CA Business Intelligence

Common Reporting for CA Technologies Solutions

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This document may reference the following CA components and products:

- CA Access Control
- CA Clarity Project & Portfolio Management (CA Clarity PPM)
- CA Embedded Entitlements Manager (CA EEM, formerly eTrust IAM)
- CA Host-Based Intrusion Prevention System
- CA Identity Manager
- CA IT Client Manager
- CA Message Manager
- CA Mobile Device Management (CA MDM)
- CA Network and Systems Management (NSM, formerly Unicenter® Network and Systems Management Unicenter NSM)
- CA Portal
- CA Security Compliance Manager
- CA Service Catalog
- CA Service Desk Manager (formerly Unicenter® Service Desk)
- CA SiteMinder®
- CA Software Change Manager
- CA Software Compliance Manager
- CA Spectrum ® Automation Manager (formerly CA DCA Manager)
- CA Spectrum ® Infrastructure Manager (CA Spectrum® IM, formerly CA Spectrum® Network Fault Manager)
- CA Spectrum® Service Assurance
- CA Virtual Assurance for Infrastructure Manager (formerly CA Virtual Performance Management)
- CA Workload Control Center (CA WCC)
- CA AutoSys® Workload Automation (formerly CA Unicenter® AutoSys® Job Management)
- CA-7™ Workload Automation (formerly, CA Unicenter® CA-7™ Job Management)
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Chapter 1: Introduction

**BusinessObjects XI** is a very flexible and scalable solution from SAP that is used to generate, schedule, organize and deliver reports for a wide range of products from CA Technologies. For many solutions this is a required component for reporting and it is normally implemented through **CA Business Intelligence**, which is a bundled version of BusinessObjects that is specifically tuned and has a simplified installer for each individual product.

Products from CA Technologies utilize two report engines that are included in CA Business Intelligence: Crystal Reports and Web Intelligence Reports. Depending on the CA product the reports can be visualized using the InfoView application and/or directly from the user interfaces from the individual CA Technologies products. Although each product provides a number of out-of-the-box reports supporting the most common scenarios, the Web Intelligence reporting solution also allows creation of new reports from scratch or by using the existing reports as templates. A separate license for Crystal Report Developer XI edition is required to modify/edit the out-of-the-box reports based on Crystal Reports.

CA Business Intelligence also supports a security model where Universes, applications and folders can be locked down for specific users or groups of users.

This document provides a high level overview of how various CA Technologies products utilize CA Business Intelligence, including information on the types of reports each product typically uses, specific requirements that affect the reporting infrastructure and how this might affect the overall performance. It also includes more generic information about CA Business Intelligence and how this solution can be designed and maintained to maximize its performance and availability.

**Important:** This document provides generic information about the CA Business Intelligence infrastructure; there may be additional caveats depending on which products are integrating with the infrastructure. Before implementing CA Business Intelligence carefully review the product documentation or consult the product support for additional details.

**Note:** Unless otherwise noted, the architecture and sizing guidelines provided are directed towards CA Business Intelligence 2.x. From an architectural and sizing point of view we do not expect any major differences for CA Business Intelligence 3.x environments, however, when/where we are aware of differences they will be noted in this document.

**Note:** This is a living document and it is expected to be frequently updated. Always download the latest copy before doing any new studies.
Chapter 2: CA Technologies Solutions and CA Business Intelligence

This chapter discusses architecture and deployment considerations for CA Business Intelligence.

Dedicated Reporting Server vs. Central, Shared Server

A large and growing number of products from CA Technologies utilize BusinessObjects XI as a common reporting infrastructure. Most of these products embed CA Business Intelligence, which provides a complete BusinessObjects XI platform that has been configured and appropriately tuned to meet the reporting needs of those solutions.

Using this CA Business Intelligence installer to install a dedicated reporting server for each solution is an easy way to ensure a robust solution that is well tested with this specific configuration. The simplicity and robustness of this makes this a recommended solution, especially in smaller environments or in virtualized environment where you don’t need to invest in dedicated hardware for each CA Business Intelligence server. This will also lead to an individual solution that is easy to troubleshoot and with minimal risk of affecting other solutions when patches are applied.

Individual CA Business Intelligence instances can either be installed on separate physical servers or as virtual machines in a virtualized environment.
However, most CA Technologies products are also capable of supporting a shared, fully implemented central CA Business Intelligence Enterprise infrastructure if needed.

If you choose to take this approach there are a few important things to consider:

- It is important to ensure that the CA Business Intelligence version and patch level currently installed on this central reporting server is supported by the individual products (typically, the same version that is bundled with the CA product).
- The CA Business Intelligence license only includes reporting on data from those CA Technologies products included in the OEM agreement with BusinessObjects.
Universes from multiple products can be installed on a common CA Business Intelligence server and reports that are accessed through InfoView typically work without any problem in this configuration. However, for products which have a deeper integration with CA Business Intelligence, such as when reports are displayed inline in the product’s ordinary user interface, there are additional considerations:

- Verify that the product’s specialized integration is supported with an external/central CA Business Intelligence server.
- Keep in mind that each product may need to install a small component on the reporting server to handle the integration. It’s important to make sure that these components don’t use the same ports when communicating with their base products or collide with other installed component in any other way.
- **Note:** This document provides general guidelines for CA Business Intelligence. Always consult the product documentation and support site for the latest and most authoritative source of information.

For large implementations installation of the different CA Business Intelligence components can be distributed across multiple servers, however this requires:

- Usage of the original BusinessObjects XI installer (setup.exe, the simplified CA Business Intelligence installer, does not support this).
- Careful review by an experienced architect designing the solution to ensure that all of the products using CA Business Intelligence support this scenario.

A third option is to co-locate CA Business Intelligence with the associated CA product, however, with a few exceptions this is normally not recommended in a production environment.

Following are several important questions to consider when determining which implementation method to select:

- **Fewer physical servers**

  Minimizing the number of physical servers might be important for many organizations, however if this is the main driver for your decision, you should be aware that, in a production environment, there are many other factors that are significantly more important than minimizing the number of logical machines in the infrastructure.

  An alternative approach to reducing the number of physical servers would be to implement the servers in a virtualized environment.
- **Enhanced scalability and flexibility**
  The BusinessObjects Enterprise XI infrastructure default installation implements a basic setup with an embedded MySQL database and one server of each kind on one physical or virtual machine. The custom install option, on the other hand, allows you to use other databases, to install different components on multiple machines as well as to add multiple instances of certain components, if required.

  Installing fewer components on each logical server greatly enhances the flexibility when it comes to modifications of the architecture. For example, this makes it significantly easier to add or remove resources for a specific component when needed.

- **Minimize risk for problems and expensive troubleshooting**
  When you install the embedded version of BusinessObjects XI on a separate server using the bundled integration kit for your specific product you can be assured that this exact configuration has been thoroughly tested by CA Technologies and is being used by numerous other clients running similar setups.

  When other products and components are implemented on the same server the complexity grows and it is increasingly more likely that you may have to troubleshoot resource contention and collisions between potentially non-compatible software applications.

- **Maintenance / Patching**
  In environments where each application has a dedicated BusinessObjects XI server it becomes significantly easier to apply maintenance. This is primarily because changes will only affect a single isolated solution and, therefore:
  - It is easier to find a suitable time to implement the change.
  - Solutions can use different patch levels on BusinessObjects XI and eliminate the risk of incompatible integration components.
  - Testing of the patched system is simplified.

  On the other hand, if you have an environment with a single BusinessObjects XI instance you only need to apply the patches on one server. However, even though you only need to test one BusinessObjects XI environment in this scenario you still need to verify/test the same amount of complete solutions.

- **Minimize administrative overhead**
  As with maintenance considerations, there is no single approach that best meets this objective. In small or medium sized environments it is often best to have dedicated logical servers for different tasks since this minimizes the number of administrative tasks required for security scoping and tuning. This is especially true when the report manager is closely integrated with the products and pre-tuned through the specialized installation.
On the other hand, if your organization has one central reporting server and skilled BusinessObjects XI administrators, a single environment can simplify your administrative tasks.

When correctly configured, the BusinessObjects Enterprise XI solution is exceedingly scalable. To enhance performance or to provide high availability, the different BusinessObjects XI servers (implemented as Windows Services or daemons) can be multiplied over one or many physical or virtual machines. However, in a typical environment, supporting one or more CA Technologies products, it is often sufficient to have one dedicated reporting server.

**Note:** If you choose to implement the BusinessObjects XI infrastructure using virtual machines in order to consolidate servers, it is important to remember that reporting can be very resource intensive at times. Therefore, you need to ensure that the required resources really exist when required.

For virtualization best practices see the Virtualization section on CA Implementation Best Practices available at the following link:

https://support.ca.com/phpdocs/0/common/impcd/r11/virtualization/virt_Frame.htm

See also the related support statement from SAP BusinessObjects, available from the following link:


Additional information about using a distributed solution can be found in the section “Scenario 4: Multiple Servers for Performance and Redundancy” on page 42.

### CA Technologies Products Utilizing CA Business Intelligence

Following is a high level overview of several CA Technologies products that take advantage of the BusinessObjects XI infrastructure. Included in the overview is the CA Business Intelligence version that is included in the product bundle, whether the product can share a common CA Business Intelligence instance and how many out of the box reports are shipped with the product.

<table>
<thead>
<tr>
<th>Product</th>
<th>Bundled CA BI</th>
<th>Shared CA BI</th>
<th>CA BI&lt;sup&gt;2&lt;/sup&gt; Reports</th>
<th>Other&lt;sup&gt;3&lt;/sup&gt; Reports</th>
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<td>15 WebI</td>
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[^1]: Limitations do exist, see Appendix A and product documentation
[^2]: where noted:
CR = Crystal Reports
WebI = Web Intelligence Reports
Dash = Dashboards
[^3]: Additional reports provided by a non-BusinessObjects solution

Additional information, including the list of included reports, is provided in Appendix A: “CA Products using CA Business Intelligence”. 
Note, if you are sharing an existing instance of CA Business Intelligence it is important to verify that it is correctly patched and that your license is valid for this configuration.
Chapter 3: Architectural Considerations

In most cases you can use the simplified CA Business Intelligence install that is embedded with your CA product to install the reporting infrastructure on a separate machine. This will ensure that the reporting server have the right patch level and includes all components that are required to support the base product.

If, however, you need to scale CA Business Intelligence beyond what this basic configuration supports or if you would like to have a single reporting infrastructure supporting multiple products, you can typically use a common larger CA Business Intelligence environment that includes only a minimum amount of code from the various products interfacing with it. Exactly what is included will vary from product to product. In addition to product-specific reports, some products require specific modules to support the integration/communication with CA Business Intelligence.

**Note:** Before starting a project like this you need to verify that all involved products support the same version and patch level of CA Business Intelligence, that they can co-exist on the same CA Business Intelligence infrastructure, that none of the products require anything specific from the embedded environment and that each supports sharing a reporting server with the other products (also see “Dedicated Reporting Server vs. Central, Shared Server” on page 3). For example, CA Spectrum Infrastructure Manager (IM) release 8 requires BusinessObjects Enterprise XI while release 9.0/9.1 uses BusinessObjects XI R2. In addition, CA Spectrum IM version 9.1 and earlier requires that CA Business Intelligence be installed on the same machine as OneClick and will, for these two reasons, require its own instance. This is no longer a requirement in Spectrum IM 9.2.

The CA Business Intelligence architecture is highly flexible. For example, after the base install you can use the Central Configuration Manager (CCM) to implement multiple instances of its servers. In addition, to provide better scalability or availability, these servers and instances of servers can be implemented either on a single machine or divided onto multiple physical or virtual machines. Again, a single dedicated CA Business Intelligence machine should be sufficient to meet the reporting needs for most CA Technologies solutions, however it is important to understand that it is often possible to add more hardware if you need to support a larger more complex environment, enhance performance, provide redundancy, and/or establish fault tolerance.

To better understand which architecture is most appropriate for your implementation, you need to understand how CA Business Intelligence is expected to be used and how the different components cooperate with each other. To assist with this, this chapter provides a high level overview over the CA Business Intelligence architecture and provides information on how the components/servers can be distributed in different scenarios.
Note: The embedded CA Business Intelligence installer automatically selects and configures the appropriate components/servers for your product. In CA Business Intelligence r3.x you can also use the “Custom or Expand” install option to manually select the component you would like to install in this server. In addition, you can use CCM to add additional instances of selected BusinessObjects XI components on the same physical or virtual CA Business Intelligence server. For additional details on this see:

- **For CA Business Intelligence 2.x** - see “Adding and deleting servers” in BusinessObjects Enterprise™ XI Release 2 Deployment and Configuration Guide.
- **For CA Business Intelligence 3.x** - see “Adding, cloning, and deleting servers” in BusinessObjects Enterprise XI 3.1 Administrator’s Guide.

The information presented in this chapter is further explored in the subsequent chapter, “Typical Scenarios” which identifies several common deployment scenarios, and includes guidelines on what type of hardware you likely will need to support the infrastructure.

CA Business Intelligence Components

The CA Business Intelligence solution is implemented through a number of logical servers that handle different focused tasks. It is important to understand that these servers are actually Windows services or UNIX daemons and that there might be, and often are, many servers installed on one physical or virtual machine.

The components that affect CA Business Intelligence servers are divided into 5 tiers, each with a number of applications and/or servers connected to them:

- **Client tier**
  This tier consists of the applications that enable people to administer, publish, and view reports and other objects. This includes:
  - InfoView
  - Central Management Console (CMC)
  - Central Configuration Manager (CCM)
  - Publishing Wizard
  - Import Wizard

- **Application tier**
  This tier hosts server-side components that process requests from the client tier, as well as components that communicate these requests to the appropriate logical server in the intelligence tier. This includes:
  - Application server and BusinessObjects Enterprise XI SDK
  - Web Component Adapter (WCA)
- **Intelligence tier**
  This tier manages the complete system. It is responsible for maintaining security, delegating tasks and sending requests to appropriate servers, manage audit information and cache reports. This includes:
  - Central Management Server (CMS)
  - Event Server
  - File Repository Servers (Input and Output)
  - Cache Server

- **Processing tier**
  This tier connects to the data tier and generates the reports based on information in these databases. This includes:
  - Job servers
    - Web Intelligence, Crystal Reports, List of Values & Desktop Intelligence
  - Web Intelligence Report Server
  - Report Application Server (RAS)
  - Crystal Reports Page Server
  - Desktop Intelligence Report Server
  - Desktop Intelligence Cache Server
  - Enterprise Performance Manager Services
    - Dashboard Manager & Analytics
  - Intelligent Question

- **Data tier**
  The data tier includes the databases that contain the data used in the reports.

These applications and servers can all be installed onto a single physical machine (or a logical machine in a virtual environment) or spread across multiple machines to enhance scalability and availability. The next sections take a closer look at the following components:

- **Intelligence Tier**
  - Central Management Server (CMS)
  - Crystal Reports Cache Servers
  - Input/Output File Repositories

- **Application Tier**
  - Web Application Server
CA Business Intelligence Components

- **Processing Tier**
  - Crystal Reports Page Servers
  - Web Intelligence Report Server
  - Report Application Server

Each section includes rough sizing guidelines, however, keep in mind that these are only estimates and should not be considered final. The actual sizing will depend on many different factors.

**Note:** Although this document primarily focuses on the intelligence and processing tiers it is important to have a basic understanding of the complete structure. Much of the information presented in this document was collected from the following sources, which can be consulted for additional details:

- *CA Business Intelligence Implementation Guide r3.x* ([https://support.ca.com/cadocs/1/j028121e.pdf](https://support.ca.com/cadocs/1/j028121e.pdf))
- *BusinessObjects Enterprise XI 3.1 Administrator’s Guide*
- *BusinessObjects Enterprise™ XI Release 2 Deployment and Configuration Guide*
- *BusinessObjects Enterprise™ XI Release 2 Administrator’s Guide*
- *BusinessObjects XI Release 2 Pattern Book for Windows*


**Central Management Server (CMS)**

The CMS is part of the Intelligence tier and, in many ways, it is the heart of the CA Business Intelligence system since it is responsible for maintaining information about the complete system. Other servers within the CA Business Intelligence system can request this information from CMS when required.

The four main tasks for CMS are:

- **Security**
  
  Keep tracks of users and groups and what objects and tasks they have access to.

- **Managing Objects**
  
  Keep track of the location and metadata for various objects, including folders, categories and inboxes. It also communicates with Job Servers and Program Job Servers to make sure scheduled jobs are running on time.
Managing Servers
The CMS also frequently communicates with all the other servers and maintains a list of their status. This information is used by other components to determine what server instance is currently available (i.e., load balancing).

Auditing
Since CMS communicates with all CA Business Intelligence Enterprise servers it is also responsible for collecting information about all user actions and writing this to a central audit database. This greatly simplifies administration of the system, since all actions are centrally logged. It is also an excellent starting point for system tuning since this log keeps track of exactly how the system is used.

Scalability Considerations
CMS scalability is highly dependent upon the type of CMS activity that is expected. For example, large updates to the CMS system database that happen when a large number of users is added or deleted requires a significant amount of CPU. The CPU throughput can often be enhanced by providing more or faster CPUs.

Rough sizing guidelines for the CMS on a CA Business Intelligence 2.x system are as follows:
- Every CMS server can support 600 concurrent active users
- Every CMS server can support approximately 150 simultaneous requests
- CMS requires one CPU for every 500 concurrent active users
- CMS requires one CPU for every 150 simultaneous request

For example, in order to support 600 concurrent users and 100 simultaneous requests you would need a single CMS server with access to two CPUs.

Rough sizing guidelines for the CMS on a CA Business Intelligence 3.x system are as follows:
- Every CMS server can support 600 concurrent active users
- CMS requires one CPU for every 500 concurrent active users
- CMS requires one CPU for every 100 simultaneous request

For example, in order to support 600 concurrent users and 100 simultaneous requests you would need a single CMS server with access to two CPUs.

Note: These are rough estimates and the actual scalability depends on many other factors such as type of performed actions, CPU Speed, Network, and database I/O.
For details on how to implement multiple CMS servers consult the CMS Clustering sections in the product documentation.

**Crystal Reports Cache Servers**

The Cache Server, which is also part of Intelligence tier, is responsible for handling most requests to display Crystal reports (the exception is requests from the Advanced DHTML viewer). When a request is received, the Crystal Reports Cache Server first verifies if it has a good copy of the report in its cache. If it does, then it returns this cached version. If no match is found, it will locate an available Page Server and request a new copy of the report. The new copy is then cached for future use and a copy sent to the original requestor.

**Scalability Considerations**

The main factor in determining the number of Cache Servers that are required is the number of expected simultaneous requests for viewing Crystal reports.

The guidelines suggest that each Cache server can support approximately 400 simultaneous requests as long as it has a sufficient amount of memory and one CPU for each 200 simultaneous requests.

It is recommended that the Cache server has a minimum of 1 MB of RAM for each simultaneous request, in addition to a 17 MB base. For example, if you expect to have up to 10 simultaneous requests to the cache server you will need to allocate 27 MB (17 MB+10 MB) of RAM for its use.

**Input/Output File Repositories**

Each CA Business Intelligence implementation has at least one Input and one Output File Repository Server. These are responsible for listing files on the server, querying for the size of a file or the entire file repository, and adding and removing files to the repository.

The Input File Repository Server (Input FRS) manages all report and program objects that have been published to the system. This can be done either by administrators or by end users using the publishing wizard, the CMC, the Import Wizard, or a BusinessObjects XI designer component, such as Crystal Reports.

The Output File Repository Server (Output FRS) is responsible for managing report instances generated by the Report Job Server or the Web Intelligence Report Server and program instances from the Program Job Server.
In larger environments it is possible to have multiple File Repositories of each type, however there can only be one physical share for each type. If you expect to have a significant amount on load on this it is wise to locate these repositories on a disk system with good I/O performance.

**Scalability Considerations**

You don’t need to consider the Input/Output File Repository Servers when calculating the need for CPU and memory, however they can take advantage of fast I/O resources in the form of high performance storage solutions and a fast network.

To support high availability multiple File Repository Servers (FRS) of either type can be implemented, however this will not affect performance. If multiple FRS are implemented it’s important to remember that all Input FRS need to share a common directory and all Output FRS need to share another directory.

**Web Application Server**

BusinessObjects Enterprise XI supports Java Server Pages (.jsp) and ASP.NET (.aspx) pages. It includes web applications developed in .aspx, such as InfoView, and the sample applications available via the BusinessObjects Enterprise XI Launchpad.

Java Server Pages (.jsp) and ASP.NET (.aspx) pages allow you to develop cross-platform J2EE and ASP.NET applications that use the BusinessObjects Enterprise XI SDKs in conjunction with third party APIs.

BusinessObjects Enterprise XI also includes Primary Interop Assemblies (PIAs) that enable you to use the BusinessObjects Enterprise XI SDK and Report Application Server SDK with ASP.NET. It also includes a set of .NET Server Components which simplify development of custom BusinessObjects Enterprise XI applications in ASP.NET.

**Scalability Considerations**

BusinessObjects XI supports many different Web Application servers, such as Microsoft IIS, Apache Tomcat, BEA Weblogic or IBM WebSphere. The number of concurrent user sessions and requests that can be handled will depend on which of these solutions you are using. Following are generic scalability recommendations, however, you should run tests in your environment and consult with the solution vendors directly for a better understanding of how your specific solution can scale in a larger environment.
One service can often handle a very large number of concurrent users and simultaneous requests. However, until you have consulted the web application’s specific documentation it is recommended to follow the guidelines below:

- Each CPU can handle up to 400 concurrent users
- Each CPU can handle 100 simultaneous requests if ActiveX is used as a primary viewer.
- Each CPU can handle 50 simultaneous requests if DHTML is used as a primary viewer.
- Each CPU can handle 40 simultaneous requests if OLAP Intelligence is used as a primary document viewing engine (OLAP DHTML viewer).

**Crystal Reports Page Servers**

The Page Server, which is part of the Processing tier, is responsible for generating Crystal reports. When it receives a request, it connects to the associated data source (the report instance or directly from a database) and generates the report in an Encapsulate Page Format (EPF).

The Page Server works closely with the Cache Server by feeding the Cache Server updated reports and ensuring that the cached EPF pages are up to date. It is important to note that only one Page Server is needed for each machine. The Page Server adapts to higher load by creating sub processes as needed (typically a maximum of 10 report jobs per sub process).

**Scalability Considerations**

By default, the Page Server automatically calculates how many Simultaneous Report jobs it can support by looking at the number of available servers. The formula it uses assumes that each CPU can support 25 Simultaneous Report Jobs with a minimum of 50 jobs. For example, a Page Server with one or two CPUs can support 50 Simultaneous Report Jobs while a server with 4 CPUs can support 100 jobs.

The sizing guidelines only apply when the default setting ("Unlimited Jobs") for "Maximum Simultaneous Report" is used. Otherwise it will use the number that is defined in the field "Jobs Limited To". This setting can be found in the "Page Server Properties" section of the Central Management Console (CMC).

Since the Page Server dynamically creates sub processes to handle higher load it is important to realize that you should NOT install multiple page servers on a single machine.

When all BusinessObjects XI Servers are co-located on the same server it may be advisable to set the limit to the maximum number of simultaneous jobs.
Web Intelligence Report Server

The Web Intelligence Report Server is responsible for all processing of Web Intelligence Documents (including creation, editing, viewing and analyzing). Depending on the user’s access rights and the report’s metadata it will use cached information or refresh the data in the document, as well as its cache.

Scalability Considerations

The scalability of the Web Intelligence Report Server depends highly on the complexity of the reports that are requested. Although the general recommendations are:

**CA Business Intelligence 2.0** supports between 25-40 simultaneous connections per available server, to be on the safe side as well as to allow for future traffic increases, consider the following guidelines:

- Use one Web Intelligence Server for every 25 simultaneous connections
- Ensure there is one CPU available for every installed Web Intelligence Server

For example, if you need to support 80 simultaneous connections to the Web Intelligence Server, you should install 4 servers on a quad CPU machine. However, if you have a dedicated server for this function and the reports are relatively simple two servers on a dual core server may be sufficient.

In **CA Business Intelligence 3.x** the Web Intelligence Reports Server will, when necessary, utilize as many CPUs as the server has available. Due to this, only one Web Intelligence Report Server is required per server.

Report Application Server

The Report Application server (RAS) handles the processing of reports that users view through the Advanced DHTML viewer. The RAS is very similar to the Page Server described above, but, since it has its own internal cache it does not interact with the cache server.

Scalability Considerations

Although the RAS is similar to the Page Server from a functional point of view, its implementation and scalability differ quite a bit. The general rule for RAS is that each server supports 25-75 simultaneous reports and that the server should have one CPU for each RAS.

To improve performance it is recommended that you base your calculations on 25 simultaneous reports per server and CPU.
When a report is viewed it is loaded in memory and then cached in memory for 30 minutes. Therefore, in addition, you need to make sure that the RAS has a sufficient amount of memory to manage all the reports in memory.

The actual RAM usage depends on the number and complexity of the reports, however a reasonable estimate is to take the file size you simultaneously have in memory and multiply this by 40.

**Other Servers**

As previously noted, there are many other servers as well, however these are not covered in detail since they have either a limited affect on scalability or are rarely used to support reporting within CA Technologies products.

However, another group of servers that you need to at least be aware of are the various job servers. It is typically recommended that you schedule most reports during non-business hours and this typically means that there is enough time for the processing. However, if the window of opportunity for this is small or if the environment has a large amount of scheduled objects (typically reports) it might be good to take a closer look at these.

How to scale a Job server depends on the type of job server and what type of jobs it manages. A rough guideline is that each job server can run 20 simultaneous jobs and that you can run 5 simultaneous jobs per CPU. For example, if you need to run 40 simultaneous jobs you will need 2 job servers on a machine with 8 CPUs.

**CA Business Intelligence Dataflow**

To correctly size the infrastructure it is helpful to understand how many users you expect and how much load you expect them to generate. To better estimate the load on various components you need to understand what components will be involved to perform certain actions.

The next few sections will take a closer look at the following actions:

- Scheduling a report
  
  This includes the Web Client, Web Application Server, CMS and the System Database.

- Processing a scheduled report
  
  This includes the CMS, System Database, Report Job Server, Input FRS and the Output FRS.

- Viewing a report on demand
  
  This includes the Web Client, Web Application Server, CMS, System Database, Cache Server, Page Server and the Input FRS.
- Viewing a report using an Advanced DHTML Viewer
  This includes the Web Client, Web Application Server, CMS, System Database, Report Application Server and the Output FRS

- Viewing a Web Intelligence Report
  This includes the Web Client, Web Application Server, CMS, System Database, Web Intelligence Report Server and the Input FRS.

- Processing a Web Intelligence Report
  This includes the CMS, System Database, Web Intelligence Job Server, Web Intelligence Report Server, Input FRS and the Output FRS.

For each of these actions, you should keep in mind the high level architecture of the CA Business Intelligence solution.

