

Technical White Paper

Cubeware Connectivity for SAP® Solution

SAP® Certified
Integration with SAP Applications

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1. General

Cubeware Connectivity for SAP® Solutions is an interface product for connecting Cubeware applications such as Cubeware Importer and Cubeware Cockpit to the SAP Business Suite and SAP Business All-In-One

This document describes the system requirements, the SAP interfaces and protocols used and the installation of Cubeware Connectivity.

Cubeware Connectivity for SAP® Solutions is a **SAP Certified Integration** for SAP NetWeaver 7.0 and above.

2. Overview of functions

Cubeware Connectivity has the following main features:

Relational access to SAP systems such as SAP ERP, SAP R/3 and SAP BW:

- Certified by SAP for SAP NetWeaver AS
- Three methods of data extraction: Open SQL Dynamic, Open SQL Extractor and BAPI
- No programming and no ABAP expertise required
- Fully automated read access to the SAP repository (data dictionary) using the Open SQL query language
- Full support for Open SQL in the SELECT statement
- Access to all table types of the SAP data dictionary (including cluster and pool tables)
- Generation and use of reusable ABAP reports (extractors)
- Access to SAP master data, text data, hierarchy data, transaction data and metadata
- Parameterized access to BAPIs and RFC function modules
- Full support for the SAP authorization concept
- Audit-trail compliant, reconstructible extraction of data from SAP
- Bulk data capability as a result of support for SAP background processing (batch processing)
- Independent of SAP frontend installations (SAP GUI)

Multidimensional access to SAP BW:

- Multidimensional driver for Cubeware Cockpit to allow connection via the “SAP BW OLE DB for OLAP” driver

3. System requirements

SAP systems:

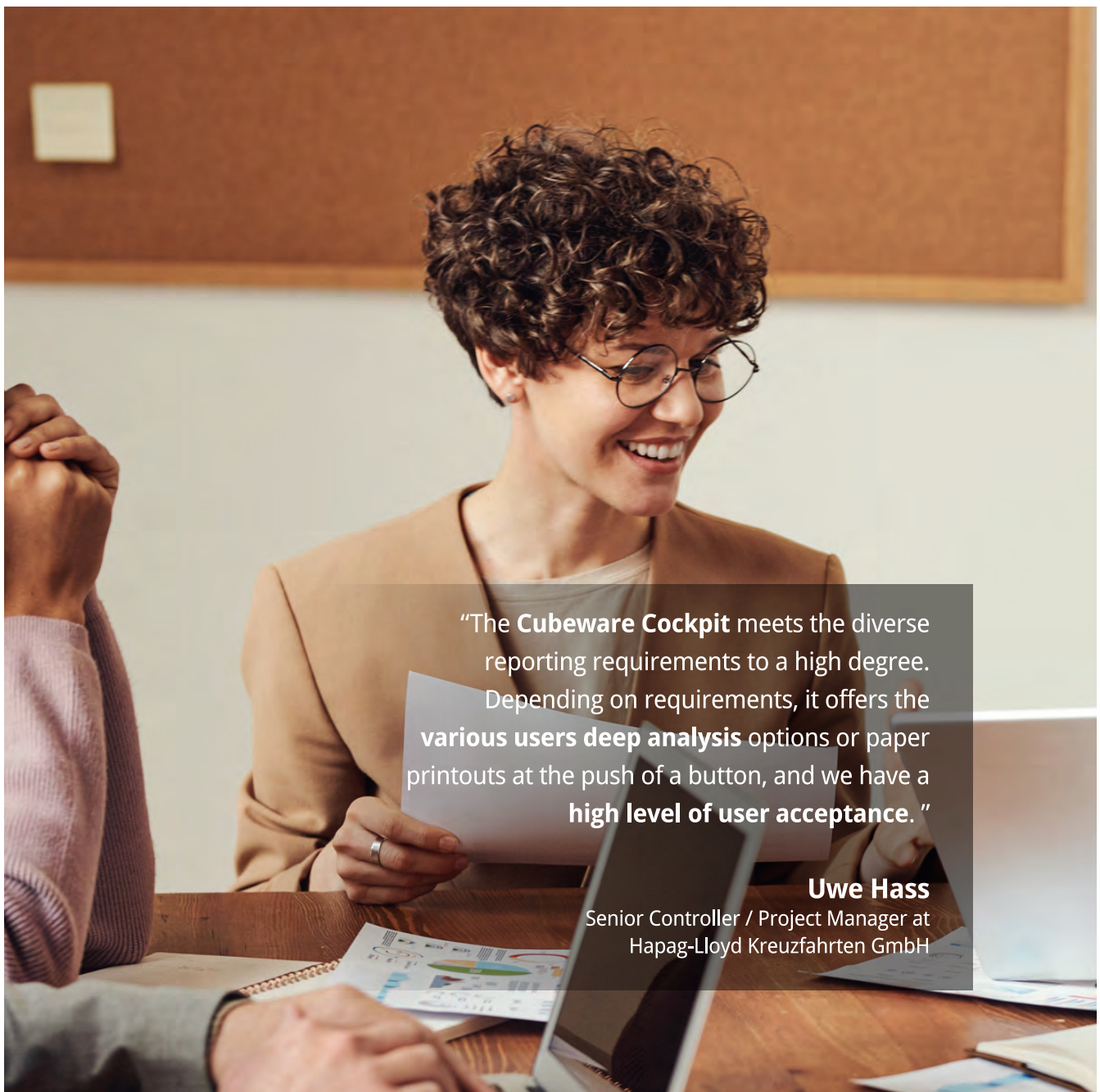
- All Unicode and non-Unicode SAP systems based on SAP NetWeaver® Version 6.10 or later with an ABAP runtime environment.
- SAP R/3® 4.0B through 4.7 (Enterprise), SAP ERP® 2004 (ECC 5.0), SAP ERP 6.0 (ECC 6.0 with current Enhancement Packages) or later
- SAP Business Information Warehouse® as of 2.0B, SAP NetWeaver® BI 7.0 or later

