Getting Started Guide

CUSTOMER

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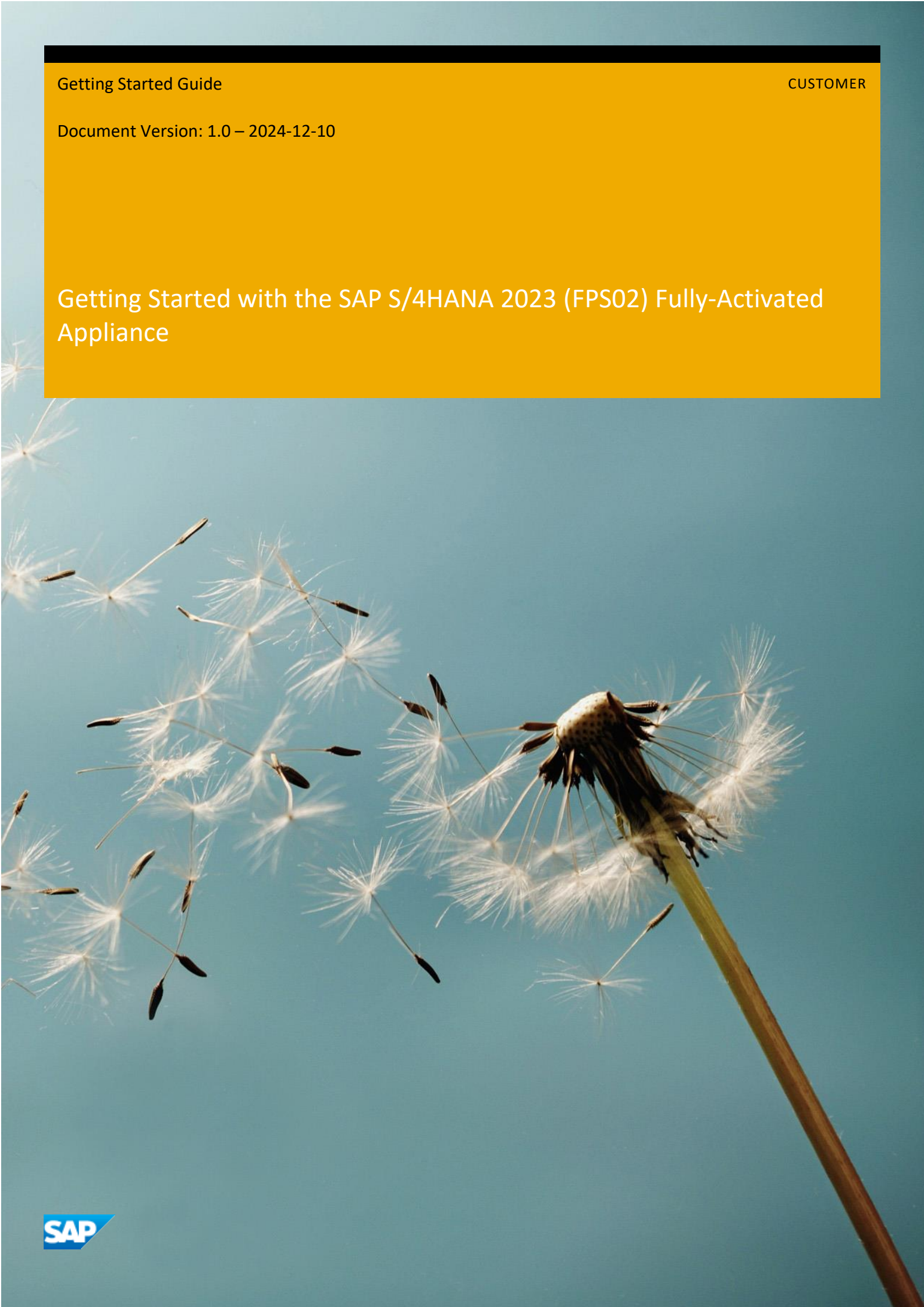
Getting Started with the SAP S/4HANA 2023 (FPS02) Fully-Activated Appliance



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1 Appliance information

1.1 Introduction

This guide provides information about the "SAP S/4HANA 2023 (FPS02), Fully Activated Appliance" on SAP Cloud Appliance Library (SAP CAL, https://cal.sap.com).

The appliance contains an SAP S/4HANA system with pre-configured SAP Best Practices and demo scenarios.

Typical use cases are trial, sandboxing, proof-of-concept, or scoping exercises.
The usage as a development system in implementation projects is not recommended since the appliance might contain components and configuration settings (some with a separate license) that are conflicting with the later deployment in a quality or production system.

Via SAP Cloud Appliance Library, the appliance can be rapidly brought up as your personal appliance with administrative rights in dedicated hyper-scalers such as Amazon, MS Azure or Google Cloud Platform (setup time ~2 hours).

SAP also offers to use the appliance on your own hardware e.g. in your data center (setup time usually ~2-3 days), please see SAP Note 2041140 if you are interested in this deployment option.

Important information about the lifecycle of the system:

Once the system has been successfully provisioned in your SAP CAL account, it is under your ownership and control (you have all-area admin authorizations in your appliance). SAP does not access or maintain this system in any way after provisioning, and you will not receive any updates by SAP.

If you consider upgrading to a higher release (either a major release or an FPS), this will need to be done as a customer-specific project (using maintenance planner, SUM, etc.). Depending on your situation, it might be easier to create a new appliance for the newer release, and transport/export any important artifacts from the older release.

What has changed in this appliance release compared to past releases ?

- The release cycle for SAP S/4HANA has changed to a two-year release cycle, see https://news.sap.com/2022/09/new-sap-s4hana-release-maintenance-strategy/ for more details.
  Nevertheless, the SAP S/4HANA 2023 FPS02 release contains many new features (incl. SAP Best Practices content), see the according What's New of the SAP documentation and the SAP Process Navigator (section 1.3 in this document)

- The authorizations of the pre-configured demo users have been reduced to allow for a more realistic testing of business user behavior.
  Except for a few users (eg. BPINST), the demo users don't have the SAP_ALL profile anymore but only the generated profiles of their assigned roles, plus manual additions where needed to run the respective demo scenarios. If you encounter issues with these authorizations, you can check what exactly is missing (tCode SU53), or manually assign SAP_ALL to the demo users (tCode SU01 for single changes, SU10 for mass changes).

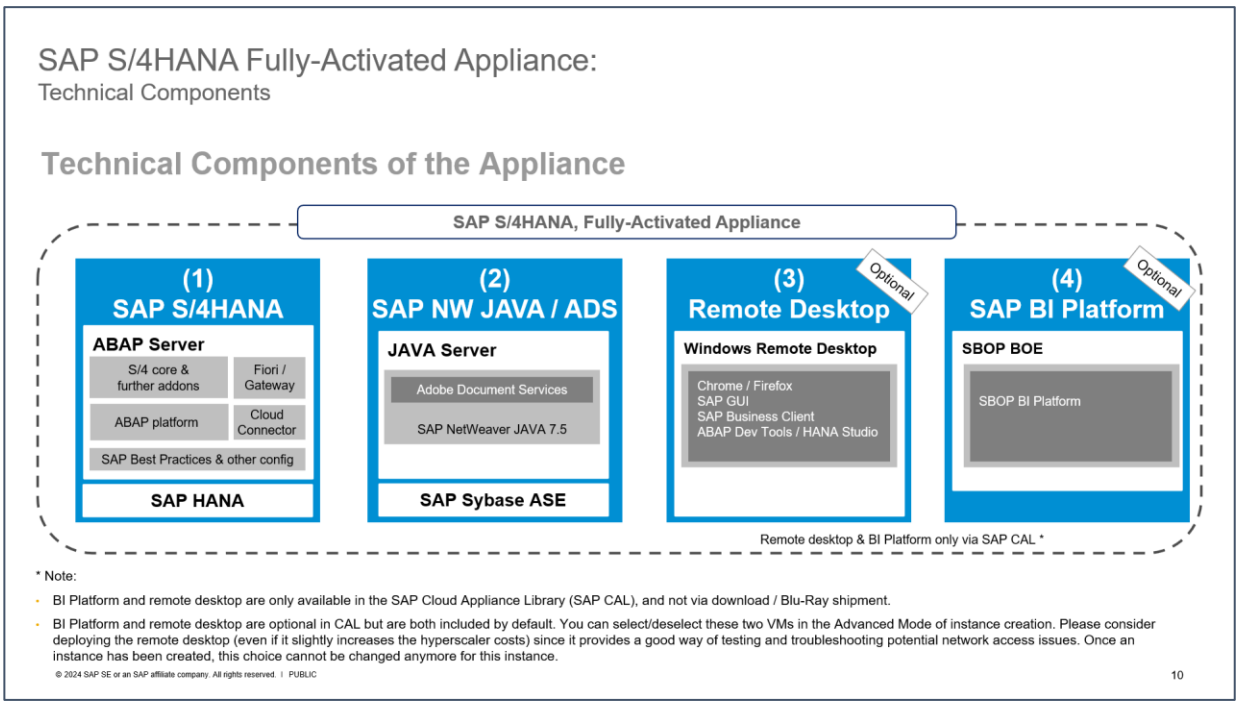
Further information:

- A general introduction into the appliance and the usage as trial or sandbox system can be found on https://blogs.sap.com/?p=727457
- Known issues will be continuously updated in this blog: https://blogs.sap.com/?p=1636309 .
- Extensive demo guides with sample walkthrough scenarios can be found here: https://blogs.sap.com/2019/04/23/sap-s4hana-fully-activated-appliance-demo-guides/.
- Video tutorials how to create a hyperscaler account and launch the appliance can be found here. They might not necessarily show the creation of the SAP S/4HANA 2023 appliance (but another SAP appliance template), however, the concepts are the same.

1.2 Installed products

When you deploy the appliance, you get access to a system landscape that has been built using the following components (see picture below).