**Scheduling a report (Crystal Report)**

The basic workflow for this is:
- The Web Client sends the request to the Web Application Server.
- The Web Application Server interprets the request and determines that it’s a schedule request. It sends the schedule time, database logon values, parameter values, destination, and format to the specified CMS.
CMS ensures that the user has permission to schedule the object. If so CMS will add a record to the System database and add the instance to its list of scheduled activities.

**Processing a Scheduled Report (Crystal Report)**

The basic workflow for processing a scheduled Crystal Report is as follows:

- CMS checks its schedule for pending activities every 15 seconds. If CMS has a report that is ready to be scheduled it looks for an available Report Job Server and sends the schedule request along with the report location, database logon, parameter, format, and destination information to the Report Job Server.
- The Report Job Server requests the report from the Input File Repository Server.
- The Input File Repository Server sends the report to the Report Job Server.
- The Report Job Server spawns a Report Job Server Child process responsible for the report. This Child process opens the report and queries the related database for the required data.
- When the database has returned all requested data to the Report Job Server the child process will continue to process the report.
- The Report Job Server Child process saves the processed report to the Output File Repository Server and removes itself from memory.
- The Report Job Server reports back to CMS that the report has been processed successfully.
- CMS updates the status of the related record in the system database to indicate a successful update.

**Viewing a Report On Demand**

The basic workflow for this process is as follows:

- The Web Client sends the request (typically via Web Server) to the Web Application Server.
- The Web Application Server interprets the request and determines that it is a request to view the first page of the selected report.
- The Web Application Server then sends a request to CMS to confirm that the user has the appropriate rights to view the object.
- CMS sends a message back to the Web Application Server confirming that the user has sufficient rights.
- The Web Application Server requests the first page of the report from the Cache Server.
■ The Cache Server determines if a valid and recent page is available in the cache; if not, it requests the page from the Page Server.

■ The Page Server requests the report instance from the Input File Repository Server which returns an instance of the report.

■ The Page Server opens the report in memory and verifies it contains data.

■ The Page Server requests the data required for the report from the database. After getting the data it processes the report and generates the first page of the report.

To speed up request for subsequent pages the Page Server keeps the report in memory until it has been idle for 60 minutes.

■ The Page Server returns the page (.epf page) to the Cache Server which stores a copy of it in its cache directory.

■ The Cache Server sends the page to the Web Application Server.

■ If a DHTML viewer was used, the Web Application Server converts the page from .epf to DHTML otherwise it sends the .epf page to the Web Server which sends page to the user's machine where the viewer is rendering the page.

Viewing a Report with an Advanced DHTML Viewer

The basic workflow for this process is as follows:

■ The Web Client sends a request (typically via Web Server) to the Web Application Server.

■ The Web Application Server interprets the request and determines that it is a request for the first page of a specific report.

■ The Web Application Server verifies with CMS that the user has the appropriate rights to view the object. CMS, in turn, looks up the user’s right in the System database.

■ The Web Application Server requests the first page of the report from the Report Application Server.

■ The Report Application Server gets the report instance from the Output File Repository Server, opens it in memory and verifies if the report contains data. If the instance includes the data the Report Application Server will use it and generate pages.

To speed up request for subsequent pages the Report Application Server keeps the report in memory until it has been idle for 30 minutes.

■ The Report Application Server sends the page to the web application server which converts the .epf to DHTML.

■ The Web Application Server sends the DHTML page to the Web Server which forwards it to the user’s machine where it is rendered.
Viewing a Web Intelligence Report

The basic workflow for this process is as follows:

- The Web Client sends a request (typically via Web Server) to the Web Application Server.
- The Web Application Server interprets the request and determines that it is a request to view a Web Intelligence report.
- The Web Application Server verifies with CMS that the user has valid credentials to view this object. CMS, in turn, looks up the user’s credentials in the system database.
- The Web Application Server requests the report from the Web Intelligence Report Server.
- The Web Intelligence Report Server gets the report from the Input File Repository Server and opens the report in its memory. It then (through QT.dll) generates the SQL from the Universe that the report is based on.
- In the Web Intelligence Report Server the Connection Server runs the query in the related database. The returned data is passed to the Report Engine where the report is processed.
- The Web Intelligence Report Server forwards the report to the web application server.
- The Web Application Server sends the finished report to the Web Server which forwards it to the user’s machine where it is rendered.

Processing a Web Intelligence Report

The basic workflow for this process is as follows:

- CMS checks its schedule every 15 seconds, looking for reports that are ready to be scheduled. When it finds a Web Intelligence report it looks for an available Web Intelligence Job Server and sends the scheduled request to this available server.
- The Web Intelligence Job Server forwards the request to the Web Intelligence Report Server.
- The Web Intelligence Report Server gets a copy of the report from the Input File Repository Server. It then opens the report in memory and generates the SQL from the Universe that the report is based on.
- In the Web Intelligence Report Server the Connection Server runs the query in the related database. The returned data is passed to the Report Engine where the report is processed.
- The Web Intelligence Report Server sends the finished report to the Output File Repository Server.
The Web Intelligence Report Server informs the Web Intelligence Job Server that the report is successfully generated, which, in turn, informs the CMS of the updated status.

Finally, CMS updates the status of the instance record in the System database.

CA Business Intelligence and Firewall Considerations

Most of the communication between CA Business Intelligence services utilizes dynamically chosen ports, by default. The CMS maintains a directory listing of registered IP addresses and port numbers so that when one service needs to communicate with another it first asks CMS how to reach the other service.

In a firewall environment, this could present a challenge unless port usage was configurable. Fortunately, it is possible to configure the ports used by various components, when needed, by using commands such as –requestport and –port. Further details can be found in:

- For **CA Business Intelligence 2.x**:
  - *BusinessObjects XI Release 2 - Deployment and Configuration Guide*
  - Specific use case can be found in *BusinessObjects XI Release 2 - Pattern Book for Windows*.

- For **CA Business Intelligence 3.x**:  
  - The “Working with Firewalls” chapter in *BusinessObjects Enterprise XI 3.1 Administrator’s Guide*.

To locate these SAP BusinessObjects guides go to [http://help.sap.com/businessobject/product_guides/](http://help.sap.com/businessobject/product_guides/) and specify "BusinessObjects Enterprise" and your particular release (for example, "BusinessObjects XI Release 2" or "BusinessObjects XI 3.1") in the search filter to display the applicable documents.

**Note:** Not all BusinessObjects components use the directory listing provided by the CMS to make their initial connections. See the documents noted above for additional details.
CA Business Intelligence and High Availability

It is the highly modularized architecture of BusinessObjects XI that is described above that makes the solution very flexible and allows it to be configured to efficiently support high availability.

The first step that needs to be taken is to clearly decide what level of high availability is required and how much it is worth. Very robust and highly available solutions typically require significant investments in hardware to support both CA Business Intelligence itself as well as the related infrastructure.

For true high availability you need to ensure:

- **Fault Tolerance**
  
  To provide a good level of fault tolerance you need to ensure that all involved components (applications, database servers, CA Business Intelligence servers, network infrastructure, etc) have standby infrastructure that can take over if/when the original infrastructure is failing. It is also important to identify the length of time during which a service interruption is acceptable.

- **Disaster Recovery**
  
  A full scale disaster recovery plan is key to ensuring that all business critical data is saved and that, at a minimum, the most critical applications can get up and running within a set timeframe in the event of a full system failure. If at all possible the backup system should be located in a different geographical location and should be able to be started without any contact with the main site.

In defining your plans for high availability, it is important to clearly identify service levels that are acceptable from both an operation as well as a cost perspective. This includes identifying the length of time during which it will be acceptable to be without these reports and the actual financial costs of doing so? High availability is important but, while reporting is becoming more and more important to the business, it is often still not extremely time sensitive. It might be acceptable to have a slight delay in delivering reports as long as all the data is still there and the reports can be produced within a well defined Service Level Agreement period.

For more information on CA Business Intelligence in high availability situations see:

- **For CA Business Intelligence 3.x:**
  
  - The “Complex Installation” appendix in CA Business Intelligence Implementation Guide r3.x
    (https://support.ca.com/cadocs/1/j028121e.pdf)
  
  - BusinessObjects Enterprise XI 3.1 Administrator’s Guide
For CA Business Intelligence 2.x:

- BusinessObjects XI Release 2 Pattern Book for Windows
- BusinessObjects Enterprise XI Release 2 Deployment and Configuration Guide
- BusinessObjects XI Release 2 Pattern Book for Windows

For All Versions:

- Product documentation and best practices for your database servers and applications
- CA Implementation Best Practices

This site provides generic information about Fault Tolerance as well as some more specific advice for many CA Technologies solutions.

https://support.ca.com/phpdocs/0/common/impcd/r11/FaultTolerance/FaultTolerance_Frame.htm

The SAP BusinessObjects guides above and other products guides for BusinessObjects XI can be found on http://help.sap.com/businessobject/product_guides. Select the Product "BusinessObjects Enterprise" and the release "BusinessObjects XI Release 2" or "BusinessObjects XI 3.1".

Using multiple servers to obtain CA Business Intelligence high availability

The following discussion of “Conceptual Architecture Models” provides several high level examples on how BusinessObjects XI can be separated onto multiple machines. When done correctly this approach will provide both high availability and better scalability, however since you typically use all infrastructure components for scalability you can expect a degraded performance in situations where certain components fails.

What is important to realize is that BusinessObjects XI uses service oriented architecture in a way that each of its services can be distributed to one or multiple servers that are separated from each other. Most of these services are working on objects and they can easily balance load between them, so if one service goes down another service of the same type can take over for it. The exceptions to this are:

- Central Management Service (CMS, see page 14 for details)

  This component keeps track of all other services and how objects move between them and, therefore, it needs some special attention in a high availability situation.

  However, there are well documented methods for CMS Clustering. See “Clustering Central Management Servers” in the BusinessObjects Enterprise XI Release 2 Deployment and Configuration Guide for more details.
- **Active File Repository Server Pair (Input/Output FRS)**

  These components don’t need the same special attention as the CMS component, but you should know that, even though you can implement multiple Input and Output FRS, only one pair will be active at any given time. The first FRS pair that registers with the CMS will become the active FRS and all others will be considered passive. If an Active FRS fails, the CMS will promote another registered FRS to become active. For this to work correctly it is important that all FRS of a certain type (input or output) use a file share that is highly available and shared between all of the FRS servers.

To summarize, BusinessObjects XI’s use of a Service Oriented Architecture makes it relatively easy to create a highly available BusinessObjects XI core solution - as long as you have enough hardware to spread out the components and take some special considerations when implementing the CMS.

**Note:** These are standard BusinessObjects XI configurations, however when using applications that are closely integrated with CA Business Intelligence it is important to verify that their specific customization/configuration is supported in this type of configurations.

### Other critical factors to ensure high availability

So, assume you have implemented all the core CA Business Intelligence services in a highly available fashion, does this mean that you can expect to reach your reports at any time? Of course not. It is just as important and, in some cases significantly more important, to ensure the surrounding infrastructure is highly available as well. This includes the following:

- **Web Application Server**

  The BusinessObjects XI solution can be implemented to take advantage of a number of different web application servers, such as Tomcat, WebSphere, WebLogic, Oracle or SAP NetWeaver. Check the product documentation provided with your particular Web Application Server, as well as with BusinessObjects, to find out how to best configure it for high availability.

  Note that there is a chapter in the *BusinessObjects Enterprise XI Release 2 Deployment and Configuration Guide* covering how to “Creating a WebSphere Cluster”.

- **Database Server**

  Depending on your database server there are many options to provide various levels of high availability (mirroring, clustering, etc). It is highly recommended that you reference the product documentation and best practices for your database.

  Depending on your specific reporting needs it may be a good practice to work on a snapshot of the actual data. This will also make it easier to implement a high availability solution for your reports.
For additional insights, consult the following sources:

- **MS SQL**

- **Oracle**
  - [http://download.oracle.com/docs/cd/B19306_01/server.102/b25159/toc.htm](http://download.oracle.com/docs/cd/B19306_01/server.102/b25159/toc.htm)

- **Application Server**
  A failing Application Server can result in a report that includes either stale or incorrect data and in many situations, this can cause more problems than a failed report. For this reason application servers are often one of the more critical pieces to have secured. Please see your application’s product documentation and best practices for advice on how best create a highly available solution.

  Also see the Fault Tolerance section on CA Implementation Best Practices [https://support.ca.com/phpdocs/0/common/impcd/r11/FaultTolerance/FaultTolerance_Frame.htm](https://support.ca.com/phpdocs/0/common/impcd/r11/FaultTolerance/FaultTolerance_Frame.htm)

- **Network failures, electrical outages, flooding of datacenter, etc...**
  There are, of course, many other events that can trigger outages, some that can be addressed relatively easily and some that require implementing standby datacenters in other parts of the world. This document will not go into the details in regards to any of these possibilities, but it is important to be aware of these risk factors when you design the physical solution and decide where various components should be located.

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**Conceptual Architecture Models**

The following information, along with an understanding of how you expect to use the reporting infrastructure and an awareness of how important it is for that infrastructure to be highly available, can help you decide which basic architecture model to use. It is also important to read and understand the section “Dedicated Reporting Server vs. Central, Shared Server” on page 3.
Simple One Machine Configuration

This is the most basic and common configuration. It includes all BusinessObjects XI servers on a single machine. This basic architecture form still allows the architect to tune the environment by adding more and faster hardware, such as CPU, RAM and hard drives, as well as implementing multiple instances of certain BusinessObjects XI Servers. Since this all happens within a single physical or virtual server it is called “vertical scaling.”

The relatively straightforward design still guarantees the BusinessObjects XI system its own set of resources that it doesn’t need to share with other applications or databases.

CA Business Intelligence is a special case of this architecture. The installer installs all required components for a specific product on one machine.

Configurations over Multiple Machines

If your organization requires higher performance or high availability, this can be accomplished by distributing the implementation across multiple servers – also called “horizontal scaling.” Depending on what you are trying to accomplish and how many servers you have available there are a number of approaches you can take. An overview of options is provided below. Regardless of which of these approaches you choose, if you have multiple CMS or FRS components they need to be configured to work as clustered components (see “CA Business Intelligence and High Availability” on page 26).

**Note:** If you do not require High availability for your reporting infrastructure, and are not deploying a shared BusinessObjects XI instance across a large reporting environment, use of a distributed BusinessObjects XI infrastructure is not typically necessary to support the reporting needs of your CA solution.

In addition to the information provided in the next few sections, you should also familiarize yourself with the section “CA Business Intelligence Components” on page 12 for more details on the different BusinessObjects XI components and their communication requirements.
Multiple Fully Configured CA Business Intelligence Machines

The first approach is simply to install the complete BusinessObjects XI stack of servers on each of the physical or virtual machines. The main reason for this is to provide a solution for high redundancy and fault tolerance.

BusinessObjects XI Servers Distributed Over Multiple Machines

The second and, in a multi-server environment, the most common approach is to configure the environment so that the different types of BusinessObjects XI servers are separated onto different physical or virtual machines. How the servers should be distributed depends a little bit on what type of load is expected. For example:

- Server 1: CMS + Event Server (optional)
- Server 2: Application Tier and Crystal Report Cache Server
- Server 3: Processing Tier and File Repository Servers
  
  This includes Job Servers, Web Intelligence Report Server, Report Application Server, Page Server and Input/Output File Repository Servers

This architecture option is a good way to extend the performance and a good solution if your reporting infrastructure needs to support many users who are simultaneously using a large number of reports. Depending on the actual usage pattern, the way the servers are distributed can be adjusted.
Note: Separating the different types of BusinessObjects XI components across multiple physical or virtual servers is considered an advanced configuration:

- The install of components on secondary servers requires you to use the original BusinessObjects XI installer instead of the CA Business Intelligence installer.
- This is an advanced configuration that requires an experienced BusinessObjects XI architect to design the solution, including verifying that the involved products support this scenario.

Multiple Fully Distributed Environments

Finally, if the environment requires the highest possible performance and high availability, you can distribute the BusinessObjects XI serves as described above and then, for redundancy, duplicate each one of these machines.
Chapter 4: Typical Scenarios

This chapter examines the following scenarios depicting sample BusinessObjects XI architectures, based on the guidelines provided in the previous chapter.

- Scenario 1: Dedicated CA Business Intelligence Server
- Scenario 2: Products Co-located with CA Business Intelligence
  (Spectrum prior to r9.2 & Proof of Concepts are typical examples of this)
- Scenario 3: One Common CA Business Intelligence Server
- Scenario 4: Multiple Servers for Performance and Redundancy

**Note:** If your environment utilizes virtualization technology such as VMware ESX or similar, you should consider implementing the solution using virtualization. This option would further simplify the process of adding resources to different components when the need occurs. However, since CA Business Intelligence is a resource intensive solution it’s critical to make sure that there are sufficient resources available for each logical machines within the host server. For information about Virtualization best practices and the related SAP BusinessObjects support statement see the following links:

https://support.ca.com/phpdocs/0/common/impcd/r11/virtualization/virt_Frame.htm,

Below is a summary of the scaling recommendations that are discussed in further detail in the previous chapter:

<table>
<thead>
<tr>
<th>Server type</th>
<th>Supported load per server</th>
<th>Supported load per CPU</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMS</td>
<td>• 600 concurrent active users per CMS</td>
<td>• 500 concurrent active users per CPU</td>
</tr>
<tr>
<td></td>
<td>• 100-150 simultaneous requests per CMS</td>
<td>• 100-150 simultaneous requests per CPU</td>
</tr>
<tr>
<td>Web Application Server</td>
<td>400 concurrent users per Web Application Server</td>
<td>• 400 concurrent users per CPU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 100 simultaneous requests using the ActiveX viewer per CPU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 50 to 75 simultaneous requests using the DHTML viewer per CPU</td>
</tr>
<tr>
<td>Cache Server</td>
<td>400 simultaneous requests per Cache Server</td>
<td>200 simultaneous requests per CPU</td>
</tr>
<tr>
<td>Report Job Server</td>
<td>20 simultaneous report jobs per Job Server</td>
<td>5 simultaneous report jobs per CPU</td>
</tr>
<tr>
<td>List of Values Job Server</td>
<td>20 simultaneous requests per List of Values Job Server</td>
<td>5 simultaneous requests per CPU</td>
</tr>
<tr>
<td>Web Intelligence Report Server</td>
<td>CA Business Intelligence 2.0 supports 25 simultaneous viewing sessions per Web Intelligence Report Server. In CA Business Intelligence 3.x, one service scales across multiple CPUs.</td>
<td>25 simultaneous viewing sessions per CPU</td>
</tr>
<tr>
<td>Report Application Server</td>
<td>200 simultaneous requests per Report Application Server</td>
<td>25 simultaneous requests per CPU</td>
</tr>
<tr>
<td>Page Server</td>
<td></td>
<td>25 to 75 simultaneous viewing sessions per CPU. (50 for initial calculations.)</td>
</tr>
</tbody>
</table>
Note: All recommendations are ROUGH estimates based on experience and BusinessObjects XI product documentation; the actual requirements can vary significantly depending on the actual usage. For example, although you can probably push the environment a little bit further, if you create complex reports or perform other complex tasks you will need significantly more hardware than is listed.

Note: Much of this information is collected from the following documents where you also can find more details:

- The "Improving Performance" chapter in the BusinessObjects Enterprise XI 3.1 Administrator’s Guide.
- BusinessObjects Enterprise™ XI Release 2 Deployment and Configuration Guide
- BusinessObjects Enterprise™ XI Release 2 Administrator’s Guide
- BusinessObjects XI Release 2 Pattern Book for Windows

These and other products guides for SAP BusinessObjects can be found on http://help.sap.com/businessobject/product_guides. Select the Product "BusinessObjects Enterprise" and the release "BusinessObjects XI Release 2" or "BusinessObjects XI 3.1”.

Scenario 1: Dedicated CA Business Intelligence Server

CA Business Intelligence is a version of BusinessObjects XI that is embedded with your CA Technologies solution and specifically tuned to work with that solution’s reporting infrastructure. Using this to create a dedicated reporting server for each solution is the most common deployment scenario since the embedded version of BusinessObjects XI is already pre-tuned to meet the needs of the specific solution that it is being deployed with. It uses a very simple architecture based on a single CA Business Intelligence server that is typically located on a separate physical or virtual server.

Many applications require an adapter or some other small piece of code to integrate with CA Business Intelligence. Aside from this exception, best practice is to completely separate the reporting infrastructure from the core application. This enhances scalability, simplifies maintenance and makes it easier to add resources to either component when required.
As long as the physical/virtual server has sufficient resources (typically CPU and RAM), and as long as the bulk of the report generation is scheduled to run outside of typical business hours this configuration should support all the reporting needs for the CA product it is bundled with. If you have multiple solutions from CA Technologies you will have one CA Business Intelligence instance for each solution or look at scenario 3 that outline a shared CA Business Intelligence instance. The advantages and disadvantages of this type of configuration are discussed in the section “Dedicated Reporting Server vs. Central, Shared Server” on page 3.

However, if you anticipate that a large number of users will be simultaneously accessing these reports you may want to consider the architectural options outlined in Scenarios 3 or 4. Note that those architectures require custom BusinessObjects XI implementation.

**Architecture Overview**

The architecture for this scenario is quite simple – all required CA Business Intelligence components, including the CMS database (default is MySQL, but other databases are supported), are installed by the CA Business Intelligence installer on a single physical or virtual server.
**Scenario 1: Dedicated CA Business Intelligence Server**

**Hardware Specifications**

The hardware estimates provided below are based on the number of concurrent active users and simultaneous users of the different types of actions. There are many more factors that need to be considered for more exact sizing recommendations; however, these estimates provide a sufficient starting point. If you typically run very complex reports or perform any other resource intensive tasks, you should obtain more detailed estimates – and, in some situations, consider the alternative architectures proposed in Scenarios 3 or 4.

<table>
<thead>
<tr>
<th>Concurrent Active Users</th>
<th>Simultaneous Requests (SR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 400</td>
<td>&lt; 100-150 Simultaneous Request to CMS</td>
</tr>
<tr>
<td></td>
<td>&lt; 50 Simultaneous Request for Crystal Reports</td>
</tr>
<tr>
<td></td>
<td>OR &lt; 25 Simultaneous Request for WEB Intelligence Reports</td>
</tr>
<tr>
<td></td>
<td>OR &lt; 25 Simultaneous Request from Advanced DHTML View</td>
</tr>
</tbody>
</table>

**Note:** The number of simultaneous requests listed above assumes that the embedded install implemented one server of each required type. With additional servers the scalability can be pushed further (see Scenario 2 for comparison).

As you can see it is important to understand what type of reports are being generated by bundled application since this can significantly impact how many simultaneous request the server can handle. See the earlier chapter on “CA Technologies Solutions and CA Business Intelligence” to see what type of reports your product us using.

<table>
<thead>
<tr>
<th>Comments</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows 2003 SE</td>
<td>2 CPU</td>
</tr>
<tr>
<td>Static IP Address</td>
<td>2-4 GB RAM*</td>
</tr>
<tr>
<td>CA Business Intelligence.</td>
<td>NIC 100Mb/s</td>
</tr>
<tr>
<td></td>
<td>60 Gb or more</td>
</tr>
</tbody>
</table>

* 2 GB RAM can be sufficient in small environments, however it is highly recommended that you use a minimum of 4 GB of RAM.
Scenario 2: Products Co-located with CA Business Intelligence

Even though best practice normally dictates that you install the CA Business Intelligence server separate from the primary application, under certain circumstances and with certain products this "rule" can be broken.

A good example of this is CA Spectrum 9.1 (and previous releases). In order to support the close integration between CA Business Intelligence and Spectrum OneClick™ for these releases both components must be located on the same server. This is no longer a requirement in CA Spectrum IM 9.2.

If you have other products that require a CA Business Intelligence infrastructure using this Spectrum reporting server to meet the reporting needs of these other products is generally not recommended. Instead you should configure additional CA Business Intelligence environments to support those products.

Note: Installation advice and pre-requisites information for the Spectrum Report Manager - including both CA Business Intelligence and Spectrum OneClick™ - is provided in the Report Manager Installation and Administration Guide.

Another example in which this configuration would be appropriate is a demonstration – or "proof of concept" – deployment with limited load. In this case you should make it clear that the deployment not be later moved into production.

In general, the sizing recommendations for CA Business Intelligence under this scenario are similar to those identified in the previous scenario. However, you will also need to add additional resources for the co-located product.
Scenario 3: One Common CA Business Intelligence Server

This is a common scenario for organizations that use the CA Business Intelligence. Even though it is a very simple architecture, it still provides good flexibility and scalability and it allows you to reuse your reporting infrastructure for multiple products.

As long as the physical/virtual server has sufficient resources (typically CPU and RAM) the architecture can scale vertically by implementing multiple instances of the BusinessObjects XI components/servers. This is configured through the Central Configuration Manager after the base install of CA Business Intelligence (see “Adding and deleting servers” in BusinessObjects Enterprise™ XI Release 2 Deployment and Configuration Guide for additional details). An example of this is provided below, using different Server Classes based the expected load on the server.

Architecture Overview

In this architecture one or more instances of every BusinessObjects XI component/server is installed on a single server. The following sections identify the important components, and related considerations. For more information see the product documentation or the previous “Architectural Considerations” chapter.
Scenario 3: One Common CA Business Intelligence Server

# Hardware Specifications

The hardware estimates provided below are based on the number of concurrent active users and simultaneous users of the different types of actions. There are many more factors that need to be considered for more exact sizing recommendations; however, these estimates provide a sufficient starting point. If you typically run very complex reports or perform any other resource intensive tasks, you should obtain more detailed estimates. See additional sizing recommendations in BusinessObjects XI product guides and Best Practices documents.

<table>
<thead>
<tr>
<th>Concurrent Active Users</th>
<th>Simultaneous Requests (SR)</th>
<th>Server Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 400</td>
<td>&lt; 100-150 SR to CMS</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>&lt; 50 SR for Crystal Reports OR &lt; 25 SR for WEB Intelligence Reports OR &lt; 25 SR from Advanced DHTML View</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt; 100-150 SR to CMS</td>
<td>II</td>
</tr>
<tr>
<td></td>
<td>&lt; 50 SR for Crystal Reports OR &lt; 50 SR for WEB Intelligence Reports OR &lt; 25 SR from Advanced DHTML View</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt; 100-150 SR to CMS</td>
<td>III</td>
</tr>
<tr>
<td></td>
<td>&lt; 50 SR for Crystal Reports OR &lt; 25 SR for WEB Intelligence Reports OR &lt; 50 SR from Advanced DHTML View</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt; 100-150 SR to CMS</td>
<td>IV</td>
</tr>
<tr>
<td></td>
<td>&lt; 50 SR for Crystal Reports OR &lt; 50 SR for WEB Intelligence Reports OR &lt; 50 SR from Advanced DHTML View</td>
<td></td>
</tr>
<tr>
<td>Less than 600</td>
<td>&lt; 100-150 SR to CMS</td>
<td>V*</td>
</tr>
<tr>
<td></td>
<td>&lt; 100 SR for Crystal Reports OR &lt; 100 SR for WEB Intelligence Reports OR &lt; 100 SR from Advanced DHTML View</td>
<td></td>
</tr>
</tbody>
</table>

* In a larger environment you should carefully consider implementing a distributed environment as described in Scenario 4 below.
**Note:** As you can many factors can influence a single recommended server class. Use common sense, and don’t push each report type to the limit the server can support. For example a machine of class II can typically support 30 Crystal Reports and 30 Web Intelligence Reports.

