

## TRANSFERRING THE MRI DATA FROM THE WORKSTATION

There are various ways of transferring your data from the MR workstation onto your computer or home directory on the network. Which way you choose will depend on what the data will be used for:

### 1. Screenshots

Can be used when you need a quick and easy way to generate MRI pictures for presentations or emails.

### 2. DICOM data

Can be used when you need to perform simple image processing such as calculating tumor/fat volume, perfusion time course, etc. Most of today's image processing software handles DICOM format.

### 3. RAW data

This is the most important data as it includes ALL the information of the scan. If you would like to have a safe and complete backup of your work, you should export the RAW data (maybe in addition to DICOM data). Raw data can be used when you need to perform a more elaborate analysis using external software (e.g. Matlab) or when you need to re-process the data using Paravision (e.g., to perform a new reconstruction of the data).

## 1. Screenshots

Screenshots are literally *snapshots* of the screen.

### a. Preparing Display Before Export

The export function exports everything you see on the *Image Display/Processing* screen, including text overlay and ROIs. You can determine what is displayed on the *Image Display/Processing* screen by selecting/deselecting the following information:

- ✓ *View* → *Image Info*
  - *Patient Information*
  - *Site Information*
  - *Scan Information*
  - *Geometry Info*
  - *Comments*

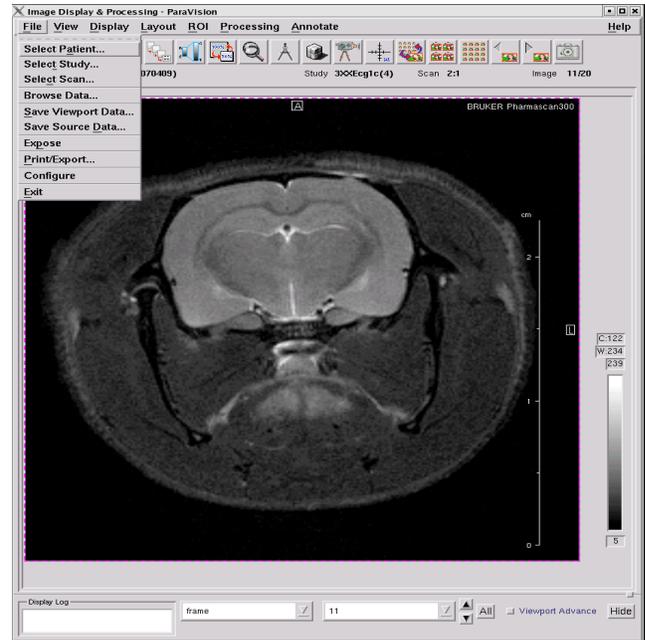
This has to be done before you export the pictures.



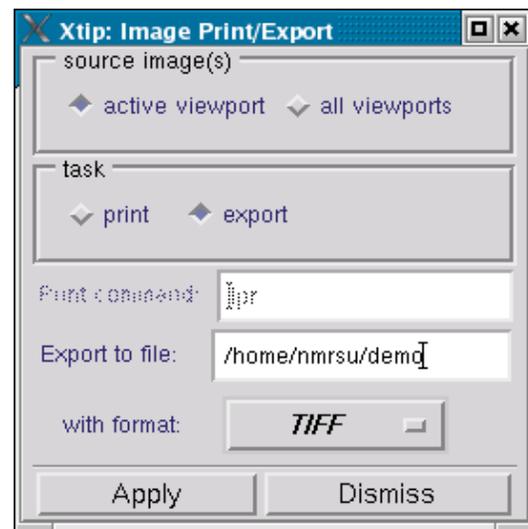
### b. Exporting Screenshots

In Paravision *Image Display & Processing* window you select

- ✓ *File* → *Print/Export*



You are now presented with the following box:



Task:

Select *export* if you want to save (not print) the images.

Source image(s):

Use *active viewport* if you want to export one picture or a set of previously selected pictures (marked by a green border)

Use *all viewports* if you want to export everything you see on the *Image Display & Processing*

Export to file:

This is usually set to your home directory and is probably something like `/home/username/`. You can change this or use it as your default path. Remember to enter a file name at the end of the path.

With format:

For presentations you should select TIFF or PNG as these are lossless formats.

✓ Press *Apply*.

### Your pictures are now stored in folder `/home/username/`.

Files can now be transferred to a memory stick, burned on a CD or transferred via network.

