WANSyncHA® for BlackBerry™ Enterprise Server

WANSyncHA for BlackBerry Enterprise Server Operations Guide

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Chapter 1: Getting Started

This document is a guide to implementing a high availability solution for BlackBerry Enterprise Server (hereafter referred to as BES) Versions 4.0 and 4.1 and the underlying DB infrastructure of Microsoft SQL Server (MSDE is also supported), based on WANSyncHA replication to a remote secondary server(s) with automated switchover and client redirection in the event of critical failure.

Please review this guide, as well as each procedure, before starting in order to ensure you have the appropriate resources and permissions to carry out a given task.

About BlackBerry Enterprise Server

BlackBerry Enterprise Server (BES) is becoming a critical component of the enterprise communications infrastructure in support of mobile productivity. If disaster should strike, whether in the form of a hurricane, a blackout, or far more likely, a virus attack or software or user error, your ability to respond well to the crisis can make the difference between a bright future and the end of your business. At the very least, you are likely to incur significant costs in lost business and, perhaps more importantly, lost confidence by your customers, investors, and other stakeholders. BlackBerry disaster recovery is not just about insurance. It is about maintaining your employees' productivity wherever they are and it is about maintaining your competitive edge. The WANSyncHA solution for BlackBerry high availability is designed to give you that edge.

We offer a customized solution for BlackBerry high availability (HA) using the award-winning WANSyncHA for SQL switchover solution with asynchronous real-time replication and automated server switchover and switchback to provide cost-effective business continuity for BlackBerry Server on both 32- and 64-bit Windows servers as well as MSCS clusters.

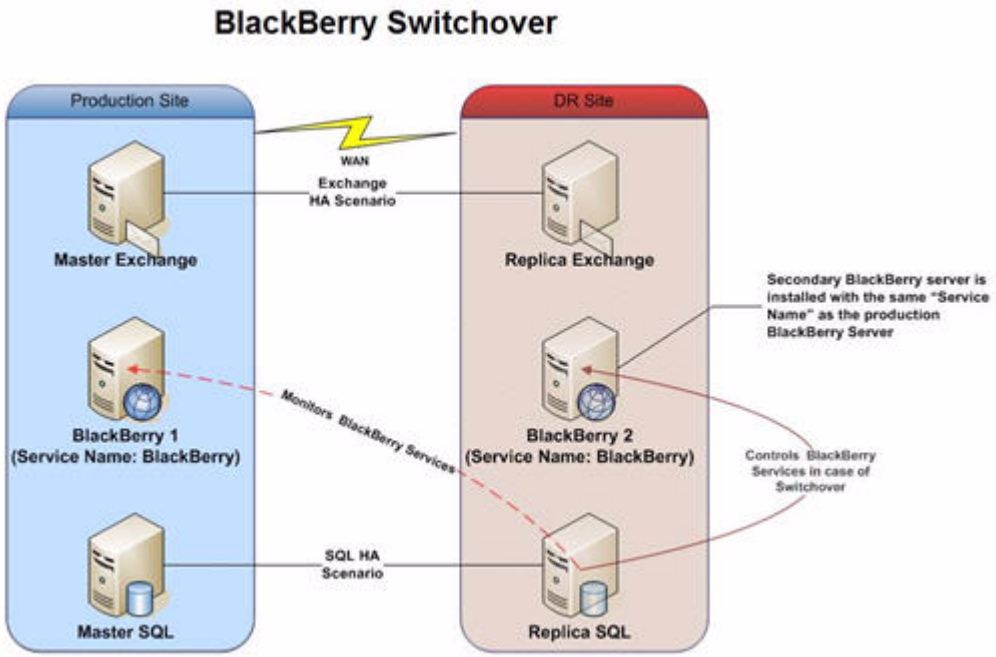
Related Documentation

Use this guide along with the *WANSync User Guide* and *WANSyncHA SQL Server Operations Guide*.

The BlackBerry HA Solution

As most BlackBerry administrators are well aware, configuration information regarding BES is stored almost entirely in the configuration database. This information is critical for proper BES operation, and is also relied upon by WANSyncHA for a successful Switchover. This dependency makes SQL and BES a platform that is tied together and, in regards to high availability, managed together. For this reason, the operations guide covers both SQL and BES HA as a single solution. This solution also covers configurations in which multiple BES servers are sharing the same SQL configuration database (i.e., BESMgmt). In this case all attached BES servers are switched over simultaneously with the BESMgmt database via WANSyncHA for SQL.

Important! This document does not cover e-mail server high availability (BlackBerry supports only MS Exchange for e-mail). High availability for those servers is covered under their own scenario and are outside the scope of this operations guide.



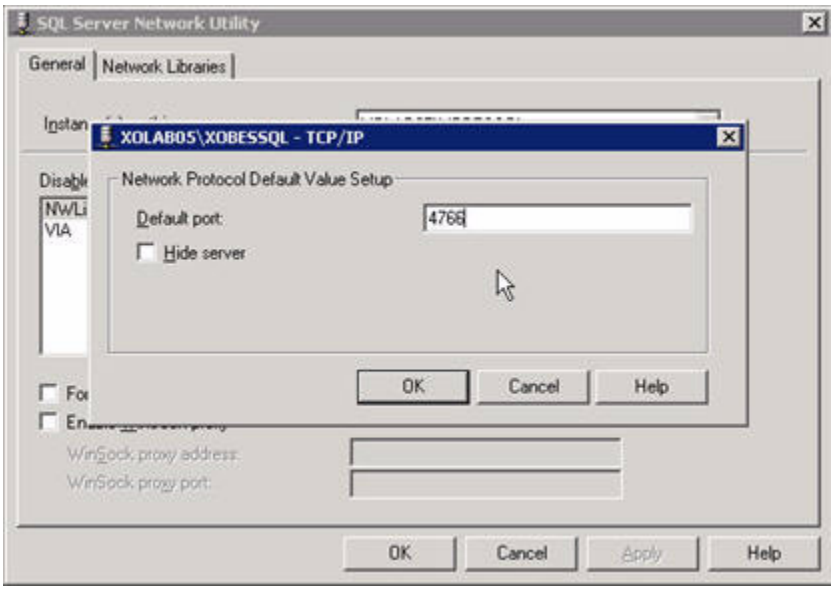
Requirements

This section describes the requirements for running WANSyncHA for BES.

Infrastructure

To implement high availability using WANSyncHA, you must have/implement the following:

- Two servers running Windows Server 2000 or 2003
- An instance of SQL 2000 or 2005 installed on each server
  - Both servers should have the same SQL version, service packs and hot fixes installed
  - Both servers should hold identical SQL Server instances, i.e., default or named
  - Drive letters containing database files should be identical on both servers
  - The full path to the default system database of each instance should be identical on both servers
- Verify that the port defined in the Network Configuration TCP/IP properties of the SQL instance(s) is assigned statically and is identical on both master and replica. What port is used is not important, they just need to match on both master and replica SQL servers.



- Statically assign all IP addresses (DHCP-assigned IP addresses on the master or replica server are not supported)
- Verify that the port defined in the Network Configuration TCP/IP properties of the SQL instance(s) is assigned statically and is identical on both master and replica (The port that is used is not important -- they just need to match on both master and replica SQL servers)
- The SQL server in question is not a domain controller or DNS server

- Two servers running Windows Server 2000 or 2003 for BES can be the same servers used for SQL/MSDE as described above (one is the current production BES server and the other is for the new standby, replica, server)

  Important! BES must be installed only on the production BES server(s) prior to starting the procedure described in this guide. If you already installed BES on a second server you intend to use as a replica, uninstall BES from that server before proceeding.

- Both servers should have identical service packs and hot fixes installed
- Installation software for BES v4.0 or 4.1 and any service packs or fixes currently applied to your production BES server
- This high availability solution is designed around the nine BES services, please verify that all services exist and are functioning properly on all production BES servers before starting implementation:
  - BlackBerry Server Alert
  - BBAttachServer
  - BlackBerry Controller
  - BlackBerry Database Consistency Service (default startup type may be disabled and is normal)
  - BlackBerry Dispatcher
  - BlackBerry Mobile Data Service (v4.0) OR BlackBerry MDS (v4.1)
  - BlackBerry Policy Service
  - BlackBerry Router
  - BlackBerry SyncServer (Synchronization Service)
- For multiple BES servers:
  - For each additional BES server connected to the same SQL instance you wish to protect, another stand-by (replica) BES server is required for Switchover. All the considerations applying to the first BES server pair apply to any additional server pairs. There is no limit to the number of BES servers that can be protected, as long as they are all connected to the same protected SQL instance. All BES server pairs will be failed over at once when the protected SQL instance is failed over (this is the instance hosting the configuration DB (i.e., BESMgmt)).

Log On Account

The WANSync service log on account must satisfy all of the following conditions:

- Must be a member of the Domain Admins group -- if the Domain Admins group is not a member of the built-in domain local group Administrators, you must use an account that is
- Must be a member of the local machine Administrators Group on all servers. If the Domain Admins group is not a member, add the account manually
- If the account does not have built-in administrator permissions on all SQL Server instances, add appropriate permissions

Important! If your company's security policy requires even more granular permissions than described, or any special circumstances apply to your case, please contact technical support to receive detailed instructions on the permissions required.

BlackBerry HA Script

The script referenced by this operations guide must be present on both SQL servers (or on all nodes, for SQL MSCS clusters) at the same path. By default, this script is provided in all versions of WANSync build 65 and above, and no additional action is required. The default location is C:\Program Files\XOsoft\WANSync\BBha.vbs.

The BlackBerry HA script controls and monitors BES services via RPC communication ports, make sure all required RPC communication ports are open between the SQL servers and all protected BES servers.

BlackBerry Configuration Database

The BES configuration database (i.e., BESMgmt) contains all the BES configuration information. The WANSyncHA solution for BlackBerry protects, and utilizes this database, in order to provide BlackBerry high availability. If you use your current BES SQL instance (i.e. the one hosting BESMgmt) for any applications other than BES and still wish to provide BSE high availability, you must move the BES configuration database to a new dedicated SQL instance. It can be on the same, or different, server but must be a new dedicated SQL instance just for the BES configuration database. Once installed as a new named instance, WANSyncHA can be configured to protect only this instance, without affecting other SQL instances or WANSync(HA) scenarios running on the server (i.e., BES Servers can be switched over without also disrupting service to other SQL databases or instances on the server). For more information please review *Independent BlackBerry SQL Instance*.

To move the BlackBerry configuration database, please follow the official instructions provided by RIM on http://www.blackberry.com: *How To - Move the BlackBerry Configuration Database from one server to another*; Article Number: KB-03112.

This operation requires a brief restart for some of BES services, so it is recommended that this procedure is performed alongside the BES server configuration to reduce the total amount of downtime required.

When editing the cfg file, ensure you change 'SERVER' to reflect the new dedicated named SQL instance for BES. For example: config file edit where the new dedicated SQL instance is on xooperations and is named xobessql:

```
; Name of Server to install the db
; Local machine can be specified as local
;
SERVER=xooperations\xobessql
```

After moving the BESMgmt database (i.e., finishing the above referenced KB) to the new server, you must restart the BlackBerry Manger before it will reconnect if it was open during the move process.

About MSDE

While this operations guide refers to a full featured SQL Server as the underlying database infrastructure, BES also supports working with a local MSDE installation by default. If this is the case with your configuration, simply regard all SQL references as MSDE references.

Non-Intrusive Installation

During installation and configuration of WANSyncHA, Microsoft SQL Server on the Master server continues working without any interruption. For the BES configuration and testing portion a brief BES downtime window will be required.

MSCS Clusters Hosting the SQL Database

With WANSyncHA, Installing on clusters is nearly identical to normal installation. To install on a cluster, simply enter the *SQL Server Virtual Server Name* when asked for the master or replica name.

Chapter 2: BlackBerry Server Setup

This chapter describes how to set up a BlackBerry Enterprise Server for use with WANSyncHA.

Configuring the Master BES Server

Since WANSyncHA uses DNS redirection in order to redirect traffic from master to replica during a switchover, you must configure BES to access the configuration database through its FQDN DNS name (e.g., server.domain.com). This operation requires a brief restart for some of BES services, so it is recommended that you perform this procedure alongside the installation of the BES replica server.

Keep in mind, when running multiple database instances on the same SQL server or in the case of a multi-function SQL server (i.e., one that serves other purposes besides hosting the BES database), you can create another DNS Host (A) record specifically for use with BES redirection and thus not disturb any other operations on the SQL server in question (for detailed instructions, see *The BlackBerry HA Solution*, *Independent BlackBerry SQL Instance*, and *BlackBerry Configuration Database*).

There are two places in which you need to perform this change:

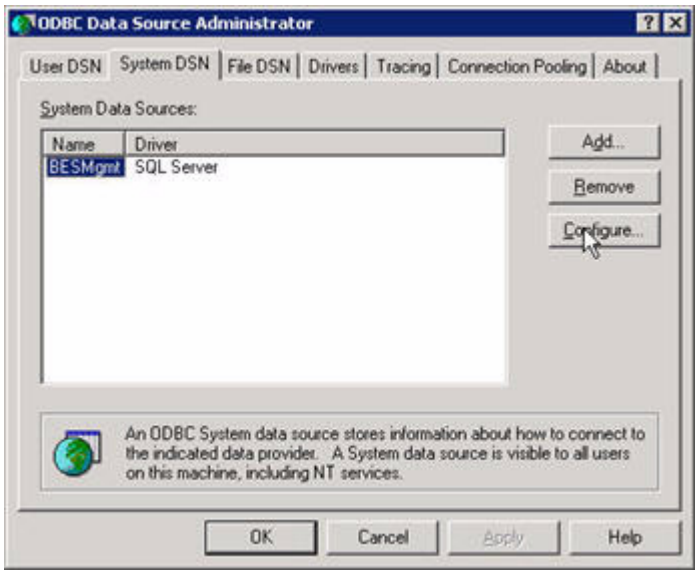
- The master BES server data sources (ODBC) configuration
- The master BlackBerry server configuration

The Master BES Server Data Sources (ODBC) Configuration

To configure the BES Server data sources:

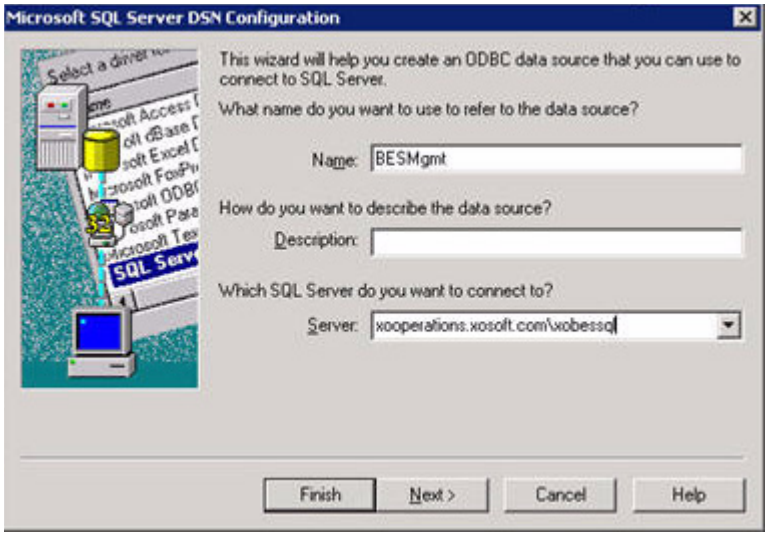
1. Open Start > Programs > Administrative Tools > Data Source (ODBC).

2. Choose the System DSN tab; highlight *BESMgmt* from the name field and then click Configure.



3. In the server field, enter the full DNS name (FQDN) for your SQL server (and the named instance path if not installed as the default instance).

   Important! Remember to use the alternate SQL server record you created if you are following *Independent BlackBerry SQL Instance* (for example, bbdb.xosoft.com/xobessql).

