intertrust®

Data Virtualization

Introduction

Organizational data processing and harvesting needs are growing every day, for both structured and unstructured data. Secure, cost-efficient, scalable, and reliable access to this data is foundational to making agile data-driven organizational decisions.

The Data Virtualization feature of the Intertrust Platform™ is built to make data operations (DataOps) simpler, logical, and agile across platforms. With its core functionality providing data interoperability, the feature creates a virtual processing layer on top of any disparate cloud, multi-cloud, or on-premises datasets. This makes querying and data processing easier to view and combine, with the results easily accessed by users and applications.

Features

The logical processing layer of the virtualization service serves as an alternative to a traditional data integration function in an enterprise architecture setup. It has a much shorter implementation cycle and much better agility in operations, thus enabling a higher level of granular data analysis and development. The Data Virtualization feature removes the need for first moving or copying data physically, as is required in a data warehousing operation. All tasks such as data integration, data sanitization, policy and access integration, and correlation are defined in the virtual logical layer, which is then applied to data as it is fetched from the source data store.

The Data Virtualization service streamlines:

- Internal and external data access and processing

- Cross-functional data-driven decision making

- Data access timelines for internal and external data-dependent applications

- Fallback operations in the absence of a fully operational data warehouse

Benefits

Agile Business Intelligence
- Provides fast delivery times for data layer creation and data processing

- Streamlines data access to downstream BI tools

Real-time source of truth
- Helps organizational decision makers have access to the most updated versions of the truth, thereby aiding in agile decision operations

Built-in policy management
- Data Virtualization combines unified data governance and policy access management to DataOps, strengthening enterprise data governance architectures

Reduced analytics time-to-market
- Ready-to-use composable datasets for downstream users across different sub-organizations enable faster downstream processing

- Internal and third-party applications do not have to wait for custom ETL batch jobs for their data consumption needs

Agile DataOps
- The virtual data layer can pull data from disparate sources and standardize it for consumption downstream, thereby providing a robust enterprise data setup

	Data virtualization	Data warehousing
Historical data views and storage capabilities	No	Yes
Dependence on enterprise IT team	Low	High
Time to market – implementation cycle	Low	High
Pre-aggregation capabilities	Limited	Yes
Large dataset query performance metrics	Limited	Fast
Cost of ownership and operations	Low	High
Multi-dimensional data visualization	No	Yes
On-demand data processing/integration	Yes	No

Complementing the legacy enterprise data warehouse

Data Virtualization is not meant to replace an on-premises/cloud-based data warehouse or repository. Rather, in a hybrid, multi-cloud environment, it is a complementary solution to the source data stores. It adds a processing layer on top, including the core enterprise warehouse. This layer enables decision makers to perform tasks like ad hoc reporting and efficient data access, as well as providing a one stop shop for refreshed data, right from the source.

The above table shows a comparative analysis between a legacy data warehouse and Intertrust Data Virtualization setup. It highlights the relative tradeoffs and corresponding need-based usage between the two solutions.

The chief elements of the Data Virtualization service can be summarized as follows:

- **The Logical Data Virtualization Layer**
  This layer represents a visualization of the enterprise data assets, and is formed by connecting to the underlying data sources in the Data Virtualization tool.

- **The Intertrust Query manager**
  The Query Manager helps the user to send commands to the source data systems. It can be optimized on a performance and a cost level for best results.

- **Integrated Security Stack**
  The Data Virtualization layer provides granular, row- and column-level security controls to the data stack.

- **Data Connectors**
  The Data Virtualization service enables connections to multi-cloud/on-premises data sources through JDBC and other connectors.

- **The Metadata Repository**
  This is the layer that stores the underlying data structures, access details, and other relevant details for the Data Virtualization tool.

The Intertrust virtual data warehouse

The Intertrust Data Virtualization service enables an organization to redefine how an enterprise data access architecture is implemented. It advocates a horizontal, distributed approach to data warehousing and data access operations. It helps organizations design an interoperable data architecture, leverages the strength of siloed data sources, and provides a neutral data interface layer, allowing the organization to maximize value creation.

