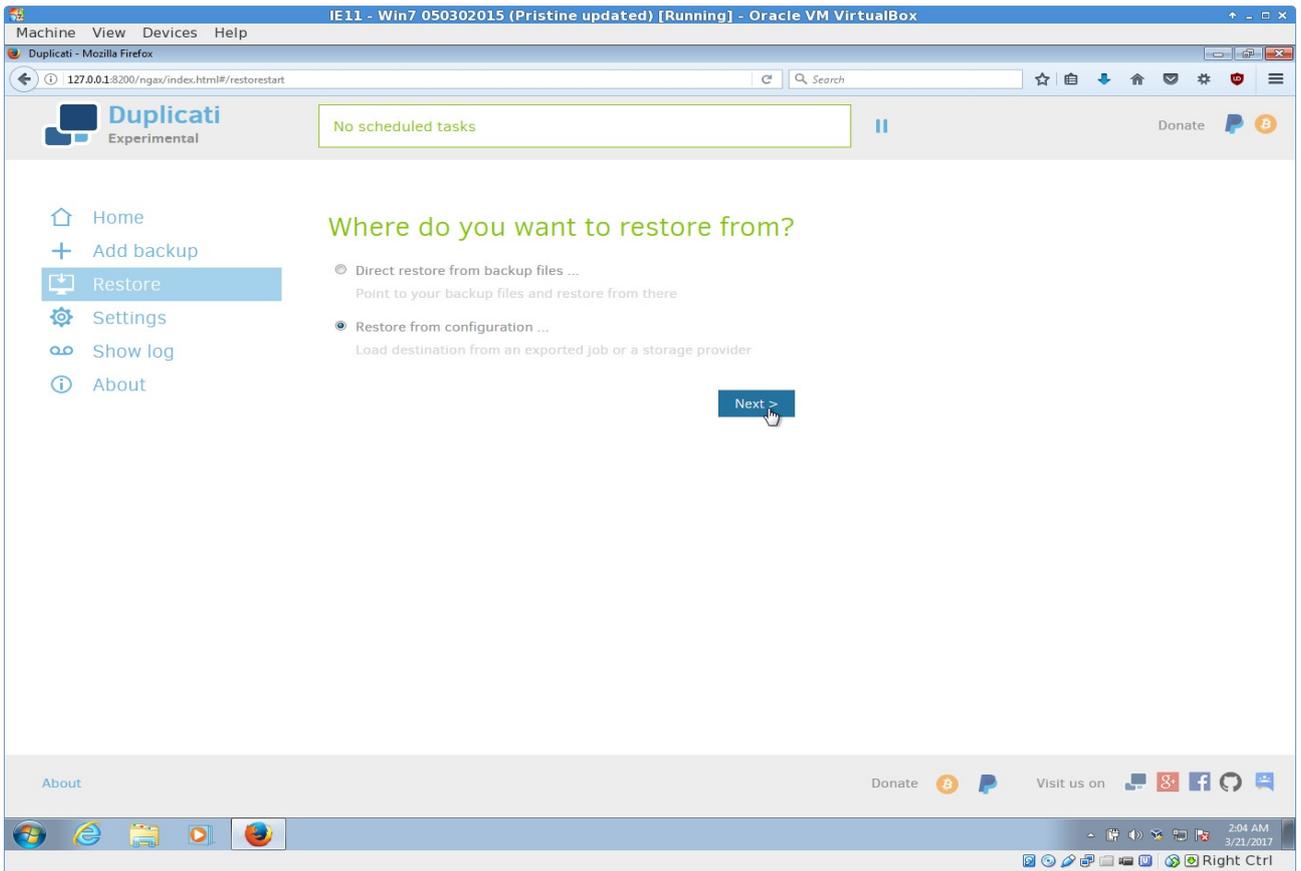
Repeat the **Add backup** procedure in Duplicati for any other backup .json files you created in ERDA Duplicati Setup.

After a successful backup run you can always recover selected files or folders from backup with the **Restore** entry in Duplicati or by folding out the backup entry and selecting **Restore files...**

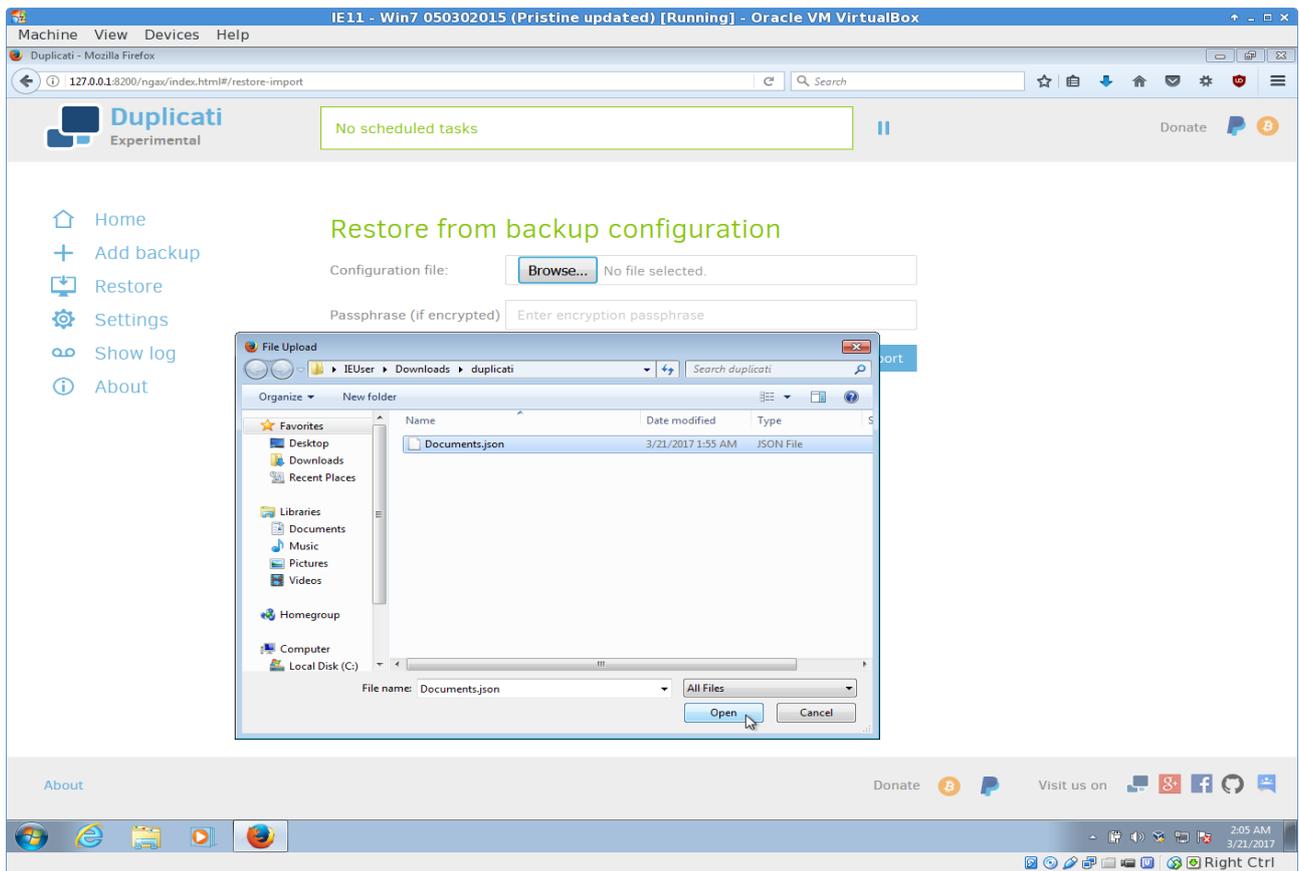


Duplicati will then guide you through the process of restoring the desired data.

