

Security Guide for SAP Business Transformation Center

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SAP Business Transformation Center | latest

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About This Guide

This guide provides security-relevant information for SAP Business Transformation Center.

→ Remember

In a typical data transformation project, you start by analyzing your source system and then you move on to setting up your target system. Initially, the target system is not available, therefore all related configuration steps can only be performed once it has been set up.

Target Audience

- · Technology Consultants
- · Security Consultants
- · System Administrators

Why Is Security Necessary?

With the increasing use of distributed systems and the internet for managing business data, the demands on security are also on the rise. When using a distributed system, you need to be sure that your data and processes support your business needs without allowing unauthorized access to critical information. User errors, negligence, or attempted manipulation of your system should not result in loss of information or processing time. These demands on security apply likewise to SAP Business Transformation Center.

Overview of the Main Sections

• Before You Start

This section contains references to other security guides that build the foundation for this document.

• User Administration and Authentication

This chapter provides an overview of the following user administration and authentication aspects:

- Recommended tools for user management
- User types that are required by SAP Business Transformation Center
- o Standard users that are needed by SAP Business Transformation Center
- Roles and Authorizations

Get an overview of the authorization concept that applies to SAP Business Transformation Center.

• Session Security Protection

This section provides information about activating secure session management, which prevents JavaScript or plug-ins from accessing the SAP logon ticket or security session cookies.

Network and Communication Security

Here, you can get an overview of the communication paths used by SAP Business Transformation Center and the security mechanisms that apply. It also includes our recommendations for the network topology to restrict access at the network level.

Data Protection

Learn about how SAP Business Transformation Center protects personal or sensitive data.

Before You Start

Fundamental Security Guides

SAP Business Transformation Center is built using SAP Business Technology Platform. Therefore, the security guides relevant for the SAP Business Technology Platform also apply here. Pay particular attention to the most relevant sections or specific restrictions as indicated in the table below.

Fundamental Security Guides

Scenario, Application or Component Security Guide	Most Relevant Sections or Specific Restrictions
SAP S/4HANA Security Guide	User Administration and Authorization, Network and Communication Security, ICF and Session Security
Setup and Administration for SAP Cloud ALM	<u>Security</u>
BTP Security Guide	BTP Security
Cloud Connector Guide	Cloud Connector Security

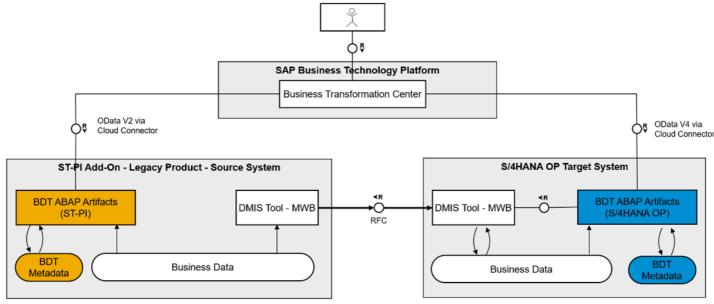
Configuration

You can find a summary of the configuration steps for implementing security for SAP Business Transformation Center in the following guide:

Setup and Administration Guide

Technical System Landscape

The following diagram shows an overview of the technical system landscape for SAP Business Transformation Center:



Technical System Landscape of SAP Business Transformation Center

SAP Business Transformation Center is a cloud native application which relies on the following components:

- The source system, which utilizes the current ST-PI add-on to enable the data transformation with SAP Business Transformation Center.
- The SAP S/4HANA system, which contains all necessary subcomponents already shipped within the SAP S/4HANA CORE component.

Each system is accessed from the cloud layer using the SAP Cloud Connector. The SAP ECC system and the SAP S/4HANA system are connected via OData service bindings from SAP Business Technology Platform. There is an RFC-based connection between the SAP ECC and the SAP S/4HANA system.

