Quest® SharePlex™ 8.6 (8.6.6)

Preinstallation Checklist

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SharePlex preinstallation checklist

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Overview

Review and satisfy all of the requirements in this checklist before installing SharePlex or before your SharePlex consultant arrives, if you have contracted with our Professional Services team.

NOTE: The requirements in this checklist apply to all source and target systems where SharePlex will be installed unless otherwise noted.

Network checklist

Requirement	Completed? (Y/N)
Add SharePlex users and groups to the nameserver. If you are installing SharePlex in a network managed by a nameserver such as NIS or NISPLUS, do the following before you install SharePlex: • Add SharePlex users to the nameserver. • Add the SharePlex groups to the nameserver.	

Requirement	Completed? (Y/N)
The SharePlex security groups **spadmin** (administrator), **spopr** (operator), and **spview** (viewer) control access to SharePlex processes. Add each SharePlex user to one of these groups on the nameserver. The groups are described in Assign SharePlex users to security groups To add the user groups: 1. For NIS add the groups to the **group.byname** and **group.bygid** maps. For NISPLUS, add them to the **group.org_dir** table. 2. Add the SharePlex Administrator user to the **spadmin** group on the nameserver. 3. Create the **spadmin** group in the **/etc/group file** (on Unix and Linux) or the **User Accounts** control panel (Windows), and then add the SharePlex Administrator user to the group. To add SharePlex groups to the local system after you install SharePlex see Assign SharePlex users to security groups	

Ensure that SharePlex can resolve host names.
 	
If you find that SharePlex cannot connect to a host, try mapping the host name to an alphanumeric alias in the following locations:
 	
• Network: The NIS and DNS servers
 	
• Unix and Linux: Local **/etc/hosts** file
 	
• Windows: Local **hosts** file
 	
In these files, put each entry on an individual line. The following is an example, where **sysA** and **sysB** are aliases:
 	
`111.22.33.44    sysA.company.com    sysA    # source system`
`55.66.77.88     sysB.company.com    sysB    # target system`	

Verify the SharePlex port number. By default SharePlex uses the port number 2100 (hex equivalent is 834) for both TCP/IP and UDP. If port 2100 is available to SharePlex, no further action is needed. You will need to enter the SharePlex port number during the installation procedure, at which time you can specify a different port number if needed. **NOTE:** In Oracle 9.2.x, port 2100 is used by an Oracle XML daemon, so it cannot be used by SharePlex. **IMPORTANT!** The SharePlex port number must be the same one on all machines in the replication configuration so that they can communicate through TCP/IP connections. Make certain the SharePlex port number is open for both TCP/IP and UDP on the firewall.	
Verify TCP/IP settings SharePlex replicates over any TCP/IP network connection. Typically, if all of the tables in a database are being replicated, SharePlex replicates about 33 percent of the redo log volume, the remainder being mostly maintenance data used by the Oracle software. The following is a formula for determining bandwidth.	

Requirement	Completed? (Y/N)
(*size of a redo log*) x (*number of log switches in 1 hour*) x 1/3 = *volume of data per hour* For example, if the redo logs are 20 MB in size, and they switch six times an hour, SharePlex will replicate approximately 40 MB each hour: 20 x 6 x 1/3 = 40 MB/hour	

Installer Checklist

Requirement	Completed? (Y/N)
Assign a directory to store the downloaded SharePlex installation package. This directory requires approximately the following disk space: • Unix and Linux: 200 MB • Windows: 60 MB plus 400 MB of temporary disk space It can be removed after SharePlex is installed.	
Plan the SharePlex product directory. You can create a directory for the SharePlex software files or let the SharePlex installer create it. This directory requires approximately the following disk space: • Unix and Linux: 120 MB • Windows: 600 MB plus 20 MB for the MKS Toolkit® Install this directory on the following: • Unix and Linux: a separate filesystem from the one that contains the source Oracle instance or (if a target) the target database. • Windows: a separate internal hard drive or partition from the one that contains the Oracle instance or (if a target) the target database. Do not install SharePlex on a raw device.	
Plan the SharePlex variable-data (working) directory. This directory is installed by the SharePlex installer with a name of your choosing. It contains the working data and varies greatly in size in correlation to the size of the redo data being generated. Install this directory on a separate filesystem from the one that contains the Oracle instance (or the target database, if this is a target) but not on a raw device. To estimate the required disk space: 1. Estimate the longest time that a replication outage can be tolerated.	

