Getting Started with SAP NetWeaver AS ABAP 7.51 SP02 on ASE 16.0 [Dev Edition]

Table of Contents

1   Solution Information

1.1 Installed Products

You get access to a system (landscape) that has been built using the following installation media:

- SAP Kernel 7.49 Linux on x86_64 64bit
- SAP ASE 16.0
- NetWeaver AS ABAP 7.51 Innovation Package SP02

1.2 Overview

- This appliance is designed to give you access to your own copy of **SAP NetWeaver AS ABAP 7.51 SP02 on SAP ASE, developer edition**. Note that this solution is **preconfigured** with many additional elements — including Fiori launchpad, Cloud Connector, SAP JVM, preconfigured frontend / backend connections, etc
- This solution is intended for two groups of developers:
    - **Non-ABAP developers**, who are interested in learning more about the ABAP language and development tools
    - **ABAP developers**, who are interested in learning about version 7.51

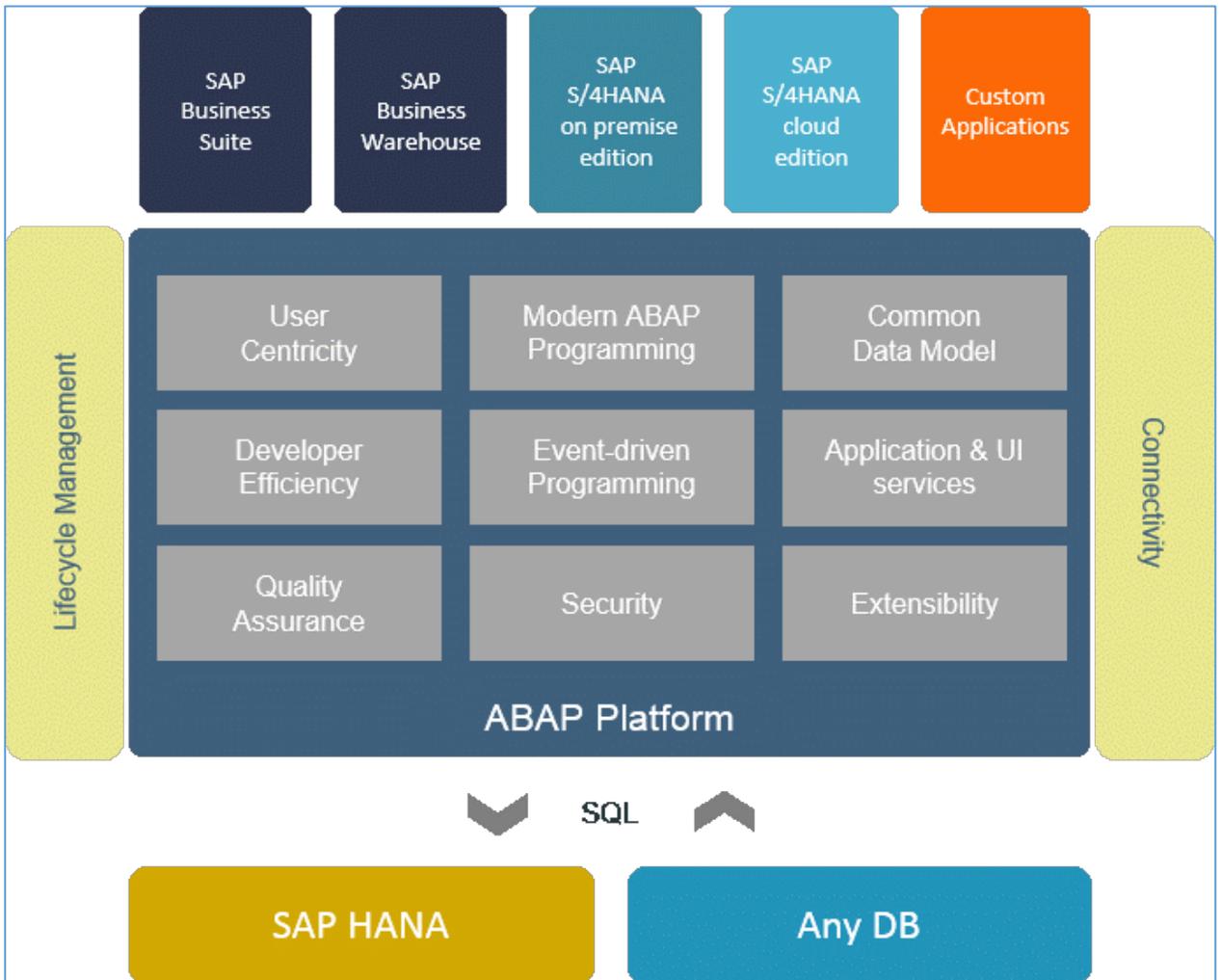## 1.3 Architecture diagram: SAP ABAP application server

Figure: SAP ABAP AS 7.51 SP02: Architecture

2 Accessing the solution

This section explains how to connect to the front end, and thus to the backend system.

