



Public

# **SAP Data Warehouse Cloud**

## DP Agent Setup, Configuration and Troubleshooting Guide

Version 2.0 – September 28, 2020

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## INTRODUCTION

To enable connections to on-premise 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 on 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 has to 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.**

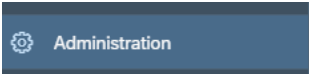
### Configuration

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.

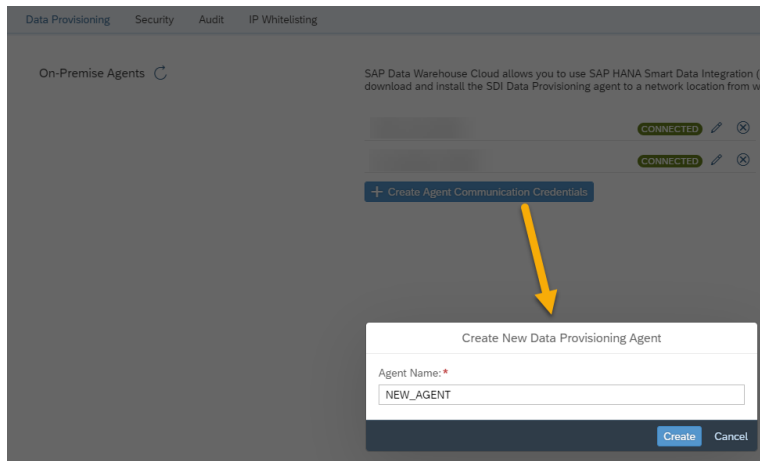
**Remark:** Please **do not** use the graphical user interface to execute the configuration steps, but only use the CLI (command line interface).

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.

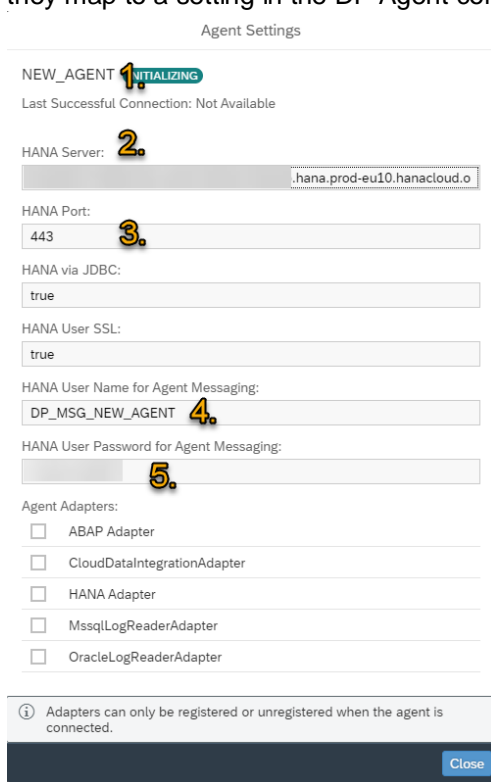
- 1.) Check if the user that will configure the Data Provisioning Agent in SAP Data Warehouse Cloud has the role "Data Warehouse Cloud Administrator"

- 2.) 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 shown. The numbering on the following screenshot will help you with the configuration in the next step as they map to a setting in the DP Agent configuration.



**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
```

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
```

```
ap/dataprovgagent/bin> ./agentcli.sh --configAgent
Following location:
```

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

```
*****
DPAgent Configuration Tool
*****
1. Agent Status
2. Start or Stop Agent
3. Agent Preferences
4. Remote Source Credentials
5. SSL Keystores & Settings
6. SAP HANA Connection
7. Agent Registration
8. Adapter Registration
9. Custom Adapters
10. Agent & Adapter Versions
q. Quit
b. Back
*****
Enter Option:6
```

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

```
*****
SAP HANA Connection
*****
1. Connect to SAP HANA Cloud via JDBC
2. Connect to SAP Data Warehouse Cloud via JDBC
3. Connect to SAP Cloud Platform CE, SAP HANA Service via JDBC
4. Connect to SAP Cloud Platform NEO, SAP HANA Service via HTTP
5. Connect to local SAP HANA (on-premises) via TCP
q. Quit
b. Back
*****
Enter Option:2
```

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.

```
*****
Connect to SAP Data Warehouse Cloud via JDBC
*****
Press "Enter" button to keep default or skip an optional setting.
If a setting cannot be skipped, that means it is required.
*****
Enter Agent Name: 1.
NEW_AGENT
Enter Use encrypted JDBC connection[true]: Valid options: true|false
Enter Host Name: 2.
hana.pfpd-eu10.hanacloud.ondemand.com
Enter Port Number: 3.
443
Enter Use Proxy Server[false]: Valid options: true|false
Enter HANA User Name for Agent Messaging: 4.
DP_MSG_NEW_AGENT
Enter HANA User Password for Agent Messaging: 5.
Enter HANA User Password for Agent Messaging: (confirm)
Do you want to save these connection settings? Any existing settings will be overwritten.
Enter [false] if you do not want to save or [true] to save.
true
Agent connection settings for SAP Data Warehouse Cloud have been saved. Restart the agent for the change to take effect.
Press Enter to continue...

```


9.) After that please restart the Data Provisioning Agent

```
*****
DPAgent Configuration Tool
*****
1. Agent Status
2. Start or Stop Agent ←
3. Agent Preferences
4. Remote Source Credentials
5. SSL Keystores & Settings
6. SAP HANA Connection
7. Agent Registration
8. Adapter Registration
9. Custom Adapters
10. Agent & Adapter Versions
q. Quit
b. Back
*****
Enter Option:2
*****
Start or Stop Agent
*****
1. Start Agent
2. Stop Agent ←
3. Ping Agent
q. Quit
b. Back
*****
Enter Option:2█
```

```
*****
Start or Stop Agent
*****
1. Start Agent ←
2. Stop Agent
3. Ping Agent
q. Quit
b. Back
*****
Enter Option:1█
```

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

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

11.) As a result, the Data Provisioning 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


“HANA Adapter” and “ABAP Adapter” can be enabled without any prerequisites, while for any 3<sup>rd</sup> Party adapter, the respective jdbc jar file needs to be copied to the <DP Agent root>/lib/ folder first. Please refer to this document for the exact version: [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 connections system for which the adapters were registered.**



## 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

In case the provided solution might have been applicable, please reach out to SAP.

All screenshots are based on a Linux based installation of the Data Provisioning Agent.

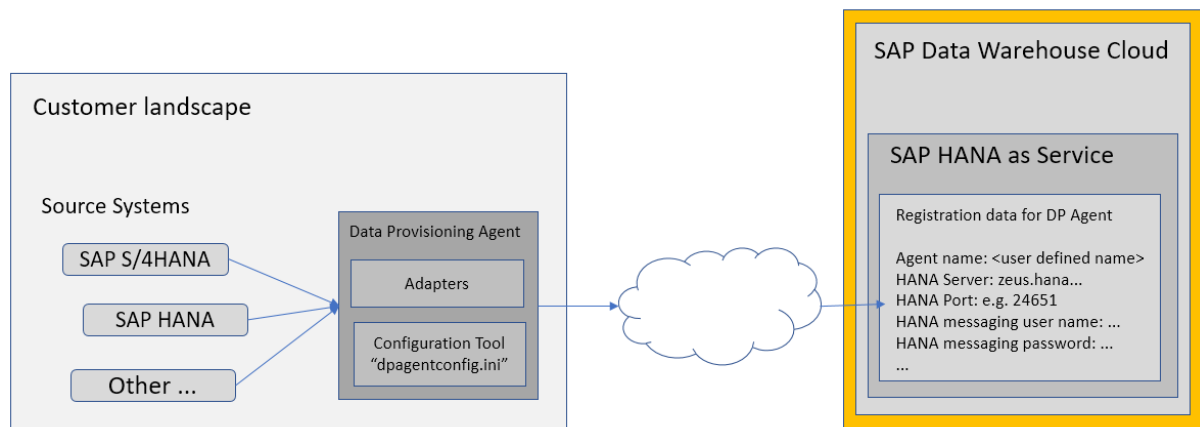
In case your installation is on a Microsoft Windows system the forward slashes "/" must be replaced by backslashes "\".

### 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.

The following architecture provides an overview of the involved components:



### 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`.

```
root@...:/usr/sap/dataprovagent/sapjvm/bin> ls
forkhelper  jjs      jvmond  keytool  pack200  rmid      servertool  unpack200
java        jvmon   jvmprof  orbd     policytool  rmiregistry  tnameserv
```

### DP Agent Configuration

Please double check that the correct values have been maintained in the `<DP Agent 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.

<b>dpagentconfig.ini file</b>	<b>Agent Settings in SAP Datawarehouse Cloud</b>
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:

<b>dpagentconfig.ini file</b>
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.

### Remark:

**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](#)

## 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
```

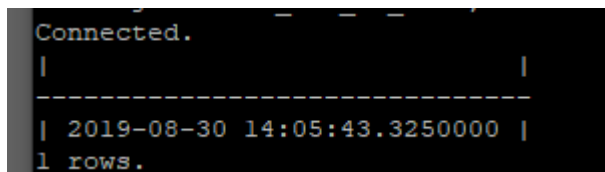
### 2.) With proxy:

```
../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:



```
Connected.
|
-----|
| 2019-08-30 14:05:43.3250000 |
| 1 rows.
```

## 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.JDBCException: 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

```
SQLException: SAP DBTech JDBC: [4321]: 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-SD

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**THE BEST RUN**

