Public

SAP Data Warehouse Cloud
DP Agent Setup, Configuration and Troubleshooting Guide

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INTRODUCTION

To enable connections to on-premise and cloud sources, SAP Data Warehouse Cloud leverages SAP HANA Smart Data Integration (SDI) and its Data Provisioning Agent. The DP Agent functions as a gateway to SAP Data Warehouse Cloud.
This guide will help you to setup and configure the DP Agent.
In addition, the troubleshooting chapter should help you overcome common issues that might arise when connecting from/to your system landscape.
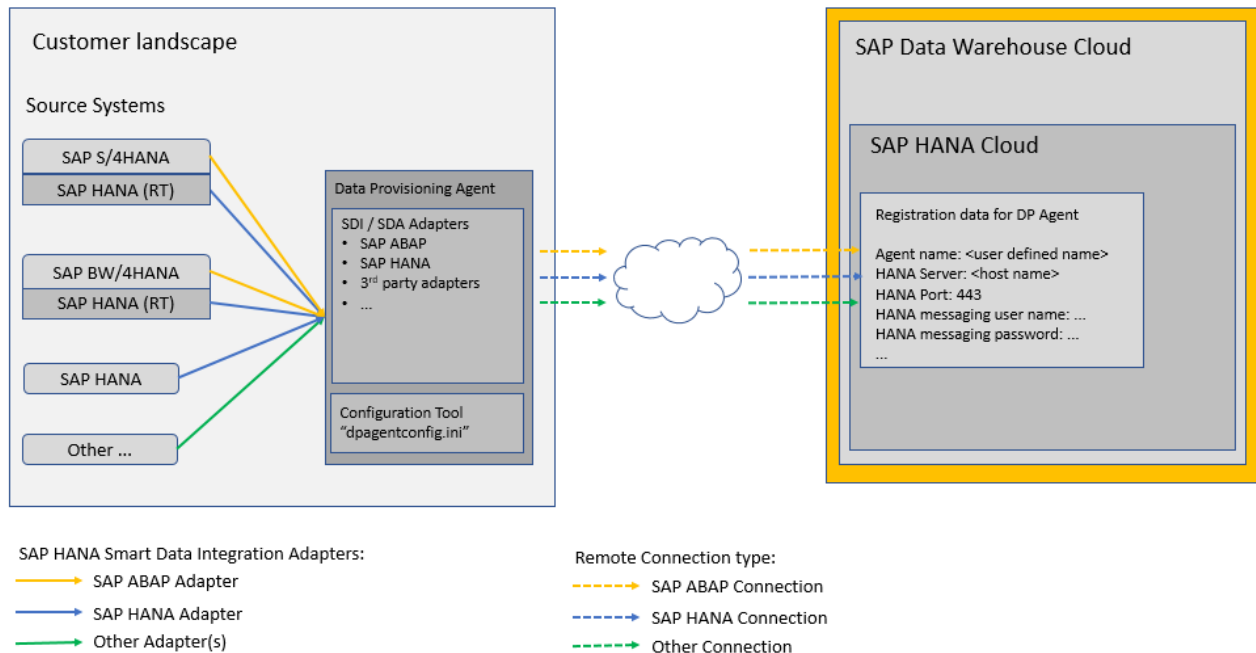
DATA PROVISIONING AGENT SETUP

As a prerequisite to connect to your local HANA and other sources, the Data Provisioning Agent needs to be installed and configured.

Before the Data Provisioning Agent can establish a connection to SAP Data Warehouse Cloud, the outgoing IPv4 address/address range of the server on which the Data Provisioning Agent runs must be whitelisted. You can maintain your authorized IPv4 address/address range in SAP Data Warehouse Cloud under *Administration -> IP Whitelisting*.

Installation

To install the DP Agent, follow the SAP Help documentation Connecting to On-Premise Sources (Installing the Data Provisioning Agent) from the SAP Data Warehouse Cloud documentation.

Remark: Please make sure you have the latest version of the DP Agent installed as the set-up procedure is based on the latest available DP Agent version.

Configuration

After you have successfully installed the Data Provisioning Agent, follow the instruction in the chapter Connecting and Configuring the Data Provisioning Agent in the SAP help portal to finalize the configuration with SAP Data Warehouse Cloud.

Remark: Please **do not** use the graphical user interface of the SAP Data Provisioning Agent to execute the configuration steps, but only use the CLI (command line interface).

Use the following step by step guide including screenshots in addition to the documentation. In case you are using a proxy, please check the additional settings in the documentation.

