



SAS® OLAP Server

A multidimensional data store designed to provide quick access to presummarized data

What does SAS® OLAP Server do?

SAS OLAP Server is a multidimensional data store designed from the outset to provide quick access to presummarized data generated from vast amounts of detailed data.

Why is SAS® OLAP Server important?

Decision makers need fast access to accurate information. Instantaneous access to summarized data is expected so timely decisions can be based on knowledge instead of gut feelings.

For whom is SAS® OLAP Server designed?

SAS OLAP Server is designed for CIOs who want to deploy a fast enterprise-wide source for reliable summaries of strategic information, IT managers with large numbers of users requiring rapid self-service navigation through summarized data, and department heads whose teams require frequent access to summaries to support business analysis and decisions.

Accurate business intelligence is an essential commodity across the enterprise, and IT departments are challenged to keep pace with both growing demands for timely access to summarized data and increasing requests for business reports.

Additionally, business intelligence users want to analyze data in new ways and require a level of interaction with data that is beyond the scope of standard corporate reports. With operational data sources running near full capacity and limited staff resources, IT organizations are finding it difficult to satisfy users' specialized requests and ensure data consistency across the various enterprise applications.

With SAS OLAP Server, a powerful multidimensional database, IT departments can provide users with fast, easy access to summarized data generated from vast amounts of detailed data, while increasing confidence in the information delivered.

Presummarized data is organized by common business topics so empowered users can move from one level of detail to another. A multithreaded query engine allows multiple queries to run in parallel, making efficient use of existing hardware resources. To ensure the consistency of both data and resulting reports, SAS OLAP Server provides a simplified process for extracting, transforming and loading (ETL) data from back-end systems and file formats. A single shared layer of metadata ensures traceability from the operational source, through the ETL process, to the destination OLAP cube. Users can quickly understand the data they are viewing and how it was derived, get the

detailed information they need without IT involvement and feel confident that the data and their results are accurate.

Key Benefits

- **Provides a transparent and integrated ETL process.** With a simplified ETL process, it is easy to build consistent OLAP cubes from disparate systems. Integrated metadata ensures that consistent information is delivered across the enterprise and enables IT to quickly justify data integrity.
- **Delivers fast, stable, summarized data for business intelligence applications.** Designed from the outset as dedicated storage for summarized data, SAS OLAP Server quickly delivers information to business intelligence applications, irrespective of the amount of underlying data. Summarizing data at multiple levels of detail before storing provides the summarized data that business intelligence applications require without the need for additional "on-the-fly" processing.
- **Frees IT from constantly creating ad hoc reports and data summaries.** Because summarized data is organized along business lines, users can get the reports they need without involving IT. This frees IT from the constant work of creating reports and data summaries to support users who need to follow a train of thought at various levels of detail.



Product Overview

SAS OLAP Server is a standards-compliant OLAP data source that uses multidimensional expressions (MDX) to query and navigate through multi-dimensional information. MDX is a structured query language that users familiar with SQL will understand with little or no training. SAS or third-party clients can communicate with the SAS OLAP Server using either a framework of Java classes or the de facto industry standard, Microsoft OLE DB for OLAP. This enables users to choose their favorite front-end application for accessing the summarized information.

Multithreaded query engine

The central component of SAS OLAP Server is a multithreaded query engine that ensures optimal use of hardware resources. Any query sent to the server is handled by an individual query thread, enabling the server to handle large user communities accessing the server in parallel. OLAP data sources

can be spread across multiple file systems, enabling the multithreaded query engine to execute multiple queries in parallel by reading data from multiple locations at once.

The MDX query engine accesses data stored in external relational tables (ROLAP), SAS' own multidimensional format (MOLAP) or a combination of data stores (HOLAP). OLAP source designers are free to choose the format that best supports their business requirements. Routines are included that enable SAS procedures to query the SAS OLAP Server using SQL Pass-Through with reach-through from multidimensional data to underlying detailed data.

Individual summaries inside OLAP data sources can be stored in a compressed format if they are not going to be frequently accessed. Data compression significantly reduces the space required to store information.

