

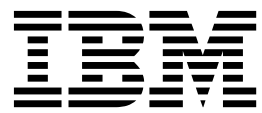
IBM Spectrum Control
Version 5.2.15

Installation Guide



IBM Spectrum Control
Version 5.2.15

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Note:

Before using this information and the product it supports, read the information in “Notices” on page 245.

This edition applies to version 5, release 2, modification 15 of IBM Spectrum Control (product numbers 5725-F93, 5725-G33, 5725-Y23, and 5725-Y24) and to all subsequent releases and modifications until otherwise indicated in new editions.

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About this guide

IBM Spectrum Control™ manages storage infrastructure by centralizing, automating, and simplifying the management of complex and heterogeneous storage environments. Use this guide to complete the steps that are required to install these products, including planning for installation and configuration.

Who should read this guide

This publication is intended for administrators or users who are installing IBM Spectrum Control. It also describes the hardware and software requirements for installing the product and provides an overview of the installation procedures.

Administrators and installers should be familiar with the following topics:

- General procedures for installing software on Microsoft Windows, AIX®, Linux, HP-UX, and Oracle Solaris.
- Storage area network (SAN) concepts
- IBM Spectrum Control concepts
- DB2® Database concepts
- Simple Network Management Protocol (SNMP) concepts
- IBM® Tivoli® Enterprise Console concepts

Publications

A number of publications are provided with IBM Spectrum Control.

IBM Tivoli Storage Productivity Center for Replication is no longer installed with IBM Spectrum Control. For current Tivoli Storage Productivity Center for Replication users who upgrade to IBM Spectrum Control, Tivoli Storage Productivity Center for Replication will remain available. See IBM Knowledge Center for any earlier versions of Tivoli Storage Productivity Center for Replication publications.

The following section describes how to access these publications online.

Accessing publications online

Information about installing, configuring, using, upgrading, and uninstalling IBM Spectrum Control and related products is available online.

Use Table 1 to view and download these publications. Translated documents are available for some products.

Table 1. Locations of publications for IBM Spectrum Control and related products

Product	Online location
IBM Cognos® Business Intelligence	http://www.ibm.com/support/knowledgecenter/SSEP7J
IBM Copy Services Manager	http://www.ibm.com/support/knowledgecenter/SSESK4
IBM DB2 Database for Linux UNIX and Windows	http://www.ibm.com/support/knowledgecenter/SSEPGG/welcome

Table 1. Locations of publications for IBM Spectrum Control and related products (continued)

Product	Online location
IBM FlashSystem™ 840	http://www.ibm.com/support/knowledgecenter/ST2NVR/com.ibm.storage.flashsystem.doc/Flashsystem_840_welcome.htm
IBM FlashSystem V840 Enterprise Performance Solution	http://www.ibm.com/support/knowledgecenter/ST2HTZ/
IBM FlashSystem 900	http://www.ibm.com/support/knowledgecenter/STKMQB/
IBM FlashSystem A9000	http://www.ibm.com/support/knowledgecenter/STJKMM
IBM FlashSystem A9000R	http://www.ibm.com/support/knowledgecenter/STJKN5
IBM FlashSystem V9000	http://www.ibm.com/systems/storage/flash/v9000/overview.html
IBM Scale Out Network Attached Storage (IBM SONAS)	http://www.ibm.com/support/knowledgecenter/STAV45/landing/sonas_151_kc_welcome.html
IBM Spectrum Accelerate™	http://www.ibm.com/support/knowledgecenter/STZSWD/welcome
IBM Spectrum Control	http://www.ibm.com/support/knowledgecenter/SS5R93/
IBM Spectrum Virtualize™	http://www.ibm.com/support/knowledgecenter/STVLF4
IBM Spectrum Scale™	http://www.ibm.com/support/knowledgecenter/SSFKCN/gpfs_welcome.html
IBM Storwize® V3500	http://www.ibm.com/support/knowledgecenter/STLM6B
IBM Storwize V3700	http://www.ibm.com/support/knowledgecenter/STLM5A
IBM Storwize V5000	http://www.ibm.com/support/knowledgecenter/STHGUJ
IBM Storwize V7000	http://www.ibm.com/support/knowledgecenter/ST3FR7
IBM Storwize V7000 Unified	http://www.ibm.com/support/knowledgecenter/ST5Q4U
IBM System Storage® DS3500	http://www.ibm.com/support/docview.wss?uid=ssg1S7004887
IBM System Storage DS3700	http://www.ibm.com/support/docview.wss?uid=ssg1S7005174
IBM System Storage DS5020	http://www.ibm.com/support/docview.wss?uid=ssg1S7004951
IBM System Storage DS6000™	http://www.redbooks.ibm.com/abstracts/sg246781.html The DS6000 series is no longer supported. For information, see the preceding publication.
IBM System Storage DS8000®	http://www.ibm.com/support/knowledgecenter/ Go to the preceding website and search for the DS8000 series system that you want.

Table 1. Locations of publications for IBM Spectrum Control and related products (continued)

Product	Online location
IBM System Storage DS® Open Application Programming Interface publications	http://www.ibm.com/support/docview.wss?uid=ssg1S7001160 Use these publications for information about how to install, configure, and use the CIM agent.
IBM System Storage N series	http://www.ibm.com/support/knowledgecenter/nseries/kc_welcome_nseries.html For more information about IBM System Storage N series, see http://www.ibm.com/systems/storage/network/software/ .
IBM System Storage SAN Volume Controller	http://www.ibm.com/support/knowledgecenter/STPVGU
IBM XIV® Storage System	http://www.ibm.com/support/knowledgecenter/STJTAG
IBM WebSphere® Application Server	http://www.ibm.com/support/knowledgecenter/SSEQTP/mapfiles/product_welcome_was.html
IBM WebSphere Application Server Liberty	https://www.ibm.com/support/knowledgecenter/SSEQTP_liberty/as_ditamaps/was900_welcome_liberty.html
Jazz™ for Service Management	http://www.ibm.com/support/knowledgecenter/SSEKCU/welcome
VMware vSphere	http://www.vmware.com/support/pubs/vsphere-esxi-vcenter-server-pubs.html

IBM Redbooks

The IBM Redbooks® are publications about specialized topics.

You can order publications through your IBM representative or the IBM branch office serving your locality. You can also search for and order books of interest to you by visiting the IBM Redbooks home page at <http://www.redbooks.ibm.com>.

Translation

Translated publications are available from IBM Knowledge Center, which is available in certain translated languages. It is displayed in the language that is appropriate for the browser locale setting.

When a locale does not have a translated version, the information is displayed in English, which is the default language. Translations of the PDFs are available when the information is translated.

Providing feedback about publications

Your feedback is important to help IBM provide the highest quality information.

To provide comments or suggestions about the product documentation, go to the IBM Knowledge Center for IBM Spectrum Control: <http://www.ibm.com/support/knowledgecenter/SS5R93/>. Click **Feedback** at the bottom of any page and complete the form.

IBM Spectrum Control Service Management Connect community

Connect, learn, and share with Service Management professionals: product support technical experts who provide their perspectives and expertise.

Access Service Management Connect at <https://www.ibm.com/developerworks/servicemanagement/>. Use Service Management Connect in the following ways:

- Become involved with transparent development, an ongoing, open engagement between other users and developers of IBM products. You can access early designs, sprint demonstrations, product roadmaps, and prerelease code.
- Connect one-on-one with the experts to collaborate and network about IBM and the Storage Management community.
- Read blogs to benefit from the expertise and experience of others.
- Use wikis and forums to collaborate with the broader user community.

Contacting IBM Software Support

You can contact IBM Software Support by phone, and you can register for support notifications at the technical support website.

- Go to the IBM Spectrum Control technical support website at http://www.ibm.com/support/entry/portal/product/tivoli/ibm_spectrum_control/ibm_spectrum_control_standard_edition.

To receive future support notifications, sign in under **Subscribe to support notifications**. You are required to enter your IBM ID and password. After you are authenticated, you can configure your subscription for IBM Spectrum Control technical support website updates.

- Customers in the United States can call 1-800-IBM-SERV (1-800-426-7378).
- For international customers, go to <https://www.ibm.com/planetwide/>.

You can also review the *IBM Software Support Handbook*, which is available at <http://www14.software.ibm.com/webapp/set2/sas/f/handbook/home.html>.

The support website offers extensive information, including a guide to support services; frequently asked questions (FAQs); and documentation for all IBM Software products, including Redbooks and white papers. Translated documents are also available for some products.

When you contact IBM Software Support, be prepared to provide identification information for your company so that support personnel can readily assist you. Company identification information might also be needed to access various online services available on the website. See “Reporting a problem.”

Reporting a problem

Provide the IBM Support Center with information about the problems that you report.

Have the following information ready when you report a problem:

- The IBM Spectrum Control version, release, modification, and service level number.
- The communication protocol (for example, TCP/IP), version, and release number that you are using.
- The activity that you were doing when the problem occurred, listing the steps that you followed before the problem occurred.

- The exact text of any error messages.

Conventions used in this guide

Information is given about the conventions that are used in this publication.

This publication uses several conventions for special terms and actions, and for operating system-dependent commands and paths.

The following typeface conventions are used in this publication:

Bold

- Flags that display with text
- Graphical user interface (GUI) elements (except for titles of windows and dialogs)
- Names of keys

Italic

- Variables
- Values that you must provide
- New terms
- Words and phrases that are emphasized
- Titles of documents

monospace

- Commands and command options
- Flags that display on a separate line
- Code examples and output
- Message text
- Names of files and directories
- Text strings that you must type, when they display within text
- Names of Oracle Java™ methods and classes
- HTML and XML tags that display like this, in monospace type

For syntax notations, remember the following details.

- In AIX, the prompt for the root user is #.
- In AIX and Linux, the commands are case-sensitive, so you must type commands exactly as they are shown.

Chapter 1. Planning

The following sections provide information to help plan your IBM Spectrum Control environment before you install the product. In a complex environment, good planning helps you avoid delays and problems in getting your system up and running.

Planning for installation

You can install IBM Spectrum Control by using the installation program or the command line in silent mode. Installing IBM Spectrum Control by using console mode is not supported.

Antivirus software considerations

Installing IBM Spectrum Control involves making use of your operating system in manners typical for installing new application software. If your antivirus software is set on the maximum mode, it might prevent some of your changes from being accepted.

To verify that your installation completes correctly, enable your antivirus software product to allow the following instances:

- The `/etc/hosts` file can be edited
- Files can be created in the `/temp` directory
- New executable files can be created in the `C:\Program Files` directory

Recommended skills and knowledge

Administrators and users of IBM Spectrum Control should be familiar with the following skills and topics:

- General procedures for installing software on Microsoft Windows, IBM AIX, and Linux operating systems
- Storage Area Network (SAN) concepts
- IBM Spectrum Control concepts
- IBM DB2 Database for Windows, AIX, and Linux operating systems
- Simple Network Management Protocol (SNMP) concepts

Required user privileges for installation

Ensure that you have the required privileges to install DB2, IBM Spectrum Control, and Jazz for Service Management. If you are installing on a Windows operating system, you must install as a user with administrator privileges. If you are installing on an AIX or Linux operating system, you must install as a root user or as a non-root user who has sudo privileges.

Fully qualified host names

Some systems might be configured to return a short host name such as `server22`, instead of a fully qualified host name such as `server22.myorg.mycompany.com`. IBM Spectrum Control requires fully qualified host names, so you must install the product on a computer that has a fully qualified host name.

For more information about determining whether you have a fully qualified domain name, see http://www.ibm.com/support/knowledgecenter/SS5R93_5.2.15/com.ibm.spectrum.sc.doc/fqz0_t_checking_fully_qualified_host_name.html.

Hardware and software requirements

The IBM Spectrum Control server can require a large amount of memory, disk space, network bandwidth, and processor resources. To promote consistent availability and performance, install IBM Spectrum Control on a dedicated server where no other critical business applications, including IBM Copy Services Manager, are installed. IBM Software Support is not responsible for availability, performance, and functional problems that are caused by other business applications that are deployed on the same server as IBM Spectrum Control.

For information about hardware requirements, see [Hardware requirements](#).

For information about software requirements, see [Software requirements](#).

For information about updates to product and operating system support, see *Find the Supported Hardware, Products and Platforms Interoperability Matrix Links* at <http://www.ibm.com/support/docview.wss?uid=swg21386446>.

Installation methods

You can install DB2, IBM Spectrum Control, and Jazz for Service Management by using a GUI or silent mode. In silent mode, a command is provided with the values in a response file.

Use the silent-mode installation to install on a server that cannot display graphics. For example, if you are installing on an AIX or Linux server that does not have the X Window System installed.

On a server that does not have the X Window System installed, you cannot change the DB2, IBM Spectrum Control, and Jazz for Service Management passwords within IBM Spectrum Control by using the change password tool. For information on how to change the passwords, see http://www.ibm.com/support/knowledgecenter/SS5R93_5.2.15/com.ibm.spectrum.sc.doc/fqz0_t_passwords_changing_no_x.html.

Installation images

Compressed installation images are available electronically. Download and extract these images to a location with adequate disk space. For disk space requirements by operating system, see *IBM Spectrum Control 5.2.x - Hardware Support: Memory, Processor and Disk Space* at <http://www.ibm.com/support/docview.wss?uid=swg27047048>.

Download the installation images for each product into a separate directory. The following list provides sample download directory paths:

- c:\downloads\DB2
- c:\downloads\SC
- c:\downloads\JazzSM

Extract the image files into a separate temporary directory for each product. For example:

- c:\temp\DB2
- c:\temp\SC
- c:\temp\JazzSM

Attention: If you do not extract the files into separate directories for each product, the common paths or path structures might overwrite each other, and you cannot install the products.

Follow these rules for naming the directories:

- Do not include spaces in the directory name.
- Keep the directory name short.
- For Linux or AIX operating systems, do not include a period (.) at the end of the directory name.

During the extraction of multi-part images, if you are prompted to merge or replace folders or files with the same name, click **Merge/Replace**.

Installation files for the following components are provided with IBM Spectrum Control:

DB2

- DB2 for Windows (64-bit)
- DB2 for Linux (64-bit)
- DB2 for AIX (64-bit)

IBM Spectrum Control

- IBM Spectrum Control for AIX
- IBM Spectrum Control for Linux
- IBM Spectrum Control for Windows

In addition, installation files for the following optional agents are available with IBM Spectrum Control:

- IBM Spectrum Control Storage Resource agent for Windows
- IBM Spectrum Control Storage Resource agent for UNIX
- IBM Spectrum Control Monitoring Agent for IBM Tivoli Monitoring on Windows
- IBM Spectrum Control Monitoring Agent for IBM Tivoli Monitoring on UNIX

On Windows operating systems, assign the appropriate security settings for the DB2 and IBM Spectrum Control compressed files by completing the following steps:

1. Right-click one of the compressed installation files.
2. Examine the **General** tab and determine whether the **Unblock** button is displayed.
3. If the **Unblock** button is displayed:
 - a. Right-click the compressed file and click **Properties**.
 - b. On the **General** tab, next to **Security**, click **Unblock**.
4. Verify that the compressed installation files no longer have the **Unblock** button displayed.

Jazz for Service Management and Tivoli Common Reporting (optional)

Cognos Business Intelligence is an optional tool for producing reports from the data that is gathered by IBM Spectrum Control. The Cognos BI reporting tool is not required to produce report information. You can generate and view information that is related to your storage resources directly in the IBM Spectrum Control GUI.

You can use the optional Cognos BI reporting tool to run, schedule, and deliver predefined and custom reports. These reports include information about storage capacity, assets, and performance of storage systems, switches, fabrics, servers, hypervisors, and their internal resources. You can create the reports in HTML, PDF, and other formats. You can also configure reports to save the report output to your local file system, and to send reports as email attachments.

If you want to use Cognos BI reports, you must download and extract the compressed files for the following components to a single directory:

- Jazz for Service Management Version 1.1.0.3
- Tivoli Common Reporting Version 3.1.0.1
- Tivoli Common Reporting Version 3.1.0.2
- IBM WebSphere Application Server Version 8.5.0.1

Before you install Jazz for Service Management and Tivoli Common Reporting, complete the following tasks:

- On Windows operating systems:
 - Verify that the Jazz for Service Management launchpad can read the values in the host file by completing the following steps:
 1. Go to the following directory:
C:\Windows\System32\drivers\etc
 2. Open the hosts file and delete the number sign from the line with the localhost information.
 - Assign the appropriate security settings by completing the following steps:
 1. Right-click one of the compressed installation files.
 2. Examine the **General** tab and determine whether the **Unblock** button is displayed.
 3. If the **Unblock** button is displayed:
 - a. Right-click the compressed file and click **Properties**.
 - b. On the **General** tab, next to **Security**, click **Unblock**.

- On Linux operating systems:

- Set the *ulimit* value for open files to 2048.

You can set the *ulimit* value for the session as shown in the following command:

```
ulimit -n 2048
```

If you want to set the *ulimit* value for the system, add `ulimit -n 2048` to the `/etc/profile` file, save the file, and then log off from the system and log in again.

To display all of the *ulimit* values, run the **ulimit -a** command.

For the disk space requirements for installing Jazz for Service Management and Tivoli Common Reporting, see “Requirements for Jazz for Service Management and Tivoli Common Reporting” on page 38.

Important: If you install IBM Spectrum Control and Cognos BI reports on Windows 2012 R2, you must upgrade WebSphere Application Server from 8.5.0 to 8.5.5. To upgrade to 8.5.5, follow the instructions at <http://www.ibm.com/support/docview.wss?uid=swg24034969>.

IBM Spectrum Control GUI

After IBM Spectrum Control is installed, use the GUI to complete your storage management tasks. The GUI runs in a web browser and includes the ability to monitor, manage, and troubleshoot storage resources. You can access this interface from anywhere that you have a web browser and connectivity to a network. You can also use the optional Cognos BI reporting tool to generate, save, and view reports about the condition, capacity, and performance resources.

Installation language

When you install IBM Spectrum Control, you must select one of the following languages:

- English
- Czech
- French
- German
- Hungarian
- Italian
- Japanese
- Korean
- Polish
- Brazilian Portuguese
- Russian
- Spanish
- Chinese (Simplified)
- Chinese (Traditional)

For more information about changing the operating system for the user interface, see “Changing the operating system language” on page 134.

Messages, online help, and text are displayed in the language that you select. You are not required to install a language pack after installation. When you use IBM Spectrum Control, the language that is displayed is the language setting of the operating system.

To install IBM Spectrum Control on a Windows domain, see “Planning to install IBM Spectrum Control in a Windows domain” on page 8 and “Installing IBM Spectrum Control on a Windows domain” on page 124.

Installation images on AIX

When you extract installation images, use the GNU tape archive (tar) program instead of the AIX tape archive program. The AIX tape archive program might truncate long file names, which can cause installation errors in IBM Spectrum Control.

To get the GNU tape archive program, go to <http://www.ibm.com/systems/power/software/aix/linux/toolbox/alpha.html#T>. Find **tar** in the **Package** column, and click **RPM** to download the program. You must specify this program as the default tape archive program in the PATH environment variable.

Product licenses

Multiple product licenses are available for IBM Spectrum Control. Each license determines the features that you can access from the IBM Spectrum Control GUI, command-line interface, and the API. You can review the features that are included with each license and determine which license meets your needs for storage management.

IBM Spectrum Control Standard Edition and IBM Spectrum Control Standard Select Edition

In addition to many other features, these licenses provide the following features:

- Single dashboard view of the storage environment that you can use to manage storage systems, hypervisors, servers, and Fibre Channel fabrics.
- Performance monitoring for storage systems and Fibre Channel networks.
- Capacity and usage monitoring.
- File provisioning for IBM Storwize V7000 Unified and IBM Scale Out Network Attached Storage.
- Health and alerting for hypervisors, networks, servers, and storage systems.
- Capacity and performance of the storage that applications and departments use.
- Administrative tools, such as:
 - VMware vCenter plug-in, which you can use to manage and provision virtual storage in a vSphere environment, and to view reports about storage systems that are monitored by IBM Spectrum Control.
 - IBM Cognos(R) Business Intelligence reports, which provide reporting and analytics information.

These licenses include a license for IBM Copy Services Manager, which manages 2-site replication, 3-site replication, and advanced copy services. You can learn more about how to download and install Copy Services Manager at <http://www.ibm.com/support/knowledgecenter/SSESK4>.

IBM Spectrum Control Advanced Edition and IBM Spectrum Control Advanced Select Edition

These licenses contain all of the features of the IBM Spectrum Control Standard Edition license, and the following features:



- Analytics-driven tiering that automatically moves volumes to the most cost-effective tier.
- Storage pool balancing, block storage provisioning, file provisioning, and storage reclamation.
- Snapshot-based protection that is provided by IBM Spectrum Protect[™] Snapshot for the applications and databases that IBM Spectrum Control uses.
- Roll-up reporting, in which capacity data is combined from multiple instances of IBM Spectrum Control for reporting purposes.

- Emailing reports:
 - Chargeback reporting for showing the capacity and the cost of the storage that is used by applications, departments, hypervisors, and physical servers.
 - Consumer reporting for showing the capacity and the cost of the block storage that is used by an application, department, hypervisor, and physical server.

The IBM Spectrum Control Standard Edition and the IBM Spectrum Control Advanced Edition licenses are priced by the number of storage capacity units (SCUs) that are needed to cover the total usable capacity that they manage. Total usable capacity is measured in tebibytes.

The IBM Spectrum Control Standard Select Edition and the IBM Spectrum Control Advanced Select Edition licenses are priced by the number of slots in the storage enclosures that they manage. A license is required for every 25 slots.

For more information about the product licenses, see the following topics in the IBM Spectrum Control Knowledge Center, or see the *IBM Spectrum Control User's Guide*:

-  Functions that are available based on role and license at http://www.ibm.com/support/knowledgecenter/SS5R93_5.2.15/com.ibm.spectrum.sc.doc/fqz0_r_wg_functions_available.html
-  License compliance at http://www.ibm.com/support/knowledgecenter/SS5R93_5.2.15/com.ibm.spectrum.sc.doc/tpch_r_managed_capacity_breakdown.html

To view a complete list of devices that can be used with IBM Spectrum Control, go to <http://www.ibm.com/support/docview.wss?uid=swg21386446>.

Definitions of licensing metrics and examples of pricing for licenses

Definitions of licensing metrics and examples of pricing for the IBM Spectrum Control are available for you to view.

To access the information, follow these steps:

1. Go to <http://www.ibm.com/common/ssi/index.wss>.
2. Click **Search results**.
3. Under Information Type, click **Announcement letters**.
4. Under By Geo, click the geography that you want.
5. Under By Language, click the language that you want.
6. In the Search in box, click the down arrow and click **Letter Number**.
7. In the Search for box, enter the letter number of the announcement letter for the geography that you want (for example, 217-125 for the United States). Other announcement letter numbers are:
 - AP17-0121 Asia, Pacific
 - A17-0199 Canada
 - ZP17-0159 Europe, Middle East, Africa
 - JP17-0155 Japan
 - LP17-0158 Latin America

Note: The Announcement letter might not be available in the language of your choice.

8. Click **Search**. The search returns a link to the announcement letter. Click the link.
9. Open the PDF and search Charge metric, Licensing Metric Definitions, or Pricing Examples.

Names of equivalent licenses in previous releases

The IBM Spectrum Control licenses were known by different names in previous releases. Use this table to determine the names.

Table 2. IBM Spectrum Control licenses and their previous names

Name of IBM Spectrum Control license	Name of Tivoli Storage Productivity Center Version 5.1 license	Name of Tivoli Storage Productivity Center Version 5.2.1 through 5.2.7 license
IBM Spectrum Control Standard Edition	Tivoli Storage Productivity Center	Tivoli Storage Productivity Center
IBM Spectrum Control Standard Select Edition	Tivoli Storage Productivity Center Select	Tivoli Storage Productivity Center Select
IBM Spectrum Control Advanced Edition	Tivoli Storage Productivity Center Advanced or IBM SmartCloud® Virtual Storage Center	IBM SmartCloud Virtual Storage Center Storage Analytics Engine
IBM Spectrum Control Advanced Select Edition	Tivoli Storage Productivity Center Advanced or IBM SmartCloud Virtual Storage Center	IBM SmartCloud Virtual Storage Center Storage Analytics Engine

Planning to install IBM Spectrum Control in a Windows domain

Before you can install IBM Spectrum Control on a Windows domain, you must determine which installation method is appropriate, based on your environment.

Installation methods

Install DB2 and IBM Spectrum Control in one of the following ways:

- Use local user accounts to install both DB2 and IBM Spectrum Control.
- Use a local user account to install DB2 and a domain user account to install IBM Spectrum Control.
- Use domain user accounts to install both DB2 and IBM Spectrum Control.

Windows domain and local user accounts

When a computer is a member of a Windows domain, you can install IBM DB2 on the local computer or on a computer that is a member of a Windows domain. The installation process creates a local DB2 user account or a domain DB2 user account.

User accounts

Windows domain user accounts are used to manage multiple computers, and local user accounts can be used to manage one computer.

Restriction: Before you install IBM Spectrum Control by using a Windows domain or a local user account as the common user name, you must add the Windows

domain user account or local user account to the local administrators group. The IBM Spectrum Control installation software recognizes only Windows domain or local user accounts (and not Windows domain or local groups) that are added to the local administrators group.

domain DB2 user account is an example of a Windows domain user account, and *local DB2 user account* is an example of a local user account.

Naming conventions for user accounts

You can install IBM Spectrum Control by using the same user account that is defined in both the local and Windows domain registries. The Windows operating system resolves this naming collision on computers that belong to a Windows domain by prefixing the user name with the host name or domain name. This user name is also called a *fully qualified user name*.

You must use the following naming conventions for each user account:

- *domain_name\administrator*
- *domain_name\user 1, domain_name\user2, domain_name\userN.*
- *host_name\administrator*
- *host_name\user1, host_name\user2, host_name\userN.*

For example, if the domain name is TPC51, and the user name is db2admin, the Windows domain user account is TPC51\db2admin. The naming convention for a local user account is *host_name\user name*. For example, if the host name is machine2, and the user name is db2admin, the user account is machine2\db2admin. You must enter the fully qualified user names in the common user name field when you install IBM Spectrum Control on computers that are members of a Windows domain.

Installation considerations

As part of your planning process, you must determine which user accounts to use when you install IBM Spectrum Control and DB2, consider the environment and security requirements.

IBM Spectrum Control uses WebSphere Application Server Liberty to authenticate the users for local and domain user accounts. When the computer that hosts the WebSphere Application Server Liberty process is a member of a Windows domain, by default local and domain user registries are used, but the Windows domain user registry takes precedence.

Related reference:

“Adding a computer to the Windows domain” on page 10

Before you can install IBM Spectrum Control in a Windows domain, you must first add the computer on which you plan to install IBM Spectrum Control to the domain.

“Installing DB2 by using a Windows domain user account” on page 11

Before you install IBM Spectrum Control in a Windows domain, you must install DB2 and register the DB2 license key. You do not need to complete this task if you are planning to install DB2 by using a local user account.

“Creating a Windows domain common user account for IBM Spectrum Control” on page 11

You must create a Windows domain common user account before you can install IBM Spectrum Control in a Windows domain.

“Granting DB2 SYSADM authority to a Windows domain user account” on page 12

If a Windows domain user account is used to install IBM Spectrum Control, the user account may not have the DB2 SYSADM authority, because DB2 goes to the domain controller computer to list the groups. Before you install IBM Spectrum Control, you must grant the Windows domain user accounts the DB2 SYSADM authority.

“Installing IBM Spectrum Control on a Windows domain” on page 124

You can install IBM Spectrum Control and DB2 by using a Windows domain or a local user account.

Adding a computer to the Windows domain

Before you can install IBM Spectrum Control in a Windows domain, you must first add the computer on which you plan to install IBM Spectrum Control to the domain.

You can log on to a computer that is a member of a Windows domain by entering a user name that is prefixed with the domain name. For example, you can enter TPC52\Administrator if you are the domain administrator of the TPC52 domain.

To add a computer to a Windows domain, complete the following steps:

1. Click **Start > Control Panel > Network and Internet > Network and Sharing Center**.
2. On the Network and Sharing Center window, click the left mouse button on your local area connection and click **Properties**.
3. Select the **Internet Protocol Version 4 (TCP/IP4)** check box, and click **Properties**.

Tip: If you are using Windows Server 2012, ensure that the **Client for Microsoft Networks** check box is selected.

4. On the **General** tab, select **Use the following DNS server addresses**.
5. In the **Preferred DNS server** field, enter the IP address of the domain controller computer.
6. In the **Alternate DNS server** field, enter the IP address of the alternate DNS server.
7. Click **Advanced**.
8. On the **DNS** tab, review the list of IP addresses.
9. In **DNS suffix for this connection** field, enter the fully qualified domain name.
10. Click **OK**.
11. Right-click **Computer** and select **Properties**.
12. In the Computer name, domain, and workgroup settings section, click **Change settings**.
13. Click **Change**.
14. On the Computer Name/Domain Changes window, select **Domain**, enter the fully qualified domain name, and click **OK**.
15. Enter the user name and password for the domain controller computer.

Important: The user name and password that you enter must be a domain administrator user name and password.

16. Click **OK** for the changes to take effect and to start the computer again.

Installing DB2 by using a Windows domain user account

Before you install IBM Spectrum Control in a Windows domain, you must install DB2 and register the DB2 license key. You do not need to complete this task if you are planning to install DB2 by using a local user account.

To install DB2 by using a domain user account, complete the following steps:

1. Log on to Windows by using a domain administrator user account that is part of the Active Directory group Schema Admins.
2. In a command prompt window, go to the directory where the **db2schex.exe** command is located and run the following command:

```
runas /USER:domain name\Administrator db2schex.exe
```

where *domain name* is the name of your domain, for example, **TPC**.
3. In the window that is displayed, enter a password and click **OK**.
4. In Windows Explorer, go to the directory where DB2 installation image is located.
5. Right-click **setup.exe** and select **Run as administrator**.
6. Complete the DB2 Setup program.
7. On the Set user information for the DB2 Administration Server page, in the User Information panel, select your domain.
8. Enter a domain user name and password.

Tip: You can reuse an existing domain user name or create one during the installation.

The domain user name needs to be in local Administrators group of the IBM Spectrum Control server.

9. On the Enable operating system security for DB2 objects page, complete the following steps:
 - a. Verify that **Enable operating system security** check box is selected.
 - b. In the DB2 administrators group and DB2 users group sections, select the domain.

Note: This step should create the DB2 administrator and users groups on the domain controller computer. If these groups are not created, you must create the groups manually on the domain before you install IBM Spectrum Control or the installation will fail.

Creating a Windows domain common user account for IBM Spectrum Control

You must create a Windows domain common user account before you can install IBM Spectrum Control in a Windows domain.

To create a domain common user account for IBM Spectrum Control, complete the following steps:

1. Log on to the domain controller computer by using a domain administrator user account.
2. Click **Start > Administrative Tools > Active Directory Users and Computers**.
3. Right-click on the Users folder and select **New > User**.
4. On the domain controller computer, click **Start > All Programs > Administrative Tools > Active Directory Users and Computers**.

5. Right-click on the domain user you created and click **Properties > Member Of**.
6. On the Member of tab, click **Add** and add DB2ADMNS.
7. Click **Check Names**.
8. If the name you entered is located, click **OK**.
9. Repeat steps 4 - 8 and add the DB2USERS group.

Tip: The Domain Users group exists.

10. Follow the prompts to create the domain common user account for IBM Spectrum Control.
11. Log on to the domain client computer on which you want to install IBM Spectrum Control by using a domain administrator user account.
When you log in to computer that is a member of a Windows domain by using the domain administrator user account, and you encounter the 'DB2 UDB SQL5005C System Error' message, complete the following steps:
 - a. Log in to the computer that is a member of a domain by using the local user name.
 - b. Click **Server Manager > Configuration > Local Users and Groups > Groups > DB2ADMNS > Properties > Add**.
 - c. Add *domain\domain user name*.
 - d. Click **Check Names**.
 - e. If the user name that you checked for is underlined, click **Apply**.
12. Open **Server Manager**.
13. In the navigation tree, click **Server Manager > Configuration > Local Users and Groups > Groups**.
14. Add the domain common user name that you created in step 3 (commonid) to the local administrator group.

Restriction: When you install IBM Spectrum Control by using a Windows domain user account, the *sAMAccountName* and *userPrincipalName* (the User login name) Active Directory attributes in the Windows domain user account cannot contain spaces. The *sAMAccountName* must have the same value as the part of the *userPrincipalName* Active Directory attribute that precedes the @ character.

Granting DB2 SYSADM authority to a Windows domain user account

If a Windows domain user account is used to install IBM Spectrum Control, the user account may not have the DB2 SYSADM authority, because DB2 goes to the domain controller computer to list the groups. Before you install IBM Spectrum Control, you must grant the Windows domain user accounts the DB2 SYSADM authority.

To enter the commands, and DB2 SYSADM authority, complete the following steps:

1. Click **Start > Command Prompt**.
2. Right-click **Command Prompt** and select **Run as administrator**.
3. Enter these commands:

```
db2cmd
db2set -g DB2_GRP_LOOKUP=local,TOKENLOCAL
db2 force application all
db2stop
db2start
db2set -all
```

After you run the commands, you can log in to IBM Spectrum Control by using a user account that has DB2 SYSADM authority.

If you are logged in by using your Windows domain user account, you may not have the authorization to run the `db2 force application all` command.

Important: When you grant DB2 SYSADM authority, and the **db2 force application all** command does not work, you can enter the **db2stop** command instead of the **db2 force application all** command.

For more information about acquiring user group information in the Windows operating system, see the IBM Knowledge Center.

For more information about the **sysadmin_group** parameter, see the IBM Knowledge Center.

Related reference:

“Installing IBM Spectrum Control on a Windows domain” on page 124

You can install IBM Spectrum Control and DB2 by using a Windows domain or a local user account.

Planning for configuration

Use this information to plan your IBM Spectrum Control environment. The information includes general configuration guidelines, TCP/IP ports, user names and user rights, and SMI-S support.

Planning for capacity

The following guidelines can help you determine the capacity for IBM Spectrum Control.

Consider the following guidelines when you determine your capacity requirements:

Database repository

For best performance, install the database repository across multiple physical disks, either through operating system striping or hardware RAID. You must have a minimum of three disks that are separate from the location of the IBM Spectrum Control host server’s operating system and the directory of the IBM Spectrum Control product installation.

IBM Spectrum Control server

The IBM Spectrum Control server must meet the following requirements:

- The IBM Spectrum Control server must have dual 3.2 GHz processors with a minimum of 8 GB of random access memory (RAM).
- The IBM Spectrum Control server must be a dedicated computer for IBM Spectrum Control operations and not shared with other applications.
- Paging space: On AIX operating systems, the paging space must be at least half or, if possible, the same amount as the physical memory. You must periodically monitor paging space usage by running the `lpsps -s` command and increasing the space if the percentage used is higher than 50%.

LSI SMI-S Provider

IBM Spectrum Control supports up to five storage systems with the LSI SMI-S Provider 1.3 or later.

Planning for IBM Spectrum Control authentication and authorization

An operating system user name is required to install and log on to IBM Spectrum Control for the first time. After you install IBM Spectrum Control, you can assign roles to users. Roles determine the product functions that are available to users.

User requirements for installing IBM Spectrum Control

The user name that you use when you run the IBM Spectrum Control installation program must belong to the following operating system groups. The user that you define as the common user during the IBM Spectrum Control installation must also belong to these groups. The IBM Spectrum Control installation program automatically maps these groups to the IBM Spectrum Control Administrator role.

Table 3. Operating system groups that are mapped to the Administrator role

Operating System	Group
Windows	Administrators
AIX	system
Linux	root

The user name that is used to install the database repository must belong to one of the following DB2 groups. The user name that is used to install the database repository depends on your installation configuration. For example, if you installed IBM Spectrum Control on a single server and you did not enter separate user information for DB2, the database repository is installed by using the common user name. Therefore, the common user must have these DB2 privileges.

Table 4. DB2 groups that are required to install the database repository

Operating System	Group
Windows	DB2ADMNS
AIX and Linux	db2iadm1

The IBM Spectrum Control installation program establishes a default authentication configuration by using the federated repositories feature of the WebSphere Application Server Liberty.

If you want to change the user authentication configuration, go to the product documentation at http://www.ibm.com/support/knowledgecenter/SS5R93_5.2.15/com.ibm.spectrum.sc.doc/fqz0_c_change_user_auth_method.html.

For more information about installing IBM Spectrum Control on a Windows domain, see “Planning to install IBM Spectrum Control in a Windows domain” on page 8 and “Installing IBM Spectrum Control on a Windows domain” on page 124.

Defining roles for IBM Spectrum Control

After you install IBM Spectrum Control, you can assign roles for IBM Spectrum Control users. These roles are predefined in IBM Spectrum Control and are assigned at the group level. The role determines the authorization level for the users who are in the group. The authorization level determines the functions in IBM Spectrum Control that the user can access.

For example, if a user is in a group that is assigned to the Administrator role, the user has full access to all IBM Spectrum Control functions. However, if a user is in a group that is assigned to the Monitor role, the user has access to only a limited set of functions.

For more information about working with roles and groups, go to the product documentation at [🔗 Role-based authorization](#).

User names and passwords

Several user names and passwords are required to install, configure, and use IBM Spectrum Control. There are also some requirements and limitations that you must understand before you install IBM Spectrum Control.

A worksheet is also provided to help you plan and document the user names and passwords that you use with IBM Spectrum Control. Keep the completed worksheet in a safe, secure place. Before you install IBM Spectrum Control, you must understand your local security policies and requirements. These policies can impose certain standards that you must consider when you create user names and passwords to comply with requirements.

Related reference:

“User name and password requirements”

This information helps you create valid user names and passwords for IBM Spectrum Control.

“DB2 user names and passwords” on page 18

This topic lists rules for DB2 user names and passwords.

“Worksheet for user names and passwords” on page 21

Use this worksheet to document the user names and passwords that you create when you install and administer IBM Spectrum Control. Space is provided for you to list more user names and passwords that you create when you configure more devices in IBM Spectrum Control.

User name and password requirements

This information helps you create valid user names and passwords for IBM Spectrum Control.

Table 1 lists the user names and passwords that are used with IBM Spectrum Control and specifies the following criteria:

- User names must be local or a Windows domain account or an LDAP account

Restriction: If you use LDAP, IBM Spectrum Control must be configured for LDAP authentication.

- Valid user name characters must comply with the minimum and maximum length requirements
- Valid password characters must comply with the minimum and maximum length requirements

Restriction: If the IBM Spectrum Control common user name is the same as the IBM Spectrum Control DB2 user name (for example, if you did not use a custom DB2 user name to install IBM Spectrum Control), the corresponding password must be valid as a DB2 password and as a WebSphere Liberty password. For more information about valid DB2 and WebSphere Liberty passwords, see Table 5 on page 16. This restriction applies during a IBM Spectrum Control installation and when you use the IBM Spectrum Control change password tool.

For more information about setting passwords on the Windows operating system, see the Microsoft Windows Dev Center - Desktop website at <http://msdn.microsoft.com/en-us/library/windows/desktop/ms675092%28v=vs.85%29.aspx>. Search for the *SAM-Account-Name* attribute.

