Connected Backup

Software Version 9.0.7

Data Center Disaster Recovery

Micro Focus®

Legal notices

Copyright notice

Documentation updates

The title page of this document contains the following identifying information:
- Software Version number, which indicates the software version.
- Document Release Date, which changes each time the document is updated.
- Software Release Date, which indicates the release date of this version of the software.

To check for updated documentation, visit https://www.microfocus.com/documentation/connected-backup/.

Support

Visit the MySupport portal to access contact information and details about the products, services, and support that Micro Focus offers.

This portal also provides customer self-solve capabilities. It gives you a fast and efficient way to access interactive technical support tools needed to manage your business. As a valued support customer, you can benefit by using the MySupport portal to:

- Search for knowledge documents of interest
- Access product documentation
- View software vulnerability alerts
- Enter into discussions with other software customers
- Download software patches
- Manage software licenses, downloads, and support contracts
- Submit and track service requests
- Contact customer support
- View information about all services that Support offers

Many areas of the portal require you to sign in. If you need an account, you can create one when prompted to sign in. To learn about the different access levels the portal uses, see the Access Levels descriptions.

Contents

Chapter 1: Before You Begin

This chapter contains information that you need before you start the Data Center disaster recovery process for Connected Backup. If you have questions about the information in this chapter, contact Support.

> **IMPORTANT:** If you are migrating Data Center to a new server, ensure that the hostname and IP address remains same.

Scenarios Not Addressed by the Disaster Recovery Guide

Do not attempt to perform the procedures in this document under any of the following conditions:

- You run a standalone Data Center and you have lost any archives or volumes.

- You run a mirrored or clustered Data Center and you have lost archives or volumes on both sides of the affected server pair.

- You run a mirrored or clustered Data Center, you have lost both sides of the server, and you do not have good backups for either side of your Data Center.

- You run a non-mirrored clustered Data Center and you have lost archives or volumes on the Registry Master Server or Directory Server.

If any of these scenarios exist, contact Support.

Required Disaster Recovery Items

The items in this section are required for any disaster recovery process. Be sure that these items are saved to a secure backup location on a regular basis as a part of your Data Center maintenance

Registry and Directory SQL database backups

This can be either the `.bak` backup files, or the `.mdf` and `.ldf` files themselves.

To back up Registry and Directory databases on a standalone Data Center

1. Open the Scheduled Tasks Control Panel.

2. Right-click **WeeklyMaint**, and then select **Run**.

3. Close the Scheduled Tasks Control Panel.

To back up Registry and Directory databases on a mirrored or clustered Data Center

> **NOTE:** Mirrored Data Center servers have both a Directory and Registry database.
>
> Clustered Data Center servers can have both a Directory and Registry database (non-dedicated Registration Master), just a Registry database (dedicated Registration Master), or just a Directory database (directory server).

1. Open the SQL Server Management Studio, and then connect to the Data Center.

2. Run `\DataCenter\DRProcs\database_backup.sql`.

3. Close the SQL Server Management Studio.

License.CTD file

Each server has a `License.CTD` file specific to its Network Identification Card (NIC). The license file is in the Data Center installation folder. You can use the License Request Form available through the MySupport portal to request for a license.

Configuration$ folder

In the `\DataCenter` folder on the Data Center, copy the `Configuration$` folder to a safe location. This folder contains the Connected Backup Agent file sets and configuration files. Directory servers in a clustered configuration do not have a `Configuration$` folder, and do not require this item for disaster recovery.

Windows Registry Connected\Keys

Export the Windows registry key from the Data Center server to a folder in a safe location. The key is in the following registry location:

HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Connected\Keys

To export the Keys registry key

1. Open the Registry Editor on your Data Center server.

2. Locate the **...\Connected\Keys** key, and then examine the values.

3. If the MEK and PMEK keys and values are not visible to you, right-click **...\Connected\Keys** and then select **Permissions**. Change the permissions for the logged-on user to **Read**. To close the window, click **OK.**

4. After the MEK and PMEK keys are visible, right-click **...\Connected\Keys**, and then select **Export**.

5. Navigate to a folder in a safe, known location, provide a file name for the export file, and then click **Save**.

6. The exported file has a `.reg` extension and contains the key that is required to recover your Data Center.

7. Close the Registry Editor.

Security files

In the `\DataCenter` folder on the Data Center, back up the following files:

- `PrivateKey.pem`

- `Certificate.pem`

- `dh1024.pem`

Additional Components

Be sure to have the following components available during the Disaster Recovery process:

- ***Installing the Data Center* guide**

  Provides information on installation procedures for Microsoft Windows and SQL Server

- ***Connected Backup Requirements Matrix***

  Provides information on supported hardware for Connected Backup Data Center installations.

- ***Connected Backup Interoperability Matrix***

  Identifies third-party software that works with Connected Backup software.

- **Microsoft Windows Server software**

  Use the same software version that you installed on the Data Center server before the disaster. If you run a mirrored server configuration, you must install the same software version on each server pair.

- **Microsoft SQL Server software**

  Use the same software version that you installed on the Data Center server before the disaster. If you run a mirrored server configuration, you must install the same software version on each server pair.

- **Data Center software**

  Use the same software version that you installed on the Data Center server before the disaster. If you run a mirrored server configuration, you must install the same software version on each server pair.

- **SQL scripts**

  Many disaster recovery procedures in this guide contain SQL scripts that you must download to complete the disaster recovery tasks. These scripts are in the Data Center installation folders `\DataCenter\DRProcs` and `\DataCenter\Scripts`.

- **Windows domain account and password used by Data Center services**

  The following are the three service accounts:

  - CNTD_DCServices

  - CNTD_WebServices

- CNTD_DataBundler

  If you run a mirrored Data Center configuration, use the same Windows domain account and password on each server.

- **Latest version device drivers for server hardware**

  Collect the most recent drivers according to vendor recommendations.

- **Vendor contact information**

  Collect this information for all hardware, software, and firmware in your Data Center.

- **Data Center Management Console (DCMC)**

  Available after you install the Data Center software.

- **Archives**

  You must have access to all archives for the Data Center configuration.

Chapter 2: Recovering a Standalone Data Center

This chapter describes how to recover a standalone Data Center.

