

# Pervasive DataExchange

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## *Getting Started with Pervasive DataExchange*

**Real-Time Backup Edition**

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# *About This Manual*

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This manual explains how to get started using Pervasive DataExchange for real-time backup. Topics include requirements for installation, installation steps, upgrade steps, and answers to common questions following an installation. In addition, this manual explains how to deploy a sample database for replication.

## **Who Should Read This Manual**

This manual provides information for users who install and run Pervasive DataExchange (Real-Time Backup Edition). This manual is also useful for system administrators who are responsible for installing and maintaining applications that use DataExchange replication.

Pervasive Software would appreciate your comments and suggestions about this manual. As a user of our documentation, you are in a unique position to provide ideas that can have a direct impact on future releases of this and other manuals. If you have comments or suggestions for the product documentation, post your request at <http://www.pervasive.com/devtalk>.

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## Manual Organization

This manual is divided into the following sections:

- Chapter 1—“Welcome to Pervasive DataExchange”  
This chapter provides a basic introduction to Pervasive DataExchange.
- Chapter 2—“Preparing to Install Pervasive DataExchange”  
This chapter discusses preparations that you should undertake before attempting to install Pervasive DataExchange.
- Chapter 3—“Installing Pervasive DataExchange with No Previous Installation”  
This chapter describes how to install DataExchange for the first time.
- Chapter 4—“Replication Deployment”  
This chapter explains the four-step deployment process to set up two machines for replication.
- Appendix A—“Troubleshooting”  
This appendix discusses how to troubleshoot problems with replication.
- Appendix B—“Upgrading Your Pervasive DataExchange Installation”  
This chapter explains how to upgrade a previous version of DataExchange.
- Appendix C—“Advanced Topics”  
This appendix explains advanced topics, such as the steps to install DataExchange in a many-to-one configuration.

This manual also contains an index.

## Conventions

Unless otherwise noted, command syntax, code, and examples use the following conventions:

CASE	Commands and reserved words typically appear in uppercase letters. Unless the manual states otherwise, you can enter these items using uppercase, lowercase, or both. For example, you can type MYPROG, myprog, or MYprog.
<b>Bold</b>	Words appearing in bold include the following: menu names, dialog box names, commands, options, buttons, statements, etc.
Monospaced font	Monospaced font is reserved for words you enter, such as command syntax.
[ ]	Square brackets enclose optional information, as in [ <i>log_name</i> ]. If information is not enclosed in square brackets, it is required.
	A vertical bar indicates a choice of information to enter, as in [ <i>file name</i>   @ <i>file name</i> ].
< >	Angle brackets enclose multiple choices for a required item, as in /D=<5   6   7>.
<i>variable</i>	Words appearing in italics are variables that you must replace with appropriate values, as in <i>file name</i> .
...	An ellipsis following information indicates you can repeat the information more than one time, as in [ <i>parameter</i> ...].
::=	The symbol ::= means one item is defined in terms of another. For example, a::=b means the item <i>a</i> is defined in terms of <i>b</i> .

# *Welcome to Pervasive DataExchange*

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*chapter*

***1***

*A Basic Introduction to Pervasive DataExchange*

Thank you for purchasing Pervasive DataExchange. This chapter contains the following topics:

- “What’s New in Pervasive DataExchange” on page 1-2
- “About Pervasive DataExchange” on page 1-3
- “Overview of How Pervasive DataExchange Works” on page 1-4
- “Where to Install DataExchange” on page 1-6
- “DataExchange Licensing” on page 1-7

## **What's New in Pervasive DataExchange**

The following features are new in this release of Pervasive DataExchange:

- Support for the current version of Pervasive PSQL.
- Use and administration of replication features through the Java user interface in Pervasive PSQL.
- Support for replication of table names beginning with the prefix "PDC"

## About Pervasive DataExchange

Pervasive DataExchange is Pervasive Software's database replication solution. It reliably moves data between two or more Pervasive PSQL databases to maintain a current backup system, drive data into reporting servers, or synchronize multiple remote databases. In short, Pervasive DataExchange offers several ways to help you replicate your data.

Pervasive DataExchange is available in two editions: Real-Time Backup and Data Synchronization. The following table summarizes the features of Pervasive DataExchange based on the edition.

*Table 1-1 Comparison of Pervasive DataExchange Editions*

Feature	Edition	
	Real-Time Backup	Data Synchronization
One-way replication	✓	✓
Two-way replication		✓
Scripted set up	✓	
Data-driven replication		✓

## Overview of How Pervasive DataExchange Works

The DataExchange technology works by capturing and sharing changes from one Pervasive PSQL database to other databases in a DataExchange replication network. Each database is augmented with DataExchange, which adds two software components to a Pervasive PSQL database: the Replication Event Handler and the Replication Engine.

- The Replication Event Handler (REH) plugs directly into the Pervasive PSQL database engine. Specifically, the REH is a set of DLLs that operate within the database engine, so if the database is running, the replication event handler is running as well. The database engine activates the REH when there is a change event (insert, update, delete). The REH then makes note of the event in one of its private control tables.
- The Replication Engine is a separate process that performs the actual replication task. It reads the control tables to determine what records have changed since the last replication session. It then groups these changes into packets and shares them with the other replication engines participating in a DataExchange network. These other engines then apply the updates to their own databases. The replication process occurs either continuously, at scheduled intervals, or on demand. The replication engine does not require constant network connectivity, so DataExchange is suitable for scenarios with intermittent connectivity, like remote users with dialup connections.

### Notification Agent

The notification agent, or agent for short, is another component installed by DataExchange. Its purpose is to initiate an e-mail if a replication failure occurs. The agent requires the basic Simple Mail Transfer Protocol (SMTP) to communicate with a mail server.

Note that the agent is installed only if the machine contains the Pervasive PSQL Server product. The agent is not available if you install DataExchange on a machine with the Pervasive PSQL Workgroup product.

See “dxagent” on page 7-34 in *Pervasive DataExchange User’s Guide*.

## Replication-Specific Files

DataExchange adds its own tables on the machine where replication executes. It uses two types of tables: system configuration and replication control. Configuration tables record information such as the databases being replicated, the sites to which data is replicated, and replication schedules.

Control tables shadow data files and track the replication state of each record in the data. Each data table or file has a control table counterpart. Similarly, each data record has a companion control table record. Through the control tables, the replication engine determines what records need to be replicated when.

DataExchange tables for replication configuration and control can reside with the files to be replicated or separately in their own database. The choice of location depends on your replication needs. Replication of entire tables can be done with a separate replication database.

This getting-started guide introduces simple replication. *Pervasive DataExchange User's Guide* covers every kind of available replication solution.

## **Where to Install DataExchange**

Pervasive DataExchange must be installed on the same computer as the Pervasive PSQL Server engine or Pervasive PSQL Workgroup engine. See also “Preparing to Install Pervasive DataExchange” on page 2-1.

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## DataExchange Licensing

DataExchange requires an activation license to replicate data between two or more computers. The installation program prompts you to enter a license string and decodes it to ensure that it is valid.

Pervasive DataExchange Real-Time Backup Edition supports installation on only two machines: a First Site and a Partner Site. Each site requires a license, but you use the same license for both sites.

You may install an evaluation version of Pervasive DataExchange Real-Time Backup Edition without a license. At the end of the evaluation period, the replication engine returns an error when it attempts to start. Use the Event Viewer of your operating system to view the error in the Application event log.

You may initially install an evaluation version then later apply an activation license. Use the following steps to replace an evaluation license with a nonevaluation license.

### ► To upgrade an evaluation license

- 1 Obtain the license key from one of the following locations:
  - Case of the DataExchange installation CD
  - Product registration card
  - Printed license agreement
- 2 If you need to purchase a license, contact Sales Support at Pervasive Software (salessupport@pervasive.com). See also “How to Get Additional Help” on page A-16.
- 3 Apply the license using the Pervasive PSQL License Administrator utility. See the License Administrator chapter in *Pervasive PSQL User's Guide*.

*Welcome to Pervasive DataExchange*

# *Preparing to Install Pervasive DataExchange*

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*Preparation Needed for Pervasive DataExchange Installation*

This chapter contains the following topics:

- “DataExchange Installation Overview” on page 2-2
- “DataExchange Installation Checklists” on page 2-4

## DataExchange Installation Overview

This section provides an overview to the components that make up Pervasive DataExchange and information on the files included in the different types of installation.

### **DataExchange Components**

Pervasive DataExchange consists of the following product components:

- Replication Event Handler
- Replication Engine
- Notification Agent
- Utilities
- Documentation

See “Overview of How Pervasive DataExchange Works” on page 1-4 for a discussion of the replication event handler, replication engine, and notification agent.

### **Utilities**

Pervasive DataExchange includes several utilities designed to help you control and manage the replication process. The following table lists the main utilities. All of the utilities are discussed in *Pervasive DataExchange User’s Guide*. Refer to Part IV, “Replication Tools and Utilities,” in that guide.

*Table 2-1 Summary of Main Pervasive DataExchange Utilities*

Utility Name	Description
Designer	Creates customized designs for replication.
Deployment tool	Sets up a two-machine replication network between a primary site and a backup site. See “Replication Deployment” on page 4-1.
Manager	Sets up replication schedules and user access.
Monitoring tool	Monitors data replication, configures replication sessions, and sets logging options.

Table 2-1 Summary of Main Pervasive DataExchange Utilities continued

Utility Name	Description
Activation tool	Enable a database to participate in replication and establish the database as belonging to a site on the replication network.
Deactivation tool	Removes a database from the list of those available for replication. If you want to delete a replicated database from physical storage, you must deactivate it first.

