SAP NetWeaver
How-To Guide

How To Configure SFTP Adapter in SAP PI

Applicable Releases:

SAP PI 7.11 Onwards

Version 1.0

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Document History

Document Version	Description
1.00	First official release of this guide

Typographic Conventions

Type Style	Description
Example Text	Words or characters quoted from the screen. These include field names, screen titles, pushbuttons labels, menu names, menu paths, and menu options. Cross-references to other documentation
Example text	Emphasized words or phrases in body text, graphic titles, and table titles
`Example text`	File and directory names and their paths, messages, names of variables and parameters, source text, and names of installation, upgrade and database tools.
`Example text`	User entry texts. These are words or characters that you enter in the system exactly as they appear in the documentation.
`<Example text>`	Variable user entry. Angle brackets indicate that you replace these words and characters with appropriate entries to make entries in the system.
`EXAMPLE TEXT`	Keys on the keyboard, for example, `F2` or `ENTER`.

Icons

Icon	Description
	Caution
	Important
	Note
	Recommendation or Tip
	Example

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1. Business Scenario

Consider a business scenario where a 3rd party application hosts a SFTP Server communicates to external world via files. Your landscapes has SAP PI as middleware for communication between different systems.

This document explains how to use SAP PI SFTP adapter with security add on to communicate with SFTP server.

The document illustrates how to use sender and receiver adapter with both user/password and certificate based authentication.

2. Background Information

SFTP is a network protocol that provides file access, file transfer, and file management functionalities over any reliable data stream. It was designed by the Internet Engineering Task Force (IETF) as an extension of the Secure Shell protocol (SSH) version 2.0 to provide secure file transfer capability, Unlike simple FTP, it encrypts both commands and data, preventing passwords and sensitive information from being transmitted in the clear over the network. It is functionally similar to FTP, but because it uses a different protocol, you can't use a standard FTP client to talk to an SFTP server, nor can you connect to an FTP server with a client that supports only SFTP.

The protocol itself does not provide authentication and security; it expects the underlying protocol to secure this. SFTP is most often used as subsystem of SSH protocol version 2 implementations

Now SFTP Adapter is available in SAP PI Security Addon - PI SFTP PGP ADDON and can be download from SAP Market place from following path for free.

https://websmp206.sap-ag.de/support ->Software Downloads ->SUPPORT PACKAGES AND PATCHES ->BROWSE OUR DOWNLOAD CATALOG ->SAP NetWeaver and complementary products -> PI SFTP PGP ADDON

You can refer SAP NOTE: 1695521 for latest information on the download location of SFTP PGP Add-On.

3. Prerequisites

Software requirements

- PI 7.11 SPS 08 or higher (In this example, I am using PI 7.30 SPS 07).
- PI SFTP PGP ADDON installed on SAP PI server.
  - SAP PI SFTP PGP ADDON is compatible with the following releases of PI. Please refer to note 1695563.
  - ✓ SAP NW PI 711 SP8
  - ✓ SAP NW PI 730 SP5
  - ✓ SAP NW PI 7.31 SP3

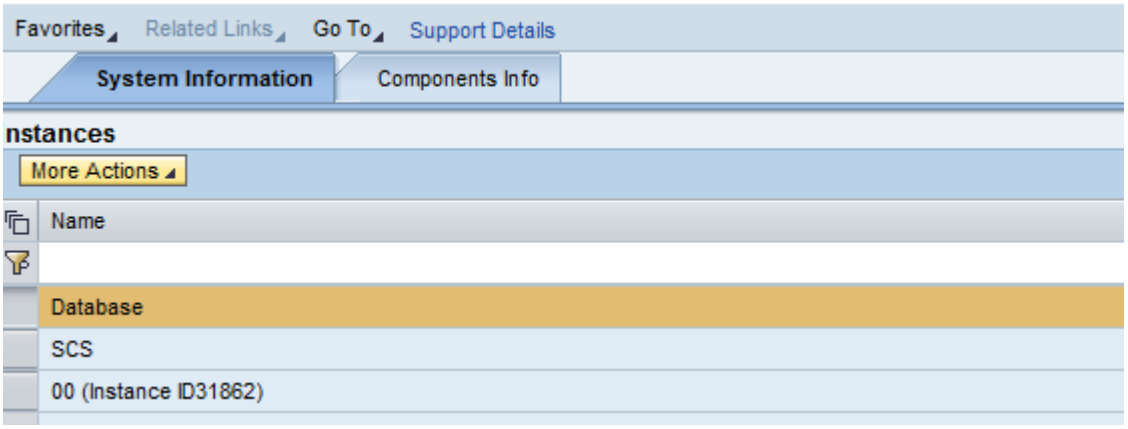
- SSH based SFTP Server.

  In this document, we will be using Open SSH 6.0. In order to test this SFTP adapter, we need a SFTP Server which is up and running. The SSH server being used in this document- Cygwin is an emulation of the UNIX environment and Open SSH for Windows. Cygwin SFTP Server also provides OpenSSL utility.
- PuTTY: PuTTY is a free and open source terminal emulator application which can act as a client for the SSH.

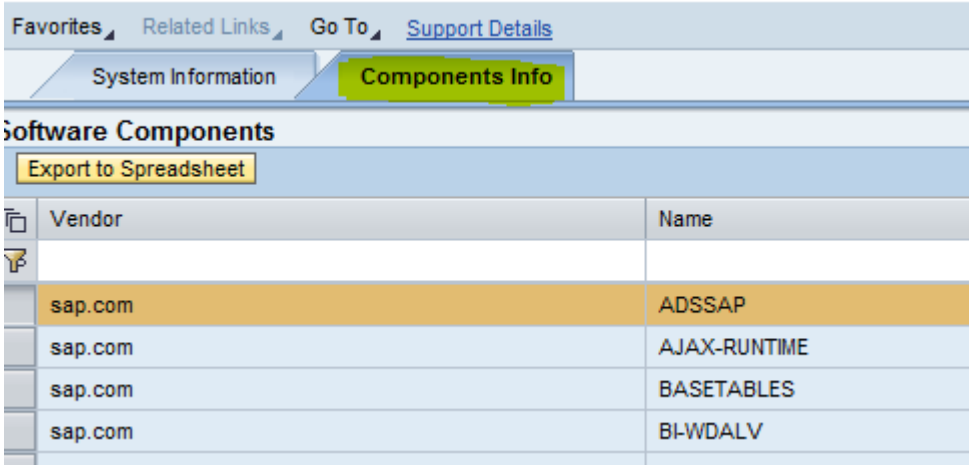
Step to Check PI SFTP PGP ADDON installation on PI Server.

- Open the NetWeaver System Information using following URL

  http://<host>:<port>/nwa/sysinfo



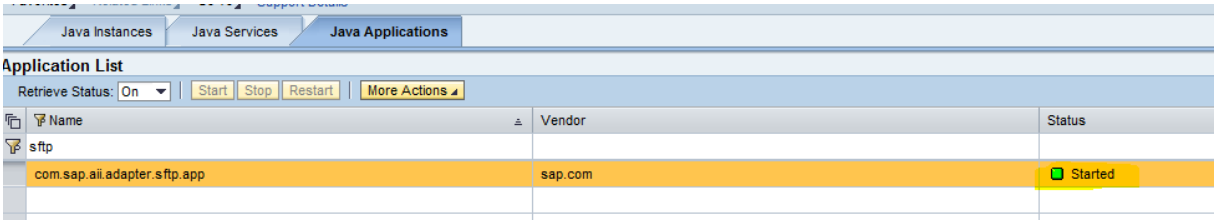
- Open Tab “Components Info”



- Search for SFTP as following screen shot

If you are able to find the Component Name “PIB2B_SFTP”. That means PI server is successfully deployed with SAP PI SFTP PGP ADDON.

