SAP Crystal Server
Document Version: 2016 Support Package 03 – 2016-07-04

SAP Crystal Server Installation Guide for Windows

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Content

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1 Document History

The following table provides an overview of important document changes.

Version	Date	Description
SAP Crystal Server2013	May, 2013	First release of this document.
SAPCrystal Server 2013 Support Package 4	June 2014	• Added instructions for updating SAP BW systems in Support for SAP BW [page 23]. • Added post-installation steps to allow database access via DataDirect in *Configuring DataDirect DSN connections*. . • Added Terminology [page 8] section. • SAP System Landscape Directory (SLD) is now a hidden feature and automatically installed, so all reference to the associated feature code has been removed. • Changed the section *Checking the installed version*. • Underscores ("_") are not allowed in a SIA name.
SAP Crystal Server 2016	November 2015	• Updated the Sybase SQL Anywhere in New features and components [page 11] • Updated information about Tomcat in New features and components [page 11] • Updated the Language support information in New features and components [page 11] and Languages [page 14] • Added information about the phase-wise installation in To run a phase-wise installation [page 50] and To run a phase-wise installation for update installation from command prompt [page 52] • Updated information about the password restrictions in Full installation and Custom/Expand

Version	Date	Description
		Installation, Full installation [page 28] and Custom (New) installation [page 32] • Added Verifying fips in your installation in Post Installation Verifying fips in your installation [page 65]
SAP Crystal Server 2016 Support Package 01	December, 2015	• Updated information in Additional documentation [page 9] • Updated information abot Tomcat 8 in New features and components [page 11] • Updated information in Upgrade support [page 13]
SAP Crystal Server 2016 Support Package 02	March, 2016	Updated a SAP note in Support for SAP Solution Manager Diagnostics (SMD) [page 22] Updated a note in To run an interactive installation [page 26] Updated a note in Installation option parameters [page 42] Updated information about new license requirement in To run a phase-wise installation for update installation from command prompt [page 52] Updated a note in To run a phase-wise installation for new installation from command prompt [page 50]
SAP Crystal Server 2016 Support Package 03	August, 2016	Added phase-wise installation from user interface in To run a phase-wise installation for update installation from user interface [page 54] Updated information about web application deployment in To run a phase-wise installation for update installation from command prompt [page 52] and To run a phase-wise installation for update installation from user interface [page 54]

2 Introduction

This document guides you through the installation of SAP Crystal Server.

2.1 About this Document

The following documentation provides administrators with information, procedures, and options for the installation, removal, and modification of an SAP Crystal Server. Two versions of this guide exist:

- *SAP Crystal Server Installation Guide for Windows*: for use with Microsoft Windows operating systems (this document).
- *SAP Crystal Server Installation Guide for Unix*: for use with Unix or Linux operating systems.

This document also provides information and procedures for the installation of the SAP Crystal Server Client Tools.

2.2 Purpose

This document is intended for system administrators performing a full installation of SAP Crystal Server 2016. For information on applying minor release, Support Package, or Patch updates to your existing installation, see the Update installation guides at http://help.sap.com/bobip.

2.3 Constraints

This guide does not describe how to set up a supported host operating system, database, web application, or web server. If you are planning to use a dedicated database, web application, or web server, it must be installed and functioning before attempting to install SAP Crystal Server.

2.4 Variables

The following variables are used throughout this guide.

Variable	Description
`<CS_INSTALL_DIR>`	The directory where Crystal Server is installed. On Windows, the default directory is `C:\Program Files (x86)\SAP BusinessObjects\`.
`<WAS_HOSTNAME>`	The hostname or IP of the web application server where BI platform web applications are deployed.

2.5　Terminology

Table 1:

Term	Definition
add-on products	Products that work with the Crystal Server but have their own installation program, such as SAP BusinessObjects Explorer
Auditing Data Store (ADS)	The database used to store auditing data
bundled database; bundled web application server	The database or web application server shipped with Crystal Server
cluster (noun)	Two or more Central Management Servers (CMSs) working together and using a single CMS database
cluster (verb)	To create a cluster. For example, to create a cluster: 1. Install a CMS and CMS database on machine A. 2. Install a CMS on machine B. 3. Point the CMS on machine B to the CMS database on machine A.
cluster key	Used to decrypt the keys in the CMS database. You can change the cluster key in the CCM, but you cannot reset the key like a password. It contains encrypted content and is important not to lose.
CMS	An abbreviation for the Central Management Server
CMS database	The database used by the CMS to store information about Crystal Server
deployment	Crystal Server software installed, configured, and running on one or more machines

Term	Definition
installation	An instance of Crystal Server files created by the installation program on a machine
machine	The computer on which Crystal Server software is installed
major release	A full release of the software, such as 4.0
migration	The process of transferring BI content from a previous major release (for example, from XI 3.1), using the upgrade management tool. This term does not apply to deployments with the same major release. See promotion.
minor release	A release of some components of the software, such as 4.2
node	A group of Crystal Server servers that run on the same machine and are managed by the same Server Intelligence Agent (SIA)
Patch	A small update for a specific Support Package version
promotion	The process of transferring BI content between deployments with the same major release (for example, 4.0 to 4.0), using the promotion management application
server	A Crystal Server process. A server hosts one or more services.
Server Intelligence Agent (SIA)	A process that manages a group of servers, including stopping, starting, and restarting servers
Support Package	A software update for a minor or major release
web application server	A server that processes dynamic content. For example, the bundled web application server for 4.2 is Tomcat 8.
upgrade	The planning, preparation, migration, and post-processes required to complete a migration process

2.6 Additional documentation

Documents listed in the following table are relevant to deployment and installation. All 4.2 documents are available for download at http://help.sap.com/bobip.

Table 2:

Document Description	Document Title
Lists the supported platforms, databases, web application servers, web servers, and other systems.	*Product Availability Matrix (PAM)*
Overview of SAP Crystal Server documentation.	*SAP Crystal Server Getting Started Guide*
Instructions to upgrade from a previous major release	*SAP Crystal ServerUpgrade Guide*
Installation instructions on applying a 2016 update to your 2013 deployment.	*SAP BusinessObjects Suite 4.2 Minor Version Update Guide*
Installation instructions on applying a Patch update to your 2016 deployment.	*SAP BusinessObjects Suite 4.2 Patch Update Guide*
Detailed instructions for deploying BI platform web applications to supported web application servers.	*SAP BusinessObjects Business Intelligence Platform Web Application Deployment Guide*

3 Planning

The SAP Crystal Server can be installed on Windows, Unix, or Linux platforms.

Before installing:

- Ensure the operating system, application server, database server, and other components on which you will install SAP Crystal Server are supported. See the SAP BusinessObjects BI 4.0 Product Availability Matrix (PAM) at https://support.sap.com/release-upgrade-maintenance/pam.html .
- Decide whether to use the included Sybase SQL Anywhere database server for the CMS and auditing databases.
  If you do not have a database server to use with SAP Crystal Server, the installation program can install and configure one for you. It is recommended that you evaluate your requirements against information from your database server vendor to determine which supported database would best suit your organization's requirements.

  > i Note
  >
  > If you do not plan to use the default database that is included in the installation program, ensure the database that you plan to use is configured before beginning the installation. The database must have user accounts with the appropriate database privileges ready, and the appropriate drivers must be installed and verified as working. The installation program will connect to and initialize the database.

  The installation program will only install a database on the local machine. It cannot install across a network.
- Decide whether to use the included Tomcat web application server.
  If you do not have a web application server system to host BI platform web applications, the installation program can install and configure one for you. It is recommended that you evaluate your requirements against information from your web application server vendor to determine which supported database would best suit your organization's requirements. To use any other supported web application server, it must be installed, configured, enabled, and accessible before you install the BI platform.
  The installation program will only install Tomcat on the local machine. It cannot install across a network.

3.1 New features and components

The following features and components are new to the SAP Crystal Server 2016 installation program.

Sybase SQL Anywhere bundled database

Sybase SQL Anywhere, bundled database server for the CMS and Auditing Data Store is updated to version 16.

If you are updating a 2013 installation that uses the bundled Microsoft SQL Server Express database server to 2016 with the update installation program, your SQL Server database is preserved and will still be used. You may

continue to use this bundled database server with no further action or you can choose to migrate your existing databases to Sybase SQL Anywhere by following the steps described in "Migrating to Sybase SQL Anywhere" in the *SAP BusinessObjects Suite 4.1 Update Guide*.

Tomcat 8 bundled web application server

Tomcat 8.0 is now the default, bundled web application server.

If you are using the update installation program to update a 2011 or 2013 installation that uses the bundled Tomcat 6.0 or 7.0 web application server respectively to 2016, your system is automatically updated to Tomcat 8.0.

> **i Note**
>
> - Any custom settings which you have applied in Tomcat 6.0 are migrated to Tomcat 8.0. Certain Tomcat 6.0 configuration files are backed up automatically to:
>   `<CS_INSTALL_DIR>\tomcat6ConfBackup\`
> - Any Custom settings you had applied in Tomcat 7.0 are retained in Tomcat 8.0 web application server. However, we strongly recommend you to validate if the custom settings are available in Tomcat 8
> - If you are using a tomcat cluster configuration on your existing SAP Crystal Server, then remove the following listener tag from the cluster configuration before updating to SAP Crystal Server 2016
>   Listener tag : `org.apache.catalina.ha.session.JvmRouteSessionIDBinderListener`
> - If you are using tomcat cluster configuration on your existing SAP Crystal Server, and you have already updated to SAP Crystal Server 2016, then remove the following listener tag from the cluster configuration and restart tomcat 8
>   Listener tag : `org.apache.catalina.ha.session.JvmRouteSessionIDBinderListener`
> - If Tomcat 8 does not start automatically, we recommended you to validate the custom settings in par with tomcat 8 migration guidelines. For more information, please refer https://tomcat.apache.org/migration-8.html ➚

New Language support for SAP Crystal Server 2016

You may now add or remove a language by modifying your SAP Crystal Server installation. You do not have to remove and re-install the product to select new languages.

To add or remove a language, go to ▮ *Start* 〉 *Control Panel* 〉 *Programs and Features* ▮, select your SAP Crystal Server server or Client Tools product and click *Uninstall/Change*. Select the *Modify* option and add or remove languages from the *Choose Language Packs* screen.

3.2 Upgrade support

Definition of Upgrade and Update

Update means adding support packages or patches to a 2016 release. *Upgrade* means moving a Crystal Server 2008 release to a Crystal Server 2011 or 2013 or 2016 release.

Updating from 2011 or 2013 to 2016 Support Package 01

Use this table to select the correct update guide.

> i Note
>
> You can install the 2013 SP1 or 2013 SP2 update directly on a 2011 installation. You do not need to install the 2013 update first.

Table 3:

Type of update	Example	Guide
minor release update	• Installing 2016 on a 2011 or 2013 re-lease	*BI Platform minor release update guide*
Support Package update	• Installing 2016 SP1 on a 2016 re-lease • Installing 2016 SP1 on a 2013 re-lease • Installing 2016 SP1 on a 2011 re-lease	*Support Package update guide*
Patch update for 4.2 release	• Installing 2016 SP1 Patch 1 on a 2016 release	*Patch 1.x Update Guide 4.2 SP1*
Patch update for 4.1 release	• Installing 2013 SP1 patch 3 on a 2013 SP1 release	*Patch 1.x Update Guide 4.1 SP1*
Patch update for 4.0 release	• Installing 2011 SP7 Patch 2 on a 2011 SP7 release	*Patch 0.x Update Guide 4.1*

Updating from 2011

If you are updating a 2011 or 2013 installation to 2016, use the SAP Crystal Server 2016 update installation program. See the *SAP BusinessObjects BI Suite 4.2 Minor Release Update Guide* for more information.

3.3 Database servers

If you do not have a database server in place for use with SAP Crystal Server, the installation program can install and configure one for you. It is recommended that you evaluate your requirements against information from your database server vendor to determine which supported database would best suit your organization's requirements.

Sybase SQL Anywhere is the default database server. Any other database server must be running and accessible when you run the installation program.

> **i Note**
>
> The database client and server must use the Unicode character set.

For a list of supported database versions, revision levels, and requirements, consult the SAP BusinessObjects BI 4.1 *Product Availability Matrix (PAM)*, available at https://support.sap.com/release-upgrade-maintenance/pam.html .

3.4 Languages

BI platform user interface has been translated into more than 40 languages. You can add support for different languages by installing language packs, either during the full installation or when modifying the installation. We recommend that you install only the language packs that are required because the installed size of language packs can be large.

To add or remove languages during a modify installation, see To modify SAP Crystal Server [page 61].

To add a new language, follow the procedure below

1. Go to ▌▶ *Start* ❯ *Control Panel* ❯ *Programs and Features* ❯
2. Select SAP Business Objects Business Intelligence platform base version.
3. Choose *Modify* and then choose *Next*.
4. Select the new language from the *Select language Packages* and choose *Next*.
5. Select the features and choose *Next*.
6. In the Expand Installation screen and Choose *Next*.
7. Enter the CMS administrator password and choose *Next*.
8. To start installation choose *Next*.
9. To complete the installation choose *Finish*

The new language has now been added.

4 Preparation

This section details how to prepare for the installation of the SAP Crystal Server.

Process Flow

1. Ensure that sufficient disk space is available. Allow for both the operating system and the software to grow over time as patches or new components become available.
2. Gather the installation media or download the latest release and any Patches or Support Packages from the SAP Service Marketplace as described in To download the server installation program [page 25].
   SAP HOSTAGENT - a required software package for using SAP System Landscape Directory (SLD). To enable SAP System Landscape Directory (SLD) support [page 21]. The SAP HOSTAGENT is packaged in the following location `CrystalServer/Collaterals/Tools/SAP_HOSTAGENT`.
   In addition, download:
   SAPCAR - a compression utility used to compress and decompress downloaded packages in the `.SAR` format from SAP Service Marketplace.

   To download SAPCAR, go to ▶ *http://support.sap.com/home.html* ❯ *Software Downloads* ❯ *Support Packages and Patches* ❯ *Browse our Download Catalog* ❯ *SAP Technology Components* ❯ *SAPCAR* ◀.
3. If you plan to use SAP System Landscape Directory (SLD), ensure that the SAP Host Agent is installed before installing the SAP Crystal Server. For more information on SLD, see "Registration of SAP BusinessObjects Business Intelligence platform in the System Landscape" in the *SAP BusinessObjects Business Intelligence Platform Administrator Guide*. For information on SAP Host Agent, see To enable SAP System Landscape Directory (SLD) support [page 21].
4. Decide the values for options you will set during the installation process. In most cases, you can accept the default values. More advanced installations require that you plan the installation process. The installation program prompts for the following information:
   - Product key.
   - Folder where the SAP Crystal Server will be installed.
   - Web application server configuration, including type, connection, and authentication details.
   - Database server configuration, including type, connection, and authentication details.
   - CMS system and Auditing Data Store configuration information, including type, connection, and authentication details.
   - Central Management Server (CMS) administrator account password and cluster key.
   - CMS port number to receive incoming connections.
   - Server Intelligence Agent (SIA) name.
   - Server Intelligence Agent (SIA) port number for incoming connections.
   - SAP Solution Manager Diagnostics (SMD) configuration.
   - CA Wily Introscope Enterprise Manager configuration.
   - Subversion version control system configuration to store configuration files.
   - Promotion management configuration.
   - Installation type (*Full*, *Custom / Expand*, *Web Tier*). For an explanation of the different installation types, see To select an install type [page 27].

4.1　System requirements

Use the following guidelines when you install SAP Crystal Server:

- Ensure that the operating system is supported. Only 64-bit operating systems are supported. Windows .NET Framework 3.5 Service Pack 1 and Windows Installer 4.5 are required.
- Before you run the installation program, ensure that the destination partition has enough room for the deployment to expand (when updates and new features are added in the future).
- If you install the deployment on the operating system partition, ensure that there is enough room for the deployment and the operating system. It is recommended that you have at least 2 gigabytes available for temporary files and web applications.
- If you have previously installed any SAP BusinessObjects BI Suite products, the installation program uses the existing directory.
- Ensure that the file path of the directory where you run the installation program is less than 280 characters in length.

For a detailed list of supported operating systems and hardware requirements, consult the *Supported Platforms* documentation available at https://support.sap.com/release-upgrade-maintenance/pam.html .

4.1.1　Account permissions

To install SAP Crystal Server on a Windows host, a user must have the following permissions:

Category	Required access
Operating system	Local administrative privileges.
Network	- Network connectivity through appropriate ports to all machines in the deployment. - Access to shared file system directories for users of the deployment. - Appropriate network authentication privileges.
Database	- Permission for the SAP Crystal Server user account to create, edit, and drop tables. - Permission for the SAP Crystal Server user account to create stored procedures (required by the Central Management Server (CMS) system database).

