White Paper

BusinessObjects Planning XI

- *Technical Overview*

Business Objects™

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Introduction

BusinessObjects Planning is a tightly integrated set of applications that collectively support an organization's diverse planning, forecasting, and reporting needs. By providing a comprehensive system for creating business models, deploying them to users for their input, tracking their progress, consolidating the results, and reporting on actual and plan data, BusinessObjects Planning can meet the needs of each of the various constituencies within your organization—finance, IT, and end users. This white paper describes the architecture of BusinessObjects Planning and highlights the capabilities you are likely to focus on during your technical evaluation.

BusinessObjects Planning Overview

BusinessObjects Planning XI is a multi-tiered application comprised of a Microsoft Excel user interface, a database backend, and the support of application and web services. Each BusinessObjects Planning implementation is configured to meet your unique requirements.

BusinessObjects Planning uses Microsoft Excel for many layout and calculation tasks, while centralizing and controlling Excel's use within the application. Excel was chosen for its rich formatting, flexibility, and common use across most organizations. The centralized database and file system ensures consistent and secure information delivery across all users. Users can access the system in a variety of ways to suit the needs of each type of user, including desktop, internet, and disconnected modes. In each of these access options, BusinessObjects Planning takes advantage of a distributed processing model, making it inherently scalable.

Network traffic is minimized by intelligent local caching during both input and reporting processes. Network communication is TCP/IP or SOAP based and database access is via OLE-DB. In addition, several browser-enabled deployment options are available.

The current release of BusinessObjects Planning is version XI. Various components of BusinessObjects Planning use C#, .NET, Visual C++, Visual Basic, VBA, Java, and SOAP technologies.

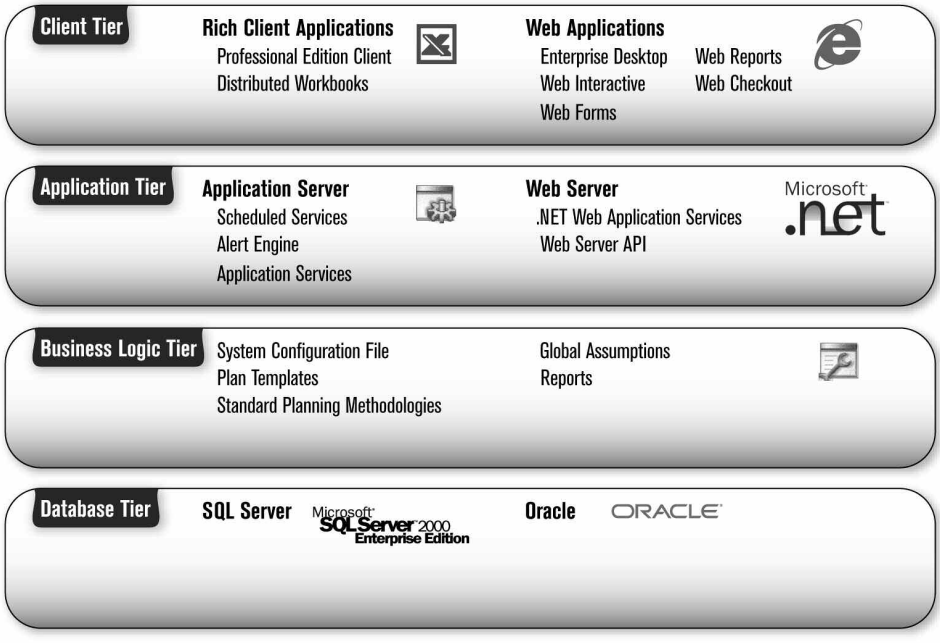
The system administrator (known as the "Master System User") is typically a finance functional user. In our experience, both finance and IT groups agree that empowering finance to take responsibility for analytic systems reduces the impact on scarce IT resources and keeps IT from being on the "critical path" to successful ongoing use.

This paper should be reviewed in conjunction with the *BusinessObjects Planning XI Technical Requirements* document which defines hardware and software specifics.

System Architecture

BusinessObjects Planning is a multi-tier system which includes a:

- ►Client tier
- ►Application tier
- ►Business Logic tier
- ►Data tier



Client Tier

Many organizations have a diverse user base—a cluster of users in a central office and other users working from remote offices or disconnected from the network altogether. BusinessObjects Planning offers several access options designed to fulfill the unique needs of each type of user. Due to its open architecture, BusinessObjects Planning can accommodate each of these access methods without requiring separate system setup or maintenance. Each access method uses the same data files and database, and each is subject to the same security.