You also need to check that SFTP Application is started from NWA->Operations->Start & Stop->Java Applications

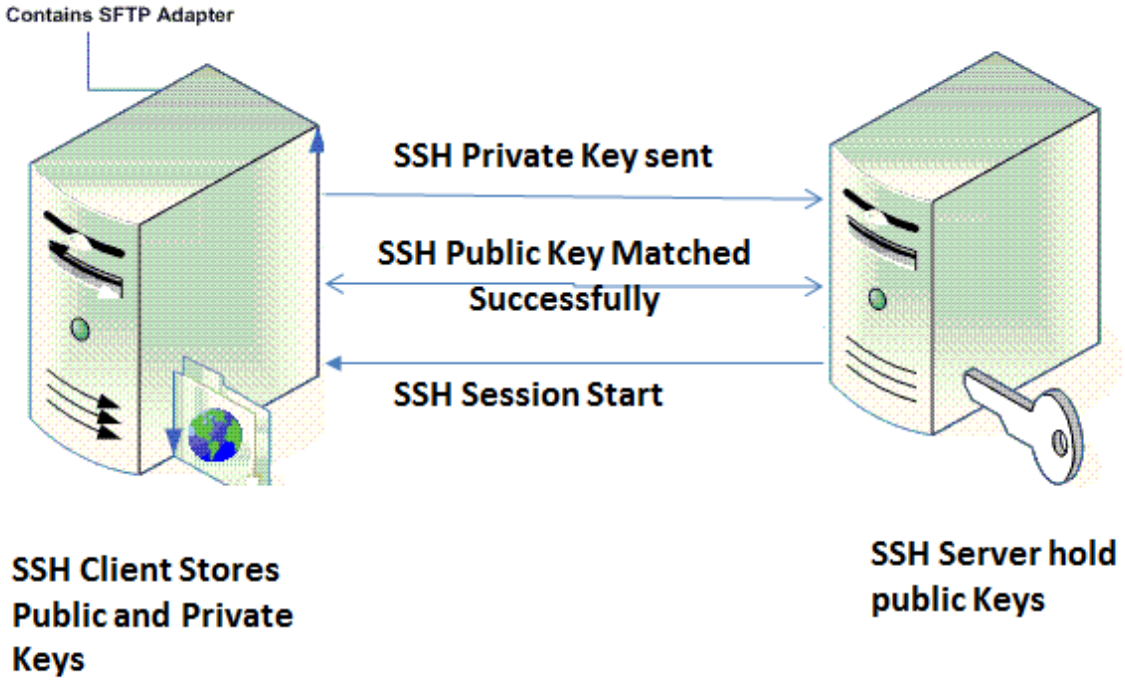


4. Step-by-Step Procedure

Authentication in the SAP PI SFTP adapter to SFTP server may be achieved in two ways

- Password based Authentication: Password based authentication is generally the easiest to try first, although some SFTP servers are set up to disallow password authentication, in which case the connection attempt will fail unless password authentication is enabled in the server.

- Private Key (Certificate) based Authentication: In certificate based authentication, SSH clients and servers authenticate each other via public/private key pairs. Each must have access to their own private key, and other's public key. Following picture explain the process of Key based authentication in SFTP.



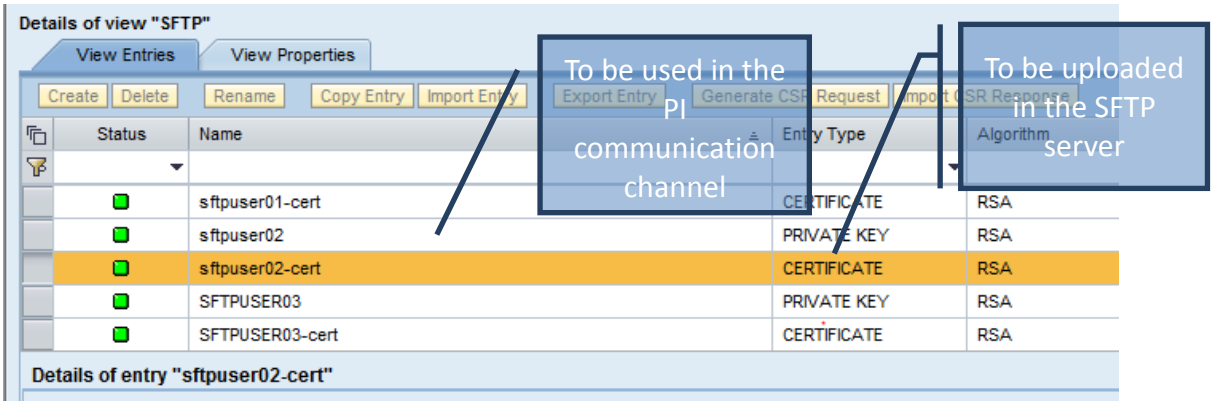
Key Based Authentication in SSH

In case of Private Key based authentication to SFTP server, follow the steps mentioned in section 4.1 and 4.2

4.1 Generating Certificates

1. Generate Private and Public Certificate in PI System and Extract Public certificate

   Generate and Extract the public X.509 Certificate from SAP PI NetWeaver Administrator -> Configuration ->Certificates and Keys using Button “Export Entry”



2. Convert Public PI X.509 certificated into SSH compatible public key.

   Since PI NWA key storage doesn't support SSH keys for Private key based authentication, OpenSSL utility is required convert SSL keys to SSH keys and vice versa. OpenSSL can be installed separately in SFTP server.

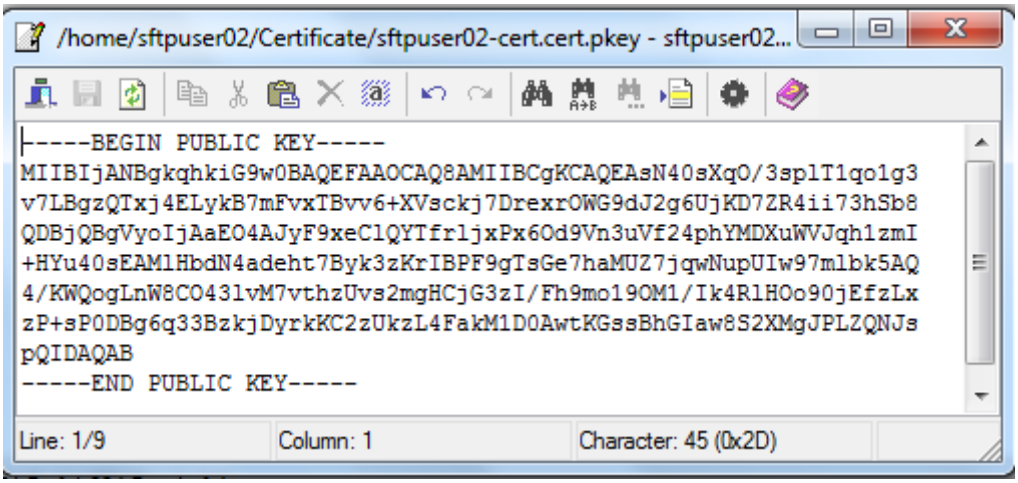
   To import the public key in SSH compatible SFTP server. First convert the PI X.509 certificate into SSH based public key. PuTTY can use as client software to connect to SFTP server. It works as command prompt screen to execute key convert commands provided by OpenSSL. Conversion can take place in two steps.