## Documentation

The installation of Pervasive DataExchange includes the documentation in HTMLHelp and PDF format. The documentation consists of the following:

- This book—*Getting Started with Pervasive DataExchange (Real-Time Backup Edition)*—helps you to get Pervasive DataExchange installed and setup. This book is also provided in hardcopy.
- *Pervasive PSQL User's Guide*—provides conceptual information and tasks to help you use the DataExchange products. The *User's Guide* covers both the Real-Time Backup Edition and the Data Synchronization Edition. You may order a hardcopy version of this manual through Pervasive Software Sales.
- *Getting Started with Pervasive DataExchange (Data Synchronization Edition)*—provided as an additional reference in case you want to learn more about the Data Synchronization Edition. You may order a hardcopy version of this manual through Pervasive Software Sales.

## DataExchange Installation Checklists

This section provides you with checklists and other information to prepare you for installation.

**Quick Checklist** Each of the following items is described in more detail in the topics that follow.

- You have observed the appropriate precautions before installing Pervasive DataExchange.
- Your system hardware and software meets the minimum requirements to install Pervasive DataExchange.



**Tip** The hardware and software requirements are listed on the Pervasive Software web site.

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- You have full administrator-level rights on the machine where you plan to install the product.
- You have a license (unless you want an evaluation version).
- You have checked any special configuration issues, such as installing into a clustered environment.
- At the end of the installation, you have access to the Readme file for important, late-breaking information.

**Precautions** The Pervasive PSQL database engine must be stopped and restarted during the installation of Pervasive DataExchange. If your business requirements prohibit stopping the database engine during certain hours, install DataExchange during an acceptable period.

Back up any important files on the target hard drive, including data files, before you begin the installation.

### **Ensure Adequate Permissions**

To install DataExchange on Windows 2003 or Windows 2000, you must have full administrator-level rights on the machine.

***Activation  
License***

See “DataExchange Licensing” on page 1-7 for a discussion of the activation license.

***The  
DataExchange  
Readme File***

Pervasive Software strongly recommends that you read the information contained in the Readme file. This file contains important product news that could not be included in the product documentation but may be essential to your installation and use of the product release.

The Readme file is located at the root on the installation CD.



# *Installing Pervasive DataExchange with No Previous Installation*

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*Instructions for First-time Installation*

This chapter contains procedures for installing Pervasive DataExchange. The chapter contains the following sections:

- “Before You Install DataExchange” on page 3-2
- “Installing a Pervasive PSQL Database Engine on the Backup Machine” on page 3-5
- “Installing Pervasive DataExchange” on page 3-6
- “Common Questions After Installing Pervasive DataExchange” on page 3-11
- “Uninstalling Pervasive DataExchange” on page 3-13

## Before You Install DataExchange

This section contains information with which you need to be familiar to successfully install Pervasive DataExchange. Before installing Pervasive DataExchange, review the following information:

- “Preparing to Install Pervasive DataExchange” on page 2-1. This chapter provides important information including system requirements and platform specific notes that are relevant to your operation.
- Readme file. This file contains late-breaking product news that could not be included in the product documentation. This file is located on the distribution media.

### **Windows Platform Notes**

Be aware of the following conditions.

- You must have full administrator-level rights on the machine where you install Pervasive DataExchange.
- You may need to disable antivirus software or change its settings to allow installation of Pervasive DataExchange.

### **Installing Over Windows Terminal Services**

Microsoft Terminal Services is a multisession environment that provides remote computers access to Windows-based programs running on a server. (Citrix MetaFrame extends Windows Terminal Services with additional client and server functionality.)

Pervasive DataExchange is supported in the following environments:

- Windows 2000 Terminal Service SP4
- Windows 2000 Terminal Service SP4 with Citrix MetaFrame 1.8
- Windows 2003 Terminal Service

To install DataExchange to a Terminal Server client, you must first modify a registry setting on the Terminal Server client. The default value for the registry setting prevents you from performing Pervasive PSQL administrative functions. You must have administrative authority to install DataExchange.

Use the following steps to modify the registry setting. You must have administrative authority on the Terminal Server client.



---

**Caution** Incorrectly editing your computer's registry can damage the registry. The damage can cause undesirable results, such as your computer not being able to boot. If you do not feel comfortable editing the registry, obtain the services of a qualified technician. Pervasive Software accepts no responsibility for a damaged registry.

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➤ **To modify the security registry setting on a Terminal Server client**



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**Note** We suggest that you create a backup of your registry before editing the registry. Refer to the online help for your operating system. Look for index entries such as “registry, backing up,” or “emergency repair disk.”

---

- 1 Select **Start ▶ Run**, enter **regedt32**, and click **OK**.  
Registry Editor opens.
- 2 Find the following registry key:  
**HKEY\_LOCAL\_MACHINE\Software\Pervasive  
Software\Utilities Interface\Settings\Restricted Access On WTS  
client**
- 3 Double-click **REG\_DWORD** for the key.  
The Edit DWORD Value dialog box opens.
- 4 In the Value Data field, change the value from 1 to 0 (zero).
- 5 Click **OK**.  
The REG\_DWORD value should read **0x00000000 (0)**.
- 6 Exit Registry Editor.



---

**Note** Changing this registry setting to zero grants Pervasive PSQL administrative authority to *everyone* who has access to the Terminal Server client machine. To restrict Pervasive PSQL administrative authority, you may want to restore the default value of the registry setting after DataExchange is installed. To do this, change the REG\_DWORD value back to 1 (see step 4 in “To modify the security registry setting on a Terminal Server client”).

You may also use regedt32 to change the permissions on the registry key so that only certain users are allowed to modify the key value.

---

## **Installing a Pervasive PSQL Database Engine on the Backup Machine**

Pervasive DataExchange requires a Pervasive PSQL Server or Workgroup engine. Ensure that your backup machine contains a database engine before attempting to install DataExchange on the machine.

If your backup machine lacks a Pervasive PSQL database engine, install one from your original CD media or download the Pervasive PSQL product from <http://www.pervasive.com>. For installation steps, see Chapter 4, “Installing Pervasive PSQL with No Previous Installation,” in the *Getting Started With Pervasive PSQL* guide for your product (Server or Workgroup).

### ***License Key***

The Pervasive DataExchange installation prompts you for a license key to use DataExchange with the database engine on the backup machine. If you omit the key, Pervasive DataExchange provides an evaluation license, which you can later replace with a non-evaluation license if you choose.

The evaluation license provides one-user count for the backup machine. The single user count is in addition to the current user count. For example, if your database engine is licensed for 20 users, you still have a permissible count of 20, not 19, after installing with the evaluation license.

## Installing Pervasive DataExchange

You must install Pervasive DataExchange on a machine that contains a Pervasive PSQL Server engine or a Workgroup engine.



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**Note** The Pervasive PSQL database engine is stopped and restarted during the installation of Pervasive DataExchange. If your business requirements prohibit stopping the database engine during certain hours, install DataExchange during an acceptable period.

---

If the installation fails before the program copies any files to the target installation directory, refer to the installation log file (replinst.log) in the Windows directory.

DataExchange installs a notification service called dxagent if the machine contains the Pervasive PSQL Server product. This notification agent is not available if you install DataExchange on a machine with the Pervasive PSQL Workgroup product. See “dxagent” on page 7-34 in *Pervasive DataExchange User’s Guide*.

You may install Pervasive DataExchange in two configurations:

- A two-machine replication network consisting of a First Site and a single Partner Site.
- A many-to-one replication network consisting of a First Site and two or more Partner Sites. See “DataExchange in a Many-to-One Configuration” on page C-2.

➤ **To install Pervasive DataExchange on a two-machine configuration**

You will run the installation twice: once on the First Site and once on a Partner Site.

- 1 Launch the installation program from your Windows machine by doing one of the following:
  - Insert the Pervasive DataExchange CD in the CD-ROM drive.
  - If the installation does not start automatically, select **Start ▶ Run**, and type *drive:\setup* where *drive* is the drive letter of your CD-ROM device.

The Welcome window appears.

- 2 Click **Next**.

The Software License Agreement appears.

- 3 Read the license agreement. To accept it, click **Yes**.

The installation asks for a DataExchange license key.

- 4 In the License field, do one of the following:
  - Type or paste the license key.
  - Leave it blank to install an evaluation copy of DataExchange.

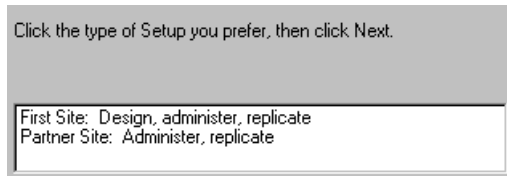
A First Site and a Partner Site use the same key, which is provided on the case of the DataExchange installation CD, the product registration card, and the printed license agreement.

At the end of the evaluation period, the replication engine returns an error when it tries to start. You may apply a license key at any time. See “To upgrade an evaluation license” on page 1-7.

- 5 Click **Next**.

The installation asks you to choose a setup type.

Figure 3-1 Setup Type



**6** Choose one of the following:

- **First Site: Design, administer, replicate**

You will use a First Site to design and configure the replication network. Its components include the DataExchange Designer, administrative utilities, and replication engine.

- **Partner Site: Administer, replicate**

A Partner Site replicates data with the First Site. Its components include the DataExchange administrative utilities and replication engine. You may install a Partner Site before installing a First Site, but you must initialize and configure the replication network from the First Site.



---

**Caution** Do not install more than one First Site on a network, or replication conflicts may occur.

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**7** Click **Next**, then continue as follows:

- To install a First Site, continue with step 8.
- To install a Partner Site, skip to step 9.

**8** Read the message that appears about the installation of DataExchange Designer as part of a First Site installation.

Click **Yes** if you have **not** installed a First Site on your replication network. Otherwise, click **No** to return to the dialog in which you specify a setup type.


**9** Specify a folder for the Start menu. You may accept the default, type a name into the **Program Folders** field, or double-click a folder name in the **Existing Folders** list.

The default folder name is Pervasive\DataExchange.

**10** Click **Next**.

A dialog appears on which you specify site information.

*Figure 3-2 Site Information*



Please fill in the following required information about your site.

