

Petrel 2009.1

System requirements

Updated: Jan 27 2009

Introduction

This document outlines the hardware (HW) and operating system (OS) requirements for Petrel 2009.1. To ensure that Petrel functions and performs as expected, we are constantly testing the latest hardware available from major suppliers, as well as optimizing it for maximum performance. In our attempt to minimize unexpected problems and costs, we tend to use branded solutions, such as those offered by HP, Dell, AMD/ATI and nVidia. However, we do not exclude hardware from other vendors.

Operating systems

Petrel 2009.1 is available on Windows 32bit and 64bit systems,

The 32 bit version of Petrel 2009.1 runs on either Microsoft Windows XP Professional or Windows XP 64bit. The 64 bit version of Petrel 2009.1 runs only on Windows Vista Business and Ultimate editions. It is recommended to run Petrel on Vista 64 due to the extended memory capabilities which translate into performance gains under this operating system.

Petrel 2009.1 is no longer supported on Windows® 2000.

Processors

Petrel has been tested in the following environment,

Single socket (CPU)	Dual socket (CPUs)
Single and Dual-Core processor	Dual-Core and Quad-Core processors

Processor speed is a determining factor when it comes to large calculation tasks, such as volume size, property modeling, and upscaling. The processor also has the function of feeding information to the graphics board. The minimum requirement for a processor might be adequate for simple Petrel usage; however, to achieve the highest

Petrel 2009.1 Minimum System Requirements	Petrel 2009.1 Recommended System Requirements
<ul style="list-style-type: none"> Microsoft® Windows® XP Professional (32-bit (SP2 or later) and Windows® Vista Business/Ultimate (64-bit only) One CPU (1.5 GHz or greater) 2 GB RAM (4 GB RAM Windows® XP and Vista 64-bit) 2 GB of free disk space OpenGL compatible graphics card with dedicated on-board RAM 1024x768 screen resolution with 32-bit colors Microsoft® .NET Framework Version 2.0 Windows experience index > 4. (64-bit Vista only) Microvision Secure Flexnet 11.3 	<ul style="list-style-type: none"> Microsoft® Windows® XP Professional (32-bit (SP2 or later) and 64-bit, Windows® Vista Business/Ultimate (64-bit only) Minimum 2 CPUs (Dual core/Quad core) 8 GB RAM 4+ GB of free high-speed hard disk OpenGL compatible Professional 3D graphics card with 512 MB of dedicated graphics card RAM or better GB Ethernet 1600x1200 screen resolution with 32-bit colors or better Microsoft® .NET Framework Version 2.0 Windows experience index > 5. (64-bit Vista only)

performance, we recommend opting for the best PC configuration available. Although Petrel currently utilizes most efficiently only one processor, a multi processors/multi core system offers many advantages to geophysics and geologic algorithms. These have been made multi-threaded in Petrel 2009.1. For more information, please see the Petrel Geophysics recommendations. Running Petrel on a multi core system will also enable you to start ECLIPSE batch jobs in an efficient manner since ECLIPSE can run on separate CPUs as well.

Newer core technologies will be tested as soon as they become available.

A 64 bit processor is needed to run Windows XP 64 bit and Vista 64 bit operating systems. Intel Xeon, AMD Opteron and Phenom processors are suitable candidates for a 64-bit system.

The Front-side bus (FSB) speed should be considered when buying a multiple core processor. For example, if you purchase a Quad Core computer with a FSB speed of 1333 MHz. and a dual socket Quad-Core computer with the same FSB you may see a decrease in performance.

Memory (RAM)

With a 32-bit application (e.g. Petrel 2009.1) running on a 32-bit OS (e.g. Windows XP) you can address 2 GB of memory per Application.

Windows XP 64-bit gives each 32-bit application access to an additional 2GB of memory, increasing the available memory to 4GB. The total system memory is recommended to be higher than the memory used by the application. This is to ensure that your Operating System has dedicated RAM and so you do not have to use your page file (disk). In the event that the amount of RAM can not be increased, it is recommended to use faster media such as SDHC cards to achieve better performance

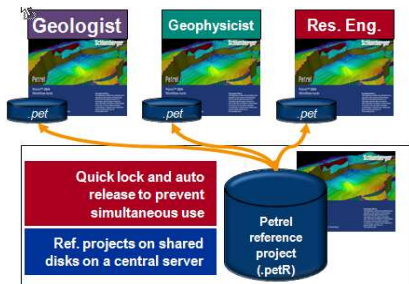
To estimate the size of your system, the following rule of thumb could be applied:

For small data sets (~1GB), the 32bit version of Petrel 2009.1 on a Windows XP 32bit with 2-3 GB of internal memory is sufficient to run Petrel. A medium sized data set (~5GB) will run successfully with Petrel 32bit on a Windows XP 64 bit system with 4GB+ of RAM. Petrel projects with large data sets, ie: large 3D seismic volumes, regional seismic models or big simulation (ECLIPSE) runs, will require Petrel 2009.1 64-bit running on



a Windows Vista 64-bit systems with 32-128 GB of RAM.

