



Protect your critical BI content from disaster with these proven backup and recovery techniques

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In This Session ...

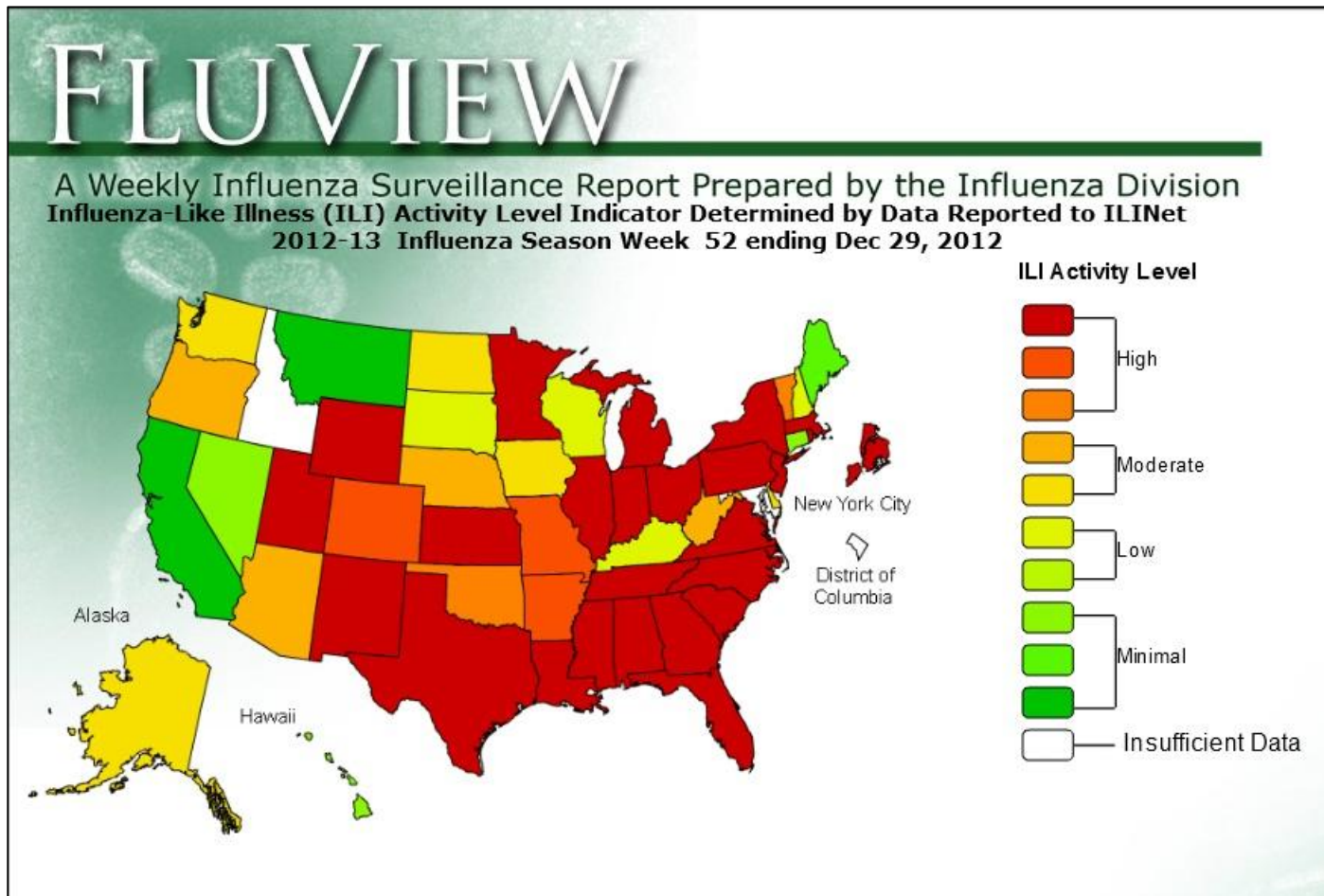
- **Identify the portions of a BusinessObjects enterprise solution that need to be protected**
- **Understand the industry jargon for backup and recovery techniques**
- **List the tools available from SAP dedicated to this purpose**
- **Learn the various methods for backing up and restoring content**
- **Choose the best method for your situation based on the size, layout, and acceptable downtime**
- **Realize the strengths and limitations of each approach**

What We'll Cover ...

- **Introduction**
- **What to Protect**
- **Concepts**
- **Tools**
- **Configuration**
- **Backup Strategies**
- **Restore Strategies**
- **Best Practices**
- **Wrap-up**

How Big a Problem Is It?

- Remember the Flu Outbreak of 2012 / 2013?



How Big a Problem Is It?

- Estimated companies running with inadequate / no backup



Why the Problem?

