
Crystal Enterprise

Disaster Recovery Planning (DRP)

Overview

As more customers implement Crystal Enterprise in mission-critical applications, they are realizing the value of backup procedures and disaster recovery that prevent or manage hardware/software failures with redundant servers. This technical brief will discuss the recommended procedures for disaster recovery for Crystal Enterprise 8.

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Introduction

The disaster recovery procedure requires a sound understanding of the mechanics of the Crystal Enterprise system. This document will provide the tested and recommended procedures for setting up a disaster recovery environment. For additional information on Crystal Enterprise architecture, please refer to the Crystal Enterprise Administrator's Guide located in the \Doc directory of the Crystal Enterprise 8 CD.

This disaster recovery procedure requires that a redundant environment be set up. The two environments should not be running at the same time; otherwise, there is a possibility that the primary and backup systems will not be synchronized. This plan requires that the primary and backup systems each be configured as a member of the cluster regardless of location, but the APSs in the primary system and the APSs in the backup system are configured to run off of the primary and backup system databases respectively. As this procedure requires an APS cluster,

the APS database must be stored in one of the following SQL Database Servers: Microsoft SQL Server, Microsoft Data Engine (MSDE), Sybase, Informix, or Oracle.

There are three types of data that need to be backed up for a disaster recovery plan in Crystal Enterprise. These are the:

- APS System Database
- FRS Output files
- FRS Input files

System Layout & Configuration

The disaster recovery plan involves a minimum of two servers (not including database servers and web servers), but it can be scaled to meet the individual customer's requirements.

In the most basic plan, each machine contains all of the Crystal Enterprise components (APS, WCS, Page Server, Job Server, Cache Server, and FRS (Input and Output)).

- The primary APS is configured to run as a cluster with the backup APS being a member of that cluster.
- On the primary machine, all servers are running and enabled by the APS.
- On the backup machine, all servers are not running, but they are enabled in the cluster.
- The files must be replicated from the primary system to the backup system

Start up the primary APS and use the system as normal. Do not start up the backup system while the primary system is running. Archive the APS system database where the backup system is located. The secondary APS must be configured to run off the backup system database.

If the primary system is brought down or is unavailable, the Crystal Enterprise system administrator can simply switch on all the services on the backup machine.

NOTE	Users will need to perform a logon after the backup system is brought up.
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Installation and Configuration

The primary system would be installed as normal. That is, install the components and point them to the primary APS. Start up all the components and enable them for the primary APS.

On the backup system, install all the components but do not start them. Leave all the services set to manual; they can be started remotely using the Crystal Management Console when the primary system goes down.

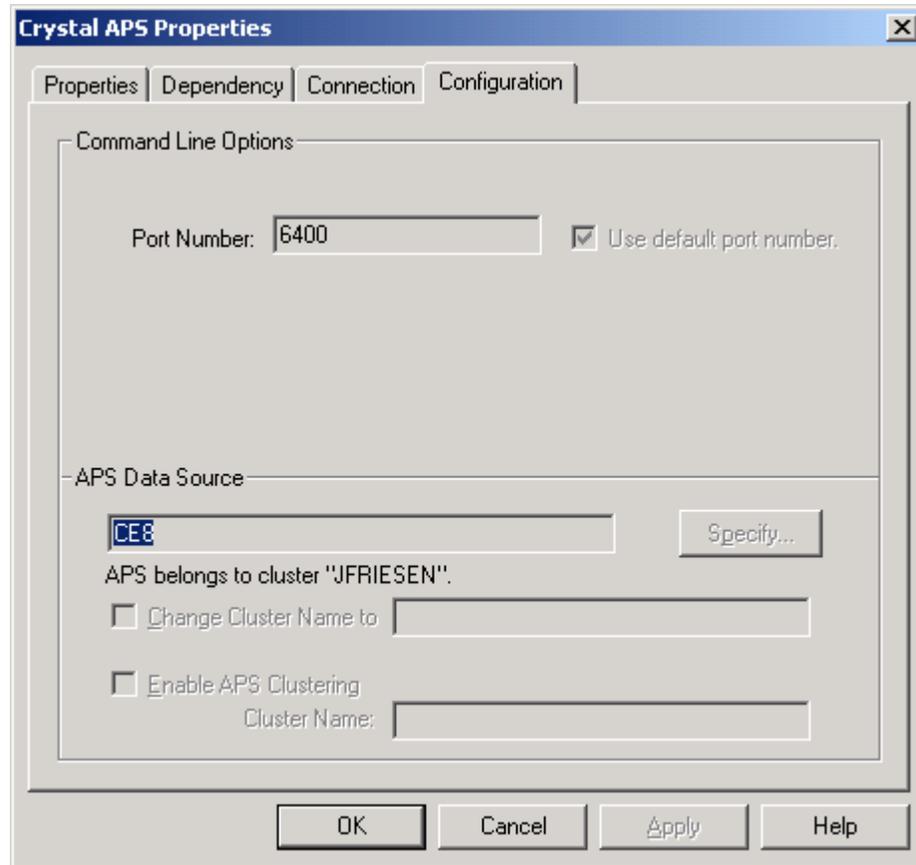
NOTE	The first time that the services are started on the backup system, they will be disabled within Crystal Enterprise. After they start, they will have to be enabled using the CMC.
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System Database

