



Using Microsoft® SQL Server™ Snapshot Replication With ArcSDE® Data

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Using Microsoft SQL Server Snapshot Replication With ArcSDE Data

Replication is used to create multiple copies of the same data that can be distributed to other databases throughout an organization. Businesses typically use replication when they have a need to separate their transactional and reporting databases, or they want to minimize business interruption caused by server failure. This paper takes you through the steps required to set up and implement snapshot replication with ArcSDE® and Microsoft® SQL Server™.

Implementing Snapshot Replication

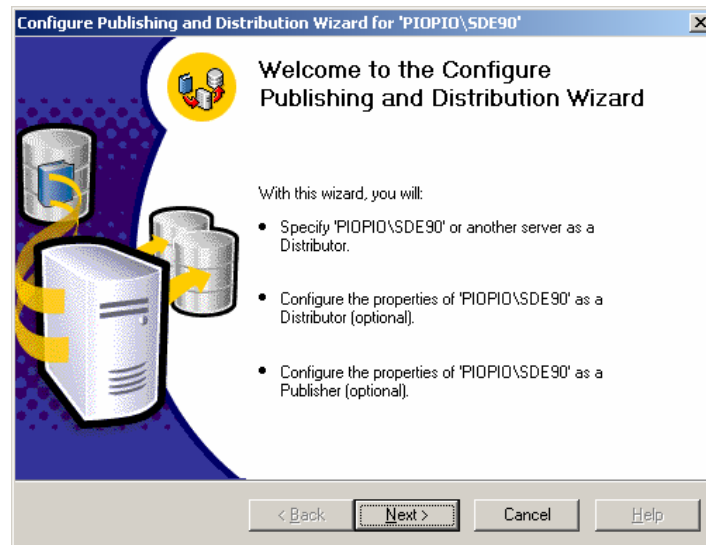
Snapshot replication is used to distribute an entire copy of the chosen information from the distributing database to the subscribing database. In SQL Server, it is the easiest type of replication to set up and maintain. It is most appropriate for read-only data, and there is a high degree of latency in this process. Any changes that are made to the data at the subscriber will be overwritten once the next snapshot image is downloaded from the distributor. Management of the distribution of the snapshot can be performed from the distribution server (a push subscription) or from the subscription server (a pull subscription). The use of a push or pull subscription is dependent on the particular circumstances of each organization. A push subscription can be centrally managed but will require a greater storage premium on the distribution server.

Implementation of snapshot replication, in this example, will be between two instances of SQL Server 2000. The procedure is similar for other versions of SQL Server as well. Although the creation of users within the database will not be covered, there will need to be an sde user preexisting in the database. Ensure the user has the appropriate privileges. If you need assistance with this part of the configuration, refer to the Configuration and Tuning guide for Microsoft SQL Server found on the installation media.

As ArcSDE data is being transferred to another database, care should be exercised to ensure compliance with your ESRI® software license agreement. Contact your sales representative or local distributor if you have any questions.

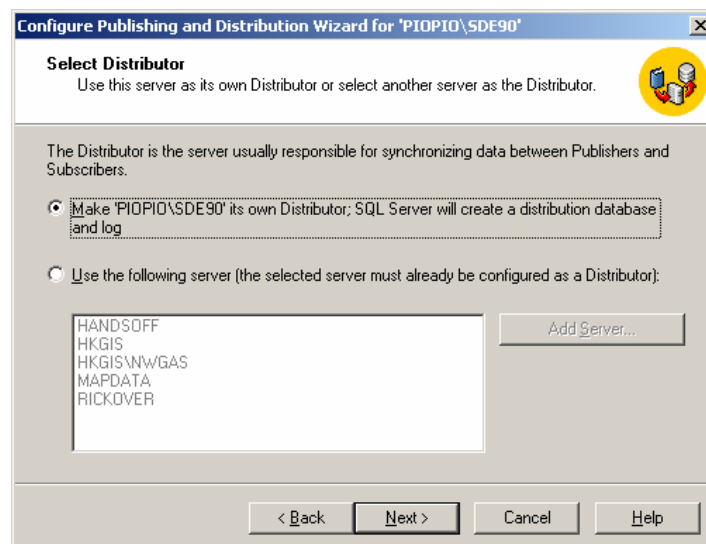
Configure Replication

From Enterprise Manager on the SQL Server you wish to replicate from, choose Tools; Replication; and Configure Publishing, Subscribers, and Distribution. This will begin the process of configuring the distribution server.

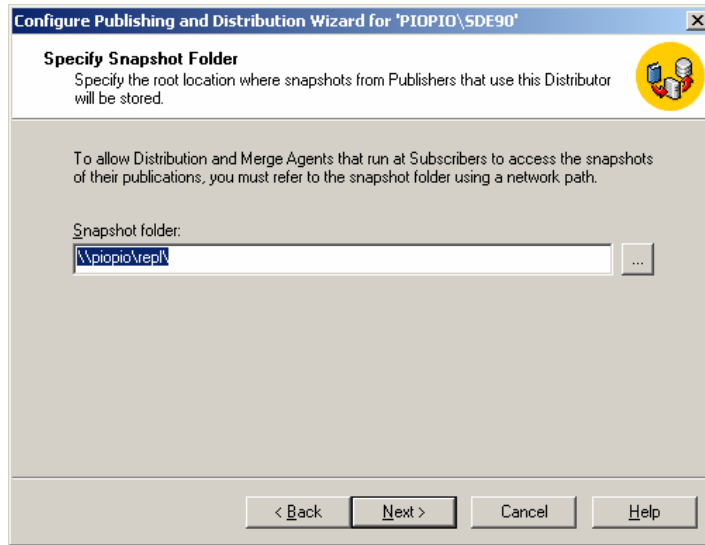


The Welcome to the Configure Publishing and Distribution Wizard appears.