Security Aspects of Data, Data Flow, and Processes

SAP Business Transformation Center has the following connections between its various subcomponents:

Connection	Description	Security Measure
Cloud to SAP ECC	OData RAP Service call from the cloud to SAP ECC via SAP Cloud Connector.	Configure Cloud Connector according to the following guide:
		Cloud Connector Setup for SAP Business Transformation Center
		Use a dedicated technical SAP user for the OData call. The user must have only minimal authorizations, and be set to user type System.
Cloud to SAP S/4HANA	OData RAP Service call from the cloud to SAP S/4HANA via SAP Cloud Connector.	Configure Cloud Connector according to the following guide:
		Cloud Connector Setup for SAP Business Transformation Center
		Use a dedicated technical SAP user for the OData call. The user must have only minimal authoriations, and be set to user type System.
SAP S/4HANA to SAP ECC	Remote Function Call (RFC) call from SAP S/4HANA to SAP ECC.	The user must be set to user type System, and it must have only minimal authorizations.

Generation of Temporary Development Objects

To perform best for data selection, SAP Business Transformation Center is generating artefacts. In the source system, database tables and reports are generated to perform the preselection.

On the target system, we generate includes to be reused in rule logics which can be value mappings, renumberings, and so on.

All generated artefacts are temporary in development class \$TMP and in namespace /1BT/, which are reserved for generated objects.

The generation is done by the communication user in the source system. The generation is secured by S_DEVELOP checks and are only allowed for local objects with names in the registered namespaces.

The generator validates that the artefacts to be created are not already present, so we do not delete any already existing artefact. In addition, we only allow creation and deletion of objects. For deletion we only accept UUIDs which must be created earlier.

Deletion of Business Application Logs

Context

SAP Business Transformation Center uses the SAP Business Application Log to store processing logs internally. The migration engine calls the SAP ECC system via RFC. These logs are not deleted by our solution, so you need to schedule a deletion report via transaction SLG2 as described below.

Procedure

- 1. Open transaction SLG2.
- 2. Select Only logs that have reached their expiration date under Expiration Date.
- 3. Enter object /BDTS/.
- 4. Choose Schedule background jobs.
- 5. Execute.

The following table summarizes the generated log objects:

System	Log Object	Production Process	Default Expiration Time (Days)
SAP S/4HANA	BDTS	Business Data Transformation	30
SAP S/4HANA	DMC	Data Mapping and Conversion Tool (Migration Engine)	180
SAP ECC	/BDTS/	Business Data Transformation	30

Object /BDTS/ has the following subobjects:

Subobject	Description
/BDTS/PRESEL	Preselection logger
/BDTS/PROPERTY	Property set
/BDTS/RETENTION	Retention report
/BDTS/TABLE	Preselection table
/BDTS/TASK	Preselection task

Object BDTS has the following subobjects:

Subobject	Description
BDTS_CMD	Command
BDTS_DAEMON	Command daemon

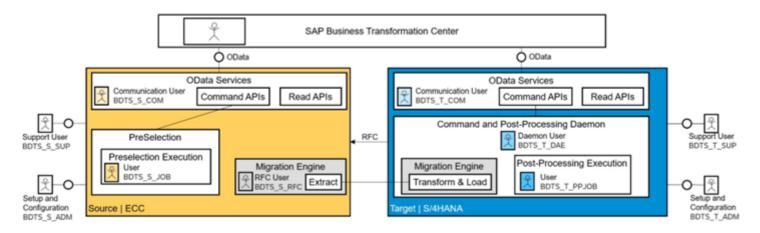
Subobject	Description
BDTS_HEALTH	Health check
BDTS_PF_DAEMON	Postprocessing daemon
BDTS_PF_ITEM	Postprocessing item execution
BDTS_RETENTION	Retention date report
BDTS_SUM_EXTRACT	Extraction from SUM buffer report

Related Information

SAP Note 195157 🎓

User Administration and Authentication

The following diagram summarizes users in the SAP ECC and SAP S4/HANA systems:



You can create the users in one of two ways:

Create Users Manually

- 1. Copy the default values for the roles in transaction SU25.
- 2. Copy the roles in transaction PFCG.
- 3. Apply the required manual changes in the roles you copied.
- 4. Create users in transaction in SU01.
- 5. Assign the copied roles to the newly created users in transaction SU01.