> i Note
>
> You cannot install the deployment on a domain controller, or on a Windows host where the default local Administrator group security settings have been modified.

4.1.2 Network permissions

Ensure that the upgrade management tool can communicate with the source and destination deployments. For more information on network permissions, see the "Securing SAP BusinessObjects Business Intelligence platform" chapter of the *SAP BusinessObjects Business Intelligence platform Administrator's Guide*.

4.1.2.1 Choosing a server location

When planning a distributed installation, consider the latency between servers. To maintain high CMS performance, place your CMS on the same subnet as the CMS system and Auditing Data Store database servers.

The CMS can also be clustered, so that CMS server processes run on different host systems in the cluster. When creating a CMS cluster, ensure that each machine experiences the same network latency to the CMS system or Auditing Data Store.

Consult the "Clustering Central Management Servers" section of the *SAP BusinessObjects Business Intelligence Platform Administrator Guide* for more information on clustering CMS server processes.

4.2 Preparing the CMS system or Auditing Data Store database

To use a database server other than the default one, complete the following tasks before installing the SAP Crystal Server.

- Create a database (or tablespace or schema, if applicable to your database), and account to store CMS configuration and system information. A second tablespace or scheme is required to hold auditing information. Record the database, tablespace, and account information so you can enter the details when prompted by the Crystal Server installation program.

  > ⚠ Caution
  >
  > If you have an existing Crystal Server installation, you must create a fresh database and migrate existing content after the install is complete.

- Ensure that your database server is configured to use Unicode character encoding (such as UTF-8).
- Ensure that the database accounts have privileges to create, modify, and delete tables, and to create stored procedures.
- When using a database server on a network, the appropriate database client drivers must be installed and verified as working before installing Crystal Server. Contact your database administrator to establish which drivers are required for your database.

During your installation, you will be prompted for the connection and authentication credentials so that the installation program can initialize the database. The table below shows which information is required for supported databases:

Table 4:

Database	Information required by installation program
Microsoft SQL Server using ODBC	- ODBC DSN name (selected from the Windows System DSN list) - Account username - Account password - Database name *Use trusted connection* checkbox **i Note** ○ When using an ODBC connection with Windows NT authentication, a trusted connection is used. You must select *Use trusted connection* during the installation and ensure that the system account has access to the database. ○ When using an ODBC connection with SQL Server authentication (username and password), a trusted connection is not used. Ensure that *Use trusted connection* is unselected. *Show system database* checkbox *Reset existing database* checkbox (recommended setting)
MySQL	- CMS database name - Server hostname - Port number (default is 3306) - Account username - Account password *Reset existing database* checkbox (recommended setting)
IBM DB2	- DB2 Alias name - Account username - Account password *Reset existing database* checkbox (recommended setting)
Oracle	- Oracle TNSNAME connection identifier - Account username - Account password *Reset existing database* checkbox (recommended setting)
Sybase ASE	- Service name **i Note** ○ The Sybase Adaptive Server Enterprise (ASE) service name is a combination of the hostname and the port number, set by your database administrator in the `sql.ini` and *interfaces* files. ○ Crystal Server will connect to the default database for the user you specify. The default is set by the database administrator. - Account username - Account password *Reset existing database* checkbox (recommended setting)
Sybase SQL Anywhere using ODBC	- DSN - Account username - Account password *Reset existing database* checkbox (recommended setting)

Database	Information required by installation program
SAP HANA Database using ODBC	- DSN - Account username - Account password *Reset existing database* option (recommended setting)

> **i Note**
>
> - MaxDB support for CMS system or Auditing Data Store database is deprecated from SAP Crystal Server
> - If you are using MaxDB for CMS system or auditing data store database, we recommend you to migrate your data to other supported database.
>   For more information on migrating your data to other database refer, SAP Business Intelligence Platform Administrator Guide.
>   For more information on other supported database, see PAM http://support.sap.com/pam

4.2.1 Extra requirements for IBM DB2

IBM DB2 has requirements that must be met before installing the SAP Crystal Server:

- Ensure that the DB2 database is created with the following settings:

  ```
  Collating Sequence = "Identity"
  Codeset = "UTF-8"
  Territory = "<XX>"
  ```

  Replace <XX > with the code that is appropriate for your location. Consult your DB2 documentation for more information. If your DB2 database does not have the `Collating Sequence = "Identity"` setting, the user and user group objects may not sort as expected in the CMC.
- Create a user temporary table space before installing the Crystal Server. If you do not create a user temporary table space, the Crystal Server installation program will not be able to configure the DB2 database. For more information on user temporary table spaces in IBM DB2, see *DB2 Basics: Table spaces and buffer pools* in the IBM technical library: http://www.ibm.com/developerworks/data/library/techarticle/0212wieser/0212wieser.html .
- When using IBM DB2 to host an Auditing Data Store database, ensure that the page size for the auditing table space is set to a minimum of 8192 (8 KB).
- Ensure that the CMS system database is not partitioned. The Auditing Data Store database may be partitioned.

4.2.2 Extra requirements for Sybase ASE

If you are using Sybase ASE for the CMS or auditing database:

- Create a database with a `page size` of 8 KB. The default page size is 2KB, which is too small for the CMS system database to run efficiently. The page size is set up during the database creation and cannot be changed after the database is created.

- Use a Unicode character set, such as UTF-8.

4.2.3 Extra requirements for SAP HANA

If you are using SAP HANA for the CMS database, you must select the default database during installation then export the data to an SAP HANA database. See *To select SAP HANA as a CMS database* in the *SAP BusinessObjects Business Intelligence platform Administrator's Guide*.

4.2.4 Extra requirements for CMS clustering with SQL Anywhere

If you are using the bundled SQL Anywhere database server for the CMS, there are two prerequisites before adding a new node on a new machine to CMS cluster. On the machine hosting the new node:

1. You must install the SQL Anywhere Database Client.
   Download the SQL Anywhere 16 client for your operating system at: http://scn.sap.com/docs/DOC-35857

2. You must create an ODBC DSN connecting to the primary node SQL Anywhere CMS database.
   On the primary node, right-click the SIA in the Central Configuration Manager (CCM) and select *Properties*. The CMS DSN is found on the *Configuration* tab with details found in the Windows *ODBC Data Source Administrator*. By default the DSN is `BI4_CMS_DSN`.

Consider the following example. A primary node with a CMS server and bundled SQL Anywhere database is installed on one machine. To create a new CMS node on a new machine:

1. Install the SQL Anywhere Database Client. This installs the SQL Anywhere 16 database driver.
2. Create an ODBC DSN to the primary node SQL Anywhere CMS database using the SQL Anywhere 16 driver. For example, assume the primary node host is 192.0.2.0 and uses default port and values for the SQL Anywhere installation:

ODBC property	SQL Anywhere value (primary node)
Data source name	BI4_CMS_DSN
User ID	dba
Password	mypassword
Host	192.0.2.0
Port	2638
Server name	BI4
Database name	BI4_CMS

3. Run the Crystal Server server installation program and select *Custom / Expand* as the installation type. During the installation select the following:
   - On the *Select Features* page, select the *Central Management Server* feature. Unselect the *Sybase SQL Anywhere Database*, *Subversion*, and *WebTier* features.

- On the *Select New or Expand Installation* page, select *Expand an existing SAP BusinessObjects Crystal Server deployment*.
- On the *Select Existing CMS Database Type* page, select *SAP Sybase SQL Anywhere using ODBC*.
- On the *Configure CMS Repository Database - SQL Anywhere (ODBC)* page, select the ODBC DSN created in step 2 and enter the "dba" account password.
- Proceed and complete the installation of the new CMS server node.

4.3 SAP support

4.3.1 Support for SAP System Landscape Directory (SLD)

SAP System Landscape Directory (SLD) is a directory service that maintains a list of installed SAP and (optionally) non-SAP software. SLD provides two main categories of information:

- Software already installed
- Software that could be installed at a later time

SAP systems come with a data supplier (DS) component that automatically updates the landscape directory. Non-SAP software that supports SLD registers through an open API. The information gathered on installed software includes:

- Version
- Host information
- Connection information

To use SLD support, ensure that SAP Host Agent is installed and working on the system(s) that host SAP Crystal Server. SAP Host Agent may be installed and configured before or after installing SAP Crystal Server.

4.3.1.1 To enable SAP System Landscape Directory (SLD) support

If you plan on using SAP System Landscape Directory (SLD) or SAP Solution Manager Diagnostics (SMD), ensure that the SAP Host Agent is installed and configured. The following steps walk you through installing SAP Host Agent.

SAP Host Agent may be installed and configured before or after installing the SAP Crystal Server. For more information on SAP Host Agent, see "Registration of SAP Crystal Server in the System Landscape" in the *SAP BusinessObjects Business Intelligence Platform Administrator Guide*.

> ℹ **Note**
>
> If you have installed SAP GUI or SAP Solution Manager Diagnostics (SMD), skip to step 4 below.

Prior to installing support for SAP System Landscape Directory (SLD) there must be an `sapadm` user with administrator privileges.

The `SAP_LocalAdmin` group must also exist, and the `sapadm` user must be a member. The `sapadm` user password is required during the SAPHOSTCONTROL installation.

1. Download SAP Host Agent (`SAPHOSTAGENT.SAR`) from the SAP Software Distribution Center of the SAP Service Marketplace (https://support.sap.com/swdc).
   Log on with your SAP Service Marketplace ID and locate the version of `SAPHOSTAGENT.SAR` appropriate for your system.
2. Install SAPHOSTCONTROL by entering the following command:
   `saphostexec -install`
3. Locate the `sldreg` tool, which is usually located in the following folder:

   `<%Program Files% >\SAP\hostctrl\exe`
4. Create an SLD key with the following command:
   `sldreg -configure connect.key`
   You will be prompted to supply a username, password, host, port, and protocol for connecting to the SLD server.
5. Enter the information requested.
   The `sldreg` tool creates a `connect.key` file that will automatically be used by `sld-ds` to push information to SLD server.

If you have already installed the Crystal Server, restart all SIA nodes in the Central Configuration Manager (CCM) to register with the SLD.

4.3.2 Support for SAP Solution Manager Diagnostics (SMD)

SAP Solution Manager Diagnostics (SMD) monitors the performance of systems in the SAP System Landscape Directory (SLD). Problems can be identified, analyzed, and resolved with the information gathered by SMD, which includes:

- Performance monitoring
- Configuration management
- Log management
- Load testing
- Alerting
- Resource monitoring

Tools integrated into SMD include:

- CA Wily Introscope
  For full instrumentation, both SMD and CA Wily Introscope should be used.
- SAP LoadRunner by HP

Non-SAP software with an SAP-certified integration is entered into a central repository and transferred automatically to your SAP System Landscape Directories (SLD). SAP customers can then easily identify which version of third-party product integration has been certified by SAP within their SAP system environment. This service provides additional awareness for third-party products besides our online catalogs for third-party products.

To use SMD, the SMD Agent must be installed. SMD Agent may be installed and configured before or after installing SAP Crystal Server. During installation, the installation program prompts for the hostname and port

number of the SMD Agent. If you do not want to use SMD, or you will install SMD later, you can choose not to use SMD. The SMD Agent can be configured later in the Central Management Console (CMC) *Placeholders* screen. For more information, seeTo configure SMD Agent post installation [page 60].

For more information on SMD Agent, see 1858920.

4.3.3 Support for CA Wily Introscope

CA Wily Introscope is included as a part of SAP Solution Manager Diagnostics (SMD). For full instrumentation, both SMD and CA Wily Introscope should be used.

To use CA Wily Introscope and SMD, the SMD Agent must be installed. SMD Agent may be installed and configured before or after installing SAP Crystal Server.

During installation, the installation program prompts for the hostname and port number of the Introscope Agent. If you do not want to use Introscope, or you will install it later, you can choose not use Introscope. Introscope can be configured later in the Central Management Console (CMC) *Placeholders* screen. For more information, seeTo configure SMD Agent post installation [page 60].

4.3.4 Support for SAP BW

The BI platform can integrate with SAP BW. To get the best performance from SAP BW, follow the instructions in these SAP Notes on https://service.sap.com :

- 1771995 - Incorrect number of hierarchy levels in Design Time
- 1750788 - BICS metadata service enhancement
- 1767351 - Missing metadata of characteristics in the fix filter
- 1776999 - Incorrect hierarchy sorting
- 1777544 - Metadata missing for node type attributes
- 1778347 - Attributes for node types are not read
- 1770434 - Dynamic filter of compound char. is incorrect
- 1762156 - Nodes in fixed filter in Design Time are incorrect
- 1776688 - Too many hierarchy levels are read
- 1798297 - Correction for issue found on Samsung queries
- 1806813 - Text of characteristic values is not read
- 1809517 - Correction for invalid variable order when retrieving the list of variables through the design time services
- 1811124 - This note fixes the sorting of the of drill down characteristics returned by the design-time API so that it matches the runtime sorting
- 1812142 - This note fixes the sorting of the hierarchies returned by the design-time API so that it matches the runtime sorting
- 1817482 - This note adds the feature for the Design Time API to choose whether members should be read initially or not. By default, there are not read; this provides a performance enhancement for SL.

4.4 Final checklist

Prior to installing the SAP Crystal Server, review the following checklist.

- Have you decided on the installation destination folder?

  > i Note
  >
  > o The use of Unicode characters in the destination folder is not supported.
  > o Ensure that the installation destination folder is not the same folder in which the installation program has been extracted (do not install to the current working directory when running the installation program from the current working directory).

- Have you verified appropriate network connectivity between all machines that will be part of your deployment?
- If you are using your own database server:
  - Have you created a database, tablespace (if required), and accounts for the CMS system and Auditing Data Store databases?
  - Have you made sure you can log onto the database from the Crystal Server host?
  - If you are using IBM DB2 or Sybase ASE, have you verified that your database was created with the correct settings? (Some settings can't be modified after the database has been created.)
  - Has the database client software been properly configured?
- If you are using your own web application server:
  - Have you decided on which web application server to use?
  - Has the server already been installed and configured?
  - Have you ensured that your existing web application server has the required JDK installed?
- If you plan to use SAP System Landscape Directory (SLD), ensure that SAP Host Agent been installed and configured. For more information, see Support for SAP System Landscape Directory (SLD) [page 21].
- If you plan to use SAP Solution Manager Diagnostics (SMD), SMD Agent may have been installed and configured before or after the Crystal Server. For more information, see Support for SAP Solution Manager Diagnostics (SMD) [page 22].

Installation on Microsoft Windows requires a minimum screen solution of 1024 × 768.

> i Note
>
> The Crystal Server installation program no longer installs Client Tools. Client Tools can only be installed with the dedicated Client Tools installation program.

5   Installation

This chapter guides you through the installation of SAP Crystal Server.

5.1   Overview

There are two different methods of running the installation program for SAP Crystal Server:

- Interactive installation
  An interactive wizard prompts for all information related to the installation. Use this option to select individual installation options from a series of screens. This is the default installation method.
- Silent installation
  Installation options are given on the command-line or in a text file. This option is useful if you want to install the same configuration on multiple machines.

If the installation program encounters an unexpected condition, and is unable to continue, it will undo any work completed up to that point, and return the system to the state that it was in before the installation started.

When the installation program detects an identical previously-installed version, it will enter maintenance mode, allowing you to remove, repair, or modify the software.

SAP Crystal Server requires a database server and web application server to function. If you do not have an existing database, the installation program automatically installs and configures a Sybase SQL Anywhere database. If you do not have an existing web application server, the installation program automatically installs and configures a Tomcat web application server.

> ℹ️ Note
>
> The installation program may take more than one hour to complete.

5.2   To download the server installation program

1. Go to https://support.sap.com/home.html 🌐 > *Software Downloads*.
2. Select *Installations and Upgrades>A–Z Index*.
3. Select ▶ *C* ▶ *Crystal Server* ▶ *Crystal Server 2016* ▮.
4. Select *Installation and Upgrade* and then select your platform.
5. Select all of the packages titled *SBOP BI PLATFORM <version> SERVER* plus any additional add-on products you require, then follow the instructions on the website to download and extract the packages.

The software may take a long time to download, and you may need to contact the system administrator to ensure your company's firewall will not terminate the download process.

Support Packages and Patches are installation programs that contain updates to Crystal Server software. You can download them from https://support.sap.com/home.html ↗ > ▶ *Software Downloads* ❯ *Support Packages and Patches* ❯ *A–Z Index* ❯. For more information on installing Support Packages and Patches, see the SAP BusinessObjects BI Suite Update Guides.

5.3   To run an interactive installation

Before installing, ensure that the account being used has Administrator privileges. The installation requires that the account being used is a member of the Windows *Administrators* group, and that the default privileges assigned to the *Administrators* group have not been modified.