<table>
<thead>
<tr>
<th>Server Class</th>
<th>Comments</th>
<th>Hardware</th>
</tr>
</thead>
</table>
| I            | Windows 2003 SE  
Static IP Address  
One BusinessObjects XI Server of each type. | 2 CPU  
2-4 GB RAM*  
NIC 100Mb/s |
| II           | Windows 2003 SE  
Static IP Address  
2 Web Intelligence Report Servers. **Note:** Use only one Web Intelligence Report Server in a CA Business Intelligence 3.x environment.  
One each of other BusinessObjects XI Servers. | 2 CPU  
4 GB RAM  
NIC 100Mb/s |
| III          | Windows 2003 SE  
Static IP Address  
2 Report Application Servers  
One each of other BusinessObjects XI Servers. | 2 CPU  
4 GB RAM  
NIC 100Mb/s |
| IV           | Windows 2003 SE  
Static IP Address  
2 Web Intelligence Report Servers. **Note:** Use only one Web Intelligence Report Server in a CA Business Intelligence 3.x environment.  
2 Report Application Servers  
One each of other BusinessObjects XI Servers. | 2 CPU  
4 GB RAM  
NIC 100Mb/s |
Scenario 4: Multiple Servers for Performance and Redundancy

| V | Windows 2003 EE  
Static IP Address  
See Chapter “Architectural Consideration” to decide the required number of instances for each BusinessObjects XI server. | 4 CPU  
8 GB RAM  
NIC 100Mb/s |

* 2 GB RAM can be sufficient in small environments, however it is highly recommended to use a minimum of 4 GB of RAM.

**Note:** Many products also require a small plug-in or integration component to manage a close integration with CA Business Intelligence. When multiple applications will be using the same CA Business Intelligence server, it is critical that you verify that these components can co-exist with each other. For example, in some situations it might be necessary to assign each plug-in a dedicated port.

**Scenario 4: Multiple Servers for Performance and Redundancy**

If you require greater flexibility, have a larger environment or need to be able to guarantee better availability one option may be to divide the various components over multiple servers.

The architecture of BusinessObjects XI allows you to, more or less, freely distribute the individual server components across any numbers of servers. This distribution can entail a number of physical servers or even logical servers in a virtualized environment.

In the following example the BusinessObjects XI components are divided into three servers. This is the most common multiple machine scenario and is often a robust and scalable solution. However, depending on the expected usage pattern, there are many other ways to configure the environment.

The basic sizing guidelines are identical, regardless of whether the implementation occurs in a traditional physical environment or in a virtual one. However, when the deployment will occur in a virtualized environment, it is ensuring that the expected resources really exist when needed is **crucial**. For further information about virtualization best practices see the virtualization section on CA Implementation Best Practices, available from the following link:

https://support.ca.com/phpdocs/0/common/impcd/r11/virtualization/virt_Frame.htm

You should also consult the related support statement from BusinessObjects XI, available from the following link:
Furthermore, to guarantee better availability you can deploy each of the BusinessObjects XI servers on multiple physical or logical machines. The easiest and most straightforward way to accomplish this is to mirror the environment described in scenarios 1 or 3. This option also requires that you set up the CMS in a clustered solution.

**Note:** All guidelines provided in this document are rough estimates. Therefore, it is critical that you further refine these estimates through additional testing and verification in your specific deployment environment. This is especially important in a large and complex environment such as the one described in this scenario. This type of advanced configurations must be verified by an architect who has significant experience deploying BusinessObjects XI solutions. This includes verification that the planned solutions are supported in this advanced BusinessObjects XI configuration.

**Architecture Overview**

The architecture in this scenario is as follows:

The BusinessObjects XI components are distributed across the three servers as follows:

- CMS & Event Server (optional)
- Application Tier & Crystal Report Cache Server
  - Web Application Server and Cache Server
- Processing Tier

For more information about the individual components see the product documentation or the “Architectural Considerations” chapter earlier in this guide.
Hardware Specifications

Central Management Server

<table>
<thead>
<tr>
<th>Concurrent Active Users</th>
<th>Simultaneous Requests (SR)</th>
<th>Server Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 600</td>
<td>&lt; 100-150 Simultaneous Request to CMS</td>
<td>I</td>
</tr>
<tr>
<td>Less than 1200</td>
<td>&lt; 200-300 Simultaneous Request to CMS</td>
<td>II</td>
</tr>
<tr>
<td>Less than 2400</td>
<td>&lt; 400-600 Simultaneous Request to CMS</td>
<td>III*</td>
</tr>
</tbody>
</table>

* One option is to implement two class II servers. The advantage of this is that it provides a level of high availability if one of the servers becomes inaccessible.

<table>
<thead>
<tr>
<th>Server Class</th>
<th>Comments</th>
<th>Hardware</th>
</tr>
</thead>
</table>
| I            | Windows 2003 SE  
Static IP Address  
1 Central Management Server  
0/1 Event Server* | Dual Core CPU  
2 GB RAM*  
NIC 100Mb/s |
| II           | Windows 2003 SE  
Static IP Address  
2 Central Management Server  
0/1 Event Server* | Dual Core CPU  
2 GB RAM*  
NIC 100Mb/s |
| III          | Windows 2003 SE  
Static IP Address  
4 Central Management Server  
0/1 Event Server* | 4 CPU  
4 GB RAM*  
NIC 100Mb/s |

* The event server is not required. If it used, it is often located on the server where the monitored file-based events occur.

**Note:** If you have more than 600 active concurrent users or expect more than 100-150 simultaneous requests you would need to implement clustered CMS. For more details about this configuration, refer to the product documentation.
**Scenario 4: Multiple Servers for Performance and Redundancy**

**Note:** Many products also require a small plug-in or integration component to manage a close integration with CA Business Intelligence. When multiple applications will be using the same reporting infrastructure, it is critical that you verify that these components can co-exist with each other. For example, in some situations it might be necessary to assign each plug-in a dedicated port.

**Application Tier and Crystal Report Cache Server**

This machine manages the Application Tier and we have chosen to implement the Crystal Report Cache Server since it frequently communicates directly with the Web Application Server.

<table>
<thead>
<tr>
<th>Concurrent Active Users</th>
<th>Simultaneous Requests (SR)</th>
<th>Server Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 400</td>
<td>&lt; 400 SR for Crystal Reports</td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>&lt; 100 SR using ActiveX Viewer OR &lt; 50 SR using DHTML Viewer</td>
<td></td>
</tr>
<tr>
<td>Less than 800</td>
<td>&lt; 400 SR for Crystal Reports</td>
<td>II</td>
</tr>
<tr>
<td></td>
<td>&lt; 200 SR using ActiveX Viewer OR &lt; 100 SR using DHTML Viewer</td>
<td></td>
</tr>
<tr>
<td>Less than 1600</td>
<td>&lt; 800 SR for Crystal Reports</td>
<td>III</td>
</tr>
<tr>
<td></td>
<td>&lt; 400 SR using ActiveX Viewer OR &lt; 200 SR using DHTML Viewer</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** As you can see there are many factors that can influence a single recommended server class. Some “wiggle room” has been built into these calculations; therefore, you can typically combine the numbers to some degree unless you are on the upper limit for each of them.

For example, having 100 simultaneous requests issued through the Active X Viewer and 40 simultaneous OLAP Intelligence Requests is typically fine on a Server Class II machine. However, simultaneously requesting 200 simultaneous requests through Active X and 80 OLAP Intelligence Requests is typically not recommended on this class of machine. In this case, Server Class III is recommended.
Scenario 4: Multiple Servers for Performance and Redundancy

<table>
<thead>
<tr>
<th>Server Class</th>
<th>Comments</th>
<th>Hardware</th>
</tr>
</thead>
</table>
| I            | Windows 2003 SE  
Static IP Address  
1 Web Application Server  
1 Cache server | 2 CPU  
2 GB RAM  
NIC 100Mb/s |
| II           | Windows 2003 SE  
Static IP Address  
2 Web Application Server  
1 Cache server | 2 CPU  
4 GB RAM  
NIC 100Mb/s |
| III          | Windows 2003 SE  
Static IP Address  
4 Web Application Server  
2 Cache server | 4 CPU  
4 GB RAM  
NIC 100Mb/s |

Processing Tier

As previously noted, the Processing Tier includes the following servers:

- Web Intelligence Report Server
- Web Intelligence Job Server
- Crystal Report Page Server
- Report Application Server

In addition it can also include the following servers (if they are used in this environment):

- Desktop Intelligence Job Server
- Desktop Intelligence Cache Server
- Desktop Intelligence Job Server
- Enterprise Performance Manager Services  
  Dashboard Manager and Analytics
- Intelligent Question
- List of Values Job Server
By default, the latter services aren’t heavily used in an implementation of CA Technologies solutions and the number of required instances isn’t going to be directly covered in this document; however if your environment makes significant use of them you would need to take this into consideration. Otherwise, a single instance of each is fine.

In this architecture we have also included the two File Repository Servers from the Intelligence Tier. The reasoning for this is that they require insignificant amount of CPU & RAM resources and they communicate a lot with the Processing tier.

<table>
<thead>
<tr>
<th>Simultaneous Requests (SR)</th>
<th>Server Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 50 SR for Crystal Reports OR &lt; 25 SR for Web Intelligence Reports OR &lt; 25-75 SR through Advanced DHTML Viewer</td>
<td>I</td>
</tr>
<tr>
<td>&lt; 50 SR for Crystal Reports OR &lt; 50 SR for Web Intelligence Reports OR &lt; 50-150 SR through Advanced DHTML Viewer</td>
<td>II</td>
</tr>
<tr>
<td>&lt; 100 SR for Crystal Reports OR &lt; 100 SR for Web Intelligence Reports OR &lt; 100-300 SR through Advanced DHTML Viewer</td>
<td>III</td>
</tr>
<tr>
<td>&lt; 200 SR for Crystal Reports OR &lt; 200 SR for Web Intelligence Reports OR &lt; 200-600 SR through Advanced DHTML Viewer</td>
<td>IV</td>
</tr>
</tbody>
</table>

**Note:** As you can see there are many factors that can impact a single recommended server class. However, some “wiggle room” has been built into the calculations so that you can typically combine the numbers unless you are on the upper limit for each of them.

For example, having 25 Simultaneous Crystal Report Requests, 25 simultaneous requests for Web Intelligence Reports and a few requests through the Advanced HTML viewer would typically be fine on a Server Class II machine. However, having 50 simultaneously requested Crystal reports, 50 Web Intelligence reports and 100 reports issued through the Advanced DHTML Viewer is typically not recommended on this machine. In this case, Server Class III is recommended.

Also, remember that these are rough guidelines. Complex and large reports and jobs can completely change the load. Also note that these recommendations assume that most of the reports are scheduled to run in batch during off hours.
## Scenario 4: Multiple Servers for Performance and Redundancy

<table>
<thead>
<tr>
<th>Server Class</th>
<th>Comments</th>
<th>Hardware</th>
<th>HDD</th>
</tr>
</thead>
</table>
| I            | Windows 2003 SE  
Static IP Address  
1 Web Intelligent Report Server  
1 Web Intelligent Job Server  
1 Crystal Report Page Server  
1 Crystal Report Job Server  
1 Report Application Server  
1 Input File Repository Server  
1 Output File Repository Server | 2 CPU  
2 GB RAM  
NIC 100Mb/s | Fast I/O  
(High Speed Network if remote) |
| II           | Windows 2003 SE  
Static IP Address  
1-2 Web Intelligent Report Server  
**Note:** Use only one Web Intelligence Report Server in a CA Business Intelligence 3.x environment.  
1 Web Intelligent Job Server  
1 Crystal Report Page Server  
1 Crystal Report Job Server  
1-2 Report Application Server  
1 Input File Repository Server  
1 Output File Repository Server | 2 CPU  
4 GB RAM  
NIC 100Mb/s | Fast I/O  
(High Speed Network if remote) |
| III          | Windows 2003 SE  
Static IP Address  
1-4 Web Intelligent Report Server  
**Note:** Use only one Web Intelligence Report Server in a CA Business Intelligence 3.x environment.  
1 Web Intelligent Job Server  
1 Crystal Report Page Server  
1 Crystal Report Job Server  
1-4 Report Application Server  
1 Input File Repository Server  
1 Output File Repository Server | 4 CPU  
4 GB RAM  
NIC 100Mb/s | Fast I/O  
(High Speed Network if remote) |
### Scenario 4: Multiple Servers for Performance and Redundancy

| IV | Windows 2003 EE Static IP Address  
|    | 1-8 Web Intelligent Report Server  
|    | Note: Use only one Web Intelligence Report Server in a CA Business Intelligence 3.x environment.  
|    | 1 Web Intelligent Job Server  
|    | 1 Crystal Report Page Server  
|    | 2 Crystal Report Job Server  
|    | 1-8 Report Application Server  
|    | 1 Input File Repository Server  
|    | 1 Output File Repository Server  
| | 8 CPU  
| | 8 GB RAM  
| | NIC 100Mb/s  
| | Fast I/O (High Speed Network if remote)  

This machine typically also includes the following services, Desktop Intelligence Job Server, Desktop Intelligence Cache Server, Desktop Intelligence Job Server, Enterprise Performance Manager Services (Dashboard Manager and Analytics), Intelligent Question and List of Values Job Server. These are normally not heavily used by reporting within CA Technologies solutions and therefore, deploying a single instance of each of the servers that is going to be used should be sufficient.

**Note 1:** For many of the servers, there is a range of how many servers are required. See the earlier “Architectural Consideration” chapter to find out how many each you will need to support your environment.

- The required number of Web Intelligence Report Servers depends on the usage of Web Intelligence Reports (discussed on page 19).
- The required number of Report Application Servers depends on the number of simultaneous requested from Advanced DHTML Viewers (described on page 19)

**Note 2:** Calculating the requirements for HDD requirement is somewhat complex as it depends highly on the complexity of the reports. If possible, it is recommended that you locate this on a SAN, or other advanced disk system, since this provides flexibility to grow, supports high availability and provides good performance for multiple parallel read/write operations.

**Note 3:** The amount of required RAM is dependent, to a large degree, on the number of reports that will be processed. For Crystal Reports, a good rule of thumb to keep in mind is that each report requires approximately 40 times its file size in RAM while it is being processed. For example, if the average report is 500Kb on disk, the required RAM for each report would be 40 * 500Kb → 20Mb. If, at peak load, you would need to simultaneously track 50 reports, you would need approximately 1GB of RAM.
Note 4: The amount of RAM required for Web Intelligence Reports is harder to estimate as it is highly dependent on the complexity of the reports and what type of actions are being performed (viewed, modified, or refreshed). Consequently, the amount of RAM might need further adjustments depending of the specific needs of your environment.

Common Variations

The architecture and server combinations outlined above represents a common way of combining the servers, however when using multiple machines the BusinessObjects XI servers can be combined in almost any way to better support your specific requirements.

A few common variations are:

- Installing the Event Server on the machine where the file based event is monitored.
- Installing the Cache Server with the Page Server.
  
  The reasoning for this is, of course, that these components communicate frequently. If they are located on separate machines they should have good network connectivity to support this communication.

- The File Repository Server should be located so that it has fast access to a fast disk drive and fast network connection to the Processing tier.
  
  In the example above it’s located on the same machine as the Processing Tier.
Chapter 5: Tuning Tips & Tricks

This chapter provides some tips for tuning and using CA Business Intelligence.

Database Configuration & Tuning

When it comes to tuning the overall system, one factor that is easily forgotten is to make sure the database system is correctly configured and appropriately maintained.

A few key pointers for this are:

- Keep the database cache hit rates above 90%
- Make sure the optimizer statistic is recent
- Make sure that the lock granularity is set to “row level”
- Keep track of and avoid lock escalations
- Avoid or minimize log write wait

These are relatively generic guidelines that apply to most database and SQL tuning recommendations. Your database administrator can, most likely, provide additional guidelines for your specific database and environment.

Report Optimization

One of the main problems when it comes to planning any flexible reporting system is that the person implementing the solution has very little control over how the solution is later used. A significant part of the load is dependent on how complex and well written the actual reports are and, in most reporting systems, this is open for changes throughout the lifecycle of the tool. In fact, queries are often written/constructed daily on the fly. Since CA Business Intelligence often supports full flexibility to ask very complex questions over a huge amount of data a single, badly formatted query can often put a huge stress on any infrastructure.

As a result, it is important that report writers be aware of how the design can impact performance. Areas of consideration include:

- Data Modeling
- Universe Design
- Query Design
Following are some recommendations for Universe and Query Design:

- **Process Less Data**

  Only request the information you need and, whenever possible, limit the amount of data to process by using restrictive WHERE clauses.

  For example, if you are working on data for a specific time period, start by sorting out all data outside this period. Also don’t request data from columns unless they will be used.

- **Only Scan Tables Once**

  Avoid executing multiple SELECT statements with similar or identical expressions if they can be merged into one.

  For example:
  - For IF/THEN/ELSE or CASE/SWITCH scenarios, the goal is to calculate complex expressions one time and then use the results multiple times.
  - External Loops that hit the database with the same or similar queries over and over again. Whenever possible design the logic to ask for all the information with one query. This query is likely more complex but the end result will be significantly faster.

- **Avoid Outer Joins**

  Usage of outer joins forces all rows from one table to be read on larger datasets - this is extremely bad for the performance.

- **Driving Tables (Oracle)**

  For example consider the following statement

  ```sql
  SELECT t1.col1, t2.col2 FROM t1, t2 WHERE t1.col3=t2.col3
  ```

  To a large degree, the performance depends on the number of rows in t1 and t2. Oracle will try to optimize this but, if it is unsure, it will select the last table in the FROM clause as the driving table (t2 in our example). In other words, always position the smallest, most restricted table last in the FROM clause.

- **Use Indexes**

  Add commonly used columns to a table-index. This will normally have a huge impact on the performance.

- **Understand how Indexes work...**

  However, when retrieving information from indexed columns it is important to be aware that there are a number of rules or limitations on when the indexes can be used.

  The following rules indicate where indexes are disabled.
  - Avoid calculations or functions on indexed columns.
    
    Example: “use col1 > 100*12” instead of “col1/12 >100”
  - Avoid open patterns (patterns beginning with %)
- Avoid comparison with NULL (IS NULL / IS NOT NULL)
- Avoid NOT Comparisons (Example: "col1 != 0")

- Clearly communicate/mark indexed columns
  As previously noted, indexed columns significantly enhance the performance; however, if the report designer isn’t aware of the indexed columns they cannot take advantage of them.

- Use ROWID, UUID (Oracle, Informix)
  ROWID in Oracle and Informix can be used as a field and thought of as a primary key for uniquely indexed tables. For example, COUNT(t1, ROWID) is significantly faster than COUNT(t1.c1).
Appendix A: CA Technologies Products that Use CA Business Intelligence

The following sections provide information on several CA Technologies products that take advantage of the BusinessObjects XI infrastructure, including a summary of details that might be important for those products and a list of reports that are shipped with the product. These reports can be extended by creating completely new reports or by making slight modifications/updates to existing Web Intelligence reports. For each product there is also a note indicating what version of CA Business Intelligence it is bundled with it and whether the reporting instance has to be used exclusively by the product or if it can share an existing instance of BusinessObjects XI. Note, if you are using an existing instance of BusinessObjects XI it is important to verify that it is correctly patched and that your license is valid for this configuration.

**Note:** The information provided in the individual product’s documentation and support homepages on CA Support Online is the authoritative source and maybe be more recent than what is summarized below. For this reason, this summary provides references to the official product documentation.

**Note:** Existing Crystal Reports can be edited/modified only if the client licenses the Crystal Report Developer XI edition.

The products that are covered in the section below are:

<table>
<thead>
<tr>
<th>Product</th>
<th>Bundled CA BI</th>
<th>Shared CA BI</th>
<th>CA BI² Reports</th>
<th>Other³ Reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA Access Control r12.5 SP1</td>
<td>CA BI 2.1</td>
<td>Yes</td>
<td>59 CR</td>
<td></td>
</tr>
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<td>CA Clarity Project &amp; Portfolio Management (PPM) r12 (12.0.02)</td>
<td>CA BI 2.0 (CA BI 2.1)</td>
<td>Yes</td>
<td>12 CR</td>
<td>27</td>
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<td>CA Host-Based Intrusion Prevention System r8.1</td>
<td>JRC</td>
<td>n/a</td>
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<td>CA Identity Manager r12.5</td>
<td>CA BI 2.1</td>
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<td>CA Mobile Device Management r12.01</td>
<td>BIEK 1.0</td>
<td></td>
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<td>CA Service Desk Manager r12.5</td>
<td>CA BI 3.0</td>
<td>Yes</td>
<td>211 (184 CR, 16 WebI, 11 Dash)</td>
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<td>Bundled CA BI</td>
<td>Shared CA BI&lt;sup&gt;1&lt;/sup&gt;</td>
<td>CA BI&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Other&lt;sup&gt;3&lt;/sup&gt; Reports</td>
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<td>-------------------------------------------------</td>
<td>---------------</td>
<td>--------------------------</td>
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<tr>
<td>CA Service Catalog r12.5</td>
<td>CA BI 3.0</td>
<td>Yes</td>
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<td>CA SiteMinder® r12 SP2</td>
<td>CA BI 2.1</td>
<td>Yes</td>
<td>14 CR</td>
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<td>CA Software Change Manager r12.1</td>
<td>CA BI 3.0</td>
<td>Yes</td>
<td>54 (20 CR, 34 WebI)</td>
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<td>CA Software Compliance Manager r12</td>
<td>CA BI 2.0</td>
<td>No</td>
<td>41 WebI</td>
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<td>CA Spectrum® Automation Manager r11.7</td>
<td>CA BI 2.1</td>
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<td>CA BI 3.0</td>
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<td>CA Spectrum® Service Assurance 2.0</td>
<td>CA BI 3.0</td>
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<td>Yes</td>
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<td>CA Workload Control Center r11.1</td>
<td>CA BI 2.0</td>
<td>15 WebI</td>
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</table>

<sup>1</sup> Limitations do exist, see details below and in product documentation

<sup>2</sup> where noted,

- CR = Crystal Reports
- WebI = Web Intelligence Reports
- Dash = Dashboard Reports

<sup>3</sup> Additional reports provided by a non BusinessObjects solution

### CA Access Control r12.5 SP1

CA Access Control uses CA Business Intelligence to provide reports that enable you to view the security status of each endpoint (users, groups, and resources) from a central location. Data can be collected from each endpoint either on a set schedule or it can be collected on demand. You do not need to connect to each endpoint to find out who is authorized to access which resource. Once data is collected independently from each endpoint it is reported to a central server. Furthermore, this data will continue to report endpoint status without the need for manual intervention. This means that each endpoint reports on its status regardless of whether the collection server is up or down.
For detailed information about these reports see “Creating Reports” in the CA Access Control Premium Edition Enterprise Administration Guide.

All of the CA Access Control reports were created using Crystal Reports Designer XI and are presented through BusinessObjects InfoView in a web-based format. A separate license for Crystal Reports Designer XI is required to customize the provided reports. Another option is to create new custom reports based on Web Intelligence that is licensed with the bundled version of BusinessObjects XI.

Quick Facts

Following is a quick look at what type of reports are provided out-of-the-box, which BusinessObjects XI component can be expected to experience significant additional load when these reports are viewed and whether BusinessObjects XI is bundled with the product:

**Technology:** BusinessObjects XI R2 SP4 (SP5 is shipped on the Report Portal DVD and required for Oracle 11g support)

**Report Types:** Crystal Reports

**# of Reports:** 59 Reports divided into 7 Groups

**Load Impact:** Central Management Server (CMS), Web Application Server (WAS), Cache Server and Page Server (WAS and Report Application Server if viewed through Advanced DHTML Viewer)

**BusinessObjects XI:** Bundled with CA Business Intelligence 2.1.

**Shared Infrastructure:** See “Chapter 7: Implementing Enterprise Reporting” in the Implementation Guide r12.5 SP1.

“If you already have an older version of the Report Portal or a standalone installation of CA Business Intelligence or BusinessObjects Enterprise XI, you do not need to upgrade and can use the existing installation instead.”
Out-of-the-Box Reports

Following is a list of standard reports provided with CA Access Control. These reports can be run as-is or used as the template for developing additional reports with different features. You can also generate completely new reports.

The predefined BusinessObjects Crystal report based reports are:

- **Account management reports**
  - CA Access Control Administrators
  - CA Access Control Group User Membership
  - CA Access Control Groups
  - CA Access Control Inactivity Days
  - CA Access Control Password Change
  - CA Access Control Password Expiration
  - CA Access Control Password Policy Compliance (Accounts)
  - CA Access Control Password Policy Compliance (Hosts)
  - CA Access Control Segregation of Duties
  - CA Access Control User Group Membership
  - CA Access Control Users Creation Date
  - CA Access Control Users Suspend Date
  - CA Access Control Users Update Date

- **Entitlement reports**
  - CA Access Control Baseline Resource Compliance (Hosts)
  - CA Access Control Group Privileges
  - CA Access Control Resource Access by Group
CA Access Control Resource Access by User
CA Access Control User Privileges

- **Miscellaneous reports**
  CA Access Control Monitored Files
  CA Access Control Monitored Programs
  CA Access Control UNIX Hosts with Unload Considerations
  CA Access Control UNIX Unload Readiness

- **Policy management reports**
  CA Access Control Policy Assignment
  CA Access Control Policy Deployment Scorecard
  CA Access Control Policy Deployment Scorecard by Host
  CA Access Control Policy Deployment Scorecard by Host Group
  CA Access Control Policy Deployment Status by Host
  CA Access Control Policy Deployment Status by Host Group
  CA Access Control Policy Inventory
  CA Access Control Policy Rules
  CA Access Control Policy Versions
  CA Access Control Rule Deviations by Host
  CA Access Control Rule Deviations by Host Group

- **Password policies reports**
  CA Access Control Privileged Accounts by Password Policy
  CA Access Control PUPM Password Policy

- **Privileged accounts management reports**
  CA Access Control Privileged Accounts by Endpoint
  CA Access Control PUPM Roles and Privileged Accounts by User
  CA Access Control Privileged Accounts Requests by Endpoint
  CA Access Control Privileged Accounts Requests by Approver
  CA Access Control Privileged Accounts Requests by Requester
  CA Access Control PUPM Users by Privileged Accounts
  CA Access Control PUPM Users by Role

- **UNIX Authentication Broker reports**
  CA Access Control UNAB Enterprise User Access by Host
  CA Access Control UNAB Access to Hosts by Enterprise User
  CA Access Control UNAB Enterprise Users
CA Clarity Project & Portfolio Management (PPM) r12

CA Clarity PPM r12 includes CA Business Intelligence and, for clients licensed for Actuate iServer, the products also provides out-of-the-box reports for this reporting infrastructure.

