

## 一、在官网

<https://software.intel.com/content/www/us/en/develop/tools/oneapi/components/onemkl.html>

下载 linux 系统版本的两个安装包：

1. Intel® oneAPI Base Toolkit
2. Intel® oneAPI HPC Toolkit

下载过程示意图如下：

The screenshot shows the Intel oneAPI website interface. At the top, there are navigation links: "Documentation & Code Samples", "Specifications", and "Help". Below this, the "What's New" section highlights "Data Parallel C++ (DPC++) APIs" and "Introduces C and Fortran OpenMP offload for Intel® GPU acceleration". The "What You Need" section lists requirements, including the Intel® oneAPI Math Kernel Library (oneMKL) and the Intel® oneAPI HPC Toolkit. Two links are circled in red: "Explore the Intel® oneAPI Base Toolkit" and "Explore the Intel® oneAPI HPC Toolkit". Below this, a section titled "Download the Toolkit" features a "Get It Now" button, also circled in red. The bottom section, "Select options below to download", includes dropdown menus for "Operating System" (Linux), "Distribution" (Web & Local (recommended)), and "Installer Type" (Local). The "Local Installer" section lists features: "Includes all tools in the toolkit" and "Recommended for host machines with poor or no internet connection". A box titled "What's Included in the Intel oneAPI Base Toolkit for Linux\*" shows a download size of 3.43 GB, version 2021.3, and date June 24, 2021. A "Download" button is at the bottom.

## 二、安装 1\_BaseKit\_p\_2021.3.0.3219\_offline

1. 安装必要软件包（每台机器可能有差别）：

```
sudo apt-get install libnss3
```

```
sudo apt-get install libnotify4
```

```
sudo apt-get install libgtk-3-0
```

```
sudo apt-get install xdg-utils
```

```
sudo apt-get install libgbm1
```

```
sudo apt-get install libglib2.0-bin
```

sudo apt-get install libatspi2.0-0

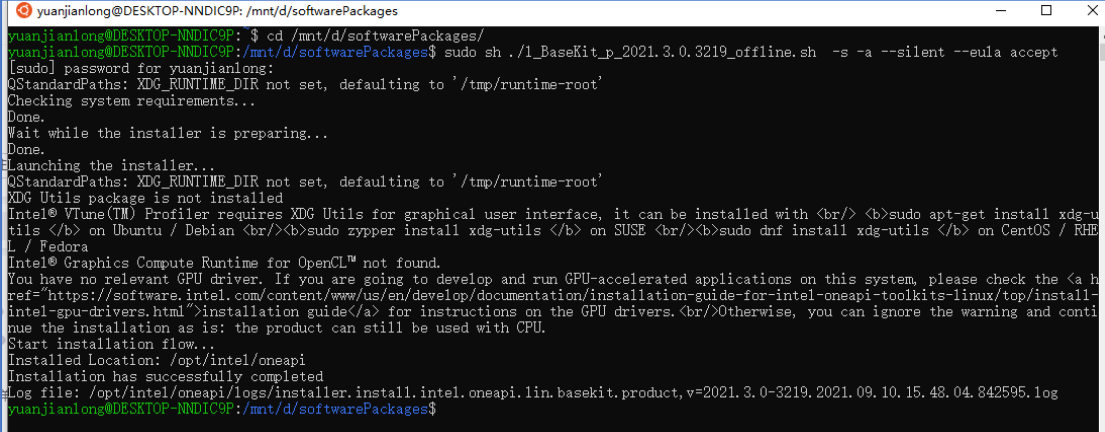
2. 界面提示安装方法: sudo sh l\_BaseKit\_p\_2021.3.0.3219\_offline

3. 命令行(非界面)提示安装方法教程:

<https://software.intel.com/content/www/us/en/develop/documentation/installation-guide-for-intel-oneapi-toolkits-linux/top/installation/install-with-command-line.html#install-with-command-line>

4. 命令为: sudo sh l\_BaseKit\_p\_2021.3.0.3219\_offline.sh -s -a --silent --eula accept