Desktop Client Applications

Professional Edition

The Professional Edition is the desktop client method of access for BusinessObjects Planning, used by administrators and local end users who can access the system via a high-speed local area network (LAN). Users who require administrative and report writing capabilities must access the system using the Professional Edition. The Professional Edition can also be used as an effective end-user application, by limiting user functions through security settings as appropriate.

A Professional Edition client installation must be performed on *each* client PC. This install can be performed silently using SMS or other similar software distribution technologies. When subsequent BusinessObjects Planning server upgrades are performed, the Professional Edition clients will auto-upgrade. Microsoft Excel must be installed on the client in order to support the Professional Edition.

The Professional Edition can also be deployed via terminal services. In this case there is no client-side footprint beyond the connection to the terminal server.

Distributed Workbooks

Professional Edition also supports a distributed mode known as distributed workbooks. Administrators can distribute workbook packages to offline users via email or by saving to a specified network location. These users then install a limited version of the Professional Edition code allowing them to work on plans in a distributed mode. When finished, the distributed users return the plans to the administrator, who collects the plans back into the central repository. Microsoft Excel must be installed on the client to support distributed workbooks.

Web Applications

Web Checkout

Web Checkout enables users to interact with their plans in a disconnected mode—for example, a manager who travels regularly and wants to modify his or her plan while away from the office. Web Checkout allows users to connect via a web browser to the central application server, select one or more plans to check out, and then have those plans delivered (via the intranet or internet) to their local desktops. Once the plan is delivered, users can disconnect from the application server and use the application locally. When completed, the user reconnects to the planning application server via the browser, and checks in the completed plan. The updated data files are then automatically returned to the central repository.

Web Checkout users need to have Microsoft Excel installed on their local computer. The first connection with the application server will automatically install the Web Checkout code. Subsequent connections will not redownload any program or data files unless they have changed in the interim.

Web Forms

Web Forms is a DHTML client that requires no client-side footprint beyond Internet Explorer. No installation is required on the user's desktop and Microsoft Excel is not required on the user's computer.

Web Forms translates your plans to web-based (HTML) data-entry forms. Users can enter their planning information directly into these forms via their web browsers. When the user saves his or her data, Web Forms will seamlessly update the underlying Planning database and files.

Web Interactive

Web Interactive is a Java-based client that allows users to perform planning within a browser. Microsoft Excel is not required on the user's computer. The Java applet reads and writes the same data files used by other system users. Web Interactive closely duplicates the end-user functionality available when editing plans in the Professional Edition.

The Java applet requires a one-time download (8MB) which occurs when the user first accesses the system. The applet is not downloaded during subsequent visits to Web Interactive unless the administrator has upgraded the Planning web server. If necessary, Planning will also automatically download and install the Sun Java JRE (Java runtime environment). Both the JRE and Java applet can be pushed and installed silently on client machines.

Web Reports

Web Reports is a DHTML client that allows users to view and drill reports using a browser. Users log onto the Web Reports system via a browser, and click on a report that they want to view. The Planning application server receives the request, refreshes the report, and returns the results to the browser. Users can interactively drill and filter the report as desired, to explore variances and answer ad hoc questions. In addition to viewing reports in HTML format within the browser, users can choose to render reports in either Excel or PDF format for distribution to a wider audience.

Web Reports allows you to access and drill into any report authored in BusinessObjects Planning via the web. Whether a user is connected via the network or via Web Reports, the information is queried directly from the BusinessObjects Planning database. Reports immediately display the results of any changes that users have made to their plans.

Web Reports is a live access option that does not require any client-side Planning software installation. Excel and Adobe Reader are required on the client machine if users want to view reports in Excel or PDF formats.

Enterprise Desktop

Enterprise Desktop provides a single point of access for all access options and licensed Planning applications. Using the Enterprise Desktop home page, users can select from available BusinessObjects Planning systems, launch access options, and view system-wide bulletins and other administrator-defined information. With Plan Dashboarding, users can also view dashboards and receive alerts via Enterprise Desktop. Users can open the Professional Edition from Enterprise Desktop, if the Professional Edition client installation has already been performed on the local desktop.

Use of Enterprise Desktop is not required. If desired, users can directly open specific web access options without going through Enterprise Desktop.

Client Summary

The following table compares the various access methods in the client tier.

