



Installation Guide | PUBLIC

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Runtime Installation Guide

SAP Product Lifecycle Management for Digital Products 1.1 SP01 FP1

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1 Introduction

1.1 About this Document

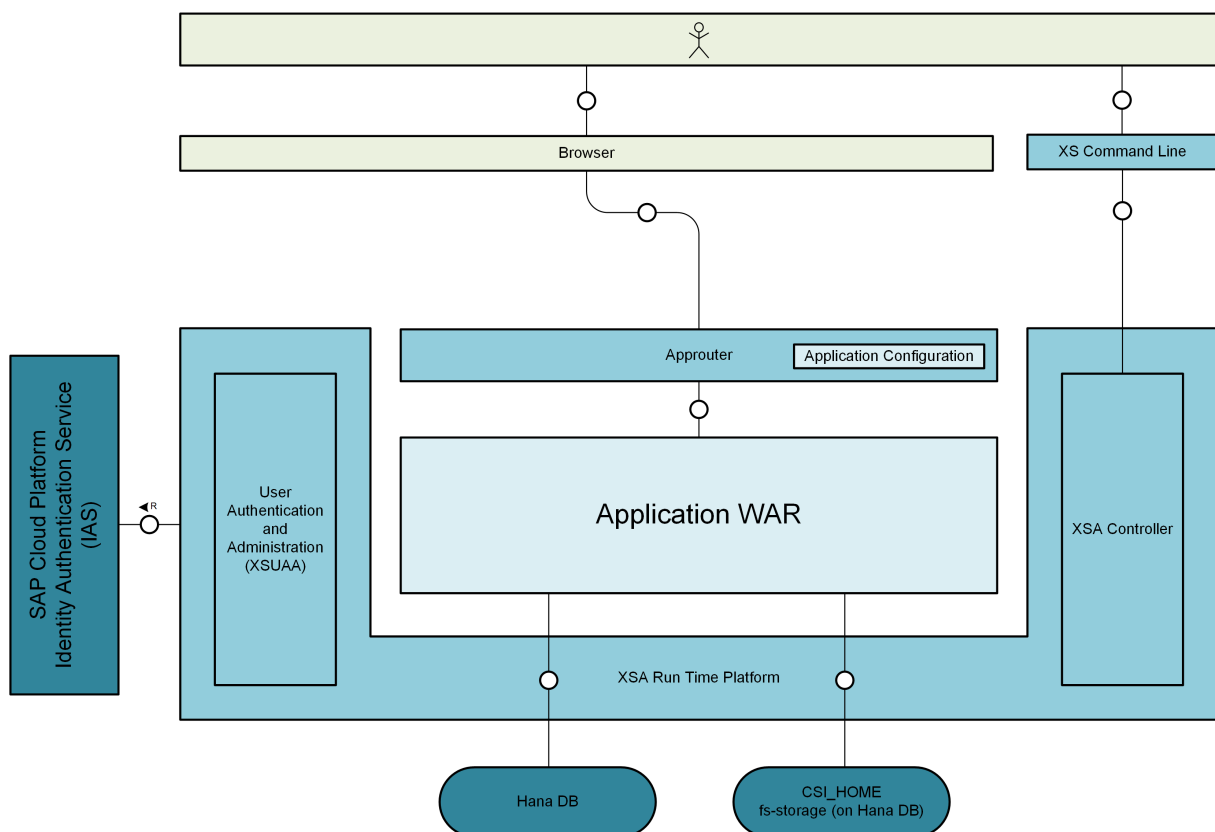
This document describes the steps to install and configure the SAP Product Lifecycle Management for Digital Products (FS-PRO) Runtime application on an SAP HANA XS Advanced (XSA) environment.

1.2 Audience

The information in this document is intended for application server administrators and database administrators (DBAs).

2 Prerequisites

2.1 System Landscape



SAP HANA XS Advanced Platform

Application Router (approuter)

The approuter handles HTTP request routing, URL-level authorization, and CSRF token handling. As part of application deployment and update, two application-specific files are installed with the approuter, `xs-app.json` and `xs-security.json`. For deployment, these files are packaged with the application WAR file into a Multi-Target Architecture (MTAR) file.

Runtime Platform Application Container

The platform's application container is based on Cloud Foundry's buildpack concept. Buildpacks provide framework and runtime support for apps. They examine your apps to determine what dependencies to download and how to configure the apps to communicate with bound services. When you push an app, the platform automatically

detects an appropriate buildpack for it. This buildpack is used to compile or prepare your app for launch.

This application has two components packaged into a single Multi-Target Architecture (MTA) file.

1. The approuter is deployed with the `node.js` buildpack.
2. The core server application WAR file is deployed with the Apache TomEE buildpack.

