

Configuring HTTP Streaming for SAP ABAP Table Reader Mappings in PowerCenter®

Abstract

When you run ABAP mappings in PowerCenter to read data from SAP tables, you can configure HTTP streaming. HTTP stream mode sessions use background processing. This article describes how to configure HTTP streaming for ABAP table reader mappings in PowerCenter.

Supported Versions

- PowerCenter 10.2

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Overview

When you run ABAP mappings in PowerCenter to read data from SAP tables, you can configure HTTP streaming. HTTP stream mode sessions use background processing. Use HTTP stream mode when the data volume is high and the extraction time exceeds the limit for dialog processes.

To extract data through stream mode by using the HTTP protocol, you must generate and install the ABAP program in stream mode, and configure the session to use the SAP Streaming Reader, an SAP R/3 application connection, and an SAP ABAP HTTP streaming connection. You must also have authorizations on the SAP system to read SAP tables and to run stream mode sessions.

Prerequisites

Before you configure ABAP HTTP streaming, verify that you have completed all the configuration tasks for PowerExchange for SAP NetWeaver. For more information about configuring PowerExchange for SAP NetWeaver, see the *Informatica® PowerExchange for SAP NetWeaver User Guide for PowerCenter*.

Configuration Tasks for SAP ABAP HTTP Streaming

Perform the following tasks to configure HTTP streaming for SAP ABAP table reader mappings in PowerCenter:

1. Generate and install the ABAP program in stream mode.
2. Create an SAP R/3 connection.
3. Create an SAP ABAP HTTP streaming connection.
4. Configure the session to use the SAP Streaming Reader, SAP R/3 connection, and SAP ABAP HTTP streaming connection.

Generating and Installing the ABAP Program in Stream Mode

To configure HTTP streaming for an ABAP table reader mapping, you must generate and install the ABAP program in stream mode.

1. Create an SAP ABAP table reader mapping.
2. In PowerCenter Mapping Designer, click **Mappings > Generate and Install R/3 Code**.

The **Generate and Install** dialog box appears.

3. Enter the following information to connect to the SAP system:

Property	Description
Connect String	Required. DEST entry defined in the sapnwrhc.ini file for a connection to a specific SAP application server or for a connection that uses SAP load balancing.
User Name	Required. SAP source system connection user name. Must be a user for which you have created a source system connection.
Password	Required. Password for the user name.
Client	Required. SAP client number.
Language	Optional. Language for the mapping. Must be compatible with the PowerCenter Client code page. If you leave this option blank, PowerCenter uses the default language of the SAP system.

4. Click **Connect**.
A list of mappings in the folder appears. If the mappings are versioned, the version number appears next to each version of the mapping.
5. Select the ABAP mapping for which you want to install ABAP.
Use the following guidelines when you select the mapping for which you want to install ABAP:
 - You can install ABAP for all versions of a mapping.
 - You can install ABAP for different versions of the same mapping.
 - You can install ABAP for all versions of multiple mappings.
6. Select the program mode as **Stream**.
7. Optionally, select **Enable Override** to override the default ABAP program name.
8. Optionally, select **Use Namespace** to prefix a namespace you registered with SAP to the ABAP program name.
9. In the **Development Class** box, enter the name of the development class where you want to install the program.

The default development class is \$TMP.

Note: The \$TMP development class is temporary. You cannot transport ABAP programs from this class to another system.

Install ABAP programs that use a namespace in a development class that is in the same namespace.

10. Click **Direct Installation**.
11. Enter the ABAP program name if you selected **Enable Override**.
This step also generates the ABAP program.

Creating an SAP R/3 Connection

To configure HTTP streaming for an ABAP table reader mapping, you must create an SAP R/3 connection to define the details of the SAP system that you want to connect to.

1. In PowerCenter Workflow Manager, click **Connections > Application**.

The **Application Connection Browser** appears.

2. Click **New** and select the sub type as **SAP R/3**. Click **OK**.

The **Application Connection Editor** appears.

