

IPFX Failover Server

IPFX Version 4.3 SP5



About This Guide

The purpose of this document is to provide the user with information on how to use this IPFX product.

Typographical Conventions

Before you start using this guide, it is important to understand the terms and typographical conventions used in the documentation.

The following kinds of formatting in the text identify special information.

Formatting convention	Type of Information
Triangular Bullet(∅)	Step-by-step procedures. You can follow these instructions to complete a specific task.
Special Bold	Items you must select, such as menu options, command buttons, or items in a list.
<i>Emphasis</i>	Use to emphasize the importance of a point or for variable expressions such as parameters.
CAPITALS	Names of keys on the keyboard. for example, SHIFT, CTRL, or ALT.
KEY+KEY	Key combinations for which the user must press and hold down one key and then press another, for example, CTRL+P, or ALT+F4.
	Information that applies to the IPFX Director platform only.
	Information that applies to the IPFX for CallManager platform only.
	Information that applies to the IPFX for NEC platform only.
	Information about an IPFX module. All, some, or no modules may be available to you, depending on which modules your organisation has purchased.

See Also

[About This Guide](#)

[Related Documents](#)

Related Documents

The following documents contain additional information related to the IPFX Failover Server:

- The *IPFX Technical Manual* contains information about setting up and installing an IPFX Server.
- The *IPFX Failover Server White Paper* contains information about different types of failover and the methods and limitations of the failover process.

See Also

[About This Guide](#)

[Typographical Conventions](#)

About the IPFX Failover Server

There are two types of Failover Server:

- A Warm Failover Server backs up voicemail in real-time, and backs up call records and configuration data once per day.
- A Hot Failover Server backs up voicemail, call records and configuration data in real-time.

Unless otherwise stated, the information in this document applies to both types of Failover Server.

Role of the Failover Server

A Failover Server monitors the status of one or more live IPFX Servers. The monitored IPFX Servers may exist at any location allowed by the network topology. In the case of IPFX Director, the monitored servers must exist reside within the same IP Subnet/Layer 2 VLAN as the Failover Server. This restriction does not apply to IPFX for CallManager and IPFX for NEC Servers.

If a monitored IPFX Server (hereafter referred to the Primary Server fails, the Failover Server takes over the Primary Server's role. The Failover Server can only stand in for one IPFX Server at a time.

For the purpose of failover, an IPFX server is considered to have failed if it can no longer respond to ping requests over the network. This situation can arise from power interruptions, network card failures, or other network-related problems.

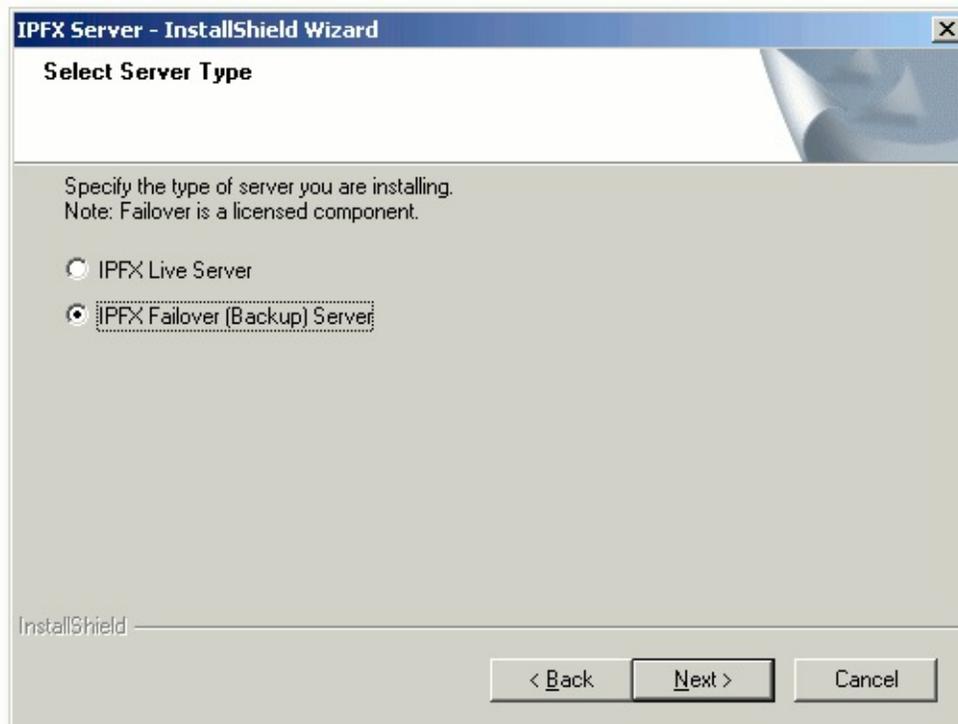
Note: If telephony applications cease to run on a particular Primary Server, but that Server remains responsive to ping requests, then the Failover Server will not recognize that the Primary Server is unavailable and will not take over from it.

See Also

[About the IPFX Failover Server](#)

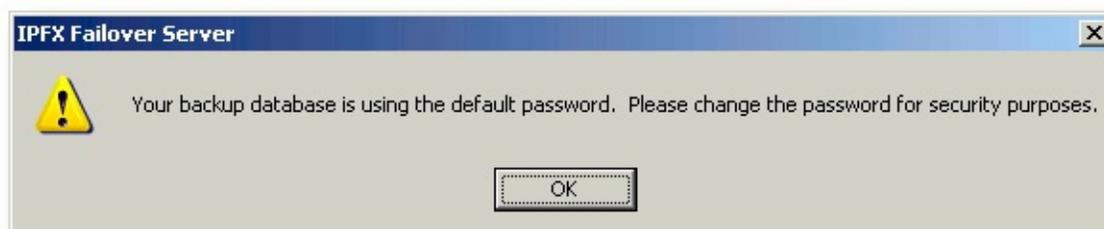
Installation

To install a server as a Failover Server, follow the installation process described in the *IPFX Technical Manual*, but select the **IPFX Failover (Backup) Server** option in the installation wizard:



Choosing the **IPFX Failover (Backup) Server** option creates a registry entry that marks the server as a Failover Server. Subsequent service packs installed on the same system will be then be installed as Failover servers by default.

When the Failover Server starts up for the first time you will be prompted to enter a password for the Failover Server's database:



Enter a memorable and secure password. You must to enter the

password twice for confirmation.