User Authentication and Administration	XS User Authentication and Administration (XSUAA) is a service for user authentication and authorization.
---	---

Controller and Command Line Interface (CLI)	The platform has a command line interface for executing routine system administration tasks, including application installation and deployment.
--	---

Other Landscape Components

HANA Database	The application requires an SAP HANA database. Only SAP HANA is supported.
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Audit Log Service	The application uses the platform's <code>auditlog</code> service to perform Data Protection and Privacy (DPP) logging. For more information about auditing, see the Change Logging and Read-Access Logging .
--------------------------	---

fs-storage Backing Service (CSI_HOME)	The application requires a file share. FS-PRO uses a backing service called <code>fs-storage</code> , which is located on the SAP HANA database server.
--	---

SAP Cloud Platform Identity Authentication Service (IAS)	To support single sign-on (SSO) between the front-end Fiori Launch Pad and the back-end application server, a SAML Identity Provider (IdP) is required. SAP Cloud Platform's Identity Authentication Service (IAS) is recommended.
---	--

Application Content

Application WAR file	Executable code for the application is deployed in the form of a WAR file. Along with the content for the approuter, this is packaged into an MTAR file.
-----------------------------	--

Approuter Configuration	Two configuration files, the application descriptor (<code>xs-app.json</code>) and the security descriptor (<code>xs-security.json</code>), are deployed with the approuter. Along with the application WAR file, they are packaged into an MTAR file.
--------------------------------	--

Database Content	Application database tables and sample content are included as part of the installation process.
-------------------------	--

CSI_HOME Content	Application shared file folders and content are included as part of the installation process.
-------------------------	---

2.2 Server System Requirements

Before you begin, ensure that all of the system requirements have been satisfied.

FS-PRO requires SAP HANA Platform Edition and the XS Advanced (XSA) Runtime component.

Refer to the specific server-side requirements below.

Supported Databases

FS-PRO hosts its application database on SAP HANA exposed as a service instance in the XS Advanced Runtime environment. As such it requires SAP HANA Platform Edition.

The following version is supported:

- 2.0 SP04 - Revision 2.00.041.0

For more information and installation instructions, see the [Installing XS Advanced Runtime](#) topic in the *SAP HANA Server Installation and Update Guide*.

Also note the following requirements:

- For a database system that is configured in Multiple Container mode, the tenant container database must already be created. It is always recommended to have a separate tenant database container.
- Do not use the SYSTEMDB container to install the database.
- Increase the `plan_cache_size` config parameter from the default value of 2GB to 8GB. If you are using the SAP HANA Studio to make this change, this can be found under the [Configuration](#) tab in *indexserver.ini*.

Application Runtime Requirements

FS-PRO requires XS Advanced Runtime as the application runtime environment, which must be installed as an additional component on the SAP HANA system. The following versions of SAP HANA are supported:

- 2.0 SP04 - Revision 2.00.041.0

For more information, see the [Installing XS Advanced Runtime](#) topic in the *SAP HANA Server Installation and Update Guide*.

Furthermore, the XS Advanced Runtime component must be updated to build 1.0.117.

Also note the following requirements:

- The logical database must be enabled and mapped to the XS Advanced organization used for FS-PRO. For more information, see the [Maintaining Database Instances in XS Advanced](#) topic in the *SAP HANA Administration Guide*.
- A trusted server certificate is required to avoid security and connectivity issues. For more information, see the [XS Advanced Certificate Management](#) topic in the *SAP HANA Security Guide*.

For more information, see:

- [Installing an SAP HANA System](#)
- [Installing XS Advanced Runtime](#)
- [Maintaining Database Instances in XS Advanced](#)
- [XS Advanced Certificate Management](#)

2.3 Client System Requirements

Client systems accessing the FS-PRO application require a supported web browser. As well, administrators require an SAP HANA client and the XS Advanced CLI client to perform the necessary administrative tasks during FS-PRO installation.


Refer to the specific client-side requirements below.

Browser Requirements

As a web application, FS-PRO provides various browser-based graphical interfaces.

The Product Modeler and Administrative Console are supported by the following browsers:

- Microsoft Internet Explorer 9
- Microsoft Internet Explorer 10 and 11 (compatibility mode only)

For administrative web interfaces provided by SAP HANA, refer to the SAP HANA 2.0 Platform Edition [Product Availability Matrix](#)  for additional requirements.

Database Client Requirements

An SAP HANA database client is required to perform administrative tasks during FS-PRO installation. You may use either the SAP HANA Studio or the SAP HANA HDBSQL command-line (CLI) client to perform such tasks.

SAP HANA Studio is Eclipse-based. For more information, see the [SAP HANA Studio](#) topic in the *SAP HANA Administration Guide*. For installation instructions, refer to the [SAP HANA Studio Installation and Upgrade Guide](#).

SAP HANA HDBSQL is a command line tool for executing commands on SAP HANA databases. For more information, refer to the [SAP HANA HDBSQL \(Command-Line Reference\)](#) topic in the *SAP HANA Administration Guide*. HDBSQL is installed as part of SAP HANA Client, and it's pre-installed on the SAP HANA server system. For installation instructions, refer to the [SAP HANA Client Installation and Update Guide](#).

Application Runtime Client Requirements

The XS CLI client is the recommended tool for administering the SAP HANA XS Advanced Runtime environment. Although it's pre-installed on the SAP HANA server system that has the XS Advanced Runtime

component installed, it's far more typical to have the XS CLI client installed on developer and administrator workstations. For more information and installation instructions, refer to the [Getting Started with the XS CLI Client](#) topic in the *SAP HANA Developer Guide*.