1. SAP S/4HANA on the SAP HANA database
2. SAP NetWeaver 7.50 JAVA with Adobe Document Services (on Sybase ASE database)
3. Optional: Microsoft Windows Server (as remote desktop) for easy frontend access.
4. Optional: SAP BusinessObjects BI Platform



Notes:

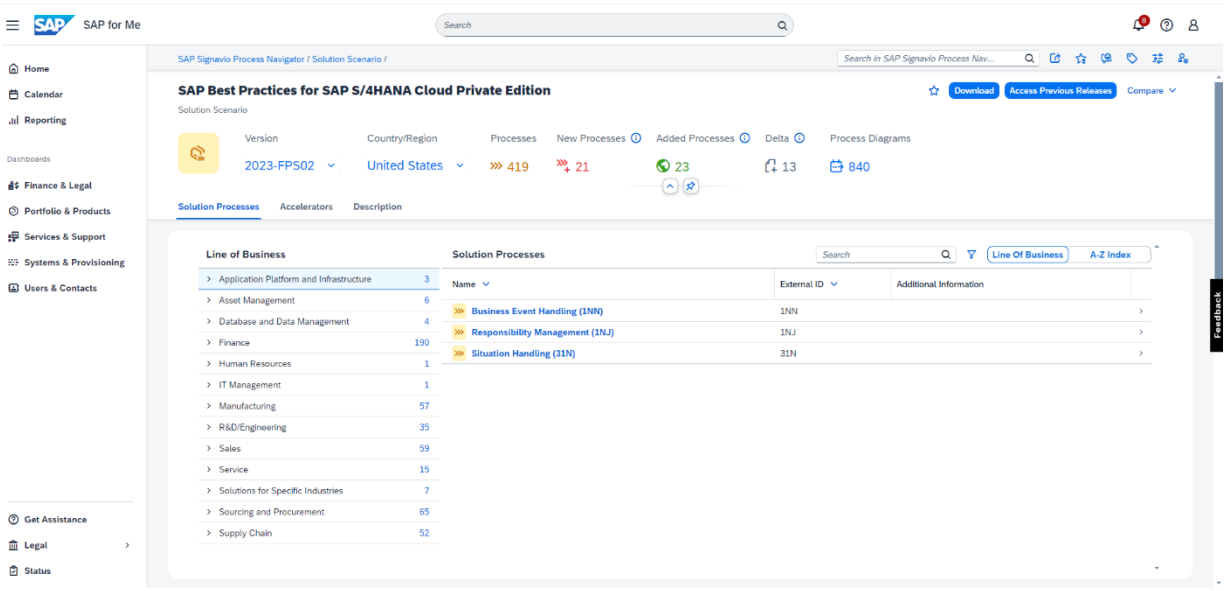
- The virtual machines (VMs) for the BI Platform and the remote desktop (RDP) are optional in Cloud Appliance Library. You can deselect these two VMs in the Advanced Mode of the appliance creation. Once an appliance has been created, this choice cannot be changed anymore for this appliance.
  Please consider deploying the remote desktop (even if it slightly increases the hyperscaler costs) since it provides a good way of testing and troubleshooting potential network access issues.
- Please make sure to have enough quota in your desired hyperscaler account & region (the needed quota can be found on https://cal.sap.com → Appliance Templates → <Desired_Template> → Calculate Cost.
- The BI Platform and the remote desktop are only available when using SAP Cloud Appliance Library as described in this document. However, you can also receive the virtual appliance for installation on your own on-premise hardware but in that case BI platform and remote desktop are not included. Please see SAP Note 2041140 for the option to install the virtual appliance on your own hardware.

A detailed component list of the appliance can be found in the appendix of this guide.

1.3 Business scenarios & localizations

The appliance uses SAP Best Practices as main business content.

Details about the scope of the SAP Best Practices for SAP S/4HANA (valid for both on-premise and private cloud deployments) can be found on the SAP Signavio Process Navigator (S-user needed): https://me.sap.com/processnavigator/SolS/EARL_SolS-055/2023-FPS02



The SAP Best Practices configuration content of SAP S/4HANA 2023 FPS02 is available for 43 local versions:

Australia, Austria, Belgium, Brazil, Canada, China, Czechia, Denmark, Finland, France, Germany, Hong Kong, Hungary, India, Indonesia, Ireland, Italy, Japan, Luxembourg, Malaysia, Mexico, Netherlands, New Zealand, Norway, Philippines, Poland, Portugal, Romania, Russia, Saudi Arabia, Singapore, Slovakia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Arab Emirates, United Kingdom, United States

In the appliance, all available localizations are activated in client 400 (see the section *ABAP client structure & business users* later in this guide), however, the suggested demo walkthroughs incl. demo data in the appliance are configured in client 100 for USA only, using the company code 1710.

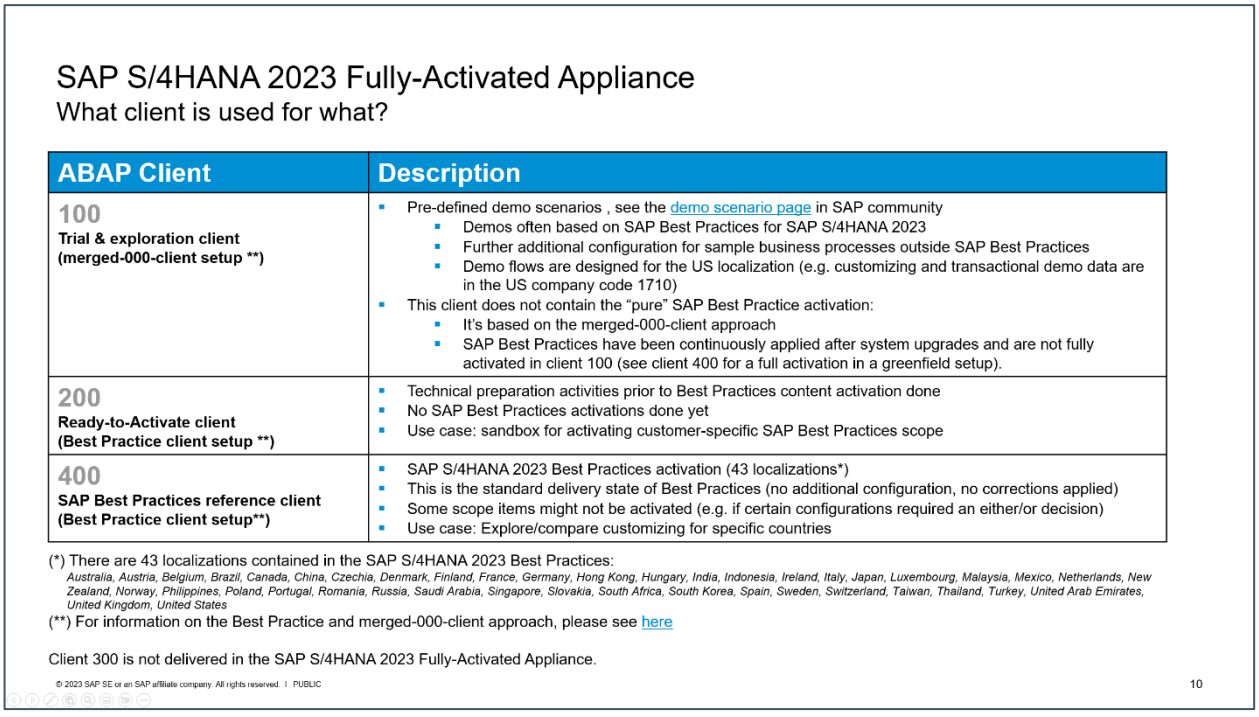
Although the SAP Best Practices have been fully activated, there are still areas that require additional configuration to be fully functional. The integration into other SAP products or 3rd party software is such an example where you need to specify e.g., the credentials (tenant, account, etc.) of the integration target.

1.4 ABAP client structure & business users

Multiple ABAP clients are configured in the appliance:

- **000** serves as standard delivery client (as usual in on-premise deployments)
- **100** is the primary demo client that contains pre-configured scenarios and sample data.
    - Pre-defined demo scenarios , see the demo scenario page in SAP community

        - Demos often based on SAP Best Practices for SAP S/4HANA 2023 FPS02
        - Further additional configuration for sample business processes outside SAP Best Practices
        - Demo flows are designed for the US localization (e.g., customizing and transactional demo data are in the US company code 1710)
    - This client does not contain the “pure” SAP Best Practice activation:
        - It’s based on the merged-000-client approach
        - SAP Best Practices have been continuously applied after system upgrades and are not fully activated in client 100 (see client 400 for a full activation in a greenfield setup).
- **200** can be used for activating the SAP Best Practices on your own.
  Please see the SAP Best Practices implementation guide for details. Be aware that some of the SAP Notes and settings mentioned in the guide still need to be applied depending on what country or scope you activate (e.g., the parameter `rdisp/scheduler/prio_high/max_runtime` is not set accordingly yet as required by the guide).
- **400** contains the activated Best Practices (BP) based on the BP client approach for all localizations
    - SAP S/4HANA 2023 FPS02 Best Practices activation (43 localizations*)
    - This is the standard delivery state of Best Practices (no additional configuration, no corrections applied)
    - Some scope items might not be activated (e.g., if certain configurations required an either/or decision); this is especially the case for scope items of Universal Parallel Accounting or Decentralized EWM. Similarly, not all scope items are available in all localizations.
    - Use case: Explore/compare the standard SAP Best Practices customizing for specific countries



SAP S/4HANA 2023 Fully-Activated Appliance

What client is used for what?

ABAP Client	Description

100
Trial & exploration client (merged-000-client setup **)
	▪ Pre-defined demo scenarios , see the demo scenario page in SAP community
	  ▪ Demos often based on SAP Best Practices for SAP S/4HANA 2023
	  ▪ Further additional configuration for sample business processes outside SAP Best Practices
	  ▪ Demo flows are designed for the US localization (e.g. customizing and transactional demo data are in the US company code 1710)
	▪ This client does not contain the “pure” SAP Best Practice activation:
	  ▪ It's based on the merged-000-client approach
	  ▪ SAP Best Practices have been continuously applied after system upgrades and are not fully activated in client 100 (see client 400 for a full activation in a greenfield setup).

200 **Ready-to-Activate client (Best Practice client setup **)**	▪ Technical preparation activities prior to Best Practices content activation done ▪ No SAP Best Practices activations done yet ▪ Use case: sandbox for activating customer-specific SAP Best Practices scope
400 **SAP Best Practices reference client (Best Practice client setup**)**	▪ SAP S/4HANA 2023 Best Practices activation (43 localizations*) ▪ This is the standard delivery state of Best Practices (no additional configuration, no corrections applied) ▪ Some scope items might not be activated (e.g. if certain configurations required an either/or decision) ▪ Use case: Explore/compare customizing for specific countries

(*) There are 43 localizations contained in the SAP S/4HANA 2023 Best Practices:
Australia, Austria, Belgium, Brazil, Canada, China, Czechia, Denmark, Finland, France, Germany, Hong Kong, Hungary, India, Indonesia, Ireland, Italy, Japan, Luxembourg, Malaysia, Mexico, Netherlands, New Zealand, Norway, Philippines, Poland, Portugal, Romania, Russia, Saudi Arabia, Singapore, Slovakia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Arab Emirates, United Kingdom, United States
(**) For information on the Best Practice and merged-000-client approach, please see here

Client 300 is not delivered in the SAP S/4HANA 2023 Fully-Activated Appliance.

Please see chapter 2 for default users and logon procedures.

(*) For the US localization, SAP Best Practices are delivered with internal tax calculation. This includes sample jurisdiction codes and sample rates so that you can execute the best practices test scripts. The organizational structure and chart of accounts are activated with SAP Best Practices sample content.
Client 200 does not contain these settings.

(**) For information on the differences between an SAP Best Practice and a merged-000 client, please see here. Especially please make sure to understand that client 400 does not contain the whole “usual” customizing that you might know from

client 000. Therefore, especially if you use scenarios outside the SAP Best Practices scope, they might not work as expected without further customizing by you (you might even experience coding errors due to this).

