Requirements for accessing data in network storage

draft-ohlman-decade-add-use-cases-reqs-02

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Requirements for accessing data in network storage

- Additional requirements to complement “draft-ietf-decade-reqs-00”
- Additional use case Internet TV
- Requirements:
  - Unique Naming of Information Objects
  - Access to Information Objects Covered by 4.1.3.2. Access by Other Users
  - Real-time Support Covered by 5.1.4. Reading before completely written
  - Discovery service for DECADE in-network storage
  - Multiple active DECADE Storage Servers
Internet TV Scenario

Watch program B

Internet TV Server

Server X
Internet TV Scenario

Watch program B

Internet TV Server

Initial viewing

Server X
Internet TV Scenario

Watch program B

Secondary p2p viewing

Internet TV Server

Server X
Internet TV Scenario

Watch program B

Secondary p2p viewing

Internet TV Server

Server X
Internet TV Scenario

Watch program B

Internet TV Server

Server X
Internet TV Scenario

Watch program B

Initial viewing

Server X

Internet TV Server
Internet TV Scenario

Watch program B

Secondary p2p viewing

Internet TV Server

Server X
Requirement: Unique Naming of Information Objects

- When a DECADE client in a certain application context stores an information object in DECADE storage servers, the object MUST be addressable by a unique name across different application contexts.

- Rationale
  - There is a need for unique naming to enable different application instances to refer to information objects using a name (that may have been provided to them by another DECADE client). Such unique naming is essential for efficient cache handling and can serve for de-duplication.
Requirement: Access to Information Objects

- It MUST be possible to access data stored on DECADE storage servers as complete information objects, such as a named video file.

Rationale

- In a video-on-demand caching use case, the client application should be enabled to retrieve the complete object in one transaction and should not be required to download individual chunks.
Requirement: Real-time Support

- The DECADE storage service MUST support real-time applications in a way that a resource that is being uploaded is already available for download.

Rationale
- For larger objects or chunks, it is not acceptable if a DECADE client has to upload the complete resource first, before other clients can start downloading it.

Covered by 5.1.4. Reading before completely written
4.1.2. Transfer and Latency Requirements
Requirement: Discovery service for DECADE in-network storage

- When a DECADE client attach to a DECADE enabled network there SHOULD be a discovery service that can tell a DECADE client where in-network storage servers can be found.

- Rationale
  - To minimize manual configuration of the DECADE clients, a discovery service, similar to DHCP, should be provided in the DECADE enabled network.
Requirement: Multiple active DECADE Storage Servers

- DECADE client SHOULD be able to use multiple in-network storage servers at the same time
- Rationale
  - One example of when this is needed is when a user/client roams to another network, then it is reasonable to assume that the currently used in-network storage remains active for a certain time not to disrupt ongoing communication sessions at the same time as another in-network storage might immediately be needed in the new network.
Summary and Conclusion

- Internet TV use case
- Additional requirements
  - Unique Naming of Information Objects
  - Access to Information Objects
  - Real-time Support
  - Discovery service for DECADE in-network storage
  - Multiple active DECADE Storage Servers
- Adopt requirements into “draft-ietf-decade-reqs-00”

- Information on the related naming concept from Networking of Information (NetInf)
  - http://www.netinf.org
  - http://www.4ward-project.eu/
  - http://www.sail-project.eu/