

Mac OS X specific information for BrainVoyager QX

In this document are Mac OS X specific issues concerning the installation and use of BrainVoyager QX are or will be described.

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Getting started

Introduction

There are two types of HASP keys (a.k.a. 'dongles'). One is for stand-alone, the other for a network. The latter is also called 'floating license'. This means that any user on the network can use BrainVoyager as long as the maximum number of instances is not activated and BrainVoyager is installed locally.

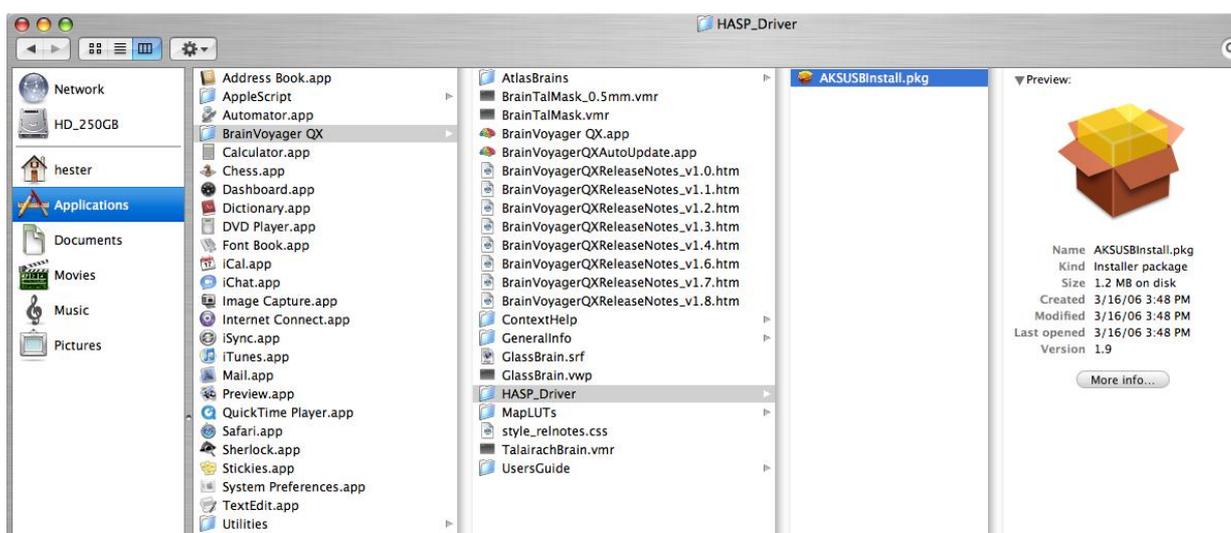
In the case of a stand-alone license, the dongle is plugged in the USB (or parallel) port of the computer running BrainVoyager. For floating licenses, the dongle is present on the computer that manages the licenses. This computer has the HASP License Manager installed.

Installing BrainVoyager QX with a stand-alone license

While the USB dongle is attached to the Mac, let the installer run the disk image *.dmg. If the dongle works, a small LED light always lights up.

Installation of the HASP driver

In the folder Applications > BrainVoyager QX > HASP_Driver there is a AKSUSBInstall.pkg (see figure below) which allows you to install the driver if this was not yet performed during installation of BrainVoyager. If you have the most recent driver, the package will tell you so. Activate the package by doubleclicking.



In case installation does not work when the dongle is attached during installation of the driver, try to install the driver without having the USB dongle attached to the Mac.

The License Manager should NOT be installed on a Mac with a stand-alone license dongle, otherwise the dongle won't be found by the HASP dongle driver.

Obtaining new drivers

In case there are problems with the dongle on a new Mac OS X version, it might be useful to check if there are new drivers. Currently (June 2007) from <http://www.aladdin.com/support/hasp/enduser.asp> the following files can be downloaded:

Description	Name file	Size	Release number	Release date
Mac OS X Driver Installer	HDD_Installer_MacOSX.dmg	1.94 MB	1.9	03/2006
Mac OS X Script-based Driver	HHD_Script_Installation_MacOSX.dmg	143 KB	1.9	03/2006

Installation

Using BrainVoyager QX on a Mac in a network

Likewise as in a Windows environment, BrainVoyager QX will run only when the License Manager (HASP LM) from Aladdin (<http://www.aladdin.com>) recognizes the IP address of the computer requesting the license.

The server side

On the server side, a `nhsrv.ini` file should be available to grant the Mac access to the HASP License Manager (LM). This is applicable when is chosen for the TCP/IP communication protocol.

Optionally, an `nhsrv.ini` file can be used to limit the range of computers that have access via their IP addresses. The `nhsrv.ini` file can then be provided on the computer where the license manager is installed.

Contents of the nhsrv.ini file

The second requirement is the presence of the `nhsrv.ini` file. This file contains the keyword `[NHS_SERVER]`, which can be configured via the **`nhs_ip_limit`** and **`nhs_adapter`**. Modify the keywords in the `[NHS_SERVER]` section of the `nhsrv.ini` file to customize the HASP License manager according to your needs.

`nhs_ip_limit`

Possible values `<IpAddr>,<IpAddr>,...`

Specify the range of stations the HASP License Manager serves. Applicable for the HASP License Manager for Win 32, Novell and Mac.

For example: `10.1.1.1,10.1.1.*, 10.1.1.1/32, 10.1.1.1/24`

`nhs_adapter`

Possible values `<IpAddr-SubMask>,<IpAddr-SubMask>,...`

Specify the IP address of one or more network cards to which the HASP License Manager listens. Applicable only for the HASP License Manager for Win32.

For example: `10.1.1.111-255.255.0.0`

Location of the nhsrv.ini file

Please find in the table below the search order for the `nhsrv.ini` file on the different platforms. The `nhsrv.ini` file can be placed in the current directory. You can set a name and the path for the configuration file using the `-c` switch (according to documentation from Aladdin).

The HASP License Manager (LM)

Installation of the LM

If the Mac is used as BrainVoyager QX license server, it is necessary to install on that Mac the HASP License Manager (LM). This can be downloaded from Aladdin via from <http://www.aladdin.com/support/hasp/enduser.asp> :

Description	Name file	Size	Release number	Release date
Mac OS X 10.4 HASP License Manager Installer	HASP_HL_LM_Setup_Mac_10.4.zip	310 KB	8.30	08/2005
Mac OS X HASP License Manager Installer	LM_Setup_Mac.dmg	420 KB	8.30	09/2004
Mac OS X HASP License Manager Script Installation	LM_Script_Mac.dmg	95 KB	8.30	09/2004

The client side

The computer itself makes itself recognizable via the nethasp.ini file. Please see the paragraph below on where to locate the file on your hard disk. The communication protocol should be one that is recognized by Windows and Mac, so TCP/IP is a good candidate.

Contents of the nethasp.ini file

An example content of the nethasp.ini is:

```
[NH_COMMON]
NH_TCPIP = Enabled;

[NH_TCPIP]
NH_SERVER_ADDR = 123.456.78.900;
NH_PORT_NUMBER = 475;
NH_TCPIP_METHOD = TCP;
NH_USE_BROADCAST = Disabled;
```

To comment a line, put a semicolon in front of the line (;).