User options

Comparison Point	Professional Edition		Web Interactive	Web Forms	Web Checkout	Web Reports	Distributed Workbooks
	Network	Terminal Server/Citrix					
Provides full functionality	✔	✔					
Work while disconnected					✔		✔
Accessible via low-bandwidth connection		✔	✔	✔	✔	✔	No connection required
Applies user-level security settings	✔	✔	✔	✔	✔	✔	Security is set on the distributed workbook package, not the user
Requires Excel installed on user PC	✔	Excel installed only on terminal server			✔	Only for XLS view	✔
Requires installation of Planning code on client machine	✔	Planning installed only on terminal server	✔		✔		✔

Bandwidth Notes

Web Checkout, Web Forms, and Web Interactive use bandwidth in "burst mode." Initial data retrieval and each subsequent "save" consumes bandwidth to the extent that it is available, but the operation is of short duration. Web Checkout requires no bandwidth except during those two processes.

Web Interactive and Web Forms require a persistent connection, but no data is transmitted during most of the session. The user experience is real-time and the only interaction with the server is during the launch and save. Typical wait times for these operations can range from 5-30 seconds depending on available bandwidth. Latency is inversely proportional to bandwidth—it will always take twice as long to load files retrieved over a connection that is only 50% as fast, given a consistent server load. The BusinessObjects Planning Technical Requirements document suggests minimum available (not already consumed) bandwidth based upon typical real-world experience.

Application Tier

Application Server

BusinessObjects Planning uses the Windows Server platform to provide Planning application services to users across all deployment methods. This service manages user access to the application as well as the underlying planning data. For web users, it manages the distribution of plans and reports to and from end users.

The Planning Application Server includes a Scheduler component which can automate all of the periodic tasks that need to be accomplished in the system. This includes activities such as importing data from external systems and distributing refreshed reports to end users.

The application server logs various activities to a daily log file. The server can be configured to control the level of detail that is maintained in this log. Under normal circumstances the system is configured simply to log errors and warnings. However, additional detail can be logged if there are system performance issues that you'd like to monitor (long running database queries, for example). This log is available for monitoring either by your system administrator or by third-party systems monitoring tools.

Web Server

BusinessObjects Planning leverages Microsoft's internet information server (IIS) for the web server tier. All but one of our web applications are ASP.NET applications developed on the .NET 2.0 framework. This technology provides the highest levels of scalability and security. Since .NET is a no-added cost component to the operating system, it allows for reduced total cost of ownership over the life of the application.

Organizations with a heightened concern for security can leverage the secure HTTP (HTTPS) protocol between client browsers and the web server.

Web Service API

Planning's web server includes a web services API that can be used to programmatically drive Planning Scheduler functionality. This is useful when you want to establish a seamless integration between BusinessObjects Planning and another enterprise system in your environment. For example, you may be using a third-party tool to periodically import data into the Planning database. Upon completion of this task, you may want Planning to refresh and distribute various reports. This "call" to the Planning scheduler to perform a specific task can be accomplished via the API. There is no need to manually launch this task within Planning.

Numerous administrative tasks can be accomplished through the API including:

- ►Uploading data
- ►Recalculating business models
- ►Refreshing and distributing reports
- ►Performing database maintenance tasks
- ►Copying data

Business Logic Tier

The Business Logic tier is comprised of files that contain system configuration information and business logic. These files are primarily represented by two BusinessObjects Planning components, the User Directory, and the Planning Deployment Directory.

User Directory

The User Directory holds the customer-specific and application-specific files necessary to perform a planning activity, such as planning templates, standard planning methodologies, global assumptions, and reports. These files define the business logic used in the application.

A BusinessObjects Planning implementation may have multiple User Directories that serve different planning purposes. Each combination of User Directory and database is configured as a "system" in the BusinessObjects Planning implementation.

Planning Deployment Directory

The Planning Deployment Directory contains the enterprise-wide configuration file for your BusinessObjects Planning installation. All access options look to this directory (either directly or via the application server) to determine available systems, security integration options, and other global configuration settings. In addition to holding the configuration file, the Planning Deployment Directory also manages the automated upgrade of Professional Edition clients.

Data Tier

BusinessObjects Planning supports either Microsoft SQL Server or Oracle relational databases. Information is dynamically extracted from the Business Logic layer for storage in the database and subsequent reporting. BusinessObjects Planning thus retains the best of each technology—the spreadsheet's rich user interface and calculation engine, and the database's scalability and reporting power. BusinessObjects Planning provides an additional layer of security, process management, and administration functionality integrating these two environments.

The BusinessObjects Planning database is structured in a modified star-schema fashion. There are several "fact tables" for various data types (financial, capital, payroll, etc.) in any given implementation. Summary-level information is calculated on-the-fly to provide you with information that accurately reflects the most recent edits submitted by users of the system and updates to hierarchies. BusinessObjects Planning is optimized for both SQL Server and Oracle—either can be employed effectively depending on your database preference.

