Building a BusinessObjects Shared-Services Environment

Jay Palevsky, Credit Suisse
Robert Isaacson, Credit Suisse

INSIGHT

AMERICAS 2006

Breakout Information (Hidden Slide)

- **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

B2_ID21_Q150

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**
  - **Investment research**
  - **Correspondent and prime brokerage services**

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

Project Overview – Organizational Requirements

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

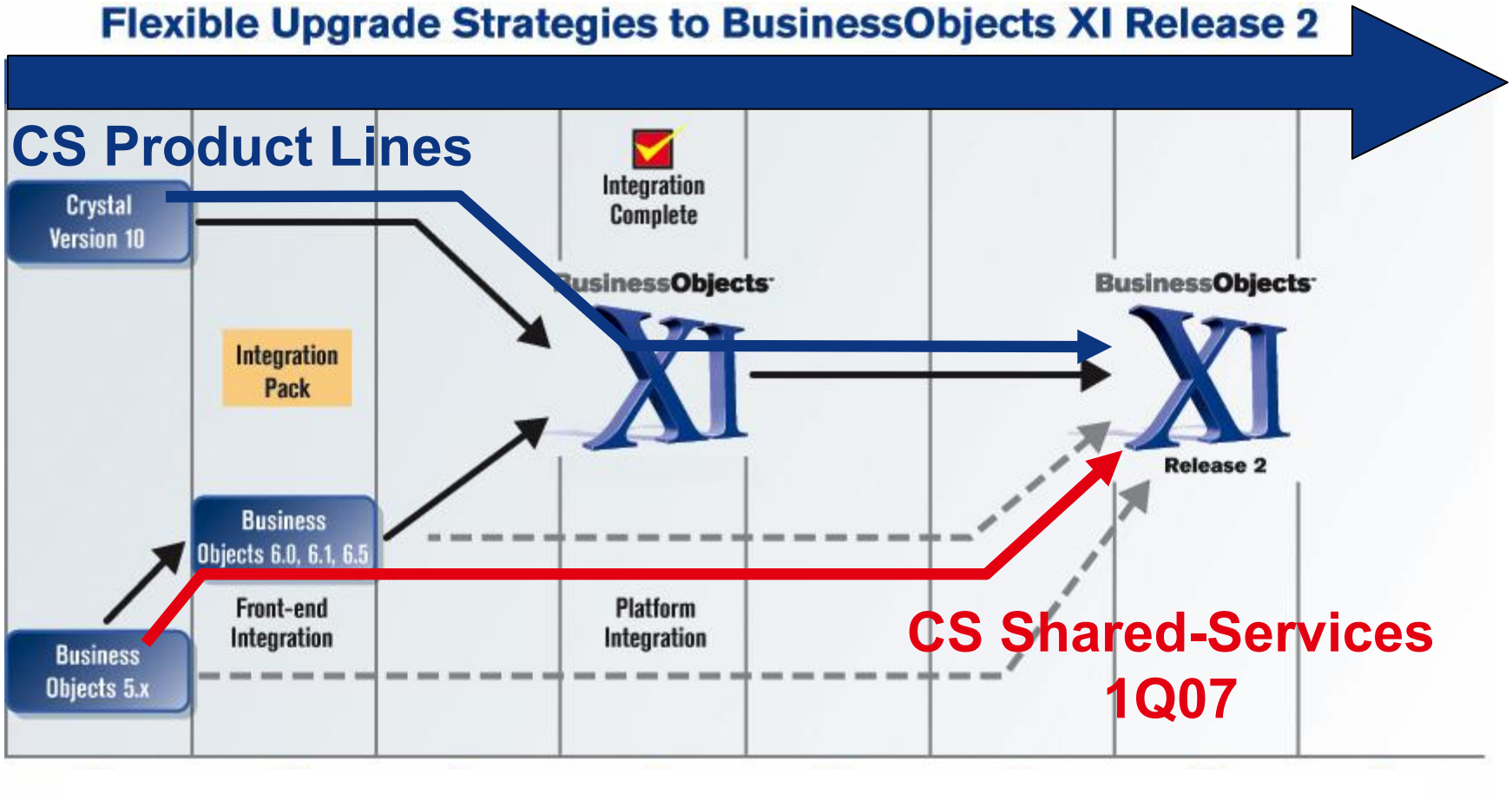
Project Overview – Deployment

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 migrated to shared services when our Business Objects XI R2 platform is available