Site Name:

Host Name or IP Address:

Both names default to the host name of your machine.

- The **Site Name** identifies your machine on the replication network. The name can be whatever you want. Accept the default or enter a more descriptive site name.
- The **Host Name** identifies this machine to the DataExchange Engine. If your machine has a fixed IP address and you prefer to use it, enter it here. If the address is assigned by DHCP, accept the machine host name by default.

**11** Click **Next**.

A summary of installation settings appears.

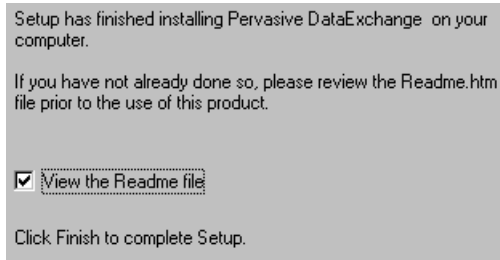
**12** Review the settings and click **Next** if they are correct. You may click **Back** to change a setting.

The DataExchange installation process continues, displaying a series of status messages that inform you what action is taking place. Most of the message dialogs contain a progress bar to indicate the amount of time elapsed.

The following types of status messages appear:

- Stopping the Pervasive PSQL database engine
- Copying components
- Installing components
- Initializing components
- Registering components
- Restarting the Pervasive PSQL database engine

At the end of the installation, setup informs you that it is complete and prompts you to view the readme file.



Pervasive Software strongly recommends that you view the readme file for important release notes concerning configuration and use of the product.

**13** Click **Finish**.

**14** Do one of the following:

- If you chose to view the readme file, it appears in a browser window. You must close the browser window to exit setup.
- If you cleared the **View the readme file** option, setup exits.

***After You  
Install  
DataExchange***

After you install DataExchange on both sites, Pervasive Software recommends that you perform an example replication deployment between the First Site and a Partner Site. The example deployment is optional. However, it allows you to perform a hands-on deployment with a sample database.

See the chapter “Replication Deployment” on page 4-1.

## Common Questions After Installing Pervasive DataExchange

This section contains information that you may have after running the installation program.

### **Do I Have to Configure Anything in Pervasive Control Center (PCC) for DataExchange?**

No. DataExchange requires no special settings in PCC.

### **Does DataExchange Create Any Log Files?**

Yes. See “Log Files” on page A-9.

### **How Do I Automate a Scheduled Replication?**

See “Schedule Tasks” on page 9-18 in *Pervasive DataExchange User’s Guide*.

### **How Do I Get Notified by E-mail for a Replication Failure?**

See “Pervasive DataExchange Agent” on page 7-34 in *Pervasive DataExchange User’s Guide*.

### **What happened to PVSWBIN?**

Since the release of Pervasive PSQL v10, Pervasive DataExchange files are no longer installed to <drive>:\pvsw\bin. This change comes as Pervasive Software adopts the same program and security guidelines established by Microsoft for the Vista operating system.

## Where are the Pervasive DataExchange files installed?

To comply with the new guidelines established by Microsoft for the Vista operating system, new installations of Pervasive DataExchange are in the following default location:

Table 3-1 Pervasive DataExchange Default Windows Installation Location

Platform	File Types	Default Installation Location
Windows Vista Windows Server 2008 (32-bit)	Application Data	<drive:>\Program Data\Pervasive Software\PSQL\Replication
	Program Files	<drive:>\Program Files\Pervasive Software\PSQL\Replication
Windows Non- Vista (32-bit)	Application Data	<drive:>\Documents and Settings\All Users\Application Data\Pervasive Software\PSQL\Replication
	Program Files	<drive:>\Program Files\Pervasive Software\PSQL\Replication

## Uninstalling Pervasive DataExchange

The uninstall program removes all DataExchange components from your system. Uninstall removes databases registered by Pervasive PSQL that are located under *<Installation Directory >\Replication*.

The uninstall program does not remove any databases that were created in locations other than under *<Installation Directory >\Replication*. It also does not remove the DSNs and database names associated with these databases.

If you have activated databases located under PSQL\Replication, perform the following actions before you uninstall DataExchange:

- Deactivate each database with the dxdeact utility. For an example of deactivating a database, see “Removing the Example Deployed Database” on page 4-9. See also “dxdeact” on page 7-11 in *Pervasive DataExchange User’s Guide*.
- Remove the template with Template Remover wizard. For an example of using the wizard, see “Removing the Example Deployed Database” on page 4-9. See also “trwizard” on page 7-32 in *Pervasive DataExchange User’s Guide*.
- Optionally, if you no longer need the data, delete the source database or specific tables using the Drop Database wizard or the Drop Table wizard in Pervasive Control Center (PCC).

If you do not deactivate the database before you remove the template, uninstall leaves the database files and the associated replication files. The replication files do not cause any problems but you may prefer to reclaim physical storage by deleting them.



**Note** The Pervasive PSQL database engine must be stopped and restarted during the uninstall of Pervasive DataExchange. If your business requirements prohibit stopping the database engine during certain hours, uninstall DataExchange during an acceptable period.

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## ➤ **To uninstall Pervasive DataExchange**



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**Note** You are **not** required to uninstall DataExchange before upgrading it. If you want to upgrade DataExchange, see “Upgrading Pervasive DataExchange” on page B-3. An uninstall removes all DataExchange design and activated database information from your system. Uninstalling requires that you redesign your replication databases.

---

- 1** Access the **Add/Remove Programs** from the Control Panel on your Windows operating system.
- 2** Click **Pervasive DataExchange** in the list.
- 3** Click the button to remove a program. The button may be labelled **Add/Remove** or **Remove**. The program to uninstall Pervasive DataExchange begins.
- 4** Click **OK** in response to the message about completely removing DataExchange.
- 5** Click **Yes**, and **OK** to confirm, in response to any messages about removing shared components.
- 6** Click **OK** when the uninstall program completes.
- 7** Restart your system if prompted to do so.

# *Replication Deployment*

---

## *A Look at the Tasks Involved in Replication Deployment*

This chapter gives a brief tutorial example for how to deploy a database for replication between two machines. The chapter contains the following sections:

- “Deployment Process” on page 4-2
- “Working with the Demodata Sample Database” on page 4-3
- “Working with Your Database” on page 4-13

The procedures in this tutorial are covered in more detail in *Pervasive DataExchange User’s Guide*.

## Deployment Process

This chapter covers the simple deployment process to prepare your database for real-time backup between two machines. The process combines the use of the DataExchange utility DXdeploy and a file copying task that you perform manually.

The deployment process has four steps:

- 1 Edit the XML deployment descriptor file used by the DXdeploy utility.
- 2 Run DXdeploy on the First Site, specifying the XML descriptor file as a parameter.
- 3 Copy the replication-enabled files from the First Site to the Partner Site.
- 4 Run DXdeploy on the Partner Site, specifying the same XML descriptor file used for the First Site.

An optional fifth step involves setting up a replication schedule with DataExchange Manager.

The easiest way to understand the process is to perform an example deployment using the sample database Demodata. The example concentrates on *what* to do. You can then learn about *why* you perform certain actions by reading “Working with Your Database” on page 4-13.



**Tip** The deployment process described in this chapter can also be performed using the DataExchange Deployment Tool. The Deployment Tool is an interactive wizard that provides an automated method for quick and easy replication deployment.

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## Working with the Demodata Sample Database

This section describes how to deploy the sample database Demodata for replication. Demodata is provided with both Pervasive PSQL Server and Workgroup.

The procedures in this section present do not explain *why* you do things so that you can concentrate on *what* to do. The intent is to quickly deploy Demodata for replication. After you've seen what to do, read the next section, "Working with Your Database" on page 4-13 to understand the *why*.

This section presents two procedures, each with several tasks:

- "Deploying Demodata for Replication"
  - "Task 1: Edit the XML descriptor file"
  - "Task 2: Run DXdeploy on the First Site"
  - "Task 3: Verify deployment on the First Site (optional)"
  - "Task 4: Copy the Template to the Partner Site"
  - "Task 5: Run DXdeploy on the Partner Site"
- "Removing the Example Deployed Database"
  - "Task 1: Deactivate the example database on both sites"
  - "Task 2: Run Template Remover on the First Site"
  - "Task 3: Delete files on the First Site"
  - "Task 4: Delete the example database and files on the Partner Site"

Since this deployment is only an example, you will not set up a replication schedule.



**Note** Pervasive PSQL contains security models for Btrieve applications. This section assumes that you deploy Demodata on sites with the Classic security model (the default model). If DefaultDB uses either the Mixed or Database security model, you must ensure that Demodata can be deployed. The easiest way to do this is to temporarily remove the password for DefaultDB on each site for which security is set.

To do so, in PCC right-click DefaultDB and select **Properties**. Click the Security tab, select the checkbox **Disable database security**, and click **Apply**. If you're not logged in to DefaultDB, provide the master password. Click **OK**. Remember to reenable security for DefaultDB after you complete the example deployment.

If you want to retain security and deploy Demodata, see "Pervasive PSQL Security" on page 2-9 in *Pervasive PSQL User's Guide*.

---

## **Deploying Demodata for Replication**

Before you work through this example, be sure you've already installed both a First Site and a Partner Site (backup site) as explained in "Installing Pervasive DataExchange" on page 3-6:

You will perform the following tasks for this example:

- "Task 1: Edit the XML descriptor file"
- "Task 2: Run DXdeploy on the First Site"
- "Task 3: Verify deployment on the First Site (optional)"
- "Task 4: Copy the Template to the Partner Site"
- "Task 5: Run DXdeploy on the Partner Site"



---

**Tip** So that you can restore Demodata to its original state after this deployment exercise, we recommend saving a copy of the database files before proceeding with this example.

---

### ➤ **Task 1: Edit the XML descriptor file**

- 1 On the First Site machine, open the folder `C:\<Installation Directory>\Replication\Docs`.
- 2 Open the XML descriptor file `EXPRESS.XML` in a text editor.

