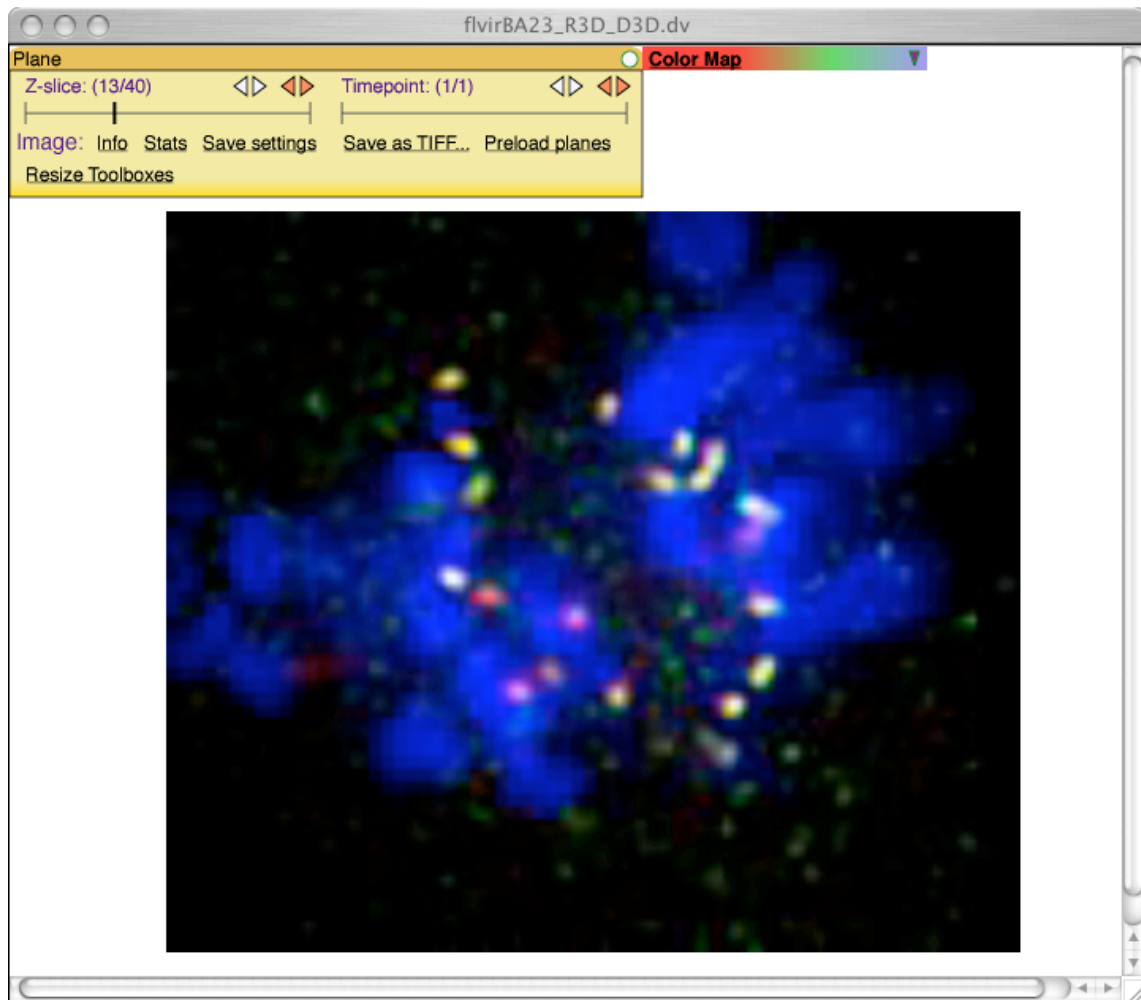# Guide to installation of OME v1.4.1 – using Macintosh OS X

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The small print…

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Important introductory comments

If you would like to read an overview of OME and how it works, please see http://www.openmicroscopy.org/getting-started/

If you have any queries about this installation procedure, please don't hesitate to contact us, at ome-devel@lists.openmicroscopy.org.uk

To join the OME users email list, see http://lists.openmicroscopy.org.uk/mailman/listinfo/ome-users

This guide is intended to be read in conjunction with the README file available in the

Macintosh 'OME Install' disk image, which can be downloaded as described below.