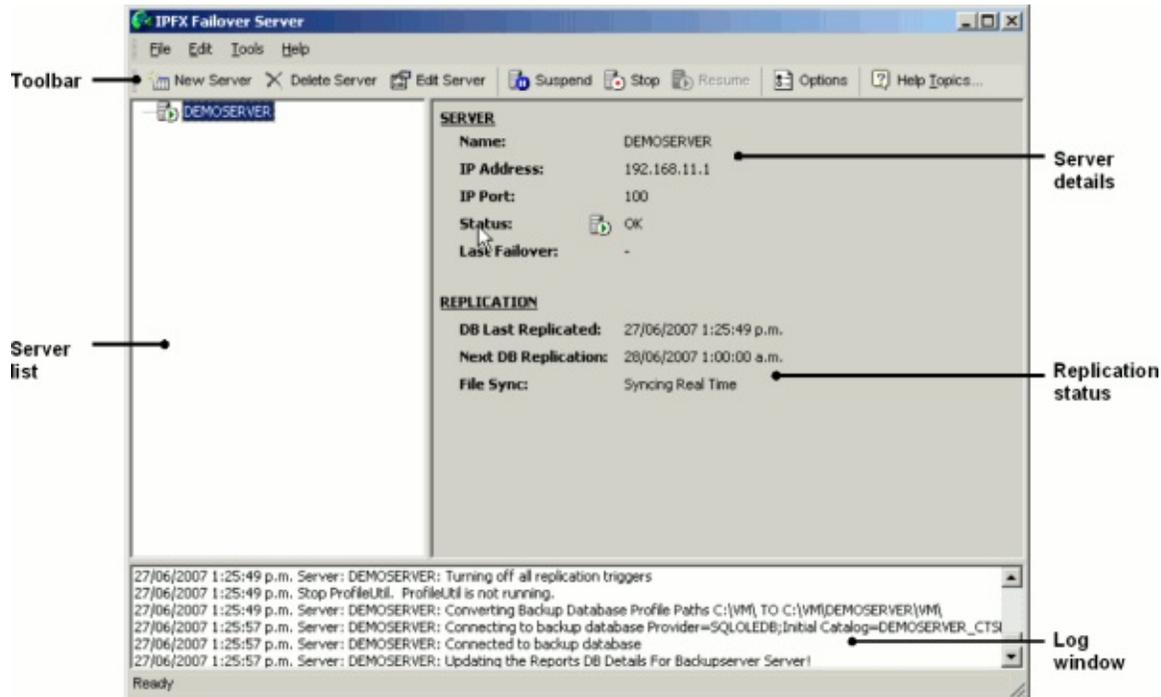
A standard Windows-style dialog box titled "Password" with a close button (X) in the top right corner. It contains two text input fields: the first is labeled "Password:" and the second is labeled "Confirm Password:". Below the input fields are two buttons: "OK" on the left and "Cancel" on the right.

The main Failover Server screen appears.

Note: When setting up Failover Servers for Cisco CallManager, you will need to ensure that you configure a TSP on the Failover Server that is identical to the TSP used on the Primary Server.

Overview

The Failover Server's screen appears as in the example below. Here, the Failover Server has been configured to monitor a single Primary IPFX Server.



- The *Server list* contains shows the names of all monitored IPFX Servers. An icon indicates the status of each server.
- The *Toolbar* buttons allow you to add or remove servers from the Server list, change failover properties of a monitored server, and start and stop monitoring individual servers.
- The *Server details* and *Replication status* of the selected server are displayed in the panel to the right.
- The *Log window* at the bottom of the screen displays the Failover Server's log messages in real time.

Status icons

The state of a monitored IPFX Server is indicated by one of the following icons:



Ok. The Primary IPFX Server is currently being monitored, and is detected as being alive and well.



Suspended. The Primary IPFX Server is not currently being monitored. File synchronisation between the Primary and Failover Servers is stopped. Database synchronisation between the Primary and Failover Servers continues.

Note: When monitoring is resumed, file synchronisation will resume and any changed files on the Primary Server will immediately be copied to the Failover Server.



Stopped. The Primary IPFX Server is not currently being monitored. File and database synchronisation between the Primary and Failover Servers is stopped.

NB: If the Primary Server continues to operate while monitoring on the Failover Server is stopped, the data on the Failover Server will become out of sync with the data on the Primary Server. Data synchronisation will only be restored when monitoring is resumed *and* the Failover Server has completed a subsequent database replication.



Suspect. The monitored IPFX Server has failed to respond to one or more pings, but the number of failed pings does not exceed the ping failover count.



Failure. The monitored IPFX Server has failed to respond to a number of pings equal to or exceeding the ping failover count. The Failover Server will take over the role of the failed CT Server if possible.



Replicating. Data is being transferred to or from the IPFX Server. This may occur during the scheduled backup process, or during failback.

See Also

[Overview](#)

[Failover](#)

Failover

Failover is the process of transferring control from a failed Primary Server to the Failover Server. Failover occurs automatically.

When a monitored Primary IPFX Server enters failure status, the Failover Server starts up its own IPFX Server application. Clients formerly connected to the Primary IPFX Server will then attempt to reconnect to the Failover Server.

Users will be asked to re-log in to their Clients when failover occurs.

See Also

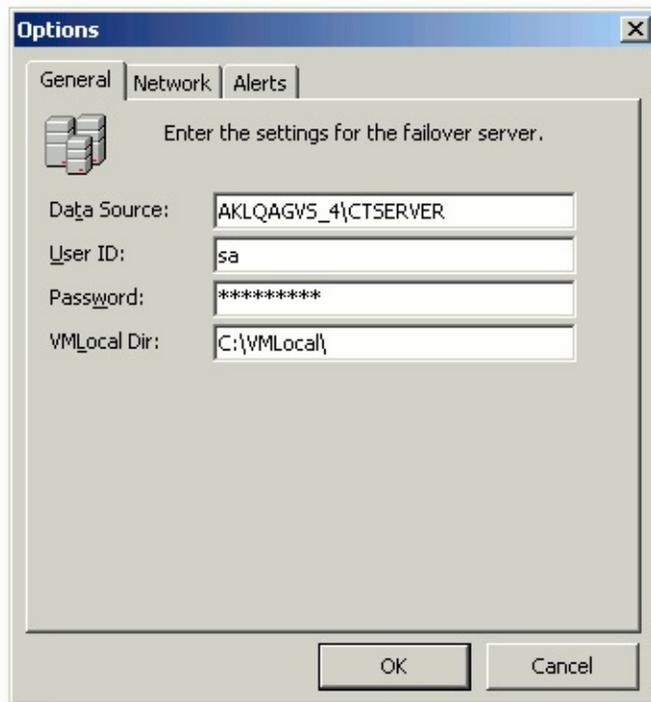
[Overview](#)

[Status icons](#)

Settings for the Failover Server

To edit settings for the Failover Server, click **Tools > Options** from the toolbar.

General tab



Data source: This is the Failover Server's Data Source, i.e. the name of the Failover Server's database, and is typically in the form *Server Name\CTSERVER*.

User ID: The User ID that the Failover Server uses to access SQL. It should be entered as shown.

Password: The Password used to access SQL in conjunction with the User ID.

VMLocal Dir: The location where applications are stored on the Failover Server.

See Also

[Settings for the Failover Server](#)

[Network tab](#)

[Alerts tab](#)

Network tab



This tab contains settings that affect how the Failover Server monitors its IPFX Servers.

Warning: Do not modify these values except on the advice of an IPFX Limited Technician.

Network Adapter: This setting is required for gratuitous ARP.