Operating systems:

- Microsoft Windows Server
(32 Bit und 64 Bit)
2019
2016
2012/2012 R2
(.NET-Framework 3.5 und 4 installed)
2008 SP2 and later
- Microsoft Windows
(32 Bit und 64 Bit)
10.x
8.x (Pro, Enterprise)
Microsoft Office 365/2016/2013/2010

Cubeware applications:

It is recommended that you use Cubeware Solutions Platform Release 9.4.3 or later



“The **Cubeware Cockpit** meets the diverse reporting requirements to a high degree. Depending on requirements, it offers the **various users deep analysis** options or paper printouts at the push of a button, and we have a **high level of user acceptance.**”

Uwe Hass

Senior Controller / Project Manager at
Hapag-Lloyd Kreuzfahrten GmbH

4. Licensing

Cubeware Connectivity can be licensed in one of the following two ways:

Developer license

The Developer license provides all the functions of Cubeware Connectivity for SAP® Solutions and is primarily intended for developing ETL processes with tools such as Cubeware Importer. The number of ports defines the number of sessions in which Connectivity can be used on a terminal server.

Runtime license

The Runtime license is only available in conjunction with a Cubeware Importer Runtime license and is intended for running predefined ETL processes. With the exception of these restrictions, this license provides the full range of functions of Connectivity. In the same way as with the Developer license, the number of ports

Cubeware Cockpit – Online Access to SAP

All direct access to SAP systems from Cubeware Cockpit is licensed using the Cubeware Cockpit feature bit Online Access to SAP. This includes access to SAP BAPIs and tables using the Connector for SAP via SQL DataViews and access to SAP BI InfoProviders and queries using Cube DataViews. Cubeware Connectivity for SAP® Solutions must be installed on every client. No license is necessary.

Note:

The license must be activated within five days. The Cubeware sales team will be happy to provide any further information on licensing that you may require.

5. Interfaces

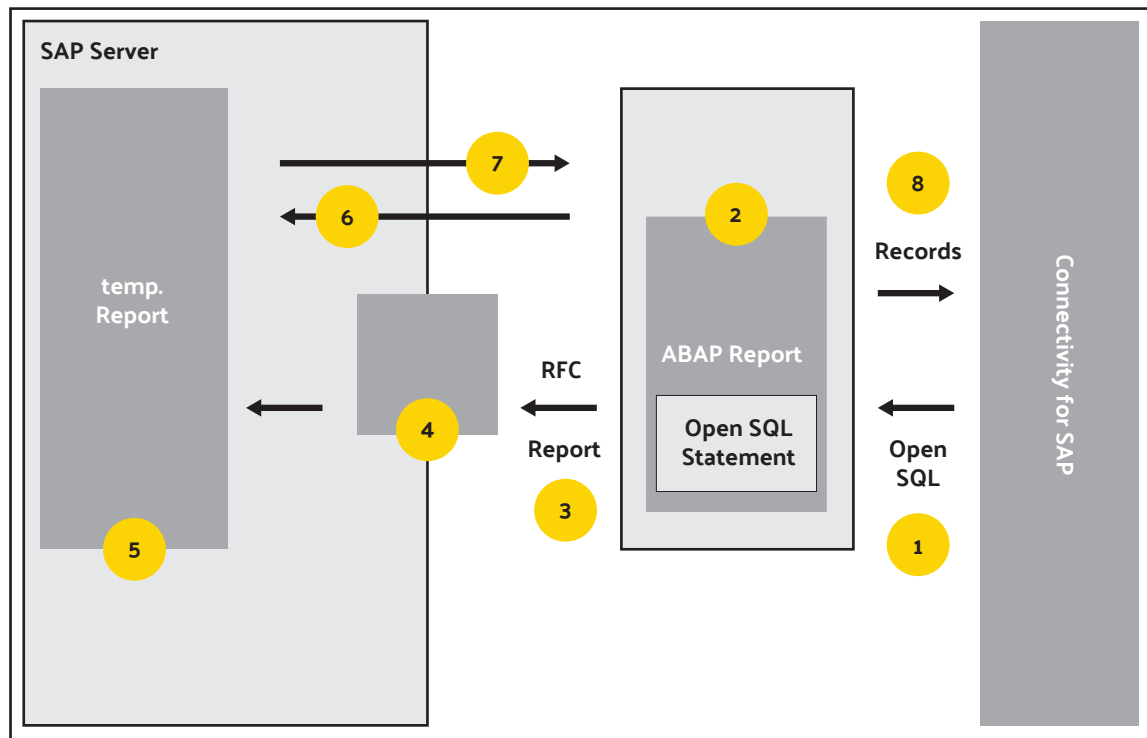
5.1 Overview Cubeware

Connectivity uses the following interfaces and protocols:

- ABAP (SAP programming interface)
- Open SQL (database query language for SAP systems that is integrated in ABAP)
- BAPI (Business Application Programming Interface)
- RFC (Remote Function Call) protocol
- XMI (external management interface for SAP batch processing)
- Cubeware ABAP interface (RFC-capable customer function module, interface for queries via generic ABAP reports in the SAP system)

5.2 ABAP

Cubeware Connectivity uses ABAP to access the tables and views of the SAP data dictionary (DDIC). Generic ABAP reports function as containers for Open SQL queries. The figure below shows the procedure when SQL queries are issued to the tables and views of the SAP DDIC.

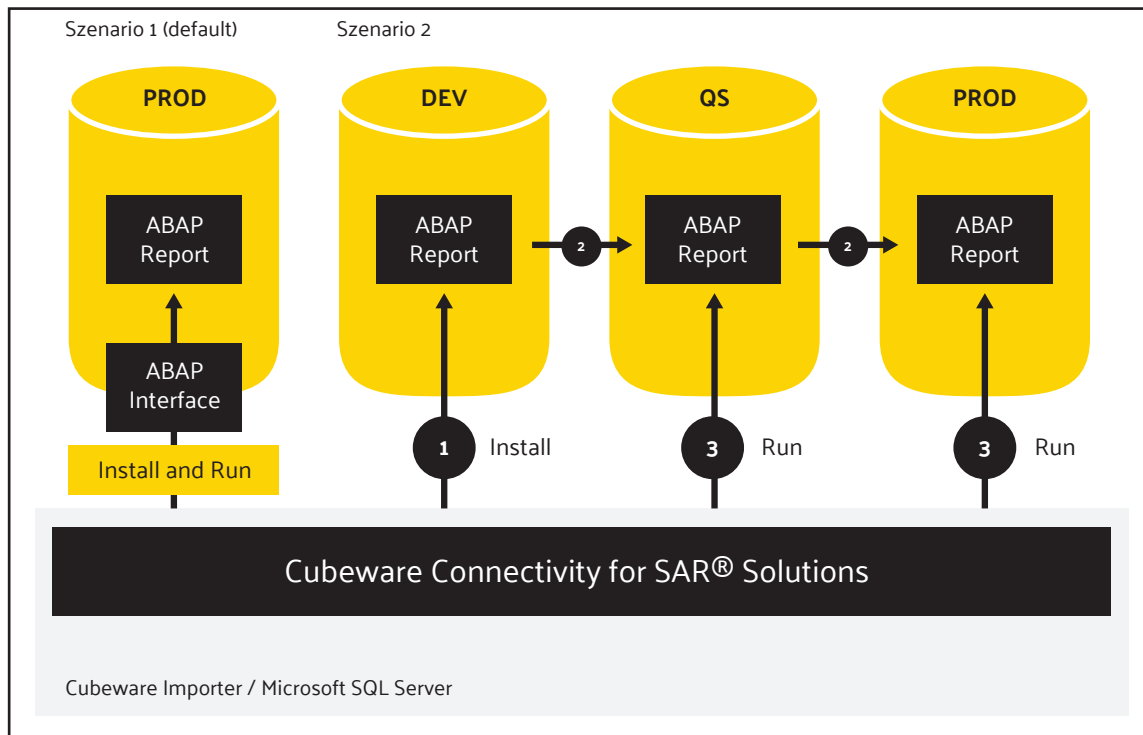


SQL query in the SAP system

1. An Open SQL statement is created by a Cubeware application such as Cubeware Importer by means of a SQL query builder.
2. The Open SQL statement is contained in a generic ABAP report.
- 3 - 5. The ABAP report is transferred to the SAP system via an RFC connection by means of the RFC-capable customer function module Cubeware ABAP Interface. It is executed and installs an ABAP report in the SAP system as a local object (development class/package \$TMP).
6. The temporary ABAP report is executed.
7. The result records are transferred packet by packet to the access module of Cubeware Connectivity via RFC.
8. The packets are passed record by record to the Cubeware application.
9. The temporary ABAP report is deleted from the SAP system on completion of data transfer.

5.3 Integration of the SAP CTS

It is possible to integrate the SAP Change and Transport System (CTS) in the SQL query mechanism. The procedure is shown in the graphic below.



SQL queries in the SAP system with and without the SAP CTS

Scenario 1 - Use of the Cubeware ABAP Interface

The SAP production system is accessed directly without using the SAP CTS. This is the standard procedure and offers the greatest possible degree of flexibility for SQL queries of the SAP repository.

Scenario 2 - Use of the Cubeware extractors

The SAP CTS is integrated for the SQL queries. A connection to the SAP development system is defined. The queries are defined over this connection. The ABAP reports are not deleted after the query (1). The ABAP reports are transported to the production system (2). A connection to the production system is defined, and the installed ABAP reports can be run (3).

When a query is changed, the entire process must be run through again.

