



# Kyndryl Resiliency Orchestration

## **Resiliency File Replicator Installation Guide**

Version 8.4.9.0



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## Preface

The Kyndryl Resiliency File Replicator Software Installation Guide provides concepts and procedures to install, upgrade, and uninstall the File Replicator product. Although this guide is intended for administrators responsible for installing, configuring, and maintaining the File Replicator product, advanced users will also benefit from the information it contains.

## Document Overview

This manual consists of the following sections:

- Installing File Replicator
- Configuring File Replicator for Security
- Starting and Stopping File Replication Service
- Upgrading File Replicator
- Uninstalling File Replicator

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# 1 Installation Overview

## 1.1 File Replicator Software

The File Replicator Software is compatible with the following servers:

- Windows Server
- Solaris Server
- Linux Server
- HPUX Server
- AIX Server

### 1.1.1 Prerequisites

Based on the features, download the GPL dependent binaries from <https://sourceforge.net/projects/gnu-utils/files/binaries/> before starting File Replicator and perform the steps mentioned in [Configuring Resiliency File Replicator for Security](#)

## 1.2 Enabling TLSv1.2 for the Resiliency File Replicator

TLS protocol is used for communication between Kyndryl Resiliency File Replicator Service (also known as PFR or SFR service) and the File Replicator Agent (also known as PFR agent).

By default, File Replicator Service and File Replicator Agent communication is secure with TLS using TLSv1.2 protocol.

Configurations on the Resiliency File Replicator Service

### 1.2.1 The following properties in \$EAMSROOT/installconfig/PFRConfiguration.cfg are used to set the communication protocol on the File Replicator Service.

Note - You need to configure the File Replicator Service and Agents to use the same communication type.

The communication protocol used is TLSv1.2 by default and is configurable.

**This property** is applicable if the communication mode is TLS, configured using the parameter 'SOCKET\_COMMUNICATIONTYPE'

panaces.acp.**communicationTLSProtocolVersion = TLSv1.2**

This property is to be updated if a specific cipher needs to be used.

```
panaces.acp.communicationTLSCipher=TLS_DHE_RSA_WITH_AES_256_GCM_SHA384,TLS_DHE_RSA_WITH_AES_128_GCM_SHA256,TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384,TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256,TLS_DHE_RSA_WITH_AES_256_CBC_SHA256,TLS_DHE_RSA_WITH_AES_128_CBC_SHA256,TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384,TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256
```

- a. SOCKET\_COMMUNICATIONTYPE = SECUREWITHTLS



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- b. In case of any cipher issues such as any incompatibilities, use default cipher (which will load all ciphers) by updating the property as -  
panaces.acp.communicationTLSCipher=default

Resiliency File Replicator Agent

The PFR agent interacts with the PFR service to enable monitoring and initiate file replication.

- c. The agent supports TLSv1.0 and TLSv1.2 to support older versions of PFR Service. In future releases, the support for TLSv1.0 will be removed.

d.

e.

Third Party Installation.

### 1.2.2 Keystore generation steps for customize password for PFR service.

**Note:** Before RO 8.4.8.0, this config parameter had a **plain** keystore password.

1. Custom password facility applies to the 'pfr.keystore' keystore file and is used to start PFR Service with Secure SSL port(46443).

2. The keystore password for the 'pfr.keystore' keystore file is stored in encrypted format in the 'PFRConfiguration.cfg' file.

The parameter name is 'SSL\_KEYSTORE\_PASSWORD'.

3. Keystore password can be encrypted using Encryption Tool (\$SFRROOT/bin/Encryptor.sh) provided with PFR module.

Sample usage of this tool:

Command given:

./Encryptor.sh <your custom password>

Example ./Encryptor.sh <Password>

Output generated:

string to encrypt: <Password>

encrypted string: <Password>

decryptedString: <Password>

Encryption and Decryption are working fine...

#

4. A new Keystore file can be generated with the below "keytool" utility.

Command#1: openssl genrsa -out serverCA.key 2048

Command#2: openssl req -x509 -new -nodes -key serverCA.key -sha256 -days 1095 -out serverCA.pem -subj "/C=US/ST=New York/L=New York City/O=Security and

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Resiliency Services/OU=Security and Resiliency Services/CN=Kyndryl Inc/emailAddress=abcEmp@kyndryl.com"

Command#3: openssl pkcs12 -password pass:" <your custom password>" -export -name server-cert -in serverCA.pem -inkey serverCA.key -out serverkeystore.p12

Command#4: \$SFRROOT/jre/bin/keytool -importkeystore -deststorepass "<your custom password>" -destkeystore pfr.keystore -srcstorepass "<your custom password>" -srckeystore serverkeystore.p12 -srcstoretype pkcs12 -alias server-cert

5. Existing keyStore can be viewed using the below "keytool" command.  
\$SFRROOT/jre/bin/keytool -v -list -keystore \$SFRROOT/installconfig/pfr.keystore

**Note:** After the above command, the tool will prompt you for the password. Verify that you input the correct plain password (not encrypted) to see keystore file contents.

### Third Party Installation

Refer to [GPL License information](#) for more information on GPL licenses.

In RHEL 7.9, unzip utility is not installed on the linux server by default. You have to install it manually. To install the unzip or zip utility, run the following command -

```
# yum install zip unzip -y
```

#### 1.2.2.1 Tar and Rsync Version Details

The following table displays the tar and resync versions of various OS platforms that File Replicator supports.

Platform	Tar Version	Rsync Version
Windows 64-Bit	tar1.16	rsync3.0.7
Linux 64-Bit RHEL 7.x	tar1.23-RHEL7-64bit	rsync3.0.9-RHEL7-64bit
Linux 64-Bit RHEL 8.x	tar1.23-RHEL7-64bit	rsync3.0.9-RHEL7-64bit
AIX	tar1.14	rsync3.0.5
HPUX 64-BIT Itanium	tar1.26	rsync3.0.9
HPUX 64-BIT Parisac	tar1.26	rsync3.0.9
Solaris_Sparc	tar1.18	rsync3.0.5
Solaris_Intel	tar1.26	rsync3.0.5

#### 1.2.2.2 Secure Replication with Rsync

The File Replicator uses Rsync for replication of large files, only if it is installed (because installation is optional) which are greater than 1 GB by default, from the local host to the remote host. You can use the ssh-keygen and ssh-copy-id to login to a remote Linux server

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without entering a password. The `ssh-keygen` creates the public and private keys, and then `ssh-copy-id` copies the local host public key to the remote host `authorized_keys` file. The `ssh-copy-id` assigns the required permission, such as `~/.ssh, ~/.ssh/authorized_keys` to the home of the remote host.

From the 8.3.9.1 version of RO `rsync` is disabled by default and users can choose to enable it.

Refer to the RO file replicator user guide for steps to enable `rsync`.

You need to perform the following steps to create public and private keys on your local host:

1. Log in to your local system.
2. Run the following command:  
**`ssh-keygen -t rsa -m PEM`**
3. Enter the location of the file to save the key. For example, `/home/user_name/.ssh/id_rsa`.
4. Type a passphrase, and then press **Enter** to create the passphrase.

### Note

If you do not want to create a passphrase, press **Enter**.

5. Type the same passphrase, and then press **Enter**. Your identification and the public key are saved in the specified file, and the key fingerprint is displayed.

You need to perform the following steps to use `ssh-copy-id` to copy the public key to the remote host:

1. Log in to your local system.
2. Run the following command:  
**`ssh-copy-id -i ~/.ssh/id_rsa.pub remote-host`**
3. Enter the remote host password.

### 1.2.3 Software Versions

The following installation packages and documents are available for download:

- The File Replicator software for Windows, Solaris, Linux, HPUX, and AIX is available in the **Installers** folder.
- The File Replicator Installation Documentation.

#### 1.2.3.1 Licensed Version

You can download the licensed versions of the Kyndryl Resiliency Orchestration software that is available on the [IBM Passport Advantage](https://www-01.ibm.com/software/passportadvantage/) (PA) Portal. (<https://www-01.ibm.com/software/passportadvantage/>)

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### 1.2.3.2 Software Fixes and Updates

You can also download the Kyndryl Resiliency Orchestration software fixes and updates that are available on the [IBM Fix Central](https://www-945.ibm.com/support/fixcentral/) Portal (https://www-945.ibm.com/support/fixcentral/).

### 1.2.3.3 File Replication Support

The following table provides information on various platforms that File Replicator supports.

Application Version	Platform	OS Version/Patch
File Replicator 8.1	Intel, AMD, SUN/Sparc, PA-RISC, Itanium	Windows 2012 Windows 2016 Windows 2019 RHEL 7 RHEL 8 Solaris Intel(v10) Solaris Sparc (v9, 10 Patch > 147148-26) AIX HP-UX v11i (PA-RISC/Itanium)

You can install the File Replicator Software using either of the following methods:

**Graphical Mode:** Graphical mode installation is an interactive, GUI-based method for installing File Replicator Software. For more information, refer to [Installing File Replicator Using GUI Mode Installation](#).