If you have a licensed copy of Crystal Reports Developer edition you can also use this to create new or customize the existing Crystal Reports to fit your more specific needs.

For detailed information about the reports see “Chapter 7: Reports”, “Appendix A: Crystal Reports Stock Report Descriptions” and “Appendix B: Actuate Stock Report Descriptions” in the CA Clarity Project & Portfolio Manager - Common Features and Personal Options User Guide. This guide includes information about setting up security and scheduling as well as detailed information about each report. In addition, many of the other more specialized Clarity documents include information regarding how specific reports can be used to address certain tasks/processes.
Quick Facts

Following is a quick look at what types of reports are provided out-of-the-box, which BusinessObjects XI component can be expected to experience significant additional load when these reports are viewed and whether BusinessObjects XI is bundled with the product:

**Technology:**
- CA Business Intelligence 2.0 (BusinessObjects XI R2 SP3+FP3.3)
- CA Business Intelligence 2.1 (BusinessObjects XI R2 SP4)
  (optionally Actuate 9.0 Report Server)

**Report Types:**
- Crystal Reports (Actuate Reports)

**# of Reports:**
- 12 Crystal Reports (27 Actuate Reports)

**Load Impact:**
- Central Management Server (CMS), Web Application Server (WAS), Cache Server and Page Server (WAS and Report Application Server if viewed through Advanced DHTML Viewer)

**BusinessObjects XI:**
- Clarity 8.x/12.0 bundled with CA Business Intelligence 2.0.
- Clarity 8.1.4+/12.0.2+ supports CA Business Intelligence 2.1

**Shared Infrastructure:**
- Clarity is supported in an environment where CA Business Intelligence (with required patches) already is installed by another solution.

**Note:** Clarity is automatically creating users in CA Business Intelligence and it’s important to ensure this security model doesn’t collide with any other application using CA Business Intelligence.
Out-of-the-Box Reports

For detailed information about the reports see the CA Clarity Project & Portfolio Manager - Common Features and Personal Options User Guide. This document includes detailed information regarding the report contents, its prerequisites, parameters and report fields.

The 12 predefined BusinessObjects Crystal report based reports are:

- Budget/Forecast Analysis Report
- Chargeback GL Account Activity Report
- Customer & Provider Chargeback Report
- Customer Invoice Report Key Tasks and Milestone Status Report
- Missing Time Report
- Portfolio Alignment Report
- Investment Status Report
- Project Transactions Inquiry Report
- Resource Assignments Report
- Resource by Role Description Report
- Timesheet Detail Report
If you are using Actuate as your reporting server the following 27 additional reports are available out-of-the-box.

- Budget/Forecast Analysis Report
- Company Listing Report
- Customer Invoice Report
- Key Tasks and Milestone Status Report
- Missing Time Report
- OBS Listing Report
- Portfolio Alignment Report
- Pre-Billing Report
- Project Analysis and Profitability Report
- Project Listing Report
- Project Snapshot Report
- Project Stoplight Report
- Project Transactions Inquiry Report
- Resource Assignments Report
- Resource Bench Report
- Resource Calendar Report
- Resource Listing Report
- Resource Utilization History Report
- Resources by Skill Report
- Revenue Forecast Report
- Skills Listing Report
- Timesheet Detail Report
- Transactions Inquiry Report
- Unfilled Roles Report
- WIP Aging By Customer Report
- WIP Summary Report
- XDM Issues Report
CA Host-Based Intrusion Prevention System r8.1

CA Host-Based Intrusion Prevention System (HIPS) does not use the complete BusinessObjects Enterprise XI infrastructure for reporting but, rather, it utilizes the Java Reporting Component that is bundled with BusinessObjects Crystal Reports. A large number of out-of-the-box reports can be reached directly from the report tab within the HIPS Administration Console.

Quick Facts

Following is a quick look at what types of reports are provided out-of-the-box and whether BusinessObjects XI is bundled with the product:

- **Technology:** BusinessObjects Java Reporting Component (JRC)
- **Report Types:** Crystal Reports
- **# of Reports:** 45 reports divided into 5 groups
- **BusinessObjects XI:** CA Host-Based Intrusion Prevention System is bundled with BusinessObjects Crystal Reports 11.5 JRC
- **Shared Infrastructure:** Not applicable – Does not use a full BusinessObjects XI infrastructure.
- **References:**
  - Support Home Page [https://support.ca.com/irj/portal/prddtlshome?productID=5785](https://support.ca.com/irj/portal/prddtlshome?productID=5785)

Out-of-the-Box Reports

CA HIPS includes 45 predefined reports that are grouped into 5 categories:

- **IDS/IPS**
  - Top 25 intruded HIPS clients
  - Top 25 intruding or data disclosing HIPS clients
  - Top 25 remote intruding stations
  - Top 25 intrusion target or data collections stations
  - Top 25 intruding or data disclosing applications
  - Top 10 intrusions
Top 25 HIPS clients blocked on intrusion attempts
Top 25 HIPS clients blocked on intruding or data disclosing
Top 25 remote stations blocked on intrusions or data collection
Top 25 applications blocked on intruding or data disclosing
Top 25 applications blocked on intrusions attempts

- **OS System Security**
  Top 25 Prevented applications
  Top 25 applications prevented to start
  Top 25 applications monitored to start
  Top 50 prevented file accesses
  Top 50 monitored file accesses
  Top 50 prevented registry accesses
  Top 50 monitored registry accesses
  Top 25 prevented COM object accesses
  Top 25 monitored COM object accesses
  Top 25 prevented service accesses
  Top 25 monitored service accesses
  Top 25 DLLs prevented to load
  Top 25 DLLs monitored to load
  Top 25 blocked devices
  Top 25 applications violating system privileges
  Top 25 monitored applications
  Usage of OS System Security Access Guards
  Access types by COM object access guard
  Access types by device access guard
  Access types by DLL loading access guard
  Access types by file access guard
  Access types by registry access guard
  Access types by spawning access guard
  Access types by service access guard
  Access types by system privilege access guard

- **Applications**
  Top 100 application launched
  Top 100 unknown applications launched
- **Firewall**
  - Top 25 accessed remote ports
  - Top 25 access prevented local ports
  - Top 25 access allowed local ports
  - Top 25 applications accessing the internet
  - Top 25 applications prevented access by the Firewall
  - Top 25 applications monitored access by the Firewall
  - Top 25 IPs blocked by the firewall

- **Server Functionality**
  - Policy Deployment history
  - Policy distribution status
  - Lost track clients
  - Client activity

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**CA Identity Manager r12.5**

CA Identity Manager r12.5 uses BusinessObjects Enterprise XI to design, manage, and view reports from the reporting database. Since Identity Manager provides a runtime version of BusinessObjects, no separate license is required.

The latest version of the product (r12.5) also has a default task that allows you to take a snapshot and move selected data to the reporting database. This makes it easy to efficiently create reports from a well defined point in time.

If you have licensed Crystal Reports Developer edition you can also use this to create new or customize the existing Crystal Reports to better fit your specific business needs.

Additional information regarding reporting options for Identity Manager r12.5 can be found in “Chapter 16: Reporting” in the *CA Identity Manager Administration Guide*. 
Quick Facts

Following is a quick look at what types of reports are provided out-of-the-box, which CA Business Intelligence component can be expected to experience significant additional load when these reports are viewed and whether CA Business Intelligence is bundled with the product:

- **Technology:** CA Business Intelligence 2.1 (BusinessObjects XI R2 SP4)
- **Report Types:** Crystal Reports
- **# of Reports:** 24 reports
- **Load Impact:** Central Management Server (CMS), Web Application Server (WAS), Cache Server and Page Server (WAS and Report Application Server if viewed through Advanced DHTML Viewer)
- **BusinessObjects XI:** Bundled with CA Business Intelligence 2.1.

**Shared Infrastructure:**

See "Chapter 3: Identity Manager Architecture" in the CA Identity Manager Implementation Guide.

"IAM Report Server is powered by Business Objects Enterprise XI. If you have an existing Business Objects server, you can use that instead of the IAM Report Server to generate Identity Manager reports."

Also See the “Reporting Server” section in the CA Identity Manager r12.5 – Platform Support Matrix and the chapter "Report Server Installation" in the Installation Guide.
Out-of-the-Box Reports

The following 24 predefined reports are provided:

- **Account Details**
  Displays a list of account templates with associated provisioning roles, endpoint types, endpoints, and accounts.

- **Administration**
  Displays a list of administrators with their administrative entitlements.

- **Audit.Assign/Revoke Provisioning Roles**
  Displays a list of provisioning role events.

- **Audit.De-Provisioning**
  Displays a list of users and their accounts that were de-provisioned.

- **Audit Details**
  Displays tasks and events with related status details.

- **Audit.Pending Approval Tasks**
  Displays a list of pending approval tasks.

- **Audit.Reset Password**
  Displays the list of users' passwords that have been reset for a given period of time.

- **Endpoint Accounts**
  Displays accounts per endpoint (you can choose which endpoint to view).
- **Endpoint Details**
  Displays a list of all endpoint types, endpoints, and the endpoint attributes.

- **Non-Standard Accounts**
  Displays all orphan, system, and exception accounts.

- **Non-Standard Accounts Trend**
  Displays non-standard accounts trends for orphan accounts, system accounts, and exception accounts.

- **Orphan Accounts**
  Displays all endpoint accounts with no global user in the Provisioning Server.

- **Policies**
  Displays all identity policies.

- **Role Administrators**
  Displays roles and their administrators.

- **Role Members**
  Displays the roles in the report database and lists the members of those roles.

- **Role Owners**
  Displays roles and their owners.

- **Roles**
  Displays the following information for each role in the report database:
  - Tasks associated with the role
  - Member policies and role members
  - Administrator policies and role administrators
  - Owner policies and role owners

- **Snapshots**
  Displays all exported snapshots.

- **Tasks Roles**
  Displays the tasks in the report database and the roles with which they are associated.

- **User Account**
  Displays a list of users and their accounts.

Note: The list of account attributes presented in this report depends on the attributes exported.
- **User Entitlements**
  Displays user’s roles, groups and accounts.
  Note: The list of account attributes presented in this report depends on the attributes exported.

- **User Policy Sync Status**
  Displays the user’s status per policy (which policies should be allocated, deallocated or reallocated).

- **User Profile**
  Displays the following information for users:
  - Name
  - User ID
  - Groups where the user is a member or administrator
  - Roles where the user is a member, administrator, or owner

- **User Roles**
  Displays the roles assigned to a user.

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**CA Mobile Device Management r12.01**

CA Mobile Device Management (MDM) provides out-of-box reporting using the BusinessObjects enterprise reporting environment. You can view, schedule, and edit report properties using BusinessObjects’ web-based portal, InfoView.

Two types of reports are provided: Crystal Reports and Web Intelligence Documents. The Web Intelligence Document reports are pre-formatted using specific reporting fields which you can select at run time.
Quick Facts

Following is a quick look at what type of reports are provided out-of-the-box, which CA Business Intelligence component can be expected to experience significant additional load when these reports are viewed and whether CA Business Intelligence is bundled with the product:

**Technology:** BIEK 1.0 (BusinessObjects XI R2 SP2)

**Report Types:** Crystal Reports and Web Intelligence Reports

**# of Reports:** 22 reports divided into 2 groups

**Load Impact:**
- Central Management Server, Web Application Server, Web Intelligence Report Server when viewing Web Intelligence Reports.
- Central Management Server (CMS), Web Application Server (WAS), Cache Server and Page Server when viewing Crystal Reports.
- CMS, WAS and Report Application Server if Crystal Reports are viewed through Advanced DHTML Viewer

**BusinessObjects XI:** Bundled with Business Intelligence Embedded Kit 1.0.

**References:**
- Support Home Page
  https://support.ca.com/irj/portal/prddtlshome?productID=8011
- Technical Document Index
  https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/8011/8011_techdocindex.html
Out-of-the-Box Reports

There are two categories of reports: Blackberry Enterprise Server Information Reports and User Information Reports.

The **Blackberry Enterprise Server Information Reports** category includes:

- **BES Daily Statistic Report**
  Monitors the performance and utilization of BlackBerry Enterprise Servers. It provides a summary of the messaging and data activity on a specific BlackBerry Enterprise Server. You can customize the report to show daily activity or a selected time period.

- **BES Global Settings Comparison Report**
  Provides a summary of changes in BlackBerry Enterprise Server configuration. The BES Global Settings Comparison report is very important for internal controls audits (e.g., Sarbanes-Oxley compliance). You can use it to compare server configuration between two servers or as a factor of time or date.

- **BES Statistics Report**
  Provides an overview of messaging activities specific to a BlackBerry Enterprise Server. The report summarizes the total daily messaging activity of each server since the BlackBerry Enterprise Server was last restarted. You can use this report to monitor the utilization of each server.

- **MAPI CDO Errors Report**
  Allows you to build a report of all MAPI CDO errors that occurred on a specified BlackBerry Enterprise Server during a standard time frame (i.e., weekly, monthly) or during a specific date range. The detailed MAPI CDO errors are listed in chronological order from the past to most recent and provides the user e-mail, mail server, PIN, mailbox name for each error, and the total number of MAPI CDO errors that occurred during the specified report period.

- **Pending Messages Report**
  Provides a synopsis of the pending message statistics for a BlackBerry Enterprise Server for a specified day. The report provides the maximum pending messages for the day as well as the average number of pending messages for that day for each user account on the BlackBerry Enterprise Server. All results are displayed in a line chart that shows the trend for pending messages for the selected date.

- **System Log report**
  Provides a chronological listing of system events logged during a specified period of time. You can filter the report using a date, range of dates, or by a specific system event.
- **Trap Log report**
  Provides a chronological listing of all traps sent on a specific BlackBerry Enterprise Server. Each entry in the log provides details of the trap and its event ID. The report also provides an accumulative total of trap entries for the user-defined time frame of the report.

The **User Information Reports** category provides a wide range of statistics for individual BlackBerry users within single or multiple BlackBerry Enterprise Server environments. They include:

- **Daily Mail Usage Statistics Report**
  Use this report to allow administrators to balance loads among different servers or plan for expansion. Important for analyzing the capacity utilization and performance of the BlackBerry environment in an organization. The Daily Mail Usage Statistics report provides a summary of mail usage for the entire BlackBerry Enterprise Server environment in an organization. You can customize the report for a single day or a date range as well as create graphical comparisons of different time periods.

- **Detailed User List Report**
  Provides a complete list of all BlackBerry users along with associated detailed information, such as PIN, phone number, server name, operating system version, model number, IMEI, and carrier.

- **Detailed User Statistics**
  Provides detailed usage statistics for individual users. This report is a standard operations audit report that helps administrators determine device preferences, cost benefit analysis, and server preferences.

- **Device Password Status Report**
  Lists all users on a BlackBerry Enterprise Server grouped according to the level of their password. Important for compliances with internal security policies and controls. The report is presented with a cumulative total of users for each password level on the BlackBerry Enterprise Server along with user contact information.

- **Devices Listed by Active Carrier Report**
  Provides a list of the carrier network being used by the BlackBerry devices on the BlackBerry Enterprise Server as of the last full service day. It is useful for comparing service providers, negotiating service contracts and selecting service for new users. It provides a list of all users grouped according to the wireless carriers (when organizations use multiple carriers). The report provides totals for each carrier type as well as user details and a graphic outline of the data.
Report Optimization

- **Devices Listed by BES Report**
  Use as a help desk tool to pinpoint devices in case of problems or loss of devices. Important to maintain inventory details about each user. It provides an inventory of all the users by BlackBerry Enterprise Server. The report provides identification details of each user account (i.e., PIN and phone number). The report also provides an accumulative total of users on each BlackBerry Enterprise Server.

- **Devices Listed by IT Policy Report**
  Provides details including the account holder's name, PIN, and phone number. The Devices Listed by IT Policy report is an inventory report that shows the list of users categorized by different IT policies.

- **Devices Listed by Mail Server/Model/OS**
  - **Devices Listed by Mail Server Report**
    Provides a list of all users grouped by mail server.
  - **Devices Listed by Model Report**
    Provides a listing of all users grouped by BlackBerry device model. The devices listed by model report are important for planning upgrades, verifying inventory, and troubleshooting. It also provides totals for each device model type as well as user details and a graphic outline of the data.
  - **Devices Listed by OS Report**
    Provides a list of all users grouped by the version of the BlackBerry operating system on the device. Important for planning upgrades, verifying inventory, and troubleshooting. The report also provides totals for each OS type as well as user details and a graphic outline of the data.

- **Least Active Mail Users Report**
  Provides a list of the least active mail users on a BlackBerry Enterprise Server with a summary of activity during a user-specified time period. You can select options to report on the top or bottom users on a single or multiple BlackBerry Enterprise Servers. This report is valuable for load balancing a multiple BlackBerry Enterprise Server environment. This report also is important to identify users who do not use the devices frequently enough to justify the costs.

- **Mail Usage Statistics per Day Report**
  Provides a list of the most and least active mail users on a BlackBerry Enterprise Server with a summary of activity during a user-specified time period. You can select options to report on the top or bottom 5, 10, 50, 100, etc. users on a BlackBerry Enterprise Server or multiple BlackBerry Enterprise Servers. This report is indispensable for load balancing a multiple BlackBerry Enterprise Server environment. This report also can help you identify users who do not use the devices frequently enough to justify the costs.
Report Optimization

- **Out of Coverage Report**
  Lists out of coverage user accounts on a chosen BlackBerry Enterprise Server with the total and the longest period of out of coverage in minutes. Used to determine the time spans during each day when user accounts are recorded by the BlackBerry Enterprise Server to be out of coverage. Each user listing can be further broken down to view the periods during the specified day that were out of coverage.

- **User Information Report**
  Provides device details and activity report for each individual user. The report provides a breakdown of the following:
  - The BlackBerry Enterprise Server on which the user is located.
  - Device information (i.e., PIN, phone number, device model, device OS, and IT policy).
  - Cumulative message statistics (since last BlackBerry Enterprise Server restart).
  - Daily device message statistics (user-specified date).

- **User Status Change Report**
  Provides a list of device users who are:
  - De-registrations: Device users that have been removed from the product through the following:
    - Regularly scheduled directory synchronization during the date range of the report and are no longer present in the directory.
    - De-registration initiated by a product administrator or help desk analyst.
    - Device user de-registering the device through the self-service portal.
  - Registrations: Device users that have been added/registered to the product within the date range requested with the report.
  - Group Changes: Device users that have had their Configuration Group changed within the date range requested with the report.
CA Service Desk Manager r12.5

CA Service Desk Manager (formerly CA Unicenter Service Desk) r12.5 provides out of the box reporting using CA Business Intelligence 3.x and includes a large number of predefined reports. Through the BusinessObjects XI Infrastructure, you can drill into details of the out-of-the-box reports and customize them to better fit your specific business needs or build ad-hoc reports that highlight details you are interested at a particular time. Role based reports can be viewed directly within the Reports tab of CA Service Desk UI and, from there, individual users can click a button to access InfoView and manage their personal reports.

Since CA Business Intelligence takes advantage of a Service Desk-aware ODBC driver that connects to the product object engine (domsrv) it is aware of the Service Desk security model, including data partitions and tenancy restrictions.

CA Service Desk Manager is bundled with a large number of reports based on Web Intelligence, Crystal Reports and Dashboard technology. Web Intelligence allows you to rapidly develop additional reports and customize existing reports. In addition, if you have a licensed Crystal Reports Developer edition you can use it to create/customize Crystal Reports to better fit your specific business needs. Custom reports can be designed from scratch or by using one of the existing reports as a template. Regardless of which method you employ, an understanding of the underlying database schema and/or the Business Object universe is critical.

Consult the CA Service Desk entity relationship diagram (ERD) to better understand the table names, field names, and relationships between the tables. This diagram provides a graphical representation of the principal tables and relationships that make up the CA Service Desk subset of the MDB. A PDF version of the ERD can be obtained from the CA Unicenter Service Desk Technical Document Index on http://support.ca.com/. A poster version is also available (See TEC480060 for r12 and TEC394113 for r11.x).

**Note:** Although CA Business Intelligence by default uses a mySQL database, during the install it can be configured to use an existing database. See TEC520339 – “Installation for Microsoft Windows 2008 R2 And Microsoft SQL Server 2008” for more details (https://support.ca.com/iri/portal/kbtech?docid=520339).

Additional information on the reporting components, including security and how to modify default reports, can be found in the CA Service Desk Administration Guide as well as the CA Management Database Overview Guide.
Quick Facts

Following is a quick look at what types of reports are provided out-of-the-box, which CA Business Intelligence component can be expected to experience significant additional load when these reports are viewed and whether CA Business Intelligence is bundled with the product:

**Technology:** CA Business Intelligence 3.0 (BusinessObjects XI R2 3.1 FP1.5)

**Report Types:** Crystal Reports, Web Intelligence and Dashboards

**# of Reports:** 211 (divided into 40 groups/13 top level groups) whereof 184 is based on Crystal Report, 16 on Web Intelligence and 11 Dashboards.

**Load Impact:** Central Management Server, Web Application Server, and Web Intelligence Report Server when viewing Web Intelligence Reports.

Central Management Server (CMS), Web Application Server (WAS), Cache Server and Page Server when viewing Crystal Reports.

CMS, WAS and Report Application Server if Crystal Reports are viewed through Advanced DHTML Viewer.

**BusinessObjects XI:** Bundled with CA Business Intelligence 3.0.

**Shared Infrastructure:** CA Service Desk manager is supported in an environment where CA Business intelligence 3.0 already is installed by other solutions from CA Technologies.

In addition CA Service Desk Manager can work on an existing BusinessObjects Enterprise R3 environment which was not installed through CA Business Intelligence, however we recommend for the greatest level of compatibility and supportability that you install and configure CA Business Intelligence. For details see the section "Existing Installation of BusinessObjects (SAP)" in the *CA Service Desk Implementation Guide*. 
Out-of-the-Box Reports

Following is a list of the BusinessObjects XI Crystal Reports that are bundled with CA Service Desk r12.5. For more information on these reports, consult the CA Service Desk Administrators Guide. In the list a "(w)" denotes Web Intelligence Reports while a "(d)" denotes Dashboard type reports. All other reports are based on Crystal Reports.

- **Aggregate Reports**
  
  Overall Summary

- **Asset Reports**
  
  Asset List

- **Change Order Reports**
  
  - **Aging Reports**
    
    Active Change Orders Aging
    
    Active Change Orders Aging for Categories
    
    Active Change Orders Aging for Groups
    
    Active Change Orders Aging for Priority
    
    Active Change Orders Aging by Priority for Categories
    
    Active Change Orders Aging by Priority for Groups
    
    Active Change Orders Aging by Priority for Status
    
    Active Change Orders Aging for Status
- **Compliance Reports**
  All Rejected Change Orders
  Average duration of Change Orders
  Change Order implementation Cost Details
  Change Order in Detail
  Change Orders by Change Type
  Change Orders by Closure Code
  Change Orders Initiated by Problem/Incident
  Change Orders outside Blackout Window
  Change Orders outside Maintenance Window
  Configuration Items Associated to Change Order

- **Forecast Reports**
  Change Orders Approved and Scheduled for Implementation
  Change Order Waiting for CAB approval

- **Resource Reports**
  Analyst Count by Priority of Open Change Orders
  Change Orders by Failed Service Type for Groups
  Workflow Tasks Pending

- **Trend Reports**
  Trend Report by Group

- **Volume**
  Active Change Orders at Week’s End
  Change Order Totals by Assignee
  Change Orders by Failed Service Type for Change Categories
  Change Orders by Failed Service Type for Statuses
  Change Categories Currently Active
  Total No. of Change Orders implemented
  Total Volume of Change Orders
  Total Volume of Change Orders by Interface
  Workflow Task Aging

  - **Properties Reports**
    Change Properties by Category
    Properties Values by Property
- **CMDB Reports**
  - CI Maintenance Windows

- **Incident and Problem Management Reports**
  - **Effectiveness Reports**
    - Mean Time To Acknowledge & Mean Time To Resolve
  - **SLA Reports**
    - SLA Violation
  - **Traceability Matrix**
    - Incident Traceability Matrix
    - Problem Traceability Matrix
  - **Count**
    - Volume and Trend

- **Issue Reports**
  - **Aging**
    - Active Issues Aging
    - Active Issues Aging for Priority
    - Active Issues Aging by Priority for Categories
    - Active Issues Aging by Priority for Groups
    - Active Issues Aging by Priority for Status
    - Active Issues Aging for Categories
    - Active Issues Aging for Groups
    - Active Issues Aging for Status
  - **Resource**
    - Analyst Count by Priority of Active Issues
    - Issues by Failed Service Type for Groups
    - Plan Task Pending
  - **Volume**
    - Active Issues at Week’s End
    - Issue Categories Currently Active
    - Issue Totals
    - Issues by Failed Service Type for Categories
    - Issues by Failed Service Type for Status
    - Plan task Aging
Total Volume of Issues
Total Volume of Issues by Interface

- **Properties**
  - Issue Properties by Category
  - Issue Property Values

- **Key Performance Indicator Reports**
  - Service Desk Application-Level Transaction Measurements (w)
  - Service Desk Application-Level Transaction Rates of Change (w)
  - Service Desk SQL and Stored Query KPI Values (w)

- **Knowledge Management Reports**
  - **Contact Activity Reports**
    - Document Usage by Contact
    - Searches by Contact
    - System Usage by Contact
    - User Sessions - Visits to Site
    - Users Opening Issues without Searching Knowledge
    - Users Opening Requests without Searching Knowledge
    - Comments by Contact
  
  - **Knowledge Document Effectiveness Reports**
    - Document FAQ Rating
    - Comments by Document
    - Document Ratings
    - Documents Viewed Detail
    - Least Frequently Viewed Documents
    - Most Frequently Viewed Documents
    - Knowledge Feedback
    - Knowledge Usage for Issues
    - Knowledge Usage for Requests
    - Poor Votes
- **Knowledge Document Status Reports**
  
  Candidate Documents for Retirement
  
  Documents by Status
  
  Documents Created Via ‘Knowledge Categories’
  
  Documents Published
  
  Documents Scheduled for Expiration
  
  Documents With Inactive Assignees
  
  Documents with Inactive Owners
  
  Expired Documents
  
  Submitted Knowledge
  
  Unpublished Documents

- **Knowledge Team Productivity Reports**
  
  Contact FAQ Ratings
  
  Contact FAQ Ratings Detail
  
  Contact Information
  
  Documents Solving Issues by Contact
  
  Documents Solving Requests by Contact
  
  Issues solved by document
  
  Requests solved by document
  
  Knowledge Initiators Detail
  
  Knowledge Initiators Summary

- **Search Administration Reports**
  
  Noise Words
  
  Synonyms
  
  Special Terms

- **Search Effectiveness and Usage Reports**
  
  Issues Closed Without Knowledge
  
  Requests Closed without Knowledge
  
  Most Frequent Searches
  
  Searches
  
  Requests Avoided
  
  Issues Closed with Knowledge
  
  Requests Closed with Knowledge
  
  Issues Avoided
- **Service Desk Integration Reports**
  Knowledge Documents Created from Requests
  Documents Solving Requests
  Documents Solving Issues Detail
  Documents Solving Requests Detail
  Knowledge Documents Created from Issues
  Documents Solving Issues
  Issues Created Based on Knowledge Documents
  Requests Created Based on Knowledge Documents
  Time to Issue Resolution
  Time to Request Resolution
  Linked Knowledge to Issues
  Linked Knowledge to Requests

- **System Reports**
  Knowledge Management Metrics

  - **MSP Reports**
    CI Maintenance Window Conflict
    Created Configuration Items Report (w)
    Deleted Configuration Items Report (w)
    Detailed Incident Source (w)
    Incident Categories without Service Type Report (w)
    Incident Resolution Method (w)
    Incident Resolution Report (w)
    Incident Source Report (w)
    Incidents by Category (w)
    Incidents by Hardware Model (w)
    Incidents without associated Asset or CI (w)
    Re-Categorized Incidents
    Reassigned Incidents Report
    Root Cause Category (w)
    Unsuccessful Knowledge Search Report (w)
    Updated Configuration Items Report (w)
- **Dashboards Reports**
  - Detail Incident Source (d)
  - Incident Resolution Dashboard (d)
  - Incidents by Category (d)
  - Incidents by Hardware Model (d)
  - Re-Categorized Incidents (d)
  - Reassigned Incidents Report (d)

- **Operational Dashboards**
  - **Service Desk Manager Daily operations**
    - Request (d)
    - Incident (d)
    - Problem (d)
    - Change Order (d)
    - Issue (d)

- **Request Reports**
  - **Aging Reports**
    - Active Requests Aging for Priority
    - Active Requests Aging by Priority for Groups
    - Active Requests Aging by Priority for Request Areas
    - Active Requests Aging by Priority for Status
    - Active Requests Aging
    - Active Requests Aging for Groups
    - Active Requests Again for Request Areas
    - Active Requests Aging for Status
  - **Count Reports**
    - Volume and Trend
  - **Effectiveness Reports**
    - Mean Time To Acknowledge & Mean Time To Resolve
- **Resource Reports**
  Analyst Count by Priority of Active Requests
  Analyst Summary
  Request List by Analyst
  Violated SLA for Groups
  Requests by Failed Service Type for Groups
  Request Aging Detail by Organization and Analyst

- **SLA Reports**
  SLA Violation

- **Volume**
  Active Request List
  Active Requests at Week’s End
  Activity of Requests
  Analyst List by Organization
  Key Organization Summary
  Open/Closed Call Analysis by Analyst
  Request Activity Counts by Customer Organization
  Request Aging Detail
  Request Areas Currently Active
  Request List
  Request List by Organization
  Request List by Priority
  Request List by Request Area
  Requests by Failed Service Type for Request Areas
  Requests by Failed Service Type for Status
  Total Volume of Requests
  Total Volume of Requests by Interface
  Urgency 1 Summary by Customer
  Violated SLA for Request Areas
  Violated SLA for Status

- **Properties Reports**
  Request Properties by Request Area
  Request Property Values
By Customer Location

- Not Closed Requests by Priority
- Not Closed Requests by Priority with Attached Change Orders
- Resolved Requests by Priority with Resolved Date

Support Automation

- Analyst Logins
- Analyst Metrics
- Assistance Sessions
- Assistance Sessions Metrics
- Tool Usage Summary
- Queue Entries
- Queue Entry Metrics
- Automated Task Execution
- Automated Task Summary
- Active Queued End Users
- Active Assistance Sessions
- Active Analysts

Survey Reports

- Survey Detail
- Survey Summary
- Survey Summary with Comments

CA Service Catalog r12.5

CA Service Catalog r12.5 provides out-of-the-box reporting using CA Business Intelligence 3.x.