The Crystal Enterprise database is simple enough to back up through normal database backup procedures. It can be backed up periodically or mirrored to another database server.

It is necessary that the primary APS(s) be configured to communicate with the primary system database and the backup APS(s) be configured to communicate with the backup system databases. The data source that the APS uses is configured in the Crystal Configuration Manager. While in the Crystal Configuration Manager, highlight the Crystal APS Service and click the Properties icon. The ODBC data source is listed under the item labeled “APS Data Source” on the Configuration tab. Make certain that the ODBC data source is configured appropriately for the primary and backup APS Services. Figure 1 shows the dialog box that sets the APS data source.

Figure 1



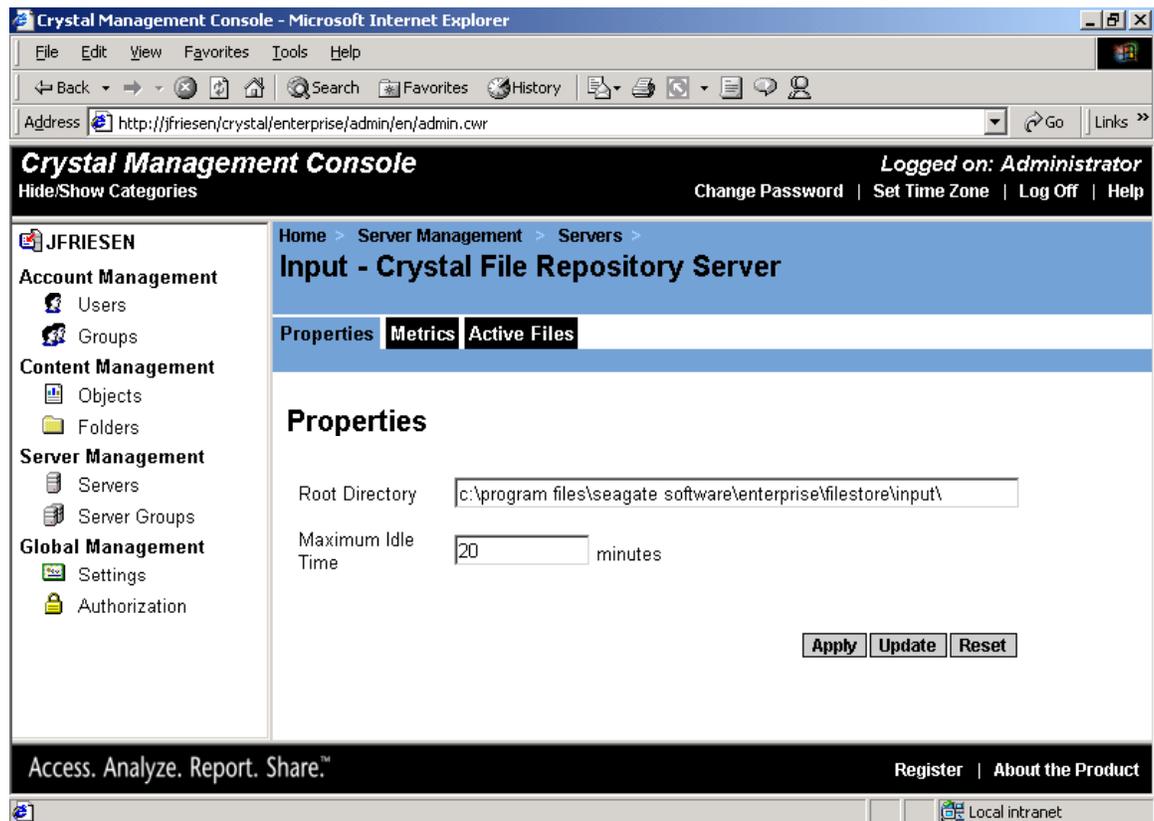
NOTE	The APS must be stopped in order to change the data source.
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Report Files