Location of the nethasp.ini file

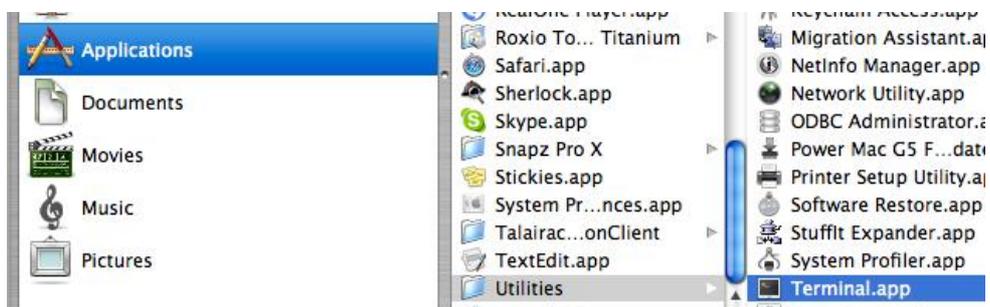
The nethasp.ini configuration file search order on Mac OS X is the following:

1. Current directory
2. Home directory of current user
3. /etc. directory

The easiest is to place the nethasp.ini file in the home directory (see figure below). This relocation of the nethasp.ini file does not require root privileges.



Otherwise, to place the nethasp.ini file in the /etc. folder, first ensure to log in as Administrator. Place the file temporarily in the home directory. Start a shell via the 'Terminal' application. This is located in Applications > Utilities > Terminal.app (see figure below).



In the terminal, first type 'cd' to be sure that the current working directory is also the home directory. Then, copy the nethasp.ini. These are the commands to type:

```
$ cd
$ sudo cp nethasp.ini ../../etc/
```

where 'sudo' is the super user command and 'cp' means 'copy'. The terminal will ask for a password, which should be your password to login. If no message is displayed after typing your password, the nethasp.ini is copied. To check this, type:

```
$ cd ../../etc/
```

To see all files, type the command 'ls', which lists the content of a directory. To start BrainVoyager, type the lines:

```
$ cd
$ cd "../../Applications/BrainVoyager QX/BrainVoyager
QX.app/Contents/MacOS/"
$ ./"BrainVoyager QX"
```

The "." (dot-slash) command in the third line indicates that the executable program "BrainVoyager QX" should be activated.

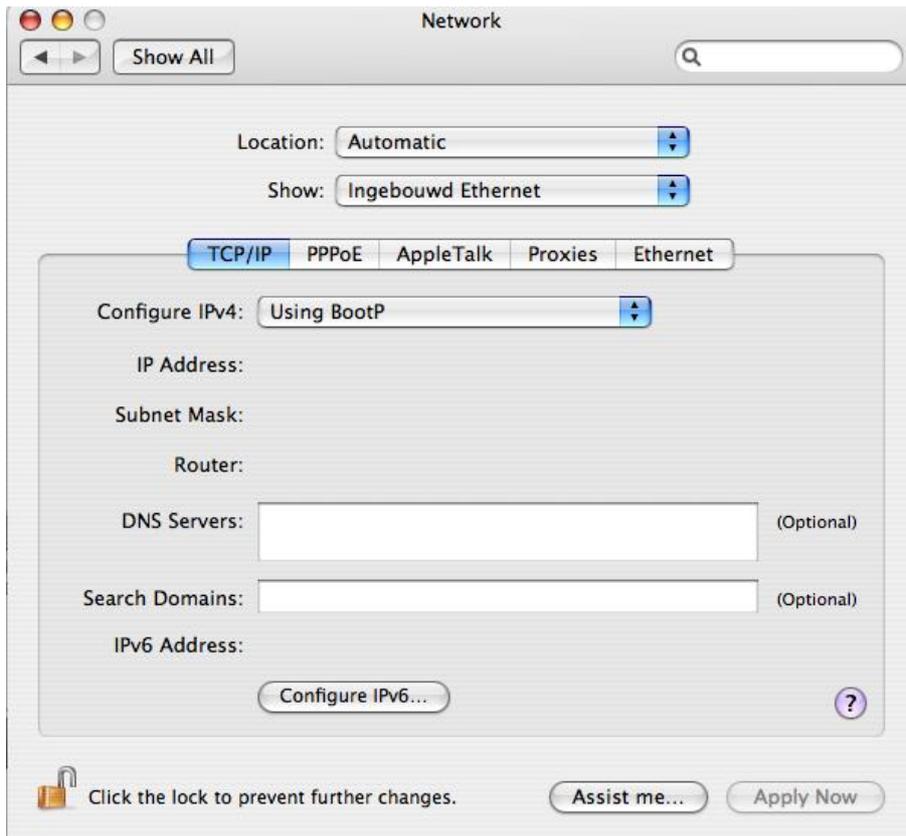
Under Mac OS X, the nethasp.ini file is searched without a leading period. If you are using a case-sensitive system on Mac OS X, make sure that the filename nethasp.ini is in lowercase.

Protocols

The HASP License Manager can communicate via the protocols UDP, IPX or TCP/IP.

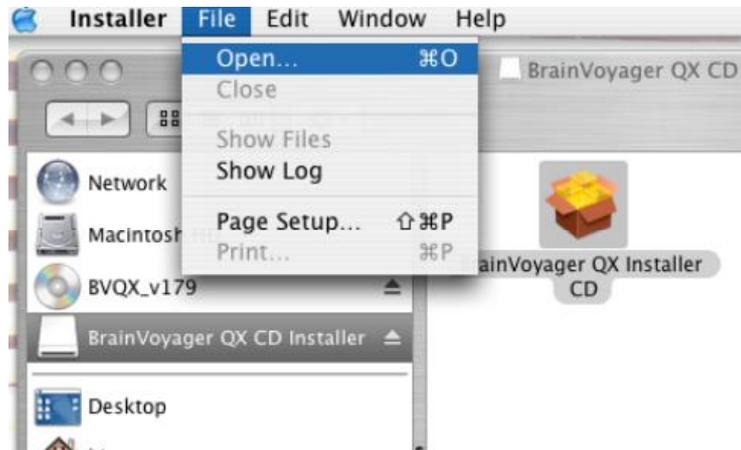
Network configuration

In the System Preferences, configure the Ethernet as 'BootP' for IPv4 (see figure below).

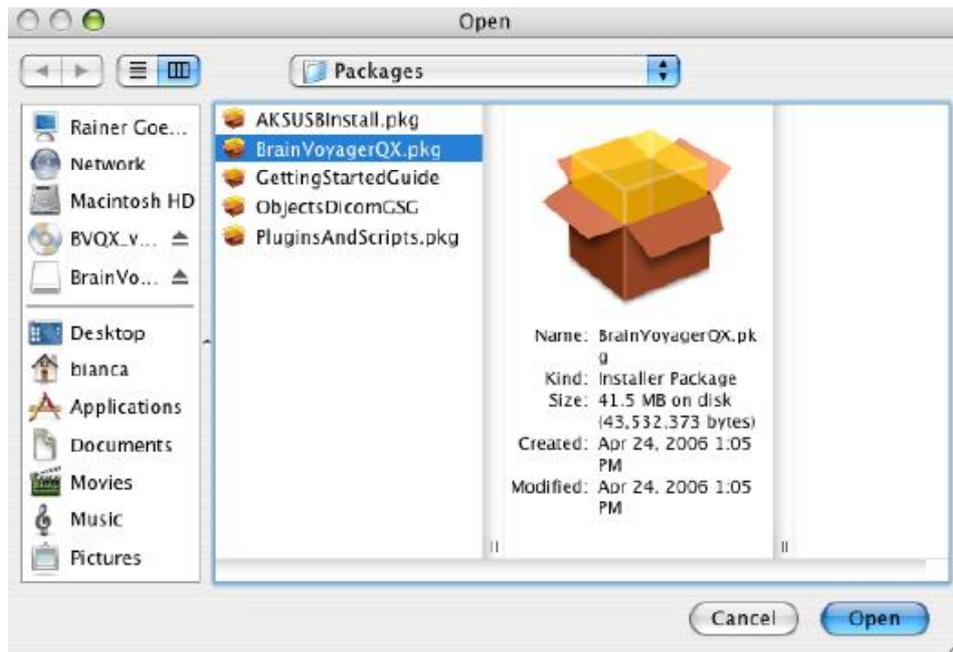


Installation on Mac OS 10.3

Mac OS 10.3 does not seem to recognize multi-packages (*.mpkg) automatically, that appear when mounting the BrainVoyager QX installation disk image (*.dmg). The solution is to open the packages (*.pkg) one-by-one via the 'Open' application 'Installer':



This will show the packages in the multi-package.