1. General guidelines for installing OME

OME works on a server-client basis (see http://openmicroscopy.org/install/index.html and http://openmicroscopy.org/system-overview). This means that it first needs to be installed on a designated computer (the 'server'), which one can then access from other computers ('clients') over the internet, or an organisation's own intranet. More than one user can access the OME server simultaneously. However, the server and client can also be the *same* computer, i.e. one can install OME on one's own computer and access it via a web browser, as if one were accessing it on a computer somewhere else. Here, we describe how to achieve this, in order to run FindSpots.

Currently, FindSpots is run entirely via the web interface (referred to as the webUI) to OME. A Java-based interface (Java UI) to OME also exists, which provides an alternative means to access and use OME; however, it does not currently provide access to FindSpots. It is our intention, in future, to merge the web-based and Java-based interfaces to OME, so that most if not all operations can be achieved by either means.

To achieve an acceptable speed of operation, it is advisable to install OME on a computer with as fast a processor as possible and in particular with as large an amount of on-board memory as possible.

OME can be installed on systems running Linux or on a Macintosh running OS X. Detailed installation instructions are available online (http://openmicroscopy.org/install/index.html). However, the simplest method to install OME is via a one-click 'installer' available for Mac OS X 10.3 or 10.4, described below. Any other method is significantly more complex and ideally requires knowledge of Unix.

NB: although the OME server is most easily *installed* on a Macintosh, it can be *run* as a client from any computer with a suitable web browser and which has web access to the server via the internet or an organisation's intranet, including Windows PC's.

NB: if running OME on a separate machine from that on which the server is installed, then in order to import images into OME, arrangements will need to be made to provide user access to a folder on the server to which images can be uploaded. Alternatively, the server will need to have access to a separate file-server on which images are to be stored – please contact the OME developers for advice on how to set this up.

2. Installation on a Macintosh

Minimum Requirements: Macintosh computer running Mac OS X 10.3 or 10.4

Installing Xcode
Before installing OME, you will need to install a set of tools from Apple called Xcode, a Mac OS X toolset for developers.

These can be found on one of the CD-ROMs that came with your Macintosh. Insert it into your

computer's CD-ROM/DVD drive and follow the instructions.

Alternatively, if you are running OS X 10.4, Xcode can also be downloaded from Apple's website. To do this, go to http://developer.apple.com/tools/xcode/index.html and click on 'Download Xcode 2.2'.

It is necessary to register for the 'Apple Developer Connection' (ADC), which is free, in order to be able to download this. To do this, click on the 'sign up' link you will see upon clicking 'Download Xcode 2.2', then follow the instructions until you see the link to download 'Xcode Tools 2.2 (Disk Image)'. Download the file and, if necessary, double-click the resulting 'disk image' to open it (this may open automatically)[1]. Then double-click the Xcode installer and follow the instructions.

Installing OME
Once Xcode is installed, download the OME installer from our website. Open http://openmicroscopy.org/install/mac-osx.html and click 'experimental installation wizard' to download the installer. This will download a 'disk image', which should open automatically in the Finder. If it does not, locate the downloaded file (filename: OME-Installer.dmg) and double-click on it.

After opening the 'disk image', a window will appear contain a number of items, including the OME installer, which can be run by double-clicking the file named 'OME-Installer'.

You will be prompted to enter the Administrator password for one of the 'Users' on your Macintosh that has Administrator privileges – please contact your local computer support department if you do not know what this password is for your computer – unfortunately, we are not able to help with that.

After entering this password, the rest of the installation should be straightforward. The installer may report that it is necessary to restart the computer in order to adjust memory allocation. Please do so if prompted and follow the instructions on screen.