For more information, see:

- [SAP HANA Studio](#)
- [SAP HANA Studio Installation and Update Guide](#)
- [SAP HANA HDBSQL \(Command-Line Reference\)](#)
- [SAP HANA Client Installation and Update Guide](#)
- [Get Started with the XS CLI Client](#)

2.4 Substitution Variable Placeholders

The following table defines the substitution variables used in this guide. Gather the information listed prior to beginning.

Substitution Variable	Description
<rel>	The release version that you are installing.
<sp>	The support package version that you are installing.
<pl>	The patch level that you are installing.
<xsa_api_url>	The SAP HANA XS Advanced API endpoint URL. Typically the URL is <code>https://<host>:3<instance>30</code> , where <host> is the host name of the SAP HANA XS Advanced system, and <instance> is the instance number.
<pro_org>	The SAP HANA XS Advanced organization that was created during installation or upgrade of SAP HANA XS Advanced.
<pro_runtime_space>	The target space within SAP HANA XS Advanced organization. Application services for the FS-PRO Runtime application are installed in this space.
<pro_admin_user>	The name of the administrative user for FS-PRO. The value used for this variable must be the value that was defined during your initial installation of FS-PRO.
<pro_admin_password>	The password of the <pro_admin_user>.
<pro_runtime_audit_service_name>	The name of the <code>auditlog</code> service instance to be used by the FS-PRO Runtime application.

Substitution Variable	Description
<code><pro_runtime_fs_storage_service_name></code>	<p>The name of the <code>fs-storage</code> service instance to be used by the FS-PRO Runtime application.</p> <p>The value used for this variable must be the value that was defined during your initial installation of FS-PRO.</p>
<code><pro_runtime_hana_service_name></code>	<p>The name of the FS-PRO Runtime <code>hana</code> service instance.</p> <p>The value used for this variable must be the value that was defined during your initial installation of FS-PRO.</p>
<code><pro_runtime_hana_schema_prefix></code>	<p>The schema name prefix.</p> <p>A schema name can only contain uppercase characters (A-Z) and numbers (0-9), with the exception of underscores.</p> <p>The value used for this variable must be the value that was defined during your initial installation of FS-PRO.</p>
<code><pro_runtime_passphrase></code>	<p>The passphrase will be used once to generate an encryption key for the FS-PRO Runtime application during installation. It will not be used during support package and patch updates.</p> <p>Replace this value with a string that is 16 characters or longer. Any characters may be used.</p>
<code><logical_database_id></code>	<p>The id of the FS-PRO Runtime application database on HANA.</p> <p>The value used for this variable must be the value that was defined during your initial installation of FS-PRO.</p>
<code><pro_runtime_home_path></code>	<p>The path, relative to the file system mount provided by the bound <code>fs-storage</code> service instance, to the directory where the FS-PRO file system component is installed.</p> <p>The value used for this variable must be the value that was defined during your initial installation of FS-PRO.</p>
<code><pro_runtime_uaa_app_name></code>	<p>The application name of the FS-PRO Runtime application as registered in the SAP HANA XS Advanced User Account and Authentication (UAA) service</p> <p>The value used for this variable must be the value that was defined during your initial installation of FS-PRO.</p>
<code><pro_runtime_admin_rc></code>	<p>The name of the FS-PRO Runtime administrative role collection.</p>
<code><pro_runtime_app_url></code>	<p>The URL to the FS-PRO Runtime approuter application.</p>

3 Preparation

3.1 Downloading the Assembly

You will need to download the assembly ZIP file, which contains all of the files that will be used during the installation process.

Context

The FS-PRO assembly ZIP file can be downloaded from the [SAP Software Download Center](#). Before you start, you must obtain the necessary authorization for the account that you are using to download SAP software. For assistance, contact your organization's administrator or account manager.

Procedure

1. Log in to [SAP Software Downloads](#).
2. When prompted, log in using credentials with the appropriate download access.
3. Go to the [SUPPORT PACKAGES & PATCHES](#) tab.
4. Expand the [By Alphabetical Index \(A-Z\)](#) item and choose the letter *P*.
5. In the category list, locate and choose [PRODUCT LIFECYCLE MGMT SRV IND](#).

The product page opens.

6. In the category list, locate and choose the [PLM FOR DIGITAL PRODUCTS 1.1](#) Installation Product.
7. Go to [Comprised Software Component Versions](#) tab and choose [FS-PRO 510](#).
8. In the [Items Available to Download](#) list, select the ZIP file entry named [SP01 FP1 for FS-PRO 510](#) for download.

You can either download it directly from the web browser, or add it to the download basket for download via the [SAP Download Manager](#).

Results

You have downloaded the FS-PRO assembly ZIP file, which will be used during the installation.

3.2 Creating an Administrative User in SAP HANA XS Advanced

To streamline the FS-PRO installation process, create and set up an administrative user with platform and application access in XS Advanced.