The Crystal Enterprise system database contains pointers to both Input and Output files. These files are managed through the FRSs that allow their location to be abstracted from the name of the machine. Thus, as long as the files are accessible under the same local path, the location of the FRSs can be easily switched.

By default, the Input FRS writes to `\Program Files\Seagate Software\Enterprise\FileStore\Input` and the Output FRS writes to `\Program Files\Seagate Software\Enterprise\FileStore\Output`. These locations can be changed through the CMC, so check there to obtain the actual location. This is highlighted in Figure 2.

Figure 2



Once the location has been ascertained, it will be necessary to replicate the files from the Input and Output directories, along with their subdirectories, to the backup machine. Crystal Enterprise will not replicate the files; another tool, like Windows 2000 Distributed File System, will have to be used.

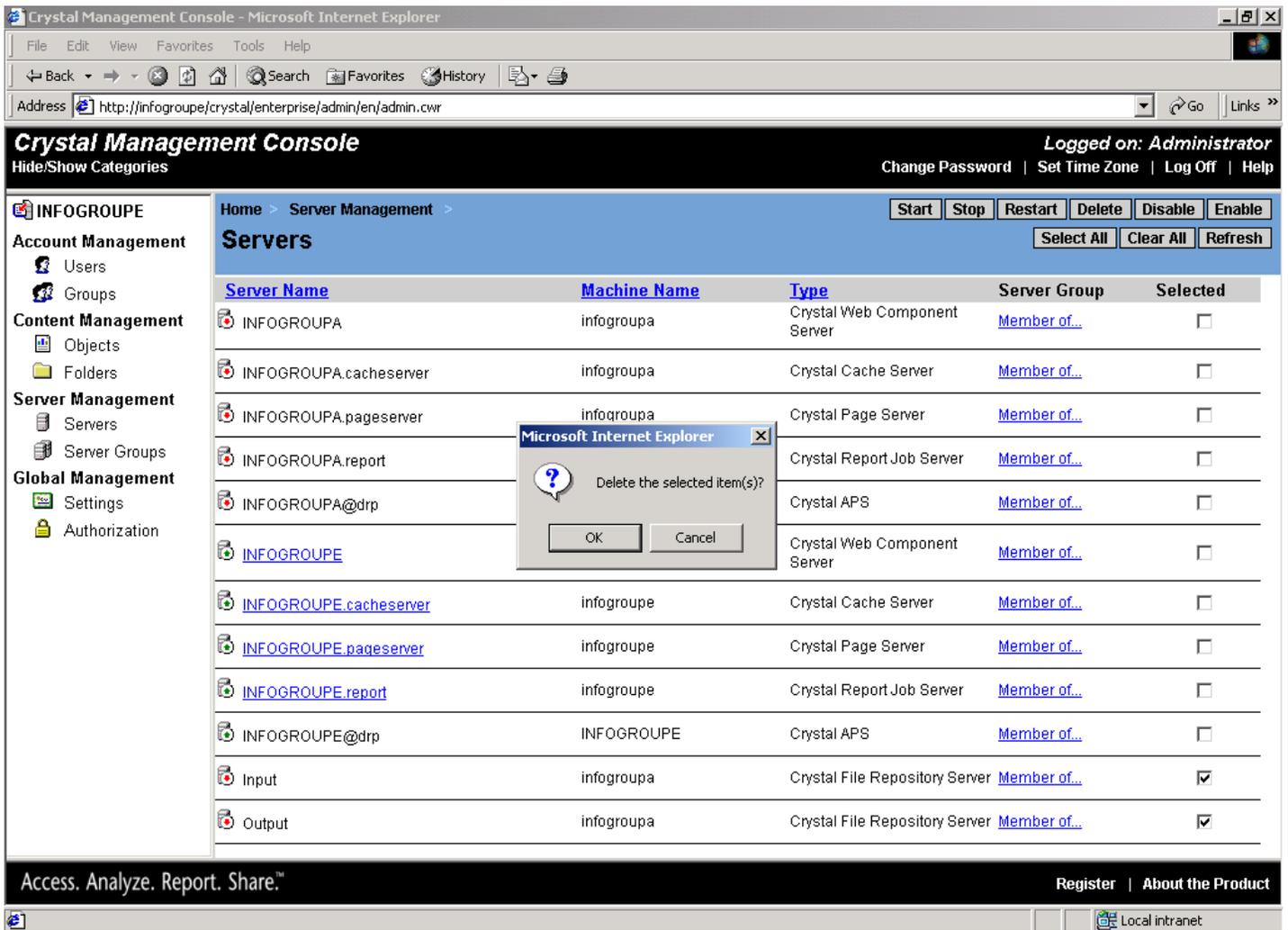
Turning on the Backup System

Simply turning on the services on the backup machine can enable the backup system. After the APS starts up, the other services will automatically register themselves with the APS.

The only exceptions to this are the two FRS services. Since the two FRS servers are tied to the machine name, they must be deleted from the list. This is done in the CMC.

NOTE If the primary and backup machines are separated by a router (i.e., they are on different subnets), do NOT run both the primary and backup APS services at the same time. APSs cannot be clustered across a router.

Figure 3



In Figure 3, note how the machine names on the Input and Output FRS still point to "INFOGROUPE", even though all INFOGROUPE services have been shut down. This is why they must be deleted.

After removing the Input and Output FRS, they can be re-added to the backup APS, simply by starting them up on the backup machine.

NOTE

The FRSs on the backup server must be started AFTER they are deleted from the list of available machines. Otherwise, they will not be able to start.