Requirement	Completed? (Y/N)
2. Use the following formula to estimate the amount of data SharePlex would replicate during that amount of time. [*size of a redo log*] x [*number of log switches per hour*] x .333 x [*number of hours downtime*] = required disk space For example: [500 MB redo log] x [5 switches per hour] x [.333] x [8 hours] = 6.5 GB disk space To replicate data from more than one database or Oracle instance on a system, use a variable-data directory for each one. Ideally they should be on different filesystems. Do not install the variable-data directory within the SharePlex product directory. Both directories contain identically named files, and SharePlex utilities that clean up the environment (if this becomes necessary) could remove the wrong files. You can install both directories under one parent directory if desired. **NOTE**: Always monitor disk usage when there is an active SharePlex configuration, especially when there are unexpected peaks in user activity.	
Install on the correct node in a cluster (including Oracle RAC) Most shared storage solutions can be used to house SharePlex. Such file systems include, but are not limited to: • Oracle Cluster File System (OCFS2) • Oracle Automatic Storage Management (ASM) Cluster File System (ACFS) • Oracle DataBase File System (DBFS) • OCFS2 **NOTE**: This file system must be mounted **nointr**. Both SharePlex and Oracle report interrupt errors if **nointr** is not specified. • Most general purpose cluster file systems In a cluster, the SharePlex working files must be available to all nodes in a cluster to support seamless failover, as follows: **Unix and Linux**: The SharePlex product and variable-data directories must be installed on a shared, non-raw disk, separate from any database files, that can be mounted on any cluster node. **Windows**: **Product directory:** On Windows, SharePlex must be installed on **all nodes** of a cluster, on the same port number, with identical path names. This is required to make the binaries and the required MKS Toolkit components available to all nodes, and to establish Registry entries. Quest recommends providing SharePlex with an internal hard drive or partition that is dedicated and separate from the database. **Variable-data directory:** The SharePlex variable-data directory must be installed on a shared disk that can be mounted on any Windows cluster node. The installer installs a variable-data directory on each node, but you will configure SharePlex to use the one on the	

Requirement	Completed? (Y/N)
shared disk during the post-installation procedure. See Configure SharePlex in an Oracle cluster for additional SharePlex requirements in a cluster. Many of those steps must be performed before you install SharePlex, while others are performed after installation.	
Create the SharePlex security groups. SharePlex provides three security groups to enable access control through **sp_ctrl**. On Unix and Linux, unless you install SharePlex as a root user, the SharePlex Administrator user and the SharePlex **admin** group must exist prior to installation. See Assign SharePlex users to security groups. **NOTE:** If you install as root, you are prompted by the installer to create these groups.	
Choose a DBA-privileged operating system group to own SharePlex. The SharePlex Administrator user must be in the Oracle **dba** group. For Oracle RAC and ASM 11*g*R2 and above, the user must also be in the Oracle Inventory group. For example: **$ useradd –g spadmin –G dba,oinstall**. The membership in Oracle Inventory group must be listed explicitly in the **etc/group** file.	
Get a valid SharePlex license key. You must have a valid permanent or trial license key from Quest to run SharePlex. The installer prompts for the license key and the text string in the Site Message that Quest Software provides with the license. The current license model for SharePlex is to license for a specific host, which depending on edition is licensed by core(s) or socket(s) and specific message repository (i.e. database, JMS/text files) etc. Specifics of license terms should be obtained from your account manager.	

Unix and Linux system checklist

Requirement	Completed? (Y/N)
Confirm that the platform is supported. See the SharePlex Release Notes for supported operating system platforms.	
Allocate at least 4 GB of memory for SharePlex processes. Plan for per-process memory up to 256 MB. This recommendation enables the Post and Read processes to allocate larger sets of memory when necessary.	
Disable the disk cache option. (Source system) Place the redo logs, archive logs, and SharePlex files on a file system that does not have a cache option. Disk caching may interfere with the capture process.	

Requirement	Completed? (Y/N)
For more information, see the SharePlex Knowledge Base article 30895.	

Set the number of semaphores per process.
Semaphores help ensure the stability of the SharePlex processes. The required SharePlex settings depend on the platform, as follows:
HP-UX:
 	
  • semmnu: 255
  • shmmax: 60 MB
 	
Oracle Solaris:
 	
  • semmni: 70
  • semmns: 255
  • semmnu: 255
  • semmsl: 128
  • semume: 255
  • shmmax: 60 MB
  • shmmni: 100
 	
Red Hat Linux:
 	
  • semmni*: 70
  • semmns*: 255
  • semmnu: 255
  • semmsl: 128
  • semopm: 64
  • semume: 255
  • shmmax: 60 MB
  • shmmin: 1MB
  • shmmni: 100
  • shmseg: 26
    *These are additive. Add the Oracle minimum values to the SharePlex minimum values to determine the correct setting.
 	
An alternative is to set the value to the number of queues you will be using plus 2. For more information about SharePlex queues, see the SharePlex Administrator Guide.	