Suggestion how to use the clients:

We recommend starting with client **100** to get familiar with the appliance and its data & configuration structure, although the two activated localizations (US & Germany) might not 100% fit to your business case. Use the demo guides (see next section of this guide) to understand the scenarios of your choice in more detail.

If you want to evaluate the SAP Best Practices for your country, have a look at client **400** for the needed configuration settings (eg. via tCode SPRO or the respective maintenance transactions and views). Client 400 is not tested, and it does not contain transactional demo data (the sample master data of SAP Best Practices are activated though), hence, you might need to invest additional effort there.
If you intend to copy client 400 to another client for further testing, please keep in mind that it does not contain the full customizing of client 000 and that you might be missing customizing data.

Client **200** is empty and can be used to activate your own set of SAP Best Practices. Especially if you activate subsets of SAP Best Practices, existing activation experience will come handy. You can also copy client 000 into your own client if you want to experience the whole flow, see the SAP Best Practices guide for the respective options.

1.5 Sample demo walkthroughs

Once you have created an appliance in SAP Cloud Appliance Library you will have a principally working S/4HANA system that you can explore and change on your own.

To give you a jump-start into the contained scenarios, we have documented a wide range of example scenarios that we recommend as starting point to get more familiar with the system.

Please see this blog (https://blogs.sap.com/2019/04/23/sap-s4hana-fully-activated-appliance-demo-guides/) for the available demo guides (choose the applicable release).

These demo guides take you on a “guided tour” through some of the pre-configured areas, but you are also free to step away from these tours.

However, if you explore additional features of the SAP S/4HANA system beyond what is provided in the demo guides, you might find functions or processes that are not pre-configured and, hence, will not provide a meaningful system response. In this case, you need to configure those scenarios or functions using SAP standard procedures (e.g., via transaction SPRO) to make them work.

You might also find errors as you explore the appliance. In this case, please search for SAP Notes and corrections and decide if you want to apply them. Your appliance behaves like a regular customer system and will not be updated automatically by SAP i.e., you will need to implement these fixes in your system.

1.6 Recommended post-installation steps

As said above, your appliance will be a working system, however, since the appliance is entirely under your control (SAP does not maintain it) there are certain settings that you might need to adapt depending on your use case, for example:

1. **Evaluate and adapt security settings**
   When you create the appliance in your hyperscaler account, by default it will be deployed in the public Internet, i.e.,

everyone with Internet connectivity can access your system.
We strongly recommend applying additional security measures as you consider it needed for your context. Chapter 4 of this guide mentions typical aspects and suggestions.

2. Open the **MM inventory management period** for the current month if you intend to post goods movements.
The above blog with the sample demo scenarios explains how to do this in section C .

3. **Check further time-dependent settings if you face issues**
This is like adapting the MM period above: Since the appliance comes in a defined state (with development close some time before you start your appliance), you might need to adapt time-dependent settings e.g., validity dates of master/meta data, certain finance periods, time-dependent production windows, and so on.

4. **Register the appliance system under your customer installations and apply license keys.**
Please see chapter 3 of this guide for details, in summary you will need to consider two timelines:
   - If you intend to use the system **beyond 30 days**, you will need to possess licenses for SAP S/4HANA and SAP Cloud Appliance Library
   - If you intend to use the system **beyond 90 days**, you will need to generate and apply your own license keys to the HANA DB, S/4HANA, and JAVA

   Both options are only possible with an S-user (i.e., a registered SAP customer user). A public P-user can only register for the 30-day trial.

5. **Create own business users if the pre-configured demo users are too "heavy".**
The pre-configured S/4HANA demo users (see section 2.4.1.1.) often have many roles assigned to enable them for a broad business scenario.
As mentioned in the introduction, starting with SAP S/4HANA 2023 FPS02 most of them do not have an SAP_ALL authorization profile anymore, however, please check if the authorizations are suited to your scenario.
If these users are too broad for your specific project, you could either create your own users in tCode SU01 (there is no contractual limit for user numbers during the trial period) or use the SAP Fiori Rapid Activation to create users with tailored role assignments (see the demo walkthrough page in the "User Experience & Extensibility" section for the respective guide).

6. **Enable the automatic download of SAP Notes**
The appliance has been technically prepared for connecting it to the SAP support backbone infrastructure.
However, for using the automatic download and application of SAP Notes (via tCode SNOTE), you need to enter your customer-specific S-User credentials in the usual SM59 RFC destinations (SAP-SUPPORT_PORTAL, SAP-SUPPORT_PARCELBOX, SAP-SUPPORT_NOTE_DOWNLOAD).

7. **On the included remote desktop: Install Eclipse (incl. HANA plug-ins) and change the default browser**

   Installing Eclipse
   The Welcome page on the remote desktop has detailed instructions how to use the provided PowerShell script. If you like, you can also manually install Eclipse and the corresponding SAP plug-ins from https://tools.eu1.hana.ondemand.com/

   Default browser
   The remote desktop still uses Internet Explorer (IE) as default browser. Since IE is deprecated by Microsoft and does not support many SAP applications anymore, you might get error messages if you open a web-based transaction

(NWBC, BRF+, etc.) from the SAP GUI.

There are two options how to overcome this:

(1)
We recommend to change the default browser on the remote desktop to Chrome or Edge (the latter needs to be installed by you) since these browsers will work with the SAP GUI (to do this, search for "Choose a default browser" in the Windows menu and change the browser icon in the app).

(2)
If (1) is not suitable for whatever reason, you can also enable the *myssocntl* service in S/4:
tCode SICF → right-click on service "default_host > sap > public > myssocntl" → Activate → Confirm.
With this setting, web-based transactions will use the browser that is defined in the installed SAP Logon options (in SAP Logon, choose *Options > Interaction Design > Control Settings > HTML Control*). On the remote desktop, this uses the MS Edge/Chromium libraries as default.
This setting will also eliminate the need to enter an additional logon in certain business scenarios that merge SAP GUI and browser content.
However, there is a potential issue with this setting when using SAP GUI directly from your corporate PCs (without remote desktop) since the above HTML control requires SAP GUI 7.70 or higher. If your business users have older SAP GUI versions installed on their local PCs, they might get errors when opening web transactions from a local SAP Logon.
SAP Note 2624143 describes the background.

1.7 More information & support

1.7.1 More information

Overview blog in SAP Community: https://blogs.sap.com/?p=727457

Known issues blog in SAP Community: https://blogs.sap.com/?p=1878499

Post installation steps and sample demo walkthroughs:
https://blogs.sap.com/2019/04/23/sap-s4hana-fully-activated-appliance-demo-guides/

SAP S/4HANA Trial Landing Page (also containing a "Quick Start Guide" how to set up the appliance if you haven't done this before reading the document in front of you):
https://www.sap.com/products/erp/s4hana-private-edition/trial.html

Video tutorials (how to create Cloud Provider accounts and start an SAP S/4HANA appliance):
https://blogs.sap.com/2021/03/19/sap-cal-learning-videos-update/

1.7.2 Support

If you run a 30-day trial (i.e., no SAP Cloud Appliance Library subscription license), please use the **SAP Community** (preferably take SAP Cloud Appliance Library as it's closely monitored):

- SAP Cloud Appliance Library (for Cloud Appliance Library usage, access, etc.): https://answers.sap.com/tags/67837800100800004473
- SAP S/4HANA (for S/4 specific functional questions): https://answers.sap.com/tags/73554900100800000266

If you have an SAP Cloud Appliance Library subscription license acquired, you can also report an incident (component BC-VCM-CAL). Ideally you have registered your appliance system under your customer installations before so that you can report the incident on the right system.

2 Accessing the appliance

2.1 Overview

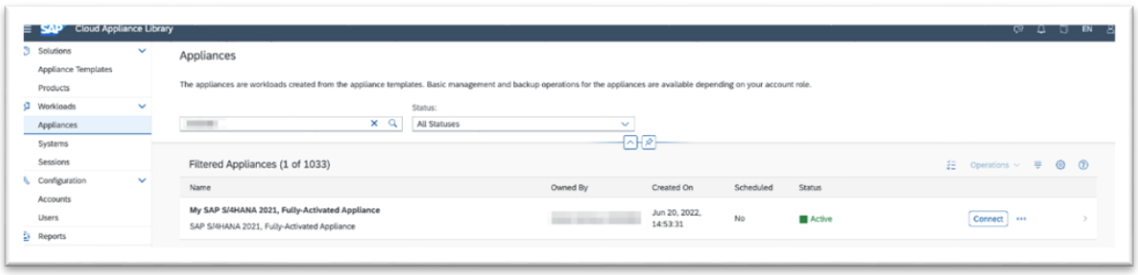
The appliance can be accessed via a preconfigured Windows remote desktop (option 1) or via client tools on your local PC (option 2).

For the first steps with the appliance (especially for the personnel that has set up the appliance), we recommend the access via the remote desktop since it has multiple client tools and pre-configurations included.

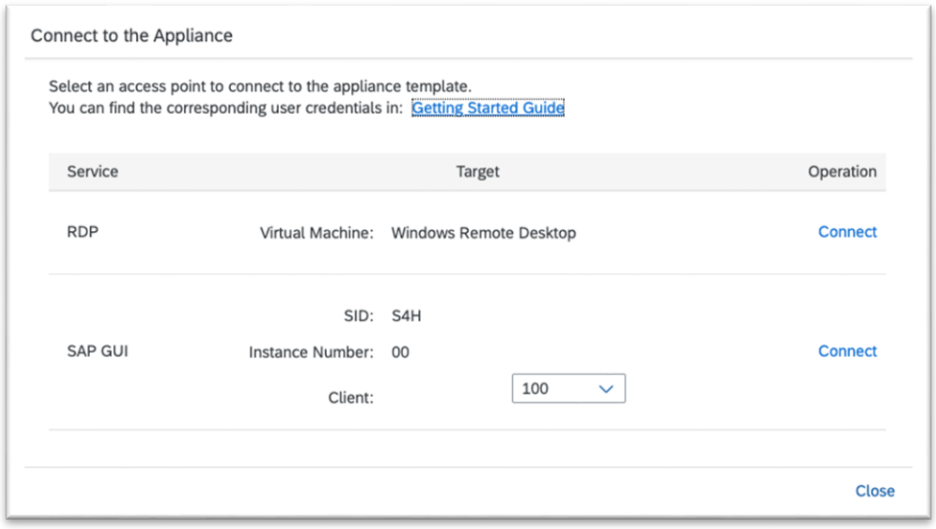
However, since only two users can log on to the remote desktop in parallel (at least without additional Microsoft licenses), this might be impractical if you want to provide the appliance to additional users. For this case, the access via a local computer will be better suited but for full access to all Fiori capabilities you will either need to modify the local `/etc/hosts` file (see chapter 2.3.1) or apply a fully-qualified host name to your appliance (see chapter 2.3.2).