Project Overview – Product Roadmap

Overlay of CS migration strategy



Project Overview – Technical Architecture Requirements

- **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

Topics

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

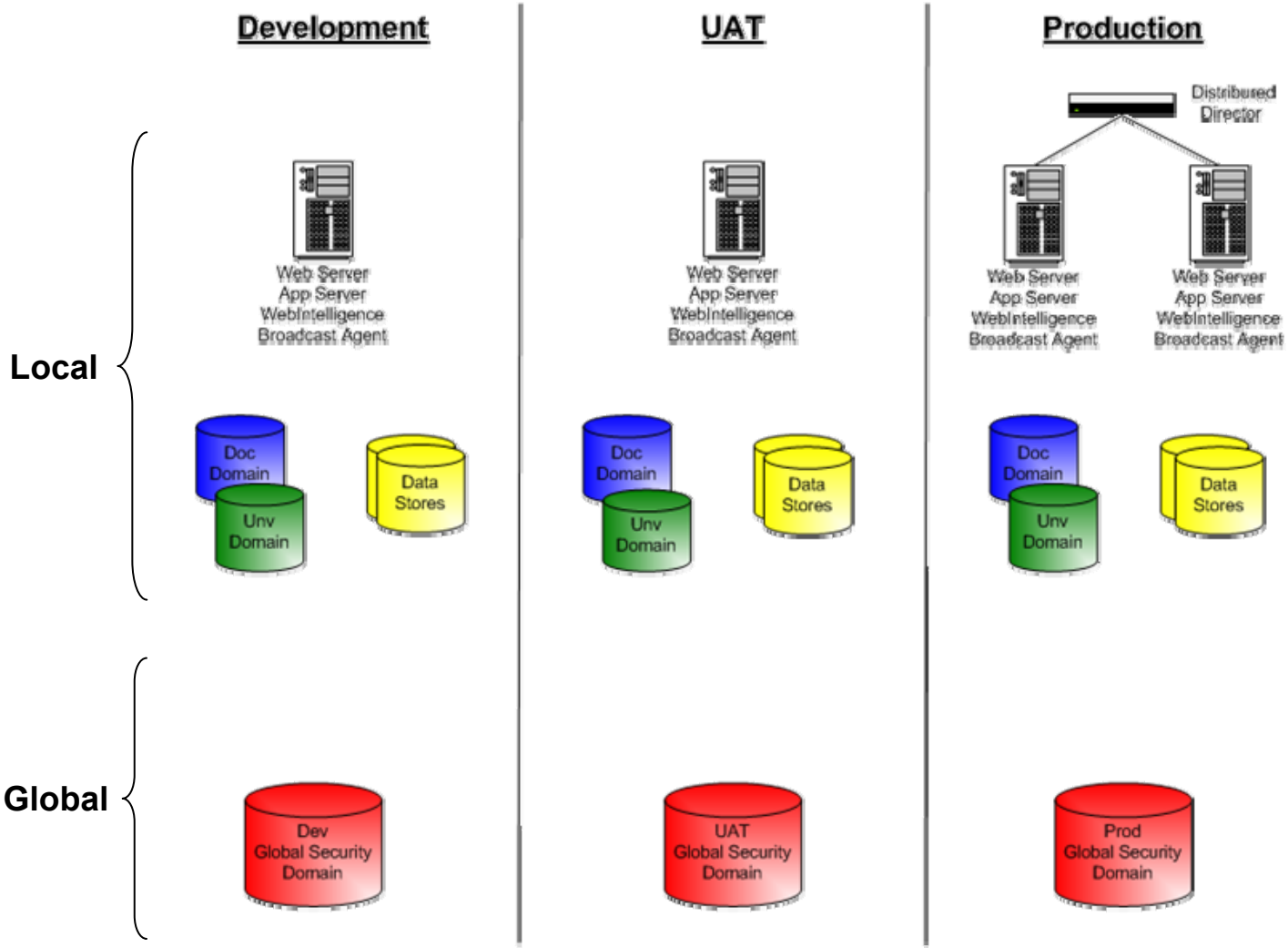
Deployment Overview

- **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

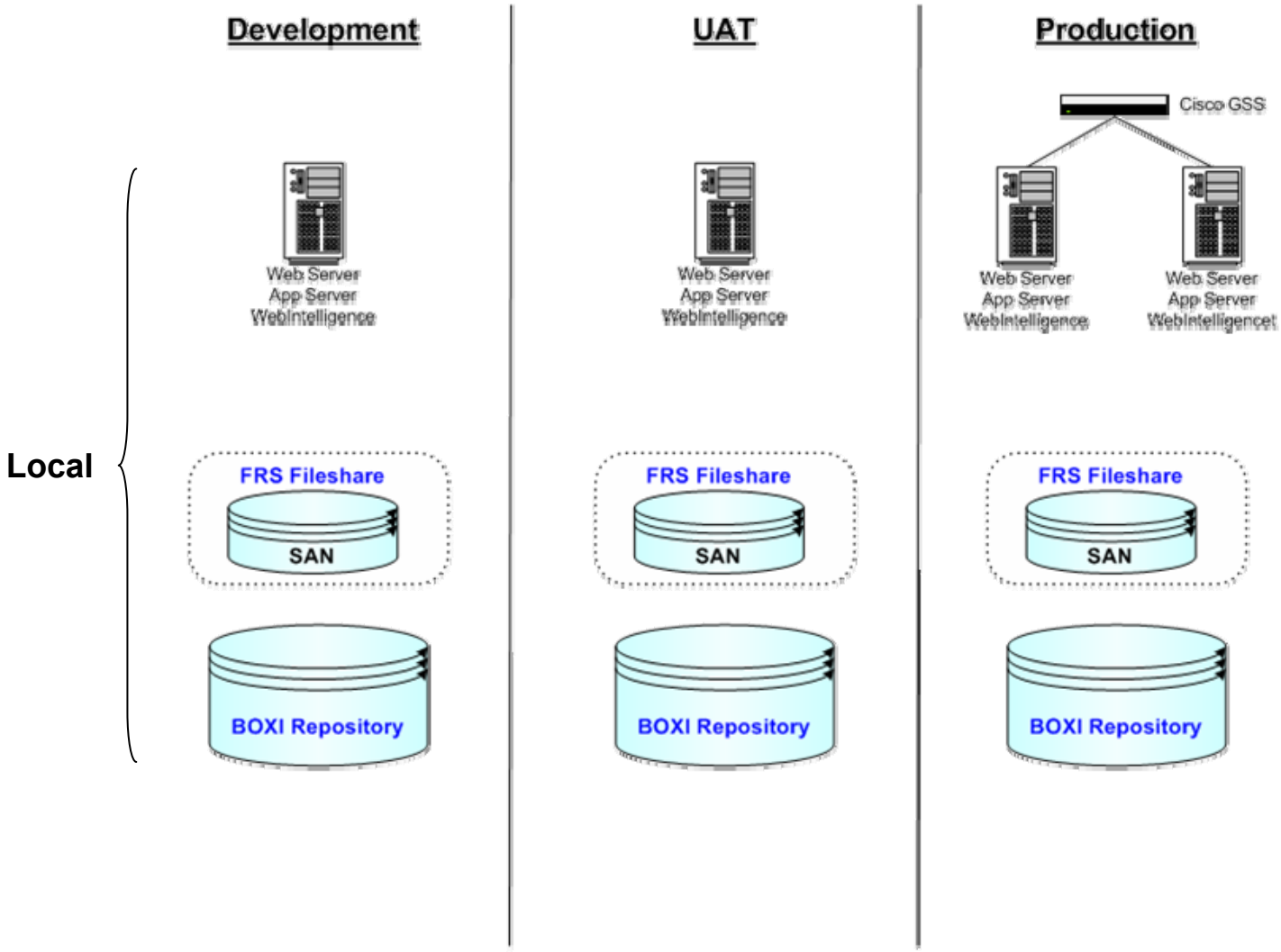
Business Objects V6.5b Environment Silos