You can connect to the AS ABAP server:

a. Via a **Remote Desktop Client (RDP)**

     i. **On Windows: ABAP Development Tools (recommended)**

     ii. **On Windows: SAP Logon**

     iii. **On Mac:** Use the free Microsoft Remote Desktop app available in the Mac App Store to connect to your frontend

     iv. **On Linux: You can use open source RDP clients like** Remmina.

b. Via a **local** installation (Windows, Mac, or Linux)

This section also covers:

- Connecting to the back end at OS level.
- Manually starting and stopping the ABAP system
- Transporting copies of ABAP objects

2.1 Connecting to the front end with Remote Desktop Client (RDP)

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.

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.

Connect to the Frontend server using the information in the table below. You can also configure manually your Remote Desktop client..

Name	Value	Description
IP Address	<IP Address>	The IP address of your frontend server instance you created in SAP CAL.
User	Administrator	User for the Windows frontend server. Note: Only one user is allowed to logon at the front-end server at the same point in time.

Name	Value	Description
Password	<Master Password>	The initial master password of the system you provided in the SAP Cloud Appliance Library when creating the instance.

2.1.1 Connecting to the ABAP Development Tools

1. From your AS ABAP server instance (https://tiint.hana.ondemand.com/console/#/instances/<your_instance>), choose **Connect:**

2. Then choose either: **RDP -> Connect** or **SAP GUI -> Connect** (usually Client **001**).
3. Log in with your Administrator password.

The remote desktop appears
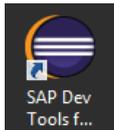
Note: When you connect using Eclipse, you may get a prompt to install some up-to-date components:

We recommend that you simply choose "Skip."

2.2 Connecting via a local installation

2.2.1 Connecting with local ABAP Development Tools (Windows)

Download the ABAP Development Tools from here: ABAP Development Tools for SAP NetWeaver, following the instructions on the web site. The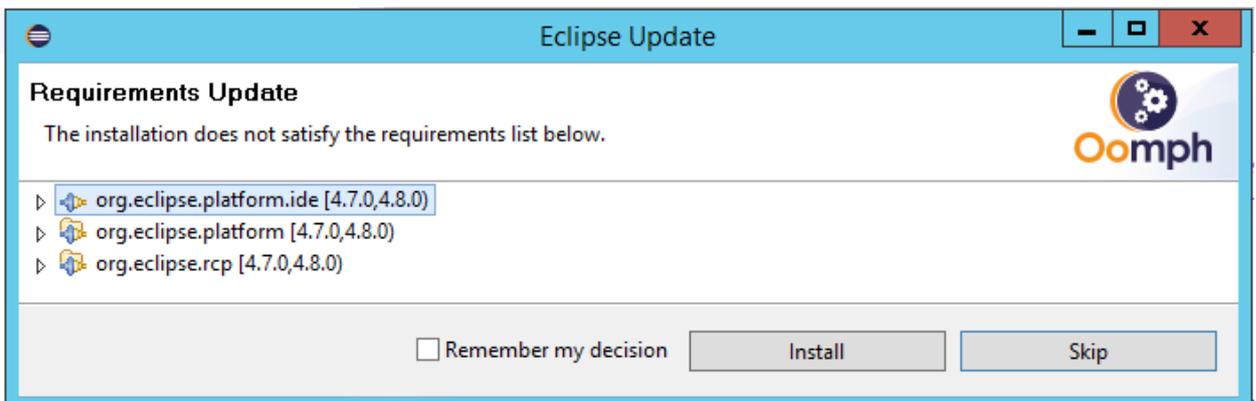n create a new project for your AS ABAP server: ABAP Tutorials: Create an ABAP project in Eclipse , step 8-10, specifying the following parameter values (recommended values in bold):

Parameter ID	Parameter Value	Note
Application Server	<IP Address>	The IP address of the backend 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
CI Instance Number	**00**	**Instance number of the central instance (CI)**
CS Instance Number	01	Instance number of the central services (CS) instance.
User Name	Client 000: SAP*, DDIC **Client 001:** SAP*, DDIC, **DEVELOPER** BWDEVELOPER	Default users
Password	<master password>	The password of SAP*, DDIC, DEVELOPER and BWDEVELOPER users are the same.

