

Distributed Caching in CCN based Internet of Things

Prerequisites:	- Programming in C++ - Experience with the OMNet++ Simulator
Recommended background:	- Attended the Network Simulation Theory course
Level:	This topic is appropriate for Master Students
Language:	English

INTRODUCTION

Content Centric Networking (CCN) [3] is a widely researched Information Centric Networking (ICN) architecture standardized at the Internet Engineering Task Force (IETF). A primary architectural element of CCN is content caching. The operations related to content caching is divided into two categories based on functionality. Content Placement Strategy (CPS) is used by CCN to determine where the content are stored in a network. Examples are, Leave Copy Everywhere (LCE) or Single Node-Based Caching Policies. Content Replacement Policy (CRP) is used to determine what content is ejected when caches fill up. Examples are First-in-First-Out (FIFO) or Least-Recently-Used (LRU).

The Internet of Things (IoT), which is primarily a network for carrying information is ideally suited to use CCN for communications as seen by the many works of research [2, 1, 4]. One of the main requirements of the IoT is caching of information to store the myriad of generated information serving the applications that require them. Due to the resource restrictedness of the devices in the IoT, distributed caching is an attractive way to store information to optimally use these resources. Therefore, the evaluation of caching strategies is important to identify their suitability to the IoT.

PROJECT DESCRIPTION

Most research has focussed on proposing caching strategies for traditional CCN [5]. The objective of this work is to identify, implement and evaluate the performance of currently proposed CCN caching strategies for the IoT. The work is performed using the OMNeT++ simulator and the *inbaverSim* model framework [6] developed to simulate CCN.

The individual steps are as follows:

- Perform a survey of CCN caching strategies in literature focusing on their suitability for the IoT and identify a subset of strategies
- Identify appropriate use cases to evaluate the performance of caching for the IoT
- Extend the models in *inbaverSim* to include the identified caching strategies
- Evaluate the performance of these strategies to make recommendations

CONTACT

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