Table 5. Valid characters for user names and passwords

User name and password for	Windows domain OK?	LDAP OK?	Valid characters
IBM Spectrum Control installation	Yes	No	Not applicable
IBM Spectrum Control common user	Yes Restriction: You must follow these naming conventions: <ul style="list-style-type: none"> Windows domain user name: <i>domain_name\user_name format</i> Local user name: <i>machine_name\username format</i> 	No	<ul style="list-style-type: none"> A through Z (uppercase characters) a through z (lowercase characters) 0 through 9 (numeric characters) Special characters: '_' and '~' <p>Restriction: The user name cannot contain spaces, \$ and ! signs, must have at least 1 character and must not start with a number or underscore. On Windows operating systems, the only valid special characters are `, ^, #, %, ^, (,), -, _ {, }, ', and .</p>
IBM Spectrum Control common user passwords	Yes	Yes	<ul style="list-style-type: none"> A through Z (uppercase characters) a through z (lowercase characters) 0 through 9 (numeric characters) Special characters: [,], ?, `, ^, !, (,), -, _ and . <p>Restriction: Passwords cannot contain spaces, must have at least 1 character and must not start with a number, dash character {-}, or underscore.</p>

Table 5. Valid characters for user names and passwords (continued)

User name and password for	Windows domain OK?	LDAP OK?	Valid characters
DB2 administrator, DB2 user	Yes Restriction: You must follow these naming conventions: <ul style="list-style-type: none"> Windows domain user name: <i>domain_name\user_name format</i> Local user name: <i>machine_name\username format</i> 	Yes	<ul style="list-style-type: none"> A through Z (uppercase characters) a through z (lowercase characters) 0 through 9 (numeric characters) Special characters: <code>!, @, #, %, ^, -, (,), _</code> Restriction: User names and passwords cannot contain spaces and must have at least 1 character. User names also must not start with a number or underscore
DB2 passwords	Yes	Yes	<ul style="list-style-type: none"> A through Z (uppercase characters) a through z (lowercase characters) 0 through 9 (numeric characters) Special characters: <code>!, ~, @, #, (,), -, _</code> Restriction: Passwords cannot contain spaces, must have at least 1 character and must not start with a number or underscore.
NAS Filer user name	No	No	<ul style="list-style-type: none"> A through Z (uppercase characters) a through z (lowercase characters) 0 through 9 (numeric characters) Special characters: <code>` ~ # % ^ & () - _ { } ' .</code> Restriction: User names and passwords cannot contain spaces and must have at least 1 character.

Table 5. Valid characters for user names and passwords (continued)

User name and password for	Windows domain OK?	LDAP OK?	Valid characters
NAS Filer password	No	No	<ul style="list-style-type: none"> A through Z (uppercase characters) a through z (lowercase characters) 0 through 9 (numeric characters) Special characters: ` ~ @ # % ^ & * () - _ = + [] { } \ ; : ' " , . < > / ? <p>Restriction: User names and passwords cannot contain spaces and must have at least 1 character.</p>

DB2 user names and passwords

This topic lists rules for DB2 user names and passwords.

DB2 user names and passwords must follow these rules:

- UNIX user names and passwords cannot be more than eight characters long. They cannot begin with a numeric digit or end with \$.
- Group and instance names can contain 1 to 8 characters.
- Names cannot be any of the following:
 - USERS
 - ADMINS
 - GUESTS
 - PUBLIC
 - LOCAL
- Names cannot begin with:
 - IBM
 - SQL
 - SYS
- Names cannot include accented characters.
- UNIX users, groups, and instance names must be lowercase.

Required user roles for monitoring resources

When you add storage systems and hypervisors for monitoring, you must provide a user name and password for logging in to those resources. The role or user group that is assigned to the user name determines the data collection and provisioning functions that you can use.

The following roles are associated with the user names that IBM Spectrum Control uses to log in to resources. Specify user names when you add a resource for monitoring. These roles are different from IBM Spectrum Control roles, which are assigned to users that log in to IBM Spectrum Control. For more information about IBM Spectrum Control roles, see [Role-based authorization](#).

Any roles that are not listed, but include the privileges of the roles that are listed, can also be used for monitoring resources.

Table 6. Required roles for storage system and hypervisor users.

Resource	Required role for performance monitors	Required role for probes	Required role for provisioning
DS6000 DS8000	Monitor role or higher	Monitor role or higher	Administrator, Physical operator, or Logical operator
SAN Volume Controller IBM Storwize family Storwize V7000 Unified (block storage) FlashSystem V840	Administrator	Monitor	Administrator
Storwize V7000 Unified (file storage) IBM SONAS	Performance monitoring is not available	Monitor	Administrator, or Export Administrator + Storage Administrator. For more information about roles, see IBM Knowledge Center for IBM SONAS .
XIV	Monitor role or higher	Any role	Storage administrator
IBM Spectrum Accelerate IBM FlashSystem A9000 IBM FlashSystem A9000R	Monitor role or higher	Any role	Provisioning is not available
IBM FlashSystem 840 IBM FlashSystem 900	Monitor role or higher	Monitor role or higher	Provisioning is not available
IBM Spectrum Scale (file storage)	Any role	Root or non-root*	Provisioning is not available

Table 6. Required roles for storage system and hypervisor users (continued).

Resource	Required role for performance monitors	Required role for probes	Required role for provisioning
IBM Spectrum Scale (object storage)	Performance monitoring is not available	<p>The Keystone admin role.</p> <p>Information is collected only for the object storage accounts and containers that the user has access to. If you want to monitor all accounts and containers, the user must also be assigned the role that is defined in the reseller_admin_role configuration option in the Swift proxy server. The default value for the reseller_admin_role option is ResellerAdmin.</p>	Provisioning is not available
IBM Cloud Object Storage	Performance monitoring is not available	Operator, System Administrator, or Super User role	Provisioning is not available
NetApp devices	Operator role or higher	Operator role or higher	Storage administrator
Cicso switches	network-admin	network-admin	Not applicable
Hypervisors (such as ESX, ESXi, and vCenter Servers)	Performance monitoring is not available	<p>A role that has permission to browse through data stores. For example: Administrator role or Virtual Machine Power User role.</p>	<ul style="list-style-type: none"> • Provisioning within the IBM Spectrum Control: any role • Provisioning with the vSphere Web Client extension: Storage administrator or Administrator roles. For more information, see Planning for the vSphere Web Client extension.
Rollup servers	Performance monitoring is not available	Administrator	Provisioning is not available

Table 6. Required roles for storage system and hypervisor users (continued).

Resource	Required role for performance monitors	Required role for probes	Required role for provisioning
<p>Note: * You can add GPFS clusters and GSS systems as a non-root user, but that user must have privileges to run a set of specified administration commands using the sudo command on the cluster node. For more information, see Monitoring IBM Spectrum Scale without requiring root privileges.</p>			

Worksheet for user names and passwords

Use this worksheet to document the user names and passwords that you create when you install and administer IBM Spectrum Control. Space is provided for you to list more user names and passwords that you create when you configure more devices in IBM Spectrum Control.

Table 7. User names and passwords for a IBM Spectrum Control installation

Item	Description	Your input
IBM Spectrum Control and DB2 installation user <ul style="list-style-type: none"> Windows: local administrator UNIX: root 		
DB2 administrator user name and password	<p>The DB2 administrator user name and password are created when you install DB2 and is required to install IBM Spectrum Control.</p> <p>On the Windows operating system, this user name must be a member of the DB2ADMNS group and Administrators group. On UNIX, the user name must be the instance owner of the instance you want to use. This user name and password are created when you install DB2.</p>	
Jazz for Service Management user name	For more information about the Jazz for Service Management user names and groups, go to IBM Knowledge Center.	
Jazz for Service Management administrator user name	For more information about the Jazz for Service Management administrator user name and groups, go to IBM Knowledge Center.	
LDAP bind user name	This user name has the authority to log in and connect to the LDAP server for authentication. It is not needed if the LDAP server allows anonymous bind. This user name and password must be provided to you by your LDAP administrator.	
Storage subsystem user name for access from IBM Spectrum Control	This user name is the user name that IBM Spectrum Control uses to log in to a storage device.	

Table 7. User names and passwords for a IBM Spectrum Control installation (continued)

Item	Description	Your input
CIMOM or SMI provider login name	This user name has log in access to the CIMOM or SMI provider software that interfaces with a storage device or a switch in a fabric.	
NAS filer user name and password	IBM Spectrum Control uses this user name to log in to a NAS device.	

Related reference:

“User name and password requirements” on page 15

This information helps you create valid user names and passwords for IBM Spectrum Control.

TCP/IP ports used by IBM Spectrum Control

When you install IBM Spectrum Control, the ports must be opened through the firewall. You must disable the firewall program or open the ports to allow incoming requests to the IBM Spectrum Control ports. Review these ports before you install IBM Spectrum Control.

IBM Spectrum Control ports used for TCP/IP

Table 1 lists the IBM Spectrum Control default ports.

All ports in Table 1 are configured during installation using the installation program. For a silent mode installation, use the **varTPCPortRangeSP** parameter in the installation response file.

Table 8. IBM Spectrum Control ports used by TCP/IP for incoming communication

Ports	Component and port information
9549	Data server 9549 listens for communications from the Device server, CLI, and Storage Resource agents.
9550-9551 9553 9572	Device server 9550-9551 listens for communications from the Data server, Alert server, and Web server. 9553 listens for logging commands. 9572 listens for IBM WebSphere Application Server Liberty administrative commands.
9556 9570 9571	Alert server 9556 listens for communications from the Device server. 9570 listens for logging commands. 9571 listens for WebSphere Application Server Liberty administrative commands.

Table 8. IBM Spectrum Control ports used by TCP/IP for incoming communication (continued)

Ports	Component and port information
9510 9567	<p>Storage Resource agent</p> <p>9510 listens for communications from the Data server if the Storage Resource agent is deployed in daemon mode. The only exception is the Storage Resource agent that is deployed on the IBM Spectrum Control server at installation time, which listens on port 9567 instead.</p> <p>If the Storage Resource agent is deployed in non-daemon mode, the Storage Resource agent does not need any listening ports.</p> <p>The Data server uses RXA to communicate with the Storage Resource agent in non-daemon mode. RXA uses the following default ports for the protocols:</p> <p>22 SSH</p> <p>512 Remote Execution (REXEC)</p> <p>514 Remote Shell (rsh)</p> <p>445 Windows SMB protocol</p> <p>The Storage Resource agent sends responses back to the Data server on port 9549, in both daemon mode and non-daemon mode.</p>
9554 9557 9568 9569	<p>Web server</p> <p>9554 is used by WebSphere Application Server Liberty.</p> <p>The following ports are used for the GUI:</p> <ul style="list-style-type: none"> • 9568 (non-secure) • 9569 (secure) <p>9557 is used for the REST API.</p>
50000	<p>DB2</p> <p>By default, DB2 listens on port 50000 for communication from IBM Spectrum Control and other clients. This default port can be changed only during the DB2 installation.</p>
16310 to 16324	<p>IBM Cognos Business Intelligence</p> <p>You can only set the values of the ports that are used by Jazz for Service Management when you install Jazz for Service Management.</p>

Restrictions: The following restrictions apply to the ports that are listed in Table 8 on page 22:

- The ports apply only to a fresh installation of IBM Spectrum Control. If you upgrade from an earlier version of IBM Spectrum Control that used different ports, those ports are reused for your installation.
- The ports are used for incoming communication and are configured during installation. *Do not* change these ports after your installation is complete.

Other IBM Spectrum Control IP ports

Table 9. Other IBM Spectrum Control IP ports

Resource and ports	Port information
Resources that run IBM Spectrum Virtualize Ports: 22, 5989	<p>For native interface:</p> <ul style="list-style-type: none"> • 22 listens for SSH communication from IBM Spectrum Control. • 5989 listens for other communication from IBM Spectrum Control. You can upload the SSH key once at setup time using the 5989 port. <p>By default, the IBM Spectrum Control Device server creates a connection between a IBM Spectrum Virtualize resource and a local port to listen for events from the IBM Spectrum Virtualize resource. The default range is 49152 to 65535. These ports are on the Device server only; you do not need to configure the firewall for them. The ports are used for a SSH tunnel to connect to the event port on the IBM Spectrum Virtualize resource. All communication to the IBM Spectrum Virtualize resource runs through the SSH connection. No other ports need to be open for IBM Spectrum Virtualize events.</p> <p>To change to a custom port range, use the CLI setdscfg command to change the values of the following parameters:</p> <ul style="list-style-type: none"> • NAPI.SVCEventListenerLPortBase • NAPI.SVCEventListenerLPortMax <p>After resetting the value, restart the Device server.</p> <p>For example, to set the range from 50100 to 65000, run these commands from the <i>installation_dir/cli/</i> subdirectory:</p> <p>For Windows operating system:</p> <pre>tpctool.bat setdscfg -user <user name> -pwd <password> -property NAPI.SVCEventListenerLPortBase 50100 tpctool.bat setdscfg -user <user name> -pwd <password> -property NAPI.SVCEventListenerLPortMax 65000</pre> <p>For AIX and Linux operating systems:</p> <pre>./tpctool.sh setdscfg -user <user name> -pwd <password> -property NAPI.SVCEventListenerLPortBase 50100 ./tpctool.sh setdscfg -user <user name> -pwd <password> -property NAPI.SVCEventListenerLPortMax 65000</pre>

Table 9. Other IBM Spectrum Control IP ports (continued)

Resource and ports	Port information
FlashSystem 840 FlashSystem 900 Ports: 22, 5989, 161 (UDP)	For native interface: <ul style="list-style-type: none"> • 22 listens for SSH communication from IBM Spectrum Control. • 5989 listens for other communication from IBM Spectrum Control. You can upload the SSH key once at setup time using the 5989 port. 161 (UDP) listens for SNMP communications from IBM Spectrum Control for performance monitoring.
DS8000 Ports: 1751, 1750, 1755, 8451, 8452	Native interface: <p>1751 (default) listens for communication from IBM Spectrum Control and other clients. If 1751 is unavailable, uses 1750.</p> <p>1751 (default) sends hardware management console (HMC) information and events to IBM Spectrum Control. If 1751 is unavailable, uses 1750.</p> <p>1755 sends and receives data for HTC when logs are being offloaded.</p> <p>8451, 8452 DS8000 listens on these ports for communication with the DS8000 GUI.</p>
<ul style="list-style-type: none"> • IBM XIV Storage System • IBM Spectrum Accelerate • FlashSystem A9000 • FlashSystem A9000R Port: 7778	7778 listens for communication from IBM Spectrum Control and other clients.
IBM Spectrum Scale <ul style="list-style-type: none"> • File storage ports: 22, 9084 • Object storage ports: 5000, 8080, 35357 	<ul style="list-style-type: none"> • File storage: <ul style="list-style-type: none"> – 22 listens for SSH communication from IBM Spectrum Control. – 9084 listens for performance data collection on the GPFS™ cluster node where the collector component is running. • Object storage: <ul style="list-style-type: none"> – 5000, 8080, 35357 listen for data about any object storage or OpenStack Swift configurations on the GPFS™ cluster node where the collector component is running.
NetApp N series Port: 80	80 listens for communication from IBM Spectrum Control using the NetApp Data ONTAP API (NAPI), if the storage system is a file storage system. <p>If the NetApp storage system is a block storage system, the CIM agent ports are used to listen for communication from the Device server.</p>
IBM Cloud Object Storage Port: 443	443 listens for HTTPS communication from IBM Spectrum Control.


Table 9. Other IBM Spectrum Control IP ports (continued)

Resource and ports	Port information
<p>EMC storage systems</p> <p>Port: 5991</p>	<p>5991 listens for events that are coming from EMC CIMOMs</p> <p>To change this port, use the CLI setdscfg command and change the value for the Event.ListenerPort parameter. Then, restart the Device server.</p> <p>For example, to set the port to 7200, run this command from the <i>installation_dir/cli/</i> subdirectory:</p> <p>For Windows operating system:</p> <pre>tpctool.bat setdscfg -user <user name> -pwd <password> -property Event.ListenerPort 7200</pre> <p>For AIX and Linux operating systems:</p> <pre>./tpctool.sh setdscfg -user <user name> -pwd <password> -property Event.ListenerPort 7200</pre> <p>You can also modify the protocol for listening to events that are coming from EMC CIMOMs. By default, this protocol is set http.</p> <p>To change this protocol, use the CLI setdscfg command and change the value for the Event.ListenerProtocol parameter. Then, restart the External Process component.</p> <p>For example, to set the protocol to https, run this command from the <i>installation_dir/cli/</i> subdirectory:</p> <p>For Windows operating system:</p> <pre>tpctool.bat setdscfg -user <user name> -pwd <password> -property Event.ListenerProtocol https</pre> <p>For AIX and Linux operating systems:</p> <pre>./tpctool.sh setdscfg -user <user name> -pwd <password> -property Event.ListenerProtocol https</pre>
<p>IBM SONAS</p> <p>Port: 22</p>	<p>22 listens for SSH communication from IBM Spectrum Control.</p>

Table 9. Other IBM Spectrum Control IP ports (continued)

Resource and ports	Port information
<p>CIM agents for managed storage systems</p> <p>Ports: 5988, 5989, 5990</p>	<p>5988 listens for non-secure communication from the Device server.</p> <p>5989 listens for secure communication from the Device server.</p> <p>5990 IBM Spectrum Control listens on this port for events coming from CIM agents for managed storage systems.</p> <p>To change the port that IBM Spectrum Control uses to listen for events coming from CIM agents for managed storage systems, use the CLI setdscfg command. Change the value for the Indication.PermanentListenerPort parameter then restart the Device server.</p> <p>For example, to set the port to 7100, run this command from the <i>installation_dir/cli/</i> subdirectory:</p> <p>For Windows operating system:</p> <pre>tpctool.bat setdscfg -user <user name> -pwd <password> -property Indication.PermanentListenerPort 7100</pre> <p>For AIX and Linux operating systems:</p> <pre>./tpctool.sh setdscfg -user <user name> -pwd <password> -property Indication.PermanentListenerPort 7100</pre>
<p>IBM Spectrum Control Device server</p> <p>Ports: 162 (UDP), 5960 (UDP), 49152 (UDP)</p>	<p>162 (UDP) listens for SNMP traps coming from managed storage systems.</p> <p>5960 (UDP) listens for forwarded SNMP messages.</p> <p>49152 (UDP) IBM Spectrum Control uses this port to forward SNMP traps.</p> <p>To change these ports, use these steps:</p> <ol style="list-style-type: none"> 1. Log on to IBM Spectrum Control as a user with administrative privileges. 2. Stop the Device server. 3. Create a backup of the <i>installation_dir/device/conf/</i> <i>user.properties</i> file. 4. Change the parameter that corresponds to the port to an available port number and save the file. <p>162 SnmpTrapPort</p> <p>5960 SnmpForwardedTrapListeningPort</p> <p>49152 SnmpForwardingPort</p> <p>5. Start the Device server.</p>
<p>All monitored resources</p> <p>7 (ECHO port)</p>	<p>Before you can discover resources, ensure that port 7 (ECHO port) is open on the resources, and Internet Control Message Protocol (ICMP) is available.</p>

Related information:

 [setdscfg command](#)

 [Starting and stopping the IBM Spectrum Control servers](#)

Planning for multipath subsystem device drivers

The subsystem device driver (SDD) is a software solution for multiple configuration environments in supported storage resources.

The subsystem device driver is installed on a host system with the native disk-device driver and provides the following functions:

- Enhanced data availability
- Dynamic input/output (I/O) load balancing across multiple paths
- Automatic path failover protection
- You can download licensed machine code at the same time that applications are running

For the most current support for multipath subsystem device drivers, go to Supported Products and Platforms.

Note:

1. The AIX SDD cannot coexist with SDDPCM on the same system.
2. The Linux SDD driver is no longer available. Starting with Red Hat Enterprise Linux Version 5 and SUSE Linux Enterprise Server Version 10, only the DM_Multipath is available.
3. The SDD driver is no longer supported on HP, starting with HP-UX 11i v3 with Itanium®.

For more information about multipath subsystem device drivers, see http://www.ibm.com/support/docview.wss?rs=540&context=ST52G7&dc=DA400&uid=ssg1S7001350&loc=en_US&cs=utf-8&lang=en.

For more information about how to install, configure, and use the subsystem device drivers, see <http://www.ibm.com/support/docview.wss?rs=540&context=ST52G7&uid=ssg1S7000303>.

Upgrading subsystem device drivers

SDD drivers cannot coexist on the same host with the SDDPCM, SDDDSM, or DM_Multipath drivers. You must upgrade from the existing SDD drivers to the SDDPCM or SDDDSM driver. Part of the upgrade process is to unconfigure and remove all SDD vpath devices. After the upgrade and configuration of the devices, the device names might differ from the previous names. Each device is detected by IBM Spectrum Control as a new device. For information about how to upgrade SDD, see <http://www.ibm.com/support/docview.wss?rs=540&context=ST52G7&uid=ssg1S7000303>.

EMC PowerPath Multipathing

EMC PowerPath Multipathing supports a wide range of servers including cluster servers connected to EMC storage systems. It tunes your storage area network and selects alternate paths for your data if necessary. It also integrates multiple path I/O capabilities, automatic load balancing, and path failover functions. For more information about EMC PowerPath Multipathing, see <http://www.emc.com>. Search for **EMC PowerPath**.

Planning for Storage Resource agents

Use Storage Resource agents to collect asset and configuration information about servers.

You can deploy Storage Resource agents from the IBM Spectrum Control GUI. You must have administrative privileges to deploy Storage Resource agents.

To deploy a Storage Resource agent from the GUI, go to **Servers > Servers**. Click **Add Server**, select **Deploy an agent for full server monitoring**, and select a method for adding a server. You can add a single server by manually entering server information or you can add multiple servers by importing configuration information from a file. If you add multiple servers, a time span is calculated during which the agents are deployed. The agents are deployed at regular intervals during the time span to avoid excessive load on the IBM Spectrum Control server.

For more information about deploying a Storage Resource agent, go to the product documentation at http://www.ibm.com/support/knowledgecenter/SS5R93_5.2.15/com.ibm.spectrum.sc.doc/fqz0_r_native_agents_deployment_considerations.html.

Protocol support for Storage Resource agents

When installing the Storage Resource agent, IBM Spectrum Control uses specific protocols for connectivity between the server and agent.

When installing the Storage Resource agent, IBM Spectrum Control uses the following protocol for connectivity between the server and agent (listed in order):

1. Secure Shell protocol (SSH).
2. Windows server message block protocol (SMB protocol).
3. Remote execution protocol (REXEC).
4. Remote shell protocol (RSH).

At run time, the connectivity that is used between the server and agent depends on the type of service that is running: On-Demand service (non-daemon service) or run as a service (daemon service).

On-Demand service (non-daemon service)

In this case, connectivity between the server and agent is established by using the same protocols as for installation of the agent: SSH, SMB, REXEC, or RSH.

run as a service (daemon service)

In this case, connectivity between the server and agent is established by using the secured socket connection. The server and agent have their respective certificates and no additional information is needed besides the certificates and the security that is provided by the SSH protocol.

Note: Running the Storage Resource agent in daemon mode requires only one socket connection to be open and thus simplifies any firewall rules that might be in place. However, the daemon mode always consumes resources (although a very small amount) when idle. In non-daemon mode, the Storage Resource agent only consumes resources when actively working for the IBM Spectrum Control server. Because the non-daemon mode uses the RXA protocol, additional firewall ports and security configuration are required.

The information required for these protocols is as follows:

SSH protocol

There are two cases where you can use the SSH protocol:

- You supply the user ID and password to connect to the server by using the SSH protocol. This user ID must have administrative privileges.
- You supply a user ID, certificate, and passphrase. You create the certificate and use that certificate when you connect to the agent. This certificate must be accessible from the server.

For information about how to create a certificate for SSH protocol connectivity, go to the documentation at http://www.ibm.com/support/knowledgecenter/SS5R93_5.2.15/com.ibm.spectrum.sc.doc/fqz0_r_create_certificate_ssh.html. This information uses Cygwin for the Storage Resource agent.

Windows SMB protocol

You supply the user ID and password. The user ID must have administrative privileges. You must also enable **File & Printer Sharing for Microsoft Windows** under **Network Properties** for the connected network adapter. Make sure that the Server service is running on the system.

REXEC protocol

You supply the user ID and password. The user ID must have administrative privileges. The system must be enabled for remote execution of commands.

RSH protocol

You supply the user ID with administrative privileges. The system must be enabled for the user to be able to run commands through the remote shell.

To enable RSH, edit the `.rhosts` file in the login directory of the user. The `rhosts` file provides access for the user to connect from a remote system.

If you elect to use a Microsoft directory, you can also get a list of domain computers. You are required to enter the domain controller, user ID, password, and certificate location. After the list is displayed, you can select a list of computers on which to deploy the agent.

After the agent is deployed, a probe job is automatically run.

The agent that is deployed on a Windows system has its registry information in the Windows registry. For UNIX or Linux, the registry information is stored in the following file: `/etc/Tivoli/TSRM/registryNA`.

For more information about setting up the environment for deploying a Storage Resource agent, go to IBM Knowledge Center at http://www.ibm.com/support/knowledgecenter/SS5R93_5.2.15/com.ibm.spectrum.sc.doc/fqz0_r_native_agents_deployment_considerations.html.

Planning for the Storage Resource agents on Oracle Solaris

You can skip automount maps (automaps) for a discovery job on Solaris. To skip automount maps, specify the `skipAutoFS=1` parameter in the server section of the `TPCD.config` file. The change globally affects all Solaris Storage Resource agents managed by the Data server.

To change the `TPCD.config` file, follow these steps:

1. Stop the Data server.
2. Modify the `TPCD.config` file in this directory:

TPC_Data_Server_install_directory/config

The default directory for Windows is:

C:\Program Files\IBM\TPC\data\config

The default directory for UNIX or Linux is:

/usr_or_opt/IBM/TPC/data/config

3. Modify the TPCD.config file with the **skipAutoFS=1** parameter added:

```
[server]
  threadPoolSize=3
  abbreviatedProbe=1
  maxThreads=8
  pingReceiveTimeout=10
  skipAutoFS=1    <== Set to 1 for Discovery
                  on Solaris Storage Resource agent to skip AutoMounts
                  process.By default, discovery will always
                  process AutoMounts on the Solaris Storage Resource agent.

[gui]
  threadPoolSize=3
  maxThreads=10
  reportRowLimit=5000
  keepCachedReport=120
```

Save the file.

4. Restart the Data server.

Planning for Internet Protocol Version 6

IBM Spectrum Control supports Internet Protocol Version 6 (IPv6) for communication between its components. The key IPv6 enhancement is the expansion of IP address spaces from 32 bits (up to 15 characters in length) to 128 bits (up to 45 characters in length).

Overview

You can install and run IBM Spectrum Control on systems that are enabled for IPv4, IPv6, or dual stack. *Dual stack* indicates that a system has both the IPv4 and IPv6 stacks enabled and both addresses configured.

You can use IPv6 addresses if one of the following conditions are met:

- The system where IBM Spectrum Control is installed is IPv6.
- Dual stack (IPv4 and IPv6) is enabled.

IBM Spectrum Control can communicate with the following external components over IPv6:

- SMI-S CIM agents
- SLP directory agents
- SNMP agents
- Storage resources
- SMTP server

Note: These external components must be IPv6 enabled to communicate with IBM Spectrum Control by using the IPv6 protocol.

Not all components and their related functions of IBM Spectrum Control are enabled for IPv6. Any functions that are not enabled for IPv6 are unavailable through the user interface when you install IBM Spectrum Control on an IPv6-only system.

If you have a system that is configured for dual stack networking, IBM Spectrum Control defaults to IPv4 addressing.

The preferred IPv6 address representation is written as eight groups of four hexadecimal digits `xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx`, where each *x* is a hexadecimal that represents 4 bits. You can also specify IPv6 addresses by using shortened formats that omit leading zeros or use double colons in place of a series of zeros. You can specify only one double colon (::) in an IPv6 address.

The following examples show an IPv6 address in the long form and in the short form:

Long form: `2001:DB8:0:0:0:0:0:0`

Short form: `2001:DB8::`

IPv6 and IBM Spectrum Control installation

If you are installing IBM Spectrum Control in an IPv6-only environment, the following requirements apply:

- For Windows operating systems, the IPv4 loopback interface is enabled.
- For AIX or Linux operating systems, the `localhost` option resolves to the IPv4 address `127.0.0.1`, instead of the IPv6 address `::1`. This value is specified in the `/etc/hosts` file.

For Windows operating systems, the `localhost` option is specified in the `C:\Windows\system32\drivers\etc\hosts` directory and file.

Table 10. IPv4 and IPv6 configurations in a multiple-servers environment

If the database repository server is configured for...	The IBM Spectrum Control server is configured for...
IPv4	IPv4
IPv4	Dual stack
Dual stack	IPv4
Dual stack	Dual stack
Dual stack	IPv6
IPv6	IPv6

Restriction: When you install the product on servers that are configured for IPv6 only, you cannot use IBM Tivoli Enterprise Console® events as triggered actions in alerts.

Planning to use LDAP for IBM Spectrum Control authentication

The Lightweight Directory Access Protocol (LDAP) is an application protocol that you can use to query and modify directory services running over TCP/IP. The IBM Spectrum Control installation program establishes a default authentication

configuration using the federated repositories feature of the IBM WebSphere Application Server Liberty. You can configure IBM Spectrum Control for LDAP authentication as a post-install activity.

A directory is a set of objects with similar attributes that are organized in a logical and hierarchical manner. An LDAP directory tree often reflects various political, geographic, and organizational boundaries, depending on the model chosen. The directory might contain entries representing people, organizational units, printers, documents, groups of people, or anything else that represents a tree entry (or multiple entries).

In the federated repositories framework, the IBM Spectrum Control installation program creates the following repositories:

File-based user repository

This repository contains the `tpcFileRegistryUser` user ID. This user password is the same as the common user password that you enter during the IBM Spectrum Control installation.

Operating system repository

This repository contains the users and groups managed by the local operating system.

With this default authentication configuration, you cannot use the IBM Spectrum Control single sign-on feature. Storage system element managers do not support the operating system repository or the file-based repository for single sign-on, even if the element manager is installed on the same system as IBM Spectrum Control.

To change the user authentication configuration, add or remove an LDAP repository in the federated repositories framework.

To authenticate user names on the IBM Spectrum Control by using an instance of Microsoft Active Directory, complete one of the following options:

Authenticate User names: Method one

1. Install IBM Spectrum Control on an AIX, Linux, or Windows operating system.
2. Configure IBM Spectrum Control for LDAP authentication.

The target LDAP repository is an instance of Active Directory running on Windows 2003 or later. This method provides the following benefits:

- The IBM Spectrum Control target system does not have to be a Windows system.
- The IBM Spectrum Control target system does not have to be a member of a Windows domain.
- There are fewer configuration steps for IBM Spectrum Control or Windows.
- The IBM Spectrum Control user names and group names do not have to include the Windows Domain Name.
- You can use the single-sign on feature between IBM Spectrum Control and storage system element managers.

Authenticate User names: Method two

1. Install IBM Spectrum Control on a Windows system that is a member of a Windows domain or on the Windows Domain Controller.
2. Configure IBM Spectrum Control for operating system authentication.

Planning for storage management

Plan for how to use IBM Spectrum Control to manage the storage and storage resources in your environment. In a complex environment, good planning helps you avoid delays and problems in getting your system up and running.

For information about how to plan for storage resources and actions, see the product documentation at [🔗](#) Planning for storage management.

Chapter 2. Installing

Before you install IBM Spectrum Control, you must install IBM DB2 because DB2 is required for the IBM Spectrum Control database repository.

IBM Spectrum Control components

You can install IBM Spectrum Control in single-server or multiple-server environments. In a single-server environment, all components are installed on one server.

In single-server or multiple-server environments, when you install IBM Spectrum Control, the following components are installed:

- Database repository
- IBM Spectrum Control servers, which comprise the following components:
 - Data server
 - Device server
 - Alert server
 - Web server
 - IBM Spectrum Control GUI
 - Command-line interface (CLI)
 - Storage Resource agent
- Cognos Business Intelligence reports (optional)


IBM Spectrum Control in an IPv4 or IPv6 environment

IBM Spectrum Control can use both IPv4 and IPv6 addresses for communication between its components.

If you have a system that is configured for dual-stack networking (with both IPv4 and IPv6 addresses), IBM Spectrum Control defaults to IPv4 addressing.

For information about using IPv4 and IPv6, see “Planning for Internet Protocol Version 6” on page 31.

Cognos Business Intelligence reports on Windows 2012 R2

If you install IBM Spectrum Control and Cognos BI reports on Windows 2012 R2, you must upgrade WebSphere Application Server from 8.5.0 to 8.5.5. To upgrade to 8.5.5, follow the instructions at  <http://www.ibm.com/support/docview.wss?uid=swg24034969>.

Hardware requirements

The hardware requirements of the IBM Spectrum Control server.

Important: IBM Spectrum Control server can require a large amount of memory, disk space, network bandwidth, and processor resources. To promote consistent availability and performance, install IBM Spectrum Control on a dedicated server where no other critical business applications, including IBM Copy Services

Manager, are installed. IBM Software Support is not responsible for availability, performance, and functional problems that are caused by other business applications that are deployed on the same server as IBM Spectrum Control.

For information about the hardware requirements for IBM Spectrum Control, see *Hardware Support: Memory, Processor and Disk Space* at <http://www.ibm.com/support/docview.wss?uid=swg27047048>.

For information about the components that can be used with IBM Spectrum Control, see *Find the Supported Hardware, Products and Platforms Interoperability Matrix Links* at <http://www.ibm.com/support/docview.wss?uid=swg21386446>.

Restriction: On AIX or Linux operating systems, when you use a Virtual Network Computing (VNC) client that is connected to a VNC server, do not use the following key combinations:

- Alt + H to start the Help page
- Alt + N to proceed to next page
- Alt + P to return to the previous page
- Alt + I to start an installation action on the Summary page

You must press **Tab** and then press **Enter** or the spacebar when the button you want to press is selected. For example, to start the Help, press **Tab** until the **Help** button is highlighted and then press **Enter** or the spacebar.

Software requirements

This section describes the software that is required to install and run your system. This section includes operating systems supported, browsers supported, databases supported, and other software required such as DB2.

Software requirements for operating systems

The IBM Spectrum Control family supports a variety of operating systems.

Before you install IBM Spectrum Control, check the IBM Spectrum Control support site at <http://www.ibm.com/support/docview.wss?uid=swg27047043#Server> for the latest operating system support.

Software requirements for Storage Resource agents

Storage Resource agents can be used by IBM Spectrum Control in various operating systems.

For a list of the operating systems that are supported for Storage Resource agents, go to <http://www.ibm.com/support/docview.wss?uid=swg27047043#Agents>.

Software requirements for the database repository

IBM Spectrum Control uses DB2 as the database repository.

Important: You must use a 64-bit version of DB2 with IBM Spectrum Control. For more information about upgrading DB2 to 64-Bit DB2 Version 10.5 or later, see “Upgrading from 32-Bit DB2 Version 9.7 to 64-Bit DB2 Version 10.5” on page 158.

Supported versions of DB2

For a list of the supported DB2 versions, go to  <http://www.ibm.com/support/docview.wss?uid=swg27047043#Databases>.

Web browser support

The IBM Spectrum Control GUI runs in a web browser and includes the ability to monitor, manage, and troubleshoot storage resources. You can access this interface from anywhere that you have a web browser and connectivity to a network.

Before you start IBM Spectrum Control, ensure that you are using a supported web browser. For a list of web browsers that you can use with IBM Spectrum Control, see the support matrix at <http://www.ibm.com/support/docview.wss?uid=swg21386446>. In the **Agents, Servers and GUI** column, click the version of IBM Spectrum Control that you are installing. On the next page, click **Web Browsers** to find the web browsers that you can use.

Note: The IBM Spectrum Control GUI requires the use of cookies to manage user preferences, such as table customization and frequently viewed charts. Ensure that cookies are enabled to use these features.

Software requirements for LDAP servers

The LDAP repositories that are available on Windows, Linux and AIX operating systems, can be used with IBM Spectrum Control.

For more information about the LDAP repositories that are supported, see <https://ibm.co/2pA5yGL>.

Software requirements for CIM agents

IBM Spectrum Control requires CIM agents for some IBM storage devices such as the DS3000, DS4000®, DS5000, DS6000.

CIM agents for DS3000, DS4000, DS5000, DS6000

For information about installing and configuring the CIM agent for the DS3000, DS4000, and DS5000, contact your CIM agent (LSI SMI Provider) at <https://signin.netapp.com/oamext/login.html>.

The LSI CIM agent must be installed and configured before you can collect data for the DS3000, DS4000, and DS5000 through IBM Spectrum Control. When you configure IBM Spectrum Control to connect to the CIM agent, you must provide the interoperability namespace for the device.

For information about the LSI CIM agent level that is required for each device and the namespace, see <http://www.ibm.com/support/docview.wss?uid=swg21386446>.

Also, note the following information about the CIM agents from LSI:

- Do not install the CIM agent on the same server as the IBM Spectrum Control server.
- Do not have the CIM agent monitor more than five storage systems.
- Use the LSI SMI-S Provider V10.06.GG.33 or later for the DS4000 and DS5000 MC level V7.60.x. Otherwise, performance monitoring does not work.

- Do not use the LSI SMI-S agent for the DS4000 and DS5000 with an MC level earlier than V7.50.x. Lower-level microcode can cause a reboot of the controller device.

CIM agents for switches and directors

CIM agents (SMI-S Providers) are also required for switches and directors. For a complete list of switches and directors that are supported and the level of CIM agents that are required for each device, see <http://www.ibm.com/support/docview.wss?uid=swg21386446>.

CIM agents for non-IBM storage systems

IBM Spectrum Control also supports some non-IBM storage systems. For example, IBM Spectrum Control supports HP, TagmaStore, CLARiiON, Symmetrix, and other storage systems.

For a complete list of storage systems that are supported and the level of CIM agents that are required for each device, see <http://www.ibm.com/support/docview.wss?uid=swg21386446>.

Requirements for Jazz for Service Management and Tivoli Common Reporting

If you plan to use Cognos Business Intelligence reports, you must install Jazz for Service Management Version 1.1.0.3 and Tivoli Common Reporting Version 3.1.0.2.

Restriction: If you are using downloaded installation packages from Passport Advantage Online, the downloaded packages must be unpacked to a local disk or file system on each server on which you install the Jazz for Service Management and Tivoli Common Reporting components. You must make sure that you have the following available free disk space:

- Windows
 - 10 GB free disk space on the C: drive for temporary installation files and other necessary files that will remain on the server.
 - 10 GB additional free disk space on the target installation disk where you are installing Jazz for Service Management and Tivoli Common Reporting program files.
 - 10 GB additional free disk space for the installation images, including the images that you download and the resulting unpacked files.
- AIX/Linux
 - 10 GB free disk space on the root file system for temporary installation files and other necessary files that will remain on the server.
 - 10 GB additional free disk space on the target installation file system where you are installing Jazz for Service Management and Tivoli Common Reporting program files.
 - 10 GB additional free disk space for the installation images, including the images that you download and the resulting unpacked files.