Description: Automatically determined, based on the Network Adapter selected.

IP Address: Automatically determined, based on the Network Adapter selected.

Subnet Mask: Automatically determined, based on the Network Adapter selected.

Ping Interval (ms): The numbers of milliseconds between pings to the monitored IPFX Servers. This setting has a default value of 2000, i.e. the Failover Server pings each monitored IPFX Server every 2 seconds.

Ping Timeout (ms): The number of milliseconds that the Failover Server will wait for an acknowledgement to its ping. This setting has a default

value of 1000, i.e. a monitored server is considered to have failed if does not send a reply within 1 second of being pinged.

Ping failure count (warning e-mail): The number of consecutive failed pings required for the Failover Server to send an e-mail alert (default 5).

Ping failure count (normal failover): The number of consecutive failed pings required to initiate failover during normal operation (default 15).

Ping failure count (after sys reboot): The number of consecutive failed pings required to initiate failover directly after the Failover Server has rebooted (default 30). This ping count over-rides the normal failover ping count (above).

See Also

[Settings for the Failover Server](#)

[General tab](#)

[Alerts tab](#)

Alerts tab



The Alerts tab is used to configure the way e-mail alerts are sent:

SMTP Server Address: The address of the mail server used by your company to send e-mail.

SMTP Server Port: The port used by the SMTP server. The default SMTP port is 25.

User Name: The user name required to access the SMTP server.

Password: The password associated with the User Name.

E-mail Address: The e-mail address from which Alerts will appear to be sent.

Notify E-mail Addresses: The list of e-mail addresses which are to receive e-mail alerts. Multiple e-mail addresses can be separated by commas.

The **Test** button can be used to confirm that e-mail alert settings are working properly.

See Also

[Settings for the Failover Server](#)

[General tab](#)

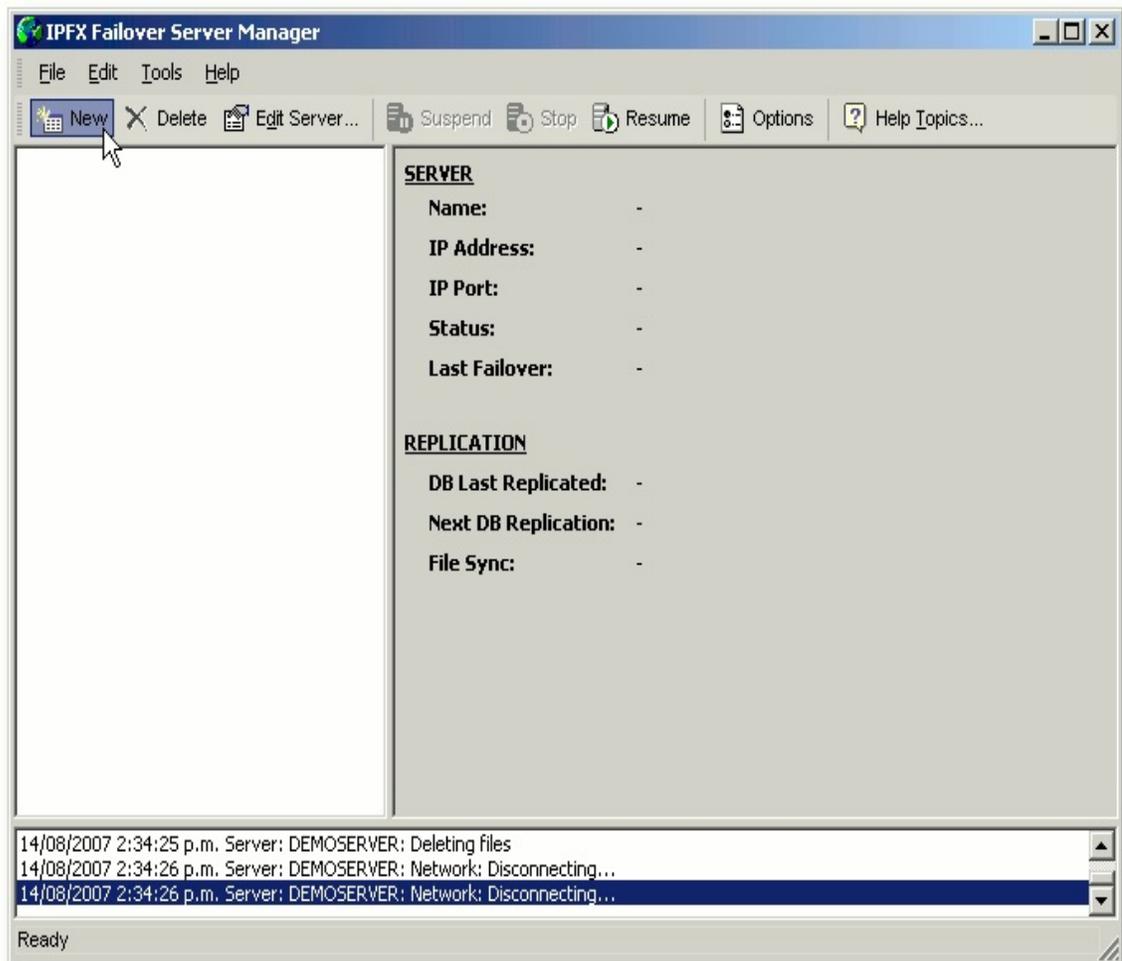
[Network tab](#)

Adding an IPFX Server to be monitored

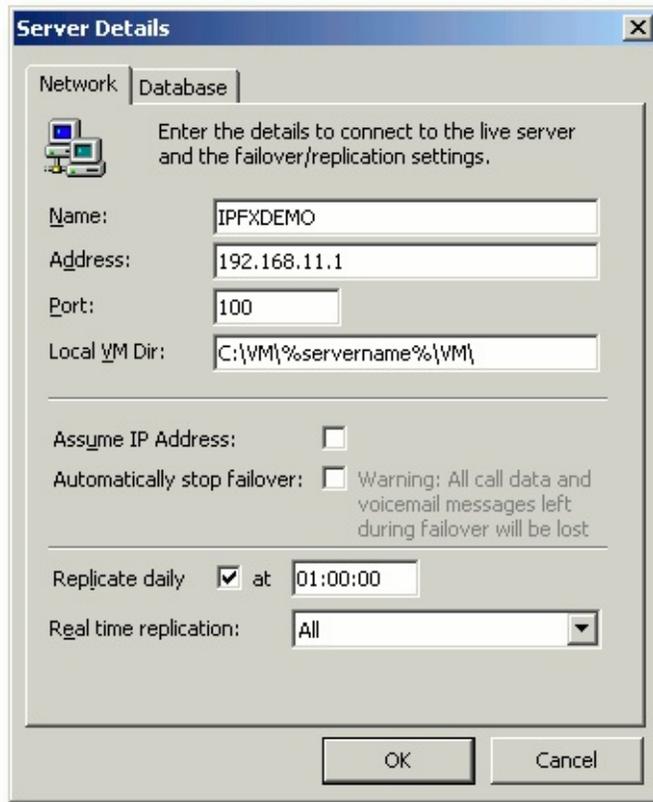
Each IPFX Server to be monitored must have its details entered into the Failover Server.