   - Convert X.509 Certificate into Open SSL based certificate. We can use following command in SSH based client like putty

openssl x509 -in {X.509 Certificate}.cert -noout -pubkey > {Open SSL based certificate}.pkey

```
sftpuser02@INST50089688E ~/Certificate
$ openssl x509 -in sftpuser02-cert.cert -noout -pubkey > sftpuser02-cert.cert.pkey
```

File generated from above command.

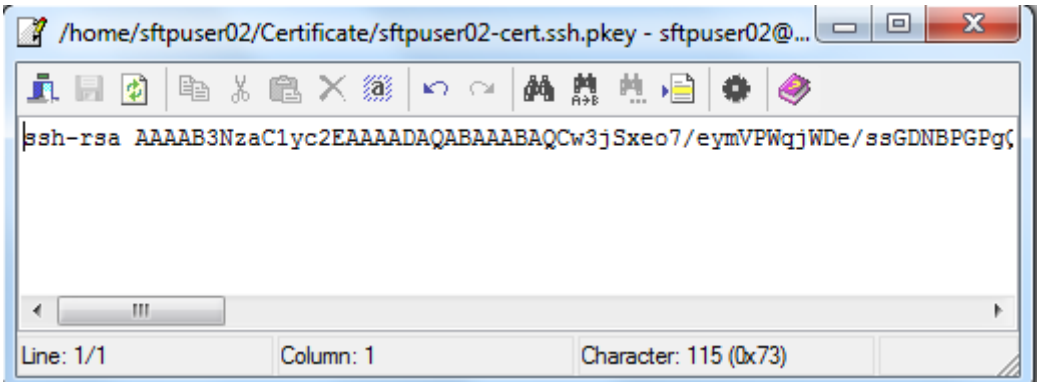


- Convert Open SSL Based certificate into SSH based certificate. We can use following command in SSH based client like putty.

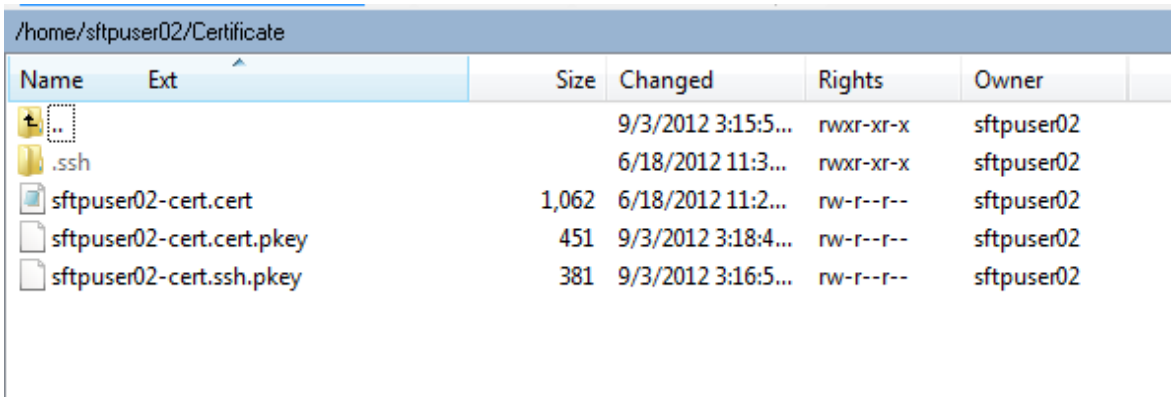
ssh-keygen -i -m PKCS8 -f {Open SSL based certificate}.pkey > {SSH based certificate}.pkey.pkey

```
sftpuser02@INST50089688E ~/Certificate
$ ssh-keygen -i -m PKCS8 -f sftpuser02-cert.cert.pkey > sftpuser02-cert.ssh.pkey
```

File generated from above command.

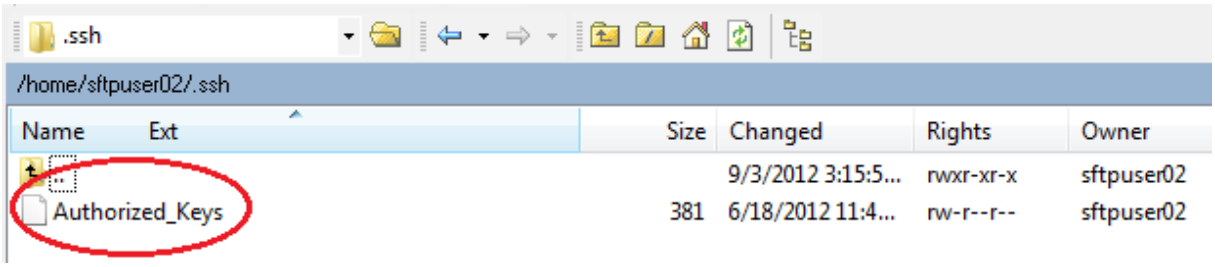


Following Keys are generated in SFTP directory from above commands.



4.2 Import PI public certificate in SFTP Server

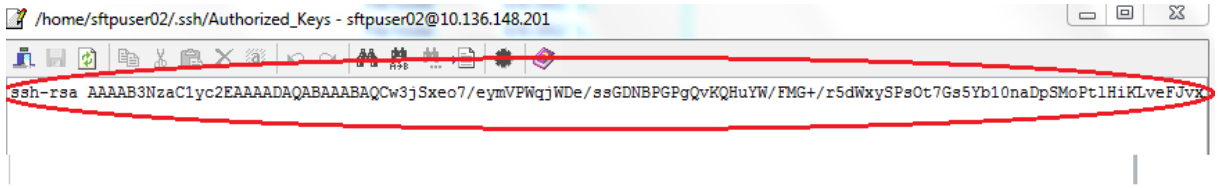
SAP PI converted public key must be registered with the SSH server, typically by copying it into the server's *authorized_keys* file.



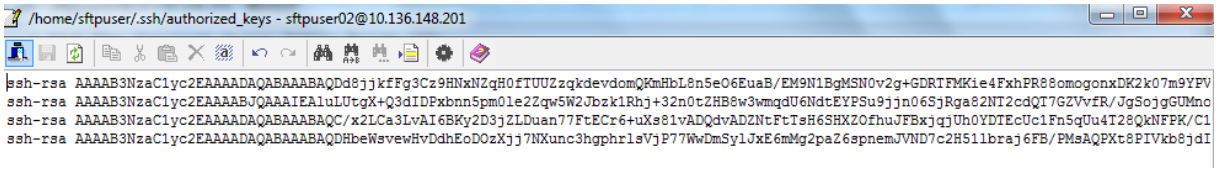
Keys are imported in user folder: <user>/.ssh as shown in above screen shot and this user would be used while making connection to SFTP server.

Go to the root folder of the user account & check for the folder '.ssh'. Create one, if the folder does not exist. Check for the file - 'authorized keys', Create one if it's not available.

Note: The key in the file must be entered in exactly one line. Please refer to the screen shot below.



