§sas.

SAS® ENTERPRISE BI SERVER

Fast deployment, simple integration and consistent data

THE POWER TO KNOW®

SAS® Enterprise BI Server helps organizations overcome the deficiencies and complexity evident in most business intelligence (BI) deployments while reducing the cost of ownership. It provides a solid basis for vendor consolidation and BI standardization, enabling IT to focus on more effectively aligning with the business. At the same time, it delivers end-user autonomy within a well-defined IT governance framework.

By providing an integrated, complete portfolio of BI capabilities, SAS Enterprise BI Server makes the need to maintain multiple BI solutions and endure their weaknesses a thing of the past. SAS BI is unique because it:

• Eliminates the need for constant, ongoing integration of technologies by providing one consistent, fully integrated BI solution.

• Eliminates the need to maintain data, security and metadata in several places and formats through a single, shared metadata server that gives access to shared metadata, business rules, data and security definitions throughout the entire BI solution.

• Eliminates the daily struggle for compliance by building it into the solution via integrated metadata. This provides consistent, reliable results that can be automatically traced back to the source.

• Eliminates the need for constant and wide-scale IT involvement to deliver information by enabling end-user autonomy within a well-defined and centrally controlled IT governance framework.

With SAS, organizations reduce the costs of having effective and reliable BI, ensure a future of innovation rather than integration, and free IT time and resources. This enables IT to align with

the business more effectively and meet business needs faster than ever at the lowest overall cost.

Key benefits

• **Faster, better decisions aligning IT and business.** IT managers deploying SAS Enterprise BI Server can leverage previous investments, integrate BI quickly into the existing environment and provide the information needed to drive the business forward as quickly as possible. This, with the added benefit of freeing resources from tedious tasks to focus on projects considered strategic to the business, ensures that IT is a driving force behind their organization's success.

• **Data consistency and control.** Through centrally managed shared metadata, data and security, SAS Enterprise BI Server delivers consistent representation and control of information by providing reliable results that easily can be traced back to the source. This alleviates the repetitive task, prevalent in most BI solutions, of validating which reports or results are correct. In addition, integration with Microsoft Office allows IT to retake control of ad hoc Excel use without impeding users' desires for this familiar environment.

• **Vendor consolidation and standardization on a comprehensive BI solution.** SAS Enterprise BI Server ensures that IT has the breadth of BI capabilities to meet the needs of every type of user: managers looking for dashboards; groups that want to view or build reports on the Web; analysts or power users who need advanced data exploration; and IT staff who need to deploy, manage, control and maintain the entire solution.

Product overview

SAS Enterprise BI Server enables IT to deliver extensive BI capabilities on top of an open and integrated BI infrastructure that is easy to integrate into existing environments, deploy and maintain. Capabilities include portals/dashboards, report viewing, report building, advanced data exploration, Microsoft Office integration, guided analysis, metadata management, guided SAS OLAP cube creation and application development. As a result, users at all levels are able to quickly and easily obtain the information needed to make decisions at the lowest overall cost to the organization.

Portal

SAS Enterprise BI Server provides a secure, role-based portal that provides personalized interaction with information. As a result, the portal can be used to present information from the boardroom down. The portal provides a highly scalable and easy-to-use interface to help users quickly find the information they need. Complete with metadata search and a centralized metadata repository, consistent results and access to information are assured.

Dashboard

SAS Enterprise Server provides a role-based, secure, customizable and extensible dashboard that is easy to administer and easy to use. It provides links to reports and analytical results from SAS, SAS Strategic Performance Management scorecards and objects, externally generated data and virtually anything addressable by a Uniform Resource Identifier (URI). The point-and-click administration means easy "data to dashboard" capabilities in seconds. The dashboard displays KPIs at a glance to help users monitor anything that drives organizational performance. Based on permissions set up by IT, users can delve deeper into analysis from the portal using

SAS BI tools and analytics products to gain insight into what caused the problem and how to fix it.