## 2. DICOM Data

DICOM stands for “Digital Imaging and Communications in Medicine” and is a standard for handling, storing, printing, and transmitting information in medical imaging. It includes a file format definition and a network communications protocol. DICOM files can be exchanged between two entities that are capable of receiving image and patient data in DICOM format.

Included in the DICOM header you can find information on patient ID, scan attributes, parameters etc.

Vivarium does not yet have a picture archiving and communication system (PACS), so all file transfers have to be done manually.

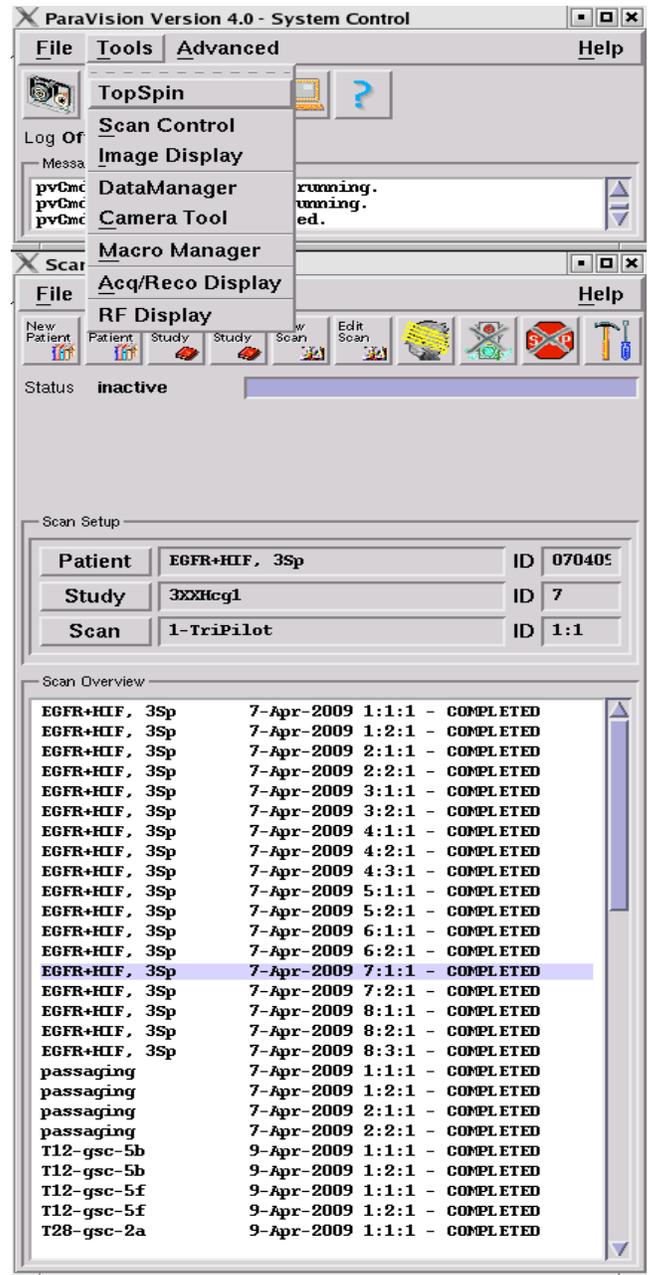
To convert RAW data into DICOM format:

✓ Start *Data Manager* from *System Control* window by selecting *Tools* → *Data Manager*

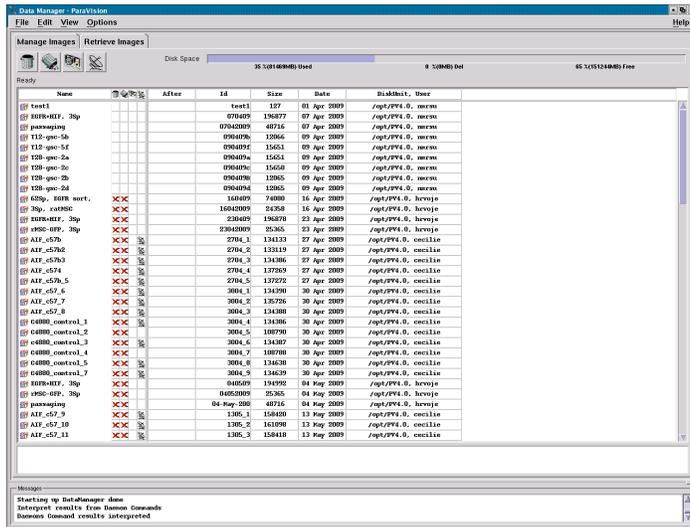
Users have different needs, so the DICOM export is set by default to a very simple export.