The nature of an analytic application like BusinessObjects Planning is quite different from that of a transaction-processing system. BusinessObjects Planning does not typically store transactional information and does not provide rollback functions—the dual nature of the Excel/database environment allows easy recreation of any data store. The application provides administrative functions for periodic archiving and purging of data.

For small-to-medium business configurations, the Planning database can be placed on a shared enterprise database server. Large deployments should be implemented on a dedicated database server. When evaluating server requirements based on anticipated user load, the number of concurrent reporting users should be the primary consideration.

A database administrator is responsible for the initial database server setup and for creating and operating a backup task. A support representative may periodically request a database backup to be taken or restored. BusinessObjects Planning does not contain any internal backup process for the database—it is expected that this would be part of an enterprise routine.

OLAP vs. Relational Databases

The two most common database alternatives for applications like BusinessObjects Planning are OLAP and relational databases. Each database type offers a compelling case when used for its most traditional purpose.

OLAP databases are very efficient in pure reporting applications. However, their benefits begin to falter when end users need to interact with the data. Relational databases are inherently designed to manage data integrity and consistency when dealing with transaction-based systems. However, highly normalized relational databases are not very efficient at providing the summary-level reports and analysis that most planning and budgeting systems require.

BusinessObjects Planning takes a more balanced approach by implementing a hybrid database. Planning uses a traditional relational database, however the data is stored in a star-schema format. This design, sometimes referred to as a ROLAP database, balances the advantages of pure OLAP and pure relational approaches. The following summarizes the key differences between OLAP and ROLAP in terms of Planning or other related applications.

- **Ability to store textual or line-item detail** BusinessObjects Planning's ROLAP database allows the storage of disparate data elements—financial, statistical, and textual—and gives you the capability to view any of those items in any report. Drill-down can be accommodated from the most summary level to the lowest level of detail, following predefined hierarchies or by "drilling around" using any combination of filters and hierarchies. Because text information can be stored, you can save commentary within your database as opposed to offline in an email thread or other document.

- **Calculation definition** Perhaps nothing more clearly differentiates ROLAP and OLAP technologies than the manner in which calculations are defined. Planning calculations are defined within the planning or reporting environment. In BusinessObjects Planning, that means Microsoft Excel. OLAP databases require you to build your business modeling calculations using their proprietary database languages. With Planning, there is no need to worry about issues such as which cells must be calculated before others—that is handled automatically. Writing formulas is straightforward—virtually all of your finance users already know how to write the appropriate formulas.

- **Dimensions and attributes** In BusinessObjects Planning's ROLAP structure, dimensions can have hundreds of different attributes. An OLAP database might require a multitude of independent dimensions to allow the same experience that a single ROLAP dimension provides in combination with its attributes. ROLAP dimension attributes can be used for filtering and can serve as drivers used in calculations.

  Planning provides an alternative tabular view for managing dimensions, hierarchies, and attributes. Many users find this easier to maintain than nested tree-views and input screens. Planning also provides capabilities for synchronizing or automatically updating dimension members and attributes from an external source. For example, you may want your department list and an organizational hierarchy mirrored from the general ledger.

- **Ad hoc queries** Although many of your reporting requirements are centered on the creation of static, formatted statements for distribution, many of your users expect the ability to develop views to satisfy ad hoc analytic needs. For example, an analyst who is reviewing a potential divestiture wants to see a consolidation of all stores in the West region except for the stores that are likely to be sold.

  Because data is always available at any level—from the most detailed to a total consolidation—it is a simple matter to apply supplemental filters to existing hierarchies. For example, the query "Show me all the stores in the West region except for stores A, B, and C" can be calculated instantaneously, just like any other query. Planning users can quickly build these types of ad hoc reports without using any proprietary database query language.

- **Administrative requirements** IT organizations are rightfully concerned about their level of involvement in implementation and ongoing support for any new system. If new technologies are employed, will internal staff need additional training? Will it be provided by the vendor or by other outside sources? Will the ongoing staffing requirement mean additional headcount? Will the system be able to provide 24/7 access to users or will there be scheduled updates?

  All transactional systems use relational databases, so every organization has experience with the database administration requirements. Planning will not present any "surprises" in that area. There are no special optimizations required. Users will have real-time access to the most current data because the system does not require any "batch" database recalculations to be completed by IT.

Deployment

Server Configurations

BusinessObjects Planning's server components can be deployed in any number of configurations. This flexibility allows you to design a system deployment that meets your unique scalability, availability, and reliability needs.

NOTE: In all configuration discussions, it is assumed that the Planning database is hosted on a separate SQL Server or Oracle database server. This server can be dedicated or shared, depending on the size of your database and the server specifications. See the *BusinessObjects Planning Technical Requirements* for more details.