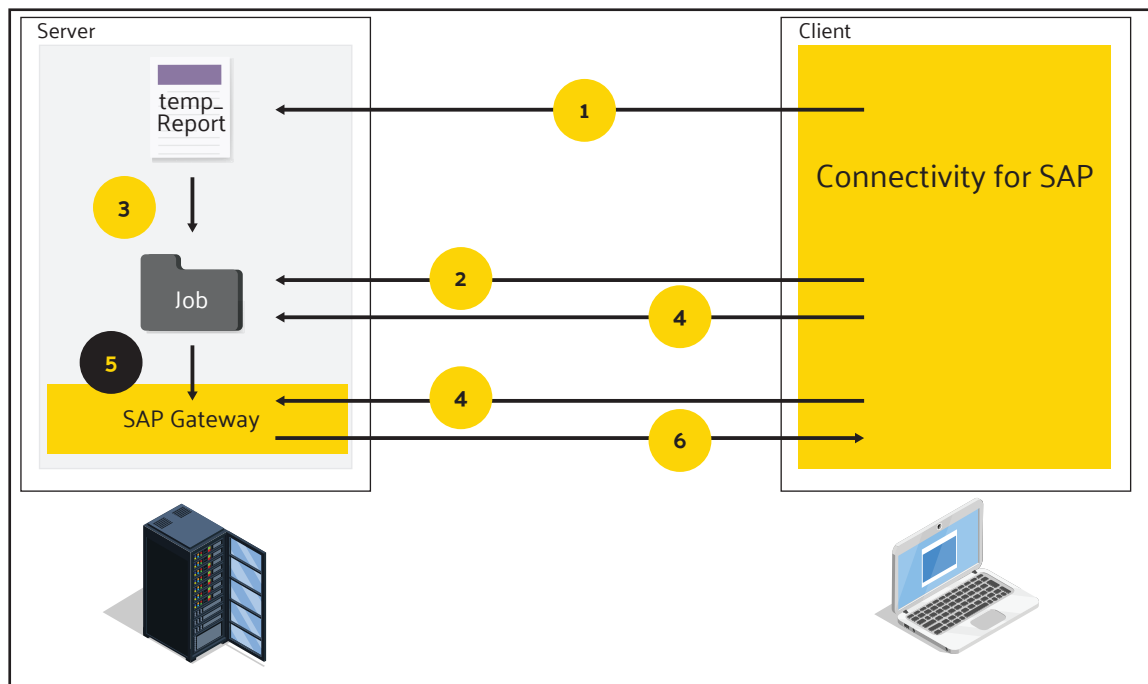
In this scenario it is possible to add authorization checks (for access to company codes or controlling areas, for example) to the ABAP reports.

When Cubeware extractors are used, it is not necessary to install Cubeware ABAP Interface in the SAP system.

5.4 XMI for batch processing

By default, queries via generic ABAP reports are run in the SAP system as interactive/online processes. Cubeware Connectivity optionally allows the ABAP reports to be run as batch processes. Cubeware Connectivity uses the XMI interface of the SAP system in order to control batch management via RFC.

The figure below shows how a query is run as a batch job.



SQL query run as a batch job in the SAP system

1. A temporary ABAP report is installed in the SAP system for the query (see steps 1-5 in section 5.2 for a description of the procedure).
2. A batch job is created in the SAP system.
3. The temporary ABAP report is assigned to the batch job.
4. Cubeware Connectivity registers at the SAP gateway and initiates the batch job at the same time.
5. - 6. The batch job makes contact with Cubeware Connectivity via the SAP Gateway and transfers the result data.

As far as the user is concerned, the handling of the queries in the Cubeware application does not change. The whole process runs in the background.

5.5 BAPI

In conjunction with Cubeware Importer, Cubeware Connectivity allows all BAPIs and RFC-capable function modules that are available in a SAP system to be called with parameters assigned.

BAPIs (Business Application Programming Interfaces) are interfaces to the SAP Business Objects. With an SAP R/3 System, for example, SAP supplies a large number of BAPIs, which are made available as remote-capable function modules. The BAPIs can be addressed via a precisely documented standard interface. They return an appropriately prepared result set for a specific question.

By means of this technology, data can be read from the SAP system, modified and written back there.

A BAPI call is defined in Cubeware Importer by means of the graphical tool BAPI Configurator. BAPI Configurator displays the interface of a BAPI. The user can use this to call the BAPI with the desired values, parameters or variables (see figure).

BAPI Configurator
BAPI_MDPROVIDER_GET_MEMBERS.MEMBERS • [Liefert eine Liste von MEMBERS, Ergebnismenge: MEMBERS]

Parameter	Wert	Optional	Standard	Datentyp	Länge	Beschreibung
ALL_PROPERTIES		•	SPACE	CHAR	1	Alle Properties gewünscht
CAT_NAM	0D_DECU	•		CHAR	32	Einschränkung: CAT_NAM
CUBE_NAM	0D_DECU/20D_SD_DEMO_Q0001	•		CHAR	70	Einschränkung: CUBE_NAM
DIM_UNAM	[0D_MATERIAL]	•		CHAR	32	Einschränkung: DIM_UNAM
END_ROW		•		NUMC	6	Allgemeines Bezugsfeld für Numerierungen
HRV_UNAM		•		CHAR	65	Einschränkung: HRV_UNAM
LVL_NUMBER		•		CHAR	2	Einschränkung: LVL_NUMBER
LVL_UNAM		•		CHAR	108	Einschränkung: LVL_UNAM
MEM_CAP		•		CHAR	60	Einschränkung: MEM_CAP
MEM_NAM		•		CHAR	64	Einschränkung: MEM_NAM
MEM_TYPE		•		CHAR	2	Einschränkung: MEM_TYPE
MEM_UNAM		•		CHAR	143	Einschränkung: MEM_UNAM
SET_NAME		•		CHAR	70	tensor processor command parameter
START_ROW		•		NUMC	6	Allgemeines Bezugsfeld für Numerierungen
TREEOP		•		CHAR	2	Einschränkung: Treeoperator