Context

The FS-PRO installation process involves various XS Advanced administrative tasks, such as creating spaces, deploying applications, and configuring user authorizations. For simplicity, a user must be created in XS Advanced and assigned the necessary authorizations to perform all such tasks. A set of role collections must be assigned.

For more information, see:

- [Setting Up Security Artifacts](#) topic in the *SAP HANA Administration Guide*.

Follow the steps below to create a new user and assign the necessary role collections to the user.

Procedure

1. In a web browser, go to the URL of the XS Advanced Administration and Monitoring tools.

→ Tip

You can find the URL by going to `<xsa_api_url>/v2/info` in a web browser and obtaining the value/URL of the `xsa-admin` entry.

2. When prompted, log in as an XSA administrative user.

Use either `XSA_ADMIN` or an existing user with comparable access.

3. Choose [User Management](#) on the main page.
4. Choose [New](#).

The [New User](#) pop-up dialog opens.

5. Enter the required information for the `<pro_admin_user>` and select [Create](#).
6. Select `<pro_admin_user>` in the XSA business users list.
7. Select the [Roles](#) tab on the [User Details](#) page.
8. Choose [Add](#).
A pop-up dialog opens.
9. Select the checkbox next to the following role collections and select [OK](#):

- `XS_AUTHORIZATION_ADMIN`
- `XS_CONTROLLER_ADMIN`

i Note

The `XS_CONTROLLER_ADMIN` role allows management of all organizations and spaces without explicitly assigning organization and space roles. If desired, you can assign the `XS_CONTROLLER_USER` role collection and the appropriate organization and space roles instead.

- `XS_USER_ADMIN`

10. Save your changes.

3.3 Creating a Space in XS Advanced for FS-PRO

The FS-PRO Runtime application requires its own space, so it must be created before the installation.

Context

The FS-PRO application is packaged as a [multi-target application \(MTA\)](#). An MTA has an ID which must be unique at the space level, as such the FS-PRO application requires its own space. In addition, the same FS-PRO application can be set up for both Design Time and Runtime usages as two separate deployments. Consequently, for a landscape consisting of both Design Time and Runtime, you must deploy each application to its own separate space.

For more information, see also:

- [Organizations and Spaces](#)
- [Maintaining Organizations and Spaces in XS Advanced](#)

To create a space for deployment of the FS-PRO application, follow the steps below.

Procedure

1. In a web browser, go to the URL of the XS Advanced Administration and Monitoring tools.

→ Tip

You can find the URL by going to `<xsa_api_url>/v2/info` in a web browser and obtaining the value/URL of the `xsa-admin` entry.

2. When prompted, log in as an XSA administrative user.

Use either `XSA_ADMIN` or an existing user with comparable access.

3. In the main page, click [Organization and Space Management](#).
4. Select `<pro_org>` on the organization list pane.
5. Select [+ Create Space](#) on the organization detail pane.

A pop-up dialog opens.

6. Enter `<pro_runtime_space>` as the space name and then select [Create](#).

Results

The space `<pro_runtime_space>` is now created for deployment of the Runtime FS-PRO application.

4 Installation

4.1 Creating the Audit Log Service Instance

The FS-PRO Runtime application requires an audit log service instance for Data Protection and Privacy (DPP) logging.

Context

To comply with general security standards, the FS-PRO application logs security-sensitive events to a platform-provided audit logging service. The audit log is persisted to the SAP HANA database's SYSTEMDB container. The following procedure describes the process of creating an `auditlog` service instance for use by FS-PRO.

For more information, see:

- [Auditing Activity in SAP HANA Systems](#) (for information regarding creating an auditing policy and querying the stored audit logs)
- [Audit Log Services in XS Advanced](#)
- [Create a Service Instance](#)
- [XS CLI: Services Management](#)

Procedure

1. Open a command prompt and log in to the appropriate space using the following command:

```
xs login -a <xsa_api_url> -u <pro_admin_user> -o <pro_org> -s  
<pro_runtime_space>
```

i Note

If your XS Advanced system is using the default SSL certificate, add the `--skip-ssl-validation` option to the `xs` command.

When prompted, enter the `<admin_password>` password.

2. Create a new `auditlog` service instance using the `free` plan by issuing the following command:

```
xs create-service auditlog free  
<pro_runtime_audit_service_name>
```

Results

You have created an `auditlog` service instance, which will be bound to and used by the main application in subsequent installation steps.

4.2 Creating the File System Service Instance

The FS-PRO Runtime application requires a file system service instance to store its home directory, which can be created using the XS CLI client.

Context

The FS-PRO application has a file system component, also known as the home directory, where it stores configuration and runtime artifacts. In an XS Advanced environment, the home directory is persisted on a file system mount provided by an instance of the `fs-storage` service. The following procedure describes the process of creating an `fs-storage` service instance for use by FS-PRO.

For more information, see:

- [File-System Storage Services in XS Advanced](#)
- [Create a Service Instance](#)
- [XS CLI: Services Management](#)

Procedure

1. Open a command prompt and log in to the appropriate space using the following command:

```
xs login -a <xsa_api_url> -u <pro_admin_user> -o <pro_org> -s  
<pro_runtime_space>
```

i Note

If your XS Advanced system is using the default SSL certificate, add the `--skip-ssl-validation` option to the `xs` command.