- Recover a Standalone Data Center, below

Recover a Standalone Data Center

This section describes how to recover your standalone Data Center.

Tasks

To restore a standalone Data Center, perform the following tasks in the order that they are presented:

> **NOTE:** You must complete the following tasks in order. If you have already completed tasks during your recovery, continue with the task that contains the next steps for the disaster recovery.

1. Before you perform the procedures in this manual, ensure you have the required files and information for the disaster recovery. See Before You Begin, on page 5.

2. Install the Microsoft Windows Server operating system. See Install and Configure Microsoft Windows, below.

3. Install Microsoft SQL Server. See Install and Configure SQL Server, on the next page.

4. Restore the SQL databases. See Recover the Connected Databases, on the next page

5. Install the Data Center software. See Install the Data Center Software, on page 11.

6. Verify that the procedures have restored your Data Center components. See Data Center Verifications, on page 12.

Install and Configure Microsoft Windows

To install the Microsoft Server operating system, use the following guidelines:

- Use the same software version that you installed on the Data Center server before the disaster.

- For information about how to install the Microsoft Server operating system, refer to Chapter 2: Preparing for Installation in the *Installing the Data Center* guide.

- For information about Data Center hardware and software requirements, refer to the *Connected Backup Requirements Matrix* guide.

Install and Configure SQL Server

To install SQL Server, use the following guidelines:

- Use the same software version that you installed on the Data Center server before the disaster.

- Use the same domain account that you previously used for your Data Center installation.

> **CAUTION:** Ensure that the Data Center installation account has local administrator privileges and SQL Server sa account rights.
>
> If you attempt a Data Center recovery with an account that does not have SQL Server sa account rights, you will have to reinstall SQL Server and restart the Data Center recovery.

- For information about how to install SQL Server, refer to the Chapter 2: Preparing for Installation in the *Installing the Data Center* guide.

Recover the Connected Databases

If the Data Center databases have been lost or corrupted during the server disaster, use the following procedure to restore the Registry and Directory databases to the Data Center server. Perform this task on each database that you need to restore.

To restore the databases

1. From your backup, copy the `.bak` or `.mdf` and the `.ldf` files to the same folder location on the Data Center in recovery as was on the original Data Center.

2. Open the SQL Server Management Studio and then connect to the Data Center server in recovery.

3. If you restore databases from a backup (`.bak` files)

   a. Right-click **Databases**, and then click **Restore Database**.

   b. Type the name of the database to restore in **To database**.

   c. Select **From device**, and then click the ellipsis button (**...**).

   d. Ensure that **File** is selected for **Backup Media**, and then click **Add**.

   e. Navigate to the location of the `.bak` file and select the file. Click **OK**.

   f. To start the database restore process, click **OK**.

      You have restored the selected database. Repeat this step for each database you need to restore.

4. If you restore databases from backed up `.mdf` and `.ldf` files

   a. Right-click **Databases** and then click **Attach**. The Attach Databases dialog box opens.

   b. Click **Add** to select a database. The Locate Database Files dialog box opens.

   c. Navigate to the location of the database and select the appropriate `.mdf` file.

   d. Click **OK** to accept the database selection.

e. If the location of the `.ldf` file is in a different folder, click the ellipsis button (**...**) in the database details section for the `.ldf` file for the database, and then select the appropriate `.ldf` file.

f. Click **OK**.

You have attached the selected database. Repeat this step for each database that you need to attach.

g. Verify that this procedure restored your databases.

You cannot verify that the information in the database is correct and accounted for, but you can verify that the tables exist and contain appropriate information. To ensure the tables exist and contain the appropriate information, run the following queries, and then verify that each query displays information.

```
PRINT 'Number of active accounts on server'
SELECT COUNT(*) FROM Registry.dbo.Customer
WHERE Status = 'A'
PRINT 'Number of ArchiveSet rows on server'
SELECT COUNT(*) FROM Directory.dbo.ArchiveSet
```

The results of the first query returns the number of active accounts in your SQL database. If that number does not match the number of active accounts that you believe are in your SQL database, contact Support.

Install the Data Center Software

Use the following procedure to install the Data Center software on a Connected Backup Data Center server that was lost or corrupted.

To install the Data Center Software after a disaster

1. From your backup, copy the `.reg` file that you created in Before You Begin, on page 5 to the Data Center in recovery, and then run the file to import the Master Encryption Keys (MEK and PMEK).

2. Install the Connected Backup Data Center software as a **Standalone server**. For more information, refer to the *Installing the Data Center* guide.

3. Open the Data Center Management Console (DCMC), and then stop all Data Center services.

4. From your backup, copy the following files to `\DataCenter`:

   - `PrivateKey.pem`

   - `Certificate.pem`

   - `dh1024.pem`

   - License.CTD

5. From your backup, copy the `Configuration$` folder to `\DataCenter`.

6. From your backup of the `Configuration$` folder, copy the `cafile.pem` file to the `DataCenter\` folder.

7. Use the DCMC to restart Data Center services.

   You have installed the Data Center software.

Data Center Verifications

To verify that you have recovered the Data Center

1. To verify that the Support Center works, log on and search for any number of accounts.

2. To verify that Account Management Website works, log on and view account information (if applicable).

   You might be unable to account for some database processes because they might happen after the database backup occurs, but before the actual disaster. The following list includes some items that might not appear in the database:

   - Accounts registered after the last backup

   - Backups for current accounts

   - Changes made to account status

   - New Support Center technicians created

   - Support Center technician password changed

Chapter 3: Recovery of a Mirrored Data Center

This chapter describes how to recover a mirrored Data Center.

- [Recover One Data Center Server of a Mirrored Pair, below](#)
- [Recover Both Servers of a Mirrored Data Center, on page 18](#)

Recover One Data Center Server of a Mirrored Pair

This section describes how to recover one Data Center server of a mirrored pair while the other Data Center server in the pair continues to be functional.

Tasks

To recover one Data Center server of a mirrored pair, complete the following tasks:

> **NOTE:** You must complete the following tasks in order. If you have already completed tasks during your recovery, continue with the task that contains the next steps for the disaster recovery.