Global security domains - local universe/document domains



Business Objects XI R2 Environment Silos

Loss of global repository - clusters are local

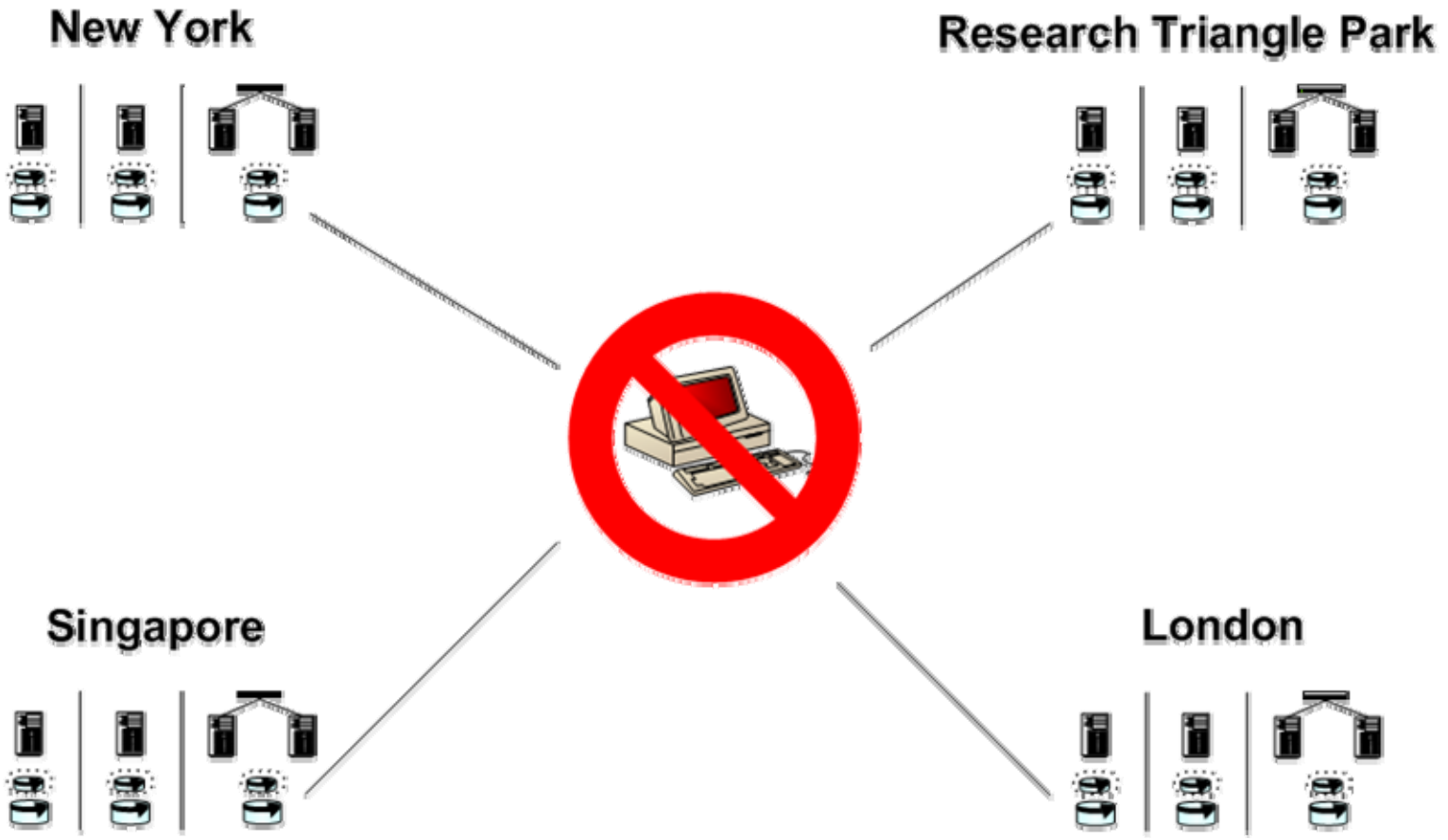


Business Objects V6.5b Global Deployment

Global security domains => global user profiles

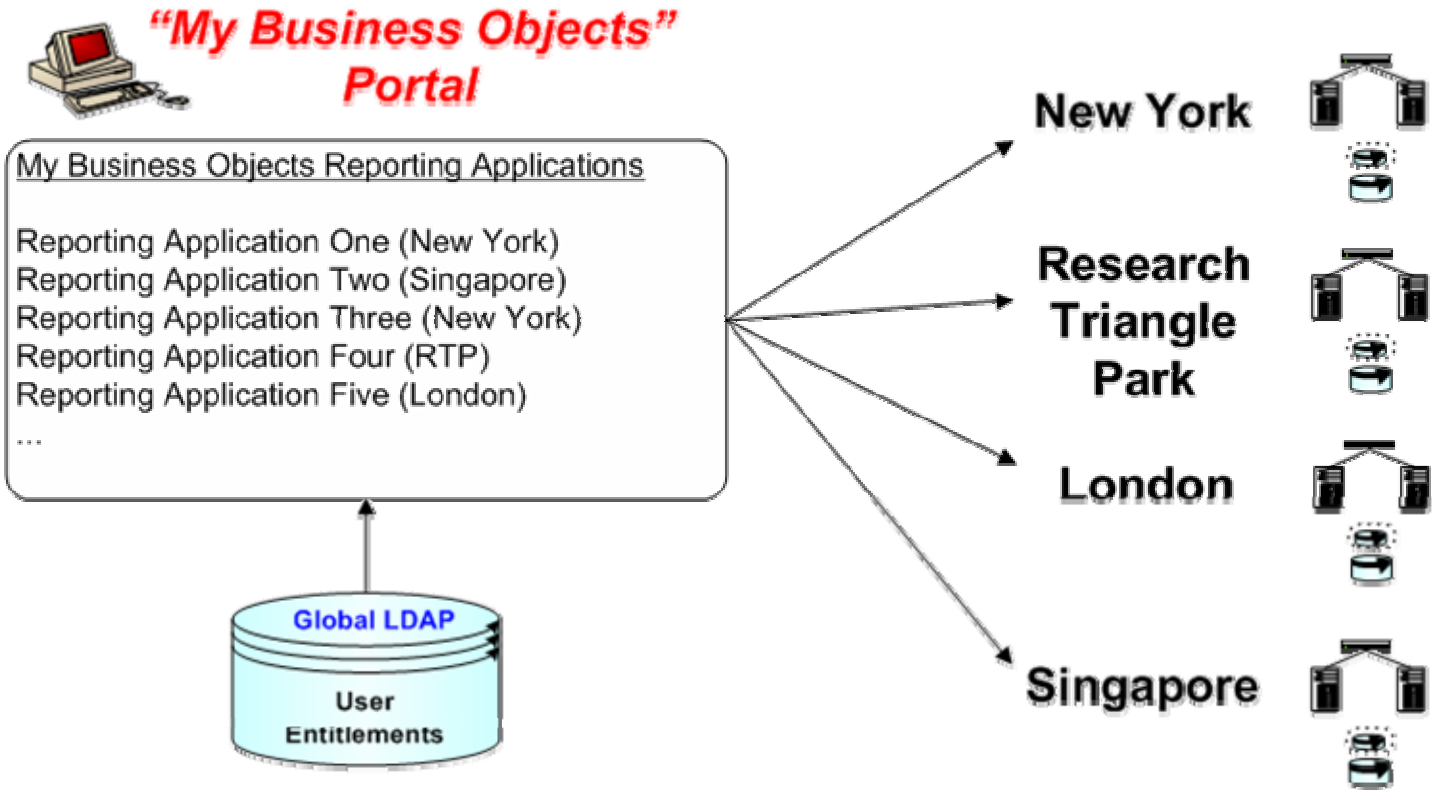
Business Objects XI R2 Global Deployment

