Why Data Virtualization is a Necessity for Every Enterprise

Enterprises are rapidly migrating to Big Data where they are given the upper hand in handling large volumes of crucial data simultaneously with the help of multiple queries, securely, without the need for moving large chunks of data to multiple locations. This helps avoid the overload of synchronization and secure integration at multiple layers where business data resides through the information agility that Data Virtualization has to offer.

Enterprise Data Virtualization (EDV) has been bundling in a gamut of benefits while garnering the attention of insight-driven enterprises of late. If you are wondering how, then, this blog answers your question.

What is Data Virtualization?

Data Virtualization is a data integration technology for Business Intelligence that involves aggregating data to create a single version of the original set that is delivered across heterogeneous users and applications.

It incorporates a data management approach of allowing an application to retrieve and manipulate data as a single view component without the user requiring its technical details such as its physical location, source formatting information, security parameters, configuration settings, etc.

EDV provides a unified, abstracted, organized, and encapsulated view of the data coming from similar or heterogeneous data sources, while the data remains in place, so that you can create analytical dashboards with valuable BI parameter values and performance metrics.

DV substitutes Extract-Transform-Load (ETLs) and data warehousing in areas such as Business Intelligence Analytics (BIA), application development and Big Data.

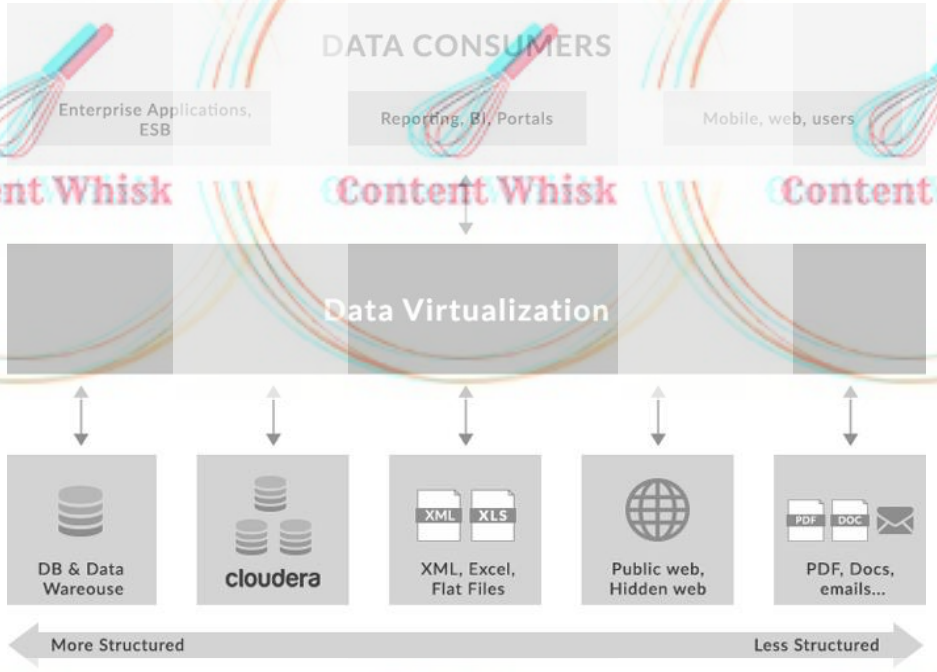

Exhibit 1: Representation of a Data Virtualization scenario (source)

How Enterprise Data Virtualization Can Help Your Business

Data Virtualization works by integrating data from diverse sources, locations, and formats, without replication. A single "virtual" data layer is created in the process which delivers unified data services to support multifarious applications and users while providing,

- Faster access to data
- Less data redundancy
- Lower CAPEX and OPEX compared to traditional data integration processes
- More agility to change, and lesser querying across data silos

"Data Virtualization enables distributed databases, as well as multiple heterogeneous data stores, to be accessed and viewed as a single database. Rather than physically performing ETL on data with transformation engines, Data Virtualization servers perform data extract, transform and integrate virtually."- The Data Management Book of Knowledge (DMBOK), second edition.

The following key capabilities of Enterprise Data Virtualization have influenced many IT companies to implement the technology in their core business strategy and are not found in any other integration middleware.

