

Specification: Providing an Access Control Layer in Content Distribution Networks

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1 Background

This work will be done at the company Uprise (Dragarbrunnsgatan 36C, Uppsala). The goal of this project is to explore, and creating, the possibility to have an local access control layer for files in a content distribution network. This will make it easier to have control over the security settings of the projects and will also make it possible to enforce local (as in not on the CDN) auth and audit logging.

2 Description

The project should research and possibly develop a system where it is possible to set different types of access to different files in a CDN. For example, the access control could be divided into three groups:

- Very secret - Only accessible from white listed IP addresses
- Secret - Only accessible from authenticated users with the correct access
- Public - Accessible by anybody

When a file is set to a belong to one of these groups it should not be static, it should be possible to, at a later stage, assign the file to another group.

It should also be possible to create so called views and projects which a group of files are added to, which then have their own security settings.

3 Methods

- The prototype/system will be developed in Scala and React.
- A literature study will be done once the specification is accepted.
- Results will be evaluated from a security and scalability point of view.
- A work station and desk space will be provided by Uprise.

4 Relevant Courses

- Computer Networks I (1DT052)
- Computer Networks II (1DT074)
- Distributed Systems (1DT064)

- Secure Computer Systems I (1DT072)
- Secure Computer Systems II (1DT073)
- Process Oriented Programming (1DT083)

5 Delimitations

If the project is easier than expected it could be expanded by looking into automatically doing simpler image analysis to find images that are about to be assigned to the incorrect category, for example a “Very secret” image that is about to be published as “Public”.

It is possible to do delimitation of the core research question as the project proceeds, but it will most likely not be needed as the research question is quite concise.

6 Time Plan

Note that this is just a rough time plan that will change during the course of the project when the circumstances change. There will rarely be one task at a time, but rather a lot of the tasks will be overlapping.

- A few days - Properly setting up the work station
- 2 weeks - Literature study and obtaining relevant books etc
- 20 weeks - Writing the report should be done pretty much throughout the whole project
- 1 week - Analyze the current system for managing the CDN assets
- 1 week - Analyze what has been done earlier regarding the subject and determine if anything is useful for this project
- 4 weeks - Implement a prototype
- 1 week - Scalability testing
- 3 weeks - Security testing

7 References

One possibility to connect the backend to:

`http://docs.aws.amazon.com/AmazonCloudFront/latest/DeveloperGuide/
private-content-signed-cookies.html`