Web-based report viewing

SAS Enterprise BI Server allows users to view reports in a self-service manner while respecting the need for IT to maintain control of the underlying data and security. Once deployed, large numbers of users, including those with limited technical skills, can quickly open, view and interact with pre-created and secured reports to answer their business questions. Report interaction enables multiple views of the data (including top 10 lists, subtotals and totals) to support the data manipulation needs of most business users. It also provides drill-down and other OLAP analysis capabilities as well as other report-traversing capabilities.

Web-based advanced data exploration

SAS Enterprise BI Server supports more specialized users in their quest for discovering hidden nuggets of information. It allows them to look at large volumes of data quickly from multiple angles, easily manipulate the data, add new data, modify the view of the data and interact with the data in many ways. Users are able to comprehensively examine all of the factors under review, allowing for effective decision making—all under the control of IT but without the need for constant use of IT resources. And because the advanced data exploration technology is part of an integrated environment, the results of the data exploration can be integrated seamlessly into standard reports that then can be viewed and explored by less advanced users. This advanced environment also allows the combining of multidimensional data with the geo-spatial mapping capabilities of ESRI for highly visual representations of data explorations.

Microsoft Office integration

SAS Enterprise BI Server enables users to transparently leverage the power of SAS data access, reporting and analytics directly from Microsoft Office via integrated menus and toolbars. Business users can analyze data that exceeds the data size limitation of Microsoft Excel and seamlessly surface results to decision makers using Word, Excel and PowerPoint. Recipients can also update embedded results from Office documents as needed. Because the data is maintained centrally, IT can oversee and validate the data being used for reports, ensuring that the data is current.

Web-based report building and distribution

SAS Enterprise BI Server provides report-building capabilities that match user skill levels to speed the creation of reports. Specialized groups or business users can build reports within constraints set by IT. SAS Enterprise BI Server delivers extensive presentation-layout capabilities and strong report-authoring capabilities. Report authors can use data from multiple data sources (relational or multidimensional), define custom calculations and filter combinations, as well as integrate SAS' analytic results into a single report. Using a comprehensive suite of graphical data presentation options, users can create and easily incorporate charts and plots in reports. Report authors can easily format, design and create business graphics and apply corporate design standards to deliver comprehnsive reports. Using role-based definitions for users, IT centrally manages the administration of report authors and viewers as well as the data that report authors can use when building reports. SAS Enterprise BI Server includes report bursting capabilities that enable easy distribution to a broad audience. Bursting allows users to create a single report, create guidelines on who has access to content and distribute the report based on assigned groupings.

Query and analysis

SAS Enterprise BI Server's query and analysis capabilities are tailored for differing skill levels, enabling users to access and query data in an autonomous fashion without having to learn new skills or engage IT. SAS can access virtually any data source with the power and interoperability to query across multiple databases and platforms.

Guided analysis

SAS Enterprise BI Server empowers advanced users with an environment for various types of analyses, data manipulation and visualization. These results then can be incorporated seamlessly in Web-based reports, the portal/dashboard or Microsoft Office documents. This interface provides users with the ability to further leverage SAS analytics.

Business metadata management

SAS Enterprise BI Server gives IT-savvy users and data architects the opportunity to translate data structures into terms that business users can understand and use, and define business rules in a consistent manner. It is through these data structures that IT can control which data can be retrieved, as well as the volume of data that can be retrieved. This ensures that IT maintains control without infringing on the users' flexibility and productivity. SAS business metadata allows the use of business logic in addition to SQL to derive needed data.

Centralized metadata and single point of management

SAS Enterprise BI Server delivers an open, integrated metadata server that allows for sharing of metadata across the entire BI solution from a centralized repository. This ensures consistent security, information and business rules. Shared metadata reduces maintenance issues and increases interoperability between applications, resulting in lower cost of ownership. In addition, SAS Enterprise BI Server includes a single point of management that allows IT to manage the whole environment from one location. This significantly reduces administration and maintenance overhead normally associated with such a comprehensive solution.

OLAP cube creation

SAS Enterprise BI Server provides fast, easy and guided OLAP cube creation. It includes a highly scalable, integrated and open OLAP server to provide the best possible support of the various interfaces that can use multidimensional data to deliver timely answers to business questions. Also included is a specific interface that makes it easy to build and maintain SAS OLAP cubes.

