Building a BusinessObjects Shared-Services Environment

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Building a BusinessObjects Shared-Services Environment

Would you like to learn how a global financial services company plans to deploy BusinessObjects XI Release 2 to support a federated BI shared service? Find out how the new platform will replace a BusinessObjects 6.5 system currently supporting over 70 reporting applications and 5,500 users deployed across all regions. Walk through our technical design plans and discover first-hand how we plan to meet some critical technical requirements such as the following: high availability and disaster recovery, security for virtual application silos on single-server instances, a global "My BusinessObjects" portal, and integration with an enterprise-level job control system.

Room 2008, Monday, November 6, 10:00am -11:00am
Topics

- Project Overview
- Deployment Overview
- Cluster Designs for High Availability/Disaster Recovery
- Virtual Application Silos
- Enterprise Job Control
- References
- Q&A
Project Overview - Company

- **Credit Suisse group**
  - Investment banking
  - Private banking
  - Asset management

- **Investment banking products**
  - Debt and equity underwriting
  - Sales and trading
  - Mergers and acquisitions

- **CS is a truly global institution**
  - Operates in more than 57 locations across more than 26 countries on five continents

- **Investment research**
- **Correspondent and prime brokerage services**
The CS investment bank is a distributed organization

- **Distributed product line ownership of business intelligence projects**
  - Globally distributed product line IT departments to retain full ownership of data and reporting applications
  - BusinessObjects to be centrally owned and hosted on shared development, user acceptance test (UAT), and production environments
  - Each product line reporting application to be deployed in a virtual silo that isolates it from other applications running on the same shared server instance

- **Distributed data warehouses/data marts**
  - Located in regional data centers (New York, London, Singapore) for both global and local reporting applications

- **Heterogeneous data sources**
  - Oracle, DB2, Sybase, SQL Server, Informix
Project Overview – Deployment

**BusinessObjects deployment at CS**

- **BusinessObjects licensing w/premium support**
  - Legacy licensing has been consolidated into 8500 named user licenses for BusinessObjects XI premium
    - Includes BusinessObjects InfoView and Crystal
  - 3000 named users for Web Intelligence analysis
  - 1000 named users for BusinessObjects analysis
  - 1500 seats of Crystal Reports Advanced Developer

- **Query and analysis - BusinessObjects**
  - Global shared services for BusinessObjects 6.5b
  - **70 product line reporting applications with over 6000 users**

- **Reporting – Crystal**
  - Approximately ten self-supported product line deployments of Crystal Enterprise 10, Business Objects XI, and Business Objects XI R2
  - Most of these deployments are expected to migrate to shared services when our Business Objects XI R2 platform is available
Project Overview – Product Roadmap

Overlay of CS migration strategy

Flexible Upgrade Strategies to BusinessObjects XI Release 2

CS Product Lines

Crystal Version 10

Integration Pack

Integration Complete

BusinessObjects

Release 2

BusinessObjects

Front-end Integration

Platform Integration

BusinessObjects 5.x

BusinessObjects 6.0, 6.1, 6.5

CS Shared-Services 1Q07
Federated regional intranet deployments
- Support high availability/disaster recovery within each region
- In the US, support disaster recovery for a distance of over 100 miles (SEC regulations)
- Support local development, UAT, production within each region in one or more locations

Additional extranet deployments
- Separate infrastructure outside the scope of this project

Unified end-user report services view
- Provide a unified global context for end-users that have access to reporting on multiple production clusters locally and globally
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Deployment Overview

- **Existing: Business Objects V6.5b**
  - Product allows for multiple Business Objects clusters to run against a common repository
  - Single global security domain for each environment
    - development, UAT, production
  - User will see identical profile in each Web Intelligence instance
  - User will have one global location for personal documents

- **Planned: Business Objects XI Release 2**
  - Product has a one-to-one mapping of cluster to repository
  - Each physical location will have an independent cluster/repository
  - User’s profile will vary with each Web Intelligence instance
  - User will have a personal documents location for each instance
Business Objects V6.5b Environment Silos

Global security domains - local universe/document domains
Business Objects XI R2 Environment Silos

Loss of global repository - clusters are local
Global security domains => global user profiles
Global user profiles no longer exist
“My Business Objects” Portal

“My Business Objects” portal => CS global user profiles

My Business Objects Reporting Applications
- Reporting Application One (New York)
- Reporting Application Two (Singapore)
- Reporting Application Three (New York)
- Reporting Application Four (RTP)
- Reporting Application Five (London)
...