1.) Check if the user that will configure the Data Provisioning Agent registration in SAP Data Warehouse Cloud has the role "Data Warehouse Cloud Administrator"

2.) In SAP Data Warehouse Cloud, navigate to "Administration" in the navigation bar.
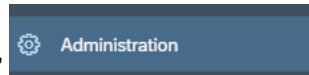
3.) Register a new Data Provisioning Agent: click "Create Agent Communication Credentials" and enter the new Agent Name
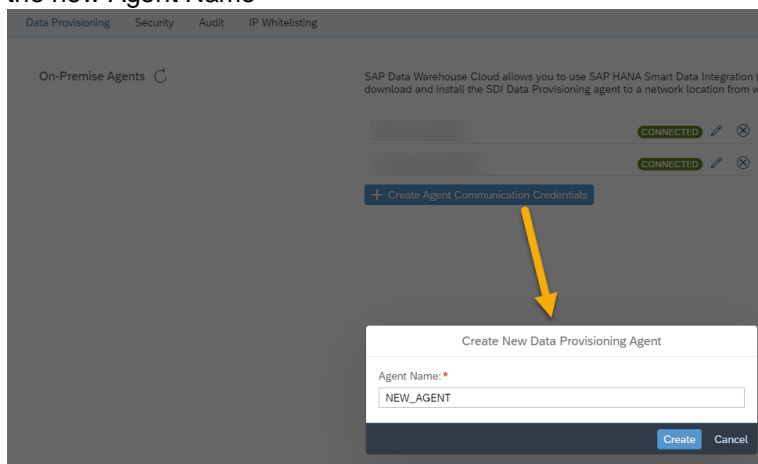
Click "Create". As a result, HANA Server Information, user and password to register the Data Provisioning Agent with SAP Data Warehouse Cloud will be displayed.

The numbering on the following screenshot will help you with the configuration in the next step mapping the parameters to the connection setup procedure for the DP Agent.

We recommend leaving this window open, as you need this information to configure the agent in the next step!

4.) Navigate to the Data Provisioning Agent installation <DP Agent root>/bin and start the DP Agent using the command

```
./ dpagent_servicedaemon.sh start
```

On Windows installations, please use

```
dpagent_servicedaemon_start.bat
dpagent_servicedaemon_stop.bat
```

respectively for starting/stopping the DP Agent service.

5.) After the DP Agent has started, the connection to SAP Data Warehouse Cloud can be configured. Start the DP Agent configuration mode using the command

```
./agentcli.sh --configAgent
```


On Windows installations, please use

```
agentcli.bat --configAgent
```

6.) Choose option **6** (SAP HANA Connection) and press Enter

7.) Choose option **2** Connect to SAP Data Warehouse Cloud via JDBC

8.) Please enter the information provided from the Agent settings dialog in the SAP Data Warehouse Cloud when going through the configuration steps. In case you have a proxy in your environment, please specify the proxy settings as well. In the end, please confirm with *true* to update the dpagentconfig.ini file with the new values you have provided.

9.) After that please restart the Data Provisioning Agent

Exit the DP Agent Configuration tool: "q. Quit".

10.) Now close the Data Provisioning Agent setting window:

11.) As a result, the DP Agent will establish the connection to SAP Data Warehouse Cloud. This might take up to five minutes (you might need to refresh the view in case the status is not yet changed:

 ):

12.) As a final step, enable the Adapters you require. Adapters like ABAPAdapter, CloudDataIntegrationAdapter, HanaAdapter can be enabled without any prerequisites, while for any 3rd party adapter, the respective jdbc jar file needs be copied to the <DP Agent root>/lib/ folder first. Please refer to this document for the exact version of the jdbc file: SAP HANA smart data integration Product Availability Matrix (PAM)

Edit the Data Provisioning Agent you have just created:

Select the adapters and close the dialog afterwards:

Agent Adapters:

- ☐ ABAP Adapter
- ☐ CloudDataIntegrationAdapter
- ☐ HANA Adapter
- ☐ MssqlLogReaderAdapter
- ☐ OracleLogReaderAdapter

ⓘ Adapters can only be registered or unregistered when the agent is connected.

Close

You have successfully setup the Data Provisioning Agent. You can now create remote connections from SAP Data Warehouse Cloud.