1. Before you perform the procedures in this manual, make sure you have the required files and information for the disaster recovery. See Before You Begin, on page 5.
2. Install the operating system. See Install and Configure Microsoft Windows, below
3. Install SQL Server. See Install and Configure SQL Server, on the next page
4. Install the Data Center software. See Install the Data Center Software, on page 15.
5. Restore the SQL databases. See Recover the Connected Databases, on the next page.
6. Recover the archives. See Recover Archives from the Functional Server, on page 16.
7. Find and remove orphaned archives. See Find and Remove Orphaned Archives, on page 17.
8. Verify the success of the recovery. See Verify the Data Center Recovery, on page 18.

Install and Configure Microsoft Windows

To install the Microsoft Server operating system, use the following guidelines:

- Use the same software version that you installed on the Data Center server before the disaster.
- For information about how to install the Microsoft Server operating system, refer to Chapter 2: Preparing for Installation in the *Installing the Data Center* guide.

- For information about Data Center hardware and software requirements, refer to the *Connected Backup Requirements Matrix* guide.

Install and Configure SQL Server

To install SQL Server, use the following guidelines:

- Use the same software version that you installed on the Data Center server before the disaster.

- Use the same domain account that you previously used for your Data Center installation.

> **CAUTION:** Ensure that the Data Center installation account has local administrator privileges and SQL Server sa account rights.
>
> If you attempt a Data Center recovery with an account that does not have SQL Server sa account rights, you will have to reinstall SQL Server and restart the Data Center recover

- For information about how to install SQL Server, refer to Chapter 2: Preparing for Installation in the *Installing the Data Center* guide.

Recover the Connected Databases

This section explains how to restore the Data Center databases to a mirrored Data Center server after a database loss on the recovering server. This procedure lets backups and restorations continue on the functional server.

To restore your databases from a working Data Center server in a mirror to the Data Center server in recovery

1. On the functional server, use the DCMC to stop the ReplicationServer and Compactor services.

2. On both servers, use the Services Control Panel to verify that SQLServerAgent and MSSQLServer are both running.

3. On the functional server, open the SQL Server Management Studio and then connect to the functional server.

4. On the functional server create a full database backup on disk of both the Directory and the Registry database files. To do so, run database_backup.sql in \Data Center \Scripts.

5. Copy the following files from the functional server to the server in recovery:

   - `Directory.bak`

   - `Registry.bak`

   By default, these files are located in `\Program Files\Microsoft SQL Server\MSSQL\Backup` on the designated SQL database volume. You select this volume during the Data Center Setup process.

6. On the server in recovery, use the Services Control Panel to stop the SQL Server and SQL Server Agent services. Then, restart the SQL Server and SQL Server Agent services (in that order).

7. On the server in recovery, open the SQL Server Management Studio and then connect to the server in recovery

8. On the server in recovery, run the `database_recovery.sql` script from `\Data Center\DRProcs` on the functional server to restore the database backups.

   If the backup and database files are not in the default locations, using Notepad, edit the `database_recovery.sql` script to replace `\Program Files\Microsoft SQL Server\MSSQL` with the correct location of the backup and database files.

9. Make sure that your SQL service account has read access to any volumes that contain the Customer archives.

10. On the server in recovery, run the `FilesInCustomersFolder.sql` script from `\DataCenter\DRProcs` on the functional server.

11. Run the following query:

    ```
    exec Directory..sp_UpdateVolumeID
    ```

    This process consumes more time and does not display any status.

12. On both servers, to verify that you recovered the databases correctly, run the following queries:

    ```
    SELECT COUNT(*) 'Customer Rows' FROM Registry.dbo.Customer
    SELECT COUNT(*) 'Community Rows' FROM Registry.dbo.Community
    SELECT COUNT(*) 'ArchiveSet Rows' FROM Directory.dbo.ArchiveSet
    SELECT COUNT(*) 'Symlink Rows' FROM Directory.dbo.Symlink
    ```

    All counts should be equal or close to equal on both sides of the mirrored pair.

    These queries let you verify that the tables exist and contain appropriate information.

13. On both servers, close SQL Server Management Studio.

14. On the functional server, use the DCMC to restart the ReplicationServer and Compactor services.

Install the Data Center Software

This section describes how to install the Data Center software on a Data Center server where data was lost or corrupted because of a disaster.

To install the Data Center Software after a disaster

1. From your backup, copy the `.reg` file that you created in Before You Begin, on page 5 to the Data Center in recovery, and then run the file to import the Master Encryption Keys (MEK and PMEK).

2. Install the Connected Backup Data Center software in the same role that you initially installed it.

   - If your server in recovery was the primary server in the mirror, install the Data Center software as the **Primary server in a new cluster**.

   - If your server in recovery was the secondary server, install the Data Center software as the **Secondary server**.

Use the same Server ID and Server Group ID values that were in use before the disaster. For more information, see the *Installing the Data Center* guide.

3. On the server in recovery, open the DCMC, and then stop all Data Center services.

4. From your backup, copy the following files to `\DataCenter`:

   - `PrivateKey.pem`

   - `Certificate.pem`

   - `dh1024.pem`

   - License.CTD

5. From your backup, copy the `Configuration$` folder to `\DataCenter`.

6. From your backup of the `Configuration$` folder, copy the `cafile.pem` file to the `DataCenter\` folder.

7. On the server in recovery, use the DCMC to re-start all Data Center services.

   You have installed the Data Center software.

Recover Archives from the Functional Server

Use this procedure to copy archives from a functional Data Center server to its mirrored Data Center server that lost archives.

> **NOTE:** Depending on the number of archives lost, this procedure can take hours or days to complete.

Begin this procedure after you ensure that the affected disk volumes on the server in recovery are replaced or stable. When you replace a lost volume, be sure to replace the volume with another volume of equal or greater capacity.

To recover archives on volumes that were lost on one side of a mirrored Data Center but still exist on the functional Data Center server

1. On the server in recovery, run the DataCopier tool in the `\DataCenter` folder.

   The DataCopier - Select Option window opens.

2. Select **Recover a volume**, and then click **Next**.

   The DataCopier - Select Volume window opens.