Set the ulimit (number of system file descriptors) to as close to 1024 as possible. The ulimit can be set either as a system *hard limit* or a session-based *soft limit*, as follows:	

Requirement	Completed? (Y/N)
• Set a hard limit: (Recommended) A root user and system restart are required to change the hard limit, but the value remains fixed at the correct level to support SharePlex. Consult your System Administrator for assistance. • Set a soft limit: A soft limit setting stays in effect only for the duration of the **sp_cop** session for which it was set, and then it reverts back to a default value that may be lower than the hard limit and too low for SharePlex.	
Set core file parameters. • Set the system core dump block size as large as system resources can accommodate, at minimum 1.5 million blocks. The default is usually 0. Core files help Quest support representatives resolve SharePlex support cases. Higher size settings ensure that enough data is captured to be useful. • Set the core file output location to the **dump** sub-directory of the SharePlex variable-data directory. • Set the naming convention of core files to either **core** or **core.***pid*. **NOTE:** SharePlex renames all core files named **core** to **core.***pid*, except for those generated by **sp_cop**. If these requirements are not met, the SharePlex event log might report that a core file was not generated, even though a file exists.	
Install the ksh shell. Install the **ksh** shell before you install SharePlex. The SharePlex monitoring scripts and other features required this shell. A version of **ksh** called **pdksh** is included with the Red Hat Linux builds. Refer to the Red Hat Linux documentation for more information.	
Install Native POSIX Threading Library (NPTL) Quest recommends using the Native POSIX Threading Library (NPTL) on Linux. NPTL is faster and behaves more like other Unix operating systems than LinuxThreads. Although LinuxThreads can be enabled per process by using the LD_ASSUME_KERNEL environment variable, setting that variable adversely affects the performance of SharePlex. If LD_ASSUME_KERNEL is employed, use a setting of 2.4.21.	
Set the UNIX account that installs SharePlex to -rwsr-s--x using set-user-id. The value of **-rwsr-s--x** enables the database setup utility (**ora_setup**) to connect to an Oracle database through SQL*Plus to install the SharePlex database account and objects that supports replication. The UNIX account that installs SharePlex owns this program. The program is located in the **bin** subdirectory of the SharePlex installation directory.	
(Debian Linux) **Create a symbolic link to the /lib64/libc.so.6 library path.** On Debian Linux, the **/libc.so.6** library files are not in the **/lib64/libc.so.6** location that	

Requirement	Completed? (Y/N)
SharePlex expects. Before installing SharePlex on Debian Linux, create a symbolic link to **/lib64/libc.so.6**.	
(Oracle Database) Configure the oratab file. Make sure that the correct ORACLE_SID and ORACLE_HOME values are explicitly listed in the **oratab** file. SharePlex refers to this file to set its environment. On Sun machines, SharePlex only uses the **oratab** file that is in the **/var/opt/oracle** directory. If there is a copy of the **oratab** file in the **/etc** directory ensure that this file is identical to the one in the **/var/opt/oracle** directory.	

Windows system checklist

Requirement	Completed? (Y/N)
Confirm that the Windows version is supported. See the SharePlex Release Notes for supported Windows versions.	
Address FAT security issues. The SharePlex user groups determine who can control the SharePlex processes. These groups only function as designed on an NTFS partition. A FAT partition lacks file security, and any user who logs onto a FAT partition has full control of SharePlex. If SharePlex must be installed on a FAT partition, allow the SharePlex **admin** group to log in locally, and allow the **spopr** and **spview** groups to log in remotely *only*. Remote logins to a FAT partition preserve group assignments. For more information about SharePlex security groups, see Assign SharePlex users to security groups.	
Be prepared to restart the system. On the Windows platform, SharePlex installs the MKS Toolkit® operating environment from Parametric Technology Corporation (PTC). The default folder for the MKS Toolkit® is **C:\Program Files\MKS Toolkit**. Set system permissions so that the MKS Toolkit files cannot be moved or removed after they are installed. For more information about the MKS Toolkit, see Appendix C: SharePlex installed items in the SharePlex Installation Guide. If this is a first-time MKS Toolkit installation, you will be prompted to restart the system. Some restarts are required after installation.	
Adjust the page size. SharePlex needs an additional 200 MB of page file size if more than 80 percent of the current total page file size is being used. Greater page size enables SharePlex to process large transactions more quickly.	

Requirement	Completed? (Y/N)
Assign a user who will own the SharePlex directories. Assign a member of the Windows Administrator group to own the SharePlex installation and variable-data directories. This user must exist before you run the SharePlex installer and must have system privileges to read the Oracle redo logs.	
(Oracle Database) Verify the Oracle Registry entries. (Test machines only) On machines where Oracle has been installed and uninstalled many times, the Oracle entries in the Registry may be corrupted. Before you install SharePlex on a test machine, uninstall all Oracle software and delete all Oracle Registry entries. Then, re-install Oracle by using the Oracle installation program, which creates Registry entries correctly. SharePlex relies on these entries to obtain database environment information.	
(Oracle Database) Set ORACLE_HOME as the first entry in the PATH variable. SharePlex expects the path to the Oracle binaries to be the first entry in the Windows PATH system variable. Change the variable, if needed, and verify that the path is correct.	