**Silent Mode:** Silent mode installation is a non-interactive method of installing File Replicator Software. This method requires the use of **.properties** file for selecting installation options. For more information, refer to [Installing File Replicator Using Silent Mode Installation](#).

### 1.2.4 Upgrade

The File Replicator software is a separate installer. You can upgrade the existing File Replicator version from 7.2 to 8.1. Only the GUI mode is supported for upgrade. The older versions before version 4.2 of File Replicator are not supported for upgrade. File Replicator should be enabled on port 46000 for nonsecure communication and 46443 for secure communication.

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## 2 Installing File Replicator Using GUI Mode Installation

This software is packaged as an image file called sfr.bin on the Resiliency Orchestration Distribution FTP in the Server folder. It contains all the binaries and packages to run File Replicator Software. This software installation involves installing File Replicator binaries, and tools used by File Replicator on **Windows, Solaris, Linux, HPUX, or AIX** servers.

### 2.1 Prerequisites for Installing File Replicator

For the installer to install the File Replicator Platform package successfully on the selected Server, you need the following hardware/software:

- Server with a minimum of 2 GB RAM.
- Kyndryl Resiliency File Replicator should be enabled on port 46000 for non-secure communication and 46443 for secure communication.
- The user should have Administrator or root equivalent privileges to install File Replicator.
- Verify that the temporary directory (/tmp) has approximately 700 MB of free space.

### 2.2 Installation of File Replicator

This section outlines the procedure to install File Replicator.

To install File Replicator, perform the following steps:

1. Log in to the system and download the server binaries from the given ftp path.
2. Navigate to the directory that contains the installation file. The selection of the folder and action to be performed to run the installer is based on the server platform used to install. Refer to the following table for details:

Servers	Folder Name	Action to be Performed Next
Windows	Installers\Windows64 for 64-bit Windows Operating Systems.	Double-click the <b>SFR.exe</b> file.
Solaris	Installers/SolarisIntel for intel architecture or Installers/SolarisSparc for sparc architecture.	At the command prompt, enter <b>./SFR.bin</b> .
Linux	Installers/Linux64 for 64-bit Linux Operating Systems.	At the command prompt, enter <b>./SFR.bin</b> .
HPUX	Installers/ HPUX.	At the command prompt, enter <b>./SFR.bin</b> .

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AIX	Installers/AIX	At the command prompt, enter <code>./SFR.bin</code> .
-----	----------------	-------------------------------------------------------

**Note**

The following are the limitations of installing File Replicator on Windows:

- Services can only be registered and started by users having local administrator permissions on the physical target machine, and not remotely.
- If Services need to be registered and started from remote machines, such as Terminal Server, the user must be an Administrator having necessary permissions to the registry and Windows\System32 directories.

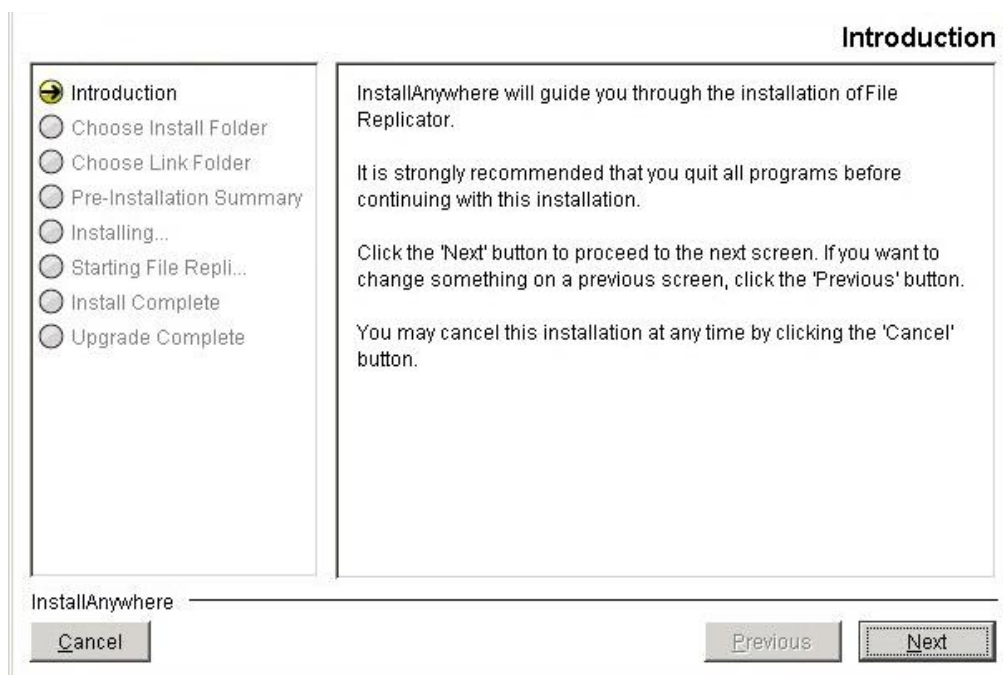
3. After extracting the files from SFR.bin, File Replicator installation starts with the following screen.

**Note**

On Linux Server, if the RHEL version is not 7.x or 8.0, a warning message will be displayed on the screen. However, the user can continue with the installation.

4. After displaying the File Replicator installer screen, the **Introduction** window is displayed.

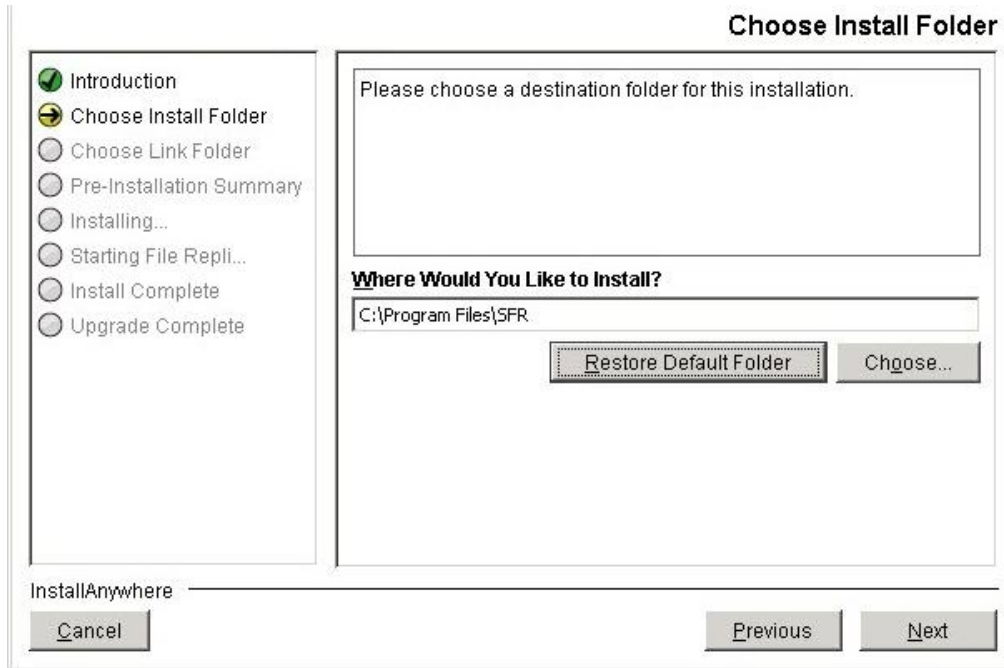
Figure 1. File Replicator Installation - Introduction



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5. Go through the installation procedure and click **Next**. The **Choose Install Folder** window is displayed.

Figure 2. File Replicator Installation - Choose Install Folder



6. Select a path to install the software by clicking **Choose**. Alternatively, you can click Restore Default Folder to restore the default path. The default path is **C:\Program Files\SFR** for **the Windows** server and **/opt/SFR** for **Solaris, Linux, HUPX, and AIX** server (**Unix**). You must use the default path displayed.
7. Click Next. The **NAT IP Address** window is displayed. Enter the NAT IP address in the NAT IP Address field.