Select the BrainVoyagerQX.pkg and click 'Open'. After installation of the BrainVoyagerQX.pkg, the other packages can be installed in the same way.

Operational differences

Keyboard keys

For all commands in the BrainVoyagerQX Getting Started Guide that are indicated via 'CTRL' on Windows, the Apple command key can be used. The Apple command key can be recognized by the clover symbol. The clover symbol is a Saint Hannes cross which is sometimes found in Scandinavia as an ornament on Viking artifacts. It is also similar to a traditional heraldic emblem called a Bowen knot (from http://en.wikipedia.org/wiki/Command_key).



Function	Volumes window	Surface window
Viewing functions		
Zoom		SHIFT + APPLE
Rotate		ARROW KEYS
Show / hide cross		
Show / hide reslice lines		
Switch between sagittal, coronal or transverse orientation	APPLE + T	n/a
Cycle through views		
Switch focus between dialogs	ALT + TAB or APPLE + TAB	
Close current window	APPLE + W	
Statistics-related functions		
Show Region-of-interest analysis dialog	SHIFT + APPLE + R	
Show or hide statistical map		
Show statistical maps dialog		APPLE + R
Segmentation		
Draw with mouse	APPLE + MOUSE	
Erase with mouse	SHIFT + MOUSE	

Viewing hidden files

Sometimes the files that come from a Siemens scanner start with ".MR" and are by default not shown by the Finder. There are two ways to make them visible, via the Terminal and via changing Finder settings.

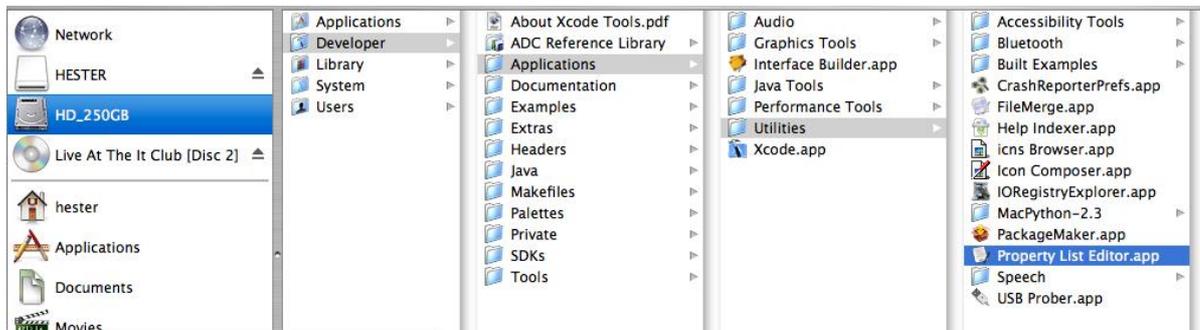
Viewing files via the Terminal

One is starting the Terminal, going to the directory with the ".MR" files via `cd "my directory"` and typing `ls -a` instead of `ls`. This results in a file list with all files.

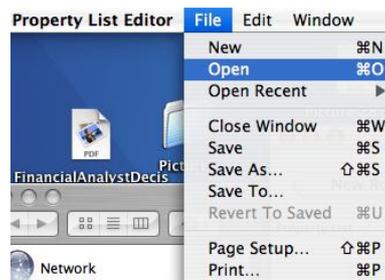
```
fdpmw0209uns400:/Volumes/HESTER hester$ cd verwerken/DICOMrenamed/
fdpmw0209uns400:/Volumes/HESTER/verwerken/DICOMrenamed hester$ ls
fdpmw0209uns400:/Volumes/HESTER/verwerken/DICOMrenamed hester$ ls -a
.
..
.MR..3.11.2006.10.20.10.15.02.921875.175037803.IMA
.MR..3.12.2006.10.20.10.15.02.921875.175036566.IMA
.MR..3.13.2006.10.20.10.15.02.921875.175037838.IMA
.MR..3.14.2006.10.20.10.15.02.921875.175036600.IMA
fdpmw0209uns400:/Volumes/HESTER/verwerken/DICOMrenamed hester$ █
```

Changing Finder settings

For a persistent change of the Finder settings, one needs the application "Property List Editor" of the Developer Tools (can be freely downloaded from Apple).



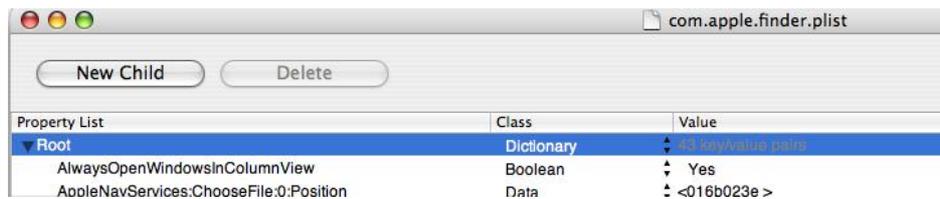
In the Property List Editor, open the Finder properties file, which is defined in a property list.



This `com.apple.finder.plist` file is located in `/Users/username/Library/Preferences`.



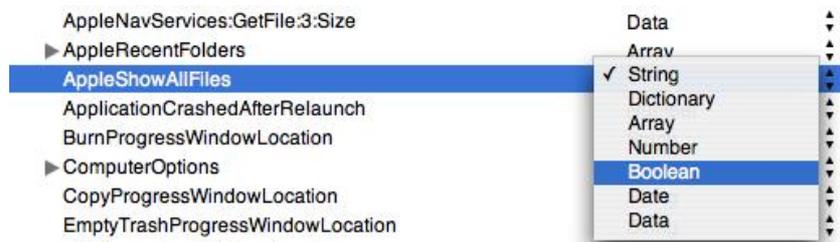
Select the root by once clicking on it and press the "New Child" button.



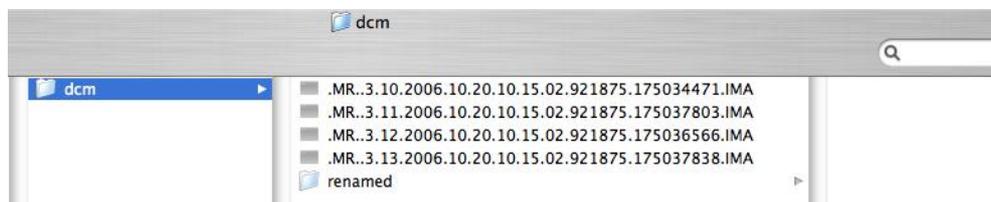
In the first column, enter *AppleShowAllFiles*.



Change its class to Boolean.



Change its value to Yes. Save the changes via File > Save or Apple + S and relaunch the Finder via Apple > Force Quit > Finder > Relaunch.