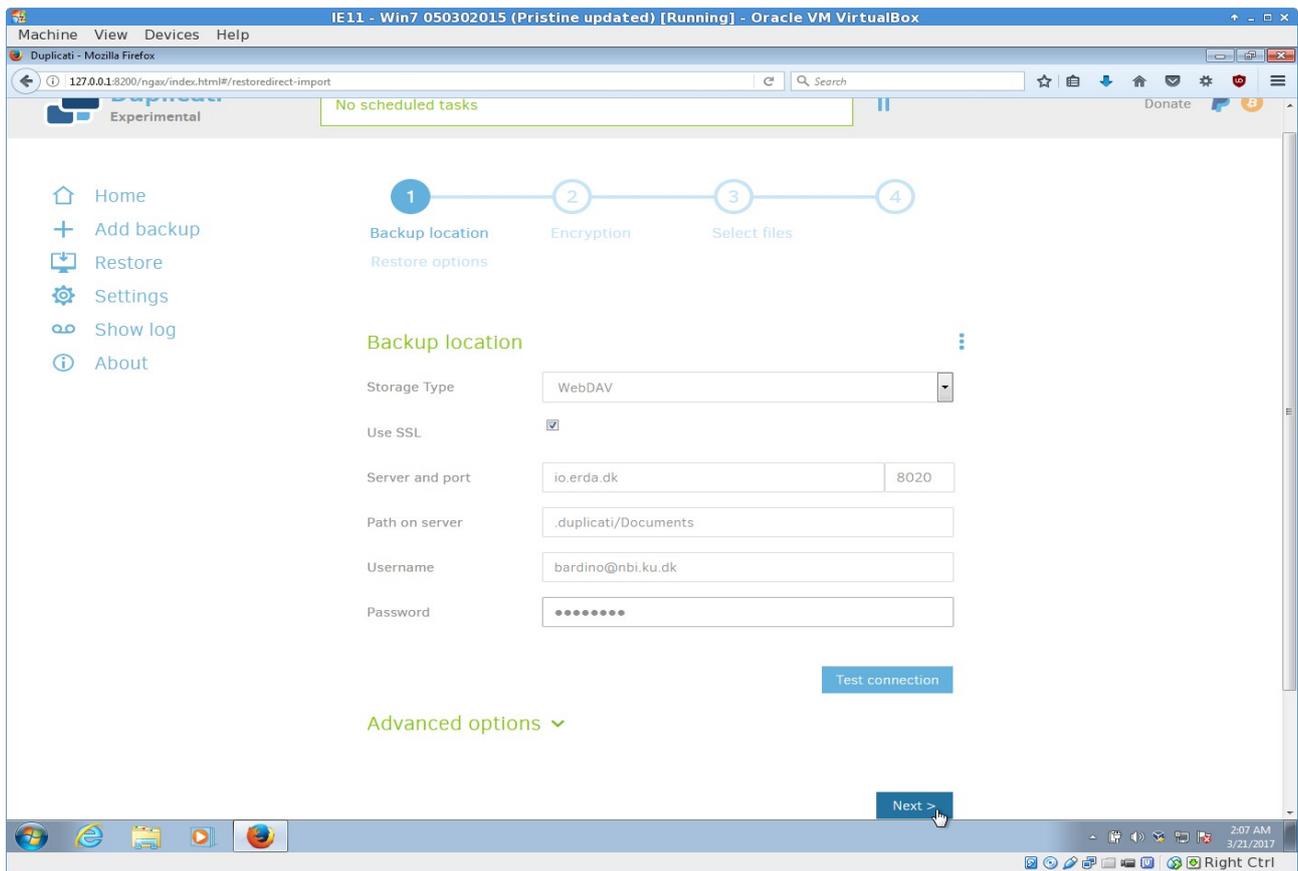
In case you lost your computer or got a new one you have to first download the .json files and import them to recreate the Duplicati setup.



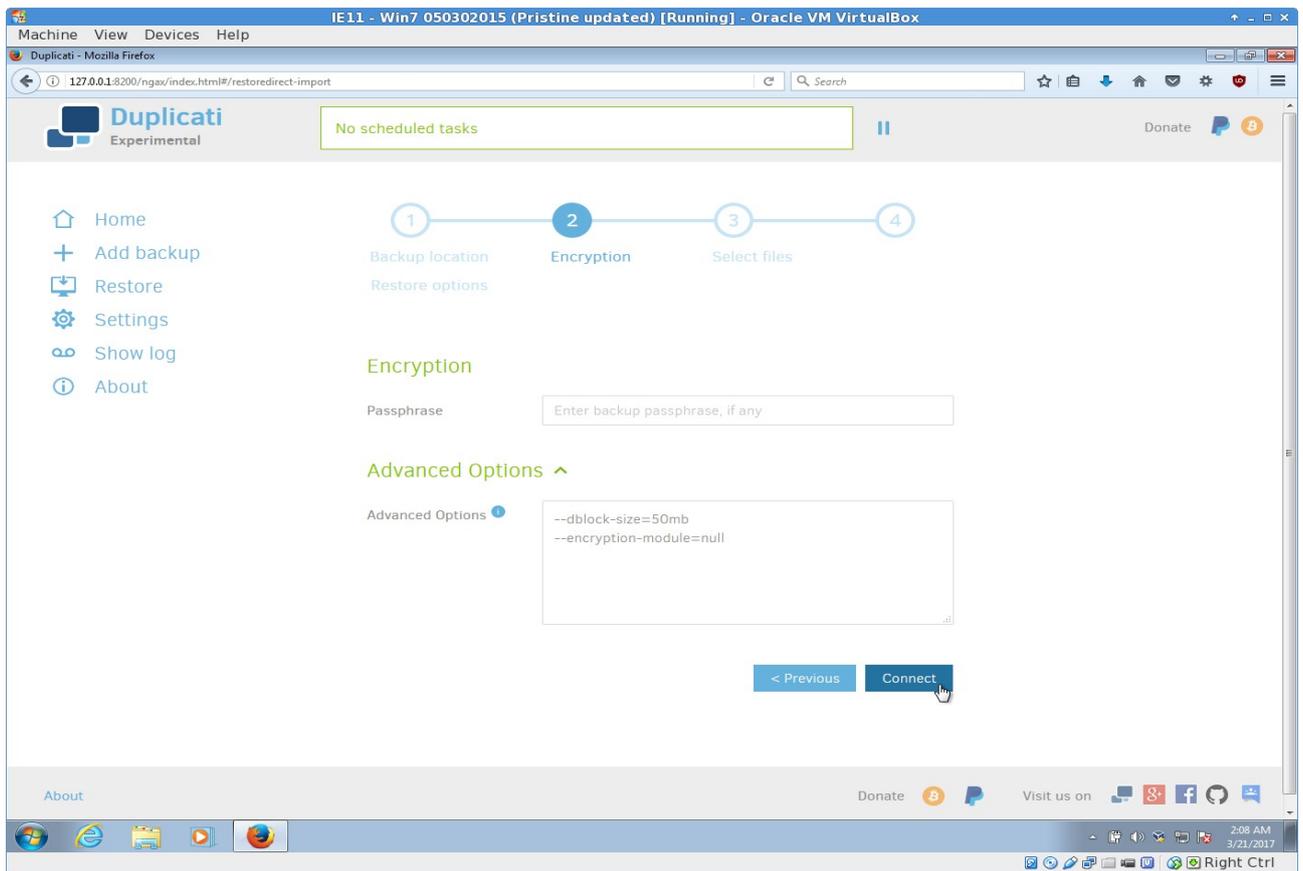
Select the re-downloaded .json file



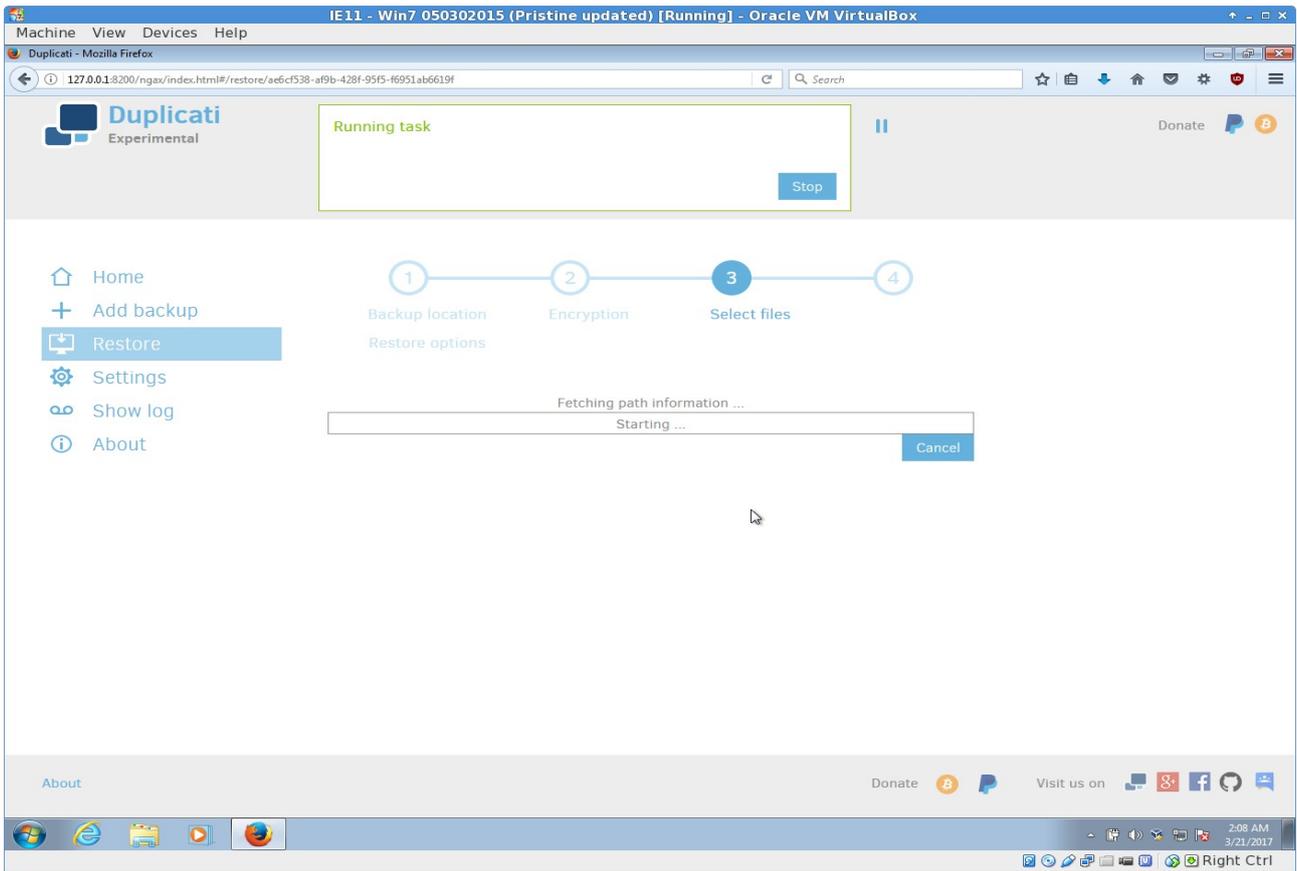
Again fill in your chosen password from the corresponding Setup page on ERDA. In this example it is the password from WebDAVS Setup.