Combined Web and Application Server

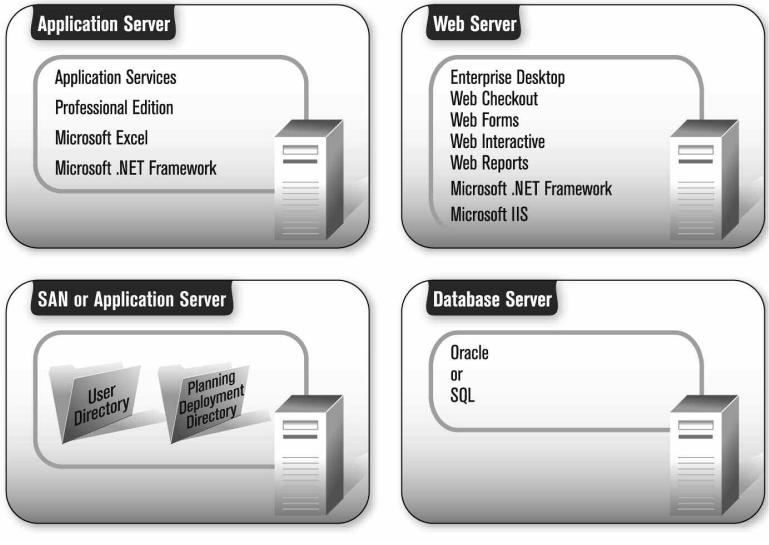
In its simplest form, Planning can be deployed on a single server that acts as both the application server and the web server. This configuration is recommended for most small to medium implementations where the user concurrency level is expected to remain small.

Separate Web and Application Servers

Planning can be deployed with separate web and application servers for organizations that anticipate one or both of the following:

- Heavy use of multiple Planning systems
- Large numbers of users accessing Web Interactive, Web Reports, or Web Forms

In these circumstances, the overall system performance can be enhanced by separating the web server and application server onto their own physical servers. Business Objects recommends hosting the User Directory and Planning Deployment Directory on a separate SAN server when using this configuration. The following diagram lists the functions which are performed by each machine in this type of implementation:



Clustered Web and Application Servers

Use of multiple web and application servers may be recommended in environments with a large number of web users, heavy Scheduler demands, or with a 24-hour/worldwide deployment. Multiple web and application servers are also used in situations requiring higher server availability and failover support.

Business Objects has successfully tested the operation of Planning web servers and application servers configured using *Microsoft Application Center*. Clustered Planning web servers should also operate with any web-aware load-balancing solution that supports "sticky" sessioning (where all requests from a user within a single session are handled by the same server). Cisco LocalDirector is an example of a load-balancing solution that supports sticky sessioning.

Use of multiple application servers requires the presence of a cluster configuration file. The cluster configuration file contains the address of each application server in the cluster, and allows the servers to coordinate with one another and share certain resources. If clustered servers are used, the User Directory and Planning Deployment Directory must be located on a file server independent of the clustered application servers, or on a clustered SAN volume.

For more information, please see the separate white paper *Configuring Clustered Servers for BusinessObjects Planning*.

Example Deployment Scenarios

BusinessObjects Planning can be deployed in a number of configurations. Ultimately, the number and nature of the user base will usually suggest an optimal configuration. This section describes several example deployment scenarios.

Please refer to the *BusinessObjects Planning Technical Requirements* for recommended hardware and software specifications.

Small Implementation

Sample system statistics: five primary users, 50 end users, single system

Sample server configuration:

- Shared enterprise-class database server
- Single server hosting all other Planning components (Application Server, Web Server, User Directory, Planning Deployment Directory)

Medium Implementation

Sample system statistics: 25 primary users, 500 end users, single system

Sample server configuration:

- ►Dedicated database server or a shared enterprise-class database server
- ►Application server
- ►Web server
- ►SAN server hosting the User Directory and Planning Deployment Directory

Large Implementation

Sample system statistics: 100 primary users, 1000 end users, multiple systems

Sample server configuration:

- ►Dedicated database server
- ►Multiple clustered application servers
- ►Multiple clustered web servers
- ►SAN server hosting the User Directory and Planning Deployment Directory

Terminal Server/Citrix Server

Terminal Server/Citrix deployments provide the full capability of the Professional Edition over a browser or other remote connection. This is often the best alternative for organizations that have users on slow connections (less than 128k throughput). Microsoft Excel does not need to be installed on the client desktops when accessing via Terminal Server or Citrix.