To add a new IPFX Server to be monitored:

1. From the toolbar of the IPFX Failover Server Manager window, click **New**:



2. The Server Details window appears:



Enter the details of the IPFX Server you want to monitor:

Name: The network name of the IPFX Server.

Address: The IP address of the IPFX Server.

Port: The port number used by the IPFX Server. A standard IPFX Server communicates on port 100

Local VM Dir: The directory on the Failover Server in which you wish to store this IPFX Server's replicated files.

Assume IP address: Check this box to have the Failover Server adopt the same IP address as the failed server during failover. If not checked, the IPFX Server will retain its own IP address during failover. See the *IPFX Failover Server White Paper* to determine which option is appropriate for your organisation.

Automatically stop failover: Check this box to automatically stop the failover server when the failed server comes back online (not available if the **Assume IP address** option is chosen).

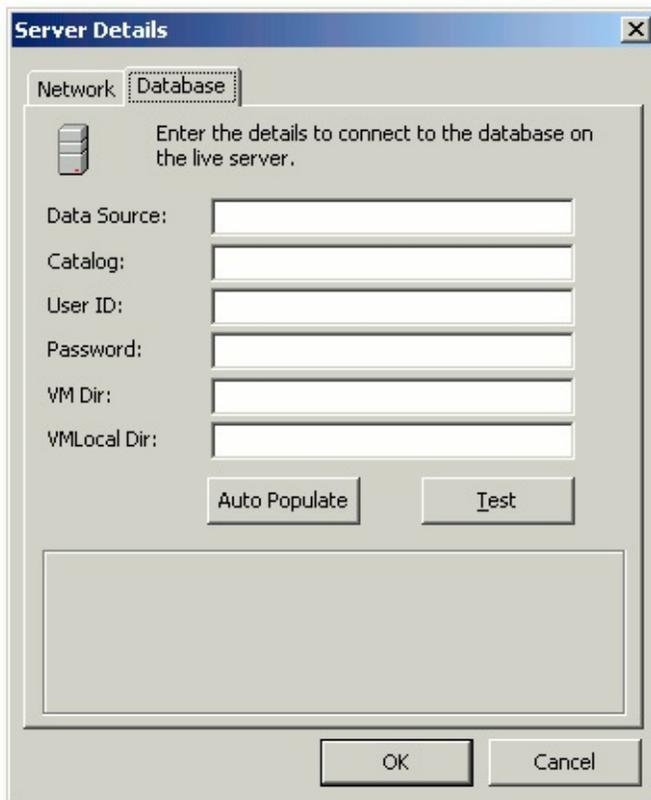
Replicate daily: To back up data from the IPFXServer at a specific

time each day, check this box and enter the backup time into the text field provided.

Real time replication: This option is only available if the Failover (Hot) module has been purchased. Choose from two modes of real time replication: All to replicate all data to the Failover Server dynamically, or Configuration to replicate the IPFX Server's configuration dynamically and all other data daily at the time specified above.

Remember to consider bandwidth usage to determine whether a Hot Failover Server can be feasibly implemented.

3. Click the **Database** tab:



The screenshot shows a dialog box titled "Server Details" with a close button (X) in the top right corner. It has two tabs: "Network" and "Database". The "Database" tab is selected. Inside the dialog, there is a database icon and the instruction "Enter the details to connect to the database on the live server." Below this are six text input fields labeled "Data Source:", "Catalog:", "User ID:", "Password:", "VM Dir:", and "VMLocal Dir:". There are two buttons: "Auto Populate" and "Test". At the bottom of the dialog are "OK" and "Cancel" buttons.

4. Click **Auto Populate**. The Failover Server will attempt to contact the IPFX Server and automatically populate the form with the relevant login details. If you receive an error message, check that you have entered the details on the **Network Tab** correctly.
 - **Data Source:** The named instance of SQL that constitutes the database.

- **Catalog:** The catalog within SQL Server.
 - **User ID:** The user name (**sa**, by default) that grants access to the monitored IPFX Server's database.
 - **Password:** The database password associated with the User ID.
 - **VM Dir:** The monitored IPFX Server's VM directory .
 - **VMLocalDir:** The monitored IPFX Server's VMLOCAL directory.
5. Click **Test** to confirm that the monitored database is accessible. If the Failover Server can successfully connect to the monitored IPFX Server, the following message appears:



Click **OK** to exit the confirmation message.

6. Click **OK** in the Server Details window to begin monitoring this IPFX Server.
7. You will be asked if you wish to replicate the CT Server's database immediately:



- Select **Yes** to back up the Primary Server's database immediately.
 - Select **No** to back up the database at the time chosen in the **Network** tab.
8. You have now finished adding a monitored IPFX server. An icon representing the Server will appear in the list at the left of the main Failover Server form.

E-mail alerts

The Failover Server generates e-mail alerts in the following situations:

- When a monitored IPFX Server fails, causing the Failover Server to take over
- When a Server has been reset
- When another IPFX server has fails while the Failover Server is already performing failover
- When Daily Replication fails
- When Daily Replication is successfully rolled back

The list of e-mail alert recipients can be configured in the [Alert settings tab](#).

Taking a CT Server Offline for Maintenance

Occasionally a monitored IPFX Server may need to be taken offline for maintenance (e.g. to receive Microsoft service packs).

If you do not wish the Failover Server to initiate failover in this situation, you may temporarily pause monitoring of the IPFX Server before taking it offline.

To pause monitoring of an IPFX Server:

1. Select the server that you wish to stop monitoring from the Server list.
2. Click **Suspend** in the toolbar.

To resume monitoring an IPFX Server:

1. Select the server that you wish to resume monitoring from the Server list.
2. Click **Resume** in the toolbar..

Upgrading the Failover Server

It is **critical** that the Failover Server runs the same version as its monitored IPFX Servers.