Important: If you install Jazz for Service Management with IBM Spectrum Control on AIX 7.1TL3 (SP0-1), you must first apply the fix for AIX APAR IV52745. You can download the fix for APAR IV52745 at the following location: <ftp://aix.software.ibm.com/aix/ifixes/iv52745/>.

For more information about the hardware and software requirements to install Jazz for Service Management and Tivoli Common Reporting, see the *Jazz for Service Management Detailed System Requirements* document at <http://www.ibm.com/support/docview.wss?uid=swg27038732>.

Installing IBM Spectrum Control

IBM Spectrum Control provides an installation program that guides you through the installation process. You can use the installation program or the command line in silent mode.

Installation checklists for IBM Spectrum Control

The installation of IBM Spectrum Control requires you to install a number of components. You can use the following checklists to guide you through the installation procedures for each component. Use separate checklists for multiple server installations.

Prepare your environment for installation

Ensure that your target environment is ready for an installation.

Table 11. Prepare your environment for an installation check list

Check	Required for	Task
<input type="checkbox"/>	Antivirus software	<p>Installing IBM Spectrum Control involves making use of your operating system in manners typical for installing new application software. If your antivirus software is set on the maximum mode, it might prevent some of your changes from being accepted.</p> <p>To verify that your installation completes correctly, enable your antivirus software product to allow the following instances:</p> <ul style="list-style-type: none">• The /etc/hosts file can be edited• Files can be created in the /temp directory• New executable files can be created in the C:\Program Files directory
<input type="checkbox"/>	Fully qualified host names	IBM Spectrum Control requires fully qualified host names, so you must install the product on a computer that has a fully qualified host name. For example, abc.tucson.example.com is a fully qualified host name where abc is the host name and tucson.example.com is the full domain name.
<input type="checkbox"/>	Hardware prerequisites	For information about the hardware requirements for IBM Spectrum Control, see <i>Hardware Support: Memory, Processor and Disk Space</i> at http://www.ibm.com/support/docview.wss?uid=swg21386446 .
<input type="checkbox"/>	Software prerequisites	<ul style="list-style-type: none">• The IBM Spectrum Control family supports various operating systems, see “Software requirements for operating systems” on page 36• For the database repository, see “Software requirements for the database repository” on page 36• For LDAP servers, see “Software requirements for LDAP servers” on page 37• For Cognos Business Intelligence reporting, see “Requirements for Jazz for Service Management and Tivoli Common Reporting” on page 38

Table 11. Prepare your environment for an installation check list (continued)

Check	Required for	Task
<input type="checkbox"/>	Required user privileges	<p>Ensure that you have the required privileges to install DB2, IBM Spectrum Control, and Jazz for Service Management. If you are installing on a Windows operating system, you must install as a user with administrator privileges. If you are installing on an AIX or Linux operating system, you must install as a root user or as a non-root user who has sudo privileges.</p> <p>If you want to install as a non-root user, your system administrator must complete configuration tasks on the target server before you begin the installation. These tasks are listed in “Installing DB2 on AIX or Linux” on page 45 and “Installing IBM Spectrum Control in a single-server AIX or Linux environment” on page 57.</p> <p>Ensure that Windows administrators have the Debug programs privilege.</p>
<input type="checkbox"/>	Download packages	<p>You must download the installation packages or images into a separate directory for each product. The following list provides suggested download directory paths:</p> <ul style="list-style-type: none"> • Windows operating systems: <ul style="list-style-type: none"> – c:\downloads\DB2 – c:\downloads\TPC – c:\downloads\JazzSM • AIX or Linux operating systems: <ul style="list-style-type: none"> – /downloads/DB2 – /downloads/TPC – /downloads/JazzSM <p>For more information, see “Planning for installation” on page 1</p>

Windows domain

Before you can install IBM Spectrum Control on a Windows domain, you must determine which installation method is appropriate, based on your environment. For more information, see “Planning to install IBM Spectrum Control in a Windows domain” on page 8

Table 12. Windows domain installation check list

Check	Required for	Task
<input type="checkbox"/>	Windows domain and local user accounts	When a computer is a member of a Windows domain, you can install IBM DB2 on the computer such that the DB2 installation process creates a local DB2 user account or a domain DB2 user account. See “Windows domain and local user accounts” on page 8
<input type="checkbox"/>	Adding a computer to the Windows domain	Before you can install IBM Spectrum Control in a Windows domain, you must first add the computer on which you plan to install IBM Spectrum Control to the domain, see “Adding a computer to the Windows domain” on page 10.
<input type="checkbox"/>	Create Windows domain common user account	You must create a Windows domain common user account before you can install IBM Spectrum Control in a Windows domain, see “Creating a Windows domain common user account for IBM Spectrum Control” on page 11.

Table 12. Windows domain installation check list (continued)

Check	Required for	Task
<input type="checkbox"/>	Grant DB2 SYSADM authority to Windows domain user account	If a Windows domain user account is used to install IBM Spectrum Control, the user account might not have the DB2 SYSADM authority, because DB2 goes to the domain controller computer to list the groups. Before you install IBM Spectrum Control, you must grant the Windows domain user accounts the DB2 SYSADM authority, see “Granting DB2 SYSADM authority to a Windows domain user account” on page 12.

DB2

Install DB2 Enterprise Server Edition Version 11.1 on Linux, AIX, or Windows operating systems.

Table 13. DB2 installation check list

Check	Required for	Task
<input type="checkbox"/>	Prepare for DB2 installation	<ul style="list-style-type: none"> When you install DB2 Enterprise Server Edition Version 11.1, a default user name and groups are created. This default user name and password are used to install IBM Spectrum Control. See “Preparing to install DB2” on page 42.
<input type="checkbox"/>	Install on Windows	For information on how to install DB2 on Windows operating systems, see “Installing DB2 on Windows” on page 44.
<input type="checkbox"/>	Install DB2 by using a Windows domain user account	<p>Before you install IBM Spectrum Control in a Windows domain, you must install DB2 and register the DB2 license key. You must have domain administrator access.</p> <p>You do not need to complete this task if you are planning to install DB2 by using a local user account, see “Installing DB2 by using a Windows domain user account” on page 11.</p>
<input type="checkbox"/>	Install DB2 on AIX or Linux - GUI installation	For information on how to install DB2 on AIX or Linux by using the GUI installation process, see “Installing DB2 on AIX or Linux” on page 45.
<input type="checkbox"/>	Install DB2 on AIX by using the command line	For more information on how to install DB2 on AIX by using the command line, see “Installing DB2 on AIX by using the command-line” on page 47.
<input type="checkbox"/>	Verify DB2 installation	You can verify that DB2 Enterprise Server Edition Version 11.1 is installed properly by using the command line processor (CLP) or the First Steps GUI, see “Verifying that DB2 is installed correctly” on page 51.

Jazz for Service Management and Tivoli Common Reporting

If you plan to use Cognos BI reports, you must install Jazz for Service Management and Tivoli Common Reporting.

Table 14. Jazz for Service Management installation check list

Check	Required for	Task
<input type="checkbox"/>	Prepare environment for installation of Jazz for Service Management	For information on preparing the environment for installation, see “Planning for installation” on page 1.

Table 14. Jazz for Service Management installation check list (continued)

Check	Required for	Task
<input type="checkbox"/>	Install Jazz for Service Management	For information on how to install Jazz for Service Management, see “Installing Jazz for Service Management and Tivoli Common Reporting” on page 87.

IBM Spectrum Control

Install IBM Spectrum Control by using the installation program or the command line in silent mode.

Table 15. Installation check list

Check	Required for	Task
<input type="checkbox"/>	Choose installation method	For more information about what methods are available to install IBM Spectrum Control, see “Planning for installation” on page 1
<input type="checkbox"/>	Install IBM Spectrum Control on a single server.	For more information about how to install IBM Spectrum Control on a single server, see “Installing IBM Spectrum Control in a single-server environment” on page 55
<input type="checkbox"/>	Install IBM Spectrum Control on multiple servers.	For more information about how to install IBM Spectrum Control on multiple servers, see “Installing IBM Spectrum Control in a multiple-server environment” on page 68

DB2

You can install the most recent version of DB2 Enterprise Server Edition that IBM Spectrum Control supports on the Linux, AIX, or Windows operating systems.

For more information about the supported versions, see “Software requirements for the database repository” on page 36.

Preparing to install DB2

Before you install DB2 Enterprise Server Edition, run the DB2 **db2prereqcheck** command on the target installation server to ensure that the server meets the prerequisites for DB2.

Before you install DB2 Enterprise Server Edition, a default user name and groups are created. This default user name and password are used to install IBM Spectrum Control. You can use the default user name and password or provide your own.

Note: Windows operating systems do not support systems that are configured only for IPv6. (Windows is enabled for IPv6 and IPv4.)

Preparing to install DB2 on Windows:

Before you install DB2 on Windows operating systems, ensure that you correctly configured your directory names.

Short file names

If DB2 is installed on a drive on which 8.3 file names are disabled, and the DB2 installation directory name has spaces in it, DB2 must be reinstalled on a drive that has 8.3 file names enabled, or in a directory that does not have spaces in the name.

To check the current 8.3 file name settings for a drive, in a DB2 command window, run the '**fsutil.exe behavior query disable8dot3**' command.

These are the values when you run the command:

- 0 = Create 8.3 short file names (default)
- 1 = Do not create 8.3 file names
- 2 = Set 8.3 file names on a per volume basis
- 3 = Disable 8.3 file names on all volumes, except the system volume

The registry state of NtfsDisable8dot3NameCreation is 0 , which means that 8.3 file names are enabled on all volumes.

To enable 8.3 file names on a global basis, run the **fsutil.exe behavior set disable8dot3 0** command.

Preparing to install DB2 on UNIX or Linux:

To operate DB2 on operating systems such as UNIX or Linux, the instance owner, the fenced user, and the DB2 administration server user are required. These users and groups are automatically created when DB2 is installed.

The user ID you need to install IBM Spectrum Control must be the owner of the instance that you want to use; this user ID and password are created when you install DB2.

Table 16 provides a list of the default user and group names.

Table 16. DB2 setup default user and group names

Required user	Default user name	Default group name	Description
instance owner	db2inst1	db2iadm1	Created in the instance owner home directory. This user ID controls all DB2 processes and owns all file systems and devices used by the databases contained within the instance.
fenced user	db2fenc1	db2fadm1	Used to run user-defined functions and stored procedures that are separate from the address space that is used by the DB2 database.

Note: For valid DB2 user IDs and passwords, see http://www-01.ibm.com/support/knowledgecenter/SSEPGG_11.1.0/com.ibm.db2.luw.admin.dbobj.doc/doc/c0007248.html.

Installing DB2

You can install DB2 on AIX, Linux, or Windows operating systems.

Installing DB2 on Windows:

Before you can install IBM Spectrum Control, you must install DB2 Enterprise Server Edition.

If you are installing DB2 in a Windows domain environment: See “Installing DB2 by using a Windows domain user account” on page 11 for additional and alternate steps that are required to install DB2.

To install DB2 on a Windows operating system, complete the following steps:

1. Log on with a user ID that has Administrator authority on Windows.
2. Use the extracted DB2 installation image. Windows Autorun starts the launchpad.

If you are using Windows Autorun, the installation program should start in 15-30 seconds. If the installation program does not start, complete one of the following steps:

- In a command prompt, to start the DB2 set up page, go to *web_image_extraction\server_folder* and run the **setup.exe** command.
- In Windows Explorer, go to *web_image_extraction\server_folder*, and double-click the setup.exe file.

Where *server_folder* in the preceding steps is the location of the DB2 installation program.

3. In the DB2 Setup Launchpad, click **Install a Product**.
4. Click **Install New for DB2 Version 11.1 Workgroup, Enterprise and Advanced Editions**.

Note: If you do not see the DB2 Setup program, it is probably running in the background. Look for a blinking icon in the Windows taskbar and click it to bring it to the foreground.

5. On the welcome page of the DB2 Setup program, click **Next**.
6. On the Software License Agreement page, review and accept the license agreement, and click **Next**.
7. On the Select the installation type page, click **Typical**, and click **Next**.
8. On the Select the installation, response file creation, or both page, select **Install DB2 Server Edition on this computer and save my settings in a response file**.
9. Enter a response file name or accept the default, and click **Next**.
10. On the Select the installation folder page, enter a directory or accept the default, and click **Next**.
11. On the Select the IBM SSH server installation folder and startup option page, enter a directory or accept the default, and click **Next**.
12. On the Set user information for the DB2 Administration Server page, enter the following user information:
 - a. Leave the **Domain** field blank.
 - b. In the **User name** field, type the DB2 user ID that you want to use or accept the default.
 - c. In the **Password** field, type a password and confirm the password by typing it again in the **Confirm password** field.
13. Select the **Use the same account for the remaining DB2 services** check box and click **Next**.

14. On the Configure DB2 instances page, click **Next**.
15. On the Set up notifications page, clear the **Set up your DB2 server to send notifications** check box, and click **Next**.
16. On the Enable operating system security for DB2 objects page, accept the defaults, and click **Next**.

The default is to enable operating system security.

Note: If you installed DB2 before on this system, and the DB2ADMS group exists, when you click **Next**, the following message is displayed:

```
Warning
The group name "DB2ADMS" already exists
in the system and will be granted complete
access to the DB2 folders and objects through
the operating system.
Click OK to continue installation, or click
Cancel to input another group name.
```

17. On the Start copying files and create response file page, review the current settings, and click **Finish**.
18. On the Setup is complete page, review the information, and click **Next**.
19. On the Install additional products page, do not install more products, click **Finish**. The setup program closes and DB2 First Steps interface opens.
20. Restart the system.

Note: To prevent the DB2 logs from filling up the C drive on the system you are installing on, you can set the *DIAGPATH* and *SPM_LOG_PATH* variables to point to an external, fast disk drive.

After you restart your computer, you must install IBM Spectrum Control. For more information about installing IBM Spectrum Control in a single-server environment, see “Installing IBM Spectrum Control in a single-server Windows environment” on page 55. For information about installing IBM Spectrum Control in a multiple-server environment, see “Installing IBM Spectrum Control with a remote database by using the installation program” on page 69.

Installing DB2 on AIX or Linux:

You can install DB2 Enterprise Server Edition as a root user or non-root user on an AIX or Linux operating system by using the DB2 Setup program. To install DB2 as a non-root user, the user must have sudo privileges on the target AIX or Linux server.

The X Window System is required on the AIX or Linux server to install DB2 by using the installation program.

If you want to install DB2 as a non-root user, have your system administrator complete the following tasks on the target server before you begin the installation:

- If you are installing DB2 on an AIX server, install sudo on the server. The default AIX distribution does not include sudo. To get the sudo installation package, go to <http://www.ibm.com/systems/power/software/aix/linux/toolbox/date.html>. Find **sudo-version** in the **Package** column, and click **RPM** to download the package.
- Ensure that the non-root user has sudo privileges for the following commands on the server:

- **xauth** (Enables the non-root user to provide access to their X Window System display for the root user.)
- **db2setup** (Enables the non-root user to launch the DB2 installation program.)

You must enter the full path to the commands when you configure the sudo privileges. For example:

```
username ALL=(root) SETENV: /usr/bin/xauth,/home/username/Downloads/DB2/server_t/db2setup
```

- Ensure that the following requirements are met to enable the installation of DB2 by using the Setup program:
 - The non-root user is able to use the X Window System on the target server and the X Window System DISPLAY environment variable is set correctly for the not-root user.
 - The DISPLAY environment variable is preserved in the sudo environment.
 - The root user has access to the X Window System display that is owned by the non-root user.

These display requirements do not apply if you install DB2 in silent mode.

- If you are installing DB2 on an AIX server, ensure that the ODMDIR environment variable is preserved in the sudo environment.

To install DB2, complete the following steps:

1. Log on to the target server as the root user or as a non-root user who has sudo privileges.
2. Use an extraction tool to extract the installation image files on the server.
3. In a command shell, change the directory to the location of the DB2 installation program db2setup, and then enter one of the following commands:

Root user

```
./db2setup
```

Non-root user

```
sudo ./db2setup
```

4. On the DB2 Setup Welcome page, click **New Install**.
5. On the Choose a Product page, select **DB2 Version 11.1 Workgroup, Enterprise and Advanced Editions** and click **Next**.
6. On the Confirmation page:
 - a. Enter an installation directory or accept the default.
 - b. Select **Typical** as the installation type.
 - c. Select **Create an instance**.
 - d. Review and agree to the IBM terms.
 - e. Click **Next**.
7. On the Instance Owner page, select **New user**, and enter the following information:
 - a. User name
DB2 adds this user ID to the db2iadm1 group, and if this user ID does not exist, DB2 creates it.
 - b. Group name
 - c. Password
 - d. Home directory
The DB2 instance owner user is the user that you enter when you install IBM Spectrum Control.

8. Select **Use default UID** and **Use default GID**, and click **Next**.
9. On the Fenced User page, select **New user**, and enter the following information:
 - a. User name
DB2 adds this user ID to the db2iadm1 group, and if this user ID does not exist, DB2 creates it.
 - b. Group name
 - c. Password
 - d. Home directory
The fenced user is used to run user-defined functions and stored procedures that are separate from the address space that is used by the DB2 database.
10. Select **Use default UID** and **Use default GID**, and click **Next**.
11. On the Response File and Summary page:
 - a. Select **Install DB2 Server Edition on this computer** and save my settings in a response file.
 - b. Enter a response file name or accept the default.
 - c. Review the Summary and click **Finish**.
12. On the Setup has completed successfully page, review the information, and click **Finish**.

To ensure that DB2 starts when the server starts, run the **db2iauto** command.

Root user

```
DB2_installation_directory/bin/db2iauto -on DB2_instance_name
```

Non-root user

```
sudo DB2_installation_directory/bin/db2iauto -on DB2_instance_name
```

Where *DB2_installation_directory* is the location of DB2 and *DB2_instance_name* is the instance that you created when you installed DB2. The default instance name is *db2inst1*.

Installing DB2 on AIX by using the command-line:

You can install DB2 Enterprise Server Edition on AIX operating systems by using commands.

Ensure that you have:

- 2 - 3 GB of hard disk drive space for the DB2 installation tar file and extracted files.
- A file system with at least 30 GB for the IBM Spectrum Control repository.

To install DB2 on the AIX operating system by using a command prompt, complete the following steps:

1. Log in with a user ID that has root authority.
2. Do one of the following steps.
 - If you are not using a DVD, skip to step 5 and work from the directory where you have the DB2 source installation program.
 - If you are using a DVD, create a mount point that is called /cdrom by entering `mkdir /cdrom`.

3. Insert the DB2 DVD into the DVD drive and mount the file system at the mount point. On AIX operating system, you can use the **crfs** command to add an entry to `/etc/filesystems` for the mount point.
4. Run the following commands:

```
/usr/sbin/crfs -v cdrfs -p ro -d'cd0' -m'/cdrom' -A'no'
mount /cdrom
```

The **crfs** command must be run only one time for a mount point. For each DVD you insert after that, you can use **mount** and **umount**, for example, **mount /cdrom** and **umount /cdrom**.

5. Enter `cd /cdrom` and go to the directory where the DVD-ROM is mounted.
6. Install the DB2 Manager.
 - a. Create a temporary directory (for example, `db2temp`) to hold the DB2 installer tar file and extracted files.
 - b. Copy or download the DB2 installer into `db2temp`. The name of the file varies depending on the location from where the file is downloaded or copied and the language to which it is associated.
 - c. Optional: If the DB2 installer file is compressed, use the appropriate extracting tool. For example, if the name of the file is `v11.1_aix64_server.tar.gz`, enter **gunzip v11.1_aix64_server.tar.gz**. In this example, `v11.1_aix64_server.tar.gz` is displayed in the `db2temp` directory.
 - d. Create an installation directory by entering, for example, `mkdir install`.
 - e. Enter `cd install` to change to the new installation directory.
 - f. Extract the DB2 installation file. For example, if the name of the installation file is `v11.1_aix64_server.tar`, enter `tar xvf ../v11.1_aix64_server.tar`.
 - g. Enter `cd /db2temp/install/server_t` and go to the directory that contains the DB2 installation program `db2_install`.
 - h. Enter `./db2_install` to run the command-line installation program.
 - i. Select **SERVER**.
 - j. Select **no** from the Do you want to install the DB2 pureScale Feature? [yes/no] section. The Installation Summary is displayed, which indicates a successful installation. DB2 is installed in `/opt/IBM/db2/V11.1`.
7. Create users and groups for use with DB2.
 - a. Enter `mkgroup id=999 db2iadml`.
 - b. Enter `mkgroup id=998 db2fadm1`.
 - c. Enter `mkuser id=1004 pgrp=db2iadml groups=db2iadml home=/home/db2inst1 db2inst1`.
 - d. Enter `mkuser id=1003 pgrp=db2fadm1 groups=db2fadm1 home=/home/db2fenc1 db2fenc1`.
 - e. Verify the owner of the directories by entering `ls -ld /home/db2inst1`. The directory ownership is displayed as follows:
 - `/home/db2inst1` shows group `db2iadml` and user `db2inst1`
 - `/home/db2fenc1` shows group `db2fadm1` and user `db2fenc1`

If the directory ownership is not correct, run the following commands as appropriate:

```
chown -R db2inst1:db2iadml /home/db2inst1
chown -R db2fenc1:db2fadm1 /home/db2fenc1
```
 - f. Enter `passwd db2inst1` to set the password that you want to use for the DB2 instance.
 - g. Enter `pwdadm -f NOCHECK db2inst1`.

- h. Enter `passwd db2fenc1` to set the password you want to use for the fenced user.
- i. Enter `pwdadm -f NOCHECK db2fenc1`.
- j. Enter `chgroup users=db2inst1,root db2iadml`.
- 8. Create a DB2 instance:
 - a. Enter `/opt/IBM/db2/V11.1/instance/db2icrt -a server -u db2fenc1 db2inst1`.
 - b. Enter `./home/db2inst1/sqllib/db2profile`.
- 9. Change the default location for database repositories. By default, the location is `/home/db2inst1`. The `/home` output is typically not large enough for database repositories.
- 10. To change the default location:
 - a. Enter `db2 update dbm cfg using DFTDBPATH new_repository_path IMMEDIATE`, where *new_repository_path* represents the new location for the repository.
 - b. Enter `chown -R db2inst1:db2iadml new_repository_path` to assign ownership to `db2inst1` and permission to anyone in `db2iadml` (same as the ownership for `/home/db2inst1`).
- 11. Configure DB2 communication:
 - a. Edit `/etc/services` and verify or add the following line at the end of the file: `db2c_db2inst1 50000/tcp`
 - b. Enter `db2 update dbm cfg using svcename db2c_db2inst1`.
 - c. Enter `db2set DB2COMM=tcpip`.
 - d. Enter `db2stop`
 - e. Enter `db2start`
- 12. From a command prompt, do the following to test your DB2 instance:
 - a. Enter `./home/db2inst1/sqllib/db2profile` to source the environment.
 - b. Enter `db2level` to get information about the instance and DB2.
 - c. Enter `db2 create db test`.
 - d. Enter `db2 list db directory` to list information about all the databases that are created for this instance.
 - e. Enter `db2 connect` to test user `db2inst1` using the password to connect to the database.
 - f. Enter `db2 disconnect test` to disconnect from the test database.
 - g. Enter `db2 drop db test` to drop the test database.

Installing DB2 on AIX 6.1 POWER7 Systems:

You can install DB2 on AIX 6.1 POWER7® Systems.

Ensure that you run `export JAVA_COMPILER=none` from a command window. This command is necessary as a result of APAR IC63450.

For more information about installing DB2, see http://www-01.ibm.com/support/knowledgecenter/SSEPGG_11.1.0/com.ibm.db2.luw.qb.server.doc/doc/c0008711.html.

1. Log on using a user ID with root authority.
2. Work from the directory where you have the DB2 source installation program
3. Run the following command from the installation image:


```
./db2_install
```

Enter the necessary information.

Note: If the following message is displayed:

WARNING: A minor error occurred while installing

Check the installation log for errors. If you do not see any errors, ignore this warning message.

4. Create DB2 groups, users, and instances.
 - a. For the DB2 groups, run the following commands.

```
mkgroup id=999 db2iadm1
mkgroup id=998 db2fadm1
```
 - b. For the DB2 users, run the following commands.

```
mkuser id=1004 pgrp=db2iadm1 groups=db2iadm1
home=/home/db2inst1 db2inst1
mkuser id=1003 pgrp=db2fadm1 groups=db2fadm1
home=/home/db2fenc1 db2fenc1
```
 - c. Set the password for db2inst1 and db2fenc1 by running the following commands:

```
passwd db2inst1
passwd db2fenc1
```
 - d. Setting the new passwords might require that you log in one time to change the initial password.

```
login db2inst1
```

Change the initial password and replace with a new password. Repeat this step for the db2fenc1 user.
 - e. Create the db2inst1 instance by running the following command:

```
/opt/IBM/db2/v11.1/instance/db2icrt -a server -u db2fenc1 db2inst1
```
5. Assign a communication port for the DB2 instance in the /etc/services file.
 - a. Select a name that is related to the instance name.
 - b. Select a free port, for example, 50000. Add the following line to the /etc/services file:

```
db2inst1c 50000/tcp
```
6. Configure the communication port in the database manager configuration for the instance:

```
db2 update dbm cfg using SVCENAME db2inst1c
```
7. Enable TCP/IP for the instance:

```
db2set DB2COMM=TCPIP
```

Note: After you install DB2, edit the file /etc/group and add root to the db2iadm1 group. The db2iadm1 line in /etc/group looks like the following line.

```
db2iadm1:x:102:root
```

Installing IBM Data Studio by using the DB2 setup program

IBM Data Studio installation is included with the DB2 version 10.1 and higher product installation. The DB2 Setup program provides an option to install Data Studio components.

Use the DB2 Setup program to define your installation preferences and to install IBM Data Studio full client component.

To use the DB2 Setup program to install Data Studio, follow these steps:

1. Start the DB2 Setup program.

2. Select **Install Data Studio Components**.
3. Select **Install Data Studio full client component**.
4. Follow the instructions to install Data Studio.

Verifying that DB2 is installed correctly

You can verify that DB2 Enterprise Server Edition is installed properly by using the command-line processor (CLP) or the First Steps GUI.

To verify that DB2 is installed, complete the following steps:

1. Create the SAMPLE database.
2. Connect to the SAMPLE database.
3. Run a query against the SAMPLE database.
4. Drop the SAMPLE database.

Verifying DB2 installation using the command-line processor (CLP):

You can verify that DB2 Enterprise Server Edition is successfully installed using the command-line processor (CLP).

To verify that DB2 is installed using the command line processor, complete the following steps:

1. Log on to the system as a user with SYSADM authority.
2. Enter `db2start` to start the database manager.
In operating systems such as AIX and Linux, you must source the `db2profile` before you run the **db2start** command. For more information sourcing the profile, go to the IBM Spectrum Control information center and search for **Using the command line on AIX and Linux**.
3. Enter the **db2sampl** command to create the SAMPLE database. This command might take a few minutes to process. There is no completion message. When the command prompt returns, the process is complete. The SAMPLE database is automatically cataloged with the database alias SAMPLE when it is created.
4. Enter the following commands in a DB2 command window to connect to the SAMPLE database, retrieve a list of all the employees who work in Department 20, and reset the database connection:

```
db2 connect to sample
db2 "select * from staff where dept = 20"
db2 connect reset
```
5. After verifying the installation, remove the SAMPLE database to free up disk space. For more information about verifying DB2 installation, refer to the DB2 documentation for your operating system.
6. Enter `db2 drop database sample` to drop the SAMPLE database.

Verifying DB2 installation by using the First Steps tool:

You can verify that DB2 Enterprise Server Edition is installed successfully, by using the First Steps tool.

- Ensure that the domain user account that you use to create the sample database has SYSADM or SYSCTRL authority.
- Install IBM Data Studio and the First Steps component.

The First Steps tool is part of the getting started component grouping in the DB2 setup program. It is installed as part of a typical installation or you can select the First Steps tool during a custom installation.

To verify the DB2 Enterprise Server Edition installation by using the First Steps tool, complete the following steps:

1. Log on to the system with the user account that you want to use to verify the installation.
2. Start First Steps by completing one of the following steps:
 - On operating systems such as AIX or Linux, run the `db2fs` command.
 - On Windows, run the `db2fs.bat` command.
3. On the First Steps window, select **Create Sample Databases**.
4. On the Create Sample Databases page, select the databases that you want to create and click **OK**. By default, the SAMPLE database is created on the computer where DB2 is installed.
5. Click **OK**.
6. Open Data Studio.
7. Expand the navigation tree to view the SAMPLE database and SAMPLE database objects.
8. Select the Tables object to view the SAMPLE database tables.
9. After you verify the installation, remove the SAMPLE database to free disk space.
10. Enter the `db2 drop database sample` command to drop the SAMPLE database.

Starting the installation programs

There are various methods to start the IBM Spectrum Control installation programs and on various operating systems.

Installation program methods

You can use these methods to start the installation programs:

Installation images

You must select an installation image and download and extract these images to a location with adequate disk space.

Storage Resource agent

Contains the files to run local Storage Resource agent installations. You must download the file for the system on which you want the agent to be in.

- The Storage Resource agent location and operating system file name is the same as the product electronic image.
- The Storage Resource agent image is in *installation_dir/data/sra/operating_system_name*.

The operating systems that are supported for the Storage Resource agents are listed in the following table.

Table 17. Operating system for Storage Resource agents.

Operating system	Operating system name
Windows	windows
AIX	aix_power
HP-UX	hp-ux_itanium
Linux x86	linux_ix86

Table 17. Operating system for Storage Resource agents. (continued)

Operating system	Operating system name
Linux for Power Systems™ Servers	linux_power
Linux s390	linux_s390
Oracle Solaris	solaris_spark

Important:

- If you are using IBM Spectrum Control electronic installation images that are decompressed in a directory that has spaces in the name, IBM Spectrum Control does not install correctly.

For example, if you have the following directory name:

- On Windows operating systems:
C:\Spectrum Control\disk\SC
- On AIX and Linux operating systems:
/temp/Spectrum Control/disk/SC

IBM Spectrum Control does not install correctly.

When you remove the spaces, and rename the directory, for example:

- On Windows operating systems:
C:\SpectrumControl\disk\SC
- On AIX and Linux operating systems:
/temp/SpectrumControl/disk/SC

IBM Spectrum Control installs correctly.

- If you are using IBM Spectrum Control electronic installation images for Linux or AIX operating systems and you download the images to a directory, ensure that your folder name *does not* contain a . at the end of the folder name.

For example, if you have a directory name

C:\SpectrumControl\disk\SC.

When you rename the folder and remove the . at the end of the name, for example:

C:\SpectrumControl\disk\SC.August3

IBM Spectrum Control installs correctly.

Starting the installation program on the Windows operating system

To start the IBM Spectrum Control installation program by using an electronic image, complete the following steps.

1. Download the image into a directory.
2. Extract the image files.
3. At the command prompt, enter `cd source_installation_directory\SC` and then enter **setup.bat**.

Starting the installation program on the Linux operating system

To start the IBM Spectrum Control installation program from the electronic image, complete the following steps.

1. Enter the following to create a directory:

- ```
mkdir /SpectrumControl
```
2. Download the image into the SpectrumControl directory.
  3. Enter this command to extract the image files:
 

```
tar -xvzf filename.tar.gz
```
  4. Ensure that the user name that you plan to use as the IBM Spectrum Control common user is in the root group and the db2iadm1 group. If the user name is not in a group, you can add the user as shown in the following command example. In this example, the user name is *db2inst1*.
 

```
usermod -a -G root db2inst1
```
  5. Navigate to the /SpectrumControl/SC directory by entering:
 

```
cd /SpectrumControl/SC
```
  6. Set up your shell environment to point to the instance where the database repository is installed. Source the db2profile for the instance that you want. For example, if the DB2 instance is db2inst1, you can source the db2profile by entering:
 

```
. /home/db2inst1/sqllib/db2profile
```
- Remember:** There is a space between . and /home.
7. Start the installation program by running the **./setup.bin** command from the same command shell that you used in step 6.

## Starting the installation program on the AIX operating system

To start the IBM Spectrum Control installation program from the electronic image, complete the following steps:

1. Enter the following to create a directory:
 

```
mkdir /SpectrumControl
```
  2. Download the image into the SpectrumControl directory.
  3. Enter this command to extract the image files:
 

```
tar -xvzf filename.tar.gz
```
  4. Ensure that the user name that you plan to use as the IBM Spectrum Control common user is in the system group and the db2iadm1 group. If the user name is not in a group, you can add the user as shown in the following command example. In this example, the user name is *db2inst1*.
 

```
usermod -G system db2inst1
```
- Tip:** If the user is already a member of secondary groups, the **usermod** command removes the db2inst1 user name from all of the secondary groups except for the system group. To preserve the existing secondary group memberships, provide a comma separated list of secondary groups after the **-G** flag. For more information, enter **man usermod** at the command prompt.
5. Navigate to the /SpectrumControl/SC directory.
 

```
cd /SpectrumControl/SC
```
  6. Set up your shell environment to point to the instance where the database repository is installed. Source the db2profile for the instance that you want. For example, if the DB2 instance is db2inst1, you can source the db2profile by entering:
 

```
. /home/db2inst1/sqllib/db2profile
```

**Remember:** There is a space between . and /home.

7. Start the installation program by running the `./setup.bin` command from the same command shell that you used in step 6.

## Installing IBM Spectrum Control in a single-server environment

Install IBM Spectrum Control by using the installation program or the command line in silent mode.

### Installation considerations

Before you begin the installation of IBM Spectrum Control, ensure that DB2 is installed. To learn how to install DB2, see *Installing DB2*. If you install DB2 on a Windows server, reboot the system before you install IBM Spectrum Control.

When you install IBM Spectrum Control, a database that is called *TPCDB* is created. In this repository, the IBM Spectrum Control database schema is created, which describes the structure of the database repository. If you already have the *TPCDB* database on your system, IBM Spectrum Control assigns a new default database repository name with a number as a suffix. For example, *TPCDB1*.

The installation program includes the option to install Cognos Business Intelligence reports and the components for these reports (Jazz for Service Management and Tivoli Common Reporting). You are not required to install Cognos BI reports or the components for the reports; these products are optional. You can produce reports about the condition, capacity, and performance of resources by using the reporting features in the IBM Spectrum Control GUI.

If the operating system on which you are installing IBM Spectrum Control is sensitive to spaces in directory paths, change the default installation location to not include spaces, for example, `C:\apps\IBM\SC`.

### Installing IBM Spectrum Control in a single-server Windows environment

You can install IBM Spectrum Control by using the IBM Spectrum Control installation program.

To install IBM Spectrum Control in a single-server environment, complete the following steps:

1. Log on to the target server as a user who has administrator privileges.

**Note:** Confirm that your Windows firewalls are disabled in the Control Panel.

2. When you install IBM Spectrum Control, the *TPCDB* database is created in the location that you specify in the *DB2 DFTDBPATH* variable. To determine the current *DFTDBPATH* value, run the following command in a DB2 CLI window:

```
get dbm cfg
```

If you want to install this database in a location that is other than the default location, run the following command in a DB2 CLI window:

```
update dbm cfg using DFTDBPATH path
```

where *path* is the new value for the *DFTDBPATH* variable.

3. Use an extraction tool to extract the installation image files on the server.
4. In a command window, change the directory to the location of the IBM Spectrum Control installation files and enter the following command:

setup.bat

5. Review the Before You Begin page and make one of the following decisions:
  - If Jazz for Service Management is installed on your computer, the Before You Begin page displays a green check mark. Click **Next**. Proceed to step 7.
  - If Jazz for Service Management is not installed on your computer, the Before You Begin page displays an **Install Now** button. Proceed to step 6 to install Jazz for Service Management.
  - If you do not want to install Jazz for Service Management on your computer, click **Next**. Proceed to step 8 on page 57 to install IBM Spectrum Control.
6. To install Jazz for Service Management, complete the following steps:
  - a. On the Before You Begin page, click **Install Now**.
  - b. On the Install Jazz for Service Management page, complete the following steps:
    - 1) Provide the location where the following Jazz for Service Management and Tivoli Common Reporting installation files were extracted:
      - Jazz for Service Management Version 1.1.0.3 launchpad
      - Tivoli Common Reporting Version 3.1.0.1
      - Tivoli Common Reporting Version 3.1.0.2
      - IBM WebSphere Application Server Version 8.5.0.1For example, the location might be c:\temp\jazzinstall.
    - 2) Click **Install Now**.

**Important:** The IBM Spectrum Control installation program pauses, and the Jazz for Service Management installation program starts. To install Jazz for Service Management, you must go to “Installing Jazz for Service Management and Tivoli Common Reporting” on page 87.

- c. When you exit the Jazz for Service Management installation program, you are returned to the Install Jazz for Service Management page in the IBM Spectrum Control installation program. Click **OK**.
  - d. If the installation of Jazz for Service Management was successful, a green check mark is displayed on the Before You Begin page.

If the installation of Jazz for Service Management was not successful, click one of the following options:

    - **Install Now**, which starts the Jazz for Service Management launchpad again.
    - **Continue**, which allows you to install IBM Spectrum Control without Cognos BI reports.
  - e. Proceed to step 8 on page 57.
7. On the Configure Jazz for Service Management and Tivoli Common Reporting page, enter the information, and click **OK**.

Jazz for Service Management starts. After Jazz for Service Management starts, it might take up to 5 minutes before all components, including Tivoli Common Reporting, are running.

If the IBM Spectrum Control installation program is unable to communicate with Jazz for Service Management, you can install IBM Spectrum Control without Cognos BI reports. After you install IBM Spectrum Control without Cognos BI reports, and resolve any problems with Jazz for Service Management, start the IBM Spectrum Control installation program again to install Cognos BI reports.

**Important:** If the installation of Jazz for Service Management was not successful, and you clicked **Next** on the Before You Begin page to install IBM Spectrum Control without Cognos BI reports, the Configure Jazz for Service Management and Tivoli Common Reporting page does not display.

8. Follow the prompts in the installation program to install IBM Spectrum Control.

If an error occurred during the IBM Spectrum Control installation process, review the IBM Spectrum Control installation log files to find details about the error.

**Related reference:**

“Planning for installation” on page 1

You can install IBM Spectrum Control by using the installation program or the command line in silent mode. Installing IBM Spectrum Control by using console mode is not supported.

“Installing IBM Spectrum Control in a single-server environment” on page 55

Install IBM Spectrum Control by using the installation program or the command line in silent mode.

“Reviewing the log files to resolve installation issues” on page 133

If an error occurs during IBM Spectrum Control installation, you can review the error log files to resolve issues and continue the installation.

## Installing IBM Spectrum Control in a single-server AIX or Linux environment

You can install IBM Spectrum Control as a root user or non-root user on an AIX or Linux operating system by using the IBM Spectrum Control installation program. To install IBM Spectrum Control as a non-root user, the user must have sudo privileges on the target AIX or Linux server.

Ensure that X Window System is installed on the target AIX or Linux server. The X Window System is required to install IBM Spectrum Control by using the installation program.