For an elaborate description, see page 225 in the Filesystem Overview chapter of [1].

Hidden window or text field

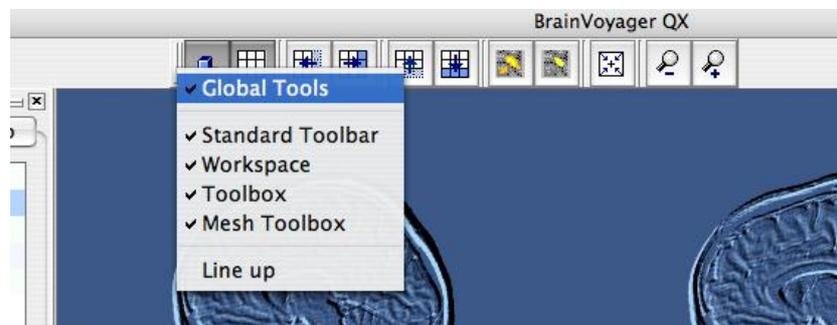
Sometimes the ScriptEditor window disappears behind the main BrainVoyager QX window. Minimize the BrainVoyager QX window to get the control back.

Sometimes a text field, for saving names for example, cannot be used. Then get the focus to that dialog back by pressing several times APPLE+TAB.

Disappearing toolbars

When the toolbox with 3D volume tools, changing threshold and zooming disappeared, go to the View option in the BrainVoyager QX main menu. Click 'Tool Box' to make the toolbar visible again.

Another way to make a toolbar visible is to right-click on the toolbar-grip of another toolbox (see figure below).



Taking screenshots

Via keyboard keys

To take a picture of the whole screen, click SHIFT + APPLE + 3. It is also possible to take a picture of a part of the screen, for example just the anatomical image in BrainVoyager QX. This can be performed with SHIFT + APPLE + 4. A target will appear. To select an area, press SHIFT while drawing with the mouse.

Dependent of the Mac OS X version, the image will be saved as *.pdf (on Mac OS 10.3, Panther) or in an image format (*.jpg, *.png, etc...) on Mac OS 10.4 (Tiger). The images are usually saved on the desktop with the name 'Picture..' and starts numbering with '1'. If there are more pictures present on the desktop, it will automatically take the next, higher number.

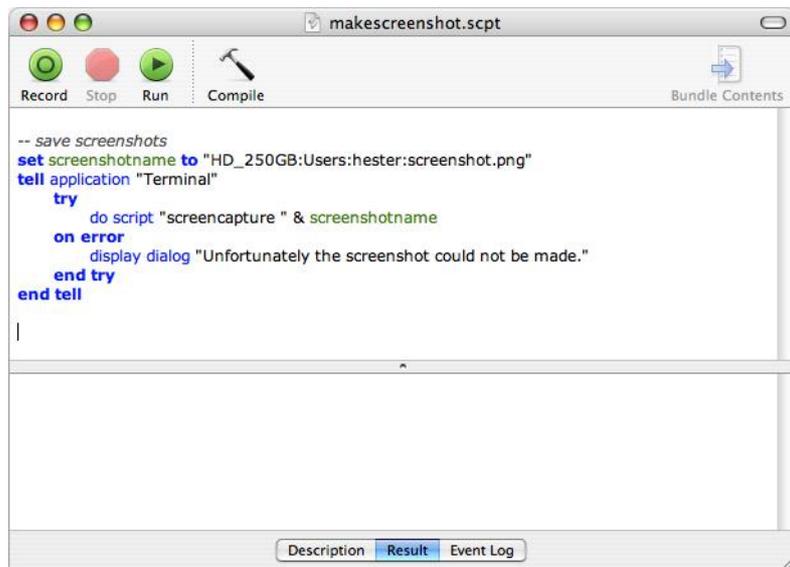
Via the command line

It is also possible to use the screenshot facility of via the Unix command `screencapture`. Start the Terminal via Applications > Utilities. Type 'screencapture' and the name and path of the image destination file.

To facilitate its use, or to use timing for taking several screenshots, AppleScript can be used. Start the AppleScript Editor by double-clicking the Script Editor.app icon in the folder /Applications/AppleScript/. Enter the following text:

```
-- save screenshots
set screenshotname to "HD_250GB:Users:<home>:screenshot.png"
tell application "Terminal"
    try
        do script "screencapture " & screenshotname
    on error
        display dialog "Unfortunately the screenshot could not be made."
    end try
end tell
```

Press 'Run' to start the script.



Starting multiple instances of BrainVoyager QX

It is possible to use several instances of BrainVoyager QX by starting from the Terminal window. Start the Terminal application from Applications > Utilities. Type the following: Go to home directory:

```
$ cd
```

Change the path to the applications directory:

```
$ cd ../../Applications
```

Go to the heart of the BrainVoyager application package. The quotes are used because there are spaces in the path name.

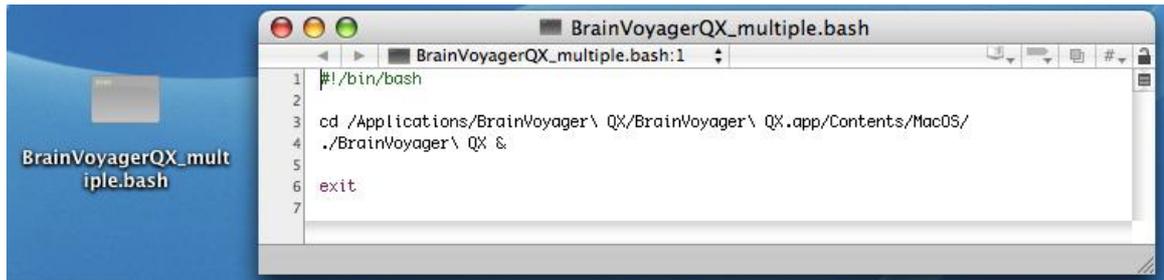
```
$ cd "BrainVoyager QX/BrainVoyager QX.app/Contents/MacOS/"
```

Start the BrainVoyager QX executable.

```
$ ./"BrainVoyager QX"
```

Open a new Terminal and repeat the process to obtain multiple instances of BrainVoyager QX.

When the '&' is added after the command, the process is started in the background, which means that one does not need to open a new Terminal.



The most convenient option is to write a batch script to start BrainVoyager in this way (see figure above), so that multiple times clicking the script means several times starting BrainVoyager QX. This batch script contains the following text, which can be pasted in for example XCode:

```
#!/bin/bash

cd /Applications/BrainVoyager\ QX/BrainVoyager\
QX.app/Contents/MacOS/
./BrainVoyager\ QX &

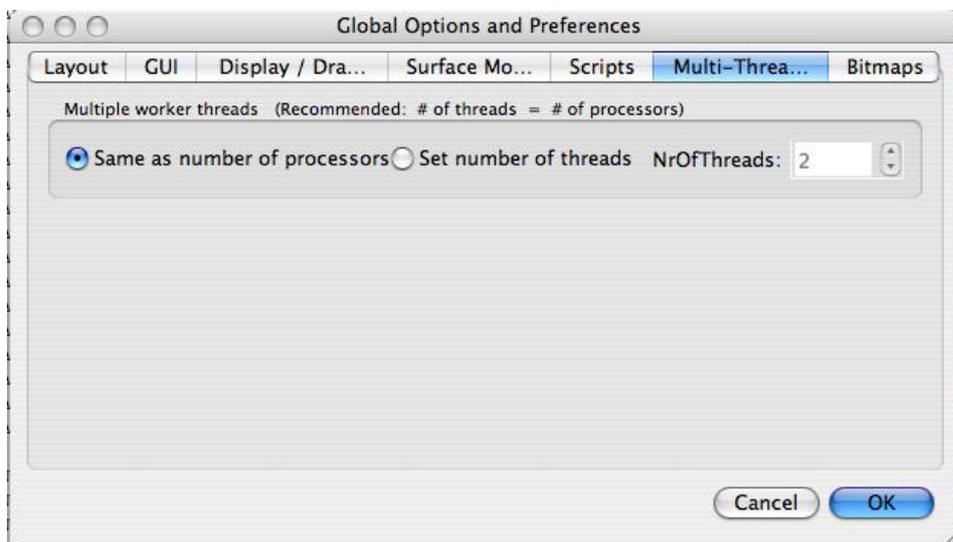
exit
```

Save this as BrainVoyagerQX_multiple.bash. Then, authorize the file as a Unix command by typing `chmod a+x BrainVoyagerQX_multiple.bash` in the Terminal.