2.2 Option 1: System access via embedded Windows Remote Desktop frontend server

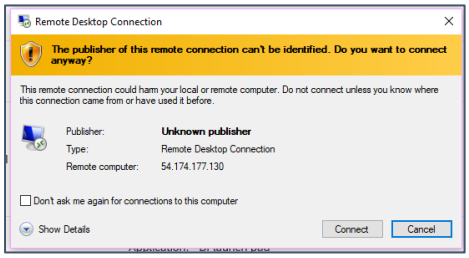
1. After your own appliance is created, click the Connect button in the Appliances view of the console.



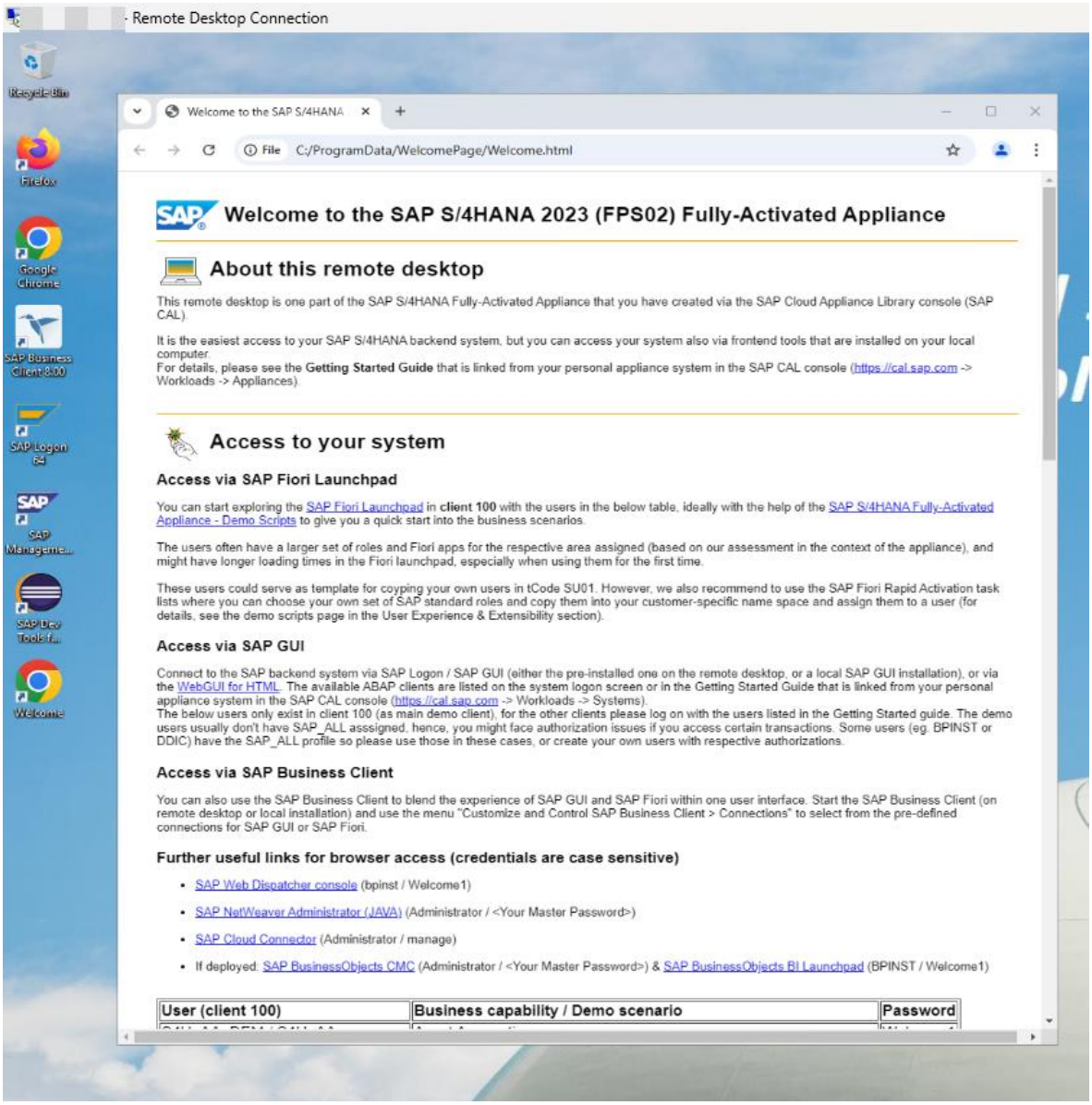
2. In the pop-up, click Connect in the “RDP Virtual Machine: Windows Remote Desktop” line .



3. Confirm the pop-up window to allow Remote Desktop Connection (click on “Connect”).
Enter user Administrator (local domain of the remote desktop) and your <Master Password> that you specified during the appliance creation in the SAP Cloud Appliance Library console.



4. Next you will see the pre-configured Windows RDP server desktop.
Follow the information on the Welcome page to logon to the SAP S/4HANA system (Fiori link, SAP GUI/HANA Studio are pre-installed on the desktop, etc.). The Welcome page shortcut on the desktop points to *C:/ProgramData/WelcomePage/Welcome.html*.
More details on pre-configured appliance users can be found in section 2.4.



5. Further remarks:
   - The embedded Windows Remoted Desktop license allows 2 concurrent sessions (e.g., one for the existing user Administrator and one for another user that you can create on the remote desktop). Installing your own RDP license might also be an option to allow more concurrent users on the RDP.
   - Eclipse and the needed SAP plugins for accessing the HANA database will not be installed by default. Please execute the MS PowerShell script on the desktop to automatically install Eclipse and the needed SAP plugins (the Welcome page on the RDP has more details).
   - If your cloud provider infrastructure has restricted Internet access (e.g., in a fenced environment), the remote desktop will not be fully provisioned, and you must install certain components manually:
     - Chrome will not be installed → use Firefox for Fiori access or install Chrome at a later point in time if this is possible in your network setup
     - The Welcome page will not show up on the desktop, but you can find it on the remote desktop in the folder `Q:\flavor\S4HANA_Fully_Activated\WelcomePage`.

- The PowerShell script for installing Eclipse can be found on `C:\Windows\eclipseinstall.ps1`

2.3 Option 2: System access via local PC

When accessing the system via your local PC, you will need to have the respective programs installed. A local browser (Chrome preferred) is obvious, but also a local SAP GUI, SAP Business Client or SAP HANA Studio (based on Eclipse) might be needed.

SAP GUI Access:

For SAP GUI access, you can use the *"Connect → SAP GUI"* option in the Cloud Appliance Library console and a local SAP GUI will open.

Or you can add the Cloud Appliance Library appliance to your local SAP Logon Pad or HANA Studio (use the *<external IP address of the ABAP/HANA virtual machine>* as host name, further details like system numbers, etc. are listed in section 2.4).

If you don't have SAP Logon/GUI installed locally, another option will be to use the WebGUI access.
Simply use the *<external IP address of the ABAP/HANA virtual machine>* in the following URL: https://<external IP address>:44301/sap/bc/gui/sap/its/webgui/#

Fiori Access:

The access to the Fiori launchpad via IP addresses will not work for apps that are based on WebGUI or Web Dynpro. For those to work, you will need to map the `/etc/hosts` file as described in the next section.

As an alternative to the hosts file mapping and if you have access to a DNS service (corporate, free internet service, or the hyperscaler provides a host name), you can also apply your own host and domain name to the system, possibly together with a registered SSL certificate. See section 2.3.2 of this guide for details.

2.3.1 Mapping your local */etc/hosts* file

To make all Fiori launchpad capabilities work correctly when you access the appliance from your local computer, a mapping between the (external) IP address of your appliance and the appliance host name must be established. This mapping step is needed since the connection to the cloud providers uses IP addresses, whereas the S/4HANA system expects dedicated host names to work correctly.
In the appliance the pre-defined host names in the appliance template are `vhcals4hcs` (and `vhcals4hci`) on the fictious domain `dummy.nodomain`.

The easiest way to achieve this mapping is via editing a standard file on your local computer.
(`C:\Windows\system32\drivers\etc\hosts`). However, you will need to have local administrator rights on your computer to edit this file.
After you have done the mapping, you will be able to access the Fiori Launchpad of SAP S/4HANA via this URL:
https://vhcals4hcs.dummy.nodomain:44301/sap/bc/ui5_ui5/ui2/ushell/shells/abap/FioriLaunchpad.html

If you cannot map your local hosts file (e.g., you don't have administrator rights on your computer or there are security concerns in your environment), please check chapter 2.3.2 if using your own fully qualified host name is an option.

For some isolated use cases, you can also put the external IP address of your S/4HANA & HANA appliance in the URL (https://<External_IP_Address_SAPS4HANA/HDB_server>:44301/sap/bc/ui5_ui5/ui2/ushell/shells/abap/FioriLaunchpad.html), however, not all applications and scenarios will work correctly with it e.g., CRM UIs or Web Dynpro applications might not correctly display, so you might hit issues in some business scenarios.

The following describes how to modify the local hosts file on a Windows computer (for Mac, please search the Internet for options).

1. Open Notepad as administrator (search for Notepad on your computer > Right mouse click > Run as administrator):
2. Click File → Open and enter the following path:

   For Windows operating system: `C:\Windows\system32\drivers\etc\hosts`
   For Linux operating system: `/etc/hosts`
3. Ensure to select All Files (*.*)
4. Open the hosts file and add the following lines to it (the IP addresses for the servers are displayed in the Cloud Appliance Library console in the appliance properties, take the external IP address):

```
# S4H Appliance
<External IP Address SAP S4HANA/HDB server> vhcals4hci.dummy.nodomain vhcals4hci
vhcals4hcs.dummy.nodomain vhcals4hcs vhcalhdbdb vhcaldhbdb.dummy.nodomain
<External IP Address SAP NW JAVA/ASE/ADS server> vhcalj2eci.dummy.nodomain vhcalj2eci
vhcalj2ecs.dummy.nodomain vhcalj2ecs vhcalj2edb vhcalj2edb.dummy.nodomain
<External IP Address SAP BI Platform> bihost bihost.dummy.nodomain
```

5. Save the hosts file and exit.

2.3.2 Use your own fully-qualified host name & certificates

Instead of mapping the default `*.dummy.nodomain` host name via the /etc/hosts file, you can also register a regular host/domain name in a DNS server of your choice and route this host name to the IP address.
There are multiple options how to accomplish this; some will require the help of your corporate network/IT department, some can be done "do-it-yourself" with technical skills.

- In a "corporate IT context" you can e.g., use your own corporate DNS resolution for the SAP S/4HANA system. This is typically done by your network / security basis team.
- If the appliance runs outside a "corporate IT context", you could either use a public low-cost DNS provider or check if the host name resolution of your hyperscaler can be used. For example, in AWS the machines typically follow a nomenclature like "`ec2-<external_IP_Address>.compute-1.amazonaws.com`" (use `nslookup <External IP Address>` to check the naming convention).
- Another option is the "fully-qualified domain" feature directly in SAP CAL. You can find this feature in the advanced creation mode in the CAL console in step 2 including a link to dedicated documentation.

Once you have mapped the IP address and a DNS name, the Fiori launchpad can be reached under https://<Your_host_name>:44301/sap/bc/ui5_ui5/ui2/ushell/shells/abap/FioriLaunchpad.html , however some further settings need to be adapted in the S/4HANA system.

