Avamar Responses to ILM Questions

Development Status and Objectives. Describe your vision of D/ILM and identify what features or functions your platform currently provides and what features or functions are still in development.

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D/ILM is a concept under which data will be managed throughout its life cycle based upon defined business/operational objectives and independent of the particular technology used at any given time. The assumption is that all data will be tagged at the time of its creation in a manner that allows global policies to determine the disposition of the data at any point in time – in a sense, HSM on steroids.

Avamar does not represent that its product, Axion is, per se, a D/ILM product. Axion is a disk-based backup solution. At the present time, however, backup is the process that most organizations use to manage data once is it migrated from active primary storage. As a disk-based backup solution, Axion can extend backup policy management to all data without the constraints associated with tape or other removable media. This process does not require (or utilize) new metadata (such as the tags mentioned above) to implement policy management, but rather an extension of the policy management used in backup today.

Development Partners. List the vendors with whom you are working to deliver your D/ILM solution functionality.

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Avamar is working with HP as a participant in their IVM Partner Program.

Data Naming Scheme. What is your method for identifying data storage requirements or characteristics and for using those requirements or characteristics in building policies?

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Axion uses the backup paradigms of “groups” and “policies” to determine the management characteristics applied to specific data objects. “Groups” are collections of client systems to which a specific set of policies is applied. Within a group, policies can be applied at a filesystem, directory, subdirectory, file-name, or individual file level. “Policies” determine characteristics such as backup time and frequency, replication, and retention and expiration requirements. Any client system may belong to one or more groups.

Access Frequency. Identify the mechanism by which your solution identifies how frequently specific files or datasets are being accessed and whether and how access frequency is used in migration policies.

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Axion does not explicitly determine the access frequency. At the time of a backup, any file that has been changed in any manner will be processed for backup. We use Commonality Factoring to reduce the level of communications necessary to implement this policy to very low levels – typically 0.5% of protected data per day.

Storage Platform Characterization. Explain the mechanism that your solution provides for characterizing the performance capabilities and costs of specific hardware platforms for data storage so that this information can be used to target the appropriate storage platforms as destinations for automatically-migrated data.

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Axion does not explicitly characterize the performance characteristics of primary storage platforms.

End of Useful Life. Explain how your platform facilitates the automated removal and clean-up of data that has outlived its useful life and restoration of freed capacity for use by applications.

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Axion incorporates a daily process to purge its archive of data objects that are no longer required by any of the unexpired backup processes. The storage reclaimed by this process will ultimately be reused by the Axion system.

Policy Articulation. Describe how policies are created and how they are applied to existing data.

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Axion provides a Java-based GUI for the system administrator to facilitate the creation of policies and groups and to assign client systems to specific groups.

Device Support. What storage devices does your product support? Are their any proprietary devices (controllers, arrays, HBAs, switches, SAN topology, virtualization products, etc.) that are required for your solution to work?

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Axion uses the concept of client agents to access all storage devices through the file system of protected client systems. The client systems communicate with the Axion server with standard TCP/IP protocols. Client agents exist for Windows, Unix and Linux operating systems.

Resource Consumption. How much bandwidth and server CPU "overhead" is introduced by your solution (e.g., to support polling processes, migration processes, agent processing, access frequency counting, etc.).

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Axion client agents run as low priority applications on the client operating systems. During the backup process, these agents will consume 10% to 20% of CPU bandwidth, but will be interrupted by higher priority processes. The backup process typically takes from 5 min to 10 min on single-user systems and form 30 min to 60 min on shared servers.

Flexibility. Does your solution have multi-vendor support? Can data, once integrated into your D/ILM scheme be migrated readily between your solution and other solutions in this space? Is you solution interoperable with other solutions in this space?

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Axion can support a wide range of storage arrays and has been certified with appropriate IBM, HP, EMC, Dell and HDS systems. Avamar is currently developing an API that will permit Axion to be integrated with existing storage management frameworks. Axion does not directly interoperate with other storage solutions.

Speeds and Feeds. How should a prospective customer compare the relative performance of competitive solutions in this space? What are the appropriate performance measures or metrics to use in evaluating competitive solutions?

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Because approaches to ILM vary widely, traditional "feeds and speeds" may not be appropriate. Instead, performance should be characterized functionally with metrics that may vary significantly depending upon the specific objective. Since all solutions of interest are likely to be network based, however, network utilization characteristics such type (FCP or IP), bandwidth (peak and average) and duty cycle should always be included.

For ILM functions, the specification for the solution should address both data-centric (e.g. bandwidth, capacity etc.) and event-centric (e.g. transaction rate, IOPS etc.) measures.

Wherever possible, the metrics should be expressed from the user's perspective rather than from the perspective of the ILM system itself.

Interconnect Support. List the network or fabric interconnects that you support. Is there an optimal interconnect for data movement for your solution? What about for management?
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All client interconnects for Axion are TCP/IP. At the present time, Axion supports Ethernet speeds up to and including 1000BaseT (GbE). With appropriate switch configurations, Axion can support multiple 1000BaseT interconnects. Axion does not, at the current time, support the iSCSI, although this is under consideration.

When used with external storage arrays, Axion can support all standard network storage interfaces including F/C.

Protocol Support. List the storage networking technologies supported, including FCP, Ethernet, iSCSI, FCIP, iFCP, Parallel SCSI, SAS, and network file system protocols (NFS, CIFS, HTTP, DAFS).
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FCP	For Axion attached storage only
Ethernet	Yes – Primary I/F
iSCSI	Not currently
FCIP	For Axion attached storage only
iFCP	For Axion attached storage only
P SCSI	For Axion attached storage only
SAS	For Axion attached storage only
NFS	N/A – Axion uses dedicated client agents
CIFS	N/A – Axion uses dedicated client agents
HTTP	N/A – Axion uses dedicated client agents
DAFS	N/A – Axion uses dedicated client agents

Data Type Support. List the data types supported by your solution, including file types and file systems, databases, and hybrids such as email. Comment on the granularity of your D/ILM solution: will it support the migration of database components or subsets, subsets of email files, etc.?
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Axion supports all data types that are accessible through a Windows, Linux or Unix file system. Additionally, Axion supports on-line agents for databases such as Oracle, SQL, MS Exchange and Sybase.

Cost. List the cost of your solution or provide some means for calculating cost for a specific environment.
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The list price for a perpetual license for Axion software to provide complete backup functionality is $20/GB. The list price for a perpetual license for complete replication functionality is $5/GB.

Standards. List any relevant open standards upon which your product is built.
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Axion meets all Ethernet and TCP/IP standards. Additionally, all Axion client agents meet the requirements for well-behaved applications on the relevant client platforms.

Other features. List other pertinent aspects of your solution.
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Axion's Commonality Factoring technology provides extremely effective data redundancy reduction and typically reduces required network traffic by a factor of 100 when compared to traditional backup applications and by more than a factor of 10 when compared to traditional archiving applications.

Miscellany: Please note any additional information that you think would be worthwhile for prospective customers to consider about your solution or other solutions in this space.
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Axion provides the life cycle data management that has always been functionally available only with backup without the limitations inherent with tape-based solutions. Once relieved of these limitations, its applicability for ILM is significantly enhanced.