Thanks to Jochen Weber for the background process information and the batch script.

Multi-threading

As indicated in the BrainVoyagerQX Release Notes for version 1.2, it is possible to adjust the number of threads according to the number of processors. This can be performed on the "Multi-threading" tab of the "Preferences" dialog:



To test the different performance, scripting can be used. Before and after the command(s), write:

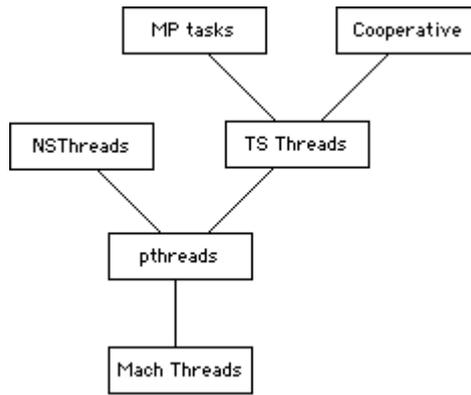
```
var date1 = new Date();
var time1 = date1.getTime();

// place here the commands

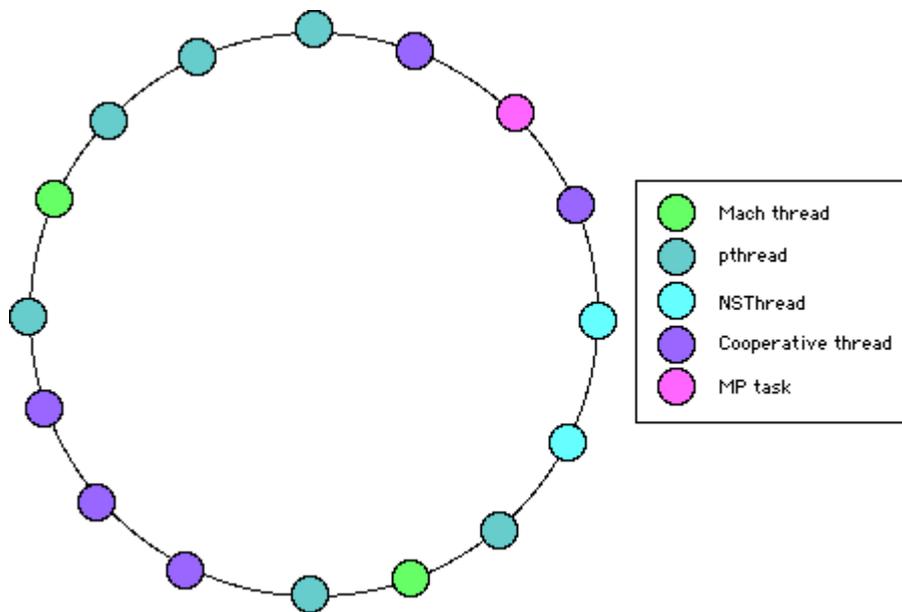
var date2 = new Date();
var time2 = date2.getTime();
var difference = time2-time1;
BrainVoyagerQX.PrintToLog("Processing time: " +
difference.toString());
```

Multi-threading on Mac OS X and via Qt

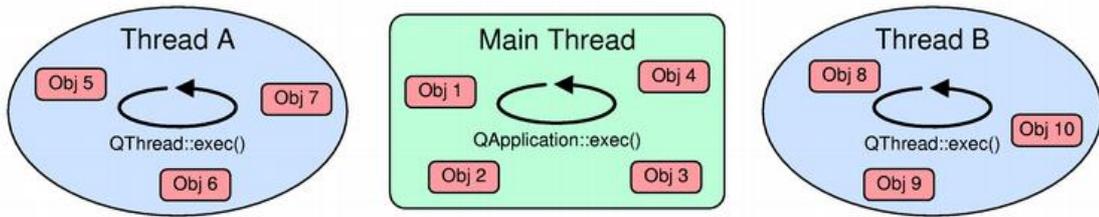
The multi-layered threading hierarchy on Mac OS X is arranged in the following way:



(from Apple Technical Note 2028: <http://developer.apple.com/technotes/tn/tn2028.html>) . All types of threads created by different APIs are finally implemented as Mach Threads on the lowest layer of the hierarchy. The Mach thread scheduler allocates the threads:



And this is implemented by Qt, since BrainVoyager QX is programmed using the Qt libraries. For details on threading in Qt, please see for example <http://doc.trolltech.com/4.3/threads.html> . On that page, we see that a "[QObject](#)" instance is said to live in the thread (QThread class, HB) in which it is created. Events to that object are dispatched by that thread's event loop."



The general workings of multi-threading are explained in the Qt 4.3 Whitepaper (from <http://dist.trolltech.com/pdf/qt43-whitepaper-a4.pdf>):

" GUI applications often use multiple threads: one thread to keep the user interface responsive, and one or many other threads to perform time-consuming activities such as reading large files and performing complex calculations. Qt can be configured to support multithreading, and provides classes to represent threads, mutexes, semaphores, thread-global storage, and classes that support various locking mechanisms. Many of Qt's classes are reentrant, and a number of functions provided are thread-safe.

Qt 4's meta-object system enables objects in different threads to communicate using signals and slots, making it possible for developers to create single-threaded applications that can later be adapted for multithreading without an extensive redesign. Additionally, components can communicate across thread boundaries by posting events to one another. Certain types of object can also be moved between threads."

Please note that some of the resources thus dedicated to the responsiveness of the user interface, which might be an explanation of why not all processor capacity seems to be used when running BrainVoyager QX.

Compiling plugins for BrainVoyager QX

For BrainVoyager QX on the Mac, the GNU compiler (gcc) can be used that are shipped with the freely available Developer Tools from Apple. In the Developer Tools is also an Integrated Development Environment (IDE) available called XTools. Download this from <http://developer.apple.com/>. (The only requirement is to become an Apple Developer Connection (ADC) member). For a simple explanation for C/C++ programmers used to Microsoft's Visual Studio how to compile a plugin on Mac OS X, see the 'Plugins on Mac OS X' document at the BrainVoyager wiki: http://wiki.brainvoyager.com/BVQX_usage_guides#Other_guides .

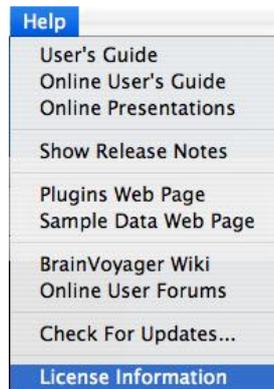
Problem solving

In case problems occur, it is useful to gather information on the cause of the problem.