The installation program requires a minimum screen resolution of 1024 × 768 pixels. Using Microsoft Remote Desktop Connection to run the installation program is supported, as long as a minimum screen resolution of 1024 × 768 pixels is used.

> ℹ **Note**
>
> The installation log file will be saved to `< <BOE_INSTALL_DIR >>\InstallData\logs\< <DATE >> \setupengine.log`.

1. Locate and run `setup.exe`.
2. Select the setup language.

   The language setting is used by the installation program to display information to you in the language of your choice. If you select a non-English language, the corresponding language pack is automatically installed on the server.

   > ℹ **Note**
   >
   > The installation program will automatically run in the same language as your operating system. The language used by the installation program will determine the names used for Windows components configured by the installation program, such as Windows service names and Start menu shortcuts. These names cannot be changed later and are not affected by language settings once the installation is complete.

3. On the *Check Prerequisites* page, review the results and decide whether to continue with the installation, or abort and correct any unmet requirements.

   The installation program checks for required components and conditions. If a dependency prerequisite condition is critical, the installation program will not allow the installation to proceed. If the missing or unsupported component is optional, you have the option to either continue with the installation or stop and correct the condition.
4. Review the installation welcome page.
5. On the *License Agreement* page, review the agreement and select *I accept the License Agreement*.
6. On the *Configure Product Registration* page, enter the product key.

   > ➡ **Tip**
   >
   > Store the product key in a safe place in case you need to re-install the product.

7. On the *Select Language Packs* page, select additional languages to install from the list.

   The language currently being used by the operating system is selected automatically. English language support cannot be deselected because it is used if a problem is detected with an individual language.

The *Select Install Type* page appears.

5.3.1 To select an install type

The *Select Install Type* page is used to select the type of installation to perform.

1. Select one of the following install type options:

   ○ Full
   Installs all required server components onto a single machine. Use this option to create a single-host deployment, such as a pre-production development or test environment.

   ○ Custom / Expand
   Allows experienced users to select individual features. Use this option:

   ○ When distributing server components between more than one host, such as creating a CMS cluster.
   ○ When you want full control over which features are deployed to a host.

   > **i Note**
   >
   > If you are adding a new node to a CMS cluster that uses the bundled SQL Anywhere database server, see Extra requirements for CMS clustering with SQL Anywhere [page 20] before proceeding with the installation.

   ○ Web Tier
   The web tier includes web applications such as BI launch pad and the Central Management Console (CMC). Use the *Web Tier* installation option to install Java web applications onto a dedicated Java web application server.
   If you already have a supported web application server installed, you can deselect the option to install Tomcat, and only install the Java web applications.

2. Proceed to the next page to start configuring the selected installation.

   On the *Configure Destination Folder* page, review the destination folder shown. This is the folder into which the installation program will install the Crystal Server. If the folder does not exist, the installation program creates it.

   > **i Note**
   >
   > ○ The use of Unicode characters in the destination folder is not supported.
   > ○ Ensure that the destination folder is not set to the same folder in which the installation program has been extracted.
   >
   > ○ If you have already installed SAP BusinessObjects products, the *Destination Folder Information* field is not editable, and the path to the existing folder is displayed.

   ○ If you selected a *Full* installation, proceed to the following *Full* section.
   ○ If you selected a *Custom / Expand* installation, proceed to the following *Custom / Expand* section.
   ○ If you selected a *Web Tier* installation, proceed to the following *Web Tier* section.

5.3.1.1 Full installation

The following steps are performed for *Full* installations of Crystal Server.

1. On the *Select Default or Existing Database* page, select a database option to store Central Management Server (CMS) and Auditing Data Store (ADS) information.

Option	Description
Configure and install a Sybase SQL Anywhere database	If you do not have a database server in place for use with Crystal Server, the installation program can install and configure Sybase SQL Anywhere for you. ℹ Note Installation of third-party patches or updates is not supported for bundled software. For details, see Patching third-party solutions bundled with the BI platform [page 64].
Configure an existing database	If you have an existing database server, the installation program prompts for information on the database type and connection credentials for both the CMS system and auditing databases. ℹ Note An existing database must have user accounts with the appropriate privileges ready, and the appropriate drivers must be installed and verified as working. The installation program attempts to connect to, and initialize, the database as a part of the installation process.

It is recommended that you evaluate your requirements against information from your database server vendor to determine which supported database would best suit your organization's needs.

2. If you selected *Configure an existing database*:
   a. On the *Select Existing CMS Database Type* page, select the database type of the existing CMS database.
   b. On the *Select Existing Auditing Database Type* page, select the database type of the existing auditing database.

   If you do not want to use the auditing feature, select *No auditing database*.

3. On the *Select Java Web Application Server* page, select an option for hosting Crystal Server web applications.

Option	Description
Install the default Tomcat Java Web Application Server and automatically deploy web applications	If you do not have a web application server in place for use with Crystal Server, the installation program can install and configure a Tomcat web application server for you. Crystal Server web applications are automatically deployed to Tomcat. ℹ Note Installation of third party patches or updates is not supported for bundled software. For details, see Patching third-party solutions bundled with the BI platform [page 64].
Manually deploy web applications to a supported Java Web Application Server after the installation	If you have an existing, supported Java web application server, select this option and then deploy web applications to it later (after installation) using the WDeploy tool. For more information, see the *SAP BusinessObjects Business Intelligence Platform Web Application Deployment Guide*

Option	Description
	i Note Crystal Server does not support the automatic deployment of web applications to any web application server other than the bundled Tomcat web application server during the installation program.
Install the Web Application Container Server and automatically deploy web applications	If you do not want to use a Java application server to host your Crystal Server web applications, then select this option to host them on Web Application Container Server (WACS).

It is recommended that you evaluate your requirements against information from your web application server vendor to determine which supported web application server would best suit your organization's needs.

> **i Note**
>
> When configuring a production environment, it is recommended that the web application server is hosted on a separate system from Crystal Server servers. Running Crystal Server servers and a web application server on the same host in a production environment may decrease performance.

4. One the *Select Version Management* page, decide whether to install and configure Subversion version control system.

Option	Description
Configure and install Subversion	Installs and configures Subversion version control system.
Do not configure a version control system at this time	If you have an existing, supported version control system, you must manually configure it with the Central Management Console (CMC) after the installation is complete. For more information, see the "Version management" and "Promotion management" sections of the *Business Intelligence Platform Administrator Guide*.

Crystal Server can maintain different versions of BI resources that exist in the CMS repository in a version control system, making it easier to revert to a previous configuration when needed using the CMC.

5. On the *Configure Server Intelligence Agent (SIA)* page, review the default name and port number for the SIA node.

Option	Description
Node Name	This is the name that you will see in the Central Configuration Manager (CCM). Many CMS servers can be managed by a single SIA. The name must consist of English characters (A-Z, a-z, and 0-9) and contain no spaces or other punctuation. Underscores ("_") are not allowed. The SIA name cannot start with a number.
SIA Port	The port is used for the SIA to listen for incoming connections from the CMS. The SIA must be able to receive incoming connections on this port, so ensure that your firewall is configured appropriately. Port 6410 is a standard TCP/IP port number reserved for use with a Crystal Server SIA.

6. On the *Configure Central Management Server (CMS)* page, review the default value for the CMS port number.

This is the port on which the CMS listens for incoming connections from the web application server, web server (if applicable), other CMS nodes (if applicable) and servers. The CMS must be able to receive incoming connections on this port, so ensure that your firewall is configured appropriately.

Port 6400 is a standard TCP/IP port number reserved for use with Crystal Server CMS.

7. On the *Configure CMS Account* page, enter and confirm the CMS Administrator account password and the CMS cluster key.

   The CMS Administrator is a super-user account in Crystal Server authentication system, used only to administer your server configuration. It is not part of any operating system or single sign-on authentication system.

   Communication between some CMS components is encrypted to provide a higher level of security when using clusters.

   > ℹ **Note**
   >
   > The administrator password entered during full install must always contain at least two of the following character classes: Upper case letters and lower case letters.

8. Configure the CMS system database.

   a. If you selected *Configure and install a Sybase SQL Anywhere database*, enter the account and port information on the *Configure Sybase SQL Anywhere* page.

      Enter the port number for Sybase SQL Anywhere to listen for incoming database queries. The database must be able to receive incoming connections on this port, so ensure that your firewall is configured appropriately. Also enter and confirm the database administrator account password.

   b. If you selected *Configure an existing database*, enter the connection information for your existing database to use for the CMS on the *Configure CMS Repository Database - <database type>* page.

      If you're using an ODBC database driver, you must configure an ODBC data source. A system ODBC DSN can be configured from: ❙▶ *Start* ❯ *Control Panel* ❯ *Administrative Tools* ❯ *Data Sources (ODBC)* ❮.

   c. If you selected *Configure an existing database*, and you plan to use auditing, enter the connection information for your existing database to use for the ADS on the *Configure Auditing Database* page.

9. If you selected *Install the default Tomcat Java Web Application Server and automatically deploy web applications*, review the default port values on the *Configure Tomcat* page.

Option	Description
Connection port	The port on which the web application server listens for incoming connections from web clients.
Shutdown port	The port that allows the web application to be shut down remotely.
Redirect port	The port that enables redirects to secure web connections.

   Tomcat must be able to receive incoming connections on the given port numbers, so ensure that your firewall is configured appropriately.

10. On the *Configure HTTP Listening Port* page, review the HTTP Listening Port number on the page for WACS to listen for incoming connections from web clients.

    WACS must be able to receive incoming connections on the given port numbers, so ensure that your firewall is configured appropriately.

11. If you selected *Configure and install Subversion* review the port number and enter a Subversion password (user account is "LCM") on the *Configure Subversion* page.

12. On the *Select Connectivity for Solution Management Diagnostics (SMD) Agent* page, decide whether to integrate Crystal Server with an existing SMD Agent.

Option	Description
Configure connectivity to SMD Agent	Crystal Server can integrate with your organization's deployment of SAP Solution Manager Diagnostics (SMD). If you select this option, enter the SMD Agent hostname and port number on the following *Configure Connectivity to SMD Agent* page.
Do not configure connectivity to SMD Agent	You can configure SMD Agent in the CMC *Placeholders* screen later after the installation program is complete.

> **i Note**
>
> To use SAP Solution Manager Diagnostics (SMD), SAP Host Agent and SMD Agent must be installed:
> - For information on installing the SAP Host Agent before installing Crystal Server, see To enable SAP System Landscape Directory (SLD) support [page 21].
> - For information on installing the SAP Host Agent after installing Crystal Server, see To configure System Landscape Directory (SLD) Data Supplier (DS) post installation [page 60] .
> - For information on installing SMD Agent before installing Crystal Server, see Support for SAP Solution Manager Diagnostics (SMD) [page 22].
> - For information on installing SMD Agent after installing Crystal Server, see To configure SMD Agent post installation [page 60].

13. On the *Select Connectivity to Introscope Enterprise Manager* page, decide whether to integrate Crystal Server with an existing Introscope Enterprise Manager server.

> **i Note**
>
> To use CA Wily Introscope Enterprise Manager, SMD Agent must be installed.

Option	Description
Configure connectivity to Introscope Enterprise Manager	Crystal Server can integrate with your organization's deployment of CA Wily Introscope Enterprise Manager. If you select this option, enter the hostname and port number for the Introscope Enterprise Manager server on the following *Configure Connectivity to Introscope Enterprise Manager* page.
Do not configure connectivity to Introscope Enterprise Manager	You can configure Introscope Enterprise Manager in the CMC *Placeholders* screen later after the installation program is complete.

The *Start Installation* page appears. Start the installation.

Proceed to *While the installation program runs*.

5.3.1.2   Custom / Expand installation

The following steps are performed for *Custom / Expand* installations of the SAP Crystal Server.

1. On the *Select Features* page, select the features to install from the list.

    Features are grouped under the following headings:
    ○ *Web Tier*
       The web tier components include web applications such as BI launch pad and the Central Management
       Console (CMC) that allow end users and administrators to interact with BI content and the BI platform
       installation.
       If you do not have a web application server in place for use with the BI platform, the installation program
       can install and configure a Tomcat web application server for you. It is recommended that you evaluate
       your requirements against information from your web application server vendor to determine which
       supported web application server would best suit your organization's needs.
       If you already have a supported web application server installed, you can deselect the option to install
       Tomcat, and only install the Java web applications
    ○ *Servers*
       Server features include the Business Intelligence platform servers (such as processing and scheduling
       servers), major system components (such as the CMS, Event Server, bundled database, and a version
       control system), and servers that integrate the BI platform into your organization's existing network
       infrastructure.
    ○ *Administrator Tools*
       The Administrator Tools features help administrators maintain an installation. For example, the Upgrade
       management tool allows you migrate BI content during an upgrade between different versions of the BI
       platform.
    ○ *Developer Tools*
       If you plan to develop your own applications with a the BI platform .NET Software Development Kit (SDK),
       install the *Developer Tools* feature.
    ○ *Database Access*
       To access, analyze, and report on the data in your organization's existing databases, select the
       appropriate *Database Access* features. If your organization does not use a particular database, you can
       deselect it.
    ○ *Samples*
       The samples features installs sample reports, templates, and reporting databases. If you do not need
       samples, you can deselect it.

2. On the *Select New or Expand Installation* page, select the type of installation to perform.

Option	Description
Start a new SAP Crystal Server deployment	Select if you are installing a stand-alone Crystal server, or the first server in a cluster.

If you selected *Start a new SAP Crystal Server deployment* on the last page, proceed to *Custom (New) installation*.

5.3.1.2.1   Custom (New) installation

If you chose the *Start a new SAP Crystal Server deployment* option for a *Custom / Expand* installation:

1. If you deselected the *Sybase SQL Anywhere Database* feature in the *Select Feature* page:
   a. On the *Select Existing CMS Database Type* page, select the database type to use for the CMS database.
   b. On the *Select Existing Auditing Database Type* page, select the database type to use for the auditing database.

      If you do not want to use the auditing feature, select *No auditing database*.
2. On the *Configure Server Intelligence Agent (SIA)* page, review the default name and port number for the SIA node.

Option	Description
Node Name	This is the name that you will see in the Central Configuration Manager (CCM). Many CMS servers can be managed by a single SIA.
	The name must consist of English alphanumeric characters (A-Z, a-z, and 0-9) and contain no spaces or other punctuation. Underscores ("_") are not allowed. The SIA name cannot start with a number.
SIA Port	The port is used for the SIA to listen for incoming connections from the CMS. The SIA must be able to receive incoming connections on this port, so ensure that your firewall is configured appropriately.
	Port 6410 is a standard TCP/IP port number reserved for use with a Crystal Server SIA.

3. On the *Configure Central Management Server (CMS)* page, review the default value for the CMS port number.

   This is the port on which the CMS listens for incoming connections from the web application server, web server (if applicable), other CMS nodes (if applicable) and servers. The CMS must be able to receive incoming connections on this port, so ensure that your firewall is configured appropriately.

   Port 6400 is a standard TCP/IP port number reserved for use with the Crystal Server CMS.
4. On the *Configure CMS Account* page, enter and confirm the CMS Administrator account password and the CMS cluster key.

   The CMS Administrator is a super-user account in Crystal Server authentication system, used only to administer your SAP BusinessObjects server configuration. It is not part of any operating system or single sign-on authentication system.

   Communication between some CMS components is encrypted to provide a higher level of security when using clusters.

   > **i Note**
   >
   > The administrator password entered during full install must always contain at least two of the following character classes: Upper case letters and lower case letters.

5. Configure the CMS system database.
   a. If you selected the *Sybase SQL Anywhere Database* feature in the *Select Feature* page, enter the account and port information on the *Configure Sybase SQL Anywhere* page.

      Enter the port number for Sybase SQL Anywhere to listen for incoming database queries. The database must be able to receive incoming connections on this port, so ensure that your firewall is configured appropriately. Also enter and confirm the database administrator account password.
   b. If you deselected the *Sybase SQL Anywhere Database* feature in the *Select Feature* page, enter the connection information for your existing database to use for the CMS on the *Configure CMS Repository Database - <database type>* page.

If you're using an ODBC database driver, you must configure an ODBC data source. A system ODBC DSN can be configured from: ▌ *Start* ❯ *Control Panel* ❯ *Administrative Tools* ❯ *Data Sources (ODBC)* ▐ .

    c. If you deselected the *Sybase SQL Anywhere Database* feature in the *Select Feature* page, and you plan to use auditing, enter the connection information for your existing database to use for the ADS on the *Configure Auditing Database* page.

6. On the *Select Automatic Server Start* page, decide whether to start the servers as soon as the installation is complete.

   If you select *No*, the servers must be started manually with the Central Configuration Manager (CCM) after the installation is complete.

7. If you selected the *Tomcat* feature in the *Select Feature* page , review the default port values on the *Configure Tomcat* page.