Agent Adapters:

- ☐ ABAP Adapter
- ☐ CloudDataIntegrationAdapter
- ☐ HANA Adapter
- ☐ MssqlLogReaderAdapter
- ☐ OracleLogReaderAdapter

ⓘ Adapters can only be registered or unregistered when the agent is

TROUBLESHOOTING

This section will help you troubleshoot common issues that might occur during the installation or the configuration of the DP Agent with SAP Data Warehouse Cloud

All screenshots are based on a Linux based installation of the Data Provisioning Agent.
In case your installation is on a Microsoft Windows system the forward slashes "/" must be replaced by backslashes "\".

Initial Checks

For a successful connection you will need to make sure that outbound connections from the DP Agent to the target host/port provided in the DP Agent registration information are not blocked by your firewall.

As mentioned before: please make sure to always have the latest version of the DP Agent installed.

Java Installation

Check whether a Java installation is available by running java -version. In case you get a response like *java: command not found*, use the Java installation which is part of the Data Provisioning Agent installation. The Java executable is in folder <DP Agent Root>/sapjvm/bin.

DP Agent Configuration

Please double check that the correct values have been maintained in the *<DPAgent_root>/dpagentconfig.ini* in your DP Agent installation. There is no need to maintain them directly in the file as they are set by the guided connection procedure.

dpagentconfig.ini file	Agent Settings in SAP Datawarehouse Cloud
agent.name=<Agent Name>	Agent Name (user defined, case sensitive)
hana.port=<HANA Port>	HANA Port
hana.onCloud=false	n/a
hana.useSSL=true	HANA Use SSL
hana.server=<HANA Server>	HANA Server
jdbc.enabled=true	HANA via JDBC
jdbc.host=<HANA Server>	HANA Server
jdbc.port=<HANA Port>	HANA Port
jdbc.encrypt=true	n/a

Only if a proxy server is used in landscape, the following parameters are maintained as well:

dpagentconfig.ini file
proxyType=http
jdbc.proxyHost=<your Proxy host>
jdbc.proxyPort=<your Proxy Port>
jdbc.useProxy=true

```
jdbc.proxyHttp=true (true in case of http Proxy,
 false in case of SOCKS proxy)
```

Logs and Traces

For successfully troubleshooting connection issues you can enable logging and JDBC tracing for the DP Agent.

DP Agent Log Configuration

Ensure to set the log levels in the *.ini file correctly.

Check the following notes for setting the log levels:
- 2496051 - How to change "Logging Level" (Trace level) of a Data Provisioning Agent - SAP HANA Smart Data Integration
- 2461391 - Where to find Data Provisioning Agent Log Files

The parameters for the log level in the *<DPAgent_root>/dpagentconfig.ini* file are

framework.log.level
service.log.level

Possible values are:

- TRACE
- DEBUG
- ERROR
- ALL

Please make sure you restart the Data Provisioning Agent after changing the log level.

<u>**Remark:**</u>
Please note that the DEBUG setting will generate a lot of data, so set this for a short period of time while you are actively debugging the workings of the DP agent and set it to a lower information level after.

JDBC Tracing

Check the Trace a JDBC Connection on the SAP Help portal here.

You need to execute the JDBC driver *.jar file from the <DP Agent root>/plugins/ folder in order to set the trace level.

Memory consumption of DP Agent

In case you are experiencing poor performance in case of replication scenarios via the DP agent, please consider increasing the DP agent memory as described in this note

2737656 - How to increase DP Agent memory

For general memory sizing recommendations for SAP Smart Data Integration please refer to the following note

2688382 - SAP HANA Smart Data Integration Memory Sizing Guideline

Validating the connection from DP Agent to Data Warehouse Cloud

Via trace file

Check the DP agent framework trace file in the *<DP Agent root>/log/* folder. If the file contains the following entries the connection could be successful established, and you will see a green Connected icon in the Data Warehouse Cloud tenant for the DP agent connection.

