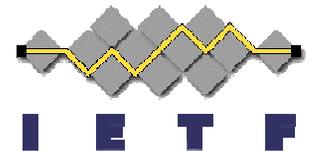


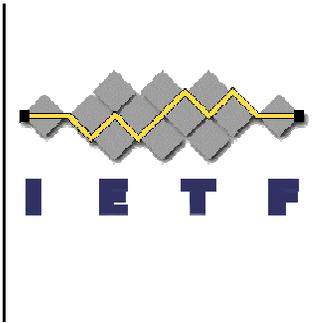
An Additional Survey of In-Network Storage Systems



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Juan Carlos Zúñiga

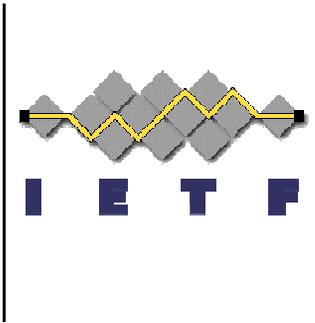
IETF 78, July 2010

<http://tools.ietf.org/html/draft-rahman-decade-survey-00>



Introduction (1/2)

- Two key storage systems are analyzed to add to the existing DECADE survey of in-network storage systems:
 - Photo Sharing
 - Web Mail
- We use same methodology and we introduce three types of Access Control Authorization



Introduction (2/2)

- Access Control Authorization:
 - Public-unrestricted:
 - Content that is widely available to anyone (e.g. Wikipedia.com)
 - Public-restricted:
 - Content that is available to a public which is restricted by certain criteria (e.g. country or region)
 - Private:
 - Content only made available to clients presenting the required credentials (e.g. password)

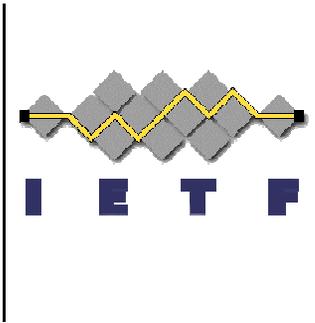
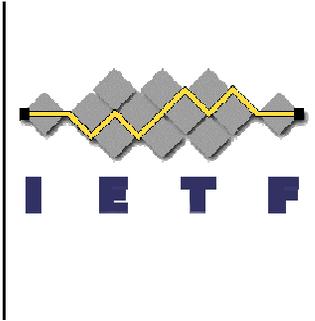


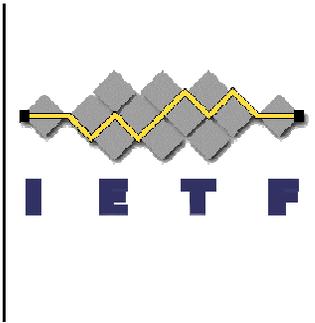
Photo Sharing (1/2)

- Large number of popular on line Photo Sharing (storing) systems. Well known examples are:
 - Kodak Gallery system serves over 60 million users and stores billions of images
 - Many blogging services (e.g. Tumblr) also specialize in storing and sharing multimedia content (e.g. video, text, audio, etc.)
- Typically architectures are client-server but a minority of systems offer a P2P mode
 - Client-server is based on the web browser-server model
 - Key protocols: HTTP/HTML

Photo Sharing (2/2)



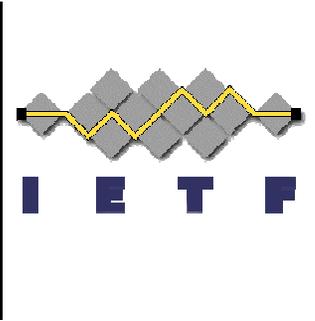
Storage System Components	Photo Sharing
Discovery	Manually via web page of service provider
Authorization	Private (typically password) or Public-unrestricted
Data Access	Users can read (view) and write (store) objects (photos)
Data Management	Users can delete previously stored objects (photos)
Data Search	Users can tag objects (photos) and then search for objects matching desired criteria
Resource Control	Not provided
Storage Mode	Objects (photos) are stored as files. They can then be organized into meta-structures (e.g. albums, galleries, etc.)



Web Mail (1/3)

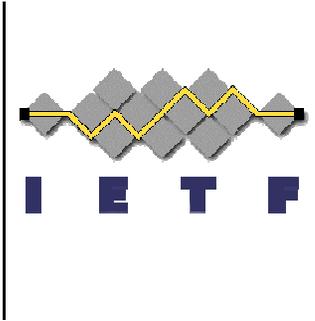
- Web Mail systems are email services primarily accessed via a web browser as opposed to a desktop email client. Well known examples are:
 - Google Gmail
 - Yahoo Mail
 - Microsoft Hotmail
- A key aspect of web mail systems are that they offer relatively large amounts of in-network storage
 - Ranging from a minimum of 1 GB to “unlimited amount of network storage” (e.g. Yahoo)

Web Mail (2/3)

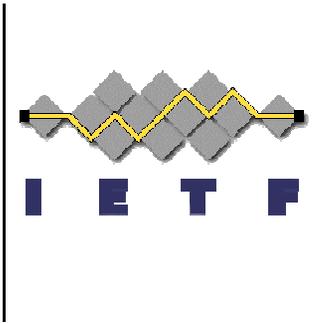


- Typically architectures are client-server based on the web-browser server model
- Key protocols: HTTP/HTML

Web Mail (3/3)

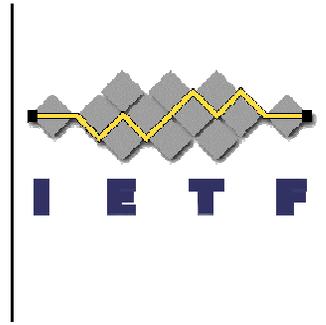


Storage System Components	Photo Storage
Discovery	Manually via web page of service provider
Authorization	Private (typically password)
Data Access	Users can read (review) and write (store) objects (email)
Data Management	Users can delete previously stored objects (email)
Data Search	Users can search for objects (email) matching desired criteria (including searching text within the body of the email)
Resource Control	Not provided
Storage Mode	Objects (email) are stored as files. They can then be organized into meta-structures (e.g. directories)



Conclusions

- Two additional key in-network storage systems were analyzed as part of the DECADE survey effort:
 - Photo Sharing
 - Web Mail
- These two systems are very popular and store a large amount of cumulative data in the Internet today and thus are instructive to consider



THANK YOU