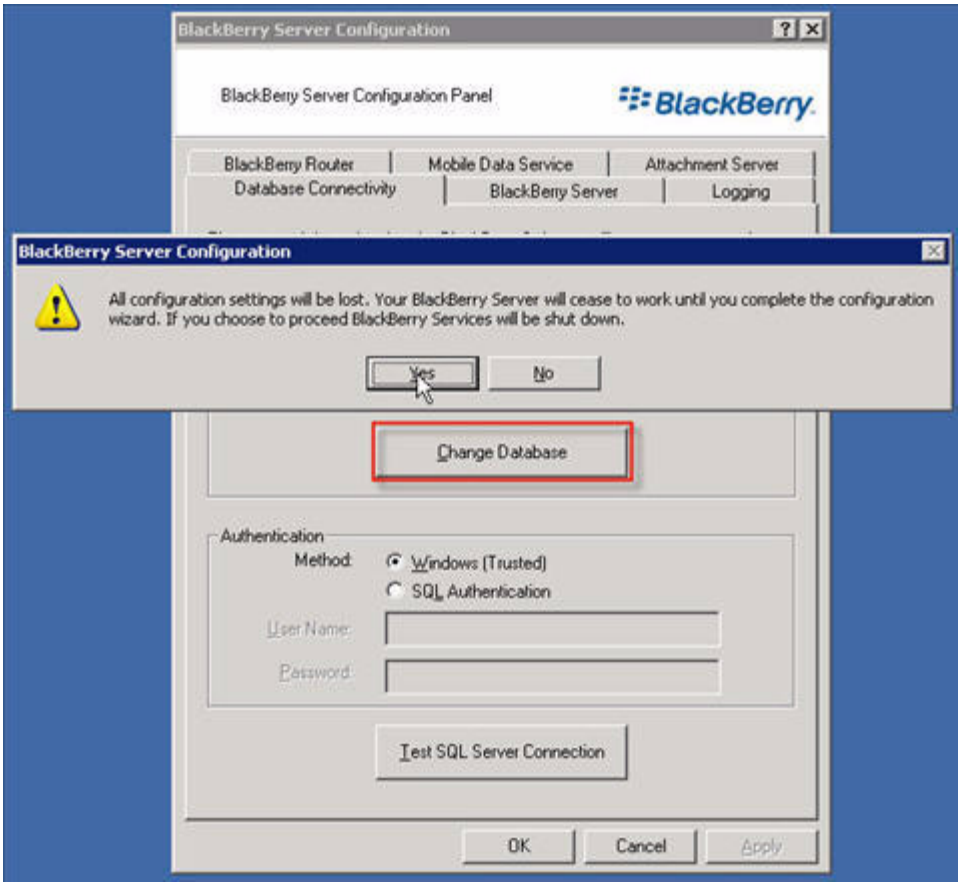


4. Test the connection to ensure it was successful.

The Master BlackBerry Server Configuration

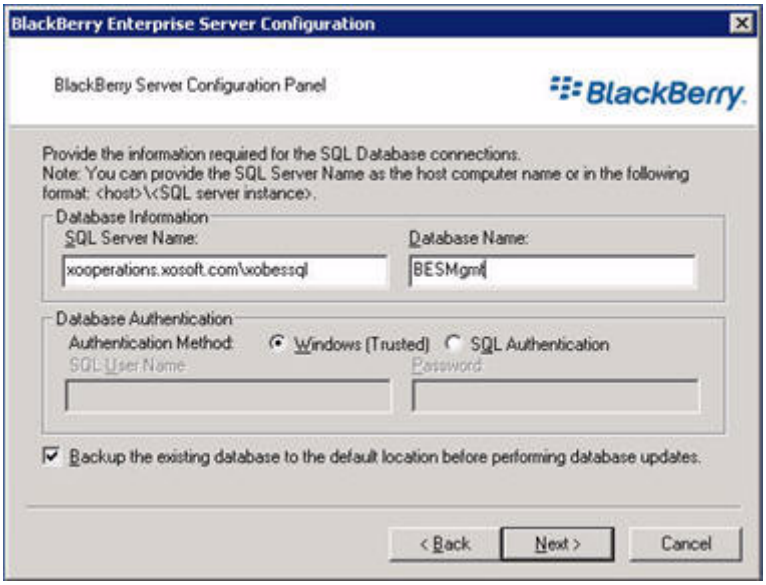
To configure the master BlackBerry Server:

1. Open Start > Programs > BlackBerry Enterprise Server > BlackBerry Server Configuration.
2. On the Database Connectivity tab, click on *Change Database;* then click on *yes* at the BlackBerry Server Configuration prompt.



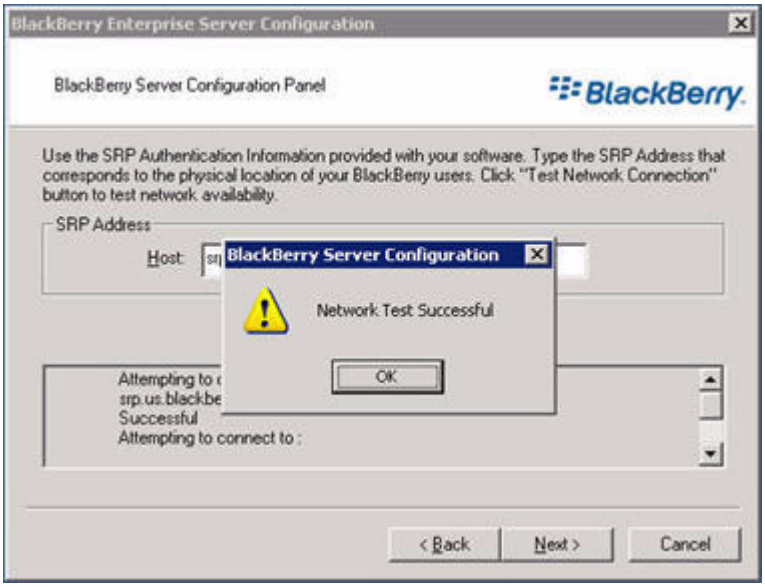
3. In the SQL Server Name field, enter the Full DNS name for your server and the named instance path if not installed as the default instance.

Important! Remember to use the alternate SQL server record you created if you are following *Independent BlackBerry SQL Instance* (for example, bbdb.xosoft.com/xobessql).

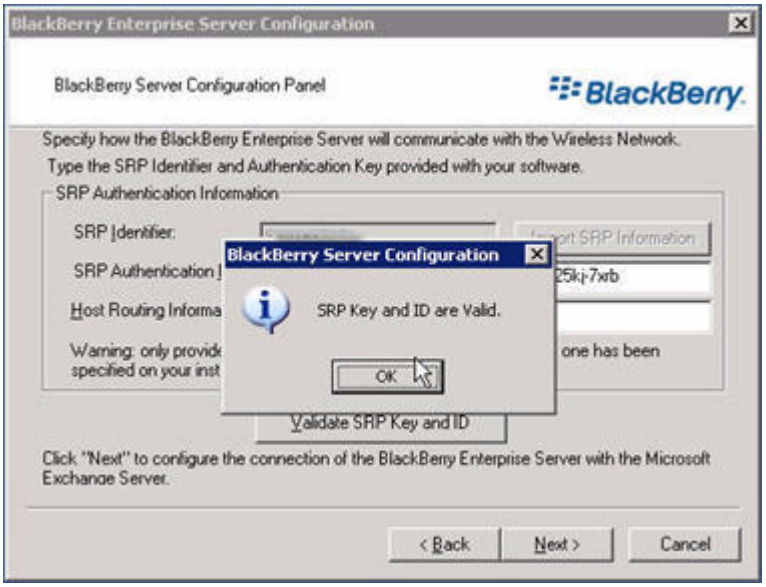


4. In the Database Name field, input the configuration database name (default: BESMgmt).

5. When you click next, the screen should show your SRP provider address. Test to ensure SRP connection is OK.

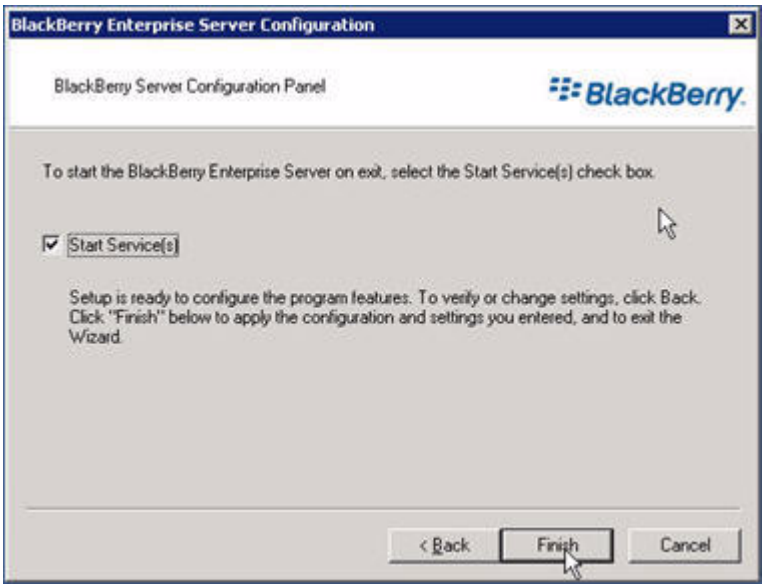


6. Clicking next again shows your SRP login information. Test to ensure key is correct.

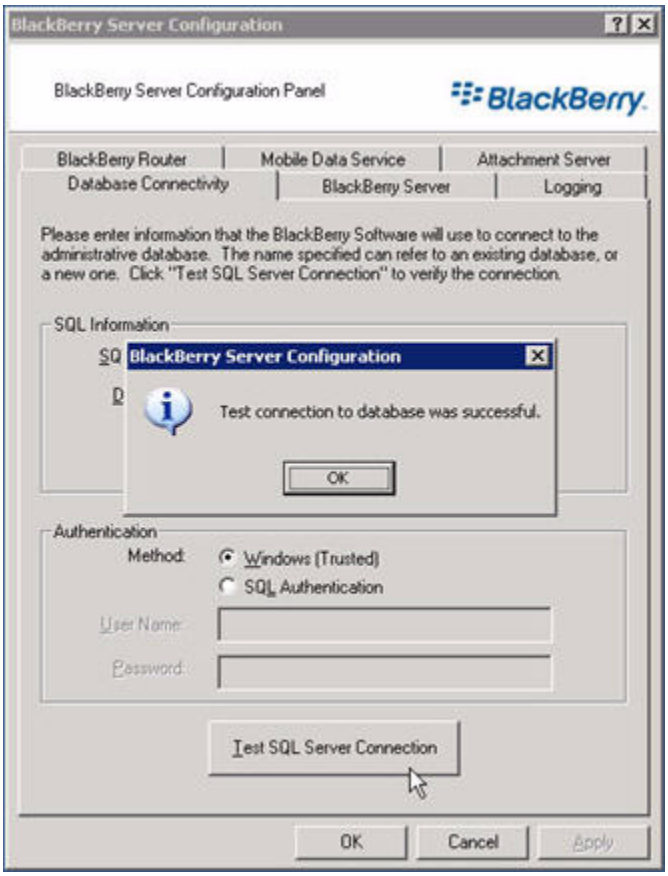


7. Make sure the mail server configuration is correct.

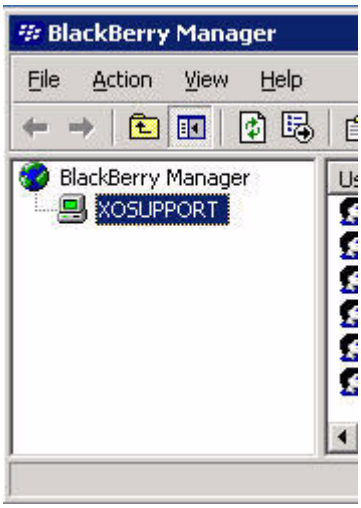
8. After finishing configuration leave the *Start Services* selection box checked.



9. Test the SQL Connection.



10. Verify that BES on the master is functioning properly.



Install and Configure the Replica BlackBerry Server

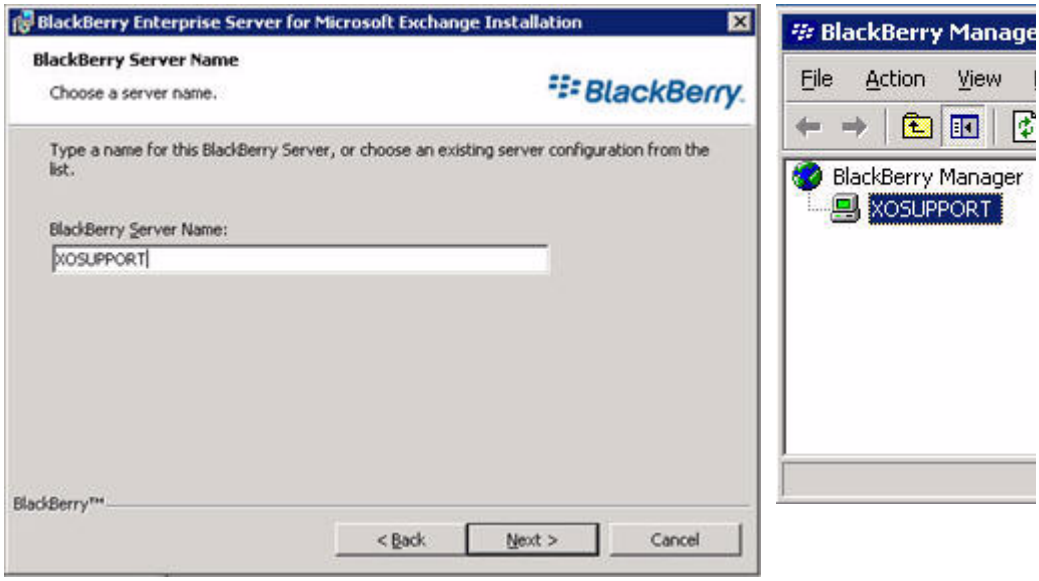
Once the master BES server is configured and ready, you are ready to install the replica BES server. Please consider the following information when installing this server.

Important! Before starting the installation, stop the BES services on the Master BES server (for this server pair), and set them to 'manual'. This is done in order to avoid SRP Key conflicts (see *SRP Connection Errors*). Both master and replica BES services cannot be online simultaneously at any time.

To configure the replica server:

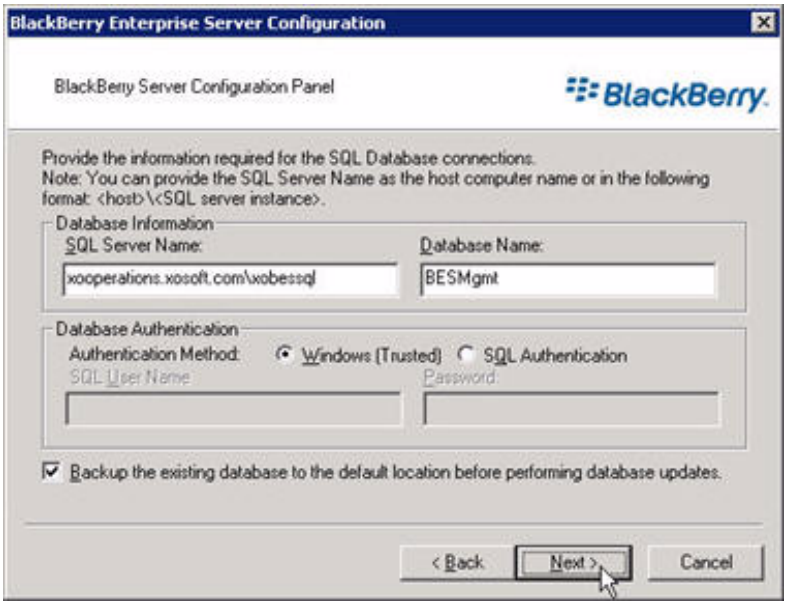
1. Start the BES installation process on your replica BES server. For the most part this installation process will be mostly identical to how you originally installed your production BES server.

2. When prompted for the BlackBerry Server Name enter the same name as the master BES server. This allows the replica BES server to assume all configuration parameters and SRP information during a switchover. This is the name that appears in the master server's BlackBerry Manager.

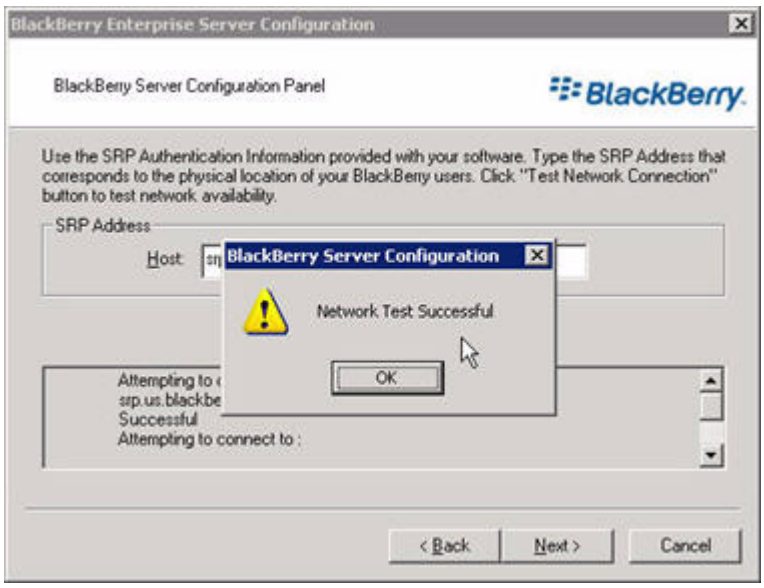


3. When installing, make sure you enter the full DNS name (FQDN) of the SQL Server; at no point should the *short name* ever be used to reference the SQL server.

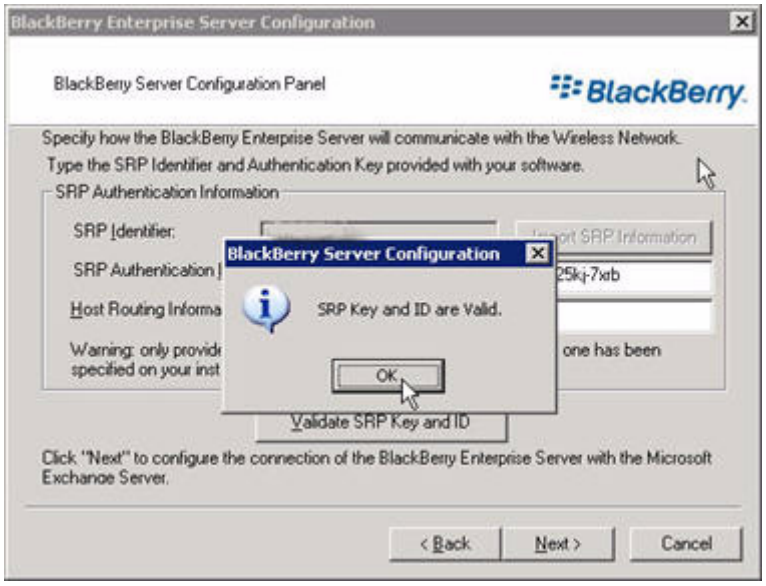
   Important! Remember to use the alternate SQL server record you created if you are following *Independent BlackBerry SQL Instance* (for example, bbdb.xosoft.com/xobessql).