However, it is possible to configure the *Data Manager* so that users have access to different transferring preferences. The system manager (Kai Brandt) can arrange such that your files are automatically transferred to e.g. your home directory at the university or another account.

In addition to DICOM transfer it is also possible to use FTP/SFTP, SCP, external hard drive, memory stick etc.



When you first start the *Data Manager* you get the following screen



In this example we show the default DICOM export method available for all users. Contact Kai Brandt if you would like to individualize your exporting preferences.

- ✓ Select the scans you want to export
- ✓ Use the combination of CTRL/SHIFT to select multiple scans.
- ✓ Right click on the blue field
- ✓ Select *Transfer Immediately*

If you get some error messages this is probably because you have an empty scan. To check, read the export log in the bottom of the screen. Here you can find detailed information about the export.

**Your files are now stored in the folder called: /opt/DICOM.**

Files can now be transferred to a memory stick, burned on a CD or transferred via network.

After the transfer of DICOM files:

- ✓ Delete your DICOM files from the /opt/DICOM folder.

### 3. RAW Data

The raw data is stored in the following folders:

For PV5.1 the folder is:  
/datadisk/data/username/nmr/

RAW data is usually very big so an external hard drive or a memory stick is the easiest transferring method. You can also transfer data via network, but the transfer might take a while.

Below we describe how to copy files (snapshots, DICOM or RAW data) onto a memory stick.

### 4. Copying files into a memory stick or external hard drive

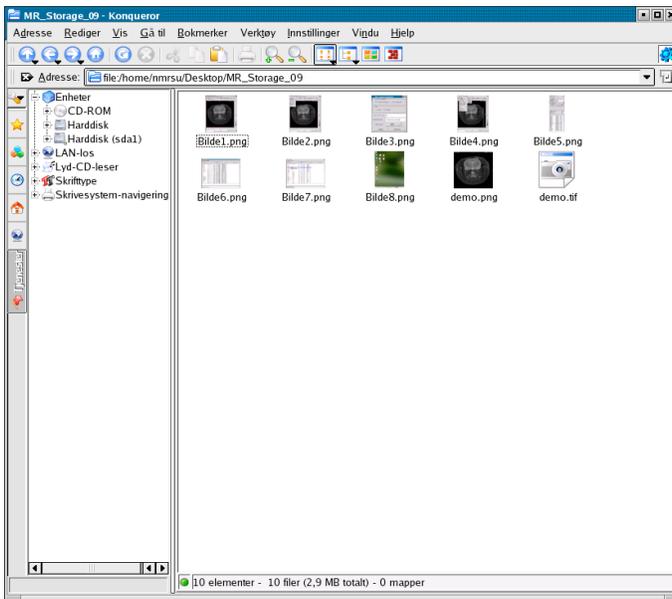
- ✓ Connect your memory stick or external hard drive
- ✓ Double click on the USB Stick icon



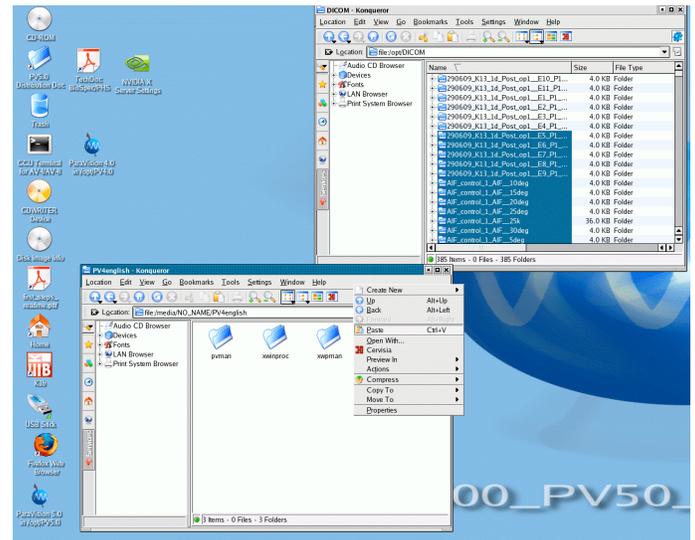
A new browser window opens. You now have access to the files on your memory stick or external hard drive.

- ✓ Click on the *Home* icon on the taskbar
- A new browser window opens. You now have access to the files on your home folder.