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Figure 3. File Replicator Installation - Provide NAT IP Address

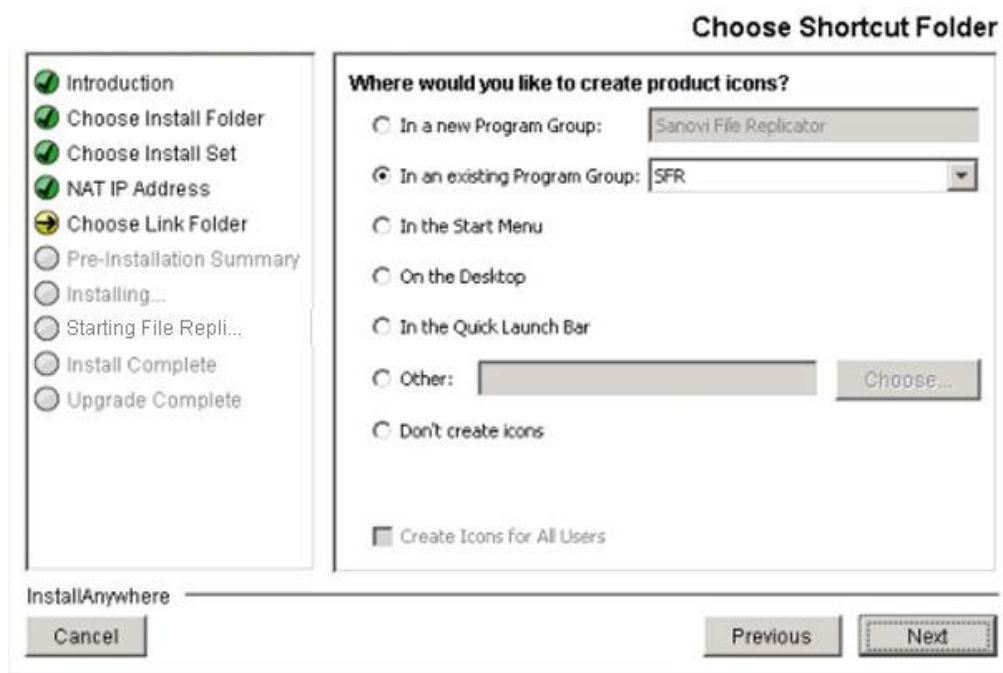
The screenshot shows a window titled "NAT IP Address" from the File Replicator installation wizard. On the left is a vertical list of steps: Introduction (checked), Choose Install Folder (checked), Choose Install Set (checked), NAT IP Address (highlighted with a yellow arrow), Choose Link Folder (unchecked), Pre-Installation Summary (unchecked), Installing... (unchecked), Starting File Repli... (unchecked), Install Complete (unchecked), and Upgrade Complete (unchecked). The main area contains a text box with the instruction: "Please input the NAT IP Address field if the server is using NAT IP other wise leave it as blank. Then click Next to proceed." Below this is a text input field labeled "NAT IP Address". At the bottom, there are three buttons: "Cancel", "Previous", and "Next". The "Next" button is highlighted with a dotted border. The text "InstallAnywhere" is visible in the bottom left corner of the window.**Note**

NAT IP address should be the private IP of the server where you are installing the File Replicator.

8. Click **Next**. The **Choose Shortcut Folder** window is displayed.

Figure 4. File Replicator Installation - Choose Shortcut Folder



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9. Select an option to create a product icon in the required location. For example, select the **Other** option button to create a product icon in a specific path, or select **Don't create icons** option button if creating shortcut folders are not required. Select **Create Icons for All Users** to create shortcut folders for all users, if required.
10. Click Next. The **Pre-Installation Summary** window is displayed.

Figure 5. File Replicator Installation – Pre-Installation Summary

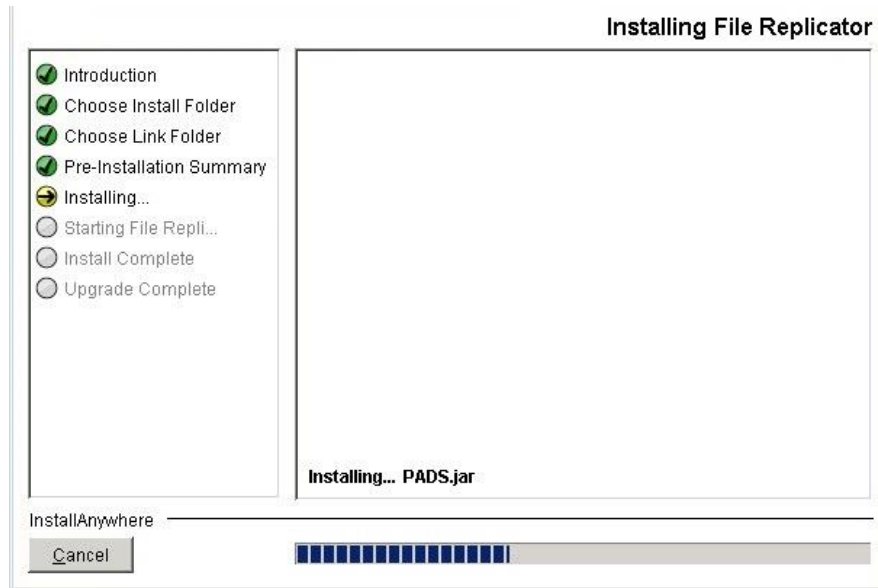
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11. Go through the pre-installation summary to verify the inputs provided. If you want to change the inputs, click **Previous** and modify.
12. Click **Install**. The Installing Resiliency File Replicator window is displayed.

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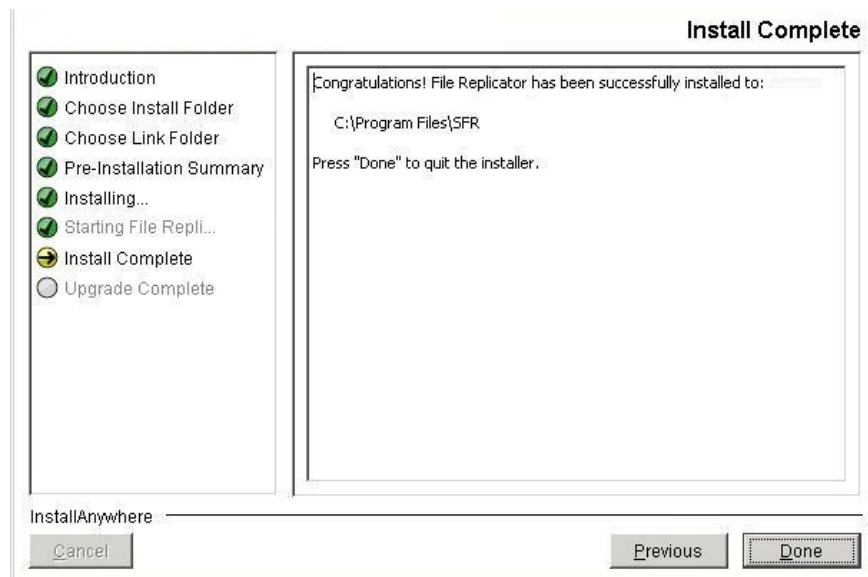


Figure 6. File Replicator Installation - Installing File Replicator



13. Once the installation is complete, the **Install Complete** window is displayed indicating successful installation, as shown in the following figure:

Figure 7. File Replicator Installation - Install Complete



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14. Click Done to complete the installation process.

Refer to [Third Party Installation](#) and perform the File Replicator Third Party Installation depending on the Operating System.

**Note**

Once the installation is complete, verify the individual File Replicator service installation manually, by clicking the Services icon on the Administrative tools group in Control Panel on the Windows server.

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### 3 Installing File Replicator Using Silent Mode Installation

In the Silent mode installation method, the installation program reads the settings for your configuration from the .properties file that you create before installation. The installation program does not display any configuration options during the installation process. Silent mode installation is supported on Windows, Linux, Solaris, HP-UX, and AIX platforms.

The following sections describe the method to install File Replicator, using the silent mode. It is assumed that you have acquired the installation program from the FTP server.

#### Note

Make sure that the hardware and software configuration required for File Replicator installation is in place. For details, refer to the *Prerequisites for Installing File Replicator*.

#### 3.1 Editing Properties File

When you install File Replicator in Silent mode, the installation program uses the **SFRInstaller.properties** file to determine, which installation options should be implemented. Before running the installation program in Silent mode, you must edit the **SFRInstaller.properties** file in which you specify the installation options that you want to invoke while performing the File Replicator installation. Perform the following steps to edit the properties files.

To edit the SFRInstaller.properties file:

1. Download the file from the ftp path.
2. Open the properties file. The following is the command to open the properties file:
  - For Linux/Solaris/AIX/HP-UX, run the following command:
 

```
vi SFRInstaller.properties
```
  - For Windows, perform the following procedure:
    1. Open the **SFRInstaller.properties** file in Notepad.
    2. Modify the corresponding properties file for the keywords shown in the following table, to reflect your configuration.
3. The **SFRInstaller.properties** file contains the following keywords:

Keyword	Description
<b>INSTALLER_UI</b>	Displays the mode of installation as "silent".
<b>USER_INSTALL_DIR</b>	Enter the full pathname for the directory in which you want to install the File Replicator software.
<b>PFR_START_YES</b>	Enter 1 if you want to start File Replicator automatically after the installation. Enter 0 if you want to start File Replicator manually.