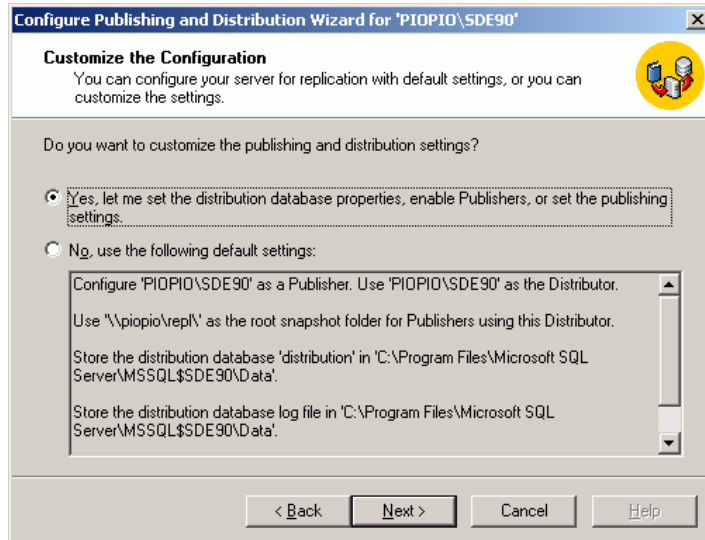
Click Next.



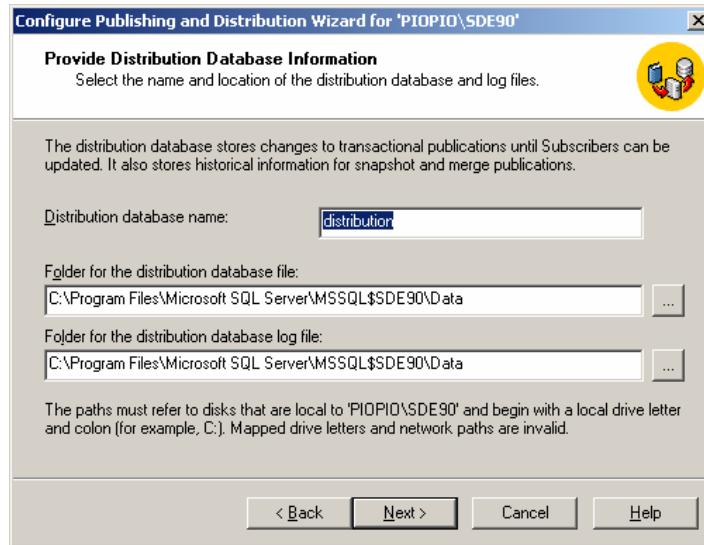
Choose the server to act as the distributor, then click Next.



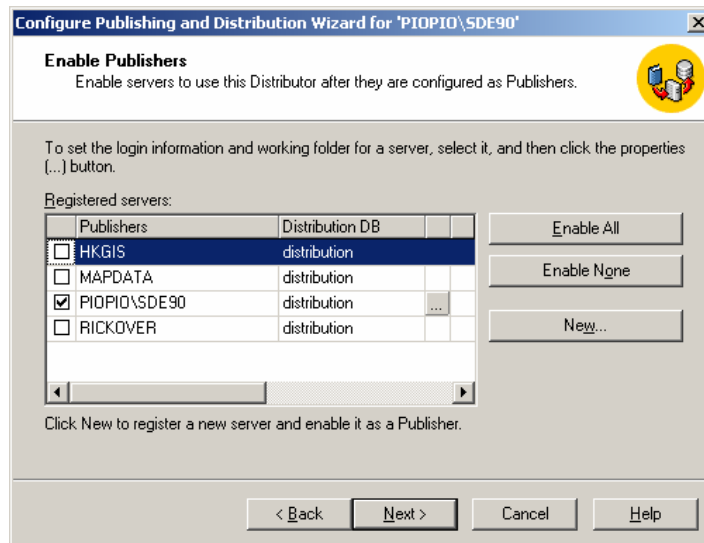
Specify the path to the replication snapshot folder. Ensure the location is accessible to all the subscribers, then click Next.



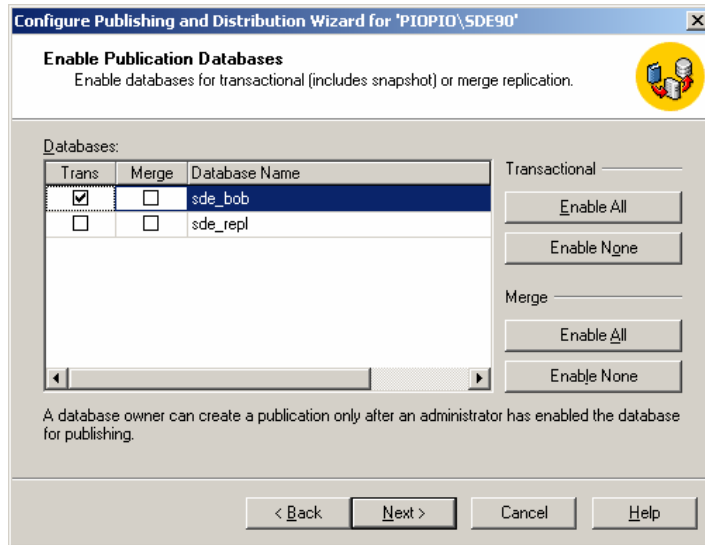
You may accept the default configuration from SQL Server, but for this example, choose to customize the publishing and distribution settings. Click Next.



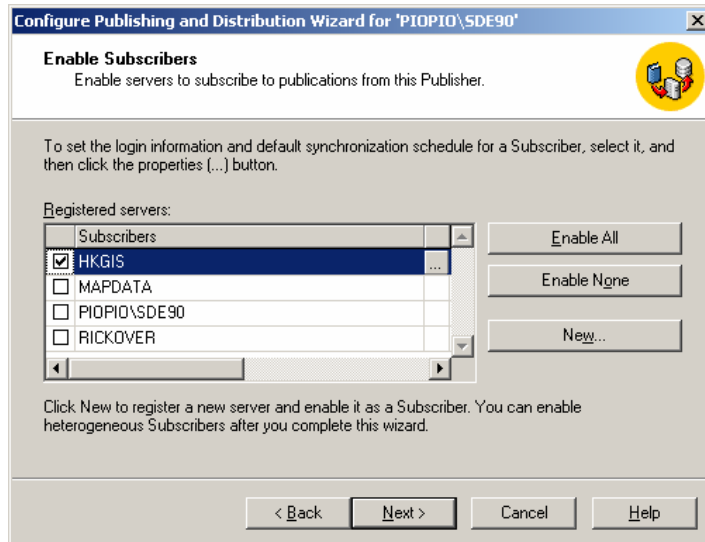
Select the name and location of the distribution database and log files. Click Next.