Business visualization

SAS Enterprise BI Server provides extensive and robust visualization capabilities that help organizations fully leverage information assets through dynamic, interactive visualization environments, a comprehensive library of graphics for presentations, and customizable graphic generation. Business visualization delivers insights and surfaces relationships that are not easily discovered in tabular formats. Business users can interact with visual environments to explore ideas, investigate patterns and discover previously hidden facts through visual queries. Providing business users with this level of self-sufficiency reduces the over-dependence on IT to service ad-hoc requests, which require point solutions that are not integrated with core BI investments.

Application development environment

SAS Enterprise BI Server delivers a comprehensive application development environment that enables IT to develop applications quickly and cost-effectively within the deployed framework.

With SAS Enterprise BI Server, users can go from data to dashboards in just seconds.

Key Features

Portal/dashboard

- Provide a zero-footprint, Web-based interface.
- Provide point-and-click wizards to enable users to create, delete and reorder pages, add and remove content, and modify page layout to organize content in their personal workspaces.
- Extend portal capabilities with a comprehensive set of portlets, extendable to include new portlets created in-house.
- Provide a comprehensive search facility to locate all content types within the security confines set by IT.
- Display customized graphical or tabular dashboards so that users easily understand key indicators. Also, link to more detailed information.
- Access various content types easily, including reports, advanced data explorations and other structured and unstructured content from one location based on IT security restrictions.
- Link to reports and analytical results from SAS, SAS Performance Management scorecards and objects, externally generated data and virtually anything addressable by a URI.
- Provide data to dashboard capabilities in seconds with point-and-click administration.

Web-based report viewing

- Provide a zero-footprint, Web-based, interactive reporting interface for the masses.
- Load, organize, view and save reports based on OLAP cubes and/or relational data from one or more data sources.
- Provide multidimensional data exploration: drill, rotate, filter, reorganize, sort, toggle totals, export to various target formats and more.
- Provide relational data exploration: rotate, filter, reorganize, sort, toggle totals, export to various target formats and more.
- Print reports to PDF or export formatted tables and graphs, or simply data, to Excel.
- Surface geo-spatial mapping information and the results of geo-spatial analyses into reports.
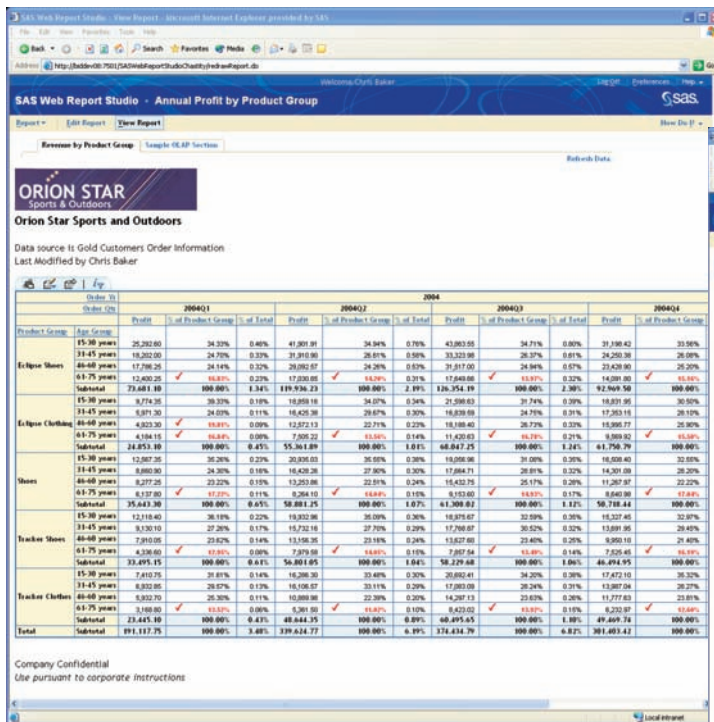
SAS Enterprise BI Server's report-viewing interface supports multiple views of the data. Technical users or business users can build reports within constraints set by IT using data from multiple sources and integrating SAS' analytic results.
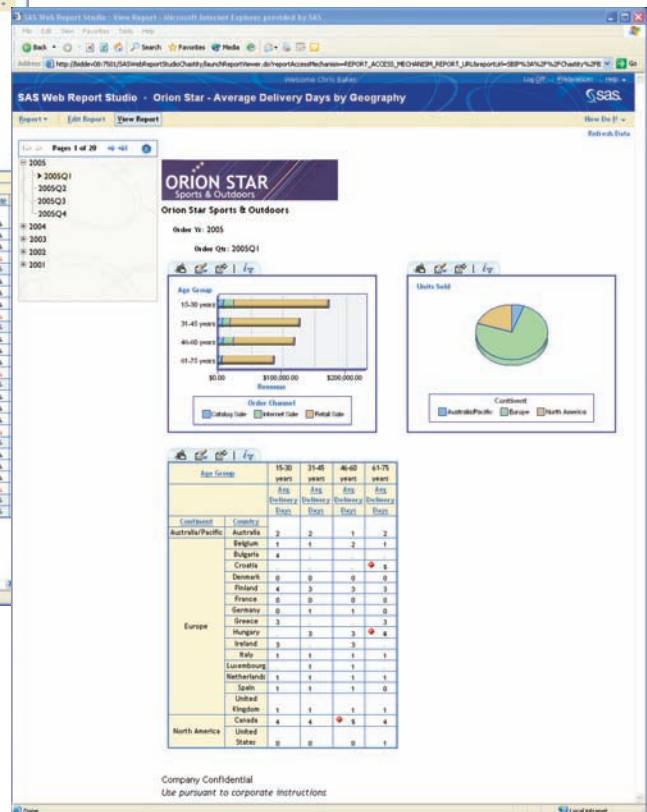
Web-based advanced data exploration