If you want to install IBM Spectrum Control as a non-root user, have your system administrator complete the following tasks on the target server before you begin the installation:

- If you are installing IBM Spectrum Control on an AIX server, install sudo on the server. The default AIX distribution does not include sudo. To get the sudo installation package, go to <http://www.ibm.com/systems/power/software/aix/linux/toolbox/date.html>. Find **sudo-version** in the **Package** column, and click **RPM** to download the package.
- Ensure that the non-root user has sudo privileges for the following commands on the server:
  - **xauth** (Enables the non-root user to provide access to their X Window System display for the root user.)
  - **db2ln** (Enables the non-root user to create the links for the DB2 system files.)
  - **setup.bin** (Enables the non-root user to launch the IBM Spectrum Control installation program.)

You must enter the full path to the commands when you configure the sudo privileges. For example:

```
username ALL=(root) SETENV: /usr/bin/xauth,/opt/ibm/db2/V11.1/cfg/db2ln,/home/username/Downloads/IBMSC/SC/setup.bin
```

- If the sudo environment on the server uses the `secure_path` option, ensure that the following directories are included in the `secure_path` value for the non-root user who is installing IBM Spectrum Control:

- *DB2\_instance\_owner\_home\_directory/sqllib/bin* (Example: */home/db2inst1/sqllib/bin*)
- *DB2\_instance\_owner\_home\_directory/sqllib/adm* (Example: */home/db2inst1/sqllib/adm*)
- *DB2\_instance\_owner\_home\_directory/sqllib/misc* (Example: */home/db2inst1/sqllib/misc*)
- Ensure that the following requirements are met to enable the installation of IBM Spectrum Control by using the installation program:
  - The non-root user is able to use the X Window System on the target server and the X Window System DISPLAY environment variable is set correctly for the not-root user.
  - The DISPLAY environment variable is preserved in the sudo environment.
  - The root user has access to the X Window System display that is owned by the non-root user.

These display requirements do not apply if you install IBM Spectrum Control in silent mode.

- If you are installing IBM Spectrum Control on an AIX server, ensure that the ODMDIR environment variable is preserved in the sudo environment.

To install IBM Spectrum Control in a single-server environment, complete the following steps:

1. Log on to the target server as the root user or as a non-root user who has sudo privileges.
2. If you logged on as a non-root user, run the following command in a command shell:
 

```
sudo DB2_installation_directory/cfg/db2ln
```

For example:

```
sudo /opt/ibm/db2/V11.1/cfg/db2ln
```

3. When you install IBM Spectrum Control, the TPCDB database is created in the location that you specify in the DB2 DFTDBPATH variable. To determine the current DFTDBPATH value, run the following command in a DB2 CLI window:
 

```
get dbm cfg
```

If you want to install this database in a location that is other than the default location:

- a. Run the following command in a DB2 CLI window:
 

```
update dbm cfg using DFTDBPATH path
```

where *path* is the new value for the DFTDBPATH variable.

- b. Run the **db2stop** and **db2start** commands to stop and restart DB2.
4. Use an extraction tool to extract the installation image files on the server.
5. In a command shell, source the DB2 user profile db2profile for the DB2 instance owner. For example:
 

```
. /home/db2inst1/sqllib/db2profile
```
6. In a command shell, change the directory to the location of the IBM Spectrum Control installation program setup.bin, and then enter the following command:
 

**Root user**

```
./setup.bin
```

### Non-root user

```
sudo -E ./setup.bin
```

7. Review the Before You Begin page and complete one of the following actions:
  - If Jazz for Service Management is installed on your computer, the Before You Begin page displays a green check mark. Click **Next**. Proceed to step 9.
  - If Jazz for Service Management is not installed on your computer, the Before You Begin page displays an **Install Now** button. Proceed to step 8 to install Jazz for Service Management.
  - If you do not want to install Jazz for Service Management on your computer, click **Next**. Proceed to step 10 on page 60 to install IBM Spectrum Control.
8. To install Jazz for Service Management, complete the following steps:
  - a. On the Before You Begin page, click **Install Now**.
  - b. On the Install Jazz for Service Management page, complete the following steps:
    - 1) Provide the location where the following Jazz for Service Management and Tivoli Common Reporting installation files were extracted:
      - Jazz for Service Management Version 1.1.0.3 launchpad
      - Tivoli Common Reporting Version 3.1.0.1
      - Tivoli Common Reporting Version 3.1.0.2
      - IBM WebSphere Application Server Version 8.5.0.1For example, the location might be `/temp/jazzinstall`.
    - 2) Click **Install Now**.

**Important:** The IBM Spectrum Control installation program pauses, and the Jazz for Service Management launchpad starts. To install Jazz for Service Management, go to “Installing Jazz for Service Management and Tivoli Common Reporting” on page 87.

- c. When you exit the Jazz for Service Management launchpad, you are returned to the Install Jazz for Service Management page in the IBM Spectrum Control installation program. Click **OK**.
    - d. If the installation of Jazz for Service Management was successful, a green check mark is displayed on the Before You Begin page of the IBM Spectrum Control installation program.

If the installation of Jazz for Service Management was not successful, click one of the following options:

      - **Install Now**, which starts the Jazz for Service Management launchpad again.
      - **Continue**, which allows you to install IBM Spectrum Control without Cognos BI reports.
    - e. Proceed to step 10 on page 60.
9. On the Configure Jazz for Service Management and Tivoli Common Reporting page, enter the information, and click **OK**.

Jazz for Service Management starts. After Jazz for Service Management starts, it might take up to 5 minutes before all components, including Tivoli Common Reporting, are running.

If the IBM Spectrum Control installation program is unable to communicate with Jazz for Service Management, you can install IBM Spectrum Control without Cognos BI reports. After you install IBM Spectrum Control without

Cognos BI reports, and resolve any problems with Jazz for Service Management, start the IBM Spectrum Control installation program again to install Cognos BI reports.

**Important:** If the installation of Jazz for Service Management was not successful, and you clicked **Next** on the Before You Begin page to install IBM Spectrum Control without Cognos BI reports, the Configure Jazz for Service Management and Tivoli Common Reporting page does not display.

10. Follow the prompts in the installation program to install IBM Spectrum Control.

If an error occurred during the IBM Spectrum Control installation process, review the IBM Spectrum Control installation log files to find details about the error.

**Related reference:**

“Planning for installation” on page 1

You can install IBM Spectrum Control by using the installation program or the command line in silent mode. Installing IBM Spectrum Control by using console mode is not supported.

“Installing IBM Spectrum Control in a single-server environment” on page 55  
Install IBM Spectrum Control by using the installation program or the command line in silent mode.

“Reviewing the log files to resolve installation issues” on page 133

If an error occurs during IBM Spectrum Control installation, you can review the error log files to resolve issues and continue the installation.

## **Installing IBM Spectrum Control in a single-server environment by using silent mode**

You can install IBM Spectrum Control by using silent mode. If you want to install IBM Spectrum Control with optional Cognos Business Intelligence reports by using silent mode, you first must install Jazz for Service Management. You can also install IBM Spectrum Control without Cognos BI reports by using silent mode.

If you plan to install IBM Spectrum Control as a non-root user, have your system administrator complete the tasks that are described in “Installing IBM Spectrum Control in a single-server AIX or Linux environment” on page 57 on the target server before you begin the installation.

If you are installing on a Windows operating system, confirm that your Windows firewalls are disabled in the Control panel.

To install IBM Spectrum Control in a single-server environment by using silent mode, complete the following steps:

1. Log on to the server where you want to install IBM Spectrum Control. If you are installing on a Windows operating system, log on as a user who has administrator privileges. If you are installing on an AIX or Linux operating system, log on as the root user or as a non-root user who has *sudo* privileges.
2. If you logged on as an AIX or Linux non-root user, run the following command in a command shell:

```
sudo DB2_installation_directory/cfg/db2ln
```

For example:

```
sudo /opt/ibm/db2/V11.1/cfg/db2ln
```

3. When you install IBM Spectrum Control, the TPCDB database is created in the location that you specify in the DB2 DFTDBPATH variable. To determine the current DFTDBPATH value, run the following command from a DB2 CLI window:  

```
get dbm cfg
```

If you want to install this database in a location that is other than the default location:

- a. Run the following command in a DB2 CLI window:  

```
update dbm cfg using DFTDBPATH path
```

where *path* is the new value for the DFTDBPATH variable.

- b. If you are installing on an AIX or Linux operating system, run the **db2stop** and **db2start** commands to stop and restart DB2.
4. If Jazz for Service Management is not installed, and you plan to run Cognos BI reports, download the Jazz for Service Management and Tivoli Common Reporting installation images and extract the compressed image files to the same temporary directory.

For example, on Windows operating systems, you might extract the files to `c:\temp\jazzinstall`. On AIX or Linux operating systems, you might extract the files to `/temp/jazzinstall`.

For more information about the installation files, go to IBM Knowledge Center at [http://www.ibm.com/support/knowledgecenter/SSEKCU\\_1.1.0.3/com.ibm.psc.doc\\_1.1.0.3/install/psc\\_t\\_install\\_adv\\_local\\_sys.html?lang=en](http://www.ibm.com/support/knowledgecenter/SSEKCU_1.1.0.3/com.ibm.psc.doc_1.1.0.3/install/psc_t_install_adv_local_sys.html?lang=en).

For more information about installing Jazz for Service Management by using silent mode, go to IBM Knowledge Center at [http://www.ibm.com/support/knowledgecenter/SSEKCU\\_1.1.0.3/com.ibm.psc.doc\\_1.1.0.3%2Finstall%2Fpsc\\_c\\_install\\_silently\\_overview.html](http://www.ibm.com/support/knowledgecenter/SSEKCU_1.1.0.3/com.ibm.psc.doc_1.1.0.3%2Finstall%2Fpsc_c_install_silently_overview.html).

5. Edit and save the appropriate response file.

For more information about editing the response file, see “Editing the response file” on page 62.

6. If you are installing on an AIX or Linux operating system, in a command shell, source the DB2 user profile `db2profile` for the DB2 instance owner. For example:

```
. /home/db2inst1/sqllib/db2profile
```

7. Run the silent mode installation program.

- For Windows operating systems, run the following command:  

```
setup.bat -l language -i silent -f absolute_path_to_response_file
```

where *language* can be one of the following values:

- Czech - cs
- English - en
- French - fr
- German - de
- Hungarian - hu
- Italian - it
- Japanese - ja
- Korean - ko
- Polish - pl
- Brazilian Portuguese - pt\_BR
- Russian - ru

- Spanish - es
- Chinese (Simplified) - zh\_CN
- Chinese (Traditional) - zh\_TW

`absolute_path_to_response_file` is the absolute path to the response file. For example, the following command specifies the language and the path:

```
setup.bat -l fr -i silent -f c:\TPC\silent_SingleServerTypical.properties
```

- For AIX or Linux operating systems, run the following command:

#### **Root user**

```
./setup.bin -l language -i silent -f /absolute_path_to_response_file
```

For example, the following command specifies the language and the path:

```
./setup.bin -l de -i silent -f /TPC/silent_SingleServerTypical.properties
```

#### **Non-root user**

```
sudo -E ./setup.bin -l language -i silent -f /absolute_path_to_response_file
```

For example, the following command specifies the language and the path:

```
sudo -E ./setup.bin -l de -i silent -f /TPC/silent_SingleServerTypical.properties
```

If you do not specify a language or if the language is not specified correctly, the installation program uses the English language as the default.

#### **8. Optional: Monitor the progress of the installation.**

- To view the progress of the silent mode installation on Windows operating systems, check the trace log in the following path:

```
installation_dir\logs\traceTPCInstall.log
```

- To view the progress of the silent mode installation on AIX or Linux operating systems, check the trace log in the following path:

```
installation_dir/logs/traceTPCInstall.log
```

If you installed IBM Spectrum Control without installing Cognos BI reports by using silent mode, see “Installing Cognos BI reports later by using silent mode” on page 120 if you want to install Cognos BI reports.

#### **Editing the response file:**

You must edit and save the appropriate response file when you install IBM Spectrum Control by using silent mode. The silent mode installation option for the response file is `-f absolute_path_to_response_file`. For example, in the Windows operating system, you enter `-f C:\installimage\silent_SingleServerTypical.properties`.

Use the following response files during a silent mode installation:

#### **silent\_SingleServerTypical.properties**

This file specifies that all the IBM Spectrum Control components are installed on one server. You can customize this file by changing the ports for the Data server, Device server, Alert server, web server, and Storage Resource agent.

#### **silent\_SingleServerCustom.properties**

This file specifies that all the IBM Spectrum Control components are installed on one server with the following customization options:

- Change the user name and password to install the database repository.
- Change the name of the database repository.

- Change the paths for the database repository.
- Change the path for the database repository log.
- Change the ports for the Data server, Device server, Alert server, web server, and Storage Resource agent.

#### **silent\_MultipleServer.properties**

This file specifies the information that is required for a multiple-server environment. You can have these configurations:

- The database repository on a remote server and the other IBM Spectrum Control components on a local server.
- Cognos Business Intelligence reports on a remote server and the other IBM Spectrum Control components on a local server.

#### **Common response file parameters**

These installation parameters are valid for all the response files.

#### **CHOSEN\_INSTALL\_TYPE=*option***

Specifies the installation type. Not all options are available in all the response files. Table 18 shows you the options that you can specify.

*Table 18. Options for the CHOSEN\_INSTALL\_TYPE parameter*

| Properties file            | Valid options                                                                                          |
|----------------------------|--------------------------------------------------------------------------------------------------------|
| silent_SingleServerTypical | <ul style="list-style-type: none"> <li>• Single Server Install</li> <li>• License Upgrade</li> </ul>   |
| silent_SingleServerCustom  | <ul style="list-style-type: none"> <li>• Single Server Install</li> <li>• License Upgrade</li> </ul>   |
| silent_MultipleServer      | <ul style="list-style-type: none"> <li>• Multiple Server Install</li> <li>• License Upgrade</li> </ul> |

For example:

```
CHOSEN_INSTALL_TYPE="Single Server Install"
```

#### **LICENSE\_ACCEPTED=false**

Specifies whether the user accepts the IBM Spectrum Control license agreement. The options are as follows:

##### **true**

The user accepts all the terms and conditions of the IBM Spectrum Control license agreement.

##### **false or any other value**

The user does not accept the IBM Spectrum Control license agreement. The installation program exits.

#### **USER\_INSTALL\_DIR=*option***

Specifies the location where you want to install IBM Spectrum Control.

On Windows operating systems, you must use double backslashes. For example:

```
USER_INSTALL_DIR=C:\\Program Files\\IBM\\TPC
```

The default value for Windows operating systems is C:\\Program Files\\IBM\\TPC.

**Note:** If the operating system on which you are installing IBM Spectrum Control is sensitive to spaces in directory paths, change the default installation location to not include spaces, for example, C:\apps\IBM\SC .

The default value for AIX or Linux operating systems is /opt/IBM/TPC.

**varSrvName=option**

Specifies the fully qualified host name of the server.

If your system is configured for dual stack networking (with both IPv4 and IPv6 addresses), IBM Spectrum Control defaults to IPv4 addressing.

Ensure that DNS is configured correctly on your server and verify that these files exist on your target server:

- For Windows operating systems, C:\Windows\system32\drivers\etc\hosts.
- For AIX or Linux operating systems, /etc/hosts.

These files must have an entry similar to the following example:

```
myserver.example.mycompany.com myserver
```

**varTPCPortRangeSP=port**

Specifies the first port in a range of ports. The default beginning port is 9549. These ports are used by the IBM Spectrum Control servers, and the Storage Resource agent.

**varCommonUsrID=user\_name**

Specifies the user name to install IBM Spectrum Control. The default user name for Windows operating system is db2admin. The default user name for AIX or Linux operating system is db2inst1.

The user name that you select must have the following operating system privileges:

- For Windows operating systems, the user name must be in the administrators group.
- For Linux operating systems, the user name must be in the root group.
- For AIX operating systems, the user name must be in the system group.

If you are using the common user name to also install the database repository, the user name must have these DB2 privileges:

- For Windows operating systems, the user name must be in the DB2ADMNS group.
- For AIX or Linux operating systems, the user name must be in the db2iadm1 group.

**varCommonUsrPw=password**

Specifies the password for the common user name.

**varFullRollback=value**

Specifies whether a full rollback or partial rollback is done when an installation failure occurs. These are the values:

- 0 Specifies that a partial rollback occurs. This value is the default.
- 1 Specifies that a full rollback occurs.

**varUseLicenseKeyOnImage=value**

Specifies whether to use the license key file that is present on the installation image. The value can be:

- 0 Uses the license key that is present on the installation image (default value)
- 1 Provides the location of the license key file

Depending on the license package you purchased, one of these license files is included with IBM Spectrum Control in the root installation directory and is on the product electronic image:

**node1ock**

IBM Spectrum Control Standard Edition license

**node1ock.SEL**

IBM Spectrum Control Standard Select Edition license

**node1ock.AE**

IBM Spectrum Control Advanced Edition license

**node1ock.AS**

IBM Spectrum Control Advanced Select Edition license

**varLicenseKeyFile=location\_of\_license\_key\_file**

Specifies the path for the license key file. This value must be set if the **varUseLicenseKeyOnImage=1** parameter is specified.

On the Windows operating system, you must use double backslashes. For example:

C:\\license\\key\\node1ock.SEL

**varInstallReportingLater=value**

Specifies whether you want to install Cognos BI reports now or later. The values are as follows:

- **false**  
Install the Cognos BI reports now (default value)
- **true**  
Install the Cognos BI reports later.

Jazz for Service Management must be installed on the computer before you install Cognos BI reports.

**JAZZSM\_INSTALL\_DIR=Location\_of\_JazzSM\_installation\_directory**

Specifies the expected default directory where Jazz for Service Management is installed.

- For the Windows operating system, the expected default directory is C:\\Program Files\\IBM\\JAZZSM.
- For the UNIX operating system, the expected default directory is /opt/IBM/JazzSM.

**varJazzSMUsrID=user\_name**

Specifies the Jazz for Service Management user name. This user name was used to install Jazz for Service Management.

**varJazzSMUsrPW=password**

Specifies the valid password that is used with the Jazz for Service Management user name.

**Response file parameters for advanced customization of the database repository**

These parameters are used for the `silent_SingleServerCustom.properties` and `silent_MultipleServer.properties` response files to configure the database repository.

**varDBAdmUsr=user\_name**

Specifies the user name that you must use to install the IBM Spectrum Control database. The user who logs in with this user name must be the owner of the DB2 instance where the database is created.

This user name must have these DB2 privileges:

- For Windows operating systems, the user name must be in the DB2ADMNS group. The default user name is db2admin.
- For AIX or Linux operating systems, the user name must be in the db2iadml group. The default user name is db2inst1.

**varDBAdmPW=password**

Specifies the password that is associated with the DB2 user name.

**varDBName=database\_name**

Specifies the name of the IBM Spectrum Control database. The default database name is TPCDB.

Specify the database name by using the following rules:

- The name can contain the following characters:
  - a - z
  - A - Z
  - 0 - 9
- The name must be 1 - 8 characters long.

**Restriction:** The database name cannot have the following conditions:

- Contain a space or a blank.
- Begin with SYS, DBM, or IBM.
- Be the name of an existing database.

**varDBPath=database\_location, database\_location, ...**

Specifies the absolute paths for the database.

The database path must follow these rules:

- The path cannot be longer than 242 bytes.
- The path must be an absolute path and not a relative path, for example, C:\

You can specify a maximum of 10 database paths and separate them with commas. For example, in the Windows operating system, you would specify C:,D:. In the AIX or Linux operating system, you would specify /home/db2inst1,/testPath.

- For example, on the Windows operating system, if the database is on the C drive, you can add a D drive, an E drive.

On Windows operating systems, you must use double backslashes. For example:

C:\\DB2\\TPCDB,D:\\TPCDB,E:\\TPCDB

- For example, on the AIX operating system:  
/home/db2inst1,/testPath

**varDBLogPath=log\_location**

Specifies the absolute path where the database log files are stored. The default value of the variable is set to <dftdbpath>/<instance name>/<varDBName>/SQLLOG.

For example:

- On Windows operating systems, c:\\DB2\\TPCDB\\SQLLOG

- On AIX operating systems, /home/db2inst1/db2inst1/TPCDB/SQLLOG

### Response file parameter for the multiple-server environment

This parameter is valid for the `silent_MultipleServer.properties` file.

#### **varMultipleServerComponentList=components**

Specifies the IBM Spectrum Control components to install. Separate the components with commas:

##### **database**

Installs the IBM Spectrum Control database repository.

##### **servers**

Installs the Data server, Device server, Alert server, web server, the Storage Resource agent, CLI, and the IBM Spectrum Control GUI.

##### **tcr**

Installs Cognos BI reports.

### Response file parameters for the remote database

The following parameters are used only in the `silent_MultipleServer.properties` response file to access the IBM Spectrum Control database on a remote server.

**Remember:** The DB2 database must be installed before you can use these parameters to access the database.

#### **varRemoteDBSrvName=host\_name**

Specifies the fully qualified host name or IP address of the remote server where the IBM Spectrum Control database repository is installed.

IBM Spectrum Control accepts both IPv4 and IPv6 addresses. If you have a system that is configured for dual stack networking (with both IPv4 and IPv6 addresses), IBM Spectrum Control defaults to IPv4 addressing.

For example, an IPv6 address in long form can be 2001:DB8:0:0:0:0:0:0. An IPv6 address in short form can be 2001:DB8:: or 2001:DB8:0.0.0.0.0.0.

#### **varRemoteDBPort=port**

Specifies the DB2 port on the remote server. The default port is 50000.

#### **varRemoteDBAdmUsr=user\_name**

Specifies the administrative user name to connect to the remote database. The default user name for the Windows operating system is db2admin. The default user name for the AIX or Linux operating system is db2inst1.

#### **varRemoteDBAdmPW=password**

Specifies the password for the user name.

#### **varRemoteDBName=database\_name**

Specifies the IBM Spectrum Control database on the remote server. The default name is TPCDB.

### Related reference:

“TCP/IP ports used by IBM Spectrum Control” on page 22

When you install IBM Spectrum Control, the ports must be opened through the firewall. You must disable the firewall program or open the ports to allow incoming requests to the IBM Spectrum Control ports. Review these ports before you install IBM Spectrum Control.

## Installing IBM Spectrum Control in a multiple-server environment

You can install IBM Spectrum Control by using the installation program or by using silent mode from the command line. Note, installing IBM Spectrum Control by using console mode is not supported.

A multiple-server environment is ideal if you are monitoring large storage environments, where one server is not sufficient to manage the IBM Spectrum Control components. In this environment, Jazz for Service Management and Tivoli Common Reporting can run on a separate server.

This environment facilitates the integration with other IBM products that are using Jazz for Service Management and Tivoli Common Reporting components and allows the sharing of components that are installed on a separate server. If you have different administrators for DB2 and IBM Spectrum Control, this environment allows the database repository and DB2 to be installed and managed on a separate server.

### Installation considerations

When you install IBM Spectrum Control, a database that is called TPCDB is created. In this repository, the IBM Spectrum Control database schema is created, which describes the structure of the database repository. If you already have the TPCDB database on your system, IBM Spectrum Control assigns a new default database repository name with a number as a suffix. For example, TPCDB1.

The installation program includes the option to install Cognos Business Intelligence reports and the components for these reports (Jazz for Service Management and Tivoli Common Reporting). You are not required to install Cognos BI reports or the components for the reports; these products are optional. You can produce reports about the condition, capacity, and performance of resources by using the reporting features in the IBM Spectrum Control GUI.

If the operating system on which you are installing IBM Spectrum Control is sensitive to spaces in directory paths, change the default installation location to not include spaces, for example, C:\apps\IBM\SC .

#### Related tasks:

“Installing IBM Spectrum Control with a remote database by using the installation program” on page 69

You can install IBM Spectrum Control in a multiple-server environment by using the installation program.

“Installing IBM Spectrum Control with remote Cognos BI reports by using the installation program” on page 73

You can install optional Cognos Business Intelligence reports in a multiple-server environment by using the installation program.

“Installing IBM Spectrum Control with a remote database by using silent mode” on page 77

You can install IBM Spectrum Control in a multiple-server environment by using silent mode.

“Installing IBM Spectrum Control with remote Cognos BI reports by using silent mode” on page 82

You can install IBM Spectrum Control in a multiple-server environment by using silent mode.

## Installing IBM Spectrum Control with a remote database by using the installation program

You can install IBM Spectrum Control in a multiple-server environment by using the installation program.

For this procedure, the terms *Server A* and *Server B* denote the two servers. If you plan to install IBM Spectrum Control as a non-root user, have your system administrator complete the tasks that are described in “Installing IBM Spectrum Control in a single-server AIX or Linux environment” on page 57 on both servers before you begin the installation.

Server A will have DB2 Enterprise Server Edition and the IBM Spectrum Control database repository installed. Server B will have the IBM Spectrum Control servers installed and optionally Jazz for Service Management (which includes TCRDB, the database for Tivoli Common Reporting), and Cognos Business Intelligence reports.

If you install Cognos BI reports on Server B, you must install DB2 on server B.

To install IBM Spectrum Control with a remote database by using the installation program, complete the following steps:

1. Complete the following steps on Server A:
  - a. Log on to Server A. If you are installing on a Windows operating system, log on as a user who has administrator privileges. If you are installing on an AIX or Linux operating system, log on as the root user or as a non-root user who has sudo privileges.

**Note:** Confirm that your Windows firewalls are disabled in the Control Panel.

- b. Install DB2 Enterprise Server Edition on Server A. For more information about installing DB2, see Installing DB2. If you install DB2 on a Windows server, restart the server before you install IBM Spectrum Control.
  - c. If you logged on as an AIX or Linux non-root user, run the following command in a command shell:

```
sudo DB2_installation_directory/cfg/db2ln
```

For example:

```
sudo /opt/ibm/db2/V11.1/cfg/db2ln
```

- d. When you install IBM Spectrum Control, the TPCDB database is created in the location that you specify in the DB2 DFTDBPATH variable. To determine the current DFTDBPATH value, run the following command in a DB2 CLI window:

```
get dbm cfg
```

If you want to install this database in a location that is other than the default location:

- 1) Run the following command in a DB2 CLI window:

```
update dbm cfg using DFTDBPATH path
```

where *path* is the new value for the DFTDBPATH variable.

- 2) If you are installing on an AIX or Linux operating system, run the **db2stop** and **db2start** commands to stop and restart DB2.

- e. If you are installing on an AIX or Linux operating system, in a command shell, source the DB2 user profile db2profile for the DB2 instance owner. For example:  

```
. /home/db2inst1/sqllib/db2profile
```

- f. Start the IBM Spectrum Control installation program on Server A. In a command window or command shell, change the directory to the location of the IBM Spectrum Control installation files and enter the following command:

**Windows**

setup.bat

**AIX or Linux root user**

./setup.bin

**AIX or Linux non-root user**

sudo -E ./setup.bin

- g. On the Before You Begin page, because only the IBM Spectrum Control database repository will be installed on Server A, click **Next**.
- h. On the Choose Installation Location and Type page, select **Multiple servers** and click **Next**.
- i. On the Multiple Server Option: Select the Components page, select **Database repository** and click **Next**.
- j. Follow the prompts in the installation program to install the IBM Spectrum Control database repository on Server A.
- k. After the installation is finished, review the message log on Server A to ensure that no errors occurred.

2. Complete the following steps on Server B:

- a. Log on to Server B. If you are installing on a Windows operating system, log on as a user who has administrator privileges. If you are installing on an AIX or Linux operating system, log on as the root user or as a non-root user who has sudo privileges.
- b. If you plan to install Cognos BI reports on Server B, install DB2 Enterprise Server Edition on Server B as described in the preceding information for installing DB2 on Server A. Continue to step 2c.

If you do not plan to install Cognos BI reports, continue to step 2f.

DB2 Enterprise Server Edition is installed on Server A and on Server B because even though you are installing IBM Spectrum Control in a multiple-server environment, it is expected that you are installing Jazz for Service Management with a local DB2 Enterprise Server Edition instance.

If you plan to install Jazz for Service Management in a multiple-server environment, and TCRDB is remote, go to the following product documentation:

- [http://www.ibm.com/support/knowledgecenter/SSEKCU\\_1.1.0.3/com.ibm.psc.doc\\_1.1.0.3/install/psc\\_c\\_install\\_adv\\_opt\\_two\\_server.html?lang=en](http://www.ibm.com/support/knowledgecenter/SSEKCU_1.1.0.3/com.ibm.psc.doc_1.1.0.3/install/psc_c_install_adv_opt_two_server.html?lang=en)
- [http://www.ibm.com/support/knowledgecenter/SSEKCU\\_1.1.0.3/com.ibm.psc.doc\\_1.1.0.3/install/tcr\\_t\\_install\\_tools\\_tcr.html?lang=en](http://www.ibm.com/support/knowledgecenter/SSEKCU_1.1.0.3/com.ibm.psc.doc_1.1.0.3/install/tcr_t_install_tools_tcr.html?lang=en)
- c. If you logged on as an AIX or Linux non-root user, run the following command in a command shell:  

```
sudo DB2_installation_directory/cfg/db2ln
```

For example:

```
sudo /opt/ibm/db2/V11.1/cfg/db2ln
```

- d. If Jazz for Service Management is not installed, and you plan to run optional Cognos BI reports, download the Jazz for Service Management and Tivoli Common Reporting installation images and extract the compressed image files to the same temporary directory.

For example, on Windows operating systems, you might extract the files to `c:\temp\jazzinstall`. On AIX or Linux operating systems, you might extract the files to `/temp/jazzinstall`. For more information about the installation files, see *Setting up a local file system for a custom installation*.

**Important:** You must install Jazz for Service Management from the IBM Spectrum Control installation program.

- e. If you are installing on an AIX or Linux operating system, in a command shell, source the DB2 user profile `db2profile` for the DB2 instance owner. For example:
- ```
. /home/db2inst1/sqllib/db2profile
```
- f. Start the IBM Spectrum Control installation program on Server B. In a command window or command shell, change the directory to the location of the IBM Spectrum Control installation files and enter the following command:

Windows

```
setup.bat
```

AIX or Linux root user

```
./setup.bin
```

AIX or Linux non-root user

```
sudo -E ./setup.bin
```

- g. Review the Before You Begin page and make one of the following decisions:
- If Jazz for Service Management is installed on Server B, the Before You Begin page displays a green check mark. Click **Next** to proceed to the next page in the IBM Spectrum Control installation program and install IBM Spectrum Control with Cognos BI reports on Server B.
 - If Jazz for Service Management is not installed on Server B, the Before You Begin page displays an **Install Now** button.
 - If you do not want to install Jazz for Service Management on Server B, click **Next** to proceed to the next page in the IBM Spectrum Control installation program and install IBM Spectrum Control without Cognos BI reports on Server B.
- h. If Jazz for Service Management is not installed on Server B, and you want to install on Server B, you can install it now:
- 1) On the Before You Begin page, click **Install Now**.
 - 2) On the Install Jazz for Service Management page, provide the location where the Jazz for Service Management and Tivoli Common Reporting installation files were extracted.
 - 3) If there is a port conflict, specify a new starting value for a 15-port range, and click the **Verify Port Availability** link to ensure that the port range is usable.
 - 4) Click **Install Now**.

The IBM Spectrum Control installation program pauses and the Jazz for Service Management launchpad starts.

When you complete and exit the Jazz for Service Management launchpad, you are returned to the Install Jazz for Service Management page in the IBM Spectrum Control installation program.

- 5) Click **OK**. If the installation of Jazz for Service Management was successful on Server B, you are returned to the Before You Begin page, which now displays a green check mark.

If the installation was not successful: If the installation of Jazz for Service Management was not successful on Server B, a message is displayed, and you can click one of the following options:

- **Install Now**, which starts the Jazz for Service Management launchpad again.
- **Continue**, which returns you to the Before You Begin page.

- 6) On the Before You Begin page, click **Next**.
- i. On the Choose Installation Location and Type page, select **Multiple servers** and click **Next**.
- j. On the Multiple Server Options: Select the Components page, select one of the following options:
 - If the installation of Jazz for Service Management was successful on Server B, select **IBM Spectrum Control Servers** and **Cognos BI reports** and click **Next**.
 - If the installation of Jazz for Service Management was not successful on Server B, select **IBM Spectrum Control Servers** and click **Next**.

Attention: **IBM Spectrum Control servers** include the following components:

- IBM Spectrum Control GUI
 - CLI
 - Storage Resource agent
- k. If the installation of Jazz for Service Management was successful on Server B, and you clicked **Next** on the Before You Begin page to install IBM Spectrum Control with Cognos BI reports, on the Configure Jazz for Service Management and Tivoli Common Reporting page, enter the following information, and click **OK**:
 - The user name that is used to log on to the Jazz for Service Management WebSphere profile.
 - The password that is associated with the user name.
 - The path for the Jazz for Service Management installation directory.

Jazz for Service Management starts. After Jazz for Service Management starts, it might take some time before all components, including Tivoli Common Reporting, are running.

If the IBM Spectrum Control installation program is unable to communicate with Jazz for Service Management on Server B, you can select the **Install Cognos BI reports later** check box, click **OK**, and continue installing IBM Spectrum Control without Cognos BI reports on Server B. After you install IBM Spectrum Control without Cognos BI reports, and resolve any problems with Jazz for Service Management, start the IBM Spectrum Control installation program again on Server B to install Cognos BI reports.

Attention: If the installation of Jazz for Service Management was not successful on Server B, and you clicked **Next** on the Before You Begin page to install IBM Spectrum Control without Cognos BI reports, the Configure Jazz for Service Management and Tivoli Common Reporting page does not display.

- l. Follow the prompts in the installation to install the IBM Spectrum Control components on Server B.
- m. After the installation is finished, review the message log on Server B to ensure that no errors occurred.

If you installed IBM Spectrum Control without installing Cognos BI reports on Server B, see “Installing Cognos BI reports later by using the installation program” on page 117 if you want to install Cognos BI reports on Server B.

Related reference:

“Planning for IBM Spectrum Control authentication and authorization” on page 14
An operating system user name is required to install and log on to IBM Spectrum Control for the first time. After you install IBM Spectrum Control, you can assign roles to users. Roles determine the product functions that are available to users.

“Installing IBM Spectrum Control in a multiple-server environment” on page 68
You can install IBM Spectrum Control by using the installation program or by using silent mode from the command line. Note, installing IBM Spectrum Control by using console mode is not supported.

“Starting the installation programs” on page 52

There are various methods to start the IBM Spectrum Control installation programs and on various operating systems.

“IBM Spectrum Control components” on page 35

You can install IBM Spectrum Control in single-server or multiple-server environments. In a single-server environment, all components are installed on one server.

“Verifying the installation” on page 129

After you install IBM Spectrum Control, you can verify whether the installation was successful.

“Reviewing the log files to resolve installation issues” on page 133

If an error occurs during IBM Spectrum Control installation, you can review the error log files to resolve issues and continue the installation.

Installing IBM Spectrum Control with remote Cognos BI reports by using the installation program

You can install optional Cognos Business Intelligence reports in a multiple-server environment by using the installation program.

For this procedure, the terms *Server A* and *Server B* denote the two servers. If you plan to install IBM Spectrum Control as a non-root user, have your system administrator complete the tasks that are described in “Installing IBM Spectrum Control in a single-server AIX or Linux environment” on page 57 on both servers before you begin the installation.

Server A will have DB2 Enterprise Server Edition, the IBM Spectrum Control database repository, and the IBM Spectrum Control servers installed. Server B will have DB2 Enterprise Server Edition, Jazz for Service Management (which includes TCRDB, the database for Tivoli Common Reporting), and the Cognos BI reports installed.

To install IBM Spectrum Control with remote Cognos BI reports by using the installation program, complete the following steps:

1. Complete the following steps on Server A:
 - a. Log on to Server A. If you are installing on a Windows operating system, log on as a user who has administrator privileges. If you are installing on an AIX or Linux operating system, log on as the root user or as a non-root user who has sudo privileges.
 - b. Install DB2 Enterprise Server Edition on Server A. For more information about installing DB2, see Installing DB2. If you install DB2 on a Windows server, make sure that you restart the server before you install IBM Spectrum Control.
 - c. If you logged on as an AIX or Linux non-root user, run the following command in a command shell:

```
sudo DB2_installation_directory/cfg/db2ln
```

For example:

```
sudo /opt/ibm/db2/V11.1/cfg/db2ln
```

- d. When you install IBM Spectrum Control, the TPCDB database is created in the location that you specify in the DB2 DFTDBPATH variable. To determine the current DFTDBPATH value, run the following command in a DB2 CLI window:

```
get dbm cfg
```

If you want to install this database in a location that is other than the default location:

- 1) Run the following command in a DB2 CLI window:

```
update dbm cfg using DFTDBPATH path
```

where *path* is the new value for the DFTDBPATH variable.

- 2) If you are installing on an AIX or Linux operating system, run the **db2stop** and **db2start** commands to stop and restart DB2.
- e. If you are installing on an AIX or Linux operating system, in a command shell, source the DB2 user profile db2profile for the DB2 instance owner. For example:
- f. Start the IBM Spectrum Control installation program on Server A. In a command window or command shell, change the directory to the location of the IBM Spectrum Control installation files and enter the following command:

Windows

```
setup.bat
```

AIX or Linux root user

```
./setup.bin
```

AIX or Linux non-root user

```
sudo -E ./setup.bin
```

- g. On the Before You Begin page, because only the IBM Spectrum Control database repository and the IBM Spectrum Control servers will be installed on Server A, click **Next**.
 - h. On the Choose Installation Location and Type page, select **Multiple servers** and click **Next**.

- i. On the Multiple Server Option: Select the Components page, select **Database repository and IBM Spectrum Control servers** and click **Next**.

Important: IBM Spectrum Control servers include the following components:

- IBM Spectrum Control GUI
- CLI
- Storage Resource agent

- j. Follow the prompts in the installation program to install the IBM Spectrum Control database repository and the IBM Spectrum Control servers on Server A.
 - k. After the installation is finished, review the message log on Server A to ensure that no errors occurred.
2. Complete the following steps on Server B:
 - a. Log on to Server B. If you are installing on a Windows operating system, log on as a user who has administrator privileges. If you are installing on an AIX or Linux operating system, log on as the root user or as a non-root user who has sudo privileges.
 - b. Install DB2 Enterprise Server Edition on Server B as described in the preceding information for installing DB2 on Server A.

DB2 Enterprise Server Edition is installed on Server A and on Server B because even though you are installing IBM Spectrum Control in a multiple-server environment, it is expected that you are installing Jazz for Service Management with a local DB2 Enterprise Server Edition instance.
 - c. If you logged on as an AIX or Linux non-root user, run the following command in a command shell:

```
sudo DB2_installation_directory/cfg/db2ln
```

For example:

```
sudo /opt/ibm/db2/V11.1/cfg/db2ln
```
 - d. If Jazz for Service Management is not installed, and you plan to run Cognos BI reports, download the Jazz for Service Management and Tivoli Common Reporting installation images and extract the compressed image files to the same temporary directory.