The file should resemble the following (comments excluded):

```
<?xml version="1.0"?>
<DXDeployment>
  <Configuration Project="DXProj" Network="DXNet"
    Release="1.0" Method="1-way">
    <Sites>
      <First
        ServerName="this.hostname"
        DSN="DXDatabase"
```

```

DataDirectory="C:\MYDATA">
  <Files>
    <Include Path="*.mkd" />
    <Include Path="*.btr" />
    <Include Path="*.dat" />
    <Include Path="*.ddf" />
  </Files>
</First>
<Partner
  ServerName="remote.hostname"
  DSN="DXDatabase"
  DataDirectory="C:\MYDATA" />
</Sites>
</Configuration>
</DXDeployment>

```

**3** Save EXPRESS.XML as **ExampleRTB.xml**.

You may save the file to the location you choose on your First Site machine. This example uses `C:\<Installation Directory>\Replication\Docs`.

**4** Specify the machine name or IP address of your First Site. “localhost” is not permitted as the machine name.

For example, if the name of your First Site is `db_server1`:

```

<First
  ServerName="db_server1"

```

**5** Specify the root directory path to the data files on the First Site.

For First Servername, change `DataDirectory="C:\MYDATA">` to `DataDirectory="C:\<Installation Directory>\Demodata">`.

The information should read something similar to the following:

```

<First
  ServerName="db_server1"
  DSN="DXDatabase"
  DataDirectory="C:\<Installation Directory>\Demodata">

```

Because this is just an example, leave the DSN as `DXDatabase`.

**6** Specify the path to the data files that you want to replicate.

The Demodata data files contain a file extension `.mkd`. Therefore, keep the line `<Include Path="*.mkd" />`.

**7** Delete the following lines:

```
<Include Path="*.btr" />
<Include Path="*.dat" />
```

Because Demodata has data dictionary files (DDFs), keep `<Include Path="*.ddf" />`. Typically you want to replicate DDFs. Note that the DSN created by DXdeploy does not use Demodata DDFs but uses its own in replication.

**8** Specify the machine name or IP address of your Partner Site.

Change **remote.hostname** to your site name or IP address. For example, if the Partner Site machine is `db_server2`:

```
<Partner
  ServerName="db_server2"
```

**9** Specify the absolute path to the root directory of the data files on the Partner Site.

For partner server name, change `DataDirectory="C:\MYDATA" />` to `DataDirectory="C:\Demodata" />`.

The information should now read something like the following:

```
<Partner
  ServerName="db_server2"
  DSN="DXDatabase"
  DataDirectory="C:\Demodata" />
```




---

**Note** The data directory on the Partner Site could be `C:\<Installation Directory>\Demodata` if you want to overwrite the sample database. This example uses a different directory to preserve the Demodata sample database as installed by Pervasive PSQL.

---

**10** Save and close the file `ExampleRTB.xml`.

➤ **Task 2: Run DXdeploy on the First Site**

**1** Open a command prompt on the First Site and type the following. The string is case-insensitive.

```
DXdeploy /Site=First C:\<Installation Directory>\Replication\
Docs\ExampleRTB.xml
```

**2** Press **Enter**.

As it runs, DXdeploy displays high-level status messages:

- Starting the CreateDSN action
- Starting the Design action
- Starting the Activate action
- Activation done, now synchronizing tables

More detailed messages are written to dxdeploy.log, located in the folder <Installation Directory >\Replication\LogFiles. To view these messages on-screen while DXdeploy runs, you can use the /LOGFILE= option. For example, `DXdeploy / Site=First /LOGFILE= ExampleRTB.xml`. A space follows the equal sign after LOGFILE=.

DXdeploy is complete when the command prompt reappears and when it enters the following message in the log file:

```
"Successfully completed all deployment actions."
```

### ➤ **Task 3: Verify deployment on the First Site (optional)**

You can visually verify that deployment has succeeded.

- 1** Start PCC if it is not already running. (Select **Control Center & Documentation** from the **Pervasive** group on the **Start** menu.)

The name of the First Site appears under the Engines branch.

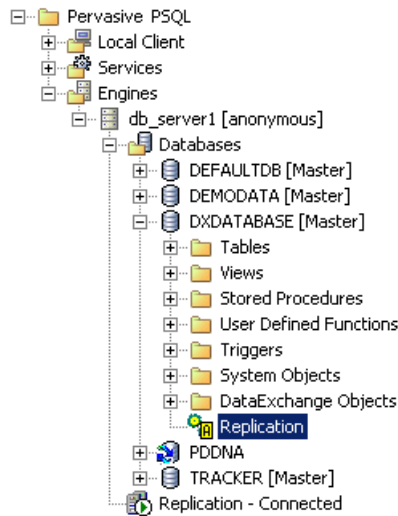
- 2** Expand the First Site branch and its list of databases.

DXDatabase is listed as a database.

- 3** Expand the DXDatabase branch.

The “A” icon shown on its Replication node indicates that the database is activated.

Figure 4-1 DXDatabase Activated on First Site



#### ➤ Task 4: Copy the Template to the Partner Site

After DXdeploy completes on the First Site, do the following:

- 1 From the First Site, copy the file `C:\<Installation Directory>\Replication\Docs\ExampleRTB.xml` to the same folder on the Partner Site.
- 2 On the Partner Site, create a folder `C:\Demodata`
- 3 Copy the contents of the First Site folder `C:\<Installation Directory>\Replication\Templates\DXDatabase` to `C:\Demodata` on the Partner Site.




---

**Note** Demodata files reside in a relative location that can be wherever you choose on the Partner Site. Your application may require absolute paths to certain data files. See “File Copying” on page 4-18 for details.

---

#### ➤ Task 5: Run DXdeploy on the Partner Site

- 1 Open a command prompt on the Partner Site and type the following. The string is case-insensitive.

```
DXdeploy /Site=Partner C:\<Installation Directory> \
Replication\Docs\ExampleRTB.xml
```

**2 Press Enter.**

As it runs, DXdeploy displays high-level status messages:

- Starting the CreateDSN action
- Starting the Design action
- Starting the Activate action
- Activation done, now synchronizing tables

More detailed messages are written to dxdeploy.log, located in the folder *<Installation Directory>\Replication\LogFiles*. To view these messages on-screen while DXdeploy runs, you can use the /LOGFILE= option. For example, `DXdeploy / Site=Partner /LOGFILE= ExampleRTB.xml`. A space follows the equal sign after LOGFILE=.

DXdeploy is complete when the command prompt reappears and when it enters the following message in the log file:

```
"Successfully completed all deployment actions."
```

When DXdeploy runs on the Partner Site, it also performs an initial replication between the First Site and the Partner Site. The initial replication populates the data on the Partner Site so that it is the same as on the First Site.

Congratulations! You've successfully deployed Demodata for replication.

### ***Removing the Example Deployed Database***

You do not need to keep the example deployed database. The following tasks explain how to remove it from the First Site and the Partner Site.

- "Task 1: Deactivate the example database on both sites"
- "Task 2: Run Template Remover on the First Site"
- "Task 3: Delete files on the First Site"
- "Task 4: Delete the example database and files on the Partner Site"

#### **➤ Task 1: Deactivate the example database on both sites**

**1** On the First Site machine, open a command prompt.

**2** Type `DXdeact DXDatabase`

The command string is case-insensitive.

**3** Press **Enter**.

The example database on the First Site is now deactivated.

**4** Repeat these steps at a command prompt on the **Partner Site**.

➤ **Task 2: Run Template Remover on the First Site**

**1** On the First Site, do one of the following:

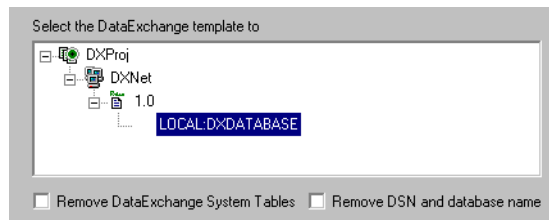
- Select **DataExchange** ▶ **Template Remover** from the **Pervasive** group on the **Start** menu.
- In PCC, select **DataExchange** ▶ **Template Remover**.

The Template Remover Wizard displays its welcome dialog.

**2** Click **Next**.

Template Remover asks you to choose a template to remove.

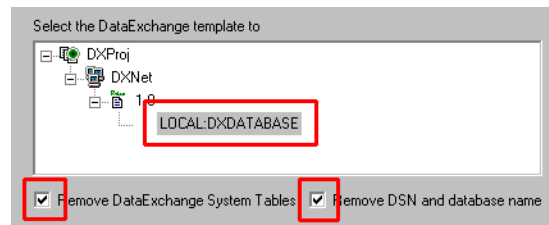
**3** In the templates pane, click **LOCAL:DXDATABASE**.



**4** Select **Remove DataExchange System Tables** and click **Yes** in the warning message to confirm that you wish to continue.

**5** Select **Remove DSN and database name**.

The wizard should now resemble the following:



**6** Click **Next**.

The wizard removes the template and presents a summary.

7 Click Close.

➤ **Task 3: Delete files on the First Site**

1 On the First Site, find the *DX\_projectname* directory under *C:\<Installation Directory >\Demodata* that was created during deployment.

*DX\_projectname* is the name given to your replication project in the XML deployment file, in this case *DXProj* in the following line in *ExampleRTB.xml*:

```
<Configuration Project="DXProj" Network="DXNet "
Release="1.0" Method="1-way">
```

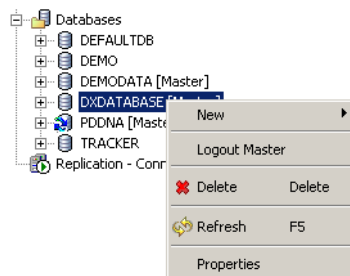
2 Delete the folder *\<Installation Directory >\Demodata\DX\_DXProj*.