- **BusinessObjects relies on several internal data sources**
 - ◆ **System and Audit Repository**
 - ▶ **Databases**
 - ◆ **Filestores**
 - ▶ **File Systems**
- **BusinessObjects has never provided a good set of backup tools**
 - ◆ **Those tools that are available are better suited for selective backups**
- **Pieces to be protected are not always obvious**
 - ◆ **More about these in a moment ...**



Problem

Our Focus – What Will be Covered

- **Guidance will be provided on backup solutions for the most common BusinessObjects Enterprise releases**
 - ♦ **XI 3.1**
 - ♦ **BI 4.0**
- **Where applicable, techniques will be provided based on operating system**
 - ♦ **Windows**
 - ♦ **UNIX variants (AIX, Linux, ...)**



What Will NOT be Covered

- Other SAP BusinessObjects solutions and technologies
 - ◆ Data Services
 - ◆ Client Tools
 - ▶ Crystal Reports
 - ▶ Universe Designer
 - ▶ Information Design Tool



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Primary Backup Targets

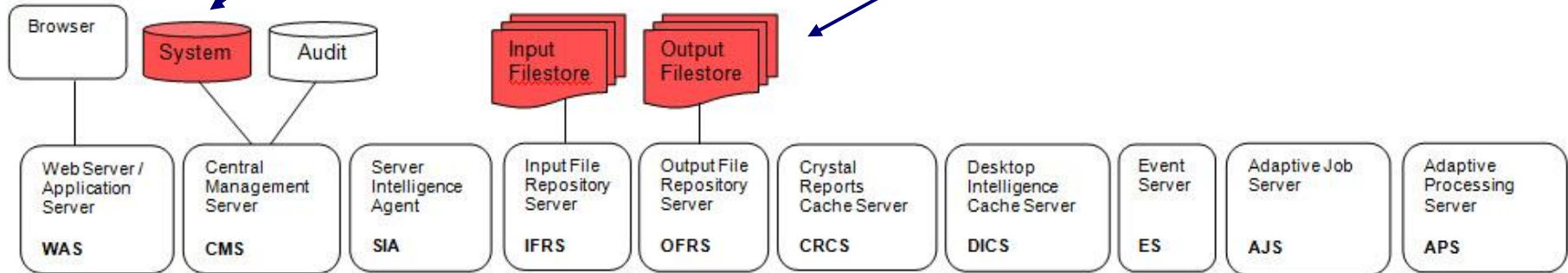
- The crucial components to backup for BusinessObjects Enterprise:
 - ◆ System Repository
 - ◆ Input and Output Filestores
- This is true regardless of the version (XIR2 through BI 4.0)
- There are other targets as well ...
 - ◆ These will be covered shortly
 - ◆ Without a valid repository and filestore set, the basic system cannot be restored



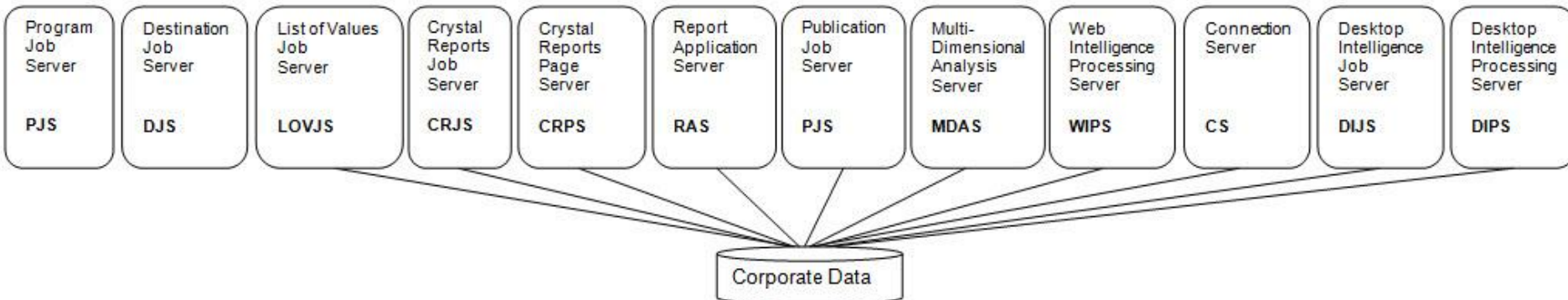
Primary Backup Targets

The System Repository is a set of tables that contains information about every Enterprise object but not actual content (reports).

The Filestores are nested directories that store the content. Pointers to this content stored in the System Repository.



BO Infrastructure XI Generic Backbone



Secondary Backup Targets

- **Additional databases schemas to back up:**
 - ◆ Audit repository and log files
 - ◆ Tables can grow very large based on audit strategy
- **Other targets**
 - ◆ Installation filesystem
 - ◆ Web tier filesystem
 - ▶ **This would include all application server files**
 - ◆ Server configurations
 - ◆ Datastore settings (ODBC, ...)
 - ◆ Software registry settings
 - ◆ Lifecycle Management repository (XI 3.1, BI 4.0)



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Terms and Definitions

- **These concepts will help you better understand the backup and restoration methods to come**
 - ◆ **Cold vs. hot backups**
 - ◆ **Full vs. incremental backups**
 - ◆ **Filesystem vs. image backup**
 - ◆ **Point in time backup**
 - ◆ **Pruning**