- Provide a zero-footprint, Web-based, interactive interface for advanced users looking for new views that define answers to questions.
- Explore and analyze OLAP cubes.
- Change business queries by selecting business items to be displayed from a sidebar.
- Slice and dice multidimensional data using a special slicer dimension and by applying filters on any level of a hierarchy.
- Drill up/down through hierarchies or expand/collapse entire levels.
- Explore data following ragged or unbalanced hierarchies that model true hierarchies as they are experienced in business.
- Obtain detailed information for every cell (drill through) with the option to export it to Excel.
- Rank multidimensional data to identify top performers or losers (ties can be handled).
- Display totals and subtotals on cross tables.
- Calculate new measures and add them to any view.
- Use conditional highlighting to provide visual highlight information inside tables and graphs depending on conditions defined by the user.
- Use text formatting, cell formatting, text replacement with fixed strings or images, and displaying of images next to cell values.
- Use maps from ESRI's ArcGIS Server to display OLAP data just like any other view on the data.
- Synchronize drill and display for map and table view.
- Drill on regions in maps to visualize information from an OLAP data source in real time, enabling a zoom down to the level of individual houses on a road.
- Drive the color coding of maps by data from the OLAP data source.
- Save views as SAS Web Report Studio reports, Microsoft Excel spreadsheets or Adobe PDF documents. Share views with other advanced data exploration users.