Option	Description
Connection port	The port on which the web application server listens for incoming connections from web clients.
Shutdown port	The port that allows the web application to be shut down remotely.
Redirect port	The port that enables redirects to secure web connections.

Tomcat must be able to receive incoming connections on the given port numbers, so ensure that your firewall is configured appropriately.

8. If you selected the *Web Application Container Server* or *RESTful Web Service* features in the *Select Feature* page, review the *HTTP Listening Port* number on the *Configure HTTP Listening Port* page.

   WACS must be able to receive incoming connections on the given port numbers, so ensure that your firewall is configured appropriately.

9. If you selected the *Subversion* feature in the *Select Feature* page, review the port number and enter a Subversion password (user account is "LCM") on the *Configure Subversion* page.

10. On the *Select Connectivity for Solution Management Diagnostics (SMD) Agent* page, decide whether to integrate Crystal Server with an existing SMD Agent.

Option	Description
Configure connectivity to SMD Agent	Crystal Server can integrate with your organization's deployment of SAP Solution Manager Diagnostics (SMD). If you select this option, enter the SMD Agent hostname and port number on the following *Configure Connectivity to SMD Agent* page.
Do not configure connectivity to SMD Agent	You can configure SMD Agent in the CMC *Placeholders* screen later after the installation program is complete.

> ⚠ Note
>
> To use SAP Solution Manager Diagnostics (SMD), SAP Host Agent and SMD Agent must be installed:
>
> ○ For information on installing the SAP Host Agent before installing Crystal Server, see To enable SAP System Landscape Directory (SLD) support [page 21].
> ○ For information on installing the SAP Host Agent after installing Crystal Server, see To configure System Landscape Directory (SLD) Data Supplier (DS) post installation [page 60] .

- For information on installing SMD Agent before installing Crystal Server, see Support for SAP Solution Manager Diagnostics (SMD) [page 22].
- For information on installing SMD Agent after installing Crystal Server, see To configure SMD Agent post installation [page 60].

11. On the *Select Connectivity to Introscope Enterprise Manager* page, decide whether to integrate Crystal Server with an existing Introscope Enterprise Manager server.

> **i Note**
>
> To use CA Wily Introscope Enterprise Manager, SMD Agent must be installed.

Option	Description
Configure connectivity to Introscope Enterprise Manager	Crystal Server can integrate with your organization's deployment of CA Wily Introscope Enterprise Manager.
	If you select this option, enter the hostname and port number for the Introscope Enterprise Manager server on the following *Configure Connectivity to Introscope Enterprise Manager* page.
Do not configure connectivity to Introscope Enterprise Manager	You can configure Introscope Enterprise Manager in the CMC *Placeholders* screen later after the installation program is complete.

The *Start Installation* page appears. Start the installation.

Proceed to *While the installation program runs*.

5.3.1.2.2 Custom (Expand) installation

If you chose the *Expand an existing SAP Crystal Server deployment* option for a *Custom / Expand* installation:

1. On the *Select Existing CMS Database Type* page, select the database type of the existing, remote CMS database.
2. On the *Configure Server Intelligence Agent (SIA)* page, review the default name and port number for the new SIA node.

Option	Description
Node Name	This is the name that you will see in the Central Configuration Manager (CCM). Many CMS servers can be managed by a single SIA.
	The name must consist of English alphanumeric characters (A-Z, a-z, and 0-9) and contain no spaces or other punctuation. Underscores ("_") are not allowed. The SIA name cannot start with a number.
SIA Port	The port is used for the SIA to listen for incoming connections from the CMS. The SIA must be able to receive incoming connections on this port, so ensure that your firewall is configured appropriately.
	Port 6410 is a standard TCP/IP port number reserved for use with a Crystal Server SIA.

3. On the *Existing CMS Deployment Information* page, enter connection information for the existing, remote CMS, including the Administrator password.

4. On the *Configure CMS Account* page, enter and confirm the CMS cluster key for the new CMS.

   The CMS Administrator is a super-user account in Crystal Server authentication system, used only to administer your SAP BusinessObjects server configuration. It is not part of any operating system or single sign-on authentication system.

   Communication between some CMS components is encrypted to provide a higher level of security when using clusters.

5. On the *Configure Central Management Server (CMS)* page, review the default value for the CMS port number.

   This is the port on which the CMS listens for incoming connections from the web application server, web server (if applicable), other CMS nodes (if applicable) and servers. The CMS must be able to receive incoming connections on this port, so ensure that your firewall is configured appropriately.

   Port 6400 is a standard TCP/IP port number reserved for use with Crystal Server CMS.

6. On the *Configure CMS Repository Database - <database type>* page, enter connection details for the CMS system database.

   If you are using the Sybase SQL Anywhere database bundled with Crystal Server on the existing CMS, to which you are attempting to connect, enter the system ODBC DSN connection for the existing CMS system database.

   If you are using a different previously installed database, enter connection credentials for the CMS to connect to the database.

7. On the *Select Automatic Server Start* page, decide whether to start the servers as soon as the installation is complete.

   If you select *No*, the servers must be started manually with the Central Configuration Manager (CCM) after the installation is complete.

8. If you selected the *Tomcat 8.0* feature, review the default port values on the *Configure Tomcat* page.

Option	Description
Connection port	The port on which the web application server listens for incoming connections from web clients.
Shutdown port	The port that allows the web application to be shut down remotely.
Redirect port	The port that enables redirects to secure web connections.

9. On the *Configure HTTP Listening Port* page, review the HTTP Listening Port number on the page for WACS to listen for incoming connections from web clients.

   WACS must be able to receive incoming connections on the given port numbers, so ensure that your firewall is configured appropriately.

10. If you selected the *Subversion* feature, review the port number and enter a Subversion password (user account is "LCM") on the *Configure Subversion* page.

11. On the *Select Connectivity for Solution Management Diagnostics (SMD) Agent* page, decide whether to integrate Crystal Server with an existing SMD Agent.

Option	Description
Configure connectivity to SMD Agent	Crystal Server can integrate with your organization's deployment of SAP Solution Manager Diagnostics (SMD).

Option	Description
	If you select this option, enter the SMD Agent hostname and port number on the following *Configure Connectivity to SMD Agent* page.
Do not configure connectivity to SMD Agent	You can configure SMD Agent in the CMC *Placeholders* screen later after the installation program is complete.

> ℹ **Note**
>
> To use SAP Solution Manager Diagnostics (SMD), SAP Host Agent and SMD Agent must be installed:
> - For information on installing the SAP Host Agent before installing Crystal Server, see To enable SAP System Landscape Directory (SLD) support [page 21].
> - For information on installing the SAP Host Agent after installing Crystal Server, see To configure System Landscape Directory (SLD) Data Supplier (DS) post installation [page 60] .
> - For information on installing SMD Agent before installing Crystal Server, see Support for SAP Solution Manager Diagnostics (SMD) [page 22].
> - For information on installing SMD Agent after installing Crystal Server, see To configure SMD Agent post installation [page 60].

12. On the *Select Connectivity to Introscope Enterprise Manager* page, decide whether to integrate Crystal Server with an existing Introscope Enterprise Manager server.

> ℹ **Note**
>
> To use CA Wily Introscope Enterprise Manager, SMD Agent must be installed.

Option	Description
Configure connectivity to Introscope Enterprise Manager	Crystal Server can integrate with your organization's deployment of CA Wily Introscope Enterprise Manager. If you select this option, enter the hostname and port number for the Introscope Enterprise Manager server on the following *Configure Connectivity to Introscope Enterprise Manager* page.
Do not configure connectivity to Introscope Enterprise Manager	You can configure Introscope Enterprise Manager in the CMC *Placeholders* screen later after the installation program is complete.

The *Start Installation* page appears. Start the installation.

Proceed to *While the installation program runs*.

5.3.1.3   Web Tier installation

The web tier hosts web applications such as BI launch pad and the Central Management Console (CMC) to serve content to users over the web. Use the *Web Tier* installation option to install BI platform Java web applications onto a dedicated Java web application server.

> ℹ **Note**
>
> - During the web tier installation, you are prompted to logon to an existing Central Management Server (CMS) as the Crystal Server Administrator account. You must have a CMS running remotely or on the same machine to perform the web tier installation.

If you do not have a web application server in place for use with SAP Crystal Server, the installation program can install and configure a Tomcat web application server for you. It is recommended that you evaluate your requirements against information from your web application server vendor to determine which supported web application server would best suit your organization's needs.

If you already have a supported web application server installed, you can deselect the option to install Tomcat, and only install the Java web applications. This option will not deploy the web applications to your web application server. To deploy web applications to a web application server after a web tier installation, use the WDeploy tool. For more information on using the WDeploy tool, see the *SAP BusinessObjects Business Intelligence Platform Web Application Deployment Guide*.

The following steps are performed for *Web Tier* installations of SAP Crystal Server.

1. On the *Select Features* page, select the features to install under ▶ *Instances* ▶ *WebTier* ▶.

Option	Description
Java Web Applications	Installs Crystal Server web applications to the machine.
Tomcat 8.0	Installs and configures the bundled Apache Tomcat web application server.

2. If you selected the *Tomcat 8.0* feature, review the default port values on the *Configure Tomcat* page.

Option	Description
Connection port	The port on which the web application server listens for incoming connections from web clients.
Shutdown port	The port that allows the web application to be shut down remotely.
Redirect port	The port that enables redirects to secure web connections.

3. On the *Existing CMS Deployment Information* page, logon to an existing CMS.
4. On the *Select Connectivity to Introscope Enterprise Manager* page, decide whether to integrate Crystal Server with an existing Introscope Enterprise Manager server.

> ℹ **Note**
>
> To use CA Wily Introscope Enterprise Manager, SMD Agent must be installed.
>
> - For information on installing SMD Agent before installing Crystal Server, see Support for SAP Solution Manager Diagnostics (SMD) [page 22].
> - For information on installing SMD Agent after installing Crystal Server, see To configure SMD Agent post installation [page 60].

Option	Description
Configure connectivity to Introscope Enterprise Manager	Crystal Server can integrate with your organization's deployment of CA Wily Introscope Enterprise Manager.

Option	Description
	If you select this option, enter the hostname and port number for the Introscope Enterprise Manager server on the following *Configure Connectivity to Introscope Enterprise Manager* page.
Do not configure connectivity to Introscope Enterprise Manager	You can configure Introscope Enterprise Manager in the CMC *Placeholders* screen later after the installation program is complete.

The *Start Installation* page appears. Start the installation.

Proceed to *While the installation program runs*.

5.3.2 While the installation program runs

The progress bar illustrates the progress of the installation as a whole.

> **i Note**
>
> When performing an Expand installation, the existing CMS may be restarted automatically as a part of the installation process.

5.3.3 When installation is complete

When the installation is complete, review the information in the *Post Installation Steps* screen. If you are not using the bundled Tomcat web application server, you must deploy web applications with the WDeploy web application deployment tool.

5.3.3.1 Reboot suppression

If a file is locked during the installation, you may be prompted to restart the server after the installation. You can choose to reboot immediately, or later. However, if you choose to suppress the reboot, the system may be in an unsupported state until the system is rebooted.

5.4 To run a silent installation

Every option in the installation wizard can be read from a response file invoked at the command-line. This type of installation is called a silent install.

> **i Note**
>
> You cannot use a silent installation to modify or remove Crystal Server. For more information on these actions, seeTo modify SAP Crystal Server [page 61] and To remove SAP Crystal Server [page 63]

A response file is a text file containing installation option parameters in key-value format. When using a response file to give installation options, the installation program is run from the command-line with the `-r` `<RESPONSE_FILE>` parameter, where `<RESPONSE_FILE>` is the name of the response file.

The response file contains multiple installation options, with one installation option per line. In the following example, the response file is given as a parameter:

```
setup.exe [...] -r C:\response.ini [...]
```

For example, the installation option `cmsport=6401` can be given on a line in the response file to set the CMS port number to 6401, instead of the default value of 6400.

In the following example of giving the `cmsport` parameter in a response file, ellipses (`[...]`) are shown to indicate where other installation options would normally be present:

```
[...]
cmsport=6401
[...]
```

> **i Note**
>
> The installation program returns the cursor to the command-line prompt when it starts. To run the installation program from a script, or to force the installation program to wait to complete before returning to the command-line, use the Windows Command Interpreter `start /wait` command to invoke `setup.exe`.
>
> For example:
>
> ```
> start /wait setup.exe [<COMMAND_LINE_OPTIONS>]
> ```

For a complete list of installation options, see Installation option parameters [page 42]. For an example of a response file, see Response file example [page 49].

5.4.1 Command-line switch parameters

The following table lists the switch parameters that can be given to the installation program on the command-line to perform a silent installation.

Table 5: Installation program command-line switch parameters

Switch parameter	Description	Example
`-w <<FILENAME>>`	Writes a response file to `<<FILENAME>>`, containing the options selected from the installation wizard.	`setup.exe -w "C:\response.ini"`

Switch parameter	Description	Example
`-r <<FILENAME>>`	Reads installation options from a response file named `<<FILENAME>>`.	`setup.exe -r "C:` `\response.ini"`

5.4.1.1 To use a response file

To use a response file, run the installation program with the `-r <<RESPONSE_FILE>>` parameter. The installation program reads all installation options from the response file, and no further input is required.

For example, the following command reads installation options from the response file `C:\response.ini`:

```
setup.exe -r C:\response.ini
```

To override an installation option in a response file, give that option on the command-line. Installation options given on the command-line take precedence over the options in the response file. For a complete list of installation options, see *Installation option parameters* below.

If an unexpected condition is encountered, an error message is written to the installation log file and the installation program exits. Installation activity, warnings, and errors are written to the installation log file in the folder:

`<<BOE_INSTALL_DIR>>\InstallData\logs\<<DATE>>\setupengine.log`

If the `<<BOE_INSTALL_DIR>>` folder has not been created by the time the installation program exits, look for `install.log` in the temporary folder specified by the system `<TEMP>` environment variable.

5.4.1.1.1 To write a response file

To create a response file, run the installation program with the `-w <<RESPONSE_FILE>>` parameter and select the desired installation options with the installation wizard. When the wizard completes, the installation program exits and the response file is created. The response file can then be used for future installations.

For example, the following command creates the response file `C:\response.ini`:

```
setup.exe -w C:\response.ini
```

Once created, the response file can be updated with a text editor.

> **i Note**
>
> When creating a response file with the GUI installation program, the license key and all passwords entered via the GUI are not written to the response file in plain text format. You must replace the starred entries (`********`) with your passwords before performing a silent installation.

5.4.1.1.2 To read a response file

A response file installation is started on the command-line, but installation options are read from a ASCII text file with the options stored in key-value format. This is useful when setting up a cluster, or for creating development or test environments with standardized options.

When an option is given both on the command-line and in a response file, the command-line options take precedence over the response file options. This allows an administrator to override an option in a response file when required. This provides three levels precedence for installation options:

1. Installation options given on the command-line take highest precedence, and will always override response file and default values.
2. Installation options given in a response file are used when not given on the command-line, and override default values.
3. Installation option default values are used when not given on the command-line or in a response file.

For example, the following command reads installation options from the response file `C:\response.ini`, but overrides the response file's setting for the installation destination folder:

```
setup.exe -r C:\response.ini InstallDir="C:\SAP\BusinessObjects BI platform"
```

5.4.2 Installation option parameters

The following table lists the parameters that can be used to select installation options in response files.

Table 6: Installation option parameters

Parameter	Description
chooseintroscopeintegration=<VALUE>	Determines whether Introscope support will be enabled or not. To enable Introscope integration, set <VALUE> to integrate. To disable Introscope integration, set <VALUE> to nointegrate.
choosesmdintegration=<VALUE>	Determines whether SAP Solution Manager Diagnostics (SMD) Agent support will be enabled or not. To enable SMD integration, set <VALUE> to integrate. To disable SMD integration, set <VALUE> to nointegrate.
clusterkey=<KEY>	Cryptographic key used to encrypt secure CMS cluster communications. Substitute <KEY> with the key string.
cmspassword=<PASSWORD>	Password to use for the CMS Administrator account. Substitute <PASSWORD> with the password.
cmsport=<PORT>	Network TCP listening port number used by the CMS for incoming connections. Substitute <PORT> with the port number. The default value is 6400.
enableservers=<SWITCH>	Determines whether or not the CMS servers will be started automatically after the installation is complete. To enable servers automatically after the installation, set <SWITCH> to 1. To not enable the servers, so that they must be started manually at a later time, set <SWITCH> to 0.

