



Fabric Application Interface Specification: A Technology Primer

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Historically, storage and data management applications have resided on servers and storage subsystems. A new generation of these applications is moving into the fabric to enable centralized management and more scalable SAN architectures. This move, however, requires higher performance from the fabric platforms. Architecturally, the way to achieve the required level of performance is to split the control plane functions from the data plane functions in an application, in order to leverage the hardware acceleration capabilities inherent to fabric platforms such as intelligent switches, directors or storage appliances. For successful deployment, new solutions must be able to exploit vendor-specific hardware implementations while providing the ability to easily migrate from one vendor platform to the other.

To ensure smooth implementation of intelligent SAN infrastructures, the T11.5 Task Group of the ANSI INCITS T11 Committee, comprised of 33 member organizations, created a Working Group to define a standard API between the storage management applications and the intelligent SAN platforms.

The Fabric Application Interface Standard (FAIS) accelerates solutions deployment and broaden end-user choices.

Control and Data Path Split

Splitting the control functions from the data path enables the storage and data management applications to delegate processing of all data plane functions to the intelligent SAN platforms, while maintaining the control plane functions. By providing the required processing capabilities, intelligent SAN platforms are paving the way for network based deployment of storage and data management applications.

Client/Server Model

At a high level, FAIS is based on a client/server model where the storage application acts as the client and the intelligent SAN platform acts as the server. This decouples the implementation intricacies of intelligent SAN platforms from the development of storage applications.

Storage software providers may then focus on developing applications and application logics that meet end-user needs rather than concentrate on exploiting vendor specific intelligent platforms.

FAIS provides the API to access the data plane functionality supported by an intelligent platform. The API is built upon an Object Model, where various storage elements are represented as managed objects.

For example, SCSI initiator, SCSI target, Logical Units and their virtualized counterparts are modeled as objects. The storage application (which executes on the Control Path Processor) and the intelligent SAN platform (also referred to as Data Path Controller) interact by exchanging information through these objects.

By standardizing the data structures for the various objects and the functions to access them, FAIS provides a high level of independence from the implementation specifics of an intelligent platform.

Standardization

As part of the standardization process, FAIS is defining the following:

- Operational model (client/server model)
- Object model (storage elements as objects) and object definitions
- Function calls (API) to interact with the defined objects
- Software structures (libraries) and behavior (synchronous & asynchronous modes)

Supported Services

FAIS will enable the storage applications to use a standard API to perform all of the functions of a SCSI initiator and/or a SCSI target. It will also enable configuration and management of the I/O acceleration functionality supported by the intelligent SAN platforms. The services supported by the APIs include:

Front-End Services: for processing requests and events that arrive at the FAIS platform from front the end.

Virtualization Services: for volume management, which includes storage pooling, the ability to control and manage access permission on independent volumes, the ability to dynamically restructure the volumes and the ability to implement other key storage functions such as mirroring and striping.

Back-End Services: for discovery and management of storage resources connected to the back end of the FAIS platform, which includes issuing commands to these devices and handling events received from them.

Benefits

The Working Group currently developing the FAIS standard expects to release a first draft of the specification during the second half of 2005. This standard will significantly speed up the deployment of storage applications in the fabric. With FAIS compliant intelligent SAN platforms and storage management applications in place, significant benefits will be gained by the vendors and the end-users.

While the vendors will gain faster time-to-market through the use of standardized components and development environments, the end-users will have access to wider choice of intelligent SAN platforms and applications.