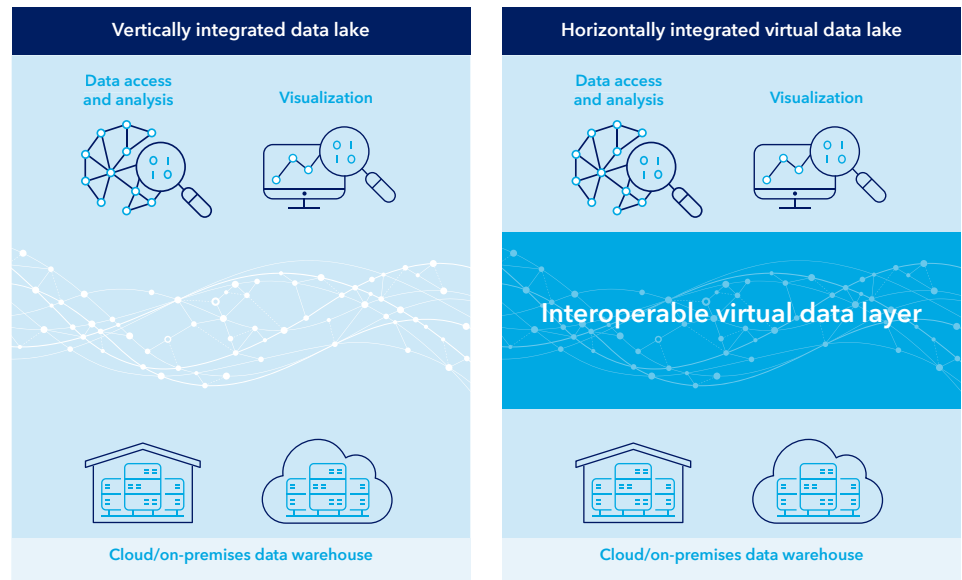## Advantages of Intertrust Data Virtualization

Data Virtualization is a feature of the Intertrust Platform, which facilitates the integration of disparate multi-cloud/on-premises data sources between different stakeholders. It integrates them with data-dependent policy and access management tools, allowing them to secure, govern, and monetize their organizational data in an agile way.

Organizations looking at transforming their existing data warehousing operations or creating a cost-effective virtual data processing layer can use Data Virtualization to connect, process, combine, and deliver data. Intertrust Data Virtualization enables agile industry DataOps, summarized as follows:

Making the right data fabric work for the organization
The data virtualization deployment is an important step in enabling a proper data fabric framework, as the virtual data access layer provides a unified source to run federated queries right at the source. With more and more organizations moving to multi-cloud plus on-prem or hybrid setups, an efficient data fabric

The diagram below highlights the value proposition that the Intertrust Platform provides versus a horizontally integrated virtual data lake.

Vertically integrated data lake — Data access and analysis, Visualization, Cloud/on-premises data warehouse

Horizontally integrated virtual data lake — Data access and analysis, Visualization, Interoperable virtual data layer, Cloud/on-premises data warehouse

framework enables more applications and departments to use disparate, disconnected data sources without building custom integration requests to each individual data point.

Enabling Business Intelligence processing
With ever-increasing data requirements for BI applications, a robust virtual data layer enables seamless DataOps processes.

Interoperable data access as a service with internal organization silos
The service enables the creation of a seamless data collaboration ecosystem between internal departments by combining data access and policy management under one layer.

Platform for secure access for third-party DataOps using data governance
Third-party applications, partners, and system integrators can connect to the virtual data layer to access and perform data operations in a highly controllable manner, without getting access to any core organizational data.