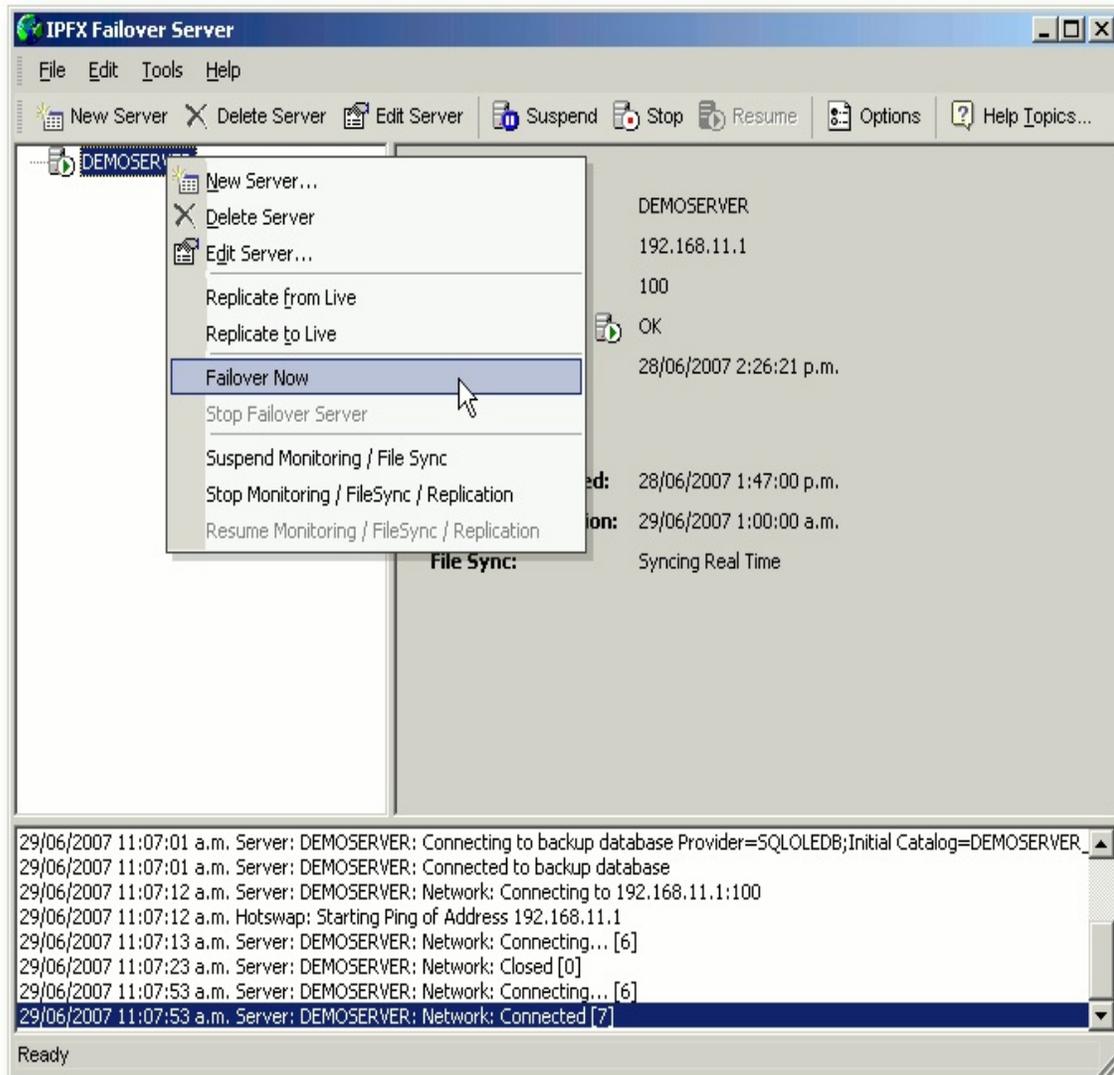
When an upgrade is planned for the monitored IPFX Server(s):

1. Shut down the Failover Server.
2. Upgrade the Failover Server and all its monitored IPFX Servers at the same time.
3. When the upgrade is complete, bring up the IPFX Servers first, then restart the Failover Server.
4. The newly-upgraded IPFX Servers will need to be replicated manually.

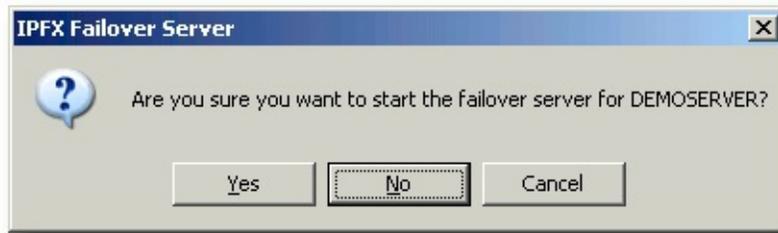
Manually initiating Failover

To manually initiate Failover:

1. Log into the Failover Server, right-click the Primary IPFX Server in the Server list and select **Failover Now**:



2. A warning message appears:



3. Click **Yes** to start Failover, or **No** to cancel.

Multiple CT Server Failures

A Failover Server can only substitute for one IPFX Server at a time.

In the event of multiple failures, the Failover Server will only substitute for the the first failed IPFX Server.

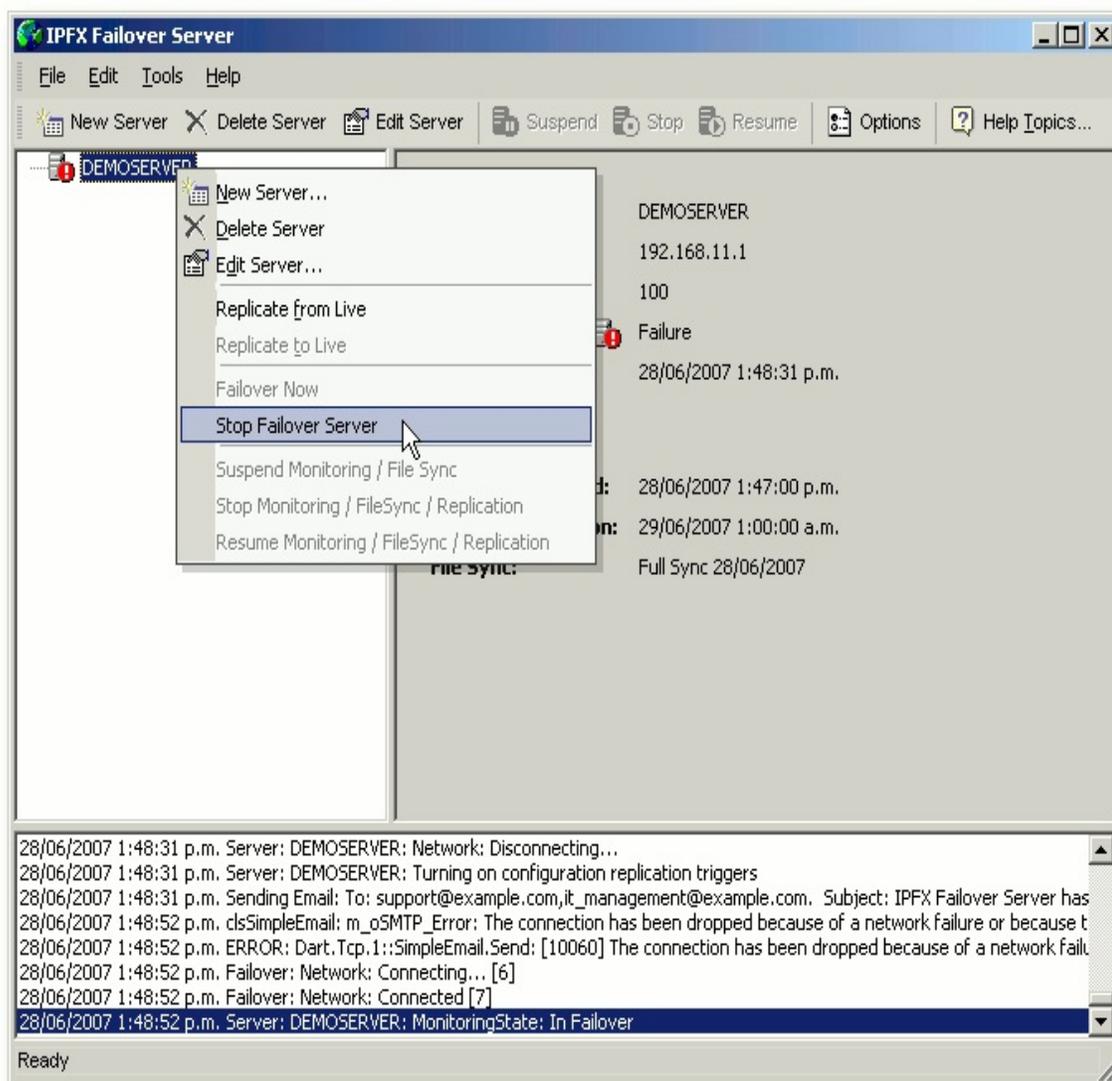
Other failed IPFX Servers will remain offline, but the recipients listed in the [Alerts setting](#) will be notified of their failed status via e-mail.