3. Select the volume you want to recover, and then click **Next**.

   The DataCopier - Summary window opens

4. Click **Next,** and then click **Start**.

   The time required for the recovery process to complete for all the archives that you need to recover can take hours or days. It is important to monitor the status of the archive recovery process.

5. To monitor the progress of the archive recovery

    a. Open the DataCopier Status window.

    b. To view the DataCopier log, click **Show Log**.

    c. To refresh the log, close the file and then click **Show Log** again.

If DataCopier could not recover certain archives, Compactor removes the references to the missing archives and then sends a notification to the accounts to back up another copy of the file. Therefore, it is important to run Compactor service after the recovery process completes.

6. Compact any accounts that have a large number of missing archives.

7. On the server in recovery, use the DCMC to make sure that backups and restores are allowed.

   For more information about how to view the backup and restore status of the BackupServer service, see DCMC Help.

Find and Remove Orphaned Archives

Restoring the databases might leave some newly backed up archives orphaned on the Data Center server.

When an Agent performs a backup that puts archives on the Data Center, the Data Center tracks these files in the Directory database. If an Agent sends archives to the Data Center after the last good backup of the Directory database, the restored database no longer has information about the archives. This creates orphaned archives.

To find orphaned archives on a Data Center server and remove them

1. On the server in recovery, use the DCMC to stop all Data Center services.

2. On the server in recovery, open the SQL Server Management Studio, and then connect to the server in recovery. Make sure you use an account with administrative privileges. You cannot perform this procedure remotely using SQL Server Management Studio.

3. Run the `FilesInCustomersFolder.sql` script from `\DataCenter\DRProcs`.

4. Make sure that no errors occurred. If you see errors in the script results, contact Support.

5. Run the following query:

   ```
   EXEC Directory..sp_ListUnregisteredFilesInCustomersFolder 'C:\Archives_
   Orphaned\RemoveFiles.txt'
   ```

   This command creates a text file that lists archives and files that are on disk, but not indexed in the database. This process consumes more time and does not display any status.

6. Review the text file for accuracy. If you are unsure the status of a file, copy the file to a new location or remove the entry from the list.

   > **NOTE:** If there are large number of files listed, contact Support.

7. After you review the file, rename `RemoveFiles.txt` as `RemoveFiles.bat`.

8. Use Windows Explorer or the Command Prompt window to run `RemoveFiles.bat` to delete the referenced files from the Data Center.

9. In SQL Server Management Studio, enter the following command:

   `EXEC Directory..sp_FilesInCustomersFolderCleanup`

   This command removes the database items that the stored procedures in this process created and used.

10. On the server in recovery, close the SQL Server Management Studio.

11. On the server in recovery, use the DCMC to restart all Data Center services.

Verify the Data Center Recovery

To verify recovery of the Data Center

1. To verify that the Support Center works, log on and search for a number of accounts.

2. To verify that Account Management Website works, log on and view account information (if applicable).

   Some database processes might take place after the database backup but before the actual disaster, which are no longer accounted for in the database. The following is a partial list of items that might not appear in the database:

   - Accounts registered during that time

   - Backups for current accounts

   - Changes made to account status

   - New Support Center technicians created

   - Support Center technician password changed

Recover Both Servers of a Mirrored Data Center

If you need to recover both servers in a mirrored Data Center from a disaster, use the procedures listed below to recovery the primary server, and then recover the secondary server using the procedures earlier in the chapter.

This section assumes that you have good and recent database backups available, and that all archives still exist on at least one of the Data Centers.

> **NOTE:** You must regularly back up your Connected databases manually for mirrored Data Centers. If you do not have a recent backup of your Connected databases, contact Support.

Tasks

Complete the following tasks on the primary server of the mirrored pair in recovery:

> **NOTE:** You must complete the following tasks in order. If you have already completed tasks during your recovery, continue with the task that contains the next steps for the disaster recovery.

1. Before you perform the procedures in this manual, make sure you have the required files and information for the disaster recovery. See Before You Begin, on page 5.

2. Install the operating system. See Install and Configure Microsoft Windows, below

3. Install SQL Server. See Install and Configure SQL Server, below.

4. Install the Data Center software. See Install the Data Center Software, on page 21.

5. Restore the SQL databases. See Recover the Connected Databases, below.

6. Verify the Data Center recovery. See Verify the Data Center Recovery, on page 21.

7. Recover the secondary server in the mirrored pair. See Recover the Secondary Server, on page 22.

Install and Configure Microsoft Windows

To install the Microsoft Server operating system, use the following guidelines:

- Use the same software version that you installed on the Data Center server before the disaster.

- For information about how to install the Microsoft Server operating system, refer to the Installing and configuring Microsoft software section in the *Installing the Data Center* guide.

- For information about Data Center hardware and software requirements, refer to the *Connected Backup Requirements Matrix* guide.

Install and Configure SQL Server

To install SQL Server, use the following guidelines:

- Use the same software version that you installed on the Data Center server before the disaster.

- Use the same domain account that you previously used for your Data Center that has the same local administrator privileges for SQL Server to run.

- For information about how to install SQL Server, refer to the Installing and configuring Microsoft software section in the *Installing the Data Center* guide.

Recover the Connected Databases

If the Data Center databases have been lost or corrupted during the server disaster, use the following procedure to restore the Registry and Directory databases to the Data Center server. Perform this task on each database that you need to restore.

To restore the databases

1. From your backup, copy the `.bak` or `.mdf` and `.ldf` files to the same folder location on the Data Center in recovery as was on the original Data Center.

2. On the server in recovery, open the SQL Server Management Studio and then connect to the Data Center server in recovery.

3. If you restore databases from a backup (`.bak` files):

    a. Right-click **Databases** and then click **Restore Database**.

    b. Type the name of the database to restore in **To database**.

    c. Select **From device**, and then click the ellipsis button (**...**).

    d. Make sure that **File** is selected for **Backup Media**, and then click **Add**.

    e. Navigate to the location of the `.bak` file and select the file. Click **OK**.

    f. To start the database restore process, click **OK**.

    You have restored the selected database. Repeat this step for each database you need to restore.