Note: When you connect using Eclipse, you may get a prompt to install some up-to-date components:
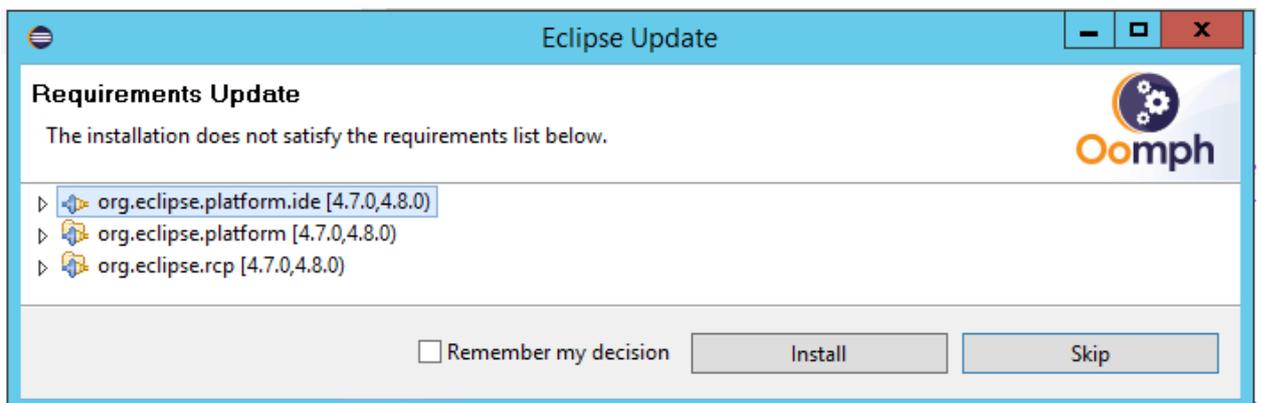
We recommend that you simply choose "Skip."

2.2.2 Connecting with local SAP GUI for Windows, Mac, or Linux

Windows: Download SAP GUI for Windows, latest version from here: SCN Wiki: SAP GUI Family: Downloads. Documentation is also available in the **Installations** section of this Wiki.

Mac or Linux: Download SAP GUI for Java, latest version from here: SCN Wiki: SAP GUI Family: Downloads. Documentation is also available in the **Installations** section of this Wiki.

To create an additional entry for your AS ABAP server, proceed with as follows:

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

Parameter ID	Parameter Value	Note
Application Server	<IP Address>	The IP address of the backend instance from SAP Cloud Appliance Library
Instance Number	00	ABAP instance number used by the appliance.
System-ID	NPL	ABAP system id used by the appliance
CI Instance Number	00	Instance number of the central instance (CI)
CS Instance Number	01	Instance number of the central services (CS) instance.
User Name	Client 000: SAP*, DDIC Client 001: SAP*, DDIC, DEVELOPER BWDEVELOPER	Default users
Password	<master password>	The password of SAP*, DDIC, DEVELOPER and BWDEVELOPER users are the same.

For out-of-the-box ABAP development and the pre-configured Fiori demo applications we recommend that you 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.

Connect to SAP **<SID>** using the information in the table below.

For more information on how to connect to the Frontend Server, see Connecting to a Solution Instance.

2.3 Database server details

Connect to SAP **<SID>** using the information in the table below.

For more information, how to connect to the Frontend Server, see Connecting to a Solution Instance.

Name	Value	Description
SID	NPL	System ID of the SAP system
DB SID	NPL	System ID of the database of the SAP system
DB Type	SYB	Type of the database
Username	SAPSSO SA SAPSA SAPSR3DB DBACOCKPIT	These are the standard users which you can use to access the database server.
Password	<master password>	Password set during instance creation

2.4 Connecting to the backend instance at OS level

If 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:

1. To retrieve the key, click on the instance name in your CAL account. Then download the instance key pair by choosing *Download Key.*

NOTE: The key pair will be downloaded locally as a *privacy enhanced mail* (.pem) file. **Keep this .pem file safe**.

2. Extract the private key of the key pair by using a tool like puttygen.exe.
3. Open PuTTY and enter the IP of your backend instance.
4. Navigate to the SSH > Auth node and enter your private key file.
5. Navigate to the Connection > Data node and enter root as auto-login username.
6. 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 groups and users at OS level:

Parameter ID	Parameter Value	Note
OS User Name	root	The default OS Administrator user for Linux SUSE.

Parameter ID	Parameter Value	Note
OS Password	<none>	Use the private key for login with the root user. During instance creation you should save the private key. So you can download it when you need it.