When prompted, enter the `<pro_admin_password>` password.

2. Create a new `fs-storage` service instance using the free plan by issuing the following command:

```
xs create-service fs-storage free  
<pro_runtime_fs_storage_service_name>
```

Results

You have created an `fs-storage` service instance, which will be bound to and used by the FS-PRO installer application and the main application in subsequent installation steps.

4.3 Creating the HANA Database Service Instance

The FS-PRO Runtime application requires a HANA database service instance, which can be created using the XS CLI client. In addition, the database user must be granted permission to create schemas to facilitate the FS-PRO application database creation.

Context

The FS-PRO application requires an application database on SAP HANA. In an SAP HANA XS Advanced environment, the application database is persisted via a schema and corresponding user provisioned by a `hana` service instance.

For more information, see:

- [Create a Service Instance](#)
- [Deployment-Infrastructure Services in XS Advanced](#)
- [XS CLI: Services Management](#)
- [Maintaining Database Instances in XS Advanced](#)

Procedure

1. Open a command prompt and log in to the appropriate space using the following XS CLI command:

```
xs login -a <xsa_api_url> -u <pro_admin_user> -o <pro_org> -s  
<pro_runtime_space>
```

i Note

If your XS Advanced system is using the default SSL certificate, add the `--skip-ssl-validation` option to the `xs` command.

When prompted, enter the `<pro_admin_password>` password.

2. Create a new `hana` service instance using the `schema` plan by issuing the following command:

Windows:


```
xs create-service hana schema <pro_runtime_hana_service_name> -c "{\"schema\":  
\"<pro_runtime_hana_schema_prefix>_SYS\", \"database_id\":  
\"<logical_database_id>\"}"
```

UNIX:

```
xs create-service hana schema <pro_runtime_hana_service_name> -c  
'{"schema":"<pro_runtime_hana_schema_prefix>_SYS", "database_id":"<logical_data  
base_id>"}'
```

i Note

If only one logical database is mapped to the target SAP HANA XS Advanced organization and space, you can omit the `database_id` parameter in the service creation parameters (in the `-c` command-line argument).

Results

You have created a `hana` service instance, which will be bound to and used by the FS-PRO installer application and the main application in subsequent installation steps.

4.4 Deploying the Installer Application

FS-PRO provides an installer application, in the form of a multi-target application (MTA), which facilitates initialization of the file system component and the application database. The MTA can be deployed using the XS CLI client.

Context

The FS-PRO installer application is an application for initializing and updating the FS-PRO file system component and the application database. Although the underlying application is packaged as a Java Web application archive (WAR) file, it does not provide any web-based functionality at present, hence it is not assigned a route during deployment. Instead, the application provides an environment to run one-off initialization and update tasks in its container. To prepare for the tasks, a `PQM_CONFIG` environment variable must be provided during deployment using the MTA deployment extension descriptor file, which is provided as a template for convenience. The value of `PQM_CONFIG` is a JSON object that describes the FS-PRO instance being installed, including the name of associated service instances and its server type (Design Time or Runtime). However when it is provided as MTA configuration, the JSON object is provided as a YAML object instead.

For more information, see:

- [The MTA Deployment Extension Description](#)
- [XS CLI: Plug-ins](#)

Procedure

1. Extract or obtain `FS-PRO-install-mta-<rel>.<sp>.<pl>.mtar` and `FS-PRO-install-mta-<rel>.<sp>.<pl>.mtaext` from the FS-PRO assembly ZIP file and place them in a local directory.
2. Configure the MTA deployment extension descriptor file `FS-PRO-install-mta-<rel>.<sp>.<pl>.mtaext` in preparation for the deployment.
 - a. Open `FS-PRO-install-mta-<rel>.<sp>.<pl>.mtaext` with a text editor.
 - b. Set the `runtime` property value to `true`.
 - c. Replace `###HOME_PATH###` with `<pro_runtime_home_path>`.
 - d. Replace `###DB_SERVICE_NAME###` with `<pro_runtime_hana_service_name>`.
 - e. Replace `###FS_STORAGE_SERVICE_NAME###` with `<pro_runtime_fs_storage_service_name>`.
 - f. Replace `###PASSPHRASE###` with `<pro_runtime_passphrase>`.

It will be used once to generate an encryption key for the FS-PRO application during installation. It will not be used during support package and patch updates.

- g. Save the file and close the text editor.
3. Open a command prompt and change to the directory where the files from the previous steps were placed. Then log in to the appropriate space using the following command:

```
xs login -a <xsa_api_url> -u <pro_admin_user> -o <pro_org> -s  
<pro_runtime_space>
```

Note

If your XS Advanced system is using the default SSL certificate, add the `--skip-ssl-validation` option to the `xs` command.

When prompted, enter the `<pro_admin_password>` password.