CALL FUNCTION BAPI_MDPROVIDER_GET_MEMBERS.MEMBERS
EXPORTING
CAT_NAM = '0D_DECU'
CUBE_NAM = '0D_DECU/20D_SD_DEMO_Q0001'
DIM_UNAM = [0D_MATERIAL]

	LVL_NUMBER	MEM_NAM	MEM_UNAM	MEM_TYPE	MEM_UID	MEM_CAP	MEM_ORDINAL	CHILDREN	PARENT_LVL	PARENT_UNAM
1	00	All	[0D_MATERIAL].[All]	02		Alle Material	000000	000009	01	
2	01	M01	[0D_MATERIAL].[M01]	01		M01	000001	000000	00	[0D_MATERIAL].[All]
3	01	M03	[0D_MATERIAL].[M03]	01		M03	000002	000000	00	[0D_MATERIAL].[All]
4	01	M09	[0D_MATERIAL].[M09]	01		M09	000003	000000	00	[0D_MATERIAL].[All]
5	01	M13	[0D_MATERIAL].[M13]	01		M13	000004	000000	00	[0D_MATERIAL].[All]
6	01	M15	[0D_MATERIAL].[M15]	01		M15	000005	000000	00	[0D_MATERIAL].[All]
7	01	M18	[0D_MATERIAL].[M18]	01		M18	000006	000000	00	[0D_MATERIAL].[All]
8	01	PCSERVICEA	[0D_MATERIAL].[PCSERVIC	01		PCSERVICEA	000007	000000	00	[0D_MATERIAL].[All]

Definition of a BAPI call in Cubeware Importer's BAPI Configurator

5.6 Logging

Cubeware Connectivity offers logging mechanisms for RFC, CPI-C and the generic ABAP reports.

5.6.1 RFC

A **trace mode** can be activated for the SAP protocols RFC. Detailed information on the RFC connections is output to local text files.

5.6.2 ABAP

A **simulation mode** can be activated for Cubeware Connectivity. This mechanism outputs all the generated ABAP reports to a local text file rather than sending them to the SAP system. The ABAP coding can be transferred to the SAP system's ABAP Workbench manually for evaluation.

5.6.3 SAP system log

The queries can optionally be logged in the **SAP system log**. A log entry is created when the temporary ABAP reports are created, started or deleted.

6. Installation

Cubeware Connectivity must always be installed on the relevant system (client, OLAP server) to allow data access (Cubeware Cockpit) or data extraction (Cubeware Importer). It is only necessary to install the Cubeware ABAP Interface in the SAP system if data from a productive system that cannot be changed is to be extracted from tables or displayed in Cockpit using Open SQL.

The following sections provide information on when any given installation is to be performed and what minimum permissions are required to do so.

You should also read the notes in the User permissions section of the online Help system for Cubeware Connectivity for SAP Solutions.

6.1 Accessing data using BAPIs (see Section 5.5)

Data can be accessed on SAP systems that can be modified and SAP systems that cannot be modified. Cubeware Connectivity is installed on the client together with Cubeware Importer. The Cubeware ABAP Interface is not required.

Minimum permissions for the SAP development, test/QA and production system:

Authorization object	Object class	Field	Field description	Field value
S_RFC	AAAB	ACTVT RFC_NAME RFC_TYPE	Activity Name of the RFC object Type of the RFC object	Execute (16) RFC1, SDIF, SDIFRUNTIME, SLST, SUTL, SYST, SDTX ⁽¹⁾ FUGR

(1) Functional groups in which the BAPI and RFC functional modules are located must be added to the permission object S_RFC on demand.

As a rule, business permission objects are checked in the BAPI. These must also be added to the role or the profile.

6.2 Access to data in tables using Open SQL (see 5.2)

6.2.1 Access to an SAP system that can be modified

Cubeware Connectivity is installed on the client together with Cubeware Importer. The Cubeware ABAP Interface is not required.

Minimum permissions for the SAP development, test/QA and production system:
Basis:

Authorization object	Object class	Field	Field description	Field value
S_ADMI_FCD	BC_A	S_ADMI_FCD	FCDSystem administration function	MEMO
S_DEVELOP	BC_C	ACTVT	Activity	Create (01), Modify (02), Display (03)
		P_GROUP	ABAP permission group	
		DEVCLASS	Development class	\$TMP
		OBINAME	Object name	Z*
		OBJTYPE	Object type	PROG
S_CPIC	BC_C	ACTVT	Activity	Accept (37)
		PROGRAM	ABAP program name	Z*
		ABAPFORM	ABAP form routine	CPIC_SEND
		CPICDEST	Destination	
S_RFC	AAAB	ACTVT	Activity	Execute (16)
		RFC_NAME	Name of the RFC object	RFC1, SDIF, SDIFRUNTIME, SLST, SUTL, SYST, SDTX, Z_CUBEWARE_BI
		RFC_TYPE	Type of the RFC object	FUGR
S_TABU_DIS	BC_A	ACTVT	Activity	Display (03)
		DICBERCLS	Permission group	&NC&, *
S_TCODE	AAAB	TCD	Transaction code	SE38