4. If you restore databases from backed up `.mdf` and `.ldf` files:

    a. Right-click **Databases** and then click **Attach**.

    b. In the Attach Databases dialog box, click **Add** to select a database.

    c. In the Locate Database Files dialog box, navigate to the location of the database, and select the appropriate `.mdf` file.

    d. Click **OK** to accept the database selection.

    e. If the location of the `.ldf` file is in a different folder, click the ellipsis button (**...**) in the database details section for the `.ldf` file for the database, and then select the appropriate `.ldf` file.

    f. Click **OK**.

    You have attached the selected database. Repeat this step for each database that you need to attach.

5. Verify that this procedure restored your databases.

    You cannot verify that the information in the database is correct and accounted for, but you can verify that the tables exist and contain appropriate information. To ensure the tables exist and contain the appropriate information, run the following queries, and then verify that each query displays information.

    ```
    PRINT 'Number of active accounts on server'
    SELECT COUNT(*) FROM Registry.dbo.Customer
    WHERE Status = 'A'
    PRINT 'Number of ArchiveSet rows on server'
    SELECT COUNT(*) FROM Directory.dbo.ArchiveSet
    ```

    The results of the first query returns the number of active accounts in your SQL database. If that number does not match the number of active accounts that you believe are in your SQL database, contact Support.

Install the Data Center Software

This section describes how to install the Data Center software on a primary Data Center server where data on both sides of the mirrored pair was lost or corrupted because of a disaster.

To install the Data Center Software on the primary server after a disaster

1. From your backup, copy the `.reg` file that you created in to the Data Center in recovery, and then run the file to import the Master Encryption Keys (MEK and PMEK).

2. Install the Connected Backup Data Center software as the Primary server in an existing cluster. For more information, refer to the *Installing the Data Center* guide.

3. On the server in recovery, use the DCMC to stop all Data Center services.

4. From your backup, copy the following files to `\DataCenter`:

   - `PrivateKey.pem`

   - `Certificate.pem`

   - `dh1024.pem`

   - License.CTD

5. From your backup, copy the `Configuration$` folder to `\DataCenter`.

6. From your backup of the `Configuration$` folder, copy the `cafile.pem` file to the `DataCenter\` folder.

7. On the server in recovery, use the DCMC to re-start all Data Center services.

   You have installed the Data Center software.

Verify the Data Center Recovery

To verify recovery of the Data Center

1. To verify that the Support Center works, log on and search for a number of accounts.

2. To verify that Account Management Website works, log on and view account information (if applicable).

   Some database processes might take place after the database backup but before the actual disaster, which are no longer accounted for in the database. The following is a partial list of items that might not appear in the database:

   - Accounts registered during that time

   - Backups for current accounts

   - Changes made to account status

   - New Support Center technicians created

   - Support Center technician password changed

Recover the Secondary Server

After you recover the primary Data Center server affected by a disaster, recover the secondary Data Center server. To recover the secondary server in the mirrored pair, perform the procedures in .

Chapter 4: Recovering a Clustered Data Center

This chapter describes how to recover a clustered Data Center.

- Recover a Clustered Data Center Server, below
- Recover a Mirrored Pair from a Clustered Data Center, on page 28
- Recover a Non-Mirrored Clustered Data Center, on page 29

Recover a Clustered Data Center Server

This section describes how to recover one Data Center in a server pair in a clustered Data Center configuration.

If you need to recover more than one server in the cluster, as long as the other server in their pair still functions, use this section for each affected server.

Tasks

To recover one Data Center server of a pair of servers in a cluster, complete the following tasks:

NOTE: You must complete the following tasks in order. If you have already completed tasks during your recovery, continue with the task that contains the next steps for the disaster recovery.

1. Before you perform the procedures in this manual, make sure you have the required files and information for the disaster recovery. See Before You Begin, on page 5.
2. Install the operating system. See Install and Configure Microsoft Windows, below
3. Install SQL Server. See Install and Configure SQL Server, on the next page
4. Restore the SQL databases. See Recover Databases to a Data Center Server, on the next page.
5. Install the Data Center software. See Install the Data Center Software, on page 25.
6. Change the volume IDs of the archives. See Change the Volume IDs for Archives, on page 26.
7. Find and remove orphaned archives. See Find and Remove Orphaned Archives, on page 27.
8. Verify the recovered Data Center. See Verify the Data Center Recovery, on page 28

Install and Configure Microsoft Windows

To install the Microsoft Server operating system, use the following guidelines:

- Use the same software version that you installed on the Data Center server before the disaster.

- For information about how to install the Microsoft Server operating system, refer to Chapter 2: Preparing for Installation in the *Installing the Data Center* guide.

- For information about Data Center hardware and software requirements, refer to the *Connected Backup Requirements Matrix* guide.

Install and Configure SQL Server

To install SQL Server, use the following guidelines:

- Use the same software version that you installed on the Data Center server before the disaster.

- Use the same domain account that you previously used for your Data Center installation.

> **CAUTION:** Ensure that the Data Center installation account has local administrator privileges and SQL Server sa account rights.
>
> If you attempt a Data Center recovery with an account that does not have SQL Server sa account rights, you will have to reinstall SQL Server and restart the Data Center recovery.

- For information about how to install SQL Server, refer to Chapter 2: Preparing for Installation in the *Installing the Data Center* guide.

Recover Databases to a Data Center Server

This section explains how to restore the Data Center databases from one side of the Data Center pair to the other after database loss on the recovering server. This procedure enables backups and restorations to continue on the functional server.

To restore your databases from a working Data Center server in a pair to the Data Center server in recovery

1. On the functional server, use the DCMC to stop all Data Center services.

2. Copy the appropriate files from the functional server to the server in recovery:

   - `Directory.bak`

   - `Registry.bak`

     > **NOTE:** Depending on the role of the Data Center pair, the functional server might have only a `Directory.bak` file, as it could be a directory server in the cluster. Registration Master servers will have a `Registry.bak` file, and could also have a `Directory.bak` file if the pair is not a dedicated Registration Master pair of servers

     By default, these files are located in `\Program Files\Microsoft SQL Server\MSSQL\Backup` on the designated SQL database volume. You select this volume during the Data Center Setup process.