3 Delete the *DXDatabase* folder under *C:\<Installation Directory >\Replication\Templates*.

➤ **Task 4: Delete the example database and files on the Partner Site**

1 On the Partner Site, start PCC if it is not already running. (Select **Control Center & Documentation** from the Pervasive group on the Start menu.)

2 In the database list, right-click *DXDatabase* and select **Delete**.



A dialog box asks you to confirm the deletion.

3 Click **Yes**.

A dialog box asks you to confirm DSN removal.



- 4 Verify that DXDatabase is the database name selected.
- 5 For the option **Always remove associated DSN entries**, do one of the following:
  - To keep the database you were replicating, leave the checkbox clear.
  - To delete the database you were replicating, select the checkbox.
- 6 Click **OK**.  
DXDatabase is removed from the database list in PCC.
- 7 To complete removal of the deployed replication database on the Partner Site, delete the directory **C:\Demodata**. This was the directory created in “Task 4: Copy the Template to the Partner Site” on page 4-8.

---

## Working with Your Database

The Demodata example demonstrated the four-part deployment process:

- 1 Edit the XML deployment descriptor file that is used by the DXdeploy utility.
- 2 Run DXdeploy on the First Site, specifying the XML descriptor file as a parameter.
- 3 Copy the replication-enabled files from the First Site to the Partner Site.
- 4 Run DXdeploy on the Partner Site, specifying the same XML descriptor file used for the First Site.

This section discusses the process in more detail so that you can apply it to your own database. Before beginning the process, however, you need to determine which tables to replicate and ensure that they can be replicated.

### **What to Determine First**

To deploy a database for replication, you need first to determine the following:

- Decide which tables in which database(s) should be replicated
- Ensure tables to be replicated contain system data and key

### **Which Tables To Replicate**

Determine which tables need to be replicated. Consider any situations in which tables created dynamically also need to be replicated. See “Adding Tables to an Activated Database” on page 3-7, in *Pervasive DataExchange User’s Guide*.

You specify the tables to be replicated in the XML deployment descriptor file. See “XML Deployment Descriptor File” on page 4-14.

### **System Data and Key**

For real-time backup replication, DataExchange requires that each table to be replicated has a unique system key. The replication control tables track changes by using the unique keys.

You may use the Pervasive PSQL utility Butil to determine if a table contains system key and data. For example, suppose you want to check table mytable.mkd located in c:\mydata. You would enter the following on a command line:

```
butil -stat c:\mydata\mytable.mkd
```

Among other information, the statistics output informs you about system data and key. If the output shows that `System Data = Yes` and `SYSKEY Status = Present`, then system data and key is present.

If the existing database does not have system keys, you **must** add system data and keys with the Pervasive PSQL Rebuild utility. Refer to the Rebuild Utility chapter in the *Pervasive PSQL Advanced Operations Guide*.

### **Pervasive PSQL Security**

Pervasive PSQL provides security models for Btrieve applications. However, the activated databases created by DXdeploy do not contain security, even if the source database does. You may add security to a replication database if you choose. See “Pervasive PSQL Security” on page 2-9 in *Pervasive DataExchange User’s Guide*. For more details, see also the chapter on Pervasive PSQL Security in the *Pervasive PSQL Advanced Operations Guide*.

### **XML Deployment Descriptor File**

The XML deployment descriptor file is a text file in which you specify information for the DXdeploy utility. For real-time backup between two machines, you use the descriptor file EXPRESS.XML. This file is located in the `\<Installation Directory>\Replication\Docs` folder.

You must edit the XML file for your situation. The following table explains the attributes in the XML file that may require editing. The default value for some of the attributes may be adequate as is. With the exception of Exclude Path, DXdeploy requires all of the attributes. DXdeploy is further discussed in *Pervasive DataExchange User’s Guide*. See “dxdeploy” on page 7-13.

Table 4-1 XML Attributes in Deployment Descriptor File

XML Attribute	Discussion
Project	<p>A replication design requires that you provide names for the replication project, replication network, and the project release. These names are of your own choosing to help you identify your replication setup.</p> <p>Project often corresponds to a specific database. If your goal is to replicate a database named <i>mydatabase</i>, then you may want to call the project <i>mydatabase project</i> or something similar that helps you remember which database is involved.</p> <p>Note that the three names—project, network, and release—are added to a replication system database used by the replication engine. The replication utilities also use these names to allow or disallow certain actions. For example, designed databases that differ only by release are allowed to replicate together. The project names and network names must match to allow replication.</p>
Network	<p>The replication network is the grouping of replication sites that participate in replication. A name that helps you remember the grouping is very useful. For example, if machines A and B participate, you could name the network <i>Sites A and B</i> or something similar.</p>
Release	<p>The release is like a version number for the design of the replication database. Your first design could be version 1, for instance. If you choose to change the design later, then you would create a version 2 and so forth.</p>
Include Path	<p>This attribute specifies the files to deploy for replication. At least one Include Path attribute is required. The following properties apply to this attribute:</p> <ul style="list-style-type: none"> <li>◆ Relative paths are relative to DataDirectory listed in the &lt;Sites&gt; section of the XML file.</li> <li>◆ Absolute paths, if specified, must all start with the same drive letter, which must be the same drive letter specified by DataDirectory.</li> <li>◆ Paths must specify files, individually or by wildcard. The “?” and “*” wildcard characters are permitted.</li> <li>◆ Subdirectories must be explicitly listed in the paths (DXdeploy does not automatically process subdirectories from a given root).</li> <li>◆ Multiple attribute lines are permitted.</li> </ul>

Table 4-1 XML Attributes in Deployment Descriptor File (Continued)

XML Attribute	Discussion
Exclude Path	This attribute specifies which files, among the included files, to exclude. The same properties apply as for Include Path.
First Servername	This attribute specifies the machine name or IP address of the First Site. "Localhost" is <b>not</b> permitted.
DSN	This attribute specifies the data source name (DSN) to be associated with the data files deployed for replication. The DSN must be unique on each site.
DataDirectory	This attribute specifies the root for relative paths in Include Path and Exclude Path. DataDirectory must begin with a drive letter.  DataDirectory in First Servername applies to the First Site. DataDirectory in Partner Servername applies to the Partner Site.
Partner Servername	This attribute specifies the machine name or IP address of the Partner Site. "Localhost" is <b>not</b> permitted.

### ***DXdeploy Utility on First Site***

After you edit the XML descriptor file, you run the DXdeploy utility on the First Site. The utility creates a *template* of the source data files. (Hereafter, for ease of discussion, the source data files will be referred to collectively as the source database.)

A template is a special type of database specifically for use with the replication tools. It contains various types of control tables used for replication. A template may also contain the data from the source database. DXdeploy creates a template without source data. (In step four of the deployment process, the source data gets replicated from the First Site to the Partner Site.)

You use a template to activate a database. *Activation* is the process of enabling a database for replication and establishing it as belonging to a site. DXdeploy also activates the source database on the First Site.

The following table explains where DXdeploy places the deployment files.

Table 4-2 Location of Activated Databases and Templates

Activated Database	Template
<p>An activated database is placed in a folder named <b>DX_projectname</b>, which is subordinate to the source database folder.</p> <p>For example, suppose your source database is located at C:\myfolder\mydatabase, and you named your project myproject. The activated database is placed in C:\myfolder\mydatabase\DX_myproject.</p> <p>Your source database is not altered.</p>	<p>All templates are placed in the <i>&lt;Installation Directory &gt;\Replication\Templates</i> folder.</p> <p>For example, if your activated database is named mydatabase, and its DSN is named mybdsn, the template occupies the following folders:</p> <ul style="list-style-type: none"> <li>◆ <i>&lt;Installation Directory &gt;\Replication\Templates\mybdsn</i> — This folder contains the empty data files produced from the source data files. The empty files are considered part of the template. Also in this folder is a copy of the XML descriptor file.</li> <li>◆ <i>&lt;Installation Directory &gt;\Replication\Templates\mybdsn\DX_myproject</i> — This folder contains the remaining replication-enabled files, such as the control tables.</li> </ul>



**Note** The activation process performed by DXdeploy may take from a few minutes to several hours depending on the size and number of data tables involved. However, you may proceed with the next step, copying the template files to the Partner Site, as soon as DXdeploy finishes creating the template.

Check for the following message on the screen: “Starting the Activate action . . .” After this message appears, you may copy the template files to the Partner Site. Typically, the template is created quite rapidly, even for a large number of data files.

## **File Copying**

After DXdeploy creates the template on the First Site, you must manually copy the template to your Partner Site.

### **Example of What to Copy Where**

DXdeploy creates template directories to help you determine where to copy the files on the Partner Site. For example, suppose your application's DSN is mydbdsn and its database name is mydatabase. Mydatabase uses four data files located as follows on your First Site:

- C:\myapp\data\table1.mkd
- C:\myapp\data\table2.mkd
- C:\myapp\data\other\table3.mkd
- C:\employees\accting\table4.mkd

Your edited XML descriptor file would resemble the following:

```
<First
  ServerName="db_server1"
  DSN="Mydbdsn"
  DataDirectory="C:\myapp\data" >
  <Files>
    <Include Path="*.mkd" />
    <Include Path="other\*.mkd" />
    <Include Path="c:\employees\accting\table4.mkd" />
```

The first and second Include Path statements are relative to DataDirectory. Assume that table4.mkd is a bound table and must be located at C:\employees\accting. It requires an absolute path.

Given this example, the following table explains where on the Partner Site you would copy the template files.