Global user profiles no longer exist



“My Business Objects” Portal

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



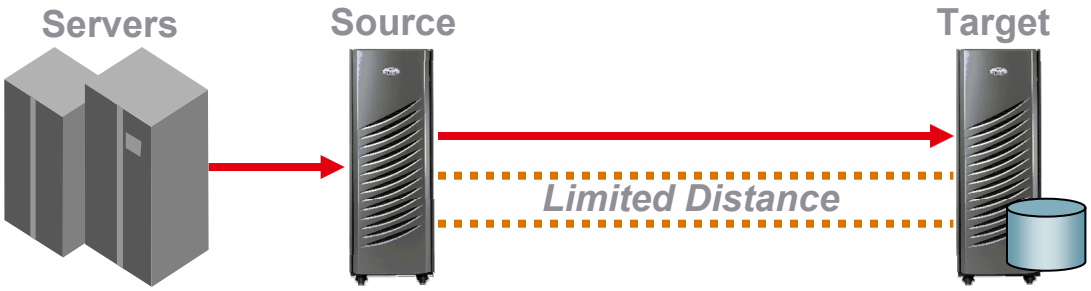
Topics

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

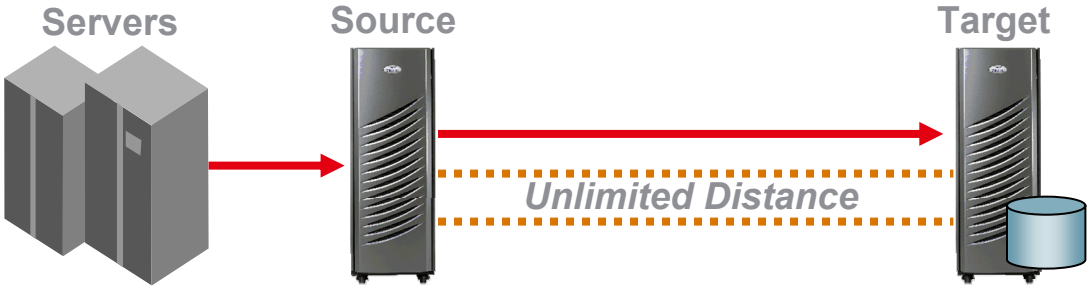
EMC SRDF Replication Concepts

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

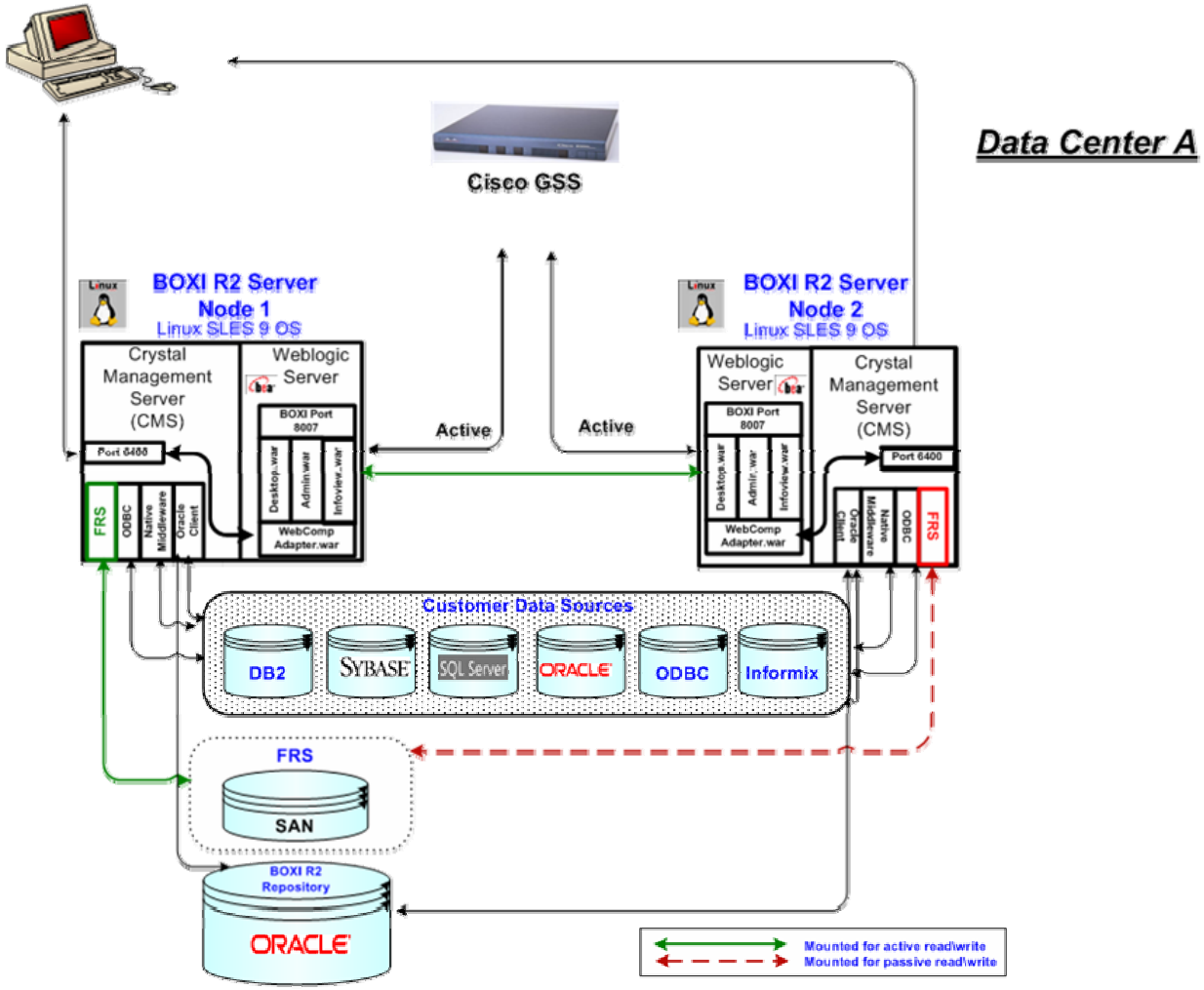
Active/Active Two Node Cluster Designs

- **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

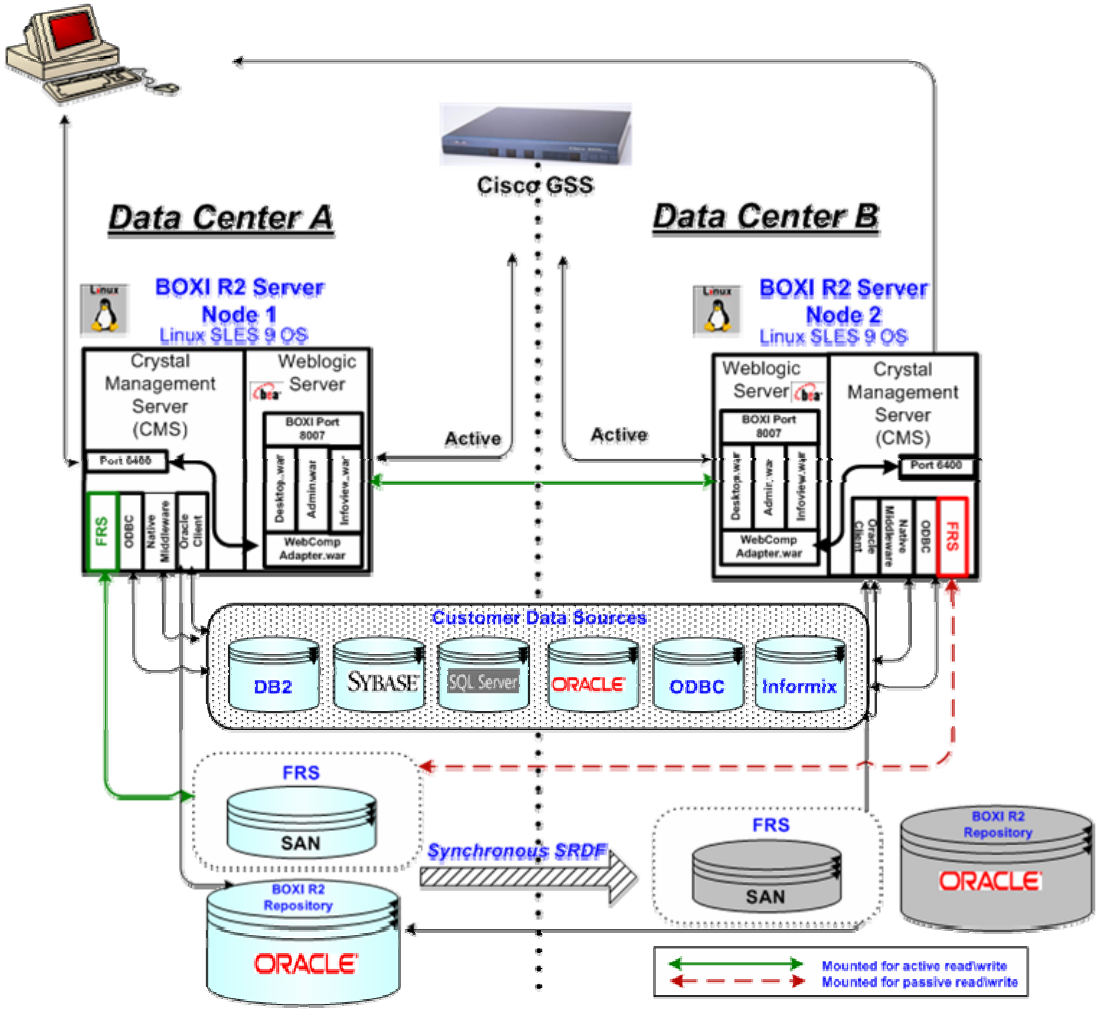
Single Data Center