Create Users Automatically

1. Use report /BDTS/ADMIN to generate all users and roles. For a detailed description see <u>Copying the Roles and Authorizations Automatically.</u>

User Administration Tools

The table below shows the tools for user management and user administration with SAP Business Transformation Center.

User Management Tools

Transaction Codes	Description
SU01	User maintenance
PFCG	Role maintenance
SU22	Default authorization value maintenance
→ Remember This transaction code is only valid for the SAP ECC source system.	
STAUTHTRACE	Authorization trace
SU25	Upgrade tool for profile generator

User Management in the ABAP Source System

User management for SAP Business Transformation Center relies on the mechanisms provided with the SAP NetWeaver Application Server ABAP. These include tools, user types, and password policies.

For an overview of how these mechanisms apply to the system, see the sections below. In addition, they also contain a list of the standard users required for operating SAP Business Transformation Center.

User Types

Standard Users

Required Manual Changes in the SAP ECC Source System

User Types

Users Required for SAP Business Transformation Center

User Type		Description	
Dialog Users These users are not necessary for the runtime, but are needed for analysis purposes and administrative tasks.	Setup and Configuration User	This user type is necessary to accomplish setup and configuration tasks.	
	SAP Support User	This user type might be required on request by SAP support.	
Technical Users	Job User	This user is used to execute the preselection tasks.	
	Communications Data User	This user communicates from the cloud to the ABAP system	
		<u>'</u>	

User Type		Description
	RFC User for Migration Engine	This user is used by the migration engine for the following purposes: Reading preselection table names Reading information about executed commands for helpdesk reports

It is often necessary to specify different security policies for different types of users. For example, your policy may specify that individual users who perform tasks interactively must change their passwords on a regular basis, while users under which background processing jobs run do not have such constraints.

The validity period of the productive password depends on the following profile parameters:

- login/password_expiration_time
- login/password_max_idle_productive

For more information about these user types, see <u>SAP NetWeaver Security Guide</u>.

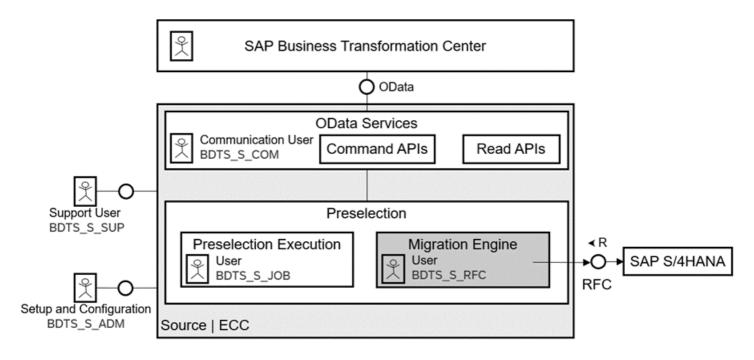
Related Information

SAP Note 622464 🏊

Standard Users

There are no standard users delivered or created by SAP Business Transformation Center. It is the responsibility of the customer to name, create, and maintain these users in a secure way.

The following image shows the necessary users in the SAP ECC system:



All the roles and usernames follow a pattern, distinguishing between the following:

• User: BDTS_S_<identifier>

- Standard single role: SAP_BDTS_SS_<identifier>
- Standard composite role: SAP_BDTS_SC_<identifier>

The table below has the standard users that must be created to operate SAP Business Transformation Center:

User	Туре	Description	Copy of Roles
BDTS_S_COM	Communications User	Technical user, which is required to call the ABAP Odata services from the cloud.	 SAP_BDTS_SC_COMM_COMMAND SAP_BDTS_SC_COMM_READ SAP_BDTS_SC_COMM_SYSINFO SAP_BDTS_SS_CMD_DISP_WDOG
BDTS_S_JOB	System User	Technical user, which is used to perform the preselection job steps.	SAP_BDTS_SC_EXECUTE_JOBSSAP_BDTS_SS_CMD_EXE_FRAMEWORKSAP_BDTS_SS_OD_COMMAND
BDTS_S_ADM	Dialog User	This user can execute the setup and configuration transaction /BDTS/ADMIN. This user is optional. You can provide any administrative user with the necessary authorization for administrative tasks.	• SAP_BDTS_SC_ADMIN
BDTS_S_SUP	Dialog User	SAP support user, which can be requested by SAP support to analyze issues in the customer system. This user is optional. It is possible to provide any user with the necessary authorization for issue analysis to SAP Support. See 1154550 for more details.	SAP_BDTS_SC_SUPPORT

In your data transformation project, you may set up your source system prior to the availability of the target system. In this case, keep in mind that the following user is only required in combination with the SAP S/4HANA target system:

User Type Description Roles	
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User	Туре	Description	Roles
BDTS_S_RFC	System User	This user is used to access the source system from the target system by the migration enginge and the help desk reports. The user must be assigned to the RFC connection on the SAP S/4HANA system.	 SAP_MWB_REMOTE SAP_LT_RFC_USER_700 SAP_BDTS_SS_PRESEL_TAB_READ_NA SAP_BDTS_SS_GET_CMD_INFO

Required Manual Changes in the SAP ECC Source System

- SAP_BDTS_SS_OD_COMMAND
- SAP_BDTS_SS_CMD_DISP_WDOG
 - Add the job user names above to field BTCUNAME of authorization object S_BTCH_NAM.

→ Remember

You must perform these changes on the roles you copied according to the following chapter:

Roles and Authorizations

User Management in the ABAP Target System

User management for the SAP Business Transformation Center uses the mechanisms provided with the SAP NetWeaver Application Server ABAP, such as tools, user types, and password policies. For an overview of how these mechanisms apply for the SAP Business Transformation Center, see the sections below.

In addition, we provide a list of the standard users required for operating the SAP Business Transformation Center.

User Types

Standard Users

Required Manual Changes in the SAP S/4HANA Target System

User Types

Users Required for SAP Business Transformation Center

User Type		Description
Dialog Users These users are not necessary for the	Setup and Configuration User	This user type is necessary to accomplish administrative tasks and prerequisites.
runtime; they are for analysis purposes and administrative tasks.	SAP Suppport User	This user type might be required on request by SAP support.
Technical Users	Job User	This user is used to execute the postprocessing background jobs.

User Type		Description
	Daemon User	This user is used as a user of ABAP daemons for command execution and postprocessing.
	Communication User	This user is communicating from the cloud to the ABAP system.

It is often necessary to specify different security policies for different types of users. For example, your policy may specify that individual users who perform tasks interactively must change their passwords on a regular basis, while users under which background processing jobs run do not have such constraints. For user type SYSTEM, see 622464 for more details on requirements about changing the password.

The validity period of the productive password depends on the following profile parameters:

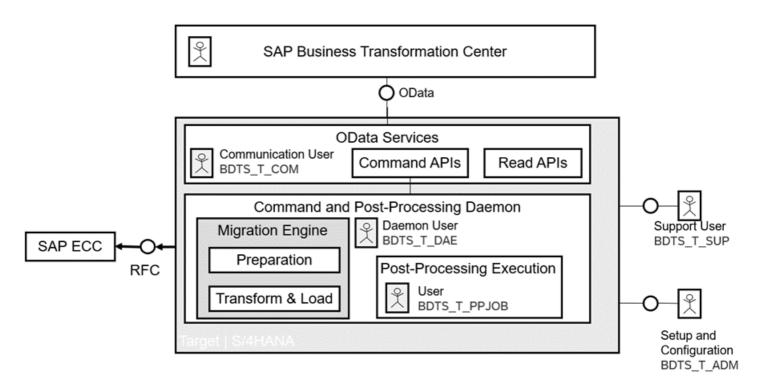
- login/password_expiration_time
- login/password_max_idle_productive

For more information about these user types, see User Types in the SAP NetWeaver AS ABAP Security Guide.