Petrel Reference Project (RPT) storage recommendation



Reference projects are usually stored on a network drive on a central server. Often times, access to these projects could become a performance issue due to network traffic; especially when multiple users access a single Reference Project and multiple data items are transferred back and forth between the local project and the Reference Project. Windows Vista offers a new remote file system protocol called SMB2. Moreover, SMB2 has been adopted by several File Server vendors and it has been deployed on their new platforms. The combination of Windows Vista and the SMB2 protocol can significantly enhance and promote the use of Reference Project workflows

Choosing the right graphics card

Choosing the right graphics card for your computer is important to optimize Petrel visualization performance. There is a substantial difference in performance between low and high-end graphics cards when using large 3D grids, or when performing seismic volume rendering.

Graphics card performance depends on several factors outside of our control; such as, Corporate Operating System images, drivers and board manufacturers are some of the factors which can impact graphics performance.

nVidia's SLI offering does not currently give any added benefit to Petrel; however, it might be helpful with large high-resolution monitors, such as the new 30 inch LCD recently introduced to the market.

Integrated graphics cards with no dedicated RAM are not recommended, as they will reduce the amount of memory available for Petrel and the Operating System.

For maximum Petrel user experience, we recommend investing in a good monitor, such as a 30 inch LCD monitor, without forgetting a high-end graphics card.

Recommended tested graphics cards

The latest official nVidia drivers that have been tested are 162.65 (Workstation) and 175.75 (Laptop). The latest official ATI driver tested is Catalyst 8.44. We suggest that you always upgrade to the latest official drivers from your PC vendor's home page, this is particularly important when upgrading your laptop display driver.

	Card Name	RAM	PC Type
Ultra High-End	nVidia Quadro FX 5600	1.5 GB	Workstation
	nVidia Quadro FX 4600	768 MB	Workstation
	ATI FireGL v8650	2 GB	Workstation
	ATI FireGL v8600	1 GB	Workstation
	ATI FireGL v7600	512 MB	Workstation
High-End	nVidia Quadro FX 5500	1GB	Workstation
	nVidia Quadro FX 3700	512 MB	Workstation
	nVidia Quadro FX 3600 M	512 MB	Laptop
	nVidia Quadro FX 3500 M	512 MB	Laptop
	nVidia Quadro FX 2500 M	512 MB	Laptop
	nVidia Quadro FX 1500 M	256 MB	Laptop
	ATI FireGL v7350	1GB	Workstation
	ATI FireGL v7300	512 MB	Workstation
	ATI FireGL v5600	512 MB	Workstation
	nVidia Quadro FX 4500	512 MB	Workstation
nVidia Quadro FX 4500 X2	1 GB	Workstation	
Mid-End	nVidia Quadro FX 1700	512 MB	Workstation
	nVidia Quadro FX 1500	256 MB	Workstation
	nVidia Quadro FX 350M/360M	512 MB (256 on card)	Laptop
	ATI FireGL v7200	256 MB	Workstation
	ATI FireGL v7100	256 MB	Workstation
W . E	ATI FireGL v3350	256 MB	Workstation

ATI Radeon X850XT	256 MB	Workstation
nVidia Quadro FX go1400	256 MB	Laptop

Petrel Modeling recommendations

Several modeling algorithms (see Release notes for details) in this Petrel release, take advantage of multiple core processing. Therefore, increasing the number of processors will improve the run time of these algorithms. This current trend of converting algorithms to run in parallel will continue based on algorithm runtime.


Petrel Geobody interpretation

Petrel 2009.1 recommended requirements are considered minimum requirements for the Geobody interpretation functionality.

Vista 64 bit and 64-bit Petrel is the recommended system configuration.

Schlumberger has tested various cards in the nVidia Quadro FX card series and the newest ATI FireGL series. See Graphics card section for detailed information about what graphics cards you should select.

Your graphics card needs to have:

- Pixel shader 2 or later.
- An  2 compatible graphics card.

Integrated graphics cards are not supported. In addition, we have noticed some problems with the nVidia Quadro FX 350M on the Dell M65 model.