2019-08-20 15:14:38,326 [INFO] DPFramework | JDBCService.start [] - Starting JDBC service.
2019-08-20 15:14:38,326 [TRACE] DPFramework | JDBCConnector.read [] - Fetching messages...
2019-08-20 15:14:38,326 [INFO] DPFramework | JDBCConnector.registerAgent [] - Registering Agent: 78:69:REGISTER_AGENT:SDA:0:PAG_DPA12:null:null:null:0:0:REGISTER_AGENT:
2019-08-20 15:14:38,326 [DEBUG] DPFramework | JDBCConnector.writeMessage [] - >>78:69:REGISTER_AGENT:SDA:0:PAG_DPA12:null:null:null:0:0:REGISTER_AGENT:
2019-08-20 15:14:38,904 [DEBUG] DPFramework | JDBCConnector.makeConnection [] - JDBC connection (1) created.
2019-08-20 15:14:38,998 [DEBUG] DPFramework | JDBCConnector.writeMessage [] - <<118:69:SUCCESS_MSG:SDA:28358:PAG_DPA12::::0:0:REGISTER_AGENT:
2019-08-20 15:14:38,998 [INFO] DPFramework | JDBCConnector.registerAgent [] - Registration complete.
2019-08-20 15:14:38,998 [INFO] DPFramework | JDBCConnector.registerAgent [] - Server Protocol: SUPPORTS_2SP02_04_PROTOCOL
2019-08-20 15:14:38,998 [TRACE] DPFramework | JDBCConnector.getRegistrationToken [] - Token = 0000c134-f010-92f9-0000-000000000026
2019-08-20 15:14:38,998 [DEBUG] DPFramework | JDBCConnector.writeMessage [] - >>106:105:GET_AGENT_MSG:SDA:0:PAG_DPA12:null:null:0000c134-f010-92f9-0000-000000000026:0:0:GET_AGENT_MSG:
2019-08-20 15:14:39,373 [DEBUG] DPFramework | JDBCConnector.makeConnection [] - JDBC connection (2) created.

Via Command Line

To validate the connection from the server the DP Agent is running to the SAP Data Warehouse Cloud tenant you can directly use the JDBC driver jar file from the command line interface (CLI). You must ensure that you're using the same JDBC driver which is also used by the DP Agent. The JDBC driver is in *<DP Agent Root>/plugins* and called something like com.sap.db.jdbc_*.jar

Pattern for the command line is:

java -jar <JDBC driver> -u <HANA User Name for Messaging Agent>,"<HANA User Password for Messaging Agent>" -n <HANA Server>:<Port> -o encrypt=true

Navigate to *<DP Agent root>/plugins/* and execute the following commands depending on your landscape

   1.) Without Proxy

../sapjvm/bin/java -jar com.sap.db.jdbc_2.4.67.3028d4615dae104ed3de580c64399b376bf8d7c4.jar -u DP_MSG_NEW_AGENT,"somePassword" -n 791e9a3b-f3c0-47c8-8a18-866f24635458.hana.prod-eu10.hanacloud.ondemand.com:443 -o encrypt=true
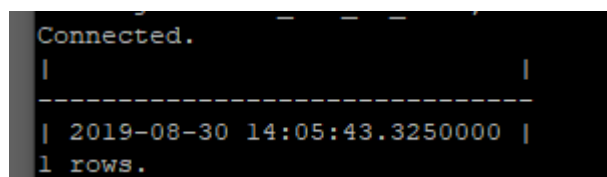
2.) **With proxy**:

../sapjvm/bin/java -jar com.sap.db.jdbc_2.4.67.3028d4615dae104ed3de580c64399b376bf8d7c4.jar -u DP_MSG_NEW_AGENT,"somePassword" -n 791e9a3b-f3c0-47c8-8a18-866f24635458.hana.prod-eu10.hanacloud.ondemand.com:443 -o encrypt=true **-o proxyHostname=yourcompanyproxy.com -o proxyPort=8080 -o proxyHttp=true -o proxytype=http**

3.) **With proxy with authentication required:**

../sapjvm/bin/java -jar com.sap.db.jdbc_2.4.67.3028d4615dae104ed3de580c64399b376bf8d7c4.jar -u DP_MSG_NEW_AGENT,"somePassword" -n 791e9a3b-f3c0-47c8-8a18-866f24635458.hana.prod-eu10.hanacloud.ondemand.com:443 -o encrypt=true -o proxyHostname=yourcompanyproxy.org -o proxyPort=8080 -o proxyHttp=true -o proxytype=http **-o proxyUserName=<your proxy user name> -o proxyPassword="<your proxy password>"**

If the connection works properly the statement should look like this:

Common Pitfalls

If you're unable to connect your DP Agent to the SAP Data Warehouse Cloud tenant check the framework log files in <DP Agent root>/log.
Open the trace file and check whether the output matches any of the below mentioned known issues.

You may first try any of the before mentioned Command line options via the jdbc library to validate the connection.

Missing IP Whitelisting

SQLException: SAP DBTech JDBC: Cannot connect to jdbc:sap://9e773134-7a64-44ee-93a1-4b34a06d4659.hana.prod-us10.hanacloud.ondemand.com:443 [Object is closed: com.sap.db.jdbc.SecureSession@9e773134-7a64-44ee-93a1-4b34a06d4659.hana.prod-us10.hanacloud.ondemand.com:443 ConnectionID:0 SessionID:0 on Socket[addr=9e773134-7a64-44ee-93a1-4b34a06d4659.hana.prod-us10.hanacloud.ondemand.com/<IP Address>,port=443,localport=53446]].