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[1] A 'disk image' is essentially a single file which contains, in a compressed form, the exact replica of the contents of a single disk e.g. a CD-ROM. It is used in order to facilitate the distribution of software, as by simply downloading a single 'disk image' file, it can be opened to yield a folder containing all the many different files necessary for a particular application to be run, or installed. Hence it is akin to a .ZIP file commonly used for distributing Windows software. However, Macintosh 'disk images' are treated by the Macintosh Finder as if they were an actual disk that had been inserted – hence a disk image is listed in Finder windows together with any other hard drives, Zip drives, etc connected to the computer, or any CD-ROM's or DVD-ROM's inserted into the CD-ROM/DVD drive, as shown in the screen shot below.
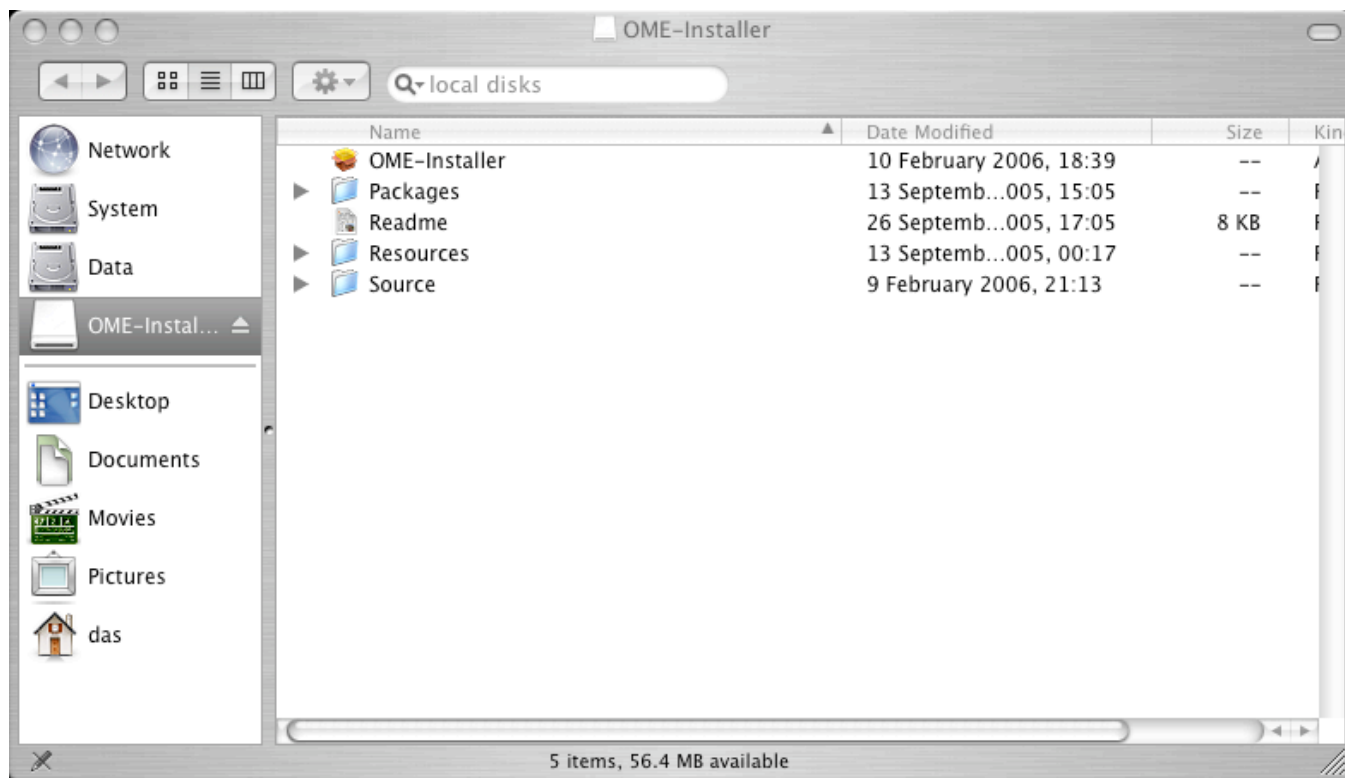
Screen-shot showing the open OME-Installer 'disk image', and the OME-Installer application ready to run.

Run the OME-Installer. The screen-shot below will appear, and may be followed by the recommendation to restart the computer, shown next. If this recommendation appears, re-start the computer, and run the installer again.

Initial display of FindSpots installer window.

If this message appears, click on 'Quit' and restart the computer.

After restarting the computer and running the installer again, the following window will appear. Enter the required information, and click 'Begin installation'.