Cold Backup

- **Cold Backup**

- ◆ All BusinessObjects Enterprise processing has been stopped
- ◆ System is down
- ◆ **PRO**: Safest and most complete form of backup
- ◆ **CON**: Most time-consuming
- ◆ **CON**: May not be practical as a daily strategy for large installations



Hot Backup

- Hot Backup

- ◆ Backup of system repository and filestores taken while system is live
- ◆ **PRO:** Can be run more frequently than cold backups (faster)
- ◆ **PRO:** Focus on the net changes since last backup
- ◆ **CON:** Possibility of incomplete results



Full vs. Incremental Backups

- **Full Backup**

- ♦ All content is copied for the entire system
- ♦ The system could be restored from this one archive
- ♦ Most cold backups are full backups as well
- ♦ **PRO:** Safest type of backup
- ♦ **CON:** Slowest



- **Incremental Backup**

- ♦ Only modified content is copied (since last backup)
- ♦ Most hot backups are incremental
- ♦ **PRO:** Less content copied so faster
- ♦ **CON:** Many successive incremental backups may have to be restored



Filesystem vs. Image Backups

• Filesystem Backup

- ◆ Directories and files are copied one at a time
- ◆ **PRO:** Only copy content that exists
- ◆ **CON:** Slowest way to archive



• Image Backup

- ◆ The entire volume that contains files is backed up
- ◆ **PRO:** Much faster than filesystem backups
- ◆ **CON:** No activity (read/write) is allowed
- ◆ **CON:** The ENTIRE volume is copied (used or not)



Tip

Take advantage of the speed of image backups by placing your input and output filestores on different volumes. This can reduce the backup time by 50%!

Point in Time Backups

- Backup is performed at a particular point in time
 - ◆ Used to refer to parts of our Enterprise solution that are irregularly backed up
 - ▶ Install and web tier file systems
 - ▶ System registry settings
 - ▶ Data source connectivity settings (ODBC)
 - ▶ Server configurations



Pruning

- The Enterprise filestores consist of deeply nested directories
- Many of these directories may be empty
- Removing empty directories prior to backup can pay big dividends
 - ◆ Backup time depends on
 - ▶ The number of directories and files
 - ▶ File size
 - ▶ Degree of nested directories



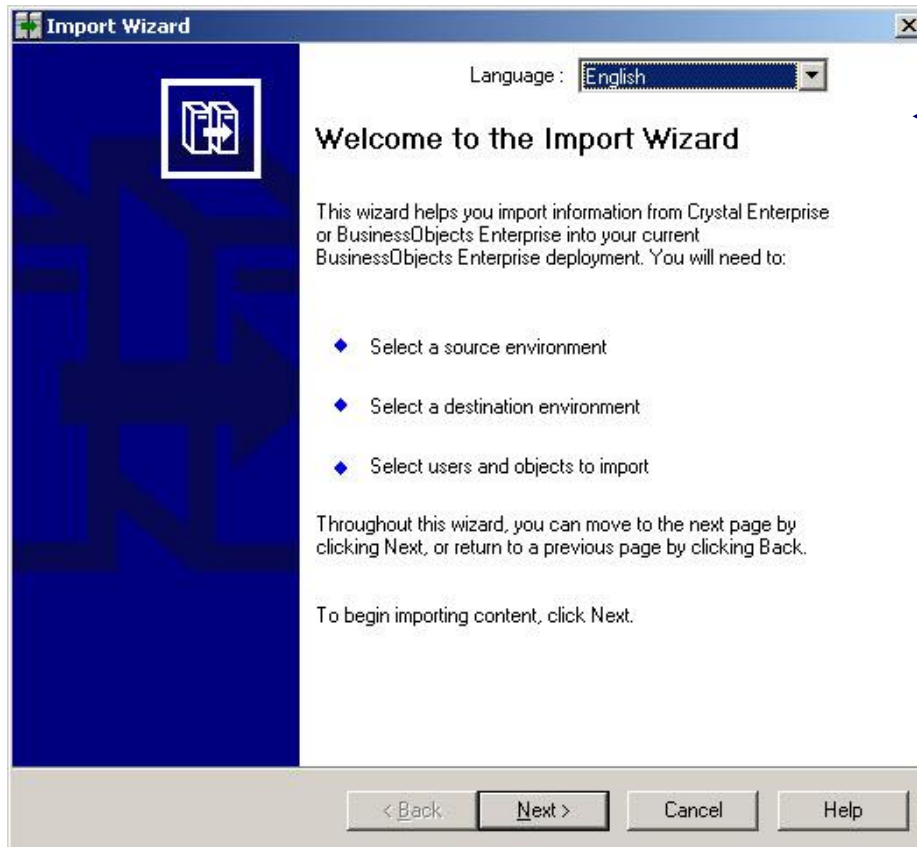
Tip

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Import Wizard (XIR2, 3.1)