4. Deploy the FS-PRO installer application using the following command:

```
xs deploy FS-PRO-install-mta-<rel>.<sp>.<pl>.mtar -e FS-PRO-install-mta-  
<rel>.<sp>.<pl>.mtaext
```

The deployment will take several minutes and will display a status upon completion. If the deployment failed, review the messages and instructions for further troubleshooting.

Results

The installer application has been deployed. The underlying application `FS-PRO-install-webapp` will be used to run the FS-PRO file system component and application database initialization tasks in subsequent installation or update steps.

→ Tip

If you need to change any parameter after the MTA is deployed, you can update the `mtaext` file and rerun the `xs deploy` command.

4.5 Granting Permission to Create Schemas

The database user of the HANA service instance previously provisioned for FS-PRO must be granted permission to create schemas to facilitate the FS-PRO application database creation.

Context

The FS-PRO application database initialization process must create more schemas to store data related to different sub-components of the FS-PRO application. The following procedure describes the process of preparing such schema and user.

For more information, see:

- [SAP HANA Studio](#)
- [SAP HANA HDBSQL \(Command-Line Reference\)](#)
- [GRANT Statement \(Access Control\)](#)
- [Connecting to a Tenant Database from Your Local Workstation](#)

Procedure

1. Using either SAP HANA Studio or SAP HANA HDBSQL, connect to the SAP HANA database instance to which the logical database is mapped as a system user.
2. Run the following SQL statement to grant schema creation permission to the FS-PRO Design Time database user provisioned in the previous step as part of the service instance creation:

```
GRANT CREATE SCHEMA to  
<pro_runtime_hana_schema_prefix>_SYS
```

Results

The database user tied to the provisioned schema of the same name has been granted create schema permission, as required by the FS-PRO application database initialization process.

4.6 Initializing the Application File System Component via the Installer Task

Use the deployed FS-PRO installer application to initialize the file system component on the bound `fs-storage` service instance previously created for this installation.

Context

A task is a job that runs asynchronously and is suitable for one-off processes such as initialization. The FS-PRO file system component is initialized via a task, which will install the artifacts to the home path provided and pre-configure some application settings. This procedure describes how to run the task and check the status.

For more information, see:

- [XS CLI: Tasks](#)
- [XS CLI: Application Management](#)

Procedure

1. Open a command prompt and log in to the appropriate space using the following command:

```
xs login -a <xsa_api_url> -u <pro_admin_user> -o <pro_org> -s  
<pro_runtime_space>
```

i Note

If your XS Advanced system is using the default SSL certificate, add the `--skip-ssl-validation` option to the `xs` command.

When prompted, enter the `<pro_admin_password>` password.

2. Run the task to initialize the FS-PRO file system component using the following command:

Windows:

```
xs run-task FS-PRO-install-webapp <home_task_name> "$PWD/META-INF/.sap_java_buildpack/sapjvm/bin/java -jar $PWD/META-INF/com.sap.fs.pro.cf.jar home default"
```

UNIX:

```
xs run-task FS-PRO-install-webapp <home_task_name> '$PWD/META-INF/.sap_java_buildpack/sapjvm/bin/java -jar $PWD/META-INF/com.sap.fs.pro.cf.jar home default'
```

i Note

<home_task_name> is the name for identifying the task and is used for checking status. You can pick any name, for example `pro-install-home`.

3. The task will take a few minutes to complete. While it's running, you can periodically use the following command to check its status:

```
xs tasks FS-PRO-install-webapp
```

The command will list the status for all tasks that have been run against the target application. Look for the entry with the name <home_task_name> and check that the state is `SUCCEEDED`.

4. If required, check the log of the task by running the following command:

```
xs logs FS-PRO-install-webapp --recent
```

→ Tip

For improved readability, you can redirect the command output to a file, then review the log file with a text viewer.

The log entries associated with the task will be marked with the task name.

Results

Upon successful completion of the task, the FS-PRO home directory is now initialized and can be used by the FS-PRO application in subsequent installation steps.

4.7 Initializing the Application Database via the Installer Task

Use the deployed FS-PRO installer application to initialize the application database on the bound `hana` service instance previously created for this installation.

Context

A task is a job that runs asynchronously and is suitable for one-off processes such as initialization. The FS-PRO file application database is initialized via a task, which will create the necessary database objects and load the initial data. This procedure describes how to run the task and check its status.

For more information, see:

- [XS CLI: Tasks](#)
- [XS CLI: Application Management](#)

Procedure

1. Open a command prompt and log in to the appropriate space using the following command:

```
xs login -a <xsa_api_url> -u <pro_admin_user> -o <pro_org> -s  
<pro_runtime_space>
```

i Note

If your XS Advanced system is using the default SSL certificate, add the `--skip-ssl-validation` option to the `xs` command.

When prompted, enter the `<pro_admin_password>` password.

2. Run the task to initialize the FS-PRO database component using the following command:

Windows:

```
xs run-task FS-PRO-install-webapp <db_task_name> "$PWD/META-INF/.sap_java_buildpack/sapjvm/bin/java -jar $PWD/META-INF/com.sap.fs.pro.cf.jar db default"
```

UNIX:

```
xs run-task FS-PRO-install-webapp <db_task_name> '$PWD/META-INF/.sap_java_buildpack/sapjvm/bin/java -jar $PWD/META-INF/com.sap.fs.pro.cf.jar db default'
```

i Note

`<db_task_name>` is the name for identifying the task and is used for checking status. You can pick any name, for example `pro-install-db`.