High availability with a two node cluster



Two Data Centers In Close Proximity

High availability/disaster recovery with a two node cluster

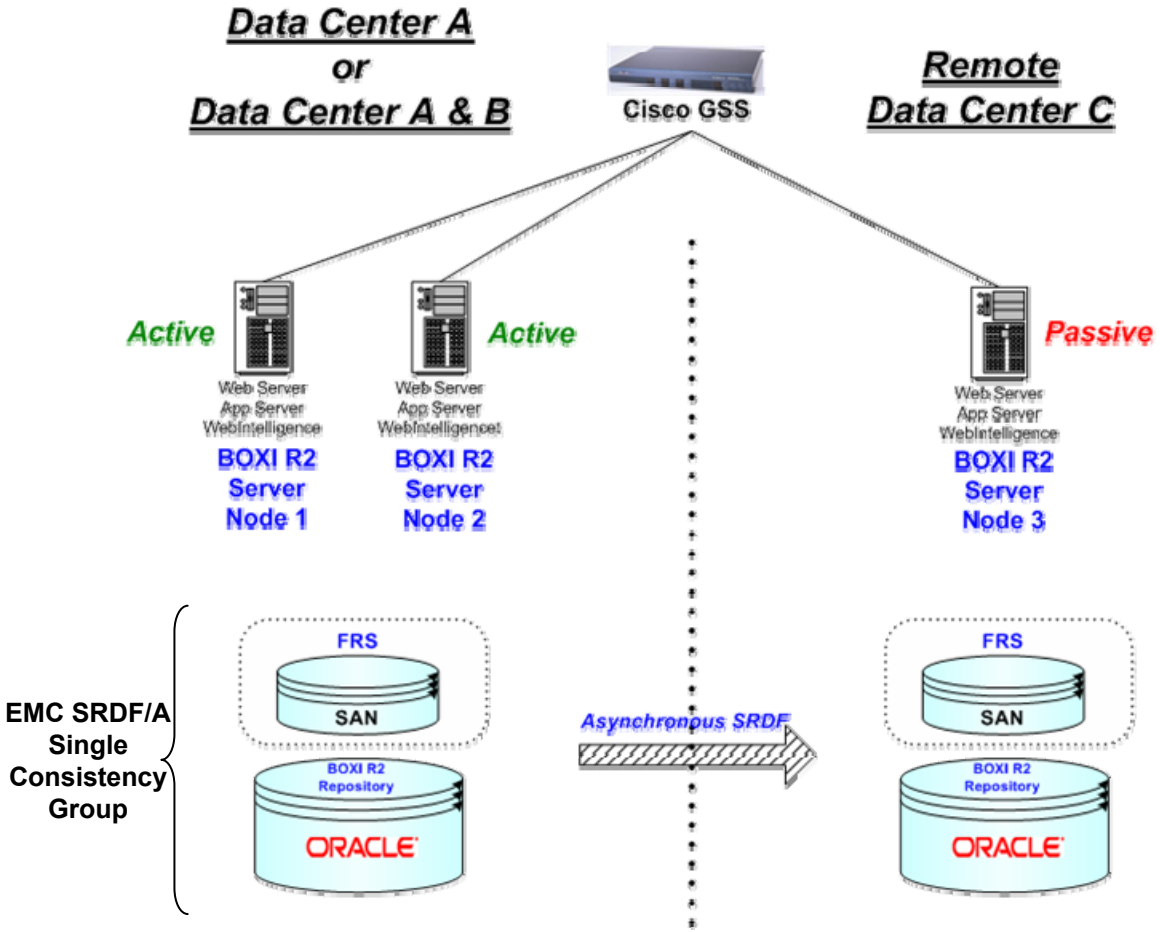


Active/Active/Passive Three Node Cluster Design

- **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

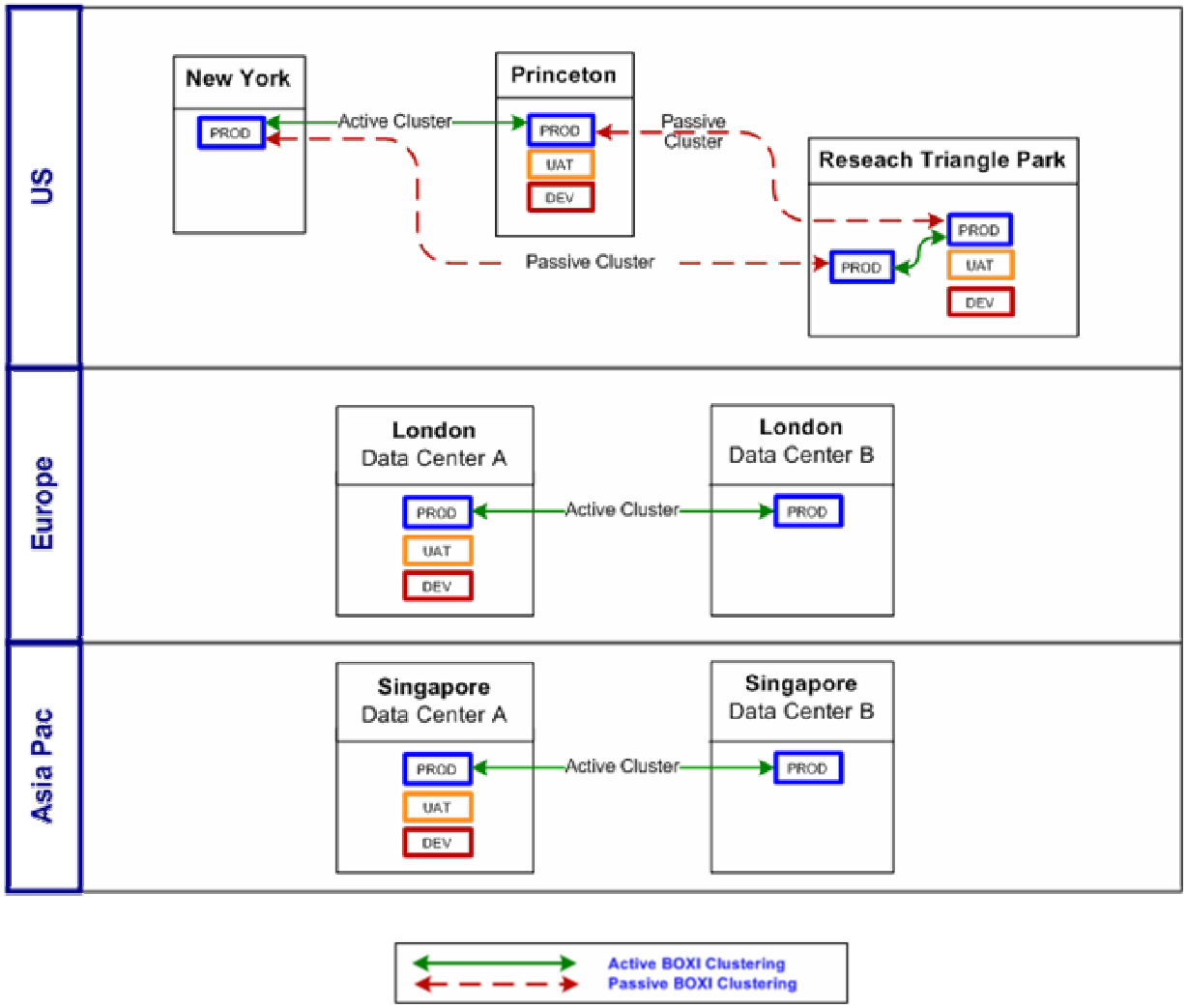


Credit Suisse Regional Deployment

- **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



Topics

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

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.