3. On the server in recovery, use the Services Control Panel to stop the SQL Server and SQL Server Agent services. Then, restart the SQL Server and SQL Server Agent services (in that

order). This restart ensures that no connections that can prevent recovery exist between the databases.

4. On the server in recovery, run the `database_recovery.sql` script from `\DataCenter\DRProcs` on the functional server to restore the database backups.

   If the backup and database files are not in the default locations, using Notepad, edit the `database_recovery.sql` script to replace `\Program Files\Microsoft SQL Server\MSSQL` with the correct location of the backup and database files

5. Make sure that your SQL service account has read access to the volumes that contain the Customer archives.

6. On the server in recovery, run the `FilesInCustomersFolder.sql` script from `\DataCenter\DRProcs` on the functional server. This process consumes more time and does not display any status.

7. Run the following query:

   ```
   EXEC Directory..sp_UpdateVolumeID
   ```

8. On both servers, to verify that you recovered the databases correctly, run the following queries:

   ```
   SELECT COUNT(*) 'Customer Rows' FROM RegistryMaster.Registry.dbo.Customer
   SELECT COUNT(*) 'Community Rows' FROM RegistryMaster.Registry.dbo.Community
   SELECT COUNT(*) 'ArchiveSet Rows' FROM Directory.dbo.ArchiveSet
   SELECT COUNT(*) 'Symlink Rows' FROM Directory.dbo.Symlink
   ```

   All counts should be equal or close to equal on both sides of the mirrored pair.

   These queries let you verify that the tables exist and contain appropriate information.

9. On both servers, close the SQL Server Management Studio.

10. On the functional server, use the DCMC to restart the ReplicationServer and Compactor services.

Install the Data Center Software

This section describes how to install the Data Center software on a Data Center server on which data was lost or corrupted because of a disaster.

To install the Data Center Software after a disaster

1. From your backup, copy the `.reg` file that you created in Before You Begin, on page 5 to the Data Center in recovery, and then run the file to import the Master Encryption Keys (MEK and PMEK).

2. Install the Connected Backup Data Center software in the same role you initially installed it.

   - If your server in recovery was the primary Registration Master server in the cluster, install the Data Center software as the **Primary server in a new cluster**.

   - If your server in recovery was a directory server on the primary side of the cluster, install the Data Center software as the **Primary server in an existing cluster**.

- If your server in recovery was a server on the secondary side of the cluster (Registration Master or directory), install the Data Center software as the **Secondary server**.

   Use the same Server ID and Server Group ID values that were in use before the disaster. For more information, refer to the *Installing the Data Center* guide.

3. On the server in recovery, open the DCMC, and then stop all the Data Center services.

4. From your backup, copy the following files to `\DataCenter`:

   - `PrivateKey.pem`

   - `Certificate.pem`

   - `dh1024.pem`

   - License.CTD

5. From your backup, copy the `Configuration$` folder to `\DataCenter`.

6. From your backup of the `Configuration$` folder, copy the `cafile.pem` file to the `DataCenter\` folder.

7. On the server in recovery, use the DCMC to restart all Data Center services.

   You have installed the Data Center software.

Change the Volume IDs for Archives

If the server in recovery is a secondary Data Center server, change the volume IDs of the archives for Data Copier to function.

This procedure depends on whether your Data Center servers store archives on a single volume or multiple volumes.

To change the volume IDs for archives

1. If your Data Center servers are configured with a single archive storage volume, use SQL Server Management Studio on the server in recovery to run the following SQL query:

   ```
   SELECT ID FROM Directory.dbo.Volumes
   WHERE ServerID = <server>
   ```

   where

   <server> is the Server ID for the server in recovery.

2. To point the archives to the volume ID on the server in recovery, run the following SQL query:

   ```
   UPDATE Directory.dbo.ArchiveSet
   SET VolumeID = <id>
   ```

   where

   <id> is the volume ID returned from step 1.

3. If your Data Center servers are configured with multiple archive storage volumes, run the following SQL query on the server in recovery:

   ```
   UPDATE Directory.dbo.ArchiveSet
   SET VolumeID = -1
   ```

This script changes the archive references on the server in recovery to show that they are not located on the server. To associate archives with their correct volume locations, see Find and Remove Orphaned Archives, below.

Find and Remove Orphaned Archives

Restoring the databases might leave some newly backed up archives orphaned on the Data Center server.

When an Agent performs a backup that puts archives on the Data Center, the Data Center tracks these files in the Directory database. If an Agent sends archives to the Data Center after the last good backup of the Directory database, the restored database no longer has information about the archives. This creates orphaned archives.

To find orphaned archives on a Data Center server and remove them

1. On the server in recovery, use the DCMC to stop all Data Center services.

2. On the server in recovery, open the SQL Server Management Studio, and then connect to the server in recovery. Make sure you use an account with administrative privileges. You cannot perform this procedure remotely using SQL Server Management Studio.

3. Run the `FilesInCustomersFolder.sql` script from `\DataCenter\DRProcs`. This process consumes more time and does not display any status.

4. Make sure that no errors occurred. If you see errors in the script results, contact Support.

5. Run the following query:

   ```
   EXEC Directory..sp_ListUnregisteredFilesInCustomersFolder 'C:\Archives_
   Orphaned\RemoveFiles.txt'
   ```

   This command creates a text file that lists archives and files that are on disk, but not indexed in the database.

6. Review the text file for accuracy. If you are unsure the status of a file, copy the file to a new location or remove the entry from the list.

   > **NOTE:** Files referenced in `RemoveFiles.txt` will be deleted by the process unless you remove the file names from `RemoveFiles.txt`.

7. After you review the file, rename `RemoveFiles.txt` as `RemoveFiles.bat`.

8. Use Windows Explorer or the Command Prompt window to run `RemoveFiles.bat` to delete the referenced files from the Data Center.

9. In SQL Server Management Studio, enter the following command:

   ```
   EXEC Directory..sp_FilesInCustomersFolderCleanup
   ```

   This command removes the database items that the stored procedures in this process created and used.

