

# SFTP Connector Guide

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## Disclaimer

The integration was either created by Saviynt or by Saviynt community users and verified by Saviynt. The integration is available “as is” and fall under standard connectors support for REST, SOAP, JDBC, LDAP, PowerShell, Jar and Saviynt Connector Framework.

**Note:** It is highly recommended to use OOTB EIC features available for file import/export.

1. Files can be imported to EIC by using API's i.e. [schema import](#) and [data import](#)
2. All reports are available through API's i.e. [Runtime analytics](#)

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## Troubleshooting

## Preface

This guide describes the integration between Saviynt **Enterprise Identity Cloud (EIC)** and SFTP location for transferring the files.

## Audience

This guide is intended for administrators and target application integration teams responsible for implementing a secure integration service with SFTP based on SFTP file location.

## Introduction

In Saviynt EIC solution there is a need for periodic and automated transfer of files into and out of Saviynt EIC solution based on customer requirements. For example, schema-based import jobs for different objects expect the data files to be available in Datafiles directory and schema files to be available in SAV directory. And sometimes data needs to be sent from Saviynt EIC solution to customer target systems for further consumption and processing by the target applications. To address these requirements Saviynt Professional Services COE team has developed a File Transfer Utility (aka SFTP Connector based on JarConnector) to automate transfer of files between customer SFTP location and Saviynt environment.

**Note:** This guide provides information about using the File Transfer Utility for only transferring files in to and out of EIC. This utility does not import the data in the files into EIC tables as such.

## Supported Features

**The SFTP integration supports the following features:**

File Transfer	
File Import	File Export
Support transfer of files (.csv and .sav files) from a customer SFTP location to Saviynt EIC platform	Support export of files ( .csv, .xls, .xlsx, .txt and .sav files) from Saviynt EIC solution to customer SFTP location.

## Supported Software Versions

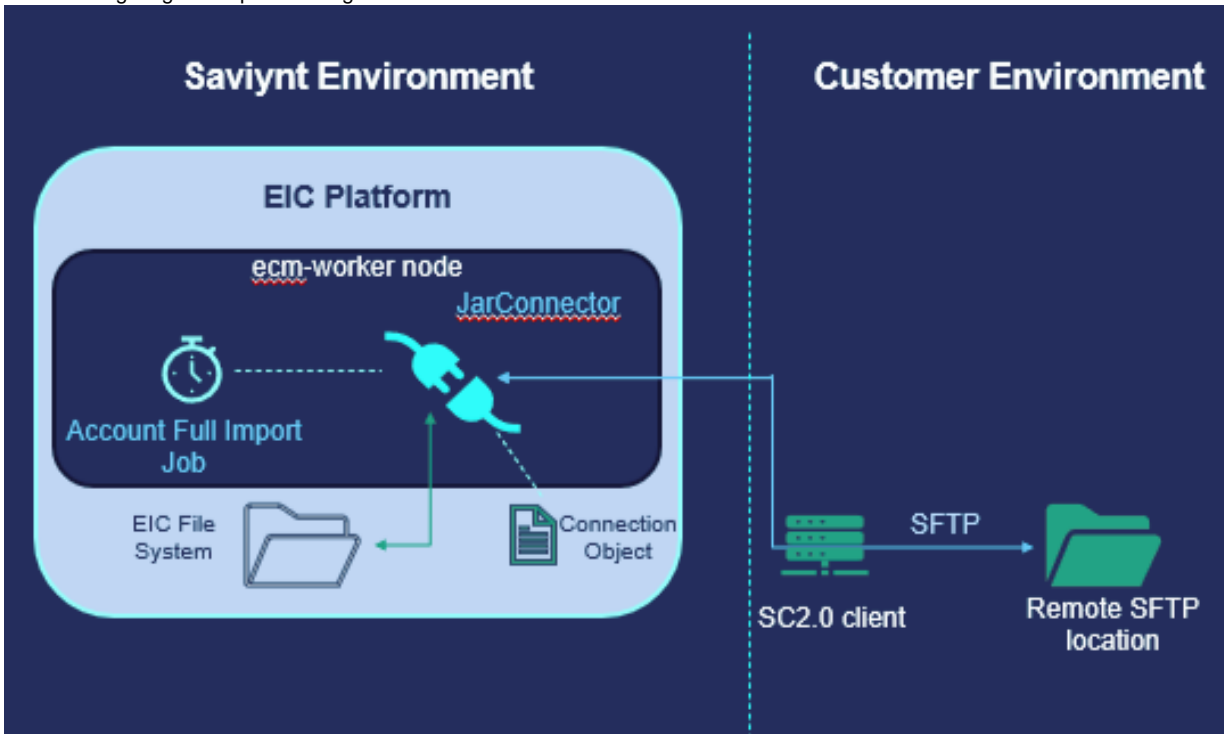
Software	Version
EIC	v5.5 sp3.x, v2020.x and v2021.x

## Integration Architecture

Utility is a **JarConnector** type connector for transferring data using SFTP protocol .

- The SFTP Utility (JarConnector) is deployed as an extension jar in EIC
- Input params are stored in connection object in the ImportAccountsJSON
- It supports transfer of .csv and .sav files into EIC to **Datafiles** and **SAV** directories respectively under Admin->Settings->File Directory
- It supports transfer of .txt, .csv, .xls, .xlsx files from **Reports** directory of EIC to a SFTP location

The following diagram depicts the high-level architecture:

