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Getting Started with SAP NetWeaver 7.50 SP1 AS ABAP and SAP BW on SAP HANA SPS10 - Developer Edition



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1 Solution Information

This guide provides general information you need to use the Developer Edition of the solution **SAP NetWeaver 7.50 SP1 Application Server ABAP and SAP Business Warehouse on SAP HANA**.

Material Numbers

You get access to a system that has been built up using the following media:

Number	Description
51050082	SAP Kernel 7.45 Solaris on x64 64bit
51049932	SAP HANA Plattf. Ed. 1.0 SPS10 (SAP HANA DB 1.00.102)
51050042	NetWeaver 7.5
SWPM10SP09_3-20009701	SOFTWARE PROVISIONING MGR 1.0 Linux on x86_64 64bit
sapcc-2.6.1.1-linux-x64.zip	SAP HANNA Cloud Connector
SAPK-75705INBICONT	SAP BI Content Installation

Components

The back end comprises the following component versions:

Component	SP-Level
SAP_BASIS	1
SAP_ABA	1
SAP_GWFND	1
SAP_UI	1
ST-PI	1
SAP_BW	1
BI_CONT	7
SAP HANA Cloud Connector	2.6.1.1

The front end comprises the following component versions:

Component	SP-Level
SAP GUI for Windows 7.40	5
SAP Development Tools for Eclipse: ABAP Development Tools 2.51	
SAP Development Tools for Eclipse: BW Modelling Tools 1.1.7	
SAP Development Tools for Eclipse: SAPUI5 Tools 2.0	
SAP BusinessObjectsDesignStudio Release 1.6	

Sizing Information

Follow the sizing guidelines to determine the hardware requirements of the solution such as network bandwidth, physical memory, CPU power, and I/O capacity by choosing this quick link: <http://service.sap.com/sizing> -> Sizing -> Sizing Guidelines

You can use also the search function in the [Quick Sizer](#) tool to find your required sizing guidelines.

OS Compatibility Information

Check the [Product Availability Matrix](#) (PAM) to determine the operating system requirements for running the SAP system in question. For your information, you can see the details of the OS environment on which this solution has been built up.

Name	Value
OS Kernel Version	3.0.101-0.31-default
OS Version	11
OS Platform	linuxx86_64
OS Release	SUSE Linux Enterprise Server 11 (x86_64)
GLIBC Version	2.11.3
OS Type	SUSELinux
OS Patch Level	3
Architecture	x86_64

SAP Host Agent Information

It is highly recommended to have the latest version of SAP Host Agent. More information can be found in the related SAP Notes "[1031096 - Installing Package SAPHOSTAGENT](#)", "[1473974 - Using the SAP Host Agent Auto Upgrade Feature](#)".

Application Server ABAP Details

Name	Value	Description
SID	A4H	System ID of the SAP system
CI Instance Number	00	The instance number of the central instance (CI)
CS Instance Number	01	The instance number of the central services (CS) instance.
Password	<master password>	The password set during instance creation.
Username	DDIC SAP* DEVELOPER BWDEVELOPER	These are the standard users which you can use to access the ABAP server.
Clients	000 001	These are the standard clients available in a newly installed SAP system.

Database Server Details

Name	Value	Description
SID	HDB	System ID of the SAP system
DB SID	HDB	System ID of the database of the SAP system
DB Type	HDB	Type of the database
Instance Number	00	Instance number of the central instance of the SAP HANA System
Username	SYSTEM SAPHDB DBACOCKPIT	These are the standard users which you can use to access the database server.
Password	<master password>	The password set during instance creation.

OS Users and Groups

Name	Description
hdbadm	SAP system administrator
hdbadm	SAP database administrator
sapsys	Group containing all <SID>adm users (should be a group in a central user storage like LDAP, NIS, or Active Directory)

2 Security Aspects

Be aware that creating your instances in the public zone of your cloud computing platform is convenient but less secure. Ensure that only port 22 (SSH) is opened when working with Linux-based solutions and port 3389 (RDP) when working with Windows based solutions. In addition, we also recommend that you limit the access to your instances by defining a specific IP range in the Access Points settings, using [CIDR notation](#). The more complex but secure alternative is to set up a virtual private cloud (VPC) with VPN access, which is described in [this tutorial on SCN](#).

The list below describes the ports opened for the security group formed by the server components of your solution instance:

To access back-end servers on the operating system (OS) level, use the following information:

Protocol	Port	Description
SSH	22	Used for SSH connection to Linux-based servers
RDP	3389	Used for RDP connection to Windows based servers

You must change the master passwords set during instance creation when you log onto the system for the first time.

Note that when using **HANA based appliances**, HANA systems are not installed individually but **cloned from a template system**. As a consequence of this cloning process, the existing root keys are cloned. For more information, see this [SAP Note 2134846 - HANA encryption key handling during system cloning](#).

For more information about security vulnerabilities, see this [community page](#).

3 Solution Provisioning in SAP Cloud Appliance Library

If you have a user in SAP Cloud Appliance Library, you need to meet the following prerequisites before starting to use the SAP Cloud Appliance library:


- Cloud Provider Configurations

You have a valid account in one of the cloud providers supported by SAP Cloud Appliance Library. If you already have an active cloud provider account, you can proceed directly with the next section. Otherwise, navigate to the cloud provider home page and sign up.

For more information about the supported cloud providers, see the [FAQ page](#).

- Navigate to SAP Cloud Appliance Library

Open the SAP Cloud Appliance Library in your Web browser using the following link: <https://cal.sap.com>

For more information about how to use solutions in SAP Cloud Appliance Library, see the official documentation of SAP Cloud Appliance Library (choose [Support](#) → [Documentation](#) link and choose  (expand all) button to see all documents in the structure). You can also use the context help in SAP Cloud Appliance Library by choosing the [Help](#) panel from the right side.

4 Connecting to Your Frontend Instance

4.1 Remote Desktop Client

For connecting to your frontend instance you need an RDP client for your local operating system:

Microsoft Windows: Start the Remote Desktop Connection using the Start Menu (All Programs > Accessories) or executing mstsc.exe.

Apple Mac OS X: Use the free [Microsoft Remote Desktop](#) app available in the Mac App Store to connect to your frontend.

Linux: You can use open source RDP clients like [Remmina](#).

4.2 Connecting with RDP

You can find the <IP Address> of your frontend instance by clicking on the instance name in your SAP Cloud Appliance Library account. Take the IP of the frontend instance and use the OS user "Administrator" with your master password to log in with your remote desktop client.

4.3 Using SAP GUI for Windows

SAP GUI for Windows is already installed on your frontend instance with a pre-configured system connection for SAP Logon. If you want to create an additional entry, proceed with the following steps:

- Start the SAP Logon.
- Choose new entry → User defined.
- In the System wizard, specify the following parameters:

Parameter ID	Parameter Value	Note
Application Server	abapci	The IP address of the instance from SAP Cloud Appliance Library
Instance Number	00	ABAP instance number used by the appliance.
System-ID	A4H	ABAP system id used by the appliance
User Name	Client 000: SAP*, DDIC Client 001: SAP*, DDIC, DEVELOPER BWDEVELOPER	Default users

Parameter ID	Parameter Value	Note
Password	<master password>	The password of SAP*, DDIC, DEVELOPER and BWDEVELOPER users are the same.

For out-of-the-box ABAP development, ABAP for HANA features and the pre-configured Fiori demo applications we recommend to use the user DEVELOPER in client 001. For the pre-configured BW demo scenarios and BW development we recommend to use the user BWDEVELOPER in client 001.

4.4 Using SAP HANA Studio

The pre-installed SAP HANA Studio on your frontend instance also contains the ABAP Development Tools, the SAPUI5 Tools, and the BW Modeling Tools. In the Systems view of the HANA Development perspective you find a pre-configured connection to your HANA system, using the following parameters:

Parameter ID	Parameter Value	Note
Hostname	hanadb	The IP address of the instance from the SAP Cloud Appliance Library
Instance Number	02	HANA instance number used for the appliance.
User Name	SYSTEM	For the connection to the DB use SYSTEM user
Password	<master password>	The password is the same as the master password provided during instance creation in the SAP Cloud Appliance Library.

The system ID of the database is HDB. It is recognized automatically via the host name.

Moreover, in the ABAP and the BW Modeling perspective in Eclipse you find pre-configured ABAP development and BW modeling projects with the following parameters:

A4H_001_developer_en: SID A4H, client 001, user: developer/master password

A4H_001_bwdeveloper_en: SID A4H, client 001, user: bwdeveloper/master password

For detailed information about these SAP development tools for Eclipse, we recommend to use the documentation available within Eclipse by opening the Help menu > Help Contents.

5 Connecting to Your Backend Instance

5.1 Connecting to Your Backend on OS Level

In case you want to access your backend instance on OS level (not recommended unless you know what you are doing), you need an SSH client for your local environment, e.g. [PuTTY for Windows](#).

The following steps describe how to connect to your backend instance using PuTTY, but are similar for alternative SSH clients:

- Click on the instance name in your CAL account, to retrieve the IP of your backend instance and download the instance key pair (maybe you already downloaded the key pair during instance creation).
- Extract the private key of the key pair by using a tool like puttygen.exe.
- Open PuTTY and enter the IP of your backend instance.
- Navigate to the SSH > Auth node and enter your private key file.
- Navigate to the Connection > Data node and enter root as auto-login username.
- Save these session settings and hit the Open button.

Now you can log in to your backend instance on OS level (SLES) for monitoring, troubleshooting, or accessing files on the server.

The following tables list all important users on OS level:

Parameter ID	Parameter Value	Note
OS User Name	root	The default OS Administrator user for Linux SUSE.
OS Password	<none>	Use the private key (downloaded during the activation of the instance in SAP Cloud Appliance Library) for login with the root user.

The administration users for HANA and ABAP on operating system level are defined as follows:

Parameter ID	Parameter Value	Note
HANA administrator name	hdbadm	Additional user for HANA lifecycle management – start/stop, administration, functions, recovery
HANA administrator password	<master password>	The password is the same as the master password provided during instance creation in the SAP Cloud Appliance Library.
ABAP administrator name	a4hadm	Additional user for ABAP lifecycle management – start/stop, administration, functions, recovery

Parameter ID	Parameter Value	Note
ABAP administrator password	<master password>	The password is the same as the master password provided during instance creation in the SAP Cloud Appliance Library.

Additional users on operating system level are:

Parameter ID	Parameter Value	Note
SAP System Administrator	sapadm	
SAP System Administrator password	<master password>	The password is the same as the master password provided during instance creation in the SAP Cloud Appliance Library.
SAP System Administrator	daaadm	
SAP System Administrator password	<master password>	The password is the same as the master password provided during instance creation in the SAP Cloud Appliance Library.

5.2 Manually starting and stopping the system

The system (ABAP server and database) is automatically started when you activate an instance in CAL. The system (ABAP server and database) is automatically stopped, when you suspend the instance in CAL. There might be nevertheless situations where you want to start or stop the ABAP server or the database manually. The next sections describe how to do this.

5.2.1 ABAP System

To check the status of the ABAP system logon as root on operating system level and execute:

```
su - a4hadm
sapcontrol -nr 00 -function GetProcessList
```

For stopping the ABAP system logon as root on operating system level and execute:

```
su - a4hadm
stopsap r3
exit
```

For starting the ABAP system logon as root on operating system level and execute (database must run):

```
su - a4hadm
startsap r3
exit
```

5.2.2 SAP HANA Database

To check the status of the database logon as root on operating system level and execute:

```
su - hdbadm
sapcontrol -nr 02 -function GetProcessList
```

For stopping the database logon as root on operating system level and execute (make sure the ABAP system has been stopped before):

```
su - hdbadm
HDB stop
exit
```

For starting the database logon as root on operating system level and execute:

```
su - hdbadm
HDB start
exit
```

5.3 Transport of Copies

The system has been set up in a way that allows you to import and export ABAP objects as transport of copies. This section describes an export/import scenario.

5.3.1 Export

To export objects with a transport of copies you have to execute the following procedure:

- In transaction SE01 choose Create (F6).
- Mark Transport of Copies and choose Enter.
- Enter a description.
- As transport target enter DMY and choose Save.
- Add the objects you need into the request. You may enter them either directly or via the menu Request/Task → Object List → Include Objects...
- Release the request.

You will find your transport files in the directories:

```
/usr/sap/trans/data
/usr/sap/trans/cofiles
```

For the file transfer you can use sFTP or SCP clients like WinSCP with user root and the private key file of your backend instance (see [Connecting to Your Backend on OS Level](#)) or you can directly import the existing PuTTY connection profile.

5.3.2 Import

To import transports into the system you have to execute the following procedure:

- Copy your transport files to:
 - /usr/sap/trans/data
 - /usr/sap/trans/cofiles
 - For the file transfer you can use sFTP or SCP clients like WinSCP (see above).
- Ensure that user a4hadm has sufficient rights for accessing your transport files (e.g. use the chown a4hadm:sapsys <file> command), otherwise the import will fail.
- In transaction STMS open the Import Overview (F5) and double click on A4H.
- In the menu select Extras → Other Requests → Add.
- Use the F4 help to select your transport request.
- Choose Enter and answer the question if you want to attach the request to the A4H import queue with yes.
- Mark the request in the import queue and select Ctrl+F11 (Import Request).
- In the popup select for Execution “Synchronous” (for smaller request) and mark all import options.
- Choose Enter and Yes to import your request.

6 Technical Licenses

6.1 Installation of the SAP NetWeaver License

The SAP NetWeaver Application Server ABAP comes with a temporary license that allows you to logon to the system. As a first step before using the system you need to install a 90 days Minisap license as follows:

1. Logon to AS ABAP via SAP GUI with user SAP* in tenant 000.
2. Start transaction SLICENSE
3. Get a "Minisap" license at <http://www.sap.com/minisap> .
As system ID choose A4H - SAP NetWeaver 7.5 AS ABAP (Linux / SAP HANA).
As hardware key use the hardware key shown in transaction SLICENSE.
4. You will receive a mail with the licence, store it.
5. Go back to the transaction SLICENSE in your ABAP instance.
6. Choose Install new License and select the license from step 4.
7. After license installation call transaction SECSTORE and run a check for all entries using F8. This is needed to enable RFC after the change of the installation number from INITIAL to DEMOSYSTEM.
8. Installing the Minisap license will change the installation number from INITIAL to DEMOSYSTEM. The developer access key for user DEVELOPER and installation number DEMOSYSTEM is already in the system and you can start developing in the customer name range (Z*, Y*).
9. The Minisap license will expire. You can renew it with the same procedure.

6.2 Installation of the SAP HANA License

The SAP HANA database comes with a temporary license. Please install a 90 days Minisap license as follows:

- Start the installed SAP HANA Studio and open the HANA Development perspective.
- From the Systems view right-click on your HDB (SYSTEM) connection.
- Select Properties.
- From the Properties dialog box, select the License tab.
- Get a "Minisap" license at <http://www.sap.com/minisap> .
As system ID choose HDB - SAP HANA Platform Edition (64GB).
As hardware key use the hardware key shown on the License tab.
- Once you received the license key file, choose first Delete License Key and then Install License Key.

These technical licenses can be renewed as long as you adhere to the terms and conditions of the [developer license agreement](#) of the SAP Developer Center and the solution-specific terms and conditions.

7 Tutorials and Demo Scenario

The developer edition is a preconfigured system and comes with a bunch of sample scenarios and tutorials. The scenarios are directly accessible from the DEVELOPER or BWDEVELOPER start menu. Launch the applications and read the accompanying blogs or tutorials in SCN. To access the linked guides please ensure correct proxy settings (see solution guide) and use Firefox for running the sample applications.

SAP Fiori Reference Applications

The SAP Fiori Reference Apps demonstrate the development, UX Design guidelines and best practices applicable to the SAP Fiori development lifecycle. The SAP Fiori Reference Apps are based on the Enterprise Procurement Model (EPM). See the documentation in [SAP Fiori Reference Applications](#).

ABAP for HANA Reference Scenario

The ABAP for HANA Reference Scenario provides a bunch of tutorials, how-tos and samples leveraging HANA in ABAP based applications. Goto the blog in SCN: [ABAP for SAP HANA Reference Scenario - The Introduction](#).

SAP Business Warehouse Demo Content

The BW demo scenarios aim to give you a comprehensive view of complex analysis functions and planning scenarios so that you can use them effectively and lucratively. The scenarios already contain all objects (InfoProviders with master data and transaction data and queries) that you need in order to execute the various functions. Find the documentation here: [SAP Business Warehouse Demo Content](#).

ABAP Channels

Using ABAP Push Channel– Web Socket implementation for ABAP – you can push in real-time any ABAP backend data changes to your Web UI and vice versa. With ABAP Messaging Channels your ABAP application can get notified about the processing status of other ABAP sessions and react without having to poll the database periodically for an updated status. And last but not least using both ABAP Push and ABAP Messaging Channels you can implement real-time collaboration. This blog introduces ABAP Channels and offers links to the step-by-step ABAP Channels demos guide, blogs and video tutorials: [Introduction to ABAP Channels](#).

Business Object Processing Framework

With 7.50 the framework used by new applications is delivered with the AS ABAP. To get familiar with the tool you can browse some basic tutorials listed in the sitemap in SCN [BOPF SCN Sitemap](#).. This edition delivers also a very

basic SAPUI5 sample based on BOPF using means already available with 7.40 SP8. Goto the Sitemap listing tutorials: [SAPUI5 on BOPF Objects](#).

Web Dynpro and FPM

Learn how to modernize your Web Dynpro apps, boost productivity, repaint user interfaces, and discover new controls. Introduce SAP Fiori design and SAP Fiori interaction principles into your Web Dynpro for ABAP applications. See the overview [Overview](#) and the description of the [FPM Innovation Code Jam](#).

Plain ABAP Language Samples

New to the ABAP server? Maybe it's a good idea to start exploring some ABAP code samples available in the start menu of the user DEVELOPER.

ABAP Code Check for S/4 Simplifications

The Custom Code Analyzer provides you with an overview on all the simplification items that require adaptation in your custom code after the conversion to S/4 HANA on SAP NetWeaver 7.50. [Go to the documentation here](#).

SAP HANA Samples

SAP HANA Interactive Education, or SHINE, is a demo application that makes it easy to learn how to build native SAP HANA applications. The demo application, delivered with SAP HANA in a special delivery unit (DU), comes complete with sample data and design-time developer objects for the application's database tables, data views, stored procedures, OData, and user interface. See the documentation [SAP HANA Interactive Education \(SHINE\)](#).

More tutorials and guides are available on the [SAP Community Network \(SCN\)](#).

8 Additional Information

8.1 Frontend Settings

8.1.1 Windows Proxy Settings

If you want to access the internet from your frontend instance, which is not required for working with this solution but allows you to update your frontend tools, please proceed as follows:

If you created your instance in the public AWS cloud environment, no additional proxy settings should be required to access the internet.

If you created your instance in a private/corporate subnet of a virtual private cloud (VPC), you have to enter the address of your proxy server or the internet gateway in the Windows internet settings: Open Internet Explorer > Internet options and add a proxy exception for hanadb, abapci, *.dummy.nodomain (default dummy domain) or the fully qualified host names. SAP HANA Studio will automatically update its proxy settings according to the Windows internet settings if you don't change the default proxy settings in Eclipse (Active Provider: Native).

8.1.2 Enhanced Security Configuration

On the Windows Server image the enhanced security configuration (ESC) of Internet Explorer is activated by default (recommended by Microsoft). This makes working with Web UIs and external sites like SCN inconvenient and forces you to deal with several security pop-ups and notifications. Thus, you can deactivate IE ESC with the following procedure (at your own risk):

In the Start menu navigate to All Programs > Administrative Tools > Server Manager.

In the Server Manager root node click on Configure IE ESC in the Security Information section.

Deactivate the IE ESC for administrators.

8.2 Using Local Client Software

If you want to access SAP HANA or the ABAP application server of your backend instance from your local client (not via the associated frontend instance), we recommend the following procedure for a local Windows environment (other operating systems require different SAP clients):

8.2.1 Downloading the SAP client software

Before connecting to the frontend instance using the Remote Desktop Connection, open the Options dialog and navigate to the Local Resources tab.

Hit the more button in the Local devices and resources section and activate one of your local drives.


After logging into your frontend instance you can use Windows Explorer to exchange files between your local machine and your frontend instance.

The SAP software is located on the D: drive of your Windows instance:

- Copy the hdbstudio70 folder to your local environment and adapt the JVM location in the hdbstudio.ini file to the location of your local JVM.
- Copy the SAPGUI-BI-Core.exe file to your local environment and start the installation of SAP GUI for Windows (take a look at the SAP GUI documentation for prerequisites).

8.2.2 Accessing your Backend Instance locally

Before you can use your local SAP client software you have to ensure, that your backend instance is accessible locally and all required TCP ports are open.

 We strongly recommend not to use a public instance for this setup, but instances running in a virtual private cloud (VPC) with a VPN connection to your local network. For more information, how to create instances in a VPC please revisit the [Using SAP Cloud Appliance Library](#) section.

If your instances are running in a VPC with VPN connection to your local network, you could open all ports by checking the Open all TCP ports option in the Access Points setting (Virtual Machine tab of your CAL instance). If you only want to expose the required ports (recommended approach), the list below shows all required TCP ports:

Protocol	Port	Description
SSH	22	Used for SSH connection to the server
Custom TCP	3200	SAP Dispatcher, used by SAP GUI
Custom TCP	3300	SAP Gateway. Used for CPIC and RFC communication.
Custom TCP	3601	Message Server
HTTP	8002	HTTP (HANA XS)
HTTPS	8443	SAP HANA Cloud Connector Administration
Custom TCP	30215	External SQL Interface. Used by SAP HANA Studio.
HTTP	50000	HTTP (AS ABAP)
HTTPS	50001	HTTPS (AS ABAP)

Protocol	Port	Description
Custom TCP	50213	Instance agent. SAP Start administrative channel for low-level access to the SAP HANA instance to allow features such as starting or stopping of the SAP HANA database.
Custom TCP	50214	Instance agent (SSL).

After following the steps above you should be able to access your cloud instances from your local environment and use the locally installed client software.

Please keep in mind that in case of latency or bandwidth issues a remote desktop connection to your frontend instance might be the better choice.

8.3 Additional Information for Business Warehouse

Beside a configured BW ABAP backend we also provide with this version some reporting capabilities.

The BW Modeling Tools (installed and configured on the Frontend Server within this solution) contains now our Eclipse based Query Designer to create/change BW queries. In addition we also provide the Design Studio with the ability to create local dashboards. Of course all ABAP based reporting options are still available (Transaction RSRT, BPC Reporting). Due to license restrictions of Microsoft Office the use of BEX Analyzer or Analysis Office is not possible.

New in NW 7.50 is a fully configured BPC (Business Planning and Consolidation) Web Client with two demo scenarios. The BPC web client can be accessed either with firefox or with your local browser via `https://<IP Address of your Instance>:50001/sap/bc/ui5_ui5/sap/bpcwebclient` (ignore the missing certificates).

If you maintain a mapping of the IP address and the servername in your local `/etc/hosts` file you can also access the url via the server name.

9 Troubleshooting

Symptom: You cannot connect to your frontend instance via Remote Desktop Connection.

Please ensure that your local network permits outbound RDP connections on port 3389 (TCP/UDP), i.e. your firewall/router doesn't block these connections.

Symptom: You cannot connect to your backend instance via SSH.

Please ensure that your local network permits outbound SSH connections on port 22, i.e. your firewall/router doesn't block these connections.

Symptom: You cannot select the Corporate Network option when creating a new solution instance.

The AWS subnet you want to use might be located in the wrong region. Please ensure to create a subnet in the Amazon region US-East (Virginia).

Symptom: You can't connect to your backend instance using your local SAP GUI.

- Check, if the ABAP server is running:
- Logon as root to the server on which the database is running (see [Connecting to Your Backend on OS Level](#)). Then execute the following statements to check the status of the ABAP server:

```
su - a4hadm
sapcontrol -nr 00 -function GetProcessList
```
- Check if all required TCP ports are open and accessible from your local network:
Please refer to section [Accessing your Backend Instance locally](#) for more information.

For more information about how to use the SAP Cloud Appliance Library, you can read the official documentation of the product by choosing the following navigation from SAP Cloud Appliance Library: Related Links & Help → Documentation. If you cannot find the needed information in the documentation, you can open a normal support ticket within the SAP Cloud Appliance Library (BC-VCM-CAL) component and your ticket will be processed by the SAP Cloud Appliance Library Operators. If you have AWS related problems, you can report them directly to AWS support or alternatively on the BC-OP-LNX-AWS component in SAP Service Marketplace.



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