- Used to selectively backup and restore content
- Not available in BI 4.0

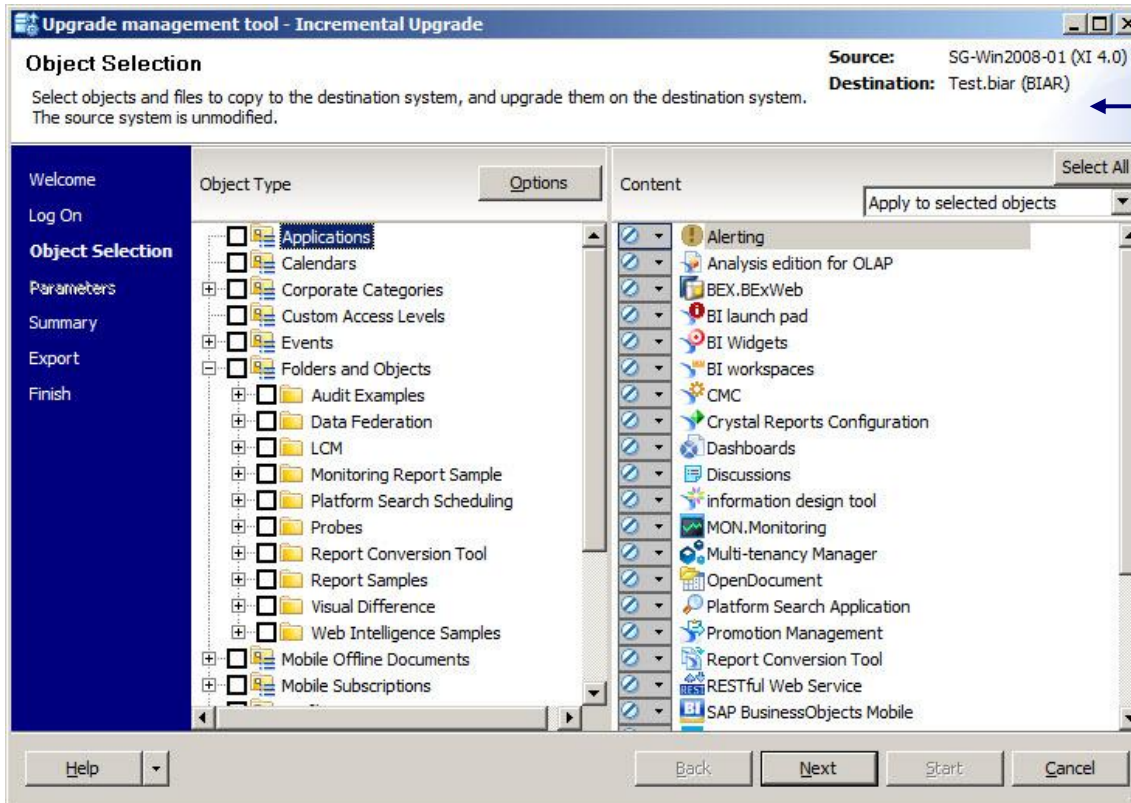


This tool is single-threaded, having difficulty transferring large amounts of information between systems. Usually used to migrate selected content.

That said, it performs much better than the web-based Lifecycle Manager. Those companies that moved to BI 4.0 sorely miss this tool!

Upgrade Management Tool (BI 4.0)

- Used to selectively backup and restore content



Lots to like here. Multi-threaded, more control over object types and dependencies.

The biggest drawback is that it only migrates objects from previous versions (XIR2, 3.1). Migrations between 4.0 systems is not possible.



Lifecycle Management (XI 3.1, BI 4.0)

- Web-based replacement to Import Wizard
- Can export content to a LCMBIAR file
 - ◆ Similar to a archive of zip files
- Practical limit to the number/size of objects archived

Can't handle the volume of the tool it replaces (Import Wizard). Even selective imports can be a struggle.

Central Management Console

Promotion Management

Welcome: **Administrator** | Preferences | Help | Log Off


SAP BusinessObjects

Promotion Jobs

Organize | Properties | History | Settings | Override Settings | Find title

New Job | Import | Edit | Promote | RollBack | VMS Actions

	Name	Status	Created	Last Run	Source	Destination
<input type="checkbox"/>	1309 Audit Thyself Collateral	Created	Sep 25, 2012 11:19 AM		sg-win2008-01	LCMBIAR



Warning

Repository Diagnostic Tool

SCAN SUMMARY

Date Scanned:	2009-10-26 11:25:10						
CMS DB:	BOE120						
Input FRS Path:	D:\Program Files\Business Objects\BusinessObjects Enterprise 12.0\FileStore\Input\						
Output FRS Path:	D:\Program Files\Business Objects\BusinessObjects Enterprise 12.0\FileStore\Output\						
Total Inconsistent Items:	<table> <tr> <td>1</td> <td>inconsistent objects</td> </tr> <tr> <td>+ 5</td> <td>inconsistent files</td> </tr> <tr> <td><u>= 6</u></td> <td>total inconsistent items</td> </tr> </table>	1	inconsistent objects	+ 5	inconsistent files	<u>= 6</u>	total inconsistent items
1	inconsistent objects						
+ 5	inconsistent files						
<u>= 6</u>	total inconsistent items						
Has More Inconsistencies:	false						