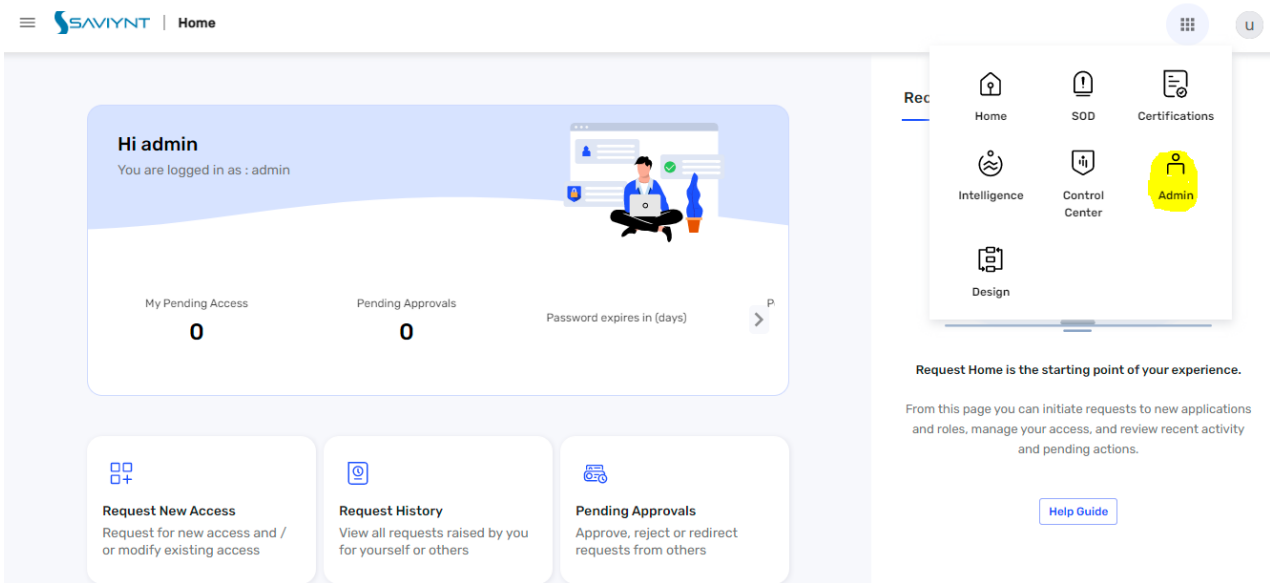


## Setting Up the Integration

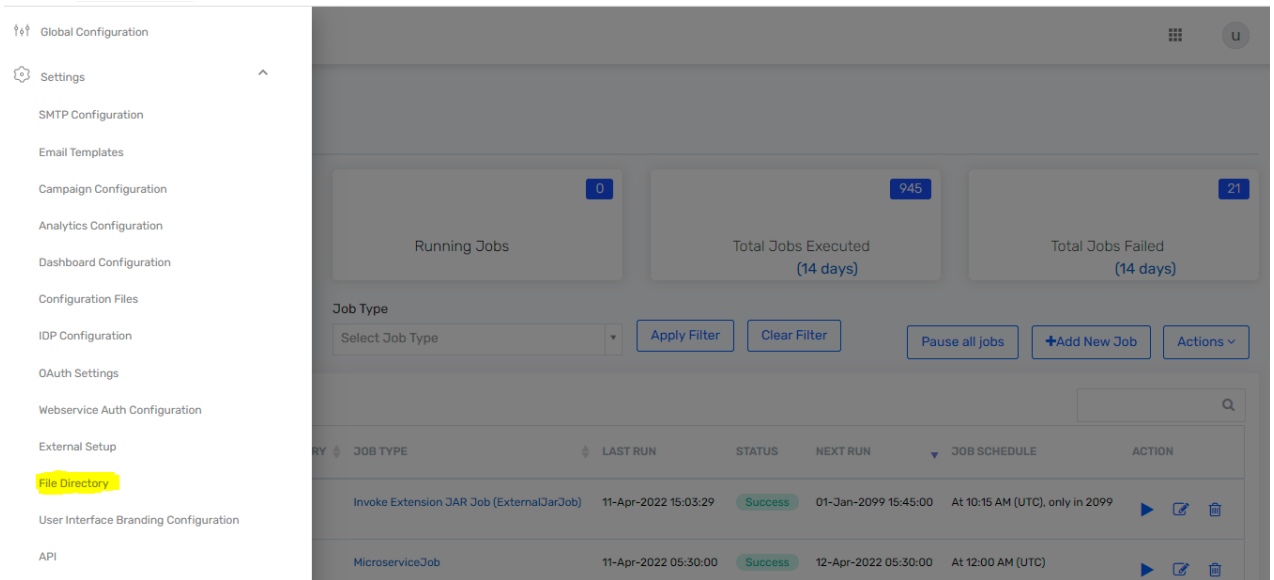
### Prerequisites

### Setting up the SFTP connector on your tenant

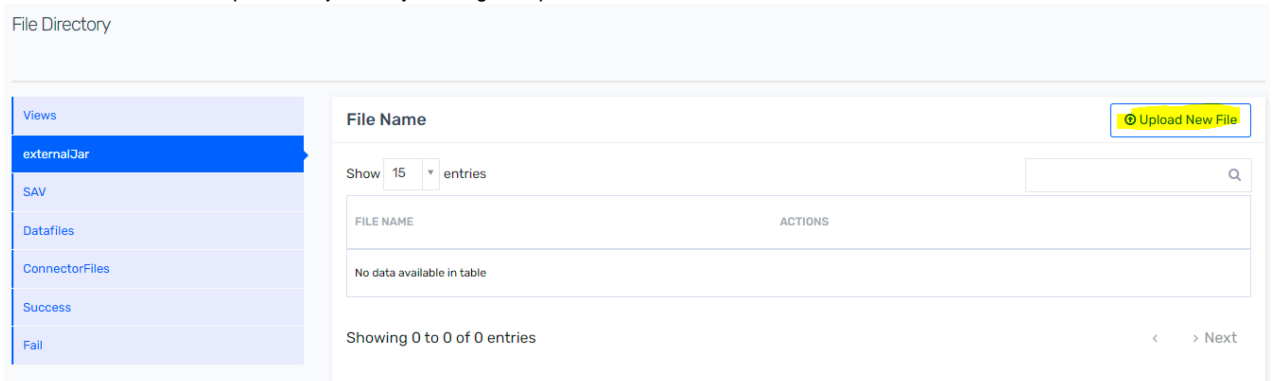
1. [Download](#) the utility jar to your local machine ([Download SFTP Jar Connector source code](#))
2. Login to EIC using the Admin credentials.
3. Go to admin page



4. Go to Settings and File Directory



5. Go to **externalJar** and upload the jar file by clicking on Upload New File



6. Select the downloaded jar file and deploy it by clicking on Upload button

7. After deploying the jar file restart the application (Admin -> Admin Functions -> Application Restart) Note: The input parameters to the connector are driven via a JarConnector type of Connection in Saviynt EIC Solution from the UI.

**Add/Update**    **History**

---

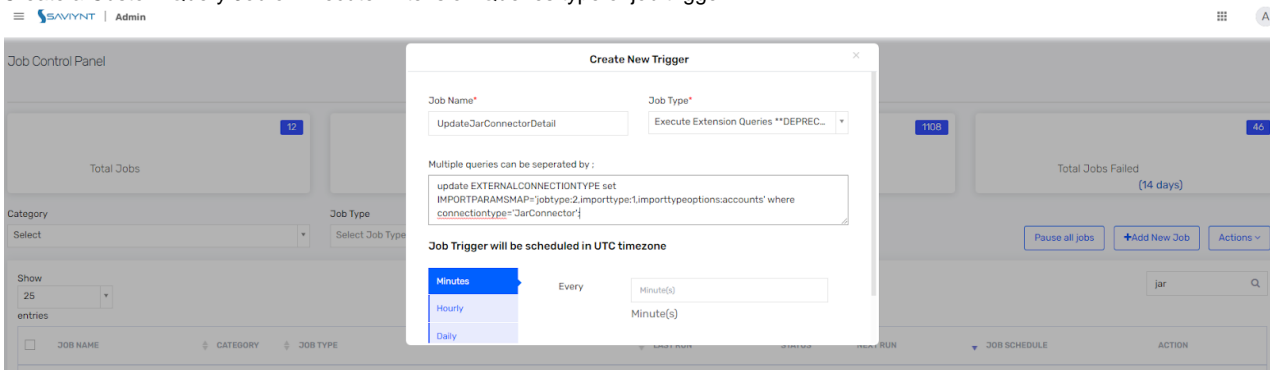
## Add/Update Connection

Connection Name \*

Connection Type

JarConnector

8. Create a Custom Query Job or Execute Extension Queries type of job trigger



9. Use the following query in the job trigger

*update EXTERNALCONNECTIONTYPE set IMPORTPARAMSMAP='jobtype:2,importtype:1,importtypeoptions:accounts' where connectiontype='JarConnector';*

10. Click on Save to save the job trigger and execute the newly created Custom Query Job (This is a one-time activity).

### Establish a network connectivity with SFTP by opening a firewall port.

If the SFTP location that you are trying to connect is behind the firewall then make sure that the firewall rules to allow connectivity are in place from your SC 2.0 servers.

### Identify the authentication method

The connector supports below authentication methods for connecting to SFTP location:

- **Username and Password** : For this the username and password values are stored in the ConnectionJSON of the connection. The ConnectionJSON is encrypted automatically by the Saviynt EIC Solution when the connection is saved. (Please note that once the ConnectionJSON is encrypted, it cannot be decrypted.)
- **Private key file (.pem file)** : For this the .pem file needs to be saved as .csv file and uploaded to the Datafiles directory of Saviynt EIC from UI. Once the key file is uploaded to Datafiles directory as .csv file and a job is triggered to execute this file, the connector automatically takes the file from the Datafiles directory, converts it into .pem file and transfers it to a secure location within Saviynt EIC which is not accessible by users. This way .pem file is secured from unauthorized access by users. If you want to change the key file, then upload the new .pem file to Datafiles directory which will be picked up by the next job run using this connector. *Please refer to APPENDIX section below in this document on how to deploy a private key file (.pem file)*

### Understanding the Configuration Parameters

First, we need to create a connection of type JarConnector. In the connection we need to configure ConnectionJSON and ImportAccountJSON

#### Connection Parameters

The connector uses the following parameters for connecting to SFTP location

Parameter	Description	Example Configuration	Mandatory?
Connection Name	Specify the name to identify the connection.	-	Yes
Connection Description	Specify the description for the connection.	-	No

ConnectionJSON	Specify this parameter to create a connection.	Use the following format to connect to the SFTP :	Yes
		<pre> {          "SFTPHOST" : "111.22.02.56" ,          "SFTPPORT" : "22" ,          "SFTPUSE" : "sftpuser" ,          "SFTPPASS" : "P7686kkjhd"  } </pre>	

*Description of the attributes used in the ConnectionJSON*

Property Name	Description	Note
SFTPHOST	IP address or the hostname of the SFTP server on the client side	The names of the properties indicated here may vary. However, these properties are being referred in the ImportAccountsJSON as well. Hence, the same needs to be updated into the ImportAccountsJSON as well.
SFTPPORT	Port number to connect to the SFTP server on the client side	
SFTPUSE	Username for the SFTP user to login to the SFTP server	
SFTPPASS	Password for the SFTP user to login to the SFTP server (Note – Password not required if private key type of authentication is being used. Hence this property needs to be kept blank)	

Please note that once you save the connection, the ConnectionJSON content is encrypted and saved in database. Once encrypted, it cannot be decrypted. So, if you want to change anything in the ConnectionJSON in future, you will have to replace the entire ConnectionJSON in the UI by editing the connection, you will not be able to change a specific line in the ConnectionJSON )

*Import Parameters (for transferring the files)*

The connector uses the following parameters for transferring files

Parameter	Description	Recommended Configuration	Mandatory?
AccountEntImport JSON	Specify this parameter to import the accounts and entitlements	Use the following format to import accounts and entitlements using the SFTP:	Yes
		<pre> {  "fullyQualifiedClassName" : "com.saviynt.connector. SFTPConnector. FileTransferUtilitywithargs" ,          "methodName" : "saviyntFileTransfer_SFTP" ,  } </pre>	

```
    "arguments": {
        "SFTPHOST":
"${connectionJSON.SFTPHOST}",
        "SFTPPORT":
"${connectionJSON.SFTPPORT}",
        "SFTPUSER":
"${connectionJSON.SFTPUSER}",
        "SFTPPASS":
"${connectionJSON.SFTPPASS}",
        "ACTION":
"download",
        "SFTP_DIRECTORY": "/upload/",
        "SAVIYNT_DIRECTORY":
"/saviynt_shared/saviynt/Import
/",
        "FILE_NAME_LIST": "AWS_TEST.
csv",
        "SFTP_LOGFILE_DIRECTORY":
"/saviynt_shared/saviynt/Import
/Success/",
        "DELETE_SOURCE_FILE_AFTER_DOWNLOAD": "no",
        "SFTP_KEY_PATH":
"/saviynt_shared/saviynt/Import
/Datafiles/",
        "SFTP_KEYFILE_NAME": "sftp_key.
csv",
        "SFTP_CERT
_DEFAULT_PATH": "/saviynt_shared
/saviynt/Import/Datafiles/",
        "LOG_FILE_AGE": "2"
    }
}
```