The out of the box reports that are shipped with CA Service Catalog are all based on Web Intelligence and can be customized further to fit your specific needs. When creating custom reports it is recommended that you make a copy of the original reports and perform all customization on those copies rather than modifying the original reports directly.

Since CA Business Intelligence installs SAP BusinessObjects Enterprise XI as a stand-alone component. The installation runs independently of CA Service Catalog, allowing a variety of CA Technologies products to share the same Business Intelligence services.
Quick Facts

Following is a quick look at what type of reports are provided out-of-the-box, which CA Business Intelligence component can be expected to experience significant additional load when these reports are viewed and whether CA Business Intelligence is bundled with the product:

**Technology:** CA Business Intelligence 3.0 (BusinessObjects XI R2 3.1 FP1.5)

**Report Types:** Web Intelligence

**# of Reports:** 25

**Load Impact:** Central Management Server, Web Application Server, Web Intelligence Report Server

Other components can be stressed if custom reports are created using Crystal Report or other non default features.

**BusinessObjects XI:** Bundled with CA Business Intelligence 3.0.

**Shared Infrastructure:** CA Service Catalog r12.5 is supported in an environment where CA Business Intelligence 3.0 or BusinessObjects XI 3.1 with required patches (FP1.5 or better) already is installed by another solution.

Additional details can be found in the chapter “Integrating with BusinessObjects Enterprise” of the Integration Guide.

**References:**

Support Home Page
[https://support.ca.com/irj/portal/prdttishome?productID=4931](https://support.ca.com/irj/portal/prdttishome?productID=4931)

Documentation (Including the Integration Guide)
[https://support.ca.com/irj/portal/DocumentationResults?productID=133904&releaseID=ALL&languageID=ENU&actionID=2](https://support.ca.com/irj/portal/DocumentationResults?productID=133904&releaseID=ALL&languageID=ENU&actionID=2)

Certification Matrix
[https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/4931/4931_certmatrix.html](https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/4931/4931_certmatrix.html)

Technical Document Index
[https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/4931/4931_techdocindex.html](https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/4931/4931_techdocindex.html)
Out-of-the-Box Reports

CA Service Catalog includes the following 25 Web Intelligence reports:

- **Account Details**
  Shows the accounts in a business unit as well as the details of those accounts.

- **Adjustment Details**
  Lists the details of the various adjustments provided to a tenant.

- **Invoice Details**
  Provides the details of the invoices raised for a particular business unit / tenant.

- **Ongoing Subscription to Services**
  Provides the details of the active subscriptions for a user.

- **Payment Details**
  Provides the details of the payments posted to various accounts for the chosen tenant.

- **Request Fulfillment Details**
  Shows time taken to Approve, Fulfill and complete all requests which fall within the specified date range. This Report will list the requests that are already completed.

- **Requests - Assets Association**
  Provides the details of the assets associated with various requests.

- **Requests - Change Orders - CI Associations**
  Provides the details of the Change Orders and the CIs associated with the requests for a Business Unit. This report can be further focused to provide details limited to a specific User in that BU.

- **Requests in Specified State For More Than Threshold Duration**
  Provides the list of orders from tenants that have been in the specified state for more than specified duration.

- **Requests Overview**
  Provides the details of the requests by period, tenant and status.

- **Service Catalog for a Tenant**
  Provides the Catalog of various services available for the tenant users.

- **Service Level Agreement Report**
  Identifies defined service request SLAs and their associated metrics. This report acts as a tool for monitoring all SLAs for a particular tenant.

- **Service Options Not Requested**
Provides the details of the offerings that haven’t been ordered by the users of the chosen tenant in the specified period of time.

- Service Request Fulfillment Report
  High-level report detailing service request fulfillment, including average fulfillment times. This report provides a high-level review of Service Request Fulfillment activity.

- Service Request Lifecycle Expectations Report
  Identifies the end-to-end expectations of service requests within a specified date range. This report can be used to monitor and track SLA compliance of a complete Service Request from an overarching “end-to-end” perspective, as well as broken down into its constituent components.

- Services - Assets Association
  Provides a list of Services/Service Options associated with the Asset types.

- Services - CMDB Associations
  Provides the associations of Services with CMDB CI’s.

- Services Becoming Unavailable
  Provides the details for the services that are becoming unavailable in the chosen time frame.

- Services Usage
  Details usage of various services and service options by the tenants. This report provides a tool for monitoring and determining the number of times a service / service option is used by the users.

- Service Usage - Open Requests
  Provides details of the requests for the specified service offerings that are in various stages of the service life cycle.

- Tenant Hierarchy Information
  Provides a hierarchical view of the tenants in a MSP installation.

- Tenant User Information
  Provides the details of the users belonging to a specific tenant and their roles in the respective tenant’s environment.

- Tenant’s Services Consumption
  Provides the details of the costs and services consumed by the tenant between specific periods of time.

- User’s Requests
  Provides the details of the requests raised, approved or fulfilled by a specific user within the designated time period.
- **Violated SLA Report**
  
  Lists violated service request SLAs. This report acts as a tool for monitoring and determining which SLAs have not been met. "#/#" is defined as "# out of #".

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**CA SiteMinder® r12 SP2**

CA SiteMinder r12 SP2 provides out of the box reporting using BusinessObjects XI by default. Earlier releases of CA SiteMinder shipped with Crystal Reports 9.0 type reports that are compatible with BusinessObjects XI.

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**Quick Facts**

Following is a quick look at what type of reports are provided out-of-the-box, which CA Business Intelligence component can be expected to experience significant additional load when these reports are viewed and whether CA Business Intelligence is bundled with the product:

- **Technology:** CA Business Intelligence 2.1 (BusinessObjects XI R2 SP4)
- **Report Types:** Crystal Reports
- **# of Reports:** 14 Reports in 2 Groups
- **Load Impact:** Central Management Server (CMS), Web Application Server (WAS), Cache Server & Page Server (WAS & Report Application Server if viewed through Advanced DHTML Viewer)
  
  Other components can be stressed if custom reports are created using Web Intelligence.

- **BusinessObjects XI:** Bundled with CA Business Intelligence 2.1.

- **Shared Infrastructure:** CA SiteMinder r12 sp2 is supported in an environment where CA Business Intelligence 2.1 already is installed by another solution.
Out-of-the-Box Reports

The CA SiteMinder reports are organized into the following two groups:

- Audit Reports
- Analysis Reports

Audit reports are created from existing audit capabilities of the Policy Server. The Policy Server must be configured to write to a database. Analysis reports are based on run-time policy evaluation functionality, for example, evaluating which users can perform which specific tasks.

CA SiteMinder includes the following reports:

- Activity By User
  Lists activities of all users during the specified time period.
- Administrative Operations by Administrator
  Lists all administrative operations in the policy store by administrator.
- Applications
  Lists all of the configured applications that the user is authorized to use.
- Applications by User
  Lists all users for a given set of applications.
- Denied Authorizations
  Lists all denied authorizations.
- Denied Resources
  Lists all denials of requested resources.
- Policies by Role
  Lists all policies for a specified set of roles in an application.
Report Optimization

- Protected Resources
  Lists all protected resources (realm + rule filter).

- Resource Activity
  Lists all authentication and authorization activity by resource.

- Resources by User
  Lists all resources for a specified set of users.

- Roles by Application
  Lists all roles defined for each specified application.

- Roles by Resource
  Lists all roles defined for a specified resource.

- Users by Resource
  Lists all users associated with each specified resource.

- Users by Role
  Lists all users that belong to a specified role.

More details about these reports can be found in the CA SiteMinder Web Access Manager Policy Server Administration Guide.

CA Software Change Manager r12.1

CA Software Change Manager (SCM) uses BusinessObjects InfoView as a business intelligence (BI) portal to display the reports, and uses CA Business Intelligence r3.0 for generating the reports stored in the CA SCM database. These predefined reports cover security, audit, project, package, and source item/version change related activities. A new Release 12.1 report displays software deployment status. These BusinessObjects-based reports are useful for administrators, managers, quality assurance testers, and developers.

Note: For more information about CA SCM Reports, see the documentation (especially the Implementation Guide, the Workbench User Guide and the CA Business Intelligence Implementation Guide) included on the CA SCM Reports installation media.
Quick Facts

Following is a quick look at what type of reports are provided out-of-the-box, which CA Business Intelligence component can be expected to experience significant additional load when these reports are viewed and whether CA Business Intelligence is bundled with the product:

**Technology:** CA Business Intelligence 3.0 (BusinessObjects XI R2 3.1 + FP1.5)

**Report Types:** Crystal Reports and Web Intelligence

**# of Reports:** 54 Reports in 4 Groups (34 based on Web Intelligence and 20 on Crystal Reports)

**Load Impact:** Central Management Server, Web Application Server, and Web Intelligence Report Server when viewing Web Intelligence Reports.

Central Management Server (CMS), Web Application Server (WAS), Cache Server and Page Server when viewing Crystal Reports.

CMS, WAS and Report Application Server if Crystal Reports are viewed through Advanced DHTML Viewer.

**BusinessObjects XI:** Bundled with CA Business Intelligence 3.0.

**Shared Infrastructure:** See the “Installing CA SCM Reports” chapter in the CA Software Change Manager Implementation Guide. Especially the sections “How to Install CA SCM Reports” and “How to set up CA SCM Reports With Other BusinessObjects Installations”

“You can use CA SCM Reports with CA Business Intelligence, or BusinessObjects that is not related to CA. If you already have CA Business Intelligence installed on your computer, you can directly run the CA SCM Reports installer to install CA SCM Reports.”
Out-of-the-Box Reports

The reports that are delivered out of the box with CA Software Change Manager include:

- **Package Change Activity (14 Web Intelligence and 9 Crystal Reports)**
  Provides information about packages and package activities, such as promotions, approvals, assignments, distribution, and so on.
  
  - Last Action by Package (WebI)
    Last action performed to packages in the selected projects.
  
  - Package Activity by Time (WebI)
    Displays a list of all package activity events for selected packages that has occurred during the selected timeframe.
  
  - Package Activity by User (WebI)
    Displays a list of packages from the selected project(s) and user(s) detailing all event activity for each package in the list. Packages will be grouped by User and then by Project.
  
  - Package Approval History (Crystal)
    Displays a history of package approval actions for each package in the selected project(s).
  
  - Package Assignment Summary by User (Crystal)
    Users with less than the specified number of assigned packages created/modified within a time range indicating a possible low number of package assignments for that user
  
  - Package Deletion Audit (WebI)
    Displays the Package deletion Information. The details of the report include Package name, State, Project, User name and Event time.
  
  - Package Distribution Summary by Project (Crystal)
Displays a summary number of packages per project selected.

- Package Distribution Summary by Project and State (Crystal)
  Displays a summary number of packages in each selected project and the number of packages in each state of that project.

- Package Distribution Summary by User (Crystal)
  Displays a summary number of assigned packages for each selected user.

- Package Distribution Summary by User and Project (Crystal)
  Displays a summary number of packages assigned to each selected user for each selected project.

- Package Location (WebI)
  Packages in the selected projects and the time they entered their current state.

- Package Location History (WebI)
  Number of packages that have entered the selected projects' states during the selected timeframe.

- Package Promotions by Time (WebI)
  Displays a list of all package promotion events for selected packages that has occurred during the selected timeframe.

- Package Summary (WebI)
  Displays a summary of packages in the selected project(s) providing basic details of each package in the selected project(s). Packages will be grouped within each project and state within that project. A: Approved P: Pending Approval R: Rejected F: Frozen <No value>: Does not require approval (package is in a state that does not contain approval processes)

- Packages Approved (WebI)
  Displays a list of packages that have successfully completed the Approval Process defined in the current state for the selected project(s), providing basic details of each Package. Packages will be grouped within each project and the state within that project.

- Packages Created by Project (Crystal)
  Displays a list of packages that have been created within the selected timeframe and project(s). Packages will be grouped by project.

- Packages Created by User (Crystal)
  Displays a list of packages that have been created within the selected timeframe and project(s) for a selected user(s). Packages will be grouped by user and then by project.

- Packages Frozen (WebI)
Displays a list of packages that has began the approval process by at least one user in the execution of the approval process defined in the current state for the selected project(s), providing basic details of each Package. Packages will be grouped within each project and the state within that project.

- **Packages Pending Approval (WebI)**
  Displays a list of packages that are currently pending the successful completion of the approval process defined in the current state for the selected project(s), providing basic details of each Package. Packages will be grouped within each project and the state within that project.

- **Packages Rejected (WebI)**
  Displays a list of packages that have been rejected by at least one user in the execution of the approval process defined in the current state for the selected project(s), providing basic details of each Package. Packages will be grouped within each project and the state within that project.

- **Packages with Activity Summary (WebI)**
  Displays a list of all packages with activity events during the selected timeframe.

- **Packages Without Assignee (Crystal)**
  Displays a list of all packages within the selected project(s) that does not currently have a package assignee.

- **Software Delivery Status Report (WebI)**
  Displays a list of packages with Software Delivery operations, results and other details.

### Project/Lifecycle Change Activity (9 Web Intelligence Reports)

Provides information about projects and life cycle change activities, such as life cycle definitions, change history, approvers, and so on.

- **Lifecycle Change History (WebI)**
  Displays a history of project configuration changes within selected timeframe.

- **Lifecycle Definition (WebI)**
  Displays the project/lifecycle definition detailing the states, views, and processes that exist in each selected project.

- **Project Activity by Time (WebI)**
  Displays a list of all project activity events that has occurred during the selected timeframe.

- **Project Activity by User (WebI)**
  Displays a list of all project activity events by user that has occurred during the selected timeframe.
- Project Summary (WebI)
  Displays a summary of selected project(s).
- Projects with Activity Summary (WebI)
  Displays a list of all projects with activity events during the selected timeframe.
- Projects with Approvals (WebI)
  Displays a list of projects that have a defined approval process within the lifecycle definition.
- Projects With Approvals and No Approvers (WebI)
  Displays a list of projects that have a defined approval process within the lifecycle definition but do not have approvers defined for that process.
- Projects Without Approvals (WebI)
  Displays a list of projects that do not have a defined approval process within the lifecycle definition.

- **Security (8 Web Intelligence and 5 Crystal Reports)**
  Provides information on authentication and security aspects of the projects, packages, and user accounts, such as password policies, failed and successful logins, and so on.
  - Approval Security Audit (WebI)
    Displays a list of packages within the selected project(s) that are assigned to users that are also listed as approvers in the defined approval process within that selected project lifecycle definition.
  - Failed Logins Summary Audit (Crystal)
    Displays a list of users who have exceeded the specified minimum number of failed login attempts within the timeframe selected.
  - Global Password Policy (WebI)
    Password policy rules that apply to all users.
  - Last Password Modification (WebI)
    Displays a list of internal user accounts that have had the account password last modified within the specified timeframe.
  - Last Successful Login (WebI)
    Displays a list of users who have had a successful login since the date specified.
  - Login Audit (WebI)
    Displays the history of login events within a selected timeframe.
  - No Successful Login (WebI)
Displays a list of users who has not had a successful login since the date specified.

- **Password Policy Overrides (WebI)**
  User specific password policy rules that override global rules.

- **System User Group Audit (WebI)**
  Details the user list for each selected user group.

- **User Access (Crystal)**
  This Report gives information about the User accesses at CA SCM Level, Project Level, Form Type, Repository Level and Item Level.

- **User Access by Project (Crystal)**
  User access by project, state and process.

- **User Group Access (Crystal)**
  This Report gives information about the User Group accesses at CA SCM Level, Project Level, Form Type, Repository Level and Item Level.

- **User Group Access by Project (Crystal)**
  User access by project, state and process.

**Source Change Activity (3 Web Intelligence and 6 Crystal)**

Provides information about items and other source change activities, such as snapshots, version changes and deletions, and so on.

- **Item Summary by Project (Crystal)**
  Displays a summary list of items within the selected project(s) and the number of versions created for each item.

- **Items Reserved Summary by Project (Crystal)**
  Displays a summary list of the number of reserved items in each selected project.

- **Items Reserved Summary by User (Crystal)**
  Displays a summary of the number of reserved items for the selected user(s).

- **Package Activity by Package (WebI)**
  Displays a list of packages from the selected project(s) detailing all event activity for each package in the list. Packages will be grouped by Project.

- **Repository Summary (WebI)**
  Displays a summary of selected repositories(s).

- **Snapshots by Project (Crystal)**
  Display a list of snapshots that exists in the selected project(s)

- **Version Activity Summary by Project (Crystal)**
Display a list of projects that have had version activity within the specified timeframe.

- **Version Activity Summary by User (Crystal)**
  Users with less than the specified number of versions created/modified within a time range indicating a low amount of version activity for that user.

- **Version Deletion Audit (WebI)**
  Displays the Version Deletion in the repository information. The audit report for deleted version is based on the specified period of time which will displays user, when, and the location of origination of version.

### CA Software Compliance Manager r12

CA Software Compliance Manager r12 uses BusinessObjects technology to efficiently deliver reports to users as well as to create new custom reports.

The main component of BusinessObjects Enterprise XI used within CA Software Compliance Manager is InfoView. InfoView is a web portal that lets you to interact with reports by viewing, running, and scheduling Web Intelligence (WEBI) reports. WEBI reports are created and administered from InfoView using a WEBI plug-in-based interface.

More information about reporting and customizing reports in CA Software Compliance Manager can be found in "Chapter 2: Understanding Alerts and Reports" in the *CA Software Compliance Manager User Guide*.

### Quick Facts

Following is a quick look at what type of reports are provided out-of-the-box, which CA Business Intelligence component can be expected to experience significant additional load when these reports are viewed and whether CA Business Intelligence is bundled with the product:

- **Technology:** CA Business Intelligence 2.0 (BusinessObjects XI R2 SP3 + FP3.3)
- **Report Types:** Web Intelligence
- **# of Reports:** 41 Reports in 8 Groups
- **Load Impact:** Central Management Server, Web Application Server, Web Intelligence Report Server
- **BusinessObjects XI:** Bundled with CA Business Intelligence 2.0.
Shared Infrastructure:


"BusinessObjects cannot be shared. This installation of BusinessObjects will be used exclusively by CA Software Compliance Manager.”

References:
Support Home Page
https://support.ca.com/irj/portal/prdttlshome?productID=8160

Documentation (including the Implementation Guide and the “Understanding Alerts and Reports” chapter in the User Guide)

Technical Document Index
https://support.ca.com/irj/portal/anonymous/phpdocs?familyPath=0/8160/8160_techdocindex.html

Out-of-the-Box Reports

The reports that are delivered out of the box with CA Software Compliance Manager include:

- **Alerts Reports**
  - License Alert - Terminated Licenses
  - License Alert - Terminating Licenses
  - License Alert - Maintenance Terminated
  - License Alert - Maintenance Terminating
  - License Alert - Maintenance Payment Approaching
  - License Alert - True-up Approaching
  - License Alert - True-up Due

- **Compliance Reports**
  - Compliance Status
  - SW Compliance Summary
  - True-Up

- **Dashboard Reports**
  - Overall Compliance Status
  - Top 10 Manufacturers by Non-compliant Installs
  - Top 10 Manufacturers by Total Installs
Inventory Interpretation Status

- **Data Validation Reports**
  - License Exceptions - Missing License Metrics
  - License Exceptions - Missing Products Covered
  - Product Exceptions - Missing Signature

- **Directory Reports**
  - Company List
  - Contact List
  - Location List
  - Organization List

- **Installation Reports**
  - Software Installation Inventory
  - Installation Compliance Criteria - Hardware Details
  - Installation Compliance Criteria - Contact Details
  - Installation Compliance Criteria - Company Details
  - Installation Compliance Criteria - Location Details

- **License Reports**
  - Effective Full License
  - License Inventory
  - License Keys
  - License Groups
  - License Purchases
  - License Documentation
  - Term License Expiration
  - Waste Report
  - Under-utilized Licenses
  - License Group Summary
  - License Group Processing Status
  - Products Covered

- **Product Reports**
  - Product Hierarchy
  - Product List
  - Signature Definitions
CA Spectrum® Automation Manager r11.7

CA Spectrum Automation Manager r11.7 (formerly CA DCA Manager) uses the BusinessObjects XI infrastructure to host and manage its reports. However, an ordinary user can access and format reports directly through the CA Spectrum Automation Manager Web interface even if he isn’t aware that the reporting server is located on a separate server. To accommodate this, the Spectrum Automation Manager requires a small reporting component to be installed on the CA Business Intelligence server itself.

Quick Facts

Following is a quick look at what type of reports are provided out-of-the-box, which CA Business Intelligence component can be expected to experience significant additional load when these reports are viewed and whether CA Business Intelligence is bundled with the product:

**Technology:** CA Business Intelligence 2.1 (BusinessObjects XI R2 SP4)

**Report Types:** Web Intelligence Reports

**# of reports:** 92 Reports in 10 Groups (one of which contains 5 subgroups)

**Load Impact:** Central Management Server, Web Application Server, Web Intelligence Report Server

**BusinessObjects XI:** Bundled with CA Business Intelligence 2.1.

**Shared Infrastructure:** CA Spectrum Automation Manager r11.7 is supported in an environment where CA Business Intelligence or BusinessObjects XI with required patches (SP4 or better) already is installed by another solution. However, it cannot share a CA Business Intelligence instance with CA Virtual Assurance for Infrastructure Managers r11.7.