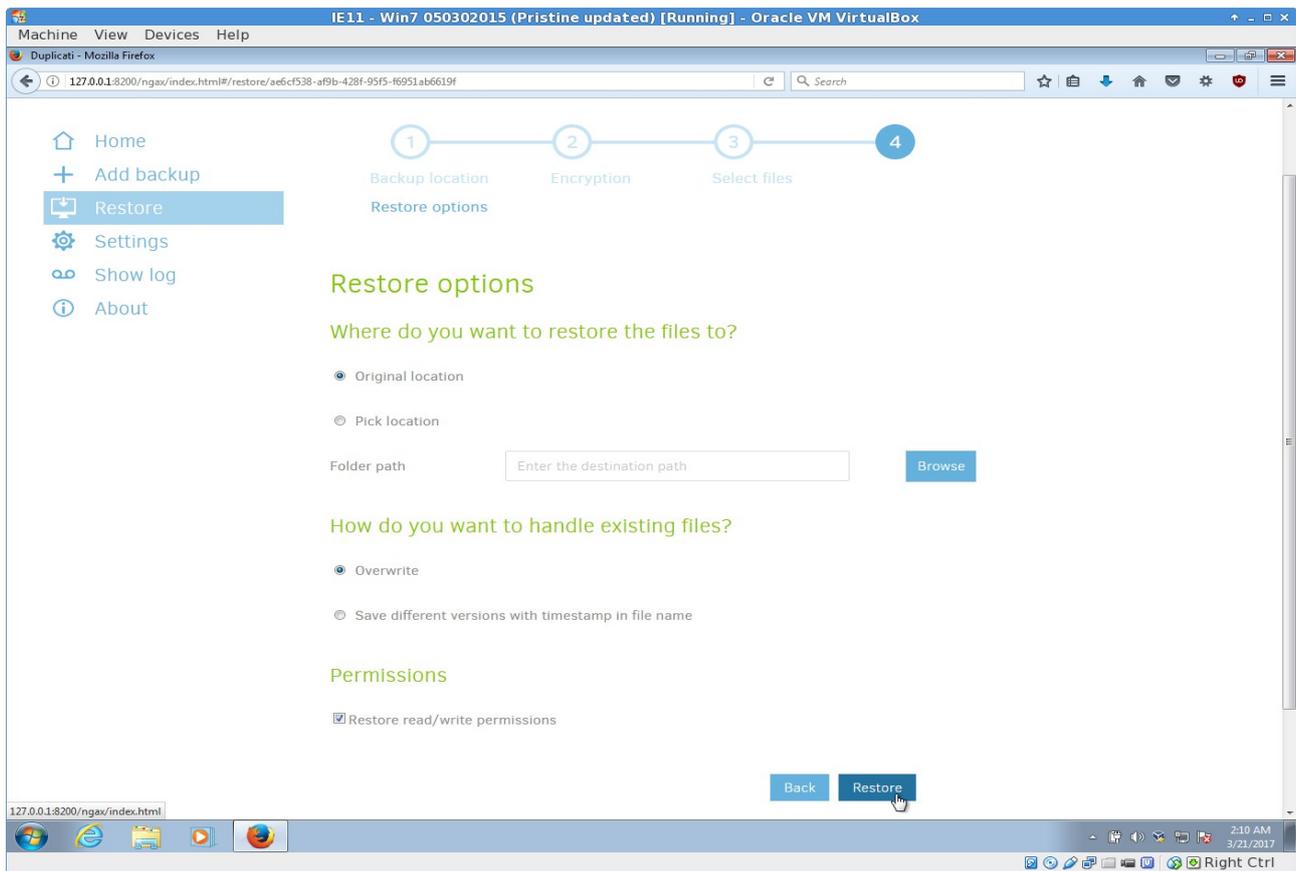
Just click **Connect** unless you have encrypted your backup. Otherwise first enter the passphrase and change `--encryption-module=null` to `--encryption-module=aes` under **Advanced options**.



Now the backup configuration is fetched from ERDA.



Finally choose where the configuration should be saved and click **Restore**.



Then you can restore the actual data from your backup(s) on ERDA.

Further information on using Duplicati is available at <https://www.duplicati.com/articles/Getting-Started/>

Scripted Server Backup to ERDA

Some research groups have their own NAS / server for group data. If you want to backup the data from such a server to ERDA, but for some reason can't or don't want to use Duplicati, there are still a couple of alternatives for making scripted backup archives.

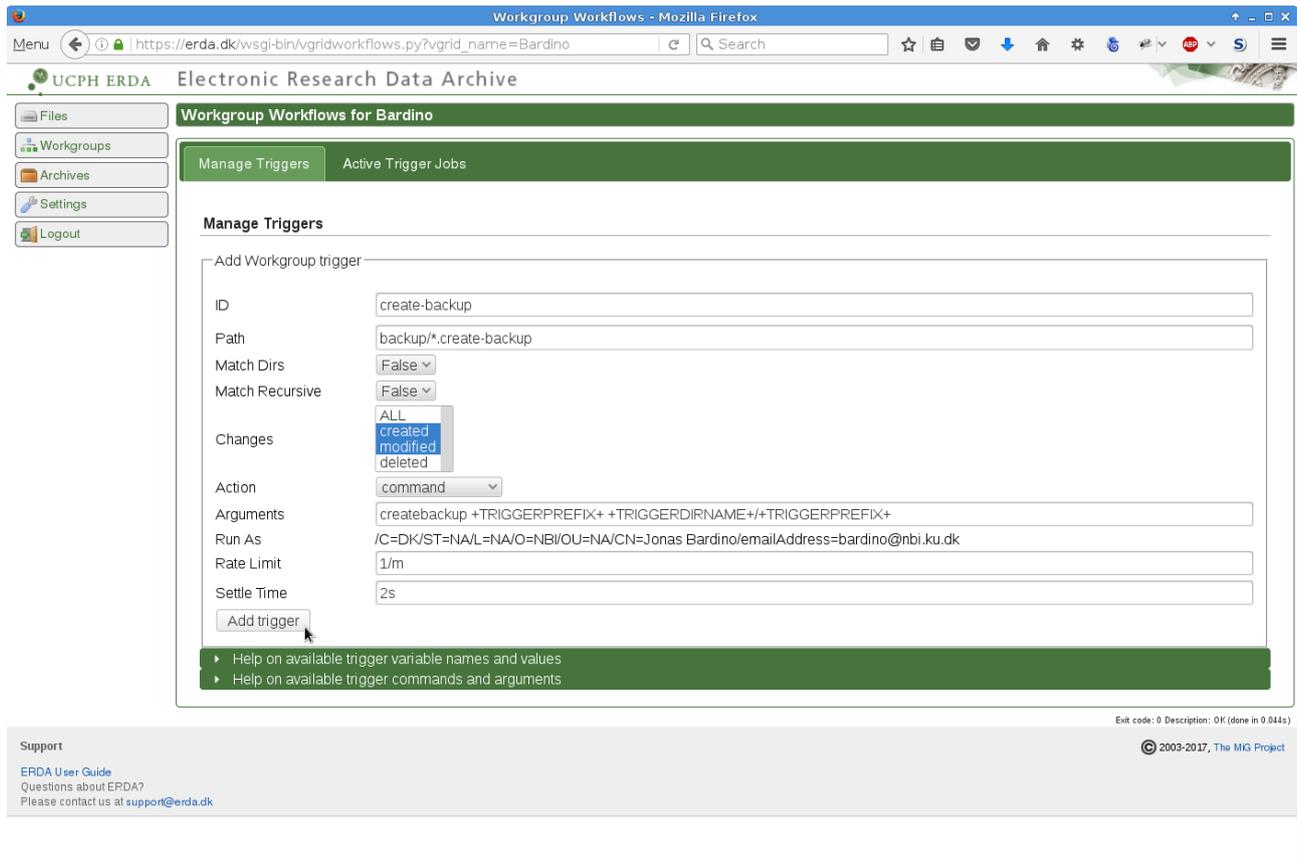
In short the simplest way of setting up something like that involves a Workgroup, upload through a read+write share link and a Workgroup workflow rule to trigger backup archive creation when a special file marker is uploaded.

