

# **HEC FSIO Session 7: Security and Archive Gaps Roadmap**

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# Security Gaps

- Long term key management
- End-to-end encryption
- Performance overhead and distributed scaling
- Tracking of information flow, provenance, etc.
- Ease of use, ease of management, quick recovery from compromise, ease of use API

# Archive Gaps

- APIs/Standards for interface, searches, and attributes, staging, etc.
- Long term attribute driven security
- Long term data reliability and management
- Metadata scaling
- Policy driven management

# Presentations

- David Du, University of Minn/NSF
  - “Integrated Infrastructure for Secure and Efficient Long-Term Data Management”
  - Area: Security – Long term key management
- Patrick McDaniel for Anand Sivasubramaniam, PSU
  - “Asymmetry in Performance and Security Requirements for I/O in High-end Computing”
  - Area: Security – Security vs. performance trade-offs
- Henry Newman, Instrumental
  - “The need for Information Lifecycle Management Standards”

# 2007 Security Gap Area

Area	Researchers	CY 06	CY 07	CY 08	CY 09	CY 10	CY 11	Rankings
Long term key management	Odlyzko	■	■	■				 Current researcher need data to validate designs
End-to-end encryption	Odlyzko	■	■	■				 Current researcher need data to validate designs
Performance overhead and distributed scaling	Sivasubramaniam	■	■	■				 Problem reasonably well understood, unclear if enough demand for product
Tracking of information flow, provenance, etc.	<i>None</i>							 Industry will help some, but not in HPC context. Nothing to commercialize yet.
Ease of use, ease of management, quick recovery, ease of use API's	Sivasubramaniam	■	■	■				 Current researchers need data to validate designs Nothing to commercialize yet.

-  Very Important
-  Greatly Needs Research
-  Greatly Needs Commercialization
-  Medium Importance
-  Needs Research
-  Needs Commercialization
-  Low Importance
-  Does Not Need Research
-  Does Not Need Commercialization
-  Full Calendar Year Funding
-  Partial Calendar Year Funding
-  On-Going Work

# 2007 Archive Gap Area

Area	Researchers	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	Rankings
API's/Standards for interface, searches, and attributes, staging etc.	Ma/Sivasubramaniam/ Zhou Tosun							 Current research is in terms of file systems, not archive. API merging with POSIX and API for searching lacking
	SciDAC – SDM							
	SciDAC – PDSI							
Long term attribute driven security	Ma/Sivasubramaniam/ Zhou							 Current research is in terms of file systems, not archive. Current researchers need data supporting proposed solutions usefulness
	Odlyzko							
Long term data reliability and management	Arpaci-Dusseau							 Need for commercialization is low because of other drivers, i.e. HIPPA and others will drive this. Redundancy techniques reasonably sufficient for archives
	Narasimhan							
Metadata scaling	Bender/Farach-Colton							 Current research is in terms of file systems, not archive, but this work can be applied to archive. File system research will be more than fast enough for archive.
	Jiang/Zhu							
	Leiserson							
	Ganger							
	Panasas							
Lustre								
ANL/CMU								
Policy driven management	None							 Sarbanes-Oxley Act is solving this problem

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