Failback

The process of returning data and control from a Failover Server to the Primary IPFX Server is called failback.

To perform failback:

1. Resolve the issue that caused the Primary IPFX Server to fail in the first instance.
2. Log into the Failover Server, right-click the Primary IPFX Server in the Server list and select **Stop Failover Server**:

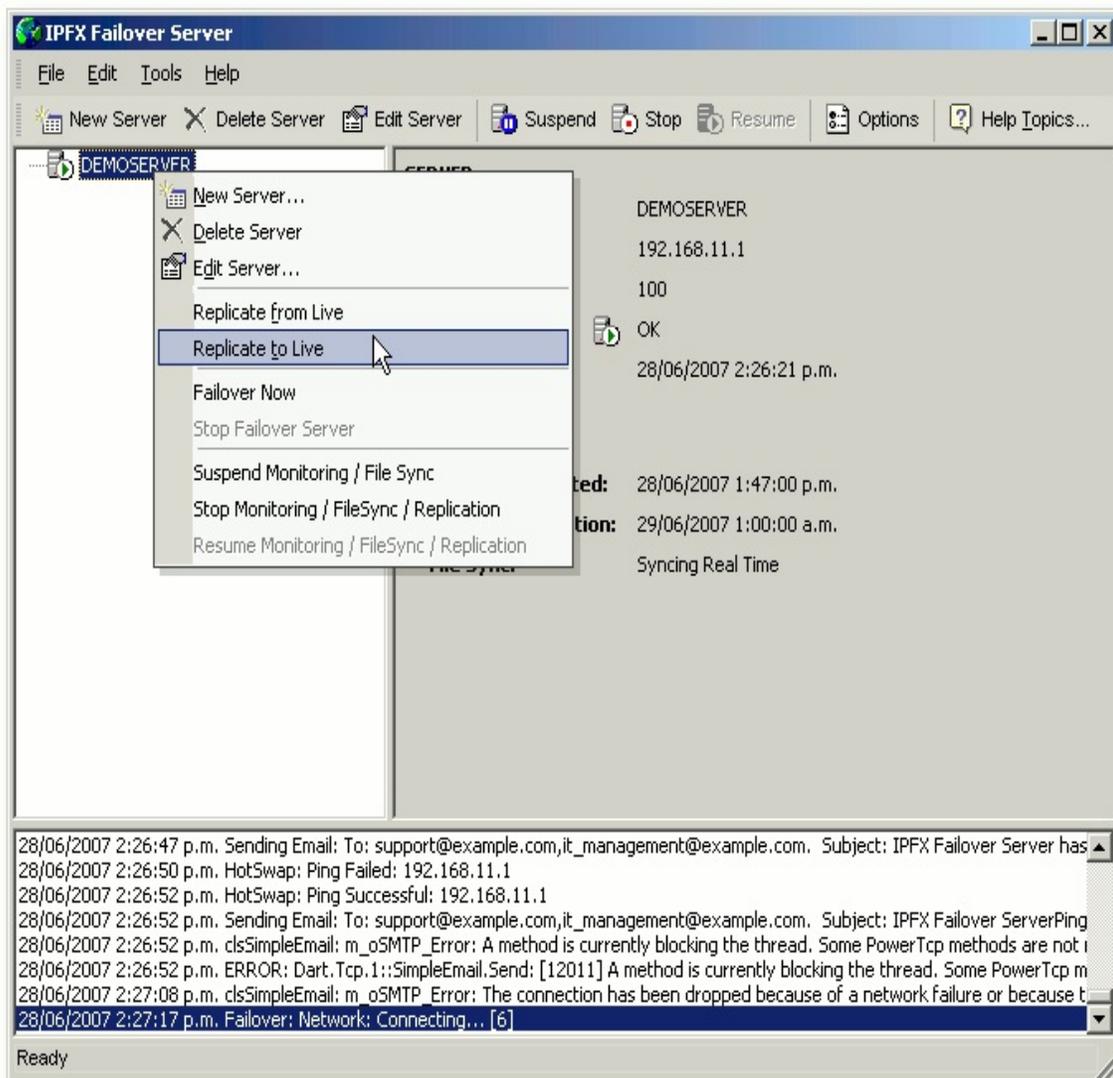


3. A warning dialog appears:



Click **Yes** to continue.

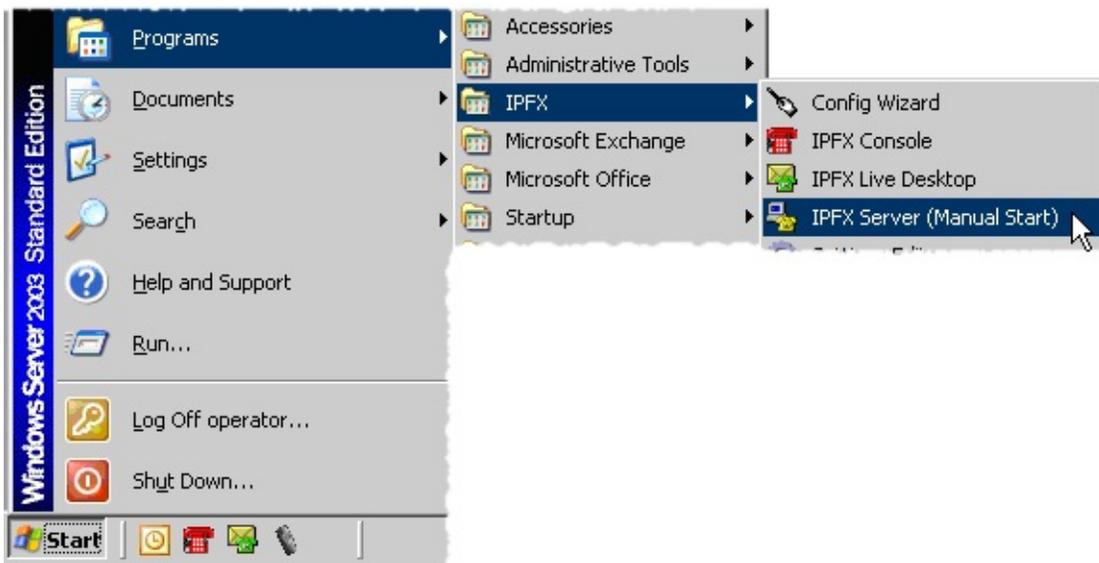
4. Quickly restart the Primary IPFX Server.
5. In the IPFX Failover Server window, right-click in the name of the Primary IPFX Server and select **Replicate to Live** from the context menu:



6. Click **OK** in the warning dialog that appears:



7. The status of the Primary Server will change to **Replicating**, and data will be transferred from the Failover Server to the Primary IPFX Server. When the process is complete, the status of the Primary Server will return to **OK**.
8. Restart the the Primary IPFX Server by clicking **Start > Programs > IPFX > IPFX Server (Manual Start)** from the Primary server's desktop:



9. Start the services on the Primary IPFX server by pressing CTRL+A in the IPFX Server window and clicking the **Start** button:

IPFX Server - AKLQADJ4 [127.0.0.1: 100]

File Edit Action View Trace Options

Start Stop Restart End Process View

Application	Status	Details	Last Event	Trace	Filename	Restart
> Message Server	Closed				C:\WMLocal\MSGSERV.EXE	360
> Networking	Closed				C:\WMLocal\NETSERV.EXE	360
Data Store	Closed				C:\WMLocal\DATASTO.EXE	360
Database Server	Closed				C:\WMLocal\DATASERV....	360
Email Server	Closed				C:\WMLocal\EMAILSVR.EXE	360
Fax Server	Closed				C:\WMLocal\PSFaxServe...	360
IPFX Archive	Closed				C:\WMLocal\logarchiver....	360
IPFX Call Recordi...	Closed				C:\WMLocal\crrresolver_...	360
IPFX Conference...	Closed				C:\WMLocal\ConfServer...	360
IPFX Database M...	Closed				C:\WMLocal\dbcheckser...	360
IPFX Feature Ser...	Closed				C:\WMLocal\FeatureSer...	360
IPFX MOH Server	Closed				C:\WMLocal\MOHServer...	360
IPFX PA Server	Closed				C:\WMLocal\PAServer.exe	360
IPFX PBX	Closed				C:\WMLocal\SIPServer.exe	360
IPFX Queue Server	Closed				C:\WMLocal\QServer.exe	360
IPFX Utilities	Closed				C:\WMLocal\SIPUTL.exe	360
Text Chat	Closed				C:\WMLocal\TextChat.exe	360
VM Mail Manager	Closed				C:\WMLocal\MAILMGR.EXE	360
VM Monitor	Closed				C:\WMLocal\MONITOR.EXE	360
VM PORT-01	Closed				C:\WMLocal\VMPortSIP...	360
VM PORT-02	Closed				C:\WMLocal\VMPortSIP...	360
VM PORT-03	Closed				C:\WMLocal\VMPortSIP...	360
VM PORT-04	Closed				C:\WMLocal\VMPortSIP...	360
VM PORT-05	Closed				C:\WMLocal\VMPortSIP...	360
VM PORT-06	Closed				C:\WMLocal\VMPortSIP...	360
VM PORT-07	Closed				C:\WMLocal\VMPortSIP...	360

Server Replication

Initial replication of a CT Server

The first time the Failover Server connects to a IPFX Server it will prompt the user to replicate that IPFX Server's database.

Should the user accept, replication proceeds as follows:

1. The Failover Server sends a request to the IPFX Server, instructing it to create a backup,
2. The CT Server creates a backup file named `VM\DB\%servername%.BAK`, containing a copy of the database and the database log files.
3. This file is copied to the Failover Server and restored there.

See Also

[Server Replication](#)

[Replicating databases manually](#)