The CA Spectrum Automation Manager Reporting Component must be installed on the same system as the BusinessObjects server.
Out-of-the-Box Reports

There are five categories of Web Intelligence Reports provided with CA Spectrum Automation Manager. More details about these reports can be found in the "Reporting" chapter of the Administration Guide:

- **Configuration Reports. This includes:**
  - Basic Managed System Information
  - Basic Managed System Information by Service
  - Data Center - Rule/Action Configuration
  - Service - Rule/Action Configuration
  - System Detail Information for Service
  - System Metrics Configuration

- **Event Based Reports. This includes:**
  - Audit Events
  - Audit Events by Component
  - Events for System
  - Managed Server List
  - Package Delivery Failure/Success
  - Provisioning Failure/Success
  - Rules and Fired Actions

References:

- Support Home Page
  [https://support.ca.com/irj/portal/prddtlshome?productID=8103](https://support.ca.com/irj/portal/prddtlshome?productID=8103)

- Documentation (including the "Reporting" chapter in the Administration Guide and "Add Custom Reports to the BusinessObjects Server" in the Implementation Guide)
  [https://support.ca.com/irj/portal/DocumentationResults?productID=137032&releaseID=ALL&languageID=ENU&actionID=2](https://support.ca.com/irj/portal/DocumentationResults?productID=137032&releaseID=ALL&languageID=ENU&actionID=2)

- Technical Document Index
  [https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/8103/8103_techdocindex.html](https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/8103/8103_techdocindex.html)
- **LPAR Reports. This includes:**
  Frame Entitlement Capacity Over Time
  Inventory List
  Partition Entitlement Capacity

- **Provisioning Reports. This includes:**
  Imaging Job History
  OS Image List
  Packaging Job History

- **Reservation Manager Reports. Includes 5 sub groups of reports:**
  - **Access Permissions Reports. This includes:**
    Image Access by Organizational Unit
    Image Access by User
    Software Group Access by Organizational Unit
    Software Group Access by User
    Software Package Access by Organizational Unit
    Software Package Access by User
  
  - **History Reports. This includes:**
    Machines Provisioned - Daily
    Machines Provisioned - Monthly
    Machines Provisioned by Platform
    Top N Images Provisioned
    Top N Organizational Units
    Top N Projects
    Top N Users

  - **Inventory - Software and Templates Reports. This includes:**
    Image Inventory
    Physical Image Inventory
    Public Reservation Template Inventory
    Software Group Inventory
    Software Package Inventory
    Virtual Image Inventory
– **Inventory - Systems Reports. This includes:**
  - Available Systems
  - Reserved Systems
  - System Inventory
  - System Inventory by Resource Pool
– **Reservations Reports. This includes:**
  - Reservations
  - Reservations - Physical Systems
  - Reservations - Virtual Systems
  - Reservations by Organizational Unit
  - Reservations by Project
  - Reservations by User

- **Status Reports. This includes:**
  - Data Center Monitoring Status
  - Service by Non-Normal Status
  - Service Monitoring Status
  - Status of Non-Normal Services
  - Status of Non-Normal Servers
  - System Monitoring Status

- **Utilization Reports. This includes:**
  - Available Resources - Bare Metal Machines
  - Bottom N Utilized Services
  - Bottom N Utilized Systems
  - Bottom N Utilized Systems by Operating System
  - Bottom N Utilized Systems by Service
  - Data Center Overall Utilization - Daily
  - Data Center Overall Utilization - Detail
  - Data Center Utilization by Service - Daily
  - Data Center Utilization by Service - Detail
  - Overall Utilization of Cluster Machines
  - Overall Utilization of Virtual Machines
  - Provisioned Resources
  - Service Overall Utilization - Daily
  - Service Overall Utilization - Detail
Report Optimization

- Service Utilization by System - Daily
- Service Utilization by System - Detail
- System Utilization
- Top N Utilized Services
- Top N Utilized Systems
- Top N Utilized Systems by Operating System
- Top N Utilized Systems by Service
- **VMware Reports**
  - Bottom N Utilized ESX Systems
  - Bottom N Utilized VMs
  - DataStore Inventory List
  - Inventory List ESX Servers
  - Inventory List VMs
  - Last # of Days Since the Snapshot was Taken
  - Top N Utilized ESX Systems
  - Top N Utilized VMs
  - VMware Tools
- **Zone Reports**
  - Inventory List Host Report
  - Inventory List Zones Report
- **Citrix XenServer Reports**
  - Bottom N Utilized Xen Servers
  - Bottom N Utilized Xen VMs
  - Inventory List Hosts
  - Inventory List VMs
  - Top N Utilized Xen Servers
  - Top N Utilized Xen VMs

Users can easily re-arrange the data provided in these reports, presenting it in different ways, changing the way it is visualized or drilling into more details. More details about the individual reports can be found in the *CA Data Center Automation Manager Administration Guide*.

Additional reports can be created by modifying an existing report or, preferably, creating a new report based on the original.
CA Spectrum® Infrastructure Manager r9.2

The CA Spectrum 9.2 interface is closely integrated with CA Business Intelligence and, in response to frequent requests from earlier releases as well as to support a common reporting infrastructure for CA Technologies products, the integration can now be done without forcing BusinessObjects XI to be co-located with the reporting server. The Report Manager lets you generate and share a variety of informative, up-to-date reports about the inventory, availability, performance, and change and fault history of network assets managed in Spectrum. When you generate a report, Report Manager compiles the data you require and presents it in the format you specify when you set up the report.

Report Manager keeps data current by extracting it from the Spectrum knowledge base at regular intervals and storing it in the Report Manager database. Report Manager enables you to generate many types of reports. Each provides a particular view of some aspect of the network’s assets that is relevant to you or other members of your organization. In other words, Report Manager addresses the information requirements of not only the Information Technology (IT) group but of other groups in your business organization as well.

Quick Facts

Following is a quick look at what type of reports are provided out-of-the-box, which CA Business Intelligence component can be expected to experience significant additional load when these reports are viewed and whether CA Business Intelligence is bundled with the product:

**Technology:** CA Business Intelligence 3.0 (BusinessObjects XI R2 3.1 + FP1.5)

**Report Types:** Crystal Reports & Web Intelligence

**# of Reports:** 133 reports divided into 9 main report groups

**Load Impact:** Central Management Server, Web Application Server, and Web Intelligence Report Server when viewing Web Intelligence Reports.

Central Management Server (CMS), Web Application Server (WAS), Cache Server and Page Server when viewing Crystal Reports.

CMS, WAS and Report Application Server if Crystal Reports are viewed through Advanced DHTML Viewer.

**BusinessObjects XI:** Bundled with CA Business Intelligence 3.0
Shared Infrastructure:

For CA Spectrum r9.2, CA Spectrum Reporting utilizes CA Business Intelligence to display reports.

CA Business Intelligence installs SAP BusinessObjects Enterprise XI as a standalone component. The installation runs independently of any products from CA Technologies, allowing a variety of products to share the same Business Intelligence services. See the Report Manager Installation and Administration Guide.

Note: Since the CA Business Intelligence version that is bundled with CA Spectrum automatically performs several required post install configuration changes, it is highly recommended that you use this version.

References:

Support Home Page
https://support.ca.com/irj/portal/prddtlshome?productID=7832

Documentation (Including the Report Manager Installation and Administration Guide and the Report Manager User Guide)
https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=7/7832/7832_docmanindex.html

Out-of-the-Box Reports

CA Spectrum r9.2 includes 133 reports out-of-the-box. These reports are divided into 9 “master” groups and further subdivided into a total of 31 groups.

Most of these reports are based on Crystal Reports, however, there are also 5 example reports created using Web Intelligence. The Web intelligence Reports can easily be copied and customized, as needed, to fit your specific reporting requirements. To make any major modifications/additions to the Crystal Reports versions you will need to license the Crystal Reports Developer’s edition. For details on this see the Report Manager Installation and Administration Guide.

Following is a list of the reports included. For more information about CA Spectrum and reporting see the Report Manager User Guide and the Report Manager Installation and Administration Guide:

- Alarm Reports

Alarm reports generate historical information about alarm events for assets in the IT infrastructure. Alarm reports can help you assess the general viability of your network, identify alarm trends, find recurring or cyclical problems, and locate specific assets that have had specific alarms in the past (regardless of their current operating state).
- **All (5 Reports based on Crystal Reports)**
  - Alarm Activity By User: All
  - Alarm Count Trend: All
  - Alarm Log: All
  - Top-N Devices and Models with the Most Alarms: All
  - Top-N Most Common Alarms: All

- **Group (5 Reports based on Crystal Reports)**
  - Alarm Activity By User: Group
  - Alarm Count Trend: Group
  - Alarm Log: Groups
  - Top-N Devices and Models with the Most Alarms: Group
  - Top-N Most Common Alarms: Group

- **Individual (3 Reports based on Crystal Reports)**
  - Alarm Activity By User: Selected Devices and Models
  - Alarm Log: Selected Devices and Models
  - Top-N Most Common Alarms: Selected Devices and Models

- **Asset Reports**
  Asset reports generate information about the inventory of assets in the IT infrastructure, including information about asset port availability and asset firmware versions. Asset reports can help you determine how vendor products are distributed throughout the infrastructure and whether they are being used effectively or whether there are opportunities for improvement.

- **All (7 Reports based on Crystal Reports)**
  - Current Assets: All
  - Current Assets (Customizable): All
  - Current Chassis-based Assets: All
  - Current Ports Summary: All
  - Current Port Assets (Customizable): All
  - Current Ports Detail: All
  - Detailed Change Management: All

- **Group (7 Reports based on Crystal Reports)**
  - Current Assets (Customizable): Groups
  - Current Assets: Group
  - Current Chassis-based Assets: Group
  - Current Connection: Group
- **Availability Reports**

  Availability reports provide historical information about up time and down time for assets in the IT infrastructure. They also provide a projected-availability report that enables you to determine the amount of downtime assets can sustain during the remainder of a month before a threshold (or a service level target) is violated.

- **All (5 Reports based on Crystal Reports)**
  - Availability by Class and Vendor: All Devices
  - Availability by Vendor and Type: All Devices
  - Outage Log: All Devices
  - Projected Monthly Availability: All Devices
  - Top-N Least Available: All Devices

- **Group (8 Reports based on Crystal Reports)**
  - Availability: Group
  - Availability: Group (Devices Only)
  - Outage Log: Group
  - Outage Log: Group (Devices Only)
  - Projected Monthly Availability: Group
  - Projected Monthly Availability: Group (Devices Only)
  - Top-N Least Available: Group
  - Top-N Least Available: Group (Devices Only)

- **Individual (4 Reports based on Crystal Reports)**
  - Availability: Selected Devices
  - Availability: Selected Models
  - Projected Monthly Availability: Selected Devices
  - Projected Monthly Availability: Selected Models
Event Reports

Event reports provide information about Spectrum events generated for Spectrum models. You can generate event reports for all models or particular models, and you can generate reports that provide a ranked list of the most frequently occurring events for particular time periods. Additionally, you can specify event codes to include or exclude from all event reports using the event filtering options configured for your Report Manager installation by your Report Manager administrator.

- **All (3 Reports based on Crystal Reports)**
  - Detailed Event Log: All
  - Top-N Devices and Models with the Most Events: All
  - Top-N Most Common Events: All

- **Group (3 Reports based on Crystal Reports)**
  - Detailed Event Log: Group
  - Top-N Devices and Models with the Most Events: Group
  - Top-N Most Common Events: Group

- **Individual (1 Report based on Crystal Reports)**
  - Detailed Event Log: Select Device or Model

Network Configuration Management Reports (optional)

Network Configuration Management reports are installed if a Network Configuration Manager is installed with OneClick and provide information about network configuration activities recorded by Spectrum during the course of on-going management of the infrastructure by the Spectrum Network Configuration Manager application. See the Network Configuration Manager User Guide for additional information.

- **All (3 Reports based on Crystal Reports)**
  - Configuration Changes: All
  - Detailed Configuration Event Log: All
  - Top-N Configuration changes: All

- **Group (3 Reports based on Crystal Reports)**
  - Configuration Changes: Group
  - Detailed Configuration Event Log: Group
  - Top-N Configuration changes: Group

- **Individual (2 Reports based on Crystal Reports)**
  - Configuration Changes: Individual Device
  - Detailed Configuration Event Log: Selected Device or Model
- **Response Time Reports** (optional)

  Response Time reports are installed if the Service Performance Manager application is installed with OneClick and provide information about response time test results and analysis compiled by the Spectrum Service Performance Manager application. The Response Time report pack provides a suite of historical-trend and exception reports that enable you to troubleshoot response time issues before they become crucial problems to network end-users. Reports graphically depict past response time performance as well as trends that indicate whether response time to critical network services is increasing or decreasing. Exception, or TopN, reports detail the best or worst response time areas so proactive action can be taken to address critical issues. See the *CA Spectrum Service Performance Manager User Guide* for additional information.

  - **Detailed Results (3 Reports based on Crystal Reports)**
    - HTTP Test Results
    - Jitter Test Results
    - RTT Test Results

  - **Summarized Results**
    - **Daily (3 Reports based on Crystal Reports)**
      - Basic RTT Test Daily Summary
      - HTTP Test Results Daily Summary
      - Jitter Test Results Daily Summary
    - **Month by Day (3 Reports based on Crystal Reports)**
      - HTTP Test Results Month-by-Day Summary
      - Jitter Test Results Month-by-Day Summary
      - RTT Month-By-Day Test Summary
    - **Month by Week (3 Reports based on Crystal Reports)**
      - HTTP Test Results Month-by-Week Summary
      - Jitter Test Results Month-by-Week Summary
      - RTT Month-By-Week Test Summary
    - **Weekly (3 Reports based on Crystal Reports)**
      - HTTP Test Results Weekly Summary
      - Jitter Test Results Weekly Summary
      - RTT Weekly Test Summary
    - **Yearly (3 Reports based on Crystal Reports)**
      - HTTP Test Results Yearly Summary
      - Jitter Test Results Yearly Summary
      - Test Results Yearly Summary
- **TopN/BottomN (6 Reports based on Crystal Reports)**
  - Best Performing Basic SPM Tests
  - Best Performing HTTP SPM Tests
  - Best Performing Jitter SPM Tests
  - Worst Performing Basic SPM Tests
  - Worst Performing HTTP SPM Tests
  - Worst Performing Jitter SPM Tests

- **Service and SLA Reports** (optional)
  Service and SLA reports are installed if the Service Manager application is installed with OneClick and provide summary and detailed historical information about service, Service Level Agreement (SLA), and service customer models in Spectrum created and managed with the Spectrum Service Manager application. Service and SLA reports enable you to track service assets, gauge service health, and analyze report results to determine how to improve service performance.

- **Customer (9 Reports based on Crystal Reports)**
  - Customer Detail
  - Customer SLA Summary
  - Service Availability by Service customer
  - Service Health by Service Customer
  - Service Summary by Service Customer
  - SLA Detail by Customer
  - SLA Inventory By SLA Customer
  - SLA Status Current and Recent by Customer
  - SLA Summary by Customer

- **Detailed Availability (3 Reports based on Crystal Reports)**
  - Service Availability By Service Customer
  - Service Availability By Service Name
  - Service Availability Variable Health Level

- **Health (4 Reports based on Crystal Reports)**
  - Actual Service Health for Services or Resource Monitors
  - Effective vs. Actual Service Health
  - Service Health by Service Customer
  - Service or Resource Monitor Health by Name
- **Inventory (3 Reports based on Crystal Reports)**
  - Service Inventory
  - SLA Inventory By SLA Customer
  - SLA Inventory By SLA Name

- **Outage (4 Reports based on Crystal Reports)**
  - Top-N Worst Performing Services
  - Top-N Worst Performing Services Including All Outage Types
  - Top-N Worst Service Outages
  - Top-N Worst Service Resources By Total Down Time

- **SLA Status (10 Reports based on Crystal Reports)**
  - SLA Detail By Customer
  - SLA Detail By SLA Name
  - SLA Detail Last N Periods
  - SLA Detail With Resource Outages
  - SLA Status Current and Recent
  - SLA Status Current and Recent By Customer
  - SLA Summary By Customer
  - SLA Summary By Name
  - SLA Summary By Status
  - SLA Summary of Warned or Violated SLAs

- **Summarized Availability (3 Reports based on Crystal Report)**
  - Service Summary By Service Customer
  - Service Summary By Service Name
  - Service Summary Variable Service Health

- **VPLS Reports (4 Reports based on Crystal Report) (optional)**
  CA Spectrum VPLS Manager is a CA Spectrum add-on application that provides management tools to service providers deploying VPLS technology in their environment. By integrating CA Spectrum VPLS Manager with CA Spectrum Reporting, you can view reports for monitoring the health of your VPLS environment. See the *VPLS Manager Solution Guide* for additional information.
  - Top-N VFI
  - VFI Health History
  - VFI Health Summary
  - Site Health History
Sample WEBI Documents (5 Reports based on Web Intelligence)

- Alarm Activity By User - All
- Current Ports Summary – Group
- Event Log – Model
- Top-10 Least Available – All Devices
- Top-5 Most Common Alarms - All

CA Spectrum® Service Assurance 2.0

CA Spectrum Service Assurance (CA Spectrum SA) uses CA Business Intelligence to provide reports that enable you to view the status of each service from a central reporting location using a web interface.

For detailed information about these reports see “Using Reporting” in the CA Spectrum Service Assurance Administration Guide.

All of the CA Spectrum Service Assurance reports were created using Crystal Reports Designer XI and are presented through BusinessObjects InfoView in a web-based format. A separate license for Crystal Reports Designer XI is required to customize the provided reports. Another option is to create new custom reports based on Web Intelligence that is licensed with the bundled version of BusinessObjects XI.

Quick Facts

Following is a quick look at what type of reports are provided out-of-the-box, which CA Business Intelligence component can be expected to experience significant additional load when these reports are viewed, and whether CA Business Intelligence is bundled with the product:

- **Technology:** CA Business Intelligence 3.0 (BusinessObjects XI R2 3.1 FP1.5)
- **Report Types:** Crystal Reports
- **# of Reports:** 10 Crystal Reports
- **Load Impact:** Central Management Server (CMS), Web Application Server (WAS), Cache Server and Page Server

Other components can be stressed if custom reports are created using Web Intelligence.

- **BusinessObjects XI:** Bundled with CA Business Intelligence 3.0

If you do not already have BusinessObjects installed in your enterprise, you must install it before installing CA Spectrum SA using the provided CA Business Intelligence for Windows r3.1 disk. If it is already installed in the environment, the SA Manager and UI Server installation can point to the server where it is located.

References:
Support Home Page
https://support.ca.com/irj/portal/prdttlshome?productID=8257

Documentation
https://support.ca.com/irj/portal/DocumentationResults?productID=138779&releaseID=ALL&languageID=ENU&actionID=2

https://support.ca.com/cadocs/1/CA Spectrum Service Assurance r2 0-ENU/Bookshelf.html

Out-of-the-Box Reports

Following is a list of standard reports provided with CA Spectrum Service Assurance. These reports can be run as-is or used as the template for developing additional reports with different features. You can also generate completely new reports.

The 9 predefined BusinessObjects Crystal Report based reports are:

- **CA Spectrum SA Reports (3 Reports based on Crystal Report)**
  - Service SLA Summary
    Displays information about SLA compliance over a selected time period. You can drill down into details about overall SLA outage and outage periods, and view further details about specific outage periods and root cause alarms.
  - Service Summary
    Summarizes service health and lists outages over a specified time period. You can drill down into details about service health and outage periods and view further details about specific outage periods and root cause alarms.
- **Top Ten Service Degrading CIs**
  Displays the ten CIs that most degraded service health over a specified time period.

  Note: the same report is also available in Top Ten Report group

- **Detailed Reports (4 Reports based on Crystal Report)**
  - **Service Availability**
    Shows the availability for a selected service over a specified time period. The chart shows the total time broken into different states. The table displays the duration and state of individual time segments included in the report time period and lets you view details about specific outage periods.
  - **Service Health**
    Shows the health for a selected service over a specified time period. The chart shows the total time broken into different states. The table displays the duration and state of individual time segments included in the report time period and lets you view details about specific outage periods.
  - **Service Quality**
    Shows the quality for a selected service over a specified time period. The chart shows the total time broken into different states. The table displays the duration and state of individual time segments included in the report time period.
  - **Service Risk**
    Shows the risk for a selected service over a specified time period. The chart shows the total time broken into different states. The table displays the duration and state of individual time segments included in the report time period.

- **Top Ten Reports (4 Reports based on Crystal Report)**
  - **Top Ten High Risk Services**
    Displays the ten services with the most time in high risk states. The chart displays the high risk time percentage for each service. The table displays high risk time segments and lets you view details about individual service risk.
  - **Top Ten Low Quality Services**
    Displays the ten services with the most time in low quality states. The chart displays the low quality time percentage for each service. The table displays low quality time segments and lets you view details about individual service quality.
- **Top 10 Problematic Services**
  Displays the ten services with the most down time. The chart displays the down time percentage for each service. The table displays service down time segments and lets you view details about individual service health.

- **Top Ten Service Degrading CIs**
  Displays the ten configuration items (CIs) that have caused the most service down time. The chart displays the total service down time caused by each CI. The table displays CI and down time details.

  **Note:** the same report is also available in the parent group

**CA Virtual Assurance for Infrastructure Manager r11.7**

CA Virtual Assurance for Infrastructure Manager r11.7 uses the CA Business Intelligence infrastructure to host and manage its reports. However, an ordinary user can access and format reports directly through the CA Virtual Assurance for Infrastructure Manager Web interface even if he isn’t aware that the reporting server is located on a separate server. To accommodate this, CA Virtual Assurance for Infrastructure Manager requires a small reporting component to be installed on the CA Business Intelligence server itself.

  **Note:** CA Virtual Assurance for Infrastructure Managers was formerly known as "CA Virtual Performance Manager" or "CA VPM". As a result some of the documents referenced for this product may still use the former name.

**Quick Facts**

Following is a quick look at what type of reports are provided out-of-the-box, which CA Business Intelligence component can be expected to experience significant additional load when these reports are viewed and whether CA Business Intelligence is bundled with the product:

- **Technology:** CA Business Intelligence 2.1 (BusinessObjects XI R2 SP4)
- **Report Types:** Web Intelligence Reports
- **# of reports:** 61 Reports in 9 Groups
- **Load Impact:** Central Management Server, Web Application Server, Web Intelligence Report Server
- **BusinessObjects XI:** Bundled with CA Business Intelligence 2.1.
Shared Infrastructure: CA Virtual Assurance for Infrastructure Manager r11.7 is supported in an environment where CA Business Intelligence or BusinessObjects XI is already installed, with required patches (SP4 or better), by another solution. However, it cannot share CA Business Intelligence instance with CA Spectrum Automation Manager r11.7.

Note: The CA Virtual Assurance for Infrastructure Manager Reporting Component must be installed on the same system as the BusinessObjects server.

References:

Support Home Page
https://support.ca.com/irj/portal/prddtlshome?productID=5653

Documentation (including the “Reporting” chapter in the Administration Guide and the Implementation Guide)

Technical Document Index
https://support.ca.com/prodinfo/5653/techdoc/

Out-of-the-Box Reports

There are five categories of Web Intelligence Reports provided with CA Virtual Assurance for Infrastructure Manager. More details about these reports can be found in the “Reporting” chapter of the Administration Guide:

- **Configuration Reports.** This includes:
  - Basic Managed System Information
  - Basic Managed System Information by Service
  - Data Center - Rule/Action Configuration
  - Service - Rule/Action Configuration
  - System Detail Information for Service
  - System Metrics Configuration

- **Event Based Reports.** This includes:
  - Audit Events
  - Audit Events by Component
  - Events for System
  - Managed Server List
  - Provisioning Failure/Success
  - Rules and Fired Actions
- **LPAR Reports.** This includes:
  - Frame Entitlement Capacity Over Time
  - Inventory List
  - Partition Entitlement Capacity

- **Provisioning Reports.** This includes:
  - Imaging Job History
  - OS Image List

- **Status Reports.** This includes:
  - Data Center Monitoring Status
  - Service by Non-Normal Status
  - Service Monitoring Status
  - Status of Non-Normal Services
  - Status of Non-Normal Servers
  - System Monitoring Status

- **Utilization Reports.** This includes:
  - Available Resources - Bare Metal Machines
  - Bottom N Utilized Services
  - Bottom N Utilized Systems
  - Bottom N Utilized Systems by Operating System
  - Bottom N Utilized Systems by Service
  - Data Center Overall Utilization - Daily
  - Data Center Overall Utilization - Detail
  - Data Center Utilization by Service - Daily
  - Data Center Utilization by Service - Detail
  - Overall Utilization of Cluster Machines
  - Overall Utilization of Virtual Machines
  - Provisioned Resources
  - Service Overall Utilization - Daily
  - Service Overall Utilization - Detail
  - Service Utilization by System - Daily
  - Service Utilization by System - Detail
  - System Utilization
  - Top N Utilized Services
  - Top N Utilized Systems
Top N Utilized Systems by Operating System
Top N Utilized Systems by Service

- **VMware Reports**
  - Bottom N Utilized ESX Systems
  - Bottom N Utilized VMs
  - DataStore Inventory List
  - Inventory List ESX Servers
  - Inventory List VMs
  - Last # of Days Since the Snapshot was Taken
  - Top N Utilized ESX Systems
  - Top N Utilized VMs
  - VMware Tools

- **Zone Reports**
  - Inventory List Host Report
  - Inventory List Zones Report

- **Citrix XenServer Reports**
  - Bottom N Utilized Xen Servers
  - Bottom N Utilized Xen VMs
  - Inventory List Hosts
  - Inventory List VMs
  - Top N Utilized Xen Servers
  - Top N Utilized Xen VMs

Users can easily re-arrange the data provided in these reports, presenting it in different ways, changing the way it is visualized or drilling into more details. More details about the individual reports can be found in the *CA Data Center Automation Manager Administration Guide*.

Additional reports can be created by modifying an existing report or, preferably, creating a new report based on the original.
CA Workload Control Center r11.1

The reporting function in CA Workload Control Center (WCC) is a web-based component that packages BusinessObjects XI technology, integrated with CA Portal and eTrust IAM security. There are a number of predefined reports provided for both CA AutoSys® Workload Automation and CA-7™ Workload Automation.

It is important to understand that the WCC Reporting Server is based on multiple components that work together. The most important of these components are:

- **Data Warehouse**
  
  The data warehouse includes consolidated data from both AutoSys® Workload Automation and CA-7™ Workload Automation r11 servers. The data warehouse can be located on the WCC server, the BusinessObjects XI server or a separate server. However, as always, the best practice is to avoid installing unnecessary components on the BusinessObjects XI server. In larger environments it is recommended to use a dedicated database server for this purpose.

- **Collectors and Collector Client Program Objects**
  
  Collector Client Program Objects uses the native scheduling capabilities of BusinessObjects XI to remotely invoke the Collectors to periodically collect data for the data warehouse.

- **Web Intelligence Reports**
  
  WCC uses the BusinessObjects XI infrastructure to provide a robust reporting environment. The predefined reports are BusinessObjects XI Web Intelligence (WEBI) documents that provide both text-based data and graphical objects through a standard web browser. Both types of reports also support drill down functionality for additional details.

All of the reports contain statistical and job run details for the CA AutoSys and CA-7™ job manager that is periodically collected from the back-end workload automation servers and stored in the statistical and job run detail tables in the data warehouse.
Quick Facts

Following is a quick look at what type of reports are provided out-of-the-box, which CA Business Intelligence component can be expected to experience significant additional load when these reports are viewed and whether CA Business Intelligence is bundled with the product:

**Technology:** CA Business Intelligence 2.0 (BusinessObjects XI R2 SP3 + FP3.3)

**Report Types:** Web Intelligence Reports

**# of Reports:** 15 reports for AutoSys® Workload Automation and CA-7™ Workload Automation

**Load Impact:** Central Management Server, Web Application Server, Web Intelligence Report Server

**BusinessObjects XI:** Bundled with CA Business Intelligence 2.0.

**References:**
- Support Home Page
  [https://support.ca.com/irj/portal/prddtlshome?productID=4602](https://support.ca.com/irj/portal/prddtlshome?productID=4602)
- Documentation (Including the Reporting User Guide and the Implementation Guide)
  [https://support.ca.com/irj/portal/DocumentationResults?productID=131893&releaseID=ALL&languageID=ENU&actionID=2](https://support.ca.com/irj/portal/DocumentationResults?productID=131893&releaseID=ALL&languageID=ENU&actionID=2)
- Technical Document Index
  [https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/4602/4602_techdocindex.html](https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/4602/4602_techdocindex.html)

Out-of-the-Box Reports

The 15 predefined reports are divided into two categories. **CA AutoSys® Workload Automation** reports include the following:

- AutoSys Job Run Event Report
- AutoSys Job Run Report
- AutoSys Job Run Throughput Report
- AutoSys Server Statistics – Alarms
- AutoSys Server Statistics – Job Runs
- AutoSys Server Statistics – Job Status
- AutoSys Job Report
- AutoSys Job Statistics Report – By Application
- AutoSys Job Statistics Report – By Date
- AutoSys Throughput Report

**CA-7™ Workload Automation** reports include the following:
- CA-7 Job Run Report
- CA-7 Server Statistics – Database Graph
- CA-7 Server Statistics – Job Graph
- CA-7 Server Statistics – Network Graph
- CA-7 Server Statistics – System Graph

Further details regarding these reports, along with task-based instructions on performing the most common reporting functions, can be found in the *Unicenter Workload Control Center Reporting User Guide*. Additional information can be found in the *Unicenter Workload Control Center Implementation Guide*. 
Appendix B: Data for Previous Releases

This appendix provides information on how several previous releases of CA Technologies products leveraged the CA Business Intelligence infrastructure, including a summary of details that might be important for those products and a list of reports that are shipped with the product. For the corresponding information for the latest GA product see Appendix A.