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### Note

PFR service will not start after the installation due to dependency on the third-party libraries

## 3.2 File Replicator Silent Mode Installation

The following section provides steps to install the software in silent mode.

### Note

In silent mode, uninstallation does not check whether services are running or not. The user needs to verify that services are stopped before uninstallation in silent mode.

### 3.2.1 Starting Silent Mode Installation on Windows Server

Perform the following steps to install File Replicator in the Windows system.

1. Log in to the Windows system.
2. Open an MS-DOS command prompt window.
3. Go to the directory that contains the installation file and enter the following command to launch the installation procedure:

```
install.exe -f <complete path of the SFRInstaller.properties file with the properties file name>
```

For example `install.exe -f c:\\Progra~1\\SFRInstaller.properties`

### Note

After completing the installation of File Replicator, no status is displayed. The user does not get information on whether the installation is successful or not.

Refer to [Configuring Resiliency File Replicator for Security](#)

## 3.3 Enabling TLSv1.2 for the Resiliency File Replicator

TLS protocol is used for communication between Kyndryl Resiliency File Replicator Service (also known as PFR or SFR service) and the File Replicator Agent (also known as PFR agent).

By default, File Replicator Service and File Replicator Agent communication is secure with TLS using TLSv1.2 protocol.

Configurations on the Resiliency File Replicator Service

### 3.3.1 The following properties in `$EAMSROOT/installconfig/PFRConfiguration.cfg` are used to set the communication protocol on the File Replicator Service.

Note - You need to configure the File Replicator Service and **Agents** to use the same communication type.

The communication protocol used is TLSv1.2 by default and is configurable.

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**This property** is applicable if the communication mode is TLS, configured using the parameter 'SOCKET\_COMMUNICATIONTYPE'

panaces.acp.**communicationTLSProtocolVersion = TLSv1.2**

This property is to be updated if a specific cipher needs to be used.

```
panaces.acp.communicationTLSCipher=TLS_DHE_RSA_WITH_AES_256_GCM_SHA384,TLS_DHE_RSA_WITH_AES_128_GCM_SHA256,TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384,TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256,TLS_DHE_RSA_WITH_AES_256_CBC_SHA256,TLS_DHE_RSA_WITH_AES_128_CBC_SHA256,TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384,TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256
```

- f. SOCKET\_COMMUNICATIONTYPE = SECUREWITHTLS
- g. In case of any cipher issues such as any incompatibilities, use default cipher (which will load all ciphers) by updating the property as -  
panaces.acp.communicationTLSCipher=default

Resiliency File Replicator Agent

The PFR agent interacts with the PFR service to enable monitoring and initiate file replication.

- h. The agent supports TLSv1.0 and TLSv1.2 to support older versions of PFR Service. In future releases, the support for TLSv1.0 will be removed.
- i.
- j.

Third Party Installation and perform the RFR Third Party Installation based on the Operating System.

### 3.3.2 Starting Silent Mode Installation on Unices Servers

1. Log in to the Linux/Solaris/HPUX/AIX system.
2. Navigate to the directory that contains the installation file. Edit and save the property file to /tmp.
3. Launch the installation by entering the following command:  
./install.bin -f <complete path of the SFRInstaller.properties file with the properties file name>

For Example ./SFR.bin -f /tmp/ SFRInstaller.properties

Refer to [Configuring Resiliency File](#) Replicator for Security

## 3.4 Enabling TLSv1.2 for the Resiliency File Replicator

TLS protocol is used for communication between Kyndryl Resiliency File Replicator Service (also known as PFR or SFR service) and the File Replicator Agent (also known as PFR agent).

By default, File Replicator Service and File Replicator Agent communication is secure with TLS using TLSv1.2 protocol.

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### 3.4.1 Configurations on the Resiliency File Replicator Service

The following properties in `$EAMSR00T/installconfig/PFRConfiguration.cfg` are used to set the communication protocol on the File Replicator Service.

**Note** - You need to configure the File Replicator Service and Agents to use the same communication type.

The communication protocol used is TLSv1.2 by default and is configurable.

This property is applicable if the communication mode is TLS, configured using the parameter '`SOCKET_COMMUNICATIONTYPE`'

k. `panaces.acp.communicationTLSProtocolVersion = TLSv1.2`

This property is to be updated if a specific cipher needs to be used.

l. `panaces.acp.communicationTLSCipher=TLS_DHE_RSA_WITH_AES_256_GCM_SHA384,TLS_DHE_RSA_WITH_AES_128_GCM_SHA256,TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384,TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256,TLS_DHE_RSA_WITH_AES_256_CBC_SHA256,TLS_DHE_RSA_WITH_AES_128_CBC_SHA256,TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384,TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256`

m. `SOCKET_COMMUNICATIONTYPE = SECUREWITHTLS`

In case of any cipher issues such as any incompatibilities, use default cipher (which will load all ciphers) by updating the property as - `panaces.acp.communicationTLSCipher=default`

### 3.4.2 Resiliency File Replicator Agent

The PFR agent interacts with the PFR service to enable monitoring and initiate file replication.

The agent supports TLSv1.0 and TLSv1.2 to support older versions of PFR Service. In future releases, the support for TLSv1.0 will be removed.

Third Party Installation and perform the File Replicator Third-Party installation based on the Operating System.



## Guide



## 4 Configuring Resiliency File Replicator for Security

### 4.1 Enabling TLSv1.2 for the Resiliency File Replicator

TLS protocol is used for communication between Kyndryl Resiliency File Replicator Service (also known as PFR or SFR service) and the File Replicator Agent (also known as PFR agent).

By default, File Replicator Service and File Replicator Agent communication is secure with TLS using TLSv1.2 protocol.

#### 4.1.1 Configurations on the Resiliency File Replicator Service

The following properties in `$EAMSR00T/installconfig/PFRConfiguration.cfg` are used to set the communication protocol on the File Replicator Service.

**Note** - You need to configure the File Replicator Service and Agents to use the same communication type.

The communication protocol used is TLSv1.2 by default and is configurable.

This property is applicable if the communication mode is TLS, configured using the parameter `'SOCKET_COMMUNICATIONTYPE'`

n. `panaces.acp.communicationTLSProtocolVersion = TLSv1.2`

This property is to be updated if a specific cipher needs to be used.

o. `panaces.acp.communicationTLSCipher=TLS_DHE_RSA_WITH_AES_256_GCM_SHA384,TLS_DHE_RSA_WITH_AES_128_GCM_SHA256,TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384,TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256,TLS_DHE_RSA_WITH_AES_256_CBC_SHA256,TLS_DHE_RSA_WITH_AES_128_CBC_SHA256,TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384,TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256`

p. `SOCKET_COMMUNICATIONTYPE = SECUREWITHTLS`

In case of any cipher issues such as any incompatibilities, use default cipher (which will load all ciphers) by updating the property as `- panaces.acp.communicationTLSCipher=default`

#### 4.1.2 Resiliency File Replicator Agent

The PFR agent interacts with the PFR service to enable monitoring and initiate file replication.

The agent supports TLSv1.0 and TLSv1.2 to support older versions of PFR Service. In future releases, the support for TLSv1.0 will be removed.

## Guide



## 5 Third Party Installation

During Resiliency File Replicator installation, the user can configure the \$SFRROOT path. This is the home directory for Resiliency File Replicator.

### 5.1 Third Party Binary Installation For Windows-32/64-Bit

Perform the following steps after installing the Kyndryl Resiliency File Replicator (RFR). Before deploying the dependent binaries, ensure the RFR services are stopped.

#### Note

Download the binaries from the link [GPL Dependent binaries](#) mentioned in [Prerequisites](#) section.

Refer to [GPL License information](#) for more information on GPL licenses.

1. Go to \$SFRROOT/bin folder by executing the following command.  
**cd \$SFRROOT/bin**
2. Download the following files to the same location  
**tar1.16-Windows-32bit.zip**
3. Extract tar1.16-Windows-32bit.zip  
Optional steps a,b In case user chooses to configure the rsync replication
  - a. Download the following files to the same location
    - i. **rsync3.0.7-Windows-32bit.zip**
  - b. Extract rsync3.0.7-Windows-32bit.zip

### 5.2 Third Party Binary Installation for Linux 64-Bit

Perform the following steps after installing the Kyndryl Resiliency File Replicator (RFR). Before deploying the dependent binaries, ensure the RFR services are stopped.

#### Note

Download the binaries from the link [GPL Dependent binaries](#) mentioned in [Prerequisites](#) section.

Refer to [GPL License information](#) for more information on GPL licenses.

