Outline

- Exploiting Weak Connectivity for Mobile File Access
  - Lily Mummert, Maria Ebling and M. Satyanarayan
- Coda file system for disconnected, strongly connected as well as weekly connected

Coda

- Deal with disconnected and weakly connected operations at the file system level (without application specific adaptation)
- Weakly connected - slow network, $$$ network
- Goal is that, as the network improves the system should move from disconnected mode operation gradually to strongly connected mode

Design Principles

- Don't punish strongly-connected clients
  - E.g. no cache write-back schemes
- Don't make life worse than when disconnected
- Do it in the background if you can
  - Delay for foreground network tasks are more pronounced
- When in doubt, seek user advice

Techniques

- Transport protocol optimization
  - Optimize protocol for environment (e.g. compress TCP headers)
- Rapid cache validation
  - Volume version stamps as a coarse optimization to avoid checking all files
  - Volume callbacks with object callbacks
- Trickle Reintegration
  - Updates are sent asynchronously
  - Delaying integration to preserve the effectiveness of log optimizations
    - Logs can be compressed by removing operations that overwrite each other. Need long enough time frame to achieve this savings

Techniques (cont.)

- Reducing impact of re-integration
  - E.g. typical disconnected mode email clients hang for a while after connection, trying to reintegrate all updates
- Seeking user advice
  - Integrate with hoard database
  - Notion of user patience threshold
  - Hoard priority

Discussion

- OS Level approach
  - AFS
- Little bit user input
  - Coda
- Application level
  - Disconnected email client (e.g. Eudora)