Petrel RE considerations

If a user wants to run FrontSim or ECLIPSE on the same PC as Petrel 2009.1, then a multi-core machine is highly recommended. Windows Vista 64-bit is the preferred Operating System.

Recommended tested hardware solutions

We regularly test hardware from different vendors; the tables shown below list some of the hardware used in the Petrel 2009.1 commercialization cycle. Although we have tested the hardware, we cannot certify it. Problems



outside of SIS control, such as driver and BIOS bugs and Operating System limitations may affect the user experience.

Recommended laptops

High-End Laptops	Mid-End Laptops
Dell M6400/M6300/M90	Dell M4300/M2300
HP Compaq 8710w	

Note: For 64-bit Windows to run on a Laptop select a 64-bit capable Intel Core 2 Duo processor or similar

High-End Workstations	
HP xw9400	HP xw8600
Dell 690	Dell T7400
Mid-End Workstations	
HP xw6600	Dell 490
Dell T5400	
Low-End Workstations	
HP xw4550	HP xw4600

For detailed information please visit the respective vendor home pages.

Petrel Geophysics recommendations

When using the geophysics module to view large 2D lines and 3D surveys, and when using the volume rendering feature, we recommend using a graphics card with at least 512MB memory. In addition, a fast hard drive (such as a SCSI drive or solid state) will increase the speed at which seismic volumes are interpreted. It is also advisable to install as much memory as your operating system permits.

Serial Attached SCSI (SAS) disks are common with high-end HW systems. This will have a great impact on performance for bulk seismic loadings. (SAS 15000 rpm hard disks are recommended.) Solid State disks (SSD) have recently also hit the market. They have an extremely low search time and quite high sustained read/write speeds.

In Petrel 2009.1 several seismic workflows (e.g. seismic display, attribute generation and realize) utilize multi-threading, thus enabling higher usage of any extra processors.

Petrel Geophysics setup scenarios

Scenario	OS	RAM	Graphics card RAM	Graphics card memory setting	Geobody render cache	Seismic cache
32-bit Petrel Geobody interpretation	Windows XP	4 GB	512 MB	512 MB	180 MB ¹⁾	100 MB
32-bit Petrel Geobody interpretation	Windows XP 64	4 GB	512 MB	512 MB	180 MB ¹⁾	500 MB
32-bit Petrel Seismic interpretation	Windows XP 64	4 GB	512 MB	512 MB	180 MB ²⁾	1000 MB
64-bit Petrel Geobody interpretation	Windows Vista 64	8 GB	1.5 GB	1.5 GB	1.5 GB	1 GB
64-bit Petrel Geobody interpretation	Windows Vista 64	16 GB	1.5 GB	1.5 GB	1.5 GB	9 GB
64-bit Petrel Seismic interpretation	Windows Vista 64	16 GB	1.5 GB	1.5 GB	1.5 GB	12 GB
64-bit Petrel Geobody interpretation	Windows Vista 64	64 GB	1.5 GB	1.5 GB	1.5 GB	58.5 GB

- 1) 32-bit Petrel users should be careful to increase this limit. Petrel may become unstable.
- 2) Users with a 64-bit OS can try to increase this limit, however system instabilities may occur

General setup tips

64-bit Petrel – Geobody interpretation on Windows Vista 64

X GB of RAM, Y GB of GPU RAM the seismic cache (S) equals:

$$S = X - 2 * Y - 4$$

where 4 is deducted for the Operating system

64-bit Petrel – Seismic interpretation on Windows Vista 64

X GB of RAM, Y GB of GPU RAM the seismic cache (S) equals:

$$S = X - 4$$

where 4 is deducted for the Operating system



LiveQuest Solutions

For Remote Solutions we can offer Petrel on LiveQuest, LiveQuest Inside or the new LiveQuest Appliance. LiveQuest is SIS remote application solution. The table on this page describes minimum and recommended hardware requirements for a Petrel 2009.1 application server. In this solution more than one user can be hosted on an application server; the server sizing depends on many factors including number of users and data requirements. However be aware there are other required components. For more information regarding a LiveQuest solution please see the brochure at www.livequest.net

LiveQuest 2009.1 Minimum Requirements for Petrel 2009.1 Application Server (hosting multiple users*)

- Microsoft® Windows® 2008 Server (64-bit)
- Intel or AMD processor (2.7 GHz or greater)
- 4 GB RAM
- 10k RPM SAS disk(s) with 1 GB of free disk space
- nVidia Quadro FX graphics card with minimum 512MB on-board RAM
- Gigabit ethernet connection server side
- LQ TAw Windows RDP plug-in
Windows and Terminal Services CALs

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