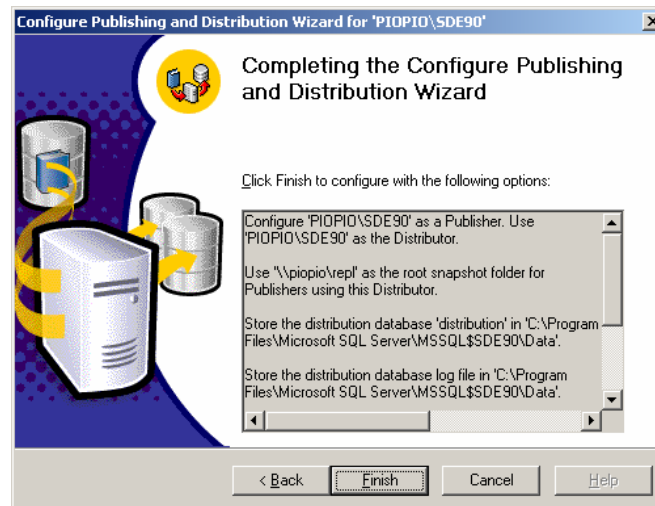
Enable the servers that will be allowed to use this distributor after they are configured as Publishers. Click Next.



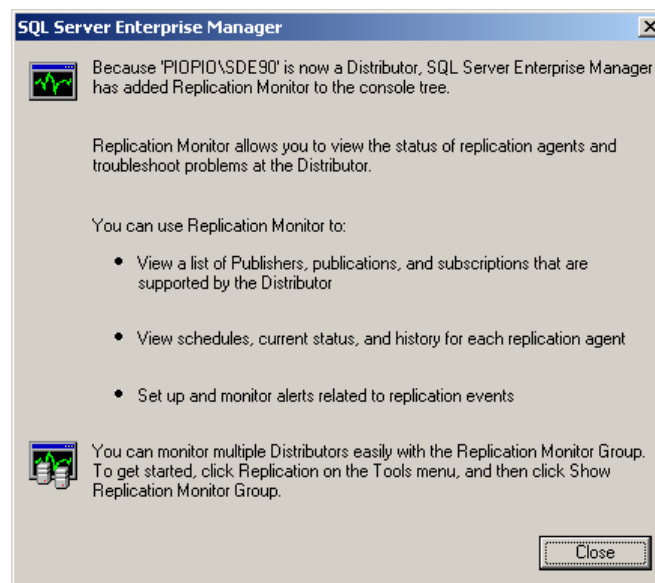
Enable the databases that are to be used for replication. Choose the Transactional check box that includes snapshot. Click Next.



Enable the subscribing server to receive publications from the distributor. Click Next.



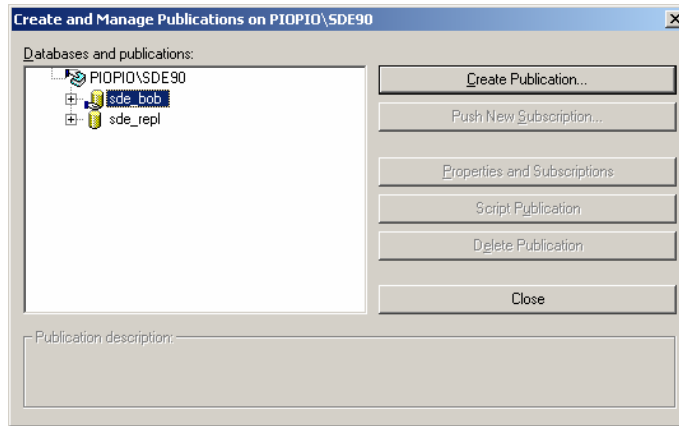
Click Finish to complete the configuration of the distribution server.



Click Close to complete the distribution configuration process.

Creating a Publication

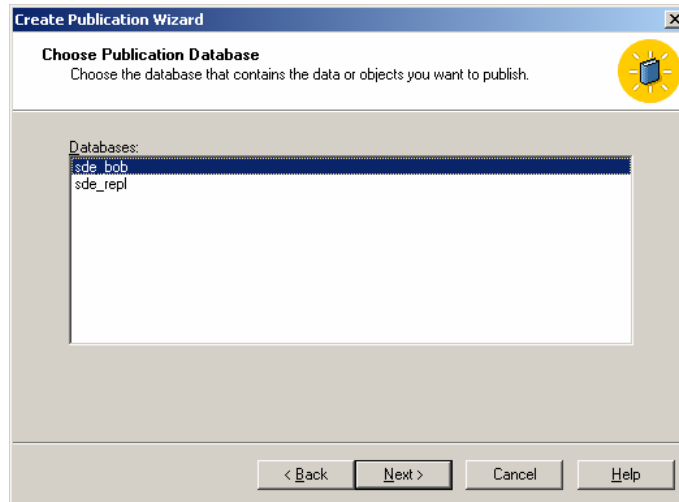
Once replication is configured, it is time to create and manage a publication in Enterprise Manager. From the Tools menu, navigate to Replication, then choose Create and Manage Publications on PIOPIO\SDE90.



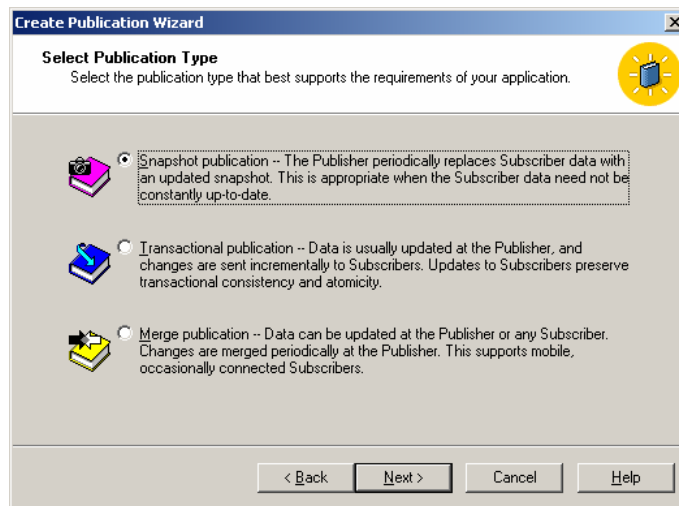
Highlight the intended source of the publication and click Create Publication.