Oracle Database Checklist

Requirement	Completed? (Y/N)
Perform any required database upgrades. Perform any required database upgrades before you install SharePlex. This ensures that SharePlex gets the most current object definitions when you run Database setup during the installation and setup steps.	
Confirm the Oracle release version and processor type. **(Oracle source and target databases)** - Verify that the Oracle release version is supported by SharePlex. See the System Requirements in the SharePlex Release Notes for more information. - Confirm that the database is a 64-bit version. SharePlex does not support 32-bit Oracle versions.	
Enable supplemental logging. (**Oracle source databases**) SharePlex requires the minimum level of supplemental logging to be enabled. If you are installing SharePlex in a cluster, enable the logging on all nodes. Some SharePlex features require the logging of primary key values. For more information about configuring Oracle logging, see Set up Oracle redo logging to support SharePlex in the SharePlex Administration Guide.	

Requirement	Completed? (Y/N)
(Recommended) Enable the logging of primary and unique keys. (**Oracle source databases**) To eliminate the need for SharePlex to query the database for key values, it is recommended that you enable supplemental logging of primary and unique keys. Making a query to obtain key values adds overhead that reduces the performance of the Read process. See the following topics in the SharePlex Administration Guide for additional information: • Set up Oracle database objects for replication • Set up Oracle redo logging to support SharePlex	
Set privileges to capture TDE-protected data. (**Oracle source databases**) To decrypt TDE-protected data from the redo log, the SharePlex Administrator must open the Oracle Wallet with the wallet password. By default, only the Oracle Wallet owner-user has read and write permissions for this file. To enable SharePlex to open the wallet, you can either of the following: Grant read permission to the wallet file to the **dba** group, because the SharePlex Administrator user is a member of that group. Or... Have the owner of the wallet start SharePlex. For more information about configuring SharePlex to support TDE, see Set up TDE Support in the SharePlex Administration Guide.	
Check the redo log location on ASM (**Oracle source databases**) If the database uses ASM, the Oracle redo logs (online and archive) cannot be located under the ASM root directory.	
Plan the SharePlex Oracle account. (**Oracle source and target databases**) During SharePlex installation, you will run a database setup utility named **ora_setup** to create a database account (user and schema) for SharePlex. The following is a list of privileges required for the database user who runs the this utility: *Non-multitenant (standard) database* The user who runs the setup utility must have DBA privileges, but if support for TDE is required, then this user must have SYSDBA privileges. *Multitenant database* The user who runs the setup utility should have SYSDBA privileges (recommended), but at minimum the user should be a DBA user with privileges for **sys.users$** and **sys.enc$**. The minimum following grants are required for the SharePlex user:	

Requirement	Completed? (Y/N)

`create user c##sp_admin identified by sp_admin;`
 	
`grant dba to c##sp_admin container=ALL;`
 	
`grant select on sys.user$ to c##sp_admin with grant option container=ALL;`
 	
If TDE support is required for the CDB, then the following *additional* priviledge is required:
 	
`grant select on sys.enc$ to c##sp_admin with grant option container=ALL;`	

Plan the SharePlex objects tablespace. (**Oracle source and target databases**) The setup utility installs some tables into a tablespace of your choosing. All but the SHAREPLEX_LOBMAP table use the default storage settings of the tablespace. The SHAREPLEX_LOBMAP table contains entries for LOBs stored out-of-row. It is created with a 1 MB INITIAL extent, 1 MB NEXT extent, and PCTINCREASE of 10. The MAXEXTENTS is 120, allowing the table to grow to 120 MB. The default storage usually is sufficient for SHAREPLEX_LOBMAP, permitting more than 4 million LOB entries. If the Oracle tables to be replicated have numerous LOB columns that are inserted or updated frequently, consider increasing the size the SharePlex tablespace accordingly. Take into account that this table shares the tablespace with other SharePlex tables. If the database uses the cost-based optimizer (CBO) and the tables that SharePlex processes include numerous LOBs, incorporate the SHAREPLEX_LOBMAP table into the analysis schedule. **NOTE:** A new installation of SharePlex does not change storage parameters from a previous installation.	
Plan the SharePlex temporary tablespace. (**Oracle source and target databases**) The setup utility prompts for a temporary tablespace for SharePlex to use for sorts and other operations, including sorts performed by the **compare** commands. The default temporary tablespace is the one where the SharePlex objects are installed. If you plan to use the **compare** commands to compare large tables, especially those without a primary or unique key, specify a dedicated temporary tablespace for SharePlex. For more information about the **compare** command, see the SharePlex Reference Guide.	
Plan for theSharePlexindex tablespace. (**Oracle source and target databases**) The setup utility prompts for a tablespace to store the indexes for the SharePlex tables. The default index tablespace is the one where the SharePlex objects are installed. To minimize I/O contention, specify a different index tablespace from the one where the tables are installed. **NOTE:** If indexes from a previous version of SharePlex are installed in the SharePlex	