Standard Users

There are no standard users delivered or created by SAP Business Transformation Center. It is up to the customer to name, create and maintain these users in a secure way.

The following image shows the necessary users in the SAP S/4HANA system:



All the roles and usernames follow a pattern, distinguishing between the following:

- User: BDTS_S_<identifier>
- Standard single role: SAP_BDTS_TS_<identifier>
- Standard composite role: SAP_BDTS_TC_<identifier>

The following users must be created in the target system to ensure you can use SAP Business Transformation Center:

User	Туре	Description	Roles
BDTS_T_COM	Communication	This user is communicating from the cloud to the ABAP system.	SAP_BDTS_TC_COMMUNICATIONSAP_BDTS_SC_COMM_SYSINFOSAP_BDTS_SS_OD_GET_TAB_FLD_STR
BDTS_T_DAE	System	This background user is for command processing. It must not be exposed to the public and must only be used to run the daemon.	SAP_BDTS_TC_DAEMONSAP_BDTS_TC_DAEMON_PF
BDTS_T_PPJOB	System	This background user is for postprocessing. It must not be exposed to the public. Caution Be aware that this user needs SAP_ALL authorization to execute XPRA, XCLA and SDM tasks. A user with this profile can perform all tasks in the SAP system. It is strongly recommended to lock this user in the property table after setting it up and unlock it during the postprocessing steps	Profile SAP_ALL
BDTS_T_SUP	Dialog	SAP support user, which can be requested by SAP support to analyze issues in the customer system. It must be locked until it is requested by SAP. This user is optional. It is possible to provide any user with the necessary authorization for issue analysis to SAP Support. See 1154550 for more details.	Profile SAP_BDTS_TC_SUPPORT

User	Туре	Description	Roles
BDTS_T_ADM	Dialog	The administrative user is needed to maintain the daemon startup/stop operation and extract XPRA/XCLA objects from SUM buffers. This user is optional. It is possible to provide any administrative user with the necessary authorization for administrative tasks.	Profile SAP_BDTS_TC_ADMIN

Required Manual Changes in the SAP S/4HANA Target System

For the following copied role, apply manual changes as explained below:

- SAP_BDTS_TS_DAEMON_PF_EXE
 - Add the job user name above to field PROGRAM of authorization object S_BTCH_NA1.

Roles and Authorizations

SAP Business Transformation Center uses the authorization concept provided by the SAP NetWeaver AS ABAP. Therefore, the recommendations and guidelines for authorizations are the same as described in the SAP NetWeaver AS Security Guide ABAP.

The SAP NetWeaver authorization concept is based on assigning authorizations to users based on roles. For role maintenance, use the profile generator (transaction PFCG) on the AS ABAP.

There is a standard list of roles and authorizations delivered with SAP Business Transformation Center, but all of these have to be copied into your own namespace so that they can work with your system. Before copying, proceed in one of the following ways depending on which scenario is applicable:

- If you are using the Profile Generator for the first time, use transaction SU25 to initially fill the Profile Generator customer tables. For information on this step, see the documentation on the Profile Generator in the Implementation Guide, the SAP Library and in the transaction itself.
- If you already used the Profile Generator in a previous release, you should use transaction SU25 (steps 2A to 2C) to transfer the new check indicators before you continue working with the Profile Generator. This transaction displays all changes to the check indicators and the field values. You can adopt the changes or retain your own settings. The transaction also specifies all roles that it makes sense to regenerate.

Then, follow the steps below to copy the roles into your own namespace:

→ Remember

Generate all roles and execute user comparison.

Enable technical names in your SAP GUI before getting started with the steps below.

1. Go to role maintenance transaction PFCG.

- 2. Create a copy of the SAP standard delivered role SAP_BDTS_* to your customer namespace.
- 3. Choose the Authorization tab and select Change.
- 4. Maintain all activity values for each authorization object. The roles delivered with authorization objects to be maintained are listed in the following chapters:
 - a. Required Manual Changes in the SAP ECC Source System
 - b. Required Manual Changes in the SAP S/4HANA Target System
- 5. Save and generate the profile.
- 6. Select the User tab. If the user is already assigned, execute User Comparison.