Zero Replication –Data Virtualization creates integrated views of data across multiple sources without moving or replicating it. By virtualizing redundant data copies across an organization, it reduces storage footprints.

Abstraction- All that businesses need to be concerned about is accessing the data without the need to know about their location or configuration.

Real-time Access- The latest version of data is available instantly.

Agility- Changes can be incorporated without impacting business operations. Data Virtualization facilitates a universal semantic layer across multiple consumer applications.

Logical abstraction and decoupling – Data virtualization allows distinct data sources, middleware, and platform-specific consumer applications that use certain interfaces, formats, schema, security protocols, and query paradigms to interact seamlessly.

Enhanced Data Handling – EDV offers more intelligent real-time query optimization, caching, in-memory and hybrid strategies that are automatically (or manually) chosen based on source constraints, application needs, and network access requirements.

Semantic integration of structured & unstructured Data - Data virtualization bridges the semantic understanding of unstructured and web data with a schema-based approach.

Agile data services provisioning - Data virtualization promotes the API economy. Primary, derived, integrated or virtual data sources can be made accessible in a different format or protocol than the original, with secure access quickly.

Unified data governance & security - All data is made discoverable and cohesive through a single virtual layer which exposes redundancy and quality issues promptly. This is achieved from source to output data services that need consistency in integration and data quality rules.

Today, data scientists believe that data virtualization can help businesses achieve data-centric value and accelerate data monetization. The top needs of enterprises that thrive on data which is a strategic asset include:

- Understanding data science and AI by C-level executives and agency leaders
- Development of a data-centric workforce that can execute a prolific Data Analytics strategy
- Development of a data strategy that complements their hybrid cloud strategy
- Enterprise decision-makers and top leadership want data governance capabilities and inventories of application development for rapid implementation, rewarding outcomes, and scalability

Benefits that cannot be ignored

- Improved performance of code and workload optimizations that give faster development and support turnaround and throughput
- Optimization of algorithms and data models for deep learning and expansion of neural networks for different business use cases
- The ability to auto-discover data sources and metadata that helps analyze and trace them for Business Intelligence, data analytics, and cross-platform integration
- Reduction of data error risks in enterprise systems that may turn out to be expensive later during damage recovery

- Optimization of real-time data access speed and change implementation through the application of machine learning and adaptive algorithms that perform data analytics
- Availability of a 360-degree view of business data to customers through the Data as a Service architecture of EDV that leverages
- Recent studies have shown that EDV leads to reduced operational costs from 5% up to 15% when implemented in the preliminary stages of product development (lesser investment in hardware, man-hours, software, etc.)
- Data integration and interoperability through centralized control
- The need to design, build and test a data warehouse and the ETL is avoided by Data Virtualization
- Prevention of data inconsistencies and data loss
- Offers quicker time-to-market compared to traditional mechanisms
- Mitigation of dependencies on vendors and technologies by creating an application-neutral layer between databases

Get in touch with our EDV experts today and learn how to optimize your business data and accelerate your company's success.

Data Virtualization Use Cases

Data blending - This mechanism is often merged with the business intelligence (BI) tool's semantic universe layer or added as a new module. It combines multiple data sets (limited list of structured or big data) to feed the BI-specific tools used by enterprises.

Data services module - Typically offered by Data Integration Suite (ETL / MDM / Data Quality) or Data Warehouse vendors, this suite is usually very strong in data modeling, transformation, and quality functions that are very robust.

SQLification Products – This emerging offering "virtualizes" the underlying big data technologies and allows them to be combined with relational data sources and flat files with querying done using standard SQL.

Cloud data services- Data Virtualization has pre-packaged integrations to SaaS and other cloud architectures, databases and a number of on-premise tools like Excel that are implemented on private enterprise clouds. These products expose normalized APIs across cloud sources for easy data exchange in projects of medium-sized data sets.

Conclusion

Data Virtualization's built-in, location-transparent architecture coupled with large-scale analytics architectures, naturally supports futuristic applications in a hybrid cloud environment. It goes beyond tiered-views and delegable query execution to offer seamless enterprise growth.

Visit our website today to learn about our Data Virtualization products and services or call us today!