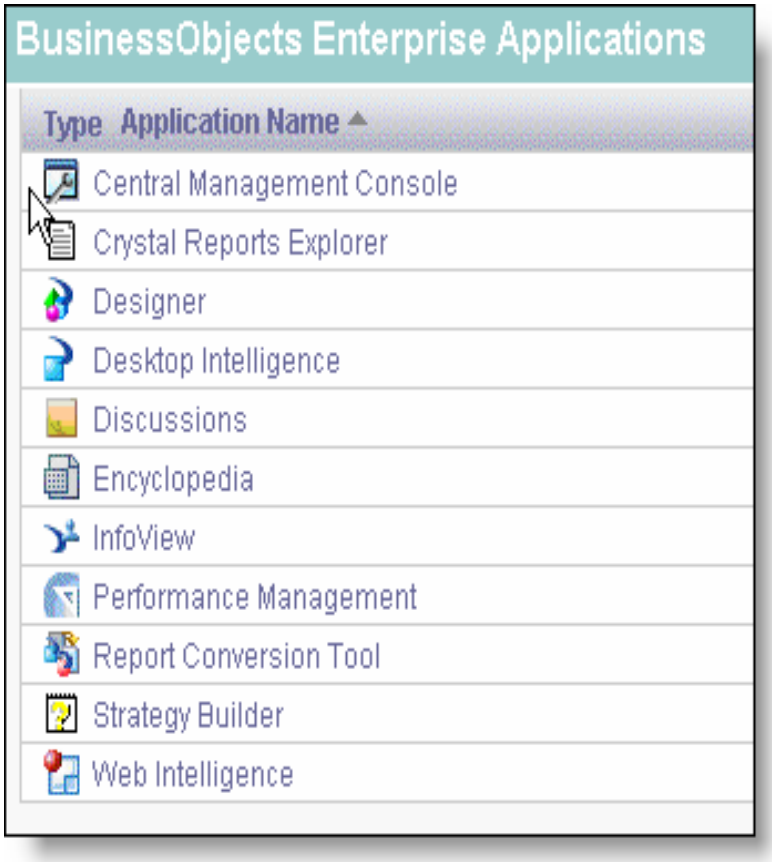
Virtual Application Silos – Security

Creating 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

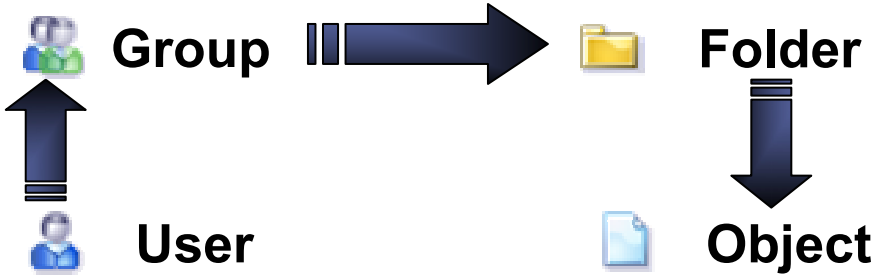


Desktop Intelligence - example

Command	Application Admin	Migration	Power User	User
Save documents for all users	● Not Specified	● Explicitly Granted	● Explicitly Granted	● Not Specified
Drill Through	● Not Specified	● Not Specified	● Explicitly Granted	● Not Specified
Edit Free-hand SQL	● Not Specified	● Explicitly Granted	● Explicitly Granted	● Not Specified
Send Documents to Repository	● Not Specified	● Explicitly Granted	● Explicitly Granted	● Not Specified
Create and Edit Connections	● Not Specified	● Explicitly Granted	● Not Specified	● Not Specified

Virtual Application Silos – Security

Creating application groups and folders

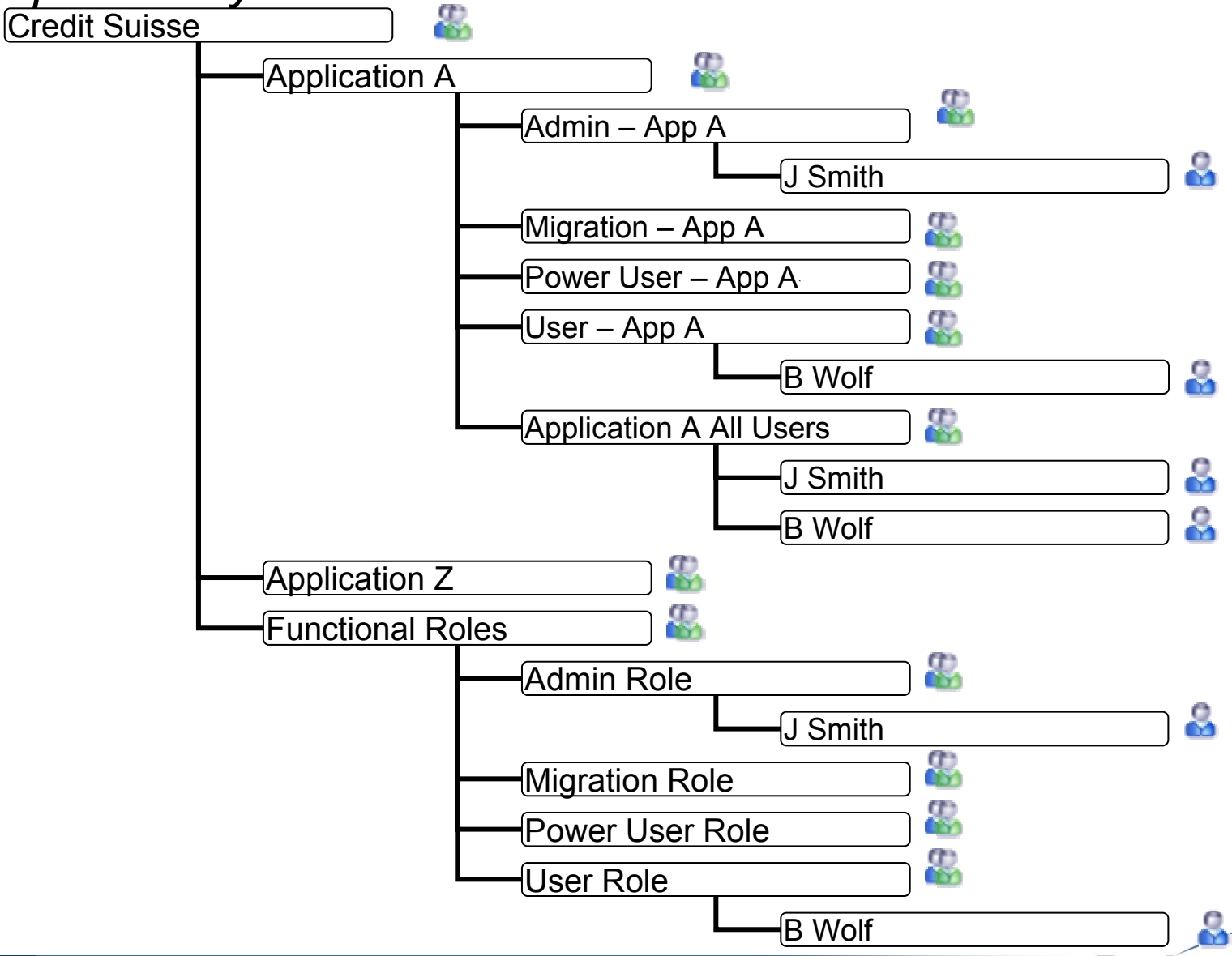


- **Folder for an applications content**
- **Create set of profile groups at the application level**
  - For example: App XYZ admin, App XYZ migration, App XYZ power user
  - Add users to a enterprise function role and application-level role
  - Apply folder permissions based on documented standard

Command	Application Admin	Migration	Power User	User
Add objects to the folder	Explicitly Granted	Explicitly Granted	Not Specified	Not Specified
Modify the rights users have to the objects	Explicitly Granted	Explicitly Granted	Not Specified	Not Specified
Edit objects	Not Specified	Explicitly Granted	Not Specified	Not Specified
Delete objects	Explicitly Granted	Explicitly Granted	Not Specified	Not Specified
Schedule the document to run	Explicitly Granted	Explicitly Granted	Explicitly Granted	Not Specified