On the demo walkthrough page a technical demo guide (in section *(A) Demo Guides → Technical*) shows the most relevant parameters that need to be switched from the *.dummy.nodomain host name to your real host name.

The above guide also explains how to install a free 90-day Let's Encrypt TLS/SSL certificate so that you can get rid of the "connection not secure" messages in the browser.

Please be aware that the guide might not comply with the security recommendations that are issued by your company or by SAP in general. Yet, the principal mechanisms, such as obtaining a signed certificate and importing it into the PSEs of the SAP systems, will also apply in a corporate context and might be helpful for your IT department.

This table lists the different options for accessing Fiori and other web-based applications in the appliance:

Method	Local admin for endusers needed ?	Own domain needed ?	Trusted SSL certificate included ?	Effort	Comments / constraints
RDP	No	No	Yes (added to local RDP cert store)	Low	2 users max. in parallel
Local /etc/hosts	Yes	No	No	Low	Needs Windows admin on local PC, MacOS might have additional constraints
FQDN via CAL	No	Yes	Possible	Medium	Documentation (also linked from the "advanced appliance creation mode" in the CAL console)
FQDN via corporate DNS	No	Yes	Possible	Medium	Involve corporate IT / network team

2.4 Users & passwords for the system components

2.4.1 SAP S/4HANA ABAP application server

2.4.1.1 Pre-configured business users in SAP S/4HANA

Note:
Many of these users have a large set of roles and extensive authorizations in the system (eg. the SAP_ALL profile). Please check your scenarios and security considerations whether you want to use them or copy & adapt them accordingly.

Client	Business Content	Sample users (password *Welcome1 if not noted otherwise*)
000 Standard delivery client	• Nothing specific (standard customizing only)	• BPINST • DDIC / SAP* (<Master_Password>
100 Trial & Exploration client	• Pre-activated SAP Best Practices for SAP S/4HANA 2023 (Germany & US, sample demo flow localized for US) * • Customizing and transactional data in US company code (1710) • SAP Fiori Apps	• *S4H_AA_DEM / S4H_AA* (Asset Accounting) • *S4H_FIN_DEM / S4H_FIN* (Finance) • *S4H_CO_DEM / S4H_CO* (Controlling) • *S4H_MM_DEM / S4H_MM* (Materials Management)

Client	Business Content	Sample users (password *Welcome1 if not noted otherwise*)
	• Based on the merged-client-000 approach Note on the users: The demo users have a relatively broad set of roles and Fiori apps assigned for their respective functional area and should be primarily used for the initial suggested demo walkthroughs. These users may have longer loading times in the Fiori launchpad, especially when using them for the first time or after a system suspension. Feel free to copy them to new user IDs (using transaction SU01) and adapt those new users to your needs.	• *S4H_PP_DEM / S4H_PP* (Production Planning) • *S4H_PM_DEM / S4H_PM* (Plant Maintenance & Quality Mgmt.) • *S4H_SD_DEM / S4H_SD* (Sales & Distribution) • *S4H_EXT* (Extensibility) • *S4H_EWM_DEM* (Warehouse Management) • *S4H_PPM_…* (Portfolio & Project Management) • *S4H_TM_DEM* (Transportation Management) • *S4H_PRED* (Predictive Analytics) • *S4H_MG* (Data Migration) • *SERV_EMPL / SERV_MAN / SLS_MAN / IC_AGENT_SRV / IHR_MAN / MCS_MAN* (SAP S/4HANA Service) • *MDG_…* (Master Data Governance) • *S4H_HCM_…* (Human Capital Management) • *FIORIADMIN (*Fiori customizing & roles) • S4H_AIF / S4H_AIF_ADM (Application Interface Framework) • *BPINST* (generic technical user) • DDIC / SAP* (<Master_Password>
200 Ready-to-activate client (white-list)	• Ready-to-Activate client	• *BPINST* • *DDIC / SAP* (<Master password>)*
400 SAP Best Practices reference client (white-list)	• Pre-activated SAP Best Practices for SAP S/4HANA 2023 FP02 without transactional data, no changes or corrections applied	• *BPINST* • *DDIC / SAP* (<Master password>)*

2.4.1.2 Administrative data & users for SAP S/4HANA

Connect to SAP S4H using the information in the table below (URLs with the host name vhcal… require hosts file mapping before, see chapter 2.3).

Name	Value	Description
SID	S4H	System ID of the SAP system
Instance Number	00	The instance number of the central instance (CI)
Clients	See section 1.4	These are the pre-configured clients
Password for users DDIC & SAP*	<*Master Password*>	The master password is the password that you chose in the SAP Cloud Appliance Library when creating the appliance. The user SAP* is unlocked in client 100 only by default. In the other clients 000/200/400 it is locked. If you need there, please unlock it with another user (or use the temporary SAP* unlocking as described in SAP Note 3303172).
ABAP administrator	s4hadm / <*Master Password*>	Additional user for ABAP lifecycle management – start/stop, administration,
SAP Web Dispatcher administrator	webadm / VA1MPwd_ or bpinst / Welcome1	Access to Web Dispatcher console: https://vhcals4hcs.dummy.nodomain:44301/sap/admin User *bpinst* is case sensitive.
Technical user for HANA DB connectivity (schema user)	SAPHANADB / <*Master Password*>	See tCode *DBACOCKPIT* → *System Landscape* → *Database Connections* for additional usage of the SAPHANADB user
SAP Cloud Connector	Administrator / *manage*	Initial credentials for the integrated SAP Cloud Connector (access via https://vhcals4hcs.dummy.nodomain:8443)

2.4.2 SAP HANA DB server

Two database entities are relevant for the appliance:
The tenant database (for storing the S/4HANA data) and the system database (for general database settings and actions e.g., maintaining the license key for SAP HANA).
An entry for both is pre-configured in the HANA Studio on the remote desktop but you can also add entries in your local HANA Studio.

Tenant database (use Single Container when adding it to your local HANA Studio)

Name	Value	Description
Tenant DB name	HDB	System ID of the HANA DB
Tenant DB Instance Number	02	Instance number of HANA DB
HANA SYSTEM user name	SYSTEM / *<Master Password>*	Standard HANA system user
HANA administrator name	hdbadm / *<Master Password>*	Additional user for HANA lifecycle management – start/stop, administration functions, recovery.
Generic HANA DB user	BPINST / Welcome1	Generic user that can be used to access HANA DB
Technical S/4HANA user	SAPHANADB / *<Master Password>*	Technical user for accessing HANA from the S/4HANA server. Defined in /nDBACOCKPIT; HANA schema SAPHANADB contains the S/4HANA data

System database (use *Multiple Containers → System DB* when adding it to your local HANA Studio, needed e.g., for applying your own HANA DB license key)

Name	Value	Description
HANA DB system	SYSTEMDB	System ID of the HANA DB
HANA DB Instance Number	02	Instance number of HANA DB
HANA SYSTEM user name	SYSTEM / *<Master Password>*	Standard HANA system user
HANA administrator name	hdbadm / *<Master Password>*	Additional user for HANA lifecycle management – start/stop, administration functions, recovery.
Generic HANA DB user	BPINST / Welcome1	Generic user that can be used to access HANA DB

2.4.3 SAP NetWeaver JAVA application server

Name	Value	Description
SID	J2E	System ID of the SAP JAVA system
Instance Number	01	The instance number of the central instance (CI)
ASE administrator name	sybadm / *<Master Password>*	Additional user for Sybase ASE lifecycle management – start/stop, administration.
JAVA administrator name	Administrator / *<Master Password>*	Additional user for JAVA lifecycle management – start/stop, administration, functions, recovery. Access to SAP NetWeaver Administrator:

Name	Value	Description
		https://vhcalj2eci.dummy.nodomain:50001/nwa
Additional JAVA user	BPINST / Welcome1	Generic user in case other users are locked

2.4.4 SAP BusinessObjects BI platform

Parameter ID	Parameter Value	Note
Administrator name	Administrator / <Master Password>	Use for all administrative functions of the BI platform e.g., in CMC
BI Power User	BPINST / Welcome1	Use for BI Launchpad
SQL Anywhere DB user	dba / Appl1ances	Use to log on to the DB of the BI platform on Linux backend stored under `/data/bobj/sqlanywhere/database`
BI Platform Linux backend user	bipadm / *Welcome1*	

In the logon screen (http://bihost:8443/BOE/BI), use *bihost:6400* as system and Enterprise authentication. Usage of the *bihost* alias requires local host file mapping when using local PC access (see section 2.3). The Windows remote desktop has the mapping pre-configured.

2.4.5 Windows Frontend Server Details

Connect to the Frontend server using the information in the table below.

SAP does not provide a separate MS Windows Terminal Server license as part of the appliance; hence, you can connect with a maximum of two concurrent users (with different user IDs) at the same time. The *Administrator* account is pre-configured, and you may create additional user IDs in the local user administration of the remote desktop if needed.

If you want to use the remote desktop with higher user numbers, please apply your own MS Terminal Server license to the remote desktop and potentially choose a larger sizing for the RDP in the Cloud Appliance Library console. But for these high user numbers it's typically better to enable access via local PCs to the appliance system.

Name	Value	Description
IP Address	<IP Address>	The IP address of your frontend server appliance you created in SAP Cloud Appliance Library (use the "external" IP address)
User	Administrator / *<Master Password>*	User for the Windows frontend server. This is a local user on the remote desktop. Only one Administrator user can logon to the front-end server at the same point in time.

A note on browsers on the RDP:

Google Chrome and Firefox are pre-installed on the Remote Desktop. In the Fiori launchpad, you might find slightly different rendering behaviors depending on the browser version. If you encounter rendering problems, please search for SAP Notes how to potentially fix them.

If you want to access the Fiori Launchpad with a local browser, please be sure to map your local host file as described in section 2.3 of this document or on https://www.sap.com/cmp/oth/crm-s4hana/s4hana-on-premise.html → *Quick Start Guide* since otherwise some Fiori applications (e.g. WebGUI or Web Dynpro) will not work correctly.

A note on Eclipse and SAP plugins

You can connect via SAP HANA Studio and the SAP Developer Tools for Eclipse (e.g. to examine the HANA DB structures or ABAP artifacts such as CDS views).