Description of the attributes used in the ImportAccountsJSON

Property Name	Description	Note
fullyQualifiedClassName	This is the class name which is invoked in the utility and the value must always be "com.saviynt.connector.SFTPConnector.FileTransferUtilitywithargs".	The key and the value for this property must NOT be changed
methodName	Method name in the utility to be invoked for performing download and upload actions and the value must always be "saviyntFileTransfer_SFTP".	The key and the value for this property must NOT be changed
arguments	These are the arguments which are required by the utility to be executed. The value for this property will always be a JSON.	The key for this property must NOT be changed
SFTPHOST	This property should point to the property which defines the SFTP host/server in the ConnectionJSON.  'connectionJSON' is the object which points to the ConnectionJSON and any attribute from the ConnectionJSON can be accessed as the following \${connectionJSON.<<propertyName>>}	The key for this property must NOT be changed. The value for this must point to the property in ConnectionJSON which holds the value of the SFTP server on client side.
SFTPPORT	This property should point to the property which defines the SFTP host/server Port in the ConnectionJSON.  'connectionJSON' is the object which points to the ConnectionJSON and any attribute from the ConnectionJSON can be accessed as the following \${connectionJSON.<<propertyName>>}	The key for this property must NOT be changed. The value for this must point to the property in ConnectionJSON which holds the value of the SFTP server Port on client side.
SFTPUSE	This property should point to the property which defines the SFTP host/server username in the ConnectionJSON.  connectionJSON is the object which points to the ConnectionJSON and any attribute from the ConnectionJSON can be accessed as the following \${connectionJSON.<<propertyName>>}	The key for this property must NOT be changed. The value for this must point to the property in ConnectionJSON which holds the value of the SFTP server username on client side.
SFTPPASS	This property should point to the property which defines the SFTP host/server user's password in the ConnectionJSON.  connectionJSON is the object which points to the ConnectionJSON and any attribute from the ConnectionJSON can be accessed as the following \${connectionJSON.<<propertyName>>}	The key for this property must NOT be changed. The value for this must point to the property in ConnectionJSON which holds the value of the SFTP server user's password on client side.

Property Name	Description
ACTION	Allowed values are DOWNLOAD or UPLOAD <ul style="list-style-type: none"> <li>Use 'DOWNLOAD as the value if you intend to transfer files from SFTP location to Saviynt EIC's Datafiles or SAV directories</li> <li>Use 'UPLOAD as the value if you intend to transfer files from /Reports directory of Saviynt EIC to SFTP location</li> </ul>

SFTP_DIRECTORY	<p>Directory path on the SFTP server to/from which files need to be transferred. This path is given by customer's team who provides the SFTP location details. This path is not given by Saviynt team.</p> <p>Note: Please ensure that the directory path given for this always ends with a forward slash (/). Please see below example</p> <p>e.g.: /upload/</p>
SAVIYNT_DIRECTORY	<p>This is the directory path on the Saviynt EIC solution from/to which files need to be transferred. The path value differs on the value of the ACTION property:</p> <ul style="list-style-type: none"> <li>• When ACTION property is DOWNLOAD, provide Saviynt file system directory path until the <b>Import</b> directory (just one level above Datafiles directory). e.g.:/saviynt_shared/saviynt/Import/</li> <li>• When ACTION property is UPLOAD, provide Saviynt file system directory path until the <b>Reports</b> directory</li> </ul> <p>e.g./saviynt_shared/saviynt/Reports/</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• Please ensure that the directory path given for this always ends with a forward slash (/). Please see below example:</li> </ul> <p>/saviynt_shared/saviynt/Import/ /saviynt_shared/saviynt/Reports/</p> <ul style="list-style-type: none"> <li>• Please note that this directory path value differs based on the version of Saviynt EIC solution the customer is using. For example, for v2021 version of EIC, the path will be /saviynt_shared/saviynt/Import/ (for DOWNLOAD) and /saviynt_shared/saviynt/Reports/ (for UPLOAD)</li> </ul> <p>And for v5.5 sp3.x and v2020.x versions of EIC, the path will be /opt/sharedappdrive/saviynt/Import/ (for DOWNLOAD) and /opt/sharedappdrive/saviynt/Reports/ (for UPLOAD)</p> <ul style="list-style-type: none"> <li>• The above only are examples. Please open a Fresh Desk ticket with Saviynt support to get the exact path for the Saviynt EIC version the customer is using</li> </ul>
FILE_NAME_LIST	<p>Comma separated values of the file names that you intend to transfer. Utility supports transferring multiple files at a time. Below are the file types that are supported from transfer:</p> <ul style="list-style-type: none"> <li>• For DOWNLOAD action only .csv and .sav file types are supported by the utility</li> <li>• For UPLOAD action only .csv, .txt, .xls and .xlsx files are supported by the utility</li> </ul> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• Please include the file extension in the file name</li> <li>• Do not include space before or after comma in the comma separated list. See below example</li> </ul> <p>e.g.: Employee_users.csv, Schema_USERS.sav</p>




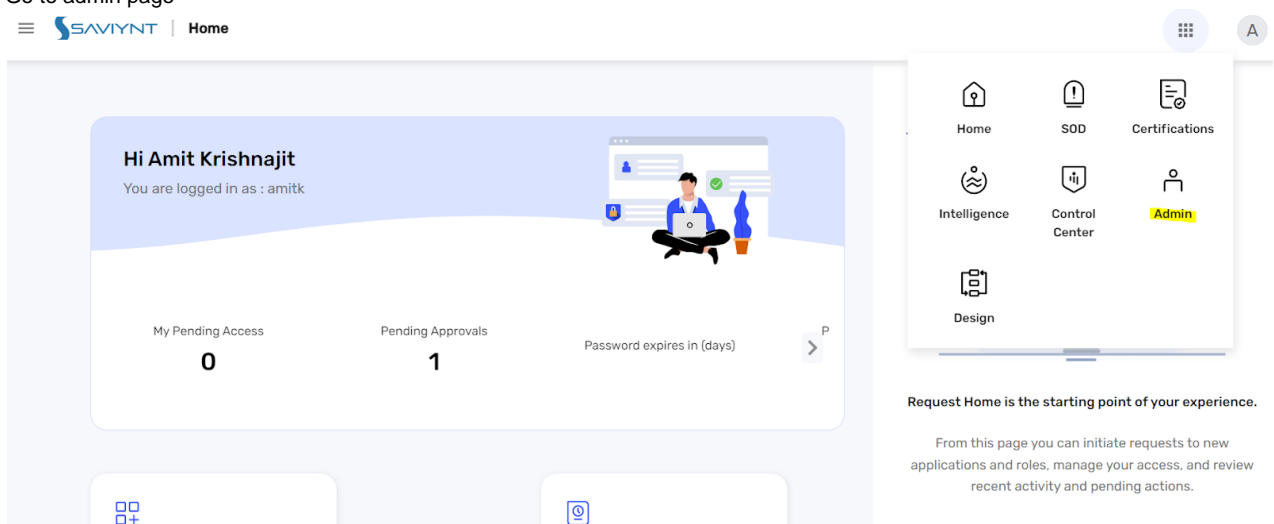
FILE_NAME_REGEX	<p>If you want to transfer files matching a specific pattern, please use this property to capture the regex (regular expression) for the file name pattern. The regex should comply with standard regex syntax.</p> <p>e.g.: <code>=^.*Test?[-_ .A-Za-z0-9]*</code></p> <p>Below are the file types that are supported from transfer:</p> <ul style="list-style-type: none"> <li>• For DOWNLOAD action only .csv and .sav file types are supported by the utility</li> <li>• For UPLOAD action only .csv, .txt, .xls and .xlsx files are supported by the utility</li> </ul> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• Do NOT include file extensions in the regular expression. Just mention the regex for name of the file</li> <li>• In case of UPLOAD action, if multiple files are found matching the regular expression in the /Reports directory. Only the file with latest timestamp will be transferred from Saviynt EIC to SFTP location</li> <li>• In case of REGEX, please add four slash(\\) for every slash which is present in the REGEX, e.g., when using   in the expression, it should be added to the REGEX as <code>\\ </code>.</li> </ul>
FILE_EXTENSION	<p>This is an optional property.</p> <p>By design below are the file types that are supported for transfer by the utility:</p> <ul style="list-style-type: none"> <li>• For DOWNLOAD action only .csv and .sav file types are supported by the utility</li> <li>• For UPLOAD action only .csv, .txt, .xls and .xlsx files are supported by the utility</li> </ul> <p>If you want to restrict the utility to transfer only specific file types from the above file types, then you can mention the comma separated values of the extensions as shown in the below example. Please note that if you provide any file extensions that are outside of the supported file extensions above, they will be ignored</p> <p>e.g: <code>.csv,.txt</code></p>
SFTP_KEY_PATH	<p>This property is used when a private key file (.pem file) based authentication is used for connecting to SFTP server. Utility will first check if this property and SFTP_KEYFILE_NAME properties are not blank. If so, it will use private key file (.pem file) based authentication else the utility will check for SFTPUSE and SFTPPASS properties and uses username /password based authentication</p> <p>By design the private key (.pem file) needs to be uploaded to Datafiles directory from Saviynt EIC UI. Please refer to section 3.2.5 on how to upload the private key file.</p> <p>Use this property to capture the Saviynt file system directory path where the private key file for SFTP authentication is stored, which is the path to the Datafiles directory.</p> <p>Please note that this path value differs based on the version of Saviynt EIC solution the customer is using. For example, for v2021 version of EIC, the path will be <code>/saviynt_shared/saviynt/Import/Datafiles/</code> and for v5.5 sp3.x and v2020.x versions of EIC, the path will be <code>/opt/sharedappdrive/saviynt/Import/Datafiles/</code></p>
SFTP_KEYFILE_NAME	<p>Provide the name of the private key file that was uploaded to Datafiles Directory</p> <p>e.g.: <code>sftp_key.csv</code></p>
SFTP_CERT_DEFAULT_PATH	<p>This is the folder where the utility will look for the key file. Please keep the path until Datafiles directory</p> <p>e.g.: <code>/saviynt_shared/saviynt/Import/Datafiles/</code></p>