First either choose an existing Workgroup of yours or create a new one for the backup as described in Workgroups (VGrids). In this example we'll use our existing *Bardino* Workgroup, but just choose a name that suits your setup. Now we create a sub-folder, say *backup*, inside the corresponding *Bardino* shared folder. For security reasons you probably don't want to save your ERDA password on the host to backup. To avoid that we can either use sftp/sshfs with an ssh key or instead make a share link with read **and** write access on *Bardino/backup* folder as described in Share Links. The latter allows us to access that folder using WebDAVS/SFTP/FTPS Access to Share Links, i.e. with just the share link ID as login and password instead of your general login. Access is then also limited to that particular sub-folder, which limits the risk of access abuse.

From the storage server we can then use a command line client like *sftp* or *lftp* to upload files there

or even mount it with e.g. *sshfs* and use something like *rsync* to only upload file changes.

From that point we *could* of course open the ERDA web pages in a browser and manually create archives, but for most server administrators this step is something to rather include in the backup process from the server. So instead we set up a Workgroup workflow rule on the *Bardino* workgroup to enable just that. First go to your ERDA Setup page and enable access to the workflows by selecting *advanced* rather than *default* in the **Site Collaboration Links** drop-down. Now when we open the Workflows page it will include a **Workflows** column. There we click the *Open* link for the *Bardino* Workgroup to get to the Workflows page. We fill in the form as shown below to create a new workflow rule.



In effect it creates a backup archive of the sub-folder *X* whenever we upload/write a file called *X.create-backup* inside our *Bardino/backup/* folder.

Thus, when we upload a snapshot of the data from the storage server to *Bardino/backup/snapshot-28052017* and afterwards upload any file to *Bardino/backup/snapshot-28052017.create-backup* it results in the automatic creation of a backup archive called *snapshot-28052017* as the following workflow log displays.

UCPH ERDA Electronic Research Data Archive

Workgroup Workflows for Bardino

Manage Triggers Active Trigger Jobs

Active Trigger Jobs

0 to 0 of 0 rows 25 job per page

Job ID	Rule	Path	Change	Time	Status
--------	------	------	--------	------	--------

Trigger Log

```

2017-05-29 11:09:58,294 INFO handle command for modified Bardino/backup/snapshot-28052017.create-backup
2017-05-29 11:09:58,313 INFO wait 2.0s for events on Bardino/backup/snapshot-28052017.create-backup to settle
2017-05-29 11:10:00,318 INFO expanded argument +TRIGGERPREFIX+ to snapshot-28052017
2017-05-29 11:10:00,319 INFO expanded argument +TRIGGERDIRNAME++TRIGGERPREFIX+ to Bardino/backup/snapshot-28052017
2017-05-29 11:10:00,911 INFO ran command: createbackup snapshot-28052017 Bardino/backup/snapshot-28052017

```

Support
ERDA User Guide
Questions about EPDA?
Please contact us at support@erda.dk

Exit code: 0 Description: OK (done in 0.048s)
© 2003-2017, The MGK Project

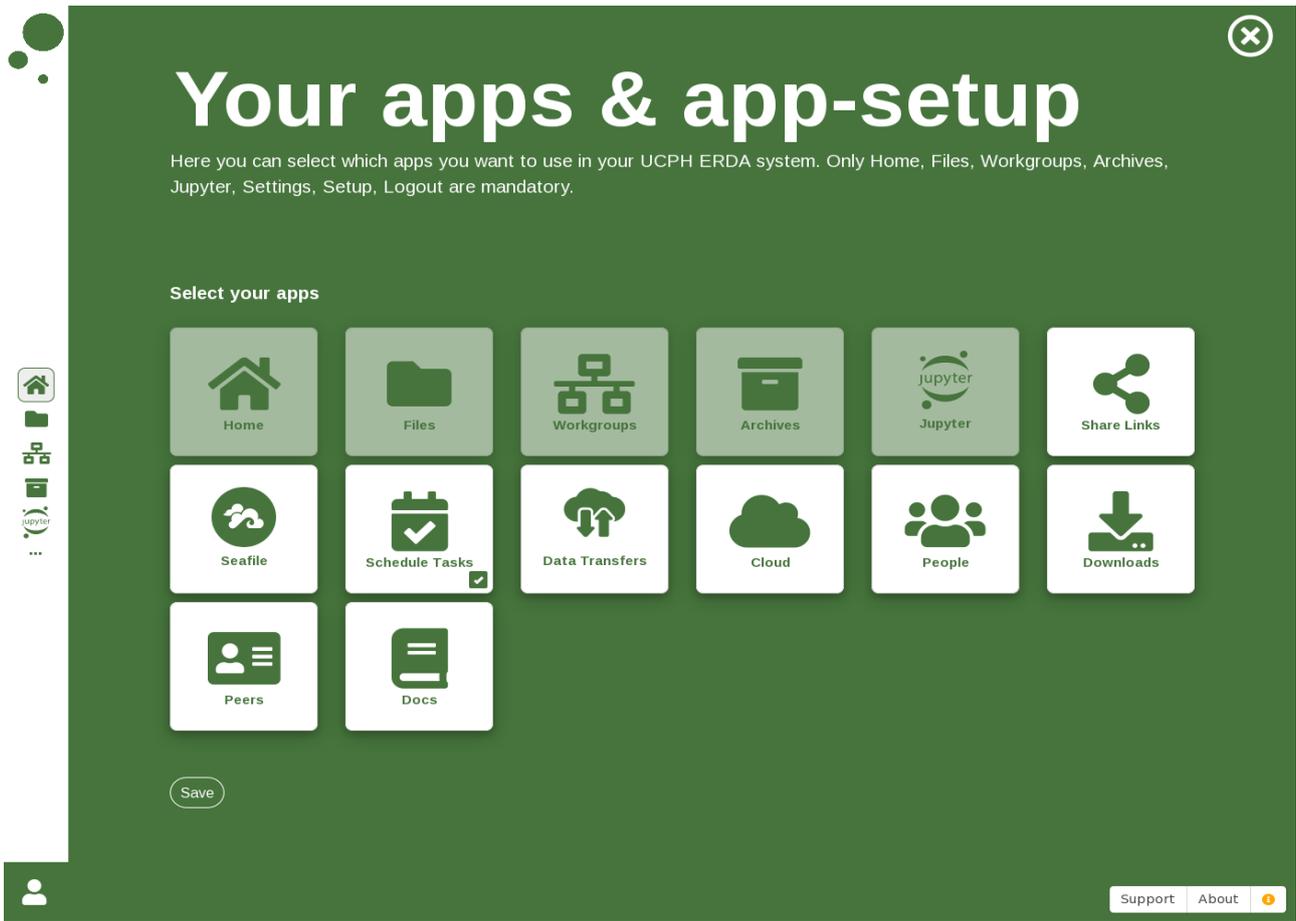
https://erda.dk/wsgi-bin/vgridworkflows.py?vgrid_name=Bardino#jobs-tab

Of course the resulting backup archive then also appears on the Archives page.

Alternatively to the workflows method you can use **Schedule Tasks** on ERDA to create backup archives of a folder e.g. every night. Please refer to the Schedule Tasks section for further details.

Schedule Tasks

It is possible to have ERDA do a number of tasks on behalf of you with the **Schedule Tasks** functionality. The corresponding navigation menu entry is not shown by default to keep it simple, but you can **Add** it from your **Home** page as shown. Click **Save** and wait for the refresh to let the **Schedule Tasks** button show up in the navigation menu to the left.



On the **Schedule Tasks** page you can schedule one-time or regularly repeating tasks

Schedule Tasks

Manage Tasks

View Logs

Manage Scheduled Tasks

You can schedule UCPH ERDA commands to run on your behalf at given times. In that way you can automate many of the routine tasks that you would in practice be able to do manually, but which would be tedious and inconvenient to repeat every time. This includes tasks like regular backup or archiving, which typically makes most sense to run e.g. every night or once a week.

Information about any scheduled actions you configure automatically gets logged and you can use View Logs above to inspect them.

Please note that for security reasons you can ONLY schedule runs of a limited set of commands, namely a selection of the most useful actions you would be able to interactively run.

The fold-outs at the bottom contain additional help on the available commands and the format in use.

