Federal Enterprise Data Architecture and Administration

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Analytica's supports our client's critical heterogenous 6 Petabyte (PB) federal enterprise data warehouse environment with federal enterprise data architecture and administration support cross structured, semi-structured, and unstructured data located in on-prem and cloud environments from over 52 institutional Internal Revenue Service (IRS) databases. These databases include data from all the core IRS systems, such as the Modernized e-File (MeF), Return Review Program (RRP), Customer Account Data Engine 2 (CADE 2), and Account Management Services (AMS).

The Challenge

The IRS relies heavily on data and analytics to improve decision-making and business operations in such areas as identity theft, refund fraud, financial crimes, taxpayer behavioral research, burden measurement, issue detection, and workload optimization. This requires a large and diverse big data, enterprise analytic computing and modeling environment in the IRS that provides data, tools, and computing services for the research and analytic initiatives aimed at improving tax administration.

The client needed "big data" federal enterprise data architecture, administration and data engineering expertise to help manage this highly heterogeneous and large-scale data federal data environment for enterprise analytics. In addition, this effort required expertise for rapid development and prototyping of emerging data architecture, data management, and database administration technologies that can support rapidly advancing large-scale analytic computing requirements.

Our Approach

Analytica's enterprise data architecture and engineering team works with the client to help architect, develop and administer a robust federal enterprise data warehouse environment that entails over 175,000 unique data element descriptions, 10,000 queries per day, and over 2,000 table refreshes per month. Our support includes recommendations for optimal configurations, performance, and tuning along with advising senior leadership of storage and back-up approaches and management. Supported users include virtually all IRS business units, the Department of Treasury, U.S. Congress, General Accountability Office, universities, and other stakeholder organizations, and represent a user base with diverse skill sets and who use a variety of tools to perform data analytics.

Analytica's federal enterprise data architecture and administration support provides a service to our clients to allow them to focus on their mission and not worry about the data architecture, engineering or administration of a federal big data environment. Our approach improved productivity and efficiencies of data

management and administration in their data environment by implementing data warehouse solutions such as dimensional data modeling (Kimball methodology) with Star/Snowflake schema to model database objects like materialized views, aggregate and summary tables to support FACT tables calculations upfront such that the Business Intelligence (BI) layer responds to report requests without lag. Our services help the IRS's Data Management Division provide their clients with large, extensive datasets for decision analytics in such areas as identity theft, refund fraud, financial crimes, taxpayer behavioral research, burden measurement, issue detection, and workload optimization.

The Solution

Our support ensured the IRS's ability to meet customer requirements for a robust, self-service data environment that supported enterprise data analytics. We were able to apply various enterprise data techniques to improve the performance of BI queries saving an overall query time of up to 2 minutes on each query, resulting in hours per week of saved productivity and improved performance per database user.

Analytica administers and advances the IRS's enterprise analytics environment to ensure the reliability, security, and system performance necessary to support the thousands of stakeholders who increasingly rely on the IRS DMD analytics environment to perform analytics.

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