CCNx 1.0 Tutorial

Theory and Practice

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ABSTRACT

This is a tutorial of the CCNx 1.0 protocol and the CCNx codebase. It will cover the basic CCNx architecture and provide hands on experience with the code.

Categories and Subject Descriptors

C.2.1 [**Networks**]: Architecture and Design

General Terms

CCN, ICN

1. INTRODUCTION

ICN has been gaining quite a bit of traction in the research community. CCN has been at the core of the surge in interest. The CCN protocol has become the basis of comparison to the various ICN architectures. The original CCNx codebase (0.x) acted as the first playground for developing and evaluating ICN. It became the base of various projects enabling a large number of research projects. With time CCN has grown throughout the past few years. The protocol has changed and the codebase has been rewritten to reflect the new functionality. A binary version of CCNx (compatible with the 1.0 protocol spec) was released at ICN 2014 for early experimentation. A source release of CCNx was made available this year under a technology evaluation program for both academia and universities as well as commercially interested entities. ICN 2015 is the perfect venue to give an overview of the CCN protocol and CCNx code base. The protocol has added a few features (like manifests) and the code has been updated with the new functionality. A CCNx tutorial would cover both the protocol changes as well as the code (in both binary and source form).

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2. TUTORIAL DESCRIPTION

2.1 Structure and Length

This tutorial takes up a whole day.

2.1.1 Morning - Theory and Architecture

In the morning the tutorial will focus mostly on the theory and architecture of CCN. This will touch on the 1.0 protocol including:

- Naming, Matching and Forwarding
- Messages and Manifests
- Transport and Routing
- PIT and FIB
- Framing headers and Encoding
- Validation

2.1.2 Afternoon - Code and Practice

The second half of the tutorial will focus on practical experience and working with the code. Specifically, we will cover:

- CCNx Forwarder
- CCNx Transport Stack
- CCNx Assembly Framework
- CCNx Coding conventions
- PARC Memory and PARC Object

Using the knowledge gained in the first part of the second half atendees will then write code in the final part of the tutorial. Help will be available.

2.2 Intended Audience

The first section of the tutorial will require a general understanding of networking. Previous experience with CCN is not required. The second part of the tutorial will require familiarity with CCN. This will be effectively provided by the first half.

2.3 Materials

All the materials to be used for this tutorial will be available through the CCNx website. Please refer to http://www.ccnx.org/ for more information.