



Enterprise Enabler®

White Paper

Third generation of Data Virtualization...

Write back to the sources

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Bi-Directional Data Virtualization

Definitions

Data Virtualization: *Without ever physically copying or moving data, it is made available as a virtual data model that can be queried, as if it were a physical database, or called as a web service.*

Data Federation: *Data from multiple different sources is aligned, merged and transformed without passing through a central format or database on its way to its destination or to fulfill a query on a virtual data model.*

Bi-Directional Data virtualization: *Elevates virtualized data to become actionable data, meaning that end users or applications can interact with that virtual data, writing back to the sources securely.*

Logical Data Warehouse: *Data Virtualization is the basis for a Logical Data Warehouse, providing all the capabilities without physically loading the data.*

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The state of data virtualization

Data Virtualization enters its third generation with Stone Bond Technologies' Enterprise Enabler®, an Agile Integration Software (AIS). Early data virtualization consisted of creating virtual data models and specialized programming that supported queries across federated data stores, in some cases eliminating the need to create a physical database. [e.g., Informatica]

The second generation brought the ability to federate data from different sources and make it available as web services for on-demand virtual delivery or query. This improvement leverages the SOA knowledge and foundation that has become common in many organizations. [e.g., Composite Software]

The third generation, takes data virtualization to another level by providing not only federated reads from multiple sources, but also secure write-back to those sources by end users or applications, and offering delivery on-demand through additional modes beyond web services. This bi-directional data flow is a huge value-add to the discipline of data virtualization. [Enterprise Enabler]

The value of virtualization

By eliminating the need for staging databases, AIS immediately reduces the hardware, design, and implementation costs, as well as the ever-increasing tech debt associated with maintaining databases over time. For business intelligence and analytics, this reduces the dependency on data warehouses for current data, and makes the frequency of updates largely irrelevant. Without the need for special purpose databases or marts, synchronization across copies of the data is unnecessary, since the data is maintained and managed one place: at the source.

Data virtualization adds a huge value to serving Business Intelligence backlogs by bypassing the need to put everything in the Data Warehouse to make it available to users and applications. It means you can combine that historic data with data coming live from applications and data sources, wherever they are.

Value of Data**Virtualization/Federation***Query federated data**Eliminate staging databases**Combine cloud and on-premise**The freshest data**Reusable data access services**Feed browser apps directly**Quickly incorporate new sources***Added Value of Bi-Directional Capabilities***Interact with data, not just Read it**Full Create, Read, Update, Delete**End user awareness for security**Transaction Rollback**Master Data Services with
read and write**Turn dashboards into consoles**Streamline business processes***And those benefits result in:***More secure data**Lower implementation costs**Faster project delivery**Lower tech debt (maintenance)**More agile IT infrastructure***The added value of bi-directional virtualization**

The addition of bi-directional data flow moves data virtualization beyond data analytics to operational business usage. Dashboards are no longer for data viewing only, but also allow the end user to make updates, additions and corrections and to take action on decisions. A manager only needs to go to one place to see and act on data from multiple totally different sources. cloud-based applications, Big Data, and on premise spreadsheets and ERPs, and data from electronic instruments, without moving or making copies of any data.

This added ability to write back to federated sources is critical in streamlining business processes by creating federated role-based browser interfaces that allow a user to interact with a single screen with information coming from, for example, SAP, Salesforce, DB2 a spreadsheet and LinkedIn. This capability eliminates the training, frustration, and time to navigate in all those systems directly. The information has been aligned and transformed to present in a consistent view, and the user has no indication that there are multiple sources involved. When DB2 is finally retired, the virtualization service behind the scenes will be adjusted to point to the new source for that information, and the user will not even know. This model is used also for customer-facing portals where multiple sources are aggregated for selective read/write access without using staging data bases to feed it.

Developing bi-directional data virtualization

Given enough time and a few good programmers, bi-directional integration can be accomplished using any integration platform, but that defies the agility that is imperative as technologies and business advance. Only Enterprise Enabler incorporates this capability into the underlying architecture and development framework. In the Integrated Development Environment (IDE), data virtualization solutions are designed, tested, deployed, and monitored from within the single tool. In minutes rather than days or weeks, you can construct a bi-directional federated data virtualization and package for multiple modes of consumption without needing to know how to write a web service, for example, or how SharePoint's external lists work.

Key Features for Agile Data Virtualization

Native transformation engine:

Merge multiple unlike sources

Works in endpoints' native forms

No XML intermediate step

Single IDE from design through deployment and monitoring

100% metadata driven

End-User awareness for security

Transaction rollback

Caching options for subsets of data

High performance for Big Data sets

Check Out:

www.stonebond.com

<http://agileintegrationsoftware.blogspot.com>

Distinguishing third generation data virtualization

Security, of course, is a huge beneficiary of data federation and virtualization because it means no copies are made of the data simply to assist with the integration. For further security, it is recommended that the integration platform be end-user aware in order to ensure that data is only seen by authorized personnel, and that write-back to the sources is prohibited for restricted fields, and allowed only to authorized individuals.

Any time you are accessing directly from the sources, you are getting the freshest data possible, without concerns about latency. A transformation engine is an essential component in ensuring correct alignment across the multiple sources and conversion as required by the virtual endpoint's definition. With third generation data virtualization, the time from data access to delivery is dramatically streamlined with a transformation engine that reads, merges, transforms and delivers data in its native format without ever passing through a central data format. Second generation engines use XSLT, which means they have an inherent lag on performance. Each source dataset must first be converted to XML before it runs through the transformation engine, and then the XML must be converted to the desired output format.

With Enterprise Enabler, virtualized data objects, called Enterprise Masters are created in a matter of minutes and are reusable and consumable in multiple formats, such as SOA, REST, JSON, Caching, Data Virtualization, OData, etc. All of the logic for end-user-aware federated data is encapsulated in an Enterprise Master, which becomes a complete corporate MDM element or a full-blown Logical Data Warehouse.

Bi-directional data virtualization can change your view of integration development productivity, effectiveness and agility. This third generation of data virtualization moves from solely BI uses to streamlining all data flow and business operations.

About Stone Bond

Stone Bond Technologies, L.P. is the leading provider of business integration software for data virtualization, federation and orchestration delivering the industry's fastest time-to-value. As the only integration solution to scale both up and down to meet business needs, Stone Bond provides software solutions that help businesses improve their bottom line by streamlining interaction among business systems. To learn more about Stone Bond Technologies please visit, www.stonebond.com.