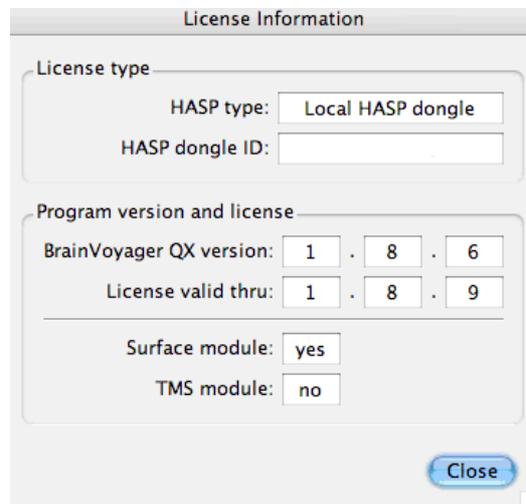
Diagnostics

License and dongle information via BrainVoyager Help

To see which kind of license you have, go to 'License Information' in the 'Help' of the BrainVoyager main menu (see figure below).

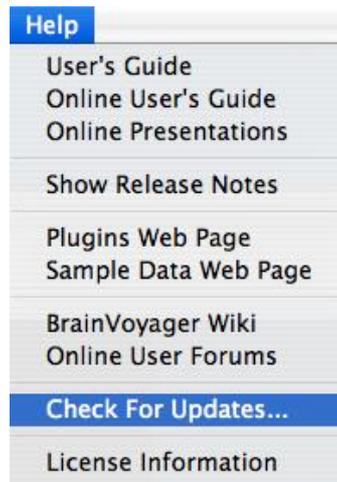


This tells you whether the dongle is of stand-alone or network type. It also provides the dongle ID and the versions that allow for updates (see figure below).



Sometimes there are new versions of BrainVoyager QX that possibly solve your problem. Therefore it is important to have the most recent version of BrainVoyager. To check for updates, select 'Check for Updates...' in the BrainVoyager QX Help menu (see

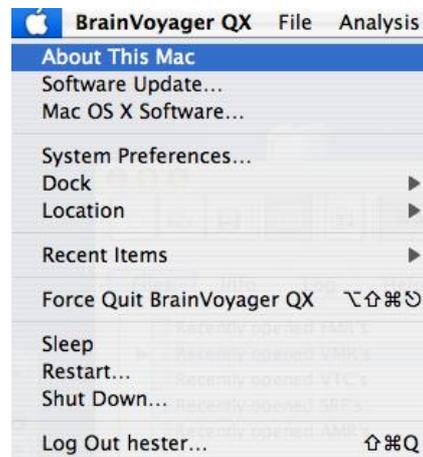
figure below).



If the Mac is connected to the internet and a new version of the program or the User's Guide is available, this can be downloaded and installed directly after the user has given permission.

BrainVoyager, USB port and network information via Apple System Profiler

The Apple System profiler can be opened by selecting the 'About my Mac...' function via the Apple logo in the Mac menu bar (see figure below). The Apple System Profiler provides a summary about the hardware and software configuration. Look in the hardware section to check for the USB port information.



In the Software > Applications section can be found whether BrainVoyager QX was properly installed. As shown in the figure below, BrainVoyager QX is an universal binary, which means it can run on both PowerPC-based Macs and Intel-based Macs.

Name	Version	Last Modified	Kind
Bluetooth Explorer	1.7.1	6/12/07 2:46 PM	Universal
Bluetooth File Exchange	1.7.14	6/6/07 12:42 PM	PowerPC
BrainVoyager QX		6/14/07 11:32 AM	Universal
BrainVoyagerQXAutoUpdate		6/14/07 11:32 AM	Universal
BuildApplet	2.3.5	6/12/07 2:46 PM	
Calculator	4.0.5	6/6/07 12:42 PM	PowerPC
Chess	2.1	1/31/06 3:09 AM	PowerPC
Clipboard Viewer	1.2	6/12/07 2:46 PM	Universal
ColorSync Utility	4.4.5	6/6/07 12:42 PM	PowerPC
Console	2.1	4/19/05 8:56 PM	PowerPC
Core Image Fun House	2.0	6/12/07 2:46 PM	Universal
CrashReporterPrefs	1.2	6/12/07 2:46 PM	Universal
Dashboard	1.0	1/31/06 11:39 PM	PowerPC
Dictionary	1.0.1	6/6/07 12:42 PM	PowerPC
DigitalColor Meter	3.4	1/31/06 7:35 AM	PowerPC
Directory Access	1.8	5/27/05 6:31 PM	PowerPC
Disk Utility	10.5.6	6/6/07 12:42 PM	PowerPC
DVD Player	4.6.5	6/6/07 12:42 PM	PowerPC
FileMerge	2.2.1	6/12/07 2:46 PM	Universal
Folder Actions Setup	1.1.1	1/31/06 4:47 AM	PowerPC
Font Book	2.0.3	6/6/07 12:42 PM	PowerPC
Grab	1.3	1/30/06 11:01 PM	PowerPC

BrainVoyager QX:

Last Modified: 6/14/07 11:32 AM
 Kind: Universal
 Get Info String: Created by Qt/QMake
 Location: /Applications/BrainVoyager QX/BrainVoyager QX.app

In the Software > Logs section can be checked whether there are messages about BrainVoyager QX (see figure below).

Name	Description	Size	Last Modified
access_log	Printer access log	5.38 KB	6/13/07 7:44 PM
console.log	User events log	7.86 KB	6/14/07 2:43 PM
error_log	Printer error log	8.75 KB	6/14/07 9:41 AM
install.log	Installer log	248.41 KB	6/14/07 1:28 PM
mail.log	Fax notification email log	118 bytes	2/1/06 7:13 PM
Software Update.log	Software update log	294 bytes	6/6/07 12:42 PM
system.log	System events log	82.22 KB	6/14/07 4:48 PM

console.log:

Description: User events log
 Size: 7.86 KB
 Last Modified: 6/14/07 2:43 PM
 Location: /Library/Logs/Console/504/console.log

Recent Contents: ...
 2007-06-14 09:47:07.738 SyndicationAgent[194] WARNING: BestCalendarDateFromString - can't interpret: 'Wed 13 Jun 2007 23:47:06 -800'
 2007-06-14 09:47:07.741 SyndicationAgent[194] WARNING: BestCalendarDateFromString - can't interpret: 'Wed 13 Jun 2007 23:47:06 -800'
 2007-06-14 09:47:07.745 SyndicationAgent[194] WARNING: BestCalendarDateFromString - can't interpret: 'Wed 13 Jun 2007 23:47:06 -800'
 2007-06-14 09:47:07.748 SyndicationAgent[194] WARNING: BestCalendarDateFromString - can't interpret: 'Wed 13 Jun 2007 23:47:06 -800'
 2007-06-14 09:47:07.751 SyndicationAgent[194] WARNING: BestCalendarDateFromString - can't interpret: 'Wed 13 Jun 2007 23:47:06 -800'
 2007-06-14 09:47:07.755 SyndicationAgent[194] WARNING: BestCalendarDateFromString - can't interpret: 'Wed 13 Jun 2007 23:47:06 -800'
 2007-06-14 09:49:39.873 Mail[192] rejected messages (rule bremmanrule), count 1