Cron Jobs: Repeating Command Schedule

Each line here follows the standard UNIX crontab format with five time fields specifying when to run, followed by the command to run.

```
1 ### Cron Jobs: Regularly Running Tasks
2 # This is a standard crontab specification describing actions to run on your
3 # behalf at given times. Lines starting with a '#' are comments, only used for
4 # explaining things. All other lines represent a scheduled task.
5 #
6 # Each task to run has to be defined through a single line indicating with
7 # different fields when the task will be run and what command to run for the
8 # task.
9 #
10 # To define the time you can provide concrete values for minute (m), hour (h),
11 # day of month (dom), month (mon), and day of week (dow) or use '*' in these
12 # fields (for 'any').
13 #
14 # For example, if you have a Documents folder and want to create a backup of it
15 # at 5 a.m every week, you can do so by adding a rule like:
16 # 0 5 * * 1 pack Documents Documents-backup.zip
17 # somewhere below this help text. Just leave out the leading '# '.
18 #
19 # m h dom mon dow command
20 38 16 * * * createbackup backup-+SCHEDDAY++SCHEDMONTH++SCHEDYEAR+ uploads
```

At Jobs: One-time Command Schedule

For one-time commands you can use the following field instead. Each line consists of a time stamp in ISO format followed by the command to run at that particular time.

```
1 ### At Jobs: One-time Tasks
2 # This is a basic at schedule file. It is similar to the crontab only with
```

Support

About



In the above example we have inserted a task to create a new backup archive every day at 16:17 with the contents of the *uploads* folder on ERDA. One can then either manually have saved data in that folder or used methods like outlined in the Scripted Server Backup to ERDA section to regularly upload data from other sources there. It should be noted that the createbackup command uses an archive name with three special automatic variables like +*SCHEDDAY*+ etc. to label the archive with the task run date.

You can follow the scheduled runs in the **View Logs** tab and the log from the first run of the above looked like the following:



Schedule Tasks

Manage Tasks

View Logs

Scheduled Tasks Log

```
2021-07-19 16:38:00,812 INFO handle ['createbackup', 'backup-+SCHDDAY++SCHEDMONTH++SCHEDYEAR+', 'uploads'] for /C=DK/ST=NA
/L=NA/O=FAKSEK/OU=NA/CN=Jonas Bardino/emailAddress=bardino@science.ku.dk
2021-07-19 16:38:00,815 INFO expanded argument backup-+SCHDDAY++SCHEDMONTH++SCHEDYEAR+ to backup-19072021
2021-07-19 16:38:00,818 INFO expanded argument uploads to uploads
2021-07-19 16:38:05,132 INFO ran command: createbackup backup-19072021 uploads
```

Support

About



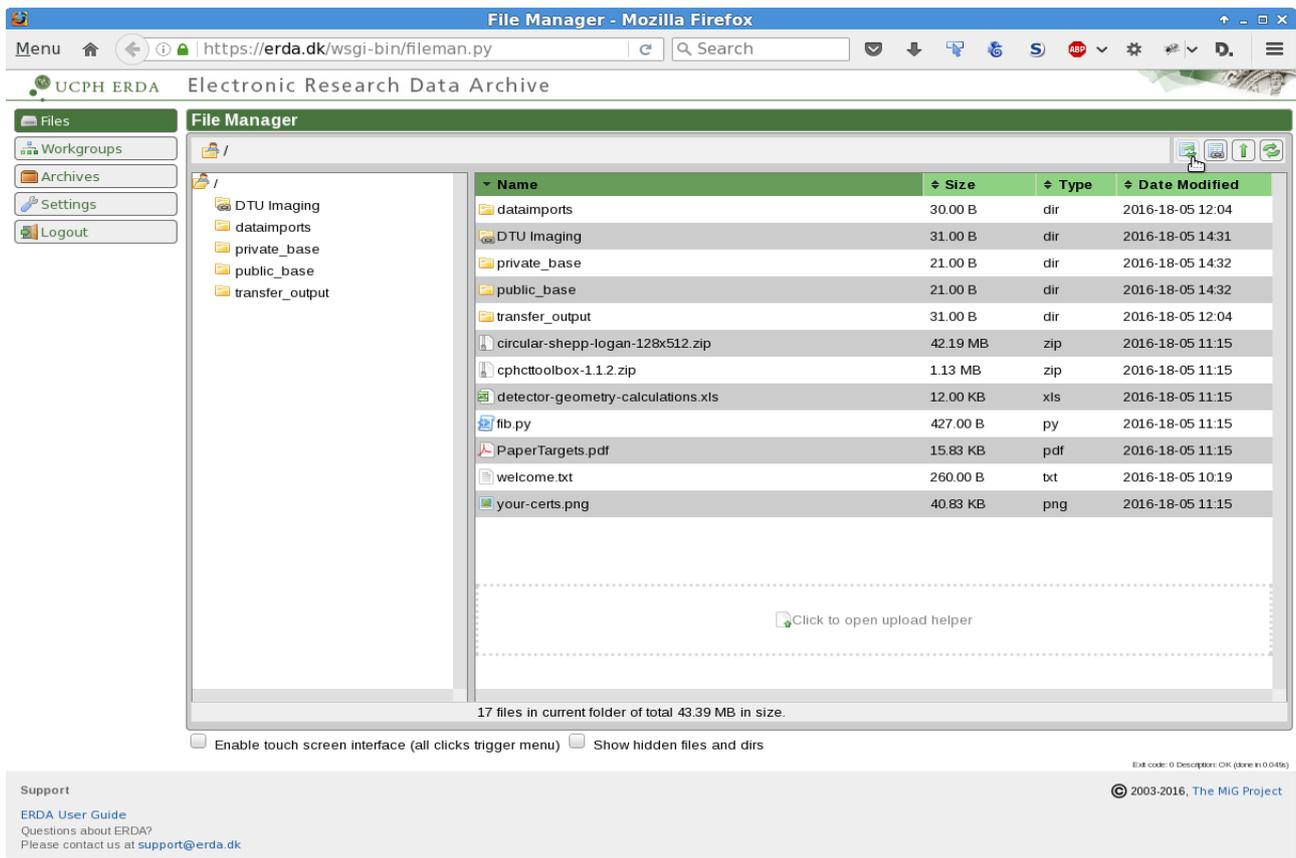
As the log shows the backup archive has automatically been given a name to match the current date. You can read more about the automatic variables and available commands at the bottom of the **Manage Tasks** tab on the **Schedule Tasks** page.

Data Import/Export

In case you have other data storage servers or instruments on the Internet, it may be useful to be able to import data to – or export data from ERDA in an efficient way. Typical scenarios include fetching big data sets from dedicated Linux/UNIX servers or from e.g. imaging sites like ESRF, SLS or similar, where data are recorded on-site with remote access afterwards. This is probably mostly relevant for users with a certain experience in handling big data sets.

ERDA comes with low-level background import and export of data through different efficient transfer protocols like SFTP/FTP(S)/RSYNC/HTTP(S) and WebDAV(S).

From your **Files** page you can click the small data transfer icon () top right in the address bar



to open the data transfers page. Alternatively you can right-click a folder on the **Files** page and select **Data Transfers** and then pick **Import** or **Export**.

The default **Manage Data Transfers** tab on the data transfers page is used to set up and monitor transfers. On the **Manage Transfer Keys** tab it is possible to set up transfer keys, i.e. digital keys used for a more secure remote login than a simple login with password. Let's see how one creates such an ssh-key and use it to import data from a server with an existing remote SFTP login.

NOTE: in case remote login with a password is allowed, one can simply skip these steps to create an ssh-key and just pick **Login with password** instead of **Login with key** when creating a transfer.

We go through the steps of creating a key from the **Manage Transfer Keys** tab. The name of the key is not that strict and it's only really used to point out the correct key when setting up the transfer afterwards.

The screenshot shows a web browser window titled "Background Data Transfers - Mozilla Firefox" with the URL "https://erda.dk/wsgi-bin/datatransfer.py". The page is for the "UCPH ERDA Electronic Research Data Archive" and is titled "Manage background data transfers".

On the left is a navigation menu with links for Files, Workgroups, Archives, Settings, and Logout. The main content area has two tabs: "Manage Data Transfers" and "Manage Transfer Keys", with the latter selected.

The "Manage Data Transfer Keys" section includes a table with columns for ID, Created, Type, Bits, and Public Key. Below the table, there is a text area containing a public key:

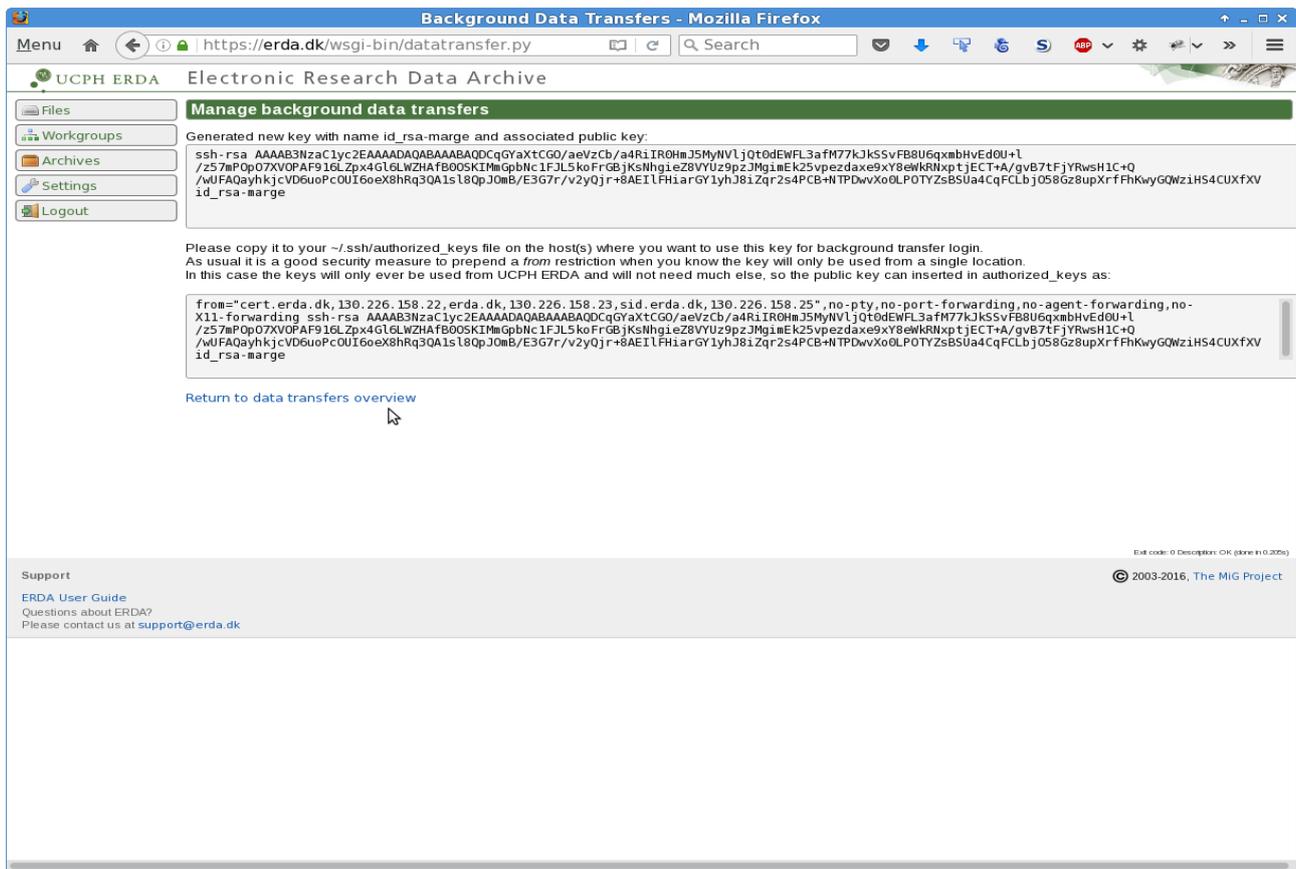
```
from="cert.erda.dk,130.226.158.22,erda.dk,130.226.158.23,sid.erda.dk,130.226.158.25",no-pty,no-port-forwarding,no-agent-forwarding,no-X11-forwarding ssh-rsa AAAAB3NzaC...
```

Below the public key, there is a form to generate a new key. It includes a "Key name:" label and a text input field containing "id_rsa-marge". A "Generate key" button is positioned below the input field.

At the bottom of the page, there is a "Support" section with links to the "ERDA User Guide" and "Questions about ERDA?", and a contact email "support@erda.dk". A copyright notice "© 2003-2016, The MiG Project" is also present.

After entering a name for the key and clicking the **Generate Key** button one is presented with the public part of the new key pair. This public key is shown along with some instructions on how to use it. In short one needs to copy the public key to the server where it is to be used for login with the private key.

NOTE: the private part of the ssh-key is **only** saved in an inaccessible location on ERDA, so nobody has access to it – and in turn to any machines where you allow it as a means of remote login.



Once you've inserted the public key on the import or export target host as instructed, you can proceed with setting up a background transfer to or from your ERDA folders. In this case it is depicted how a data import with SFTP from the host *marge.esci.nbi.dk* is set up with username *bardino* and with the recently created ssh-key, which we named *id_rsa-marge*. The transfer is configured to import the contents of the *build/circular/* folder from the remote host and save them in the *dataimports/* folder on ERDA.

Background Data Transfers - Mozilla Firefox

Menu [Settings](#) [Logout](#)

External Data Transfers

0 to 0 of 0 rows 25 transfers per page

ID	Action	Protocol	Host	Port	Login	Source(s)	Destination	Created	Status
----	--------	----------	------	------	-------	-----------	-------------	---------	--------

Latest Transfer Results

Create External Data Transfer

Fill in the import/export data transfer details below to request a new background data transfer task. Source must be a path without wildcard characters and it must be specifically pointed out if the src is a directory. In that case recursive transfer will automatically be used and otherwise the src is considered a single file, so it will fail if that is not the case. Destination is a single location directory to transfer the data to. It is considered in relation to your user home for *import* requests. Source is similarly considered in relation to your user home in *export* requests. Destination is always handled as a directory path to transfer source files into.

import data export data

Transfer ID:

SFTP Host: Port:

anonymous access login with password login with key

Username:

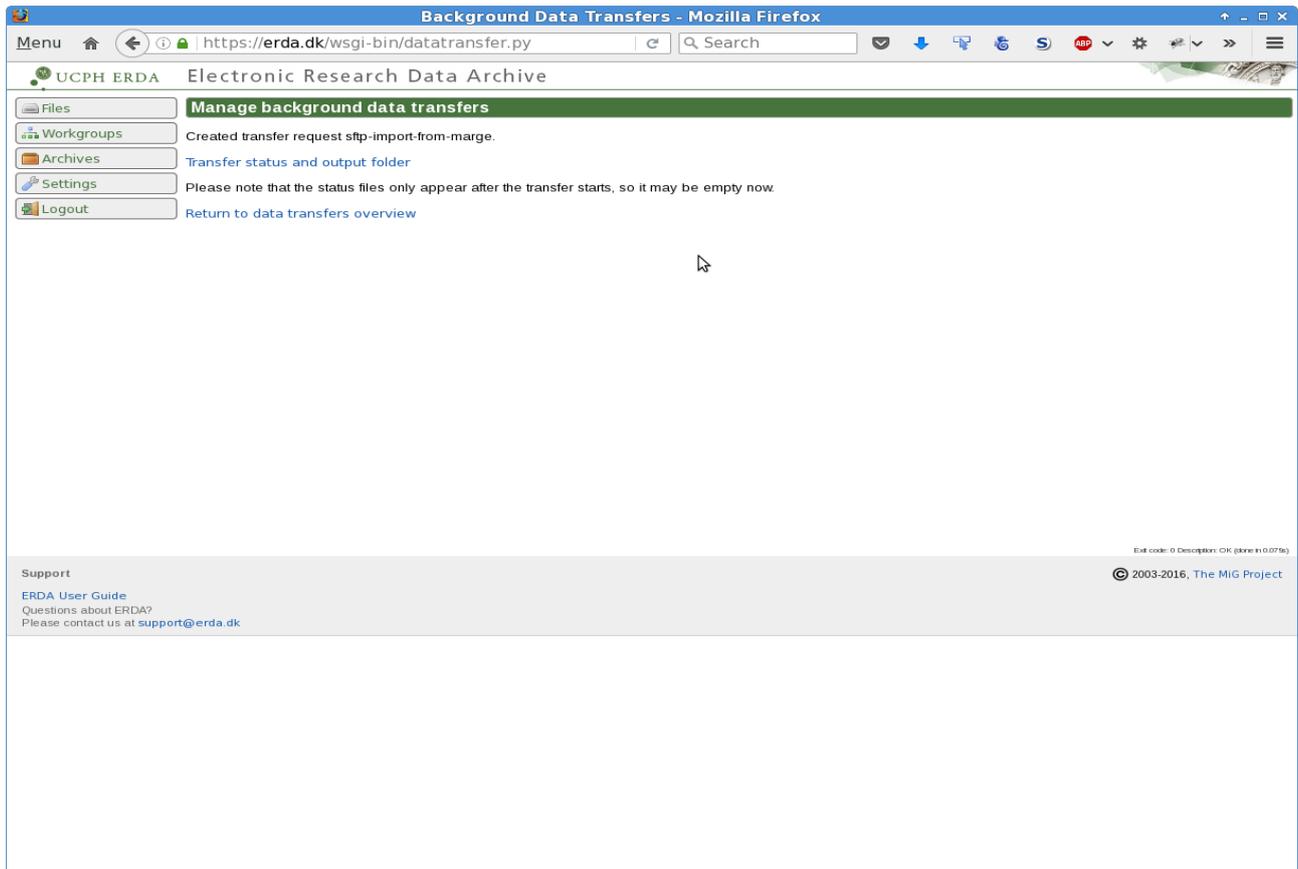
Key:

Source path(s): Source file Source directory (recursive)

Destination path: Destination directory Destination file

Notify on completion (e.g. email address):
email:

A click on the *Request transfer* button enqueues the transfer



and you can monitor the progress in the overview and with the associated status buttons to the right there.