#### 5.2.1 RHEL 7.X/8.0

1. Go to the \$SFRROOT folder by executing the following command.  
**cd \$SFRROOT**
2. Download and then Unzip the files by executing the following commands:  
**tar -xvzf tar1.23-RHEL7-64bit.tar.gz**

Guide

The next step is Optional In case the user chooses to configure the rsync replication

**tar -xvzf rsync3.0.9-RHEL7-64bit.tar.gz**

**Note** - Refer to the note on unzip utility at [Unzip Note](#).

### 5.3 Third Party Binary Installation For AIX

Perform the following steps after installing the Kyndryl Resiliency File Replicator (RFR). Before deploying the dependent binaries, ensure the RFR services are stopped.

**Note**

Download the binaries from the link GPL Dependent binaries mentioned in [Prerequisites](#) section.

Refer to [GPL License information](#) for more information on GPL licenses.

#### 5.3.1 Option 1

For Kyndryl Resiliency File Replicator to function properly, tar 1.14 are the prerequisite requirement.

Configuration of Rsync replication is optional.

Once the pre-requisites are downloaded and installed, create the soft link as described below

Assume Tar location: /usr/bin/tar and Rsync location: /usr/bin/rsync

Use the following commands (replace \$SFRROOT with SFR root path )

**ln -s /usr/bin/tar \$SFRROOT/bin/tar**

The next step is Optional In case the user chooses to configure the rsync replication

**ln -s /usr/bin/rsync \$SFRROOT/bin/rsync**

#### 5.3.2 Option 2

**Note**

Download the binaries from the link GPL Dependent binaries mentioned in [Prerequisites](#) section.

Refer to [GPL License information](#) for more information on GPL licenses.

Refer to the note on unzip utility at [Unzip Note](#).

1. Go to the \$SFRROOT folder by executing the following command:  
**§ cd \$SFRROOT**
2. Download and then unzip the files by executing the following commands  
**§ gunzip tar1.14-AIX.tar.gz**  
**§ tar -xvf tar1.14-AIX.tar.gz**

Guide

if rsync replication is chosen ONLY then execute the next steps

1. Download and then unzip the files by executing the following commands.

```
§ gunzip rsync3.0.5-AIX.tar.gz
```

```
§ tar -xvf rsync3.0.5-AIX.tar.gz
```

2. Verify that execution of `$(SFRROOT)/bin/rsync` does not show any library file error if any error is specific to the library please create the following soft link:

```
§ ln -s $(SFRROOT)/bin/libiconv.a /usr/lib/libiconv.a
```

## 5.4 Third Party Binary Installation For HPUX-64-BIT Itanium

Perform the following steps after installing the Kyndryl Resiliency File Replicator (RFR). Before deploying the dependent binaries, ensure the RFR services are stopped.

### Note

Download the binaries from the link [GPL Dependent binaries](#) mentioned in [Prerequisites](#) section.

Refer to [GPL License information](#) for more information on GPL licenses.

Refer to the note on unzip utility at [Unzip Note](#).

1. Go to a `$(SFRROOT)` folder by executing the following command.

```
cd $(SFRROOT)
```

2. Download and then Unzip/Untar the following files by executing the following command

```
gunzip tar1.26-HPUX11.31-IA.tar.gz
```

```
tar -xvf tar1.26-HPUX11.31-IA.tar
```

The next step is Optional In case user chooses to configure the rsync replication

```
gunzip rsync3.0.9-HPUX11.31-IA.tar.gz
```

```
tar -xvf rsync3.0.9-HPUX11.31-IA.tar
```

Create the following soft links.

Guide

```
In -s $SFRROOT/tool/usr/local/lib/libpopt.so
/usr/lib/hpux32/libpopt.so
```

## 5.5 Third Party Binary Installation for Solaris\_Sparc

Perform the following steps after installing Kyndryl Resiliency File Replicator (RFR). Before deploying the dependent binaries, ensure the RFR services are stopped.

**Note**

Download the binaries from the link [GPL Dependent binaries](#) mentioned in [Prerequisites](#) section.

Refer to [GPL License information](#) for more information on GPL licenses.

Refer to the note on unzip utility at [Unzip Note](#).

1. Go to a \$SFRROOT folder by executing the following command.  
`cd $SFRROOT`
2. Download and then Unzip/Untar the following files  
`tar -xvzf rsync3.0.5-SOLARIS10-SPARC.tar.gz`
3. Execute the following command to add the library packages

**Note**

If the package is already installed as part of tar, the other packages only selected

```
pkgadd -d $SFRROOT/bin/tar-1.18-sol10-sparc-local -R $SFRROOT/tool
<<EOF
```

```
1
```

```
EOF
```

```
pkgadd -d $SFRROOT/bin/libiconv-1.11-sol10-sparc-local -R
$SFRROOT/tool <<EOF
```

```
1
```

```
EOF
```

```
pkgadd -d $SFRROOT/bin/libintl-3.4.0-sol10-sparc-local -R
$SFRROOT/tool <<EOF
```

```
1
```

```
EOF
```

```
pkgadd -d $SFRROOT/bin/libgcc-3.4.6-sol10-sparc-local -R
$SFRROOT/tool <<EOF
```

Guide

1

EOF

The next two steps are Optional In case the user chooses to configure the rsync replication

1. Execute the following command to add the library packages

**Note**

If the package is already installed as part of tar, the other packages only selected

```
pkgadd -d $SFRROOT/bin/rsync-3.0.5-sol10-sparc-local -R $SFRROOT/tool  
<<EOF
```

1

EOF

```
pkgadd -d $SFRROOT/bin/libiconv-1.11-sol10-sparc-local -R  
$SFRROOT/tool <<EOF
```

1

EOF

```
pkgadd -d $SFRROOT/bin/libintl-3.4.0-sol10-sparc-local -R  
$SFRROOT/tool <<EOF
```

1

EOF

```
pkgadd -d $SFRROOT/bin/libgcc-3.4.6-sol10-sparc-local -R  
$SFRROOT/tool <<EOF
```

1

EOF

```
pkgadd -d $SFRROOT/bin/popt-1.14-sol10-sparc-local -R $SFRROOT/tool  
<<EOF
```

1

EOF

2. Download and then Unzip/Untar the following files

```
tar -xvzf tar1.18-SOLARIS10-SPARC.tar.gz
```

3. Create the following soft links.

Guide

```
ln -s $SFRROOT /tool/usr/local/lib/libiconv.so.2
```

```
ln -s $SFRROOT /tool/usr/local/lib/libgcc_s.so.1
```

## 5.6 Third Party Binary Installation For Solaris\_Intel

Perform the following steps after installing the Kyndryl Resiliency File Replicator (RFR). Before deploying the dependent binaries, ensure the RFR services are stopped.

**Note**

Download the binaries from the link [GPL Dependent binaries](#) mentioned in [Prerequisites](#) section.

Refer to [GPL License information](#) for more information on GPL licenses.

Refer to the note on unzip utility at [Unzip Note](#).

1. Go to a \$SFRROOT folder by executing the following command.

```
cd $SFRROOT
```

2. Download and then Unzip/Untar the following files

```
tar -xvzf tar1.26-SOLARIS10-x86.tar.gz
```

3. Execute the following command to add the library packages

**Note**

If the package is already installed as part of tar, the other packages only selected

```
pkgadd -d $SFRROOT/bin/tar-1.26-sol10-x86-local -R $SFRROOT/tool  
<<EOF
```

```
1
```

```
EOF
```

```
pkgadd -d $SFRROOT/bin/libiconv-1.14-sol10-x86-local -R  
$SFRROOT/tool <<EOF
```

```
1
```

```
EOF
```

```
pkgadd -d $SFRROOT/bin/libintl-3.4.0-sol10-x86-local -R $SFRROOT/tool  
<<EOF
```

```
1
```

```
EOF
```

Guide

```
pkgadd -d $SFRROOT/bin/libgcc-3.4.6-sol10-x86-local -R $SFRROOT/tool
<<EOF
1
EOF
```

The next two steps are Optional In case the user chooses to configure the rsync replication

1. Download and then Unzip/Untar the following files

```
tar -xvzf rsync3.0.5-SOLARIS10-x86.tar.gz
```

2. Execute the following command to add the library packages

**Note**

If the package is already installed as part of tar, the other packages only selected

```
pkgadd -d $SFRROOT/bin/rsync-3.0.5-sol10-x86-local -R $SFRROOT/tool
<<EOF
```

```
1
```

```
EOF
```

```
pkgadd -d $SFRROOT/bin/libiconv-1.14-sol10-x86-local -R
$SFRROOT/tool <<EOF
```

```
1
```

```
EOF
```

```
pkgadd -d $SFRROOT/bin/libintl-3.4.0-sol10-x86-local -R $SFRROOT/tool
<<EOF
```

```
1
```

```
EOF
```

```
pkgadd -d $SFRROOT/bin/libgcc-3.4.6-sol10-x86-local -R $SFRROOT/tool
<<EOF
```

```
1
```

```
EOF
```

```
pkgadd -d $SFRROOT/bin/popt-1.16-sol10-x86-local -R $SFRROOT/tool
<<EOF
```

```
1
```

```
EOF
```

3. Create the following soft links.



Guide

```
ln -s $SFRRROOT / tool/usr/local/lib/libintl.so.8 /lib/libintl.so.8
```

```
ln -s $SFRRROOT / tool/usr/local/lib/libiconv.so.2 /lib/libiconv.so.2
```

```
ln -s $SFRRROOT / tool/usr/local/lib/libgcc_s.so.1 /lib/libgcc_s.so.1
```

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## 6 Stopping and Starting File Replicator

This chapter explains the procedures that you must follow to start and stop File Replicator on Windows, Solaris, AIX, HPUX, and Linux servers.