4. Verify that the Network test is successful.

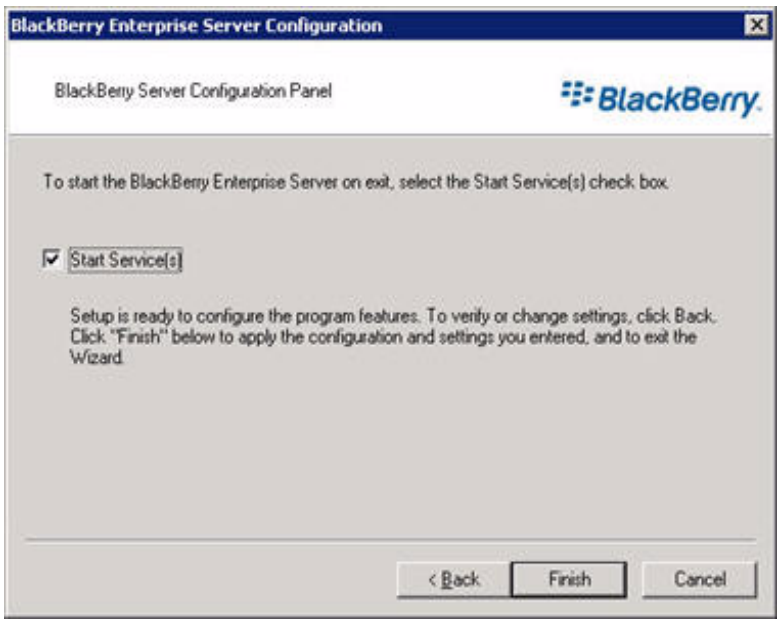


5. Verify that the SRP key test is successful.



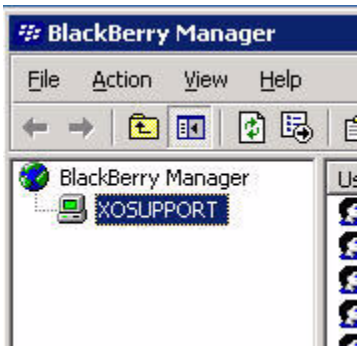
6. Make sure the mail server configuration is correct.

7. Leave the *Start Services* selection box checked.



8. After installation is complete, confirm that configuration information is correct and that BES on the replica is now functioning properly. If any configuration discrepancies exist between the original configuration and this one, or if BES is not functioning, you might have mistakenly entered a different server name and created a new server entry in the BES database. You should check the BlackBerry Server Configuration tool to see if the SRP Key defined is identical to the SRP Key of the master BES server. If not, remove the replica BES installation and install again with the correct Server Name (i.e., the same name as your master BES installation).

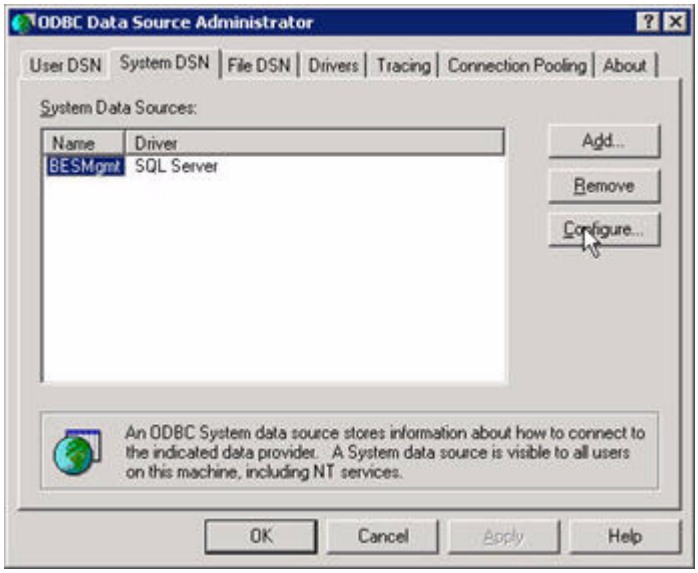
   Important! BlackBerry Manager on the replica should show the same server name as it did on the master BES server.



The Replica BES Server Data Sources (ODBC) Configuration

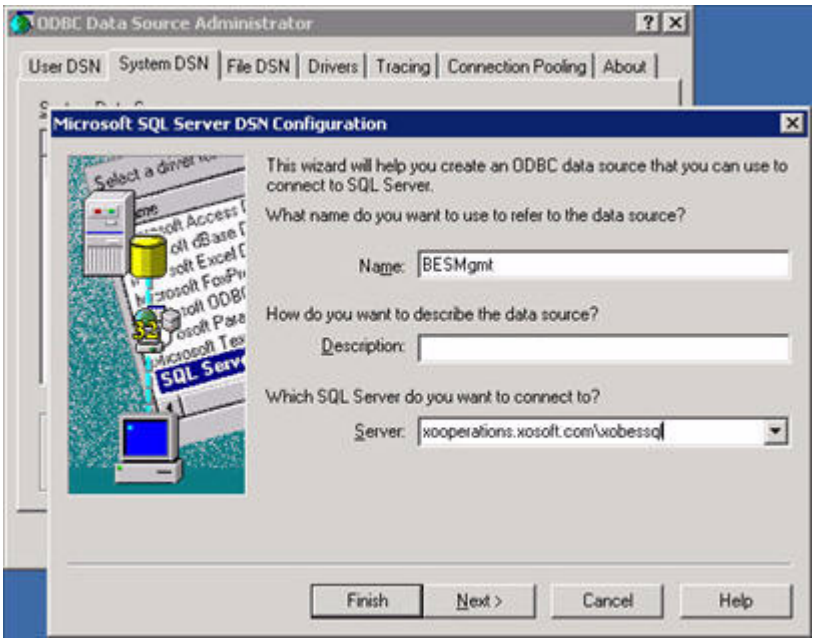
To use the replica BES server data sources (ODBC) configuration:

1. Open Start > Programs > Administrative Tools > Data Source (ODBC).
2. Choose the System DSN tab; highlight *BESMgmt* and click Configure.



3. In the server field, enter the full DNS name (FQDN) for your SQL server (and the named instance path if not installed as the default instance).

   Important! Remember to use the alternate SQL server record you created if you are following *Independent BlackBerry SQL Instance* (for example, bbdb.xosoft.com/xobessql).



4. Click Next and continue to test your connection; verify that it is successful.

Complete the Configuration

After finishing installation and testing, shut down the BES services on the replica server and set them to *manual*. You can now start the services on the master BES server, but leave the services set to *manual*. Test to ensure BES is functioning properly on the master server after starting all services.

While using this solution, the BES services on both master and replica server stay in manual start up mode to avoid any possible SRP conflicts (see *SRP Connection Errors*). It is suggested that you create a batch file or script allowing you to stop and start the BES services without having to stop/stop each service individually. This also means that you must start the services manually after each reboot on the active server.

Multiple BlackBerry Servers

If you are protecting multiple BES Servers, the previous procedures must be performed for all BES server pairs. When you are done preparing all BES servers, proceed to the beginning of this chapter.

Chapter 3: WANSyncHA Setup

This chapter describes how to install WANSyncHA. Before proceeding ensure that you have properly installed the replica BES SQL instance per the *The BlackBerry HA Solution* section. It is also recommended to reference the *Independent BlackBerry SQL Instance* as well as the *The Master BlackBerry Server Configuration*.

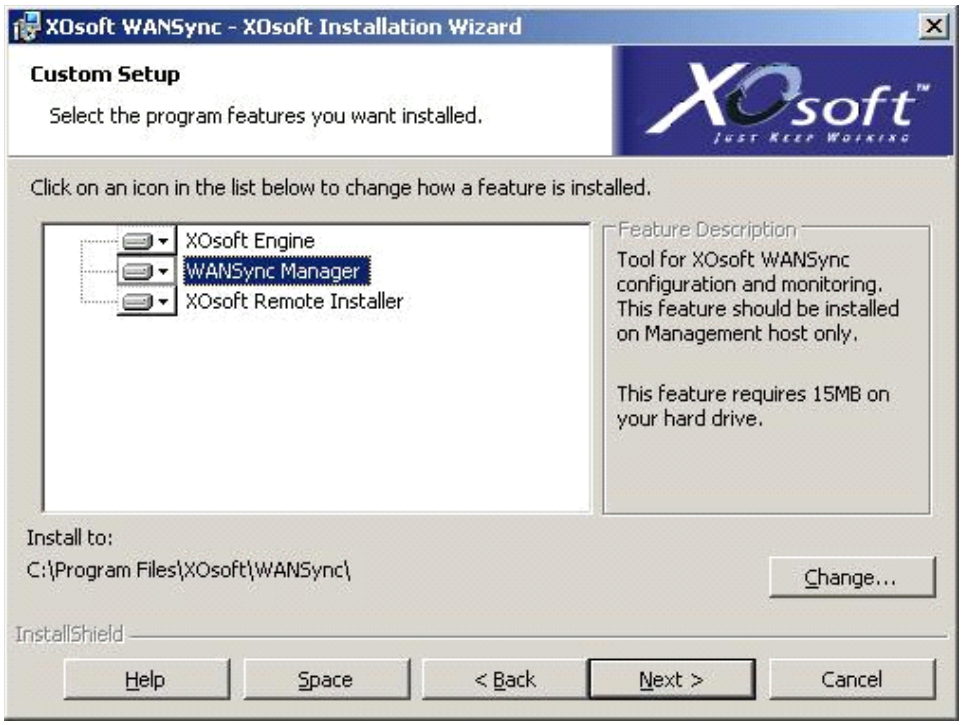
Install WANSync Manager

Install WANSync Manager and the Remote Installation Wizard onto the machine from which the WANSyncHA scenario will be configured. The location of the Manager is not critical so long as it is accessible in the event of a disaster. The Manager is frequently installed on a server room or an administrator's workstation.

Important! If the Manager is installed directly on either the master or replica servers, ensure that the XOsoft Engine is also installed.

If you intend to use the XOsoft Remote Installer (recommended), the machine

on which you are running the remote installer should have .Net framework 2.0 installed. The framework is required only on the machine running the remote installer wizard (GUI); the target servers do not have this requirement.



After the scenario is run it is cached on your master and replica servers. Once cached, you can download it to any installed WANSync Manager by selecting *Download* from the File menu (then enter the name of your master or replica server).

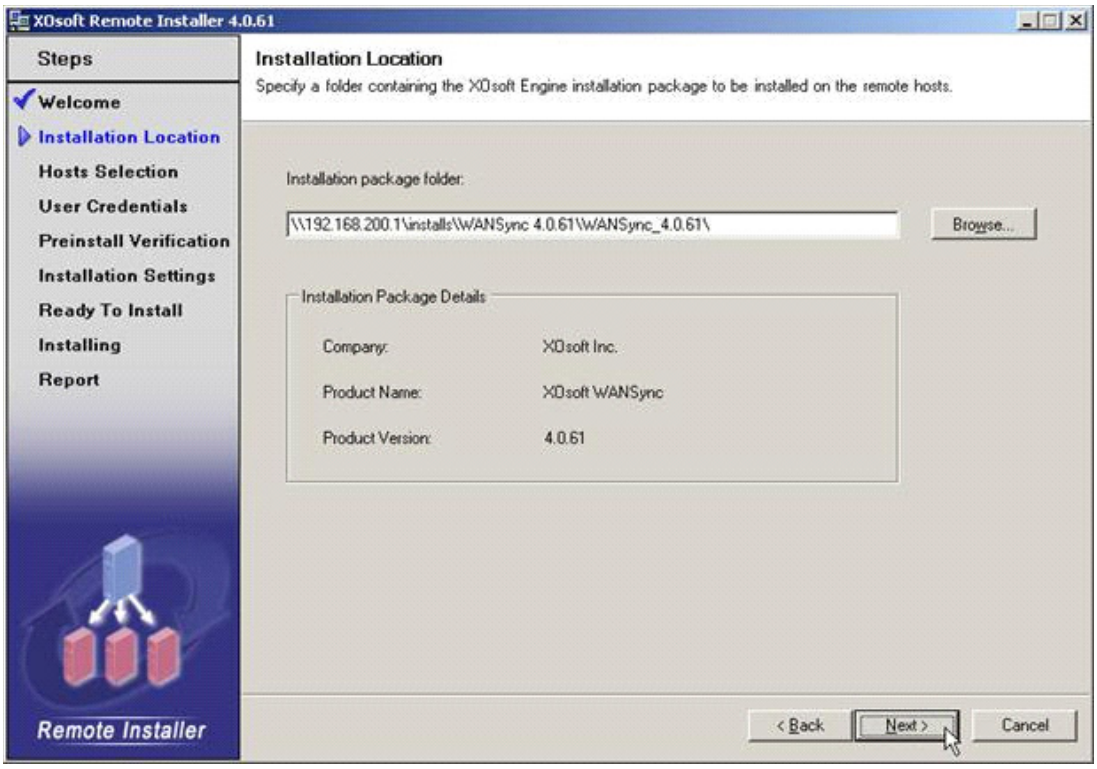
Using the Remote Installation Wizard

You can use the Remote Installation Wizard to deploy the XOsoft Engine to any number of servers, or cluster nodes, in one step. Alternatively, you can install the XOsoft Engine manually by running setup.exe directly on each server.

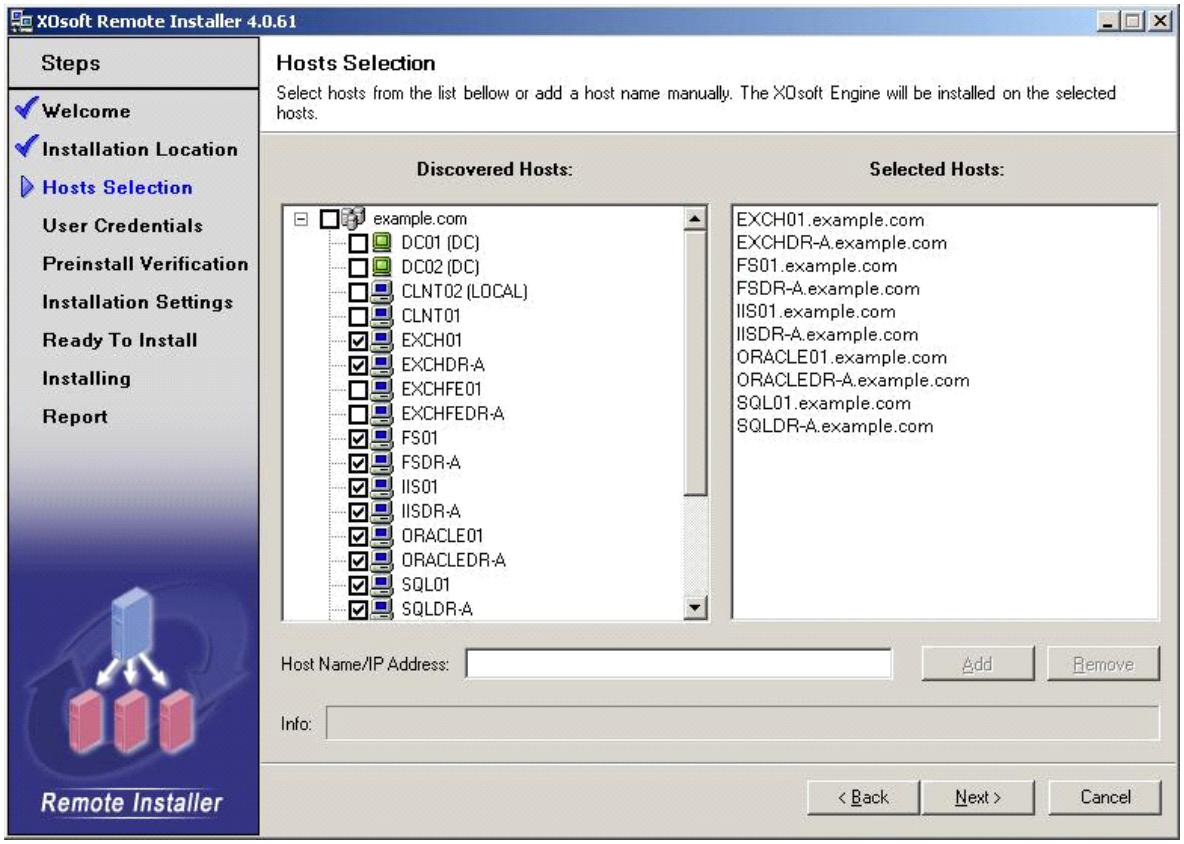
Important! If you install the XOsoft Engine using the remote installation wizard, you can skip the manual installation step under the sections *Master SQL Server* and *Replica SQL Server*.