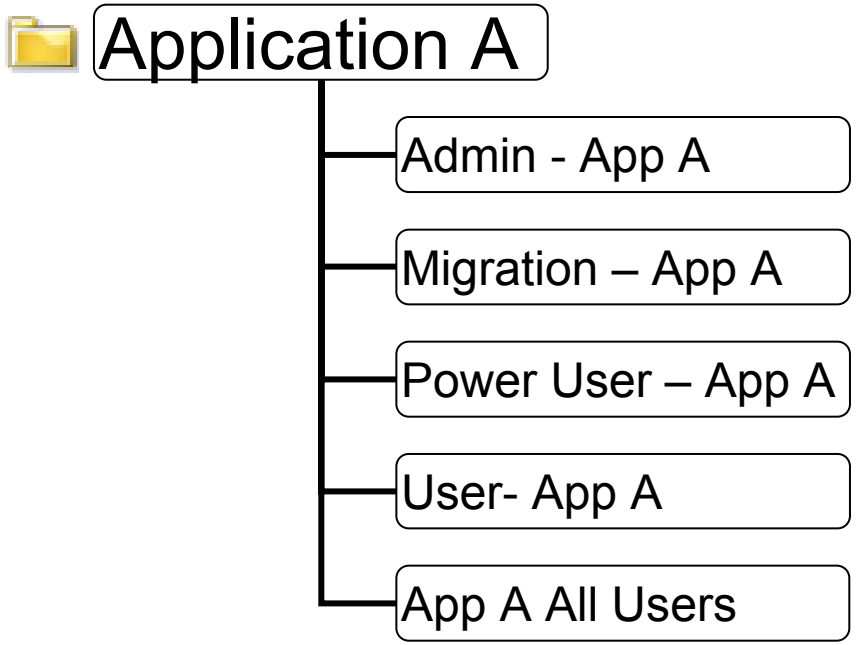
Virtual Application Silos – Security

Group security view



Virtual Application Silos – Security

Folder right assignment

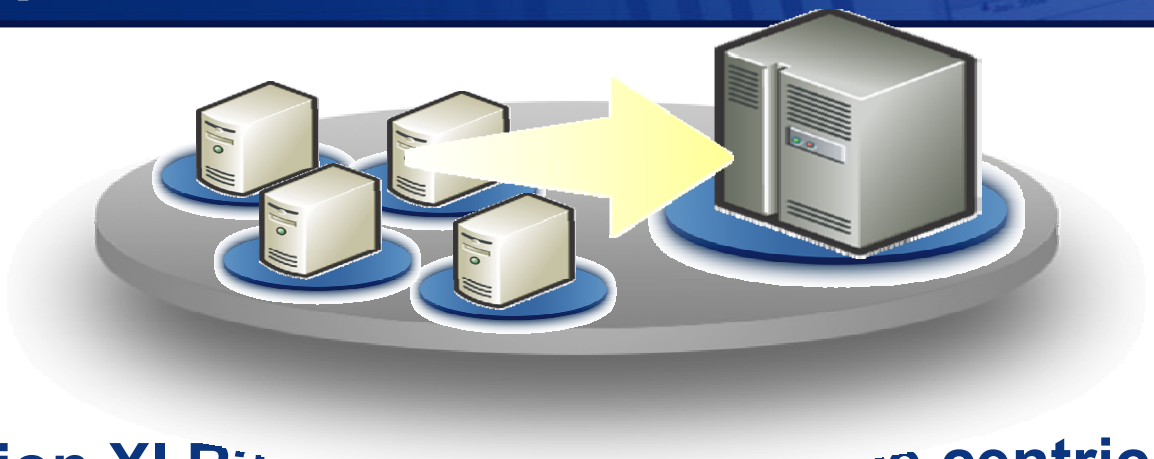


Virtual Application Silos – Security

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

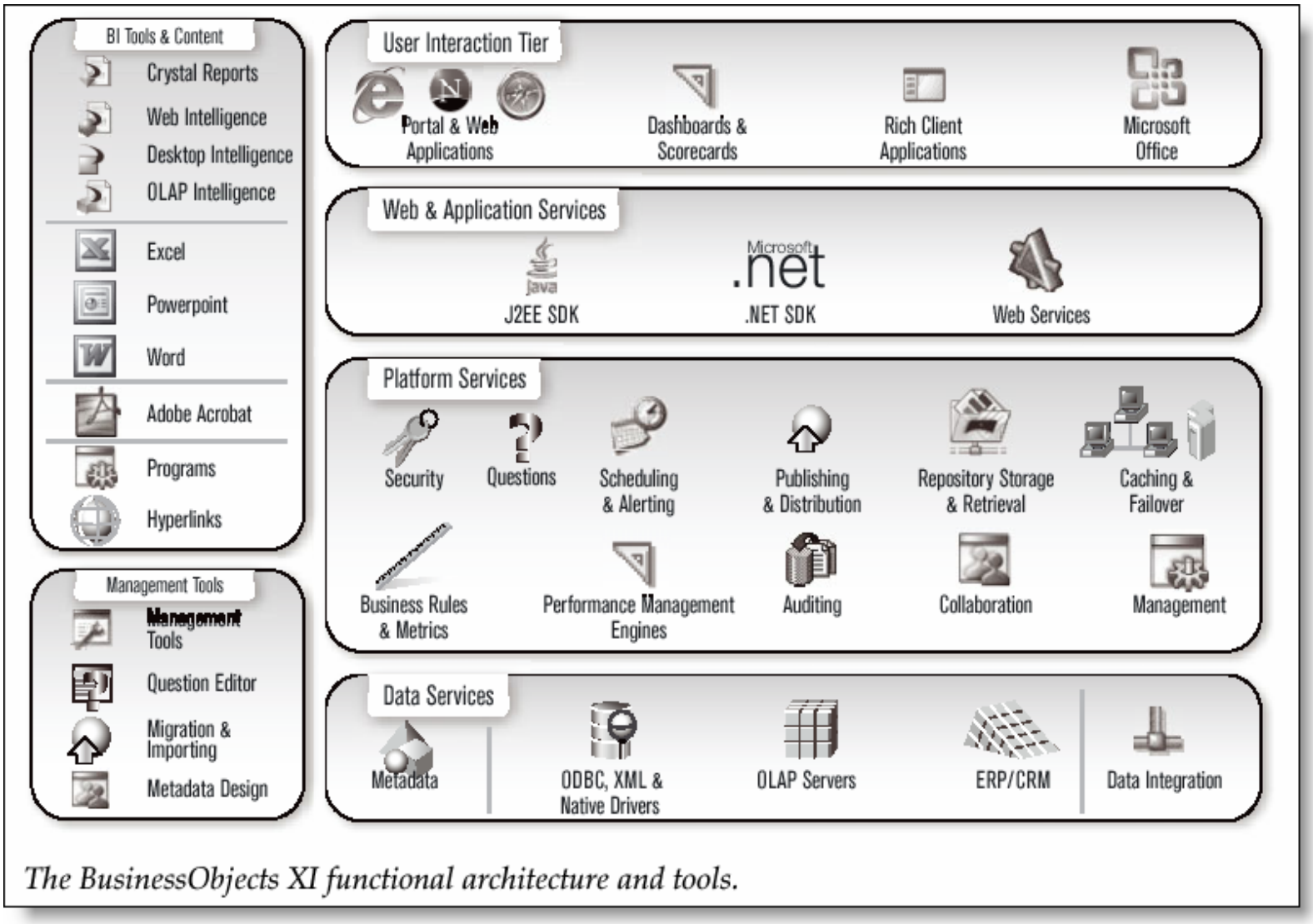


- **Application XI R2 Enterprise single deployments**
  - Deep vertical integration leads to Increased support costs
  - Resource management varied based on application components
  - Myriad of deployment architectures
  - Increased server sprawl
  - Low utilization

- **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

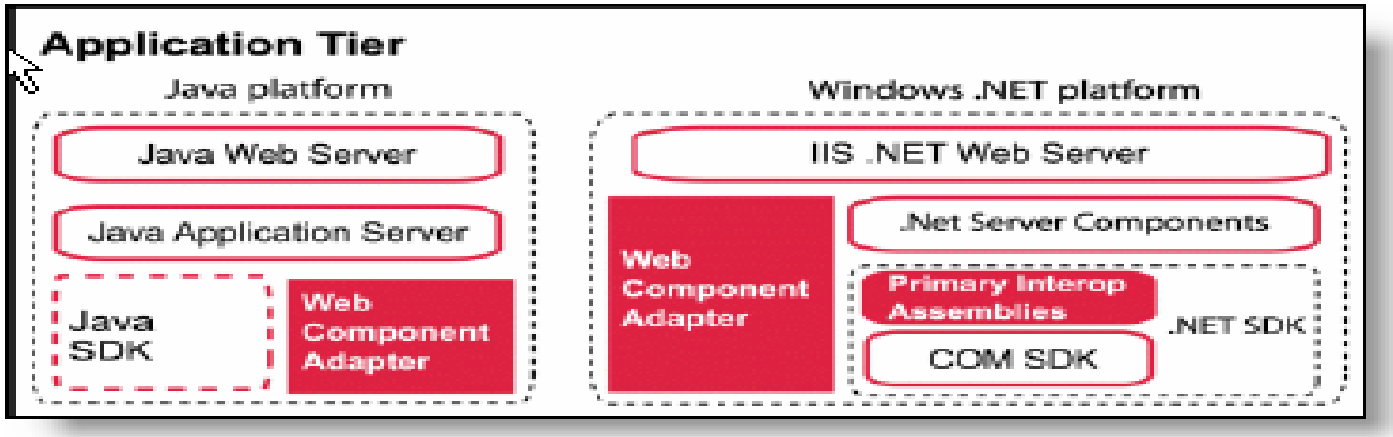
Virtual Application Silos – Application Model

BusinessObjects component stack



The BusinessObjects XI functional architecture and tools.