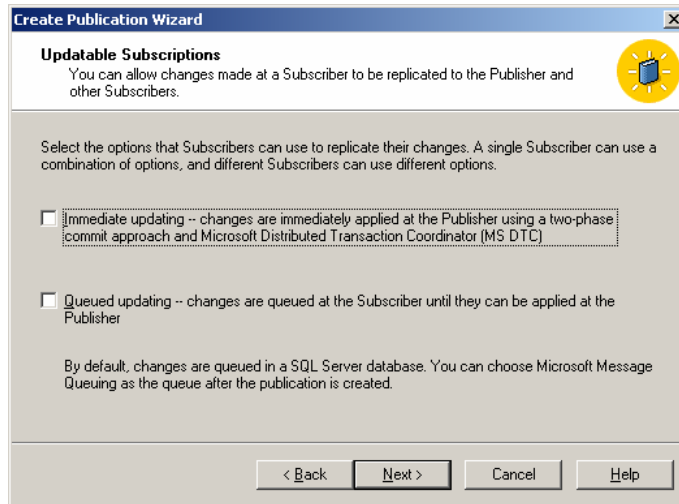
The Welcome to the Create Publication Wizard will appear. This example will be run with the Show advanced options in this wizard configured. Click Next to continue.



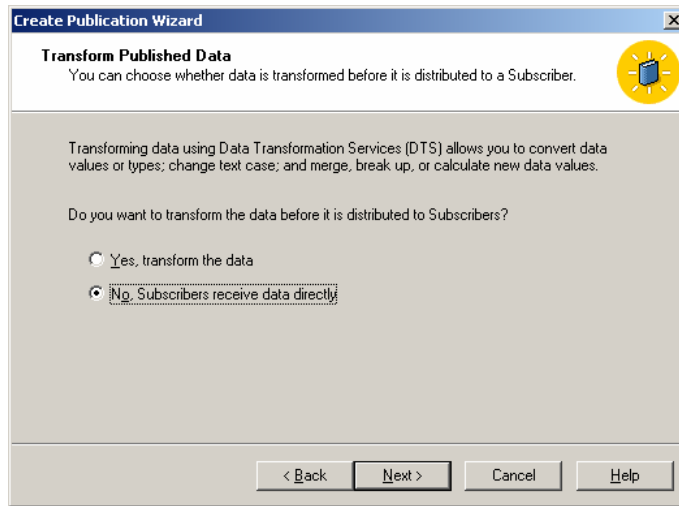
Highlight the database that contains the objects to be published, then click Next.



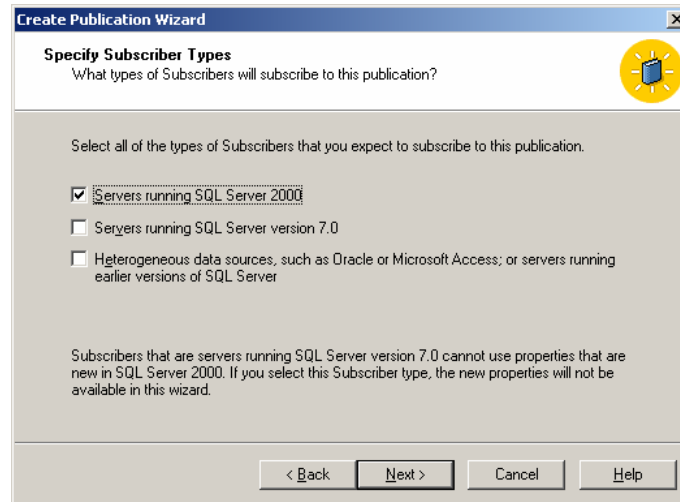
Select Snapshot publication, then click Next.



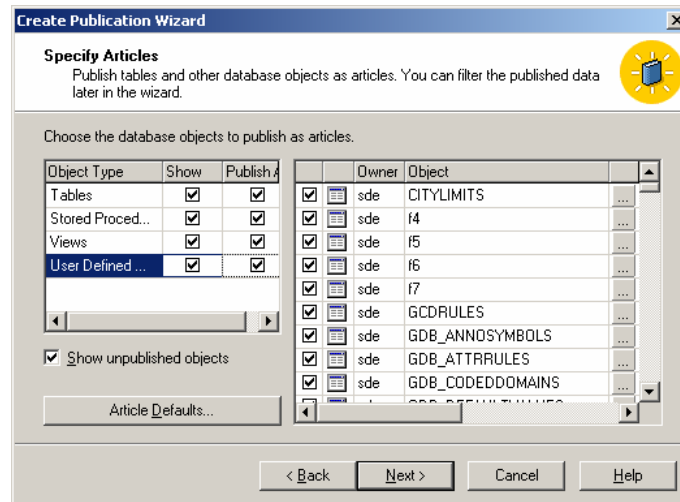
Updatable Subscriptions are not supported with ArcSDE. Click Next.



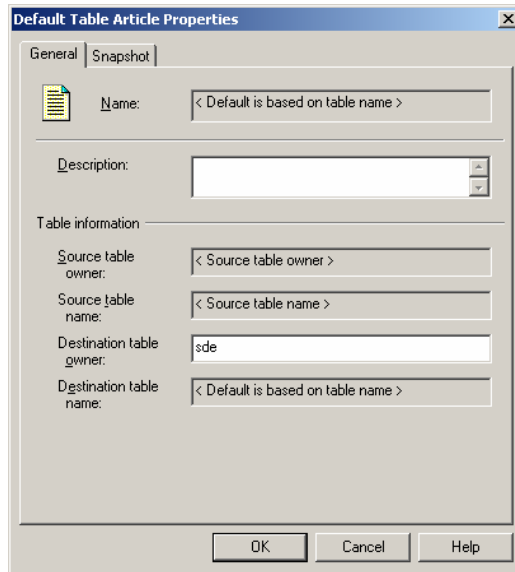
The data between publisher and subscriber will not be modified in this example. Click Next.