Requirement	Completed? (Y/N)
objects tablespace, you can move them to a different tablespace and then specify that tablespace when you run the setup utility.	
Install the Oracle client. (**Oracle source and target databases**) The Oracle client libraries are needed both for installation and setup as well as for the operation of SharePlex.	
Consider character sets (**Oracle source and target databases**) For SharePlex to replicate all characters within the Oracle character sets that you are using, one of the following must be true: • The character sets are identical on the source and target • The character set of the source database is a subset of the character set of the target database (all characters contained on the source exist in the character set of the target) For more information about how character set conversion is handled and how to apply data without conversion, see Set up an Oracle database to support SharePlex in SharePlex Administration Guide.	
Check the log buffer size. (**Oracle target database**) The number of database writers has an impact on replication, especially when there are numerous concurrent transactions. Whenever a transaction is committed, its buffered data is flushed to disk. If most transactions are small, but the buffer is large, this can cause slow posting. When a large transaction is committed while another, more normal-sized transaction is committed, the second COMMIT must wait while the entire buffer is flushed to disk. Reducing the size of the buffer that is flushed to disk can speed the Post process. Try decreasing the size of the log buffer to 1024 KB, or even 512 KB if possible.	
Adjust the SHAREPLEX_TRANS table (**Oracle target database**) SharePlex updates the SHAREPLEX_TRANS table to maintain read consistency for the target database. You might need to adjust the **initrans** setting of this table to improve replication performance and reduce contention on that table: • If the production database has between 500 and 1,000 concurrent users, rebuild the SHAREPLEX_TRANS table to have an initrans of 30. • If the production database has more than 1,000 concurrent users, rebuild the SHAREPLEX_TRANS table to have an initrans value of 40.	
Set the Oracle PROCESSES, SESSIONS, and OPEN_CURSPRS parameters.	

Requirement	Completed? (Y/N)
(**Oracle target database**) For the PROCESSES and SESSIONS parameters, 65 is the minimum value required by the SharePlex Post process so that it can open enough SQL connections to the target database to handle current transaction volume. This value is determined by the default setting of the SP_OPO_THREADS_MAX parameter, plus one for the main Post thread. SharePlex also requires the value of the Oracle OPEN_CURSORS parameter to be set correctly on the target database. For more information, see Set up an Oracle database to support SharePlex in the SharePlex Administration Guide.	
Review requirements for objects in replication. **(Oracle source and target databases)** Review information and guidelines for configuring the following object properties: • Keys • Indexes • Triggers • Constraints • Sequences See Set up Oracle database objects for replication in the SharePlex Administration Guide.	

Open Target Checklist

NOTE: The SharePlex-supported Open Target targets are listed in the SharePlex Release Notes.

Requirement	Completed? (Y/N)
Perform any required database upgrades. Perform any required database upgrades before you install SharePlex. This ensures that SharePlex gets the most current object definitions when you run Database setup during the installation and setup steps.	
Confirm the database release version. Verify that the release version of the database is supported by SharePlex. See the System Requirements in the SharePlex Release Notes for more information.	
Consider character sets When replicating to an Open Target target (non-Oracle target), SharePlex supports replication from any Oracle Unicode character set and the US7ASCII character set.	

Requirement	Completed? (Y/N)
SharePlex posts data to Open Target in the Unicode character set, and therefore if the source data is Unicode or US7ASCII, no conversion on the target is required. However, if the following are true, conversion is required on the target: • If the character set of the source data is anything other than Oracle Unicode or US7ASCII, you must install an Oracle client on the target to perform the conversion to Unicode for posting to the target. • If the data must be posted to the target database in any character set other than Unicode, you must install an Oracle client on the target to perform the conversion and use the **target** command to identify the target character set for Post to use. See the SharePlex Reference Guide for more information about this command. ***To perform conversion with an Oracle client on Linux*** 1. Install an Oracle *Administrator* client on the target system. The client must be the Administrator installation type. The Instant Client and Runtime installation types are not supported. 2. Set ORACLE_HOME to the client installation. Set ORACLE_SID to an alias or a non-existing SID. SharePlex does not use them and a database does not have to be running. 3. Download the *Oracle-based SharePlex installer*, rather than the Open Target installer, to install SharePlex on the target system. The Oracle-based installer includes functionality that directs Post to use the conversion functions from the Oracle client library to convert the data before posting to the target database. 4. Follow the instructions for installing SharePlex *for Oracle* (not the ones for installing on Open Target). 5. Make certain the SP_OPX_NLS_CONVERSION parameter is set to the default of 1. ***To perform conversion with an Oracle client on Windows*** 1. Install an Oracle *Administrator* client on the target system. The client must be the Administrator installation type. The Instant Client and Runtime installation types are not supported. 2. In the SharePlex Registry key **\HKEY_LOCAL_ MACHINE\SOFTWARE\Wow6432Node\QuestSoftware\SharePlex***port_number*, set ORACLE_HOME to the Oracle client installation location, and set ORACLE_SID to an alias or a non-existing SID. No Oracle database is required. SharePlex only needs to use the client libraries. 3. Install SharePlex using the Windows installer. 4. Make certain the SP_OPX_NLS_CONVERSION parameter is set to the default of 1. ***To apply Unicode and US7ASCII data without conversion*** If the source data is Unicode or US7ASCII and you are not replicating LOB data, no conversion or Oracle client is needed. Set the SP_OPX_NLS_CONVERSION parameter to 0 to disable conversion, and then restart Post if it is running.	