3. The task will take a few minutes to complete. While it's running, you can periodically use the following command to check its status:

```
xs tasks FS-PRO-install-webapp
```

The command will list the status for all tasks that have been run against the target application. Look for the entry with the name `<db_task_name>` and check that the state is `SUCCEEDED`.

4. If required, check the log of the task by running the following command:

```
xs logs FS-PRO-install-webapp --recent
```

→ Tip

For improved readability, you can redirect the command output to a file, then review the log file with a text viewer.

The log entries associated with the task will be marked with the task name.

Results

Upon successful completion of the task, the FS-PRO application database is now initialized and can be used by the FS-PRO application in subsequent installation steps.

4.8 Deploying the Main Application

The FS-PRO application is packaged as a multi-target application (MTA) and can be deployed using the XS CLI client.

Context

The main FS-PRO application is implemented following the MTA architecture, as such it contains the following modules:

1. The application router (also known as approuter) that handles routing and security.
2. The Java web application that provides the main functionality.
3. An XSUAA security definition that provisions an XSUAA service instance for use by the approuter and the Java web application.

All modules will be provisioned accordingly as the MTA is deployed, providing a working application environment upon deployment. Additional configuration (such as service instance names) are provided in the MTA deployment extensions descriptor file during deployment according to the steps below.

For more information, see:

- [The MTA Deployment Extension Description](#)
- [XS CLI: Tasks](#)
- [XS CLI: Application Management](#)

Procedure

1. Extract or obtain `FS-PRO-mta-<rel>.<sp>.<pl>.mtar` and `FS-PRO-mta-<rel>.<sp>.<pl>.mtaext` from the FS-PRO assembly ZIP file and place them in a local directory.
2. Configure the MTA deployment extension descriptor file `FS-PRO-mta-<rel>.<sp>.<pl>.mtaext` in preparation for the deployment.
 - a. Open `FS-PRO-mta-<rel>.<sp>.<pl>.mtaext` with a text editor.
 - b. Replace `###HOME_PATH###` with `<pro_runtime_home_path>`.
 - c. Replace `###DB_SERVICE_NAME###` with `<pro_runtime_hana_service_name>`.
 - d. Replace `###FS_STORAGE_SERVICE_NAME###` with `<pro_runtime_fs_storage_service_name>`.
 - e. Replace `###UAA_APP_NAME###` with `<pro_runtime_uaa_app_name>`.
 - f. Replace `###AUDIT_SERVICE_NAME###` with `<pro_runtime_audit_service_name>`.
 - g. Save the file and close the text editor.
3. Open a command prompt and change to the directory where the files from the previous steps were placed. Then log in to the appropriate space using the following command:

```
xs login -a <xsa_api_url> -u <pro_admin_user> -o <pro_org> -s  
<pro_runtime_space>
```

i Note

If your XS Advanced system is using the default SSL certificate, add the `--skip-ssl-validation` option to the `xs` command.

When prompted, enter the `<pro_admin_password>` password.

4. Deploy the FS-PRO installer application using the following command:

```
xs deploy FS-PRO-mta-<rel>.<sp>.<pl>.mtar -e FS-PRO-mta-  
<rel>.<sp>.<pl>.mtaext
```

The deployment will take several minutes and will display a status upon completion. If the deployment failed, review the messages and instructions for further troubleshooting.

→ Tip

If you need to change any parameter after the MTA is deployed, you can update the `mtaext` file and rerun the `xs deploy` command.

5. Check the log of the FS-PRO approuter application by running the following command:

```
xs logs FS-PRO-approuter --recent
```

→ Tip

For improved readability, you can redirect the command output to a file, then review the log file with a text viewer.

Ensure that there are no startup errors present in the log.

6. Check the log of the FS-PRO webapp application by running the following command:

```
xs logs FS-PRO-webapp --recent
```

→ Tip

For improved readability, you can redirect the command output to a file, then review the log file with a text viewer.

Ensure that there are no startup errors present in the log.

Results

The FS-PRO application has been deployed and can be validated after you configure the necessary users and roles as post-installation steps.

5 Post-Installation

5.1 Building Application Roles

The FS-PRO application uses the User Account and Authentication (UAA) service for authentication and authorization. FS-PRO also provides application-specific role templates that can be included in role collections to control user access in XS Advanced.

Context

When the FS-PRO application is deployed, an XSUAA service instance is created with the FS-PRO-specific XSUAA configuration. Such configuration includes authorization scopes that control the finer-grain authorization of various FS-PRO functions, as well as role templates which consolidate related authorization scopes in a role-based manner. As described in the [Maintaining Security in XS Advanced](#) topic in the *SAP HANA Administration Guide*, an XS Advanced administrator can create role collections based on the application roles, thus providing yet another level of consolidation for multiple applications registered in XSUAA. In our case, we need to create a role collection specific to FS-PRO that provides the authorization to access administrative functionality of the FS-PRO application. This facilitates the rest of the post-installation steps.