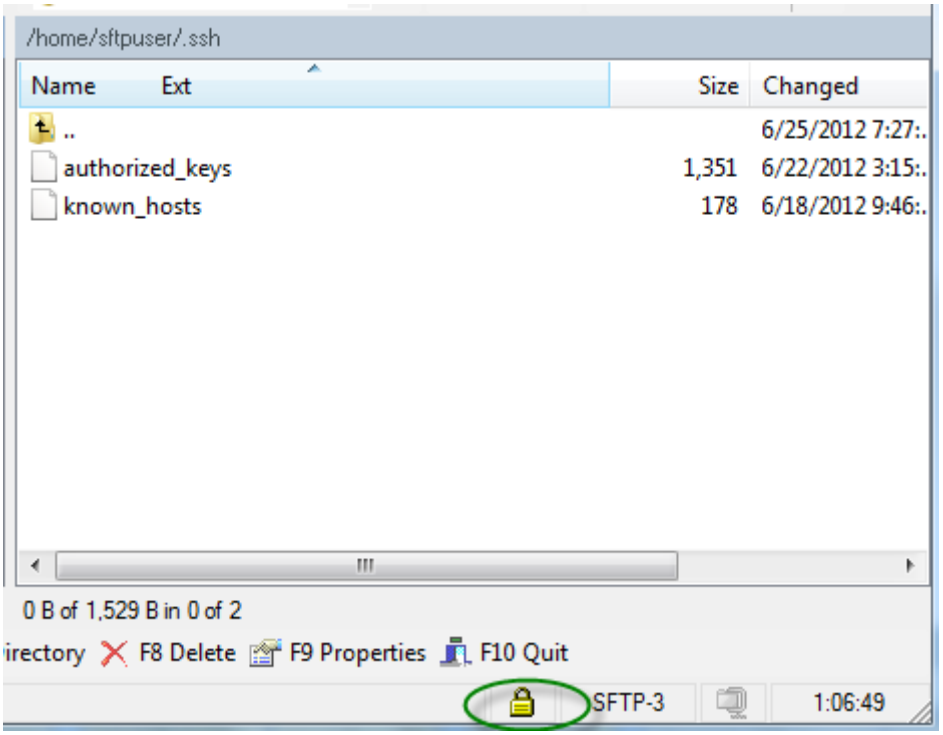
If server need to authorise multiple public key for particular user, Paste the public key content in new line as following screen shot.



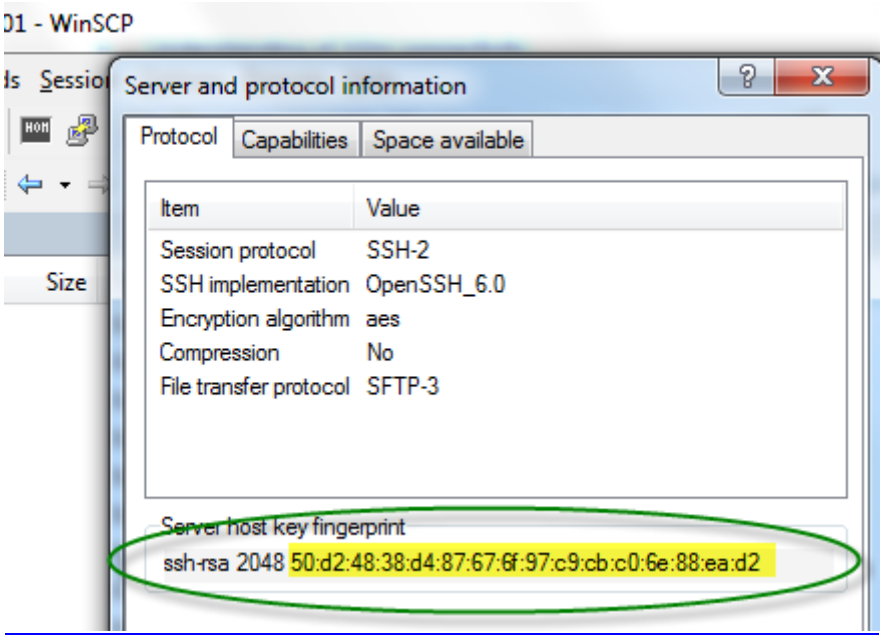
4.3 Configuring SFTP Sender Adapter

The sender Communication channel can be configured as follows

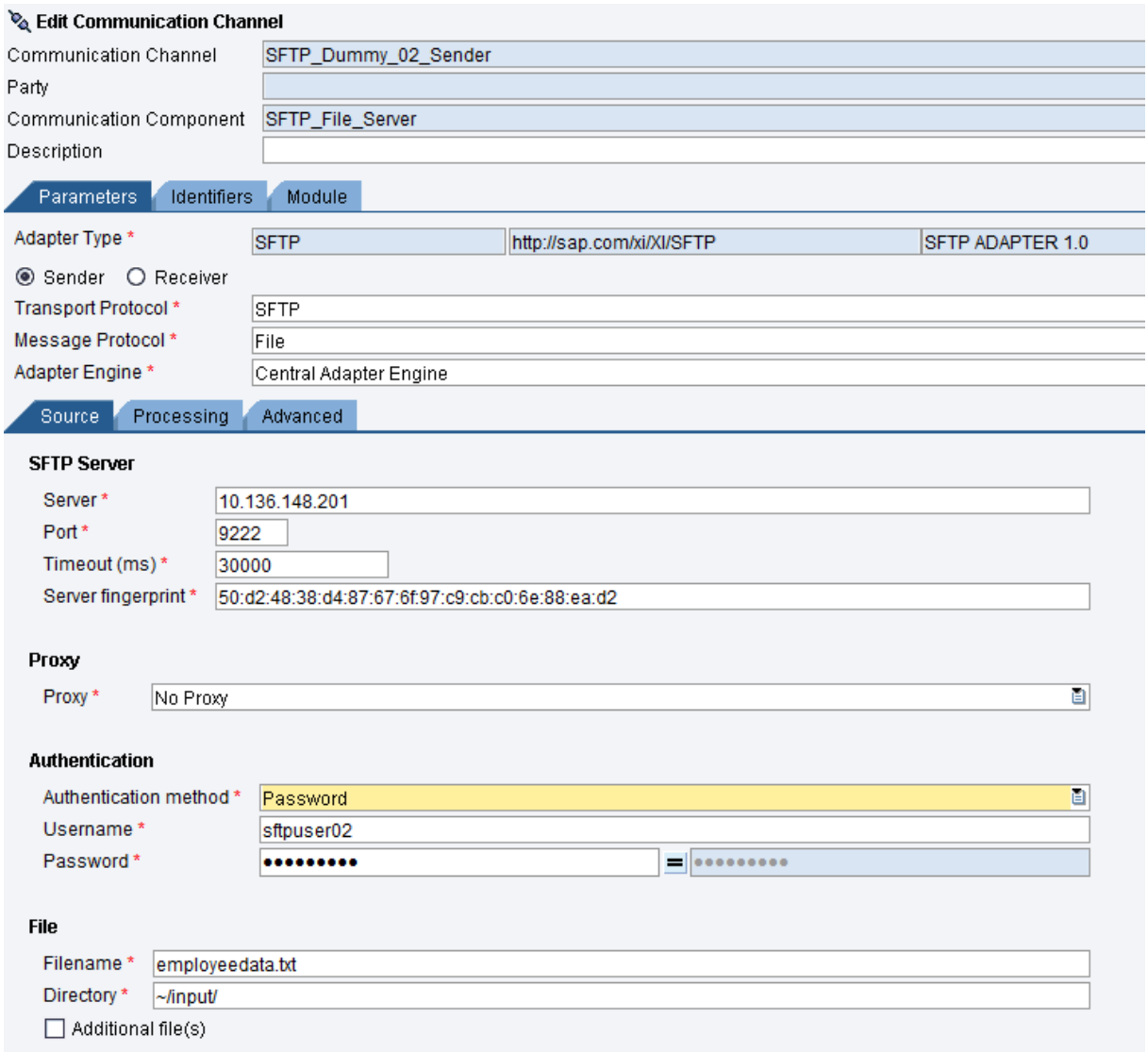
1. Enter the SFTP Server and Port details. The default port SFTP is 22. (in this document port 9222 is being used)
2. Enter the sever Fingerprint. The fingerprint is generally provided by your SFTP Server Admin. Alternatively, to retrieve the fingerprint, you can use one of the SFTP Client in our case we have used WinSCP. Click on the lock icon on the as shown below