Requirement	Completed? (Y/N)
Install the appropriate ODBC driver. Verify that the appropriate ODBC driver is installed for your target, and install one if there is not one present. For Microsoft SQL Server, make certain to do the following: Install the **Microsoft SQL Server ODBC Driver**. It must be that driver, *not* the **Microsoft SQL Server Native Client**, or SharePlex will return an error when you run **mss_setup** to configure Post to connect to the database. To tell the difference between the two drivers: • The Microsoft SQL Server <u>ODBC Driver</u> has versions such as 06.02.9200. • The Microsoft SQL Server <u>Native Client</u> has versions such as 11.00.3513. To test a driver with SharePlex you can use the OTS utility. You can use a standalone version of this utility before you install SharePlex, or you can run the utility from the installation directory after you install SharePlex. See the OTS documentation in the SharePlex Reference Guide for more information. **NOTE**: SharePlex is already certified to work through ODBC with SQL Server, PostgreSQL, and Sybase targets.	

Enable case sensitivity on key columns
 	
Enable case-sensitivity for the data of any character-based primary key columns or columns that form a unique index. This ensures that Post compares the correct source and target key values so that it updates the correct target row and prevents unique constraint errors. Unless the key values are case sensitive, cases like the following can happen:
 	
`Create table Sales (CustName varchar(20) primary key);`
 	
`insert into Sales values ('abc company');`
 	
(Succeeds)
 	
`insert into Sales values ('ABC Company');`
 	
(Fails with unique constraint violation error)	

Disable triggers on the target tables. Triggers must be configured to ignore Post operations.	
To get additional information Additional post-installation setup steps are required to support Open Target database targets. See the SharePlex Administration Guide for instructions on setting up an Open Target database after you install SharePlex.	
(SQL Server) Configure a System Data Source Name Create a System (not User) Data Source Name (DSN) for the SQL Server database on the Windows system. The DSN can use either **Windows NT authentication** or **SQL Server authentication**. If you configure the DSN to use **NT authentication** and are using SQL Server 2012 or later, grant the **NTAuthority\SYSTEM** user the **sysadmin** fixed server role. (For earlier versions of SQL Server, **sysadmin** is granted to the **NT Authority\SYSTEM** user by default.)	

Requirement	Completed? (Y/N)
Test connection to the database through this DSN.	

Configure SharePlex in an Oracle cluster

Contents

Overview of SharePlex Oracle cluster support

SharePlex integrates with Oracle Clusterware cluster hardware and software to maintain the high availability of data capture and uninterrupted replication to your targets. If the node where SharePlex is running fails or must be taken out of the cluster for maintenance, SharePlex can be started on another server by the cluster software. SharePlex start and stop is controlled through the cluster.

These instructions assume that the cluster solution is already installed, tested, and is functioning, and they are not a substitute for the cluster vendor's documentation. Additional steps that are specific to your cluster installation may be required.

The following diagram shows SharePlex installed into an Oracle RAC cluster:
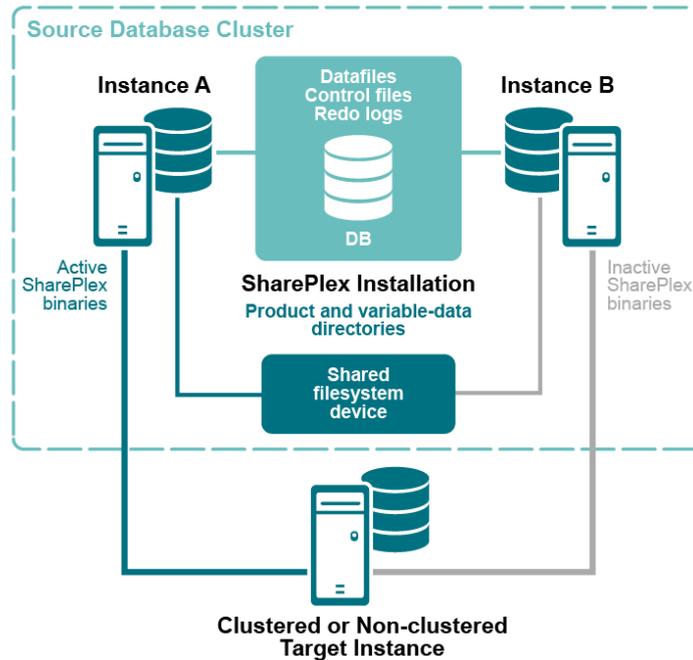
**SharePlex Configuration
with Clustered Source Oracle Database**

