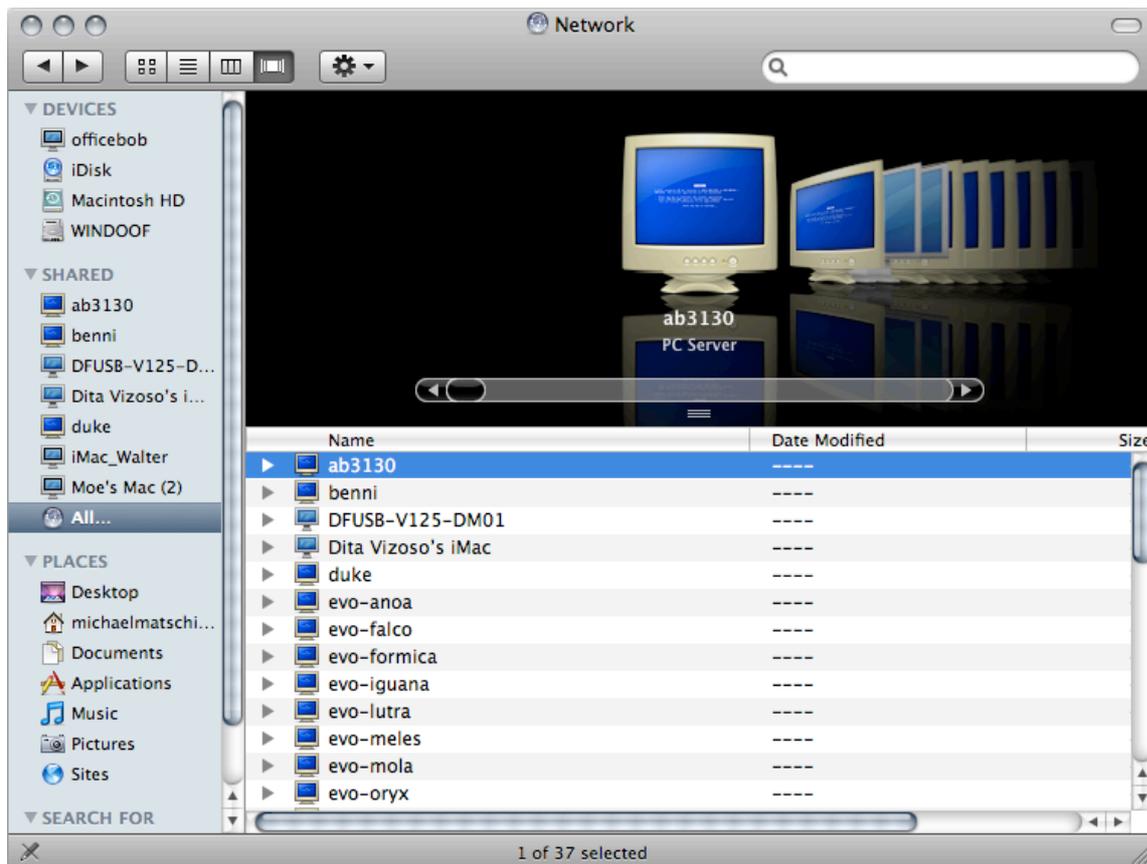| Protocol:	**Run software on the server**	SalzburgerLab
Version:	1.0	Protocols
Date:	6/23/2008	
Author:	Michael Matschiner (michaelmatschiner@mac.com)	UNI BASEL
Page:	1	