For this you will need to install Eclipse and the respective SAP plug-ins for Eclipse on the remote desktop:

- Double-click on the desktop icon "SAP Dev Tools for Eclipse" (this will start a PowerShell script to automatically install Eclipse and the respective SAP plug-ins)
- Accept the Terms & Conditions
- Wait until Eclipse and the SAP plug-ins have been installed (this will take ~ 10 minutes and Eclipse will be opened in the background during the installation, ignore any pop-ups that might show up)
- Once the installation has successfully finished, click on the newly created Eclipse icon "SAP Dev Tools for Eclipse" on the remote desktop to launch Eclipse
- The prompt to set a master password is optional and pops out when opening certain perspectives
- In Eclipse, open the desired perspective (HANA Administrator / Modeler, ABAP, ...). The most important system entries have been automatically set up in Eclipse, only the passwords need to be provided
- If there are problems with the automated PowerShell script, you can re-run it, or download and install Eclipse and the SAP plug-ins manually via SAP Development Tools (choose a release that has the ABAP and HANA Tools available as add-ons)

2.4.6 Accessing Your Appliance on Linux Level

You can access the Linux backend system of your appliance (ABAP / JAVA / BI) as *root* using secure SSH tools, e.g., PuTTY

For information how to access an appliance on OS level, go to *https://cal.sap.com/catalog#/support* → *General Technical Questions* → *How to connect to a running appliance via the secure shell protocol (SSH)?*

Parameter ID	Parameter Value	Note
OS User Name	root	The default Linux administrator user
OS Password	<none>	Use the generated private key with SSH tools

Note:

You must use the private key (file format .pem) that was generated in the last step of the Create Appliance wizard from SAP Cloud Appliance Library. During the creation, you were asked to either store the key file attached to your appliance within SAP CAL or download it to a local secure file share on your computer.

2.4.6.1 Starting/stopping your system

The easiest way for a restart is the *Reboot* button in the SAP CAL console, however, this will typically need 10-15 minutes in total.

As a faster alternative you can also use the SAP Management Console on the remote desktop. User credentials are `<sidadm> / <master password>` (with sidadm being one of `s4hadm / hdbadm / j2eadm` depending on the component).

And lastly, you can also do it on Linux shell level with the usual `sapcontrol` commands, eg. `sapcontrol -nr 00 -function StartSystem` - entered on the virtual machine for S/4 & HANA DB - starts the S/4 system (see the generic documentation of sapcontrol for details).
The instance number for the `-nr` parameter can be found earlier in this guide.

3 Licenses & fees

SAP Cloud Appliance Library is a delivery channel for quickly using SAP on-premise software products in a hyperscaler environment.
Therefore, three separate license / cost factors need to be considered, each depending on the duration that your system should be used:

a) the SAP on-premise product (e.g., SAP S/4HANA)

b) SAP Cloud Appliance Library

c) the chosen hyperscaler

This table gives an overview about the different aspects. Details are mentioned in the paragraphs afterwards.

The third column in the table below (on-premise installation) is an alternative to SAP Cloud Appliance Library and not covered in detail in this document (please see SAP Note 2041140 for details).

SAP S/4HANA 2023 Fully-Activated Appliance:
Fees, licenses, and support for the different channels (as of December 2023)

	SAP CAL 30-day trial	SAP CAL >30 days	On-Premise installation
SAP S/4HANA licenses?	**No** Covered by web-based terms & conditions form on cal.sap.com	**Yes** Bring your own (trial) licenses *	**Yes** Bring your own (trial) licenses *
SAP CAL license?	**No** Covered by web-based terms & conditions form on cal.sap.com	**Yes** Monthly CAL subscription (see overview or buy directly in SAP Store)	**No**
Hosting fees?	**Yes** Hyperscaler will charge you	**Yes** Hyperscaler will charge you	**No**
Server hardware costs?	**No**	**No**	**Yes** Hardware (x86_64) with Linux OS needed
Support?	SAP community	SAP Incident (BC-VCM-CAL)	SAP Incident (BC-VCM-CAL)

Note for IT administrators:
Latest after 90 days you will need to generate and install your own license keys to keep the system running (the appliance has a 90-day temporary license key installed, see the Getting Started Guide (SAP CAL) or the First Steps Guide (on-premise) for details.

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* Needed SAP S/4HANA licenses

CAL >30 days & On-Premise Installation
- S/4HANA Enterprise Mgmt. & HANA runtime (or equivalent/superior licenses)

Get missing (trial) licenses via SAP Account Executive

SAP Partners:
- S/4HANA on-premise test&demo (TD_...) and application development (DEV_...) licenses are sufficient
- Pure platform development (DEV_...) licenses are not sufficient

Additional functionality with separate licenses:
- The appliance contains features that are not included in the SAP S/4HANA Enterprise Management scope, however they may be used under a trial license.
- Please check your individual contract conditions what scope may be used in your productive implementations. The usage of the appliance for production implementations (e.g. as source for a system copy) is not recommended.

3.1 First 30 days: Running your appliance as trial

In the first 30 days, the SAP license fees (Cloud Appliance Library & S/4HANA) are waived. During this period, you only need to bear the hosting fees of your cloud provider.

The 30-day period starts when you accept the form for the trial agreement in the Cloud Appliance Library console (after clicking on “Create Appliance”).
During the instantiation, the S/4HANA system will generate a temporary license key that is enough for exploration purposes.

3.2 Beyond 30 days: Running your appliance with SAP licenses

If you want to use an appliance beyond the 30-day trial period (i.e. unlock the appliance template in SAP CAL), you need to obtain two SAP licenses:

1. The SAP Cloud Appliance Library (SAP CAL) subscription
2. The SAP product licenses for the product(s) that are bundled within your appliance (i.e. SAP S/4HANA and HANA DB licenses in the case of the SAP S/4HANA Fully-Activated Appliance)

The validity of these licenses will be automatically checked after the first 30 days. In case of a missing license component an error message will be displayed in the SAP Cloud Appliance Library console and the respective appliance will stay in status “Suspended”.

The cloud provider fees will stay the same as during the first 30 days.

You can continue to use a trial appliance from the first 30 days under these conditions, all your changes in that appliance will be preserved once you unlock the appliance template.

Note for SAP Partners:
For SAP partners, application TD_... or DEV_... licenses will be sufficient as well (in combination with an SAP CAL subscription). Please see SAP PartnerEdge for details.

3.2.1 SAP Cloud Appliance Library subscription

You can purchase the subscription package via the SAP Store on
https://store.sap.com/dcp/en/product/0000000000008900303/sap-cloud-appliance-library .

The minimum subscription is 3 months for one appliance (i.e., you can have exactly one appliance active at a time during these 3 months). You can also choose longer subscription periods and higher appliance numbers (i.e., you can activate multiple appliance templates in parallel).

In the SAP Store, you will need an S-user that is allowed to purchase in SAP Store.

Please make sure that the SAP Store user and the SAP CAL user belong to the same organization, otherwise the mapping between the license and the to-be-unlocked appliance is not possible. In case these two users do now belong to the same organization, please see this blog how to resolve this.

3.2.2 SAP product licenses

3.2.2.1 SAP S/4HANA Enterprise Mgmt. & SAP HANA DB

To use the SAP S/4HANA Fully-Activated Appliance under your own SAP Product License Agreements, you need to possess at least a license for the SAP HANA DB (application runtime) and for SAP S/4HANA Enterprise Management professional use.

If you don't possess these (trial) licenses already, please obtain them via your SAP account executive.

The Cloud Appliance Library infrastructure checks whether the customer/partner organization of the S-user who created the appliance in SAP Cloud Appliance Library possesses these licenses. Only if this check is passed, the appliance can be activated in SAP Cloud Appliance Library beyond 30 days.

The licenses entitle your organization to use the virtual appliance, however, since technically you will still be running under the 90-day temporary license key, we recommend generating your own license key and apply it to your system as soon as possible. 90 days after the initial appliance creation, the appliance will stop working without these technical license keys (see the next chapter for details).

Note:
At least the following separately licensed SAP S/4HANA capabilities are also configured and described in the pre-configured demo scenarios of the virtual appliance. These capabilities will technically work in your appliance without entering dedicated license keys for them, however, they might not be part of your customer-specific license agreement for implementation / production systems.

- SAP S/4HANA Finance for cash mgmt.
- SAP S/4HANA Finance for receivables mgmt.
- SAP S/4HANA for advanced compliance reporting
- SAP Business Planning and Consolidation, add-on for S/4HANA
- SAP S/4HANA for extended planning
- SAP S/4HANA Advanced Available-to-Promise
- SAP S/4HANA for Advanced Variant Configuration, standard
- SAP Portfolio and Project Management for SAP S/4HANA professional
- SAP Enterprise Master Data Governance for SAP S/4HANA
- SAP S/4HANA Advanced Available-to-Promise

3.2.2.2 Optional: SAP BusinessObjects BI Platform licenses

If you chose to use the optional SAP BusinessObjects Platform in your appliance the temporary license key for BI will be valid for 30 days. It needs to be replaced by your own permanent key for the BI platform after that time if you want the BI platform to work.

If you don't apply a permanent license key, the BI platform cannot be used anymore.
The other appliance components (S/4HANA etc.) will not be affected and can be used even without the BI platform.

3.3 Beyond 90 days: License key installation required

Latest 90 days after appliance creation (but better directly after unlocking the appliance template in Cloud Appliance Library after 30 days), you need to apply a valid license key to the system components.

- SAP S/4HANA
- SAP HANA database
- SAP NetWeaver J2EE platform
- Optional: SAP BusinessObjects BI platform (temporary license key will expire after 30 days !)

The first three are part of the SAP S/4HANA license; the BI platform needs to be licensed separately.

To get license keys for your system components, you first need to register them as a customer installation (see https://support.sap.com/en/my-support/systems-installations.html).

Afterwards you can request license keys via the SAP license key application (https://support.sap.com/licensekey).

During the license key generation, you will be asked for certain parameters (hardware keys and other system properties). The table below has the details.

For S/4HANA and JAVA, you can also choose to generate a *"Maintenance Certificate"* together with the license key. The Maintenance Certificate is valid for 3 months and only needed for advanced system operations e.g., the installation of add-ons or support packages. It doesn't affect the system in general so you can decide whether to take it or not. More details are here.

For more information about how to generate and install product license keys, please see this step-by-step video (using an SAP-internal license key but the principle is the same for customers & partners once you have registered a technical installation for SAP S/4HANA under your customer number – please check with your inhouse SAP team or your responsible partner in case of questions).

SID	Product	Version	DB	OS	Comment	Where to get the hardware key and apply the license key
HDB	SAP HANA, platform edition	SAP HANA 2.0, platform edition	-	Linux	License type: SAP In-memory Appliance platform Quantity: 256 GB Memory Volume	HANA Studio: log on to system DB with SYSTEM user; *right-click on system → Properties → Licenses.* HANA Studio on remote desktop has pre-configured entry for system DB. In a local HANA Studio use host name vhcalhdbdb or IP address of ABAP/JAVA VM; instance number 02; multiple containers > system database.
S4H	SAP S/4HANA	SAP S/4HANA 2023	SAP HANA database	Linux	N/A	Log on to S/4HANA with SAP GUI and use tCode */nSLICENSE*
J2E	SAP NetWeaver	SAP NetWeaver 7.5	Sybase ASE	Linux	As license type, select 'J2EE - Web AS JAVA'	*https://vhcalj2eci.dummy.nodomain:50001/nwa with Administrator user → Configuration → Infrastructure → Licenses.*
BIP	Optional:	SAP BusinessObjects Business	-	Linux	Material: Choose SAP BO BI Platform (with fitting license KPI e.g.,	BOE CMC with user Administrator / <Master Password> (https://bihost:8443/BOE/CMC) → Licenses

SID	Product	Version	DB	OS	Comment	Where to get the hardware key and apply the license key
	SAP BusinessObjects Business Intelligence platform	Intelligence platform 4.3			concurrent sessions CS,…) and version XI 4.3	

Note to SAP employees:

You can generate SAP-internal license keys (18 months validity) directly in the license key application without having to register your system (just enter the needed parameters and the hardware key).