If you see this kind of error, it is most likely related to a missing IP whitelisting on SAP Data Warehouse Cloud. Please maintain authorized IPv4 address/ address ranges in SAP Data Warehouse Cloud under *Administration -> IP Whitelisting.*

Authentication failed

Log:

2019-08-20 14:51:03,508 [INFO] DPFramework | JDBCService.start [] - Starting JDBC service.
2019-08-20 14:51:03,508 [TRACE] DPFramework | JDBCConnector.read [] - Fetching messages...
2019-08-20 14:51:03,508 [INFO] DPFramework | JDBCConnector.registerAgent [] - Registering
Agent: 78:69:REGISTER_AGENT:SDA:0:PAG_DPA11:null:null:null:0:0:REGISTER_AGENT:
2019-08-20 14:51:03,508 [DEBUG] DPFramework | JDBCConnector.writeMessage [] -
>>78:69:REGISTER_AGENT:SDA:0:PAG_DPA11:null:null:null:0:0:REGISTER_AGENT:
**2019-08-20 14:51:04,179 [ERROR] DPFramework | JDBCConnector.makeConnection [] - Failed
to connect to server (1 of 10 attempts).**
**2019-08-20 14:51:04,179 [ERROR] DPFramework | JDBCConnector.makeConnection [] -
com.sap.db.jdbc.exceptions.SQLInvalidAuthorizationSpecExceptionSapDB: [10]:
authentication failed**
2019-08-20 14:51:04,179 [INFO] DPFramework | JDBCConnector.makeConnection [] - Waiting for
30s to retry connection.

Failed authentication is due to an invalid user name / password stored in the *<DP Agent
root>secure_storage* file.
It's best to

1. Rename the existing file, i.e. to secure_storage_archive
2. Set the HANA XS Username and password again using the –setSecureProperty option. This
   creates a new <DP Agent root>/secure_storage file.
3. Restart the DP Agent.
4. Retry the connection.

Firewall/Proxy Issues

Cannot connect to jdbc:sap://<Host>:<Port> [Unknown host <Host>/<Port> [<Proxy>], -709].
Log:

2019-08-20 14:08:41,433 [INFO] DPFramework | JDBCService.start [] - Starting JDBC service.
2019-08-20 14:08:41,433 [TRACE] DPFramework | JDBCConnector.read [] - Fetching messages...
2019-08-20 14:08:41,433 [INFO] DPFramework | JDBCConnector.registerAgent [] - Registering
Agent: 77:68:REGISTER_AGENT:SDA:0:PAG_DPA9:null:null:null:0:0:REGISTER_AGENT:
2019-08-20 14:08:41,433 [DEBUG] DPFramework | JDBCConnector.writeMessage [] -
>>77:68:REGISTER_AGENT:SDA:0:PAG_DPA9:null:null:null:0:0:REGISTER_AGENT:
**2019-08-20 14:08:43,792 [ERROR] DPFramework | JDBCConnector.makeConnection [] - Failed
to connect to server (1 of 10 attempts).**
**2019-08-20 14:08:43,792 [ERROR] DPFramework | JDBCConnector.makeConnection [] -
com.sap.db.jdbc.exceptions.JDBCDriverException: SAP DBTech JDBC: Cannot connect to
jdbc:sap://<Host>:<Port> [Unknown host <Host>:<Port> [<Proxy>], -709].**
2019-08-20 14:08:43,792 [INFO] DPFramework | JDBCConnector.makeConnection [] - Waiting for
30s to retry connection.

This issue typically indicates, that the JDBC driver is not capable of resolving the HANA server URL to
connect to the SAP Data Warehouse Cloud tenant and/or establish a correct outbound call. Please
check your firewall/proxy settings in this case and make sure to enable outbound connections
accordingly.

Missing encryption: only secure connections are allowed

Check log output for missing encryption: -> only secure connections are allowed

When testing the connectivity directly with the JDBC driver, add the parameter

-o encrypt=true

SAP Notes for Data Provisioning Agent and support component

2511196 - What ports are used by Smart Data Integration

2091095 - SAP HANA Smart Data Integration and SAP HANA Smart Data Quality

2400022 - FAQ: SAP HANA Smart Data Integration (SDI)

2477204 - FAQ: SAP HANA Services and Ports

Support Component for SDI HAN-DP-SDI

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