Selection of OME username and password. *Enter the desired OME username and password. 'First name and 'Last name' may also be modified. 'Email address' is optional. Click 'Begin Installation'.*

Pre-installation checks. *Once pre-installation checks have been completed, as shown by the green 'OK' on the right-hand panel, click 'Begin installation' to start the installation of OME and associated files.*
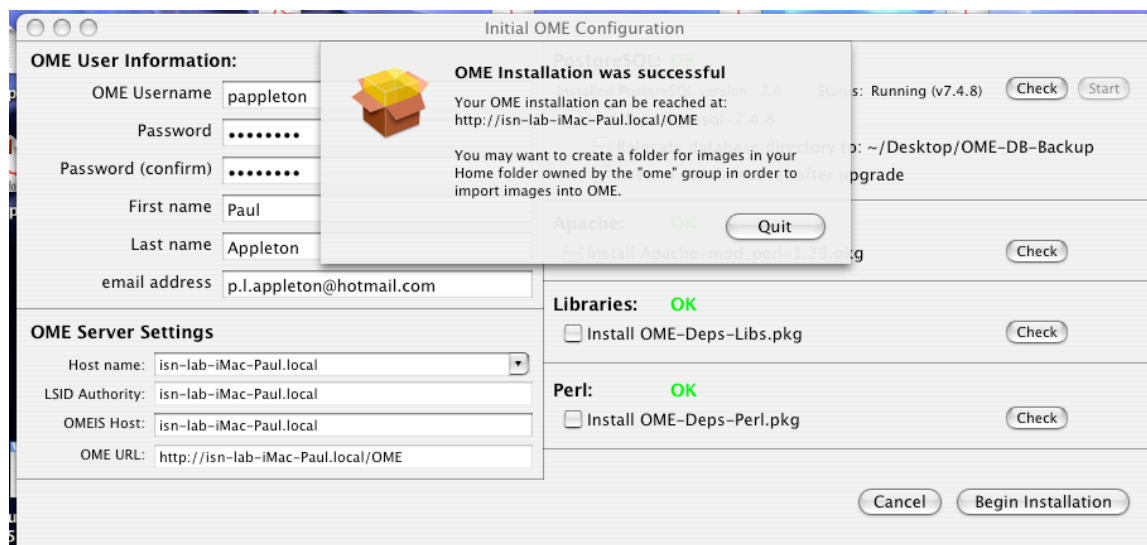
Successful installation. *Click 'Quit' after this window is displayed.*

Currently, the version of OME which will be installed by this method is a recent, experimental version, not one of the earlier 'release' versions.

After installing Xcode and running the OS X installer for OME, confirm that OME has successfully been installed. To do this, open your web browser and open this web address: http://localhost/OME - you should be presented with an OME welcome page. If not, please email us for help!