Use cases
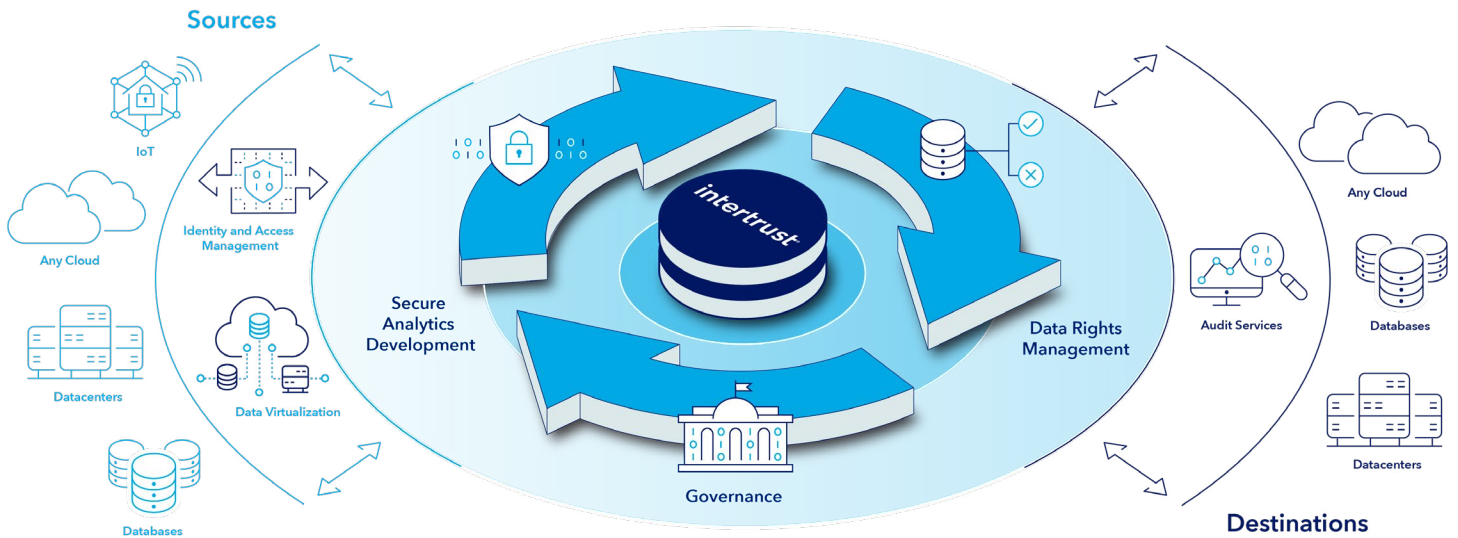
E.ON
Energy Grid Data | Germany

Intertrust Data Virtualization services enable E.ON to manage data operations around their mission-critical electrical grid data and share it seamlessly with multiple stakeholders in the energy ecosystem in an agile process, with the best data security practices.

Read more: https://bit.ly/Planning-Optimization

Leading Automotive OEM
Corporate DataOps | Asia

One of the world's largest automakers is using Intertrust Data Virtualization services to create a trusted data exchange ecosystem, which doubles as a secure environment that helps to collaborate with third-party firms needing to use the automaker's internal data to develop applications.

Read more: https://bit.ly/Auto_OEM

Sources

IoT

Any Cloud

Datacenters

Databases

Identity and Access Management

Data Virtualization

Secure Analytics Development

Data Rights Management

Governance

Audit Services

Any Cloud

Databases

Datacenters

Destinations

Intertrust Platform is an interoperability layer that provides secure links for diverse datasets and devices – from edge to cloud.

The solution

Intertrust Platform is an edge-to-cloud data interoperability layer that uses secure data virtualization and identity and access management to enable governed data collaboration in secure workflow environments. It is designed to facilitate secure and efficient data orchestration for multiple entities and stakeholders, internal or external. It works securely across hundreds of data silos and clouds and ensures compliance with data security regulations and privacy protections.

Intertrust Platform™

The Platform leverages container orchestration technologies such as Kubernetes and Docker to make deployments cloud-agnostic.

Identity and Access Management
Device and user identity, authentication, and authorization; maintains platform objects and their relationships.

Data Virtualization
Data object definitions, permissions, restrictions. Provides data interfaces, manages DBs and virtualized datasets.

Secure Execution Environments
Secure network-isolatable environments for workload execution and controlled, interactive data exploration.

Time Series Database
Scalable, efficient, high performance database designed for time-series data.

intertrust®

Building trust for the connected world.

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