

Simplifying Information Exchange



The Access 4 Learning (A4L) Community's SIF 3 Infrastructure is the latest release of an open standard infrastructure, bringing SIF into the modern era by leveraging a REST¹ based approach to data exchange. The key contribution the SIF 3.x Infrastructure Specification defines, coordinates and standardizes the ways in which multiple RESTful clients can access a RESTful educational service securely, robustly, and in real time.

There are three **ground-breaking design** advances which satisfy long standing requests from SIF 2.x developers and implementers:

- **Scalability Designed In.**
From the simplest exchange to the most advanced, SIF 3 design seeks to first do more with less, then do more with more. The result is an efficient cloud friendly infrastructure.
- **Start Simple and Build on Your Integration.**
First, the message broker functionality has been broken up into a set of multiple, separately implementable Infrastructure Services. Second, the SIF 3 architecture makes it possible to construct and deploy SIF-compliant solutions in a 'Direct Environment' without utilizing any middleware!
- **Infrastructure independent of the Data Model.**
All current data model dependencies have been removed allowing the SIF 3 infrastructure to carry SIF object data from any locale (North America, UK, Australia), or other major data standards, without change.

These changes allow SIF 3 solutions to be deployed in any Education Data Center using the identical technologies that are already present and known to IT personnel.

How Scalable are SIF 3 deployments?

SIF 2 solutions have been deployed in every setting from a single school to an entire State, depending on need. Performance limits in large deployments during reporting periods were analyzed leading to major performance enhancements for the SIF 3 Infrastructure.

Let's Focus on the scalability features anyone using the SIF 3 infrastructure will encounter:

- **Fewer Trips:** Every exchange has been scrutinized for messages that can be done without. The result is whether you are requesting objects or publishing events, efficiency has been maximized.
- **More Data Per Trip:** From the ability to negotiate pages of data on the fly, to events that convey many similar changes, more data moved per trip means less waiting. For those requiring even more scalability:

¹ REST (REpresentational State Transfer) is an architectural style, and an approach to communications that is often used in the development of Web services. The use of REST is often preferred over the more heavyweight SOAP (Simple Object Access Protocol) style because REST does not leverage as much bandwidth, which makes it a better fit for use over the Internet.

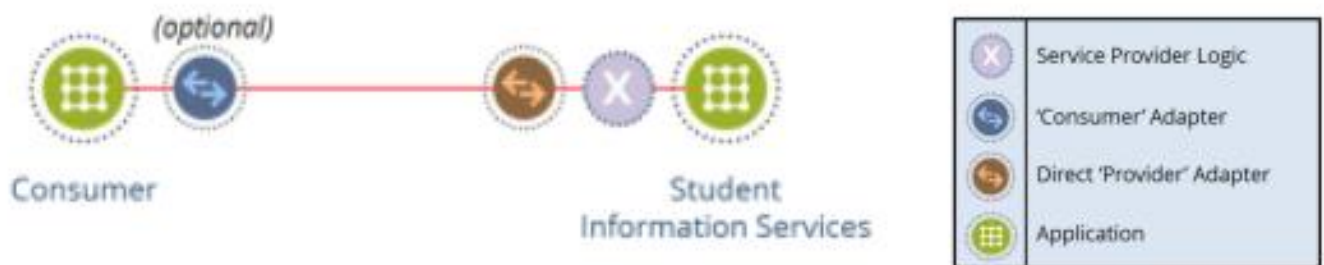
- **Just the Changes:** One scheme that has matured throughout the life of the SIF 3 infrastructure is the ability to request just the desired changes. This was first done at the object level, and then expanded to collections. Moving less data overall, means the data you need gets there faster.
- **Multiple Connections:** While this is available in a few different places within the specification the overall approach and result is consistent. By having parallel streams of data, more data can be delivered in the same amount of time.

How Does an Integration Grow?

The SIF 3 Infrastructure is an enabler for direct, brokered or hybrid environments to exchange data.

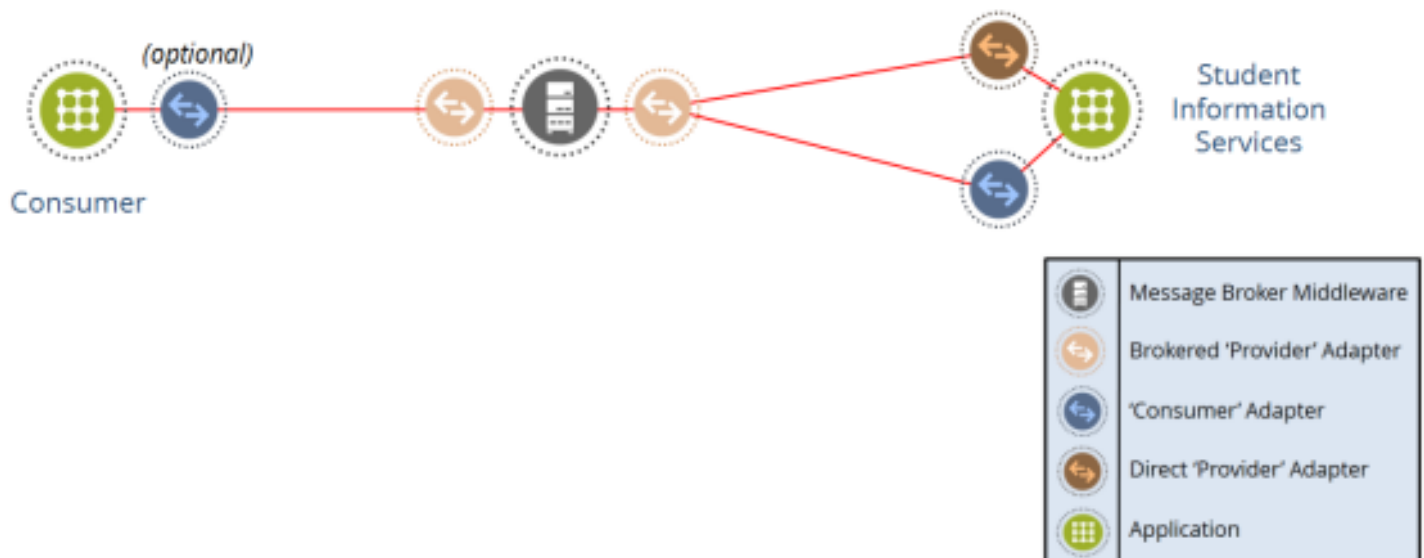
Direct Environment – single source for all data.