Now that the backup FRSs have been registered, they will need to be enabled. This is also done in the CMC as noted in Figure 4.

Figure 4

The screenshot shows the Crystal Management Console interface in a Microsoft Internet Explorer browser. The address bar shows the URL: <http://infogroupe/crystal/enterprise/admin/en/admin.cwr>. The page title is "Crystal Management Console" and it indicates the user is logged on as Administrator. The interface includes a navigation menu on the left with categories like Account Management, Content Management, Server Management, and Global Management. The main content area displays a table of servers under the heading "Servers".

Server Name	Machine Name	Type	Server Group	Selected
INFOGROUPE	infogroupe	Crystal Web Component Server	Member of...	<input type="checkbox"/>
INFOGROUPE.cacheserver	infogroupe	Crystal Cache Server	Member of...	<input type="checkbox"/>
INFOGROUPE.pageserver	infogroupe	Crystal Page Server	Member of...	<input type="checkbox"/>
INFOGROUPE.report	infogroupe	Crystal Report Job Server	Member of...	<input type="checkbox"/>
INFOGROUPE@drp	INFOGROUPE	Crystal APS	Member of...	<input type="checkbox"/>
INFOGROUPE	infogroupe	Crystal Web Component Server	Member of...	<input type="checkbox"/>
INFOGROUPE.cacheserver	infogroupe	Crystal Cache Server	Member of...	<input type="checkbox"/>
INFOGROUPE.pageserver	infogroupe	Crystal Page Server	Member of...	<input type="checkbox"/>
INFOGROUPE.report	infogroupe	Crystal Report Job Server	Member of...	<input type="checkbox"/>
INFOGROUPE@drp	INFOGROUPE	Crystal APS	Member of...	<input type="checkbox"/>
Input	infogroupe	Crystal File Repository Server	Member of...	<input checked="" type="checkbox"/>
Output	infogroupe	Crystal File Repository Server	Member of...	<input checked="" type="checkbox"/>

At the top of the server list, there are buttons for Start, Stop, Restart, Delete, Disable, and Enable. The Enable button is highlighted, and a tooltip indicates "Enable the selected Server(s)". The 'Selected' column for the 'Input' and 'Output' servers contains checked checkboxes.