- ✓ Move the files to your memory stick or hard drive window.
- ✓ Right click and select *Paste* or use *Ctrl + V*



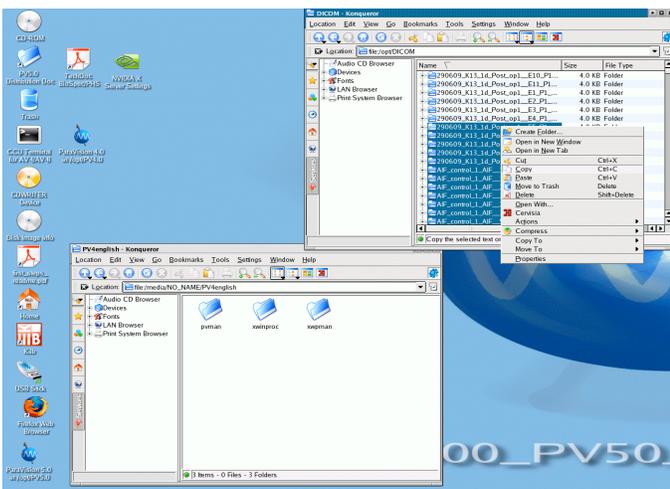
To access files in folders other than *Home* folder:

- ✓ Change the path in the Location field to e.g. */opt/DICOM* (this is where DICOM files are stored)
- ✓ Select the files you want to copy, right click and select *Copy*. Or press *Ctrl + C*

When copying is finished you have to Unmount the volume (memory stick or external hard drive)

- ✓ Empty the trashcan and close the file manager
- ✓ Right click on the USB Stick icon.
- ✓ Select *Unmount*

When the volume is mounted you should see a green arrow. The arrow should disappear when the volume is unmounted:



## 5. Copying files via network onto a home directory on the university server

You can copy your files directly to your home directory on the university server (*gol.uib.no* or *nturt.uib.no*, etc..).

On your home computer/laptop, you need to have a program for connecting securely to the UiB servers.

For Windows users:

- ✓ Go to <https://tjinfo.uib.no/program> and download “SSH Secure Shell”.
- ✓ Log into the UiB server. Note that username is: *uib/username*.
- ✓ Create a new folder (e.g., *MR*)
- ✓ Check the path to your home directory, e.g., */Home/sivXX/username/MR*

For Mac users:

- ✓ In the *Finder* menu, go to *Go* → *Connect to Server*
- ✓ Write the IP address or the name of the server in the pop-up window, e.g., *smb://klient.uib.no/FELLES/MOFA/Biomic*
- ✓ Log into the UiB server. Note that username is: *uib\username*.
- ✓ Repeat step 3 and 4 as for Windows users

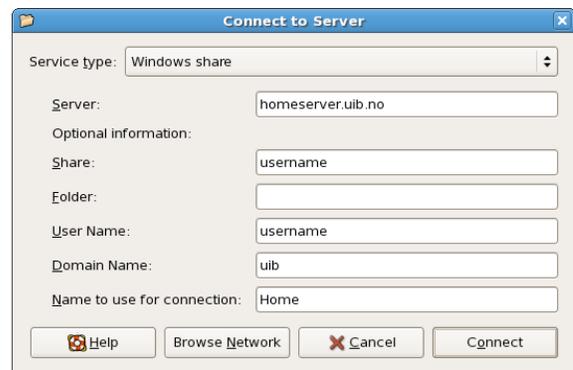
To transfer the file(s) from the MR computer to the server **via a command line**, you need to:

- ✓ Open a *Terminal* window (the icon for the *Terminal* is a black screen in the control panel on the bottom of the screen)
- ✓ Write: `cd /opt/DICOM` if you would like to copy DICOM files or `cd /datadisk/data/username/nmr` if you would like to transfer raw data
- ✓ Write: `scp -r* username@servername.uib.no:/Home/sivX X/username/MR`

where you replace *username* with your UiB username, the *servername* with the name of the machine you are connecting to and */Home/sivXX/username/MR* with the path to the *MR* folder in your home directory.