For each product version there is a note indicating what version of CA Business Intelligence is bundled with it and whether the CA Business Intelligence instance has to be used exclusively by the product or if it can share an existing instance of CA Business Intelligence. Note, if you are using an existing instance of BusinessObjects XI, it is important to verify that it is correctly patched and that your license is valid for this configuration.

**Note:** The information provided in the individual product’s documentation and support homepages on CA Support Online is the authoritative source and maybe be more recent than what is summarized below. For this reason, this summary provides references to the official product documentation.

Following is a summary of the products discussed in this appendix along with a quick view of their CA Business Intelligence status:

<table>
<thead>
<tr>
<th>Product</th>
<th>Bundled CA BI</th>
<th>Shared CA BI</th>
<th>CA BI² Reports</th>
<th>Other³ Reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA Message Manager r12.5</td>
<td>BIEK 1.0</td>
<td>No</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>CA Security Compliance Manager r12 SP1</td>
<td>CA BI 2.0</td>
<td>Yes</td>
<td>6 Webi</td>
<td>6</td>
</tr>
<tr>
<td>CA Service Desk Manager r12.1</td>
<td>CA BI 2.1</td>
<td>Yes</td>
<td>154</td>
<td></td>
</tr>
<tr>
<td>CA Software Change Manager r12</td>
<td>CA BI 2.0</td>
<td>Yes</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td>CA Spectrum® Infrastructure Manager r9.1</td>
<td>CA BI 2.0</td>
<td>No</td>
<td>60-123 CR</td>
<td></td>
</tr>
<tr>
<td>CA Spectrum® Service Assurance 1.1</td>
<td>CA BI 2.1</td>
<td>Yes</td>
<td>10 CR</td>
<td></td>
</tr>
</tbody>
</table>

¹ Limitations do exists, see details below and in product documentation
² where noted, CR = Crystal Reports / WebI = Web Intelligence Reports
³ Additional reports provided by a non BusinessObjects solution
CA Message Manager r12.5

CA Message Manager Reporting (MM Reporting) is a web-based component that packages BusinessObjects XI technology and is integrated with MM Supervision and MM Discovery. Predefined (on-demand) reports are provided for both MM Supervision and MM Discovery.

CA Message Manager Reporting (MM Reporting) uses BusinessObjects Enterprise XI as the default reporting system. Predefined CA Message Manager reports are viewed using BusinessObjects Web Intelligence (WEBI) or Crystal Reports. WEBI and Crystal Reports are tools built into BusinessObjects Enterprise XI.

More about reporting and customizing reports for CA Message Manager can be found in CA Message Manager Reporting Module Guide.

Note: MM Reporting has been removed from CA Message Manager Release 12.6. Going forward CA Message Manager Reporting is handled by CA DLP which does not currently use CA Business Intelligence.

Quick Facts

Following is a quick look at what type of reports are provided out-of-the-box, which BusinessObjects XI component can be expected to experience significant additional load when these reports are viewed and whether BusinessObjects XI is bundled with the product:

- **Technology:** BusinessObjects XI R2 SP2 + FP2.6
- **Report Types:** Crystal Reports and Web Intelligence
- **# of Reports:** 29 Reports in 2 Groups
- **Load Impact:**
  - Central Management Server, Web Application Server, Web Intelligence Report Server when viewing Web Intelligence Reports.
  - Central Management Server (CMS), Web Application Server (WAS), Cache Server and Page Server when viewing Crystal Reports.
  - CMS, WAS and Report Application Server if Crystal Reports are viewed through Advanced DHTML Viewer
- **BusinessObjects XI:** Bundled with Business Intelligence Embedded Kit 1.0.
Shared Infrastructure: Not recommended, since the CA Message Manager Reporting (the Business Objects Framework) component should be installed locally on the CA Message Manager UI Server. (see CA Message Manager Reporting Module Guide)

References: Support Home Page
https://support.ca.com/irj/portal/prddtlshome?productID=5707

Documentation (Including CA Message Manager Reporting Product Guide)
https://support.ca.com/irj/portal/DocumentationResults?productID=135808&releaseID=ALL&languageID=ENU&actionID=2

Technical Document Index
https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/5707/5707_techdocindex.html

Out-of-the-Box Reports

The reports that are provided out of the box are:

- Administration Reports
  - Archive Storage Cost by Employee
  - Archive Storage Cost by Group
  - Historical Bypassing Address
  - Historical Employee Info
  - Historical Employees By Group
  - Historical Employees By Reviewer
  - Historical Exclusion List
  - Historical Group Info
  - Historical Inclusion List
  - Historical Internal Domains
  - Historical Restricted Issues
  - Historical Reviewers By Group
  - Historical Threshold Settings
  - Message Review Times by Reviewers
CA Security Compliance Manager r12 SP1

CA Security Compliance Manager (SECOM) includes both a set of internal reports that are reached directly from the SECOM User Interface as well a set of more flexible reports that are available through the CA Business Intelligence Infrastructure.

When you use the CA Business Intelligence infrastructure you will also get access to a set of enterprise reports that show various views of the data collected from your sources into the evidence warehouse. These reports are more flexible than the internal CA Security Compliance Manager reports; you can customize, print, and import them into different formats.

These enterprise reports can be viewed in BusinessObjects Enterprise XI, which is a separate application suite.

More about reporting and customizing reports in CA Security Compliance Manager can be found in the CA Security Compliance Manager Installation Guide and in the “Reports” chapter in the CA Security Compliance Manager Product Guide.
Quick Facts

Following is a quick look at what type of reports are provided out-of-the-box, which CA Business Intelligence component can be expected to experience significant additional load when these reports are viewed and whether CA Business Intelligence is bundled with the product:

<table>
<thead>
<tr>
<th>Technology:</th>
<th>BusinessObjects XI R2 SP3 + FP3.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Report Types:</td>
<td>Web Intelligence</td>
</tr>
<tr>
<td># of Reports:</td>
<td>6 reports (in addition to 6 SECOM internal reports)</td>
</tr>
<tr>
<td>Load Impact:</td>
<td>Central Management Server, Web Application Server,</td>
</tr>
<tr>
<td></td>
<td>Web Intelligence Report Server</td>
</tr>
<tr>
<td>BusinessObjects XI:</td>
<td>Bundled with CA Business Intelligence 2.0.</td>
</tr>
<tr>
<td>Shared Infrastructure:</td>
<td>See &quot;Set Up the Reporting Server” in the Installation guide for r12 SP1.</td>
</tr>
<tr>
<td></td>
<td>&quot;Note: If you already have BusinessObjects installed on Windows, you can use it to work with the enterprise reports.”</td>
</tr>
<tr>
<td>References:</td>
<td>Documentation (Including a &quot;Reports” chapter in the Product Guide)</td>
</tr>
<tr>
<td></td>
<td><a href="https://support.ca.com/irj/portal/DocumentationResults?productId=137816&amp;releaseID=ALL&amp;languageID=ENU&amp;actionID=2">https://support.ca.com/irj/portal/DocumentationResults?productId=137816&amp;releaseID=ALL&amp;languageID=ENU&amp;actionID=2</a></td>
</tr>
<tr>
<td></td>
<td>Technical Document Index</td>
</tr>
<tr>
<td></td>
<td><a href="https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/8100/8100_tecindex.html">https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/8100/8100_tecindex.html</a></td>
</tr>
</tbody>
</table>
Out-of-the-Box Reports

The following four reports are internal to SECOM and don’t take advantage of the CA Business Intelligence infrastructure:

- **Orphan accounts report**
  Shows accounts that are not correlated with any users.

- **Audit reports**
  Show historical and status information for certifications. Audit reports include the following:
  - **Certifier performance report**
    Displays users' performance as certifiers.
  - **Entitlements report**
    Displays user details and entitlements certification history.

- **Process reports**
  Show statistics and trends for automated processes

- **Operational Reports**
  Provide statistics and show current statuses for objects and events in CA Security Compliance Manager. Operational reports include the following:
  - **Source reports**
    Statuses and statistics for events related to a certain source
  - **Automated process reports**
    Statuses and statistics for events related to a certain automated process

The following additional predefined reports are available through the CA Business Intelligence infrastructure. These reports can be customized to suit your specific business requirements.

- **Account Report**
  Displays all accounts that the application collected from your sources, and the details of these accounts.

- **Department Report**
  Displays the accounts that belong to the users from a specific department.

- **Endpoint Report**
  Displays all accounts collected from a specific source (endpoint).

- **Group Membership Report**
  Displays the users that belong to specific groups and the users' accounts.
Report Optimization

- Orphan Account Report
  Displays all orphan accounts and the sources to which these accounts belong.
- User Access Report
  Displays all accounts for each user.

CA Service Desk Manager r12.1

CA Service Desk Manager (formerly CA Unicenter Service Desk) r12 provides out of the box reporting using CA Business Intelligence infrastructure and includes a large number of predefined reports for both CA Service Desk and CA Service Desk Knowledge Tools. Through the CA Business Intelligence Infrastructure, you can drill into details of the out-of-the-box reports and customize them to better fit your specific business needs or build ad-hoc reports that highlight details you are interested at a particular time. Role based reports can be viewed directly within the Reports tab of CA Service Desk UI and, from there, individual users can click a button to access InfoView and manage their personal reports.

Since CA Business Intelligence takes advantage of a Service Desk-aware ODBC driver that connects to the product object engine (domsrv) it is aware of the Service Desk security model, including data partitions and tenancy restrictions.

CA Service Desk Manager is bundled with a large number of reports based on Web Intelligence and Crystal Reports. Web Intelligence allows you to rapidly develop additional reports and customize existing reports. In addition, if you have a licensed Crystal Reports Developer edition you can use it to create/customize Crystal Reports to better fit your specific business needs. Custom reports can be designed from scratch or by using one of the existing reports as a template. Regardless of which method you employ, an understanding of the underlying database schema is critical.

Consult the CA Service Desk entity relationship diagram (ERD) to better understand the table names, field names, and relationships between the tables. This diagram provides a graphical representation of the principal tables and relationships that make up the CA Service Desk subset of the MDB. A PDF version of the ERD can be obtained from the CA Unicenter Service Desk Technical Document Index on http://support.ca.com/. A poster version is also available (See TEC480060 for r12 and TEC394113 for r11.x).

Note: Although CA Business Intelligence by default uses a mySQL database, during the install it can be configured to use an existing database. See the document CA Business Intelligence Installation for Microsoft Windows 2003 and Microsoft SQL Server 2005 for more details.

Additional information on how to modify default reports can be found in the CA Service Desk Administration Guide as well as the CA Management Database Overview Guide.
Quick Facts

Following is a quick look at what types of reports are provided out-of-the-box, which CA Business Intelligence component can be expected to experience significant additional load when these reports are viewed and whether CA Business Intelligence is bundled with the product:

<table>
<thead>
<tr>
<th>Technology:</th>
<th>BusinessObjects XI R2 SP4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Report Types:</td>
<td>Crystal Reports and Web Intelligence</td>
</tr>
<tr>
<td># of Reports:</td>
<td>154 (which includes 59 Knowledge Tools Reports)</td>
</tr>
<tr>
<td>Load Impact:</td>
<td>Central Management Server, Web Application Server, and Web Intelligence Report Server when viewing Web Intelligence Reports.</td>
</tr>
<tr>
<td></td>
<td>Central Management Server (CMS), Web Application Server (WAS), Cache Server and Page Server when viewing Crystal Reports.</td>
</tr>
<tr>
<td></td>
<td>CMS, WAS and Report Application Server if Crystal Reports are viewed through Advanced DHTML Viewer.</td>
</tr>
</tbody>
</table>

**BusinessObjects XI:** Bundled with CA Business Intelligence 2.1.

**Shared Infrastructure:** See "How to Point an Existing CA Business Intelligence Server to a CA Service Desk Server" in the "Managing CA Business Intelligence Reports" chapter in the CA Service Desk Administration Guide.

**References:**
- Support Home Page
  [https://support.ca.com/irj/portal/prddtlshome?productID=8165](https://support.ca.com/irj/portal/prddtlshome?productID=8165)
- Documentation (Including the "Managing CA Business Intelligence Reports" and "Generating Reports" chapter in the Administration Guide and the document CA Management Database Overview)
  [https://support.ca.com/irj/portal/DocumentationResults?productID=1474&releaseID=ALL&languageID=ENU&actionID=2](https://support.ca.com/irj/portal/DocumentationResults?productID=1474&releaseID=ALL&languageID=ENU&actionID=2)
- Technical Document Index
  [https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/191/191_techdocindex.html](https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/191/191_techdocindex.html)
Out-of-the-Box Reports

Following is an alphabetical list of the BusinessObjects XI Crystal Reports that are bundled with CA Service Desk r12.1. For more information on these reports, consult the CA Service Desk Administrators Guide.

- Aggregate Reports
  - Overall Summary

- Asset Reports
  - Asset List

- Change Management Reports
  - Aging
    - Active Change Orders Aging
    - Active Change Orders Aging by Categories
    - Active Change Orders Aging by Priority for Groups
    - Active Change Orders Aging by Priority
    - Active Change Orders Aging for Categories
    - Active Change Orders Aging for Groups
    - Active Change Orders Aging by Priority for Status
    - Active Change Orders Aging for Status
  - Resource
    - Analyst Count by Priority of Open Change Orders
    - Change Orders by Failed Service Type for Groups
    - Workflow Tasks Pending
  - Volume
    - Active Change Orders at Week’s End
    - Change Categories Currently Active
    - Change Order Totals by Assignee
    - Change Orders by Failed Service Type for Change Categories
    - Change Orders by Failed Service Type for Statuses
    - Total Volume of Change Orders
    - Total Volume of Change Orders by Interface
    - Workflow Task Aging
  - Properties Reports
    - Change Properties by Category
    - Properties Values by Property
**Incident and Problem Management Reports**

- **Count**
  - Volume and Trend

- **Effectiveness**
  - Mean Time To Acknowledge & Mean Time To Resolve

- **SLA**
  - SLA Violation

- **Traceability Matrix**
  - Incident Traceability Matrix
  - Problem Traceability Matrix

**Issue Reports**

- **Aging**
  - Active Issues Aging
  - Active Issues Aging by Priority for Categories
  - Active Issues Aging by Priority for Groups
  - Active Issues Aging by Priority
  - Active Issues Aging by Priority for Categories
  - Active Issues Aging by Priority for Groups
  - Active Issues Aging by Priority for Status
  - Active Issues Aging by Status

- **Resource**
  - Analyst Count by Priority of Active Issues
  - Issues by Failed Service Type for Groups
  - Plan Task Pending

- **Volume**
  - Active Issues at Week’s End
  - Issue Categories Currently Active
  - Issue Totals
  - Issues by Failed Service Type for Categories
  - Issues by Failed Service Type for Status
  - Plan task Aging
  - Total Volume of Issues
  - Total Volume of Issues by Interface
• Properties
  Issue Properties by Category
  Issue Property Values

■ KPI Reports
  Service Desk Application-Level Transaction Measurements
  Service Desk Application-Level Transaction Rates of Change
  Service Desk SQL and Stored Query KPI Values

■ Request Reports
  • Aging
    Active Requests Aging
    Active Requests Aging by Groups
    Active Requests Aging by Priority
    Active Requests Aging by Priority for Groups
    Active Requests Aging by Priority for Request Areas
    Active Requests Again by Request Areas
    Active Requests Aging by Status
    Active Requests Aging by Priority for Status
  • Count
    Volume and Trend
  • Effectiveness
    Mean Time To Acknowledge & Mean Time To Resolve
  • Resource
    Analyst Count by Priority of Active Requests
    Analyst Summary
    Request Aging Detail by Organization and Analyst
    Request List by Analyst
    Requests by Failed Service Type for Groups
    Violated SLA for Groups
  • SLA
    SLA Violation
  • Volume
    Active Request List
    Active Requests at Week’s End
    Activity of Requests
Analyst List by Organization
Key Organization Summary
Open/Closed Call Analysis by Analyst
Request Activity Counts by Customer Organization
Request Aging Detail
Request Areas Currently Active
Request List
Request List by Organization
Request List by Priority
Request List by Request Area
Requests by Failed Service Type for Request Areas
Requests by Failed Service Type for Status
Total Volume of Requests
Total Volume of Requests by Interface
Urgency 1 Summary by Customer
Violated SLA for Request Areas
Violated SLA for Status

By Customer Location
Not Closed Requests by Priority
Not Closed Requests by Priority with Attached Change Orders
Resolved Requests by Priority with Resolved Date

Survey Reports
Survey Detail
Survey Summary
Survey Summary with Comments

Knowledge Tools

The following Knowledge Tools Crystal Reports are installed only when the full KT product is installed. For more details, consult the CA Service Desk Administrators Guide.

Contact Activity Reports
Comments by Contact
Document Usage by Contact
Searches by Contact
System Usage by Contact
User Sessions - Visits to Site
Users Opening Issues without Searching Knowledge
Users Opening Requests without Searching Knowledge

- Knowledge Document Effectiveness Reports
  Comments by Document
  Document FAQ Rating
  Document Ratings
  Documents Viewed Detail
  Least Frequently Viewed Documents
  Most Frequently Viewed Documents
  Knowledge Feedback
  Knowledge Usage for Issues
  Knowledge Usage for Requests
  Poor Votes

- Knowledge Document Status Reports
  Candidate Documents for Retirement
  Documents by Status
  Documents Created Via ‘Knowledge Categories’
  Documents Published
  Documents Scheduled for Expiration
  Documents With Inactive Assignees
  Documents with Inactive Owners
  Expired Documents
  Submitted Knowledge
  Unpublished Documents

- Knowledge Team Productivity Reports
  Contact FAQ Ratings
  Contact FAQ Ratings Detail
  Contact Information
  Documents Solving Issues by Contact
  Documents Solving Requests by Contact
  Documents Solving Issues by Contact Detail
  Documents Solving Requests by Contact Detail
Knowledge Initiators Detail
Knowledge Initiators Summary
- Search Administration Reports
  Noise Words
  Special Terms
  Synonyms
- Search Effectiveness and Usage Reports
  Issues Avoided
  Issues Closed with Knowledge
  Requests Closed without Knowledge
  Most Frequent Searches
  Requests Avoided
  Requests Closed with Knowledge
  Requests Closed without Knowledge
  Searches
- System Reports
  Knowledge Management Metrics
- Service Desk Integration Reports
  Documents Solving Issues
  Documents Solving Issues Detail
  Documents Solving Requests
  Documents Solving Requests Detail
  Knowledge Documents Created from Issues
  Knowledge Documents Created from Requests
  Linked Knowledge to Issues
  Linked Knowledge to Requests
  Requests Created Based on Knowledge Documents
  Time to Issue Resolution
  Time to Request Resolution
CA Software Change Manager r12

CA Software Change Manager (SCM) uses BusinessObjects InfoView as a business intelligence (BI) portal to collect, consolidate, and present your organization’s CA SCM data. Reports include existing Dashboard, CA SCM reports, and new reports that cover security, audit, project change activity, package change activity, and source item change activity. The reports are useful for administrators, managers, quality assurance testers, and developers.

Note: For more information about CA SCM Reports, see the documentation on the CA SCM Reports installation media.

Quick Facts

Following is a quick look at what type of reports are provided out-of-the-box, which CA Business Intelligence component can be expected to experience significant additional load when these reports are viewed and whether CA Business Intelligence is bundled with the product:

- **Technology:** BusinessObjects XI R2 SP3 + FP3.3
- **Report Types:** Crystal Reports and Web Intelligence
- **# of Reports:** 58 Reports in 4 Groups (whereof 2 have a subgroup for Lookup reports)
- **Load Impact:** Central Management Server, Web Application Server, and Web Intelligence Report Server when viewing Web Intelligence Reports.
  - Central Management Server (CMS), Web Application Server (WAS), Cache Server and Page Server when viewing Crystal Reports.
  - CMS, WAS and Report Application Server if Crystal Reports are viewed through Advanced DHTML Viewer.
- **BusinessObjects XI:** Bundled with CA Business Intelligence 2.0.
- **Shared Infrastructure:** See CA Software Change Manager Report Component Guide, “Chapter 1: Introduction”, section on “Installation Overview” and additional details in “Chapter 3: Installing CA SCM Reports”
  - "You can use CA SCM Reports with CA Business Intelligence, or BusinessObjects that is not related to CA. If you already have CA Business Intelligence
installed on your computer, you can directly run the CA SCM Reports installer to install CA SCM Reports.”

References:
Support Home Page  
https://support.ca.com/irj/portal/prddtlshome?prdhmpgform=p&productID=255

Documentation (Note: CA SCM Reports Components Guide can be found on the installation media)
https://support.ca.com/irj/portal/DocumentationResults?productID=138332&releaseID=ALL&languageID=ENU&actionID=2

Technical Document Index  
https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/255/255_techdocindex.html

Out-of-the-Box Reports

The reports that are delivered out of the box with CA Software Change Manager include:

- **Package Change Activity**

  Provides information about packages and package activities, such as promotions, approvals, assignments, distribution, and so on.

  - Last Action by Package
    
    Last action performed to packages in the selected projects.

  - Package Activity by Time
    
    Displays a list of all package activity events for selected packages that has occurred during the selected timeframe.

  - Package Activity by User
    
    Displays a list of packages from the selected project(s) and user(s) detailing all event activity for each package in the list. Packages will be grouped by User and then by Project.

  - Package Approval History
    
    Displays a history of package approval actions for each package in the selected project(s).

  - Package Assignment Summary by User
    
    Users with less than the specified number of assigned packages created/modified within a time range indicating a possible low number of package assignments for that user.

  - Package Deletion Audit
    
    Displays the Package deletion Information. The details of the report include Package name, State, Project, User name and Event time.
- **Package Distribution Summary by Project**
  Displays a summary number of packages per project selected.

- **Package Distribution Summary by Project and State**
  Displays a summary number of packages in each selected project and the number of packages in each state of that project.

- **Package Distribution Summary by User**
  Displays a summary number of assigned packages for each selected user.

- **Package Distribution Summary by User and Project**
  Displays a summary number of packages assigned to each selected user for each selected project.

- **Package Location**
  Packages in the selected projects and the time they entered their current state.

- **Package Location History**
  Number of packages that have entered the selected projects' states during the selected timeframe.

- **Package Promotions by Time**
  Displays a list of all package promotion events for selected packages that has occurred during the selected timeframe.

- **Package Summary**
  Displays a summary of packages in the selected project(s) providing basic details of each package in the selected project(s). Packages will be grouped within each project and state within that project. A: Approved P: Pending Approval R: Rejected F: Frozen <No value>: Does not require approval (package is in a state that does not contain approval processes)

- **Packages Approved**
  Displays a list of packages that have successfully completed the Approval Process defined in the current state for the selected project(s), providing basic details of each Package. Packages will be grouped within each project and the state within that project.

- **Packages Created by Project**
  Displays a list of packages that have been created within the selected timeframe and project(s). Packages will be grouped by project.

- **Packages Created by User**
  Displays a list of packages that have been created within the selected timeframe and project(s) for a selected user(s). Packages will be grouped by user and then by project.
- **Packages Frozen**
  Displays a list of packages that has began the approval process by at least one user in the execution of the approval process defined in the current state for the selected project(s), providing basic details of each Package. Packages will be grouped within each project and the state within that project.

- **Packages Pending Approval**
  Displays a list of packages that are currently pending the successful completion of the approval process defined in the current state for the selected project(s), providing basic details of each Package. Packages will be grouped within each project and the state within that project.

- **Packages Rejected**
  Displays a list of packages that have been rejected by at least one user in the execution of the approval process defined in the current state for the selected project(s), providing basic details of each Package. Packages will be grouped within each project and the state within that project.

- **Packages with Activity Summary**
  Displays a list of all packages with activity events during the selected timeframe.

- **Packages Without Assignee**
  Displays a list of all packages within the selected project(s) that does not currently have a package assignee.

- **Package Change Activity - Lookup Reports**
  - **Last Action by Package Details**
    Last action performed to packages in the selected projects.
  - **Package Details**
    Note: for lookup only (do not use as standalone report) This report gives the Package details of the Packages clicked in the Package Activity by Package, Package Activity by User, Project Activity by User, Project Activity by Time Reports.
  - **Packages with Activity Detail**
    Note: for lookup only (do not use as standalone report) Displays a list of all package activity events for selected packages that has occurred during the selected timeframe.
- **Project/Lifecycle Change Activity**
  Provides information about projects and life cycle change activities, such as life cycle definitions, change history, approvers, and so on.
  - Lifecycle Change History
    Displays a history of project configuration changes within selected timeframe.
  - Lifecycle Definition
    Displays the project/lifecycle definition detailing the states, views, and processes that exist in each selected project.
  - Project Activity by Time
    Displays a list of all project activity events that has occurred during the selected timeframe.
  - Project Activity by User
    Displays a list of all project activity events by user that has occurred during the selected timeframe.
  - Project Summary
    Displays a summary of selected project(s).
  - Projects with Activity Summary
    Displays a list of all projects with activity events during the selected timeframe.
  - Projects with Approvals
    Displays a list of projects that have a defined approval process within the lifecycle definition.
  - Projects With Approvals and No Approvers
    Displays a list of projects that have a defined approval process within the lifecycle definition but do not have approvers defined for that process.
  - Projects Without Approvals
    Displays a list of projects that do not have a defined approval process within the lifecycle definition.

- **Project/Lifecycle Change Activity - Lookup Reports**
  - Projects with Activity Detail
    Note: for lookup only (do not use as standalone report) Displays a list of all project activity events for selected projects that has occurred during the selected timeframe.
  - Projects With Approvals and Approvers
    Displays a list of projects that have a defined approval process within the lifecycle definition along with the approvers defined for that approval process.
**Security**

Provides information on authentication and security aspects of the projects, packages, and user accounts, such as password policies, failed and successful logins, and so on.

- **Approval Security Audit**
  Displays a list of packages within the selected project(s) that are assigned to users that are also listed as approvers in the defined approval process within that selected project lifecycle definition.