3.3.1 What to do if your temporary license key has expired

If you missed to install your own permanent license key before the temporary 90-day key has expired, your system will stop working, hence, if you experience connectivity errors roughly three months after the appliance creation think of an expired license key in the first place.

The procedure is now a bit more difficult since you need to get to a fully-licensed HANA DB first before you can install the S/4 license key, therefore follow these steps:

1. Apply the HANA DB license key as described above. When you log on to the HANA system DB with the SYSTEM user, you will only have limited options (incl. some warning messages), but the license key installation works as usual.
2. Restart the S/4HANA ABAP system. The easiest way is to use the `Reboot` button in the CAL console, but you can also do it on Linux OS level with the `sapcontrol` command.
3. When the S/4 appliance is active again, apply the license key to S/4HANA as described above. **You need to do this in client 000 with the user `SAP* / <Master_Password>`.** Afterwards, HANA and S/4HANA should run as before.
4. Apply the JAVA server license key as described above **within 30 minutes after a re-boot or activation of the appliance**. After this period, the JAVA server will go down until the next reboot / re-activation.
5. For SAP BusinessObjects (temporary license key expires after 30 days), apply the license key as described above (no special considerations).

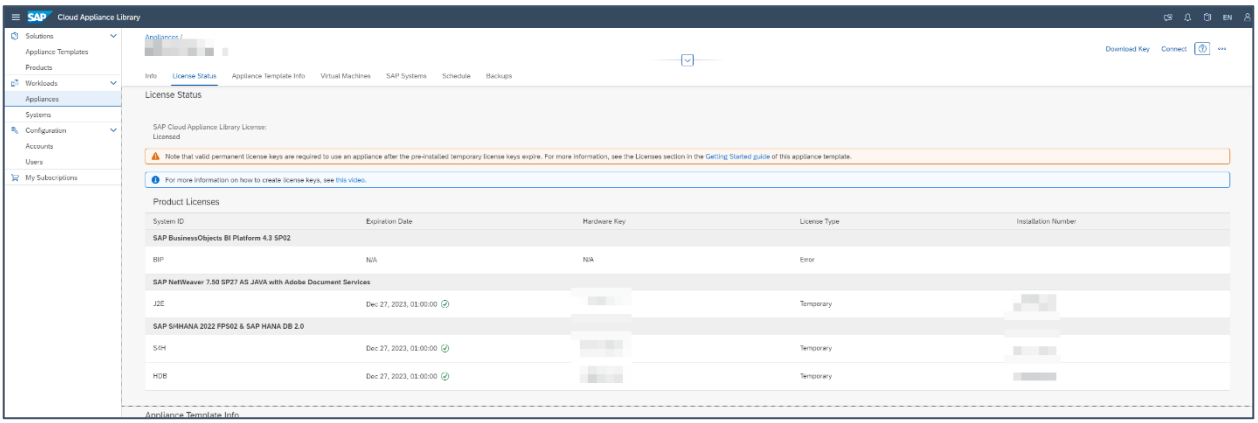
3.3.2 Product license checks in the CAL console

The CAL console provides an online license check under Appliances → License Status, see screenshot below.

This comprises SAP S/4HANA, SAP HANA DB, SAP NetWeaver (JAVA), and the SAP BI platform.

Some hints:

- The license status is polled automatically every 5-10 minutes by the CAL console, please allow for some time to refresh after you have changed anything in the license keys
- If you have two license keys in parallel in the system (eg. one temporary and one permanent in the JAVA platform), the check might show false negative results
- The HANA DB keys will only be recognized when applied to the system DB


Cloud Appliance Library
Solutions
Appliance Templates
Products
Workloads
Appliances
Systems
Configuration
Accounts
Users
My Subscriptions
Download Key
Connect
Info
License Status
Appliance Template Info
Virtual Machines
SAP Systems
Schedule
Backups
License Status
SAP Cloud Appliance Library License:
Licensed
Note that valid permanent license keys are required to use an appliance after the pre-installed temporary license keys expire. For more information, see the Licenses section in the Getting Started guide of this appliance template.
For more information on how to create license keys, see this video.
Product Licenses
System ID
Expiration Date
Hardware Key
License Type
Installation Number
SAP BusinessObjects BI Platform 4.3 SP02
BIP
N/A
N/A
Error
SAP NetWeaver 7.50 SP27 AS JAVA with Adobe Document Services
J2E
Dec 27, 2023, 01:00:00
Temporary
SAP S/4HANA 2022 FPS02 & SAP HANA DB 2.0
S/4
Dec 27, 2023, 01:00:00
Temporary
HDB
Dec 27, 2023, 01:00:00
Temporary
Appliance Template Info

4 Security Aspects in SAP Cloud Appliance Library

4.1 Internet ports for accessing your system

By default, the below ports are opened for your appliance (i.e., this is the inbound firewall of your cloud provider). The access from your local computer to your appliance happens via those ports.

You can edit/add/remove ports manually in the appliance details (click on the appliance link in the *Cloud Appliance Library console* → *Edit* → *Virtual Machine* → *Access Points*).

If you want to tighten the security, open as few ports as really needed for your scenario.
Especially the port 3389 of the remote desktop could be exposed to brute-force hacking attacks from the Internet.

Virtual Machine*	Protocol	Port (open by default)	Description
ABAP	SSH	22	Used for secure connection to Linux-based server operating system
ABAP	HTTPS	44301, 44300	Used for access of a local web browser to appliance (Fiori etc.). 44301 via Web Dispatcher, 44300 via ABAP ICM directly
ABAP	HTTP	50000	Standard HTTP port for ABAP
ABAP	HTTPS	8443	Access to integrated Cloud Connector
ABAP	SAP GUI	3200	Used for access of local SAP GUI to appliance
ABAP	TCP	3300	Used for connection of ABAP Development Tools (Eclipse-based) to SAP S/4HANA ABAP repository & RFC calls to other systems if intended
ABAP	TCP	30213 / 30215	Used for connection of SAP HANA Studio to HANA DB
JAVA	SSH	22	SSH connection to Linux operating system (e.g., for PuTTY)
JAVA	HTTPS	50001	Used for access to SAP NetWeaver Administrator and other web-based J2EE applications
BIP	SSH	22	Used for secure connection to Linux-based server operating system
BIP	HTTP	8443, 6400	Used for HTTP connection to BI platform
WIN	RDP	3389	Used for access from MS Windows remote desktop connection

** ABAP = SAP S/4HANA & SAP HANA DB; JAVA = SAP NetWeaver 7.50 AS JAVA incl. ADS (Adobe Document Service) ; BIP = SAP BusinessObjects BI Platform 4.2 ; WIN = MS Windows Remote Desktop*

Please also make sure that any outbound firewall (e.g., if you are behind a corporate firewall) allows access through the needed ports. If you encounter problems behind a firewall, a good test is to use a public network (e.g., from home) or test access via the delivered remote desktop.

4.2 Further network security considerations

Be aware that creating your appliances in the public zone of your cloud provider (i.e., the “open Internet”) is convenient but less secure than providing it within your corporate network.

In addition, we also recommend that you limit the access to your appliances by defining a whitelisted IP range of IP addresses that may access your appliance (e.g., the subnet of your company). With this, only computers within the white-listed IP range can access your system via the specific port. You can maintain the IP Range settings in the Cloud Appliance Library console → *Edit* → *Virtual Machine* → *Access Points.*, using CIDR notation.

The more complex but also more secure alternative to public Internet is to set up a virtual private cloud (VPC) or other dedicated access channels from your corporate network, please see the documentation of your hyperscaler how to do this.

Note that when using HANA based appliances, HANA systems are not installed individually but cloned from a template system. Because 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.

4.3 ABAP user roles and profiles

The ABAP business users listed in chapter 2 have a large set of roles and typically a default password Welcome1.

If you plan to release the appliance to a larger set of users (especially in the Internet scenario), it is advised to restrict/lock the access with these users (or change the initial passwords) and create your own users with fitting roles and authorizations (see also the section “Recommended post-installation steps” earlier in this document).

This can be done with the standard user management capabilities (e.g., tCode SU01, etc.).

4.4 SSL/TLS Certificates

The appliance comes with a certificate that was self-signed by SAP. Most local browsers will issue a warning message that such a certificate is untrusted, and you will need to add the affected URLs (Fiori launchpad and others) to the list of trusted sites once.

Hence, if you see messages about unsafe connections, untrusted certificates, etc., please click on “Proceed” or “I know the risk”, etc. (the screens and needed clicks will vary depending on the browser).

As an alternative, you can also apply your own trusted certificate to the system if you have assigned your own host name as described in chapter 2.3.2 of this guide.

On the demo walkthrough page a technical demo guide (in section *(A) Demo Guides* → *Technical*) explains how to install a free 90-day Let’s Encrypt SSL certificate.

Please be aware that the mentioned guide is meant to provide a quick workaround and might not comply with the security recommendations that are issued by your company or by SAP in general.

On the delivered remote desktop, the self-signed certificate has already been imported into the store with trusted certificates, and you will not see a warning if you access the Fiori launchpad. The web sites of the J2EE server or the SAP Cloud Connector will still display warnings, please acknowledge the risk and continue as outlined above.

5 Appliance Template 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 appliance templates 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.