Graphical user interface for designing OLAP data sources

Bundled with SAS OLAP Server, SAS OLAP Cube Studio provides cube designers with an easy-to-use graphical user interface for creating OLAP data sources. SAS OLAP Cube Studio also plugs in to SAS Data Integration Studio to create the same look and feel for data integration process designers.

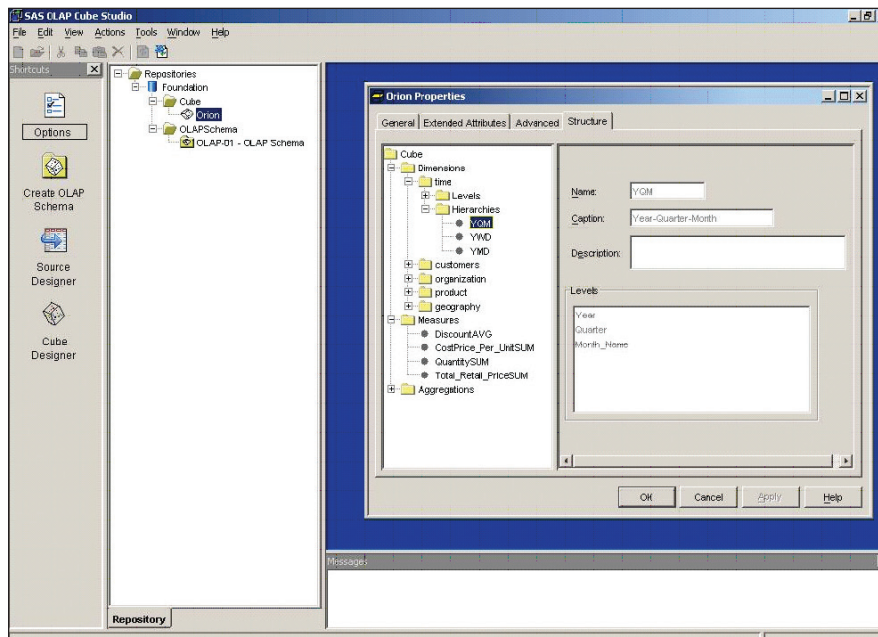
In addition, data designers can define OLAP data sources with a programmatic approach using a SAS procedure. A Java-based wizard facilitates designing, creating, updating and tuning cubes. The wizard is available through SAS OLAP Cube Studio, as well as within SAS Data Integration Studio.

Flexible data structures facilitate real-world use

SAS OLAP Server includes special features to facilitate use in real-world business scenarios. These include temporal dimensions for easily calculating time-based measures such as year-to-date values or opening-period values for financial analysis, ragged and unbalanced hierarchies for easily modeling and reporting on real-world hierarchies, and parallel drill hierarchies for analyzing along different drill paths within a single dimension.

Centralized metadata

All definitions of OLAP data sources are stored in a centralized repository on the SAS Metadata Server. The SAS Metadata Server can significantly reduce the costs of running a SAS environment because it provides a single point where administrators can maintain the entire platform and a central point where applications can search for information about available data sources.



With an easy-to-use graphical interface, SAS OLAP Cube Studio lets you quickly design cubes, dimensions and hierarchies.

The SAS Metadata Server also maintains central security information required to prevent unauthorized access to information. Access rights can be set for entire OLAP data sources or for individual dimensions using user- or group-specific conditions.

Cube management

The SAS OLAP Server owns a cache that stores frequently accessed cubes in memory. Once a query accesses a cube, the cube's regions affected by the query remain in memory, enabling subsequent queries to access these cached regions quickly in memory without having to access the slower disk-based storage.

Dimensions can be shared among cubes for consistency and efficient updates. An OLAP administrator can define a set of dimensions once and then reference the set from other cubes. This saves processing time and storage space as separate dimensions are not needed for each cube. In addition, administrators can update the shared dimension once and apply it to cubes sharing that dimension.

System administrators can use performance reports generated by SAS OLAP Server's Application Response Measurement (ARM) system to fine-tune cache sizes and cube structures according to the usage patterns of an OLAP data source. SAS OLAP Server can be monitored through ARM classes. ARM result sets can be transferred to SAS or third-party clients, such as the HP-UX Workload Manager, for monitoring activity and performance.