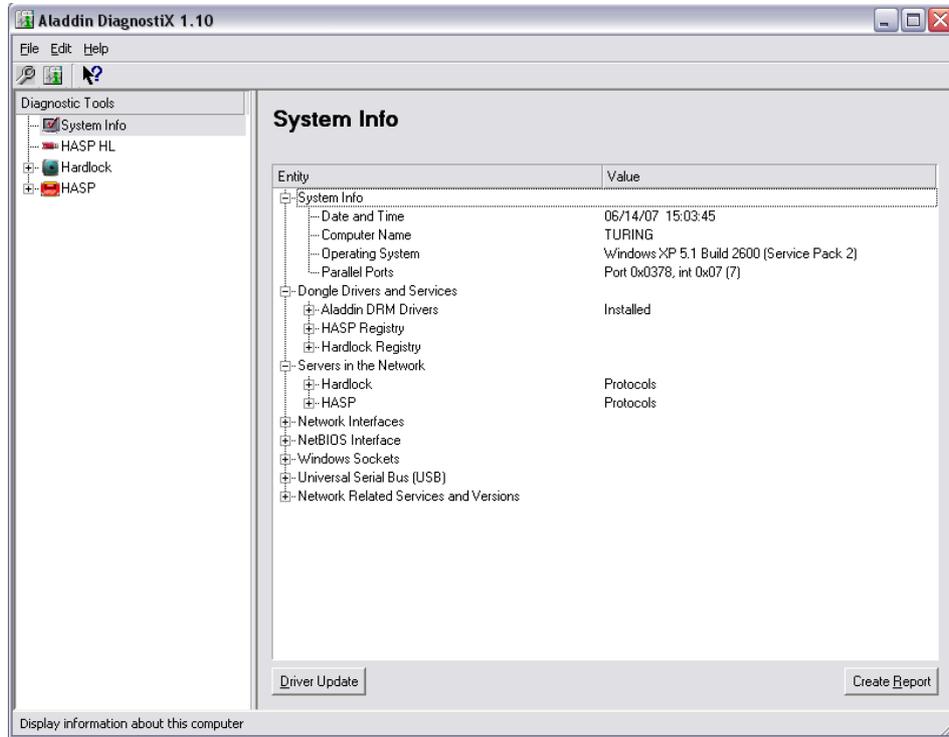
CrashReporter

The information shown in the Apple System Profiler is saved in a log file. Look in Library > Logs > CrashReporter for a possible BrainVoyager QX.crash.log. This text file can be sent to BrainVoyager support.

The Aladdin DiagnostiX tool

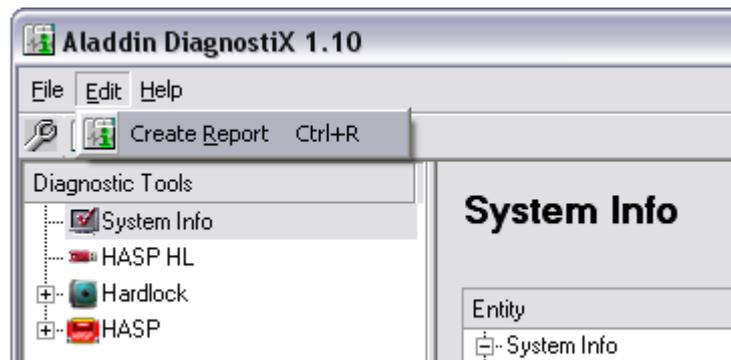
In case a Windows computer is available, the Aladdin DiagnostiX tool can be used to collect information about the network, the HASP dongle and the drivers being installed.

Please see the figure below for the interface of the DiagnostiX tool.

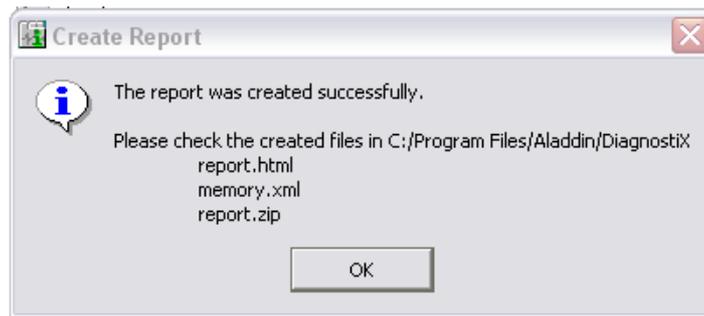


The DiagnostiX tool can be downloaded from <http://www.aladdin.com/support/hasp/enduser.asp#testtools>.

To create a report that can be send to the BrainVoyager support team, go to File > Edit > Create report or press CTRL + R.



The location of the report will be provided via a message box:



Solution procedures

The following articles about software and USB device problems are obtained from the Apple support website for your convenience.

Isolating issues in Mac OS X

Document from Apple support at <http://docs.info.apple.com/article.html?artnum=25392>.

By using the approach here, you can learn how to isolate an issue to its root cause, or at minimum to determine the sequence of events that causes the issue to occur. Using this approach may help you solve the issue, locate other documents in the Knowledge Base, write better posts to Apple Discussions, or communicate with AppleCare Technical Support.

Describing the issue

Start by asking yourself basic questions about the issue that will help you describe it.

What is the issue?

When answering this question, be sure to note any alert or "error" messages that appear. Be sure to describe any unexpected hardware or software behavior, and any other details that seem relevant.

Users accustomed to reading logs should review them in Apple System Profiler for any relevant information. If you are not experienced with reading logs, it is generally best to ignore them unless instructed to search for a specific message.

When does it occur?

- If you can identify a sequence of events that lead up to the issue, be sure to document each.
- If the issue seems to occur at certain time intervals, be sure to record the times at which it happens. Does it happen only at certain times (for example, daily at 9:00) or on a periodic basis (for example, every 47 minutes)?
- If the issue occurs so irregularly that you cannot yet describe when it happens, the suggestions below will help you troubleshoot the issue over time by making certain changes, then watching to see if the issue stops.
- If the issue occurs at startup immediately following a third-party software installation, [find out what you can do](#).
- You can also [troubleshoot](#) any other issues that occur during startup.

When did the issue start?

Note any recent changes to the computer and its software, since they could affect the issue. Was any new software or hardware installed?

Check documentation

After you can describe the issue, check known documentation sources, searching on key terms you have identified.

If an application program is affected, first check any "read me" files included with it. These may describe known issues.

If the issue is with a third-party product, check the manufacturer's or publisher's website for information about the issue.

Up-to-date software and firmware?

As a general rule, make sure you are using the latest versions of Apple and third-party software for best compatibility. Also make sure your computer's firmware is up-to-date.

Is it a software or hardware issue?

Pay attention to important clues.

- If the issue seems specific to a certain application or Mac OS X feature, [troubleshoot software](#) before hardware.
- If the issue occurs as the computer starts up--unless the computer does not turn on at all-- [troubleshoot software](#) before hardware.
- For other issues, or when software troubleshooting does not produce a resolution, use the rest of this document.

Use Disk Utility to check for disk errors and permission issues

Such issues can contribute to other symptoms, but are usually [easy to fix](#).

Can you isolate to a hardware device?

Issues with a hardware device can sometimes appear to be software issues, but are not resolved with software troubleshooting. Eliminate hardware as a cause (or conversely, isolate the issue to software):

1. Disconnect external devices. If the computer is an iBook or PowerBook computer, disconnect all external devices. For an iMac, disconnect all devices other than the Apple keyboard and mouse. For a Power Mac, disconnect all external devices other than one display (which should be connected to an original, built-in video port), and the original Apple keyboard and mouse. If this resolves the issue, add devices back one at a time (shut down first if the device requires it) to further isolate the issue.
2. Insert the Apple Hardware Test CD that came with your computer (if one did). Use the extended test. If any issues are found proceed to step 3, or contact AppleCare or your nearest Apple Authorized Service Provider to arrange for diagnostics and service as necessary.
3. Shut down the computer and remove any third-party memory upgrades, expansion cards, additional hard drives, or other internal hardware upgrades. If you are not comfortable doing this, an Apple Authorized Service provider can assist. A service fee may be charged if the issue is not related to your Apple hardware. Alternatively, you may wish to skip this step and go to "Reinstall Mac OS X" below.

