



High Availability for Blackberry[®] Enterprise Server for Microsoft[®] Exchange Using Double-Take[®]



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Double-Take Support for Application Failover

The Double-Take[®] file system replication process is application independent and replicates any file system changes (including permissions and attributes) written to NTFS, FAT or FAT32 file systems by any application or process, subject to specific exceptions called out in the *User's Guide* or readme.txt file. Maintaining point-in-time consistent file system replicas and providing server monitoring and automatic or manual failover of the server name and IP address are the primary functions of the Double-Take software and we offer support to qualified customers should these functions fail to operate in accordance with our published documentation, regardless of what application or process is manipulating the data.

NSI[®] Software may provide application notes and other documents that provide implementation guidelines on how to use Double-Take functions and replicas to manually or automatically failover or recover many popular third party applications and a general process to accomplish failover or recovery of many other third party applications. While these steps are believed to be accurate for the specific configuration, Double-Take version, and application versions originally tested, due to the number of possible configurations and variables, NSI Software can only test selected combinations and may provide only limited support for the operation and configuration of third party applications or the behavior of those applications before, during, or after failover, in its discretion. In cases where NSI Software has no direct access to or experience with a particular application or configuration, NSI Software support may also be limited to only the actual replication of the file system data and failover (name and IP address) of the server.

For assistance in validating, implementing or troubleshooting these or other possible configurations with third party applications, NSI Software and its partners may offer professional services on a fee basis to apply best practices for assisting with third party applications to recover automatically or manually using replicated data. This, and any other, application note is provided solely for the convenience of our customers and is not intended to bind NSI Software to any obligation. Although we try to provide quality information, NSI Software makes no claims, promises or guarantees about the accuracy, completeness, or adequacy of the information contained in this document.

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Introduction

Blackberry® Enterprise Server for Microsoft® Exchange is used to redirect e-mail messages from a mail server running Microsoft Exchange to a wireless handheld Blackberry device, and also from the Blackberry device back to the Exchange server. Double-Take® provides real-time enterprise data protection and replication. Double-Take can be used to provide high availability for Blackberry Enterprise Server.

This document describes the steps necessary to configure Double-Take to provide high availability for Blackberry Enterprise Server for Exchange using a Microsoft SQL Server 2000 database back end. These procedures allow a secondary server to assume the identity and role of a failed server while maintaining the availability of Blackberry Enterprise Server and/or SQL Server 2000 services with minimal disruption or data loss.

Instructions for protecting the Exchange server using Double-Take are outside the scope of this document. For more information, see the Exchange Server 2000/2003 application note, available from the Application Notes section of the NSI® Software support web site (support.nsisoftware.com).

To complete these instructions, you will install SQL Server 2000, Blackberry Enterprise Server, and Double-Take. You will configure Double-Take for replication and failover.

Due to the complexities of these applications, this document is intended for network administrators with experience installing, configuring, and maintaining network applications including Double-Take, Microsoft SQL Server, and Blackberry Enterprise Server.

Requirements

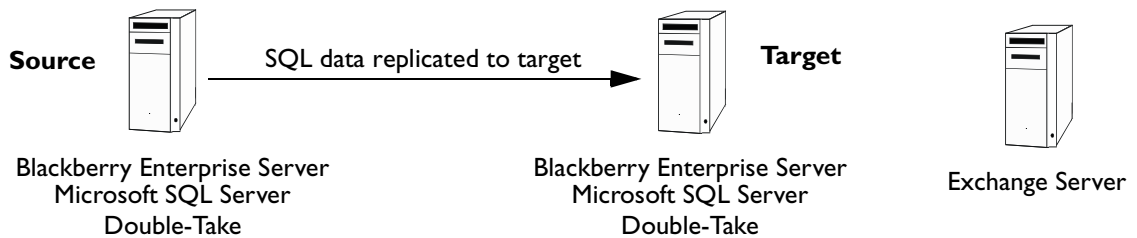
Each server must meet the following requirements:

- ◆ A licensed copy of Microsoft Windows® 2000 Server or Windows Server 2003
- ◆ A licensed copy of Microsoft SQL Server 2000 with Service Pack 3A or later
- ◆ A licensed copy of Double-Take
- ◆ A licensed copy of Blackberry Enterprise Server v3.6 or v4.0 for Microsoft Exchange

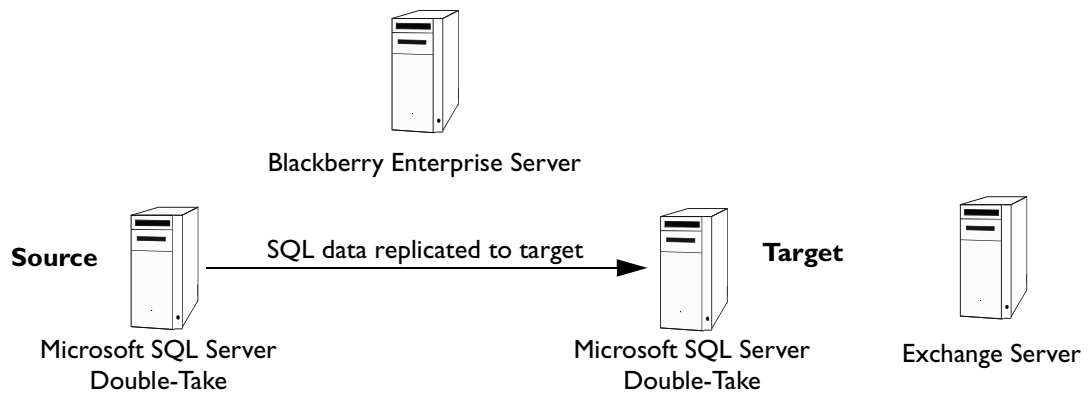
Configurations

Blackberry Enterprise Server can be figured in many ways. This application note describes how it can be used with Double-Take in the following configurations.

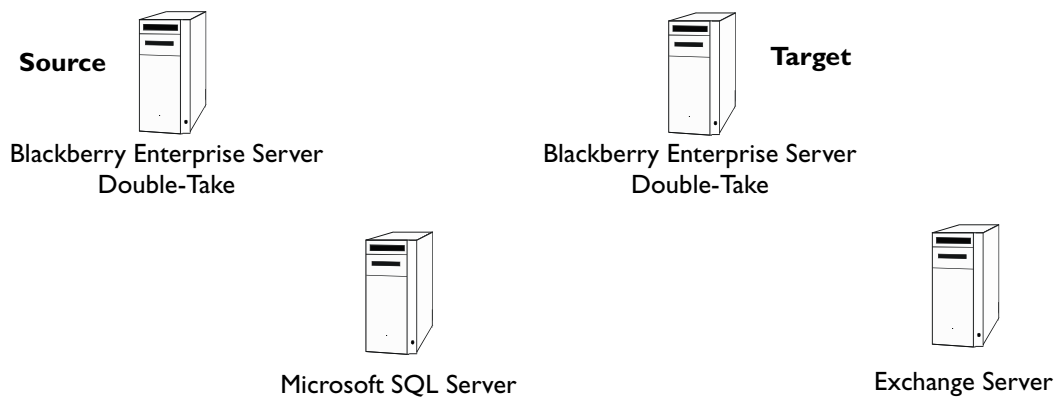
- ◆ **Standalone Configuration**—Blackberry Enterprise Server and SQL Server 2000 are installed on the same server (the source machine). Blackberry Enterprise Server and SQL Server are also installed on a target machine, but remain dormant. Double-Take replicates SQL data from the source machine to the target, and in the event of a failure, Double-Take launches the SQL Server and Blackberry Enterprise Server services so that the target machine can take over for the source machine.