In this environment, an application server hosts a "session" for each logged in user. All operating system and application functions (including BusinessObjects Planning) execute on the server. There are several advantages to such a deployment:

- ►Thin bandwidth support
- ►No need for Microsoft Excel on client desktops
- ►Easier application administration
- ►No dependency on client configuration (memory, other applications that might conflict)

Terminal services can be deployed via a user's browser—simply clicking a link on an intranet page can launch BusinessObjects Planning. Dozens of BusinessObjects Planning clients have deployed to end users with this technology—across a LAN, across the country, or even around the world.

Microsoft and Citrix both provide products for this thin-client deployment. Each of these products has its advantages, but they both provide equivalent functionality that BusinessObjects Planning can leverage. The server takes over the role of hosting the BusinessObjects Planning application, and remote users connect via LAN, WAN, or public internet to that server.

Please refer to the *BusinessObjects Planning Technical Requirements* for recommended specifications for terminal server deployments.

NOTE: Both Microsoft and Citrix have specific CAL or end-user license requirements that should be considered as part of your implementation costs. Please contact your Microsoft or Citrix representative for details.

Benchmarking

BusinessObjects Planning is architected for robust performance across the broad spectrum of user scenarios. The architecture is designed to meet the needs of virtually any planning deployment, and is flexible enough to accommodate scenarios from smaller mid-market deployments with a handful of users to enterprise multi-national deployments with multiple systems and thousands of users.

BusinessObjects Planning has undergone internal benchmark and performance tests throughout the product development cycle. The testing continues throughout the product lifecycle to ensure that customer performance needs are met and exceeded. Your BusinessObjects Planning representative can assist you in evaluating your environment and recommending appropriate deployments and access options for maximum performance.

Security

The data managed within BusinessObjects Planning is often proprietary or sensitive in nature. Maintaining the confidential nature of this information is critical to the competitive positions of many organizations. Therefore, BusinessObjects Planning leverages all applicable tools and techniques for securing this key corporate asset.

User Authentication

With business applications, user authentication is commonly performed through the use of user names and passwords. These user names and passwords can be maintained either within Planning or within your existing Microsoft Active Directory. Importing users from Active Directory saves time, reduces information redundancy, and increases the overall security of your Planning implementation. When an imported Active Directory user launches BusinessObjects Planning, there is no subsequent prompt for a password, so users will not be faced with the need to memorize an additional password just to use Planning. Password complexity and aging requirements can be accommodated within the Planning system or through the optional integration with Active Directory or network (NT authentication) login.

NOTE: BusinessObjects Planning also supports user integration with BusinessObjects Enterprise. See Integrating with BusinessObjects Enterprise.

User Authorization

Once users and groups of users have been defined, administrators can grant specific BusinessObjects Planning capabilities to those users. For example, most users would not be allowed to import data files. Most of the features within BusinessObjects Planning can be enabled on a user-by-user basis through Security.

Administrators can also restrict users from accessing various parts of your planning data by using data filters. A user in the East region, for example, may have a filter that restricts that user from seeing North region data. Additionally, that user may be restricted from seeing detailed wage information for East region employees. Security can be defined to the record level in this fashion.

You can apply security on a cell-by-cell basis within data-entry workbooks and restrict users from viewing entire worksheets within the plan.

Data Encryption

Encryption is the conversion of data into a form (called a ciphertext) that cannot be easily understood by unauthorized people. Data is commonly encrypted while it is “in motion”. For example, systems often encrypt data as it is moved from an application server to a web server to a web browser. This is useful protection against threats caused by someone “listening” to the traffic on your network. If that traffic is encrypted, the “listener” won’t be able to make sense of the data. The most common encryption tool for web-server-to-web-browser communication is the HTTPS protocol. Planning can leverage this 128-bit encryption method.

Encrypted data *in transit* does nothing to protect data that isn't moving (data in your database, for example). It is often equally as important to store the data in an encrypted format, so in the unlikely event that unauthorized personnel breach your systems, they will be unable to make sense of the valuable data held in your Planning system. BusinessObjects Planning can store data in Oracle and SQL Server databases. Both databases have data encryption capabilities which will properly secure your data. For example, Oracle's Advanced Security Option will ensure that your data is encrypted using either the 3DES or AES algorithms before being stored.

Planning will also encrypt any Excel files that it is managing. These files are secured using an RC4 encryption algorithm.

Network and Server Security

Another important aspect of a system's security relates to the security of the network and servers themselves. Administrators will often implement technologies like proxy servers and reverse proxies, to ensure that only authorized personnel can gain access to resources on your network.

Business Objects supports two configurations for accessing the Planning web access options from the internet:

- Configuring a DMZ router to allow access to the Planning web server. Only port 80 (or port 443 if using SSL) needs to be opened.
- Configuring a reverse-proxy server to secure access to the Planning web server. Reverse proxy servers allow the client system to perceive the reverse proxy server as the web server. The reverse proxy server will manage client requests from the public network and proxy them to the Planning server in a secured area on your LAN.