For information on how to create roles for different FS-PRO business and administrative usages, refer to the *Application User and Authorization Management* section in the *SAP Product Lifecycle Management for Digital Products Administration Guide*.

Procedure

1. In a web browser, go to the URL of the XS Advanced Administration and Monitoring tools.

→ Tip

You can find the URL by going to `<xsa_api_url>/v2/info` in a web browser and obtaining the value/URL of the `xsa-admin` entry.

2. When prompted, log in as `<pro_admin_user>`.
3. In the main page, select the [Application Role Builder](#).
4. Select [Role Collection](#) in the left menu.
5. Select the + icon at the bottom of the role collections list.
A pop-up dialog opens.
6. Enter the name `<pro_runtime_admin_rc>` and a description (for example, PRO Runtime Administrative Role Collection), then select [Create](#).

7. Choose the newly created role collection in the role collections list.
8. Select the *Roles* tab in the editor pane.
9. Select *+ Add Application Role*.
A pop-up dialog opens.
10. Perform the following actions and select *OK*:
 - a. Choose `<pro_runtime_uaa_app_name><uaa_app_name_suffix>` from the *Application Name* dropdown list, where `<uaa_app_name_suffix>` is a generated suffix added by XSUAA based on the plan used for the service instance.
 - b. Choose *Administrator_RT* from the *Template Name* dropdown list.
This role provides administrative access in the Administrative Console tool.
 - c. Choose *Administrator_RT* from the *Application Role* dropdown list.
This is the same as the template name.
11. Save your changes.

Results

The role collection for FS-PRO administrative usage is now created and can be assigned to FS-PRO administrative users.

5.2 Granting Application Administrative Permissions

The next step is to assign the role collection catering to FS-PRO administrative usage. The FS-PRO administrative user needs this permission to access tools and functions required to complete the post-installation steps.

Context

After the FS-PRO-specific administrative role collection is created, it can now be assigned to the FS-PRO administrative user in the User Management tool of the XS Advanced Administration and Monitoring tools application.

For more information, see the [Maintaining Security in XS Advanced](#) topic in the *SAP HANA Administration Guide*.

Procedure

1. In a web browser, go to the URL of the XS Advanced Administration and Monitoring tools.

→ Tip

You can find the URL by going to `<xsa_api_url>/v2/info` in a web browser and obtaining the value/URL of the `xsa-admin` entry.

2. When prompted, log in as `<pro_admin_user>`.
3. Select *User Management* on the main page.
4. Select `<pro_admin_user>` in the XSA business users list.
5. Choose the *Role Collections* tab on the user details page.
6. Select *Add*.
A pop-up dialog opens.
7. Select the checkbox next to `<pro_runtime_admin_rc>` and select *OK*.
8. Save your changes.

Results

The role collection has been assigned and the user has access to the FS-PRO Administrative Console and the Product Modeler to complete the post-installation steps.

5.3 Validating the Application

With the FS-PRO administrative user, you can now validate access and application information using the FS-PRO tools.

Context

To ensure that the FS-PRO application is running correctly, you can access the Runtime Administrative Console and check the application information. Failure to successfully access the application is an indication that issues occurred with either the user setup or the application deployment.

Procedure

1. Open a command prompt and log in to the appropriate space using the following command:

```
xs login -a <xsa_api_url> -u <pro_admin_user> -o <pro_org> -s  
      <pro_runtime_space>
```

i Note

If your XS Advanced system is using the default SSL certificate, add the `--skip-ssl-validation` option to the `xs` command.

When prompted, enter the `<pro_admin_password>` password.

2. Obtain the URL to the FS-PRO approuter application, `FS-PRO-approuter`, using the following command:

```
xs app FS-PRO-approuter
```

This is referred to as `<pro_runtime_app_url>` in this guide.

3. Validate access to the application and verify the application information in the Runtime Administrative Console.
 - a. Launch Internet Explorer and go to `<pro_runtime_app_url>/csiroot/admin/`.

i Note

Internet Explorer is the only web browser that is compatible with the Administrative Console and the URL must be added to the [Compatibility View Settings](#).

- b. Log in to the Runtime Administrative Console as `<pro_admin_user>`.
The Runtime Administrative Console will open after a short delay.
- c. Select ► [Help](#) ► [About](#) ▾ from the menu bar.
- d. Verify that the application information is correct.
- e. Select [Logout](#) at the upper-right of the page.

Results

You have verified that the FS-PRO installation is successful, allowing access to the application tool.

6 Next Steps

You have successfully installed the Runtime application. What's next?

System administrators and security consultants should review the *SAP Product Lifecycle Management for Digital Products Security Guide* to design the security features that will be implemented in the FS-PRO Runtime Administrative Console.



The system administrator will also need to configure the servers, create users and assign permissions/roles in the FS-PRO Runtime Administrative Console. For guidance, see the *SAP Product Lifecycle Management for Digital Products Administration Guide*

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