Microsoft Office integration

- Provide integration with Microsoft Word, Excel and PowerPoint through a plug-in.
- Provide offline viewing of previously created results.
- Turn Excel back into an application rather than an ad hoc data store.
- Access data from any centrally IT-defined enterprise data source.
- Refresh the data at the click of a button from any central enterprise data source defined by IT.
- Cycle through data that exceeds the 65,536 row limitations of Excel. Server-side buffering ensures large data sources are never transferred as one to the client.
- Use all the capabilities of Excel on the data displayed but have the ability to always get access to the latest view of information.
- Embed SAS derived intelligence and information into Word and Excel.
- Deliver results as: RTF (Rich Text Format), HTML with Word, raw data (CSV), or HTML into Excel for further manipulation with native Office functionality.
- Manipulate pivot tables to illustrate multidimensional data from various sources
- Deliver graphics results directly into Word, Excel or PowerPoint in any of these formats: ActiveX, GIF, JPEG or PNG.
- Refresh tables and charts automatically to get the latest view of information, pulling from current data that is centrally maintained.
- Enable distribution of embedded results on demand using native Microsoft Office functionality.
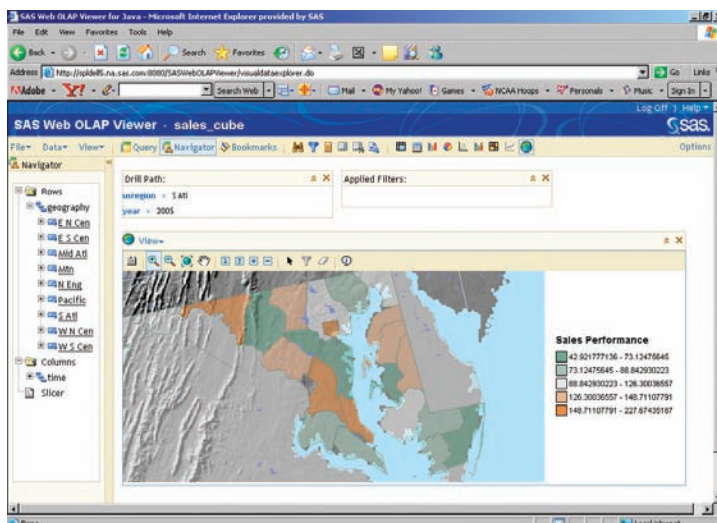
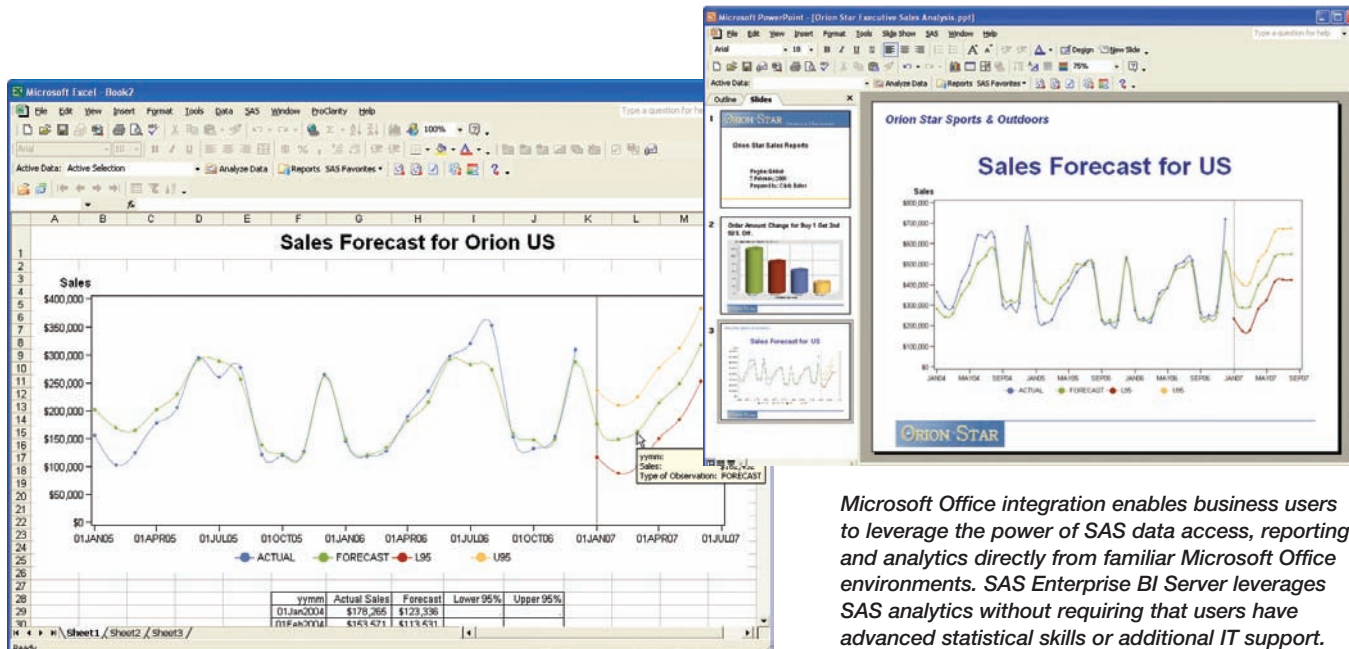*Unlike other BI vendors, SAS offers OLAP capabilities that are well integrated into the Web reporting environment. SAS Enterprise BI Server includes a multidimensional data store that provides fast access to presummarized data generated from a variety of sources controlled by IT. A Web-based OLAP interface lets business users look at data from multiple angles, view increasing levels of detail, and add linked graphs or maps.*