SFTP_LOGFILE_DIRECTORY	<p>This is an optional parameter</p> <p>By default, the log statements of the utility are written to Saviynt debug logs which are visible under <i>Application Logs</i> in UI. Additionally, the utility can be configured to write the log file statements to a custom log file under /Datafiles/Success so that the log file can be viewed from the UI under Success directory</p> <p>e.g.: /saviynt_shared/saviynt/Import/</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• Please ensure that the directory path given for this always ends with a forward slash (/). Please see below example: /saviynt_shared/saviynt/Import/</li> <li>• Please note that this directory path value differs based on the version of Saviynt EIC solution the customer is using. For example, for v2021 version of EIC, the path will be /saviynt_shared/saviynt/Import/ and for v5.5 sp3.x and v2020.x versions of EIC, the path will be /opt/sharedappdrive/saviynt/Import/</li> </ul>
LOG_FILE_AGE	<p>Number of days to retain the custom log file. Please note that max allowed days are 30 and default days are 7</p> <p>e.g. 5</p>
DELETE_SOURCE_FILE_AFTER_DOWNLOAD	<p>Allowed values: Yes or No</p> <p>If Yes, utility will delete the source file from SFTP location after successfully downloading the file on to Saviynt side</p> <p>If No, utility will NOT delete the source file from SFTP location after successfully downloading the file on to Saviynt side</p> <p>This is applicable only for DOWNLOAD action</p>

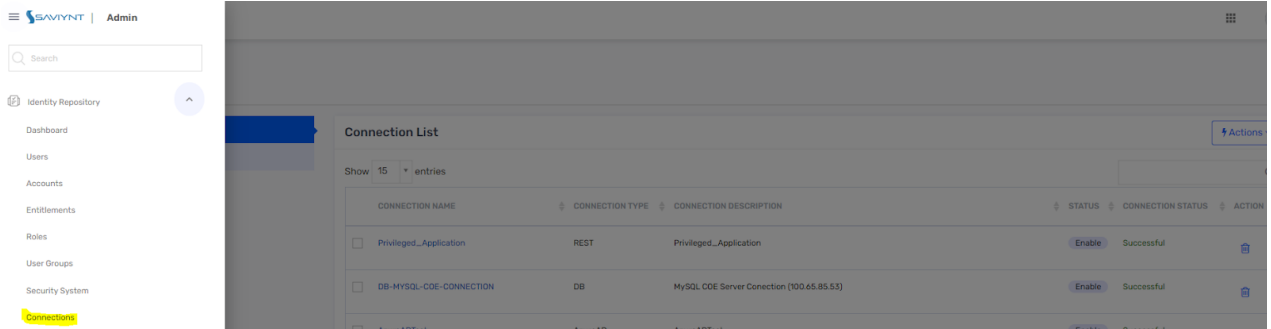
### Creating a Connection

First, we need to create a connection of type JarConnector. In the connectionJSON we need to configure configure ConnectionJSON and ImportAccountJSON. Follow the below steps for the configuration:

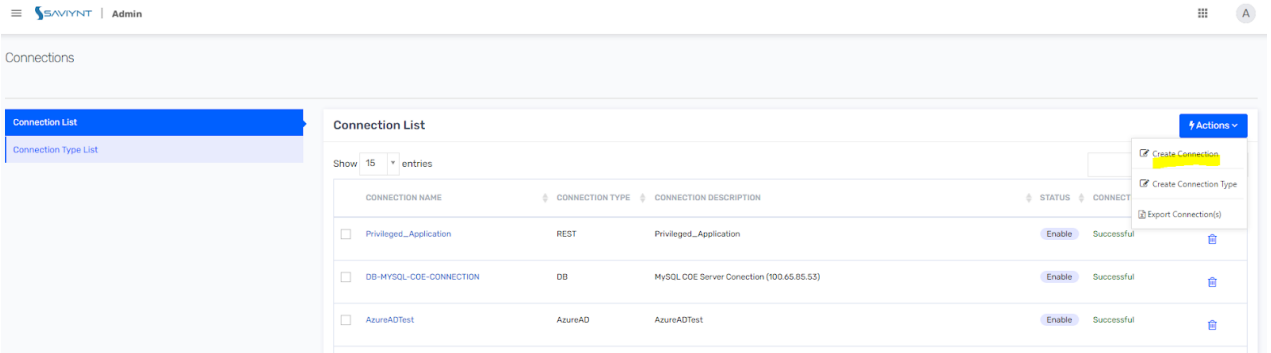
1. Login to EIC as an admin user with required privileges
2. Go to admin page
3. 



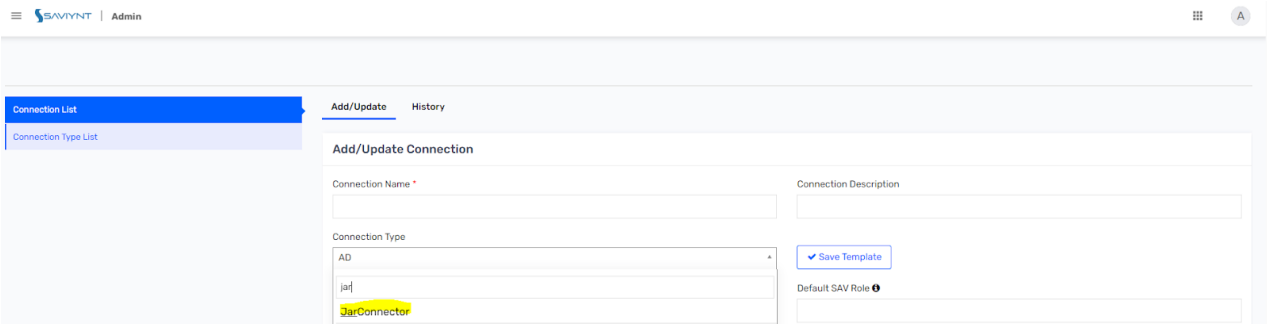
4. Go to Identity Repository -> Connections



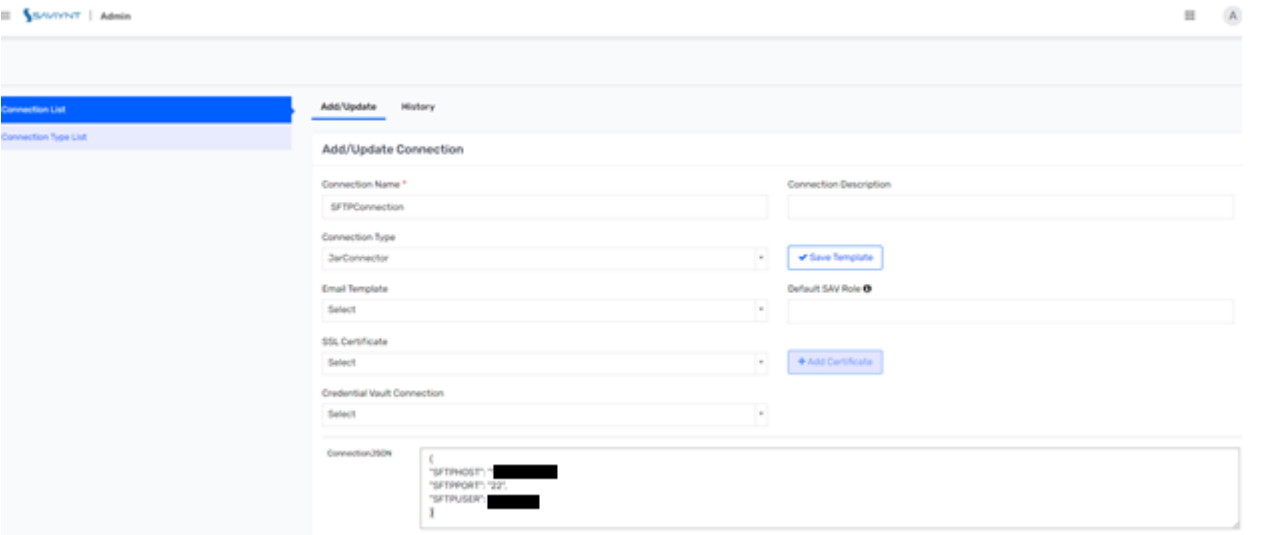
5. Click on Actions -> Create Connection