Normal operations
SharePlex replicates from the primary instance of a clustered database to the primary instance of a target clustered database or to a non-clustered database.

Or...
SharePlex replicates from a non-clustered database to the primary instance of a target clustered database.

Source Database Cluster

Instance A

**Datafiles
Control files
Redo logs**

DB

Instance B

SharePlex Installation
Product and variable-data directories

Active SharePlex binaries

Inactive SharePlex binaries

Shared filesystem device

After failover
SharePlex connects to the secondary instance in the cluster and resumes processing.

**Clustered or Non-clustered
Target Instance**

Configure SharePlex in an Oracle cluster

1. Ask your system administrator for an IP address on the public subnet (not configured through DHCP) that will serve as the Virtual IP (VIP) for SharePlex. The VIP must be able to resolve to the active node upon failover. The cluster software maps the VIP to the SharePlex server and migrates it during a failover.

2. Set the VIP for SharePlex in the system environment on each node.

   - Unix and Linux: **export SP_SYS_HOST_NAME=***VIP_address*

   - Windows: In the Windows Registry, set the **SP_SYS_HOSTNAME** entry under HKEY_LOCAL_ MACHINE/SOFTWARE/Wow6432Node/QuestSoftware/SharePlex/*port#*. Create this entry if it does not exist.

3. Map a host alias to the virtual IP address in the **/etc/hosts** file (on Unix and Linux) or the **hosts** file (on Windows) on all nodes to establish a consistent host name across all nodes in the cluster. The alias is exported in the SharePlex user profile and used in the SharePlex configuration parameters. Alternatively, this mapping can be done in a nameserver. The alias cannot contain non-alphanumeric characters, such as underscores (_) or dots (.). For example:

   ```
   1.0.1.6 LocalSys #permanent IP address
   1.0.1.7 HACluster #floating IP address
   ```

4. Create the same **tns_alias** name for SharePlex to use to connect to the database on each node. A **tns_alias** establishes global connection information that supercedes local instance names and enables SharePlex to connect to the failover instance without requiring a configuration reactivation. SharePlex identifies the correct Oracle instance from the configuration file. Set load balance to **off** and set failover to **on**.

> **NOTE:** Set load balance to **off** and set failover to **on**. (Load balancing cannot be enabled during the activation of a SharePlex configuration. A workaround is to disable load balancing before activation and then enable it after activation.)

```
SPLEX =
      (DESCRIPTION =
      (ADDRESS_LIST =
         (ADDRESS = (PROTOCOL = TCP)(HOST = RAC1)(PORT = 1521))
         (ADDRESS = (PROTOCOL = TCP)(HOST = RAC2)(PORT = 1521))
       )
       (LOAD_BALANCE = OFF)
       (FAILOVER = ON)
       (CONNECT_DATA =
       (SERVICE_NAME = ORCL)
       ))
```

5. Add this tns_alias to the **oratab** file on each cluster node that SharePlex is expected to start on during a failover.

6. If the Oracle instances in the cluster have different ORACLE_HOMEs, edit the **oratab** file on each node and on the nameserver, if applicable, to use a symbolic link in place of the actual ORACLE_HOME path:

SID:*/path_to_symbolic_link*:N

7. Install SharePlex according to the installation instructions for the platform you are using.
   NOTE THE FOLLOWING:

   - See the Installer Checklist for important information about where to install SharePlex in a cluster.

   - Make certain to install a SharePlex license on each node in the cluster.

   - When you run the database setup utility (ora_setup), reply **No** to the prompt for a BEQUEATH connection. This response generates a prompt for a tns_alias. Supply the tns_alias that you created in the previous steps.

     ```
     Will SharePlex install be using a BEQUEATH connection? No
     Enter the TNS alias for which SharePlex should be installed: SPLEX
     ```

     NOTE: On Windows, SharePlex must be installed on **all nodes** of a cluster, on the same port number, with identical path names. This is required to make the binaries and the required MKS Toolkit components available to all nodes, and to establish Registry entries. Additionally, Database Setup must be run on each node after installation.