- ◆ **Back-end Configuration**—Blackberry Enterprise Server and SQL Server 2000 are installed on separate servers, and Double-Take protects the SQL back end (which becomes the source machine). In this configuration, SQL Server is installed on the target machine and remains dormant while Double-Take replicates SQL data from the source machine to the target. SQL services are started on the target machine in the event of a source failure, and Blackberry Enterprise Server is able to connect automatically to the target database after this occurs.



- ◆ **Front-end Configuration**—Blackberry Enterprise Server is installed on the source server, and SQL Server 2000 is installed on a separate server, which may or may not also be the target. Blackberry Enterprise Server is installed on the target machine, but remains dormant until the event of a source failure.



Preparing the Source

Use the appropriate section for instructions on how to prepare the source for your configuration.

Standalone configuration

1. Install Microsoft SQL Server 2000 on the source, if it is not already installed.
2. Install Blackberry Enterprise Server on the source. Record your installation settings so that you can use the same values on the target.

Blackberry server name: _____

Windows login information: _____

Database name: _____

3. Install Double-Take on the source machine using the installation defaults. See the Double-Take *Getting Started* guide for details.

Back-end configuration

1. Install Microsoft SQL Server 2000 on the source, if it is not already installed.
2. Install Double-Take on the source machine using the installation defaults. See the Double-Take *Getting Started* guide for details.

Front-end configuration

1. Install Blackberry Enterprise Server on the source. Record your installation settings so that you can use the same values on the target.

Blackberry server name: _____

Windows login information: _____

SQL server name: _____

Database name: _____

2. Install Double-Take on the source machine using the installation defaults. See the Double-Take *Getting Started* guide for details.

Preparing the Target

Use the appropriate section for instructions on how to prepare the target for your configuration.

Standalone configuration

1. Install Microsoft SQL Server 2000 on the target, if it is not already installed.
2. Install Blackberry Enterprise Server on the target, using the same values for Blackberry server name, Windows login information, and database name that you recorded in step 2 of [Preparing the Source](#) for standalone configuration. The SQL Server name will be the hostname of the target machine, not the source machine.

NOTE: Having two Blackberry Enterprise Servers running at the same time with the same SRP (Server Routing Protocol) key disables that particular SRP key. If the SRP key is disabled, wireless communication with Blackberry devices will not function.

3. Install Double-Take on the target machine using the installation defaults. See the Double-Take *Getting Started* guide for details.
4. Stop the following services and set them to manual startup on the target so that the Double-Take source can replicate the changes to the target. These may vary based on your environment.
 - ◆ SQL Server 2000:
 - ◆ Distributed Transaction Coordinator
 - ◆ MSSQLServer
 - ◆ SQLServerAgent
 - ◆ Microsoft Search
 - ◆ MSSQLServerADHelper
 - ◆ Blackberry Enterprise Server:
 - ◆ Blackberry Alert
 - ◆ Blackberry Attachment Service
 - ◆ Blackberry Controller
 - ◆ Blackberry Dispatcher
 - ◆ Blackberry Mobile Data Service
 - ◆ Blackberry Policy Service
 - ◆ Blackberry Router
 - ◆ Blackberry Synchronization Service

Continue with the section [Configure and Begin Mirroring and Replication](#) on page 6.

Back-end configuration

1. Install Microsoft SQL Server 2000 on the target, if it is not already installed.
2. Install Double-Take on the target machine using the installation defaults. See the Double-Take *Getting Started* guide for details.
3. Stop the following SQL Server 2000 services and set them to manual startup on the target so that the Double-Take source can replicate the changes to the target. These may vary based on your environment.
 - ◆ Distributed Transaction Coordinator
 - ◆ MSSQLServer
 - ◆ SQLServerAgent
 - ◆ Microsoft Search
 - ◆ MSSQLServerADHelper

Continue with the section [Configure and Begin Mirroring and Replication](#) on page 6.