Parameter	Description
`installdir=<PATH>`	Destination folder into which the setup program will install.
	When installing to a host that already has an installation of the BI platform, the value of `installdir` will be automatically set to the same path as the existing installation.
	ⓘ Note
	The use of Unicode characters in the destination folder is not supported.
	• The use of Unicode characters in the destination folder is not supported.
	• Ensure that the destination folder is not the same folder in which the installation program has been extracted (do not install to the current working directory when running the installation program from the current working directory).
`installtype=<VALUE>`	Determines whether or not the installation program should select installable components based upon the default settings, custom settings (allows you to select components), or settings used for installing web tier components (when installing to a web application server). To install the default components, set `<VALUE>` to `default`. To install a custom selection of components, set `<VALUE>` to `custom`. To install a web tier components, set `<VALUE>` to `webtier`.
`introscope_ent_host=<HOSTNAME>`	Hostname of the Introscope server. Substitute `<HOSTNAME>` with the Introscope server hostname.
`introscope_ent_port=<PORT>`	Network TCP listening port number used by the Introscope server. Substitute `<PORT>` with the Introscope server port number.
`lcmname=LCM_Repository`	Hostname of the SAP Lifecycle management server.
	ⓘ Note
	Do not change this value.
`lcmpassword=<PASSWORD>`	User password to access SAP Lifecycle management server. Substitute `<PASSWORD>` with the password.
`lcmport=<PORT>`	Network TCP listening port number used by the SAP Lifecycle management server. Substitute `<PORT>` with the port number.
`lcmusername=LCM`	Username to access SAP Lifecycle management server.
	ⓘ Note
	Do not change this value.
`neworexistinglcm=<VALUE>`	Determines whether or not the installation is a new LCM on a fresh server, or an expand installation used to create a CMS cluster. To perform a new installation, set `<VALUE>` to `new`. To perform an expand installation, set `<VALUE>` to `expand`.

Parameter	Description
`productkey=<KEY>`	Product license key issued when you purchased the software. Substitute `<KEY>` with the product key in the format `XXXXX-XXXXXX-XXXXXX-XXXX`.
`registeredcompany=<NAME>`	Name of the company to whom the software is registered. Substitute `<NAME>` with the name.
`registereduser=<NAME>`	Name of the user to whom the software is registered. Substitute `<NAME>` with the name.
`selectedlanguagepacks=<CODE>`	Installs language support for users and administrators to interact with the BI platform in a supported language. If more than one language pack is to be installed, use a semi-colon delimited list without spaces, within quotes, to separate each code. In the following example, language support for English, Japanese, Simplified Chinese, and Thai will be installed: `SelectedLanguagePacks="en;ja;zh_cn;th"` Substitute the following language codes where `<CODE>` is: • Arabic: `ar` • Czech: `cs` • Danish: `da` • Dutch: `nl` • English: `en` • Finnish: `fi` • French: `fr` • German: `de` • Hungarian: `hu` • Italian: `it` • Japanese: `ja` • Korean: `ko` • Norwegian Bokmal: `nb` • Polish: `pl` • Portuguese: `pt` • Russian: `ru` • Simplified Chinese: `zh_cn` • Slovak: `sk` • Slovenian: `sl` • Spanish: `ed` • Swedish: `sv` • Thai: `th` • Traditional Chinese: `zh_tw` • Turkish: `tr`
`selectintegrateddatabase=<VALUE>`	Determines whether or not the bundled database will be installed. To install the bundled database, set `<VALUE>` to `1`. The bundled database is Sybase SQL Anywhere.

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Parameter	Description
setupuilanguage=<CODE>	Determines which language for the installation program to use during the installation. Substitute the language code where <CODE> is: • Czech: cs • Danish: da • Dutch: nl • English: en • Finnish: fi • French: fr • German: de • Hungarian: hu • Italian: it • Japanese: ja • Korean: ko • Norwegian Bokmal: nb • Polish: pl • Portuguese: pt • Russian: ru • Simplified Chinese: zh_cn • Slovak: sk • Slovenian: sl • Spanish: es • Swedish: sv • Thai: th • Traditional Chinese: zh_tw • Turkish: tr
sianame=<NAME>	Name of the Server Intelligence Agent (SIA) node created for this installation. Substitute <NAME> with the SIA name. The name must consist of English characters (A-Z, a-z, and 0-9) and contain no spaces or other punctuation. Underscores ("_") are not allowed. The SIA name cannot start with a number.
siaport=<PORT>	Network TCP listening port number used by the SIA. Substitute <PORT> with the port number.
smdagent_host=<HOSTNAME>	Hostname of the SMD Agent. Substitute <HOSTNAME> with the agent hostname.
smdagent_port=<PORT>	Network TCP listening port number used by the SMD Agent. Substitute <PORT> with the agent port number.
sqlanywhereadminpassword=<PASSWORD>	Admin password to assign to the Sybase SQL Anywhere dba administrative user account. Substitute <PASSWORD> with the password.

Parameter	Description
`sqlanywhereport=<PORT>`	Network TCP listening port number used by the Sybase SQL Anywhere database server bundled with the BI platform. Substitute `<PORT>` with the database server port number.
`tomcatconnectionport=<PORT>`	Network TCP listening port number used by the Tomcat web application server for inbound connections. Substitute `<PORT>` with the port number.
`tomcatredirectport=<PORT>`	Network TCP listening port number used by the Tomcat web application server for server request redirection. Substitute `<PORT>` with the port number.
`tomcatshutdownport=<PORT>`	Network TCP listening port number used by the Tomcat web application server to trigger a server shutdown. Substitute `<PORT>` with the port number.
`webappservertype=<VALUE>`	Sets the web application server to use for web application deployment. The default value is `tomcat`. Before deploying web applications with the WDeploy tool, you must still manually update the WDeploy configuration files. For more information, see the *SAP BusinessObjects Business Intelligence Platform Web Application Deployment Guide*.
`features=<CODE>`	List of components to install. Used in combination with the `installtype=custom` or `installtype=webtier` parameter. This parameter should not be modified manually. Features must be selected through the installation program user interface when creating a response file. For a complete list of feature codes, see Feature codes [page 46].

5.4.2.1   Feature codes

The following feature codes to select features for installation. Multiple features are separated with commas.

- `root`: install all features
  - `WebTier`: install all web tier components
    - `JavaWebApps1` Java Web Applications
    - `IntegratedTomcat` (install bundled Tomcat web application server)
  - `Servers`: install all server components
    - `PlatformServers`: install all platform servers
      - `CMS` (Central Management Server)
      - `FRS` (File Repository Servers)
      - `PlatformServers.IntegratedDB.SQLAnywhere` (installs bundled Sybase SQL Anywhere database server)
      - `PlatformServers.EventServer`
      - `PlatformServers.WebAppContainerService` (WACS)
      - `AdaptiveProcessingServer` (platform processing)
      - `AdaptiveJobServer` (scheduling)
      - `Platform.Action.Framework.backend` (Insight to Action framework)

- ○ `Subversion` (Subversion version control system)
  - ○ `ConnectionServices`: install connectivity components
    - ○ `ConnectionProcService`
  - ○ `DataFederatorServices`: install all data federation components
    - ○ `DataFederatorQueryService`
  - ○ `AdvancedAnalysisServices`: install all Analysis components
    - ○ `MultidimensionalAnalysisServices` (MDAS)
    - ○ `BExWebApplicationsService`
  - ○ `CrystalReportsServers`: install all SAP Crystal Reports components
    - ○ `CrystalReportsProcServices` (SAP Crystal Reports Processing)
    - ○ `CrystalReportSchedulingServices`
    - ○ `CrystalReport2011ProcServices` (SAP Crystal Reports 2011 Processing)
    - ○ `CrystalReport2011SchedulingServices` (SAP Crystal Reports 2011 Scheduling)
  - ○ `XcelsiusServers` (Dashboards)
  - ○ `MobileServices`
    - ○ `MobileServers`
    - ○ `MobileAddon` (CMS plugin for Mobile)
  - ○ `IntegrationServers`: install all integration components
    - ○ `BWPublisherServer` (SAP BW authentication and SAP BW Publisher support)
  - ○ `AdministratorTools`: install all administrator tools
    - ○ `UpgradeManager` (Upgrade management tool)

- ● `DeveloperTools`: install all developer tool components
  - ○ `BOE64bitNETSDK` (64-bit BI platform .NET SDK)

- ● `DataAccess` install all database access components
  - ○ `DataAccess.DataFederator`
  - ○ `DataAccess.HPNeoView`
  - ○ `DataAccess.MySQL`
  - ○ `DataAccess.GenericJDBC`
  - ○ `DataAccess.GenericODBC`
  - ○ `DataAccess.GenericOLEDB`
  - ○ `DataAccess.OptionalDataDirectODBC`
  - ○ `DataAccess.MaxDB`
  - ○ `DataAccess.SAPHANA`
  - ○ `DataAccess.Salesforce` (Salesforce.com)
  - ○ `DataAccess.Netezza`
  - ○ `DataAccess.Microsoft_AnalyticalServices`
  - ○ `DataAccess.MicrosoftExchange`
  - ○ `DataAccess.MicrosoftOutlook`
  - ○ `DataAccess.Microsoft_SQLServer`
  - ○ `DataAccess.Microsoft_Access`
  - ○ `DataAccess.Ingres`
  - ○ `DataAccess.Greenplum`

- DataAccess.IBMDB2
- DataAccess.Informix
- DataAccess.ProgressOpenEdge
- DataAccess.Oracle
- DataAccess.Sybase
- DataAccess.Teradata
- DataAccess.SAPBW
- DataAccess.SAPERP
- DataAccess.XMLWebServices
- DataAccess.OData
- DataAccess.Excel
- DataAccess.SAP (security and data access for SAP BW and R/3 systems)
- DataAccess.PersonalFiles
- DataAccess.JavaBean
- DataAccess.OpenConnectivity
- DataAccess.HSQLDB
- DataAccess.Derby
- DataAccess.HadoopHive
- DataAccess.Essbase
- DataAccess.Peoplesoft (PeopleSoft Enterprise)
- DataAccess.JDEdwards (JD Edwards EnterpriseOne)
- DataAccess.Siebel (Siebel Enterprise Server)
- DataAccess.OracleEBS (Oracle E-Business Suite)
- DataAccess.Universe (SAP BusinessObjects Universe)
- DataAccess.MyCube (OLAP Cube)
- DataAccess.XML
- DataAccess.ADO.NET
- DataAccess.COMData
- DataAccess.DataSet (Dataset Consumer)
- DataAccess.SymantecACT
- DataAccess.BDE (IDAPI Database DLL)
- DataAccess.CDO (Crystal Data Objects)
- DataAccess.FieldDefinitions
- DataAccess.FileSystem
- DataAccess.NTEventLog
- DataAccess.WebActivityLog
- DataAccess.Btrieve (Pervasive Database Driver)
- DataAccess.dBase
- DataAccess.UWSC (Universal Web Services Connector (UWSC))
- Samples: install sample reports and data sources

5.4.2.2 Response file example

The following example response file contains options for installing SAP BusinessObjects Business Intelligence platform.

> ➡ Tip
>
> An example response file called `response.ini` is also included with your installation package.

> ❖ Example
>
> **response.ini**
>
> ```
> # InstallDir requires a trailing slash
> InstallDir=C:\Program Files (x86)\SAP BusinessObjects\
> ProductKey=XXXXX-XXXXXX-XXXXXX-XXXX
> SetupUILanguage=en
> InstallType=default
> TomcatConnectionPort=10001
> TomcatRedirectPort=10002
> TomcatShutdownPort=10003
> CMSPort=10004
> CMSPassword=Password1
> ClusterKey=Password1
> SIAName=sia
> SIAPort=10006
> SelectedLanguagePacks=en
> RunMonitorTool=0
> LCMName=localhost
> LCMPort=10004
> LCMUserName=Administrator
> LCMPassword=Password1
> NewOrExistingLCM=new
> #Choose to Integrated Introscope: integrate or nointegrate
> ChooseIntroscopeIntegration=nointegrate
> ### Choose to Integrate Solution Manager Diagnostics (SMD) Agent: integrate or
> nointegrate
> choosesmdintegration=nointegrate
> # Change this to "0" if you want to use existing db
> SelectIntegratedDatabase=1
> SQLAnywhereAdminPassword=Password1
> SQLAnywherePort=2638
> # Choose your existing database types
> UsingCMSDBType=sqlanywhere
> UsingAuditDBType=sqlanywhere
> # Enter appropriate values for the db type
> ExistingCMSDBServer=www
> ExistingCMSDBPort=111
> ExistingCMSDBDatabase=xxx
> ExistingCMSDBUser=yyy
> ExistingCMSDBPassword=zzz
> ExistingCMSDBReset=1
> # Enter appropriate values for the db type
> ExistingAuditingDBServer=aaa
> ExistingAuditingDBPort=111
> ExistingAuditingDBDatabase=bbb
> ExistingAuditingDBUser=ccc
> ExistingAuditingDBPassword=ddd
> #Enter appropriate values for the Introscope
> Introscope_ENT_HOST=localhost
> Introscope_ENT_PORT=6001
> Introscope_ENT_INSTRUMENTATION=10
> #Enter appropriate values for the SMD Agent
> ```

```
SMDAgent_HOST=localhost
SMDAgent_PORT=6001
#WACS Port
WACSPort=6405
# The acceptable value of WebAppServerType: tomcat/wacs/manual/none
WebAppServerType=tomcat
#List the features installed by default
features=JavaWebApps1,tomcat80,WebTier,CMS,FRS,PlatformServers.IntegratedDB.SQLAny
where,PlatformServers.EventServer,PlatformServers.SystemLandscapeSupplier,Adaptive
ProcessingServer,AdaptiveJobServer,Platform.RestWebService,Platform.Action.Framewo
rk.backend,Subversion,ConnectionProcService,ConnectionServices,DataFederatorQueryS
ervice,DataFederatorServices,MultidimensionalAnalysisServices,BExWebApplicationsSe
rvice,AdvancedAnalysisServices,CrystalReportsProcServices,CrystalReportSchedulingS
ervices,CrystalReport2011ProcServices,CrystalReport2011SchedulingServices,CrystalR
eportsServers,WebIProcServer,WebISchedulingServices,WebIServers,XcelsiusServers,Mo
bileAddon,MobileServices,BWPublisherServer,IntegrationServers,MultitenancyManager,
UpgradeManager,AdministratorTools,DataAccess.DataFederator,DataAccess.HPNeoView,Da
taAccess.MySQL,DataAccess.GenericJDBC,DataAccess.GenericOLEDB,DataAccess.OptionalD
ataDirectODBC,DataAccess.MaxDB,DataAccess.Salesforce,DataAccess.Netezza,DataAccess
.Microsoft_AnalyticalServices,DataAccess.MicrosoftExchange,DataAccess.MicrosoftOut
look,DataAccess.Microsoft_SQLServer,DataAccess.Microsoft_Access,DataAccess.Ingres,
DataAccess.Greenplum,DataAccess.IBMDB2,DataAccess.Informix,DataAccess.ProgressOpen
Edge,DataAccess.Oracle,DataAccess.Sybase,DataAccess.Teradata,DataAccess.SAPBW,Data
Access.SAP,DataAccess.SAPHANA,DataAccess.PersonalFiles,DataAccess.JavaBean,DataAcc
ess.OpenConnectivity,DataAccess.HSQLDB,DataAccess.Derby,DataAccess.HadoopHive,Data
Access.Essbase,DataAccess.Universe,DataAccess.MyCube,DataAccess.XML,DataAccess.ADO
.NET,DataAccess.COMData,DataAccess.DataSet,DataAccess.SymantecACT,DataAccess.BDE,D
ataAccess.CDO,DataAccess.FieldDefinitions,DataAccess.FileSystem,DataAccess.NTEvent
Log,DataAccess.WebActivityLog,DataAccess.Btrieve,DataAccess.dBase,DataAccess.UWSC,
DataAccess.SAPERP,DataAccess.XMLWebServices,DataAccess.OData,DataAccess.Excel,Data
Access.OracleEBS,Samples
```

5.5   To run a phase-wise installation

The installation is performed in two phases - Caching and Installation after caching.

- Caching is the process of copying the software to the installation directory
- Installation after caching is the actual installation process

5.5.1 To run a phase-wise installation for new installation from command prompt

To do a phase-wise installation, perform the following steps:

1. Navigate to command prompt.
2. Enter the location where the software is downloaded..
3. Enter the setup.exe -cache `<path><file name>`.

For example: `setup.exe -cache c:\response.ini`

4. In the Select setup language window, select the setup language.
The setup language setting is to display information during the installation in the language of your choice.

5. In the *Check Prerequisites* window, review the results and decide whether to continue with the installation, or abort and correct any unmet requirements.
The installation program checks for required components and conditions.
   - If a dependency prerequisite condition is critical, the installation program will not allow the installation to proceed
   - If the missing or unsupported component is optional, you have the option to either continue with the installation or abort and correct the condition

6. In the *Installation wizard* window, review the instructions displayed.

7. In the *License Agreement* window, review and accept the license agreement.

8. In the *Configure Product Registration* window, enter the product key.

9. In the *Select Language Packages* window, select additional languages to install from the list.
The language currently being used by the operating system is selected automatically. English language support cannot be deselected because the BI platform uses English if a problem is detected with an individual language.