Setting up a folder for OME images

When choosing 'Import Images' within OME, one will be presented with a listing of the main OME data directory. The installer sets this to be the 'home' directory for the currently logged in user on the Macintosh running the OME server (not the Macintosh or PC from which one is accessing FindSpots, unless that is also the one on which OME is being run from). The home directory can be reached using the Finder by clicking on it in the panel on the left, as shown below (for Mac OS 10.3.9 – this may vary for other versions).
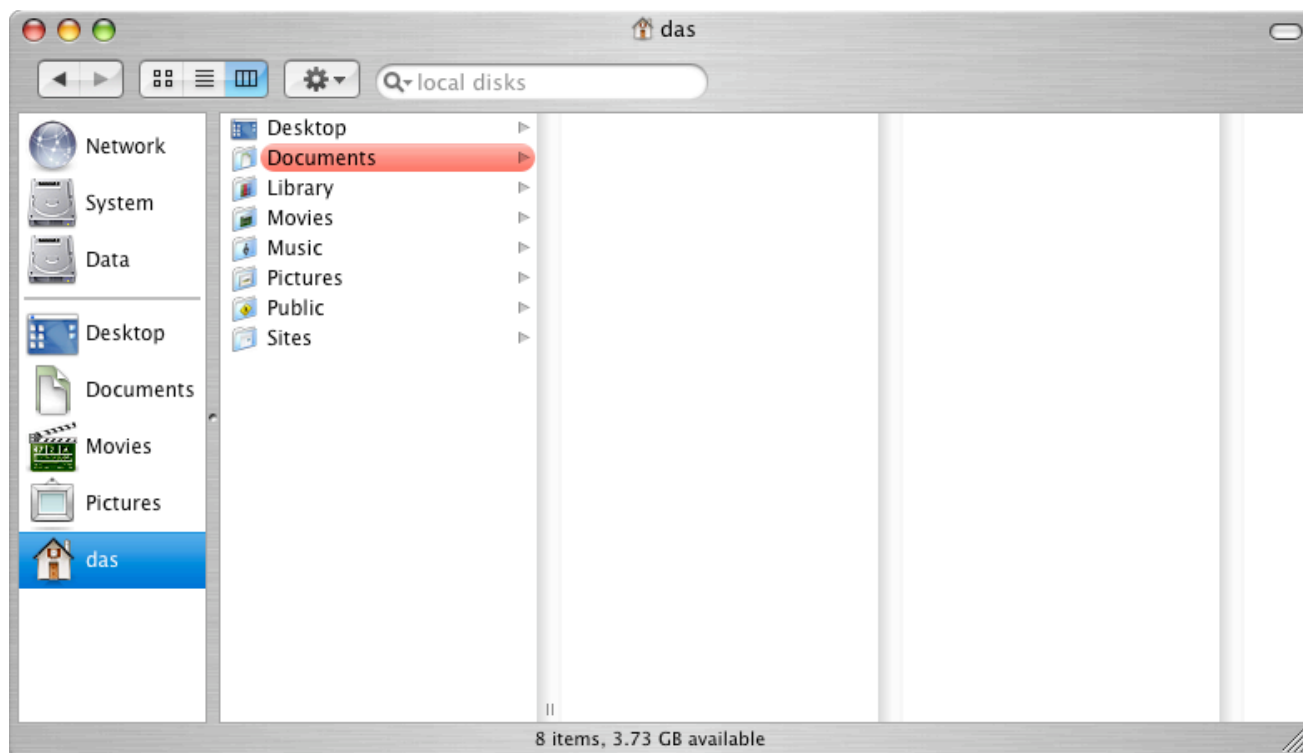
Screen-shot of the home directory for the currently logged in user ('das', in this case).

In order for image import to be possible, it is necessary to ensure the correct Permissions' are set up for the folder(s) from which images are to be imported.

Normally, folders in your home directory are not viewable by other users (except the drop box). It is recommended that a new folder be created in the 'Public' folder of the home directory, e.g. 'OME images', which users on all computers can access in order to deposit images.

Even if OME will only be used from the computer it is installed in, it is important to access permissions are correctly set up for the folder in which OME images are to be placed for import, otherwise image import will not work.

To set up permissions, select the newly created OME data folder referred to above, and choose 'Get info' from the File menu. Click on the small triangle next to 'Details', under 'Ownership and Permissions'. If the small padlock icon is 'locked', click on it, and enter the password details requested.

Then open the pop-up menu next to 'Group' and select 'ome'. From the 'Access' menu, select 'Read only' or 'Read & Write' ('Read only' provides more security and is recommended). To make this into a 'drop box' that users on other computers can add data to this directory remotely, open the pop-up menu next to 'Others' and select 'Write only'. Then click on 'Apply to enclosed items' and close the window.
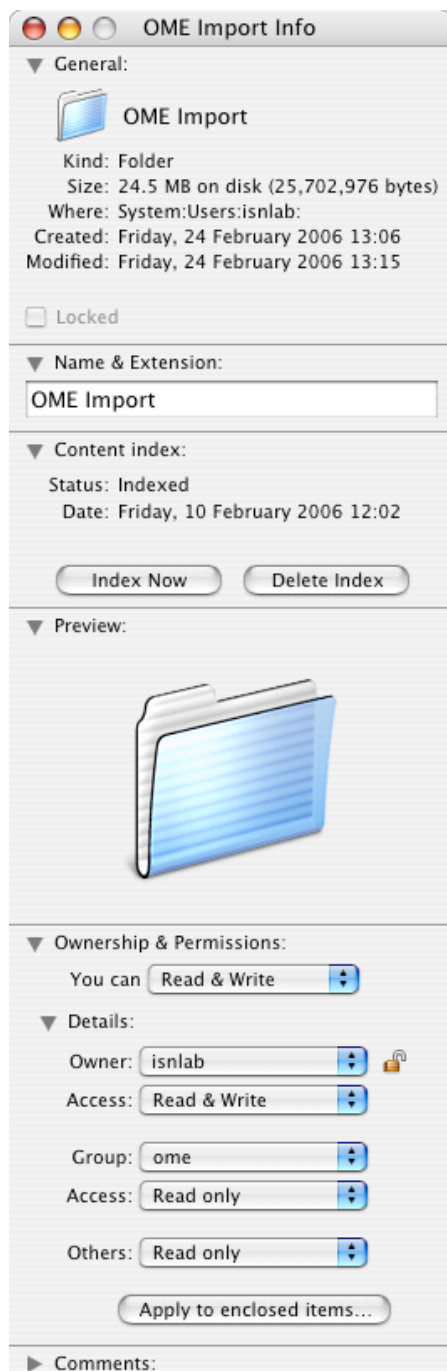
Selecting permissions for the folder into which images will be placed for OME.

