Aperi Storage Management Framework

http://www.eclipse.org/aperi/

Agenda

- Aperi Overview, Mission and Scope
- Open Source and the Eclipse Foundation
- Vendor benefit scenarios
- Getting started

Aperi Overview and Mission

- Provide an open, extensible, standards-based storage management framework
- Give customers more flexibility and choice on how to manage their storage
- Simplify the infrastructure customers need to manage storage
- Drive adoption of industry standards

The Aperi Community

- ***Nine Leading Storage Vendors***
- ***Members Collaborate with the SNIA***
- ***Implements SMI-S Standards***
- ***Provides Vendor-Neutral Framework***
- ***A Project at the Eclipse Foundation***
- ***Code Available under Eclipse Public License***

- *Brocade Communication Systems, Inc.*
- *Cisco Systems, Inc.*
- *CA, Inc.*
- *Emulex Corporation*
- *LSI Logic Corporation (Engenio Storage Group)*
- *Fujitsu Limited*
- *IBM Corporation*
- *Network Appliance, Inc.*
- *Novell, Inc.*

“"SNIA's planned relationship with Aperi will include interoperability programs for SMI-S, the use of SNIA facilities for Aperi interoperability programs, and advancing current and new storage standards. The IT industry will benefit from Aperi helping to drive SMI-S implementations, storage technologies and open standards.”

-- *Wayne Adams*, SNIA Chairman

From Infrastructure Plumbing To Application Enablement

Today's Environment

Focus on platform support and development

Tomorrow's Environment

Focus on advanced applications

Benefits for Users & Vendors

Storage Users

- Accelerates the advancement of interoperability across storage systems, devices, and storage management software
- Encourages greater flexibility and choice for customers – reducing customer costs
- Open source model encourages end user customization
- Deepens vendor collaboration on SMI-S to spur innovation and reduce barriers to interoperability

Storage Vendors

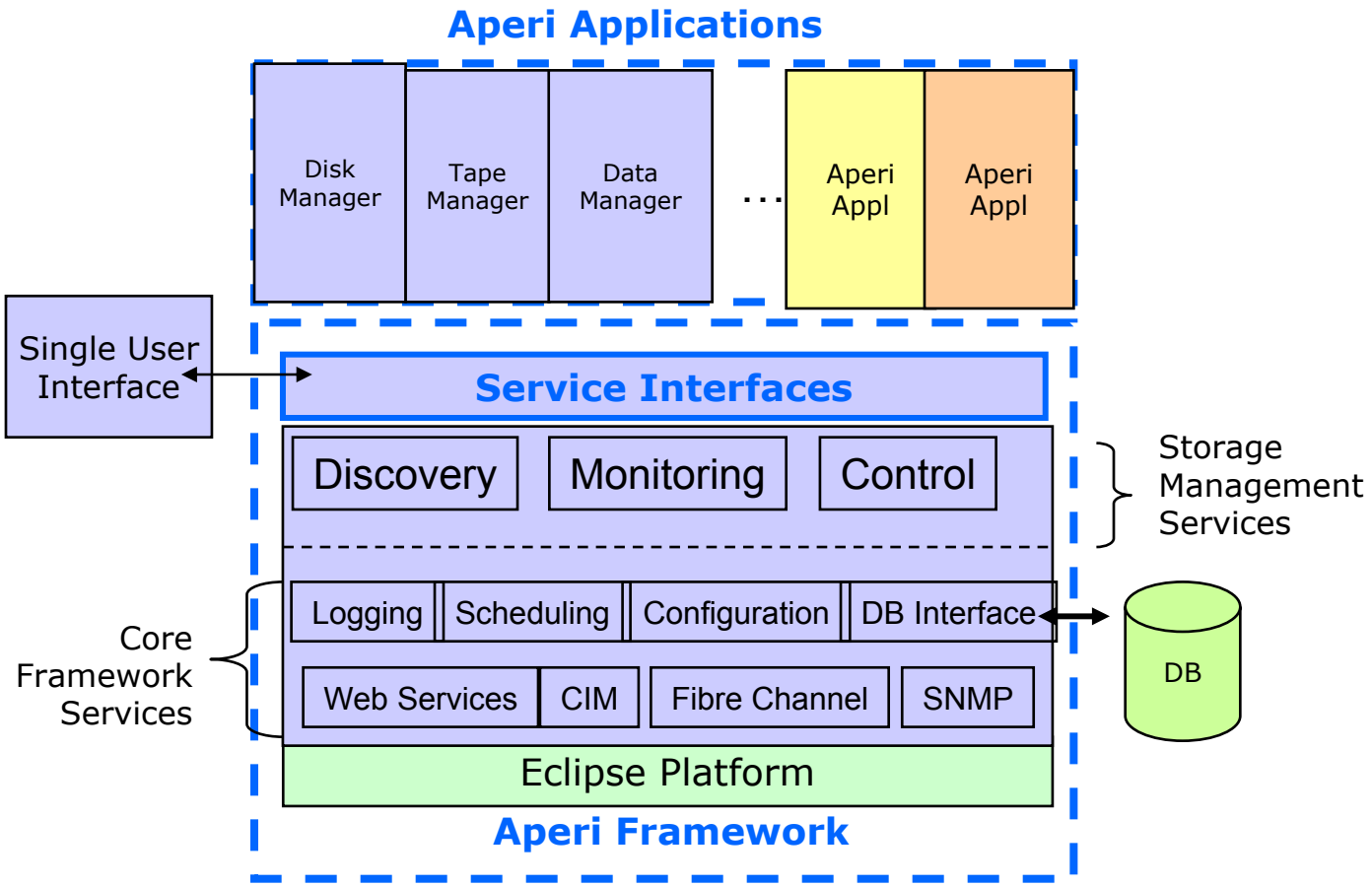
- Deliver infrastructure foundation so vendors can spend their resources creating new management applications and extensions
- Helps reduce interoperability challenges by allowing vendors to contribute code directly to the framework or interface with it
- Implements SMI-S standards that many vendors already support
- Value accelerates as more vendors join and interface with the framework

Aperi Scope

- **Modular and Extensible Architecture**
  - Core management components act as building blocks for advanced capabilities

- **Major Functions Include:**
  - Resource discovery, monitoring and reporting
  - Event management
  - Storage subsystem configuration, LUN assignment, and zoning
  - SAN Fabric Manager including graphical topology display
  - Tape Manager library discovery and reporting
  - File System Capacity Reporting (size, % used, %free only)

Aperi Architecture



Open Source Case for Business

The Open Source Initiative[1]:

- The basic idea behind open source is very simple: When programmers can read, redistribute, and modify the source code for a piece of software, the software evolves. People improve it, people adapt it, people fix bugs. And this can happen at a speed that, if one is used to the slow pace of conventional software development, seems astonishing.

- We in the open source community have learned that this rapid evolutionary process produces better software than the traditional closed model, in which only a very few programmers can see the source and everybody else must blindly use an opaque block of bits.

The case for business[2]:

The payoff for software producers:

- Advantage: Development speed
- Advantage: Lower overhead

The payoff for software merchants

- Advantage: Closeness to the customer
- Advantage: Broader market

[1] http://www.opensource.org/index.php

[2] http://www.opensource.org/advocacy/case_for_business.php

Open Source IQ[1]

"Theoretically, you have an almost unlimited IQ you can put into solving a problem"

Michael Goulde, senior analyst at Forrester Research and open source expert.

"Customers feel like with open source there's no reason to re-invent the wheel,"

Laurie Wurster, Research Director, Gartner Consulting

1 - . http://news.yahoo.com/s/nf/20070130/bs_nf/49629

The Eclipse Foundation

- A not-for-profit, member supported corporation that hosts the Eclipse projects
- Includes major technology vendors, innovative start-ups, universities, research institutions, and individuals
  - 18 Strategic Members
  - 100+ Add-in Provider Members
  - 17 Associate Members
- Eclipse open source projects are focused on enhancing, promoting, and cultivating software application frameworks and an extensible development platform
  - 10 Top Level projects
  - 50+ projects
- A proven model that works
  - Structured community that fosters innovation and collaboration
  - Capable of hosting large open source projects
  - A strong governance model that supports commercial adoption of the code

Eclipse Public License FAQs

- **Can I take a Program licensed under the EPL, compile it without modification, and commercially license the result?**
  Yes. You may compile a Program licensed under the EPL without modification and commercially license the result in accordance with the terms of the EPL.
- **Do I need to include the source code for such Program with the object code distribution?**
  No. But you do need to include a statement that the source code is available from you and information on how to obtain it.
- **When I incorporate a portion of a Program licensed under the EPL into my own proprietary product distributed in object code form, can I use a single license for the full product, in other words, covering the portion of the Program plus my own code?**
  Yes. The object code for the product may be distributed under a single license as long as it references the EPL portion and complies, for that portion, with the terms of the EPL.
- **If I modify a Program licensed under the EPL and distribute the object code of the modified Program for free, must I make the source code available?**
  Yes. By distributing the modified Program, even if it is only a free version of the object code, you are obligated to make the source code to the modified Program available to others.