The script S999PanPFRSvc starts the service automatically when the server is booted. However, you can start or stop the service manually without rebooting the server.

### 6.1 Starting and Stopping of File Replicator Service on Windows

1. Open Control Panel > Administrative Tools > Services.
2. Right-click the file File Replicator and select Start to start the service.
3. Right-click the file File Replicator and select Stop to stop the service.
4. Right-click the file File Replicator and select Restart to restart the service.

### 6.2 Starting and Stopping of File Replicator Service on Solaris

- Start and Stop scripts of the Solaris agent reside at the following location:

**/etc/rc3.d**

These scripts start the service automatically when the server is booted.

- To start the File Replicator Service manually, go to:

**\$SFRROOT/bin**

- To start the File Replicator Service manually, you can directly give the following command:

**# ./PFR.sh start**

- Check whether the agents have been started or not with the following command:

**# ps -ef | grep -i LAX**

- To stop the File Replicator Service manually, you can directly give the following command:

**# ./PFR.sh stop**

### 6.3 Starting and Stopping of File Replicator Service on Linux

- Start and Stop scripts of the File Replicator Service reside at the following location:

**/etc/rc3.d**

- These scripts start the service automatically when the server is booted.

- To start the File Replicator Service manually, go to:

**\$SFRROOT/bin**

- To start the File Replicator Service, you can directly give the following command:

Guide**# ./ PFR.sh start**

- Check whether the File Replicator Service has been started or not with the following command:

**# ps -ef | grep -i LAX**

- To stop the File Replicator Service manually, you can directly give the following command:

**# ./PFR.sh stop**

## 6.4 Starting and Stopping of File Replicator Service on HPUX

- Enter the following folder to start the File Replicator Service:

**\$SFRROOT/bin**

- You can directly run the following command to start the File Replicator Service:

**# ./ PFR.sh start**

- Check whether the File Replicator Service has been started or not with the following command:

**# ps -ef | grep -i LAX**

- To stop the File Replicator Service, you can directly give the following command:

**# ./ PFR.sh stop**

## 6.5 Starting and Stopping of File Replicator Service on AIX

- Start and Stop scripts of the AIX agent reside at the following location:

**/etc/rc.d/rc2.d**

- These scripts start the service automatically when the server is booted.
- Enter the following folder to start the File Replicator Service manually:

**\$SFRROOT/bin**

- You can directly run the following command to start the File Replicator Service manually:

**# ./PFR.sh start**

- Check whether the File Replicator Service is started or not with the following command:

**# ps -ef | grep -i LAX**

- Run the following command directly to stop the File Replicator Service manually:

**# ./PFR.sh stop**

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## 7 Upgrading File Replicator

Kyndryl Resiliency File Replicator can be upgraded using GUI mode as detailed in the section [Upgrading File Replicator in GUI mode](#) or through Low Touch Upgrade from Kyndryl Resiliency Orchestration. For low touch upgrade steps, refer to the Kyndryl Resiliency Orchestration Administrator's guide.

### 7.1 Prerequisites for upgrading

- Stop all the File Replicator Services.
- Ensure that the temporary directory (/tmp) has approximately 700 MB of free space.

### 7.2 Upgrading File Replicator in GUI mode

Perform the following steps for upgrading the server.

1. Login to the system and Download the server binaries from the given ftp path.
2. Navigate to the directory that contains the installation file. The selection of the folder and action to be performed to run the installer is based on the server platform used to install. Refer to the following table for these details:

Servers	Folder Name	Action to be performed next
Windows	Installers\Windows64 for 64-bit Windows Operating Systems.	Double-click the SFR.exe file.
Solaris	Installers/SolarisIntel for intel architecture or Installers/SolarisSparc for sparc architecture.	At the command prompt, enter ./SFR.bin.
Linux	Installers/Linux64 for 64-bit Linux Operating Systems.	At the command prompt, enter ./SFR.bin.
HPUX	Installers/ HPUX.	At the command prompt, enter ./SFR.bin.
AIX	Installers/AIX.	At the command prompt, enter ./SFR.bin.

3. After extracting the files from SFR.bin, the File Replicator upgrade starts with the following screen.

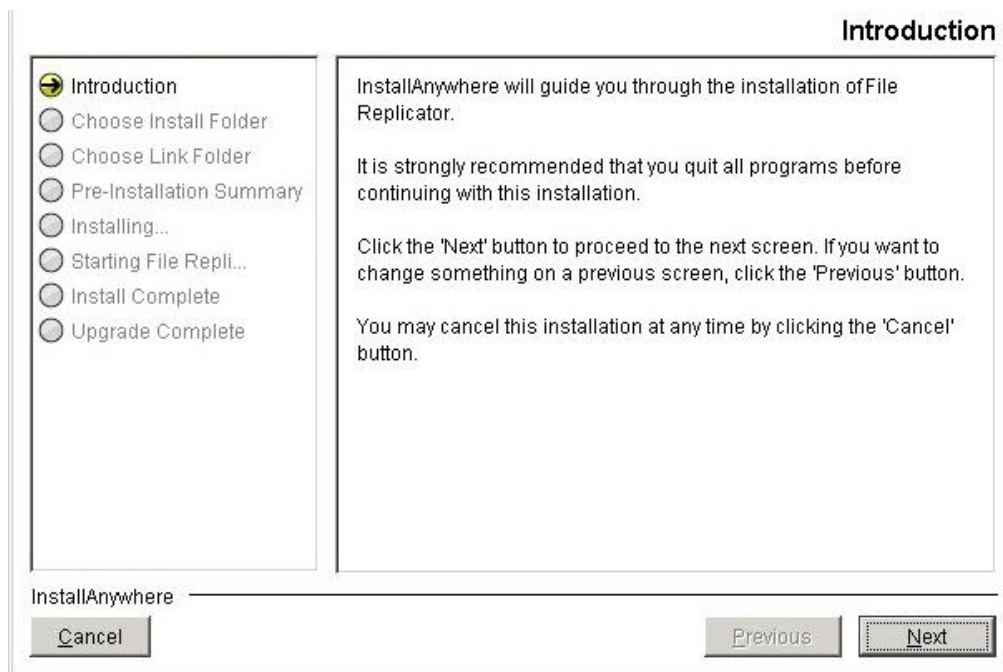
#### Note

On Linux Server, if the RHEL version is not 7.x/8.0, then a warning message will be displayed on the screen. However, the user can continue with the installation.

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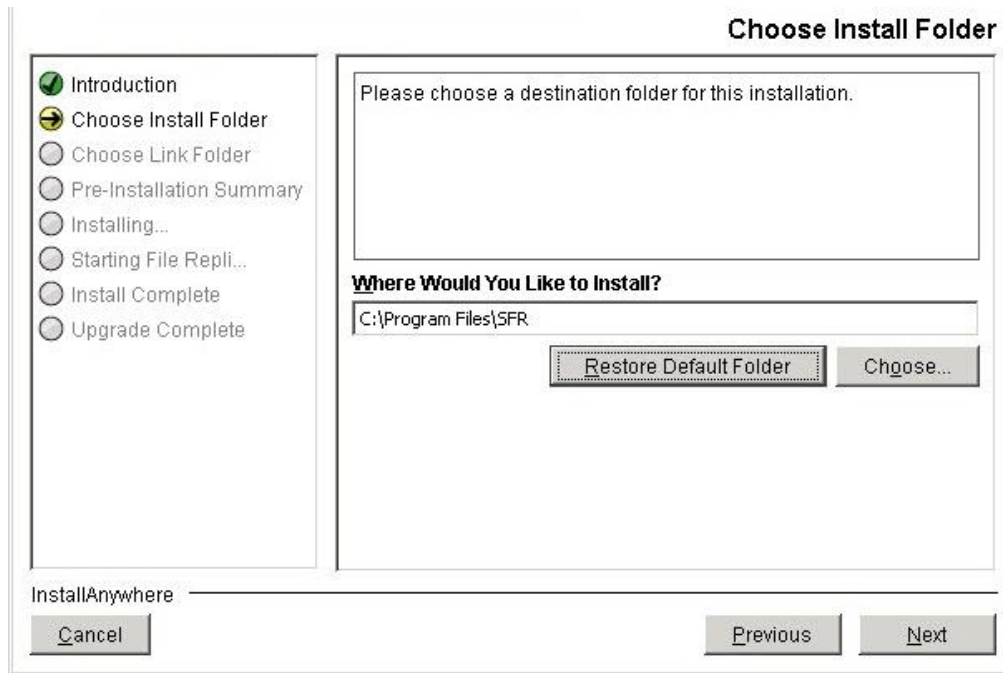
4. After displaying the **Resiliency File Replicator Installer** screen, the **Introduction** window is displayed.