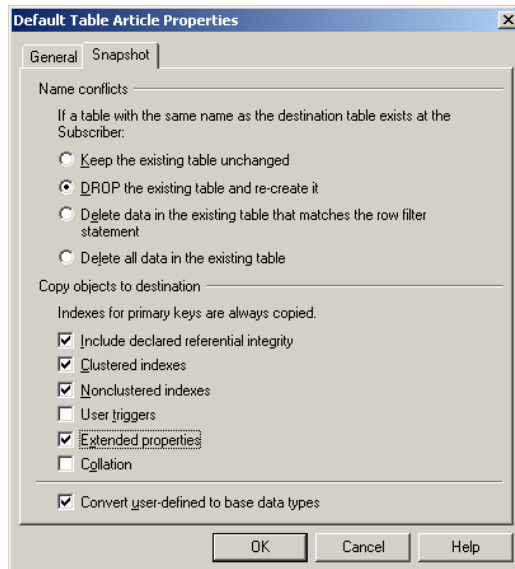
For this example, SQL Server 2000 was run. ArcSDE currently supports SQL Server 2000 and SQL Server 7. Click Next.

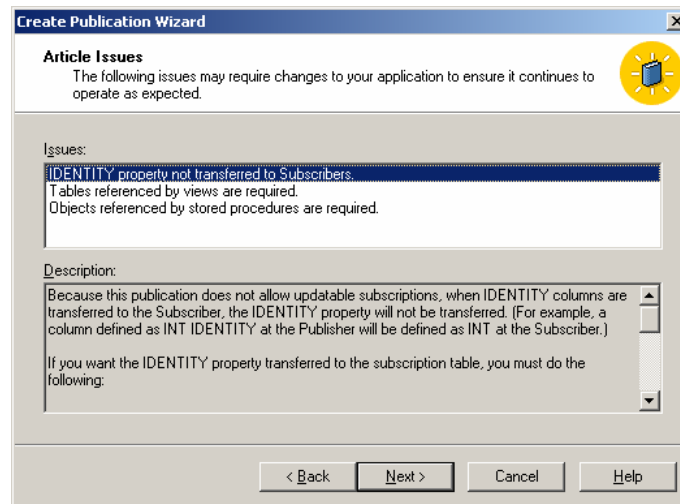


Choose the data to transfer; here all tables in sde will be replicated. All the Spatial Database Engine™ (SDE®) stored procedures, views, and user-defined functions will also be replicated. It is necessary here to ensure that the tables are also replicated with the correct properties on the subscribing database. A way to ensure that multiple tables have the same owner is to click the Article Defaults button to set the owner of the tables that you are about to publish.

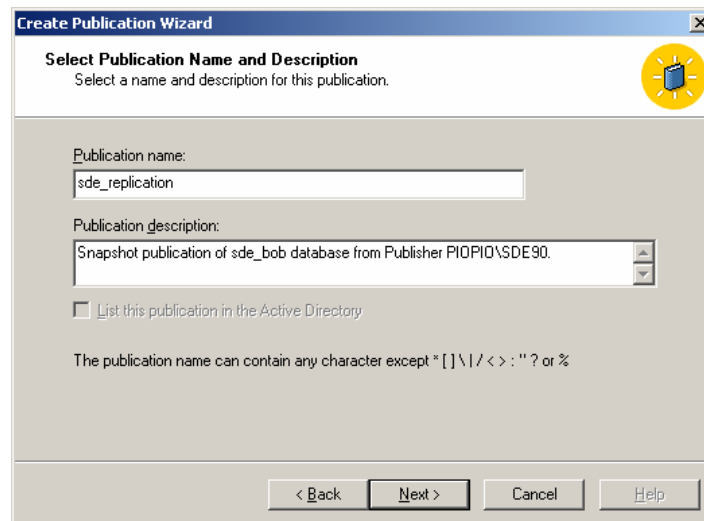


Confirm that the source table owner and the destination table owner are correct. We also need to ensure that the extended properties associated with the articles are replicated. Therefore, click the Snapshot tab on the Default Table Article Properties page to check the appropriate boxes.

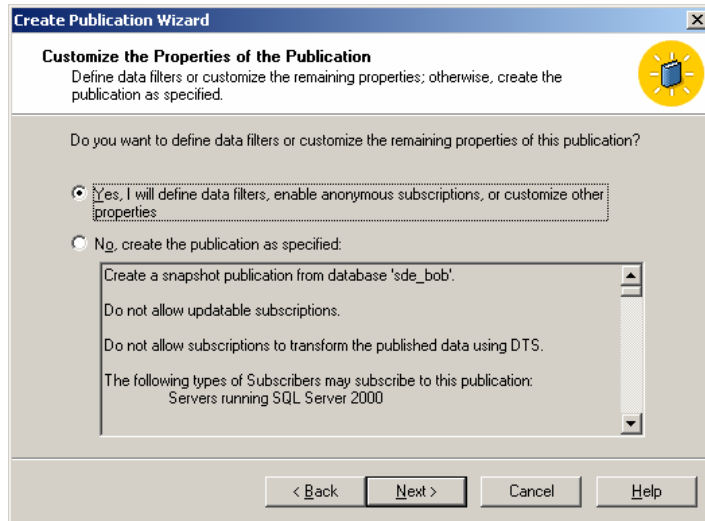




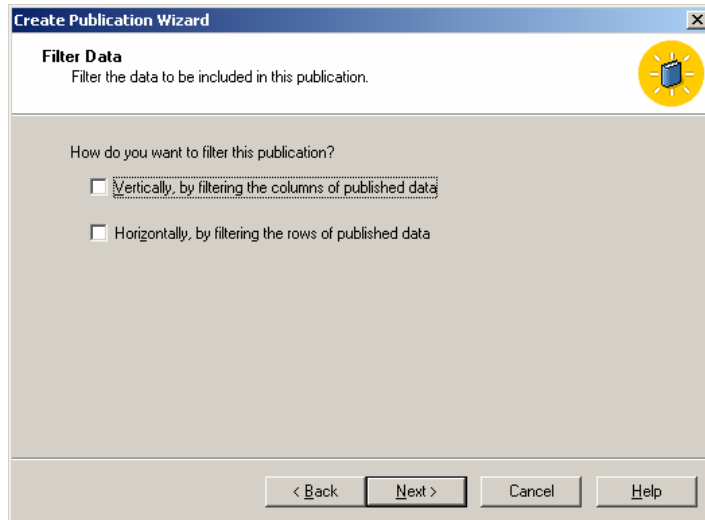
IDENTITY is a unique identifier that is added to the XML tables used in ArcSDE. Click Next.