→ Tip

You can assign users directly here if they have already been created.

7. Save your settings.

Copying the Roles and Authorizations Automatically

SAP ECC

In your source system, you can copy the roles automatically using the /BDTS/ADMIN transaction. In there, select the row with description BTC: Create Roles and Users, and then Execute. Then, you have to provide the following details:

- Confirm that you have copied the default values for the roles in transaction SU25.
- A prefix for your namespace for the role copy.
- Optionally, you can also change the name of every user this transaction can generate for SAP Business Transformation
 Center. The system provides a default name for each user, and it is recommended to keep those unchanged to avoid any
 confusion with support cases later.
- The In Scope option is selected by default; you can uncheck that to leave out any of the users from this process.
- The option to create an RFC user (BDTS_S_RFC) with the corresponding role copy and assignment is not available if the DMIS add-on is not installed

Once all the details are set, select **Execute**. This generates a technical configuration task, which you have to run to finish the role generation.

If a role already exists, the system prompts you to confirm if you want to keep the existing role, or if you want to refresh it. If you choose **Keep**, you retain the already existing role, whereas selecting **Refresh** deletes the current role and generates a new one.

If you select **Refresh**, the system deletes the role from all users, and only regenarates it for the users selected in the previous screen. As a result, you may have to manually add the role again to other users if you select this option.

SAP S/4HANA

In your target system, use transaction BDTS_ADMIN to access the role generation transaction. The rest of the process is the same as described in the SAP ECC section above.

Session Security Protection

In order to increase security and prevent access to the SAP logon ticket and security session cookies, we recommend activating secure session management.

We also recommend using SSL to protect the network communications where these security-relevant cookies are transferred.

Session Security Protection in the AS ABAP

To activate session security on the AS ABAP, set the corresponding profile parameters and activate the session security for the clients using transaction SICF_SESSIONS.

For more information, a list of the relevant profile parameters, and detailed instructions, see <u>Activating HTTP Security Session</u> <u>Management on SAP NetWeaver AS for ABAP</u> in the AS ABAP security documentation.

Network and Communication Security

Your network infrastructure is extremely important for protecting your system. Your network needs to support the communication necessary for your business needs without allowing unauthorized access. A well-defined network topology can eliminate many security threats based on software flaws (at both the operating system level and application level) or network attacks such as eavesdropping. If users cannot log on to your application or database servers at the operating system or database layer, then there is no way for intruders to compromise the machines and gain access to the backend system database or files. Additionally, if users are not able to connect to the server LAN (local area network), they cannot exploit well-known bugs and security holes in network services on the server machines.

The network topology for SAP Business Transformation Center is based on the topology used by the SAP NetWeaver platform. Therefore, the security guidelines and recommendations described in the SAP NetWeaver Security Guide also apply to SAP Business Transformation Center. Details that specifically apply to the SAP Business Transformation Center are described in the following topics.

Communication Channel Security

The table below shows the communication channels used by SAP Business Transformation Center, the protocol used for the connection, and the type of data transferred.

BTC Communication Channel Properties

Communication Path	Protocol Used	Type of Data Transferred	Data Requiring Special Protection
SAP Business Transformation Center requests structural information from the SAP ECC system via SAP Cloud Connector.	HTTPS/0Data	Commands are sent from the cloud to the ABAP system. Then, the ABAP system returns structural meta- and aggregated data for dictionary tables.	SSL
SSAP Business Transformation Center requests structural information from the SAP S/4HANA system via SAP Cloud Connector.	HTTPS/OData	Structural data as DDIC information related to table fields and table definition.	SSL