> ℹ **Note**
>
> In the *Select Languages Packages* window, you can select the check box to add or remove language packs.

10. In the *Select Install Type* window, select one of the type of install
    - Full Installation :If you selected a *Full* installation, proceed to the following *Full installation* section.
    - Custom/Expand Instllation : If you selected a *Custom/Expand* installation, proceed to the following *Custom/Expand installation* section.
    - Web Tier: If you selected a *Web Tier* installation, proceed to the following *Web Tier installation* section.

11. *Start Installation* window apperars, To start caching, choose *Next*.

12. *Caching completed successfully* screen appears.

> ℹ **Note**
>
> During the caching process the system downtime is eliminated.

13. Navigate to the directory where response.ini file is located.

14. Enter the passwords and product key; and save the response.ini file.
For example: Enter the *CMS Cluster Key*, *Administrator Password*, and *SQL Anywhere Password* information.

15. Navigate to command prompt.

16. Enter the location where the software is downloaded.

17. Enter the setup.exe -resume_after_cache `<path><file name>`
For example: `setup.exe -resume_after_cache c:\response.ini`

18. In the *Resume installation* window, choose *OK*

19. In the *Post Installation Steps* window, follow the instructions and choose *Next*

The installation of is completed successfully.

> ℹ **Note**
>
> - You can experience the system downtime only during the installation after caching, hence the overall system downtime is reduced.

- After you start the installation, the installer repairs any errors that occurred during the caching and proceeds with the installation

5.5.2 To run a phase-wise installation for update installation from command prompt

To do a phase-wise installation patch update, perform the following steps:

1. Open command prompt.
2. Navigate to the download location of software.
3. Execute the command `setup.exe -cache <path><file name>`.
   For example: `setup.exe -cache c:\response.ini`

   > ℹ **Note**
   >
   > If you prefer to use an existing response.ini file with necessary inputs, installer directly starts Caching phase without prompting for any information.

4. In the *Check Prerequisites* window, review the results and decide whether to continue with the installation, or abort and correct any unmet requirements.
   The installation program checks for required components and conditions.
   - If a dependency prerequisite condition is critical, the installation program will not allow the installation to proceed
   - If the missing or unsupported component is optional, you have the option to either continue with the installation or abort and correct the condition
5. In the *Installation wizard* window, review the instructions displayed.
6. In the *License Agreement* window, review and accept the license agreement.
7. In the *New License Key Requirement* window, review the contents of the New License Key Requirement, and select the check box, and choose *Next*

   > ℹ **Note**
   >
   > The installer will display the *New License Key Requirement* window, if you are updating SAP Crystal Server 2016 SP1 or earlier versions to higher version of SAP Crystal Server, otherwise the installer shall not display the *New License Key Requirement* window.

   > ℹ **Note**
   >
   > When you update your system from SAP Crystal Server 2016 SP1 or earlier versions to SAP Crsytal Server higher versions, the existing licenses behave as invalid licenses. You need to request a new license key for SAP Crystal Server 2016 update from SAP Service Market Place. Visit https://support.sap.com/keys-systems-installations/keys.html to request a new license key.
   >
   > For more information on how to request a new license key, visit http://scn.sap.com/docs/DOC-70095 .

> After you update your system to SAP Crystal Server 2016 update, you must log on to Central Management Console; delete the old license key and add the new license key. Alternatively, you can run the script to delete the license keys. For more information on how to delete the license key through the script, see the 2276413 .
>
> Until you add the new license key in Central Management Console, certain servers are in disabled state.
>
> Once you add the new license key, navigate to Servers window; enable the servers that are in disabled state.
>
> For more information, see the **Business Intelligence Platform Administrator Guide**.

8. In the *Existing CMS Deployment Information* window, enter the *CMS Logon Administrator Information* password.
9. In the *Web Application Deployment* window, choose the suitable web application deployment radio button and choose *Next*.

> ℹ **Note**
>
> If bundled default Tomcat JAVA Web Application Server is present in the base installation, installer prompts the Web Application Deployment window. Else, the installer does not prompt Web Application Deployment window.

   ○ Choosing the *Deploy web applications now* radio button deploys the web application contents on the bundled default Tomcat JAVA web application server.
   ○ Choosing the *Deploy web application later* radio button does not deploy the web application contents on the bundled default Tomcat JAVA web application server.
   ○ We recommend you to choose the *Deploy web application later* radio button when you are installing SAP Crystal Server and SAP BusinessObjects Explorer add-on product. When you are installing the Explorer add-on product in your system, choose the *Deploy web application now* radio button. This way you shall experience overall reduction in system downtime.
10. In the *Start Installation* window, choose *Next* to start caching.

> ℹ **Note**
>
> During the caching phase, there is no system downtime and you can continue working on the system.

11. *Caching completed successfully* dialog appears.

> ℹ **Note**
>
> You can perform Installation after caching phase when maintenance time is available.

12. Navigate to the response.ini file directory location.
13. Enter the *Remote CMS Administrator Password* and save the response.ini file.
14. Open command prompt.
15. Navigate to the download location of the software.
16. Execute the command `setup.exe -resume_after_cache <path><file name>`.
   For example: `setup.exe -resume_after_cache c:\response.ini`
17. In the *Resume installation* window, choose *OK*
18. In the *Post Installation Steps* window, follow the instructions and choose *Next*

> ℹ **Note**
>
> The installer does not display the *Post Installation Steps* window, if you are updating SAP Crystal Server 4.2 SP2 to higher version of SAP Crystal Server 4.2 and when your base setup has bundled default Tomcat Web Application Server.

The installation of SAP Crystal Server 2016 update is completed successfully.

> ℹ **Note**
>
> You shall experience the system downtime only during the installation after caching, hence there is an overall reduction in the system downtime.

5.5.3 To run a phase-wise installation for update installation from user interface

To do a phase-wise installation patch update, perform the following steps:

1. Navigate to the setup.exe file location.
2. Execute the setup.exe file.
3. In the *Check Prerequisites* window, review the results and decide whether to continue with the installation, or abort and correct any unmet requirements.
   The installation program checks for required components and conditions.
   - If a dependency prerequisite condition is critical, the installation program does not allow the installation to proceed.
   - If missing or unsupported component is optional, you have the option to either continue with the installation or abort and correct the condition.
4. In the *Installation wizard* window, review the instructions displayed.
5. In the *License Agreement* window, review and accept the license agreement.
6. In the *New License Key Requirement* window, review the contents of the New License Key Requirement, and select the checkbox, and choose *Next*.

> ℹ **Note**
>
> The installer will display the *New License Key Requirement* window, if you are updating SAP Crystal Server 2016 SP1 or earlier versions to higher version of SAP Crystal Server 2016, otherwise the installer shall not display the *New License Key Requirement* window.

> ℹ **Note**
>
> When you update your system from SAP Crystal Server 2016 SP1 or earlier versions to higher versions of SAP Crystal Server 2016, the existing licenses behave as invalid licenses. You need to request a new

license key for SAP Crystal Server 2016 update from SAP Service Market Place. Visit https://support.sap.com/keys-systems-installations/keys.html to request a new license key.

For more information on how to request a new license key, visit http://scn.sap.com/docs/DOC-70095.

After you update your system to SAP Crystal Server 2016 update, you must log on to Central Management Console; delete the old license key and add the new license key. Alternatively, you can run the script to delete the license keys. For more information on how to delete the license key through the script, see the 2276413.

Until you add the new license key in Central Management Console, certain servers are in disabled state.

Once you add the new license key, navigate to Servers window; enable the servers that are in disabled state.

For more information, see the **Business Intelligence Platform Administrator Guide**.

7. In the *Existing CMS Deployment Information* window, enter the *CMS Logon Administrator Information* password.
8. In the *Select Installation Mode* window, choose the *Phase-wise Installation* radio button.

> ℹ **Note**
>
> Caching is performed in two phases – Caching and Installation after caching.
>
> During Caching, there is no system downtime and you can continue working on the system.
>
> During Installation after caching, in system in which you install the software, there is system downtime.

9. To start the Caching phase, choose *Next*.
   Caching completed successfully window appears.
10. To exit the phase-wise installation, choose *Finish*.

> ℹ **Note**
>
> You can perform Installation after caching phase when maintenance time is available.

11. To resume the installation after caching phase, perform the steps 1 and 2.
12. To proceed further, Perform steps 3, 5, 6, and 7.
13. In the *Web Application Deployment* window, choose the suitable web application deployment radio button.

> ℹ **Note**
>
> If bundled default Tomcat JAVA Web Application Server is present in the base installation, installer prompts the Web Application Deployment window. Else, the installer does not prompt Web Application Deployment window.

- ○ Choosing the *Deploy web applications now* radio button deploys the web application contens on the bundled default Tomcat JAVA web application server.
- ○ Choosing the *Deploy web application later* radio button does not deploy the web application contens on the bundled default Tomcat JAVA web application server.
- ○ We recommend you to choose the *Deploy web application later* radio button when you are installing SAP Crystal Server and SAP BusinessObjects Explorer add-on product. When you are installing the Explorer add-on product in your system, choose the *Deploy web applications now* radio button. This way you can experience overall reduction in system downtime.

14. In the *Resume Installation* window, choose *Next* to resume the installation.
    Update installation begins. When the installation is complete, Post installation Steps window appears.
15. In the *Post Installation Steps* window, follow the instructions and choose *Next*.

> ℹ **Note**
>
> The installer does not display the *Post Installation Steps* window, if you are updating SAP Crystal Server 2016 SP2 to higher version of SAP Crystal Server 2016 and when your base setup has bundled default Tomcat Web Application Server.

16. To exit the installation, choose *Finish*.

The installation of SAP Crystal Server 2016 update is completed successfully.

> ℹ **Note**
>
> You shall experience the system downtime only during the installation after caching, hence there is an overall reduction in the system downtime.

6 Post-Installation

This section describes the activities that should be performed after the installation program has finished, to test that the installation was successful.

6.1 Verifying your installation

You can verify that your installation was successful by using a Central Management Console (CMC) to log onto your CMS. The CMC is used to administer servers, users and groups, rights, and security policies.

If you installed the *Java Web Applications* feature on the machine, launch the CMC by going to: ▌ *Start* ❯ *Programs* ❯ *SAP Crystal Server 2016* ❯ *SAP BusinessObjects Enterprise* ❯ *SAP BusinessObjects Enterprise Central Management Console* ▐.

If you have installed a dedicated web application server, you can enter the web application server's URL to access the CMC. Use the following URL:

```
http://<<WAS_HOSTNAME>>:<<PORT>>/BOE/CMC
```

Substitute < `<WAS_HOSTNAME>` > for the hostname of the web application server and < `<PORT>` > for the web application server's listening port. If you are using a custom web application server root context or `BOE.war` web application context, the URL will be different.

If you are using Internet Explorer, you may receive several Internet Explorer Enhanced Security Configuration warnings because the new server is not yet added to the list of trusted sites. Click *Add* to add the local web server to the list of trusted web sites. If your server is not using SSL encryption, deselect *Require server verification (https:) for all sites in this zone*.

Log on as the Administrator user by typing **Administrator** into the *User Name* field and entering the administrative password that you entered into the installation program.

For more information on using the CMC, see the *SAP BusinessObjects Business Intelligence Platform Administrator Guide*.

6.1.1 Checking the installed version

Use one of the following methods to check the version of the Crystal Server that you have installed:

- On Windows deployments, use Windows Add Remove Programs (ARP)
- On Unix or Linux deployments, run `modifyOrRemoveProducts.sh`

Crystal Solutions and Client Tools

You can see the current version information for Crystal Server Client Tools and other Crystal Solutions products such as SAP Crystal Reports in the ▌▶ *Help* ▶ *About* ▐ menu.

6.1.2 Troubleshooting login issues

If you are unable to log on to the CMS using the CMC, or launch the CMC, evaluate the following possible causes:

1. Is a firewall blocking the CMS port number (default 6400) or the web application server port?
   Check the Windows Firewall settings by going to: ▌▶ *Start* ▶ *Settings* ▶ *Control Panel* ▶ *Windows Firewall* ▐.

2. Is the URL correct?
   The default URL to access the CMC is:

   ```
   http://<<WAS_HOSTNAME>>:<<PORT>>/BOE/CMC
   ```

   Substitute < `<WAS_HOSTNAME` >> for the hostname of the web application server and < `<PORT` >> for the web application server's listening port. If you are using a custom web application server root context or `BOE.war` web application context, the URL will be different.

3. Is the correct method specified in the *Authentication* field?
   The default authentication type is *Enterprise*, referring to native SAP Crystal Server authentication system. If you are using an LDAP or Windows AD single sign-on authentication system, select the system instead.

4. Did you provide the correct user credentials in the *User Name* and *Password* fields on the CMC login screen?
   The name of the administrative account is **Administrator** . You entered the password during the installation process.

5. Is the Server Intelligence Agent (SIA) running.?
   Go to: ▌▶ *Start* ▶ *Programs* ▶ *SAP Crystal Server 2016* ▶ *SAP BusinessObjects Enterprise* ▶ *SAP BusinessObjects Enterprise Central Management Console* ▐.
   If the SIA is not running, start it.

6. Ensure that the database server(s) used for the CMS system and Auditing Data Store databases are running, and that the network connection from the CMS to the database is working.

7. If you are attempting to connect to a CMS cluster using the **@<clustername>** format, and this is your first attempt to connect to the cluster, the CMC will not know which CMS servers belong to the cluster.
   In this case, you need to specify a list of CMS servers in the `web.xml`, found in the `WEB-INF` folder of the CMC web application WAR file. Follow the instructions in the `cms.clusters` section of `web.xml` for more details. It is also possible to specify CMS cluster information for the BI launch pad by modifying its corresponding `web.xml` file.

If none of these solutions work, consider repairing or reinstalling the software or contacting support at: https://support.sap.com/home.html✎.

6.2   Creating additional Adaptive Processing Servers

The installation program installs one Adaptive Processing Server (APS) per host system. Depending on the features that you've installed, this APS may host a large number of services, such as the Monitoring Service, Lifecycle Management Service, Multi-Dimensional Analysis Service (MDAS), Publishing Service, and others.

For production or test systems, the best practice is to create additional APSs, and configure the APSs to meet your business requirements.

You can create additional APSs in two ways:

- Run the System Configuration Wizard.
  The wizard helps you with basic configurations of your Crystal Server system, including configuring APSs according to predefined deployment templates. The APS configuration provided by the wizard is a good starting point; however, system sizing must still be performed.
  The wizard is available from the Central Management Console (CMC). For more information about the wizard, see "Introduction to the System Configuration Wizard" in the *Business Intelligence Platform Administrator Guide*. For more information about default deployment templates, see the *SAP BusinessObjects BI platform Deployment Templates* document, which is available from within the wizard, and also at http://help.sap.com/bobip41.
- Use the CMC to manually create and configure additional APSs. For details, see "Adding, cloning, and deleting servers" in the *Business Intelligence Platform Administrator Guide*.

➡ Remember

Selecting a deployment template in the wizard or manually creating additional APSs does not replace system sizing. Ensure that sizing is performed: http://www.sap.com/bisizing .

6.3   Deploying web applications

The installation only deploys web applications to the bundled version of Tomcat. To deploy web applications to a supported web application server, you must deploy the web applications manually with the WDeploy tool, or with the web application server administrative console.

The WDeploy tool automates the deployment of web applications to supported web application servers. For more information on using WDeploy, see the *SAP BusinessObjects Business Intelligence Platform Web Application Deployment Guide*.

6.4   SAP support

6.4.1 To configure System Landscape Directory (SLD) Data Supplier (DS) post installation

If you decided not to enable support for SAP System Landscape Directory (SLD) when installing SAP Crystal Server, you can enable it at any time later by installing SAP Host Agent. For more information, see To enable SAP System Landscape Directory (SLD) support [page 21].

Once SAP Host Agent is installed, open the Central Management Console (CMC), select the *Servers* tab, and restart the SIA nodes. SLD registration will automatically occur whenever a SIA is restarted or created.

To enable SLD support for web applications deployed to a web application server, see "SAP System Landscape Directory (SLD) registration" in the *SAP BusinessObjects Business Intelligence Platform Web Application Deployment Guide*.

6.4.2 To configure SMD Agent post installation

If you did not configure SAP Solution Manager Diagnostics (SMD) during the installation process, you can still give the SMD Agent hostname and port number in the Central Management Console (CMC).

> **i Note**
>
> SMD Agent must be installed before configuring the SMD Agent hostname and port number in SAP Crystal Server.