Background Data Transfers - Mozilla Firefox

Menu [Home](#) [Back](#) [Forward](#) [Refresh](#) [Print](#) [Search](#) [Settings](#) [Help](#)

UCPH ERDA Electronic Research Data Archive

Files Workgroups Archives Settings Logout

Manage background data transfers

Manage Data Transfers Manage Transfer Keys

External Data Transfers

1 to 1 of 1 rows 25 transfers per page

ID	Action	Protocol	Host	Port	Login	Source(s)	Destination	Created	Status
sftp-import-from-marge	import	sftp	marge.esci.nbi.dk	22	barдино : id_rsa-marge	build/circular/	dataimports/	Wed May 18 12:04:46 2016	ACTIVE

Latest Transfer Results

```
2016-05-18 12:04:46,173 INFO handle sftp-import-from-marge import
```

Create External Data Transfer

Fill in the import/export data transfer details below to request a new background data transfer task. Source must be a path without wildcard characters and it must be specifically pointed out if the src is a directory. In that case recursive transfer will automatically be used and otherwise the src is considered a single file, so it will fail if that is not the case. Destination is a single location directory to transfer the data to. It is considered in relation to your user home for *import* requests. Source is similarly considered in relation to your user home in *export* requests. Destination is always handled as a directory path to transfer source files into.

import data export data

Transfer ID:

HTTP Host: Port:

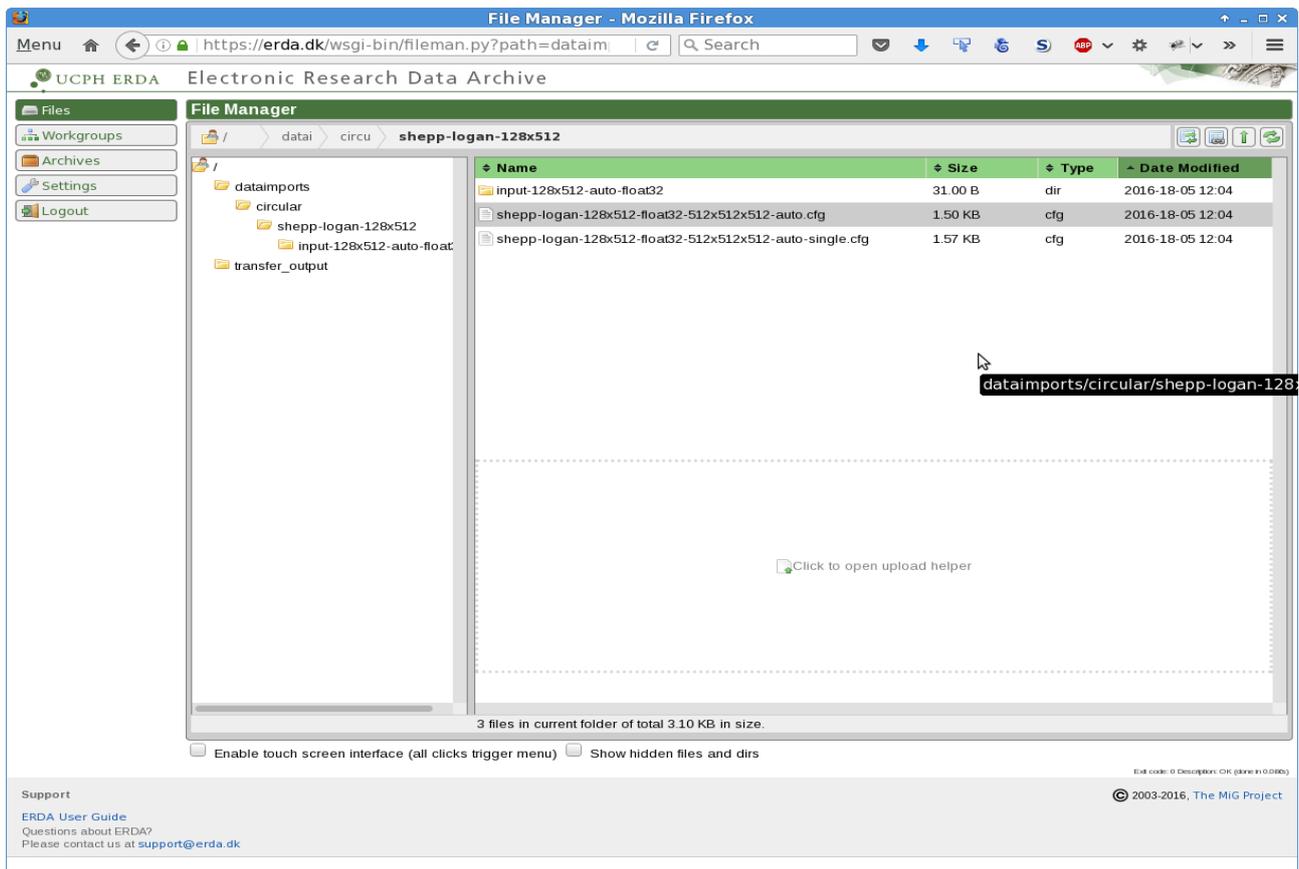
anonymous access login with password login with key

Source path(s): Source file Source directory (recursive)

Destination path: Destination directory Destination file

Notifv on completion (e.g. email address):

The transfer can be monitored more closely in the destination folder by clicking the *local component*-icon (📁), and in this case the result of the import looked like this, with a few files and folders recursively imported from *marge.esci.nbi.dk*.



All the other possible transfer combinations follow the same general procedure.

If a transfer fails you can find some information about what might have gone wrong through the *status files*-icon (i). Sometimes it is tricky to debug exactly what went wrong with the remote login or transfer, so feel free to contact us for help.

Courses and External Collaboration

ERDA is not only for internal data storage and sharing, but can also be an asset for courses and for collaboration across organizational boundaries - be it with domestic or foreign partners. In addition to data sharing, e.g. the interactive data analysis facilities like Jupyter can be a useful means of getting better acquainted with a particular subject, to let theory and practice go hand in hand. That is, it can be used both to present content and by giving participants an understanding of it, by letting them experiment and work with it interactively.

External Users / Peers

Research is rarely a purely local activity only happening at the university, and in a significant number of projects easy data sharing with other domestic or foreign participants from academia and private companies is therefore mandatory. ERDA is fundamentally designed with such considerations as a central requirement. Thus, access is not technically restricted by outdated castle-and-moat approaches, requiring users to either physically be “inside a perimeter” at UCPH or mimic it by means of VPN or similar. Instead ERDA relies on a zero trust⁴ security model throughout, with strictly secure access from anywhere.

Of course we cannot just let anyone get access to arbitrary data and storage. So data isolation is applied at a users and workgroup share level, and external users can only get an ERDA account if an employee at UCPH explicitly mandates their access. Management requires a formal confirmation to be in place for the latter. We have chosen to integrate that directly in ERDA with the Peers functionality, where employees can specify whom they need to collaborate with or provide access to for course/workshop purposes.

As an employee you have two overall choices available for that

1. You specify peer details with the option to send out a matching invitation
2. You let them sign up themselves and then accept their pending user account creation

Externals need to use our stand-alone login solution with their email address as username and a personal strong password of choice. Therefore as such they need to fill a short sign up form choosing their password. Using (1) the sign up form is pre-filled with all other fields you entered, whereas in (2) they have to fill the corresponding ID fields themselves and specifically reference you as their contact employed at UCPH – in order for you to accept their account. That is, they must write in the Comment field that it’s for a collaboration or course with you as contact, and preferably mention your UCPH email address there, too.

An example inviting a former colleague for a few years of on-going collaboration could look like

4 <https://www.nist.gov/publications/zero-trust-architecture>



Peers

Show Peers Requested Peers Enter Peers Import Peers

You may enter your individual peers in the form fields below and assign a shared kind and account expiry time for all entries. Just leave the Action field to Add unless you want to Update or Remove existing peers. You are free to leave rows empty, but each field in a peer row MUST be filled for the row to be treated.

Label		Kind		Expire	
<input type="text" value="FormerColleagues"/>		<input type="text" value="Collaboration"/>		<input type="text" value="31/12/2025"/>	
Action					
<input type="text" value="Add"/>					
Full Name	Organization	Email	Country (ISO 3166)	State (if applicable)	
<input type="text" value="Brian Vinter"/>	<input type="text" value="AU"/>	<input type="text" value="vinter@au.dk"/>	<input type="text" value="Denmark"/>	<input type="text" value="2-Letter state code"/>	
Full Name	Organization	Email	Country (ISO 3166)	State (if applicable)	
<input type="text" value="Full Name"/>	<input type="text" value="Organization"/>	<input type="text" value="Email at organization"/>	<input type="text" value=""/>	<input type="text" value="2-Letter state code"/>	
Full Name	Organization	Email	Country (ISO 3166)	State (if applicable)	
<input type="text" value="Full Name"/>	<input type="text" value="Organization"/>	<input type="text" value="Email at organization"/>	<input type="text" value=""/>	<input type="text" value="2-Letter state code"/>	
Full Name	Organization	Email	Country (ISO 3166)	State (if applicable)	
<input type="text" value="Full Name"/>	<input type="text" value="Organization"/>	<input type="text" value="Email at organization"/>	<input type="text" value=""/>	<input type="text" value="2-Letter state code"/>	
Full Name	Organization	Email	Country (ISO 3166)	State (if applicable)	
<input type="text" value="Full Name"/>	<input type="text" value="Organization"/>	<input type="text" value="Email at organization"/>	<input type="text" value=""/>	<input type="text" value="2-Letter state code"/>	
Full Name	Organization	Email	Country (ISO 3166)	State (if applicable)	
<input type="text" value="Full Name"/>	<input type="text" value="Organization"/>	<input type="text" value="Email at organization"/>	<input type="text" value=""/>	<input type="text" value="2-Letter state code"/>	
Invite on email <input checked="" type="checkbox"/>					
<input type="button" value="Save Peers"/>					

Support About

Checking *Invite on email* before saving results in an automatic invitation email to the entered user(s), including a link to a personal pre-filled sign up form. In that way it's only needed for them to choose a personal password and accept the user terms before clicking *Send*.