Run the remote installation wizard either from the start menu or from the WANSync Manager Tools menu. When using the remote installation wizard, consider the following steps:

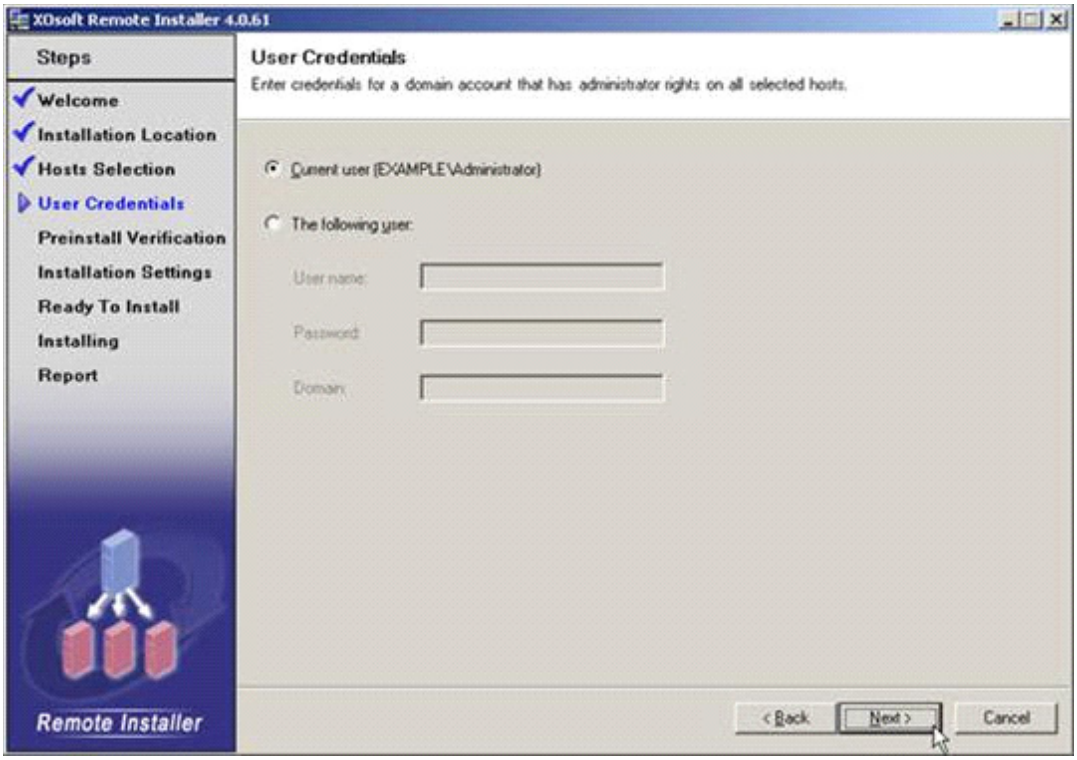
- **Installation location** - ensure that this path is correct and contains a valid WANSync setup package.



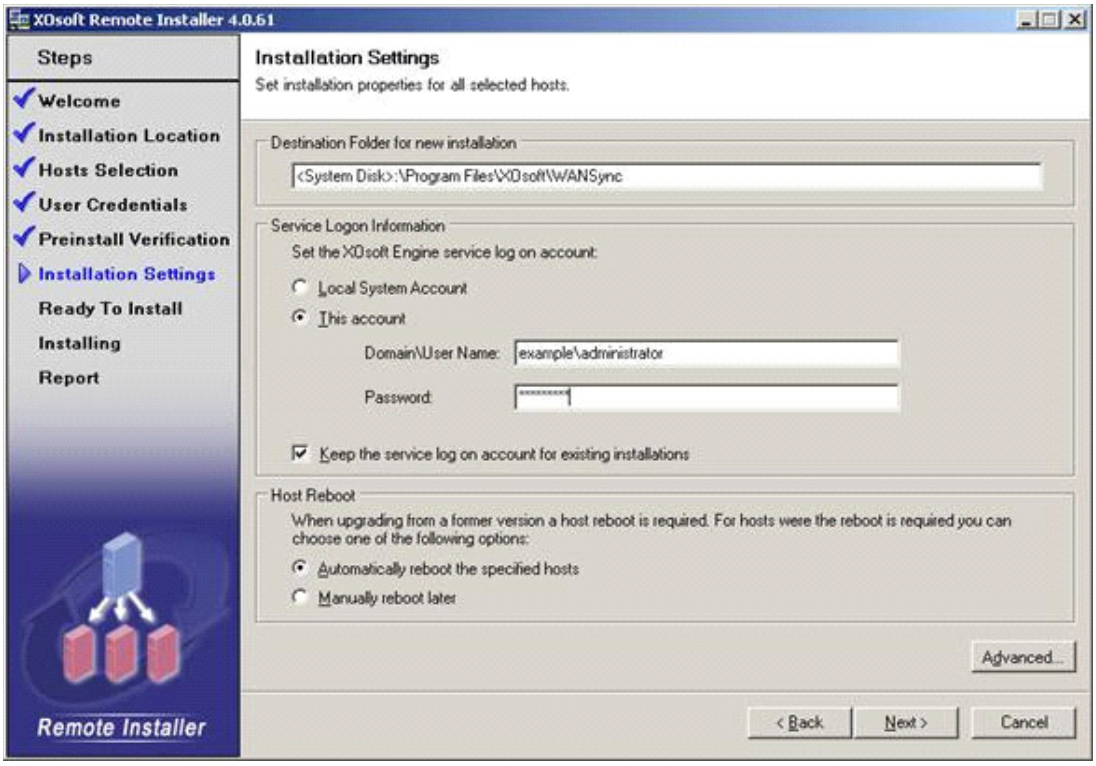
- **Hosts selection** - select the servers (or cluster) nodes to which you want to deploy the XOsoft Engine (you can add servers manually from the *Host Name/IP Address* box).



- **User credentials** - the user account that is used to install the XOsoft Engine on each target server (ensure that this account is a local Administrator on all target machines).

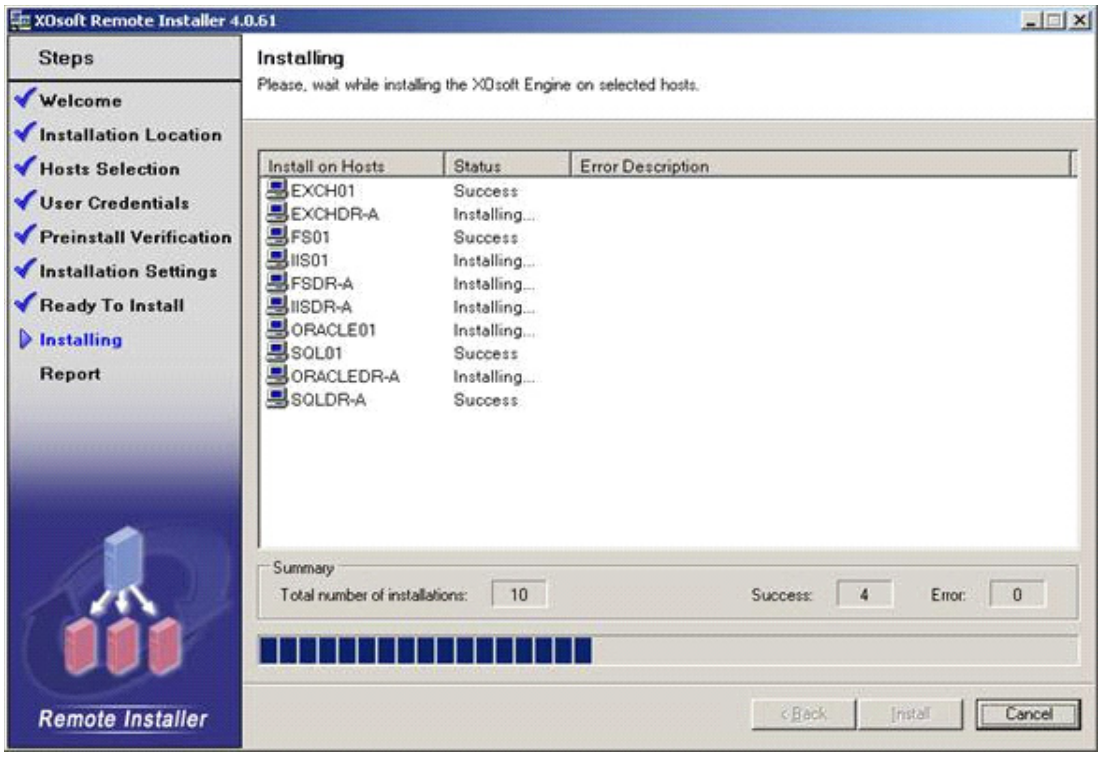


- **Preinstall verification** - click Next after all servers have reported success.
- **Install settings** - select *This Account* and enter your WANSync service account domain\username and password (see *The BlackBerry HA Solution* for more details).

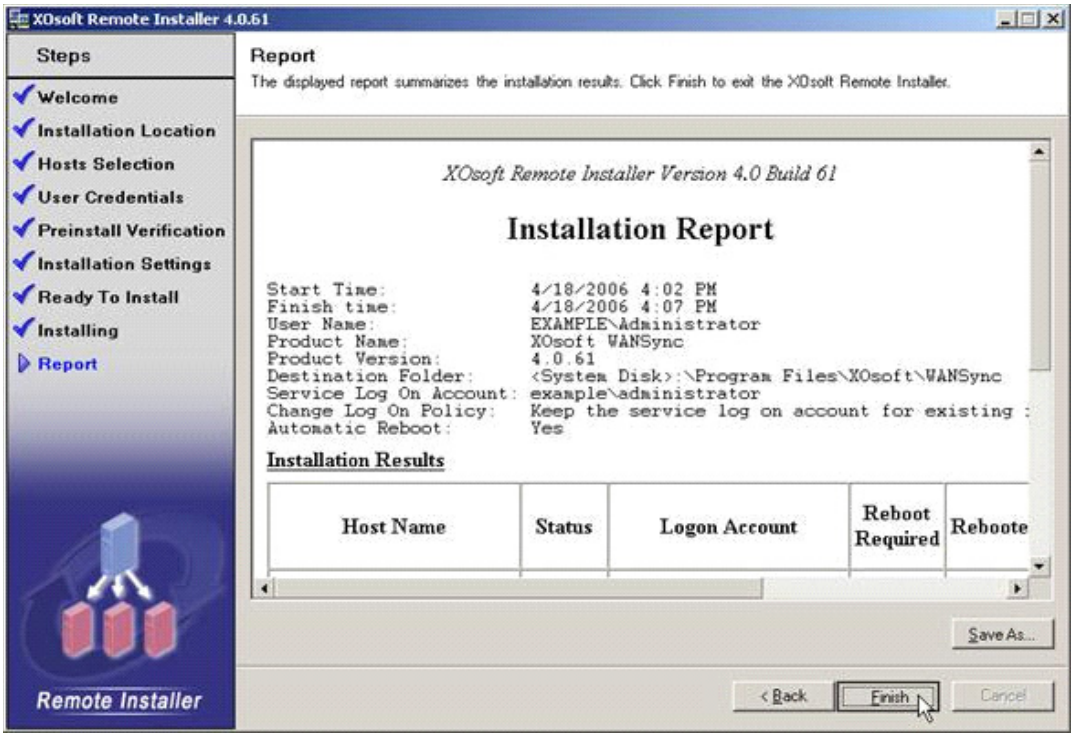


Important! Do not proceed without first setting the correct service account (see *The BlackBerry HA Solution* for more details).

- **Ready to Install** - confirm that all desired servers are listed and then click the Install button.
- **Installing** - you can monitor the installation process from this screen.



- **Report** - in this last step you can view the full installation report and, optionally, save a copy (the XOsoft Engine now is installed on all selected servers or cluster nodes).



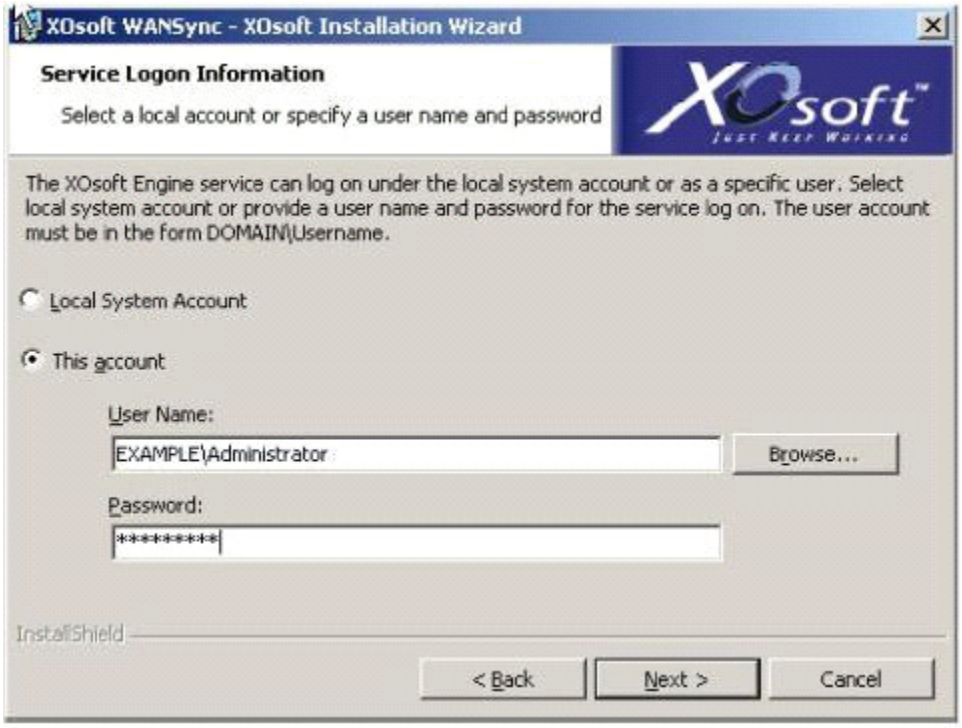
Master SQL Server

To install WANSyncHA on the master SQL server:

1. If you did not use the Remote Installation Wizard, install WANSyncHA on the master server.

   Important! When installing WANSyncHA, use the log on account as described in *The BlackBerry HA Solution*.

Note: If you installed under a different account than required, you can change it any time using the Windows services console: find the XOsoft Engine service and change the log on account. Then restart the service to apply the change.



2. If you have file level antivirus software installed, exclude the WANSyncHA installation directory and SQL database and log files from antivirus protection.
3. If the master server is a cluster, perform steps 1 and 2 on all nodes. You do not need to switch over the SQL group during installation.

Replica SQL Server

1. If you did not use the Remote Installation Wizard, install WANSyncHA on the replica server.

   Important! When installing WANSyncHA, use the log on account as described in *The BlackBerry HA Solution*.

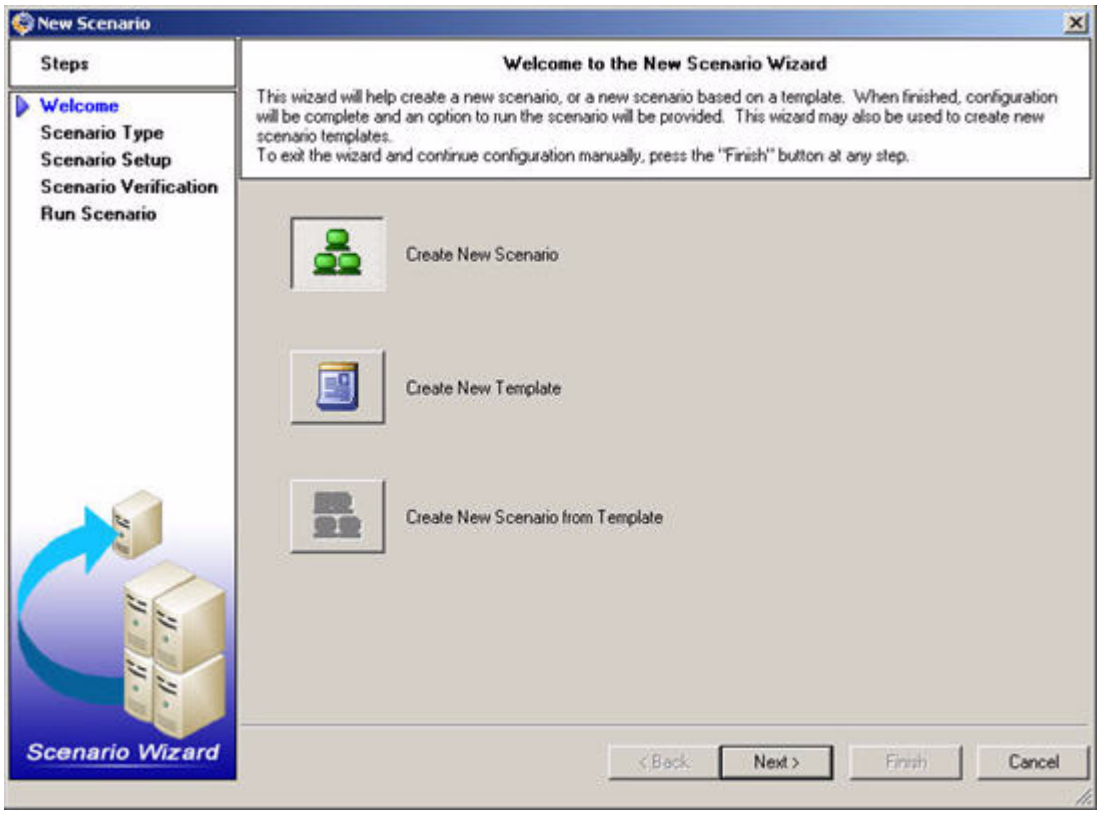
   Note: If you installed under a different account than required, you can change it any time using the Windows services console: find the XOsoft Engine service and change the log on account. Then restart the service to apply the change.
2. If you have file level antivirus software installed, exclude the WANSyncHA installation directory and SQL database and log files from antivirus protection.

3. If the replica server is a cluster, perform steps 1 and 2 on all nodes. You do not need to switch over the SQL group during installation.