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

Parameter ID	Parameter Value	Note
Group	sapsys	standard group to which SAP users are assigned
Database administrator name	hdbadm	Additional user for database lifecycle management – start/stop, administration, functions, recovery
Database 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	npladm	Additional user for ABAP lifecycle management – start/stop, administration, functions, recovery
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 password	<master password>	The password is the same as the master password provided during instance creation in the SAP Cloud Appliance Library.

2.5   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.

2.5.1   ABAP System

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

```
su – npladm
sapcontrol -nr 00 -function GetProcessList
```

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

```
su – npladm
stopsap r3
exit
```

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

```
su – npladm
startsap r3
exit
```

2.6   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. For security reasons we removed the rfc connection and user tmsadm. See TMS Documentation to complete the configuration.

This section describes an export/import scenario.

2.6.1   Export

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

1.   In transaction SE01 choose Create (F6).

2.   Mark Transport of Copies and choose Enter.

3.   Enter a description.

4.   As transport target enter DMY and choose Save.

5.   Add the objects you need into the request. You may enter them either directly or via the menu Request/Task → Object List → Include Objects…

6.   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.

2.6.2 Import

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

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

3 Licenses: Developer edition

3.1 Running the solution with a developer license

This solution can be used for development purpose under the perpetual Developer License Agreement. Note that you are allowed to install only "Minisap" license keys that can be renewed as long as you adhere to the Terms and Conditions of the Developer License Agreement.

3.2 Generating the license key

Once you create the solution instance in SAP Cloud Appliance Library, the SAP system will generate a temporary license key that is sufficient to **logon** to the system. As a first step before **using** the system you need to install a Minisap license as described in the Community Wiki page: How to request and install Minisap license keys.

3.3 Installing the license key

1. Logon to *AS ABAP* via *SAP GUI* with user **SAP*** in client **000**.

2. Start transaction **SLICENSE**.

3. Generate a "Minisap" license at http://www.sap.com/minisap .

- As system ID choose NPL as follows (ie **not** NPL SAP NW 7.x (MaxDB):
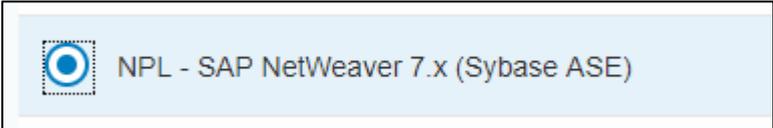
  NPL - SAP NetWeaver 7.x (Sybase ASE)

-
- As hardware key use the hardware key shown in transaction **SLICENSE**.

4. The license will be downloaded automatically to your local PC.

5. Go back to the transaction **SLICENCE** in your ABAP instance.

6. On the *Digitally-Signed Licenses* tab, choose *Delete License.*

7. Choose *Install new License* and select the license from step 4.

This is needed to enable RFC after the change of the installation number from **INITIAL** to **DEMOSYSTEM**.

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*).

If you need an access key in addition, this is the correct one: 12222845243181034647 .

Note that the Minisap license has an expiration period and after it, you can renew it with the same procedure.

4 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: Creating a VPC with VPN access for running virtual appliances on AWS – the easy way

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 initial user passwords provided by SAP when you log onto the system for the first time.

5 Solution provisioning in the SAP Cloud Appliance Library (CAL)

As an administrator, you need to do the following:

1. Understand key concepts: SAP Cloud Appliance Library: Key Concepts
2. Decide on your Cloud provider: The currently supported cloud providers are Amazon Web Services™ (AWS) and Microsoft Azure. For more information about the supported cloud providers, see the FAQ page.
3. Decide on your SAP solution type and charging model: FAQ: Solution types and charging model
4. Navigate to SAP Cloud Appliance Library: https://cal.sap.com
5. Create an account for yourself in SAP CAL.
6. Navigate to the solution and create an instance of it: SAP NetWeaver AS ABAP and SAP BW 7.50 SP02 on ASE (CAL)
7. Allow your employees to apply for a user.

For more information, see:

- the official documentation: Navigate to the SAP Cloud Appliance Library: https://cal.sap.com ; then choose Support → Documentation link and choose ⊞ (expand all) 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
- the SAP Cloud Appliance Library FAQ (SCN Wiki).

6   Tutorials and demo scenarios

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. For a full, uptodate list of available tutorials /demos, see the following blog in SCN:

Guides and Tutorials for AS ABAP on SAP HANA (Dev Edition)

To access the linked guides please ensure correct proxy settings (see solution guide) and use Firefox for running the sample applications.