Communication Path	Protocol Used	Type of Data Transferred	Data Requiring Special Protection
SAP Business Transformation Center issuing commands to the SAP S/4HANA system to configure the execution layer (via SAP Cloud Connector).	HTTPS/OData	Configuration is pushed down from the cloud layer to the SAP S/4HANA system, this includes table relations, filter criteria and other information needed by the execution engine to run the transformation.	SSL
SAP S/4HANA execution engine is generating artefacts such as function groups on the SAP ECC system for later transformation. SAP S/4HANA execution engine is calling generated artefacts to extract data from the SAP ECC system.	RFC	Configuration such as filter criteria are pushed to the SAP ECC system, table data is then read from the SAP ECC system using the filter criteria.	SNC

DIAG connections can be protected using Secure Network Communications (SNC). HTTP connections are protected using the Secure Sockets Layer (SSL) protocol. We recommend using secure protocols (SSL, SNC) whenever possible.

For more information, see <u>Transport Layer Security</u> and the <u>Web Services Security Guide</u>.

Network Security

For SAP Business Transformation Center, we do not recommend any special network layout.

Ports

SAP Business Transformation Center runs on SAP NetWeaver and uses the ports from the AS ABAP. For more information, see the topics for AS ABAP Ports [SAP Library] in the corresponding SAP NetWeaver Security Guides. For other components, for example, SAPinst, SAProuter, or the SAP Web Dispatcher, see also the document TCP/IP Ports Used by SAP Applications, which is located on SAP Developer Network at http://scn.sap.com/community/security/ under Infrastructure Security and Network and Communications Security. For ports related to the SAP Cloud Connector refer to the SAP Cloud Connector guide.

Communication Destinations

The table below shows an overview of the communication destinations used by SAP Business Transformation Center.

Connection Destinations

Destination	Delivered	Туре	User	Description
Cloud > SAP S/4HANA, User is created in SAP S/4HANA system	No	OData Service	Communications Data User	Cloud access to control the transformation, create and run artefacts.
Cloud > SAP ECC, User is created in SAP ECC system	No	OData Service	Communications Data User	This is the only connection directly from the cloud to a source system.

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Destination	Delivered	Туре	User	Description
SAP S/4HANA > SAP ECC, User is created in SAP ECC system	No	RFC	Technical User	Runtime access to source system including generating artefacts for transformation and data extraction, no change of source data but creation of preselection tables in the source system.

Data Protection

Data protection is associated with numerous legal requirements and privacy concerns. In addition to compliance with general data privacy acts, it is necessary to consider compliance with industry-specific legislation in different countries. This section describes the specific features and functions that SAP provides to support compliance with the relevant legal requirements and data privacy.

This section and any other sections in this document do not give any advice on whether these features and functions are the best method to support company, industry, regional or country-specific requirements. Furthermore, this guide does not give any advice or recommendations with regard to additional features that would be required in a particular environment; decisions related to data protection must be made on a case-by-case basis and under consideration of the given system landscape and the applicable legal requirements. For more details, refer to SAP Note 3429058.

i Note

In most cases, compliance with data privacy laws is not a product feature.

SAP software supports data privacy by providing security features and specific data-protection-relevant functions such as functions for the simplified blocking and deletion of personal data.

SAP does not provide legal advice in any form. The definitions and other terms used in this guide are not taken from any given legal source.

Deletion of Temporary Data

Deletion of Temporary Data in the ABAP Source System

Temporary data in the managed ABAP system is based on a retention date. If this date is reached, all impacted data can be deleted with report /BDTS/UTIL_DELETE_TRAN_AREA in the SAP ECC source system. This report should be executed nightly until no temporary data is left to be checked and deleted after the retention date has been reached.

The report can be executed manually or by using transaction /BDTS/ADMIN on the SAP ECC source system.

⚠ Caution

Be aware that this report has no selection screen, and it checks and deletes all temporary objects whose retention dates have been reached. There is no further confirmation implemented because the reports are designed to run automatically at night without any user interaction.

A Setup and Configuration user can execute this transaction or report.

On the SAP ECC source system, the Setup and Configuration user can plan the deletion as a job.

Deletion of Temporary Data in the ABAP Target System

On the SAP S/4HANA target system, this report is scheduled automatically as a technical job. It can be switched off via transaction $\nS_{YI3}_{39000188}$.