A File Sharing Network over NDN

CS 557 Project 2 - Spring 2014

Date assigned: Sun Apr 6, 2014
Date due: Mon, April 28, 2014 at midnight

Changelog: Version 1.1: 2014-04-24

- Change Version number to 1.1
- Add the task to describe implementation experience. Requirements are listed at the end of project description.
- Adjust the points distribution in grading: switch points for "Clients request, download, and share as expecte" from 20 to 10; add 10 points for "implementation experience" in README.

Project Description

The purpose of this project is to re-implement Project 1 but in the context of Named-data Networking (NDN). In that sense, you will port your existing project over NDN. We will use the CCNx code base for this.

Note that you will need to get Project 1 to work, if you were not able to finish it by the original deadline.

Recall that Project 1 has steps as below:

- Manager creates the tracker.
- Upon the report from tracker, the manager spawns all clients and send them any configuration information they need.
- At the specified time, a client must contact the tracker to query the specified file(s) or report what files it has.
- Since the tracker keeps the list of peers, it responds with this list for each requested file.
- When a client gets the nodes list, it will pull the file sgements from nodes on this list.

In Project 2, you need to migrate what you did in Project 1 to NDN. Specifically, you must implement Project 2 using CCNx library.

Communication in NDN is driven by the receiving end, i.e., the data consumer, therefore the steps in Project 2 are different:

- Manager creates all clients on the same machine; Note that there is no tracker.
- As soon as a client created, it must request the configuration file. In this project, the file is named "/csu/cs557/configuration", and it is published by the manager before it creates clients. Note that the configuration format is the same as project 1.
- At the specified start time, clients send out requests for the specified file. The file name must use the same format as project 1: "/csu/cs557/foo.dat".

- You need to make decisions on how clients pull content.

Here is an hello_world example to demonstrate how to create server and client over CCNx respectively.

In README, you must add a section called "Implementation Experience" to tell me your implementation experience using CCNx library. In this section, you must answer questions below:

- Did you find any suprising things implementing this project?(ex: list the tasks that can be easily done in NDN)
- Compared with traditional networks, do you think NDN is a better Network architecture? Why?
- Point out the drawbacks of NDN if there is any.

What to turn in

Your program must compile and run on the CS or Deterlab machines without additional libraries. To turn in, put all your files in a tar file and name it as follows: proj2.<your_name>.tar. Then email me the file by the deadline. When expanded, the file should create a directory called proj2.your_name. Other requirements are the same as Project 1.

Grading

- No credit will be given to a program that fails to compile on the DETER lab machines.
- 5% Makefile included and compiles programs without errors.
- 5% README included and contains enough information to run program.
- 10% Manager spawns clients correctly.
- 25% .out files are generated correctly amd show correctly operation of the protocol.
- 10% Manager and clients exit as expected.
- 10% Clients request, download, and share as expected.
- 10% Multiple files download works well.
- 10% Downloaded files/segments are not corrupted.
- 5% Packet loss works well.
- 10% Implementation experience section in README

Note: This is an individual assignment. Please do your own work.