4. 安装成功会显示如下图的信息, 如果显示 failed 则重启计算机再尝试安装。



```
yuanjianlong@DESKTOP-NNDC9P: /mnt/d/softwarePackages
yuanjianlong@DESKTOP-NNDC9P: $ cd /mnt/d/softwarePackages/
yuanjianlong@DESKTOP-NNDC9P: /mnt/d/softwarePackages$ sudo sh ./l_BaseKit_p_2021.3.0.3219_offline.sh -s -a --silent --eula accept
[sudo] password for yuanjianlong:
QStandardPaths: XDG_RUNTIME_DIR not set, defaulting to '/tmp/runtime-root'
Checking system requirements...
Done.
Wait while the installer is preparing...
Done.
Launching the installer...
QStandardPaths: XDG_RUNTIME_DIR not set, defaulting to '/tmp/runtime-root'
XDG Utils package is not installed
Intel® VTune(TM) Profiler requires XDG Utils for graphical user interface, it can be installed with <br/> <b>sudo apt-get install xdg-u
tils </b> on Ubuntu / Debian <br/> <b>sudo zypper install xdg-utils </b> on SUSE <br/> <b>sudo dnf install xdg-utils </b> on CentOS / RHE
L / Fedora
Intel® Graphics Compute Runtime for OpenCL™ not found.
You have no relevant GPU driver. If you are going to develop and run GPU-accelerated applications on this system, please check the <a h
ref="https://software.intel.com/content/www/us/en/develop/documentation/installation-guide-for-intel-oneapi-toolkits-linux/top/install-
intel-gpu-drivers.html">installation guide</a> for instructions on the GPU drivers.<br/>Otherwise, you can ignore the warning and conti
nue the installation as is: the product can still be used with CPU.
Start installation flow...
Installed Location: /opt/intel/oneapi
Installation has successfully completed
Log file: /opt/intel/oneapi/logs/installer.install.intel.oneapi.lin.basekit.product,v=2021.3.0-3219.2021.09.10.15.48.04.842595.log
yuanjianlong@DESKTOP-NNDC9P: /mnt/d/softwarePackages$
```

### 三、安装 l\_HPCKit\_p\_2021.3.0.3230\_offline.sh

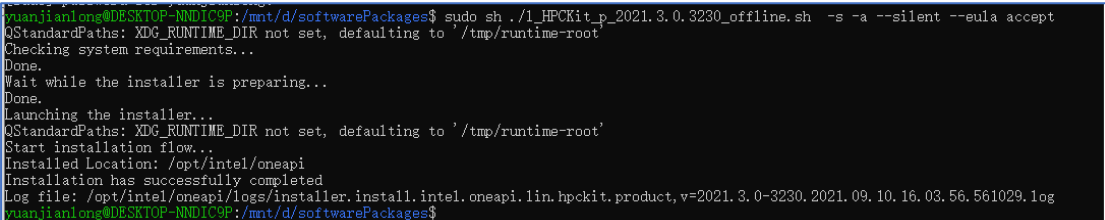
1. 界面提示安装方法: sudo sh l\_HPCKit\_p\_2021.3.0.3230\_offline.sh

2. 命令行(非界面)提示安装方法教程:

<https://software.intel.com/content/www/us/en/develop/documentation/installation-guide-for-intel-oneapi-toolkits-linux/top/installation/install-with-command-line.html#install-with-command-line>

3. 命令为: sudo sh ./l\_HPCKit\_p\_2021.3.0.3230\_offline.sh -s -a --silent --eula accept

4. 安装成功会显示如下信息, 如果显示 failed 则重启计算机再尝试安装。



```
yuanjianlong@DESKTOP-NNDC9P: /mnt/d/softwarePackages$ sudo sh ./l_HPCKit_p_2021.3.0.3230_offline.sh -s -a --silent --eula accept
QStandardPaths: XDG_RUNTIME_DIR not set, defaulting to '/tmp/runtime-root'
Checking system requirements...
Done.
Wait while the installer is preparing...
Done.
Launching the installer...
QStandardPaths: XDG_RUNTIME_DIR not set, defaulting to '/tmp/runtime-root'
Start installation flow...
Installed Location: /opt/intel/oneapi
Installation has successfully completed
Log file: /opt/intel/oneapi/logs/installer.install.intel.oneapi.lin.hpckit.product,v=2021.3.0-3230.2021.09.10.16.03.56.561029.log
yuanjianlong@DESKTOP-NNDC9P: /mnt/d/softwarePackages$
```

### 四、设置环境变量

1) source ./opt/intel/oneapi/setvars.sh

显示如下信息:

```
yuanjianlong@DESKTOP-NNDC9F:/$ source ./opt/intel/oneapi/setvars.sh
```

```
:: initializing oneAPI environment ...  
-bash: BASH_VERSION = 4.4.20(1)-release  
: advisor -- latest  
: ccl -- latest  
: cdk -- latest  
: compiler -- latest  
: dal -- latest  
: debugger -- latest  
: dev-utilities -- latest  
: dnnl -- latest  
: dpcpp-ct -- latest  
: dpl -- latest  
: inspector -- latest  
: intelpython -- latest  
: ipp -- latest  
: ippcp -- latest  
: itac -- latest  
: mkl -- latest  
: mpi -- latest  
: tbb -- latest  
: vpl -- latest  
: vtune -- latest  
: oneAPI environment initialized ::
```

2) 在终端输入: vi ~/.bashrc

3) 在底部加上环境变量语句:

```
export INTEL_PATH=/opt/intel/oneapi/mpi/2021.3.0
```

```
export PATH=$PATH:$INTEL_PATH/bin
```

4) 保存并退出 ~/.bashrc

5) 环境变量生效, 执行:

```
source ~/.bashrc
```

```
mpicc
```

6) 检查是否安装成功, 在终端输入 mpirun, 显示:

```
yuanjianlong@DESKTOP-NNDC9F:/$ mpirun  
Usage: ./mpirun [global opts] [local opts for exec1] [exec1] [exec1 args] : [local opts for exec2] [exec2] [exec2 args] : ...  
Global options (passed to all executables):  
Global environment options:  
-env (name) (value) environment variable name and value  
-envlist (env1,env2,...) environment variable list to pass  
-envrune do not pass any environment variables  
-envrune pass all environment variables not managed  
by the launcher (default)  
Other global options:  
-f (name) file containing the host names  
-hosts (host list) comma separated host list  
Local options (passed to individual executables):  
Other local options:  
-n/-np (value) number of processes  
[exec_name] [args] executable name and arguments  
Hydra specific options (treated as global):  
Launch options:  
-launcher launcher to use (ssh slurm rsh ll sge pbsdsh pdsh srun lsf blaunch qsh fork)  
-launcher-exec executable to use to launch processes  
-enable-x/-disable-x enable or disable X forwarding  
Resource management kernel options:  
-runk resource management kernel to use (slurm ll lsf sge pbs cobalt)  
Processor topology options:  
-bind-to process binding  
-map-by process mapping  
-membind memory binding policy  
Other Hydra options:  
-verbose verbose mode  
-info build information  
-print-all-exitcodes print exit codes of all processes  
-ppn processes per node  
-prepend-rank prepend rank to output  
-prepend-pattern prepend pattern to output  
-outfile-pattern direct stdout to file  
-errfile-pattern direct stderr to file  
-nameserver name server information (host:port format)  
-disable-auto-cleanup don't cleanup processes on error  
-disable-hostname-propagation let MPICH auto-detect the hostname  
-localhost local hostname for the launching node  
-unize universe size (SYSTEM, INFINITE, <value>)  
Intel(R) MPI Library specific options:  
<option> -help show help message for the specific option  
Global options:  
-aps Intel(R) Application Performance Snapshot profile  
-mps Intel(R) Application Performance Snapshot profile (MPI, OpenMP only)  
-tool tool and rank set  
-hostfile file containing tool and rank set  
-hosts-group (groups of hosts) allows to set node ranges (like in Slurm® Workload Manager)  
Other Hydra options:  
-iface network interface to use  
-s <spec> redirect stdin to all or 1,2 or 2-4,6 MPI processes (0 by default)  
-silent-abort do not print abort warning message  
-nolocal avoid running the application processes on the node where mpirun.hydra started  
-tune (binary file) defines the name of binary tuning file  
-print-rank-map print rank mapping  
Intel(R) MPI Library, Version 2021.3 Build 20210601 (id: 6r90181f1)  
Copyright 2003-2021 Intel Corporation.
```

或者在终端输入: ifort -v

```
yuanjianlong@DESKTOP-NNDC9F:/$ ifort -v  
ifort version 2021.3.0  
yuanjianlong@DESKTOP-NNDC9F:/$
```

Created by Jianlong Yuan

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