



HALCON

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“Ready to use” HPeek System Image For NVIDIA Jetson Nano



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More information about HPeek and HALCON can be found at: <https://www.halcon.com/>

About the “Ready to use” HPeek System Image for NVIDIA Jetson Nano

The **HPeek** system image provides an easy way to evaluate HALCON on embedded hardware. It also provides a good starting point for developing applications based on **HDevEngine**. This system image is targeted at the NVIDIA Jetson Nano. It is flashed to a microSD card and booted on the Jetson Nano. The Jetson Nano can either run stand-alone or headless, i.e., without a keyboard and a monitor. In the latter case, the system is controlled from a Windows PC via the remote desktop protocol.

The following items are required:

Hardware

- NVIDIA Jetson Nano
- microSD card (min. 16GB)
- microSD card reader
- Windows PC with Administrator privileges
- monitor, keyboard and mouse are required for the initial configuration of the image.
- network patch cable for headless control (to establish a direct network connection between the PC and the Jetson Nano)

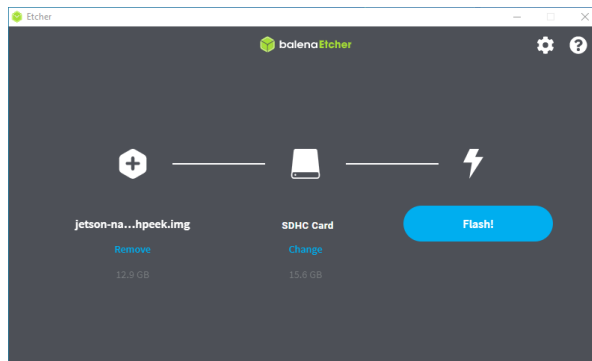
Software

- **“Ready to use” HPeek System Image for NVIDIA Jetson Nano** (the downloadable zip file contains this PDF and the system image)
- Imaging tool: This is required to flash the system image to the microSD card. There are numerous tools that can be used for this purpose. For the sake of simplicity, this documentation describes the process using Etcher. A portable version which runs without installation can be downloaded at <https://etcher.io>. MVTec is in no way affiliated with this freeware product and does not offer any support for it.

Getting Started

First, flash the system image to the microSD card:

- Insert the microSD card into a card reader connected to the PC.
- Run Etcher Portable.
- Select the HPeek system image for Jetson Nano.
- Select the microSD card as the target drive.
- Flash the system image to the microSD card. Depending on the system this may take up to 20 minutes. After flashing the system image, Windows may suggest to format the microSD. This happens because Windows cannot natively access Linux partitions. Click *No* to keep the data on the microSD card as is.



The microSD card can now be booted in the Jetson Nano:

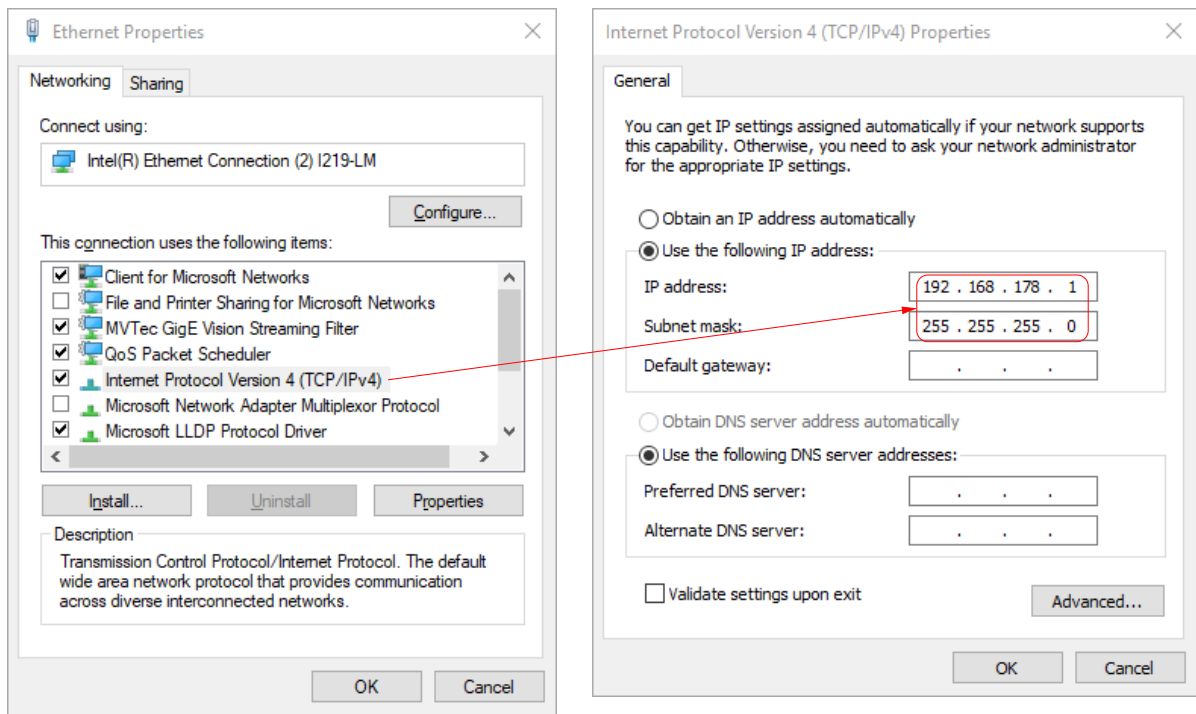
- Insert the microSD into the designated slot on the Jetson Nano.
- Connect monitor, keyboard, and mouse to the board.
- Boot the Jetson Nano by connecting the power supply. You should be able to watch the system boot up on the connected monitor.
- Follow the setup menu including accepting licenses, selection of language, keyboard setup, timezone, and the creation of a user.