8. Incorporate SharePlex into the cluster failover routines so that it migrates with the other applications during failover and so the **sp_cop** process is started on the adoptive node by the cluster software. At minimum, this includes creating a startup script for SharePlex and a cluster script for SharePlex to handle failover. **Note the following**:

   - The **sp_cop** program is the *only* process that the cluster software should start. The **sp_cop** process must be allowed to start the other SharePlex processes. All SharePlex processes, except **sp_cop**, can be controlled through the **sp_ctrl** interface.

   - Do not attempt to start or stop **sp_cop** yourself through the command interface; otherwise the cluster software will attempt to restart it. If you need to stop **sp_cop**, use the cluster software commands.

   - If possible, configure SharePlex and Oracle into a single global cluster package. The combination of SharePlex and Oracle in the same package allows the cluster software to start and stop SharePlex and Oracle in the proper sequence if any component of the package fails. Configure Oracle to start before SharePlex.

   - Assistance for creating startup and cluster scripts is available through SharePlex Professional (PSO) Services.

9. Use the SharePlex tns_alias in the datasource portion of the configuration file if this is a source SharePlex instance or in the routing map if this is a target SharePlex instance:

   ```
   datasource:o.tnsalias
   ```

   or...

   ```
   myhost@SPLEX
   ```

10. Make certain your systems administrators understand that any changes or upgrades they perform to the operating system on any node in the cluster must be implemented on all nodes in the cluster so that SharePlex fails over to an identical environment.

11. See Set up SharePlex in a Windows cluster for additional post-installation requirements for Windows clusters.

Assign SharePlex users to security groups

The SharePlex security groups provide access control to the SharePlex command and control system. Without proper configuration of these groups, anyone with permissions on the system can use the commands that view, configure, and control data replication.

Contents

Overview of SharePlex security groups

To monitor, control, or change SharePlex replication, a person must be assigned to one of the SharePlex security groups on the systems where he or she will be issuing commands. Each group corresponds to an authorization level, which determines which SharePlex commands a person can issue. To execute a command, a user must have that command's authorization level or higher.

Use the **authlevel** command to determine your authorization level for issuing SharePlex commands on a system.

Description of the SharePlex security groups

Refer to the following table to determine the group and authorization level that you want to grant each SharePlex user.

User Authorization Levels and Roles

Auth level	User type	User group	User roles
1	Administration	spadmin*	You need at least one user with Administrator rights on each source and target system.
			Can issue all SharePlex commands. Commands that can *only* be issued by a SharePlex Administrator are:
			startup, shutdown - all configuration commands relating to an active configuration - all parameter commands except **list param** **start capture** **stop capture** **abort capture** **truncate log**
			The SharePlex Administrator user must be in the Oracle **dba** group. For Oracle RAC and ASM 11*g*R2 and above, the user must also be in the Oracle Inventory group. For example: **$ useradd –g spadmin –G dba,oinstall**. The membership in Oracle Inventory group must be listed explicitly in the **etc/group** file.
			On Unix and Linux, unless you install SharePlex as a root user, the SharePlex Administrator user and the SharePlex **admin** group must exist prior to installation.
2	Operator	spopr	Can issue all SharePlex commands except those listed above.
3	Viewer	spview	Can view lists, status screens, and logs to monitor replication only.

NOTE: The default name for the SharePlex administrator group is **spadmin**, but you can designate any group or specify any name for that group during installation.

Create and populate SharePlex groups on Unix and Linux

Where and when to create the SharePlex groups on Unix and Linux depends on whether you install SharePlex as a root or non-root user.

- If you install as non-root, create the groups in the **/etc/group** file before you run the SharePlex installer. In a cluster, create them on all nodes.*

- If you install SharePlex as a root user, you can direct the installer to create the groups in the **/etc/group** file. If you install in a cluster, the installer creates the groups on the primary node, but you must create them yourself on the other nodes.

* The groups must exist because the installer adds the SharePlex Administrator user to the **spadmin** group during the installation process. In a cluster, this user is only added to the primary node. You must add the SharePlex Administrator user to the other nodes.

To create the groups in /etc/group

> # groupadd spadmin
>
> # groupadd spopr
>
> # groupadd spview

To assign a user to a group

1. Open the **/etc/group** file.

2. Add the Unix or Linux user name to the appropriate group. To assign a list of user names to a group, use a comma-separated list (see the following example).

   ```
   spadmin:*:102:spadmin,root,jim,jane,joyce,jerry
   ```

   If the password field is null, no password is associated with the group. In the example, the asterisk (*) represents the password, "102" represents the numerical group ID, and **spadmin** is the group. The group ID must be unique.

3. Save the file.

Users can verify their authorization levels by issuing the **authlevel** command in **sp_ctrl**.

Create and populate SharePlex groups on Windows

On Windows, the SharePlex groups are created in the Windows **User Accounts** control panel by the SharePlex installer. To assign users to these groups, use that control panel after you install SharePlex.

Users can verify their authorization levels by issuing the **authlevel** command in **sp_ctrl**.

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