



# BAREFOOT ACADEMY

## BA-1113 (Online) Counters, Meters and Registers. Non-standard IPv4 Processing

### Course Prospectus

BA-1113 is an introductory online, instructor-led course module that continues exploration of P416 in Tofino Native Architecture (TNA). It concentrates on stateful processing and the concept of a P4 extern, but also provides some exciting examples of taking P4 out of the realm of “traditional” switching. This module builds on top of BA-1111 and BA-1112. This course is recommended to anyone who wants to continue learning P4 language and is a required prerequisite for other online courses.

BA-1113 is a part of [Barefoot Academy Online](#) course series.

### Course Goals

Upon the completion of the course, the students will:

1. Understand the concepts of stateful objects and P4<sub>16</sub> externs
2. Learn how to use TNA stateful objects, both from the data and control plane perspective
3. Understand the difference between direct and indirect objects and their typical applications
4. Understand the details of Tofino implementation of counters and meters and their placement inside Match-Action Pipeline
5. Get basic introduction to general stateful processing in Tofino using registers
6. Learn new P4 programming techniques

## Target Audience

This course is most suitable for the data plane designers and architects as well as the engineers who plan to learn P4 programming in detail.

## What is included?

The course fee includes the following:

- A 3-hour lecture (with short breaks) conducted online via Zoom (Zoom account associated with your work email address is required)
- Lecture and lab materials in PDF format (we highly recommend printing them before the start of the class)
- Two or five consecutive days of access to a personal, preconfigured lab VM (depending on the ticket)
- Online support by the instructor via a dedicated Slack channel

## Pre-requisites

- General understanding of network and telecommunications architecture and protocols
- Knowledge of C and C++ languages, especially as it relates to embedded and NOS development
- Knowledge of Python language
- Experience in data or control plane design is extremely helpful
- Good and reliable Internet access for both online lectures and VM access is a must

## Logistics

An event-specific link to ticket purchase site will be provided on both [Barefoot Academy page](#) as well as on [Customer Portal](#) and [FASTER Forum](#). If you do not have an account on the Customer Portal or FASTER Forum, please contact [Barefoot Sales](#) representative first to get the password and establish an account.

To attend an online presentation, you will need to create a **free Zoom account, associated with your work email address**. Upon the registration, you will receive a link to the online event. You will also receive an invitation to establish a Slack account for lab support, also **associated with your work email address**.

A high-speed internet connection is required to attend the online presentation. Call-in numbers for higher voice quality might be provided, depending on the region. Please, connect to the online meeting 15 minutes before the start to work out all potential connection problems.

All necessary materials, including the presentation PDFs and lab exercises will be available through the Customer Portal or FASTER Forum a day before the start of the class. We highly recommend that you print the presentation PDFs and use them to take notes. Alternatively, these presentations can be loaded on a tablet, where the notes can be taken with an electronic pen.

The information about the lab Virtual Machines will be provided at the end of the lecture. VMs will be kept running for the next two or five days, depending on the ticket type. This time can be extended through a separate arrangement.

## Contact

For more information, please contact [academy@barefootnetworks.com](mailto:academy@barefootnetworks.com).