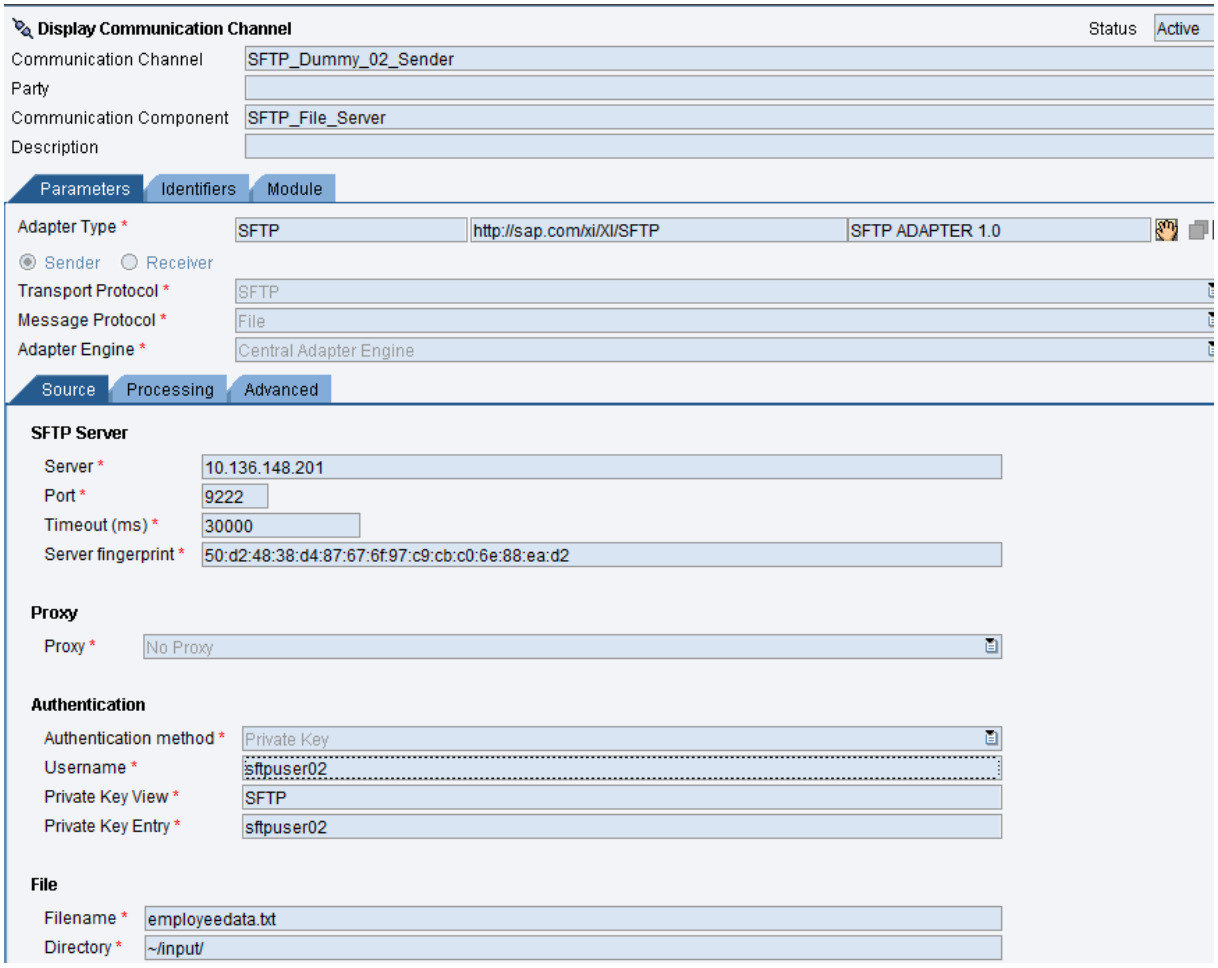
You can see the fingerprint as highlighted below



As discussed above, Authentication can be of two types – Password or Private Key.
In case password is used, you will have to provide the user id and password for the SFTP server.



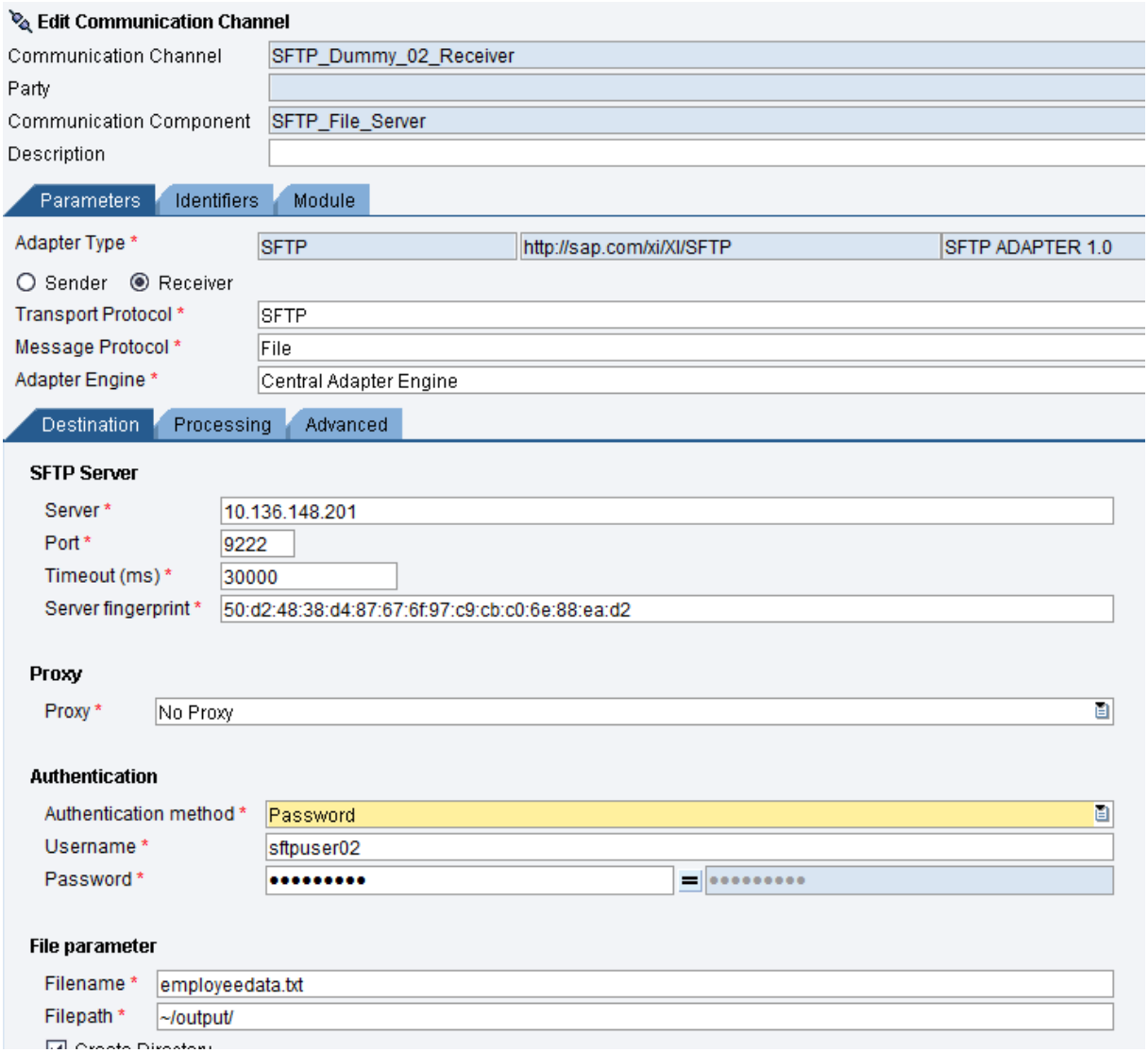
5. In this case, we have used Private Key as the authentication method. You can get the key from the system administrator. However, section 4.1 describes the generation of certificates and Private key using Key storage in PI



