BA-1122 (Online)
Complex Packet Processing:
Mirroring, Resubmit and Recirculation

Course Prospectus

BA-1122 is a Level-1 online, instructor-led course module that provides comprehensive, hands-on introduction to several related pipeline mechanisms that make it possible to implement such important functionality as mirroring, telemetry and robust MPLS packet parsing. Same mechanisms can also be used to implement very complex and non-standard programs in P4.

This course module will introduce you to multiple TNA externs that make both mirroring, resubmit and packet recirculation possible. This course is recommended to all data plane developers who want to expand their $P4_{16}$/TNA knowledge and skills.

BA-1122 is a part of Barefoot Academy Online course series.

Course Goals

Upon the completion of the course, the students will:

1. Understand the operation of mirroring and resubmit functionality, related TNA externs and intrinsic deparser metadata
2. Learn about mirror session management APIs
3. Learn how to design ingress and egress parsers to account for various of types of internal headers (as well as design internal headers themselves)
4. Learn how to use mirroring in order to export telemetry information
5. Learn how to add additional encapsulation headers to the packets
6. Understand the differences between resubmit and recirculation and their areas of applicability
7. Learn about complex, multi-pipe $P4_{16}$/TNA programs

Target Audience

This course is most suitable for practicing data plane and control plane designers, tasked with design and development of data plane and control plane programs for modern networking equipment. It does require attendees to have sufficient pre-requisite knowledge.

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

- Understanding of network and telecommunications architecture and protocols, specifically IP and IP Multicast, LAG and ECMP (BA-1001)
- Understanding of the basics of P4$_{16}$ language in TNA architecture (BA-1111, BA-1112 and BA-1113)
- Understanding of the basics of Tofino™ ASIC architecture (BA-1141)
- 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.