6 Appendix

6.1 Installed Technical Component Details

6.1.1 SAP S/4HANA 2023 (FPS02) on SAP ABAP application server 7.58 & SAP HANA DB 2.00.079

The SAP Kernel release is 793 PL 101

Software Component Name	Software Component Release	Support Package Level	Highest Imported Support Package	Short Description of Software Component
SAP_BASIS	758	2	SAPK-75802INSAPBASIS	SAP Basis Component
SAP_ABA	75I	2	SAPK-75I02INSAPABA	Cross-Application Component
SAP_GWFND	758	2	SAPK-75802INSAPGWFND	SAP Gateway Foundation
SAP_UI	758	2	SAPK-75802INSAPUI	User Interface Technology
ST-PI	740	28	SAPK-74028INSTPI	SAP Solution Tools Plug-In
SAP_BW	758	2	SAPK-75802INSAPBW	SAP Business Warehouse
UIBAS001	758	2	SAPK-75802INUIBAS001	UI for Basis Applications
MDG_FND	808	2	SAPK-80802INMDGFND	S/4HANA MDG Foundation
S4FND	108	2	SAPK-10802INS4FND	S/4HANA Foundation
MDG_APPL	808	2	SAPK-80802INMDGAPPL	S/4HANA MDG Applications
S4CEXT	108	2	SAPK-10802INS4CEXT	S/4HANA Applications EXT
S4CORE	108	2	SAPK-10802INS4CORE	S/4HANA Core Applications 1
S4HCM	101	11	SAPK-10111INS4HCM	Human Resources
S4HCMCAE	101	11	SAPK-10111INS4HCMCAE	Subcomponent S4HCMCAE of S4HCM
S4HCMCAR	101	11	SAPK-10111INS4HCMCAR	Subcomponent S4HCMCAR of S4HCM

Software Component Name	Software Component Release	Support Package Level	Highest Imported Support Package	Short Description of Software Component
S4HCMCAT	101	11	SAPK-10111INS4HCMCAT	Subcomponent S4HCMCAT of S4HCM
S4HCMCAU	101	11	SAPK-10111INS4HCMCAU	Subcomponent S4HCMCAU of S4HCM
S4HCMCBE	101	11	SAPK-10111INS4HCMCBE	Subcomponent S4HCMCBE of S4HCM
S4HCMCBG	101	11	SAPK-10111INS4HCMCBG	Subcomponent S4HCMCBG of S4HCM
S4HCMCBR	101	11	SAPK-10111INS4HCMCBR	Subcomponent S4HCMCBR of S4HCM
S4HCMCCA	101	11	SAPK-10111INS4HCMCCA	Subcomponent S4HCMCCA of S4HCM
S4HCMCCH	101	11	SAPK-10111INS4HCMCCH	Subcomponent S4HCMCCH of S4HCM
S4HCMCCL	101	11	SAPK-10111INS4HCMCCL	Subcomponent S4HCMCCL of S4HCM
S4HCMCCN	101	11	SAPK-10111INS4HCMCCN	Subcomponent S4HCMCCN of S4HCM
S4HCMCCO	101	11	SAPK-10111INS4HCMCCO	Subcomponent S4HCMCCO of S4HCM
S4HCMCCZ	101	11	SAPK-10111INS4HCMCCZ	Subcomponent S4HCMCCZ of S4HCM
S4HCMCDE	101	11	SAPK-10111INS4HCMCDE	Subcomponent S4HCMCDE of S4HCM
S4HCMCDK	101	11	SAPK-10111INS4HCMCDK	Subcomponent S4HCMCDK of S4HCM
S4HCMCEG	101	11	SAPK-10111INS4HCMCEG	Subcomponent S4HCMCEG of S4HCM
S4HCMCES	101	11	SAPK-10111INS4HCMCES	Subcomponent S4HCMCES of S4HCM
S4HCMCFI	101	11	SAPK-10111INS4HCMCFI	Subcomponent S4HCMCFI of S4HCM
S4HCMCFR	101	11	SAPK-10111INS4HCMCFR	Subcomponent S4HCMCFR of S4HCM
S4HCMCGB	101	11	SAPK-10111INS4HCMCGB	Subcomponent S4HCMCGB of S4HCM
S4HCMCGR	101	11	SAPK-10111INS4HCMCGR	Subcomponent S4HCMCGR of S4HCM
S4HCMCHK	101	11	SAPK-10111INS4HCMCHK	Subcomponent S4HCMCHK of S4HCM
S4HCMCHR	101	11	SAPK-10111INS4HCMCHR	Subcomponent S4HCMCHR of S4HCM
S4HCMCHU	101	11	SAPK-10111INS4HCMCHU	Subcomponent S4HCMCHU of S4HCM

Software Component Name	Software Component Release	Support Package Level	Highest Imported Support Package	Short Description of Software Component
S4HCMCID	101	11	SAPK-10111INS4HCMCID	Subcomponent S4HCMCID of S4HCM
S4HCMCIE	101	11	SAPK-10111INS4HCMCIE	Subcomponent S4HCMCIE of S4HCM
S4HCMCIN	101	11	SAPK-10111INS4HCMCIN	Subcomponent S4HCMCIN of S4HCM
S4HCMCIT	101	11	SAPK-10111INS4HCMCIT	Subcomponent S4HCMCIT of S4HCM
S4HCMCJP	101	11	SAPK-10111INS4HCMCJP	Subcomponent S4HCMCJP of S4HCM
S4HCMCKR	101	11	SAPK-10111INS4HCMCKR	Subcomponent S4HCMCKR of S4HCM
S4HCMCKW	101	11	SAPK-10111INS4HCMCKW	Subcomponent S4HCMCKW of S4HCM
S4HCMCKZ	101	11	SAPK-10111INS4HCMCKZ	Subcomponent S4HCMCKZ of S4HCM
S4HCMCMX	101	11	SAPK-10111INS4HCMCMX	Subcomponent S4HCMCMX of S4HCM
S4HCMCMY	101	11	SAPK-10111INS4HCMCMY	Subcomponent S4HCMCMY of S4HCM
S4HCMCNL	101	11	SAPK-10111INS4HCMCNL	Subcomponent S4HCMCNL of S4HCM
S4HCMCNO	101	11	SAPK-10111INS4HCMCNO	Subcomponent S4HCMCNO of S4HCM
S4HCMCNZ	101	11	SAPK-10111INS4HCMCNZ	Subcomponent S4HCMCNZ of S4HCM
S4HCMCOM	101	11	SAPK-10111INS4HCMCOM	Subcomponent S4HCMCOM of S4HCM
S4HCMCPH	101	11	SAPK-10111INS4HCMCPH	Subcomponent S4HCMCPH of S4HCM
S4HCMCPL	101	11	SAPK-10111INS4HCMCPL	Subcomponent S4HCMCPL of S4HCM
S4HCMCPT	101	11	SAPK-10111INS4HCMCPT	Subcomponent S4HCMCPT of S4HCM
S4HCMCQA	101	11	SAPK-10111INS4HCMCQA	Subcomponent S4HCMCQA of S4HCM
S4HCMCRO	101	11	SAPK-10111INS4HCMCRO	Subcomponent S4HCMCRO of S4HCM
S4HCMCRU	101	11	SAPK-10111INS4HCMCRU	Subcomponent S4HCMCRU of S4HCM
S4HCMCSA	101	11	SAPK-10111INS4HCMCSA	Subcomponent S4HCMCSA of S4HCM
S4HCMCSE	101	11	SAPK-10111INS4HCMCSE	Subcomponent S4HCMCSE of S4HCM

Software Component Name	Software Component Release	Support Package Level	Highest Imported Support Package	Short Description of Software Component
S4HCMCSG	101	11	SAPK-10111INS4HCMCSG	Subcomponent S4HCMCSG of S4HCM
S4HCMCSI	101	11	SAPK-10111INS4HCMCSI	Subcomponent S4HCMCSI of S4HCM
S4HCMCSK	101	11	SAPK-10111INS4HCMCSK	Subcomponent S4HCMCSK of S4HCM
S4HCMCTH	101	11	SAPK-10111INS4HCMCTH	Subcomponent S4HCMCTH of S4HCM
S4HCMCTR	101	11	SAPK-10111INS4HCMCTR	Subcomponent S4HCMCTR of S4HCM
S4HCMCTW	101	11	SAPK-10111INS4HCMCTW	Subcomponent S4HCMCTW of S4HCM
S4HCMCUA	101	11	SAPK-10111INS4HCMCUA	Subcomponent S4HCMCUA of S4HCM
S4HCMCUN	101	11	SAPK-10111INS4HCMCUN	Subcomponent S4HCMCUN of S4HCM
S4HCMCUS	101	11	SAPK-10111INS4HCMCUS	Subcomponent S4HCMCUS of S4HCM
S4HCMCVE	101	11	SAPK-10111INS4HCMCVE	Subcomponent S4HCMCVE of S4HCM
S4HCMCZA	101	11	SAPK-10111INS4HCMCZA	Subcomponent S4HCMCZA of S4HCM
S4HCMGXX	101	11	SAPK-10111INS4HCMGXX	Subcomponent S4HCMGXX of S4HCM
S4HCMRXX	101	11	SAPK-10111INS4HCMRXX	Subcomponent S4HCMRXX of S4HCM
EA-DFPS	808	2	SAPK-80802INEADFPS	S/4HANA DFPS
EA-PS	808	2	SAPK-80802INEAPS	S/4HANA PS
FI-CAX	808	2	SAPK-80802INFICAX	S/4HANA FI-CA Extended
IS-OIL	808	2	SAPK-80802INISOIL	S/4HANA IS-OIL
IS-PRA	808	2	SAPK-80802INISPRA	S/4HANA IS-PRA
IS-PS-CA	808	2	SAPK-80802INISPSCA	S/4HANA IS-PS-CA
IS-UT	808	2	SAPK-80802INISUT	S/4HANA IS-UT
S4COREOP	108	2	SAPK-10802INS4COREOP	S/4HANA Core Applications 2
S4DEPREC	108	2	SAPK-10802INS4DEPREC	S/4HANA Core Applications 3
GBX01HR5	605	30	SAPK-60530INGBX01HR5	GBX01HR5 605
UIAPFI70	902	2	SAPK-90202INUIAPFI70	UI SFIN

Software Component Name	Software Component Release	Support Package Level	Highest Imported Support Package	Short Description of Software Component
UIHR002	100	26	SAPK-10026INUIHR002	UI for ERP Human Capital Management 100
UIS4HOP1	900	2	SAPK-90002INUIS4HOP1	UI for S/4HANA On Premise
PERSONAS	300	18	SAPK-30018INPERSONAS	PERSONAS - SAP GUI PERSONALISATION
ST-A/PI	01V_731	3	SAPKITABC6	Servicetools for SAP Basis 731 and higher
HOME	DEV	0	-	Customer Development (Standard)
ZCUSTOM_DEVELOPMENT	DEV	0	-	Cloud-Ready Custom Development
LOCAL	DEV	0	-	System Local Development (Standard)
ZLOCAL	DEV	0	-	Cloud-Ready Local Custom Development

6.1.2 SAP HANA Database & Plug-In Versions

HANA Version: *2.00.076.00*

Plug-in	Full Version
AFL	2.00.079.0000 Build 1720768968-1530
LCAPPS	2.00.079.0000 Build 1720768968-1530
SAP_AFL_SDK_APL	4.203.2405.0
VCH2023	2.00.079.00 Build 1720729199-1530

6.1.3 SAP NetWeaver 7.50 application server JAVA with Adobe Document Services installed

ASE DB release is 16.0 PL 06.

Product Name	Name	Version	Vendor	Description
SAP NETWAVER J2EE	7.50	30	sap.com	SAP NETWEAVER 7.5: Adobe Document Services
SAP NETWAVER J2EE	7.50	30	sap.com	SAP NETWEAVER 7.5: Application Server Java

6.1.4 Windows Remote Desktop Installed Components

- SAP GUI & SAP Business Client (with Webview2 plugin for Edge)
- MS PowerShell script for installing Eclipse and tools for HANA (Administration/Modeling) & ABAP Development (ADT)
- SAP Microsoft Management Console for a convenient re-start of S/4HANA, HANA DB, and NW JAVA
- Google Chrome / Mozilla Firefox

6.1.5 SAP BusinessObjects BI Platform 4.3

- SBOP BI PLATFORM 4.3 SP03 SERVER LINUX

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