4.4 Configuring Receiver Adapter

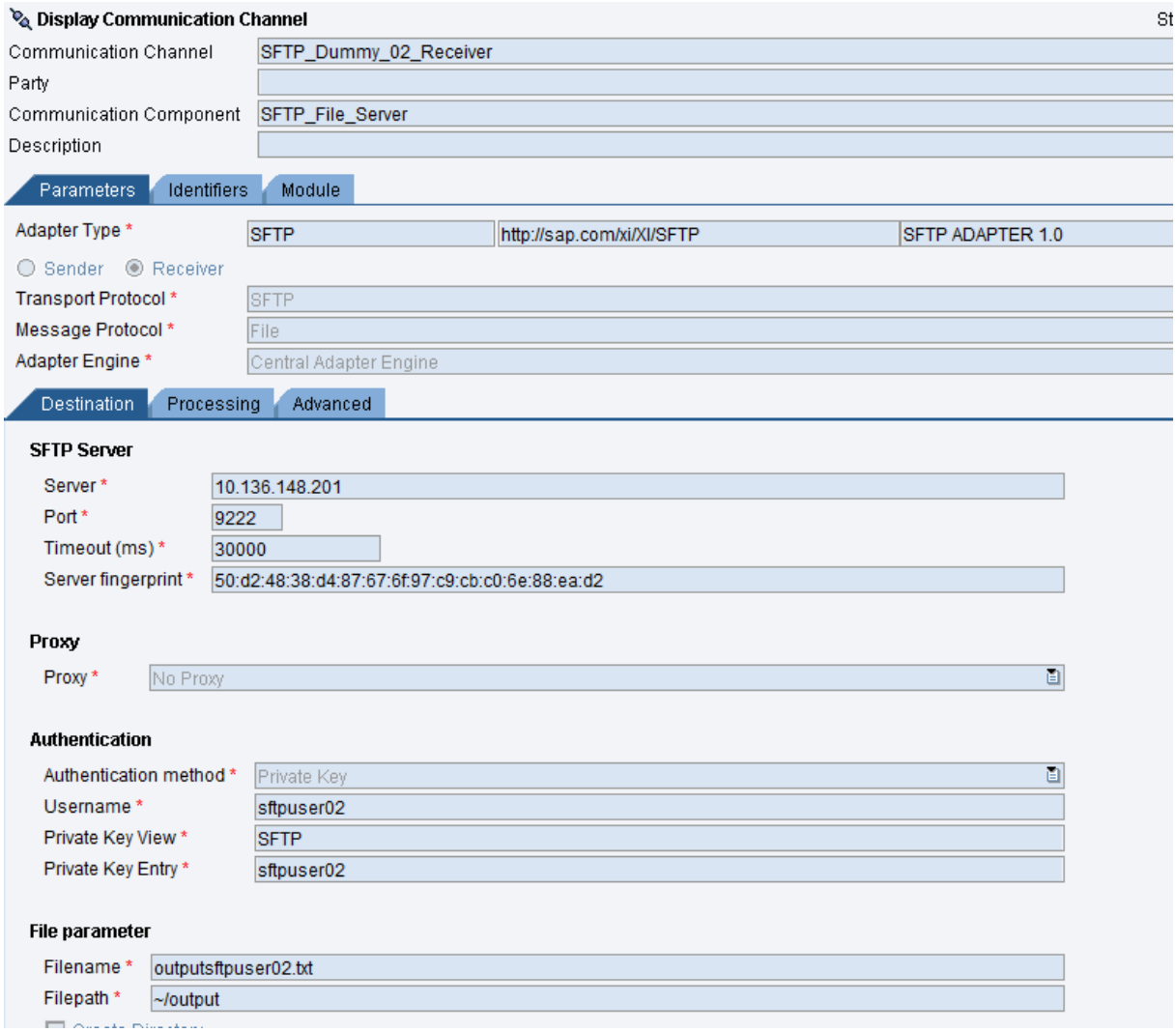
To Configure the receiving channel,

1. Enter the receiver SFTP server and port details.
2. Enter the fingerprint of the SFTP. The fingerprint may be retrieved as mentioned in section 4.3
3. In case user based authentication method is used enter the user name and password for the SFTP server.



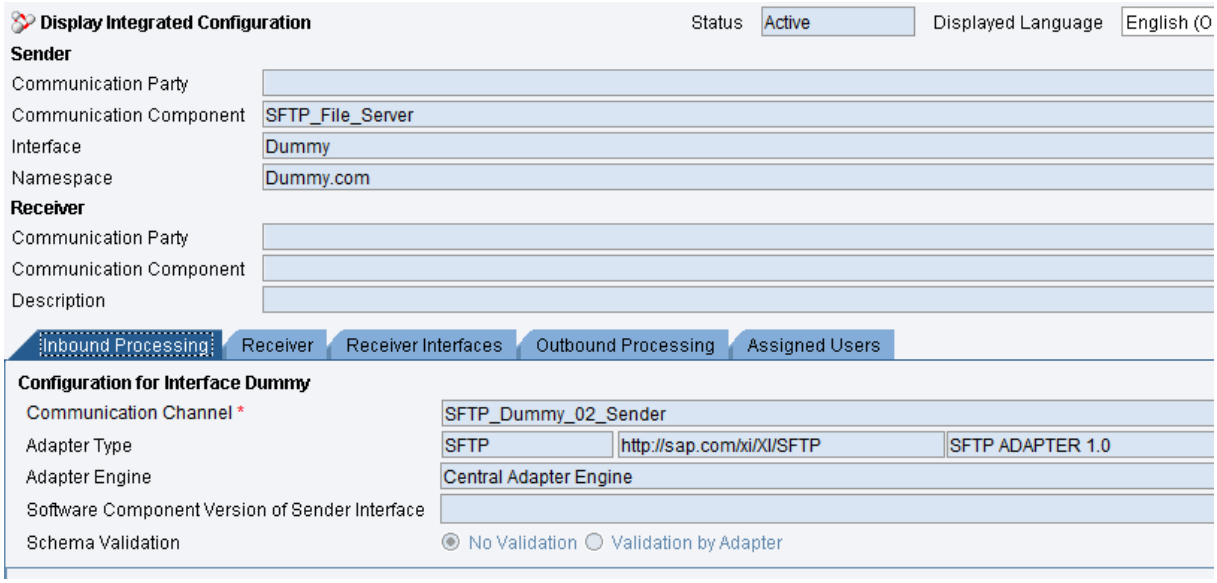
4. In case the certificate based authentication method is used in the receiver channel, enter the User name and the key view / Key details in the authentication section