Global LDAP
User Entitlements

New York
Research Triangle Park
London
Singapore
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EMC SRDF Replication Concepts

SRDF - Symmetrix Remote Data Facility

- **Synchronous SRDF (SRDF/S)**
  - No data exposure
  - Some performance impact
  - 200 km max distance

- **Asynchronous SRDF (SRDF/A)**
  - Can manage to 30 - 500 sec intervals
  - No performance impact
  - Can use consistency groups across Simms
Business Objects XI R2 Split Cluster Concepts

- **Split active/active cluster across data centers (short distances)**
  - Supported by Business Objects where latency between clusters is less than 10ms (<30 miles @CS)
  - Use synchronous SRDF to keep backup copy of FRS (on Storage Area Network - SAN) and BusinessObjects XI R2 repository in 2nd data center

- **Split active/passive cluster across data centers (long distances)**
  - Build additional passive cluster member in remote data center and keep in stopped state until invocation of Disaster Recovery Scenario
  - Use asynchronous SRDF to keep backup copy of FRS (SAN) and BusinessObjects XI R2 repository in remote 2nd data center
Active/Active Two Node Cluster Designs

- Single data center (out-of-the-box solution)
  - High availability with a two node active/active cluster
  - Corporate infrastructure provides for local redundancy of FRS and BusinessObjects XI R2 repository

- Two data centers in close proximity
  - High availability/disaster recovery (DR) with a two node active/active cluster
  - Use of synchronous SRDF for redundancy of FRS and BusinessObjects XI R2 repository
  - FRS and BusinessObjects XI R2 repository fail over independently of Business Objects cluster

Note: It is assumed that customer data sources will follow the same DR strategy as the BusinessObjects XI R2 repository in each configuration
Single Data Center

High availability with a two node cluster
Two Data Centers In Close Proximity

High availability/disaster recovery with a two node cluster
Wide area disaster recovery
(Required by Securities and Exchange Commission)

- Remote DR using standby passive cluster node with replicated FRS and BusinessObjects XI R2 repository
- Use of asynchronous SRDF with single consistency group for FRS and BusinessObjects XI R2 repository
  - Replicated data will be synchronized at least every five minutes
  - Single consistency group - Symms replicate simultaneously, to the same point in time (+ or - one millisecond) to the DR location, thus minimizing the risk of the repository becoming out-of-sync with the FRS
Wide Area Disaster Recovery

Remote standby cluster node with replicated repository and FRS

- Data Center A
- Data Center A & B
- Remote Data Center C

EMC SRDF/A
Single Consistency Group

Asynchronous SRDF
In US, a combination of local and remote clustering is employed

- New York ⇔ Princeton has an active/active split cluster with a third passive cluster member in Research Triangle Park (RTP)
- Research Triangle Park has a local active/active cluster with a third passive cluster member in New York
- Multi-hop replication is used for the FRS and repository for the New York ⇔ Princeton cluster
  - Synchronous SRDF to nearby site (New York => Princeton)
  - Asynchronous SRDF to far-away site (Princeton => RTP)
  - RTP copy of New York ⇔ Princeton cluster only invoked if both New York and Princeton are unavailable

For Europe and Asia-Pacific active/active clustering across two data centers is employed
Credit Suisse Regional Deployment Topology

In US, both local and remote clustering are employed
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Virtual Application Silos – Shared Enterprise

*BI applications and use of shared enterprise*

- **Publish and manage own BI content**
  - Through development lifecycle (DEV -> TEST -> PROD)
- **All levels of security**
  - Resource (report, universe, connection) and data security
  - Functional role definition
- **Leverage BI services**
  - Inclusion in client-server and web application deployments
  - Complete separation between application and processing tiers
- **Enterprise job control**
  - Integration with Control-M, an enterprise job scheduling product, and Broadcast Agent.
Create functional roles

Define functional roles
- Roles within a OLAP deployment for use of product functions
  - Application admin role who will perform user and group administration
  - Migration role who will perform code migrations through lifecycle
  - Power user role who can promote code to group folders
  - User role for refresh and basic OLAP functions
  - Environmental specific permissions
    - Locked-down production
    - Open sandbox and development

Points of control
- SOX control objective requiring development lifecycle enforcement
  - Development personnel prohibited from moving development software or data to production
Virtual Application Silos – Security