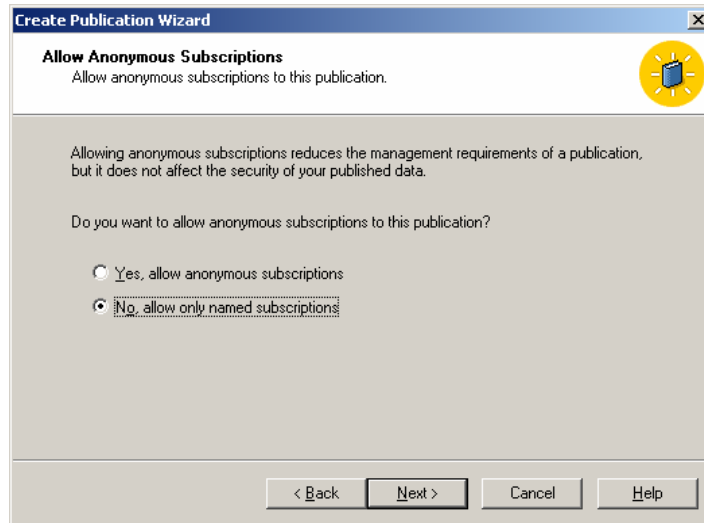
Enter a Publication name and Publication description, then click Next.



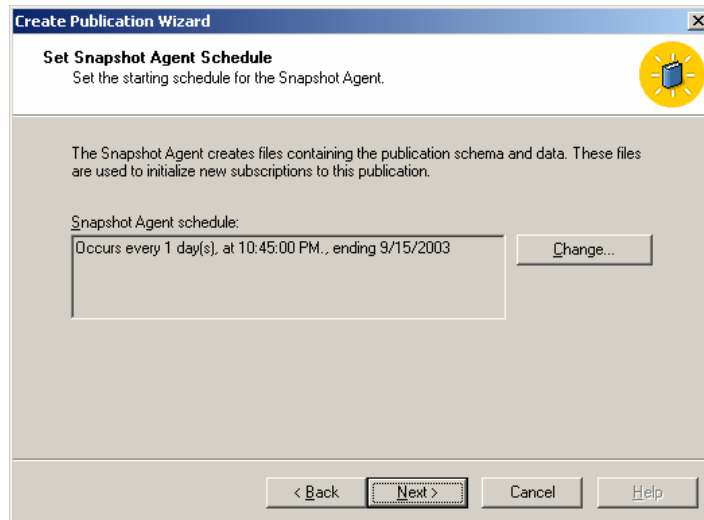
For this example, choose to customize the publication properties. Click Next.



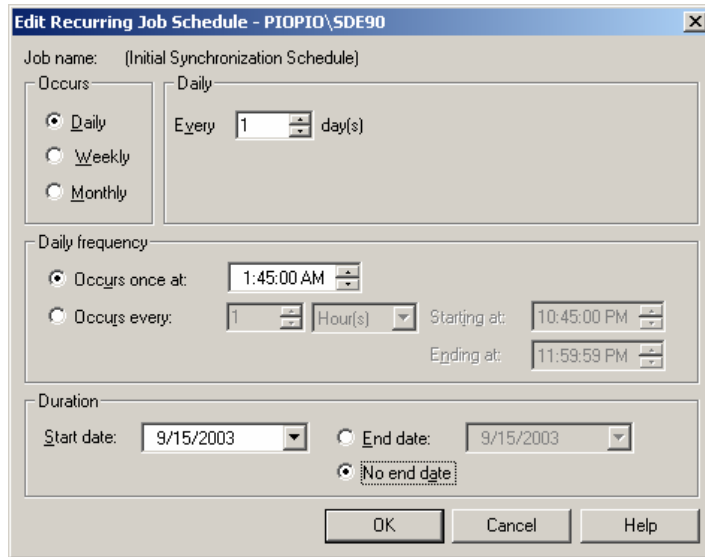
No filtering of this publication will be chosen. Click Next.



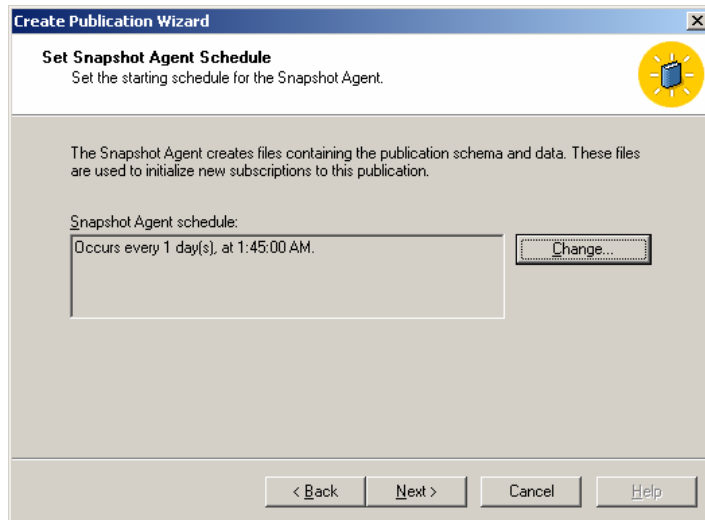
Only named subscriptions (servers) will be allowed in this example. Click Next.



The snapshot agent schedule can be changed to run at appropriate times. Click Change.



Set the parameters to make the snapshot. Click OK. You will return to the previous screen.