1. Open the Central Management Console.
2. Select the *Servers* tab.
3. Expand the SIA *Nodes* folder in server list, and right-click the SIA to be updated.
4. Select *Placeholders* from the context menu.
5. Ensure that the placeholders related to SMD Agent are set correctly:
    a. Update the `%SMDAgentHost%` placeholder with the SMD Agent hostname.
    b. Update the `%SMDAgentPort%` placeholder with the SMD Agent port number.
6. Save and close the *Placeholders* screen.
7. Restart the SIA.
8. When more than one SIA is present, repeat steps 3-7 for each SIA in the *Nodes* folder.

6.4.3 To configure CA Wily Introscope Agent post installation

If you did not configure CA Wily Introscope during the installation process, you can configure it later in the Central Management Console (CMC).

1. Open the Central Management Console.
2. Select the *Servers* tab.
3. Expand the SIA *Nodes* folder in server list, and right-click the SIA to be updated.
4. Select *Placeholders* from the context menu.
5. Ensure that the placeholders related to Introscope are set correctly:
   a. Change the `%IntroscopeAgentEnableInstrumentation%` placeholder from `false` to `true`.
   b. Update the `%IntroscopeAgentManagerHost%` placeholder with the Introscope Agent hostname.
   c. Update the `%IntroscopeAgenEnterpriseManagerPort%` placeholder with the Introscope Agent port number.
   d. Review `%IntroscopeAgenEnterpriseManagerTransport%` to ensure that the correct network transport is selected (for example, `TCP`).
6. Save and close the *Placeholders* screen.
7. Restart the SIA.
8. When more than one SIA is present, repeat steps 3-7 for each SIA in the *Nodes* folder.

6.5   Post-install diagnostic checks

You can run the Monitoring Tool at any time to run a diagnostics check and look for problems.

To access the Monitoring Tool in order to run diagnostic tests, log on to the Central Management Console (CMC), select the *Monitoring* screen, and click the *Probes* tab.

6.6   Making changes to SAP BusinessObjects Business Intelligence platform

6.6.1 To modify SAP Crystal Server

These instructions describe the process to modify your SAP Crystal Server installation by adding or removing installed components though the Windows Control Panel.

It is recommended that you back up the CMS system database before modifying the BI platform.

1. Run the Central Configuration Manager (CCM) by selecting ▐▶ *Start* ❭ *Programs* ❭ *SAP Crystal Server 2016* ❭ *SAP BusinessObjects Enterprise* ❭ *Central Configuration Manager* ❭.
2. Select all listed servers and click the *Stop* button.
3. When all of the servers are stopped, close the CCM console.

4. Go to: ▌ *Start* ▶ *Control Panel* ▶ *Programs and Features* ▌.

5. Right-click *SAP Crystal Server 2016* and select *Uninstall/Change*.

6. On the *Application Maintenance* page, select *Modify* and click *Next*.

7. On the *Select Language Packs* page, select any languages you want to install; unselect any languages you want to remove. Click *Next* to continue.

8. On the *Select Features* page, select any features you want to install; unselect any features you want to remove.

   Features are grouped under the following headings:

   ○ *Web Tier*
     The web tier components include web applications such as BI launch pad and the Central Management Console (CMC) that allow end users and administrators to interact with BI content and the BI platform installation.
     If you do not have a web application server in place for use with the BI platform, the installation program can install and configure a Tomcat web application server for you. It is recommended that you evaluate your requirements against information from your web application server vendor to determine which supported web application server would best suit your organization's needs.
     If you already have a supported web application server installed, you can deselect the option to install Tomcat, and only install the Java web applications

   ○ *Servers*
     Server features include the Business Intelligence platform servers (such as processing and scheduling servers), major system components (such as the CMS, Event Server, bundled database, and a version control system), and servers that integrate the BI platform into your organization's existing network infrastructure.

   ○ *Administrator Tools*
     The Administrator Tools features help administrators maintain an installation. For example, the Upgrade management tool allows you migrate BI content during an upgrade between different versions of the BI platform.

   ○ *Developer Tools*
     If you plan to develop your own applications with a the BI platform .NET Software Development Kit (SDK), install the *Developer Tools* feature.

   ○ *Database Access*
     To access, analyze, and report on the data in your organization's existing databases, select the appropriate *Database Access* features. If your organization does not use a particular database, you can deselect it.

   ○ *Samples*
     The samples features installs sample reports, templates, and reporting databases. If you do not need samples, you can deselect it.

9. Click *Next* to apply your changes.

The *Start Installation* page appears. Start the installation.

6.6.2 To repair SAP Crystal Server

These instructions describe the process to repair an SAP Crystal Server installation from the Microsoft Windows Control Panel. This process restores the files and settings originally configured by the setup program.

It is recommended that you back up the CMS system database before running a repair.

1. Run the Central Configuration Manager (CCM) by selecting ▮▶ *Start* ❯ *Programs* ❯ *SAP Crystal Server 2016* ❯ *SAP BusinessObjects Enterprise* ❯ *Central Configuration Manager* ▮.

2. Change the status of all servers to stopped.

3. When all of the servers are stopped, close the CCM.

4. Go to: ▮▶ *Start* ❯ *Control Panel* ❯ *Programs and Features* ▮.

5. Right-click *SAP Crystal Server 2016* and select *Uninstall/Change*.

6. On the *Application Maintenance* page, select *Repair* and click *Next*.

7. (Optional) On the *Existing CMS Deployment Information* page, enter the CMS connection and logon information for the existing, remote CMS.

> **ℹ Note**
>
> If you cannot connect to your existing, remote CMS, click *No* when prompted and you can proceed with the repair.

The *Start Installation* page appears. Start the installation. Once the repair is complete, the system is restored to its original configuration.

6.6.3 To remove SAP Crystal Server

These instructions describe the process to permanently uninstall SAP Crystal Server from a system.

It is recommended that you back up the CMS database before removing SAP Crystal Server.

> **ℹ Note**
>
> Add-on products that with dependencies on other products should be removed before the product on which they depend. For example, for servers with SAP Crystal Server Explorer installed, SAP Crystal Server Explorer should be removed first, as it will not function without SAP Crystal Server.

> **ℹ Note**
>
> **Prerequisite for uninstalling or downgrading SAP Crystal Server Platform Services 2016 SP2**
>
> - When uninstalling or downgrading SAP Crystal Server from 2016 SP2 to 2016 SP1 or 2013 or 2011, ensure that you remove the new license key pertaining to SAP Crystal Server from 2016 SP2 from CMC
> - If you had uninstalled SAP Crystal Server from 2016 SP2 without removing the new license key, run the script to the remove the key. For more information on removing the key through the script, see SAP Note 2276413 ⤵

The following items will remain:

- The CMS repository auditing databases, as they may be shared with other programs. If you are using the bundled Sybase SQL Anywhere database server, a backup of the CMS and auditing database files (`.db`) remain at the following location: < `<BIP_INSTALL_DIR` >>\sqlanywhere\database.backup.< `<DATE` >>\
- The file repository folder, as it may contain user data.

- Web applications deployed to a web application server will not be undeployed. Use the WDeploy command or the web application server administrative console to undeploy web applications.
- Web application files customized to an individual web application server.
- Configuration files

> ℹ **Note**
>
> These items can be removed manually by an administrator if required.

1. Run the Central Configuration Manager (CCM) by selecting ▶ *Start* ❯ *Programs* ❯ *SAP Crystal Server 2016* ❯ *SAP BusinessObjects Enterprise* ❯ *Central Configuration Manager* ❯.
2. Stop the Server Intelligence Agent (SIA).
3. When all of the servers are stopped, close the CCM.
4. Go to: ▶ *Start* ❯ *Control Panel* ❯ *Programs and Features* ❯.
5. Right-click *SAP Crystal Server 2016* and select *Uninstall/Change*.
6. On the *Application Maintenance* page, select *Remove* and click *Next*.
7. On the *Uninstall Confirmation* page, confirm that you want uninstall by clicking *Next*.
   The uninstallation program starts andSAP BusinessObjects Business Intelligence platform is removed from the system.

6.6.4 Patching third-party solutions bundled with the BI platform

There are several third-party software solutions bundled with SAP Crystal Server 2016 installation, including:

- SAP Sybase SQL Anywhere
- Apache Tomcat 8.0
- SAP JVM

These third-party solutions are delivered as-is and without any support to patch them with vendor-delivered patches or updates. In the event of a security issues arising in those delivered products, SAP will patch them in subsequent Support Packages (SPs) or Patches as necessary.

If your business has the need to run a newer version or patch of the bundled software, consider switching to a fully featured solution providing you with a greater flexibility and support. For a list of databases, web application servers, and other systems supported by this release, see the *Product Availability Matrix* (Supported Platforms/ PAR), available on the SAP BusinessObjects section of the SAP Support Portal at: https://support.sap.com/ home.html📌

> ℹ **Note**
>
> The SAP JVM/JDK must not be swapped with another vendor's JVM/JDK.

6.7   When the administrator account password is lost

If the credentials for the SAP Crystal Server *administrator* account are lost, consider whether another administrative account is available, and use it to change the password for the SAP Crystal Server *administrator* account.

If this is not possible, refer to SAP Knowledge Base Article 1679970 - How to reset the Administrator password in Business Intelligence Platform 4.X.

6.8   Viewing log summary

ErrorsAndWarnings.log file contains exclusively the errors and warnings that occurred during install or uninstall or modify or repair the BI platform. The status of install or uninstall of the SAP Crystal Server 2016 has following scenarios:

- SAP Crystal Serer 2016 has been successfully installed or uninstalled.
- SAP Crystal Serer 2016 has been successfully installed / uninstalled with warnings
- SAP Crystal Server 2016 has encountered errors during the install / uninstall process

The hyperlink *Click here for details* appears in case of warnings or errors during the installation or uninstallation or modifying or repairing. When you select *Click here for details*, you can see the errors and warnings listed in the file.

Alternatively the errors and warnings log file is saved to `<INSTALL_DIR>\InstallData\logs\<DATEandTIME>\ErrorsAndWarnings.log.`

6.9   Verifying fips in your installation

To verify fips in your installation, perform the following steps:

1. Navigate ▶ *Start* ❯ *Central Configuration Manager* ❯.
2. In the *Central Configuration Manager* window, right-click on *Server Intelligent Agent* and select *Properties*.
3. 4. In the *Command* key value – fips is appended by default.

You can see fips is enabled by default in your installation.

> ℹ **Note**
>
> FIPS is default only for a new installation.

7 Installing SAP Crystal Server Client Tools

The SAP Crystal Server Client Tools can only be installed by a dedicated installation program, and are no longer bundled with the installation of Crystal Server servers.

Crystal Server Client Tools installation program installs a suite of desktop clients on supported Windows operating systems only. Client Tools are not available for Unix or Linux operating systems.

> ℹ **Note**
>
> - Although the Client Tools are supported on 64-bit operating systems, the Client Tools themselves are only available as 32-bit applications.
> - When installing a database driver for Client Tools on 64-bit operating systems, ensure that you install the 32-bit version. A 32-bit application cannot use a 64-bit driver.
> - If you install both the Client Tools and Crystal Server servers on the same 64-bit Windows operating system, you must install both 32-bit and 64-bit database drivers on the machine. You must also ensure that both 32-bit and 64-bit database connector middleware is installed and that their data source configurations are identical, because Client Tools requests in this scenario may be handled by either of the two 32-bit or 64-bit Native Connectivity Services.

Some of the client applications that make up the Client Tools suite are also available with their own stand-alone installation program. This allows you to install the client application by itself, without having to install the Client Tools suite's *Custom* installation option.

Client Tools can co-exist on a system that also runs BI platform server software. When installing both BI platform servers and Client Tools on the same system, it is recommended that the server components (including add-ons and language packs) are installed before Client Tools. This allows the Client Tools to use same the same components as the server.

No product key is required to install Client Tools, but you require administrative privileges for the account being used to run the installation program.

If a file is in use during the installation, the installation program recommends a system reboot when the install is complete. Although the reboot can be postponed, and you can continue to use the system after the installation, the system may be in an unsupported state until it is rebooted. It is recommended that you restart the system at the end of an installation if a reboot is recommended.

7.1 Desktop client applications

The following desktop client applications are installed by the SAP BusinessObjects Business Intelligence Platform Client Tools installation program:

- Business View Manager
- Information design tool
- Translation Management Tool

- Data Federation Administration Tool
- Developer Components
  For integrating BusinessObjects functionality into interactive web applications. Includes the BI platform Java SDK, Web Services SDK, and .NET SDK.
- Data Access and Security

7.1.1 Business View Manager

Business View Manager allows users to build semantic layer objects that simplify underlying database complexity.

Business View Manager can create data connections, dynamic data connections, data foundations, business elements, business views, and relational views. It also allows detailed column and row-level security to be set for the objects in a report.

Designers can build connections to multiple data sources, join tables, alias field names, create calculated fields, and then use the simplified structure as a Business View. Report designers and users can then use the business view as the basis for their reports, rather than and building their own queries from the data directly.

7.1.2 Information design tool

Information design tool (formerly Information Designer) is a metadata design environment that enables a designer to extract, define, and manipulate metadata from relational and OLAP sources to create and deploy SAP BusinessObjects universes.

7.1.3 Translation Management Tool

The BI platform provides support for multilingual documents and universes. A multilingual document contains localized versions of universe metadata and document prompts. A user can create reports, for example, from the same universe in their chosen languages.

Translation Management Tool (formerly Translation Manager) defines the multilingual universes and manages translation of universes and other report and analytic resources in the CMS repository.

Translation Management Tool:

- Translates universe or documents for a multilingual audience.
- Defines the metadata language parts of a document, and the appropriate translation. It generates external XLIFF format and imports XLIFF files to get translated information.
- Lists the universe or document structure to be translated.
- Lets you translate the metadata through the user interface, or through an external translation tool by importing and exporting XLIFF files.
- Creates multilingual documents.

7.1.4 Data Federation Administration Tool

The Data Federation Administration Tool (formerly Data Federator) is a rich client application that offers easy-to-use features to manage your data federation service.

Tightly integrated in the BI platform, the data federation service enables multi-source universes by distributing queries across disparate data sources, and lets you federate data through a single data foundation.

The data federation administration tool lets you optimize data federation queries and fine-tune the data federation query engine for the best possible performance.

You use the data federation administration tool to do the following:

- Test SQL queries.
- Visualize optimization plans which detail how federated queries are distributed to each source.
- Compute statistics and set system parameters to fine-tune the data federation services and get the best possible performance.
- Manage properties to control how queries are executed in each data source at the connector level.
- Monitor running SQL queries.
- Browse the history of executed queries.

7.2 To download the Client Tools installation program

1. Go to https://support.sap.com/home.html > *Software Downloads*.
2. Select *Installations and Upgrades>A–Z Index*.
3. Select ▶ *B* ❯ *SBOP BI platform (former SBOP Enterprise)* ❯ *SBOP BI PLATFORM (ENTERPRISE)* ❯ *SBOP BI PLATFORM 4.2* ◀.
4. Select *Installation and Upgrade* and then select your platform.
5. Select *SBOP BI PLATFORM <version> CLIENT TOOLS WINDOWS (32B)*, then follow the instructions on the website to download and extract the objects.

The software may take a long time to download, and you may need to contact the system administrator to ensure your company's firewall will not terminate the download process.

Support Packages and Patches are installation programs that contain updates to BI platform software. You can download them from https://service.sap.com/support > ▶ *Software Downloads* ❯ *Support Packages and Patches* ❯ *A–Z Index* ◀. For more information on installing Support Packages and Patches, see the SAP BusinessObjects BI Suite Update Guides.

7.3 Client Tools installation prerequisites

Before installing or making changes to a Client Tools installation, ensure that:

- Any existing BI Suite client tools and products are closed before running the installation program. If any client tool fails to start after the installation, running the installation program in repair mode should correct the issue.
- All Crystal Server servers running on the machine except the CMS and File Repository Servers (FRS).
- The account being used has Administrator privileges. The installation requires that the account being used is a member of the Windows *Administrators* group, and that the default privileges assigned to the *Administrators* group have not been modified.
- You are using a minimum screen resolution of 1024 × 768 pixels. Using Microsoft Remote Desktop Connection to run the installation program is supported, as long as a minimum screen resolution of 1024 × 768 pixels is used.

7.4   To run an interactive installation of Client Tools

> **i Note**
>
> The installation log file will be saved to `< <BIP_INSTALL_DIR >>\InstallData\logs\< <DATE >> \setupengine.log`.

1. Locate and run `setup.exe`.
2. Select the setup language.

    The language setting is used by the installation program to display information to you in the language of your choice. If you select a non-English language, the corresponding language pack is automatically installed on the server.

    > **i Note**
    >
    > The installation program will automatically run in the same language as your operating system. The language used by the installation program will determine the names used for Windows components configured by the installation program, such as Windows service names and Start menu shortcuts. These names cannot be changed later and are not affected by language settings once the installation is complete.