Note: the 'ome' group includes the user logged in at the time OME was installed, as well as 'Apache', the web server. For further details about file permissions in Mac OS X, see http://docs.info.apple.com/article.html?path=Mac/10.4/en/mh669.html

3. **Accessing/running OME using a web browser**

Java and Web user interfaces

At present, there are two ways to access and use an OME server – via the OME Java user interface (Java UI) using a custom application called 'Shoola', or via the web user interface (webUI) and a web browser. At present, certain functionality is available in the webUI that is not available in the Java UI. For example, the object-finding analysis module, FindSpots, can only be run from the webUI.

More details about installing the Java application can be found at
http://cvs.openmicroscopy.org.uk/ome-doc/CURRENT/INSTALL.java_client .

Whether one uses the JavaUI or the webUI, it is necessary to know the internet address of the computer on which it is installed, in order to access it.

Accessing OME from the computer it is intalled on

To access the OME server from the *same* computer as it is installed on (which will be a Macintosh, if the instructions here are followed), the internet address of the computer is simply 'localhost'. Hence to access OME via the web interface, go to http://localhost/OME

Accessing OME from other computers on the intranet/internet

To access OME from another computer on the local intranet, or via the internet (assuming there is no firewall in place to prevent access from external sources), it is necessary to know the specific IP address or IP number of the computer. This can be found as follows:

Using the Mac on which the OME server is running, select 'System Preferences…' from the Apple menu; the window below should appear. Then double-click on the 'Sharing' icon, listed under 'Internet & Network': if this is not visible within the 'System Preferences' window, click on the 'Show All' button on the top-left of the System Preferences window, and then click on 'Sharing'.
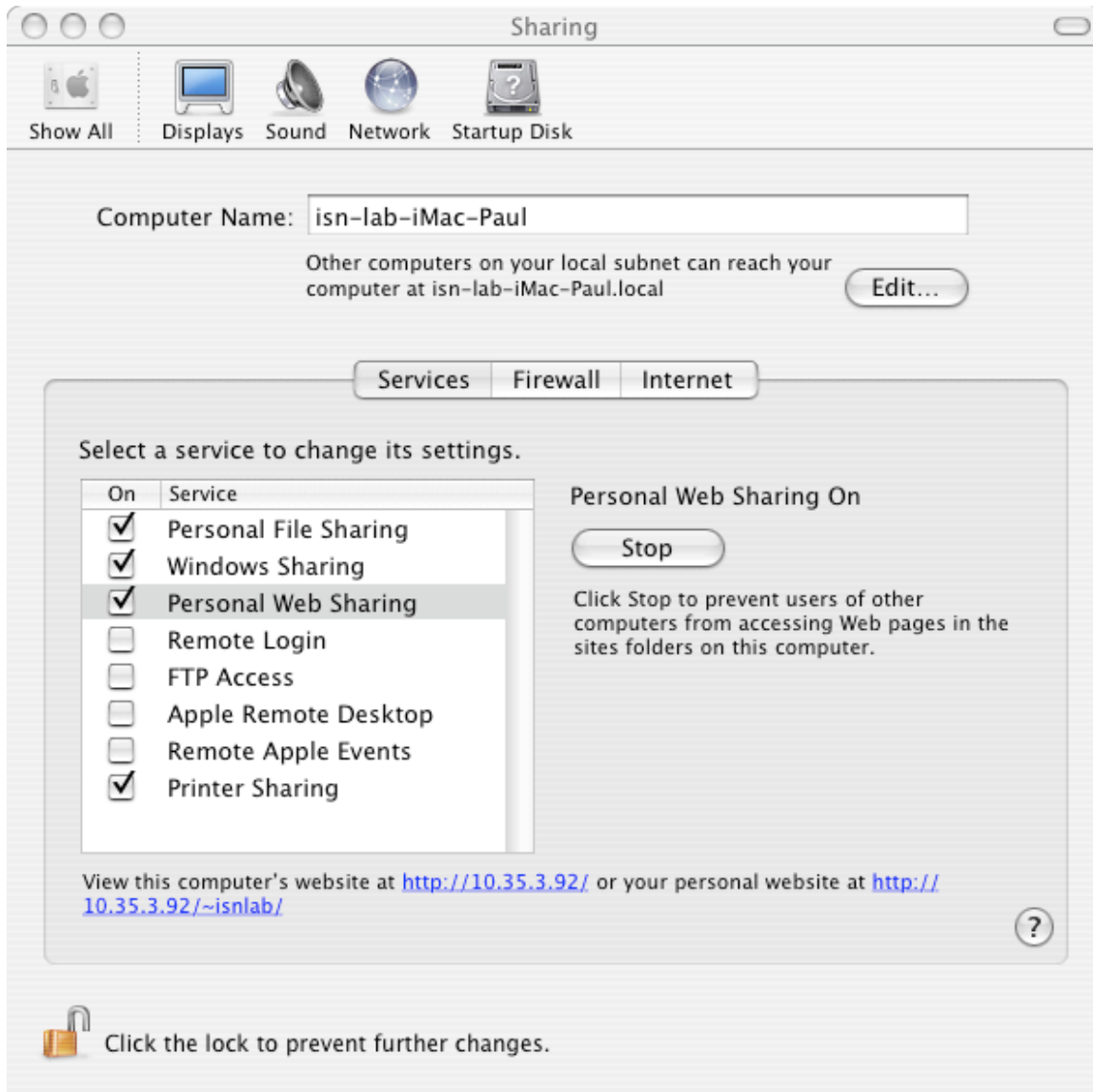
Click on 'Personal Web sharing'. If this is not currently enabled, click the 'Start' button or the check box adjacent to it, and wait until 'Personal Web Sharing On' is displayed.

The address to use for accessing this computer over the intranet or internet will be shown towards the bottom of this window. Hence the address for the computer shown here is 10.35.3.92, which can be used to configure the Java OME application.

To access the *webUI* of the OME server on this Macintosh, from *another* PC or Macintosh, enter http://10.35.3.92/OME into a web browser. Note that this will not work if there is a firewall between the Macintosh running OME, and the computer used to access it. Contact your local network administrator for details.

System preferences window. *Select 'Sharing' from the 'System Preferences' window to find the IP address of the computer on which the OME server is running, in order to be able to access it from other computers. If you cannot see the above display in the 'System Preferences' window, click on the 'Show All' button.*

Finding the internet address of the OME server. Click on 'Personal Web sharing'. If this is not currently running, click the 'Start' button and wait for it to start. The address to use for accessing this computer over the intranet or internet is shown below, e.g. http://10.35.3.92 *for the computer shown here. To access OME on this Macintosh from another PC or Macintosh, enter* http://10.35.3.92/OME *into a web browser.*

Important note on choice of web browser

If accessing the OME webUI using a Macintosh computer, the recommended web browser is Apple's 'Safari' web browser (available as standard in Mac OS X). For computers running Microsoft Windows, Internet Explorer is recommended. In both cases, the SVG viewer will need to be installed, but OME will prompt for this when required and this should occur automatically and be straightforward.

Mozilla FireFox is not currently recommended, as the latest version (v 1.5.0.1) has been tested on both

Macintosh or Windows and does not display images within OME, with the default settings. This version of FireFox has built-in SVG support, which appears not to work with OME (or at least, with the current version of OME). However, it *is* possible to use FireFox successfully with OME, by turning off the built-in SVG support.