10. On the server in recovery, close the SQL Server Management Studio.

11. On the server in recovery, use the DCMC to restart all Data Center services.

Verify the Data Center Recovery

To verify recovery of the Data Center

1. To verify that the Support Center works, log on and search for a number of accounts.

2. To verify that Account Management Website works, log on and view account information (if applicable).

   Some database processes might take place after the database backup but before the actual disaster, which are no longer accounted for in the database. The following is a partial list of items that might not appear in the database:

   - Accounts registered during that time

   - Backups for current accounts

   - Changes made to account status

   - New Support Center technicians created

   - Support Center technician password changed

Recover a Mirrored Pair from a Clustered Data Center

This section contains procedures that explain how to recover both servers of a mirrored pair in a clustered Data Center environment.

Tasks

To recover both servers of a mirrored pair within a clustered Data Center, complete following steps:

> **NOTE:** You must complete the following tasks in order. If you have already completed tasks during your recovery, continue with the task that contains the next steps for the disaster recovery.

1. Before you start any of the procedures in this manual. See Before You Begin, on page 5.

2. Install the operating system. See Install and Configure Microsoft Windows, on page 23.

3. Install SQL Server. See Install and Configure SQL Server, on page 24

4. Restore the SQL databases. See Recover Databases to a Data Center Server, on page 24

5. Install the Data Center software. See Install the Data Center Software, on page 25

6. Recover the archives. See Recover the Archives After a Disaster, on the next page.

7. Verifications. See Verify the Data Center Recovery, above.

Restrictions

Use this procedure whether the pair lost was a Registration Master pair or a directory pair. If all servers in the cluster were lost, use this procedure to recover the Registration Master servers first and then each directory server pair next. This procedure assumes that a good and recent database backup and the archives are available.

Contact Support if the following scenarios have occurred:

- You have lost the archives on your Registration Master servers.

- You have lost the SQL databases on your Registration Master servers and a good, recent backup of the databases is not available.

Use the if only one server of the mirror has been lost to a disaster.

Recover the Archives After a Disaster

To recover the archives

1. In the DataCopier - Select Option window, select **Recover a volume**, and then click **Next.**

2. In the DataCopier - Select Volume window, select the volume to be recovered, and then click **Next**.

3. In the DataCopier - Summary window, click **Next,** and then click **Start**.

   The time required for the recovery process to complete for all the archives that you need to recover can take hours or days. It is important to monitor the status of the archive recovery process.

4. To monitor the progress of the archive recovery

   a. Open the DataCopier Status window.

   b. To view the DataCopier log, click **Show Log**.

   c. To refresh the log, close the file and then click **Show Log** again.

   If DataCopier could not recover certain archives, Compactor removes the references to the missing archives and then sends a notification to the accounts to back up another copy of the file. Therefore, it is important to run Compactor service after the recovery process completes.

5. Compact any accounts that have a large number of missing archives.

6. Use Data Center Management Console to verify that backups and restores are allowed. For detailed instructions, refer to the Data Center Management Console Help.

Recover a Non-Mirrored Clustered Data Center

This section describes how to recover your Registry Master Server and Directory Server in a Non-Mirrored Clustered Data Center configuration.

Tasks

To restore a Non-Mirrored Clustered Data Center, perform the following tasks in the order that they are presented:

NOTE: You must complete the following tasks in order. If you have already completed tasks during your recovery, continue with the task that contains the next steps for the disaster recovery.

1. Before you perform the procedures in this manual, ensure you have the required files and information for the disaster recovery. See Before You Begin, on page 5.

2. Install the Microsoft Windows Server operating system. See Install and Configure Microsoft Windows, below.

3. Install Microsoft SQL Server. See Install and Configure SQL Server, below.

4. Restore the SQL databases. See Recover the Connected Databases, on the next page

5. Install the Data Center software. See Install the Data Center Software, on page 32.

6. Verify that the procedures have restored your Data Center components. See Data Center Verifications, on page 33.

Restrictions

Use this procedure whether the server lost was a Registry Master Server or a Directory Server. If all servers in the cluster were lost, use this procedure to recover the Registry Master Server first and then subsequent Directory Server. This procedure assumes that a good and recent database backup and the archives are available.

Contact Support if the following scenarios have occurred:

- You have lost the archives on your Registry Master Server.

- You have lost the SQL databases on your Registry Master Server and a good, recent backup of the databases is not available.

Install and Configure Microsoft Windows

To install the Microsoft Server operating system, use the following guidelines:

- Use the same software version that you installed on the Data Center server before the disaster.

- For information about how to install the Microsoft Server operating system, refer to Chapter 2: Preparing for Installation in the *Installing the Data Center* guide.

- For information about Data Center hardware and software requirements, refer to the *Connected Backup Requirements Matrix* guide.

Install and Configure SQL Server

To install SQL Server, use the following guidelines:

- Use the same software version that you installed on the Data Center server before the disaster.

- Use the same domain account that you previously used for your Data Center installation.

CAUTION: Ensure that the Data Center installation account has local administrator privileges and SQL Server sa account rights.

If you attempt a Data Center recovery with an account that does not have SQL Server sa account rights, you will have to reinstall SQL Server and restart the Data Center recovery.

- For information about how to install SQL Server, refer to the Chapter 2: Preparing for Installation in the *Installing the Data Center* guide.

Recover the Connected Databases

If the Data Center databases have been lost or corrupted during the server disaster, use the following procedure to restore the Registry and Directory databases to the Data Center server. Perform this task on each database that you need to restore.

To restore the databases

1. From your backup, copy the `.bak` or `.mdf` and the `.ldf` files to the same folder location on the Data Center in recovery as was on the original Data Center.

   > **NOTE:** You must restore both Registry and Directory databases for a Registry Master Server, and for a Directory Server you must restore just a Directory database.

2. Open the SQL Server Management Studio and then connect to the Data Center server in recovery.

3. If you restore databases from a backup (`.bak` files)

   a. Right-click **Databases**, and then click **Restore Database**.

   b. Type the name of the database to restore in **To database**.

   c. Select **From device**, and then click the ellipsis button (**...**).

   d. Ensure that **File** is selected for **Backup Media**, and then click **Add**.

   e. Navigate to the location of the `.bak` file and select the file. Click **OK**.

   f. To start the database restore process, click **OK**.

   You have restored the selected database. Repeat this step for each database you need to restore.