3. On the *Check Prerequisites* page, review the results and decide whether to continue with the installation, or abort and correct any unmet requirements.

    The installation program checks for required components and conditions. If a dependency prerequisite condition is critical, the installation program will not allow the installation to proceed. If the missing or unsupported component is optional, you have the option to either continue with the installation or stop and correct the condition.

4. Review the installation welcome page.
5. On the *License Agreement* page, review the agreement and select *I accept the License Agreement*.
6. On the *Select Language Packs* page, select additional languages to install from the list.

    The language currently being used by the operating system is selected automatically. English language support cannot be deselected because it is used if a problem is detected with an individual language.

7. On the *Configure Destination Folder* page, review the destination folder shown.

    This is the folder into which the installation program will install Crystal Server Client Tools. If the folder does not exist, the installation program creates it.

> ℹ **Note**
>
> o The use of Unicode characters in the destination folder is not supported.
>
> o Ensure that the destination folder is not set to the same folder in which the installation program has been extracted.
>
> o If you have already installed SAP BusinessObjects products, the *Destination Folder Information* field is not editable, and the path to the existing folder is displayed.

8. On the *Select Features* page, select the features to install from the list.

   Features are grouped under the following headings:
   o Client components
     Desktop client applications:
     o Business View Manager
     o Information Design Tool
     o Translation Management Tool
     o Data Federation Administration Tool
   o Developer Components
     o SAP BusinessObjects BI platform Java SDK
     o SAP BusinessObjects BI platform Web Services SDK
     o SAP BusinessObjects BI platform .NET SDK
     o Crystal Reports Java SDK
     o SAP BusinessObjects Semantic Layer Java SDK
       o Semantic Layer SDK
       o Semantic Layer SDK Samples
   o Data Access and Security
     The individual drivers listed under this heading allow client tools to access supported reporting database systems.

The *Start Installation* page appears. Start the installation.

7.5 To run a silent installation of Client Tools

Every option in the installation wizard can be given from the command-line. This type of installation is known as a silent install.

Installation options can be given directly on the command-line as a parameter, or can be stored in a response file.

- Giving installation options on the command-line
  Installation options can be passed directly to the setup program from the command-line as a parameter. For example, the installation option `CMSPort=6401` can be given on the command-line as a parameter when running the installation program to set the CMS port number to 6401, instead of the default value of 6400.
  In the following example of giving the `CMSPort` parameter on the command-line, ellipses (`[...]`) are shown to indicate where other installation options would normally be present:
  ```
  setup.exe [...] CMSPort=6401 [...]
  ```
- Giving installation options in a response file

Installation options can be stored in a response file, which is a text file containing installation option parameters in key-value format. When using a response file to give installation options, the installation program is run from the command-line with the `-r < <RESPONSE_FILE >>` parameter, where < <RESPONSE_FILE >> is the name of the response file.

The response file contains multiple installation options, with one installation option per line. In the following example, the response file is given as a parameter:

`setup.exe [...] -r C:\response.ini [...]`

For example, the installation option `CMSPort=6401` can be given on a line in the response file to set the CMS port number to 6401, instead of the default value of 6400.

In the following example of giving the `CMSPort` parameter in a response file, ellipses (`[...]`) are shown to indicate where other installation options would normally be present:

```
[...]
CMSPort=6401
[...]
```

> ### i Note
>
> The installation program returns the cursor to the command-line prompt when it starts. To run the installation program from a script, or to force the installation program to wait to complete before returning to the command-line, use the Windows Command Interpreter `start /wait` command to invoke `setup.exe`.
>
> For example:
>
> ```
> start /wait setup.exe [<<COMMAND_LINE_OPTIONS>>]
> ```

For a complete list of installation options, see Installation option parameters for Client Tools [page 73]. For an example of a response file, see Response file example [page 49].

7.5.1 Command-line silent install of Client Tools

You can install Client Tools with one command by giving parameters on the command-line. This is referred to as a silent installation. When parameters are supplied on the command-line, the installation will not prompt for information.

7.5.1.1   To use a response file

To use a response file, run the installation program with the `-r <<RESPONSE_FILE>>` parameter. The installation program reads all installation options from the response file, and no further input is required.

For example, the following command reads installation options from the response file `C:\response.ini`:

```
setup.exe -r C:\response.ini
```

To override an installation option in a response file, give that option on the command-line. Installation options given on the command-line take precedence over the options in the response file. For a complete list of installation options, see *Installation option parameters* below.

If an unexpected condition is encountered, an error message is written to the installation log file and the installation program exits. Installation activity, warnings, and errors are written to the installation log file in the folder:

`<<BOE_INSTALL_DIR>>\InstallData\logs\<<DATE>>\setupengine.log`

If the `<<BOE_INSTALL_DIR>>` folder has not been created by the time the installation program exits, look for `install.log` in the temporary folder specified by the system `<TEMP>` environment variable.

7.5.1.1.1   To write a response file

To create a response file, run the installation program with the `-w  <<RESPONSE_FILE>>` parameter and select the desired installation options with the installation wizard. When the wizard completes, the installation program exits and the response file is created. The response file can then be used for future installations.

For example, the following command creates the response file `C:\response.ini`:

```
setup.exe -w C:\response.ini
```

Once created, the response file can be updated with a text editor.

> i Note
>
> When creating a response file with the GUI installation program, the license key and all passwords entered via the GUI are not written to the response file in plain text format. You must replace the starred entries (`********`) with your passwords before performing a silent installation.

7.5.1.1.2   To read a response file

A response file installation is started on the command-line, but installation options are read from a ASCII text file with the options stored in key-value format. This is useful when setting up a cluster, or for creating development or test environments with standardized options.

When an option is given both on the command-line and in a response file, the command-line options take precedence over the response file options. This allows an administrator to override an option in a response file when required. This provides three levels precedence for installation options:

1. Installation options given on the command-line take highest precedence, and will always override response file and default values.
2. Installation options given in a response file are used when not given on the command-line, and override default values.
3. Installation option default values are used when not given on the command-line or in a response file.

For example, the following command reads installation options from the response file `C:\response.ini`, but overrides the response file's setting for the installation destination folder:

```
setup.exe -r C:\response.ini InstallDir="C:\SAP\BusinessObjects BI platform"
```

7.5.2 Installation option parameters for Client Tools

The following table lists the parameters that can be used to select installation options on both the command-line and in response files.

Table 9: Installation option parameters

Parameter	Description
`InstallDir=< <PATH >>`	Destination folder into which the setup program will install. When installing to a host that already has an installation of SAP Crystal Server, the value of `InstallDir` will be automatically set to the same path as the existing installation. i **Note** • The use of Unicode characters in the destination folder path is not supported. • Ensure that the destination folder is not set to the same folder in which the installation program has been extracted.

Parameter	Description
SelectedLanguagePacks=< <CODE >>	Installs language support for users and administrators to interact with SAP Crystal Server in a supported language.

If more than one language pack is to be installed, use a semi-colon delimited list without spaces, within quotes, to separate each code. In the following example, language support for English, Japanese, Simplified Chinese, and Thai will be installed:

```
SelectedLanguagePacks="en;ja;zh_cn;th"
```

Substitute the following language codes where < <CODE >> is:

- Czech: cs
- Danish: da
- Dutch: nl
- English: en
- Finnish: fi
- French: fr
- German: de
- Hungarian: hu
- Italian: it
- Japanese: ja
- Korean: ko
- Norwegian Bokmal: nb
- Polish: pl
- Portuguese: pt
- Russian: ru
- Simplified Chinese: zh_cn
- Slovak: sk
- Spanish: es
- Swedish: sv
- Thai: th
- Traditional Chinese: zh_tw
- Turkish: tr

Parameter	Description
`SetupUILanguage=< <CODE> >`	Determines which language for the installation program to use during the installation. Substitute the language code where `< <CODE> >` is: • Czech: `cs` • Danish: `da` • Dutch: `nl` • English: `en` • Finnish: `fi` • French: `fr` • German: `de` • Hungarian: `hu` • Italian: `it` • Japanese: `ja` • Korean: `ko` • Norwegian Bokmal: `nb` • Polish: `pl` • Portuguese: `pt` • Russian: `ru` • Simplified Chinese: `zh_cn` • Slovak: `sk` • Spanish: `es` • Swedish: `sv` • Thai: `th` • Traditional Chinese: `zh_tw` • Turkish: `tr`
`Features=< <CODE> >`	List of components to install. To select multiple features, use a comma-delimited list without spaces to give each code. In the following example, Business View Manager, is selected for install: ```Features=WebI_Rich_Client,Business_View_Manager,Report_Conversion,[...]``` For a complete list of feature codes, see *Feature codes*.

7.5.2.1 Feature codes for Client Tools

Use the following feature codes to select features for installation. To select multiple features, separate each feature code with a comma, without spaces. For example, the following feature list selects Business View Manager, and Information Design Tool clients for installation:

```
features=Business_View_Manager,InformationDesignTool,[...]
```

- `root`: install all features
  - `ClientComponents`: install all client components
    - `Business_View_Manager`
    - `InformationDesignTool`
      - `InformationDesignTool_Core`(Information Design Tool)
      - `UniverseLandscapeMigration` (Universe Landscape Migration add-in - requires Information Design Tool to also be installed)
  - `DevComponents`: install all developer tool components
    - `JavaSDK` (SAP Crystal Server Java SDK)
    - `WebSDK` (SAP Crystal Server Java Web Services SDK)
    - `DotNetSDK` (SAP Crystal Server .NET SDK)
    - `CRJavaSDK` (SAP Crystal Reports Java SDK)
  - `DataAccess`: install all data source drivers and files
    - `DataFed_DataAccess` (Data Federator)
    - `HPNeoView_DataAccess`
    - `MySQL_DataAccess`
    - `GenericODBC_DataAccess`
    - `GenericOLEDB_DataAccess`
    - `GenericJDBC_DataAccess`
    - `MaxDB_DataAccess`
    - `SalesForce_DataAccess` (Salesforce.com)
    - `Netezza_DataAccess`
    - `Microsoft_DataAccess`
    - `Ingres_DataAccess`
    - `Greenplum_DataAccess`
    - `IBMDB2`
    - `Informix_DataAccess`
    - `Progress_Open_Edge_DataAccess`
    - `Oracle_DataAccess`
    - `Sybase_DataAccess`
    - `TeraData_DataAccess`
    - `SAPBW_DataAccess`
    - `SAP_DataAccess`
    - `PersonalFiles_DataAccess`
    - `JavaBean_DataAccess`
    - `OpenConnectivity_DataAccess`
    - `HSQLDB_DataAccess`
    - `Derby_DataAccess`
    - `Essbase_DataAccess`

7.5.2.2 Response file example for Client Tools

The following example response file contains options for installing SAP BusinessObjects Business Intelligence platform Client Tools.

→ Tip

An example response file called `response.ini` is also included with your installation package.

🔧 Example

In this example, the response file is named `C:\response.ini`.

```
### Installation directory
installdir=C:\Program Files (x86)\SAP BusinessObjects\
### #property.SelectedLanguagePack.description#
selectedlanguagepacks=cs;da;nl;en;fi;fr;de;hu;it;ja;ko;nb;pl;pt;ru;zh_cn;sk;es;sv;
th;zh_tw;tr
### Setup UI language
setupuilanguage=en
### Available features
### -----------------
### root
###   ClientComponents
###     Business_View_Manager
###     InformationDesignTool
###       InformationDesignTool_Core
###       UniverseLandscapeMigration
###     Translation_Manager
###     DataFederationAdministrationTool
###   DevComponents
###     JavaSDK
###     WebSDK
###     DotNetSDK
###     CRJavaSDK
###   DataAccess
###     DataFed_DataAccess
###     HPNeoView_DataAccess
###     MySQL_DataAccess
###     GenericODBC_DataAccess
###     GenericOLEDB_DataAccess
###     GenericJDBC_DataAccess
###     MaxDB_DataAccess
###     SalesForce_DataAccess
###     Netezza_DataAccess
###     Microsoft_DataAccess
###     Ingres_DataAccess
###     Greenplum_DataAccess
###     IBMDB2
###     Informix_DataAccess
###     Progress_Open_Edge_DataAccess
###     Oracle_DataAccess
###     Sybase_DataAccess
###     TeraData_DataAccess
###     SAPBW_DataAccess
###     SAP_DataAccess
###     PersonalFiles_DataAccess
###     JavaBean_DataAccess
###     OpenConnectivity_DataAccess
###     HSQLDB_DataAccess
###     Derby_DataAccess
###     Essbase_DataAccess
###     PSFT_DataAccess
```

```
###    JDE_DataAccess
###    Siebel_DataAccess
###    EBS_DataAccess
features=Business_View_Manager,InformationDesignTool,Translation_Manager,DataFeder
ationAdministrationTool,biwidgets,ClientComponents,JavaSDK,WebSDK,DotNetSDK,CRJava
SDK,DevComponents,DataFed_DataAccess,HPNeoView_DataAccess,MySQL_DataAccess,Generic
ODBC_DataAccess,GenericOLEDB_DataAccess,GenericJDBC_DataAccess,MaxDB_DataAccess,Sa
lesForce_DataAccess,Netezza_DataAccess,Microsoft_DataAccess,Ingres_DataAccess,Gree
nplum_DataAccess,IBMDB2,Informix_DataAccess,Progress_Open_Edge_DataAccess,Oracle_D
ataAccess,Sybase_DataAccess,TeraData_DataAccess,SAPBW_DataAccess,SAP_DataAccess,Pe
rsonalFiles_DataAccess,JavaBean_DataAccess,OpenConnectivity_DataAccess,HSQLDB_Data
Access,Derby_DataAccess,Essbase_DataAccess,PSFT_DataAccess,JDE_DataAccess,Siebel_D
ataAccess,EBS_DataAccess,DataAccess,root
```

7.6   Making changes to Client Tools

7.6.1 To modify Client Tools

These instructions describe the process to modify your Client Tools installation by adding or removing installed components though the Windows Control Panel.

1. Go to: ▌ *Start* ❯ *Control Panel* ❯ *Programs and Features* ❯.

2. Right-click *SAP Crystal Server 2016 Client Tools* and select *Uninstall/Change*.

3. On the *Application Maintenance* page, select *Modify* and click *Next*.

4. On the *Select Language Packs* page, select any languages you want to install; unselect any languages you want to remove. Click *Next* to continue.

5. On the *Select Features* page, select any features you want to install; unselect any features you want to remove.

   Features are grouped under the following headings:
   - Client components
     - Business View Manager
     - Report Conversion Tool
     - Information Design Tool
     - Translation Management Tool
     - Data Federation Administration Tool
   - Developer Components
     - Crystal Server Java SDK
     - Crystal Server Web Services SDK
     - Crystal Server .NET SDK
     - Crystal Reports Java SDK
   - Data Access and Security
     The individual drivers listed under this heading allow client tools to access a broad range of supported data sources.

6. Click *Next* to apply your changes.

The *Start Installation* page appears. Start the installation.

7.6.2 To repair a Client Tools installation

These instructions describe the process to repair your Client Tools installation through the Windows Control Panel. This process restores the files originally installed by the setup program.

It is recommended that you back up your system before running a repair.

1. Go to: ▶ *Start* ❯ *Control Panel* ❯ *Programs and Features* ❯.
2. Right-click *SAP Crystal Server 2016 Client Tools* and click *Uninstall/Change*.
3. On the *Application Maintenance* page, select *Repair* and click *Next*.

The *Start Installation* page appears. Start the installation. Once the repair is complete, the Client Tools are restored their original configuration.

7.6.3 To remove Client Tools

The following steps remove the entire set of SAP BusinessObjects Business Intelligence platform Client Tools from a system.

> **i Note**
>
> To add or remove individual tools and applications, use the steps described in "To modify Client Tools".

1. Go to: ▶ *Start* ❯ *Control Panel* ❯ *Programs and Features* ❯.
2. Right-click *SAP Crystal Server 2016 Client Tools* and click *Uninstall/Change*.
3. On the *Application Maintenance* page, select *Remove* and click *Next*.
4. On the *Uninstall Confirmation* page, confirm that you want uninstall by clicking *Next*.
    The uninstallation program starts and theSAP BusinessObjects Business Intelligence platform Client Tools are removed from the system.

7.7 Upgrading Client Tools

The Client Tools installation program will not modify existing previous versions of SAP Crystal Server Client Tools. Crystal Server Client Tools are supported when installed on systems that also contain the following previous Client Tool versions:

*   SAP BusinessObjects Business Intelligence platform XI 3.1 (any version)
*   BusinessObjects Enterprise XI 3.0
*   BusinessObjects Enterprise XI R2

The installation of Crystal Server Client Tools with Client Tools form BusinessObjects Enterprise 10 or BusinessObjects Enterprise XI is not supported and you may encounter compatibility issues.

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