- If the issue is resolved, add your devices back one at a time. When the issue returns, remove the most recently-added device. If the issue goes away again, you have identified the cause. If software was included with the device, try deleting and reinstalling it. You may also wish to contact the vendor or manufacturer of that device for specific troubleshooting steps.
- You may want to test devices on all available ports into which they can be used. If a USB device works on USB port 1 but not on USB port 2, try connecting other devices to port 2. It is possible that your computer's ports aren't working properly.

Reinstall Mac OS X

If an issue persists, reinstalling Mac OS X should resolve it.

- For Mac OS X 10.2, 10.3, 10.4 or later, perform an [Archive and Install](#) installation.

Tip: You won't be able to return to your previous System following an Archive and Install installation, but you can select the "Preserve existing Users & Network Settings" option to retain your original applications and settings, documents, and user accounts.

- For Mac OS X 10.1.5 or earlier, installation of Mac OS X requires erasing the Mac OS X volume. This is described in the next paragraph.

If the issue persists, back up any necessary data, start up from a Mac OS X Install or Restore CD, erase the Mac OS X volume, reinstall Mac OS X and [restore](#) any additional Apple software.

Reinstall additional software one item at a time, restarting the computer after each install. For best results, use the computer for several hours after each installation to determine if that particular software contributed to the issue. Reinstalling everything at once without noting when the issue returned may lead to a need to repeat this process.

Warning: Choosing Erase and Install will completely erase the contents of the chosen volume before installing Mac OS X. Be sure to [back up](#) your files before continuing.

If these suggestions do not resolve your issue, contact AppleCare or your nearest Apple Authorized Service Provider for assistance.

Related documents

- 106692: [Mac OS X: Troubleshooting Installation and Software Updates](#)
- 107013: [Mac OS X 10.2, 10.3: Mac Help Viewer unexpectedly quits](#)
- 106677: [Mac OS X: Troubleshooting the Classic Environment](#)
- 106712: [Mac OS X: Troubleshooting Permissions Issues](#)
- 106714: [Mac OS X: Troubleshooting Printing Issues](#)
- 106693: [Mac OS X: Troubleshooting Installation From CD-ROM](#)
- 106749: [Mac OS X: Troubleshooting a Cable Modem, DSL, or LAN Internet Connection](#)
- 106748: [Mac OS X: Troubleshooting a Dial-Up/PPP Internet Connection](#)
- 106747: [Mac OS X: Troubleshooting a PPPoE Internet Connection](#)
- 106694: [Mac OS X: Troubleshooting the Mac OS X Installer](#)

USB device troubleshooting

From <http://docs.info.apple.com/article.html?artnum=58033>

USB Device Troubleshooting

Do you have a USB device that's not behaving? Here's how to troubleshoot it.

Update software and firmware

The first thing to do is make sure that you've got the latest software and firmware installed on your computer. Sometimes a device may have trouble if the software doesn't have the latest components to handle it.

The easiest way to check for software updates is to use the [Software Update](#) pane of System Preferences. You can also download software updates and the latest firmware from [Apple Support Downloads](#).

If your issue is with a single USB device that's not working, check the manufacturer's website to see if there's a driver or a driver update that you need to install.

Troubleshoot the device

If you've updated your software and checked the drivers but the issue still persists, try the following things:

1. Unplug the affected device from the USB port and then plug it back in. Make sure that the connection is secure. Note that USB plugs fit into ports one way only—if you try to plug them in upside-down, you won't have any success.
2. For troubleshooting purposes, unplug all USB accessories from the computer. Then start plugging in USB devices one at a time, testing each one to make sure they all work before adding the next. Sometimes two devices will conflict and won't work together. If you find this to be the case, contact the manufacturer for assistance.
3. Ask yourself, is this a new device that never worked, or is it a device that you've had for a while that suddenly stopped working? If it used to work, think about what changed just before the device stopped working. Did you recently add another new device? Install a new program? Try reverting the computer to the way it was before the device stopped working. If it works again, there is an incompatibility with the device and whatever you added. (See the section on troubleshooting device compatibility below.)
4. Open System Profiler from the Utilities folder, which is inside the Applications folder. From the Contents column on the left, under the Hardware header, select USB; the panel to the right will show all the USB devices that the computer recognizes. It may not identify them correctly by name, but it should have the right number of devices listed.
 - If the device shows up in System Profiler, even if the device doesn't work, the issue is usually due to software. Your best solution is to try updating the drivers, creating a new user, or reinstalling the system software.
 - If the device doesn't show up in System Profiler, the issue is more likely to be hardware—either the device or the USB port isn't working properly. In this event, continue on to the next item on this list. With each of the following items, check the System Profiler window (press Command-R to refresh the list) to see if the device appears.
5. If you have the device plugged into a USB hub or into your keyboard, plug it directly into one of the USB ports on the computer. If it works there, the issue is with the device to which it had been previously connected. The

directly into one of the USB ports on the computer. If it works there, the issue is with the device to which it had been previously connected. The device may need more power than the port provides - see article [50468](#) for more information.

6. Check the device in all the USB ports on the computer. Also test each port using a good, working USB device. Sometimes one port on the computer will stop functioning, but others will still work. If this is the case, the computer may need to be serviced.
7. Does the affected device have a power cord? If it does, try unplugging and replugging it. Make sure it's plugged into a working power outlet (you can test the outlet by plugging in a lamp or clock).

Troubleshooting device compatibility

If you have several USB accessories plugged into your computer (such as a keyboard, mouse, hub, printer, scanner, camera, external drive), you may get an incompatibility between two of the devices. You can test to see if this is the case:

1. Unplug all USB accessories except for your Apple mouse and Apple keyboard.
2. Make sure the Apple mouse and Apple keyboard work as expected.
3. Reconnect one of your USB accessories to the computer. So, for example, you may now have your Apple mouse, Apple keyboard, and printer attached to the computer.
4. Make sure the accessories all work as expected. Move the mouse, type on the keyboard, and print a test page with the printer.
5. Continue with steps 3 and 4, gradually adding one accessory at a time, until something stops working as expected. At that point, you have pinpointed which device caused the issue - the most recent one you added. You may want to contact the manufacturer of that device to see if they have any suggestions or can offer you assistance.

Related documents

43023: [USB: Troubleshooting Error Messages](#)

25243: [USB: High Bandwidth and Isochronous Devices Must Be Separated](#)

References

[1] McIntosh, J., Toporek, C. and Stone, C. (2003) Mac OS X in a Nutshell. A Desktop Quick Reference. Sebastopol, CA: O'Reilly & Associates, Inc.

[2]

Document history

Version 0.6

- added some information about multi-threading (October 30, 2007)

Version 0.5

- a: - added 'Taking screenshots' section (August 10, 2007)
- b: - added 'Starting multiple instances of BrainVoyager QX (Sept, 2007)

Version 0.4

- added the 'Seeing hidden(dot) files' section (*July 13, 2007*)

Version 0.3

- Added getting started, operational differences and problem solving chapters (*June 2007*)

Version 0.2

- Creation (March 14, 2007)