Security Management and Auditing

BusinessObjects Planning provides a full set of features to assist in security management. For example, password rules can be applied to force users to change passwords periodically and to ensure these passwords conform to a defined set of rules.

Whenever a change is made that impacts BusinessObjects Planning Security, that change is automatically entered into the security log. This log (which is available for review by administrators) contains information about all security activities, including user login attempts, modifications to users and groups, and changes to password administration settings. Using this log, your administrator can gain quick visibility into your system's overall level of protection.

System Roles and Responsibilities

As with other enterprise systems, there are several different roles and responsibilities associated with the implementation and ongoing use of BusinessObjects Planning. This section details the most common roles involved in the initial implementation and subsequent operation of BusinessObjects Planning.

Planning implementations are typically owned and operated within the finance department. Once the system has been installed and implemented, it typically requires little or no outside support from IT.

Primary Users

The primary users of BusinessObjects Planning include the master system users (MSUs) and report developers.

The MSU is the "owner" of your Planning system and is usually a member of the finance department or a similar business unit. Due to the highly business-oriented nature of the MSU's responsibilities, this role is rarely filled by IT personnel.

All MSU-level tasks are managed within the Professional Edition. Typical MSU activities include:

- Managing end-user access rights within Planning
- Managing the budget distribution and collection workflow process
- Maintaining supporting files and data for planning, such as plan templates, standard planning methodologies, and global assumptions
- Performing periodic application maintenance tasks like importing/exporting data and refreshing periodic reports

Larger organizations typically have multiple MSUs share these responsibilities.

Report developers are users who create standard reports for the overall user community or who perform intensive reporting and ad hoc analysis. These users are considered primary users due to the resource-intensive nature of their tasks and their need to access the system using the Professional Edition.

End Users

End users can use any of the Planning access options to view and edit their plans, as well as refresh and interact with Planning reports.

Network Administrator

The network administrator provides the hardware, operating system, and security infrastructure within which BusinessObjects Planning will operate. Once the software is implemented, the level of effort required of your network administrator is minimal. Duties typically include monitoring the Planning servers and managing their performance. Network Administrators are also responsible for regular backups of the Planning User Directories.

Database Administrator

Database administrators provide and manage the database (either SQL Server or Oracle) for your Planning implementation. Their role is to create the database into which the Planning application objects will be created, and then run a provided script to create these objects. DBAs are also responsible for establishing a regular backup schedule for the Planning database.

Integration with Your Enterprise

Integrating with BusinessObjects Enterprise

BusinessObjects Enterprise XI is a business intelligence (BI) platform that provides a set of common services to simplify deployment and management of BI tools, reports, applications, and analytic engines. These tools are intended to help organizations access all of their data, analyze it, and share it with their customers and suppliers. BusinessObjects Planning represents one potential source of data that you may choose to leverage with BusinessObjects Enterprise. There are several key capabilities in BusinessObjects Planning to help make this possible.

User Integration

The information that businesses manage with BusinessObjects Enterprise is often confidential and can be shared only with key internal and external stakeholders. BusinessObjects Enterprise has a robust security model to ensure that the right people have access to the right data at the right time. This functionality can be extended to BusinessObjects Planning through the BusinessObjects Enterprise user integration features.

BusinessObjects Enterprise users can be imported into BusinessObjects Planning, thereby enabling a single source of authorized users and a common location for basic user and group management. When integrated into BusinessObjects Planning, these users are authenticated via the standard security mechanism within the BusinessObjects Enterprise framework. Only authorized personnel have access to the forward-looking strategic information contained within the BusinessObjects Planning system.

Universe Metadata

The key to the success of BusinessObjects Enterprise lies in its unique ability to present data to end users in an easily understood format. This is the job of the BusinessObjects universe. Universes translate the complex technical aspects of databases into a meaningful 'menu' for business users. BusinessObjects Planning can automatically publish a universe that will present your budgeting and planning information to ad hoc report users and analysts.

Planning-published universes are automatically updated in response to structure-changing events in BusinessObjects Planning, so that universes are kept in synch with BusinessObjects Planning. Whether users analyze this data directly within Planning or from BusinessObjects Enterprise, they will have the same experience. They will have the same drill paths through the data. Most importantly, they will get the same answers because both systems are accessing the one (and only) version of the truth within your organization.

If desired, you can also synchronize security on the published universe, so that users imported from BusinessObjects Enterprise are automatically granted access to the universe. Any data filters applied to those users in BusinessObjects Planning are also applied to the universe so that your security measures remain in place regardless of how the user accesses the data.