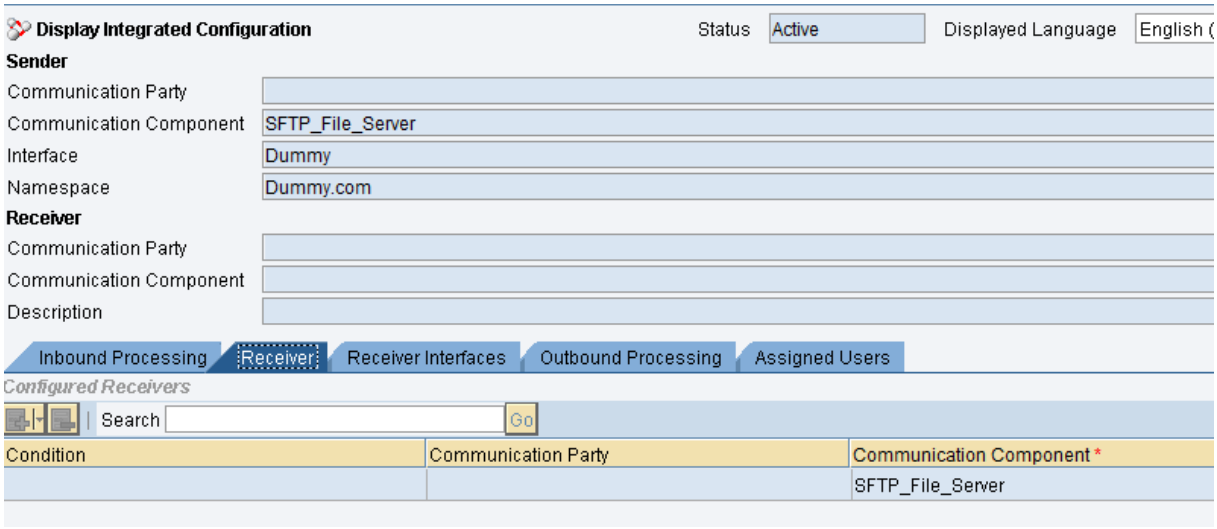
   Enter the name and directory of the file to be created.



4.5 End to End SAP PI Configuration

For Demo purpose we have configured the scenario to pick the file from SFTP server and drop to SFTP server. We have taken dummy interface name in scenario as Scenario doesn't involve any message mapping. Please find the screen shot below for Integrated Configuration Object of SAP PI.


Display Integrated Configuration
Status
Active
Displayed Language
English (O
Sender
Communication Party
Communication Component
SFTP_File_Server
Interface
Dummy
Namespace
Dummy.com
Receiver
Communication Party
Communication Component
Description
Inbound Processing
Receiver
Receiver Interfaces
Outbound Processing
Assigned Users
Configuration for Interface Dummy
Communication Channel *
SFTP_Dummy_02_Sender
Adapter Type
SFTP
http://sap.com/xi/XI/SFTP
SFTP ADAPTER 1.0
Adapter Engine
Central Adapter Engine
Software Component Version of Sender Interface
Schema Validation
No Validation
Validation by Adapter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Displayed Language
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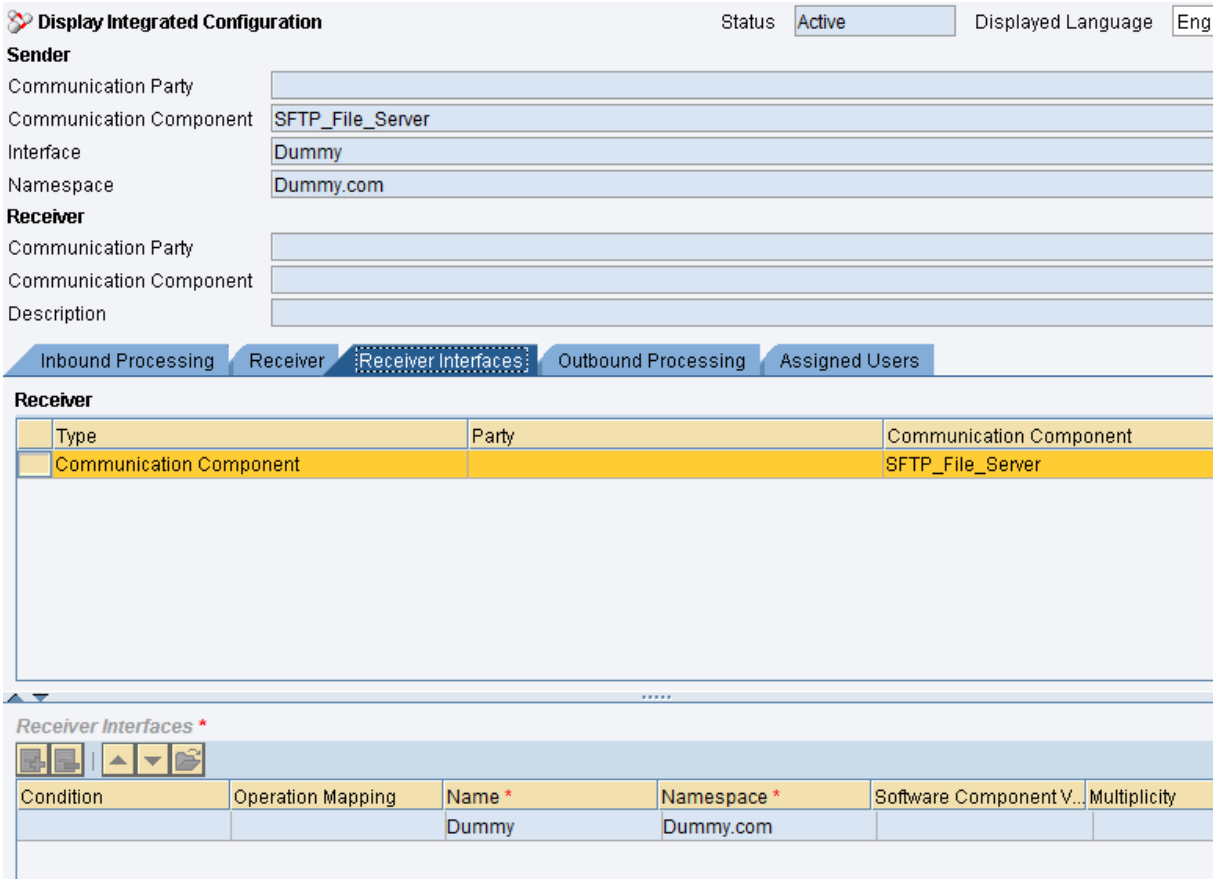
Sender
Communication Party
Communication Component
SFTP_File_Server
Interface
Dummy
Namespace
Dummy.com
Receiver
Communication Party
Communication Component
Description
Inbound Processing
Receiver
Receiver Interfaces
Outbound Processing
Assigned Users
Configured Receivers
Search
Go
Condition
Communication Party
Communication Component *
SFTP_File_Server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Status
Active
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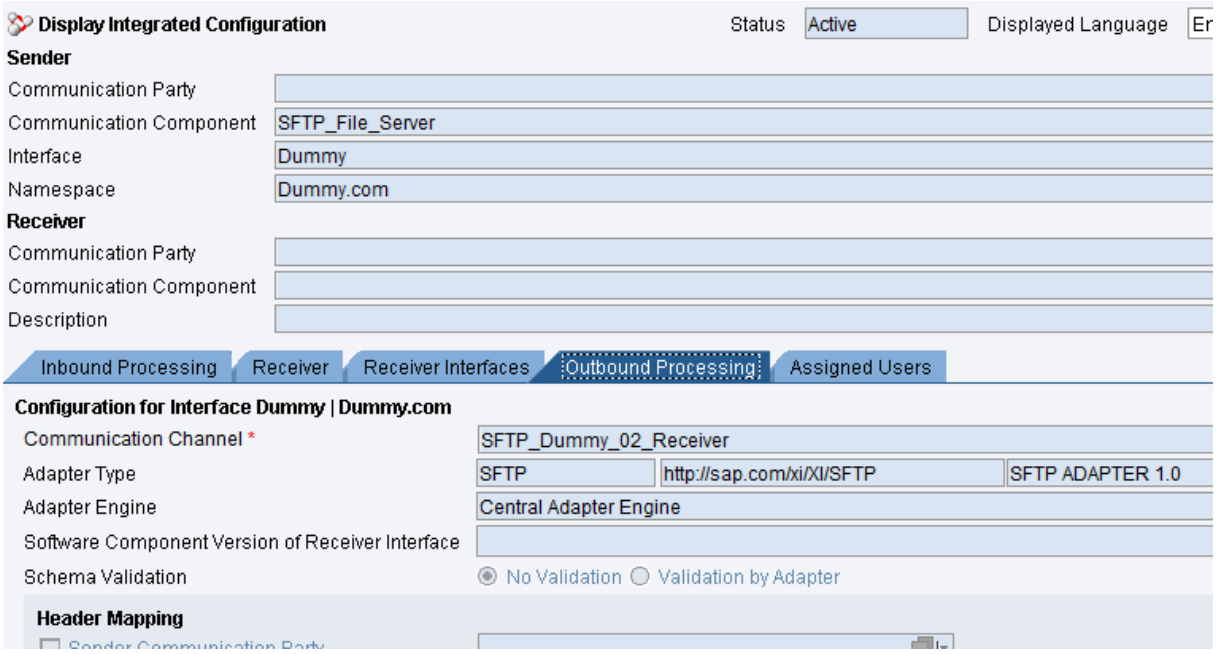
Sender
Communication Party
Communication Component
SFTP_File_Server
Interface
Dummy
Namespace
Dummy.com
Receiver
Communication Party
Communication Component
Description
Inbound Processing
Receiver
Receiver Interfaces
Outbound Processing
Assigned Users
Receiver
Type
Party
Communication Component
Communication Component
SFTP_File_Server
Receiver Interfaces *
Condition
Operation Mapping
Name *
Namespace *
Software Component V...
Multiplicity
Dummy
Dummy.com