The following image shows the **Application Connection Editor** for an SAP R/3 connection:

Connection Object Definition



Application Connection Editor

Name:

Type: SAP R3 ▼

User Name:

☐ Use Parameter In Password

Password:

Connect String:

Code Page: ▼

Attributes:

Attribute	Value
Client code	
Language Code	

- Configure the following connection properties:

Property	Description
Name	Connection name used by the Workflow Manager.
User Name	<p>SAP user name with authorizations on S_DATASET, S_TABU_DIS, S_PROGRAM, and B_BTCH_JOB objects.</p> <p>To define the user name in the parameter file, enter the session parameter \$ParamName as the user name and define the value in the session or workflow parameter file. The Integration Service interprets user names that start with \$Param as session parameters.</p>
Use Parameter in Password	<p>Indicates that the password for the SAP user name is a session parameter, \$ParamName. Define the password in the workflow or session parameter file and encrypt it by using the pmpasswd CRYPT_DATA option.</p> <p>Default is disabled.</p>

Property	Description
Password	Password for the SAP user name.
Connect String	DEST entry defined in the sapnwrfe.ini file for a connection to a specific SAP application server or for an SAP load balancing connection.
Code Page	Code page compatible with the SAP server. The code page must correspond to the language code.
Client Code	SAP client number.
Language Code	Language code that corresponds to the SAP language.

- Click **OK** to save the connection.

Creating an SAP ABAP HTTP Streaming Connection


To configure HTTP streaming for an ABAP table reader mapping, you must create an SAP ABAP HTTP streaming connection to define the port range and HTTPS details for streaming.

- In PowerCenter Workflow Manager, click **Connections > Application**.
The **Application Connection Browser** appears.
- Click **New** and select the sub type as **SAP ABAP HTTP Streaming**. Click **OK**.

The **Application Connection Editor** appears.

The following image shows the **Application Connection Editor** for an SAP ABAP HTTP streaming connection:

Connection Object Definition X

 **Application Connection Editor**

Name: OK

Type: Cancel

User Name: Help

☐ Use Parameter In Password

Password:

Connect String:

Code Page:

Attributes:

Attribute	Value
Port Range	10000-60000
Use HTTPS	<input type="checkbox"/>
Keystore Location	
Keystore Password	
Private Key Password	

3. Configure the following connection properties:

Property	Description
Name	Connection name used by the Workflow Manager.
Port Range	<p>HTTP port range that the PowerCenter Integration Service must use to read data from the SAP server in HTTP stream mode.</p> <p>Enter the minimum and maximum port numbers with a hyphen as the separator. The minimum and maximum port number can range between 10000 and 60000.</p> <p>Default is 10000-60000.</p>

Property	Description
Use HTTPS	Select this option to enable secure streaming of data over the HTTP protocol.
Keystore Location	Path and file name of the keystore file that contains the private or public key pairs and associated certificates. Available and required if you enable HTTPS.
Keystore Password	Password for the keystore file. Available and required if you enable HTTPS.
Private Key Password	Password to decrypt the private key file. Available and required if you enable HTTPS, and the SAP server uses public key authentication and the private key is encrypted.

- Click **OK** to save the connection.

Configuring the Session to Use SAP ABAP HTTP Streaming

To configure HTTP streaming for an ABAP table reader mapping, you must configure the session to use the SAP Streaming Reader, an SAP R/3 connection, and an SAP ABAP HTTP streaming connection. The SAP R/3 connection provides the details of the SAP system to connect to. The SAP ABAP HTTP streaming connection provides the port range and HTTPS details for streaming.

- In PowerCenter Workflow Manager, create an SAP ABAP session and workflow.
- Double-click the session to view the session details.
- Click the **Mapping** tab and open the **Transformations** view.
- Click the **Sources** node.
- In the **Readers** section, select **SAP Streaming Reader**.
- In the **Connections** section, assign an SAP R/3 connection and an SAP ABAP HTTP streaming connection for the session.
Note: If you do not configure an SAP ABAP HTTP streaming connection for the session, the session does not run in HTTP stream mode. It runs in RFC stream mode.
- Click **Apply** and **OK** to save the changes.