Scan Summary | Inconsistent Objects | Inconsistent Files

INCONSISTENT OBJECTS

Inconsistent Objects:	1292	
Object Name:	Monthly Variance Cross Tab	
Object Kind:	CrystalReport	
Total Inconsistencies:	1	
Inconsistency	Warning	Suggestion
1.	CrystalReport object 'Monthly Variance Cross Tab' (Object ID = 1292) is referencing files that do not exist in the FRS (16c45c69a470d1100.rpt).	Allow the application to remove the missing files from the object's file list.
Back to top		

Scan Summary | Inconsistent Objects | Inconsistent Files

- Resolves discrepancies between system repository and filestores
- Utility run from the command line

XI 3.1

<http://wiki.sdn.sap.com/wiki/display/BOBJ/How+to+use+Repository+Diagnostic+Tool>

BI 4.0

http://help.sap.com/boall_en/

Look for “Business Intelligence Platform Repository Diagnostic Tool User Guide”

Repository Diagnostic Tool, cont'd

- One word of caution ...
- This tool can (and will) alter your system repository and filestores
- This is OK when restoring backups
 - ◆ Not a live system being altered
 - ◆ Inconsistent content may not be restored
- Live systems are a different matter
- Be **VERY CAREFUL** when attempting to scan and repair a live system
 - ◆ Can scan without repairing as a first attempt



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Input / Output File Repository Servers

- Can be configured to perform pruning (Windows)

1. Stop the Input and Output Servers
2. Open a command window and run a batch file containing the following (one command per input / output server)
3. Restart the servers

Windows

```
"<BO install directory>\win32_x86\fileserv" -rootdir  
"<BO install directory>/FileStore/Input/" -prune -fg
```

win64_x64 for BI 4.0

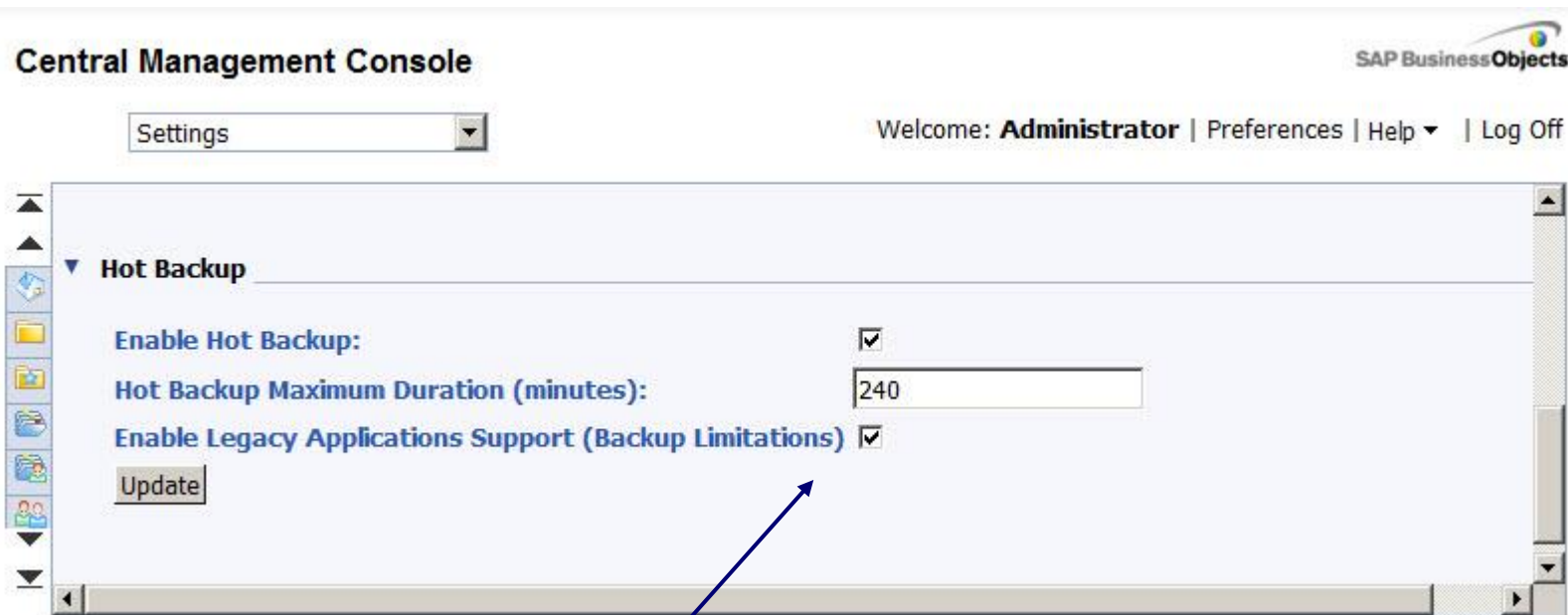
UNIX (using ccm.sh launch command for XI 3.1 or CMC for BI 4.0)

```
<BO install directory>/bobjrestart.sh" -protect  
<BO install directory>/linux_x86/boe_filesd" ...  
-prune -fg
```

Some companies
create dedicated
input/output
servers just for
pruning

Hot Backup – BI 4.0 Preparation

- BI 4.0 SP04 and later has added a “Hot Backup” option that reduces problems later on



