ICA-XFG-001
Introduction to Data Plane Programmability

Course Prospectus

ICA-XFG-001 is free, 1-unit preparatory, instructor-led course that provides a quick introduction to the exciting technology of high-speed programmable packet processing. This course is recommended to anyone who wants to attend the introductory academy courses such as ICA-XFG-101 to learn about P4 Language, Intel® P4 Studio, and Intel Tofino™ Family of Intelligent Fabric Processors (IFP) and would like to obtain more background knowledge about the underlying technology and its applications.

ICA-XFG-001 is a part of Intel® Connectivity Academy XFG course series and can be taken either in-person or online.

Course Goals

Upon the completion of the course, the students will:

1. Understand the general architecture of telecommunication systems with the emphasis on the role of the data plane in system functionality and performance
2. Understand the concept of data plane programming and its benefits
3. Understand the typical functionality offloaded to the data plane programs
4. Understand the role of the control plane and control plane APIs
5. Get a roadmap for future education and exploration

Detailed Schedule

The course consists of a 2-hour-long lecture (presentation) with one break. There are no labs due to the introductory nature of the course.

To accommodate students from different time zones, the sessions might be conducted either in the morning or in the evening (Pacific Time).

Course Outline

- Introduction
- How are network devices built?
- Why do we need devices with programmable data planes?
- Is it possible to build high-speed devices with programmable packet processing algorithms?
- What packet processing algorithms do and how one can express them?
- What is the role of the control plane and how it can communicate with the data plane
- Intel Connectivity Academy training roadmap

Target Audience

This course is suitable for everyone who wants to learn about programmable networking and might be considering attending other Intel Connectivity Academy courses.

Pre-requisites

- General understanding of networking

How to Register

Class dates and times are announced on the P4ica Calendar Page ahead of time and you can register right on the site.

Unlike other Academy courses that do require all the participants to have a valid NDA and SLA (SLACA for the academic and research organizations) in place, ICA-XFG-001 is open to public. However, if you do plan to attend Level-1 or Level-2 courses in the future, please establish the proper relationship with Intel ahead of time.

Logistics

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 invitations to establish accounts on Slack and the P4ica Support Portal for lab support and materials access, 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 5-10 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 P4ica Support Portal 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.

Contact

For more information, please contact academy@p4ica.com.

Important Notes

P4ica, LTD is an independent training and consulting company. It delivers Intel Connectivity Academy classes under the special license from Intel, using approved materials and lab exercises. It also acts as a custodian for the Academy archives, thereby providing the alumni lifetime access to the class materials.

Intel® P4 Studio SDE is a software product, developed independently from the software, available via p4.org. Some components of the SDE were contributed by Intel to p4.org, others rely on the code from p4.org, but the goals of the projects, the tools, and the workflows are different. P4.org software is a community-supported project with many resources freely available. This class covers Intel® P4 Studio SDE and **not** p4.org software. Specifically, not covered are the Behavioral Model (BMv2), v1model and PSA $P4_{16}$ architectures and neither is P4Runtime protocol.

$P4_{16}$ compiler for Intel® Tofino™ and Intel® Switch Runtime Interface APIs are in active development as is the course module material. While Intel® Connectivity Academy team strives to introduce Intel customers to the leading-edge software, bugs, errors and omissions may occur. The later versions of these course modules might significantly differ from the earlier ones.

The course module material covers both Tofino and Tofino2 devices. Relevant enhancements and differences are emphasized and discussed whenever applicable.

The availability of each course is announced separately. Please, visit P4ica Calendar Page website for more information.

The online presentations may be recorded and may be published, in whole or in part, in various media, including print, audio and video formats without further notice. If you do not want to participate, you may choose to either keep your audio and video connections muted or turned off or leave the call. By choosing to remain, you are consenting to the recording of the session.