For example, on Windows operating systems, you might extract the files to c:\temp\jazzinstall. On AIX or Linux operating systems, you might extract the files to /temp/jazzinstall.

For more information about the installation files, see Setting up a local file system for a custom installation.
 - e. If you are installing on an AIX or Linux operating system, in a command shell, source the DB2 user profile db2profile for the DB2 instance owner.

For example:

```
. /home/db2inst1/sqllib/db2profile
```
 - f. Start the IBM Spectrum Control installation program on Server B. In a command window or command shell, change the directory to the location of the IBM Spectrum Control installation files and enter the following command:

Windows

setup.bat

AIX or Linux root user

./setup.bin

AIX or Linux non-root user

```
sudo -E ./setup.bin
```

- g. If Jazz for Service Management is installed on Server B, the Before You Begin page displays a green check mark. Click **Next** to proceed to the next page in the IBM Spectrum Control installation program.
- h. If Jazz for Service Management is not installed on Server B, and you want to install it on Server B, you can install it now:
 - 1) On the Before You Begin page, click **Install Now**.
 - 2) On the Install Jazz for Service Management page, provide the location where the Jazz for Service Management and Tivoli Common Reporting installation files were extracted.
 - 3) If there is a port conflict, specify a new starting value for a 15-port range, and click the **Verify Port Availability** link to ensure that the port range is usable.
 - 4) Click **Install Now**.

The IBM Spectrum Control installation program pauses and the Jazz for Service Management launchpad starts.

When you exit the Jazz for Service Management launchpad, you are returned to the Install Jazz for Service Management page in the IBM Spectrum Control installation program. Click **OK**.

If the installation of Jazz for Service Management was successful on Server B, you are returned to the Before You Begin page, which now displays a green check mark.

If the installation of Jazz for Service Management was not successful on Server B, a message is displayed, and you can click one of the following options:

- **Install Now**, which starts the Jazz for Service Management launchpad again.
- **Continue**, which returns you to the Before You Begin page.

You must install Jazz for Service Management successfully on Server B to continue installing Cognos BI reports on Server B.

If the installation of Jazz for Service Management was successful on Server B, and a green check mark is displayed on the Before You Begin page, click **Next**.

- i. On the Choose Installation Location and Type page, select **Multiple servers** and click **Next**.
 - j. On the Multiple Server Options: Select the Components page, select **Cognos BI reports** and click **Next**.
 - k. On the Configure Jazz for Service Management and Tivoli Common Reporting page, enter the following information and click **Next**:
 - The user name that is used to log on to the Jazz for Service Management WebSphere profile.
 - The password that is associated with the user name.
 - The path for the Jazz for Service Management installation directory.
- If the IBM Spectrum Control installation program is unable to communicate with Jazz for Service Management, you must resolve this problem to continue installing Cognos BI reports.
- l. Follow the prompts in the installation program to install Cognos BI reports on Server B.

Related reference:

“Planning for IBM Spectrum Control authentication and authorization” on page 14
An operating system user name is required to install and log on to IBM Spectrum Control for the first time. After you install IBM Spectrum Control, you can assign roles to users. Roles determine the product functions that are available to users.

“Installing IBM Spectrum Control in a multiple-server environment” on page 68
You can install IBM Spectrum Control by using the installation program or by using silent mode from the command line. Note, installing IBM Spectrum Control by using console mode is not supported.

“Starting the installation programs” on page 52

There are various methods to start the IBM Spectrum Control installation programs and on various operating systems.

“IBM Spectrum Control components” on page 35

You can install IBM Spectrum Control in single-server or multiple-server environments. In a single-server environment, all components are installed on one server.

“Verifying the installation” on page 129

After you install IBM Spectrum Control, you can verify whether the installation was successful.

“Reviewing the log files to resolve installation issues” on page 133

If an error occurs during IBM Spectrum Control installation, you can review the error log files to resolve issues and continue the installation.

Installing IBM Spectrum Control with a remote database by using silent mode

You can install IBM Spectrum Control in a multiple-server environment by using silent mode.

For this procedure, the terms *Server A* and *Server B* denote the two servers. If you plan to install IBM Spectrum Control as a non-root user, have your system administrator complete the tasks that are described in “Installing IBM Spectrum Control in a single-server AIX or Linux environment” on page 57 on both servers before you begin the installation.

If you are installing IBM Spectrum Control in silent mode on a Windows operating system, confirm that your Windows firewalls are disabled in the Control Panel.

Server A will have DB2 Enterprise Server Edition and the IBM Spectrum Control database repository installed. Server B will have the IBM Spectrum Control servers installed and optionally Jazz for Service Management (which includes TCRDB, the database for Tivoli Common Reporting), and Cognos Business Intelligence reports.

If you install Cognos BI reports on Server B, you must install DB2 on server B.

To install IBM Spectrum Control in a multiple-server environment by using silent mode, complete the following steps:

1. Complete the following steps on Server A:
 - a. Log on to Server A. If you are installing on a Windows operating system, log on as a user who has administrator privileges. If you are installing on an AIX or Linux operating system, log on as the root user or as a non-root user who has sudo privileges.
 - b. Install DB2 Enterprise Server Edition on Server A. For more information about installing DB2, see Installing DB2. If you install DB2 on a Windows server, make sure that you restart the server before you install IBM Spectrum Control.

- c. If you logged on as an AIX or Linux non-root user, run the following command in a command shell:

```
sudo DB2_installation_directory/cfg/db2ln
```

For example:

```
sudo /opt/ibm/db2/V11.1/cfg/db2ln
```

- d. When you install IBM Spectrum Control, the TPCDB database is created in the location that you specify in the DB2 DFTDBPATH variable. To determine the current DFTDBPATH value, run the following command in a DB2 CLI window:

```
get dbm cfg
```

If you want to install this database in a location that is other than the default location:

- 1) Run the following command in a DB2 CLI window:

```
update dbm cfg using DFTDBPATH path
```

where *path* is the new value for the DFTDBPATH variable.

- 2) If you are installing on an AIX or Linux operating system, run the **db2stop** and **db2start** commands to stop and restart DB2.

- e. On Server A, set the following parameters in the `silent_MultipleServer.properties` response file to install the remote database repository.

- `LICENSE_ACCEPTED=true`
- `CHOSEN_INSTALL_TYPE="Multiple Server Install"`
- `varMultipleServerComponentList=database`
- `USER_INSTALL_DIR=option`
- `varSrvName=option`
- `varDBAdmUsr=user_name`
- `varDBAdmPW=password`
- `varDBName=database_name`
- `varDBPath=database_location`
- `varDBLogPath=log_location`

For more information about editing the `silent_MultipleServer.properties` file, see “Editing the response file” on page 62.

- f. Save the response file.

- g. If you are installing on an AIX or Linux operating system, in a command shell, source the DB2 user profile `db2profile` for the DB2 instance owner. For example:

```
. /home/db2inst1/sqllib/db2profile
```

- h. Run the silent mode installation program on Server A.

- For Windows operating systems, run the following command:

```
setup.bat -l language -i silent -f absolute_path_to_response_file
```

where *language* can be one of the following values:
 - Czech - cs
 - English - en
 - French - fr
 - German - de
 - Hungarian - hu

- Italian - it
- Japanese - ja
- Korean - ko
- Polish - pl
- Brazilian Portuguese - pt_BR
- Russian - ru
- Spanish - es
- Chinese (Simplified) - zh_CN
- Chinese (Traditional) - zh_TW

`absolute_path_to_response_file` is the absolute path to the response file. For example, the following command specifies the language and the path:

```
setup.bat -l fr -i silent -f c:\TPC\silent_MultipleServer.properties
```

- For AIX or Linux operating systems, run the following command:

Root user

```
./setup.bin -l language -i silent -f /absolute_path_to_response_file
```

For example, the following command specifies the language and the path:

```
./setup.bin -l de -i silent -f /TPC/silent_MultipleServer.properties
```

Non-root user

```
sudo -E ./setup.bin -l language -i silent -f /absolute_path_to_response_file
```

For example, the following command specifies the language and the path:

```
sudo -E ./setup.bin -l de -i silent -f /TPC/silent_MultipleServer.properties
```

If you do not specify a language or if the language is not specified correctly, the installation program uses the English language as the default.

- i. Optional: Monitor the progress of the installation.

- To view the progress of the silent mode installation on Windows operating systems, check the trace log in the following path:

```
installation_dir\logs\traceTPCInstall.log
```

- To view the progress of the silent mode installation on AIX or Linux operating systems, check the trace log in the following path:

```
installation_dir/logs/traceTPCInstall.log
```

Tip: If there are preinstallation errors, you can review the `lax*out.txt` and `lax*err.txt` files that are in the `/tmp` and `%TEMP%` directories.

2. Complete the following steps on Server B:

- a. Log on to Server B. If you are installing on a Windows operating system, log on as a user who has administrator privileges. If you are installing on an AIX or Linux operating system, log on as the root user or as a non-root user who has sudo privileges.
- b. If you plan to install Cognos BI reports on Server B, install DB2 Enterprise Server Edition on Server B as described in the preceding information for installing DB2 on Server A. Continue to step 2c.

If you do not plan to install Cognos BI reports, continue to step 2e and then step 2g.

DB2 Enterprise Server Edition is installed on Server A and on Server B because even though you are installing IBM Spectrum Control in a multiple-server environment, it is expected that you are installing Jazz for Service Management with a local DB2 Enterprise Server Edition instance.

- c. If you logged on as an AIX or Linux non-root user, run the following command in a command shell:

```
sudo DB2_installation_directory/cfg/db2ln
```

For example:

```
sudo /opt/ibm/db2/V11.1/cfg/db2ln
```

- d. If you intend to use Cognos BI reports and Jazz for Service Management is not installed on Server B, install Jazz for Service Management now. Download the Jazz for Service Management and Tivoli Common Reporting installation images and extract the compressed image files to the same temporary directory.

For example, on Windows operating systems, you might extract the files to c:\temp\jazzinstall. On AIX or Linux operating systems, you might extract the files to /temp/jazzinstall.

After you download the images, install Jazz for Service Management.

For more information about the installation files, see Setting up a local file system for a custom installation.

For more information about installing Jazz for Service Management by using silent mode, see http://www.ibm.com/support/knowledgecenter/SSEKCU_1.1.0.3/com.ibm.psc.doc_1.1.0.3/install/psc_c_install_silently_overview.html.

- e. On Server B, set the parameters in the silent_MultipleServer.properties response file.

If you plan to install Cognos BI reports on Server B, set the following parameters in the response file:

- LICENSE_ACCEPTED=true
- CHOSEN_INSTALL_TYPE="Multiple Server Install"
- varMultipleServerComponentList=servers,tcr
- USER_INSTALL_DIR=*option*
- varSrvName=*option*
- varTPCPortRangeSP=*port*
- varCommonUsrID=*user_name*
- varCommonUsrPw=*password*
- varRemoteDBSrvName=*host_name*
- varRemoteDBPort=*port*
- varRemoteDBAdmUsr=*user_name*
- varRemoteDBAdmPW=*password*
- varRemoteDBName=*database_name*
- JAZZSM_INSTALL_DIR=*location_of_JazzSM_installation_directory*
- varJazzSMUsrID=*user_name*
- varJazzSMUsrPW=*password*

If you do not plan to install Cognos BI reports on Server B, set the following parameters in the response file:

- LICENSE_ACCEPTED=true
- CHOSEN_INSTALL_TYPE="Multiple Server Install"
- varMultipleServerComponentList=servers
- USER_INSTALL_DIR=*option*
- varSrvName=*option*

- `varTPCPortRangeSP=port`
- `varCommonUsrID=user_name`
- `varCommonUsrPw=password`
- `varRemoteDBSrvName=host_name`
- `varRemoteDBPort=port`
- `varRemoteDBAdmUsr=user_name`
- `varRemoteDBAdmPW=password`
- `varRemoteDBName=database_name`
- `JAZZSM_INSTALL_DIR=`
- `varJazzSMUsrID=`
- `varJazzSMUsrPW=`

Because you are not installing Cognos BI reports, the value for the `varMultipleServerComponentList` parameter does not include `tcr` and no values are required for the `JAZZSM_INSTALL_DIR=`, `varJazzSMUsrID=`, `varJazzSMUsrPW=` parameters.

For more information about editing the `silent_MultipleServer.properties` file, see “Editing the response file” on page 62.

- If you are installing on an AIX or Linux operating system, in a command shell, source the DB2 user profile `db2profile` for the DB2 instance owner. For example:

```
. /home/db2inst1/sqllib/db2profile
```

- Run the silent mode installation program on Server B.

- For Windows operating systems, run the following command:
`setup.bat -l language -i silent -f absolute_path_to_response_file`
where *language* can be one of the following values:

- Czech - cs
- English - en
- French - fr
- German - de
- Hungarian - hu
- Italian - it
- Japanese - ja
- Korean - ko
- Polish - pl
- Brazilian Portuguese - pt_BR
- Russian - ru
- Spanish - es
- Chinese (Simplified) - zh_CN
- Chinese (Traditional) - zh_TW

`absolute_path_to_response_file` is the absolute path to the response file. For example, the following command specifies the language and the path:

```
setup.bat -l fr -i silent -f c:\TPC\silent_MultipleServer.properties
```

- For AIX or Linux operating systems, run the following command:

Root user

```
./setup.bin -l language -i silent -f /absolute_path_to_response_file
```

For example, the following command specifies the language and the path:

```
./setup.bin -l de -i silent -f /TPC/silent_MultipleServer.properties
```

Non-root user

```
sudo -E ./setup.bin -l language -i silent -f /absolute_path_to_response_file
```

For example, the following command specifies the language and the path:

```
sudo -E ./setup.bin -l de -i silent -f /TPC/silent_MultipleServer.properties
```

If you do not specify a language or if the language is not specified correctly, the installation program uses the English language as the default.

h. Optional: Monitor the progress of the installation.

- To view the progress of the silent mode installation on Windows operating systems, check the trace log in the following path:

```
installation_dir\logs\traceTPCInstall.log
```

- To view the progress of the silent mode installation on AIX or Linux operating systems, check the trace log in the following path:

```
installation_dir/logs/traceTPCInstall.log
```

Note: If there are preinstallation errors, you can review the `lax*out.txt` and `lax*err.txt` files that are in the `/tmp` and `%TEMP%` directories.

Related reference:

“Planning for IBM Spectrum Control authentication and authorization” on page 14
An operating system user name is required to install and log on to IBM Spectrum Control for the first time. After you install IBM Spectrum Control, you can assign roles to users. Roles determine the product functions that are available to users.

“Installing IBM Spectrum Control in a multiple-server environment” on page 68
You can install IBM Spectrum Control by using the installation program or by using silent mode from the command line. Note, installing IBM Spectrum Control by using console mode is not supported.

“Starting the installation programs” on page 52

There are various methods to start the IBM Spectrum Control installation programs and on various operating systems.

“IBM Spectrum Control components” on page 35

You can install IBM Spectrum Control in single-server or multiple-server environments. In a single-server environment, all components are installed on one server.

“Verifying the installation” on page 129

After you install IBM Spectrum Control, you can verify whether the installation was successful.

“Reviewing the log files to resolve installation issues” on page 133

If an error occurs during IBM Spectrum Control installation, you can review the error log files to resolve issues and continue the installation.

Installing IBM Spectrum Control with remote Cognos BI reports by using silent mode

You can install IBM Spectrum Control in a multiple-server environment by using silent mode.

For this procedure, the terms *Server A* and *Server B* denote the two servers. If you plan to install IBM Spectrum Control as a non-root user, have your system administrator complete the tasks that are described in “Installing IBM Spectrum Control in a single-server AIX or Linux environment” on page 57 on both servers before you begin the installation.

Server A has DB2 Enterprise Server Edition, the IBM Spectrum Control database repository, and the IBM Spectrum Control servers installed. Server B has DB2 Enterprise Server Edition, Jazz for Service Management (which includes TCRDB, the database for Tivoli Common Reporting Version 3.1.0.2) and the Cognos Business Intelligence reports installed.

To install IBM Spectrum Control in a multiple-server environment by using silent-mode, complete the following steps:

1. Complete the following steps on Server A:
 - a. Log on to Server A. If you are installing on a Windows operating system, log on as a user who has administrator privileges. If you are installing on an AIX or Linux operating system, log on as the root user or as a non-root user who has sudo privileges.
 - b. Install DB2 Enterprise Server Edition on Server A. For more information about installing DB2, see *Installing DB2*. If you install DB2 on a Windows server, make sure that you restart the server before you install IBM Spectrum Control.
 - c. If you logged on as an AIX or Linux non-root user, run the following command in a command shell:

```
sudo DB2_installation_directory/cfg/db2ln
```

For example:

```
sudo /opt/ibm/db2/V11.1/cfg/db2ln
```

- d. When you install IBM Spectrum Control, the TPCDB database is created in the location that you specify in the DB2 DFTDBPATH variable. To determine the current DFTDBPATH value, run the following command in a DB2 CLI window:

```
get dbm cfg
```

If you want to install this database in a location that is other than the default location:

- 1) Run the following command in a DB2 CLI window:

```
update dbm cfg using DFTDBPATH path
```

where *path* is the new value for the DFTDBPATH variable.

- 2) If you are installing on an AIX or Linux operating system, run the **db2stop** and **db2start** commands to stop and restart DB2.
- e. On Server A, edit the `silent_MultipleServer.properties` file, and set the following parameters to install the database repository and servers:
 - `LICENSE_ACCEPTED=true`
 - `CHOSEN_INSTALL_TYPE="Multiple Server Install"`
 - `varMultipleServerComponentList=database,servers`
 - `USER_INSTALL_DIR=option`
 - `varSrvName=option`
 - `varTPCPortRangeSP=port`
 - `varCommonUsrID=user_name`
 - `varCommonUsrPW=password`
 - `varDBAdmUsr=user_name`
 - `varDBAdmPW=`
 - `varDBName=database_name`

- `varDBPath=database_path`
- `varDBLogPath=log_location`

For more information about editing the response file, see “Editing the response file” on page 62.

- Save the response file.
- If you are installing on an AIX or Linux operating system, in a command shell, source the DB2 user profile `db2profile` for the DB2 instance owner. For example:

```
. /home/db2inst1/sqllib/db2profile
```

- Run the silent mode installation program on Server A.

- For Windows operating systems, run the following command:
`setup.bat -l language -i silent -f absolute_path_to_response_file`
 where *language* can be one of the following values:

- Czech - cs
- English - en
- French - fr
- German - de
- Hungarian - hu
- Italian - it
- Japanese - ja
- Korean - ko
- Polish - pl
- Brazilian Portuguese - pt_BR
- Russian - ru
- Spanish - es
- Chinese (Simplified) - zh_CN
- Chinese (Traditional) - zh_TW

`absolute_path_to_response_file` is the absolute path to the response file. For example, the following command specifies the language and the path:
`setup.bat -l fr -i silent -f c:\TPC\silent_MultipleServer.properties`

- For AIX or Linux operating systems, run the following command:

Root user

```
./setup.bin -l language -i silent -f /absolute_path_to_response_file
```

For example, the following command specifies the language and the path:
`./setup.bin -l de -i silent -f /TPC/silent_MultipleServer.properties`

Non-root user

```
sudo -E ./setup.bin -l language -i silent -f /absolute_path_to_response_file
```

For example, the following command specifies the language and the path:
`sudo -E ./setup.bin -l de -i silent -f /TPC/silent_MultipleServer.properties`

If you do not specify a language or if the language is not specified correctly, the installation program uses the English language as the default.

- Optional: Monitor the progress of the installation.
 - To view the progress of the silent mode installation on Windows operating systems, check the trace log in the following path:
`installation_dir\logs\traceTPCInstall.log`

- To view the progress of the silent mode installation on AIX or Linux operating systems, check the trace log in the following path:
installation_dir/logs/traceTPCInstall.log

Tip: If there are preinstallation errors, you can review the *lax*out.txt* and *lax*err.txt* files that are in the */tmp* and *%TEMP%* directories.

2. Complete the following steps on Server B:

- a. Log on to Server B. If you are installing on a Windows operating system, log on as a user who has administrator privileges. If you are installing on an AIX or Linux operating system, log on as the root user or as a non-root user who has sudo privileges.

- b. Install DB2 Enterprise Server Edition on Server B as described in the preceding information for installing DB2 on Server A.

DB2 Enterprise Server Edition is installed on Server A and on Server B because even though you are installing IBM Spectrum Control in a multiple-server environment, it is expected that you are installing Jazz for Service Management with a local DB2 Enterprise Server Edition instance.

- c. If you logged on as an AIX or Linux non-root user, run the following command in a command shell:

```
sudo DB2_installation_directory/cfg/db2ln
```

For example:

```
sudo /opt/ibm/db2/V11.1/cfg/db2ln
```

- d. If you intend to use Cognos BI reports and Jazz for Service Management is not installed on Server B, install Jazz for Service Management now. Download the Jazz for Service Management and Tivoli Common Reporting installation images and extract the compressed image files to the same temporary directory.

For example, on Windows operating systems, you might extract the files to *c:\temp\jazzinstall*. On AIX or Linux operating systems, you might extract the files to */temp/jazzinstall*.

For more information about the installation files, see Setting up a local file system for a custom installation.

For more information about installing Jazz for Service Management by using silent mode, see Custom installations by using silent mode.

- e. Edit and save the *silent_MultipleServer.properties* file on Server B and set the following parameters:

- *LICENSE_ACCEPTED=true*
- *CHOSEN_INSTALL_TYPE="Multiple Server Install"*
- *varMultipleServerComponentList=tcr*
- *USER_INSTALL_DIR=option*
- *varSrvName=option*
- *varRemoteDBSrvName=host_name*
- *varRemoteDBPort=port*
- *varRemoteDBAdmUsr=user_name*
- *varRemoteDBAdmPW=password*
- *varRemoteDBName=database_name*
- *JAZZSM_INSTALL_DIR=Location_of_JazzSM_installation_directory*
- *varJazzSMUsrID=user_name*
- *varJazzSMUsrPW=password*

For more information about editing the response file, see “Editing the response file” on page 62.

- f. If you are installing on an AIX or Linux operating system, in a command shell, source the DB2 user profile `db2profile` for the DB2 instance owner. For example:

```
. /home/db2inst1/sqllib/db2profile
```

- g. Run the silent mode installation program on Server B.

- For Windows operating systems, run the following command:
`setup.bat -l language -i silent -f absolute_path_to_response_file`
where *language* can be one of the following values:
 - Czech - cs
 - English - en
 - French - fr
 - German - de
 - Hungarian - hu
 - Italian - it
 - Japanese - ja
 - Korean - ko
 - Polish - pl
 - Brazilian Portuguese - pt_BR
 - Russian - ru
 - Spanish - es
 - Chinese (Simplified) - zh_CN
 - Chinese (Traditional) - zh_TW

`absolute_path_to_response_file` is the absolute path to the response file. For example, the following command specifies the language and the path:

```
setup.bat -l fr -i silent -f c:\TPC\silent_MultipleServer.properties
```

- For AIX or Linux operating systems, run the following command:

Root

```
./setup.bin -l language -i silent -f /absolute_path_to_response_file
```

For example, the following command specifies the language and the path:

```
./setup.bin -l de -i silent -f /TPC/silent_MultipleServer.properties
```

- For AIX or Linux operating systems, run the following command:

Non-root

```
sudo -E ./setup.bin -l language -i silent -f /absolute_path_to_response_file
```

For example, the following command specifies the language and the path:

```
sudo -E ./setup.bin -l de -i silent -f /TPC/silent_MultipleServer.properties
```

If you do not specify a language or if the language is not specified correctly, the installation program uses the English language as the default.

- h. Optional: Monitor the progress of the installation.

- To view the progress of the silent mode installation on Windows operating systems, check the trace log in the following path:
`installation_dir\logs\traceTPCInstall.log`
- To view the progress of the silent mode installation on AIX or Linux operating systems, check the trace log in the following path:
`installation_dir/logs/traceTPCInstall.log`

Tip: If there are preinstallation errors, you can review the `lax*out.txt` and `lax*err.txt` files that are in the `/tmp` and `%TEMP%` directories.

Related reference:

“Planning for IBM Spectrum Control authentication and authorization” on page 14
An operating system user name is required to install and log on to IBM Spectrum Control for the first time. After you install IBM Spectrum Control, you can assign roles to users. Roles determine the product functions that are available to users.

“Installing IBM Spectrum Control in a multiple-server environment” on page 68
You can install IBM Spectrum Control by using the installation program or by using silent mode from the command line. Note, installing IBM Spectrum Control by using console mode is not supported.

“Starting the installation programs” on page 52

There are various methods to start the IBM Spectrum Control installation programs and on various operating systems.

“IBM Spectrum Control components” on page 35

You can install IBM Spectrum Control in single-server or multiple-server environments. In a single-server environment, all components are installed on one server.

“Verifying the installation” on page 129

After you install IBM Spectrum Control, you can verify whether the installation was successful.

“Reviewing the log files to resolve installation issues” on page 133

If an error occurs during IBM Spectrum Control installation, you can review the error log files to resolve issues and continue the installation.

Installing Jazz for Service Management and Tivoli Common Reporting

If you plan to use Cognos Business Intelligence reports, you must install Jazz for Service Management Version 1.1.0.3 and Tivoli Common Reporting Version 3.1.0.2 before you install Cognos BI reports. You can install these components now or after you install IBM Spectrum Control.

Before you begin: You do not need to install Jazz for Service Management Version 1.1.0.3 if you have Jazz for Service Management Version 1.1.0.2 already installed.

Installing the components

You must install Jazz for Service Management from the IBM Spectrum Control installation program. For more information about installing IBM Spectrum Control, see “Installing IBM Spectrum Control in a single-server environment” on page 55 or “Installing IBM Spectrum Control in a multiple-server environment” on page 68.

Installing Jazz for Service Management and Tivoli Common Reporting on Windows

You can install Jazz for Service Management and Tivoli Common Reporting in a custom workflow on Windows operating systems by using a web browser.

Important: Before you install Jazz for Service Management, see “Planning for installation” on page 1.

To install Jazz for Service Management and Tivoli Common Reporting on Windows operating systems, complete the following steps:

1. On the Welcome page for Jazz for Service Management, click **Custom**. Ensure that you click **Custom**, not **Full**.
2. On the Custom workflow page, click **Next**.
3. On the Specify Jazz for Service Management Home Location page, click **Next**.

Tip: If you have an existing Jazz for Service Management installation, launchpad provides the path to the existing installation. If you do not have an existing Jazz for Service Management installation, the **Home Location** field is blank.

4. On the Specify Source Locations page, review the locations for the Jazz for Service Management, WebSphere Application Server, and Tivoli Common Reporting installation images.

Tip: Because DB2 must be installed before IBM Spectrum Control, a path for the installation image is not required in the **IBM DB2 10.1 or later, Enterprise Server Edition installation image** field. Leave the field blank and continue the installation. If an information message is displayed for the blank field, close the message.

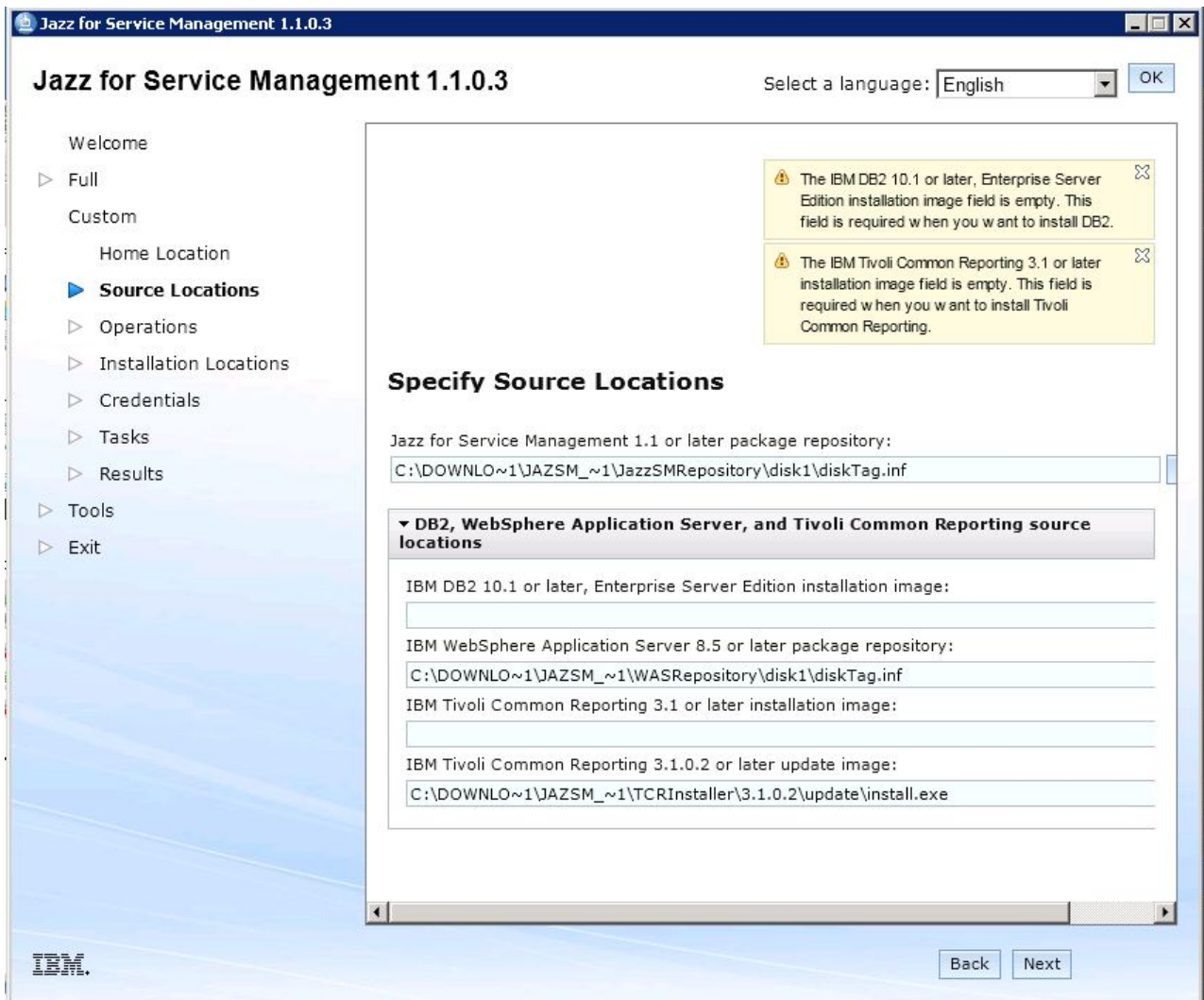


Figure 1. Specifying the source locations

5. On the Select Operations page, select **Install** for only the following components:

- **Reporting services**
- **IBM WebSphere Application Server**

Select **None** for all other components.

Attention: If you accept the default option **Install** for all of the components, components that are not required are installed. These additional components can increase the time that it takes to complete the installation and can cause performance issues after installation.

If you plan to configure LDAP authentication for an IBM System Storage DS8000 Storage Manager or IBM System Storage SAN Volume Controller system, select **Install** for **Security Services**.

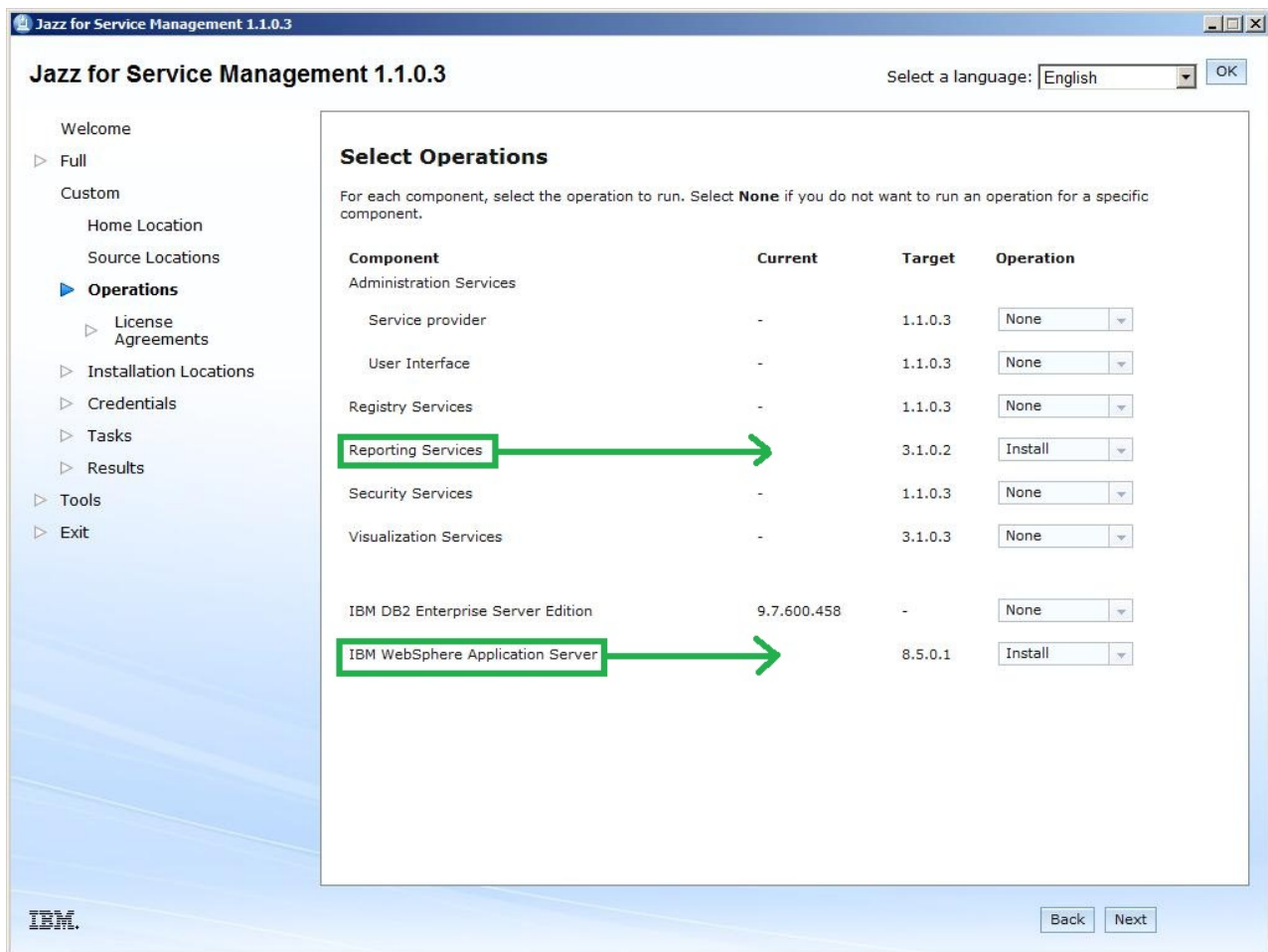


Figure 2. Selecting the components to install

6. On the Software License Agreement page, read and accept the license agreement, and click **Next**.
7. On the Specify Installation Locations page, accept the installation locations for Jazz for Service Management and WebSphere Application Server or enter other locations, and click **Next**:
- Jazz for Service Management
For example, c:\Program Files\IBM\JazzSM
 - WebSphere Application Server

For example, c:\Program Files\IBM\WebSphere\AppServer
If DB2 is already installed on your system, the **DB2 installation location** field is disabled.

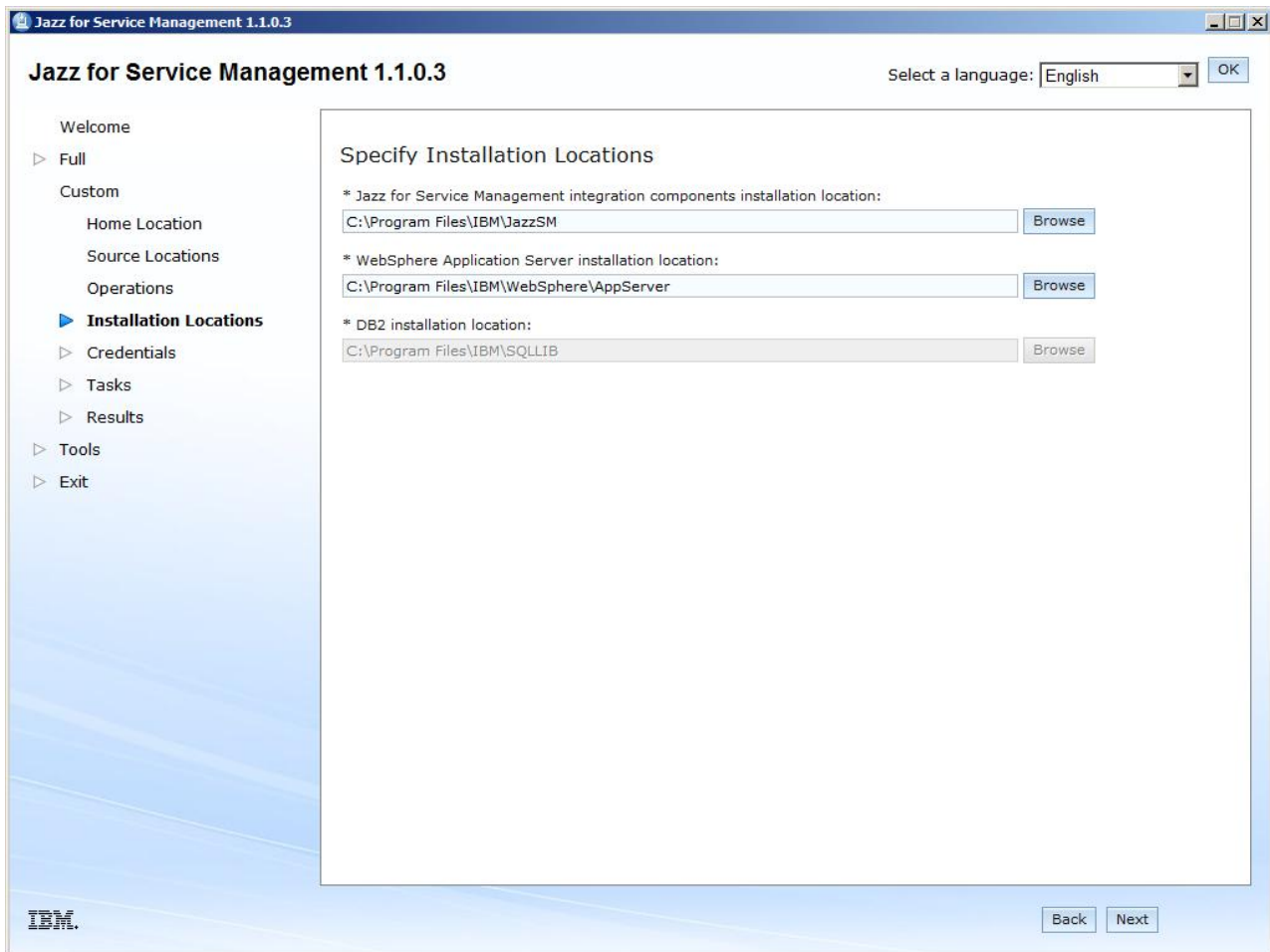


Figure 3. Entering the installation locations

8. On the Specify Credentials page, enter the following information:
 - a. WebSphere Application Server credentials for the new instance of WebSphere Application Server that will be installed.