Web-based report building and distribution

- Provide a zero-footprint, Web-based, interactive report-building interface for report authors. (IT controls who can have access to report-building capabilities.)
- Build reports based on OLAP cubes and/or relational data from one or more data sources.
- Build reports that match user skill levels and the requirements of the information.
  - Create a quick view of data that lets you select a data source and display the default view in one simple step.
  - Create simple reports. Wizards guide novice report authors through report creation:
    - Choose data items needed from a non-technical, IT-provided view known as an information map.
    - Select predefined filters; set groupings and sorting; override default formatting.
    - Define report layout: add tables, graphs, table of contents, footers and headers.
    - Create custom calculations and filters.
  - Create more comprehensive reports with powerful layout capabilities for experienced report authors and specialized reports:
    - Choose from a gallery of common predefined layouts and custom templates for a quick start, or begin from a blank page and add tables, graphs and text manually.
    - Define multiple report sections with data from multiple data sources.
    - Precisely position and size graphs, tables, text, images, etc., with advanced layout capabilities.
    - Use advanced formatting for all graphs (size, style, decoration, data, legend placement, etc.).
    - Use advanced formatting for text (font, size, color, alignment, etc.).
    - Use dynamic text insertion to show information such as report creation date and prompt values as appropriate.
    - Define custom calculations, filters and aggregations.
    - Link reports:
      - Add hypertext links on text, images, tables, graphs and group breaks.
      - Add links to other reports or Web pages.
    - Use conditional highlighting to define exceptions:
      - Use conditional highlighting on tables and graphs.
      - Change text format and background.
      - Add or replace with image or text.
    - Use a variety of charts: bar/3D bar, pie/3D pie, line, scatter and more.
- Share reports with large and diverse audiences through report bursting capabilities.
- Save predefined reports and information with report archiving.

Query and analysis

- Provide query capabilities for all levels of users across multiple BI interfaces.
- Provide wizard-driven query capabilities within the user reporting environment.
- Remove complexity of data structures from non-technical users.
- Allow queries to be performed across multiple data sources.

Microsoft Office integration enables business users to leverage the power of SAS data access, reporting and analytics directly from familiar Microsoft Office environments. SAS Enterprise BI Server leverages SAS analytics without requiring that users have advanced statistical skills or additional IT support.

Guided analysis

- Provide a .NET-based native Windows application for programmers, analysts or more advanced users.
- Provide a large number of prebuilt tasks over a wide variety of topics.
- View OLAP cubes from SAS or from other vendors that support OLE DB for OLAP, and the MDX standard, such as SAP InfoCubes.
- Use slices of OLAP cubes for further analysis.
- Easily incorporate geo-spatial data into analyses.
- Query and subset data graphically from any accessible source or write SQL/MDX.
- Package results into SAS Stored Processes that can then be used in all SAS BI interfaces and Microsoft Office to gain access to anything SAS can do, allowing work to be distributed without IT involvement while maintaining security.

Business metadata management

- Map physical data structures to business terms in an easy-to-use interface.
- Access data from virtually any data source including multiple sources at once.
- Define consistent business views of the data for relational tables and OLAP cubes.
- Create one business view over disparate database management systems for a combined set of query attributes.
- Combine data from multiple sources.
- Control size of result sets that can be returned to avoid long-running queries.
- Capture consistent business rules and specify allowable options and prompts for end users.
- Centrally manage metadata.
- Create and manage repositories, control the metadata server, define access controls, and register and manage users and groups through a single interface.