Configuring ABAP HTTP Streaming for Upgraded ABAP Table Reader Mappings

Perform the following tasks to configure HTTP streaming for an SAP ABAP table reader mapping that you upgraded from a version earlier than 10.2:

- Regenerate and reinstall the ABAP program in stream mode.
- Create an SAP R/3 connection.
- Create an SAP ABAP HTTP streaming connection.
- Configure the session to use the SAP Streaming Reader, an SAP R/3 application connection, and an SAP ABAP HTTP streaming connection.
Note: If you configure HTTP streaming, but do not regenerate and reinstall the ABAP program in stream mode, the session fails.

Configuring HTTPS for SAP ABAP Table Reader

To connect to SAP through HTTPS and read data from SAP tables, you must configure the machine that hosts the PowerCenter Integration Service and the machine that hosts the SAP system. You must also create an SAP ABAP HTTP streaming connection.

Configure HTTPS on the following host machines:

PowerCenter Integration Service

To configure HTTPS on the machine that hosts the PowerCenter Integration Service, perform the following tasks:

1. Create a certificate using OpenSSL and JAVA KeyTool.
2. Convert the OpenSSL certificate (PKCS#12 certificate) to an SAP-specific format (PSE) by using the SAPGENPSE tool.

PowerExchange for SAP NetWeaver supports self-signed certificates.

SAP System

To configure HTTPS on the machine that hosts the SAP system, perform the following tasks:

1. Enable the HTTPS service on the SAP system.
2. Import the certificate in PSE format to the SAP system trust store.

HTTPS Prerequisites

Before you create an OpenSSL certificate, verify the following prerequisites:

- Download and install OpenSSL on the machine that hosts the PowerCenter Integration Service.
- Based on the operating system of the machine that hosts the PowerCenter Integration Service and the SAP system, download the latest available patch of the SAPGENPSE Cryptography tool from the SAP Service Marketplace.
Typically, the SAPGENPSE files are extracted to the `nt-x86_64` directory.
- Configure the following SAP parameters: `icm/server_port`, `ssl/ssl_lib`, `sec/libsapsecu`, `ssf/ssfapi_lib`, `ssf/name`, `icm/HTTPS/verify_client`, `ssl/client_pse`, and `wdisp/ssl_encrypt`. For more information about configuring the parameters, see the SAP documentation.

Create an OpenSSL Certificate

Create a self-signed certificate using OpenSSL.

1. At the command prompt, set the `OPENSSL_CONF` variable to the absolute path to the `openssl.cfg` file. For example, enter the following command:

```
set OPENSSL_CONF= C:\OpenSSL-Win64\bin\openssl.cfg
```

2. Navigate to the following directory: `<OpenSSL installation directory>\bin`

3. To generate a 2048-bit RSA private key, enter the following command:

```
openssl.exe req -new -newkey rsa:2048 -sha1 -keyout <RSA key file name>.key -out <RSA key file name>.csr
```

4. When prompted, enter the following values:

- Private key password (PEM pass phrase). Enter a phrase that you want to use to encrypt the secret key. Re-enter the password for verification.

Important: Make a note of this PEM password. You need to specify this value in some of the following steps.

- Two letter code for the country name. For example, enter DE for Germany.
- State or province name
- Locality name
- Organization name. Enter the company name.
- Organization unit name. Enter the department name.
- Common name (CN). Enter the fully qualified host name of the machine that hosts the PowerCenter Integration Service. Mandatory.
- Email address

5. Enter the following extra attributes you want to send along with the certificate request:

- Challenge password
- Optional company name

An RSA private key of 2048-bit size is created. The <RSA key file name>.key and <RSA key file name>.csr files are generated in the current location.