Additional Notes

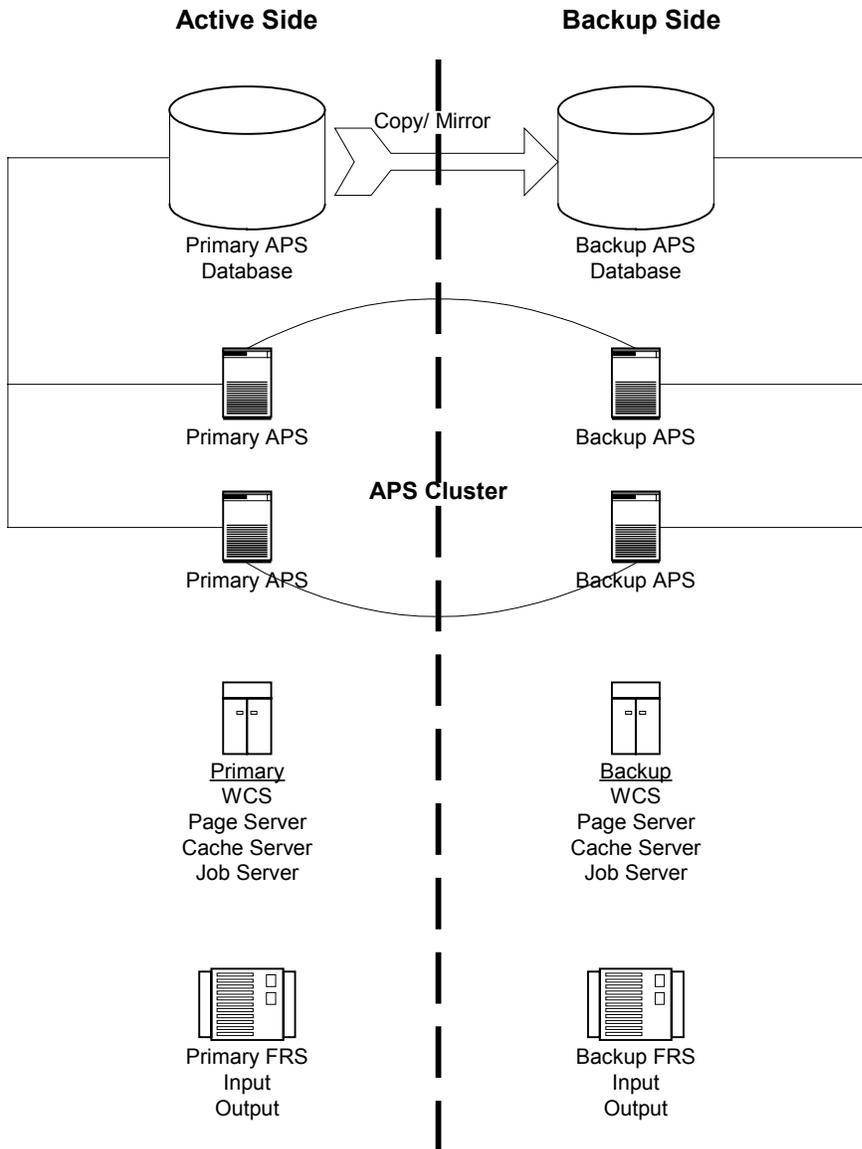
There are a few additional considerations to be made between the primary and backup systems:

- The directory structure should be identical.
- The ODBC layer and ODBC drivers should be identical.
- The data source names should be identical.

- In the case of the Page and Job Server, each server must have the same version of the database client software installed and be using identical data sources for connecting to those database servers.
- Each machine should use the same account to run the services (either the system account or the same domain NT user account names and passwords).

NOTE	No other 3 rd party applications should be installed to these production environments as they may interfere with a proper disaster recovery plan. If it must be done, installation of the 3 rd party applications should first be done to a replicated test environment to see if there will be any effects on Crystal Enterprise from the newly installed application. Such potential changes may be: an updated ODBC layer version and updated ODBC drivers. These have a potential negative impact on a seamless Disaster Recovery Plan.
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Appendix A: Crystal Enterprise – DRP Topology



Backup database is a copy/mirror of the Primary. The Backup APS should use a DSN that points to the Backup database.

Backup APS machines are inactive members of the cluster. DO NOT start the Backup APS while the Primary APS machines are running.

Backup WCS, Page Server, Cache Server, and Job Server are also inactive members of the cluster. Start these services when the failover occurs.

Backup FRS (Input and Output) CANNOT be started until the Primary FRS's have been removed using the CMC.

Contacting Crystal Decisions for Technical Support

We recommend that you refer to the product documentation and that you visit our Technical Support web site for more resources.

Self-serve Support:

<http://support.crystaldecisions.com/>

Email Support:

<http://support.crystaldecisions.com/support/answers.asp>

Telephone Support:

<http://www.crystaldecisions.com/contact/support.asp>

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