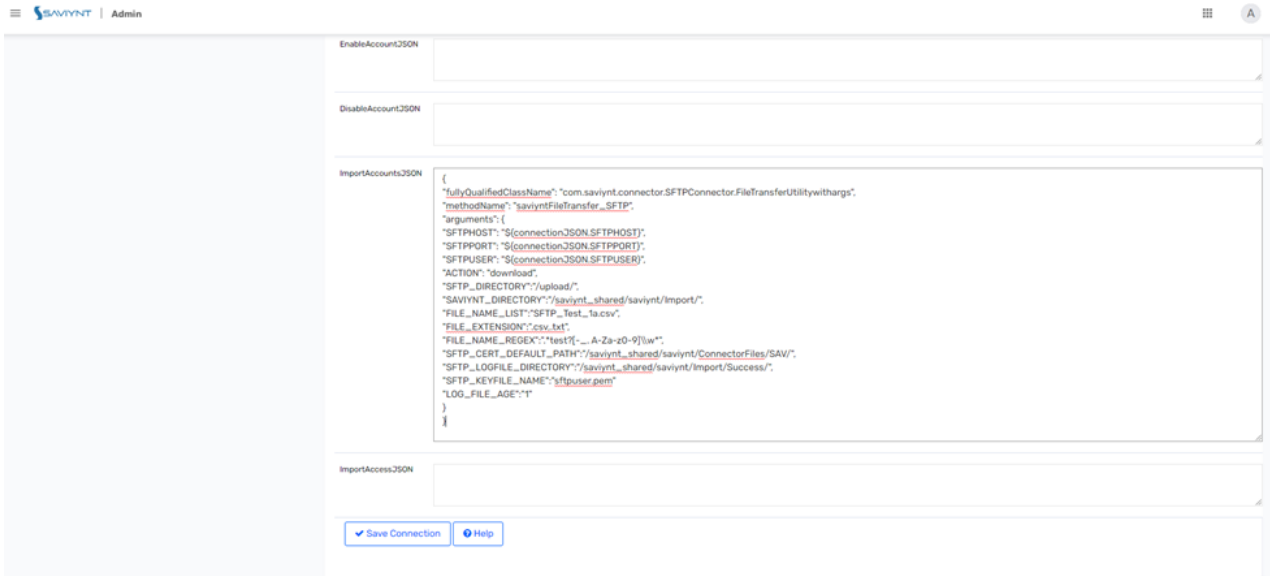


6. Select Connection Type as JarConnector



7. Provide a Connection Name, ConnectionJSON and ImportAccountsJSON and click on Save connection

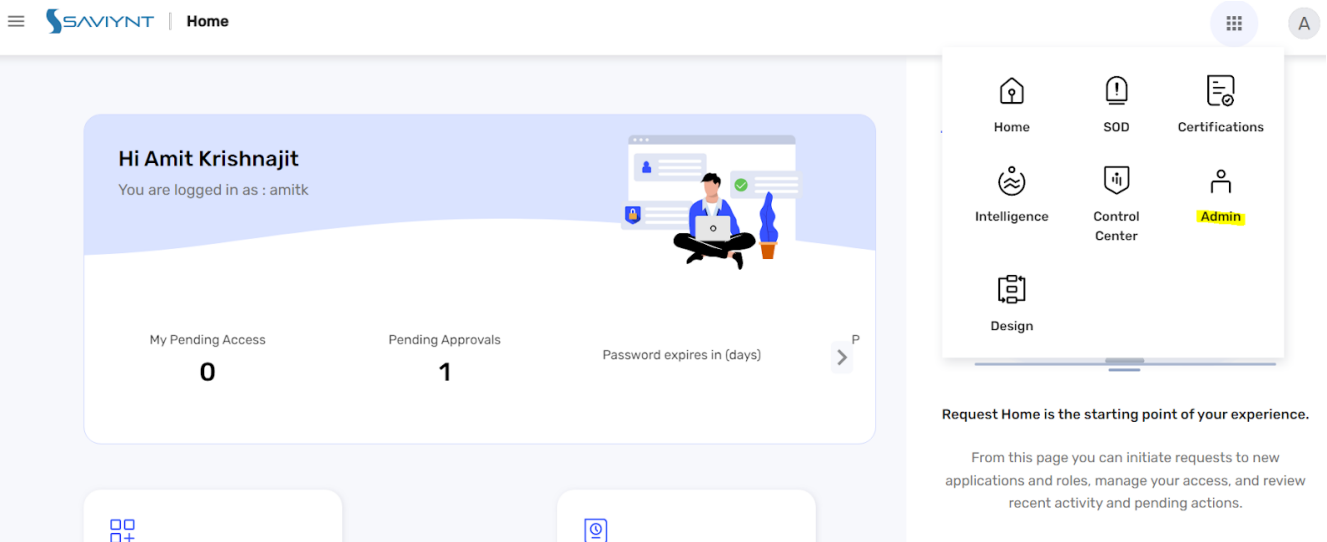




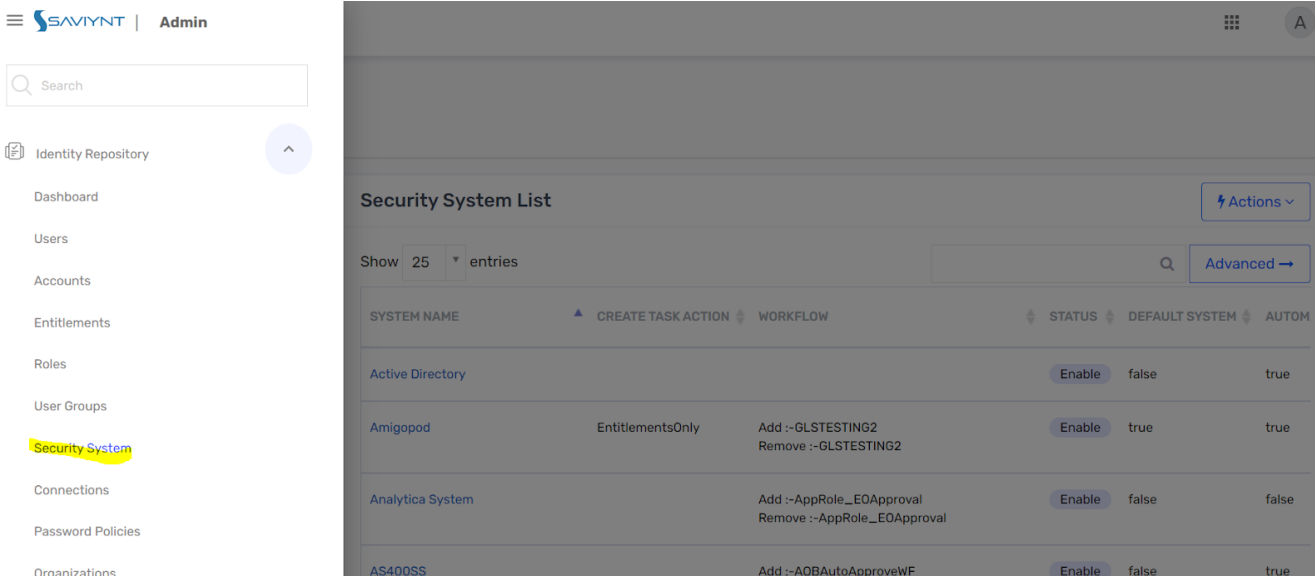
### Creating a Security System and Endpoint

A security system and endpoint need to be created so that the Jar connection can be mapped to it.

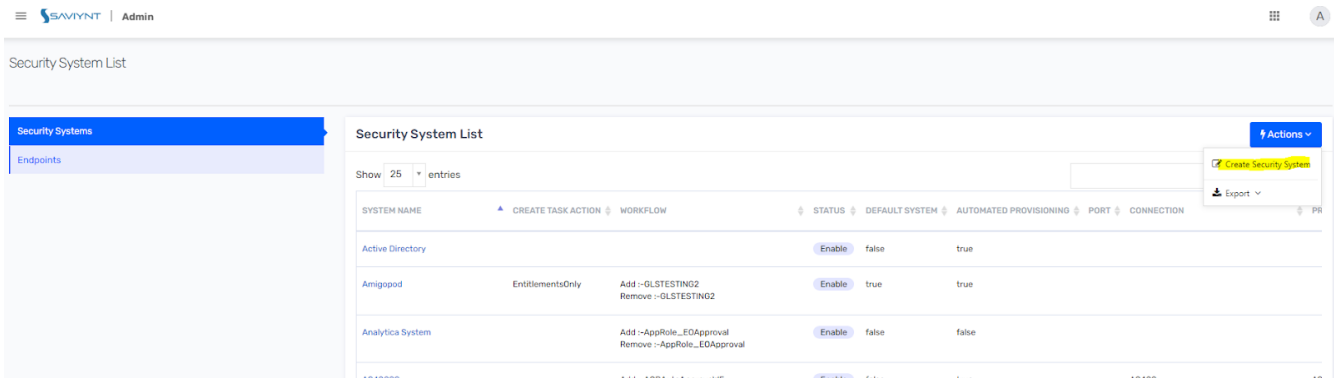
1. Login to EIC as an admin user with required privileges
2. Go to admin page