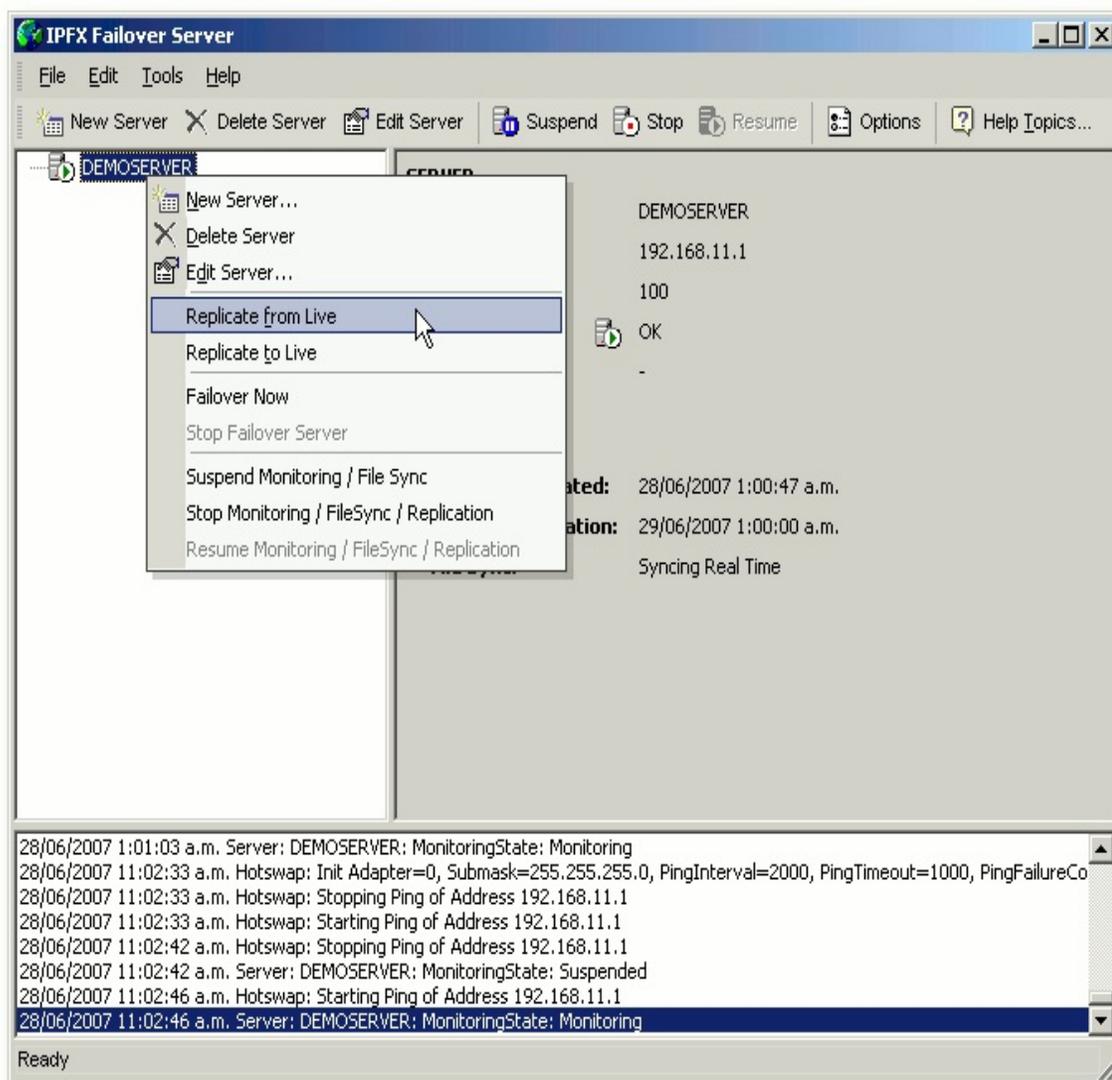
Replicating databases manually

Replicate from Live

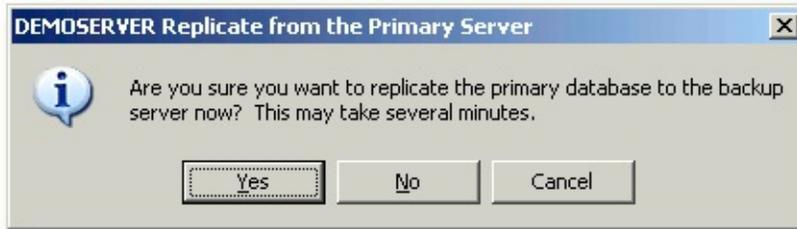
Replicating from Live copies a Primary Server's database to the Failover server.

To Replicate from Live:

1. In the Server list, right-click on the server whose database you wish to replicate.
2. Select **Replicate from Live**:



3. A warning dialog appears:



Select **Yes** to replicate the Primary Server's database.

4. In the Server list, the Primary Server's status will change to **Replicating**. When the status returns to **OK**, replication has been completed.

See Also

[Server Replication](#)

[Initial replication of a CT Server](#)

Technical Details

Failover Registry Key

The following registry key is set if a CT Server is installed as a Failover Server:

HKEY_LOCAL_MACHINE\SOFTWARE\Performance
Solutions\Settings\InstallShield\ServerType=1

See Also

[Technical Details](#)

[Directory Structure](#)

[Databases](#)

Directory Structure

All *application* files on the Failover Server are installed in the normal location (c:\vmlocal), just as if it were an ordinary IPFX Server.

Because the Failover Server can monitor multiple IPFX Servers, it has separate VM directories for each IPFX Server. Each VM directory contains data specific to its corresponding IPFX Server: files from that IPFX Server's VM directory and subdirectories specific to that Server (Msgbox recordings, Voicemail recordings, SQL database etc.)

The default VM directories on the Failover Server are named according to the following scheme:

C:\VM*<monitored server name>*\VM

For example:

C:\VM\aklmatrix\VM

See Also

[Technical Details](#)

[Failover Registry Key](#)

[Databases](#)

Databases

In This Section	See Also
MSDE name	Technical Details
Catalog name	Failover Registry Key
Replication	Directory Structure

MSDE name

The MSDE instance on the Failover Server has the same name as on a normal IPFX Server:

<Computer name>\CTServer

For example:

AKLIPFXFAILOVER\CTServer

See Also

[Databases](#)

[Catalog name](#)

[Replication](#)

Catalog name

On an ordinary IPFX Server, database catalog name is CTSERVER. Because there can be multiple catalogs on the Failover Server, the naming convention there is different. The catalog name on the Failover Server is a combination of the IPFX Server name and the catalog name on the IPFX Server:

<ServerName>_CatalogName

For example:

AKLMATRIX_CTSERVER

See Also

[Databases](#)

[MSDE name](#)

[Replication](#)

Replication

When the Failover Server refers to the process of replication, this does not refer to the replication functionality provided with MSDE.

Two areas of the IPFX Server are replicated: databases and files.

In This Section

[Database replication](#)

[File replication](#)

See Also

[Databases](#)

[MSDE name](#)

[Catalog name](#)

Database replication

Database replication consists of transferring a complete copy of the IPFX Server's database onto the Failover Server. This process is performed nightly by an application called BackupUtil.exe.

BackupUtil.exe obtains a copy of the IPFX Server's database in the following manner:

A command is issued to the IPFX Server, instructing it to back up the database to a file:

```
BACKUP DATABASE [CTSERVER]
TO DISK =
N'C:\VM\DB\MSSQL$CTSERVER\DATA\AKLMATRIX_CTSERVER.bak'
WITH INIT ,
NOUNLOAD ,
Name = N'AKLMATRIX_CTSERVER' ,
SKIP ,
STATS = 10 ,
Description = N'AKLMATRIX_CTSERVER',
NOFORMAT
```

This file is copied to the Failover Server:

```
FILECOPY \\AKLMATRIX\C$\VM\DB\AKLMATRIX_CTSERVER.BAK TO
C:\SERVERS\AKLMATRIX\VM\DB\MELDEVTEST_CTSERVER.BAK
```

The file is restored to a database on the Failover Server:

```
RESTORE DATABASE AKLMATRIX_CTSERVER
From DISK = N'
C:\SERVERS\AKLMATRIX\VM\DB\MELDEVTEST_CTSERVER.BAK '
WITH
MOVE 'CTSERVER' TO N'
C:\SERVERS\AKLMATRIX\VM\DB\AKLMATRIX_CTSERVER.MDF,
MOVE 'CTSERVER_log' TO N' C:\SERVERS\AKLMATRIX\VM\DB\
```

|AKLMATRIX_CTSERVER.LDF'

A Hot Failover Server also uses a second method of database replication. In addition to the nightly backup described above, the Hot Failover Server picks up real-time changes made to the IPFX Server throughout the day. The Hot Failover Server does this via a network connection to the Message Server on the live IPFX Server. When changes are made to the live database, they are broadcast out via the Message Server. The Hot Failover Server receives this change and updates the corresponding Failover database accordingly.

See Also

[Replication](#)

[File replication](#)

File replication

Wav/vox files must be replicated on the Failover Server so that voicemail, queue announcements, auto attendants can function.

File replication is handled by the application syncutil.exe. This application is instructed to keep the Failover Server's files in sync with a monitored list of directories/file types on the live IPFX Server.

Base directories

Source: \\AKLMATRIX\VM\

Destination: C:\SERVERS\AKLMATRIX\VM\

File inclusions

Subdirectory	Types	Recursive
Extn\	*.wav, *.vox	True
Custom\	*.wav, *.vox	True
Mail\	*.*	True
Music\	*.*	True
Upload\Extn\	*.*	True

See Also

[Replication](#)

[Database replication](#)