To transfer the file(s) from the MR computer to the server **using a graphical interface**, you need to do the following:

- ✓ When logging into the MR machine, choose *gnome* for your session (*Change session*) rather than *KDE* environment because the graphical interface is more intuitive in *gnome*.
- ✓ Go to *Places* → *Connect to server*
- ✓ If connecting to your home directory on the UiB server, choose *Service type: SSH*, *Server: login.uib.no* and *User Name: UiB username* (see 1<sup>st</sup> figure below).
- ✓ If connecting to a windows machine, choose *Service type: Windows share*, *Server: homeserver.uib.no*, *Share: Username*, *User Name: UiB username*, *Domain Name: uib* (see 2<sup>nd</sup> figure below).



- ✓ Note that at the moment **it is not possible to connect to *klient.uib.no*** either via graphical interface or command line because *klient.uib.no* is a windows cluster (rather than a single windows machine). We are working on solving this issue.

## 6. Transferring files via a web browser

A very simple and elegant way to copy the MRI data is to transfer them first to a university server using a special web-based utility called *vedlegg* (attachment). After the data is transferred to the university server, you will be given and emailed an URL link, which will give you access to the file. The transfer is secure as only the person uploading the file will be given the URL link. You can also email the link to your collaborators so that they can access the file as well.

Below is a detailed description on how to do this:

- ✓ Check that the `/opt/DICOM` folder is empty before you start exporting data as DICOM files
- ✓ Create DICOMs as described in under point 2, DICOM Data.
- ✓ Open a *Terminal* window (the icon for the *Terminal* is a black screen in the control panel on the bottom of the screen)
- ✓ In the terminal window, write:
 

```
zip -r mydicom /opt/DICOM/*
```

 where you can replace “*mydicom*” with a folder name of your choice. This command zips all the folders in the DICOM folder and creates a file called *mydicom.zip*
- ✓ Check that the file size is less than 1GB by writing:
 

```
du -h mydicom.zip
```
- ✓ If the *mydicom* file is bigger than 1GB, you have to split it in smaller files. To break it up in files of size 300 MB, you write the following:
 

```
zipsplit -n 300000000 mydicom.zip
```
- ✓ Start a web browser and go to:
 

```
http://vedlegg.uib.no
```
- ✓ Log onto the website using your university login and password.
- ✓ Click on *Choose File*
- ✓ Choose the file you have created with the zip utility. It is stored in `/home/username` where you replace *username* with your username on the MRI consol.

- ✓ Choose how many days you would like to file to be available for download
- ✓ Click on *Send*

It is important that you wait until the file is uploaded and do not log out of the page.
- ✓ When the file is transferred you will get a URL link with the file’s location. You will also receive an email with the same details.
- ✓ You now need to trash everything that is in the DICOM folder as well as the *mydicom* file. Write in the *Terminal* window:
 

```
rm mydicom.zip
```

```
rm -r /opt/DICOM/*
```
- ✓ To download the file from the university server, you have to click on the URL link in the email you have received. The transfer to your computer starts automatically.

The principle is the same for transferring RAW data, which you find in the folder called `/datadisk/data/username/nmr/`.

The top screenshot shows the login page of the TJINFO web interface. The page title is "Lagre en fil tilgjengelig på webben - Mozilla Firefox". The URL is "https://tjinfo.uib.no/vedlegg". The page content includes a navigation menu, a language selector (English), and a login form with fields for "Brukernavn" (username) and "Passord" (password). Below the login form, there is a "Send" button and a message: "Om denne tjenesten [Om SRM] [Lag en midlertidig og ublokkert adresse]".

The bottom screenshot shows the "Dine filer" (My files) section of the TJINFO web interface. The page title is "Lagre en fil tilgjengelig på webben - Mozilla Firefox". The URL is "https://tjinfo.uib.no/vedlegg". The page content includes a navigation menu, a language selector (English), and a table of uploaded files. The table has columns for "Filnavn", "størrelse", "type", "gyldig til", and "Nedlastet/slett".

Filnavn	størrelse	type	gyldig til	Nedlastet/slett
HrvojesData.zip	137278050 bytes	application/zip	2013-03-21 16:03:37	2
StromaD3.zip	400715558 bytes	application/zip	2013-03-21 10:28:56	0
StromaD1.zip	99972592 bytes	application/zip	2013-03-21 10:25:45	0
StromaD2.zip	999739485 bytes	application/zip	2013-03-21 10:23:06	0

Below the table, there is a "Last opp denne filen:" section with a "Browse..." button. There is also a "Antall dager filen vil være tilgjengelig:" section with a dropdown menu set to "30" and a "Logout" button. At the bottom, there is a message: "Om denne tjenesten [Om SRM] [Lag en midlertidig og ublokkert adresse]".