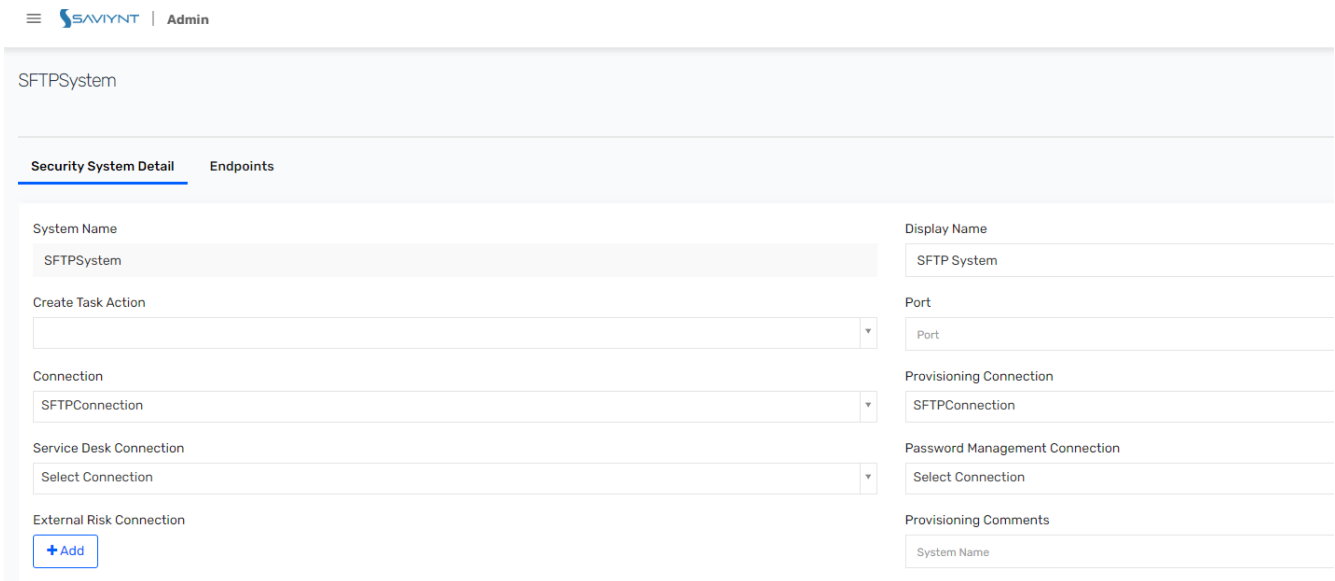
3. Go to Identity Repository -> Security System



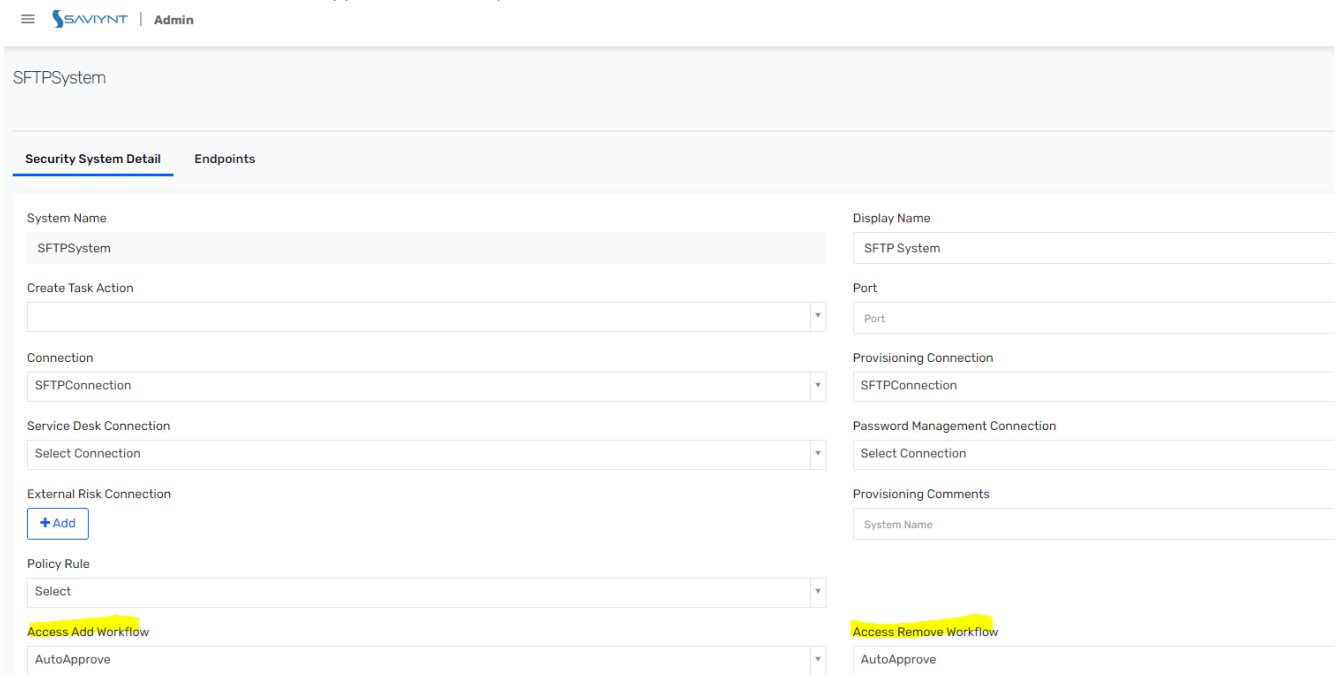
4. Click on Actions -> Create Security System



5. Input the System Name, display name, select the Connection and Provisioning Connection as the JarConnector connection created above.

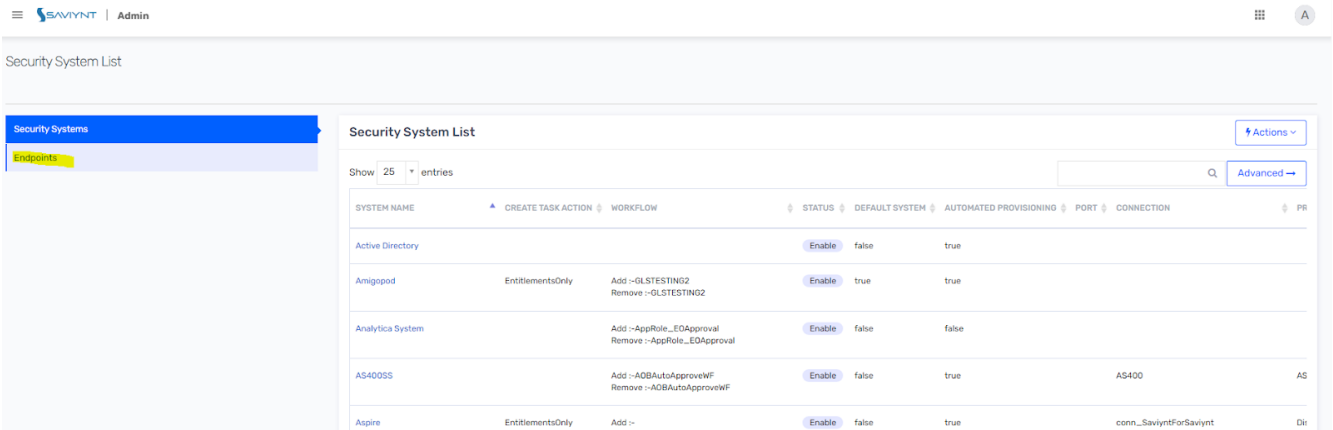


6. Select an Auto Approve workflow in the Access Add Workflow and Access Remove Workflow in the Security System (Refer to APPENDIX section on how to create an Auto Approve Workflow )