The user name and password that you enter are used to create your WebSphere Application Server profile. The user name and password are specific to WebSphere Application Server, and are not created for the operating system or IBM Spectrum Control.
 - b. DB2 credentials for your existing DB2 instance

The credentials are used to connect to DB2 and create the Cognos Content Store database. Ensure that you use the correct credentials for your existing DB2 instance.

Restriction: If you are installing Jazz for Service Management on a computer that is a member of a Windows domain, and you installed DB2 on that computer so that the DB2 instance user is domain user, enter only the DB2 instance user name (for example, db2admin). Do not enter the

Windows domain name as a prefix to the DB2 instance user name. For example, do not enter mydomain\\db2admin). The **Instance user name** field does not accept this format.

If you have an existing DB2 installation and that installation has multiple DB2 instances, the Jazz for Service Management launchpad uses the default DB2 instance that is returned by the **db2ilist** command.

Jazz for Service Management 1.1.0.3

Select a language: English OK

Welcome

- Full
- Custom
 - Home Location
 - Source Locations
 - Operations
 - Installation Locations
- Credentials**
- Tasks
- Results
- Tools
- Exit

Specify Credentials

WebSphere Application Server Profile

Administrator name: smadmin

Administrator password:

Confirm administrator password:

DB2

Instance user name: db2admin

Instance user password:

Back Next

IBM.

Figure 4. Specifying your credentials

9. On the Run Tasks page, review the list of components to be installed, and click **Run**.

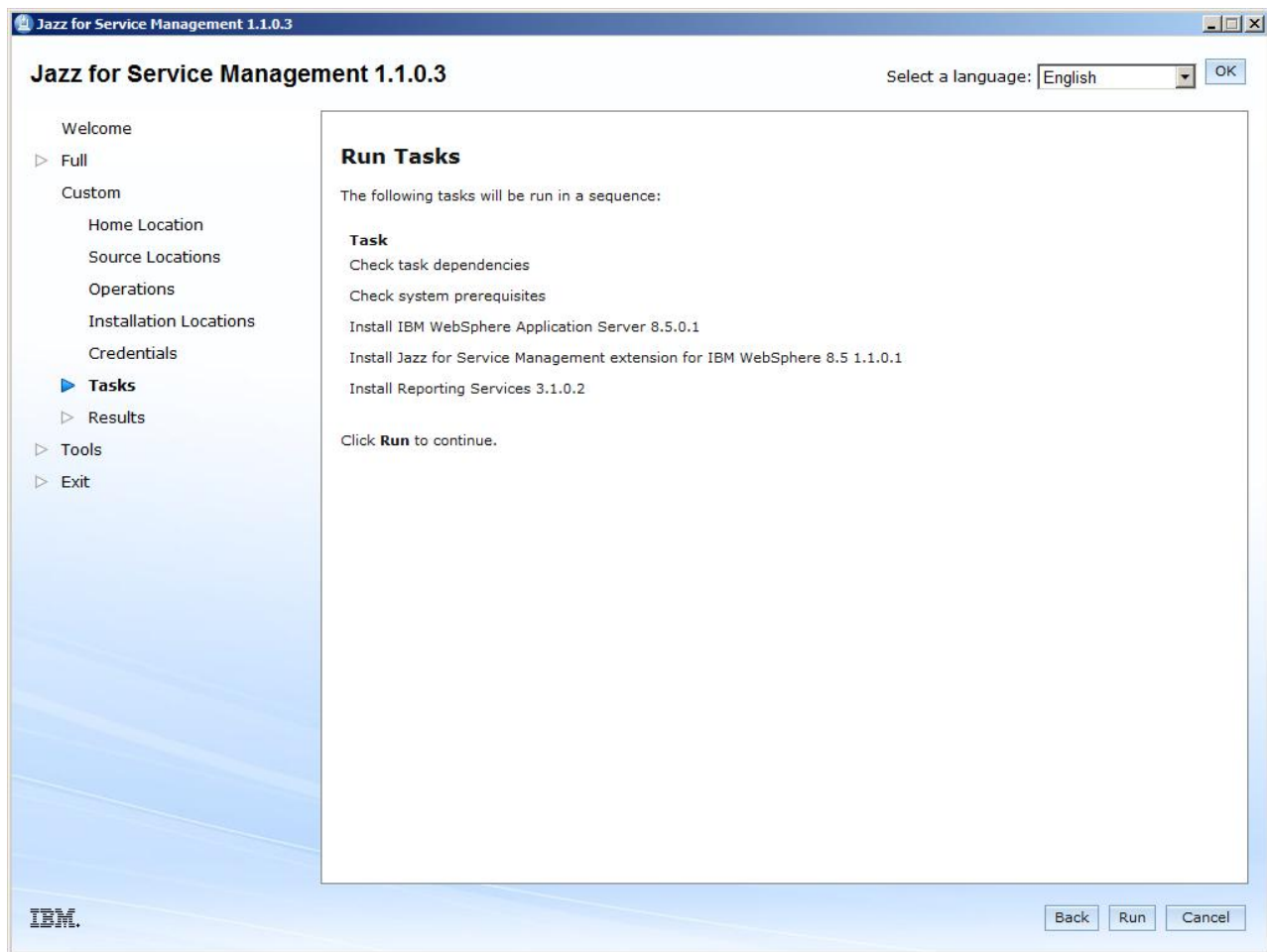


Figure 5. Run Tasks page

Tip: Warnings on the Run Tasks page do not affect the Jazz for Service Management installation.

After you click **Run**, it can take 30 minutes or longer to install the components. If you are running antivirus software on your server, it can take 90 minutes or longer to install the components. Running antivirus software on your server can also affect IBM Spectrum Control performance.

To improve performance, update your antivirus software so that it excludes the IBM Spectrum Control installation directory. To create an exception, see the documentation for your antivirus software.

For more information about using antivirus software with IBM Spectrum Control, see “Taking the first steps after installation” on page 151.

10. On the Review Results page, review the status and results of the installation for each component. Follow the directions that are provided on the page to correct any issues. While the installation is running, the **Running the custom workflow** status bar is displayed. When the status bar is no longer on the Review Results page, you can close the page by clicking **Exit**. The Jazz for Service Management launchpad closes.

After you install Jazz for Service Management, you must complete the IBM Spectrum Control installation:

- If you are installing IBM Spectrum Control in a single-server environment, return to step 6c in “Installing IBM Spectrum Control in a single-server Windows environment” on page 55.
- If you are installing IBM Spectrum Control in a multiple-server environment, return to step 2hv in “Installing IBM Spectrum Control with a remote database by using the installation program” on page 69.

Installing Jazz for Service Management and Tivoli Common Reporting on Linux

You can install Jazz for Service Management and Tivoli Common Reporting on Linux operating systems by using a web browser.

Important: Before you install Jazz for Service Management, see “Planning for installation” on page 1.

To install Jazz for Service Management and Tivoli Common Reporting on Linux operating systems, complete the following steps:

1. On the Welcome page for Jazz for Service Management, click **Custom**. Ensure that you click **Custom**, not **Full**.
2. On the Custom workflow page, click **Next**.
3. On the Specify Jazz for Service Management Home Location page, click **Next**.

Tip: If you have an existing Jazz for Service Management installation, launchpad provides the path to the existing installation. If you do not have an existing Jazz for Service Management installation, the **Home Location** field is blank.

4. On the Specify Source Locations page, review the locations for the Jazz for Service Management, WebSphere Application Server, and Tivoli Common Reporting installation images.

Tip: Because DB2 must be installed before IBM Spectrum Control, a path for the installation image is not required in the **IBM DB2 10.1 or later, Enterprise Server Edition installation image** field. Leave the field blank and continue the installation. If an information message is displayed for the blank field, close the message.

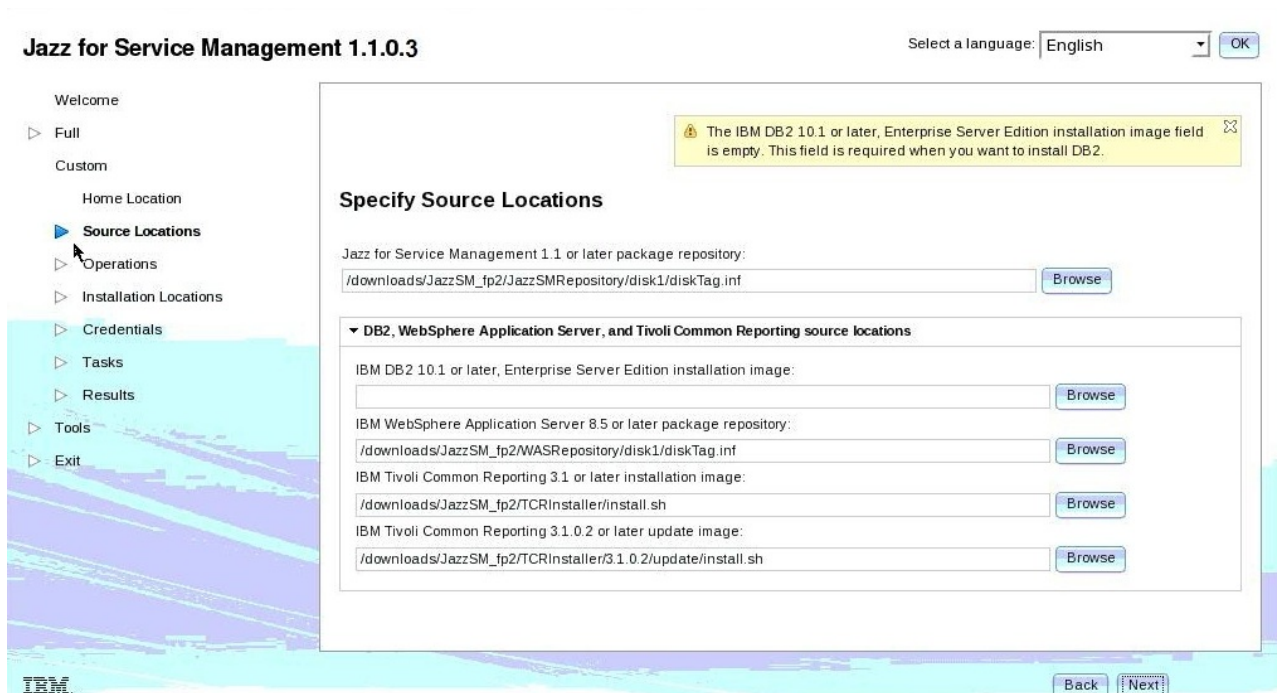


Figure 6. Specifying the source locations

5. On the Select Operations page, select **Install** for only the following components:

- **Reporting services**
- **IBM WebSphere Application Server**

Select **None** for all other components.

Attention: If you accept the default option **Install** for all of the components, components that are not required are installed. These additional components can increase the time that it takes to complete the installation and can cause performance issues after installation.

If you plan to configure LDAP authentication for an IBM System Storage DS8000 Storage Manager or IBM System Storage SAN Volume Controller system, select **Install** for **Security Services**.

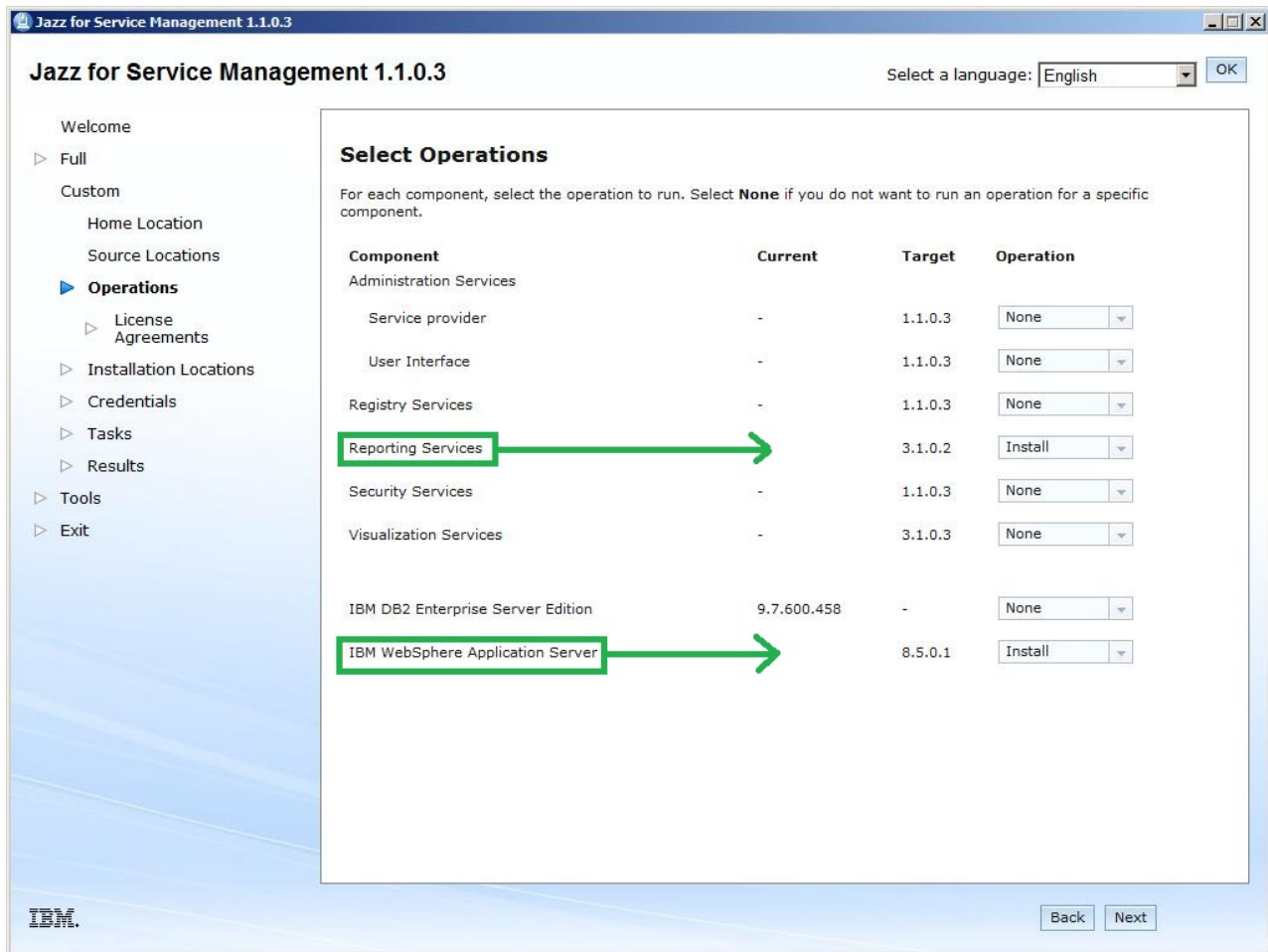


Figure 7. Selecting the components to install

6. On the Software License Agreement page, read and accept the license agreement, and click **Next**.
 7. On the Specify Installation Locations page, accept the installation locations for Jazz for Service Management and WebSphere Application Server or enter other locations, and click **Next**:
 - Jazz for Service Management
For example, /opt/IBM/JazzSM
 - WebSphere Application Server
For example, /opt/IBM/WebSphere/AppServer
- If DB2 is already installed on your system, the **DB2 installation location** field is disabled.

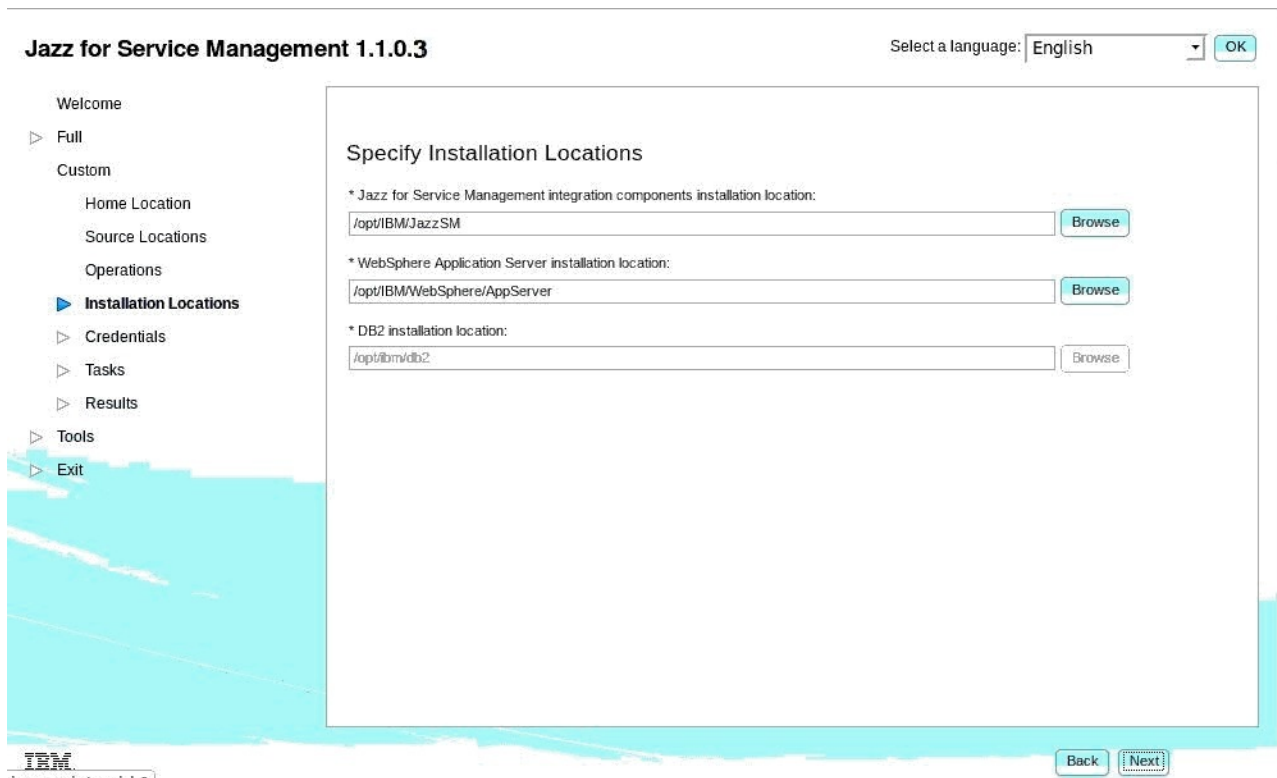


Figure 8. Entering the installation locations

8. On the Specify Credentials page, enter the following information:
 - a. WebSphere Application Server credentials for the new instance of WebSphere Application Server that will be installed.
 The user name and password that you enter are used to create your WebSphere Application Server profile. The user name and password are specific to WebSphere Application Server, and are not created for the operating system or IBM Spectrum Control.
 - b. DB2 credentials for your existing DB2 instance
 The credentials are used to connect to DB2 and create the Cognos Content Store database. Ensure that you use the correct credentials for your existing DB2 instance.

If you have an existing DB2 installation and that installation has multiple DB2 instances, the Jazz for Service Management launchpad uses the default DB2 instance that is returned by the **db2ilist** command.

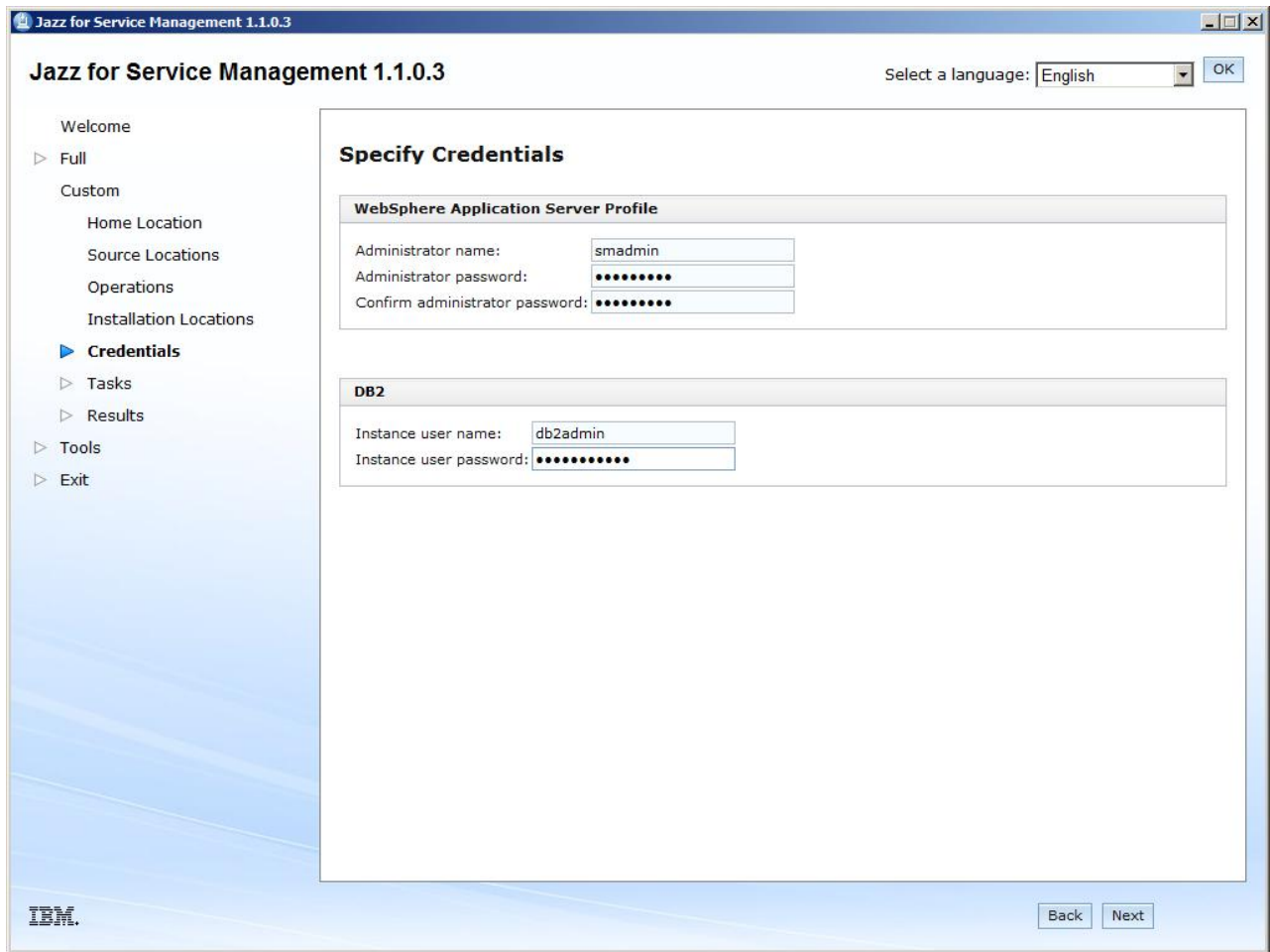


Figure 9. Specifying your credentials

9. On the Run Tasks page, review the list of components to be installed, and click **Run**.

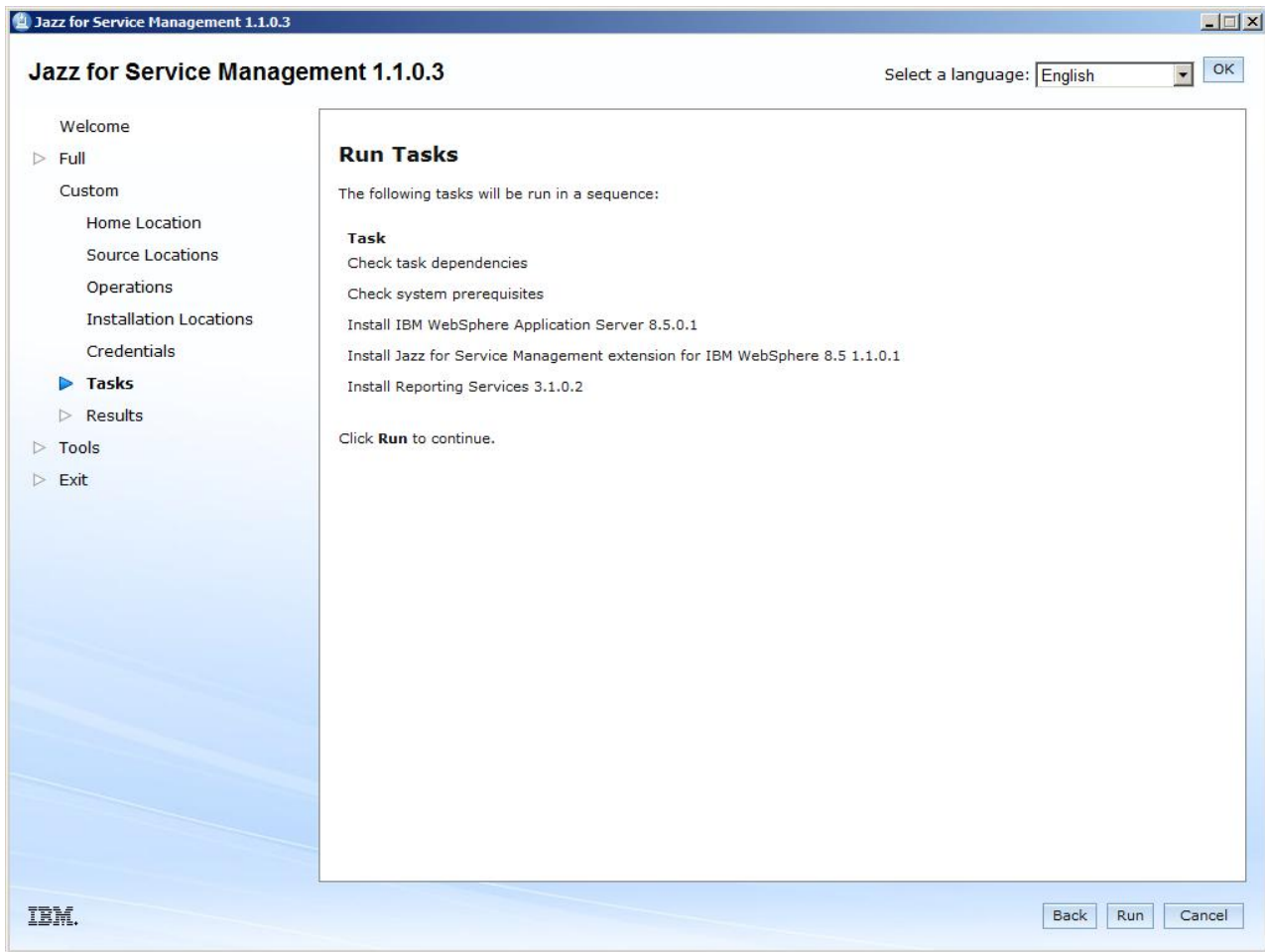


Figure 10. Run Tasks page

Tip: Warnings on the Run Tasks page do not affect the Jazz for Service Management installation.

After you click **Run**, it can take 30 minutes or longer to install the components. If you are running antivirus software on your server, it can take 90 minutes or longer to install the components. Running antivirus software on your server can also affect IBM Spectrum Control performance.

To improve performance, update your antivirus software so that it excludes the IBM Spectrum Control installation directory. To create an exception, see the documentation for your antivirus software.

For more information about using antivirus software with IBM Spectrum Control, see “Taking the first steps after installation” on page 151.

10. On the Review Results page, review the status and results of the installation for each component. Follow the directions that are provided on the page to correct any issues. While the installation is running, the **Running the custom workflow** status bar is displayed. When the status bar is no longer on the Review Results page, you can close the page by clicking **Exit**. The Jazz for Service Management launchpad closes.

After you install Jazz for Service Management, you must complete the IBM Spectrum Control installation:

- If you are installing IBM Spectrum Control in a single-server environment, return to step 8c in “Installing IBM Spectrum Control in a single-server AIX or Linux environment” on page 57.
- If you are installing IBM Spectrum Control in a multiple-server environment, return to step 2hv in “Installing IBM Spectrum Control with a remote database by using the installation program” on page 69.

Installing Jazz for Service Management and Tivoli Common Reporting on AIX

You can install Jazz for Service Management and Tivoli Common Reporting on AIX operating systems by using a web browser.

Important: Before you install Jazz for Service Management, see “Planning for installation” on page 1.

To install Jazz for Service Management and Tivoli Common Reporting on AIX operating systems, complete the following steps:

1. On the Welcome page for Jazz for Service Management, click **Custom**. Ensure that you click **Custom**, not **Full**.
2. On the Custom workflow page, click **Next**.
3. On the Specify Jazz for Service Management Home Location page, click **Next**.

Tip: If you have an existing Jazz for Service Management installation, launchpad provides the path to the existing installation. If you do not have an existing Jazz for Service Management installation, the **Home Location** field is blank.

4. On the Specify Source Locations page, review the locations for the Jazz for Service Management, WebSphere Application Server, and Tivoli Common Reporting installation images.

Tip: Because DB2 must be installed before IBM Spectrum Control, a path for the installation image is not required in the **IBM DB2 10.1 or later, Enterprise Server Edition installation image** field. Leave the field blank and continue the installation. If an information message is displayed for the blank field, close the message.

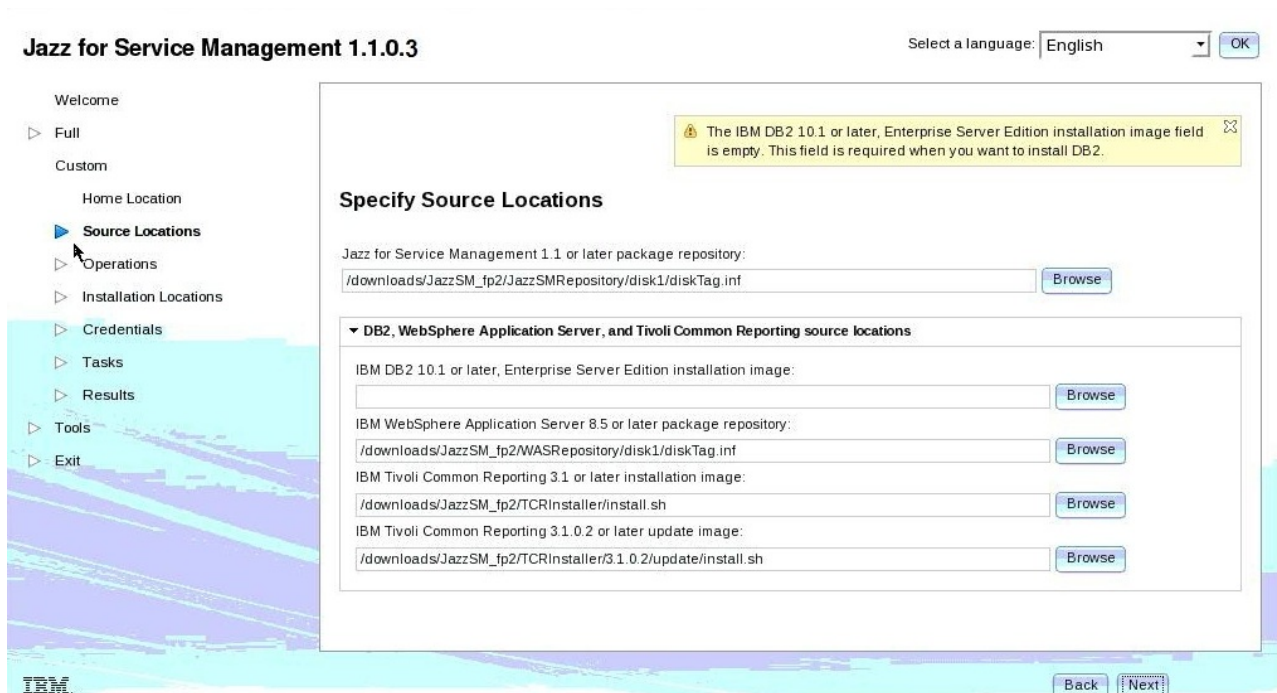


Figure 11. Specifying the source locations

5. On the Select Operations page, select **Install** for only the following components:

- **Reporting services**
- **IBM WebSphere Application Server**

Select **None** for all other components.

Attention: If you accept the default option **Install** for all of the components, components that are not required are installed. These additional components can increase the time that it takes to complete the installation and can cause performance issues after installation.

If you plan to configure LDAP authentication for an IBM System Storage DS8000 Storage Manager or IBM System Storage SAN Volume Controller system, select **Install** for **Security Services**.

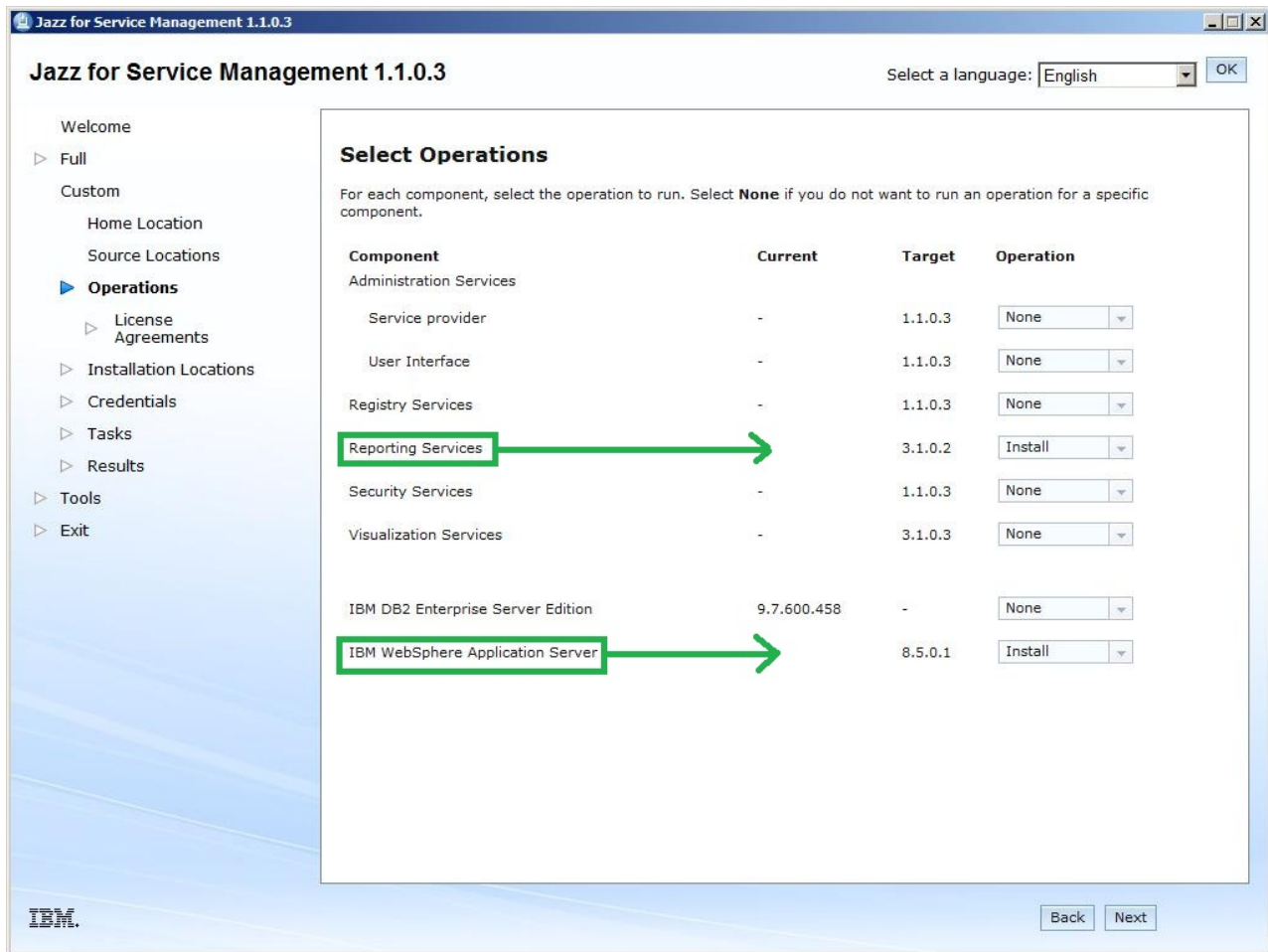


Figure 12. Selecting the components to install

- On the Software License Agreement page, read and accept the license agreement, and click **Next**.
 - On the Specify Installation Locations page, accept the installation locations for Jazz for Service Management and WebSphere Application Server or enter other locations, and click **Next**:
 - Jazz for Service Management
For example, /opt/IBM/JazzSM
 - WebSphere Application Server
For example, /opt/IBM/WebSphere/AppServer
- If DB2 is already installed on your system, the **DB2 installation location** field is disabled.

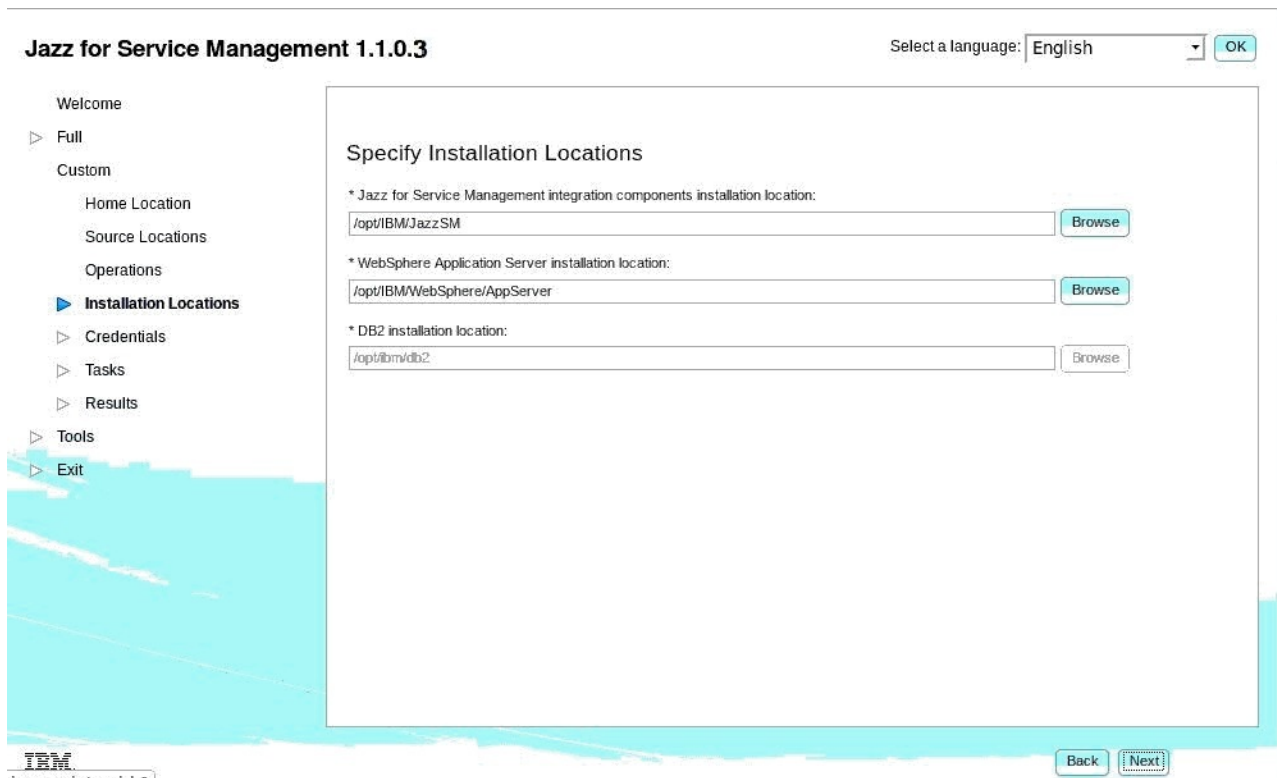


Figure 13. Entering the installation locations

8. On the Specify Credentials page, enter the following information:
 - a. WebSphere Application Server credentials for the new instance of WebSphere Application Server that will be installed.
 The user name and password that you enter are used to create your WebSphere Application Server profile. The user name and password are specific to WebSphere Application Server, and are not created for the operating system or IBM Spectrum Control.
 - b. DB2 credentials for your existing DB2 instance
 The credentials are used to connect to DB2 and create the Cognos Content Store database. Ensure that you use the correct credentials for your existing DB2 instance.