Directory on First Site	Contents	Where to Copy on Partner Site
\<Installation Directory >\ Replication\ Templates\mydbdsn\ mydatabase\ DX_myproject	Empty data files table1.mkd, table2.mkd, and table3.mkd  The edited XML descriptor file  DX_projectname subdirectory: <Installation Directory > Replication Templates mydbdsn mydatabase DX_projectname	Generally, to the same location as on the First Site. That is, to C:\myapp\data. However, the files can be located any where you choose provided that the location on the Partner Site matches the DataDirectory for Partner ServerName in the XML descriptor file.  The DX_projectname subdirectory contains the remaining replication- enabled files, such as the control tables.
\<Installation Directory >\ Replication\ Templates\mydbdsn\ mydatabase\c_drive\ employees\accting	Empty data file table4.mkd	C:\employees\accting



**Note** If you've installed your application on the Partner Site, its data files may already reside there. If so, overwrite them with the template files.

### ***DXdeploy Utility on Partner Site***

After the template is copied to the Partner Site and DXdeploy activates it on the First Site, activate the Partner Site. Run DXdeploy with the same XML deployment descriptor file used for the First Site. The edited file is found in the database directory under <Installation Directory >\Replication\Templates, which in the example above would be \<Installation Directory >\Replication\Templates\mydbdsn\mydatabase.



**Caution** DXdeploy must finish activation on the First Site before you run it on the Partner Site. On the First Site, check on-screen for the message: "Activation done, now synchronizing

tables.” Once the message appears, run DXdeploy on the Partner Site.

---

## **Replication Schedule**

After DXdeploy completes on the Partner Site, it performs an initial replication with the First Site. (DXdeploy must have completed on the First Site, also.) The initial replication between the sites fully populates the data tables on the Partner Site.

Following deployment, you may want to set up a replication schedule to initiate replication. A replication schedule periodically keeps the Partner Site data concurrent with the First Site data. See “Schedule Tasks” on page 9-18 in *Pervasive DataExchange User’s Guide* for how to set up a replication schedule.



---

**Note** Ensure that you set up the schedule on the First Site. That way, data flows from the First Site to the Partner Site.

---

## **Disaster Recovery**

If your First Site is catastrophically destroyed, you may restore your data from the Partner Site to a new First Site and reestablish your replication network. See “Disaster Recovery” on page 4-24 in *Pervasive DataExchange User’s Guide*.



# Troubleshooting

chapter

A

---

## *How to Proceed If You Encounter Problems Implementing Solutions*

This appendix discusses situations you may encounter as you implement a replication solution. It includes the following sections:

- “Troubleshooting Resources” on page A-2
- “Troubleshooting Strategies” on page A-3
- “Installation” on page A-4
- “Network Communications” on page A-5
- “Database Engine” on page A-6
- “Replication Engine” on page A-8
- “Log Files” on page A-9
- “Data Replication” on page A-14
- “Notification Agent” on page A-15
- “How to Get Additional Help” on page A-16

## Troubleshooting Resources

The following table describes resources available to help you solve problems.

*Table A-1 Resources that Assist with Problem Determination*

<b>Feature/ Component</b>	<b>Function</b>	<b>For More Information</b>
DataExchange log files	Logs information during replication processing.	See "Log Files" on page A-9
DataExchange Table Synchronization and Check utility	Ensures that every record in the data tables has a corresponding record in the replication control tables.	See "dxsynctables" on page 7-25 in <i>Pervasive DataExchange User's Guide</i>
Pervasive System Analyzer	Tests active engine installations and network communications in DataExchange.	See "Network Communications" on page A-5
Knowledge Base	Provides troubleshooting information about Pervasive software configurations and common environments.	Search the Pervasive Knowledge base at: <a href="http://www.pervasive.com/kb">http://www.pervasive.com/kb</a>

## Troubleshooting Strategies

You must first diagnose a problem before you can fix it. The following checklist contains items to help you diagnose problems with DataExchange.

- Did DataExchange install correctly?
- Does the network function correctly?
- Is the database engine running?
- Is the replication engine running?
- Is data being replicated correctly?
- Is the notification agent sending e-mail?
- Do the log files contain errors?
- Are other sources of help available?

The rest of this chapter discusses each checklist item in more depth.

## Installation

This section discusses topics that pertain to installation.

### ***Multiple DataExchange Designers***

Unpredictable results can occur if you design replication databases with more than one DataExchange Designer. For this reason, install only one DataExchange Designer per replication network. DataExchange Designer is installed as part of a First Site installation. In other words, install only one First Site per replication network.

### ***Terminal Services***

To install DataExchange to a Terminal Server client, you must first modify a registry setting on the Terminal Server client. See “Installing Over Windows Terminal Services” on page 3-2 .

---

## Network Communications

Pervasive System Analyzer (PSA) is a diagnostic utility included with the Pervasive PSQL database engines. PSA can be used as a stand-alone diagnostic tool to help you troubleshoot network problems.



---

**Note** For DataExchange, use PSA only to troubleshoot network problems. PSA is capable of other functions pertaining only to the Pervasive PSQL database engines. The additional functions in PSA (such as archiving) do not apply to DataExchange.

---

### ***How to Start PSA***

➤ **To start PSA**

- 1 Select Pervasive System Analyzer from the Pervasive group on the Start menu.



---

**Note** To troubleshoot your network communications for DataExchange, select **Test Active Installation** on the **System Analyzer Options** dialog in PSA.

---

### ***Documentation for PSA***

The use of PSA is detailed in the *Pervasive PSQL User's Guide*. Please see that guide for complete information regarding PSA.

## Database Engine

The Pervasive PSQL database engine must be running to perform replication.

➤ **To verify Pervasive PSQL Server engine is running**

- 1 Open the Windows Control Panel.
- 2 Click **Administrative Tools**, then open **Services**.
- 3 Scroll the list until you reach the following services:
  - Pervasive PSQL Transactional Engine
  - Pervasive PSQL Relational Engine

Both of these services must be started for the Pervasive PSQL database engine to function correctly.

The Status column shows whether the service is currently running. The Startup column shows whether the service is set to automatically start on system startup or start manually.

- 4 If a service is not started, right-click its icon and select **Start**.

➤ **To verify Pervasive PSQL Workgroup engine is running**

- 1 Check for the Workgroup icon in the Windows taskbar:



If this icon (engine running) is showing, the engine is running.

The engine is not running if either of the following is true:

- The engine-running icon is not showing in the Windows taskbar.
- The following icon (engine stopped) is showing in the PCC namespace:



You can start the engine from the **Pervasive** group on the **Start** menu.

## Replication Engine

The DataExchange replication engine must be running to perform replication. The engine will not run, for example, if a temporary license has expired.

Use the Pervasive PSQL License Administrator utility to determine if you have a permanent license installed for Pervasive DataExchange or to see if a temporary license has expired. See the License Administrator chapter in *Pervasive PSQL User's Guide*.

### ➤ To verify replication engine is running with Pervasive PSQL Server

- 1 Open the Windows Control Panel.
- 2 Click **Administrative Tools**, then open **Services**.
- 3 Scroll the list until you reach the entry **Pervasive PSQL Replication**.

This service must be started for the DataExchange replication engine to function correctly.

The Status column shows whether the service is currently running. The Startup column shows whether the service is set to automatically start on system startup or start manually.

- 4 If the service is not started, right-click its icon and select **Start**.

### ➤ To verify replication engine is running with Pervasive PSQL Workgroup

- 1 Check the Workgroup icon in the Windows taskbar:



If this icon is showing, the engine is running. The engine is not running if this icon is not showing.

You can start the engine by selecting **Replication Engine** from the **Pervasive** group on the **Start** menu.

---

## Log Files

Pervasive DataExchange allows you to enable event logging via log files. You may record the activity of the DataExchange Designer, the Replication monitoring tools, the DataExchange Manager, and the Replication Engine. Additionally, DataExchange keeps a messages log and an installation log.

All logs are text files and have a file extension of LOG for the current one. The files produce any mix of data: Information, Warning, Error, and Debugging. You may also choose verbose messages. Verbose messages contain the name of the program and a line number within the program to help you debug situations. Verbose applies only to the Debug logging level.

You can change the default location of the logs, which is *<Installation Directory >\Replication\LogFiles*. If you want, you can also change the default log size and the default number of files kept (a history). You can open the LogFiles folder by selecting **DataExchange ▶ LogFiles** from the Pervasive group on the Start menu.

### **Log File Size**

If you set the maximum log size to zero (“no limit”), the log will increase in size to whatever capacity the physical storage allows. We recommend that you do not set a maximum log size of zero except for troubleshooting. Even then, avoid using “no limit” for an extended period (typically, more than four hours). The Dre log, for example, can grow rapidly depending on the type of logging being performed (such as Debug logging), the frequency of replication, and the number of sites replicating.

When a log file reaches its maximum size, the file is reassigned to the next history file name. For example, when the Dre.log reaches its maximum size, it gets renamed to Dre.lo1 and a new Dre.log gets created. Dre.log is then empty and starts acquiring data once more. When the maximum size is again reached, Dre.lo1 gets renamed to Dre.lo2, Dre.log gets renamed to Dre.lo1, and a new Dre.log is again empty and able to acquire data. The setting for “maximum logs to keep” determines the extent of the history retained: lo1, lo2, lo3, and so forth.

The DataExchange Designer, DataExchange Manager, and the Statistics and Log View tools have a Logging dialog that allows you to change the logging settings.

## **Log File Descriptions**

The following table describes the content of the various log files.

*Table A-2 DataExchange Log Files*

<b>Log File (.log)</b>	<b>Description</b>
da	The log updated by DataExchange Manager when you modify schedules, user access, and so forth.
dnewsite	The replication installation log. This log is created when you install Pervasive DataExchange and contains information about setting up the replication DNA database.
dre	<p>This log contains detailed information on the status of the replications, and is the most active log file. The Replication Engine updates this log as replication occurs.</p> <p>The default maximum size of this log is 2 MB. You may want to limit this log to a maximum 5 MB. Some text editors cannot open files larger than 10 MB.</p> <p>When the Replication Engine reassigns the DRE log to the next history version (DRE.LOG to DRE.LO1, for instance), some log messages may be lost. The loss is typically minimal and may not even occur, depending on the replication activity when the history version is assigned.</p>
dregdtk	This log is created if you install a First Site (which includes the DataExchange Designer). The log contains information about registering the licenses.
dxact	The log updated by the activation utility when you activate a site.
dxdeact	The log updated by the deactivation utility when you deactivate a site.
dxdeploy	The log updated by the dxdeploy utility. See also “Working with the Demodata Sample Database” on page 4-3 for a hands-on example in which information is written to dxdeploy.log.
dxevent	The log updated by the dxevent.dll, which handles replication session event callbacks.
dxsynctables	The log updated by the dxsynctables utility, which is used to synchronize data files and the replication data control files.

