

# Named Data Networking

## Building a file synchronization service

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### Executive Summary

Named Data Networking (NDN) leverages an alternative methodology for solicitation and publication of data when compared to traditional IP based source/destination communication channels. To encourage adoption of this architecture and further its development we propose the creation of a file storage and synchronization system.

### Problem Statement

Given NDN is still in its adolescence, there are few applications that are written that leverage the technology. Localized communication services is one of the greatest benefits that NDN brings to the table and having a methodology that can demonstrate that technology in action and illustrate its value could assist in both speeding adoption of the NDN architecture and help find ways to improve the existing architecture and associated libraries.

### Objective

The objective of this project is to design and implement a simple file synchronization service that works over an NDN network, maintaining synchronization state of files that may be changing in different locations. Simple implementation would include data synchronization from a source node. However, given the flexibility and alternative access and distribution methodologies associated with NDN, this system should be able to reflect a mechanism for maintaining synchronization of a given file (or set of files) across multiple nodes or in different locations within a given network. The NDN architecture offers some useful advantages for a shared file storage and synchronization service, particularly the freedom it provides for users to share these files without the use of some centralized service or repository. For our research project, we propose implementing such a system for users to keep files they would like to work with on multiple machines without having to manually update their remote copies, regardless of which machine they are working from.

## Outline & Approach

- Create summarization document of NDN file synchronization strategy
- Component diagram & sketch system for file synchronization
- Create multi-process NDN router network for testing purposes
- Create component that monitors a given set of files for modification
- Create component that receives updated information on files that have been modified using the services provided in ChronoSync
- Create a simple user interface to manage the monitored files
- Implement the system on a set of Raspberry Pis connected by the NDN router for validation

## Milestones

- Project Introduction Presentation (Due 9/30)
- Project Mid Semester Presentation (Due 11/6)
- Project Final Presentation (Week of 12/2)
- Project Final Report (Due 12/13)
- Project Final Code Submission (Due 12/13)

## Grading / Scoring

Scoring	Due	Percentage
Project Proposal	9/27	5%
Introductory Presentation	9/30	5%
Mid Semester Presentation	11/6	5%
Final Presentation	12/2	10%
Final Paper / Project Summarization & Analysis	12/13	10%
Functional Distribution Environment (Routers, etc.)	12/13	20%
Functional Distribution Application (Producer & Consumer)	12/13	35%
Functional Display & Validation Mechanism	12/13	10%