Display Integrated Configuration
Status
Active
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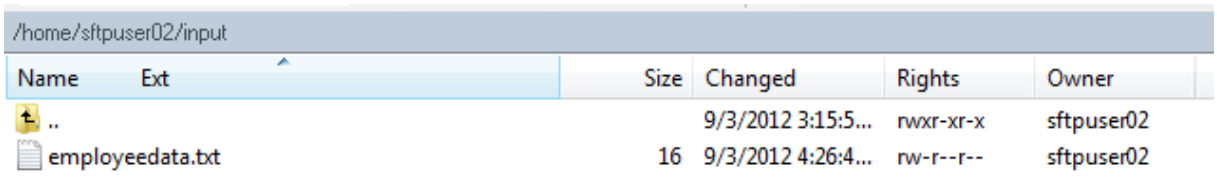
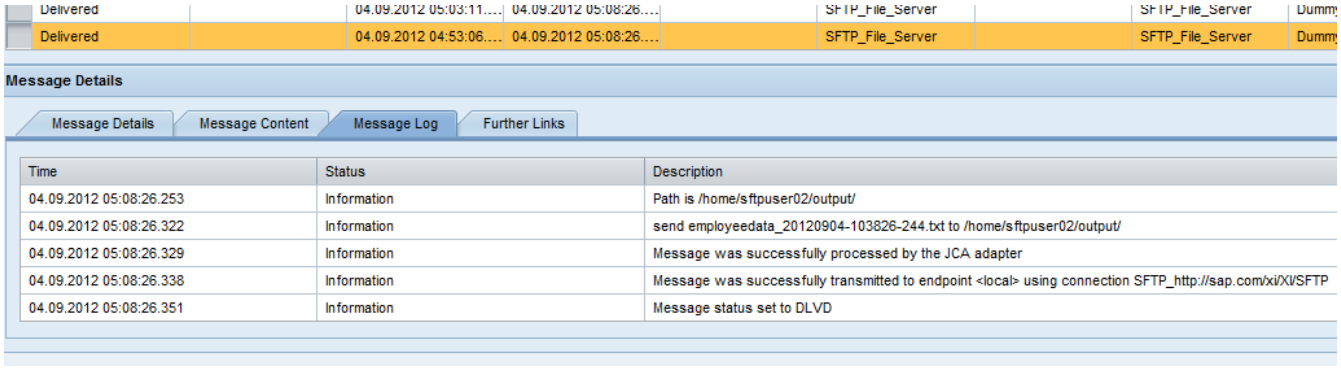
Er
Sender
Communication Party
Communication Component
SFTP_File_Server
Interface
Dummy
Namespace
Dummy.com
Receiver
Communication Party
Communication Component
Description
Inbound Processing
Receiver
Receiver Interfaces
Outbound Processing
Assigned Users
Configuration for Interface Dummy | Dummy.com
Communication Channel *
SFTP_Dummy_02_Receiver
Adapter Type
SFTP
http://sap.com/xi/XI/SFTP
SFTP ADAPTER 1.0
Adapter Engine
Central Adapter Engine
Software Component Version of Receiver Interface
Schema Validation
No Validation
Validation by Adapter
Header Mapping

4.6 Testing Scenario

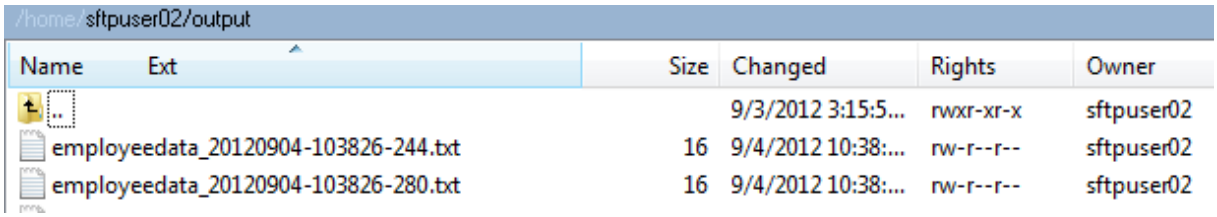
Place the file with name “employeedata” in “input” directory for SFTP Server.



SAP PI Log:



Check the “output” folder in SFTP Directory



5. Appendix

Appendix A – Related SAP Notes

Note 1692819 - FAQ: PI SFTP Adapter

Appendix B - Support Components

If you experience problems with the installation of this product, any issues with the configurations or require any other information related to secure connectivity add-on (SFTP Adapter and PGP Module), please create a customer message on the SAP Service Marketplace at http://service.sap.com/message or in SAP GUI under component:

BC-XI-CON-SFT – SFTP Adapter and PGP Module