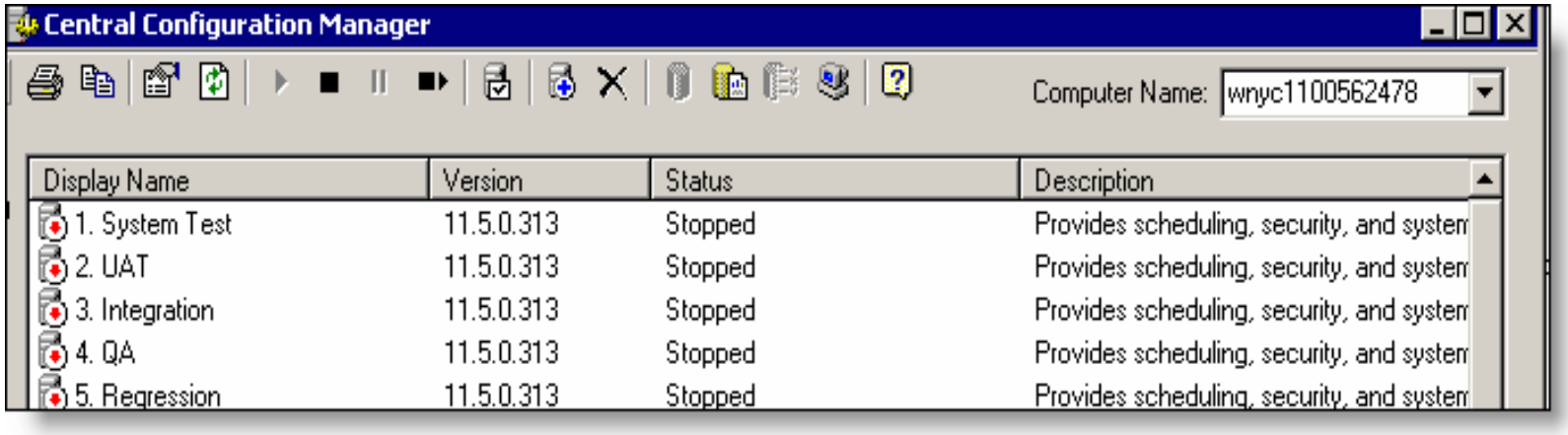
Virtual Application Silos - Delivering an SDK Environment



- **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**
- **Mutliple clusters per deployment**
  - One CMS cluster per repository connection
  - Added complexity in delivering service levels

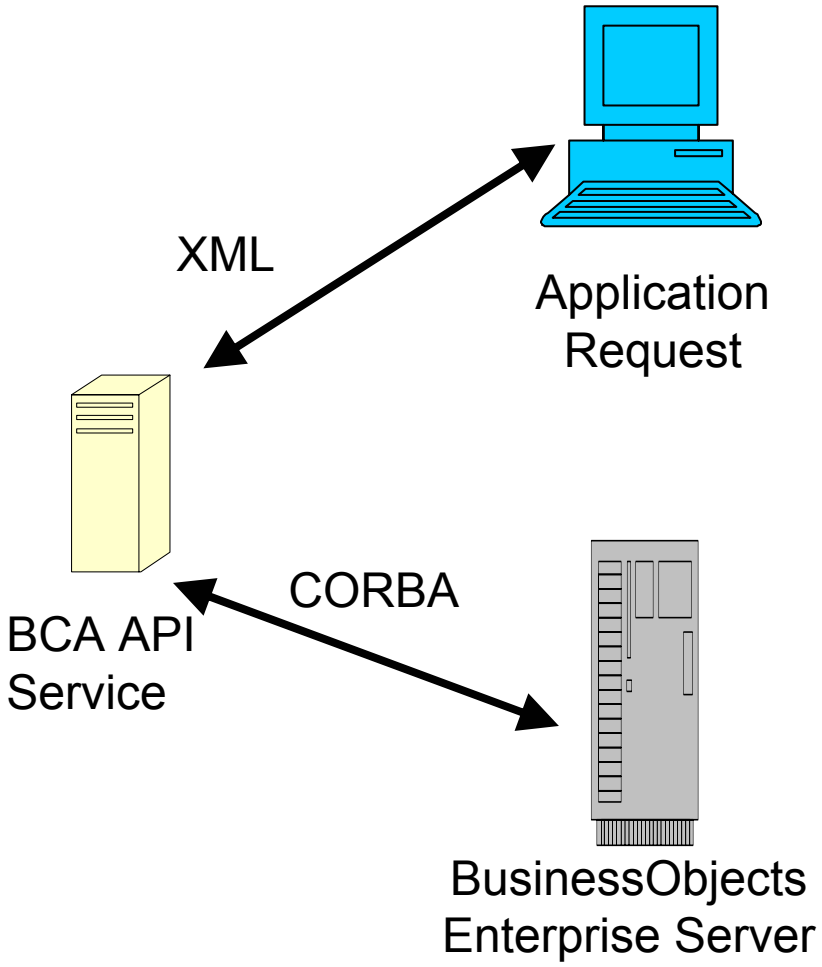
Topics

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

Value Added Components – BCA API Architecture

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

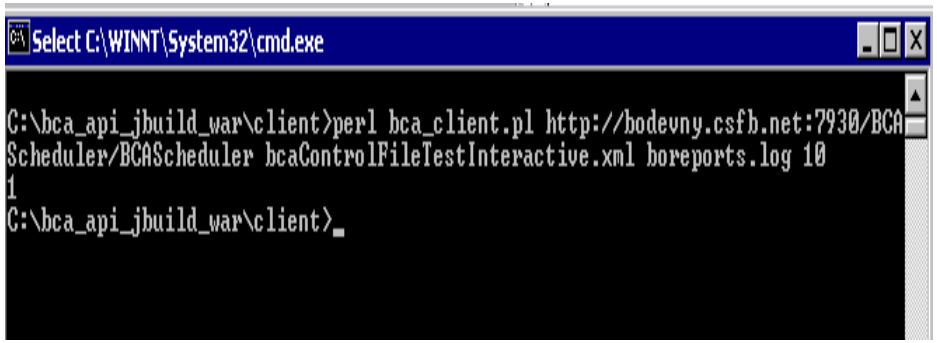


Value Added Components – BCA API

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



Value Added Components – BCA API Client

BCA API specification

- **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

Document section from XML control file

```
<Document>
        <DocumentName>testDoc1</DocumentName>
        <DocumentType>rep</DocumentType>
        <RefreshInNameOfRecipient>true</RefreshInNameOfRecipient>
        <RetryInterval>5</RetryInterval>
        <NumberOfRetries>3</ NumberOfRetries >
        <Prompts>
                <Prompt>
                        <PromptName>User type2</PromptName>
                        <PromptValue>Designer</PromptValue>
                </Prompt>
        </Prompts>
        <Actions>
                <Action>refresh</Action>
                <Action>xls</Action>
                <Action>pdf</Action>
        </Actions>
        <Groups>
                <Group>manager</Group>
        </Groups>
        <FtpServer>
                <Name>ftp-server-name</Name>
                <UserName>user-id</UserName>
                <Password>password</Password>
                <Directory>destination-directory</Directory>
        </FtpServer>
        <Emails>
                <Email>
                        <Subject>test subject</Subject>
                        <Body>test body text</Body>
                        <FromAddress>jane.doe@csfb.com</FromAddress>
                        <Attachments>
                        <Attachment>pdf</Attachment>
                        </Attachments>
                        <Destinations>
                                <DestinationTo>john.doe@csfb.com</DestinationTo>
                        </Destinations>
                </Email>
        </Emails>
</Document>
```

Value Added Components – BCA API Client

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

Topics

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

References

- **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

Topics

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

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
- **Contact information – Jay Palevsky**
  - Email: jay.palevsky@credit-suisse.com
  - Tel: 212 325 7074
- **Contact information – Robert Isaacson**
  - Email: robert.isaacson@credit-suisse.com
  - Tel: 212 538 7375