If you have an existing DB2 installation and that installation has multiple DB2 instances, the Jazz for Service Management launchpad uses the default DB2 instance that is returned by the **db2ilist** command.

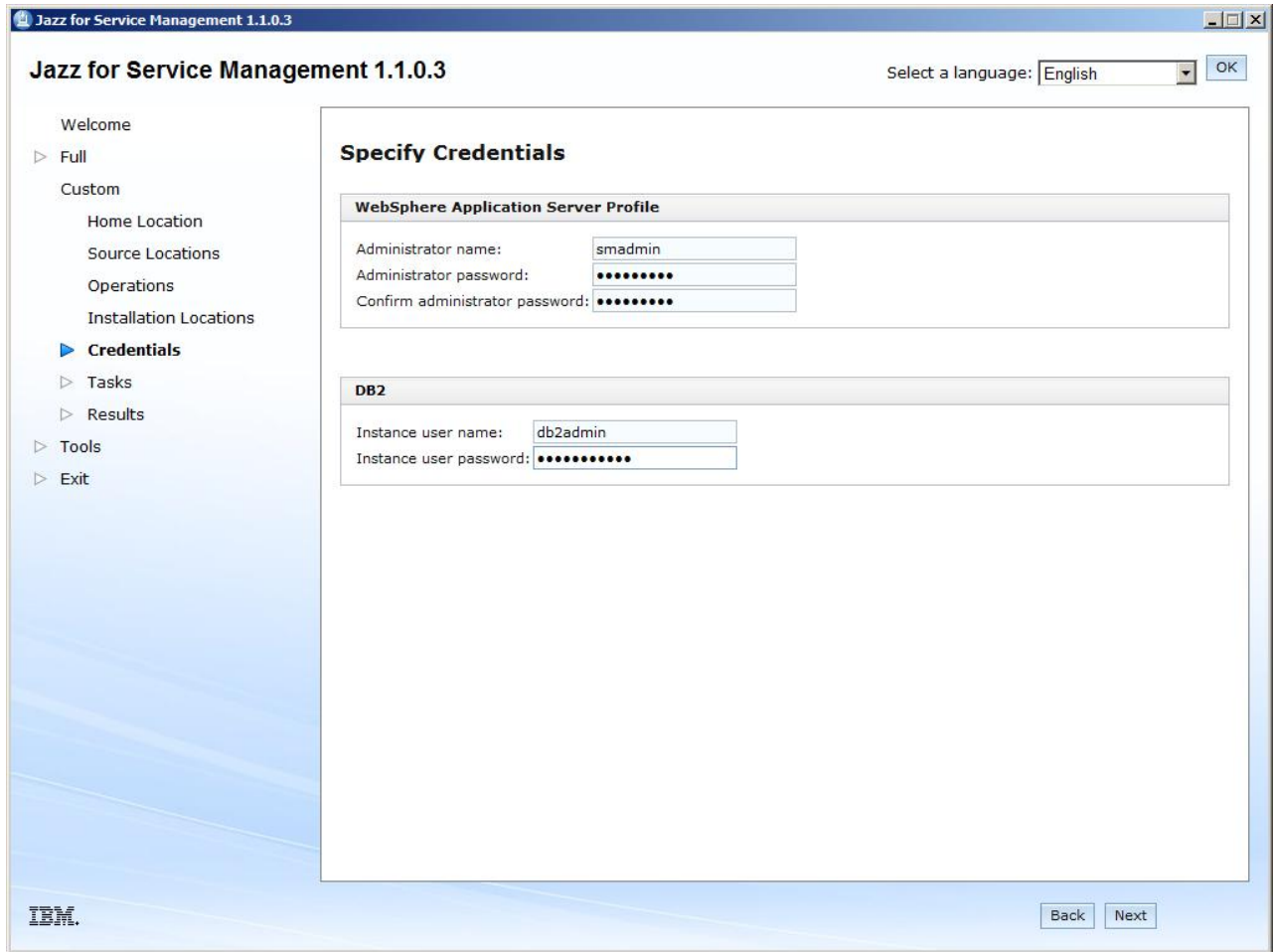


Figure 14. Specifying your credentials

9. On the Run Tasks page, review the list of components to be installed, and click **Run**.

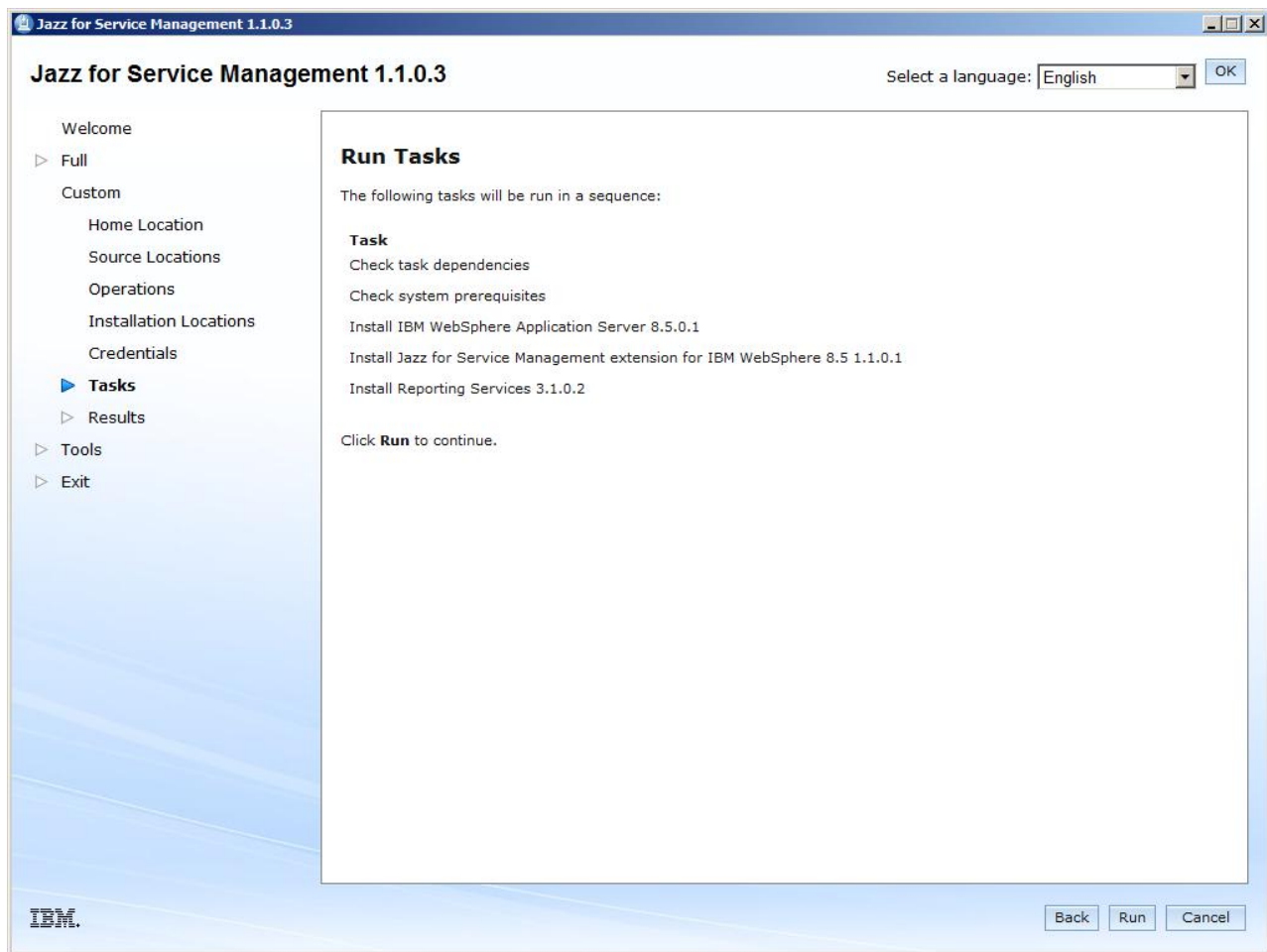


Figure 15. Run Tasks page

Tip: Warnings on the Run Tasks page do not affect the Jazz for Service Management installation.

After you click **Run**, it can take 30 minutes or longer to install the components. If you are running antivirus software on your server, it can take 90 minutes or longer to install the components. Running antivirus software on your server can also affect IBM Spectrum Control performance.

To improve performance, update your antivirus software so that it excludes the IBM Spectrum Control installation directory. To create an exception, see the documentation for your antivirus software.

For more information about using antivirus software with IBM Spectrum Control, see “Taking the first steps after installation” on page 151.

10. On the Review Results page, review the status and results of the installation for each component. Follow the directions that are provided on the page to correct any issues. While the installation is running, the **Running the custom workflow** status bar is displayed. When the status bar is no longer on the Review Results page, you can close the page by clicking **Exit**. The Jazz for Service Management launchpad closes.

After you install Jazz for Service Management, you must complete the IBM Spectrum Control installation:

- If you are installing IBM Spectrum Control in a single-server environment, return to step 8c in “Installing IBM Spectrum Control in a single-server AIX or Linux environment” on page 57.
- If you are installing IBM Spectrum Control in a multiple-server environment, return to step 2hv in “Installing IBM Spectrum Control with a remote database by using the installation program” on page 69.

Installing Jazz for Service Management and Tivoli Common Reporting on AIX without a web browser

On AIX operating systems, if your target computer does not have a browser, or if your browser is incompatible with the Jazz for Service Management launchpad, you can install Jazz for Service Management by using IBM Installation Manager. You can install Tivoli Common Reporting by using another installation program.

Installing Installation Manager

Before you install Jazz for Service Management and Tivoli Common Reporting, you must first install Installation Manager.

Important: If you cannot install Installation Manager by using the GUI mode, you can install Installation Manager by using the silent mode. For more information about installing Installation Manager by using silent mode, see [Silently installing Installation Manager](#). For more information about custom installations by using silent mode, see [Custom installations by using silent mode](#).

To install Installation Manager on AIX operating systems, complete the following steps:

1. Download and extract the following compressed files into the same temporary directory:
 - Jazz for Service Management
 - Tivoli Common Reporting
 - IBM WebSphere Application Server
2. Go to the following directory:
`JazzSM_install_directory/im.aix`

where *JazzSM_install_directory* is where you extracted the Jazz for Service Management launchpad compressed files.

3. Run the following command to install Installation Manager:
`./install`
4. On the Install Packages page, verify that only the check box for **IBM Installation Manager** is selected and click **Next**.

Important: You must install Installation Manager **only** when you run the installation program the first time. After you install Installation Manager and run the installation program again, you can select the packages that are necessary to install Jazz for Service Management.

5. On the License agreement page, read, accept the license agreement, and click **Next**.
6. On the page where you can select a location for Installation Manager, click **Next**.
7. Enter the shared resources directory location and click **Next**.
8. Review the summary information and click **Install**.

9. Click **Restart Installation Manager**.

Tip: If you are planning to install Jazz for Service Management, after you complete step 9, skip to step 2 in the next procedure.

Installing Jazz for Service Management by using Installation Manager

You can install Jazz for Service Management after you install Installation Manager Version 1.6.1.

To install Jazz for Service Management by using Installation Manager, complete the following steps:

1. Run this command to start Installation Manager:
`/opt/IBM/InstallationManager/eclipse/IBMIM`
2. On the Installation Manager Home page, click **File > Preferences**.
3. Click **Add Repository**.
4. To add the Jazz for Service Management repository, browse to the following directory path:
`JazzSM_image_folder/JazzSMRepository/disk1/`
5. Select the `diskTag.inf` file and click **OK** and then **OK** again.
6. Click **Add Repository**.
7. To add the IBM WebSphere Application Server repository, browse to the following directory path:
`JazzSM_image_folder/WASRepository/disk1/`
where *JazzSM_image_folder* is where you extracted the Jazz for Service Management launchpad compressed files.
8. Select the `diskTag.inf` file and click **OK** and then **OK** again.

Tip: After you select the `.inf` files for Jazz for Service Management and WebSphere Application Server, the Preferences window can disappear behind the Installation Manager Home page. Ensure that the Preferences screen remains active.

9. On the Installation Manager Home page, click **Install**.
10. On the Install Packages page, ensure that **only** the following packages are selected, and click **OK**:
 - **IBM WebSphere Application Server 8.5.0.1**
 - **Jazz for Service Management extension for WebSphere 8.5**
 - **Reporting Services environment**
11.

Attention: If you plan to configure LDAP authentication by using IBM System Storage DS8000 Storage Manager or IBM System Storage SAN Volume Controller, you must install **Security Services**.
12. On the License agreement page, read and accept the license agreement, and click **Next**.
13. Review the location of the shared directory and click **Next**.

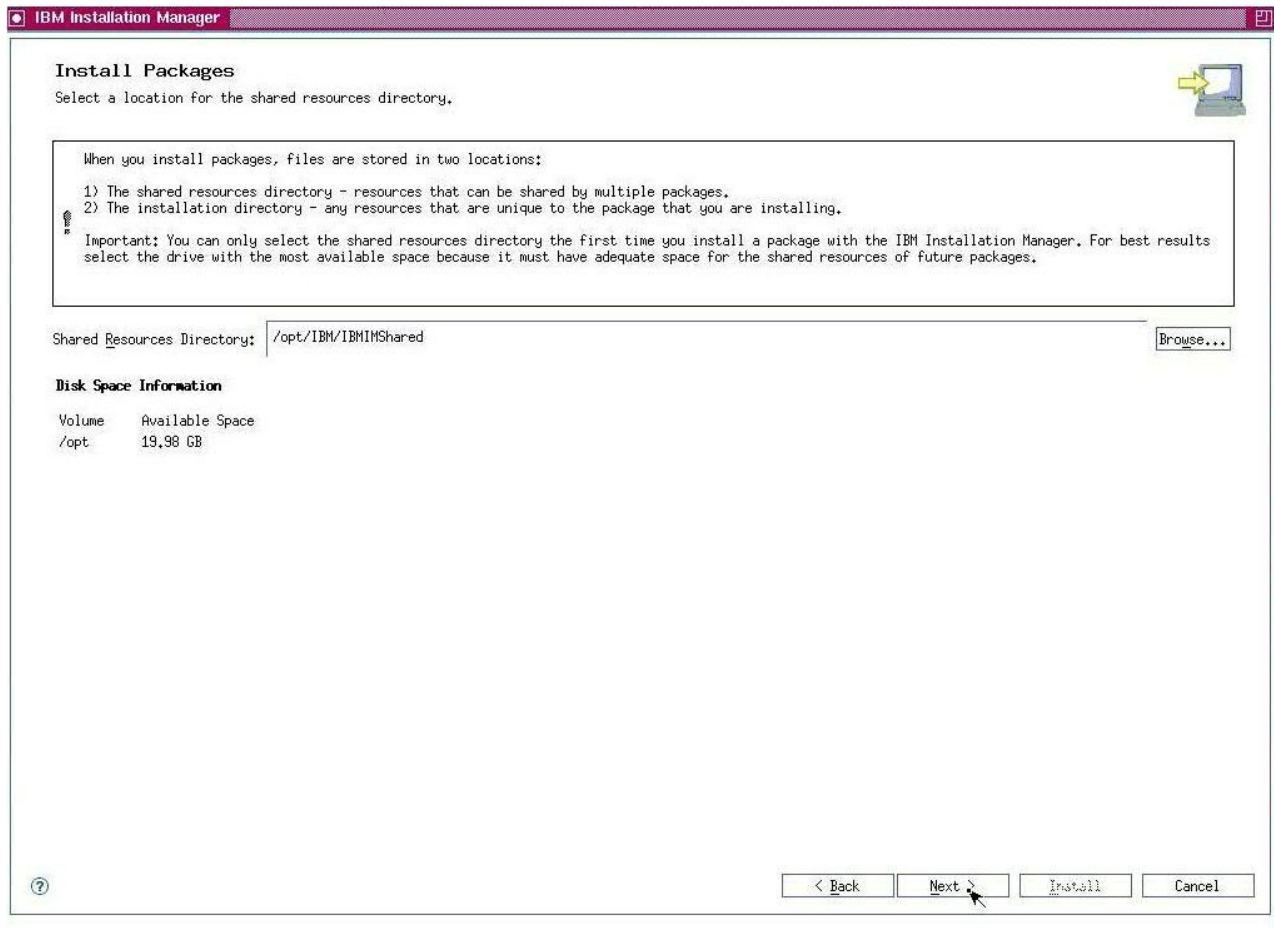


Figure 16. Specifying your installation location

14. Review the location of the installation directory and click **Next**.
15. Select the language that you want to use to install Jazz for Service Management and click **Next**.

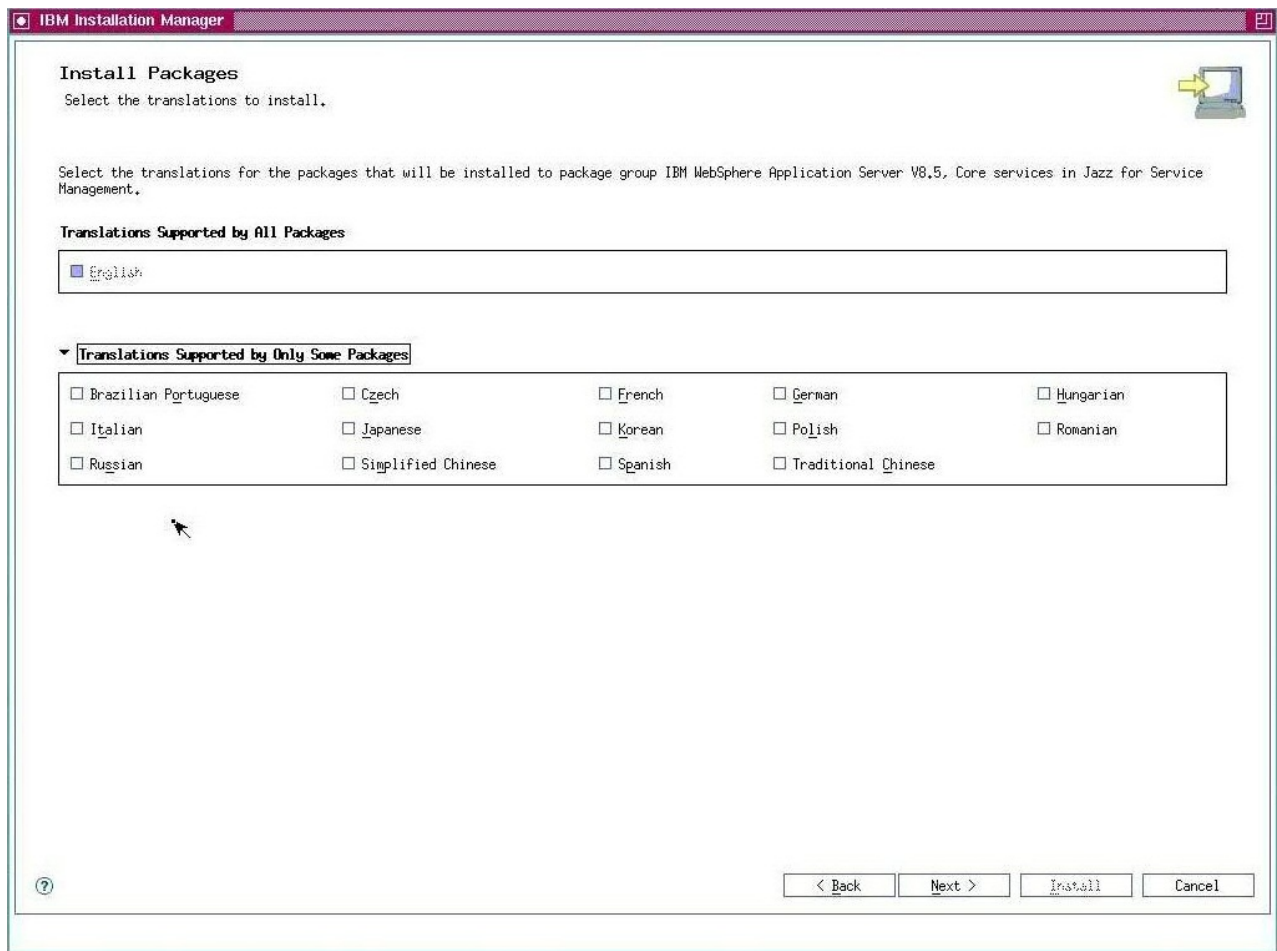


Figure 17. Selecting your installation language

16. Review the packages that will be installed and click **Next**.
17. Enter the user name and password for the Jazz for Service Management WebSphere Application Server profile.
The user name and password that you enter are used to create your WebSphere Application Server profile.

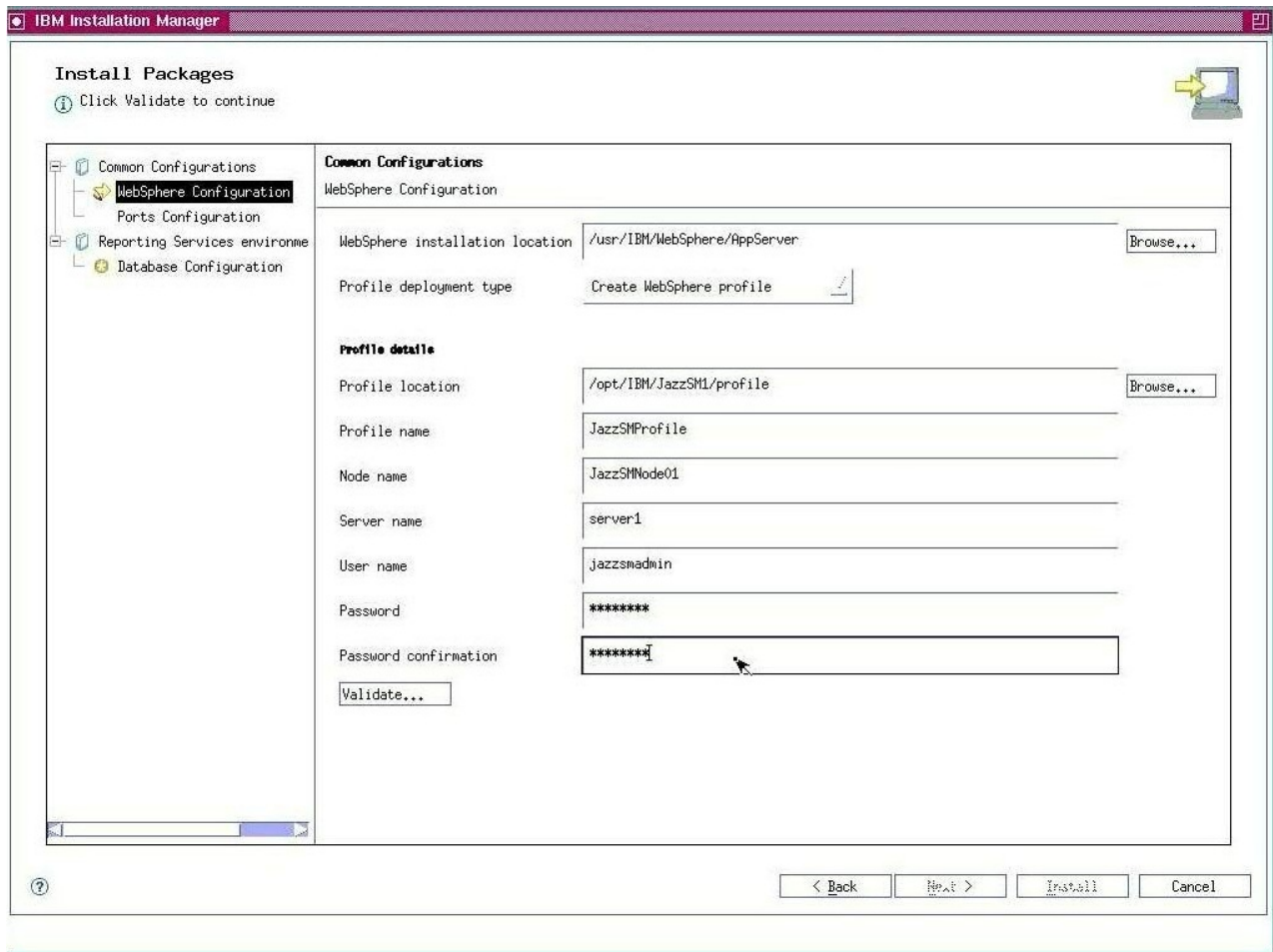


Figure 18. WebSphere Application Server Configuration

Important: Do not use Administrator as the user name. If you add a Microsoft Windows Active Directory (MSAD) LDAP repository to Jazz for Service Management later, issues with duplicate user names can prevent you from logging in to WebSphere Integrated Solutions Console that is associated with Jazz for Service Management.

18. Click **Validate** and click **Next**.

Note: When the profile is valid, the **Next** button is active.

19. Review your port configuration and click **Next**.

Important: You must verify that the ports you specify on this page are available and not being used by other applications. If any of the specified ports are in use, change those values to ports you know are available before installing Jazz for Service Management.

Jazz for Service Management and IBM Tivoli Integrated Portal can use port 16310. If IBM Tivoli Integrated Portal is installed and there is a port conflict, you must change the value of the HTTP transport port.

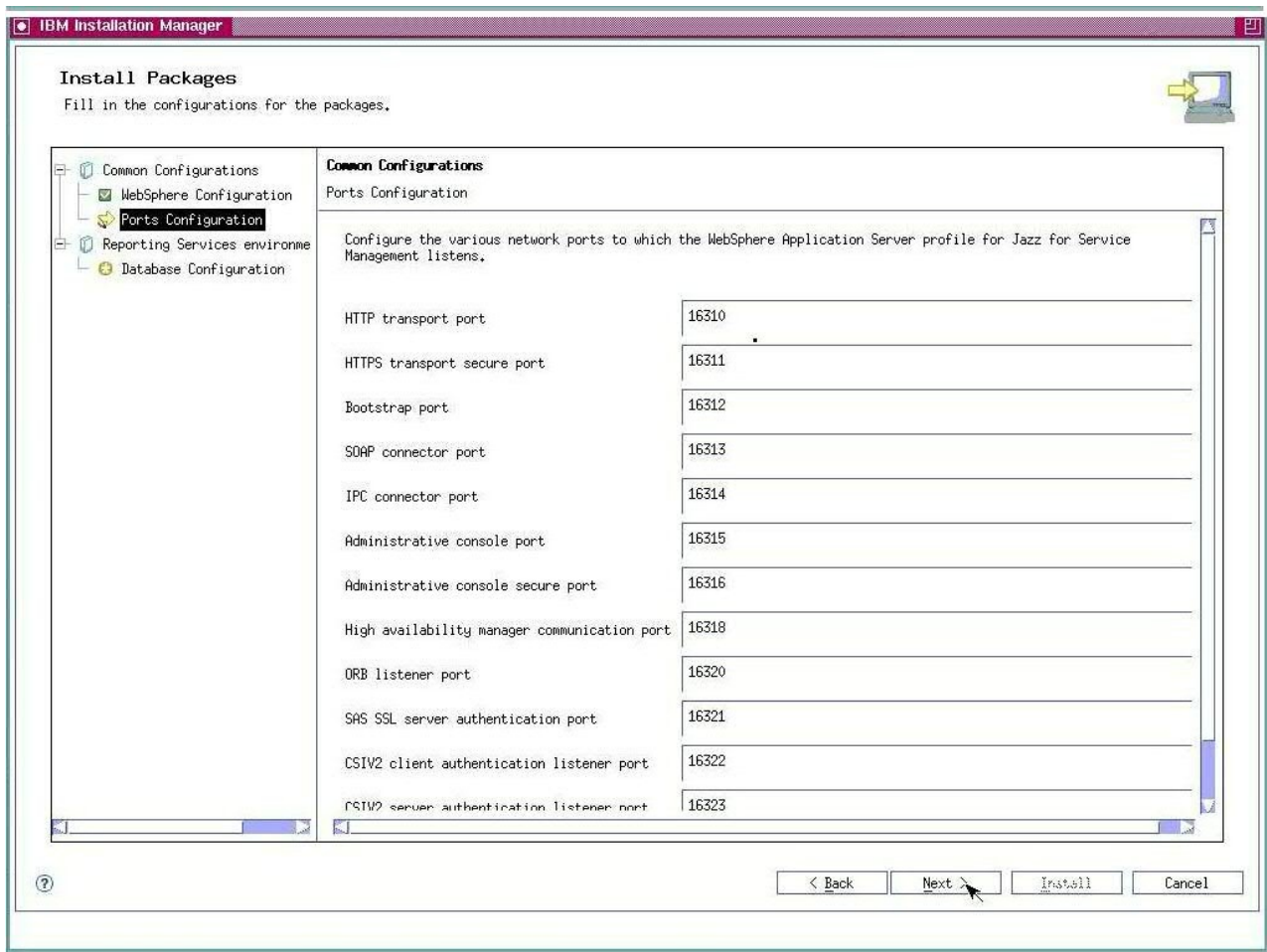


Figure 19. Configuring your ports

20. Enter your existing DB2 credentials, click **Test Connection**, and click **Next**.
An informational message appears verifying that the connection is successful.
The DB2 credentials are used to connect to DB2 and create the Cognos Content Store database.

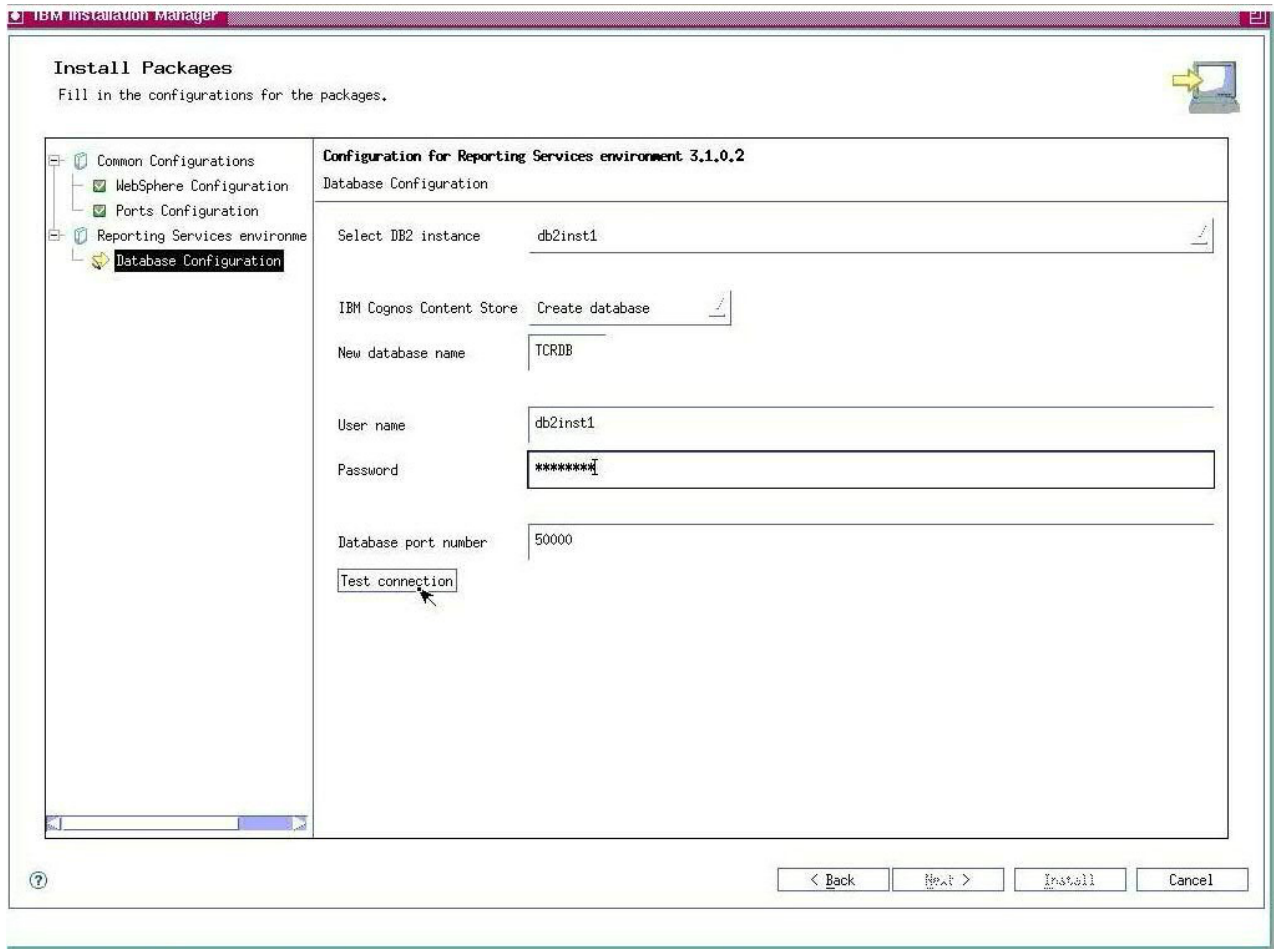


Figure 20. Creating the database

21. Review the list of packages that will be installed and click **Install**.
22. Select **None** and click **Finish**.
23. Exit from the Installation Manager Home page.

Important: If you restart your computer, you must manually restart Jazz for Service Management and Tivoli Common Reporting.

To restart Jazz for Service Management and Tivoli Common Reporting on the AIX operating system, complete the following steps:

1. Go to the /opt/IBM/JazzSM/profile/bin directory.
2. Run the following command:

```
./startServer.sh server1
```

For more information about installing Jazz for Service Management, see [Installing Jazz for Service Management](#).

Installing Tivoli Common Reporting on AIX without a web browser

You must install Tivoli Common Reporting after you install Jazz for Service Management. Tivoli Common Reporting is installed by using InstallAnywhere.

You install Tivoli Common Reporting Version 3.1.0.2 in two parts:

- First you install Tivoli Common Reporting Version 3.1.0.1 using the following steps.
- Then you upgrade to Tivoli Common Reporting Version 3.1.0.2 by completing the upgrade steps immediately after the Version 3.1.0.1 installation steps.

To install Tivoli Common Reporting, complete the following steps:

1. Go to the directory in which you extracted the Tivoli Common Reporting installation files (for example, /tmp/TCR/).
2. Go to the TCRInstaller directory.
3. To start the installation process, run the following command:
`./install.sh`
4. Select a language, accept the license agreement, follow the prompts in the installation program, and click **Next**.
5. On the IBM Jazz for Service Management Installation Directory Selection page, specify the location of the Jazz for Service Management installation directory and click **Next**. In the warning dialog about IBM Dashboard Application Services Hub not being installed, click **Next**.
6. On the IBM Jazz for Service Management Details page, verify the information, and click **Next**.

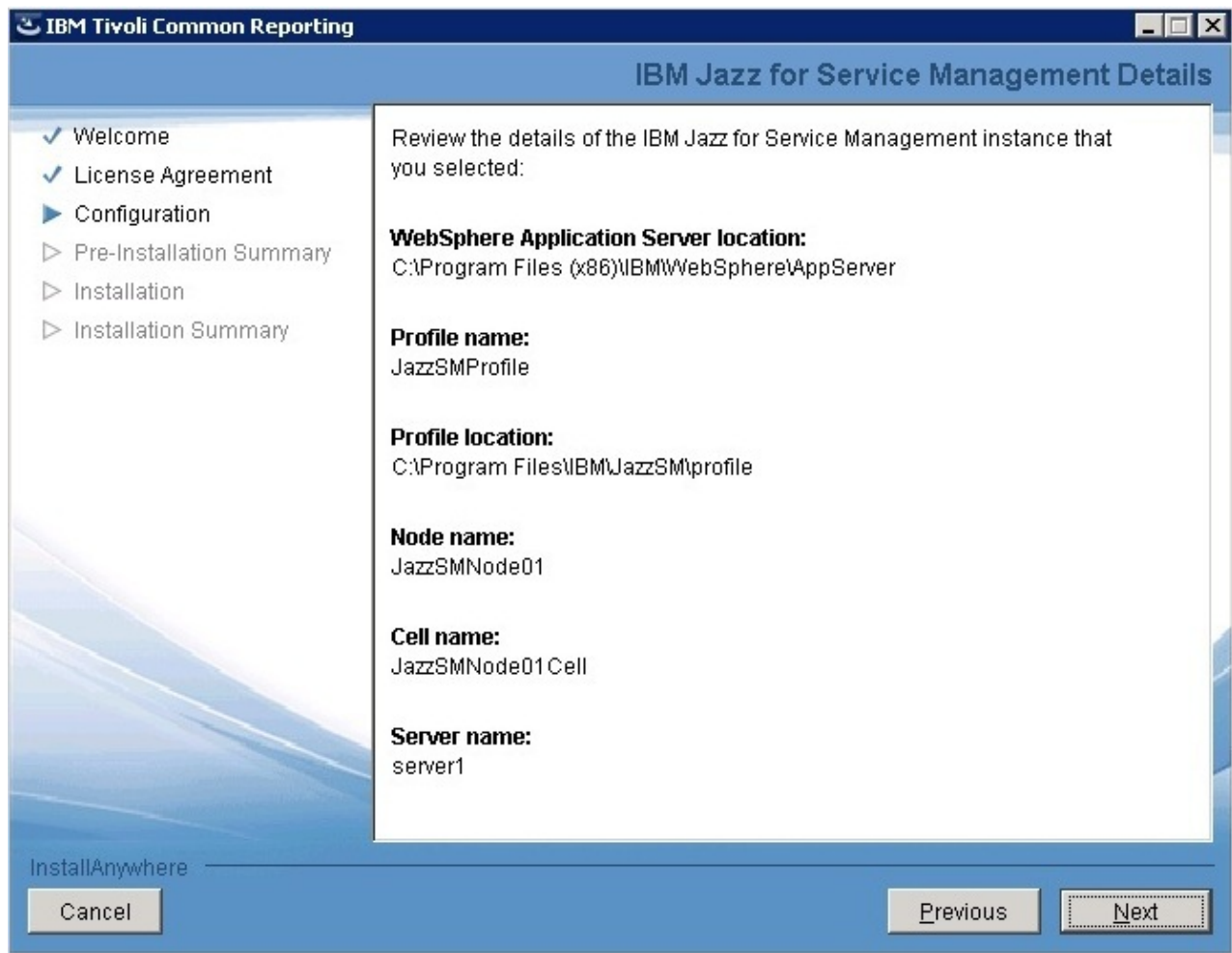


Figure 21. Installation details for Jazz for Service Management

7. On the WebSphere Information page, enter the user name and password that you used to install WebSphere Application Server during the Jazz for Service Management installation, and click **Next**.
8. On the Content Store configuration page, specify the following information about the Cognos Content Store database you created earlier in this procedure, and click **Next**:
 - **Hostname/IP.**
 - In the **Port** field, enter 50000.
Use port 50000 if you completed a typical DB2 installation. For custom DB2 installations, enter the custom port value that you specified during your DB2 installation.
 - In the **Database name** field, enter TCRDB.
 - **Database owner.**
 - **Database owner password.**
9. On the Pre-Installation Summary page, verify the information, and click **Install**.
10. On the Installation Summary page, click **Done** to complete the installation.