Figure 8. Upgrading File Replicator - Introduction



5. Go through the installation procedure and click **Next**. The **Choose Install Folder** window is displayed.

Figure 9. Upgrading File Replicator - Choose Install Folder

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6. Select the path of the existing File Replicator Installation to upgrade by clicking Choose. Alternatively, you can click Restore Default Folder to restore the default path. The default path is **C:\Program Files\SFR** for **Windows** server and **/opt/SFR** for **Unix** servers. It is recommended that you use the default path.
7. Click **Next**. An **Upgrade Installation** dialog box is displayed.

Figure 10. Upgrading File Replicator - Upgrade Installation

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8. Click **OK** to continue with the upgrade.

**Note**

A **File Replicator running** dialog box may be displayed with a warning as shown in the following figure. Click **Stop** to continue with the upgrade.

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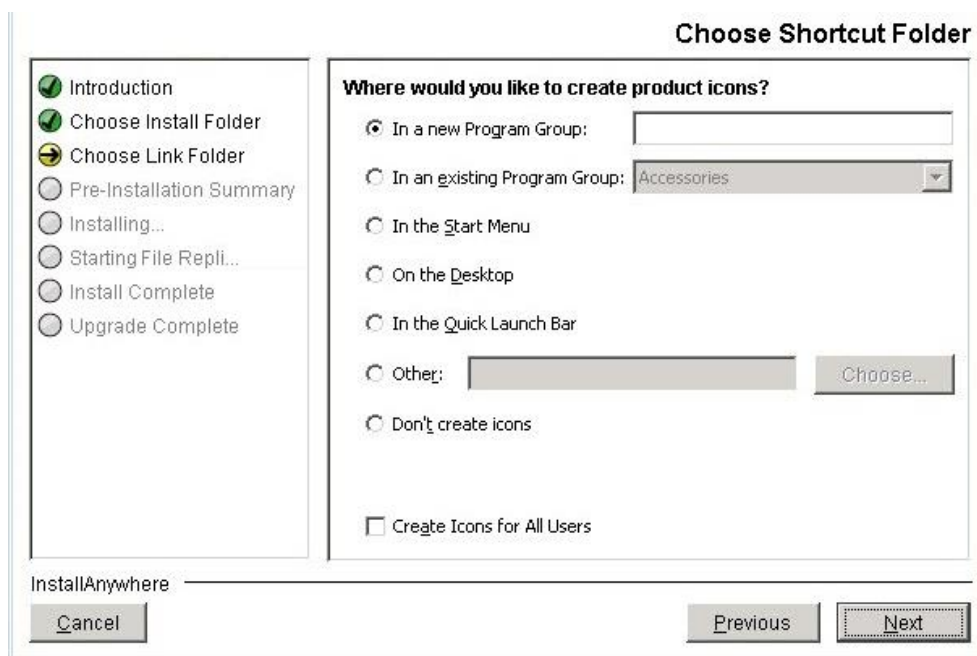


Figure 11. Upgrading File Replicator - File Replicator running



- The Choose Shortcut Folder/Choose Link Folder window is displayed.

Figure 12. Upgrading File Replicator - Choose Shortcut Folder





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10. Select an option to create a product icon in the required location. For example, select **Other** option button to create a product icon in a specific path, or select **Don't create icons/Don't create links** option button to avoid creating shortcut folders.
11. Click Next. The **Preinstallation Summary** window is displayed.

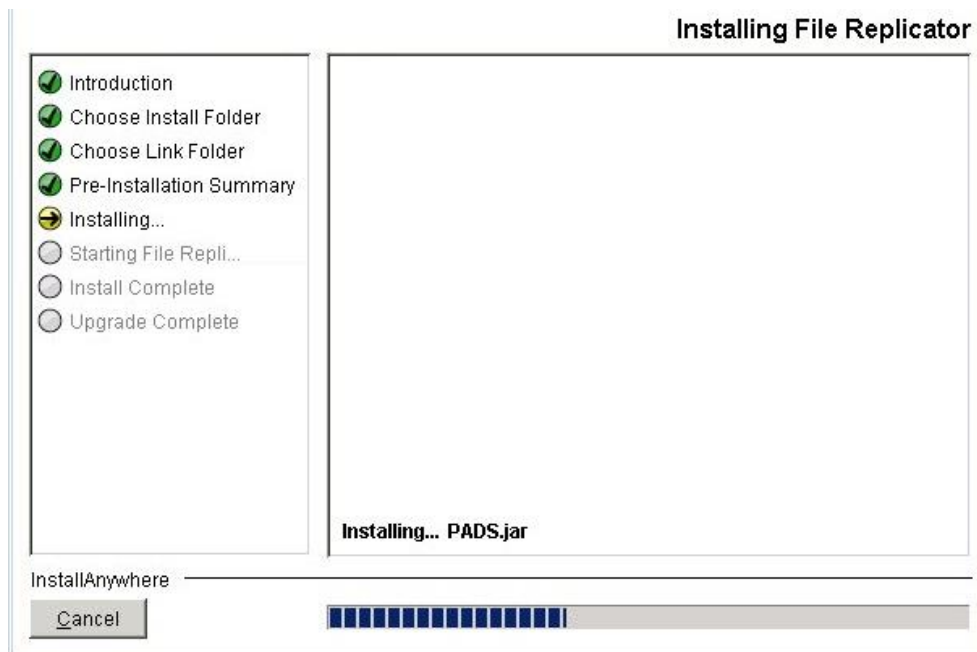
Figure 13. Upgrading File Replicator - Preinstallation Summary



12. Go through the preinstallation summary to verify the inputs provided. If you want to change the inputs, click **Previous** and modify.
13. Click Install. The **Installing Resiliency File Replicator** window is displayed.

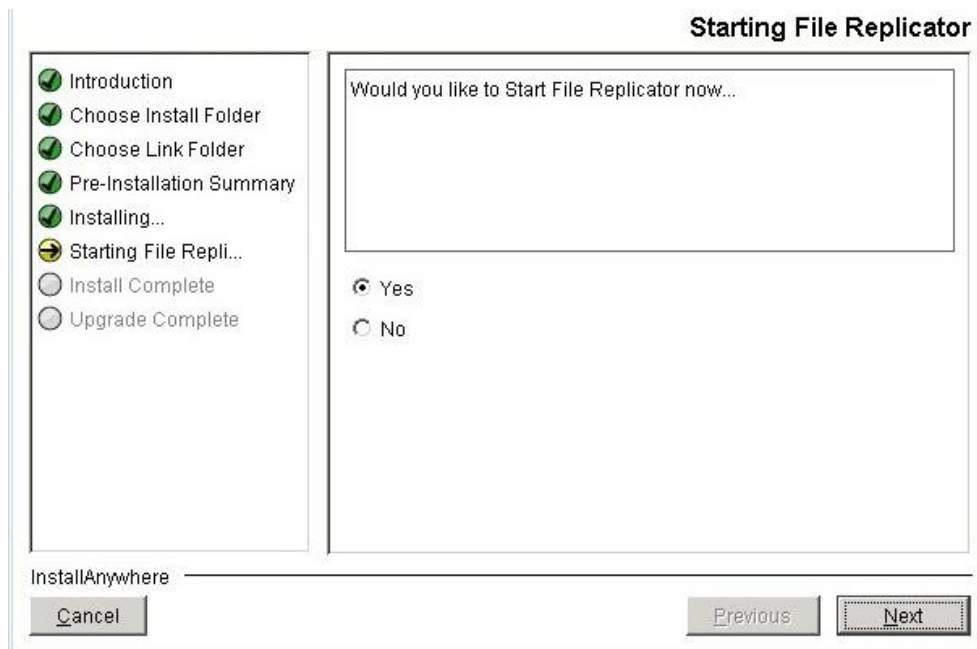
Figure 14. Upgrading File Replicator - Installing File Replicator

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14. Once the installation is complete, the **Starting Resiliency File Replicator** window is displayed.