Howto:
Run software on the server

Our group has access to the server of the institute of zoology (evo-lutra), and we should make good use of it to keep our computers free from computationally expensive tasks. Currently, the following programs are installed on evo-lutra: ClustalW, Muscle, MrBayes, RAxML, IM, IMa, R. PAUP* will soon be available. If you want any additional installations, just let me know.
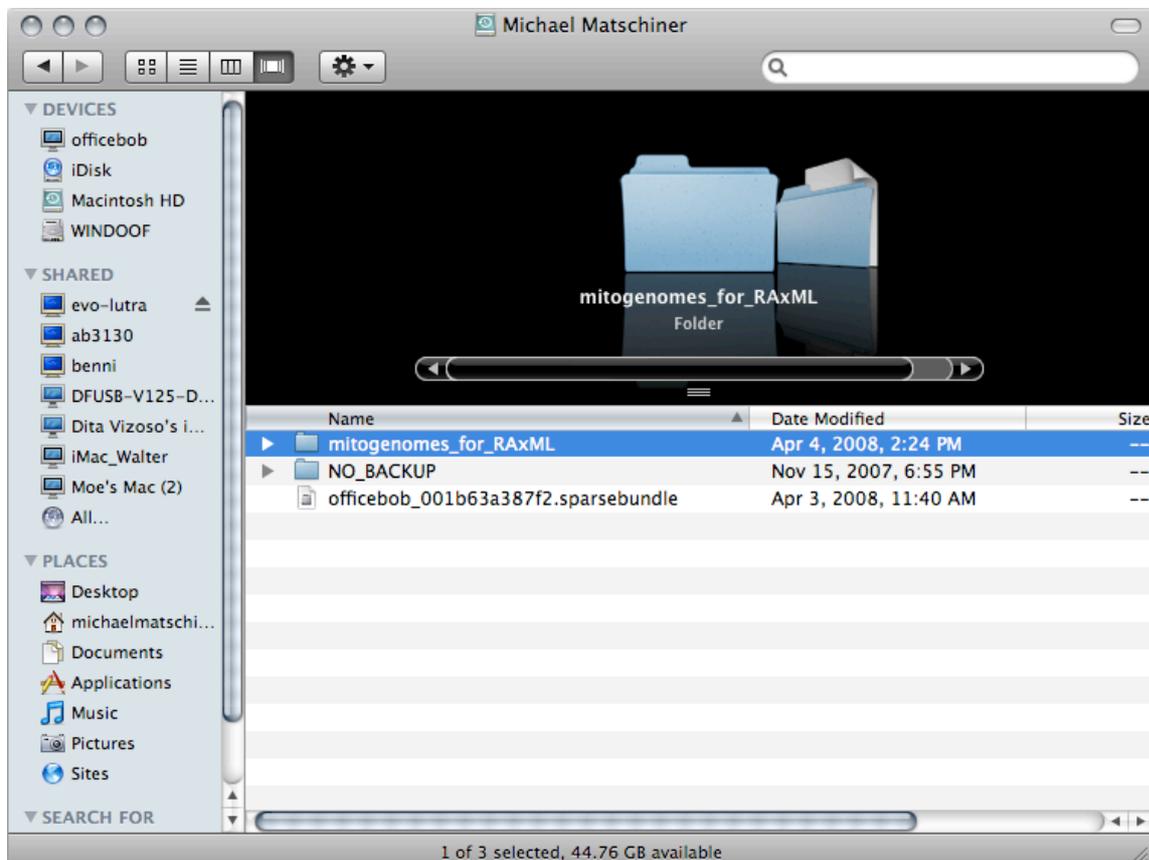
1. Connect to evo-lutra

Go to the Finder and click 'All...' in the left side panel under 'Shared':

Protocol:	**Run software on the server**	SalzburgerLab
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Page:	2	

Double click evo-lutra. This way you will be connected as a guest, and you'll be able to see all home directories on evo-lutra, but you won't be able to access them. Therefore, click 'Connect as...' in the upper right corner of the window. You'll see an authentication prompt. Use the user name and the password that Lukas has send to you. (Connect as: 'Registered User')
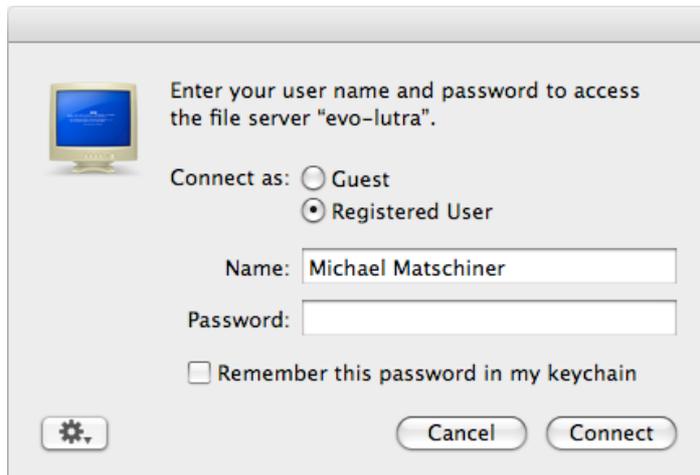
You should then be able to access your home directory on evo-lutra, and the connection to evo-lutra should be indicated by the 'Eject' button (⏏) in the left side panel of the Finder:

Protocol:	**Run software on the server**
Version:	1.0
Date:	6/23/2008
Author:	Michael Matschiner (michaelmatschiner@mac.com)
Page:	3

SalzburgerLab
Protocols

UNI
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2. Copy your input file to evo-lutra

Of course you'll want to give an input file to the software you intend to use. Open a second finder window, navigate to the folder with your input file, and simply drag'n'drop the file into the other window with your evo-lutra share. You can create, move, and delete folders on your evo-lutra share just as you do on your computer.
If this is too easy for you, here's an alternative way:

3. Secure Copying to evo-lutra (alternative way of copying your input file)

Open the Terminal (you'll find it in Applications>Utilities). Navigate to the folder containing your input file by using UNIX commands such as pwd, cd, and ls.

pwd: stands for 'print working directory'. If you type this command, it will simply output your current directory (=folder) to tell you where you are.
ls: lists all subdirectories and files in your current directory.
cd: 'change directory'. This command needs an argument, such as 'cd xyz' to move into the subdirectory 'xyz' or 'cd ..' to move up one level. If you type 'pwd' again, you should see that your current directory has changed.

Once you're in the folder which contains the inputfile (make sure by typing 'ls'), you can type the following Secure Copy (scp) command to copy this file to your evo-lutra share:

scp inputfilename yourusername@evo-lutra.zoo.unibas.ch:PRIV_SHARE

where yourusername is the username that Lukas has sent you (e.g. 'micham'), and inputfilename is, of course, the name of your input file, as shown by the command 'ls'.
(Note that sometimes this inputfile name is not what you think it is, cause the extension may be hidden in the Finder.)
'PRIV_SHARE' is your home directory on evo-lutra, and in fact the only one you can access and modify. However, you may add a subfolder to copy your inputfile directly into it (e.g. ...PRIV_SHARE/files_for_IM). You will be prompted for your password, type the password that Lukas has sent you. If the copy was successful, you'll see something like the following line, indicating the time needed for the transfer.

```
evo-parus:Microsatellites_paperstyle michaelmatschiner$ scp ggmsp_rounded.txt micham@evo-lutra.zoo.unibas.ch:.
Password:
ggmsp_rounded.txt                                        100%   14KB  14.3KB/s   00:00
```

4. Using Secure Shell to login to evo-lutra and start the run

Open the Terminal (Applications>Utilities). Type the following Secure Shell (ssh) command:

ssh yourusername@evo-lutra.zoo.unibas.ch

where yourusername is, again, the username that Lukas has sent you (e.g. 'micham'). You'll be prompted for your password, type the password you got from Lukas. If you see a welcome message you're logged in. Navigate to the folder with the copy of your inputfile (using pwd, ls, and cd, as described above), and start the software as written in the respective software manual.

Protocol:	**Run software on the server**
Version:	1.0
Date:	6/23/2008
Author:	Michael Matschiner (michaelmatschiner@mac.com)
Page:	4

5. Using screen to detach and reattach processes

Just an additional hint:
If you start applications on evo-lutra that run for days or weeks, you may want to close the Terminal windows on your computer in the meantime, in order to restart your computer or similar.
This is made possible by the software screen, which also runs on evo-lutra. Before you start your application, but when you're already logged in to evo-lutra, type screen in your Terminal window. You will be greated by a welcome screen. Just press the space bar.
You can now start your application as usual. During the run of your application, you can detach the process from your machine by typing

ctrl-a d

The process will now be hidden from your view. You can close the window, the Terminal and shut down your computer if you wish. Any time later, you can reattach to your process by typing

screen -r

(obviously, you must be logged in to evo-lutra via ssh and be in the Terminal).

You don't even have to be in the institute to do this. You can log in to evo-lutra from home and monitor your processes from there. (To log in to evo-lutra from outside the university's network, you'll need VPN however). You could even follow your runs in your holidays. If you wish to.