Creating functional roles

BusinessObjects Enterprise Applications

<table>
<thead>
<tr>
<th>Type</th>
<th>Application Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Management Console</td>
<td>Desktop Intelligence – example</td>
</tr>
<tr>
<td>Crystal Reports Explorer</td>
<td></td>
</tr>
<tr>
<td>Designer</td>
<td></td>
</tr>
<tr>
<td>Desktop Intelligence</td>
<td></td>
</tr>
<tr>
<td>Discussions</td>
<td></td>
</tr>
<tr>
<td>Encyclopedia</td>
<td></td>
</tr>
<tr>
<td>InfoView</td>
<td></td>
</tr>
<tr>
<td>Performance Management</td>
<td></td>
</tr>
<tr>
<td>Report Conversion Tool</td>
<td></td>
</tr>
<tr>
<td>Strategy Builder</td>
<td></td>
</tr>
<tr>
<td>Web Intelligence</td>
<td></td>
</tr>
</tbody>
</table>

Desktop Intelligence - example

<table>
<thead>
<tr>
<th>Command</th>
<th>Application Admin</th>
<th>Migration</th>
<th>Power User</th>
<th>User</th>
</tr>
</thead>
<tbody>
<tr>
<td>Save documents</td>
<td>Not Specified</td>
<td>Explicitly Granted</td>
<td>Explicitly Granted</td>
<td>Not Specified</td>
</tr>
<tr>
<td>Drill Through</td>
<td>Not Specified</td>
<td>Not Specified</td>
<td>Explicitly Granted</td>
<td>Not Specified</td>
</tr>
<tr>
<td>Edit Free-hand SQL</td>
<td>Not Specified</td>
<td>Explicitly Granted</td>
<td>Explicitly Granted</td>
<td>Not Specified</td>
</tr>
<tr>
<td>Send Documents to Repository</td>
<td>Not Specified</td>
<td>Explicitly Granted</td>
<td>Explicitly Granted</td>
<td>Not Specified</td>
</tr>
<tr>
<td>Create and Edit Connections</td>
<td>Not Specified</td>
<td>Explicitly Granted</td>
<td>Not Specified</td>
<td>Not Specified</td>
</tr>
</tbody>
</table>
Virtual Application Silos – Security

Creating application groups and folders

- Folder for an applications content
- Create set of profile groups at the application level
  - For example: App XYZ admin, App XYZ migration, App XYZ power user
  - Add users to a enterprise function role and application-level role
  - Apply folder permissions based on documented standard

<table>
<thead>
<tr>
<th>Command</th>
<th>Application Admin</th>
<th>Migration</th>
<th>Power User</th>
<th>User</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add objects to the folder</td>
<td>Explicitly Granted</td>
<td>Explicitly Granted</td>
<td>Not Specified</td>
<td>Not Specified</td>
</tr>
<tr>
<td>Modify the rights users have to the objects</td>
<td>Explicitly Granted</td>
<td>Explicitly Granted</td>
<td>Not Specified</td>
<td>Not Specified</td>
</tr>
<tr>
<td>Edit objects</td>
<td>Not Specified</td>
<td>Explicitly Granted</td>
<td>Not Specified</td>
<td>Not Specified</td>
</tr>
<tr>
<td>Delete objects</td>
<td>Explicitly Granted</td>
<td>Explicitly Granted</td>
<td>Not Specified</td>
<td>Not Specified</td>
</tr>
<tr>
<td>Schedule the document to run</td>
<td>Explicitly Granted</td>
<td>Explicitly Granted</td>
<td>Explicitly Granted</td>
<td>Not Specified</td>
</tr>
</tbody>
</table>
Virtual Application Silos – Security

Group security view

Credit Suisse

Application A
- Admin – App A
  - J Smith
- Migration – App A
- Power User – App A
- User – App A
  - B Wolf
- Application A All Users
  - J Smith
  - B Wolf

Application Z

Functional Roles
- Admin Role
  - J Smith
- Migration Role
- Power User Role
- User Role
  - B Wolf
Folder right assignment

Application A
- Admin - App A
- Migration – App A
- Power User – App A
- User - App A
- App A All Users
Virtual Application Silos – Security

Key points to remember

► If a right is set as “not specified” the right is denied by default

► Users to group association
  • Added to only one enterprise role for production functionality
    – Developers explicitly granted right to save for all users in Desktop Intelligence
  • Added to only one application role for access control list permission on a folder permissions
    – Developers explicitly granted right to view, edit, delete all objects in application folder root
  • Added to an application all users group
    – Used to identify, centrally, all users of an application centrally

► Application folder parent
  • Apply rights to application roles and all user groups, referenced above, to the application folder parent
Virtual Application Silos – Service Architecture

- Application XI R2 Enterprise
  - single deployments
    - Deep vertical integration leads to increased support costs
    - Resource management varied based on application components
    - Myriad of deployment architectures
    - Increased server sprawl
    - Low utilization

- Service centric architecture
  - Loose coupling of client and service
  - Scalable and centralized business continuity and DR
  - Centralized monitoring and support
  - Platform independence
  - Finer control of resource pools to meet service levels
Virtual Application Silos – Application Model