Front-end configuration

1. Prior to installing Blackberry Enterprise Server on the target server, make a backup of your SQL Server database. This will be restored after Blackberry Enterprise Server is installed on the target in order to prevent the target server from being added to the server farm.
2. Install Blackberry Enterprise Server on the target, using the same values for Blackberry server name, Windows login information, SQL server name, and database name that you recorded in step 1 of [Preparing the Source](#) for front-end configuration.

NOTE: Having two Blackberry Enterprise Servers running at the same time with the same SRP (Server Routing Protocol) key disables that particular SRP key. If the SRP key is disabled, wireless communication with Blackberry devices will not function.

3. Install Double-Take on the target machine using the installation defaults. See the Double-Take *Getting Started* guide for details.
4. Stop the following Blackberry services and set them to manual startup on the target. These may vary based on your environment.
 - ◆ Blackberry Alert
 - ◆ Blackberry Attachment Service
 - ◆ Blackberry Controller
 - ◆ Blackberry Dispatcher
 - ◆ Blackberry Mobile Data Service
 - ◆ Blackberry Policy Service
 - ◆ Blackberry Router
 - ◆ Blackberry Synchronization Service
5. Restore the backup copy of the SQL server database created in step 1.

NOTE: The existing SQL Server database will be overwritten with the backup copy, which is necessary to prevent the target server from being added to the server farm.

Continue with the section [Configure Failover and Begin Failure Monitoring](#) on page 7.

Configure and Begin Mirroring and Replication

These steps apply to the standalone and back-end configurations only. If you are using a front-end configuration, only the Blackberry Enterprise Server is failed over to access data that resides on the SQL server, so mirroring and replication are not necessary.

The following steps create the Double-Take replication set and establish the connection between the source and target.

1. On the source, select **Start, Programs, Double-Take, Management Console**.
2. Double-click your source machine to log on.
3. Right-click the source and select **Properties**.
4. On the Source tab, enable **Block Checksum All Files on a Difference Mirror** and click **OK**.
5. Right-click the source machine and select **New, Replication Set** and enter the desired name for the replication set.
6. Select the data you wish to protect. Most likely, this will only include the SQL and Blackberry data and log files. It is not necessary to replicate the application files since they already exist on the target machine.
 - ◆ Select the following directories for a default SQL installation:
 - ◆ <drive>:\Program Files\Microsoft SQL Server\MSSQL\Log
 - ◆ <drive>:\Program Files\Microsoft SQL Server\MSSQL\Data
 - ◆ Select any other directories (even if on different drives) that you may have created to store SQL data files.
 - ◆ Exclude any tempdb files. (According to Microsoft SQL documentation, temporary tables and stored procedures are dropped automatically on disconnect and no connections are active when the system is shut down. There is never anything in tempdb to be saved from one session of SQL Server to another. For additional information, see your SQL reference guides.)
 - ◆ Select the Blackberry Enterprise Server data and log files. These should have names similar to the database name (for example, BESMgmt) you chose when installing Blackberry Enterprise Server.
7. Right-click the replication set name and select **Save** to save the replication set.
8. Drag and drop the replication set onto the target. The Connection Manager dialog box opens.
9. The **Source Server**, **Target Server**, **Replication Set**, and **Route** fields will automatically be populated. If you have multiple IP addresses on your target, verify the **Route** field is set to the correct network path. (For detailed information on connecting a source and target, see the *Double-Take User's Guide*.)
10. Select **One to One** to map the replication set data from the source to an identical volume/directory structure on the target.
11. NSI Software recommends moving or deleting orphan files on the target. If desired, configure the connection so that orphan files on the target are deleted or moved. See the *Double-Take User's Guide* for detailed instructions on orphan files.
12. Click **Connect** to start the mirror and replication processes. This will overwrite the target Blackberry Enterprise Server database (if any) with the source Blackberry Enterprise Server database.

NOTE: If you start Blackberry Enterprise Server and mount the replicated databases on the target, or if the data on the target is otherwise modified, the data on the target will be updated. If the updated data on the target is not needed, perform a full or difference with block checksum mirror from the source to the target. If the updated data on the target is needed, restore the data from the target to the source.