Additional permissions for the SAP development, test/QA and production system for running dynamic Open SQL queries as batch jobs:

Authorization object	Object class	Field	Field description	Field value
S_RFC	AAAB	ACTVT	Activity	Execute (16)
		RFC_NAME	Name of the RFC object	SXMI, SXBP, RFCV
		RFC_TYPE	Type of the RFC object	FUGR
S_XMLPROD	BC_A	EXTCOMPANY	Company name for an external TOOL	Cubeware
		EXTPRODUCT	Program name for an external tool	Importer
		INTERFACE	Code for the interface	XBP
S_BTCH_ADM	BC_A	BTCADMIN	Consolidation of jobs to form a group	Y
S_BTCH_JOB	BC_A	JOBGROUP	ID for batch administrator	
		JOBACTION	Operations on a job	RELE
S_CPIC	BC_A	ACTVT	Activity	Initialize (51)
		PROGRAM	ABAP program name	Z*
		ABAPFORM	ABAP form routine	
		CPICDEST	Destination	ZCW001

The values shown in **bold** can be adapted or further restricted as required.

6.2.2 Access to an SAP system that cannot be modified

Cubeware Connectivity is installed on the client together with Cubeware Importer. The Cubeware ABAP Interface is also installed on the server (see section 6.4).

For minimum requirements, see Section 6.2.1

Permissions for the ABAP Interface

ZCUBEWARE	ZCW	ACTVT	Activity	Execute (16)
-----------	-----	-------	----------	--------------

The **values shown in bold** can be adapted or further restricted as required. If the ABAP Interface is used in the dynamic reports mode of Open SQL, the functional group in which the ABAP Interface is located must be added to the permission object S_RFC. The name of the ABAP Interface permission object ZCUBEWARE depends on the settings made in the ABAP Interface installer during installation of the ABAP Interface.

6.2.2 Access using Cubeware extractors (see section 5.3)

If no direct access to an SAP system that cannot be modified is permitted, SAP CTS is used. Cubeware Connectivity is installed on the client together with Cubeware Importer.

Minimum permissions for the SAP development system for creating extractors:

Authorization object	Object class	Field	Field description	Field value
S_ADMIFCD	BC_A	S_ADMIFCD	System administration function	MEMO
S_DEVELOP	BC_C	ACTVT	Activity	Create (01), Modify (02), Display (03)
		P_GROUP	ABAP permission group	
		DEVCLASS	Development class	\$TMP
		OBJNAME	Object name	Z\$\$\$XRFC
		OBJTYPE	Object type	PROG
S_CPIC	BC_C	ACTVT	Activity	Accept (37)
		PROGRAM	ABAP program name	Z*
		ABAPFORM	ABAP form routine	CPIC_SEND CW_GETMETADATA
		CPICDEST	Destination	
S_RFC	AAAB	ACTVT	Activity	Execute (16)
		RFC_NAME	Name of the RFC object	RFC1, SDIF, SDIFRUNTIME, SLST, SUTL, SYST, SDTX, Z_CUBEWARE_BI
		RFC_TYPE	Type of the RFC object	FUGR
S_TABU_DIS	BC_A	ACTVT	Activity	Display (03)
		DICBERCLS	Permission group	&NC&, *
S_TCODE	AAAB	TCD	Transaction code	SE38

The values shown in bold can be adapted or further restricted as required.

Minimum permissions for the SAP test/QA and production system for executing extractors:

Authorization object	Object class	Field	Field description	Field value
S_CPIC	BC_A	ACTVT	Activity	Accept (37)
		PROGRAM	ABAP program name	Z*
		PROGRAM	ABAP form routine	CPIC_SEND, CW_GETMETADATA
		CPICDEST	Destination	
S_RFC	AAAB	ACTVT	Activity	Execute (16)
		RFC_NAME	Name of the RFC object	RFC1, SDIF, SDIFRUNTIME, SLST, SUTL, SYST, SDTX, FRFC
		RFC_TYPE	Type of the RFC object	FUGR
S_TABU_DIS	BC_A	ACTVT	Activity	Display (03)
		DICBERCLS	Permission group	&NC&

The values shown in **bold** can be adapted or further restricted as required.

Additional permissions for the SAP development, test/QA and production system for running extractors as batch jobs:

Authorization object	Object class	Field	Field description	Field value
S_RFC	AAAB	ACTVT	Activity	Execute (16)
		RFC_NAME	Name of the RFC object	SXMI, SXBP, RFCV
		RFC_TYPE	Type of the RFC object	FUGR
S_XML_PROD	BC_A	EXTCOMPANY	Company name for an external TOOL	Cubeware
		EXTPRODUCT	Program name for an external tool	Importer
		INTERFACE	Code for the interface	XBP
S_BTCH_ADM	BC_A	BTCADMIN	Consolidation of jobs to form a group	Y
S_BTCH_JOB	BC_A	JOBGROUP	ID for batch administrator	
		JOBACTION	Operations on a job	RELE
S_CPIC	BC_A	ACTVT	Activity	Initialize (51)
		PROGRAM	ABAP program name	Z*
		ABAPFORM	ABAP form routine	
		CPICDEST	Destination	ZCW001

The values shown in **bold** can be adapted or further restricted as required.