Eclipse Public License FAQs

- **If I write a module to add to a Program licensed under the EPL and distribute the object code of the module along with the rest of the Program, must I make the source code to my module available in accordance with the terms of the EPL?**
  No, as long as the module is not a derivative work of the Program.
- **Some free software communities say that linking to their code automatically means that your program is a derivative work. Is this the position of the Eclipse Foundation?**
  No, the Eclipse Foundation interprets the term "derivative work" in a way that is consistent with the definition in the U.S. Copyright Act, as applicable to computer software. Therefore, linking to Eclipse code might or might not create a derivative work, depending on all of the other facts and circumstances.
- **I"m a programmer not a lawyer, can you give me a clear cut example of when something is or is not a derivative work?**
  If you have made a copy of existing Eclipse code and made a few minor revisions to it, that is a derivative work. If you"ve written your own Eclipse plug-in with 100% your own code to implement functionality not currently in Eclipse, then it is not a derivative work. Scenarios between those two extremes will require you to seek the advice of your own legal counsel in deciding whether your program constitutes a derivative work.

Eclipse Foundation Membership vs Project Participation

- Eclipse Foundation membership
  - Not required to participate in open source projects
  - Provides marketing benefits
  - Enables participation or representation in leadership committees

- Project participation
  - Open to all who agree to the governance model
  - Not subject to Eclipse Foundation membership
  - Committer status is earned via meritocracy

Vendor Benefit Examples

- Hardware Vendor
  - Increase number of applications that manage your hardware
  - Reduce investment for support of many separate ISVs and applications
- Provider of element manager software
  - Reduce your investment in low-value infrastructure components
  - Extend your applications into new storage areas should require less investment (e.g. adding storage capacity reporting to a fabric management application)
- Provider of systems or storage management software
  - Reduce investment in low value functions
  - Increase resources providing high value customer requested features
  - Increase interoperability with other software solutions
  - Community model allows delivery of new functions for less investment and in faster timeframe

Common framework opportunities

- The more vendors that leverage Aperi and test it with their commercial systems, the higher the opportunity to improve the code quality.
  - 'The reliability of the basic utilities from GNU and Linux were noticeably better than those of the commercial systems.' Fuzz Revisited: A Re-examination of the Reliability of UNIX Utilities and Services. Feb, 2000 Univ of Wisconsin
  - 'When programmers can read, redistribute, and modify the source code for a piece of software, the software evolves. People improve it, people adapt it, people fix bugs. And this can happen at a speed that, if one is used to the slow pace of conventional software development, seems astonishing.' http://www.opensource.org/index.php
- A single framework with common services used by many vendors increases the interoperability among applications from different vendors
- When working together within a community to deliver common framework functions, vendors can improve the timeline and reduce the number of resources required to deliver functions these same functions on their own.
  - Three vendors each with 1PY of effort available would have to chose between implementing Fabric Secure Zoning, NAS and Unified Storage profiles or IP based storage management. If each vendor selects one item and contributes this effort to Aperi, every vendors can obtain the code for all 3 line items.

Business Triggers to an Aperi framework investment

- Accelerate support for new storage hardware
  - A storage management application for new hardware that leverages open source will require less investment than a completely new closed application
  - Major hardware change requiring a substantial storage management software investment
- Reduce investment in storage software infrastructure
  - Replace existing features with open source to reduce ongoing investment/maintenance costs (discovery, topology, monitoring)
  - Substantial investment needed to modernize software architecture
  - Acquisition requiring the merging of two separate management solutions into one integrated solution
- Accelerate support for storage management features
  - Extending systems management features such as asset management, configuration, monitoring or reporting with storage data
  - Leverage new storage management features available in open source with reduced investment over commercial software development (iSCSI, new SMI profile)

Real examples of required storage infrastructure investments

- SMI-S Currency
- Virtualization (disk, fabric)
- IP based and multi-protocol storage management
- SAN security
- Currency for vendor unique extensions
- User customized reports
- Policy based storage management
- Automation

Aperi Participation Approaches

- **Code contributions**
  - Contribute SMI client code
  - Provide SMI extensions for vendor unique capabilities
  - Contribute current proprietary approaches for deep device management
  - Contribute management functions (e.g. IP storage enablement)
  - Provide resources to roadmap line items
- **Adoption of code in commercial products**
  - Support and test Aperi management of a storage devices
  - Incorporate Aperi technology via program calls
  - Replace current technology with Aperi framework
  - Convert application to an Aperi plug-in

Getting started

- Join the aperi-news mailing list:
  https://dev.eclipse.org/mailman/listinfo/aperi-news
- Join the aperi-dev mailing list:
  https://dev.eclipse.org/mailman/listinfo/aperi-dev
- Download the code: http://www.eclipse.org/aperi/downloads.php