The initial baseline mirror is complete after the mirror is complete and the Mirror Status has changed to **Idle**.

Configure Failover and Begin Failure Monitoring

The following failover instructions apply to all configurations.

1. If a failure occurs, you will want to have the appropriate services start on the target automatically. To do this, create a batch file on the target called `postover.bat` using the sample batch file. Save the batch file to the same directory on the target where your Double-Take files are installed.

POSTOVER.BAT

```
REM Sample post-failover script for Blackberry Enterprise Server and SQL 2000. You may need to remark
REM out some commands depending on the function of your target.

REM If you are using the standalone configuration, perform both sets of commands.
REM If you are using the back-end configuration, perform the first set of commands only.
REM If you are using the front-end configuration, perform the second set of commands only.

REM These commands are to start the services for SQL 2000. The included services may vary depending
REM on your environment. This is needed for the standalone and back-end configurations.

net start "Distributed Transaction Coordinator"
net start "MSSQLSERVER" /y
net start "SQLSERVERAGENT"
net start "Microsoft Search"

REM These commands are to start the services for Blackberry Enterprise Server. The included services
REM may vary depending on your environment. This is needed for the standalone and front-end
REM configurations.

net start "Blackberry Alert"
net start "Blackberry Attachment Service"
net start "Blackberry Controller"
net start "Blackberry Dispatcher"
net start "Blackberry Mobile Data Service"
net start "Blackberry Policy Service"
net start "Blackberry Router"
net start "Blackberry Synchronization Service"
```

2. After a failure is resolved, you will be ready to bring your source back online. At this time, you will want to stop the appropriate services on the target automatically. To do this, create a batch file on the target called `preback.bat` using the sample batch file. Save the batch file to the same directory on the target where your Double-Take files are installed.

PREBACK.BAT

```
REM Sample pre-failback script for Blackberry Enterprise Server and SQL 2000. You may need to remark
REM out some commands depending on the function of your target.

REM If you are using the standalone configuration, perform both sets of commands.
REM If you are using the back-end configuration, perform the first set of commands only.
REM If you are using the front-end configuration, perform the second set of commands only.

REM These commands are to stop the services for SQL 2000. The included services may vary depending on
REM your environment. This is needed for the standalone and back-end configurations.

net stop "Distributed Transaction Coordinator"
net stop "MSSQLSERVER" /y
net stop "SQLSERVERAGENT"
net stop "Microsoft Search"

REM These commands are to stop the services for Blackberry Enterprise Server. The included services
REM may vary depending on your environment. This is needed for the standalone and front-end
REM configurations.

net stop "Blackberry Alert"
net stop "Blackberry Attachment Service"
net stop "Blackberry Controller"
net stop "Blackberry Dispatcher"
net stop "Blackberry Mobile Data Service"
net stop "Blackberry Policy Service"
net stop "Blackberry Router"
net stop "Blackberry Synchronization Service"
```

NOTE: These sample scripts can be downloaded in the Application Notes section of the NSI Software support web site (support.nsisoftware.com).

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3. Select **Start, Programs, Double-Take, Failover Control Center**.
 4. Select the target machine from the list of available machines. If the target you need is not displayed, click **Add Target**, enter the machine name, click **OK**, and then click **Login**.
 5. To add a monitor for the selected target, click **Add Monitor**. Type the name of the source machine and click **OK**. The Monitor Settings window will open.
 6. In the Monitor Settings window, mark the IP address that is going to failover and verify that **Adding Source Identity to Target** is selected.
 7. Under **Active Directory**, enable **Failover Hostname** and **Failback Hostname**.
 8. Click **Account** and specify a username and password with full domain administrative privileges.
 9. Highlight the machine name under Names to Monitor and click **Scripts**. Specify the scripts that were created earlier using `postover.bat` for the target post-failover script and `preback.bat` for the target pre-failback script.
 10. Click **OK** to go back to the Monitor Settings dialog box and then click **OK** to begin monitoring the source machine.