After the setup has completed, the installed system can also be controlled from a connected PC. This mode of operation is referred to as “headless” and is described in the following two sections. You can skip them if you want to control the Jetson Nano in stand-alone mode.

Configuration (Headless Mode)

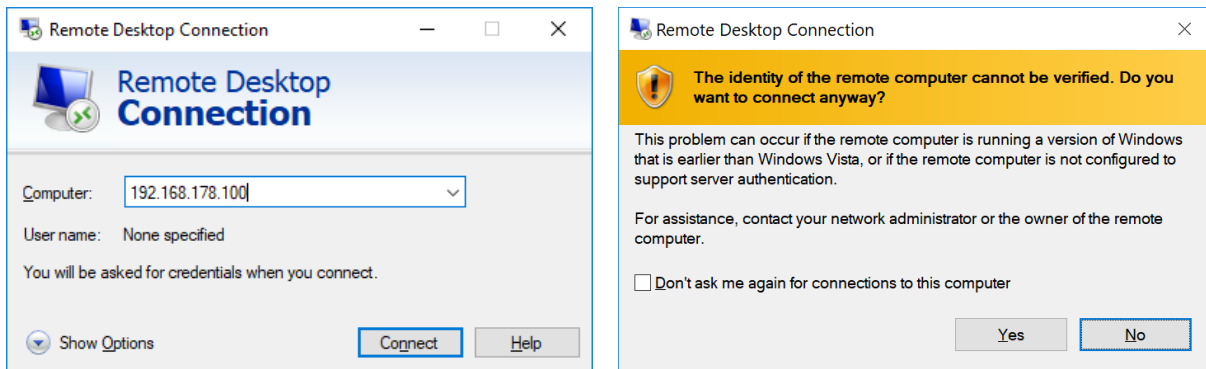
In case the Jetson Nano runs headless, it can be controlled from the PC. Before the PC can talk to the Jetson Nano, its network settings need to be adjusted.

- Connect the Jetson Nano to the PC using the network patch cable.
- Configure the network address of the PC by right-clicking the network symbol at the task bar *Open Network & Internet settings*.
- Select *Change adapter options*. This step requires Administrator privileges.
- Right-click on the adapter that is connected to the Jetson Nano and select *Properties*. The adapter is usually labelled »Ethernet«.
- Double-click on *Internet Protocol Version 4 (TCP/IPv4)*. Set the *IP address* to 192.168.178.1 and the *Subnet mask* to 255.255.255.0. Confirm the settings and close the dialog.



Connection (Headless Mode)

On the PC, start the application *Remote Desktop Connection* and enter the IP address of the Jetson Nano (192.168.178.100) as the computer name. Click *Connect* and discard the identity warning by clicking *Yes*.



Login to the Jetson Nano using the credentials of the user created during setup. The PC should now display the desktop interface of the Jetson Nano.

Starting HPeek

HPeek is installed in `/opt/halcon-hpeek-20.05.0.0`. Simply double-click the desktop icon *Sneak a Peek with HPeek* (`run_overview.sh`). HPeek will demonstrate several machine vision applications using HALCON. To see the potential of HALCON's deep learning functionality, simply double-click the desktop icon *Deep Learning with HPeek*. (`run_deep_learning.sh`) for a demonstration of some examples.