7 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 – npladm
  sapcontrol -nr 00 -function GetProcessList
  ```
- Check if all required TCP ports are open and accessible from your local network:

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.

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 that you do not 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
HTTPS	8443	Cloud Connector Administration
Custom TCP	30215	External SQL Interface. Used by SAP HANA Studio.
HTTP	80000	HTTP (AS ABAP)
HTTPS	443000	HTTPS (AS ABAP)

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 SAP 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.

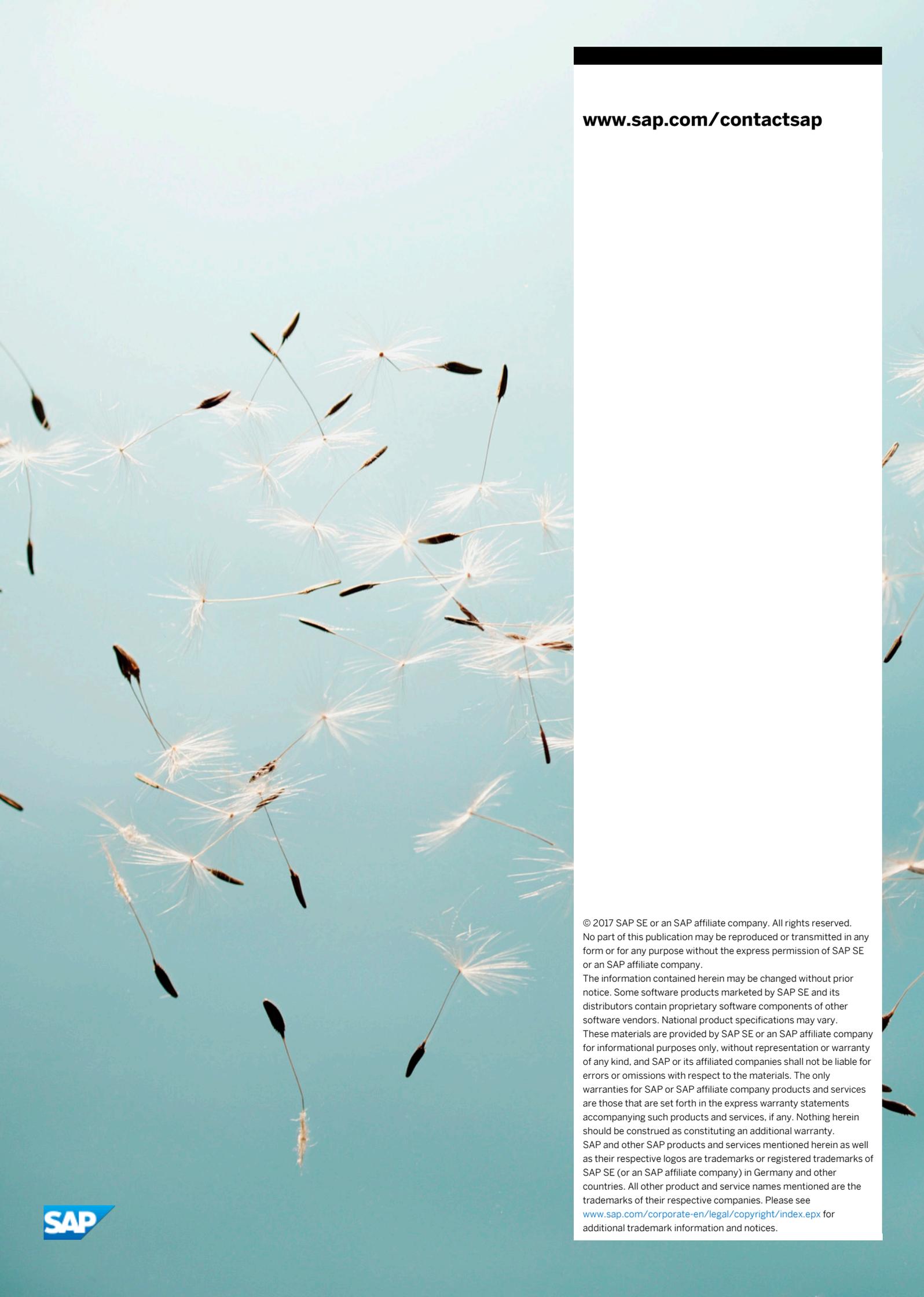## 8.4 Installed software components

Components

The solution comprises the following component versions:

Component	Release	SP Level
SAP_BASIS	751	2
SAP_ABA	751	2
SAP_GWFND	751	2
SAP_UI	751	2
ST-PI	740	6
SAP_BW	751	2

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.

.