Business visualization

- Allow users to summarize and present data using a variety of highly customizable charts, including: vertical and horizontal bar, pie, donut, subgrouped pie, star and block charts. Allow users to generate scatter, line, area bubble, multiple axis and overlay plots.
- Generate static or dynamic interactive (Java or ActiveX) charts and graphs.
- Generate graphs in a variety of static forms (Microsoft Windows bitmap and metafile, enhanced metafile, device independent bitmap, JPEG, GIF, TIF, PS, EPSI, PNG, PBM) that can be inserted in third-party applications by SAS through interfaces or manually.
- Provide highly interactive business graphics, including animated bubble plots, 3D scatter plots, trellis plots, summary charts and needle charts.
- Visually query and filter data for interactive tabulation and ability to rearrange data at will.
- Provide visual analytics, including interactive simulations and optimization and state-of-the-art time series modeling.

Application development environment

- Includes a comprehensive stand alone development environment (including a Java IDE) that provides all required SAS components on one machine for easy development and testing.
- Incorporates all SAS APIs and components for easy reuse in corporate standard development environments.
- Allows for the easy customization and extension of an organization's business intelligence environment.

SAS Enterprise BI Server includes an interface that makes it easy to map complex data structures into terms understood by business users.

SAS® Enterprise BI Server Technical Requirements

Client environment

All SAS Business Intelligence clients run in a Windows desktop environment.

- Windows (x86-32): Windows 2000 Professional, Windows XP Professional
- Internet Explorer 5.5 and 6

Server environment

SAS Servers, including Base SAS and SAS Metadata Server, can be installed on one or more hardware systems in a multi-tier configuration.

- AIX: Release 5.1, 5.2, 5.3 on POWER
- HP-UX PA-RISC: Release 11i Version 1, 2 and 3
- HP-UX Itanium: Release 11i Version 1, 2 and 3
- Linux for Intel (x86-32): Red Hat Linux 8.0, RHAS 2.1, RHEL 3.0 and 4.0, SuSE SLES 8 and 9
- Linux for Itanium (64-bit): Red Hat RHEL 3.0
- Solaris on SPARC: Version 8, 9, 10
- Solaris on x64: Version 10
- Windows (x86-32): Windows NT 4 Server, Windows 2000 Server, Windows Server 2003
- Windows (on Itanium): Windows Server 2003 for Itanium-based systems
- z/OS: Version 1 and higher

Web tier

SAS includes a reference implementation of Apache Tomcat. Sites can optionally choose to license WebLogic or WebSphere directly from the vendor:

- BEA WebLogic (AIX, HP-UX Itanium, Solaris, Windows 2000 Server, Windows Server 2003).
- IBM WebSphere (AIX, Windows 2000 Server, Windows Server 2003).
- Tomcat (AIX, HP-UX Itanium, Solaris, Windows 2000 Server, Windows Server 2003).

Optional software

- ESRI ArcGIS 9.0 Server with Service Pack 2 is required for a GIS-enabled SAS Enterprise BI Server.
- Platform Suite for SAS from Platform Computing is available for SAS BI Server and SAS Enterprise BI Server.
- SAS Enterprise Guide and SAS AppDev Studio are optional components of SAS Enterprise BI Server.

A solid business intelligence provider will have a fully integrated solution that can exchange information between its various clients and shared metadata. In addition, your BI vendor of choice should provide a number of expected capabilities. The table below provides a high-level overview of the capabilities you should look for when evaluating a BI vendor.

CAPABILITY	PROVIDED BY SAS
Portal and dashboard capabilities	YES
Web-based report viewing — relational	YES
Web-based report viewing — OLAP (not just linked reports)	YES
Web-based report viewing relational and OLAP through one client	YES
Web-based report building through a zero-client interface	YES
Web-based report editing through a zero-client interface	YES
Web-based advanced data exploration (OLAP exploitation) and the ability to push results back to report building and viewing environments	YES
Integration with Microsoft Office	YES
Guided analysis and access to analytics capabilities	YES
Query and analysis as a pervasive part of all interfaces	YES
Query capabilities that extend beyond SQL	YES
Advanced visualization	YES
Application development environment	YES
Business metadata	YES
Shared metadata across all clients	YES
Single metadata management interface for the whole solution	YES
One shared, centrally-managed security model for the whole solution	YES

THE POWER TO KNOW®