**BusinessObjects component stack**

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The BusinessObjects XI functional architecture and tools.
Hub-spoke architecture

Deliver Infoview out-of-box with sample code
- Deployment descriptor updates for WCA and Infoview
  - Connection timeout settings to match Credit Suisse application server session timeouts
  - Virtual directory mappings
  - Default CMS name for login page

Configuration for connectivity to backend shared enterprise services

Authentication and authorization secured by back-end enterprise repository
Virtual Application Silos – Multipurpose

Logical environments from one physical installation

- **Need to provide multiple test environments**
  - System test, integration test, acceptance test, validation testing (QA, fit-for-purpose), regression testing
  - Performance testing would not fit this deployment, requirement calls for duplicate infrastructure capacity as production
- **Warm standby DR requirement**
- **Use a remote region (NY using RTP) UAT machine**
- **Multiple clusters per deployment**
  - One CMS cluster per repository connection
  - Added complexity in delivering service levels
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High-level overview

- **Web service architecture**
  - Perl script freely distributed which allows command line integration
  - Web service allows for integration in all technologies
  - Client does not know of service implementation details
  - Message based communication using XML
    - Stateless using HTTP protocol
  - Client location is independent of invocation
  - BCA API software delivered as J2EE servlet
  - Detailed logging for ease of troubleshooting
Value Added Components – BCA API

Broadcast Agent API requirements and parameters

• Core requirements
  - Scheduling jobs using traditional BCA no longer required
  - Use of enterprise Control-M job control product
  - Return code 1 for success, -1 for failure
  - Detailed logging for ease of troubleshooting
  - Thin client with minimum deployment effort

• Required parameters
  - HTTP server URL
  - Path to batch parameter or configuration file (*.xml)
  - Log file location
  - Log rotation rule

Tue Oct 11 18:20:46 2005 INFO Beginning+Processing+of+batch+feed+on+session
Tue Oct 11 18:20:46 2005 INFO INFO%3A+Attempting+to+create+a+session
Tue Oct 11 18:20:46 2005 INFO INFO%3A+Retrieved+Webi+Server+Object
Tue Oct 11 18:20:46 2005 INFO INFO%3A+Valid+session+opened+for+user+edtest
Tue Oct 11 18:20:46 2005 INFO INFO%3A+Session+and+Context+retrieved
Tue Oct 11 18:20:46 2005 INFO INFO%3A+Document+and+UserList%2C+Begin+processing********
Tue Oct 11 18:20:46 2005 INFO INFO%3A+This+is+a+Full+Client+report+for+in-line+processing
Tue Oct 11 18:20:46 2005 INFO INFO%3A+Document+has+been+opened+successfully
Tue Oct 11 18:20:46 2005 INFO INFO%3A+Prompt+for+input+of+additional+parameters
Tue Oct 11 18:20:46 2005 INFO INFO%3A+Report+is+being+generated
C:\\bca_api_jbuild_war\\client>perl bca_client.pl http://bodevny.csfb.net:7930/BCAScheduler/BCAScheduler bcaControlFileTestInteractive.xml bcaReports.log 10
C:\\bca_api_jbuild_war\\client>
XML specification

- Username is system supplied ID
- Parameter name and value pairs
- Uses existing categories
- Schema definition (.xsd) as published standard
- FTP and SMTP support for one destination only
Current limitations

- **Single destination with single output format through API**
  - Loss of multiple actions and formats per batch job from v6.5.
  - Requires multiple iterations or batch runs per report to achieve similar functionality XML specification
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- Service Centric Deployment
- Enterprise Job Control
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Please see our 2005 Insight presentation for a complete overview of how we created the CS global shared-service for Business Objects

- **Abstract:** three years ago, Credit Suisse’s team was tasked in building and maintaining a global shared service to support diverse and strategic BI initiatives across multiple regions and product lines. CSFB now supports 60 different reporting applications with over 3,000 users running on a common infrastructure owned and supported by a single global service organization. See the organizational and technical challenges that CS overcame. Learn the critical steps required to deploy a global BI service, such as defining organizational role definitions, cost transparency and charge backs, virtual application silos, and integration with an enterprise-level job control system.

http://www.jay.palevsky.net/businessobjects/bo2005.htm
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- Cluster Designs for High Availability/Disaster Recovery
- Security for Virtual Application Silos
- Enterprise Job Control
- References
- Q&A
Questions

- Jay Palevsky, Global Program Manager, Credit Suisse
- Robert Isaacson, Global Technical Lead, Credit Suisse
- I will repeat questions to ensure everyone can hear

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