Enterprise Information Management

Information is an increasingly vital asset in business today. Enterprise information management (EIM) is a combination of strategy, practices, and open technologies for delivering that information in a trusted, integrated, and timely manner. Business Objects provides the technologies that make this possible. These technologies include data integration, metadata management, and data quality tools. With these products and services, the information managed within BusinessObjects Planning can be seamlessly integrated with other systems and processes outside of Planning. This, in turn, will help ensure that decision makers are taking a holistic, "all encompassing" approach to business decisions. And, it will help ensure that these decisions are based upon one single, trusted version of the truth.

EIM tools from Business Objects can play a vital role in the integration of Planning with the rest of your enterprise. Our data quality and data integration tools can ensure that your planning environment is founded upon the most trusted data from across your enterprise. Likewise, these tools can ensure that vital Planning information is distributed throughout the enterprise.

Importing External Data

BusinessObjects Planning provides robust data import functionality. Any number of import utilities can be configured as part of the implementation process. It is possible to load data from virtually any data source into BusinessObjects Planning. Most data interchange is accommodated via "flat files"—typically comma-separated (CSV) or fixed-width formats. Alternatively, the BusinessObjects Planning import utility can read directly from any ODBC-compliant data source. The ODBC data source could be a query within an external system, or, it could be a table or view within your Planning database that is updated via an external data integration process. See the *BusinessObjects Planning Data Interchange Specifications* document for more information.

It is possible to automate the synchronization of BusinessObjects Planning dimensional elements (a department list, for example) with the corresponding definitions in a master system, like a General Ledger. The import utility also has the capability to transform or map data during the import process. Typical examples include collapsing data (summarizing several cash accounts into one) or reversing signs (converting Revenue from a credit—negative—balance to a positive number). Planning includes a scheduling service that can automatically process these tasks during off-peak hours for optimal performance.

Customers with complex, proprietary data sources may choose to implement our optional Data Integrator product. This tool automates data extraction, transformation, and movement from diverse data sources and application systems. It includes off-the-shelf tools for extracting data from proprietary systems like PeopleSoft, Oracle, SAP, and JDEdwards.

Sharing Data Between Multiple Planning Applications

BusinessObjects Planning is often implemented within an organization to solve several distinct but related business problems. For example, an organization might implement three different BusinessObjects Planning applications such as:

- *Strategic Planning* application to identify long-term business direction
- *Forecasting* application to enable periodic mid-year adjustments to their annual budgets
- *Budgeting* application to define their detailed annual revenue and expense budgets

In the case of an organization implementing multiple applications, there is often a need to share data and metadata between these applications. Planning is designed to effectively enable this interchange. All of the EIM capabilities can be leveraged to implement a data interchange *between* various planning systems as well as implementing data interchanges to other external systems.

Exporting to Other Systems

Data that is managed in Planning can be easily shared with other systems. For example, your company may wish to include forecast data (created within BusinessObjects Planning) within an existing data warehouse. Customers commonly export data from Planning to their general ledger, fixed asset, payroll, or profitability systems. These "target" systems can read directly from the BusinessObjects Planning database, or an export can be created in any format required for the data transfer. Exports can be performed on a scheduled or ad hoc basis.

Software Updates

Business Objects typically issues updates to the Planning system on an annual basis. These updates include enhancements to product functionality as well as improvements in existing functionality. Customers who have purchased a product support package are eligible to receive these updates. Software updates are available for download via the Business Objects electronic software delivery (ESD) website. If required, we can provide the software on a CD.

It's a straightforward process to install BusinessObjects Planning updates. Both client and server installations are updated using Microsoft Installer. A typical update can be done without a great deal of technical oversight. To update an existing installation, you must install the upgrade on each Planning server in your environment (application servers and web servers). The Professional Edition client upgrades will then automatically be performed the next time each client logs in to BusinessObjects Planning. If desired, you may choose to perform a "silent" install for this client upgrade instead.

In addition to these updates, Business Objects issues periodic patches to address customer-reported issues. Patches are available for download on the Business Objects Online Customer Support site.

Conclusion

BusinessObjects Planning provides you with a system that is easy to maintain, requires minimal training, and ensures data integrity through all of your planning, budgeting, forecasting and consolidations processes. The technology enables your deployment to scale from a small local installation to a large global deployment while preserving a rich end-user experience and an easy-to-manage infrastructure. BusinessObjects Planning is one member of the BusinessObjects EPM solution set.

For further information on BusinessObjects Planning or EPM solutions, please contact your account manger or visit: *http://www.businessobjects.com/products/performancemanagement*

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