- Connects Data Consumers to Data Providers with no middleware - can be multiple connections.
- Supports cloud based environments
- Example: SIS accessed by students via mobile devices OR SLDS seeded by multiple District SIS and accessed by data analytic and reporting applications



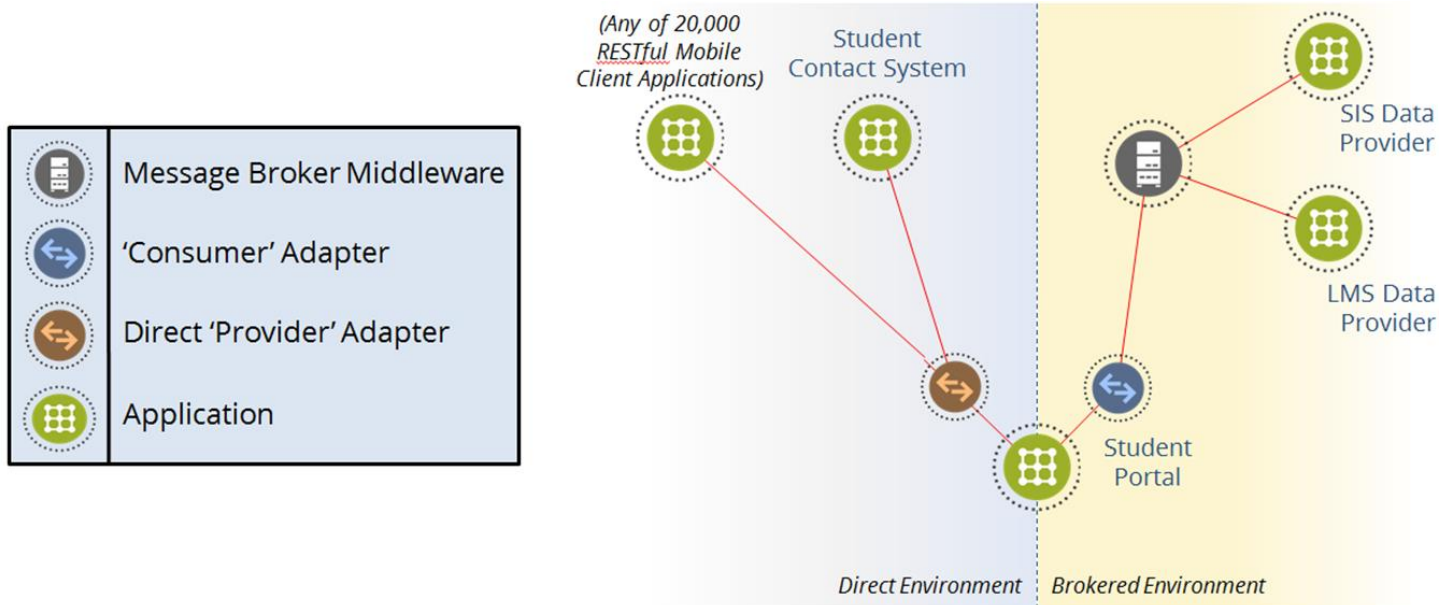
Brokered Environment – multiple data sources.

- Connects Consumers to multiple Providers leveraging existing IT middleware (Enterprise Service Bus (ESB))
- All 'direct' Data Consumers can run in brokered environments. External applications register to provide their data – highly scalable to meet current and future IT requirements
- Centralized enforcement of site data security and privacy policies – YOU are in control of YOUR data.



Hybrid Environment - a combination of environments.

- In production: SIF 2 and SIF 3 infrastructures
- Shown: direct and brokered



How reliable are SIF 3 Solutions?

Overall system reliability is of course dependent on the quality of the set of applications deployed in a given solution, and the extent to which these applications successfully interact. The SIF Certification Program provides the primary way to ensure seamless interoperability between SIF-certified components.

In addition, the SIF 3 architecture enhances robustness in one revolutionary way. When one system attempts to impact data in its provider, the requester now receives a set of results. This can be used to prevent applications' data becoming out of synchronization.

More information

To find out more about the SIF 3 Infrastructure, please review the Specification and supporting documentation: <http://data.a4l.org/sif-specifications/sif-infrastructure/>

To review the list of SIF Certified applications on the SIF Certification Registry: <http://data.a4l.org/certification/>

Additional reading resources can be found here: <https://data.A4L.org/resources/>

- Upcycling existing technologies: Migrating to a SIF 3 Infrastructure
- Getting Started with xPress Roster

You can also find more information on the xPress API website: <https://xpressapi.org/>