Note: *Label* is just a simple name of your choice to help you keep track of your peers. It does not allow space or various special characters, but you may use '-' or '_' to separate words.

UCPH ERDA Electronic Research Data Archive

UCPH ERDA account request - with OpenID login

Please enter your information in at least the **mandatory** fields below and press the Send button to submit the account request to the UCPH ERDA administrators.

IMPORTANT: we need to verify your identity, so please use an Email address clearly affiliated with your Organization!

Full name	Email address	Organization
<input type="text" value="Brian Vinter"/>	<input type="text" value="vinter@au.dk"/>	<input type="text" value="AU"/>
Country	Optional state code	
<input type="text" value="DK"/>	<input type="text" value="NA"/>	
Password	Verify password	
<input type="password" value="●●●●●●●●"/>	<input type="password" value="●●●●●●●●"/>	

Optional comment or reason why you should be granted a UCPH ERDA account

I accept the UCPH ERDA [terms and conditions](#)

Support
ERDA User Guide
Questions about ERDA?
Please contact us at support@erda.dk

Privacy and Rights
[Privacy Policy & Cookie Policy](#)
© 2003-2020, The MIG Project

The ERDA administrators will then create the user account and thereby automatically send a brief welcome email with login details, etc.

As an employee you can use Show Peers to view and manage your external contacts, plus send out invitations in case you skipped that during registration.



Peers

Show Peers Requested Peers Enter Peers Import Peers

Only employees at UCPH can vouch for external peers to let them have an account for collaboration or course activities.
This is an overview of your registered peers. That is, people that you have vouched for to get an account on UCPH ERDA because they need it for a particular course/workshop, research project or for general long term collaboration with you. The site admins will use this information to accept account requests and extensions from your peers until the given time of expiry.

1 to 2 of 2 rows 25 peers per page

Full Name	Organization	Email	Country	State	Kind	Label	Expire	Actions
Brian Vinter	AU	vinter@au.dk	DK	NA	collaboration	External	2026-03-01	
Johan Lusher	Industrial Automation	jsl@i-a.dk	DK	NA	collaboration	External	2026-03-01	

Support About

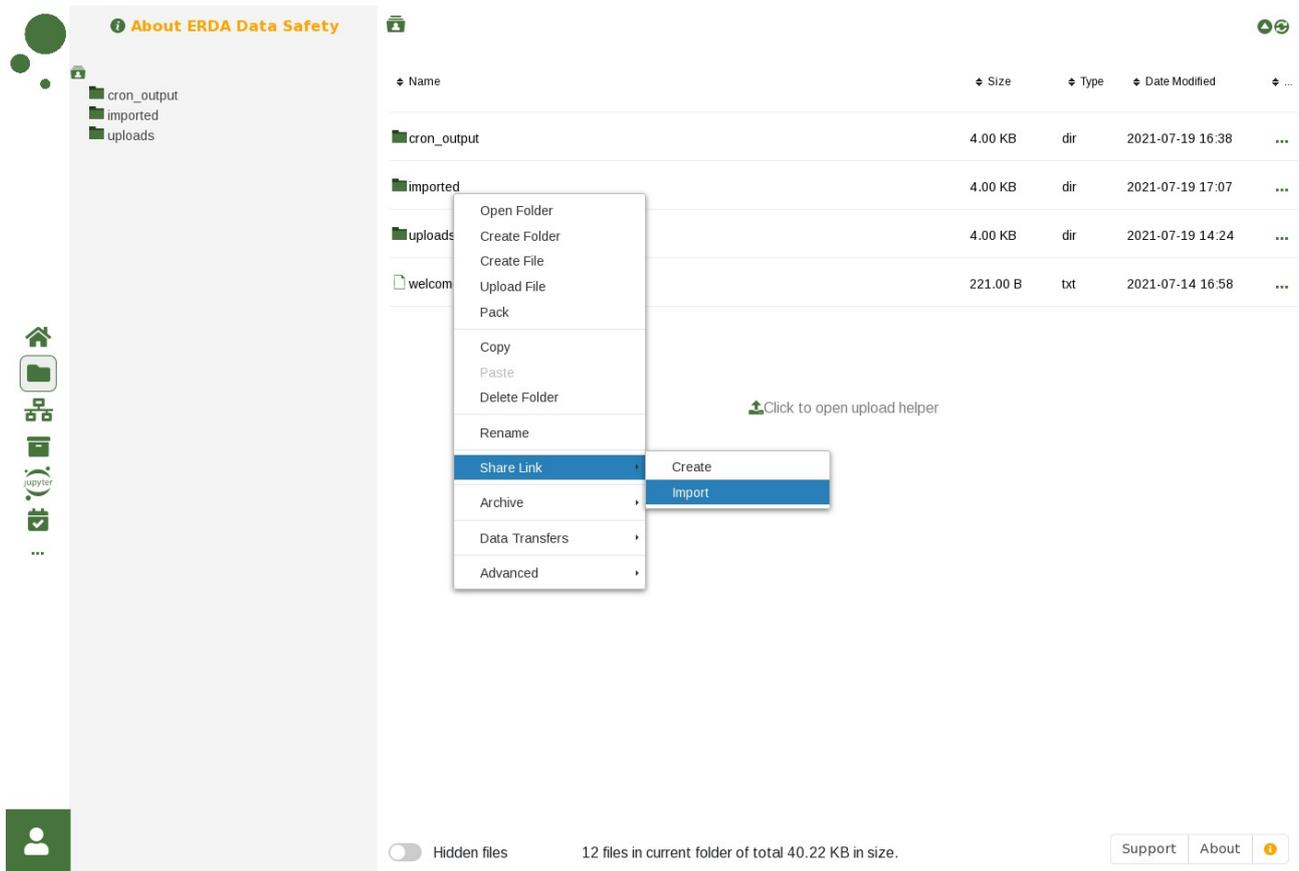
The ERDA administrators use the given Expire value to time-limit access to the external user accounts. In practice the access always lasts at most one year at a time to limit stale accounts, but with the option to renew access without repeated confirmation from the employee as long as it doesn't exceed the Expire date. After the expire date such renewal requires updated or repeated peer acceptance.

In case you want to change an Expire value later on, you can do so by entering the same user ID field values under Enter Peers or Import Peers, pick Update in the Actions drop-down and choose another Expire value.

Personal Copy of Material / Import Sharelink

For collaboration purposes it usually makes most sense to use Workgroups with the associated shared folders for data sharing. In that situation there's only *one* shared version of the data for all to work on.

In teaching contexts, on the other hand, it is common to want personal copies of course/workshop material for participants to work on. E.g. if the material involves Jupyter notebooks or similar that they are supposed to individually extend as exercises. A common approach in such situations is to make a folder with the relevant material and create a read-only share link on it. Then distribute the share link or just the ID of it to the participants, instructing them to create a folder in their ERDA Files and use Share Link → Import from the right-click menu to fetch their own personal copy to work on.



In the resulting import dialog they enter either the handed out Share Link ID or the complete URL of it. In the example here it's shown for a link with ID *ddYIhYUKMP*.

Import from Share Link ✕

You can import the files and directories someone shared with you in share links, e.g. to get your own copy of read-only material. Just leave Source path to "*" to import entire share link content.

Please select a destination folder where the import does not interfere with your existing data.

Share Link ID:

Source path:

Destination folder:

Overwrite files:

Ok Cancel

[Click to open upload helper](#)

Hidden files 12 files in current folder of total 40.22 KB in size. [Support](#) [About](#) ⓘ

When clicking **Ok** the contents of the share link are copied to the chosen folder, where it's ready for use in exercises and so on.

Support, Questions and Comments

We welcome all comments on how we can improve the user experience as well as any questions you may have about the use of ERDA. This includes support in case something doesn't work the way it is intended and described here.

It is very helpful for us if you include information about your operating system and browser with any support requests. If you aren't sure you can open up

<https://www.whatismybrowser.com/> or <https://detectmybrowser.com/>

and send us at least the line below “Your web browser is:” in the blue block at the top or the line starting with “You're using” respectively.

Screenshots of any problems are also very useful.

Feel free to contact us by sending an email to ERDA Support <support@erda.dk>.

Kind Regards, the UCPH ERDA team.