6. To generate a self-signed key using the RSA private key, enter the following command:

```
openssl x509 -req -days 11499 -in <RSA key file name>.csr -signkey <RSA key file name>.key -out <certificate file name>.crt
```

7. When prompted, enter the PEM pass phrase for the RSA private key.

The <certificate file name>.crt file is generated in the current location.

8. Concatenate the contents of the <certificate file name>.crt file and the <RSA key file name>.key file to a .pem file.

- a. Open the <certificate file name>.crt file and the <RSA key file name>.key files in a Text editor.
- b. Create a file and save it as <PEM file name>.pem.
- c. Copy the contents of the <certificate file name>.crt file and paste it in the .pem file.
- d. Copy the contents of the <RSA key name>.key file and append it to the existing contents of the .pem file.
- e. Save the <PEM file name>.pem file.

9. To create a PKCS#12 certificate, enter the following command at the command prompt:

```
openssl pkcs12 -export -in <PEM file name>.pem -out <P12 file name>.p12 -name "domain name"
```

10. When prompted, enter the following details:

- The PEM pass phrase for the .pem file.
- An export password for the P12 file. Re-enter the password for verification.

Important: Make a note of this export password for the P12 file. You need to specify this value in some of the following steps and while creating the SAP ABAP HTTP streaming connection.

The <P12 file name>.p12 file is generated in the current location.

11. To create a Java keystore file, enter the following command:

```
keytool -v -importkeystore -srckeystore <P12 file name>.p12 -srcstoretype PKCS12 -destkeystore <JKS file name>.jks -deststoretype JKS -srcalias "source alias" -destalias "destination alias"
```

12. When prompted, enter the following details:

- Password for the destination keystore, the JKS file.

Important: Make a note of this password. You need to specify this password while creating the SAP ABAP HTTP streaming connection.

- Password for the source keystore, the P12 file. Enter the Export password for the P12 file.

The <JKS file name>.jks file is generated in the current location.

Important: While enabling HTTPS in an SAP ABAP HTTP streaming connection, you must specify the name and location of this keystore file. You must also specify the destination keystore password as the keystore password and the source keystore password as the private key password.

Convert an OpenSSL Certificate to PSE Format

You can convert an OpenSSL certificate to PSE format using the SAPGENPSE tool.

1. At the command prompt, navigate to the SAPGENPSE extraction directory.

2. To generate a PSE file, enter the following command:

```
sapgenpse import_p12 -p <PSE directory>\<PSE file name>.pse <P12 certificate directory>\<P12 file name>.p12
```

3. When prompted, enter the following details:

- Password for the P12 file. Enter the Export password for the P12 file.
- Personal identification number (PIN) to protect the PSE file. Re-enter the PIN for verification.

The <PSE file name>.pse file is generated in the specified directory.

4. To generate the certificate based on the PSE format, enter the following command:

```
sapgenpse export_own_cert -p <PSE file directory>\<PSE file name>.pse -o <certificate name>.cert
```

5. When prompted, enter the PSE PIN number.

The <certificate name>.cert file is generated in the current location. Import this certificate file to the SAP system trust store.

Enable the HTTPS Service on SAP System

Enable the HTTPS service from the SMICM transaction.

Import a Certificate to SAP System Trust Store

1. Log in to SAP and go to the STRUST transaction.

2. Select **SSL Client (Standard)** and specify the password. In the **Import Certificate** dialog, you might need to select the Base64 format as the certificate file format.

3. Click the **Import** icon and select the <certificate name>.cert file in PSE format.

Note: If the user is on a different network, you might need to add a DNS entry of the PowerCenter Integration Service host on the SAP application server.

4. Click **Add to Certificate List**.

5. Restart the ICM.

Performance Tuning for SAP ABAP HTTP Streaming Sessions

When you run an HTTP stream mode session to read data from SAP through ABAP, you can configure the FileCompressEnable custom property to enable compressed data transfer. When you compress data, you can increase the session performance and decrease the disk storage.

To enable compressed data transfer, add the FileCompressEnable custom property at the session level or at the PowerCenter Integration Service level and set the value to 1.

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