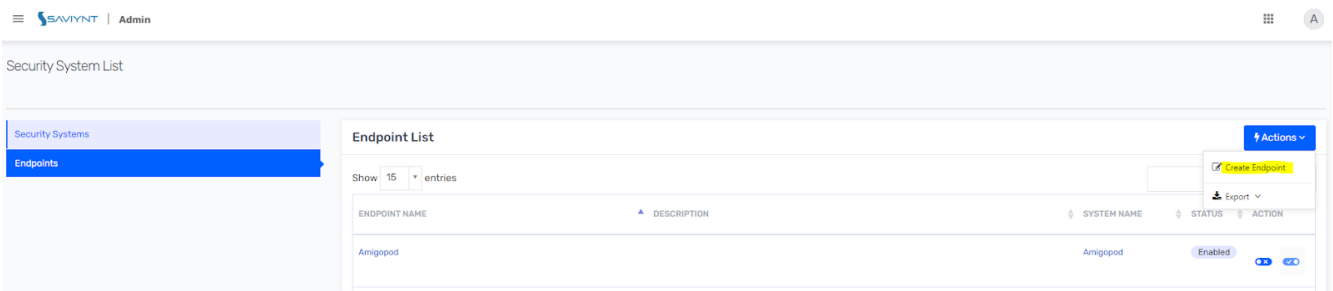


7. After the Security System is created, go to Identity Repository -> Security System

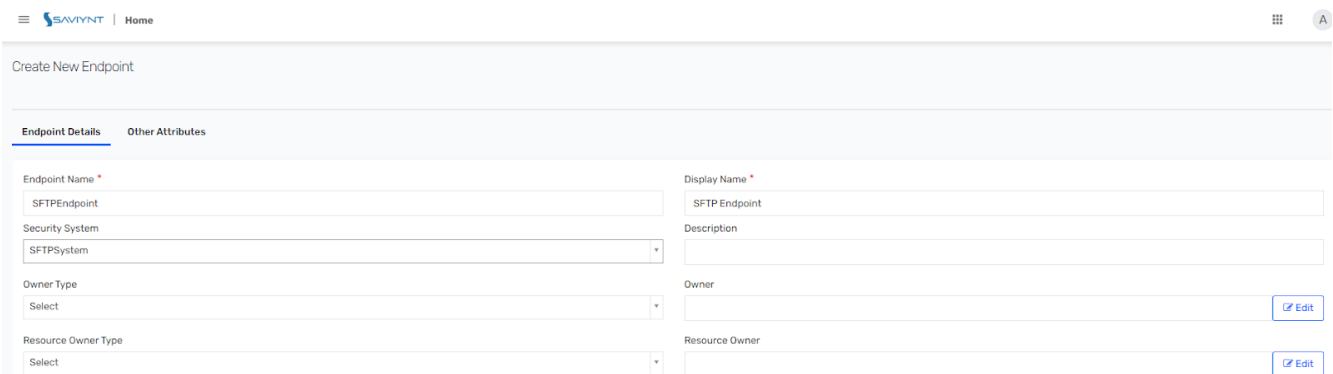
8. Go to Endpoints section



9. Click on Actions -> Create Endpoint



10. Provide the Endpoint name, display name and select the Security system which was created in the previous step

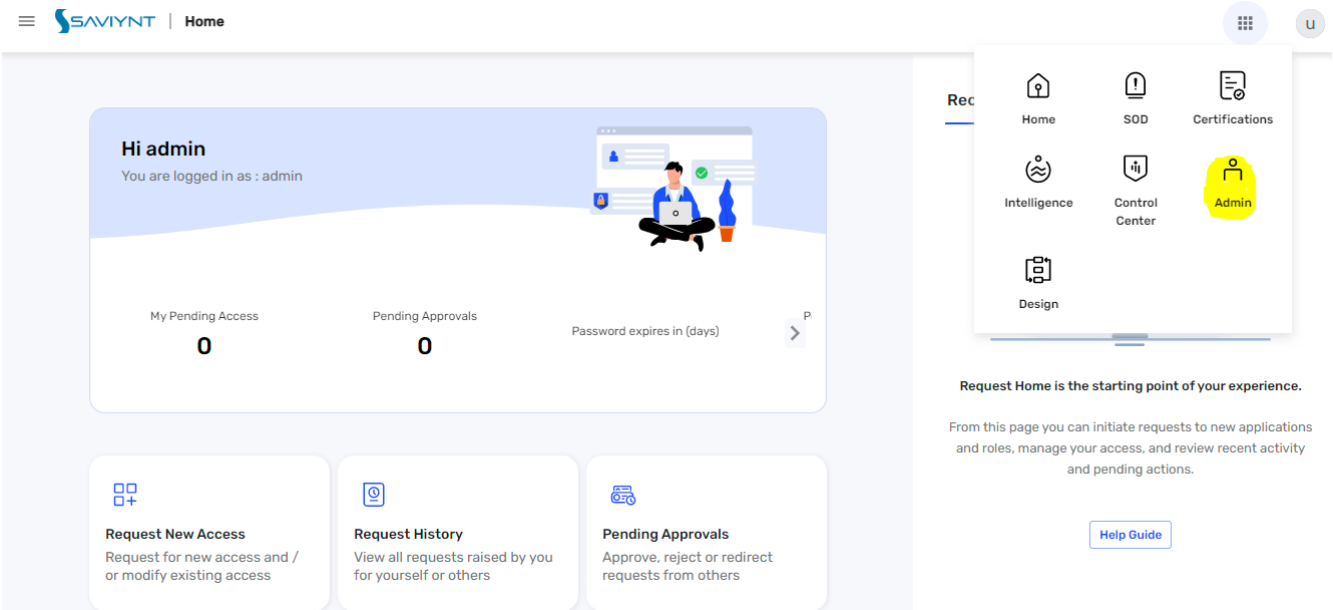


11. Click on Create button to create the endpoint

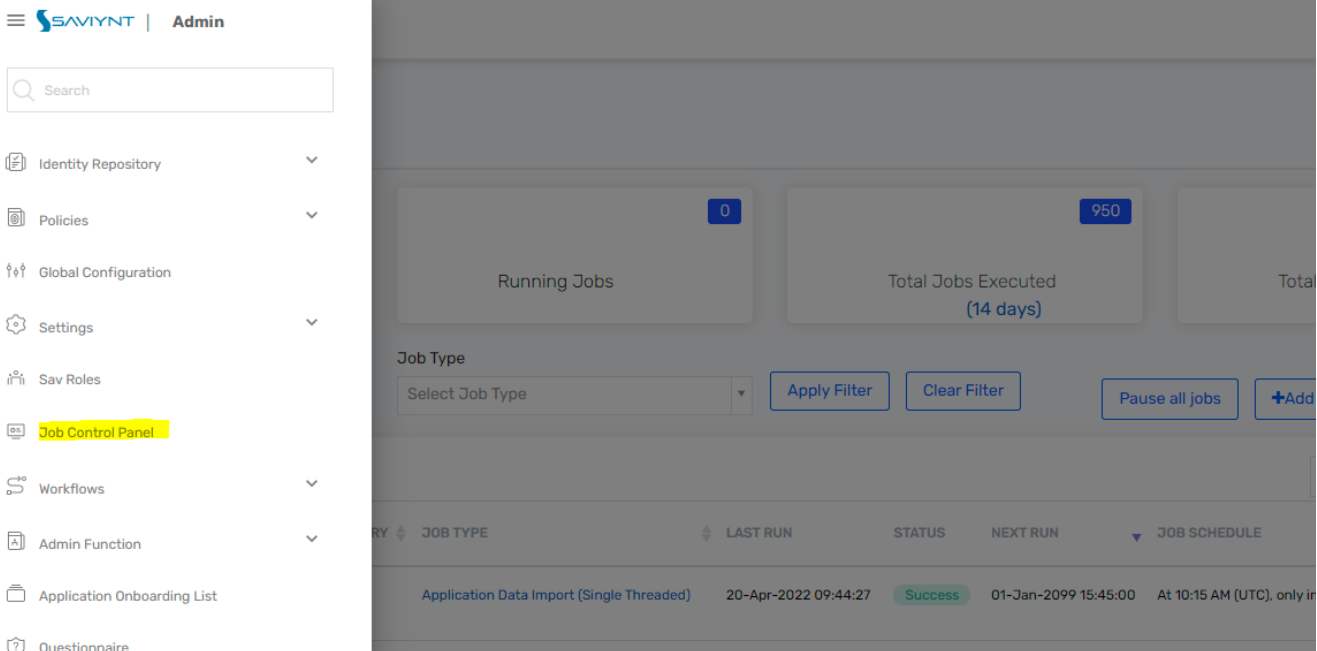
Using the SFTP File Transfer Utility for Transferring the files

Once the deployment and configuration steps mentioned above are complete, perform the transfer of files by following the below steps:

1. Login to EIC as an admin user with required privileges
2. Go to admin page



### 3. Go to Job Control Panel



### 4. Click on Add New Job button on the screen

### 5. It will open a create new trigger pop-up. Fill in the details as shown below.

Parameter	Value	Notes
Job Name	A meaning ful job name of your choice (e.g SFTPFileTransfer)	
Job Type	Application Data Import (Single Threaded)	Use the value as-is
System	e.g: SFTP System	Select from the dropdown the Security System where the Jar Connection was mapped to.
External Connection	e.g: SFTPConnection	This will auto-populate on selection of the System. The value would be the name of the Jar Connection which was created.
Job Type	Full Import	Select the value from the dropdown
Import Type	Accounts	Select the value from the dropdown

### Create New Trigger

**Job Name\***

**Job Type\***

**System \***

**External Connection \***

**Job Type \***

**Import Type \***

**Job Trigger will be scheduled in UTC timezone**

Minutes

Every

Hourly

APPENDIX

1.Question: How to create an auto-approve workflow?