Sophisticated, language-aware data operations

When designing cubes, select local and collate options for SAS OLAP cubes that use a single language. Multiple lan-

Key Features

Powerful, industrial-strength, multidimensional database

- Designed to handle large volumes of business intelligence data.
- Supports multidimensional (MOLAP) and hybrid (HOLAP) data stores.
- Routines enable SAS procedures to query the SAS OLAP Server using SQL Pass-Through with reach-through from multidimensional data to the underlying detailed data.
- Native support for open industry standards:
 - OLE DB for OLAP.
 - Fully compliant implementation of MDX query language for communication with third-party clients.
- With SAS software's open architecture, cubes can be surfaced via the Web, through Microsoft Excel as a pivot table, as well as through SAS or other standards-compliant browsers.

Fast processing of queries

- Multithreaded query engine.
- Parallel storage allows data to be spread across multiple-disk systems, providing parallel-read access for query threads.
- Cluster management for load-balanced servers.

Tunable optimization of summarized data conserves system resources

- Seldom accessed data can be stored in compressed format.
- Frequently queried data can be cached in memory for faster access.
- Dimension hierarchies and metrics (metadata) are stored in the cube itself, while data remains in the database and is only queried at run time, reducing data duplication and cube processing time.

Easy-to-use GUIs for building and maintaining OLAP cubes

- SAS OLAP Cube Studio, a standalone cube-building tool, makes it easy to define data dimensions and aggregations.
- SAS OLAP Cube Studio is integrated with SAS Data Integration Studio, a powerful extract-transform-load process designer, so you can build cubes from cleansed data sources and load them for later use and updating.
- Java-based wizard facilitates designing, creating, updating and tuning cubes, and is accessible from either SAS OLAP Cube Studio or SAS Data Integration Studio.
- Ability to create a set of dimensions once, then share those with other cubes, providing consistent hierarchies and saving system resources. Update the set and apply across shared cubes.

Flexible dimensions support real-world OLAP problems

- Temporal dimensions calculate time-based measures, such as year-to-date values or opening-period values.
- Ragged and unbalanced hierarchies provide modeling of dimensions equivalent to real-world structures.
- Parallel drill hierarchies are available for analyzing along different drill paths within a single dimension.

Centralized metadata with security credentials preserved on drill-through

- All metadata (data that describes multidimensional data sources, their dimensions, levels and measures) is stored in a single, open location – the SAS Metadata Server. SAS OLAP Server is fully integrated into the open security model maintained in SAS Metadata Server and used across all SAS products and solutions.
- User credentials persist and are passed during drill-through operations.

Multiple-language support

- Caption tables enable use of translated captions.
- Support for natural language format for measures.
- Sophisticated, language-aware ordering of data.

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guages are supported in captions, drill-through tables and linguistic sorting.

Multiplatform support for enterprise scalability

SAS OLAP Server is available on any major hardware platform in the market, ranging from Microsoft Server 2008, HP-UX, AIX and Solaris, up to z/OS on mainframes, and it is engineered to take advantage of multithreaded processing and parallel I/O channels.

Using SAS/ACCESS® interfaces, SAS OLAP Server can create cubes based on any data stored in any kind of database on any operating system. With full compliance for Microsoft's OLE DB for OLAP, SAS OLAP Server delivers enterprise-level scalability and outstanding query performance to a wide variety of clients.

Key Features (continued)

Powerful interfaces for OLAP server monitoring

- All maintenance operations are executed with the OLAP procedure, which is used by the Java-based wizard, and is available to standard SAS programs.
- Define OLAP data servers and their configuration parameters, including performance logging options.
- Manage clusters to optimally balance server loads.
- Application Response Measurement (ARM) classes used to monitor all server activities. Result sets can be transferred to SAS or third-party clients, such as the HP-UX Workload Manager, to monitor activity and performance.

SAS® OLAP Server System Requirements

To learn more about SAS OLAP Server system requirements, download white papers, view screenshots and see other related material, please visit www.sas.com/olap.