Table A-2 DataExchange Log Files (Continued)

Log File (.log)	Description
ffcopy	The log updated by the ffcopy.exe utility, which copies non-Btrieve files from a First Site to a Partner Site.
mer	This log is written to if errors occur while DataExchange routes calls to the MKDE. This log is usually empty. If you suspect that data is not getting replicated correctly, check this log.
msg	This log lists messages about the replication sessions, the sites that replicated and if the replication was successful. The Replication Engine writes to this log. The dre log is more detailed.
prd	The log that DataExchange Designer updates when you design a replication template.
reh	This log contains information only if the Replication event handlers encounter problems updating control tables. If you suspect that data is not getting replicated correctly, check this log.
replinst	<p>The log that Pervasive DataExchange creates to record information related only to installation. This log file is especially useful if installation fails.</p> <p>Note that if installation fails, the file is located in the WINNT directory under Windows 2000.</p>
sess####	<p>These logs contain information about particular replication sessions. The #### represents a four-digit number.</p> <p>The logs are created if you set up a replication schedule and then replicate. The logs are deleted if you stop the replication engine, and are also deleted at regular intervals. The deletion interval is set by a registry setting.</p>

➤ **To access logging options in DataExchange Manager**

- 1 In PCC, click the name of a database.
- 2 Click DataExchange ▶ Manager.
- 3 Log on to Manager.
- 4 Click Options.

➤ **To access logging options in DataExchange Designer**

- 1 In PCC, click the name of a database.
- 2 Click DataExchange ▶ Designer.
- 3 Open an existing template.
- 4 Click View ▶ Preferences ▶ Logging tab.

➤ **To access logging options in the Progress and Log Viewers**

- 1 In PCC, right-click Replication - Connected and select Statistics and Log Views.
- 2 Right-click in the Replication Log Viewer and select Log Messages.

A drop-down menu displays log commands and settings, which are explained in *Pervasive DataExchange User's Guide* in Chapter 10, "Using the Replication Progress and Log Viewers" under "Recording and Monitoring Replication Activity."

➤ **To change the deletion interval for session logs**



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**Caution** Incorrectly editing your computer's registry can damage the registry. The damage can cause undesirable results, such as your computer not being able to boot. If you do not feel comfortable editing the registry, obtain the services of a qualified technician. Pervasive Software accepts no responsibility for a damaged registry.

We suggest that you create a backup of your registry before editing the registry. Refer to the online help for your operating system. Look for index entries such as "registry, backing up," or "emergency repair disk."

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- 1 Select Start ▶ Run, then type `regedt32` in the Open text box.
- 2 Click OK.  
Registry Editor opens.
- 3 Find the following registry key:  
HKEY\_LOCAL\_MACHINE\Software\Pervasive Software\Pervasive Replication\SessionExpiry
- 4 Double-click REG\_DWORD for the key.

The Edit DWORD Value dialog opens.

- 5** In the Value Data field, change the value to **the desired minutes** (5 is the default).
- 6** Click **OK**.
- 7** Exit Registry Editor.

## Data Replication

This section discusses topics that pertain to replicating data.

### ***False Alert Because of Schedule Manipulation***

If you delete, disable, or modify a schedule, the other replication sites are not aware of this because replication does not take place. The notification agent on the other sites continues to contact the scheduling site. If the scheduling site is down or unreachable, the agent sends a failure alert. The alert is false because the schedule no longer applies.

To prevent such false alerts, manually initiate replication after you delete, disable, or modify a schedule. The replication ensures that the schedule changes get replicated. Alternatively, if your entire replication network no longer needs replication, deactivate all replication sites on the network.

### ***Correct Alarms but Replication on Wrong Schedule***

This situation occurs if you change a schedule remotely. For example, you start DataExchange Manager on site B and use it to change the schedule on site A. The replication engine on site A will not use the new settings until you restart the engine. The notification agent, however, uses the new schedule without having to be restarted. The agent properly notifies of replication being off schedule.

To prevent this situation, do not update schedules remotely.

### ***Dynamically Created Tables Not Being Replicated***

If your dynamically created tables are not being replicated, verify that the file matching patterns in the dCNF table are correct. DataExchange provides a utility, Dxdynpath, to help you verify file matching patterns. See “dxdynpath” on page 7-15 in *Pervasive DataExchange User’s Guide*.



**Note** Dxdynpath should only be used with the Real-Time Backup Edition.

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## Notification Agent

The notification agent is installed only if the machine contains the Pervasive PSQL Server product. It is not available for the Workgroup product. If the notification agent is not sending e-mail, check the following:

- The agent is running as a service
- The agent is correctly configured (see “dxagent” on page 7-34 in *Pervasive DataExchange User’s Guide*)
- The SMTP port through which the agent communicates does not require authentication or encryption
- Each replication machine with an agent has access to the SMTP server
- The SMTP server is set up to accept e-mail from each replication site running the agent

➤ **To verify notification agent is running**

- 1 Open the Windows Control Panel.
- 2 Click **Administrative Tools**, then **Services**.
- 3 Scroll the list of services until you reach the entry **Pervasive DataExchange Agent**.

This service must be started for the notification agent to function correctly. The Status column shows whether the service is currently running. The Startup column shows whether the service is set to automatically start on system startup or start manually.

- 4 If the service is not started, right-click its icon and select **Start**.

### **Testing the Mail Server**

The SMTP mail server must also be functioning correctly. If required, verify that the SMTP mail server is sending and receiving e-mail correctly. Reference the documentation supplied for your SMTP server software or check for testing procedures on vendor Web sites.

## How to Get Additional Help

Pervasive Software strives to ensure that your product installation is easy and successful. If you encounter problems during or after the installation that are not covered in the user documentation, please contact Pervasive Software and we will address your problem promptly.

The following table lists a variety of resources to help you get answers to your questions, troubleshoot problems, and interact with the Pervasive team as well as with other customers.

Table 1-3 Pervasive Software Resources and Contact Information

Resource	Description	Contact Information
Pervasive Software Web site	The Pervasive Software Web site is a great source for everything Pervasive PSQL.	<a href="http://www.pervasive.com">http://www.pervasive.com</a>
Pervasive Resource Center	The Resource Center provides a quick and easy way to access Pervasive resources, such as:  Free Trials - Data Sheets - White Papers - Success Stories - Tech Papers - Demos - Webinars - Audio - Training - Subscription Center - Developer Center - Dev Talk Technical Forums	<a href="http://www.pervasive.com/resources/">http://www.pervasive.com/resources/</a>
FTP Site	The Pervasive FTP site contains downloadable updates and patches to our product offerings, as well as additional debugging tools, documentation, third-party tools, and beta releases.	<a href="ftp://ftp.pervasive.com/support/">ftp://ftp.pervasive.com/support/</a>
Newsgroup	The Pervasive PSQL newsgroup is managed by the end-user community, posting and answering questions as they wish.	<a href="news://comp.databases.btrieve">news://comp.databases.btrieve</a> .
Technical Support	The Support site contains product support assistance, support offerings, as well as online forms to submit service tickets, feedback and product defects.	<a href="http://www.pervasive.com/support/">http://www.pervasive.com/support/</a>

Table 1-3 Pervasive Software Resources and Contact Information

Resource	Description	Contact Information
Pervasive PSQL Knowledge Base	The Pervasive PSQL Knowledge Base is a searchable database of information on installation, configuration, component management, product defect status, and answers to the frequently asked questions (FAQs).	<a href="http://www.pervasive.com/support/">http://www.pervasive.com/support/</a>
Pervasive Library	View the current documentation and technical papers online and access Pervasive discussion forums.	<a href="http://www.pervasive.com/library">http://www.pervasive.com/library</a>
Online Documentation	Download the latest versions of Pervasive PSQL product manuals.	<a href="http://www.pervasive.com/support/technical/online_manuals.asp">http://www.pervasive.com/support/technical/online_manuals.asp</a>
	The complete suite of online documentation is installed automatically on Windows, unless you specifically excluded it, during installation.	Access installed documentation from the <b>Pervasive</b> program on the <b>Start</b> menu or from the installation CD-ROM.
Printed Documentation	Printed versions of each manual are available for purchase separately, or you may purchase the entire documentation set.	<a href="http://www.pervasive.com/ecommerce/Scripts/default.asp">http://www.pervasive.com/ecommerce/Scripts/default.asp</a>  Send e-mail to: <a href="mailto:salesupport@pervasive.com">salesupport@pervasive.com</a>  Or telephone: 1 800 287 4383.
Telephone Contacts	Pervasive Software has offices worldwide to help solve your product support issues.	<a href="http://www.pervasive.com/company/contact">http://www.pervasive.com/company/contact</a>
E-Mail Contacts	Pervasive Software welcomes your comments, suggestions and requests for assistance via e-mail.	

## **Technical Support**

If you still have questions or problems relating to your Pervasive DataExchange installation, you can obtain help from the Pervasive Customer Support department.

Your purchase of Pervasive products entitles you to 30 days of free technical support for installation and configuration problems.