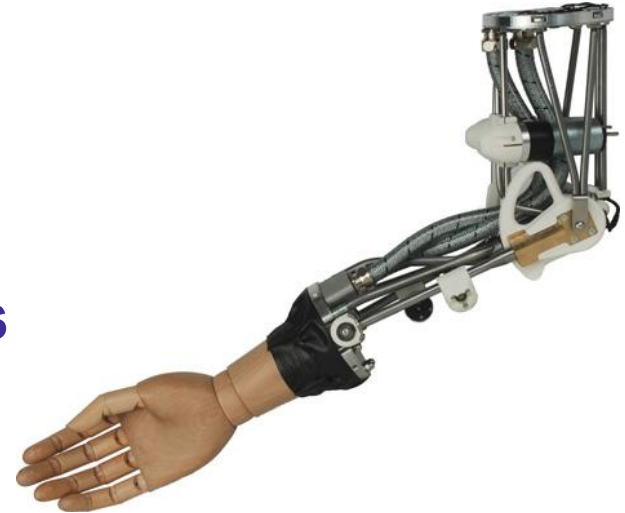
These settings work by making a copy of content before it is modified. This will increase the size of your Input / Output filestores.

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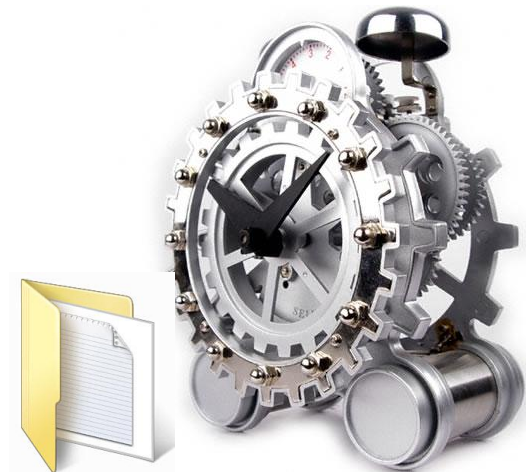
A Hybrid Backup Strategy

- Many places describe how to perform individual types of backups
- The secret is combining those techniques into a comprehensive backup strategy
- Our strategy:
 - ♦ Take a point-in-time backup of irregularly scheduled content
 - ♦ Prune filestores before every cold backup
 - ♦ Perform a cold backup for your system repository and filestores weekly
 - ♦ Perform an incremental hot backup of the same content daily



Step 1: Installation File Backup

- This backup should be done at least once
 - ◆ Ideally when known modifications are made
- First, back up your BusinessObjects installation directory
 - ◆ DO NOT include the data directory if possible
- Back up your web tier files if separated
 - ◆ This is your application server directory



Step 1: Registry Backup

- **Windows: Back up your BusinessObjects application registry**
 - **Most important:**
 - ▶ **HKEY_LOCAL_MACHINE > SOFTWARE > Business Objects**
- **UNIX:**
 - **The installation directory contains the registry!**

SAP BusinessObjects
for BI 4.0



Step 2: Prune Filestores

- Instructions already given in a previous slide
- Best practice
 - ◆ Create dedicated servers for pruning
 - ◆ Much better than adding **-prune** to your only working file servers
 - ◆ Consider adding **-trace** as well for statistics



Best Practice

Step 3. Perform a Cold Backup

- Stop the BusinessObjects server processes
- Windows:
 - ◆ Use the Central Configuration Manager
 - ◆ Stop the Server Intelligence Agent
- UNIX
 - ◆ Use the `ccm.sh` or `stopservers` script



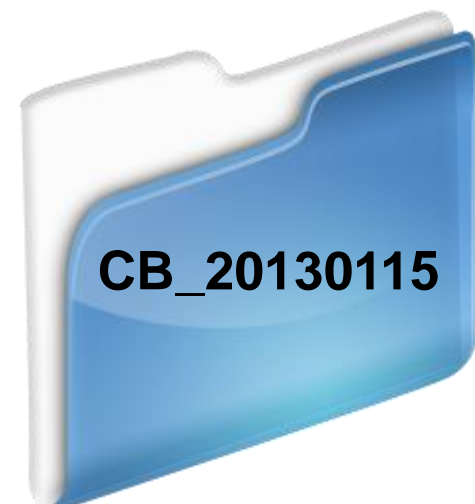
3. Perform a Cold Backup, cont'd

- Start the export of system repository data AND filestore data
 - ◆ System is down so both activities can be done at the same time
 - ◆ Example: Use Oracle export or Datapump
 - ◆ Example: Copy input and output filestores (Windows)
 - ▶ <BO Install directory>/FileStore/Input
 - ▶ <BO Install directory>/FileStore/Output
 - ◆ Example: Copy filestore directories (UNIX)
 - ▶ <BO Install directory>/sap_bobj/data/frsinput
 - ▶ <BO Install directory>/sap_bobj/data/frsinput



