# Offload NAT and Routing onto Intel IPUs using P4-TC

This talk is built on top of our presentations on [Hardware Offload Driver with P4-TC](#)

and [HW Offload of L2 forwarding P4 program via-p4-tc](#) in P4-Workshop 2023.

**Background**: P4-TC is an implementation of P4 in Linux kernel's traffic-control (TC) subsystem. P4-TC supports both S/W and H/W offloaded data path. Intel's IXD driver will provide support for users to offload their P4 pipelines onto Intel IPU's via P4-TC.

## What's new this time?

We have made significant progress since the introduction of our initial idea presented last year. In addition to exact match, p4-tc driver now supports fully offloaded NAT, routing, ACL, switchdev capabilities and multi-table support.

In this demo, we will showcase hardware offloaded NAT and Routing operations via P4-TC.

Below is the driver architecture:
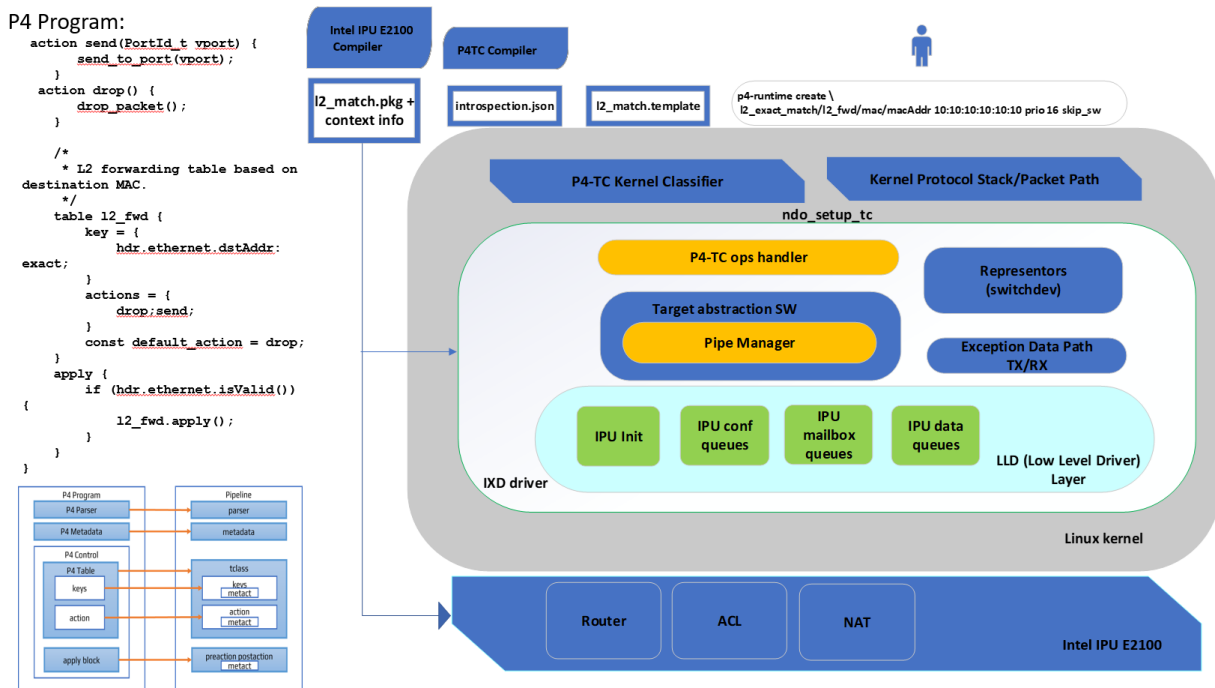


For a given P4 program, p4 compiler generates relevant artifacts. These artifacts are absorbed by driver. They provide helper information for the driver to correctly map a given rule (coming via ndo interfaces) to a specific HW block.

This demo will highlight IXD driver P4 data flows and config interactions. Demo will include rule programming from user space 'tc' utility, seeing this rule being successfully offloaded. Demo will also include passing traffic and verifying accuracy of programmed rules.

Setup info: