

application
notes

hp OpenView storage mirroring pervasive SQL 2000

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This document describes the steps necessary to configure Storage Mirroring to provide high availability for Windows 2000 servers running Pervasive SQL 2000.

For the latest version of these Application Notes and other Storage Mirroring documentation, access the HP storage website at: <http://www.hp.com/products1/storage/index.html>.



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Table of Contents

Introduction	1
Requirements	1
Install Software on the Source	1
Install and Configure Software on the Target	1
Configure and Begin Mirroring and Replication	2
Configure Failover and Begin Failure Monitoring	2
Restoring Your SQL Data	4

Introduction

Pervasive SQL offers a high performance, reliable, low maintenance database for multiple operating systems. NSI Software's HP OpenView Storage Mirroring provides real-time enterprise data protection and replication. HP OpenView Storage Mirroring can be used to provide high availability for your Pervasive SQL server running on Windows 200x.

This document describes the steps necessary to configure HP OpenView Storage Mirroring to provide high availability for Windows 200x servers running Pervasive SQL 2000 or v8. These procedures allow a secondary server to assume the identity and role of a failed SQL server while maintaining the availability of SQL services with minimal disruption or data loss.

To complete these instructions, you will install Pervasive SQL and HP OpenView Storage Mirroring, and configure HP OpenView Storage Mirroring 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 HP OpenView Storage Mirroring and Pervasive SQL.

Requirements

- ◆ Microsoft Windows 200x with the latest service pack
- ◆ Two licensed copies of Pervasive SQL 2000 or Pervasive SQL v8
- ◆ Two licensed copies of HP OpenView Storage Mirroring

NOTE: HP OpenView Storage Mirroring allows you to configure one target to monitor and failover for one or more source machines. In a one-to-one configuration, you will want to replicate your SQL data to the same location on the target so that failover is automatic. In a many-to-one configuration, each SQL data store will need to be replicated to a unique location and then renamed to the corresponding SQL directory on the source before failover occurs.

This application note focuses on a single SQL server being replicated to a single target.

Install Software on the Source

1. Install Pervasive SQL and create a database on the source, if you have not already done so.
2. Record the drive and directory where SQL is installed. The default directory for Pervasive is <drive>:\PVS\

SQL Installation Drive and Directory: _____

NOTE: If you already have SQL installed and are not certain where the files are located, view the properties of a table to determine the location.

3. Install HP OpenView Storage Mirroring on the source machine using the installation defaults. See the HP OpenView Storage Mirroring *Getting Started* guide for further details.

Install and Configure Software on the Target

1. Install HP OpenView Storage Mirroring on the target using the installation defaults. See the HP OpenView Storage Mirroring *Getting Started* guide for further details.
2. Install Pervasive SQL and create a database on the target using the same drive and directory specifications recorded in step 2 of the previous section.
3. Set the Pervasive services to manual startup so that all SQL files are closed on the target and the HP OpenView Storage Mirroring source can replicate the changes.
 - ◆ If you are using Pervasive SQL 2000, set the following services to manual startup.
 - ◆ Pervasive SQL 2000 Relationship
 - ◆ Pervasive SQL 2000 Transactional
 - ◆ If you are using Pervasive SQL v8, set the following services to manual startup
 - ◆ Pervasive SQL Relationship
 - ◆ Pervasive SQL Transactional

NOTE: If a failure should occur, the failover and failback scripts that you will be creating will control the stopping and starting of the SQL services.

Configure and Begin Mirroring and Replication

1. Select **Start, Programs, HP OpenView Storage Mirroring, Management Console**.
2. Double-click your source machine to log on.
3. Right-click your source machine and select **New, Replication Set** and enter the desired name for the replication set.
4. Select the data you wish to protect. Most likely, this will only include the SQL data and log files. It is not necessary to replicate the application files (.dll and .exe files) since they already exist on the target machine. Select <drive>:\PVSW and any other directories (even if on different drives) that you may have created to store your SQL data files.
5. Right-click the replication set name and select **Save** to save the replication set.
6. Drag and drop the replication set onto the target. The Connection Manager dialog box opens.
7. 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, reference the HP OpenView Storage Mirroring *User's Guide*.)
8. Select the **One To One** mapping so that the replication set data is transmitted to the same directory structure on the target.
9. Click **Connect** to start the mirror and replication processes.

Configure Failover and Begin Failure Monitoring

1. If a failure occurs, you will want to have the SQL services start on the target machine automatically. To do this, create a batch file called `postover.bat` using the sample batch file below. Save the batch file to the same directory where your HP OpenView Storage Mirroring files are installed.

POSTOVER.BAT

```
REM Sample post-failover script for Pervasive SQL. By default, this script is configured for Pervasive
REM SQL 2000. If you are running Pervasive SQL v8, you will need to comment out the SQL 2000 commands
REM and use the v8 commands.

REM The following two commands are for Pervasive SQL 2000
net start "pervasive.sql 2000 (relational)"
net start "pervasive.sql 2000 (transactional)"

REM The following two commands are for Pervasive SQL v8
REM net start "pervasive.sql relational)"
REM net start "pervasive.sql transactional)"
```

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 SQL services on the target automatically. To do this, create a batch file called `preback.bat` using the sample batch file below. Save the batch file to the same directory where your HP OpenView Storage Mirroring files are installed.

PREBACK.BAT

```
REM Sample pre-failback script for Pervasive SQL. By default, this script is configured for Pervasive
REM SQL 2000. If you are running Pervasive SQL v8, you will need to comment out the SQL 2000 commands
REM and use the v8 commands.

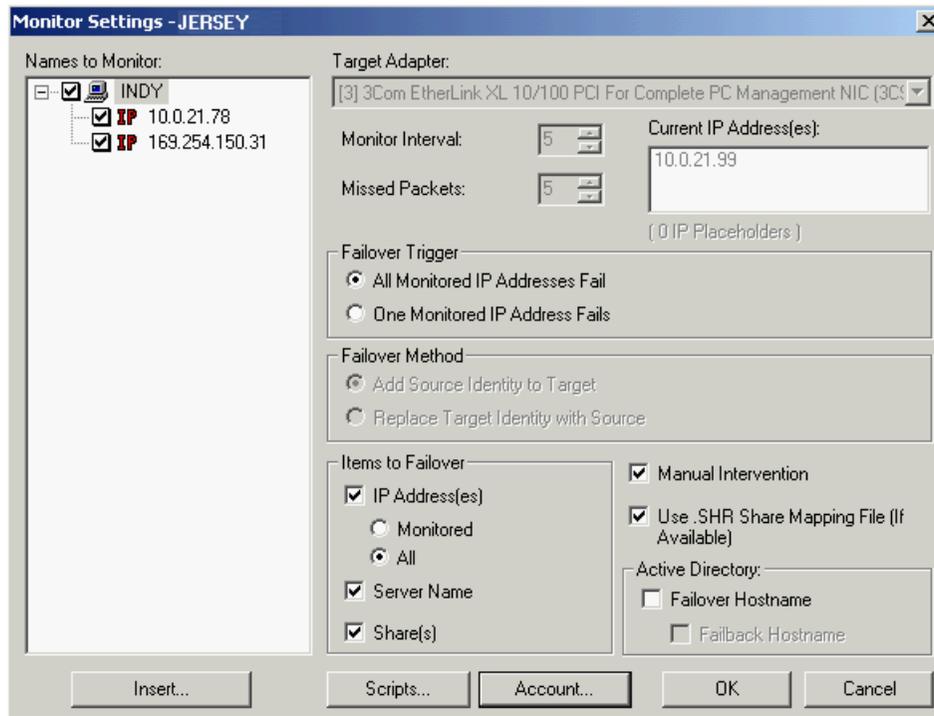
REM The following two commands are for Pervasive SQL 2000
net stop "pervasive.sql 2000 (relational)"
net stop "pervasive.sql 2000 (transactional)"

REM The following two commands are for Pervasive SQL v8
REM net stop "pervasive.sql (relational)"
REM net stop "pervasive.sql (transactional)"
```

NOTE: These sample batch files are available on the NSI Software web site at www.nsisoftware.com/download/Pervsql.exe.

3. Select **Start, Programs, HP OpenView Storage Mirroring, 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, and click **OK**.
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.

- In the Monitor Settings window, mark the IP address that is going to failover.



- Click **Scripts** and specify the scripts that were created earlier.
- Click **OK** to go back to the Monitor Settings dialog box.
- 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 detailed information on monitoring failover, see the *HP OpenView Storage Mirroring User's Guide*.

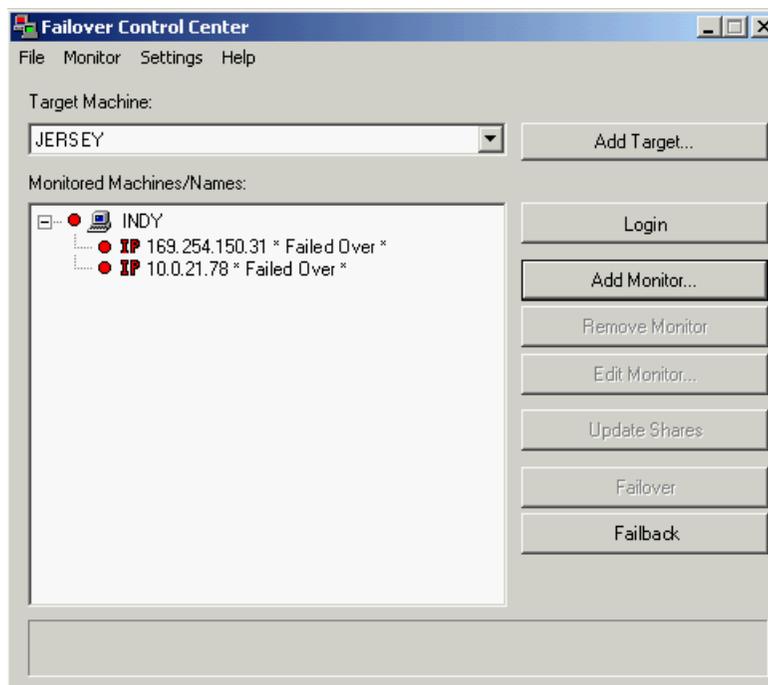
Restoring Your SQL Data

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, continue with step 6 below.

3. Install Windows. Since your source machine is not connected to the network, go ahead and use the source's original name and IP address.
4. Install HP OpenView Storage Mirroring using the installation defaults.
5. Install Pervasive SQL using the same drive and directory settings recorded in step 2 of the first section.
6. **Verify that SQL is not running on the source.** The SQL services must not be running at this time. Depending on the type of failure, your services may be set to manual startup but could still be running. **Stop your SQL services and set them to manual.**
7. Select **Start, Programs, HP OpenView Storage Mirroring, Failover Control Center.**
8. Select the target machine that is currently standing in for the failed source.
9. 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.

10. You will be prompted to determine if you want to continue monitoring the source server. Do not choose **Continue** or **Stop** at this time.
11. Connect the source machine to the network.
12. After the source is back online, select whether or not you want to continue monitoring this source machine (**Continue** or **Stop**).

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13. To begin the restoration process, open the HP OpenView Storage Mirroring Management Console and select **Tools, Restoration Manager**.

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

14. Complete the appropriate fields as described below.
- ◆ **Original Source**—The name of the source machine where the data original 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.
15. Identify the correct drive mappings for the data and any other restoration options necessary. For detailed information on the restoration options, see the HP OpenView Storage Mirroring *User's Guide*.
16. 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.
17. After the restoration is complete, start the SQL services on the source machine and then reestablish the HP OpenView Storage Mirroring SQL replication set connection.

At this time, your data is restored back to your source machine, the source machine is again the primary SQL 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.