Breakout 4B

Future File Systems Protocols

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Session Scribes:

Session Presenter: Lee Ward

Session Writeup:

Current High Level Topics

- *NFSv4 security, WAN, Performance, load balancing, symmetric NFS*
- *pNFS, first class metadata and data clients*
- *Beginning efforts for relaxation of POSIX semantics*
- *ANSI T10 OBSD*
- *Transports: RDMA, iSER, iSCSI, …*
- *Enterprise Sharing of global parallel file systems*
- *Quality of service*

Areas that need to have more research focus

- *POSIX data and metadata I/O extensions for parallel access*
- *Coordinating POSIX I/O extensions with middleware (e.g. MPI-IO)*
- *Subfiles/forked files*
- *Non-tree based file systems*
- *OBSD over new transports (e.g. RDMA)*
- *OBSD extensions and applications*
- *NFSv4 benchmarks*
- *NFSv4 extensions and applications*
- *pNFS*
- *QoS integration into other protocols*
- *User-space I/O*
- *Intra-FS communication*
- *Virtual machines and file system access (virtual machine assists, memory sharing)*

Rough Consensus

- *Three things that everyone agrees are critical:*
  - *POSIX data and metadata I/O extensions for parallel access (38/12) (short/long)*
  - *NFSv4 extensions and applications (34/15) (short)*
  - *pNFS (33/12) (short/long)*
- *Middle Tier:*
  - *General consensus*
    - *OBSD extensions and applications (23/8) (long)*
    - *QoS integration into other protocols (20/8) (continuous)*
    - *Coordinating POSIX I/O extensions with middleware (e.g. MPI-IO) (16/9) (continuous)*
  - *Academia particularly promoted*
    - *User-space I/O (22/6) (short)*
    - *OBSD over new transports (e.g. RDMA) (19/4) (continuous)*
    - *Virtual machines and file system access (virtual machine assists, memory sharing) (20/7) (long)*