Answer: Please create a workflow by following the below steps

1. Go to Admin -> Workflows -> Workflow List
2. Click on Actions -> Create New Workflow
3. Create a workflow in the following way:

3. Click on Save and then click on Send for Approval

4. Go to Admin -> Workflows -> Workflow Approval



SAVIYNT | Admin

Search

- Identity Repository
- Policies
- Global Configuration
- Settings
- Save Roles
- Job Control Panel
- Workflows
  - Workflow List
  - Workflow Approval**

WORKFLOW TYPE	STATUS	VERSION	OWNER	CREATED BY	CREATE DATE
Parallel	Active	1		SaviyntSupportAgent1	29-Apr-2022 22:00:26
Parallel	Active	1	amitk		05-May-2022 15:51:49
Parallel	Active	1	admin		21-Mar-2022 15:40:33
Parallel	Active	1	admin		21-Mar-2022 15:40:33

### 5. Click on Accept

SAVIYNT | Admin

Workflow Approval List

Workflow Approval List

Show 25 entries

WORKFLOW NAME	WORKFLOW TYPE	STATUS	VERSION	OWNER	CREATED BY	CREATE DATE	SOURCE	ACTION
Auto_Approve_Workflow	Parallel	Pending Approval	1	amitk		09-May-2022 18:42:33	UI	

Showing 1 to 1 of 1 entries

### 6. Provide some comments and submit

SAVIYNT | Admin

Workflow Approval List

Workflow Approval List

Show 25 entries

WORKFLOW NAME	WORKFLOW TYPE	STATUS	VERSION	OWNER	CREATED BY	CREATE DATE	SOURCE	ACTION
Auto_Approve_Workflow	Parallel	Pending Approval	1	amitk		09-May-2022 18:42:33	UI	

Showing 1 to 1 of 1 entries

**Enter Comment**

Comments

Validate

Close Submit

SAVIYNT | Admin

Workflow Approval List

Workflow Approval List

Show 25 entries

No data available in table

Showing 0 to 0 of 0 entries

**Saviynt Security Manager**

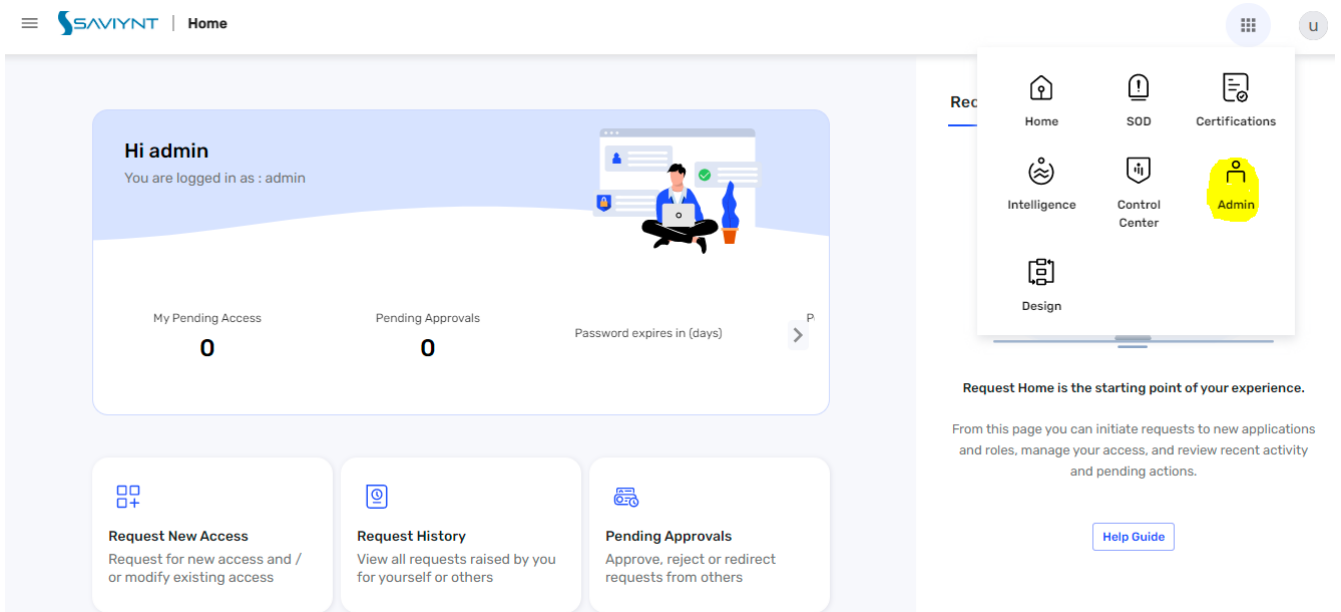
Workflow Auto\_Approve\_Workflow accepted and loaded

Close

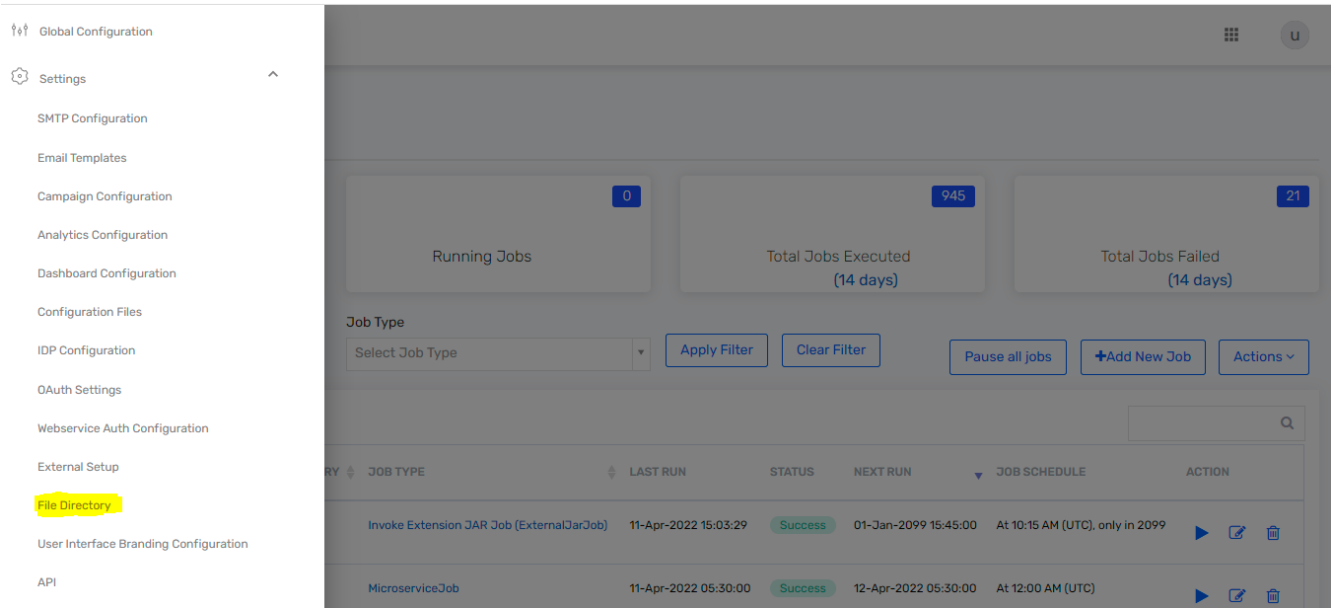
**2. Question:** How do I transfer the private key (.pem) file for SFTP authentication ?

**Answer:**

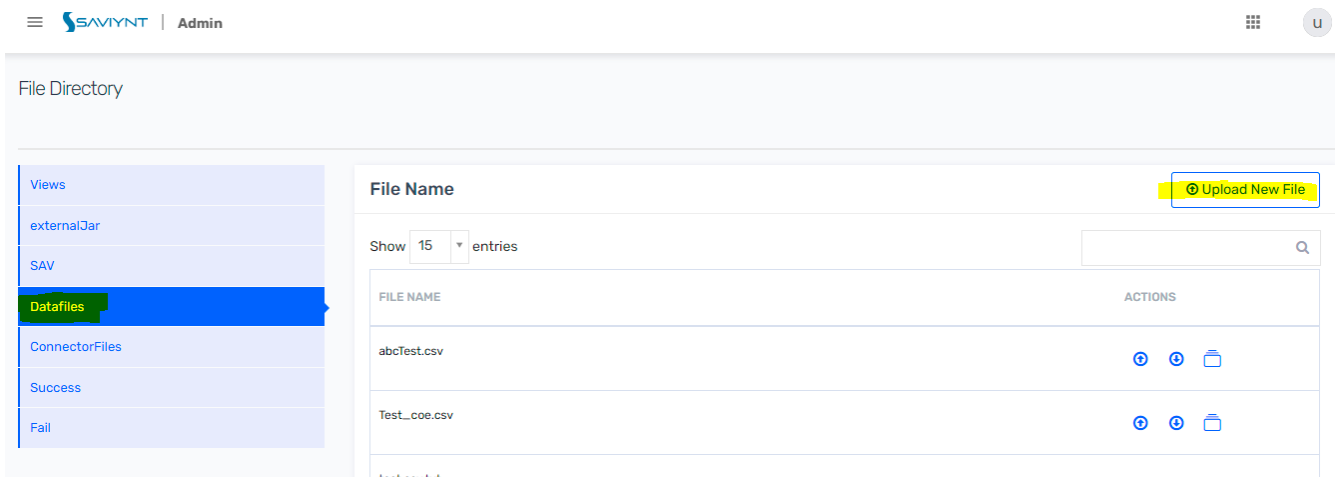
1. Procure the .pem file from the customer team
2. Save the file on local system as .csv file
3. Login to EIC as an admin user with required privileges
4. Go to admin page



**5. Go to Settings and File Directory**



**6. Click on the Datafile section and click on the Upload New File button to upload the file**



**3. Question:** How do I download/upload the files from/to multiple directories on SFTP location ?

**Answer:** Utility supports download/upload the files from/to one directory per execution of the utility. To download files from multiple directories, create multiple connections, security systems, endpoints, and job triggers. Each trigger has to be executed in sequence.

**4. Question:** Can we both download and upload the files at the same time?

**Answer:** Utility supports only one action (download or upload) at a time per execution of the utility. You can create separate jobs for download and upload and each job with a property file corresponding to the action you want to perform download / upload and configure those jobs to run in sequence.

## Troubleshooting

To troubleshoot common problems with connectors, answer frequently asked questions, and provide solutions to a few common issues you might encounter while configuring or working with connectors, see [Common Troubleshooting Guide for Connectors](#).