- **Failed Logins Summary Audit**
  Displays a list of users who have exceeded the specified minimum number of failed login attempts within the timeframe selected.

- **Global Password Policy**
  Password policy rules that apply to all users.

- **Last Password Modification**
  Displays a list of internal user accounts that have had the account password last modified within the specified timeframe.

- **Last Successful Login**
  Displays a list of users who have had a successful login since the date specified.

- **Login Audit**
  Displays the history of login events within a selected timeframe.

- **No Successful Login**
  Displays a list of users who has not had a successful login since the date specified.

- **Password Policy Overrides**
  User specific password policy rules that override global rules.

- **System User Group Audit**
  Details the user list for each selected user group.

- **User Access**
  This Report gives information about the User accesses at CA SCM Level, Project Level, Form Type, Repository Level and Item Level.

- **User Access by Project**
  User access by project, state and process.

- **User Group Access**
  This Report gives information about the User Group accesses at CA SCM Level, Project Level, Form Type, Repository Level and Item Level.
- **User Group Access by Project**
  User access by project, state and process.

- **Source Change Activity**
  Provides information about items and other source change activities, such as snapshots, version changes and deletions, and so on.
  - **Item Summary by Project**
    Displays a summary list of items within the selected project(s) and the number of versions created for each item.
  - **Items Reserved Summary by Project**
    Displays a summary list of the number of reserved items in each selected project.
  - **Items Reserved Summary by User**
    Displays a summary of the number of reserved items for the selected user(s).
  - **Package Activity by Package**
    Displays a list of packages from the selected project(s) detailing all event activity for each package in the list. Packages will be grouped by project.
  - **Repository Summary**
    Displays a summary of selected repositories(s).
  - **Snapshots by Project**
    Display a list of snapshots that exists in the selected project(s)
  - **Version Activity Summary by Project**
    Displays a list of projects that have had version activity within the specified timeframe.
  - **Version Activity Summary by User**
    Users with less than the specified number of versions created/modified within a time range indicating a low amount of version activity for that user
  - **Version Deletion Audit**
    Displays the Version Deletion in the repository information. The audit report for deleted version is based on the specified period of time which will displays user, when, and the location of origination of version.
CA Spectrum® Infrastructure Manager r9.1

The CA Spectrum 9.1 OneClick interface is closely integrated with BusinessObjects XI. To accomplish this close integration BusinessObjects XI must be installed on the same machine as OneClick with Report Manager. This is one of the few exceptions to the general Best Practice recommendation that BusinessObjects XI be installed separately from the main application. For performance reasons, however, it should still be installed separately from the main Spectrum server. This requirement to be co-located with the OneClick server will be removed in upcoming releases of CA Spectrum.

The Report Manager lets you generate and share a variety of informative, up-to-date reports about the inventory, availability, performance, and change and fault history of network assets managed in Spectrum. When you generate a report, Report Manager compiles the data you require and presents it in the format you specify when you set up the report.

Report Manager keeps data current by extracting it from the Spectrum knowledge base at regular intervals and storing it in the Report Manager database. Report Manager enables you to generate many types of reports. Each provides a particular view of some aspect of the network’s assets that is relevant to you or other members of your organization. In other words, Report Manager addresses the information requirements of not only the Information Technology (IT) group but of other groups in your business organization as well.

Quick Facts

Following is a quick look at what type of reports are provided out-of-the-box, which BusinessObjects XI component can be expected to experience significant additional load when these reports are viewed and whether BusinessObjects XI is bundled with the product:

**Technology:**  
BusinessObjects XI R2 SP3 + FP3.3

**Report Types:**  
Crystal Reports

**# of Reports:**  
60 - 123 reports divided into 4-7 report packs

**Load Impact:**  
Central Management Server (CMS), Web Application Server (WAS), Cache Server and Page Server (WAS and Report Application Server if viewed through Advanced DHTML Viewer)

**BusinessObjects XI:**  
Bundled with CA Business Intelligence 2.0
Shared Infrastructure: BusinessObjects XI must be installed on the same machine as OneClick with Report Manager, the BusinessObjects XI instance should therefore typically not be shared between multiple solutions.

References:

Support Home Page
https://support.ca.com/irj/portal/prddtlshome?productID=7832

Documentation (Including the Report Manager Installation and Administration Guide (Spectrum document 5169) and the Report Manager User Guide (Spectrum document 5158))
https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=7/7832/7832_docmanindex.html

Out-of-the-Box Reports

Depending on which components are installed, there are 60 to 123 reports shipped with CA Spectrum. These reports are grouped into "report packs" which include specific types of information about your organization's network assets.

The standard report packs are:

- **Alarm** (3 subgroups /18 reports)
- **Asset** (3 subgroups / 18 reports)
- **Availability** (3 subgroups / 17 reports)
- **Event** (3 subgroups / 7 reports)
- **Network Configuration Management** (3 reports)
  
  **Note:** Included only if Network Configuration Manager is installed with OneClick.

- **Response Time** (7 subgroups / 24 reports)
  
  **Note:** Included only if the Service Performance Manager application is installed with OneClick.

- **Service and SLA** (8 subgroups / 36 reports)
  
  **Note:** Included only if the Service Manager application is installed with OneClick.

To make any major modifications to these reports or to add new reports you will need to license the Crystal Reports Developer's edition, however some minor and common modifications are possible with the out-of-the-box Spectrum server. For details on this see the Report Manager Installation and Administration Guide (Spectrum document 5169).
Following is a list of the reports included with each report pack. For more information about Spectrum and reporting see the Report Manager User Guide (Spectrum document 5158) or the Report Manager Installation and Administration Guide (Spectrum document 5169):

- **Alarm Report Pack**

  Alarm reports generate historical information about alarm events for assets in the IT infrastructure. Alarm reports can help you assess the general viability of your network, identify alarm trends, find recurring or cyclical problems, and locate specific assets that have had specific alarms in the past (regardless of their current operating state).

  The alarm reports that are shipped with Spectrum 9.1 are:

  - **All**
    - Alarm Activity By User: All
    - Alarm Count by Month: All
    - Alarm Count by Week: All
    - Alarm Log: All
    - Daily Alarm Count by Hour: All
    - Monthly Alarm Count by Day: All
    - Monthly Alarm Count by Week: All
    - Top-N Devices and Models with the Most Alarms: All
    - Top-N Most Common Alarms: All
    - Weekly Alarm Count by Day: All
    - Yearly Alarm Count by Month: All
  
  - **Group**
    - Alarm Activity By User: Group
    - Alarm Log: Groups
    - Top-N Devices and Models with the Most Alarms: Group
    - Top-N Most Common Alarms: Group
  
  - **Individual**
    - Alarm Activity By User: Selected Devices and Models
    - Alarm Log: Selected Devices and Models
    - Top-N Most Common Alarms: Selected Devices and Models
**Asset Report Pack**

Asset reports generate information about the inventory of assets in the IT infrastructure, including information about asset port availability and asset firmware versions. Asset reports can help you determine how vendor products are distributed throughout the infrastructure and whether they are being used effectively or are underused.

The asset reports that are shipped with Spectrum 9.x are:

- **All**
  - Current Assets (Customizable): All
  - Current Assets: All
  - Current Chassis-based Assets: All
  - Current Ports Detail: All
  - Current Ports Summary: All
  - Detailed Change Management: All

- **Groups**
  - Current Assets (Customizable): Groups
  - Current Assets: Group
  - Current Chassis-based Assets: Group
  - Current Connection: Group
  - Current Firmware: Group
  - Current Ports Detail: Group
  - Current Ports Summary: Group

- **Individual**
  - Current Asset Detail: Selected Devices
  - Current Chassis-based Assets: Selected Devices
  - Current Connection: Selected Devices
  - Current Ports Detail: Selected Devices
  - Current Ports Summary: Selected Devices
- **Availability Report Pack**

  Availability reports provide historical information about up time and down time for assets in the IT infrastructure. Also included in this pack is a projected-availability report that enables you to determine the amount of downtime assets can sustain during the remainder of a month before a threshold (or a service level target) is violated.

  The availability reports that are shipped with Spectrum 9.x are:

  - **All Devices**
    - Availability by Class and Vendor: All Devices
    - Availability by Vendor and Type: All Devices
    - Outage Log: All Devices
    - Projected Monthly Availability: All Devices
    - TopN Least Available: All Devices
  
  - **Groups**
    - Availability: Group
    - Availability: Group (Devices Only)
    - Outage Log: Group
    - Outage Log: Group (Devices Only)
    - Projected Monthly Availability: Group
    - Projected Monthly Availability: Group (Devices Only)
    - TopN Least Available: Group
    - Top-N Least Available: Group (Devices Only)
  
  - **Individual**
    - Availability: Selected Devices
    - Availability: Selected Models
    - Projected Monthly Availability: Selected Devices
    - Projected Monthly Availability: Selected Models
## Event Report Pack

Event reports provide information about Spectrum events generated for Spectrum models. You can generate event reports for all models or particular models, and you can generate reports that provide a ranked list of the most frequently occurring events for particular time periods. Additionally, you can specify event codes to include or exclude from all event reports using the event filtering options configured for your Report Manager installation by your Report Manager administrator.

The reports that are shipped with Spectrum 9.x are:

- **All**
  - Detailed Event Log: All
  - TopN Devices and Models with the Most Events: All
  - TopN Most Common Events: All
- **Group**
  - Detailed Event Log: Group
  - Top-N Devices and Models with the Most Events: Group
  - TopN Most Common Events : Group
- **Individual**
  - Detailed Event Log: Select Device or Model

## Network Configuration Management

Network Configuration Management reports provide information about network configuration activities recorded by Spectrum during the course of on-going management of the infrastructure by the Spectrum Network Configuration Manager application.

**Note:** This report pack only exist if the Network Configuration Manager is installed with OneClick.

The reports that are shipped with Spectrum 9.x are:

- Detailed Configuration Event Log: All
- Detailed Configuration Event Log: Group
- Detailed Configuration Event Log: Selected Device or Model
Response Time Report Pack

Response Time reports provide information about response time test results and analysis compiled by the Spectrum Service Performance Manager application. The Response Time report pack provides a suite of historical-trend and exception reports that enable you to troubleshoot response time issues before they become crucial problems to network end-users. Reports graphically depict past response time performance as well as trends that indicate whether response time to critical network services is increasing or decreasing. Exception, or TopN, reports detail the best or worst response time areas so proactive action can be taken to address critical issues.

Note: This report pack is only included if the Service Performance Manager application is installed with OneClick.

The reports that are shipped with Spectrum 9.x are:

- Detailed Reports
  - Basic RTT Test Results
  - HTTP Test Results
  - Jitter Test Results

- Summarized Results – Daily
  - Basic RTT Test Daily Summary
  - HTTP Test Results Daily Summary
  - Jitter Test Results Daily Summary

- Summarized Results - Month by Day
  - Basic RTT Month-By-Day Test Summary
  - HTTP Test Results Month-by-Day Summary
  - Jitter Test Results Month-by-Day Summary

- Summarized Results - Month by Week
  - Basic RTT Month-By-Week Test Summary
  - HTTP Test Results Month-by-Week Summary
  - Jitter Test Results Month-by-Week Summary

- Summarized Results - Weekly
  - Basic RTT Weekly Test Summary
  - HTTP Test Results Weekly Summary
  - Jitter Test Results Weekly Summary
- Summarized Results - Yearly
  - Basic Test Results Yearly Summary
  - HTTP Test Results Yearly Summary
  - Jitter Test Results Yearly Summary
- TopN/BottomN
  - Best Performing Basic SPM Tests
  - Best Performing HTTP SPM Tests
  - Best Performing Jitter SPM Tests
  - Worst Performing Basic SPM Tests
  - Worst Performing HTTP SPM Tests
  - Worst Performing Jitter SPM Tests

- Service and SLA Report Pack
  Service and SLA reports provide summary and detailed historical information about service, Service Level Agreement (SLA), and service customer models in Spectrum created and managed with the Spectrum Service Manager application. Service and SLA reports enable you to track service assets, gauge service health, and analyze report results to determine how to improve service performance.

  **Note:** This report pack is only included if the Service Manager application is installed with OneClick.

  The reports that are shipped with Spectrum 9.x are:
  - Customer
    - Customer Detail
    - Customer SLA Summary
    - Service Availability by Service Customer
    - Service Summary by Service Customer
    - SLA Detail by Customer
    - SLA Inventory By SLA Customer
    - SLA Status Current and Recent by Customer
    - SLA Summary by Customer
  - Detailed Availability
    - Service Availability By Service Customer
    - Service Availability By Service Name
    - Service Availability By Service Owner
    - Service Availability Variable Health Level
Report Optimization

- **Health**
  - Service or Resource Monitor Health by Name

- **Inventory**
  - Service Inventory
  - SLA Inventory By SLA Customer
  - SLA Inventory By SLA Name

- **Outage**
  - TopN Worst Performing Services
  - TopN Worst Performing Services Including All Outage Types
  - TopN Worst Service Outages
  - TopN Worst Service Resources By Total Down Time

- **Owner**
  - Service Availability by Service Owner
  - Service Summary by Service Owner

- **SLA Status**
  - SLA Detail By Customer
  - SLA Detail By SLA Name
  - SLA Detail Last N Periods
  - SLA Detail With Resource Outages
  - SLA Status Current and Recent
  - SLA Status Current and Recent By Customer
  - SLA Summary By Customer
  - SLA Summary By Name
  - SLA Summary By Status
  - SLA Summary of Warned or Violated SLAs

- **Summarized Availability**
  - Service Summary By Service Customer
  - Service Summary By Service Name
  - Service Summary By Service Owner
  - Service Summary Variable Service Health
CA Spectrum® Service Assurance 1.1

CA Spectrum Service Assurance (CA Spectrum SA) uses CA Business Intelligence to provide reports that enable you to view the status of each service from a central reporting location using a web interface.

For detailed information about these reports see “Using Reporting” in the CA Spectrum Service Assurance Administration Guide r1.1.

All of the CA Spectrum Service Assurance reports were created using Crystal Reports Designer XI and are presented through BusinessObjects InfoView in a web-based format. A separate license for Crystal Reports Designer XI is required to customize the provided reports. Another option is to create new custom reports based on Web Intelligence that is licensed with the bundled version of BusinessObjects XI.

Quick Facts

Following is a quick look at what type of reports are provided out-of-the-box, which CA Business Intelligence component can be expected to experience significant additional load when these reports are viewed, and whether CA Business Intelligence is bundled with the product:

<table>
<thead>
<tr>
<th>Technology:</th>
<th>CA Business Intelligence 2.1 (BusinessObjects XI R2 SP4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Report Types:</td>
<td>Crystal Reports</td>
</tr>
<tr>
<td># of Reports:</td>
<td>10 Crystal Reports</td>
</tr>
<tr>
<td>Load Impact:</td>
<td>Central Management Server (CMS), Web Application Server (WAS), Cache Server and Page Server</td>
</tr>
<tr>
<td></td>
<td>Other components can be stressed if custom reports are created using Web Intelligence.</td>
</tr>
<tr>
<td>BusinessObjects XI:</td>
<td>Bundled with CA Business Intelligence 2.1</td>
</tr>
</tbody>
</table>

"If you do not already have BusinessObjects installed in your enterprise, you must install it before installing CA Spectrum SA using the provided CA Business Intelligence for Windows r2.1 disk. If it is already installed in the environment, the SA Manager and UI Server installation can point to the server where it is located."

References:
Support Home Page
https://support.ca.com/irj/portal/prdttlshome?productID=8257

Documentation (Including CA Business Intelligence Installation Guide and the “Using Reporting” chapter in CA Spectrum Service Assurance Administration Guide)
https://support.ca.com/irj/portal/DocumentationResults?productID=138779&releaseID=ALL&languageID=ENU&actionID=2

Out-of-the-Box Reports

Following is a list of standard reports provided with CA Spectrum Service Assurance. These reports can be run as-is or used as the template for developing additional reports with different features. You can also generate completely new reports.

The 9 predefined BusinessObjects Crystal Report based reports are:

- **Service SLA Summary**
  Displays a summary of a service’s SLA compliance over a selected time period. It also contains details about overall SLA outage and outage periods, specific outage periods, and root cause alarms.

- **Service Summary**
  Display a summary of a service’s health and lists outages over a time period. This report is also embedded as a sub-report per service in the Top Ten reports related to health.

- **Service Availability**
  Displays availability information for one or more selected services over a specified time period.

- **Service Health**
  Displays health information for one or more selected services over a specified time period.
- **Service Quality**
  Displays quality information for one or more selected services over a specified time period.

- **Service Risk**
  Displays risk information for one or more selected services over a specified time period.

- **Top Ten Service Degrading CIs**
  Displays the ten CIs that most degraded service health over a specified time period.

- **Top Ten High Risk Services**
  Displays the ten services that had the highest risk over a specified time period.

- **Top Ten Low Quality Services**
  Displays the ten services that had the lowest quality over a specified time period.

- **Top 10 Problematic Services**
  Displays the ten services that had the most down time over a specified time period.
Appendix C: References and Links

This chapter references links and documentation that might be useful for further studies. Note that many of these are also directly referenced earlier in this document.

CA Technologies Links and Documents

Note: Many of these links require the user to be a registered CA Technologies client and have a valid login to support.ca.com.

- **Generic Architectural Links & Documents**
  - Green Books Home Page
    [https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/common/greenbooks.html](https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/common/greenbooks.html)
  - CA Implementation Best Practices – Home Page
    [https://support.ca.com/phpdocs/0/common/impcd/r11/StartHere.htm](https://support.ca.com/phpdocs/0/common/impcd/r11/StartHere.htm)
  - CA Implementation Best Practices – CA Business Intelligence Section
    [https://support.ca.com/phpdocs/0/common/impcd/r11/CABI/CABI_Frame.htm](https://support.ca.com/phpdocs/0/common/impcd/r11/CABI/CABI_Frame.htm)
  - CA Implementation Best Practices - Virtualization
    [https://support.ca.com/phpdocs/0/common/impcd/r11/virtualization/virt_Frame.htm](https://support.ca.com/phpdocs/0/common/impcd/r11/virtualization/virt_Frame.htm)
  - Virtualization Best Practices

- **CA Access Control**
  - Support Home Page
    [https://support.ca.com/irj/portal/prddtshome?productID=154](https://support.ca.com/irj/portal/prddtshome?productID=154)
  - Documentation
    [https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/154/154_docindex.html](https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/154/154_docindex.html)
  - Technical Document Index
    [https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/154/154_techdocindex.html](https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/154/154_techdocindex.html)
- High Availability for the CA Access Control PMDB
  https://support.ca.com/phpdocs/0/common/impcd/r11/solutions/EAC_HA.htm

**CA Clarity**
- Support Home Page
  https://support.ca.com/irj/portal/prddtlshome?productID=5590
- Documentation
  https://support.ca.com/irj/portal/DocumentationResults?productID=136750&releaseID=ALL&languageID=ENU&actionID=2
  https://support.ca.com/cadocs/1/CA%20Clarity%20PPM%2012%201200-ENU/Bookshelf.html (r12.1)
- Documentation - CA Governance, Risk & Compliance Manager
  https://support.ca.com/irj/portal/DocumentationResults?productID=137656&releaseID=ALL&languageID=ENU&actionID=2
- Technical Document Index
  https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/7799/7799_tecdocindex.html

**CA Host Based Intrusion Prevention System**
- Support Home Page
  https://support.ca.com/irj/portal/prddtlshome?productID=5785
- Documentation
  https://support.ca.com/irj/portal/DocumentationResults?productID=136529&releaseID=ALL&languageID=ENU&actionID=2
- Technical Document Index
  https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/5785/5785_techdocindex.html

**CA Identity Manager**
- Support Home Page
  https://support.ca.com/irj/portal/prddtlshome?productID=5655
- Documentation
  https://support.ca.com/irj/portal/DocumentationResults?productID=135300&releaseID=ALL&languageID=ENU&actionID=2
- Technical Document Index
  https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/5655/5655_techdocindex.html
References and Links

- Green Book: CA Identity Manager and CA Directory - Tuning Policy and User Stores

- CA Identity Manager: Concepts and Examples
  https://support.ca.com/phpdocs/7/common/greenbooks/CA_Identity_Manager_Green_Book_ENU.pdf (Master)
  https://support.ca.com/phpdocs/7/common/greenbooks/CA_Identity_Manager_Green_Book_ENU.zip (Companion)

- **CA Message Manager**
  - Support Home Page
    https://support.ca.com/irj/portal/prddtlshome?productID=5707
  - Technical Document Index
    https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/5707/5707_techdocindex.html
  - Implementation Document Index
    https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=7/5707/5707_imp_techdocindex.html

- **CA Mobile Device Management**
  - Support Home Page
    https://support.ca.com/irj/portal/prddtlshome?productID=8011
  - Technical Document Index
    https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/8011/8011_techdocindex.html

- **CA Security Compliance Manager**
  - Documentation
    https://support.ca.com/irj/portal/DocumentationResults?productID=137816&releaseID=ALL&languageID=ENU&actionID=2
  - Technical Document Index
    https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/8100/8100_tecindex.html

- **CA Service Desk Manager**
  - Support Home Page
    https://support.ca.com/irj/portal/prddtlshome?productID=8165
  - Documentation
    https://support.ca.com/irj/portal/DocumentationResults?productID=1474&releaseID=ALL&languageID=ENU&actionID=2
Integrations (Green Book)
https://support.ca.com/phpdocs/7/common/greenbooks/CA_Unicenter_Service_Desk_Integrations_Green_Book_ENU.pdf

Incident and Problem Management - Version 1.1 (Green Book)
https://support.ca.com/phpdocs/7/common/greenbooks/Incident_and_Problem_Management_Green_Book_ENU.pdf

**CA Service Catalog**
- Support Home Page
  https://support.ca.com/irj/portal/prddtlshome?productID=4931
- Documentation/Manuals
  https://support.ca.com/irj/portal/DocumentationResults?productID=133904&releaseID=ALL&languageID=ENU&actionID=2
- Implementation Document Index
  https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=7/4931/4931_imp_techdocindex.html

**CA SiteMinder®**
- Support Home Page
  https://support.ca.com/irj/portal/prddtlshome?productID=5262
- Documentation/Manuals
  https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=7/5262/5262_docmanindex.html
- Informational Document Index
  https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/5262/5262_docindex.html

**CA Software Change Manager**
- Support Home Page
  https://support.ca.com/irj/portal/prddtlshome?productID=255
- Documentation/Manuals
  https://support.ca.com/irj/portal/DocumentationResults?productID=138332&releaseID=ALL&languageID=ENU&actionID=2
- Technical Document Index
  https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/255/255_techdocindex.html
■ **CA Software Compliance Manager**
  - Support Home Page
    https://support.ca.com/irj/portal/prddtlshome?productID=8160
  - CA software Compliance Green Book
    https://support.ca.com/phpdocs/7/common/greenbooks/CA_Software_Compliance_Manager_Green_Book_ENU.pdf
  - Compatibility Matrix
    https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/8160/8160_compmatrix.html
  - Technical Document Index
    https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/8160/8160_techdocindex.html

■ **CA Spectrum Automation Manager**
  - Support Home Page
    https://support.ca.com/irj/portal/prddtlshome?prdhmpgform=p&productId=8103
  - Documentation/Manuals
    https://support.ca.com/irj/portal/DocumentationResults?productId=137032&releaseID=ALL&languageID=ENU&actionID=2
    https://support.ca.com/cadocs/1/CA%20Spectrum%20Automation%20Manager%20Base%20Configuration%2012%20SP2-ENU/Bookshelf.html (r12.0 SP2)

■ **CA Spectrum® Infrastructure Manager**
  - Support.ca.com Home Page
    https://support.ca.com/irj/portal/prddtlshome?productID=7832
  - Documentation/Manuals
    https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=7/7832/7832_docmanindex.html
  - Network and Voice Management (Green Book)
    https://support.ca.com/phpdocs/0/common/greenbooks/Network_and_Voice_Management_Green_Book_ENU.pdf
References and Links

- **CA Spectrum® Service Assurance**
  - Support Home Page
    https://support.ca.com/irj/portal/prddtlshome?productID=8257
  - Documentation/Manuals
    https://support.ca.com/irj/portal/DocumentationResults?productID=138779&releaseID=ALL&languageID=ENU&actionID=2
    https://support.ca.com/cadocs/1/CA Spectrum Service Assurance r20-ENU/Bookshelf.html

- **CA Virtual Assurance for Infrastructure Managers** (formerly CA Virtual Performance Management)
  - Support Home Page
    https://support.ca.com/irj/portal/prddtlshome?productID=5653

- **CA Workload Automation Solutions**
  - Support Home Page
    https://support.ca.com/irj/portal/anonymous/prddtlshome?productID=8104
  - Workload Automation Deployment Best Practices (Green Book)
    https://support.ca.com/phpdocs/7/common/greenbooks/Workload_Automation_Deployment_Best_Practice_ENU.pdf

- **CA AutoSys Workload Automation**
  - Support Home Page
    https://support.ca.com/irj/portal/prddtlshome?prdhmpgform=p&productID=253
  - Technical Document Index
    https://support.ca.com/prodinfo/253/techdoc/
  - Documentation/Manuals
    https://support.ca.com/irj/portal/DocumentationResults?productID=138777&releaseID=ALL&languageID=ENU&actionID=2
    https://support.ca.com/cadocs/7/CA%20Workload%20Automation%20AE%20r11%203-ENU/Bookshelf.html
    https://support.ca.com/cadocs/7/j012611e.zip

- **CA-7 Workload Automation**
  - Support Home Page
    https://support.ca.com/irj/portal/prddtlshome?productID=1171
  - Documentation/Manuals
    https://support.ca.com/irj/portal/DocumentationResults?productID=131730&releaseID=ALL&languageID=ENU&actionID=2
References and Links

- **CA Workload Control Center**
  - Support Home Page
    https://support.ca.com/irj/portal/prddtlshome?productID=4602
  - Documentation/Manuals
    https://support.ca.com/irj/portal/DocumentationResults?productID=131893&releaseID=ALL&languageID=ENU&actionID=2
  - Technical Document Index
    https://support.ca.com/irj/portal/anonymous/phpdocs?filePath=0/4602/4602_techdocindex.html

External Links

Additional links are provided for BusinessObjects XI below:

- **SAP BusinessObjects XI Products Guide**
  Product: BusinessObjects Enterprise
  Release: BusinessObjects XI Release 2 (CA Business Intelligence 2.x) or BusinessObjects XI 3.1 (CA Business Intelligence 3.x)

- **SAP BusinessObjects XI 3.1 Administrators Guide (CA Business Intelligence 3.x)**

- **BusinessObjects XI Release 2 Pattern Book For Windows**
  n_pattern_book.pdf

- **BusinessObjects XI Release 2 Deployment and Configuration Guide**
  l_en.pdf

- **Statement of support: VMware ESX Server**

- **SAP BusinessObjects XI 3.1 Articles and Supported Platforms**
  http://www.sdn.sap.com/irj/boc/articles?rid=/webcontent/uuid/3042e25c-a668-2b10-7fa7-a9d373687040