In the event of a source machine failure, your target machine is now ready to stand in for your source. For information on monitoring failover, see the *Double-Take User's Guide*.

If you are using the standalone or back-end configuration, continue with the section [Restoring Your Data](#) on page 9.

If you are using a front-end configuration, only the Blackberry Enterprise Server is failed over to access data that resides on the SQL server, so you do not need to complete the section [Restoring Your Data](#).

Restoring Your Data

These steps apply to only the standalone and back-end configurations. If you are using a front-end configuration, only the Blackberry Enterprise Server is failed over to access data that resides on the SQL server, so data restoration is not necessary.

If your source experiences a failure, such as a power, network, or disk failure, your target machine will stand in for the source while you resolve the source machine issues. During the source machine downtime, data is updated on the target machine. When your source machine is ready to come back online, the data is no longer current and must be updated with the new data on the target machine.

1. Verify that your source machine is not connected to the network. If it is, disconnect it.
2. Resolve the source machine problem that caused the failure.

NOTE: If you must rebuild your hard drive, continue with step 3.

If you do not need to rebuild your hard drive, verify that the Double-Take connection on the source has been disconnected (right-click the connection in the Double-Take Management Console and select **Disconnect**) and then continue with step 7.

3. Install Windows. Since your source machine is not connected to the network, use the source's original name and IP address.
4. Install Double-Take using the installation defaults.
5. If you are using the standalone configuration, install Blackberry Enterprise Server.
6. Install SQL using the configurations that you recorded when originally configuring the source.
7. On the source, stop the following services so that all SQL files are closed on the source and the Double-Take target can restore the changes back to the source. Make sure that you stop all of the services, SQL included, relevant to your environment:
 - ◆ Distributed Transaction Coordinator
 - ◆ MSSQLServer
 - ◆ SQLServerAgent
 - ◆ Microsoft Search
 - ◆ MSSQLServerADHelper
8. On the target, select **Start, Programs, Double-Take, Failover Control Center**.
9. Select the target machine that is currently standing in for the failed source.
10. Select the failed source and click **Failback**. The pre-failback script entered during the failover configuration stops the SQL services on the target so that no additional changes can be made.
11. You will be prompted to determine if you want to continue monitoring the source server. Do not choose **Continue** or **Stop** at this time.
12. Connect the source machine to the network.
13. After the source is back online, select whether or not you want to continue monitoring this source machine (**Continue** or **Stop**).

NOTE: Verify that the Double-Take connection on the source has been disconnected. If it is not, right-click the connection in the Double-Take Management Console and select **Disconnect**.

14. To begin the restoration process, open the Double-Take Management Console and select **Tools, Restoration Manager**.

NOTE: You can also run the Double-Take DTCL automated restoration script, which can be found in the *Double-Take User's Guide*, to complete the remaining steps in this section.

15. Complete the appropriate fields.
 - ◆ **Original Source**—The name of the source machine where the data originally resided.
 - ◆ **Restore From**—The name of the target machine that contains the replicated data.
 - ◆ **Replication Set**—The name of the replication set to be restored.
 - ◆ **Restore To**—The name of the machine where the data will be restored. This may or may not be the same as the original source machine.
16. Identify the correct drive mappings for the data and any other restoration options necessary. For detailed information on the restoration options, see the *Double-Take User's Guide*.

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17. Verify that the selections you have made are correct and click **Restore**. The restoration procedure time will vary depending on the amount of data that you have to restore.
 18. After the restoration is complete, start the SQL services on the source machine. If you are using the standalone configuration, start BlackBerry Enterprise Server services on the source machine.
 19. Reestablish the Double-Take replication set and connection.

At this time, your data is restored back to your source machine, the source machine is again the primary server, and, if you selected to continue failover monitoring, the target is available to stand in for the source in the event of a failure.