4. If you restore databases from backed up `.mdf` and `.ldf` files

   a. Right-click **Databases** and then click **Attach**. The Attach Databases dialog box opens.

   b. Click **Add** to select a database. The Locate Database Files dialog box opens.

   c. Navigate to the location of the database and select the appropriate `.mdf` file.

   d. Click **OK** to accept the database selection.

   e. If the location of the `.ldf` file is in a different folder, click the ellipsis button (**...**) in the database details section for the `.ldf` file for the database, and then select the appropriate `.ldf` file.

   f. Click **OK**.

   You have attached the selected database. Repeat this step for each database that you need to attach.

   g. Verify that this procedure restored your databases.

You cannot verify that the information in the database is correct and accounted for, but you can verify that the tables exist and contain appropriate information. To ensure the tables exist and contain the appropriate information, run the following queries, and then verify that each query displays information.

```
PRINT 'Number of active accounts on server'
SELECT COUNT(*) FROM Registry.dbo.Customer
WHERE Status = 'A'
PRINT 'Number of ArchiveSet rows on server'
SELECT COUNT(*) FROM Directory.dbo.ArchiveSet
```

> **NOTE:** You must run the SQL query for a registry database only on a Registry Master Server, and not on a Directory Server.

The results of the first query returns the number of active accounts in your SQL database. If that number does not match the number of active accounts that you believe are in your SQL database, contact Support

Install the Data Center Software

Use the following procedure to install the Data Center software on a Registry Master Server or Directory Server that was lost or corrupted.

To install the Data Center Software after a disaster

1. From your backup, copy the `.reg` file that you created in Before You Begin, on page 5 to the Data Center in recovery, and then run the file to import the Master Encryption Keys (MEK and PMEK).

2. Install the Connected Backup Data Center software on one of the following servers on which the data was lost or corrupted because of a disaster:

   - If your server in recovery was a Registry Master Server in the non-mirrored cluster, install the Data Center software as a **Standalone Server**.

   - If your server in recovery was a Directory Server in the non-mirrored cluster, install the Data Center software as a **Primary Server in an existing cluster**, and select **Non-Mirrored Directory Server** checkbox.

   For more information, refer to the *Installing the Data Center* guide.

3. Open the Data Center Management Console (DCMC), and then stop all Data Center services.

4. From your backup, copy the following files to `\DataCenter`:

   - `PrivateKey.pem`

   - `Certificate.pem`

   - `dh1024.pem`

   - License.CTD

5. From your backup, copy the `Configuration$` folder to `\DataCenter`.

6. From your backup of the `Configuration$` folder, copy the `cafile.pem` file to the `DataCenter\` folder.

7. Use the DCMC to restart Data Center services.

   You have installed the Data Center software.

Data Center Verifications

To verify that you have recovered the Data Center

1. To verify that the Support Center works, log on and search for any number of accounts.

2. To verify that Account Management Website works, log on and view account information (if applicable).

   You might be unable to account for some database processes because they might happen after the database backup occurs, but before the actual disaster. The following list includes some items that might not appear in the database:

   - Accounts registered after the last backup

   - Backups for current accounts

   - Changes made to account status

   - New Support Center technicians created

   - Support Center technician password changed

Chapter 5: Archive Issues

This chapter describes how to handle archive issues related to disaster recovery.

- Clean Archive References After Volume Loss

Clean Archive References After Volume Loss

This section describes how to clean up archive references after the loss of a volume where a backup of the volume is not available.

Before You Begin

Before you begin the recovery procedure, consider the following restrictions:

- This procedure does not recover lost data. It only cleans the databases so that the Data Center can continue to operate. In this procedure, Compactor deletes references to the data lost on the volume. Depending on the amount of data lost and the number of accounts effected by the loss, it can take hours or days for Compactor to complete the cleaning process.

- The first step in this procedure is to determine the percentage of data lost on the Data Center. After you determine the percentage, you can decide whether or not to continue with this procedure or to request a procedure from Support to clean the entire Data Center and start again.

Procedure

To clean up archives after the loss of a volume:

1. Open the SQL Server Management Studio, and then connect to the affected server.

2. Run the `archive_space_by_volume.sql` script from `\DataCenter\DRProcs`.

   > **NOTE:** This procedure clears the database of space that was designated to the data lost from the customer volume. If you are certain that you want to clear the database of this space, continue to step 3. If you are uncertain about whether you want to clear this space, contact Support for additional assistance.

3. Note the name of the lost volume from the results of the script.

4. Use Notepad to edit the file `\DataCenter\DRProcs\ accounts_on_volume.sql` to reference the volume ID from the previous step.

5. Run the `accounts_on_volume.sql` script from `\DataCenter\DRProcs`.

6. Use the DCMC to run Compactor on the accounts that have archives on the lost volume. For a procedure that starts and runs Compactor on specific accounts, see DCMC Help.

   After Compactor completes processing all of the accounts, the database cleaning is complete.

7. Compactor creates entries for each account affected by the data loss in the NotifyAccountResync table, so that the Agent resends any lost information it still can access locally. To verify that the NotifyAccountResync table contains all accounts affected by the volume loss, use the following script:

```
SELECT * FROM Directory.dbo.NotifyAccountResync
```

```
WHERE Account IN (111111111, 222222222)
```

Replace 111111111 and 222222222 with a comma-separated list of 9-digit account numbers affected by the volume loss. If the NotifyAccountResync table does not contain the accounts, use the following script to insert them into the table:

```
INSERT INTO Directory.dbo.NotifyAccountResync
```

```
VALUES(111111111, GetDate())
```

Replace 111111111 with an account number that is not listed in the NotifyAccountResync table. Repeat this query for each account that is not listed in the table.

Send documentation feedback

If you have comments about this document, you can contact the documentation team by email. If an email client is configured on this system, click the link above and an email window opens with the following information in the subject line:

Feedback on Micro Focus Connected Backup 9.0.7 Data Center Disaster Recovery

Add your feedback to the email and click **Send**.

If no email client is available, copy the information above to a new message in a web mail client, and send your feedback to swpdl.ConnectedBackup.DocFeedback@microfocus.com.

We appreciate your feedback!