Create a Replication Scenario

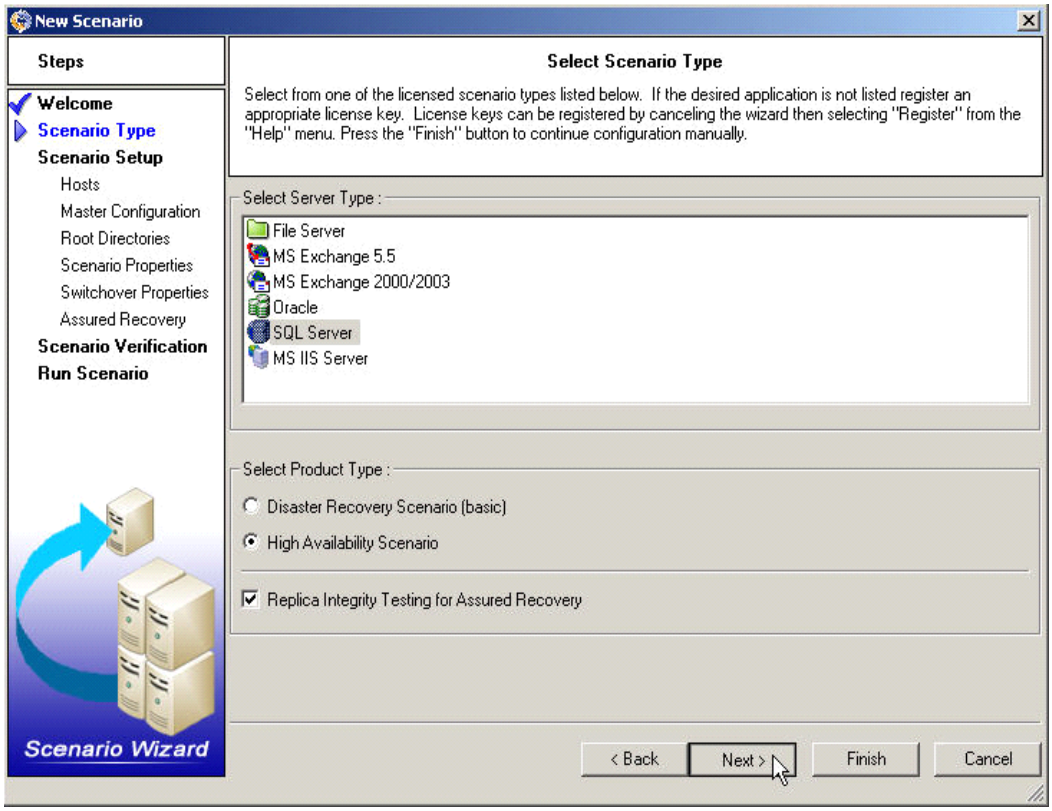
Before creating a new scenario, ensure that you have installed SQL on the replica SQL server. Make sure to review *The BlackBerry HA Solution* and *Independent BlackBerry SQL Instance* (if it applies).

1. Open WANSync Manager. From the File menu, select *New* or click the New Scenario button.
2. At the Welcome step click Next to *Create New Scenario*.



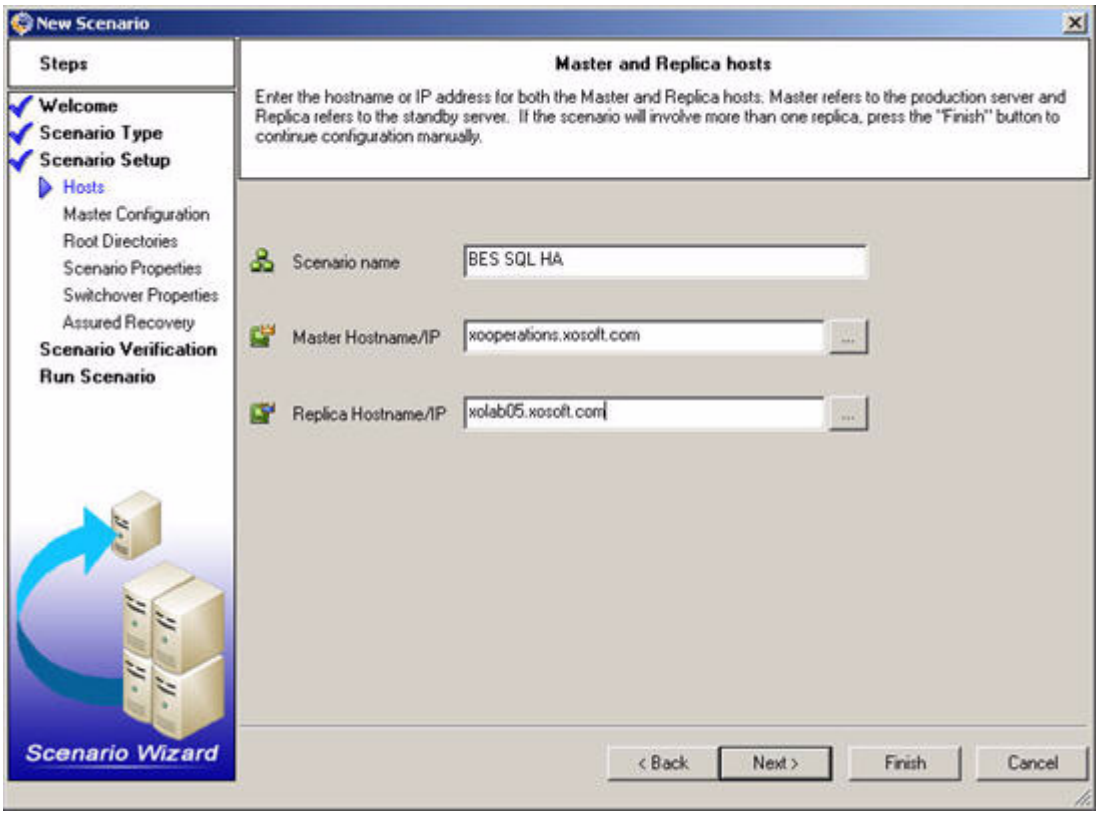
3. At the *Scenario Type* step select *MS SQL*, *High Availability Scenario* and, optionally, *Replica Integrity Test for Assured Recovery*.

Note: Learn more about Assured Recovery and how it can help ensure success through automatic testing. Please visit the Products menu at www.caxosoft.com or review the *WANSync User Guide* for more information.



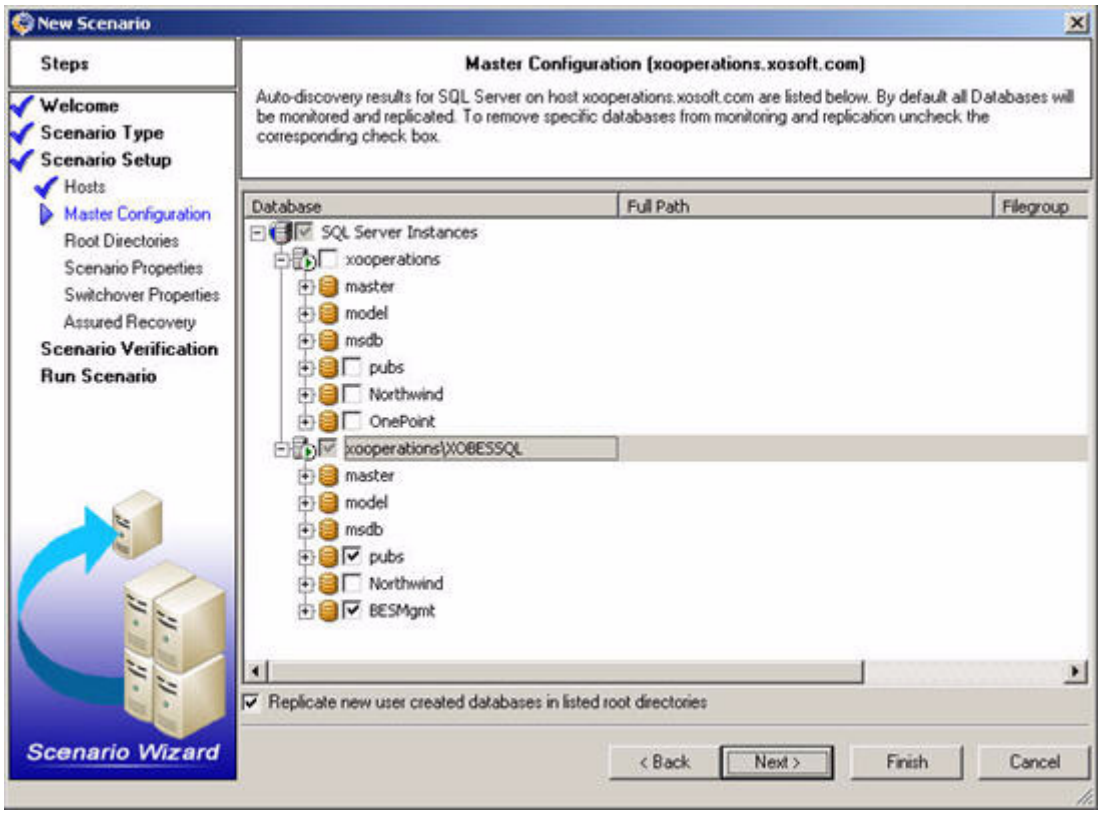
4. During the Hosts step, name the scenario and input the server names for the master and replica SQL Server hosts.

Note: If either server is a MSCS cluster, enter the SQL Virtual Server Name as the master and/or replica name.

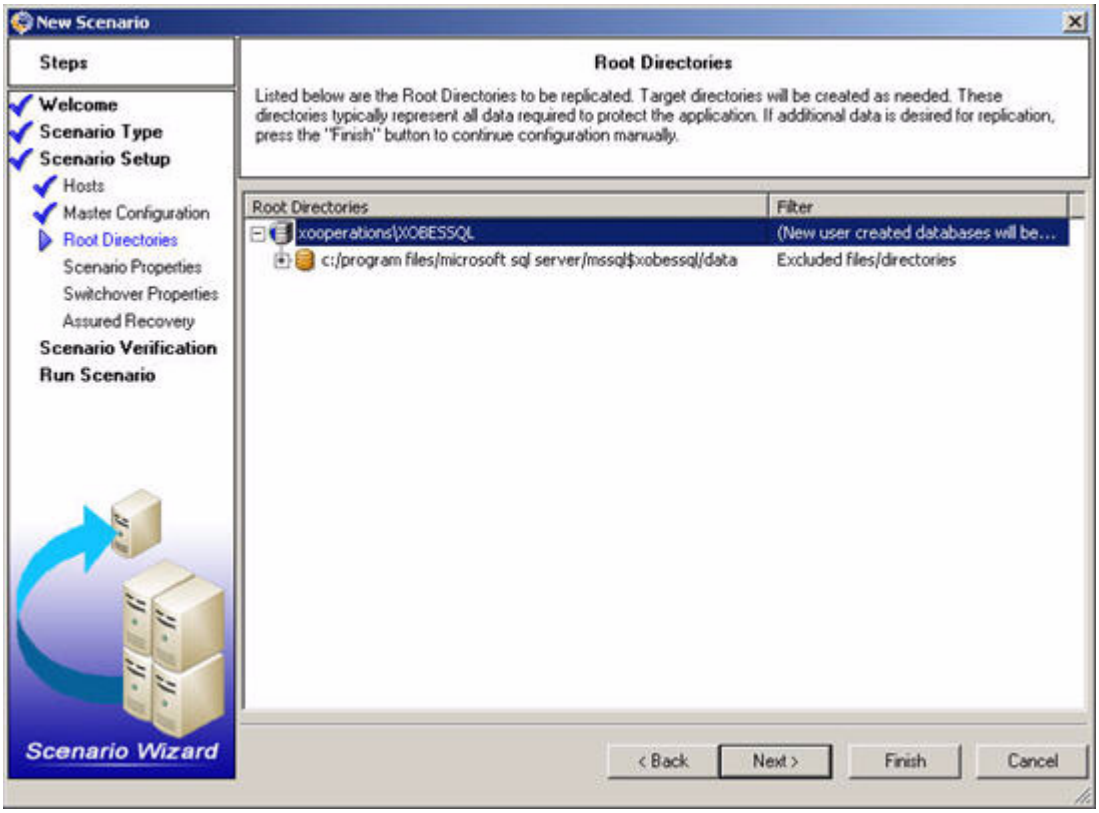


5. At the Master Configuration step, WANSync's auto-discovery automatically detects all instances and databases on the master SQL server. By default, all instances are selected. You can deselect any of the instances or any non-system database within any instance. Ensure that the instance containing the BES configuration database is selected.

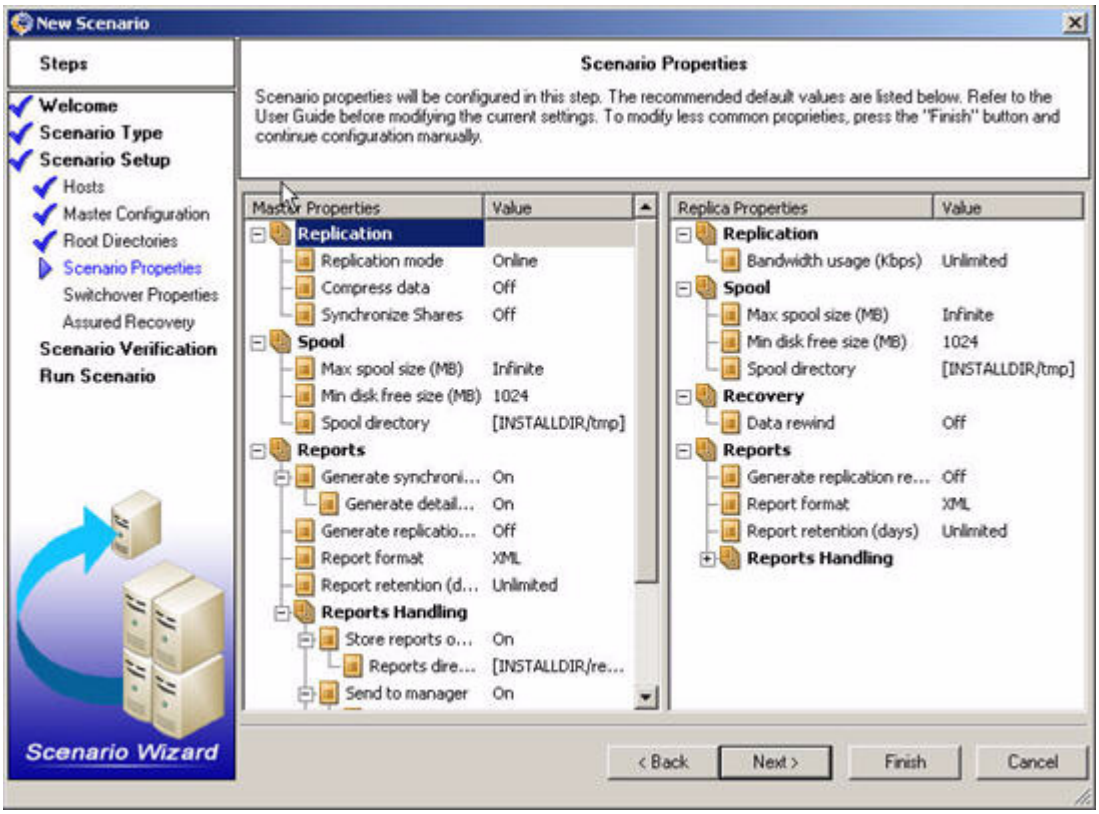
Important! If you are following the directions in *Independent BlackBerry SQL Instance*, please review before clicking Next.



6. The Root Directories step displays the data to be replicated. Click the Next button to continue.

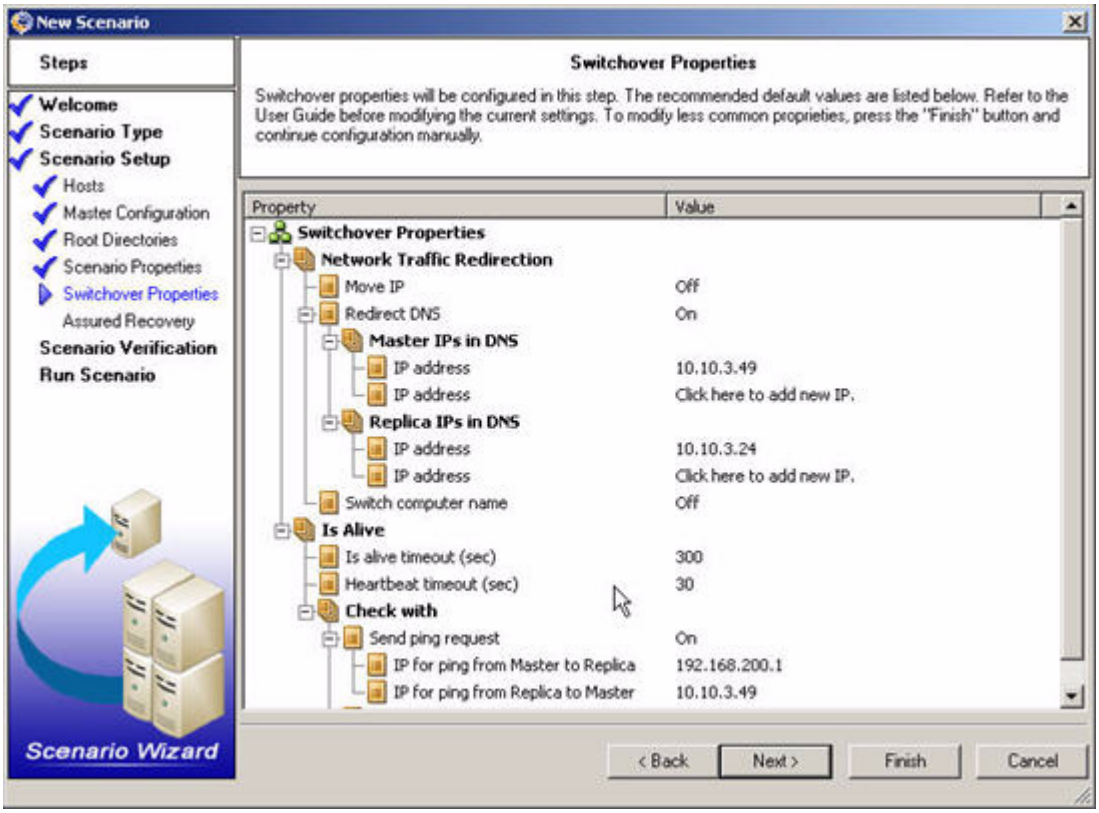


7. The Scenario Properties step allows you to configure additional properties. No changes are required at this step. Click Next when ready.