# *Upgrading Your Pervasive DataExchange Installation*

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## *B*

### *Instructions for Upgrading an Existing Pervasive DataExchange Installation*

This appendix explains the steps to upgrade your current Pervasive DataExchange product installation. It contains the following sections:

- “Before You Upgrade DataExchange” on page B-2
- “Upgrading Pervasive DataExchange” on page B-3
- “Common Questions After Upgrading Pervasive DataExchange” on page B-7

## Before You Upgrade DataExchange

Before upgrading Pervasive DataExchange, review the following information:

- ❑ “Preparing to Install Pervasive DataExchange” on page 2-1. This chapter provides important information including system requirements and platform specific notes that are relevant to your operation.
- ❑ Readme file. This file is located on the distribution media and contains late-breaking product news that could not be included in the product documentation.

Upgrading means that you are installing a newer version of the product than the version currently installed. You do not have to uninstall the previous version to upgrade.

### **Windows Platform Notes**

Be aware of the following conditions.

- You must have full administrator-level rights on the machine where you install Pervasive DataExchange.
- If you run with Advanced Power Management, disable it while installing Pervasive DataExchange. The power management can cause an installation to fail if the server is suspended during the install. You control the advanced power management via the Power Options in the Control Panel.

### **DataExchange Readme File**

Pervasive Software strongly recommends that you read the information contained in the Readme file. This file contains important product news that could not be included in the product documentation but may be essential to your installation and use of the product release.

The Readme file is located at the root on the installation CD.

### **Back Up Data Files**

Ensure that you have a current backup of all of your data files prior to beginning the upgrade installation. You may also want to perform and test a full system backup. A full system backup is a general precaution prior to any software installation on a server.

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## Upgrading Pervasive DataExchange

The upgrade of DataExchange requires a previously installed version of the product.



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**Note** You are **not** required to uninstall DataExchange before upgrading it. An uninstall removes all DataExchange design and activated database information from your system, as well as any databases created under the Replication directory. Uninstalling requires that you redesign your replication databases.

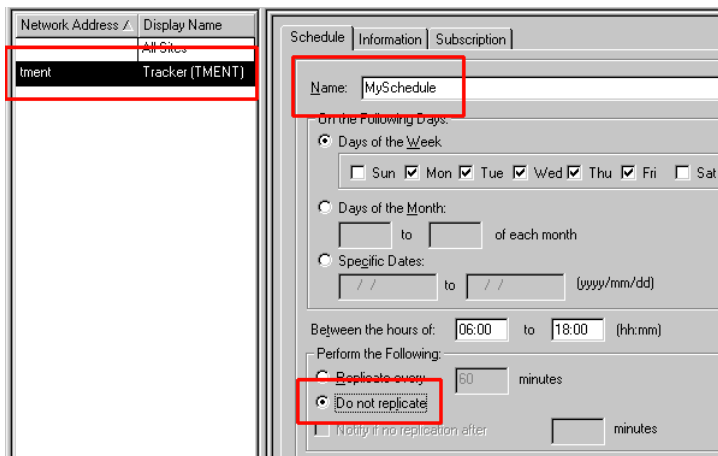
---

If the upgrade installation fails before the program copies any files to the target installation directory, refer to the installation log file (replinst.log) in the <drive>:\Windows directory.

### ► To upgrade Pervasive DataExchange

Remember to upgrade **all** sites used in replication.

- 1 If needed, replicate to ensure that data at all sites is current.
- 2 Stop all replication schedules.
  - In PCC, click the database for which you have a schedule set up.
  - Select **DataExchange ▶ Manager**.
  - Log on. By default, the Login Name is **ADMIN** and the Password is **password**. Both are case-sensitive.
  - Click the desired site in the site list.
  - Click the **Schedule** tab.
  - Select each schedule in the **Name** list (one at a time).
  - Click the option **Do not replicate** then click **Apply**.



- 3 Do one of the following to launch the installation program from your Windows machine:
  - Insert the Pervasive DataExchange CD in the CD-ROM drive.
  - If the installation does not start automatically, select **Start ▶ Run**, and type *drive:\setup* where *drive* is the drive letter of your CD-ROM device.

Setup checks for a previous version of DataExchange. If found, messages about upgrading appear:

Figure B-1 General Upgrade Message



- 4 Click **OK**.  
The Welcome screen appears.
- 5 Click **Next**.  
The Software License Agreement appears.
- 6 Read the license agreement. To accept it, click **Yes**.  
If your existing DataExchange license key needs updating, setup asks for a new one. If not, skip to step 8.

**7** In the License field, do one of the following:

- Type or paste the license key.
- Leave it blank to install an evaluation copy of DataExchange.

A First Site and a Partner Site use the same key, which is provided on the case of the DataExchange installation CD, the product registration card, and the printed license agreement.

At the end of the evaluation period, the replication engine returns an error when it tries to start. You may apply a license key at any time. See “To upgrade an evaluation license” on page 1-7.

**8** Click **Next**.

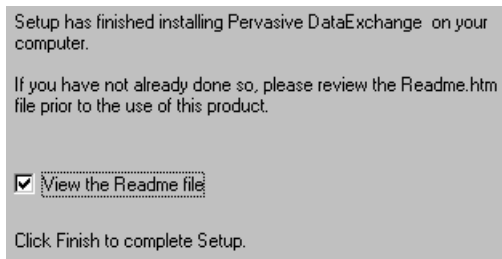
The installation program automatically determines the settings for the previously installed version of DataExchange on the machine. A summary of installation settings appears.

**9** Click **Next**.

The upgrade continues, displaying status messages. The following types of messages appear:

- Stopping the Pervasive PSQL database engine
- Copying components
- Installing components
- Initializing components
- Registering components
- Restarting the Pervasive PSQL database engine

At the end of the installation, setup informs you that it is complete and prompts you to view the readme file.



- 10** View the Readme file. Pervasive Software strongly recommends you do so to learn important information that could not be included in the product documentation but may be essential to your configuration and use of the product.
- 11** Click **Finish**.
- 12** Do one of the following:
  - If you chose to view the readme file, it appears in a browser window. You must **close** the browser window to exit setup.
  - If you cleared the **View the readme file** option, setup exits. To view it later, open the DataExchange readme.htm file.
- 13** Restart existing replication schedules.
  - In PCC, click the database for which you have a schedule set up.
  - Click **DataExchange ▶ Manager**.
  - Log on. By default, the Login Name is **ADMIN** and the Password is **password**. Both are case-sensitive.
  - Click the desired site in the site list.
  - Click the **Schedule** tab.
  - Select each schedule in the **Name** list (one at a time).
  - Click the option **Replicate every** then click **Apply**.

## **Common Questions After Upgrading Pervasive DataExchange**

See also “Common Questions After Installing Pervasive DataExchange” on page 3-11.

### **Will my activated databases still replicate after I upgrade?**

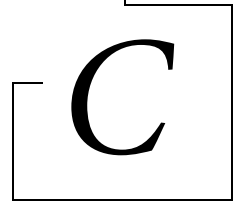
Yes. All replication information is retained for your activated databases. Your only task to use the activated databases is to restart any replication schedules that you had established before the upgrade.

### **Are all of my DataExchange registry settings retained after I upgrade?**

Yes. The registry settings remain as before.



# *Advanced Topics*



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## *Advanced Topics for Pervasive DataExchange*

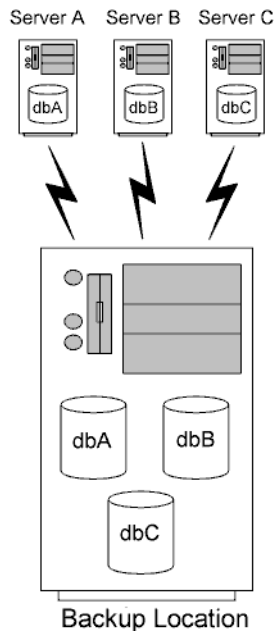
This appendix discusses advanced topics dealing with installation of Pervasive DataExchange. The following section is included:

- “DataExchange in a Many-to-One Configuration” on page C-2
- “Installing One First Site and Many Partner Sites” on page C-4

## DataExchange in a Many-to-One Configuration

A many-to-one configuration involves multiple sites backing up data to a single site. In such situations, the choice of a First Site may not be immediately apparent. Consider the following example.

Figure C-1 Many-to-One Backup Configuration Example



You have three servers, A, B, and C, each on its own network. Each server runs its own database, dbA, dbB, and dbC, respectively. You want to implement a real-time backup solution, in which case a replicated copy of each database is maintained on the same machine.

Given this scenario, the most reasonable choice for the First Site is the *backup* location. Why? Part of the reason is that a replication network can have only one First Site. In addition, the backup location meets the following criteria:

- Contains network connectivity to the Partner Sites.
- Provides physical storage for the entire set of data.
- Lends itself as the location from which the least amount of file copying is required. Replication design requires that some files are copied to the Partner Sites.

See “Many-to-One Configuration” on page 4-3 in *Pervasive DataExchange User’s Guide* for an explanation of how to deploy DataExchange in a many-to-one configuration.

## Installing One First Site and Many Partner Sites

Each replication network must have one site designated as a *First Site*. The other sites, the Partner Sites, must perform an initial replication with the First Site. The initial replication establishes the Partner Sites as part of the replication network.

A First Site installation includes DataExchange Designer, a utility used to design how a database is replicated. You can design a replication database on one site and deploy (activate) it on other sites. Installing the DataExchange Designer on multiple sites is unnecessary and can lead to problems if the sites begin to configure their own databases for replication.

Therefore, install only one First Site on your replication network. However, your replication network may have as many Partner Sites as needed.

### ➤ **To install Pervasive DataExchange on a many-to-one configuration**

- 1** Install DataExchange on the First Site and one Partner Site as explained in “To install Pervasive DataExchange on a two-machine configuration” on page 3-7.
- 2** Run the installation program on each additional Partner Site.
- 3** In the **Enter License** dialog, type or paste your DataExchange license key. Use the license key supplied with the additional version of the Real-Time Backup Edition that you purchased.
- 4** Click **Next**.
- 5** For setup type, click **Partner Site** and click **Next**.
- 6** Continue with step 9 in “To install Pervasive DataExchange on a two-machine configuration” on page 3-8.

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