6.4 Installation on the client

The setup routine installs the following client components of Cubeware Connectivity:

- **Cubeware Connector for SAP** (cwirsap.dll, cwirsapu.dll) – Access module for SAP. The connector is offered as a relational data source in Cubeware Importer and Cubeware Cockpit.
- **Cubeware ABAP Interface Installer** (sapadmin.exe, sapadminu.exe) – Wizard for the installation of Cubeware ABAP Interface in the SAP system
- **SAP NetWeaver BW (Query Flat)** (cwirsapbw.dll) – Relational interface to the flat data of a query. The driver is only available in Cubeware Importer.

The setup routine for Cubeware Connectivity is a Windows installer and is available as an executable file (EXE) and an MSI file.

Local administration rights are required on the workstation for installation.

During installation, files are copied to the file system and entries are made in the Windows registry.

The following SAP RFC client components are installed with Cubeware Connectivity:

- librfc32.dll – SAP RFC library
- librfc32u.dll – SAP Unicode RFC library
- icudt34.dll – IBM Unicode Components for SAP Unicode RFC
- icuin34.dll – IBM Unicode Components for SAP Unicode RFC
- icuuc34.dll – IBM Unicode Components for SAP Unicode RFC
- sapnwrfc.dll – SAP NetWeaver RFC library
- libicudcnumber.dll – Subcomponents of the SAP NetWeaver RFC library
- libsapucum.dll – Subcomponents of the SAP NetWeaver RFC library

If these components already exist on the system, possibly as a result of an existing SAP frontend installation, the existing components are not changed.

The Microsoft Visual C++ Redistributable Package is installed as the runtime environment for Cubeware Connectivity.

Additional system requirements:

TCP/IP

The TCP/IP transport protocol must be installed on the client computer. Cubeware Connectivity for SAP® Solutions uses the RFC protocols. TCP/IP acts as the transport protocol for the two SAP protocols. It must be possible to use TCP/IP to access the SAP system you wish to communicate with.

TCP ports

If there is a **firewall** between the SAP system and the client system, the TCP ports 32+<SYSNR> and 33+<SYSNR> must be opened in the firewall to make it possible to log into an SAP application server. Port 36+<SYSNR> must be opened in the firewall for logging in to an SAP server group (load-balancing). If login is performed via an SAP router, this is not necessary, as communication is then performed over the SAP router port (default 3299), and this should already have been opened in the firewall.

You should also note that these ports should also be enabled in any local virus scanner.

SAP router

If communication takes place via an SAP router, the route between the computer with Cubeware Connectivity and the SAP system must be enabled in its route permission table. The default port for the SAP router is 3299.

6.5 Installing the ABAP Interface on the server

Installation on the SAP server involves the following steps:

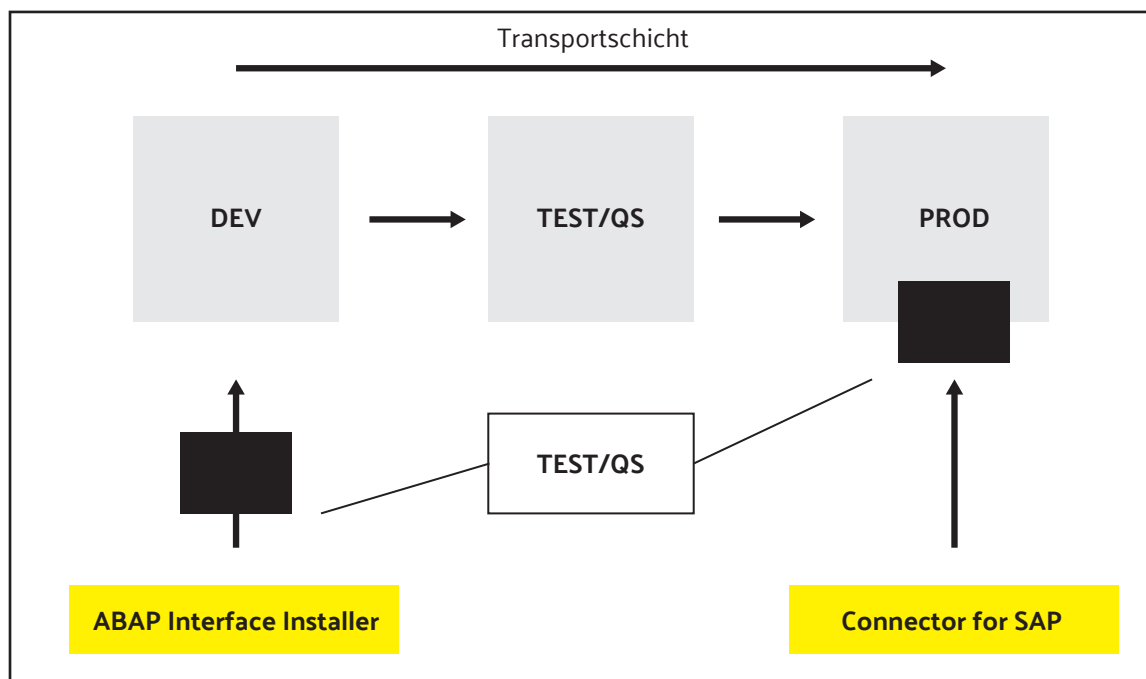
- Create the Cubeware ABAP Interface
- Create transport package and relocate functional group
- Create ABAP Interface permission object
- Prepare transport
- Perform transport and set up permissions

You will find detailed information on the various installation steps and the administration activities in the SAP system in the Cubeware Connectivity online help system.