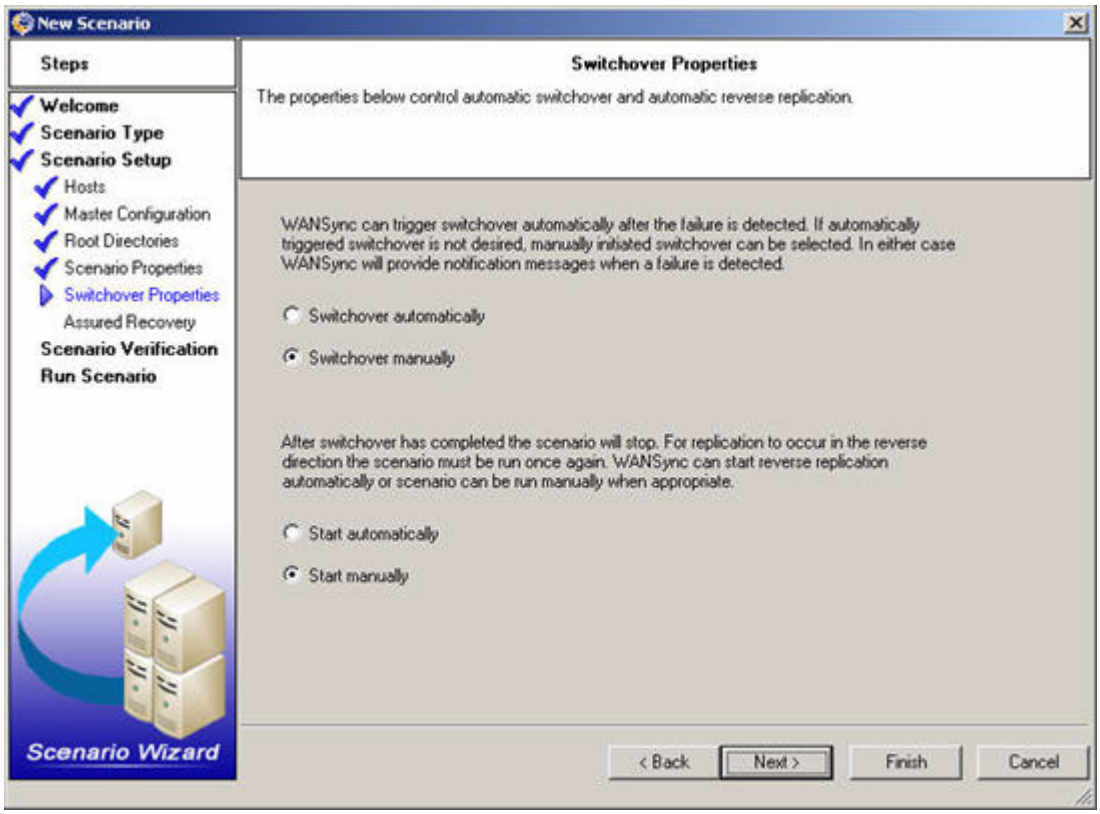
Note: You can modify all the settings in this pane after the scenario is created. However, before changing any Spool properties (which are configured here), please review *Spool Settings* for configuration details.

8. The Switchover Properties step allows you to modify switchover parameters. As with the prior step, no changes are required. Click Next when ready.

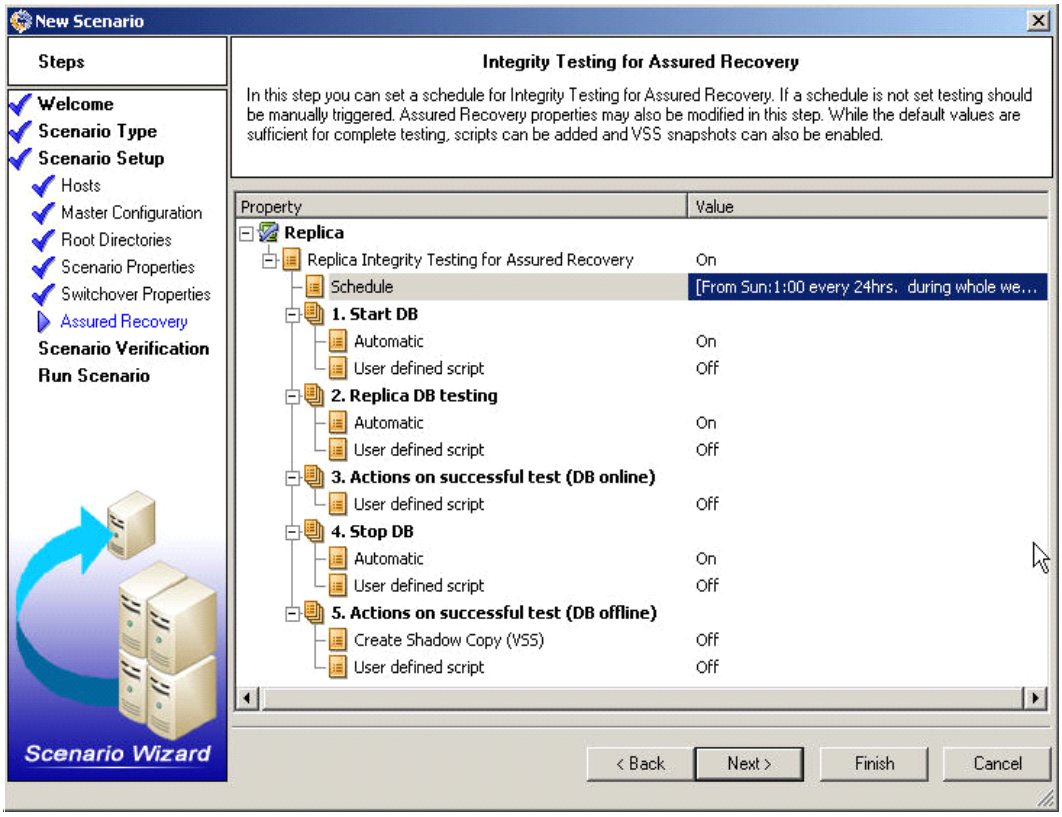


9. The last step in Switchover Properties defines which steps are triggered automatically by WANSyncHA or triggered manually by the Administrator. Select manual for each option and then click the Next button.

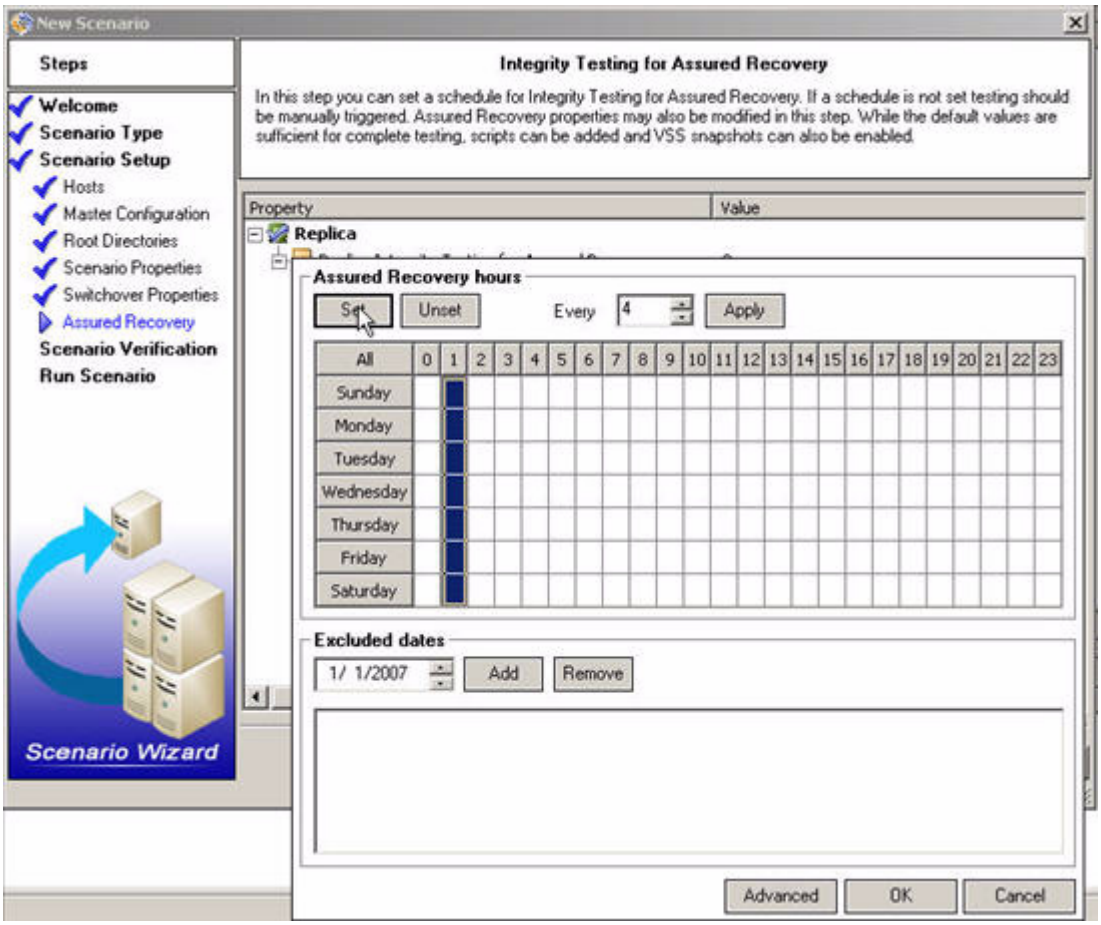
Important! It is not recommended to set these options to automatic when using the BlackBerry solution to avoid any possible SRP key conflicts. See *SRP Connection Errors* for more information.



10. The Assured Recovery step is presented only if you selected this option in the Scenario Type step.

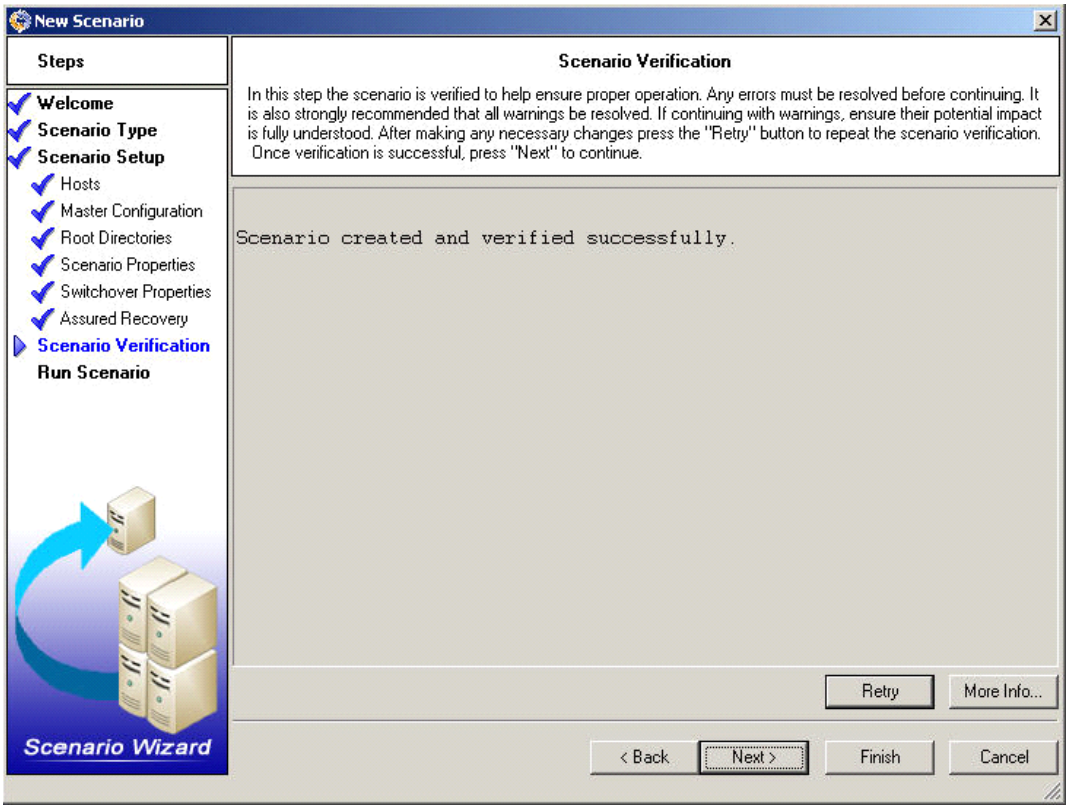


If scheduled testing is desired, double-click on the value for Schedule: the Assured Recovery hours screen opens allowing you to set a schedule for testing.

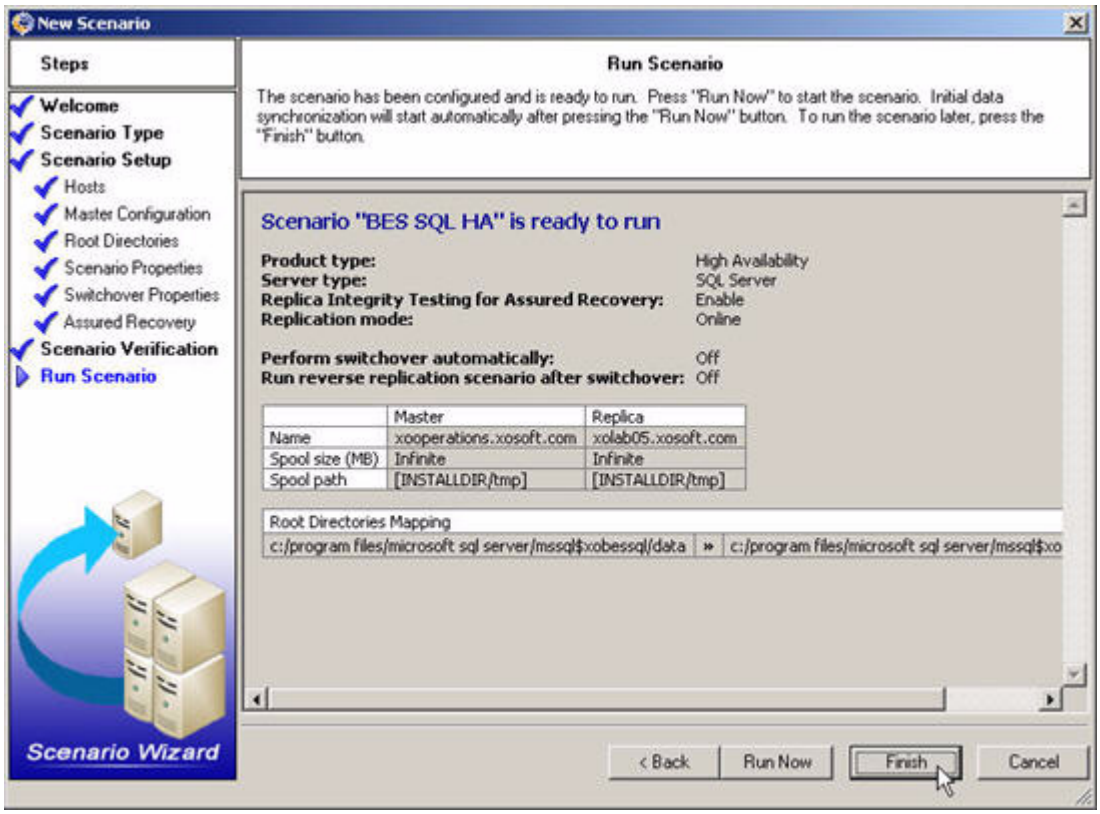


11. Scenario Verification checks many different parameters between the master and replica and servers to ensure a successful switchover. If any errors are reported you cannot continue until they are resolved. To retry verification click the Retry button. After the scenario is verified successfully, click Next to continue.

Important! Although the software allows you to continue with warnings, it is not recommended to do so. Resolve any warning situations before continuing to ensure proper operation of the application.



12. The Run Scenario screen follows. Review configuration information and then choose *Finish* to continue with the BlackBerry HA configuration described in the next section.



Note: Do not click *Run Now*; click Finish. The BES-specific configuration must be completed before running the scenario.

Prepare the BlackBerry HA Server

After completing the initial scenario, you must perform several changes in the SQL HA scenario to support BlackBerry monitoring and switchover. As stated, there is no limit to the number of BES servers that can be protected, as long as they are all connected to the protected SQL server and each has a dedicated BlackBerry replica server that was installed as described in *BlackBerry Server Setup*. Please keep in mind that when a switchover occurs, all BES servers are switched over along with the SQL server. The SQL and BES servers function as a single unit to avoid inconsistencies and split-brain issues.