Figure 15. Upgrading File Replicator - Starting File Replicator



15. On the **Starting Resiliency File Replicator** window, perform either of the following:

Guide

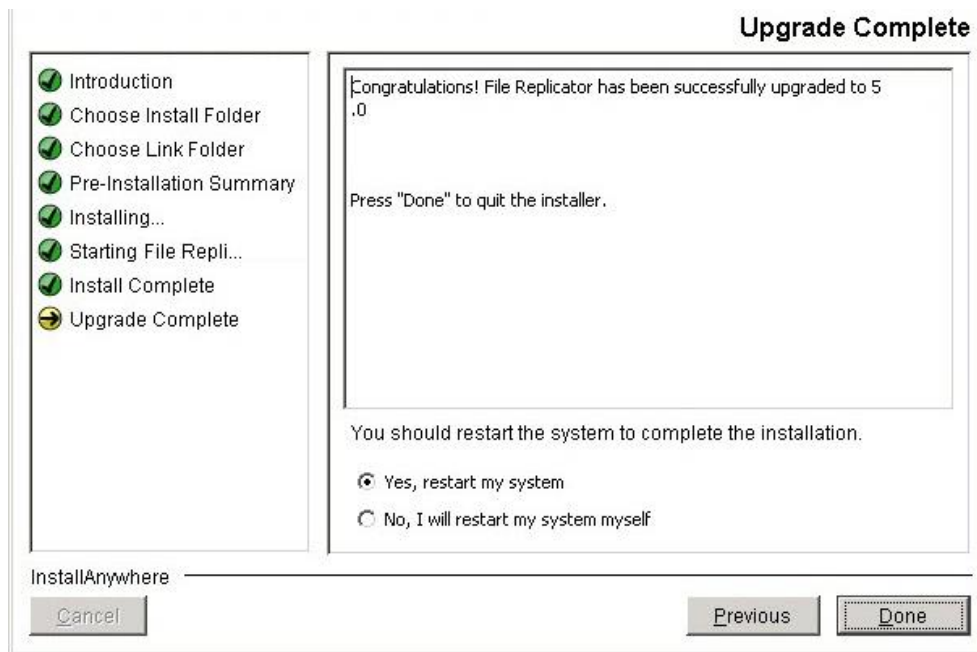
16. Click Yes to start the File Replicator services automatically.
17. Click No to start the File Replicator services manually.

**Note**

The best practice is not to change the default value displayed on the Starting Resiliency File Replicator window.

18. Restart the File Replicator machine, if the agents do not start after File Replicator installation is complete.
19. Click **Next**. The **Upgrade Complete** window is displayed, indicating successful upgrade.

Figure 16. Upgrading File Replicator - Upgrade Complete



20. Click **Done** to complete the upgrade process.

### 7.3 Upgrading Resiliency File Replicator using Command Line

Perform the following steps for the Kyndryl Resiliency File Replicator (RFR) upgrade:

1. Stop the RFR service.
2. Take a backup of the **panacesFileReplicator** folder.
3. Uninstall the existing RFR.
4. Install the newer version of RFR using downloaded binaries.

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5. Install the tar from the Patch directory.

In case the user chooses rsync replication Install rsync.

6. Apply the TLS patch by performing the following steps:

- a. Copy the PFR.jar from the **PFRAgent** folder to **/opt/panaces/DRMAgents/lib** folder.
- b. Copy the PFR.jar from the **SFRService** folder to **/opt/panaces/SFR/lib** folder.
- c. Edit the PFRConfiguration.cfg file from the TLS Patch directory and modify the following entries:
  - SOCKET\_COMMUNICATIONTYPE = SECUREWITHTLS
  - RSYNC\_COMMUNICATIONTYPE = DAEMON
- d. Copy the PFRConfiguration.cfg file from the TLS Patch directory to **/opt/panaces/SFR/installconfig** folder.

7. Apply the SSL patch by copying the pfr.keystore file from SSL Patch directory to **/opt/panaces/SFR/installconfig** folder.

8. Apply log4j Patch by copying the log4j.jar from LOG4J Patch directory to **/opt/panaces/SFR/lib** folder.

9. Apply Java Patch by performing the following steps:

- a. Take a backup of the jre folder from **/opt/panaces/SFR** folder.
- b. Copy the jre folder from JAVA Patch directory to **/opt/panaces/SFR** folder.

10. Copy the files and folders within the bak, filesets, and sfrdb using backup of panacesFileReplicator to the new location of panacesFileReplicator.

11. Edit the .rt file from bak and filesets and append the following lines to the files.

- FILESET\_TOTAL\_REPLICATED\_TIME=3
- FILESET\_TOTAL\_PENDING\_FILES\_SIZE\_BEFORE\_REPLICATION=0

12. Start the RFR service.

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## 8 Uninstalling File Replicator

This chapter provides detailed information on uninstalling File Replicator on your system.

**Note**

If you have used the Silent mode of installation, you can perform only Silent mode of un-installation. After the Silent mode of installation, Graphical mode of un-installation cannot be performed.

If you have used the Graphical mode of installation for File Replicator, you can employ either the Graphical or Silent mode of un-installation. Use the following commands to perform silent mode un-installation:

```
Uninstall_Sanovi_File_Replicator -i silent
```

```
Uninstall_Sanovi_File_Replicator -i silent
```

### 8.1 Uninstallation of File Replicator

To uninstall File Replicator from GUI, perform the following steps:

1. Enter in the folder \$SFRROOT/Uninstall.
2. Click Uninstall\_Sanovi\_File\_Replicator
3. To uninstall File Replicator from the command prompt, perform the following steps:

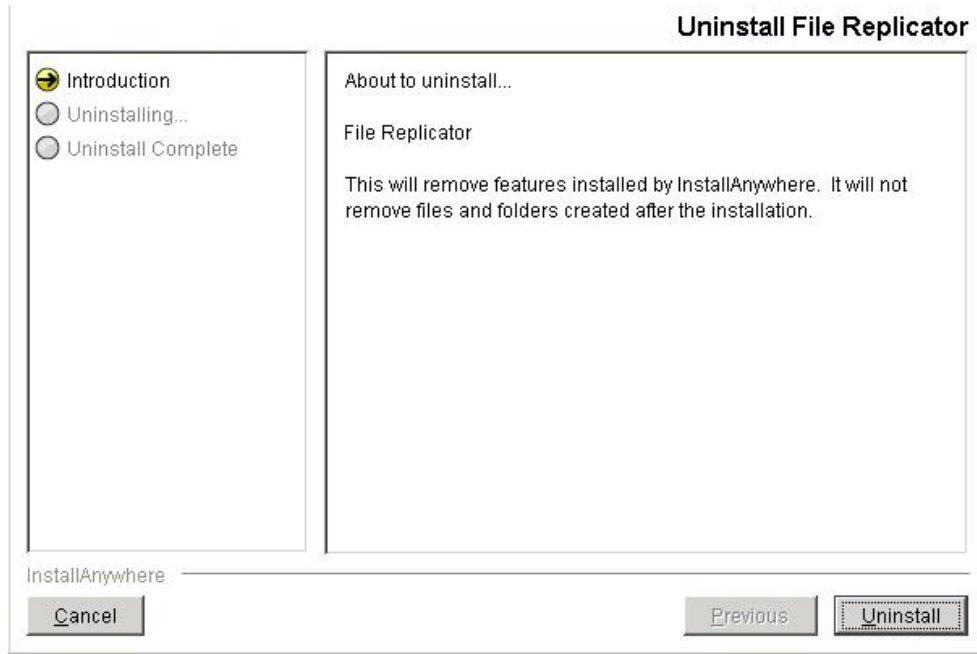
```
# cd $SFRROOT/Uninstall
```

```
# ./Uninstall_Sanovi_File_Replicator
```

This process will uninstall all binaries that have been installed while installing File Replicator. This process will not uninstall Tomcat binaries.

Figure 17. Uninstallation of File Replicator

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## 9 License Information

### 9.1 GPL License Information

If you wish to access the source code for any of these packages, it is recommended that you visit the official download site of the package maintainer directly. A link to each download site appears in the table below. These links are provided "as-is" and will take you to sites that are not owned or controlled by Kyndryl. Kyndryl is not accountable for the contents of these sites and is not acting as a distributor of the code on such sites. Kyndryl in no way warrants that the code or other information on these sites is accurate, will function in a particular manner, or is non-infringing of a third party's intellectual property rights. Please contact the maintainers of the code for information on the licenses and documentation that accompany the source code distributed from their site.

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<https://sourceforge.net/projects/gnu-utils/files/binaries/>.

In addition to GPL, each of these packages includes its own licensing information. It is essential to understand the terms and conditions pertaining to the licensing information of the individual tools.