

# Computer requirements for MinION™



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# Computer requirements

## Introduction

Oxford Nanopore Technologies's MinION<sup>\*</sup> device is an electronic analysis system for use in scientific research. The core technology is built around a nanopore that is able to detect single molecule events including nucleic acids (DNA/RNA), proteins and small molecules.

The MinION is a small self-contained, device for Nanopore Sensing. It plugs directly into a standard USB 3.0 port on a desktop or laptop computer (see specifications below). MinKNOW software runs on the host computer to which the MinION is connected. Despite its size, the MinION is capable of sequencing several gigabases in a single run. As such it is recommended that, if possible, a powerful PC is sourced to ensure a user can access all the technology features.

MinKNOW carries out several core tasks: Data acquisition; real-time analysis and feedback; data streaming whilst providing device control including selecting the run parameters; sample identification and tracking and ensuring that the Platform Chemistry is performing correctly to run the samples and local basecalling.

## Minimum Computer Specification

Component	Minimum Specification		
	Microsoft	Macintosh	Linux
Operating System:	Windows 7, 8.1 and 10 64 bit	Yosemite or El Capitan 64 bit	Ubuntu 14.04 LTS
Memory/RAM:	8Gb RAM*		
CPU	i5, i7 or Xeon**		
Storage/hard drive	512 GB SSD***		
User Account Privilege Level	Local Administrator		
Ports	1 x USB 3.0		

\* For running additional processes such as local basecalling additional memory is highly recommended

\*\* For additional processes such as local base calling an i5 may not be sufficient. Minimum of 4 cores are recommended.

\*\*\* This is a minimum requirement. If purchasing a new computer, an SSD of 1 TB or more is recommended.

## Computer set up

Anti-virus software	Installation highly recommended
Internet Connection	An Internet connection and appropriate firewall settings are required for downloading and running the MinKNOW software.

### *Antivirus software*

When the MinION compatibility checker or MinKNOW software download begins, it is possible that some antivirus softwares will quarantine it. This is due to the early release of the software and the fact that the antivirus products require a level of visibility in order to recognise that the source of the software is trusted and virus-free. If you experience this, it is possible to go into the quarantine screen of the antivirus software and choose to restore it, or to continue installation. You may wish to ask your local IT to allow the software to be installed automatically, to avoid this.

Antivirus software scanning the entire hard drive and using significant amounts of CPU may cause performance issues and for this reason it is recommended that the scans are switched to the manual setting, rather than to the automatic one, so that they can be performed when the system is not in use.

Updates are usually quite small and would not normally impact the routine running of the system. Check the setting for your software. The auto update of DAT files on antivirus products should not affect the running on a MinION, however, some major updates may require Windows to be restarted. Restart of the laptop itself will fatally halt a run.

### **Note:**

The MinION device software must be run as local administrator in order to have proper CPU priority for data acquisition. If the prompt does not appear to log on as the administrator, check that the anti-virus software is not blocking it.

### *Microsoft Windows updates*

It is essential to check the settings for Windows updates. Windows Updates Automatic restarts need to be disabled and it is recommended that Windows Update installs are set to occur on Shutdown only. Most companies will either schedule Windows updates on a regular basis or release the updates for installation following testing.

## FAQs

### ***Why do I need 64-bit?***

The MinION software, MinKNOW, is compiled and run as a 64-bit application. 64-bit is required for utilising the 8 GB memory (or more in higher specification PCs). Please check you have requested this configuration if you are purchasing a new computer.

### ***Can I use a MAC to run your software?***

Yes MinKNOW will run on MAC OS X

### ***Will the software run on a Linux PC/laptop?***

Yes - Linux MinKNOW is available.

### ***Do I really need an SSD?***

For optimal performance of the MinION you will need an SSD.

### ***What firewall settings do I need to run the MinION?***

During runs both the MinKNOW and the EPI2ME desktop agent require access to the AWS IP ranges currently listed here:

<http://docs.aws.amazon.com/general/latest/gr/aws-ip-ranges.html> and also access to:

178.79.175.200

96.126.99.215

106.187.40.102

### ***Does the software support web proxy?***

HTTP/S proxy support in both MinKNOW and EPI2ME has been tested using the HTTPS proxy services at our disposal.

### ***Can I run the MinION on any PCs/desktop or laptop?***

You can run the MinION on any device that meets the minimum required specifications provided.