6.5.1 Cubeware ABAP Interface

Cubeware ABAP Interface is an RFC-capable function module that represents the interface in the SAP system for queries via generic ABAP reports with Cubeware Connectivity.

The function module is installed on the development system by means of the Cubeware ABAP Interface Installer wizard. From there the function module is installed on the production system via the corresponding transport layer. On the production system it represents the interface for Cubeware Connectivity (see figure).



Installation and transport of Cubeware ABAP Interface

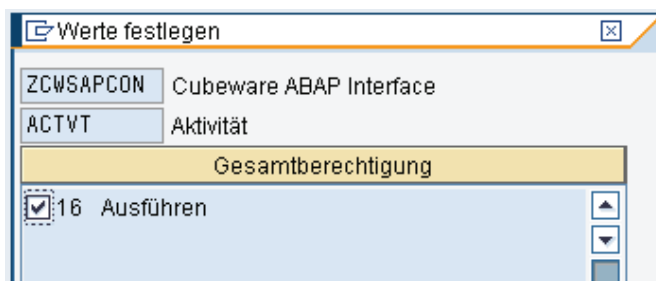
6.5.2 Cubeware ABAP Interface authorization object

Cubeware ABAP Interface includes a check for the Cubeware ABAP Interface authorization object. The SAP logon user must be assigned an access right for the authorization object, thus enabling the user to use Cubeware ABAP Interface.

The access right should not be assigned to other users. This ensures that only the user of Cubeware Connectivity can use Cubeware ABAP Interface to run the generic ABAP reports.

Any name within the customer's name space can be chosen for the authorization object, but **ZCUBEWARE** is suggested in Cubeware ABAP Interface Installer.

The authorization object has the authorization field **ACTVT** with the field value **Run (16)**. The access right must be defined with the value **Run (16)** (see figure).



Installation and transport of Cubeware ABAP Interface

6.6 SAP logon use

Login to the SAP system is through an SAP logon user. A background user is sufficient for access to an SAP system with Cubeware Connectivity.

Dialog, **communication** and **service** are the permitted user types. The minimum permissions that a SAP logon user must have are described under the various access types in this document.

About Cubeware

Business Intelligence & Performance Management solutions

Cubeware helps you to bundle all relevant data and information and to make it available to all your employees – both online and offline – providing a sound basis for decisions to be taken. Integrated analysis, dashboarding, planning and reporting from a single source. Over 4,000 customers around the world rely on it.

Sophisticated

Since 1997 our solutions for business intelligence and performance management have been deployed around the world to ensure that data becomes information and that information leads to knowledge, and that this knowledge enables the right decisions to be made at the right time. Throughout the company. Across all departments. For all employees. Targeted. Affordable. Fast. Customised. This is our mission. Why should you settle for anything less?

The basis for your BI success

The Cubeware Solutions Platform C8 (CSP C8) is the central, integrated BI neural system. Irrespective of whether you wish to tap new data sources, prepare, analyse or visualise data, make reports available to thousands of users or simulate and plan your next steps, CSP C8 is the central answer to your challenges.

Overcome all your BI challenges

Companies of all sizes in all sectors use CSP C8 to implement target group-specific, integrated BI and PM solutions.



Visualisation & planning

Interact intuitively with your data and information. Create meaningful dashboards, user-guided reporting environments and planning workflows.



Data & report distribution

Whether following the push or pull principle. Whether a portal or on-premise solution. Whether web-based, via PC or smartphone. You decide how your analyses, dashboards, planning masks and reports are distributed and used.



Data governance

You can quickly and easily define company-wide or department-specific authorisation models to ensure that your data are made available securely and reliably to your users and user groups.



Data modelling

In no time at all you can create data models for analysis and enhance existing models with new data to provide a rapid and accurate response to any changes – using the fastest OLAP databases in accordance with the best-of-breed principle.



Data management

Combine disparate information silos to perform analysis and planning across your entire data pool and to eliminate the expense of information silos.

Tightly integrated analysis, reporting & planning

A plan that you cannot actively control, monitor and communicate will have as little effect as an analysis that has no influence on the way you plan your next steps. This is why CSP C8 covers the entire life-cycle of business intelligence and performance – using a standardised data model, across all front ends and with integrated functions for analysis, dashboarding, planning and reporting.

Learn more at: planung.cubeware.com

BI bots – effortlessness reinvented

A different approach to self-service BI: our chatbots for C8 Mobile, Telegram™ and Skype™ for Business enable you to supply all your employees, customers and partners with relevant information direct from your BI system – without any need for training or prior knowledge. Benefit from the “WhatsApp effect”. Company-wide BI has never been so easy and affordable.

Learn more at: www.bi-bot.com