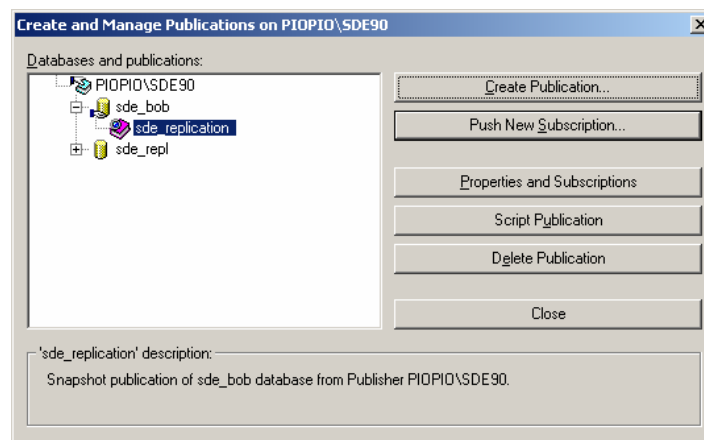
Click Next.



Click Finish to complete the creation of the publication.

Creating a New Subscription

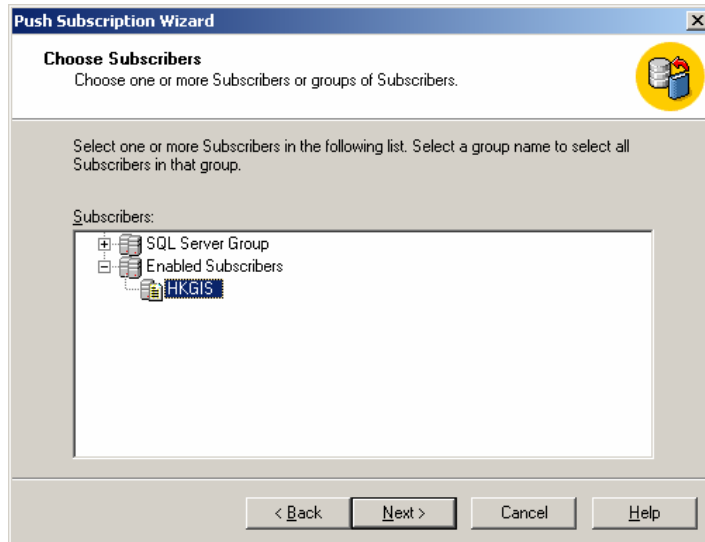
Subscriptions come in two forms: pull and push. Pull subscriptions are initiated by the subscriber database. Push subscriptions are sent to the subscribing database automatically or on a set schedule. In this example, a push subscription of the publication will be created.



Highlight the publication, and click Push New Subscription.



The Welcome to the Push Subscription Wizard will appear. This example will select advanced options. Click Next.

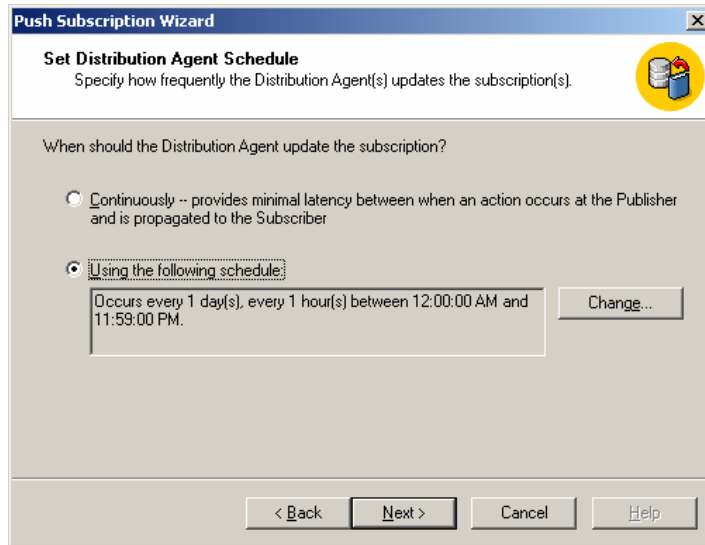


The screenshot shows the 'Push Subscription Wizard' dialog box. The title bar reads 'Push Subscription Wizard'. The main heading is 'Choose Destination Database' with the instruction 'Specify the subscription database at the SQL Server Subscriber(s)'. A text box labeled 'Subscription database name:' contains the text 'sde_bob'. To the right of the text box is a 'Browse or Create...' button. Below the text box is a note: 'Note: The specified database must exist at each Subscriber when the subscription is initialized.' At the bottom of the dialog are four buttons: '< Back', 'Next >', 'Cancel', and 'Help'.

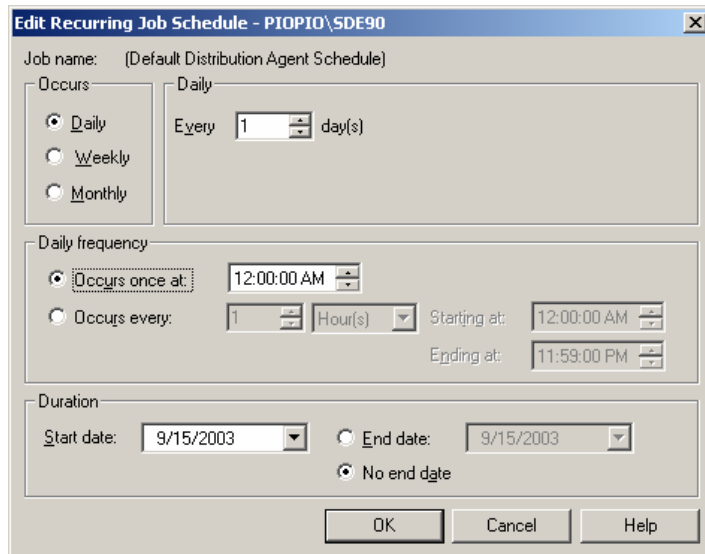
Browse to or create the database on the subscribing database that will receive the publication. The subscribing database must be named identically to the publishing database. Click Next.

The screenshot shows the 'Push Subscription Wizard' dialog box. The title bar reads 'Push Subscription Wizard'. The main heading is 'Set Distribution Agent Location' with the instruction 'You can choose whether the Distribution Agent runs at the Distributor or at the Subscriber.' Below this is the question 'Where do you want the synchronization agent to run?'. There are two radio button options: 'Run the agent at the Distributor' (which is selected) and 'Run the agent at the Subscriber (supported only for Windows 2000 and Windows NT Subscribers)'. Below the radio buttons is a text box labeled 'Network computer name of Subscriber:' which is currently empty. Below the text box is a note: 'After the subscription is created, you can use the subscription properties dialog box to verify that the agent can run at the Subscriber.' At the bottom of the dialog are four buttons: '< Back', 'Next >', 'Cancel', and 'Help'.