The BlackBerry High Availability script – bbha.vbs – is provided with the WANSyncHA installation, and resides in the program installation folder. In order to implement BlackBerry HA, you must configure the scenario with the provided script at various locations and with varying arguments.

The bbha.vbs script requires three arguments, two of which can be multivalued:

- **Command** – the action to be performed (monitor, start, stop).
- **Master** – The Master server set in which the master SQL hostname is the first value followed by each master BES server name, separated by a semicolons.
- **Replica** – The Replica server set in which the replica SQL hostname is the first value followed by each replica BES server name, separated by a semicolons.

  Important! The BES server name in this case is NOT the server name shown in the BES Manager but rather the actual name of the server on which BES is running. The names can be the same but it's possible they differ. Use the actual computer name in this case.

As stated, switchover initiated in the SQL scenario also affects all BES servers associated with it. To associate a BES server pair (master/replica BES) they must be included in the script arguments.

For example, if you want to implement a BlackBerry HA solution with two BES servers connected to the SQL server, where:

- Master SQL Server Name – SQLSRV
- Master BES Server 1 Name – BBSRV1
- Master BES Server 2 Name - BBSRV2
- Replica SQL Server Name - SQLREP
- Replica BES Server 1 Name - BBREP1 (BES 'Server Name' identical but host name is different)
- Replica BES Server 2 Name - BBREP2 (BES 'Server Name' identical but host name is different)

Then the master server set is: SQLSRV;BBSRV1;BBSRV2
and the replica server set is: SQLREP;BBREP1;BBREP2

Keep in mind that the arguments are tied to each BES server pair, meaning that if the designated replica server for BBSRV1 is BBREP1, which was installed specifically to replace it (see *BlackBerry Server Setup* for details), they must be placed in similar locations in the script arguments. Also note that the first hostname must be the SQL server hostname.

- The command argument is used to indicate what type of action – start, stop or monitor – the script is performing.
- The Stop command is initiated when the Database is stopped on the active host pending a switchover
- The Start command is initiated after the completion of a successful switchover and is responsible for bringing the BES servers online
- The Monitor command is issued periodically (along with all *is alive* checks) and determines the status of active BES servers

In case of a BES host failure or service failure, the script returns an exit code notifying WANSyncHA of a failure status.

Configure the BlackBerry HA Server

To configure the BlackBerry HA Server:

1. In the right pane, click the Switchover tab.
2. Look under the Hosts category and check that the Master Full Qualified Name is the correct DNS name for the SQL Server to which the BES servers connect.

   Note: If you created an additional record to be used solely for the BES SQL Instance (as described in *Independent BlackBerry SQL Instance*), remember to enter this record instead for proper redirection. For example, BBDB.xosoft.com.
3. Verify that under Network Traffic Redirection > DNS Servers IP, the addresses for all DNS servers are correct.
4. Change the DNS TTL from the default of 60 to 10 to allow faster propagation during switchover for the BES servers.
5. Verify SQL master and replica IP addresses.
6. Set the BlackBerry HA scripts:

   Note: Note that the syntax in all cases is identical except for the /command argument. In order to avoid mistakes in entering the master and replica server sets, we recommend that you type in the syntax correctly once and then Copy/Paste the syntax, changing the /command parameter as necessary. Also note that you must use the actual computer names in the arguments listed here.

   Important! Do not use the BlackBerry Server Name or alternate name as defined in *Independent BlackBerry SQL Instance*; use the actual computer name in these arguments.

- Under Is Alive > Check With > User Defined Scripts > Check Script on Stand-by host Set to On:
  - Under Script Name enter the path for the windows script host command shell (typically, C:\Windows\System32\cscript.exe)
  - Under arguments enter the path to the bbha.vbs script provided with WANSyncHA, enclosed in quotations (typically, "C:\Program Files\XOsoft\WANSync\bbha.vbs") followed by these parameters: /command: **monitor** /master: [Master Set] /replica: [Replica Set]
  - For example, "C:\Program Files\XOsoft\WANSync\bbha.vbs" /command:monitor /master:SQLSRV;BBSRV1;BBSRV2 /replica:SQLREP;BBREP1;BBREP2
- Under DB Management > User Defined Scripts > Stop DB script Set to On:
  - Under Script Name enter the path for the windows script host command shell (typically, C:\Windows\System32\cscript.exe)
  - Under arguments enter the path to the bbha.vbs script provided with WANSyncHA, enclosed in quotations (typically, "C:\Program Files\XOsoft\WANSync\bbha.vbs") followed by these parameters: /command: **stop** /master: [Master Set] /replica: [Replica Set]

  - For example: "C:\Program Files\XOsoft\WANSync\bbha.vbs" /command:stop /master:SQLSRV;BBSRV1;BBSRV2 /replica:SQLREP;BBREP1;BBREP2

- Under Action on Success > User Defined Script Set to On:
  - Under Script Name enter the path for the windows script host command shell (typically, C:\Windows\System32\cscript.exe)
  - Under arguments enter the path to the bbha.vbs script provided with WANSyncHA, enclosed in quotations. (typically, "C:\Program Files\XOsoft\WANSync\bbha.vbs") followed by these parameters: /command: **start** /master: [Master Set] /replica: [Replica Set]
  - For example: "C:\Program Files\XOsoft\WANSync\bbha.vbs" /command:start /master:SQLSRV;BBSRV1;BBSRV2 /replica:SQLREP;BBREP1;BBREP2

7. The final result should look similar to this screen:

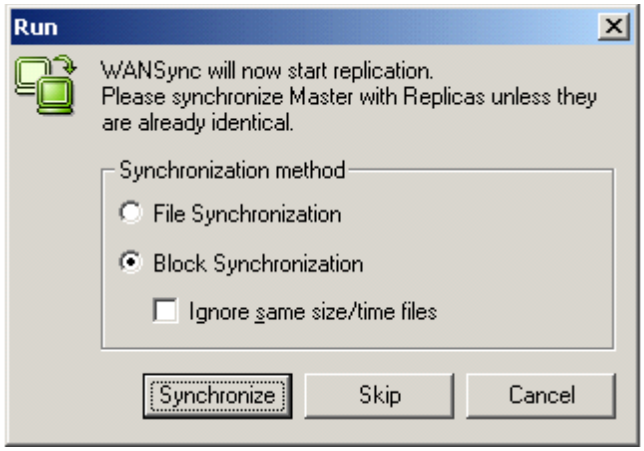
Run the Scenario

You are ready to run the high availability scenario. When the scenario starts, WANSyncHA synchronizes the data on the two servers. To start the scenario, select the Run button from the WANSync Manager's menu or tool bar.

Before initiating synchronization and replication, WANSync verifies your scenario configuration. When verification is complete, WANSync Manager displays this message: *Are you sure you want to run scenario "SQL Server Scenario?".* The top pane displays warning and error messages resulting from verification, if any exist.

Note: If any errors are displayed, you cannot run the scenario. Read all errors and warnings, then review the operations guide to see if you might have missed a critical step. If you do not manage resolving the errors or warnings yourself or by reviewing the operations guide, please contact technical support for further assistance.

Click OK to run the scenario. The following screen is displayed:



Leave the default values in the dialog box: the Block synchronization type with the Ignore same size/time files option unchecked. Click the Synchronize button.

Note: Block synchronization is best suited for database replication and most replication scenarios. If you wish to learn more about the other synchronization methods please refer to the *WANSync User Guide.*

Synchronization may take a while, depending on database size and network bandwidth between Master and replica. You will receive the following message in the event windows when the synchronization is complete: *All modifications during synchronization are replicated.*

At this point, real-time replication is operational and the high availability solution is installed and active.

Once the scenario is started, the bbha.vbs script monitors all BES services and will notify if any failures occur. The notification will look like this: *Script C:/Windows/System32/cscript.exe executed; return code is 1.*

To view script operation (and to confirm proper arguments) you can view the bbha log located in the scripts directory.

Note: If you see the warning below or any other warning regarding the script, but the BlackBerry is functioning properly, it indicates that the script parameters, script configuration locations, network connectivity or administrative rights between the BES and SQL servers is incorrect or that the BES services on the master are not currently functioning properly. Stop the scenario and check the arguments and script path. If you are still not successful contact WANSync support to review the bbha.log file and troubleshoot the issue. If BES is showing as down and indicates SRP Connection errors please review *SRP Connection Errors*.

Script C:/Windows/System32/cscript.exe executed; return code is 1.

Chapter 4: Switching Over and Switching Back

This chapter describes the WANSyncHA switchover and switchback processes. You can initiate switchover and switchback once the scenario is up and running.

During a graceful switchover/switchback, when both servers are connected, WANSyncHA ensures that SRP key conflicts do not occur. However, if you switchover when the master is unavailable, the master BES services may continue running. In most cases they are stopped because they are set for manual start up mode. Before bringing the master server back on the network, double-check to ensure all BES services are stopped to prevent SRP key conflicts. BES services can run on only one BES server (master or replica) at a time for a SRP key conflict will occur. For more information, see *SRP Connection Errors*.

Switchover

To perform a switchover:

1. Open WANSync Manager and select the SQL scenario.
2. Select *Perform Switchover* from the toolbar, or select it from the menu.
3. Click OK on the *Perform Switchover* confirmation.

This initiates a switchover from the master SQL server to the replica SQL server. During the switchover, BES servers are sent stop and start controls to facilitate BES switchover alongside SQL. Detailed information about switchover processes are located in the event pane during the switchover.

Manual Switchback

To perform a manual switchback:

1. From WANSync Manager, select the SQL scenario.

2. Click Run to start the scenario; WANSync detects that a switchover has occurred and prompts you that it will start a Backward scenario.
3. Once Re-synchronization is complete, select *Perform Switchover* from the toolbar, or select it from the menu.
4. Click OK on the *Perform Switchover* confirmation.

After switchback is completed, you can run the scenario again in its original (forward) state.

Appendix A: Independent BlackBerry SQL Instance

WANSyncHA supports the independent transfer of a single instance (on a multi-instance or multi-function SQL server) to a replica server. This section is directed to administrators using a shared SQL server to host the BES configuration data, and wish to protect only the BES portion via WANSyncHA.

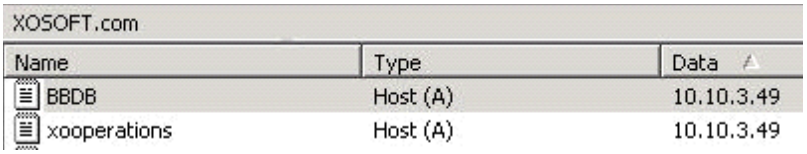
Implement the Solution

In order to implement this solution, several small additions to this HA solution are required.

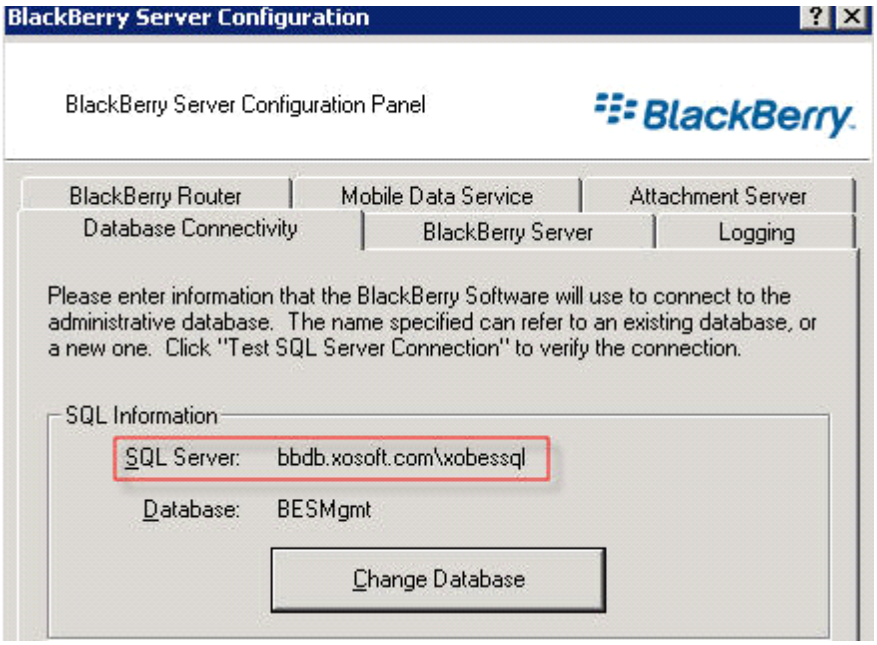
Please keep the following steps in mind as you follow this guide:

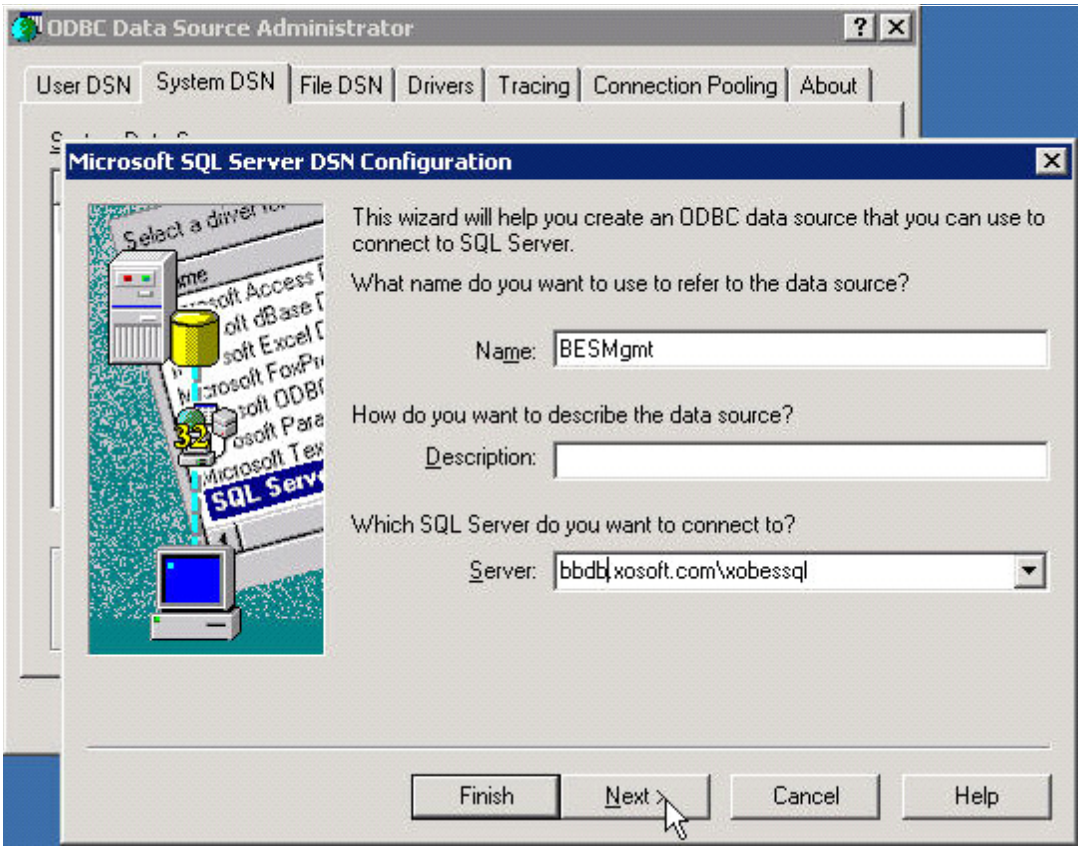
1. The SQL servers and additional instances should comply with the all the specifications described in the *The BlackBerry HA Solution*.

2. An additional DNS Host (A) Record for the master SQL server is required. This DNS record is used for all BES HA purposes related to the SQL database. It should have a unique name and must be a host (A) record type; CNAME alias records are NOT supported. For example, in this case xooperations.xosoft.com is the real name of the SQL server and BBDB.xosoft.com is the new dedicated BES SQL record.