3. Perform a Cold Backup, cont'd

- Place the results of all backups in the same place
 - ◆ Datetime-stamped directory would be ideal
 - ◆ OR ... in an archive that contains:
 - ▶ Database export(s)
 - ▶ Filestore copies
 - ◆ This may not be practical for large filestores



3. Perform a Cold Backup, cont'd

- Restart the BusinessObjects servers
 - ◆ Windows
 - ▶ Use Central Configuration Manager
 - ▶ Restart SIA
 - ◆ UNIX
 - ▶ Use `ccm.sh` or `startservers` script
 - ◆ All these commands can be scripted
 - ▶ ... and scheduled externally using 3rd party schedulers



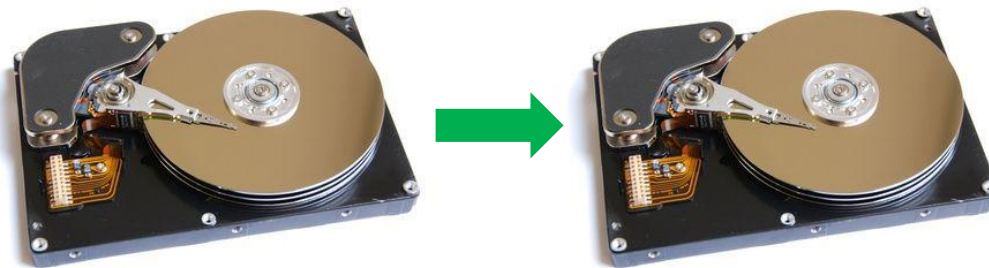
4. Perform a Hot Backup

- **Start the System Repository backup first**
 - ◆ Take a full backup
 - ◆ Don't worry about copying only modifications
- **Start the Filestore backup next**
 - ◆ Archive just the directory / file changes
- **Some transactions will be out of synch**
 - ◆ Actions may occur during the backup period
 - ◆ They will be corrected during the Restore phase



4. Perform a Hot Backup – Shadow Copy Alternative

- One way to minimize inconsistencies involves using a shadow copy
 - ♦ The filestores are configured on a Storage Area Network (SAN)
 - ♦ Changes are copied to a backup SAN device
 - ♦ This is your “shadow copy”
- Disconnect the shadow copy when starting the hot backup
- Start the system repository backup
- Back up the shadow copy at the same time



Demonstration - Backup



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Restoring Archived Content

- The backup used (cold / hot) will drive how the archives are restored
- Our strategy - COLD:
 - ◆ Set up another BusinessObjects environment for restoration
 - ◆ Restore System Repository archive to a live schema/db
 - ◆ Delete servers and SIA from this System Repository schema
 - ◆ Restore filestore archives to this new environment
 - ◆ Create a new SIA with default servers
 - ◆ Selectively restore contents



Restoring Archived Content, cont'd

- **Our strategy - HOT:**
 - ◆ **Set up another BusinessObjects environment for restoration**
 - ◆ **Restore System Repository archive to a live schema/db**
 - ◆ **Delete servers and SIA from this System Repository schema**
 - ◆ **Restore filestore archives to this new environment**
 - ◆ **This includes cold backup copies plus hot backups**
 - ◆ **Delete the existing Server Intelligence Agent (SIA)**
 - ◆ **Create a new SIA with default servers**
 - ◆ **Use the System Diagnostic Tool to reconcile discrepancies**
 - ◆ **Selectively restore contents**



Step 1: New BusinessObjects Environment

- This can be a plain vanilla environment
 - ◆ Customizations (if used) not necessary
 - ◆ Used as a landing pad for content backups



Step 2: Restore System Repository Archive

- **Import the backed-up System Repository tables to a live database schema**
 - ◆ **Empty schema**
 - ◆ **Method will depend on the database being used**



Step 3: Delete Server Entries

- The existing servers and SIA still point to the original system
- We **MUST** eliminate any relationship to that system
 - ♦ Do so by deleting rows from the **CMS_INFOOBJECTS** table

1. Collect list of server and SIA CUIDs from QueryBuilder

```
SELECT si_cuid from ci_systemobjects where si_kind =
'Server'
```

```
SELECT si_cuid from ci_systemobjects where si_name =
'<name of SIA>'
```

2. Delete those CUID entries from the InfoObjects table

```
DELETE
FROM CMS_INFOOBJECTS6
WHERE si_cuid in
(<list of CUIDs from Step 1>)
```

CMS_INFOOBJECTS7
for BI 4.0

All servers have
si_parentid = 16
(excluding SIA)

Step 4: Restore Filestore Archives

- **These filestores will take the place of the original input / output directories from the recovery environment**
 - ♦ **No need to keep the original filestore directories**
 - ♦ **... unless you want to switch this environment back**



Step 5: Create New SIA

- Use the Central Configuration Manager (Windows)
- Use `serverconfig.sh` (UNIX variants)
- Create new SIA with all default servers including CMS

Step 6: Resolve Discrepancies (HOT only)

- Use the Repository Diagnostic Tool
 - ◆ reposcan.exe
 - ◆ boe_reposcan.sh (UNIX variants)

