Lustre HSM

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Objectives

• A cost-effective way to expand the storage capacity with customer's choice of storage backend
  • CEA/ORNL and HPSS
  • Cray/TACC and SAMQ
  • FNAL and Enstore
• Provide an archive solution with better scalability and performance
• Make Sun Storage 7000 series unified storage systems our choice of backend Archive Servers
Status

• Collaborative effort between Oracle and CEA
• Most ambitious Lustre community development effort ever undertaken
• Started in late 2008 with CEA/Sun
• Plan to release in two main phases, V1 and V2
• First interface with HPSS and SAMQ
• Currently, completed V1 feature development, integration testing is under way.
The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle’s products remains at the sole discretion of Oracle.
Lustre HSM releases and features

<table>
<thead>
<tr>
<th>Primary Functionality (V1)</th>
<th>Advanced Functionality (V2)</th>
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<tbody>
<tr>
<td>- Full file archive, release and restore</td>
<td>- File restore on first read (sub-stripe write)</td>
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<td>- Fully-automatic restore at file open</td>
<td>- Partial file release</td>
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<td>- Policy Engine</td>
<td>- File writes may cancel archive operation</td>
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<td>- Copytool for HPSS</td>
<td>- Add small-file aggregation to coordinator (TBD)</td>
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<td>- Generic Copytool</td>
<td>- User-settable complex policies (TBD)</td>
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<td>- Tool to import files from existing archives</td>
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<td>- Tool for per-file archive status and management</td>
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<td>- Multiple HSM archive support</td>
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HSM V1 Overview

• Components
  • Agents/Copytools
  • Coordinator
  • Policy Engine
  • Lustre MDT changes

• Basic actions
  • Archive a file
  • Release a file
  • Restore a file
  • Import a file / archive

• No support for Lustre HSM client/server interoperability and compatibility.
HSM Support

- SAM Archive
- Lustre & SAM client
  - POSIX copytool
  - HSM agent
  - Policy engine (RobinHood)
- HSM Coordinator
- MDS
- OSS

- HPSS Archive
- Lustre & HPSS client
  - HPSS copytool
  - HSM agent
  - Policy engine (RobinHood)
- OSS Node
- Lustre & SAM client
  - POSIX copytool
  - HSM agent
  - Policy engine (RobinHood)

- Separate distribution and supported for SAM-QFS customers
- Standard Lustre support contract
- Community supported

- Control messages
- Data flow