



# **Arrow Lake S Intel® Platform for Linux\* Kernel 6.11 NPU Integration BKM**

**Validation Report**

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***WW46, November 2024***



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## *Revision History*

Revision	Description	Revision Date
1.0	• Initial Release	September 2023
2.0	• Updated Kernel Version to 6.5.7	February 2024
3.0	• Updated Kernel Version to 6.8.0	June 2024
4.0	• Updated Kernel Version to 6.9.0	July 2024
5.0	• Updated Kernel Version to 6.10.1	August 2024
6.0	• Updated Kernel Version to 6.11	November 2024

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# 1 Overview

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This document covers the BKM for integrating the NPU driver on Intel® Platform for Linux Kernel 6.11 platform.

## 1.1 Security Considerations

This document provides a sample integration workflow to enable NPU Driver on Intel® Platform for Linux Kernel 6.11 platform. These instructions shall be used as reference only, and it's the responsibility of the <integrator> to ensure that all components and their dependencies are using the latest available secure versions of the implementation. These instructions are for reference only, hence it's the responsibility of the <integrator> to take security considerations into account prior building a production capable system.

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## 2 *NPU BKM for Integration and Validation*

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### 2.1 Steps for Installation Procedure on Ubuntu\* 24.04

1. Remove old packages
  - `dpkg --purge --force-remove-reinstreq intel-driver-compiler-npu intel-fw-npu intel-level-zero-npu`
2. Download all \*.deb packages
  - `wget https://github.com/intel/linux-npu-driver/releases/download/v1.5.0/intel-driver-compiler-npu\_1.5.0.20240619-9582784383\_ubuntu22.04\_amd64.deb`
  - `wget https://github.com/intel/linux-npu-driver/releases/download/v1.5.0/intel-fw-npu\_1.5.0.20240619-9582784383\_ubuntu22.04\_amd64.deb`
  - `wget https://github.com/intel/linux-npu-driver/releases/download/v1.5.0/intel-level-zero-npu\_1.5.0.20240619-9582784383\_ubuntu22.04\_amd64.deb`
3. Install libtbb12 which is a dependency for intel-driver-compiler-npu
  - `sudo apt update`
  - `sudo apt install libtbb12`
4. Install all packages
  - `sudo dpkg -i *.deb`
5. Install Level Zero if it is not in the system
  - `# check if Level Zero is installed`  
`dpkg -l level-zero`
  - `# download and install package if Level Zero is missing`  
  
`wget https://github.com/oneapi-src/level-zero/releases/download/v1.17.2/level-zero\_1.17.2+u22.04\_amd64.deb`  
  
`dpkg -i level-zero*.deb`
6. Reboot
  - `reboot`  
`# if everything works, we should see /dev/accel/accel0 device`  
`ls /dev/accel/accel0`  
`/dev/accel/accel0`  
`# to receive intel_vpu state`  
`dmesg`

Run below command before NPU workload execution with OpenVino:

- `sudo chown intel:render /dev/accel/accel0`
- `sudo chmod g+rw /dev/accel/accel0`

## 2.2 Steps for Validation

- Compile the sample codes for for Openvino. We can verify the NPU plugin using the sample demos, here in this case we will use `classification_async_sample`
- `cd /opt/intel/openvino/usr/local/samples/cpp`
- `./build_samples`
- After built the samples will be in `$HOME/openvino_cpp_samples_build/intel64/Release`
- `cd $HOME/openvino_cpp_samples_build/intel64/Release`
- `./classification_sample_async -i <image.bmp> -m <model.xml> -d NPU`

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