To do this, type `about:config` into the URL bar and press return. Then type `svg.enabled` into the 'Filter' field, which is located on the top-left of the FireFox window, as shown below. By double-clicking anywhere in the resulting line beginning 'svg.enabled', its value can be switched alternately between on and off, for which the 'value' heading will be labelled 'true' or 'false' respectively.
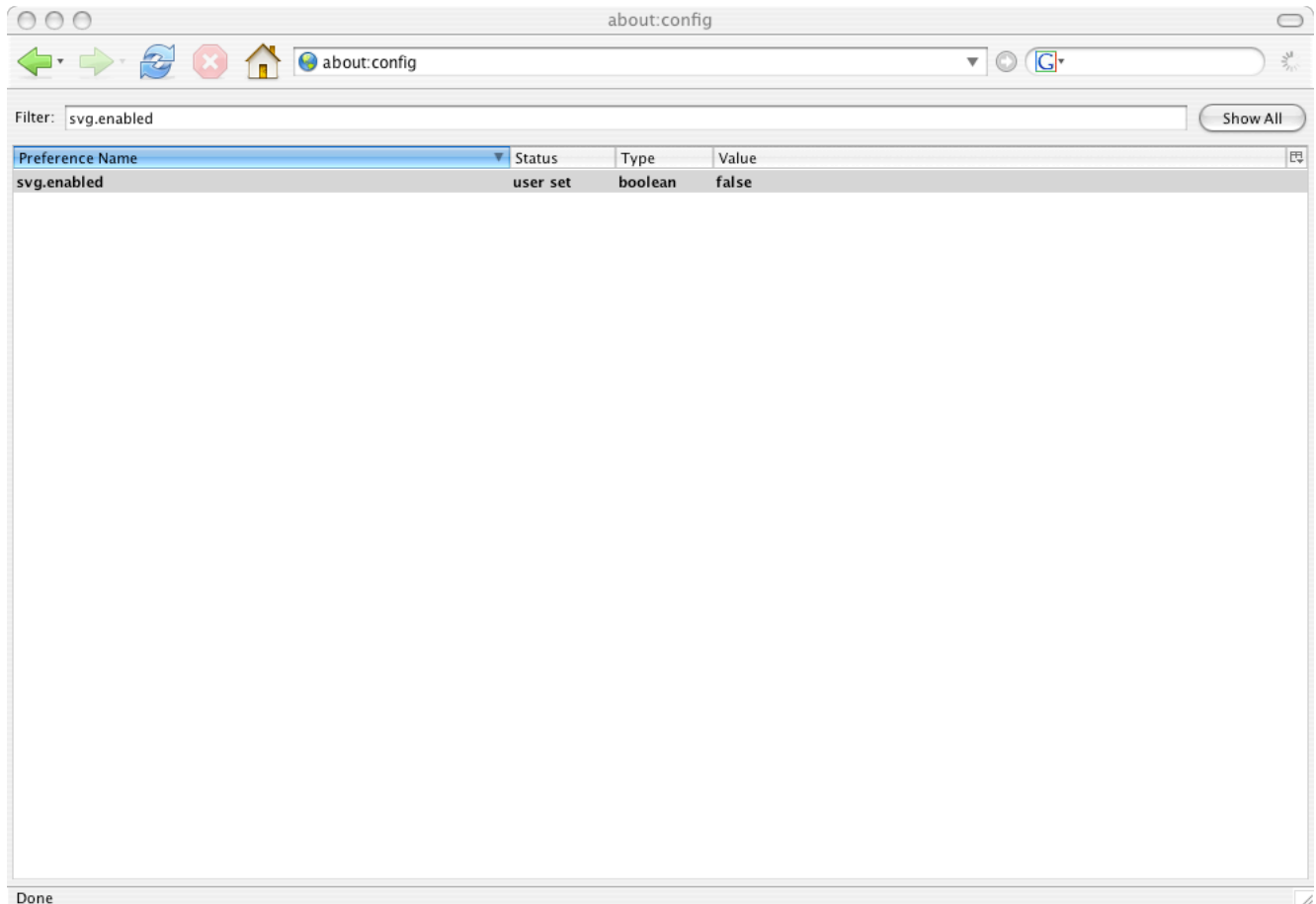
Turning off the built-in support for SVG in Firefox 1.5. This is necessary in order to use Firefox 1.5 with OME. After downloading the SVG viewer from Adobe, as described in the text, Firefox will display images from OME. In the state shown here, where the Value heading is labelled 'false', built-in support for SVG is turned off.