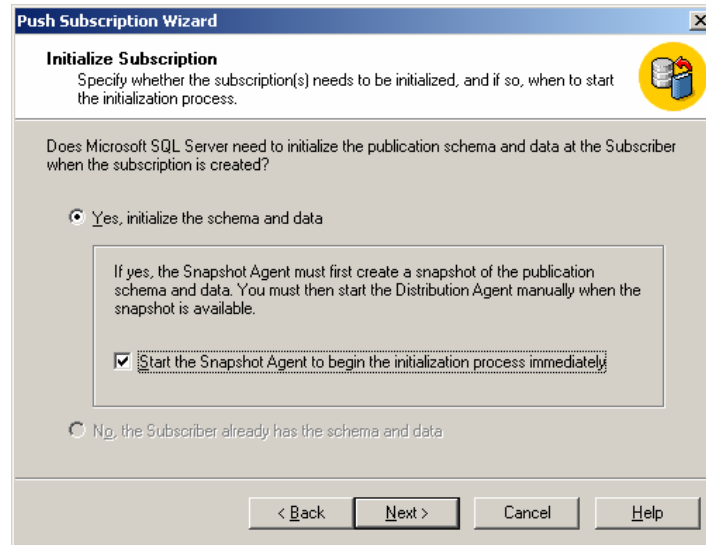
For this example, the agent will be run at the Distributor. Click Next.



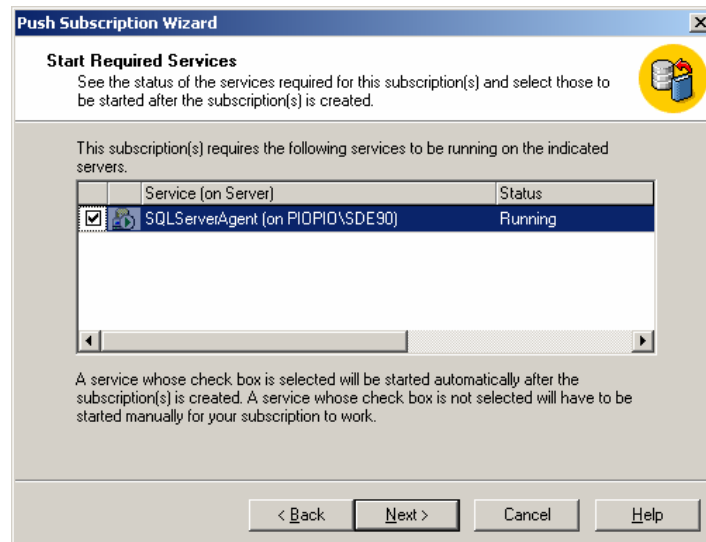
This example will change the Distribution Agent schedule rather than run continuously. Click Change.



Select the parameters to run the Distribution Agent schedule. Click OK.



For this example, choose Yes, initialize the schema and data. Check Start the Snapshot Agent to begin the initialization process immediately. Click Next.



Click Next to start the required services.



Click Finish to complete the replication procedure.

Completing the Replication Setup

Once the snapshot has been successfully completed, you may need to manually start the agent to push it to the subscriber for the first time. Thereafter, it will occur on schedule. The subscription will then be ready for ArcSDE to be started or installed. Once you have successfully completed a subscriber update, continue to look at ArcSDE on the subscriber machine.

Configuring ArcSDE

If ArcSDE is not already installed on the subscriber machine, install it now. When you get to the postinstallation part of the setup, skip the repository setup. All that you need to do is create and start the ArcSDE service. If all the SDE tables, stored procedures, views, and functions were successfully created, then the service should start without hesitation.

Conclusion

Snapshot replication can be used with ArcSDE for creating read-only spatial databases. Setup is via the SQL Server tools provided for creating snapshot replication. No special configuration of ArcSDE is required.



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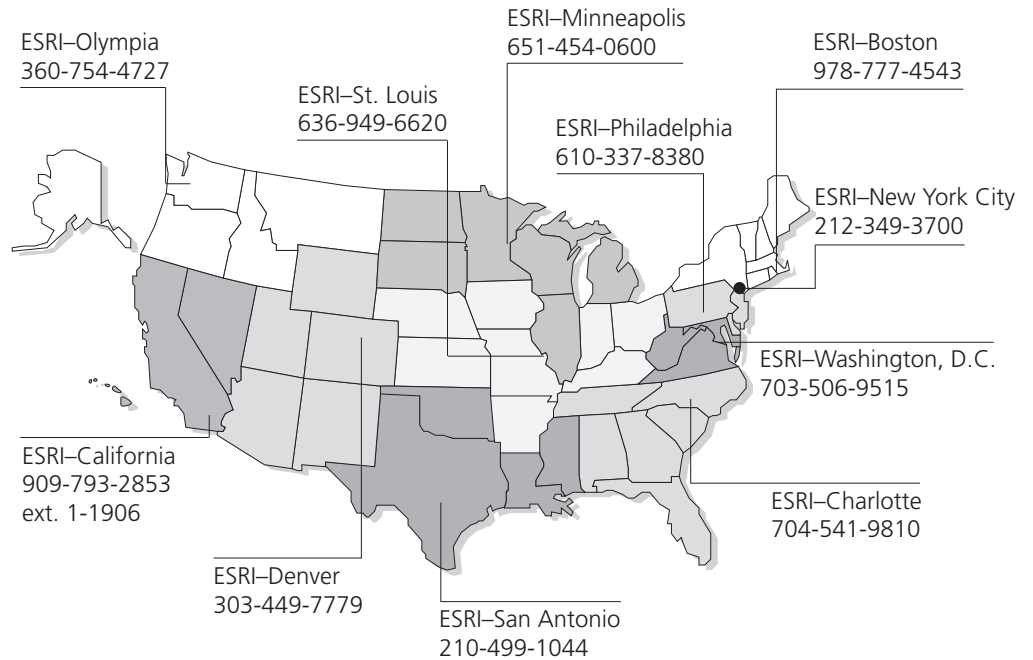
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