SCAN SUMMARY	
Date Scanned:	2009-10-26 11:25:10
CMS DB:	BOE120
Input FRS Path:	D:\Program Files\Business Objects\BusinessObjects Enterprise 12.0\FileStore\Input\
Output FRS Path:	D:\Program Files\Business Objects\BusinessObjects Enterprise 12.0\FileStore\Output\
Total Inconsistent Items:	1 inconsistent objects + 5 inconsistent files = 6 total inconsistent items
Has More Inconsistencies:	false

Scan Summary | Inconsistent Objects | Inconsistent Files

INCONSISTENT OBJECTS		
Inconsistent Objects:	1292	
Object Name:	Monthly Variance Cross Tab	
Object Kind:	CrystalReport	
Total Inconsistencies:	1	
Inconsistency	Warning	Suggestion
1.	CrystalReport object 'Monthly Variance Cross Tab' (Object ID = 1292) is referencing files that do not exist in the FRS (16c45c69a470d1100.rpt).	Allow the application to remove the missing files from the object's file list.

Back to top

Scan Summary | Inconsistent Objects | Inconsistent Files

OK to run this to resynch a restored BO environment.

Most companies are very wary of running this against a LIVE production installation.

Step 7: Selectively Restore Content

- Use the Import Wizard (3.1) or Lifecycle Management (3.1 / 4.0)
 - ◆ Select content to restore between environments

The screenshot displays two overlapping windows from the SAP BusinessObjects environment. The top window is the 'Import Wizard', which is a dialog box with a blue header and a white body. It features a 'Language' dropdown menu set to 'English' and a 'Welcome to the Import Wizard' message. Below the message, it states: 'This wizard helps you import information from Crystal Enterprise or BusinessObjects Enterprise into your current BusinessObjects Enterprise deployment. You will need to:'. The bottom window is the 'Central Management Console' (CMC) interface. It has a blue sidebar on the left and a main content area. The top of the CMC shows 'Promotion Management' in a dropdown menu and a 'Welcome: Administrator' message with links for 'Preferences', 'Help', and 'Log Off'. The main content area is titled 'Promotion Jobs' and contains a toolbar with icons for 'Organize', 'Properties', 'History', 'Settings', 'Override Settings', and 'Find title'. Below the toolbar is a navigation bar with 'New Job', 'Import', 'Edit', 'Promote', 'RollBack', and 'VMS Actions' buttons. A table below the navigation bar lists promotion jobs. The table has columns for 'Name', 'Status', 'Created', 'Last Run', 'Source', and 'Destination'. A single job is listed: '1309 Audit Thyself Collateral' with a status of 'Created' and a creation date of 'Sep 25, 2012 11:19 AM'. The source is 'sg-win2008-01' and the destination is 'LCMBIAR'.

Import Wizard

Language : English

Welcome to the Import Wizard

This wizard helps you import information from Crystal Enterprise or BusinessObjects Enterprise into your current BusinessObjects Enterprise deployment. You will need to:

Central Management Console

Promotion Management

Welcome: Administrator | Preferences | Help | Log Off

Promotion Jobs

Organize X Properties History Settings Override Settings Find title

New Job Import Edit Promote RollBack VMS Actions

	Name	Status	Created	Last Run	Source	Destination
<input type="checkbox"/>	1309 Audit Thyself Collateral	Created	Sep 25, 2012 11:19 AM		sg-win2008-01	LCMBIAR

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Consider the Following ...

- **Keep an BusinessObjects environment dedicated for restoration**
 - ◆ Could be used to automatically stage the last archive
 - ◆ Serves as an online backup from last business day
- **Group archives together where possible**
 - ◆ Categorize by backup date
- **Save a series of backups**
 - ◆ Number of backups is up to you and your business
 - ◆ Two weeks of backups (2 cold, remaining incremental)



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Where to Find More Information

- **Mike Stamback, “Best Practices for Backup and Disaster Recovery of Business Objects Enterprise XI 3.1” (GBN 2009 BusinessObjects Conference, October 2009)**
 - ♦ Paper describes best practices for backing up BusinessObjects XI 3.1 environments
- **Raphael Branger, “Backup and Recovery in BO 4.0”**
 - ♦ (<http://rbranger.wordpress.com/2012/09/10/backup-recovery-in-bo-4-0/>)
- **BI4 Hot Backup**
 - ♦ (<http://wiki.sdn.sap.com/wiki/display/BOBJ/BI4+Hot+Backup>)
- **Business Intelligence Platform Administrator’s Guide BI 4.0 SP05**
 - ♦ (http://help.sap.com/boall_en/)
 - ♦ Business Intelligence Platform → SAP BusinessObjects 4.0

7 Key Points to Take Home

- Your BusinessObjects Enterprise solution does not have built-in backup protection
- It is up to you to safeguard your BI investment
- This is possible through the use of industry-accepted backup and restore techniques
- Available downtime windows, content size, and level of protection must be considered
- Strategies can be tuned to providing a daily vs. one-off backup solution
- Any of the strategies discussed can be implemented fairly quickly
- The biggest danger to your BI investment, then, is indecision



Your Turn!



Questions?

How to contact me:
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Please remember to complete your session evaluation

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