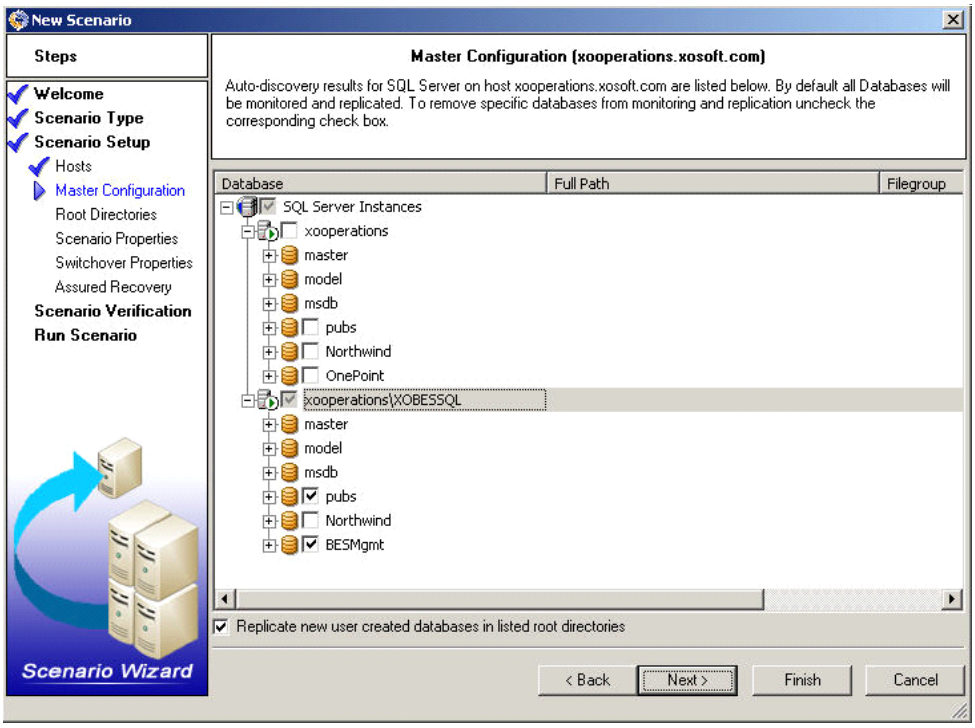


3. In *BlackBerry Server Setup*, ensure you use the additional record (*BBDB.domain.com*) and not the hostname (*sqlserver.domain.com*) for all SQL configuration settings in BES and ODBC. For example, instead of xooperations.*xosoft.com.com\instancename* use *BBDB.xosoft.com\instancename.*

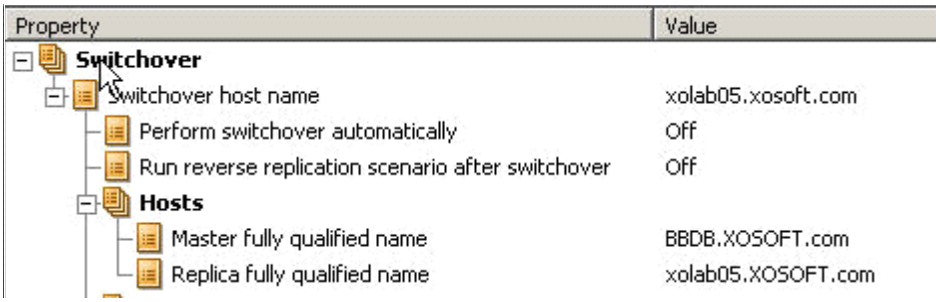



ODBC Data Source Administrator
User DSN
System DSN
File DSN
Drivers
Tracing
Connection Pooling
About
Microsoft SQL Server DSN Configuration
This wizard will help you create an ODBC data source that you can use to connect to SQL Server.
What name do you want to use to refer to the data source?
Name:
BESMgmt
How do you want to describe the data source?
Description:
Which SQL Server do you want to connect to?
Server:
bbdb.xosoft.com\xobessql
Finish
Next >
Cancel
Help

4. When configuring the scenario, make sure that you only select the desired instance which contains the BES Configuration database.



5. In the Switchover tab configuration section, enter the additional DNS Record as the Master Fully Qualified Name - This is the record that is redirected during switchover. For example, in this case it's BBDB.xosoft.com rather than the real SQL server name of xooperations.xosoft.com.



Performing these steps ensure that only the independent instance is switched over while other instances remain working on the master server.

Appendix B: WANSync Tips

This chapter provides you with helpful information concerning the application.

Spool Settings

The WANSync spool is a folder on disk where data to be replicated is backed up (i.e., spooled) if bandwidth is not sufficient to transfer the amount of changes in real-time. Data can spool due to temporary network disconnections, network congestion, or simply because the network bandwidth is not sufficient to transfer the amount of data changing over on the server.

In addition to storing changes waiting on available bandwidth, spool space is also used as part of the normal synchronization process. Thus, some spool build up during synchronization is normal.

Place the WANSync spool folder on a drive with relatively low use such as a dedicated volume or boot/system volume. Do not place the spool folder on a volume containing frequently accessed system (OS), user, or application data. Examples include volumes containing databases, shared files, or the system pagefile. By default, the spool folder is located in the tmp folder under the WANSync installation directory. The spool parameters, located in the properties tab (on both master and replica) or set with the New Scenario Wizard, determines how much disk space is available for the spool. In most cases the default values are sufficient. However, if you choose to change this value, it should be at least 10% of the total dataset size. For example, if you are replicating 50GB of data on a server you should ensure that at least 5GB of space is available for spool. Please note that this space is not pre-allocated.

Important! If you change the spool location, please remember to remove the new path from file level antivirus scans: both scheduled and real time.

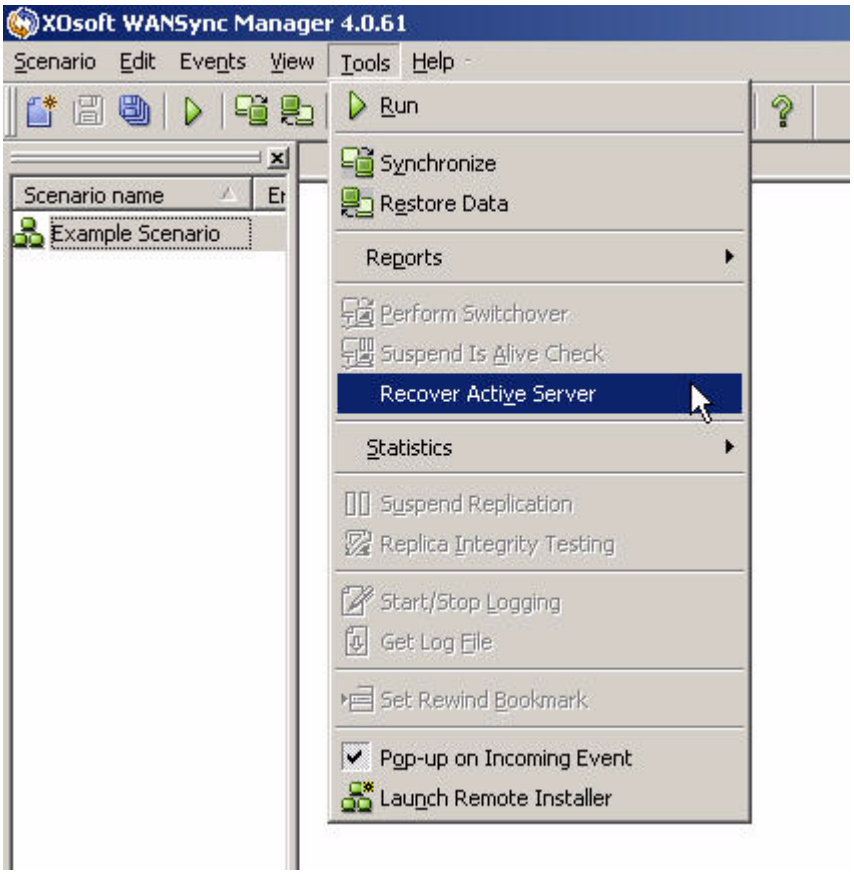
Recover Active Server

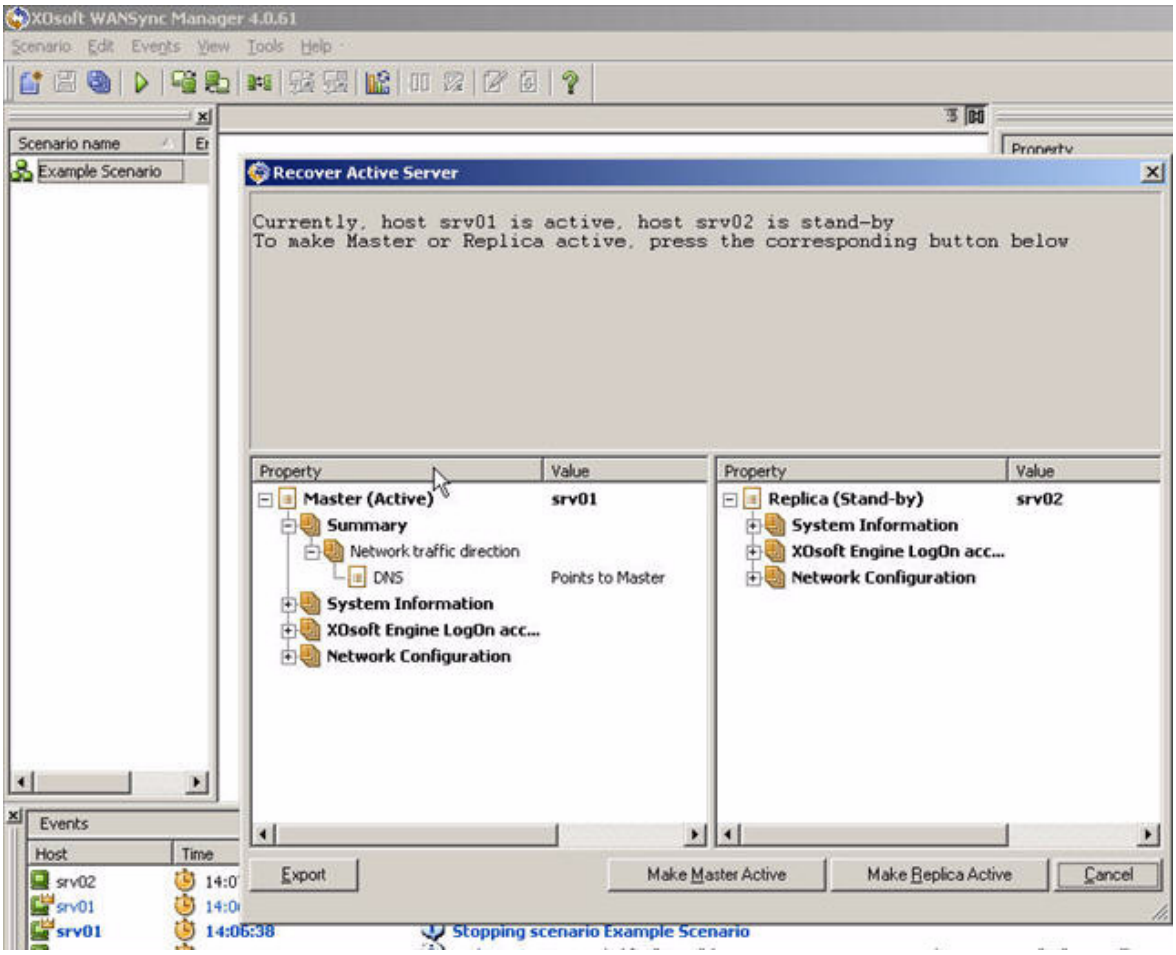
Important! When using the Recover Active Server feature, the BES services are not started automatically. After Recover Active Server finishes, the BES services are stopped on both master and replica BES server pairs, you must manually start the BES services on the appropriate server.

In certain circumstances, it may be necessary to forcibly make the master or replica server the active server without completing the data synchronization process. For example, if switchover occurred but no data was changed on the replica server. In this case you may even have newer data on the master server making it undesirable to synchronize data from the replica to the master server. WANSync allows for this option through a process called Recover Active Server. To use this option, ensure that the scenario is stopped, and select *Recover Active Server* from the Tools menu.

Note: While this option is the right choice in many situations, use it with caution. If used improperly data loss can occur. Normally WANSync will not allow switchover from one host to another until all data is synchronized. It is designed this way so users are not redirected to an out of date data set that then overwrites what may be a more current data set. When using Recover Active Server WANSync is forcing users to one server or the other with no regard as to which server has the correct data set. Thus, as an administrator, you must manually ensure that the server you are making active has the most up to date data set.

Important! Recover Active Server is not available if you are using the Switch Computer Name redirection method.





Select either *Make Master Active* or *Make Replica Active* depending onto which server you want to force into the active role.

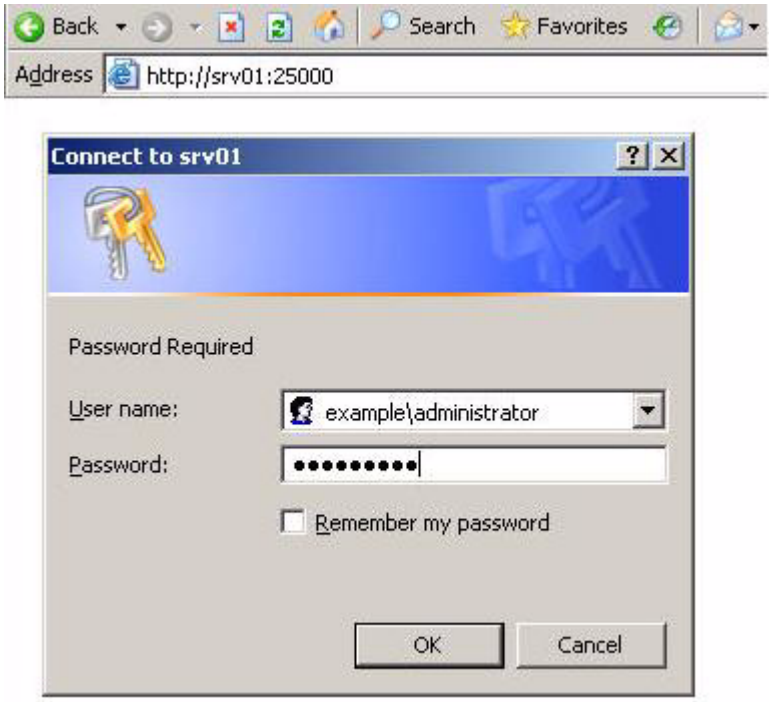
Important! If a legitimate switchover in a disaster situation occurs and users are redirected to the replica server for any period of time, it is important to replicate all changes on the replica back to the master before making the master server active. Using *Recover Active Server* in such a situation results in loss of data.

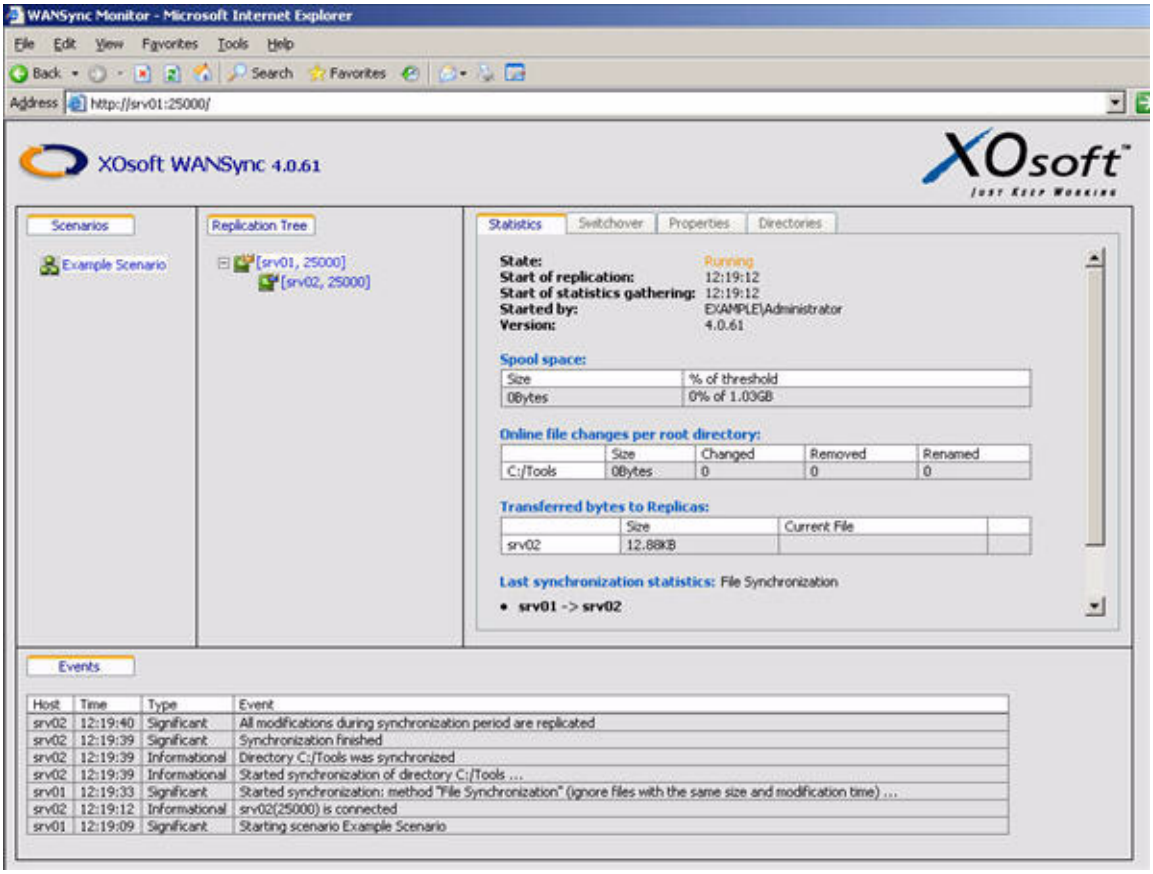
Read Only Web GUI

The primary WANSync Manager may only be used by one Administrator at a time. Opening the GUI locks it for the current user making simultaneous use impossible. This is required to prevent conflicts. To allow simultaneous monitoring by any number of administrators WANSync also offers a read only Web GUI.

To access the web GUI:

1. Open your browser to http://masterservername:25000.
2. Enter a user account and password with administrative permissions on the master server.





Important! There is no need to refresh the browser; the GUI refreshes automatically. You can monitor all parameters, statistics, and events from this window.

SRP Connection Errors

AN SRP connection error occurs if at any point both the master and replica BES servers are connected to RIM's server with services running. In this case, RIM generates an SRP key conflict and disables your SRP Key.

When a conflict occurs, despite proper connectivity, the Windows event log reports repeated SRP connection errors. Contact RIM technical support to resolve this conflict. Let them know you were in the process of moving BES servers and accidentally brought both online simultaneously; ask them to re-enable your SRP key. There is no need to mention WANSyncHA since it is out of the scope of a RIM support call. The conflict is on RIM's side and not something you can fix directly.

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