For more information about installing Tivoli Common Reporting, see Installing Tivoli Common Reporting.

What to do next: You must upgrade to Tivoli Common Reporting Version 3.1.0.2.

Upgrading Tivoli Common Reporting on AIX without a web browser

On AIX operating systems, if your target computer does not have a browser, you can upgrade to Tivoli Common Reporting Version 3.1.0.2 by using InstallAnywhere.

Before you begin: You must download and extract the compressed Tivoli Common Reporting installation files in a directory that is separate from the directory in which you downloaded the Jazz for Service Management Version 1.1.0.3 upgrade files, the IBM Spectrum Control installation files, and the DB2 installation files.

To upgrade to Tivoli Common Reporting Version 3.1.0.2, complete the following steps:

1. Go to the directory in which you extracted the Tivoli Common Reporting installation files, for example, /tmp/TCR/.
2. Go to the TCRInstaller/3.1.0.2/update directory.
3. To start the installation, in a terminal window, run the following command:
./install.sh
4. Select a language and click **Go**.
5. Review the Welcome page and click **Next**.
6. Read and accept the license agreement and click **Next**.
7. On the IBM Jazz for Service Management Installation Directory Selection page, review the location of the Jazz for Service Management installation directory and click **Next**.
8. On the IBM Jazz for Service Management Details page, verify the information, and click **Next**.
9. On the WebSphere Information page, enter the user name and password that you used to install WebSphere Application Server during the Jazz for Service Management installation, and click **Next**.
The default user name is smadmin.
10. On the Pre-Installation Summary page, verify the information, and click **Install**.
It might take up to 30 minutes to upgrade Tivoli Common Reporting.
11. On the Installation Summary page, click **Done** to complete the upgrade.

Related concepts:

“Installing Jazz for Service Management and Tivoli Common Reporting” on page 87

If you plan to use Cognos Business Intelligence reports, you must install Jazz for Service Management Version 1.1.0.3 and Tivoli Common Reporting Version 3.1.0.2 before you install Cognos BI reports. You can install these components now or after you install IBM Spectrum Control.

Related reference:

“Requirements for Jazz for Service Management and Tivoli Common Reporting” on page 38

If you plan to use Cognos Business Intelligence reports, you must install Jazz for Service Management Version 1.1.0.3 and Tivoli Common Reporting Version 3.1.0.2.

Upgrading Installation Manager

If you try to install Jazz for Service Management by using a version of IBM Installation Manager that is lower than Version 1.6.1, the Jazz for Service Management installation will fail with error message CRIMA1099E. To complete the Jazz for Service Management installation, you must upgrade Installation Manager to Version 1.6.1 or later.

To upgrade Installation Manager to Version 1.6.1 or later, complete the following steps:

1. Click **Start > All Programs > IBM Installation Manager > IBM Installation Manager**.
2. Click **File > Preferences**.
3. In the navigation tree, click the **Updates** node.
4. Select the **Search for Installation Manager updates** check box and click **OK**.
5. On the Installation Manager Home screen, click **Update**.
6. If a newer version of Installation Manager is detected, and you want to upgrade, click **Yes**.
7. Click **OK** to restart Installation Manager.
8. Continue the Jazz for Service Management installation.

Installing Jazz for Service Management and Tivoli Common Reporting by using DVDs

You can install Jazz for Service Management and Tivoli Common Reporting on the Windows, Linux, or AIX operating systems by using DVDs.

Each of the following Jazz for Service Management components is provided on a separate DVD:

- Tivoli Common Reporting
- IBM WebSphere Application Server
- Jazz for Service Management launchpad

To install Jazz for Service Management and Tivoli Common Reporting by using DVDs, complete the following steps:

1. On the computer on which you want to install Jazz for Service Management, create a temporary folder.

Restriction: You cannot install Jazz for Service Management directly from the DVDs.

2. Insert each disk and copy the files into the temporary folder.

Table 19. Approximate times to copy installation files from the DVD to a local directory

Installation file	Minutes to copy
Tivoli Common Reporting	8
WebSphere Application Server	10
Jazz for Service Management launchpad	5

3. Insert the IBM Spectrum Control installation disk.
4. Start the IBM Spectrum Control installation program.
5. On the Welcome page, click **Install Now**.

6. On the Install Jazz for Service Management and Tivoli Common Reporting page, browse for the temporary folder that you created in step 1 on page 115, and click **Install Now**.
7. Complete the Jazz for Service Management installation.

Related tasks:

“Installing IBM Spectrum Control in a single-server Windows environment” on page 55

You can install IBM Spectrum Control by using the IBM Spectrum Control installation program.

“Installing IBM Spectrum Control with a remote database by using the installation program” on page 69

You can install IBM Spectrum Control in a multiple-server environment by using the installation program.

Creating more users for Jazz for Service Management and Tivoli Common Reporting

You can add users for Jazz for Service Management and Tivoli Common Reporting to the file-based user repository after you install Jazz for Service Management. You create the users in the WebSphere Integrated Solutions Console.

1. To access the WebSphere Integrated Solutions Console, open a web browser, and open the following web address:

`https://host_name:port/ibm/console/login.jsp`

Where *host_name* is the server name or IP address for the server that is running WebSphere Application Server, and *port* is the port number for WebSphere Application Server.

To determine the port number, open the `JAZZSM_INSTALL_DIR/profile/properties/portdef.props` file. The port number is the value that is assigned to the `WC_adminhost_secure` key. The default port number is 16316.

2. Log in to the WebSphere Integrated Solutions Console with your administrator user ID and password for Jazz for Service Management.
3. In the WebSphere Integrated Solutions Console navigation tree, click **Users and Groups > Manage Users**.
4. Click **Create**.
5. Enter information for the user, and then click **Create**.

Add the new users in Tivoli Common Reporting. To make it easier to manage security, you can create groups of user IDs in Tivoli Common Reporting

Troubleshooting Jazz for Service Management installation procedure

Find answers to issues with Jazz for Service Management if you do not use the IBM Spectrum Control installation program to install Jazz for Service Management.

Problem


The Jazz for Service Management Windows service does not get created. As a result, the Jazz for Service Management server does not automatically start when you restart the computer, which causes Cognos Business Intelligence reports to fail.

Solution

There are two possible solutions to this problem:

- You must manually start Jazz for Service Management server every time you restart the computer on which Jazz for Service Management is installed
- On a command prompt, type the following command to start the service:
`smsetApplicationServer.bat -property autostart=true`

You must have administrator privileges to run the **smsetApplicationServer** command. For more information about the **smsetApplicationServer**, go to IBM Knowledge Center at

 http://www-01.ibm.com/support/knowledgecenter/SSEKCU_1.1.0.3/com.ibm.psc.doc_1.1.0.3/ref/psc_r_install_smsetappserver_cmd.html.

Problem

Jazz for Service Management launchpad uses the same default ports as IBM Tivoli Integrated Portal Version 2.2. If IBM Tivoli Integrated Portal is installed and there is a port conflict, the Jazz for Service Management launchpad does not provide an option to use non-default ports. The Jazz for Service Management launchpad also does not detect the port conflict if the Tivoli Integrated Portal Version 2.2 server is down.

Solution

Go to the Resolve Port Conflicts section.

Problem

If you do not select **Run as Administrator**, the stand-alone Jazz for Service Management installation fails.

Solution

When you use a Windows domain user account to install Jazz for Service Management, you must right-click the `launchpad64.exe` file and select **Run as Administrator**.

Installing Cognos BI reports later by using the installation program

You can install Cognos Business Intelligence reports by using the installation program after you install IBM Spectrum Control.

Ensure that you have completed the steps in “Installing IBM Spectrum Control in a single-server Windows environment” on page 55.

You can install Cognos BI reports after you install IBM Spectrum Control for one of the following reasons:

- You chose not to install Jazz for Service Management the first time you ran the IBM Spectrum Control installation program. IBM Spectrum Control was installed without Cognos BI reports.
- You attempted to install Jazz for Service Management the first time you ran the IBM Spectrum Control installation program, but the Jazz for Service Management installation did not succeed. IBM Spectrum Control was installed without Cognos BI reports.
- You successfully installed Jazz for Service Management the first time you ran the IBM Spectrum Control installation program, but there was an issue when the installation program attempted to communicate with Jazz for Service Management. IBM Spectrum Control was installed without Cognos BI reports.

This procedure assumes one of the following conditions:

- You have not yet installed Jazz for Service Management.
- You resolved any issues that you experienced during the initial attempt to install Jazz for Service Management.

To install Cognos BI reports later by using the installation program, complete the following steps:

1. Log on to the IBM Spectrum Control computer with the appropriate user privileges.
2. If Jazz for Service Management is not installed, download and extract the Jazz for Service Management and Tivoli Common Reporting compressed installation files to the same temporary directory.
For more information about the installation files, see Setting up a local file system for a custom installation.
3. Start the IBM Spectrum Control installation program again.
4. On the Before You Begin page of the IBM Spectrum Control installation program, take one of the following actions:
 - If Jazz for Service Management is not installed on your computer, **Install Now** is displayed under **Cognos BI Reporting** on the Before You Begin page. Proceed to step 5.
 - If Jazz for Service Management is installed on your computer, a green check mark icon is displayed under **Cognos BI Reporting** on the Before You Begin page. Proceed to step 18a.
5. To install Jazz for Service Management, click **Install Now**.
6. On the Install Jazz for Service Management page, complete the following steps:
 - a. Enter the location of the directory that you created in step 2. For example, on Windows operating systems, the path might be c:\downloads\jazzSM. On AIX or Linux operating systems, the path might be /downloads/JazzSM.
 - b. If there is a port conflict, specify a new starting value for a 15-port range, and click **Verify Port Availability** to ensure that the port range is usable.
 - c. Click **Install now**. The IBM Spectrum Control installation program pauses and the Jazz for Service Management launchpad starts.
7. On the Before You Begin page for Jazz for Service Management, click **Custom**. Ensure that you click **Custom**, not **Full**.
8. On the Custom workflow page, click **Next**.
9. On the Specify Jazz for Service Management Home Location page, click **Next**.

Tip: If you have an existing Jazz for Service Management installation, launchpad provides the path to the existing installation.

If you do not have an existing Jazz for Service Management installation, the field is blank.

10. On the Specify Source Locations page, review the locations for the Jazz for Service Management, WebSphere Application Server, and Tivoli Common Reporting installation images.

Tip: Because DB2 must be installed before IBM Spectrum Control, a path for the installation image is not required in the **IBM DB2 10.1 or later, Enterprise**

Server Edition installation image field. Leave the field blank and continue the installation. If an information message is displayed for the blank field, close the message.

11. On the Select Operations page, select **Install** for only the following components:

- **Reporting services**
- **IBM WebSphere Application Server**

Select **None** for all other components.

Attention: If you accept the default option **Install** for all of the components, components that are not required are installed. These additional components can increase the time that it takes to complete the installation and can cause performance issues after installation.

If you plan to configure LDAP authentication for an IBM System Storage DS8000 Storage Manager or IBM System Storage SAN Volume Controller system, select **Install** for **Security Services**.

12. On the Software License Agreement page, read and accept the license agreement, and click **Next**.
13. On the Specify Installation Locations page, accept the installation locations for Jazz for Service Management and WebSphere Application Server or enter other locations, and click **Next**. If DB2 is installed on your computer, the field to enter the DB2 installation location is disabled.
14. On the Specify Credentials page, enter the following information:
 - WebSphere Application Server credentials for the new instance of WebSphere Application Server that will be installed.

The user name and password that you enter are used to create your WebSphere Application Server profile. The user name and password are specific to WebSphere Application Server, and are not created for the operating system or IBM Spectrum Control.
 - DB2 credentials for your existing DB2 instance.

The credentials are used to connect to DB2 and create the Cognos Content Store database. Ensure that you use the correct credentials for your existing DB2 instance.

Restriction: If you are installing Jazz for Service Management on a computer that is a member of a Windows domain, and you installed DB2 on that computer so that the DB2 instance user is a domain user, enter only the DB2 instance user name (for example, db2admin). Do not enter the Windows domain name as a prefix to the DB2 instance user name. For example, do not enter mydomain\db2admin). The **Instance user name** field does not accept this format.

If you have an existing DB2 installation and that installation has multiple DB2 instances, the Jazz for Service Management launchpad uses the default DB2 instance that is returned by the **db2ilist** command.

15. On the Run Tasks page, review the list of components to be installed, and click **Run**.

Important: After you click **Run**, it can take 30 minutes or longer to install the components. If you are running antivirus software on your server, it can take 90 minutes or longer to install the components. Running antivirus software on your server can also affect IBM Spectrum Control performance.

To improve performance, update your antivirus software so that it excludes the IBM Spectrum Control installation directory. To create an exception, see the documentation for your antivirus software.

For more information about using antivirus software with IBM Spectrum Control, see *Taking the first steps after installation*.

16. On the Review Results page, review the status and results of the installation for each component. Follow the directions that are provided on the page to correct any issues.

While the installation is running, the **Running the custom workflow** status bar is displayed. When the status bar is no longer on the Review Results page, you can close the page by clicking **Exit**. The Jazz for Service Management launchpad closes.

17. On the Install Jazz for Service Management page of the IBM Spectrum Control installation program, click **OK**.
18. On the Before You Begin page of the IBM Spectrum Control installation program, complete one of the following steps:

- a. If the installation of Jazz for Service Management was successful, a green check mark icon is displayed on the Before You Begin page of the IBM Spectrum Control installation program. Click **Next**. The installation program presents a series of pages that prompt you through the installation of the Cognos BI reports. These pages include the Configure Jazz for Service Management and Tivoli Common Reporting page, which requires the following information:

- The user name that is used to log on to the Jazz for Service Management WebSphere profile.
- The password that is associated with the user name.
- The path for the Jazz for Service Management installation directory.

If the IBM Spectrum Control installation program is unable to communicate with Jazz for Service Management, you must resolve this problem to continue installing Cognos BI reports.

- b. If the installation of Jazz for Service Management was not successful, a message is displayed, and you can click one of the following options:
 - **Install Now** to restart the Jazz for Service Management launchpad.
 - **Continue** to return to the Before You Begin page.

You must install Jazz for Service Management successfully to continue installing Cognos BI reports.

Installing Cognos BI reports later by using silent mode

You can install Cognos Business Intelligence reports by using silent mode after you install IBM Spectrum Control.

It is expected that you have completed the steps in “Installing IBM Spectrum Control in a single-server environment by using silent mode” on page 60.

You can install Cognos BI reports after you install IBM Spectrum Control by using silent mode for one of the following reasons:

- You chose not to install Jazz for Service Management before you installed IBM Spectrum Control by using silent mode.
- You encountered issues when attempting to install Jazz for Service Management before you installed IBM Spectrum Control by using silent mode.

This procedure assumes one of the following conditions:

- You have successfully installed Jazz for Service Management.
- You resolved any issues that you experienced during the initial attempt to install Jazz for Service Management.

To install Cognos BI reports later by using silent mode, complete the following steps:

1. Log on to the IBM Spectrum Control computer with the appropriate user privileges.
2. Edit the same response file that you used when you installed IBM Spectrum Control without Cognos BI reports by using silent mode. For information about editing the response file, see “Editing the response file” on page 62.
3. Set the `varInstallReportingLater` parameter to the following value:
`false`
4. Ensure that the following parameters have the correct values:
 - `JAZZSM_INSTALL_DIR`, which is the directory where Jazz for Service Management is installed.
 - `varJazzSMUsrID`, which is the user ID that was used to install Jazz for Service Management
 - `varJazzSMUsrPW`, which is the password that is valid for the Jazz for Service Management user ID.
5. Run the silent mode installation program to install only Cognos BI reports.
 - For Windows operating systems, run the following command:
`setup.bat -l language -i silent -f absolute_path_to_response_file`
where *language* can be one of the following values:
 - Czech - cs
 - English - en
 - French - fr
 - German - de
 - Hungarian - hu
 - Italian - it
 - Japanese - ja
 - Korean - ko
 - Polish - pl
 - Brazilian Portuguese - pt_BR
 - Russian - ru
 - Spanish - es
 - Chinese (Simplified) - zh_CN
 - Chinese (Traditional) - zh_TW

`absolute_path_to_response_file` is the absolute path to the response file. For example, the following command specifies the language and the path:

```
setup.bat -l fr -i silent -f  
c:\TPC52\silent_SingleServerTypical.properties
```

- For AIX or Linux operating systems, run the following command:
`./setup.bin -l language -i silent -f /absolute_path_to_response_file`

For example, the following command specifies the language and the path:

```
./setup.bin -l de -i silent -f /TPC52/silent_SingleServerTypical.properties
```

If you do not specify a language or if the language is not specified correctly, the installation program uses the English language as the default.

Redeploying Cognos BI reports

If you experienced issues with the Tivoli Common Reporting installation and had to uninstall and install Tivoli Common Reporting again, you can uninstall and install IBM Spectrum Control Cognos Business Intelligence reports again.

To uninstall Cognos BI reports, complete the following steps:

1. Go to the *installation_dir/_uninst* directory.
2. Run one of the following commands to uninstall Cognos BI reports:
 - On the Windows operating system:
`uninstall_tpc_reports.bat`
 - On the AIX or Linux operating systems:
`uninstall_tpc_reports.sh`

To install Cognos BI reports again, complete the following steps:

1. Install Tivoli Common Reporting.
2. Run the IBM Spectrum Control installation program again to install Cognos BI reports.

Related tasks:

“Installing Cognos BI reports later by using the installation program” on page 117
You can install Cognos Business Intelligence reports by using the installation program after you install IBM Spectrum Control.

“Installing IBM Spectrum Control with a remote database by using the installation program” on page 69
You can install IBM Spectrum Control in a multiple-server environment by using the installation program.

Accessing IBM Spectrum Control server from a remote computer using Command Line Interface

Accessing client components on a remote computer helps you complete storage management tasks from a computer that does not have a IBM Spectrum Control server that is installed on it.

To access IBM Spectrum Control server on a remote computer, complete the following steps:

1. Go to the *client_images* subdirectory in the IBM Spectrum Control installation directory.
 - On AIX or Linux operating systems, here is an example of a subdirectory:
`/opt/IBM/TPC/client_images`
 - On Windows operating systems, here is an example of a subdirectory:
`C:\Program Files\IBM\TPC\client_images`
2. To create a client image, run one of the following commands for the operating system of the computer on which you want to access the command-line interface (CLI):
 - On AIX or Linux operating systems, run the following command:
`createClientImage.sh [aix | linux | windows | all]`

When you include the [aix | linux | windows | all] parameters, you can create AIX, Linux, and Windows client images on a computer that is running AIX or Linux operating systems.

- On Windows operating systems run the following command:

```
createClientImage.bat [aix | linux | windows | all]
```

When you include the [aix | linux | windows | all] parameters, you can create AIX, Linux, and Windows client images on a computer that is running AIX and Linux or Windows operating systems.

Tip: Each parameter creates one of the following compressed client image files:

aix

Creates a TPC_CLIENT_AIX.tar image.

linux

Creates a TPC_CLIENT_LINUX.zip image.

windows

Creates a TPC_CLIENT_WIN.zip image.

all

Creates all of the client images.

3. Extract the appropriate compressed file on the remote computer.

- On AIX operating systems, extract the TPC_CLIENT_AIX.tar file to a folder, for example:

```
/opt/IBM/TPCCClient
```

- On Linux operating systems, extract the TPC_CLIENT_LINUX.zip file to a folder, for example:

```
/opt/IBM/TPCCClient
```

- On Windows operating systems, extract the TPC_CLIENT_WIN.zip file to a folder, for example:

```
c:/Program Files/IBM/TPCCClient
```

4. Ensure that the following directories appear in the folder where you extracted the client image compressed file:

- cli
- jre

The cli folder contains the files to start the IBM Spectrum Control command-line interface and the Replication command-line interface. The jre folder contains other files that are necessary to start the command-line interface.

5. To start the IBM Spectrum Control command-line interface, run one of the following commands:

- On AIX or Linux operating systems:

```
/opt/IBM/TPCCClient/cli/tpctool.sh
```

- On Windows operating systems:

```
C:\Program Files\IBM\TPCCClient\cli\tpctool.bat
```

6. If Tivoli Storage Productivity for Replication is installed, to start the Replication command-line interface, run one of the following commands:

- On AIX or Linux operating systems:

```
/opt/IBM/TPCCClient/cli/csmcli.sh
```

- On Windows operating systems:

```
C:\Program Files\IBM\TPCCClient\cli\csmcli.bat
```

Installing IBM Spectrum Control on a Windows domain

You can install IBM Spectrum Control and DB2 by using a Windows domain or a local user account.

Installing Microsoft .NET Framework

Before you install IBM Spectrum Control on a Windows domain, you must install Microsoft .NET Framework Version 3.5 or later.

Important: The steps in this procedure apply only if you are installing Microsoft .NET Framework Version 3.5 or later in a Windows 2008 R2 (64-bit) environment.

If the operating system on which you are installing IBM Spectrum Control is sensitive to spaces in directory paths, change the default installation location to not include spaces, for example, C:\apps\IBM\SC .

Prerequisite: You cannot run the commands to install Microsoft .NET Framework Version 3.5 or later on a Windows PowerShell (x86).

To install Microsoft .NET Framework Version 3.5 or later, complete the following steps:

1. Click **Start > All Programs > Accessories > Window PowerShell**, right-click **Window PowerShell**, and select **Run as administrator**.
2. To install the software, in the Windows PowerShell window, run the following commands:

```
Import-Module ServerManager
Add-WindowsFeature as-net-framework
```

Installing DB2 and IBM Spectrum Control by using local user accounts

Prerequisite: If the local user account is used to install the database repository, this account must be a member of the DB2 administrator (DB2ADMNS) group.

To install IBM Spectrum Control and DB2 by using local user account, complete the following steps:

1. Install DB2 by using a local user account.
2. Log on to the Windows domain computer on which you plan to install IBM Spectrum Control by using a local user account that is a member of the local administrator and the local DB2 administrator (DB2ADMNS) groups.
3. On the Single Server Installation Information page, in the **User name** field, enter a local user account that is a member of local administrator group.

Installing DB2 by using a local user account and IBM Spectrum Control by using a domain user account

Prerequisite: If the local user account is used to install the database repository, this account must be a member of the DB2 administrator (DB2ADMNS) group.

To install DB2 with a local user account and IBM Spectrum Control with a domain user account, complete the following steps:

1. Install DB2 by using a local user account.

2. Log on to the Windows domain computer on which you plan to install IBM Spectrum Control by using a domain user account that is a member of the local administrator and the local DB2 administrator (DB2ADMNS) groups.
This user must have the **Act as part of the operating system** and **Login as a service** permissions set in the security policy.
3. On the Single Server Installation Information page, in the **User name** field, enter a domain user account (with a Windows domain name prefix) that is a member of the local administrators group.
4. Click **Configure Database repository**.
5. On the Configure the Database Repository page, enter the DB2 user name **without** a Windows domain name prefix, enter the password for the DB2 user, and click **Validate**.
6. When the validation is complete, click **OK** to return to the Single Server Installation Information page.

Restriction: If the domain security policy overrides the local security policy, you must set the indicators on the domain controller computer.

Installing DB2 and IBM Spectrum Control by using domain user accounts

Prerequisite: If the domain user account is used to install the database repository, this user account must have DB2 SYSADM authority.

To install IBM Spectrum Control and DB2 by using domain user accounts complete the following steps:

1. Install DB2 by using a domain user account.
2. Log on to the Windows domain computer on which you plan to install IBM Spectrum Control by using a domain user account that has domain administrator rights and is a member of the local administrator group.
3. On the Single Server Installation Information page, in the **User name** field, enter a domain user account (with a Windows domain name prefix) that is a member of the local administrators group.
4. Click **Configure Database repository**.
5. On the Configure the Database Repository page, enter the DB2 user name **without** a Windows domain name prefix, enter the password for the DB2 user, and click **Validate**.
6. When the validation is complete, click **OK** to return to the Single Server Installation Information page.

Resolving Windows domain prevalidation errors

Adding Windows domain user accounts to a local group, such as Administrator or DB2ADMNS, and later deleting these user accounts from the domain controller computer can cause an error when the account is validated.

When you delete user accounts from the domain controller computer, a reference to the user account is created as a security ID on the computer that is a member of a Windows domain. If these references are not removed, the IBM Spectrum Control installation can fail.

To locate the references that have a security ID, complete these steps:

1. On the domain member computer, click **Start > Control Panel > Administrative Tools > Computer Management**. If you are prompted by a User Account Control window, click **Yes**.
2. In the Computer Management navigation tree view, expand the **Local Users and Groups** node and select **Groups**.
3. In the **Name** column, look for a security ID like the following example:
S-1-5-21-337177553-1671989427-887411491-500
4. To remove a reference, select the security ID and click **Delete**.
 - a. To add the user account back to the group, click **Add**. The user account now belongs to the group.

When a prevalidation error occurs, depending on the type of user account and the group, error messages might be displayed:

- BPCIN0109E An unexpected error occurred.....
For more information, review the log files and see the IBM Knowledge Center.

To resolve this situation, use these steps:

1. On the domain controller computer, open **Users and Groups** on the Active Directory.
2. Delete all groups from the user account, and then add the groups again.
3. Log on to the computer again that is the member of the domain.


You have to add the DB2ADMNS rights to the user account again.

Locate the installation log files, lax*-out.txt and lax*-err.txt, for more details about the root cause of the error message. For example,

name=DB2ADMNS An error occurred while enumerating the groups.
The group could be found.

- BPCIN0244E An error occurred while enumerating the local administrator group membership. On the current computer, on the Properties page of this group, remove the user names that are displayed with a security ID (SID). An example of a SID is S-1-5-21-337177553-1671989427-887411491-500 and is used instead of a user name.
- BPCIN0245E An error occurred while enumerating the local DB2 administrator group membership. On the current computer, on the Properties page of this group, remove the user names that are displayed with a security ID (SID). An example of a SID is S-1-5-21-337177553-1671989427-887411491-500 and is used instead of a user name.

For more information about these messages, go to IBM Knowledge Center at

 http://www.ibm.com/support/knowledgecenter/SS5R93_5.2.15/ and search for the message number.

In the error message window, click **OK** to resume the installation program or **Quit** to restart the IBM Spectrum Control.

Related reference:

“Windows domain and local user accounts” on page 8

When a computer is a member of a Windows domain, you can install IBM DB2 on the local computer or on a computer that is a member of a Windows domain. The installation process creates a local DB2 user account or a domain DB2 user account.

“Adding a computer to the Windows domain” on page 10

Before you can install IBM Spectrum Control in a Windows domain, you must first add the computer on which you plan to install IBM Spectrum Control to the

domain.

“Installing DB2 by using a Windows domain user account” on page 11

Before you install IBM Spectrum Control in a Windows domain, you must install DB2 and register the DB2 license key. You do not need to complete this task if you are planning to install DB2 by using a local user account.

“Creating a Windows domain common user account for IBM Spectrum Control” on page 11

You must create a Windows domain common user account before you can install IBM Spectrum Control in a Windows domain.

“Granting DB2 SYSADM authority to a Windows domain user account” on page 12

If a Windows domain user account is used to install IBM Spectrum Control, the user account may not have the DB2 SYSADM authority, because DB2 goes to the domain controller computer to list the groups. Before you install IBM Spectrum Control, you must grant the Windows domain user accounts the DB2 SYSADM authority.

Verifying the connection to the domain controller computer by using the Dcdiag tool

Use the Dcdiag command-line tool to help you determine whether the domain controller computer is registered with the domain name server (DNS), whether the controller can be pinged, and whether the controller has Lightweight Directory Access Protocol (LDAP) connectivity.

To install and use the Dcdiag tool, complete the following steps:

1. On a computer that is a member of a Windows domain, go to <http://www.microsoft.com/en-us/download/details.aspx?id=15326>.
2. Download the following files to the same location:
 - support.cab
 - suptools.msi
3. Run the suptools.msi file.
4. Proceed through the installation software and click **Finish** to install the tool.
5. In a command prompt window, to run the tool, enter the following command:
`DCDIAG /TEST:DNS /V /E /S:domaincontroller`

Where *domaincontroller* is the name of the domain controller computer, for example, TPCDomain.

Important: You can run the command only if you are logged in with a Windows domain user name. If you try to run the command when you are logged in with a local user name, the following error message is displayed:

```
Connecting to directory service on server 10.10.10.10
LDAP bind failed with error 1326,
Logon failure: unknown user name or bad password.
```

When you run the **DCDIAG** command, and you connect to the domain controller computer, the output contains text such as passed test Connectivity. This text is displayed even if text such as system1.srm.tpc.example.com failed test DNS": Testing server: Default-First-Site-Name\TPCDomain is displayed at the end of the output.

The following output shows that the connection was successful:

```

Starting test: Connectivity
* Active Directory LDAP Services Check
*** Warning: could not confirm the identity
of this server in the directory versus
the names returned by DNS servers. If
there are problems accessing this directory
server then you may need to check that this
server is correctly registered with DNS
* Active Directory RPC Services Check
..... TPCDomain passed test Connectivity

```

Installing IBM Spectrum Control and associated products using minimal space on the Windows C: drive

There might be situations in which you do not want to install DB2, IBM Spectrum Control, or Jazz for Service Management on the C: drive.

For example, you might have limited space on the drive. You can install these products on a different drive that meets the space requirements for the products. You can also minimize the space that is used on the C: drive during the installation process by directing temporary files to another drive.

The procedures that are provided apply to installing the products on a single server using the appropriate installation programs. The procedures can be modified to suit different installation scenarios.

Installing DB2

Complete the following steps to install DB2 with minimal space used on the C: drive

1. Open a command window and complete the following steps in the same window session:
 - a. At the command prompt, change the directory to the location of the DB2 Setup program setup.exe file.
 - b. Run the following commands to change the TEMP and TMP environment variable settings to the drive and directory where you want to direct the temporary files that are created during the installation of DB2.

Important: The directory that is specified in these commands must be an existing directory. If the directory does not exist, you must create it before you start the installation of DB2.

```

set TEMP=drive_and_directory
set TMP=drive_and_directory

```

For example:

```

set TEMP=Q:\Temp
set TMP=Q:\Temp

```

2. Start the DB2 Setup program and follow the prompts in the program to complete a typical installation on a drive other than the C: drive. Ensure that you set the correct drive and directory on the following pages:
 - Select the installation folder
 - Select the IBM SSH server installation folder and startup option

After the installation, the files and directories that are related to DB2 use approximately 75 MB of space on the C: drive.

Installing IBM Spectrum Control and Jazz for Service Management

Complete the following steps to install IBM Spectrum Control and Jazz for Service Management with minimal space used on the C: drive:

1. Open a command window and complete the following steps in the same window session:
 - a. At the command prompt, change the directory to the location of the IBM Spectrum Control installation program `setup.bat` file.
 - b. Run the following commands to change the TEMP and TMP environment variable settings to the drive and directory where you want to direct the temporary files that are created during the installation of IBM Spectrum Control and Jazz for Service Management.

Important: The directory that is specified in these commands must be an existing directory. If the directory does not exist, you must create it before you start the installation of IBM Spectrum Control and Jazz for Service Management.

```
set TEMP=drive_and_directory
set TMP=drive_and_directory
```

For example:

```
set TEMP=Q:\Temp
set TMP=Q:\Temp
```

2. Start the IBM Spectrum Control program and follow the prompts to complete the installation, including installing Jazz for Service Management, on a drive other than the C: drive. Ensure that you set the correct drive and directory on the following pages:
 - Specify Installation Locations page in the Jazz for Service Management launchpad.
 - Choose Installation Location and Type page in IBM Spectrum Control installation program.
 - Configure the Database Repository page in the IBM Spectrum Control installation program.

After the installation, the files and directories that are related to IBM Spectrum Control and Jazz for Service Management use the following amount of space on the C: drive:

- Approximately 5 MB for IBM Spectrum Control.
- Approximately 1.7 GB for Jazz for Service Management. Most of the space is used by IBM Installation Manager.

Verifying the installation

After you install IBM Spectrum Control, you can verify whether the installation was successful.

Use the following questions to guide you through the verification process.

Remember the following information when you are verifying the installation:

- You must use a user name with DB2 administrative privileges to run any DB2 commands.
- You must run any DB2 commands on the DB2 command line.

Was the TPCDB database created?

Run the following DB2 command:

```
db2 list db directory
```

This command returns information about the TPCDB database.

Are the tables and views present in the TPCDB database?

Run the following DB2 commands:

```
db2 connect to TPCDB
db2 list tables for schema TPC
db2 disconnect TPCDB
```

These commands indicate that you can connect to and disconnect from the IBM Spectrum Control database repository and lists the tables and views in the TPCDB database.

Is the Data server running?

On the Windows operating system:

Go to the Services listing and find **IBM Spectrum Control - Data Server**.

On the AIX or Linux operating system:

Run the following command:

```
ps -eaf | grep DataServer.jar
```

This command returns a list of the Data server processes in the process table.

Is the Device server running?

On the Windows operating system:

1. Go to the Services listing and find **IBM Spectrum Control - Device Server**.

2. In a Windows command window, go to the following directory:

```
installation_dir\wlp\bin\
```

where *installation_dir* is the top-level directory in which you installed IBM Spectrum Control (for example, C:\Program Files\IBM\TPC\).

3. Run the following command:

```
server.bat status deviceServer
```

This command returns a status of running.

On the AIX or Linux operating system:

1. In a command-line window, go to the following directory:

```
installation_dir/wlp/bin/
```

where *installation_dir* is the top-level directory in which you installed IBM Spectrum Control (for example, /opt/IBM/TPC/).

2. Run the following command:

```
./server status deviceServer
```

This command returns a status of running.

It can take several minutes after the Device server starts for all services to be running.

Are all Device server services running?

Go to

```
https://localhost:port/ITSRM/ServiceManager
```

Where *port* is the value of the `WC_defaulthost_secure` key in the *installation_dir/device/portdef.props* file. The default port number is 9551.

Is the Alert server running?

On the Windows operating system:

1. Go to the Services listing and find **IBM Spectrum Control - Alert Server**.
2. In a Windows command window, go to the following directory:
installation_dir\wlp\bin

where *installation_dir* is the top-level directory where you installed IBM Spectrum Control (for example, `C:\Program Files\IBM\TPC\`).

3. Run the following command:

```
server.bat status alertServer
```

This command returns a status of running.

On the AIX or Linux operating system:

1. In a command-line window, go to the following directory:
installation_dir/wlp/bin/

where *installation_dir* is the top-level directory where you installed IBM Spectrum Control (for example, `/opt/IBM/TPC/`).

2. Run the following command:

```
./server status alertServer
```

This command returns a status of running.

It can take several minutes after the Alert server starts for all services to be running.

Is the Storage Resource agent running?

On the Windows operating system:

Go to the Services window and find **IBM Spectrum Control Storage Resource Agent**.

On the AIX or Linux operating system:

Run the following command:

```
ps -eaf | grep Agent
```

This command returns a list of the Storage Resource agent processes in the process table.

Is the web server running?

On the Windows operating system:

Go to the **Services** window and find **IBM Spectrum Control - Web Server**.

On the AIX or Linux operating system:

Run the following command:

```
ps -eaf | grep webServer
```

This command returns a list of the web server processes in the process table.

Can I log on to the IBM Spectrum Control GUI?

Open a web browser and enter the following web address:

```
https://host_name:port/srm
```

Where *host_name* is the fully qualified host name of the computer where the IBM Spectrum Control web server is installed and *port* is the value of the *httpsPort* key in the file *installation_dir/wlp/usr/servers/webServer/server.xml*. The default port is 9569.

Are the Cognos Business Intelligence reports deployed in Tivoli Common Reporting?

Note: This verification applies only if you did not select the **Install Cognos BI reports later** check box when you installed IBM Spectrum Control.

On the Windows operating system:

1. In a Windows command window, go to the following directory:

productname_installation_dir\reporting\bin\

where *productname_installation_dir* is the top-level directory in which you installed Jazz for Service Management (for example, C:\Program Files\IBM\JazzSM\).

2. Run the following command:

```
trcmd.bat -user JazzSM_user_ID  
-password JazzSM_User_Password  
-list -dataSources
```

where *JazzSM_user_ID* and *JazzSM_User_Password* are the user name and password that you used when you created the WebSphere Application Server profile during the Jazz for Service Management installation.

This command returns a list of the Tivoli Common Reporting data sources and the list contains an entry for TPCDB.

3. Run the following command:

```
trcmd.bat -user JazzSM_User_ID  
-password JazzSM_User_Password -list -reportSets
```

where *JazzSM_user_ID* and *JazzSM_User_Password* are the user name and password that you used when you created the WebSphere Application Server profile during the Jazz for Service Management installation.

This command returns a list of the report sets that are deployed in Tivoli Common Reporting and the list contains numerous entries for Cognos BI reports

On the AIX or Linux operating system:

1. In a command-line window, go to the following directory:

productname_installation_dir/reporting/bin/

where *productname_installation_dir* is the top-level directory in which you installed Jazz for Service Management (for example, /opt/IBM/JazzSM/).

2. Run the following command:

```
./trcmd.sh -user JazzSM_user_ID  
-password JazzSM_user_password  
-list -dataSources
```

where *JazzSM_user_name* and *JazzSM_user_password* are the user name and password that you used when you created the WebSphere Application Server profile during the Jazz for Service Management installation.

This command returns a list of the Tivoli Common Reporting data sources and the list contains an entry for TPCDB.

3. Run the following command:

```
./trcmd.sh -user JazzSM_user_ID  
-password JazzSM_user_password  
-list -reportSets
```

where *JazzSM_user_ID* and *JazzSM_user_password* are the user name and password that you used when you created the WebSphere Application Server profile during the Jazz for Service Management installation.

This command returns a list of the report sets that are deployed in Tivoli Common Reporting, and the list contains numerous entries for Cognos BI reports.

Reviewing the log files to resolve installation issues

If an error occurs during IBM Spectrum Control installation, you can review the error log files to resolve issues and continue the installation.

To resolve errors that occur during the preinstall steps in the IBM Spectrum Control installation program, complete the following steps:

1. Navigate to one of the following directories:
 - For the Windows operating system, go to %TEMP% directory
 - For the AIX or Linux operating system, go to /tmp directory
2. Review the following log files:
 - lax-xxxxx-out.txt
 - lax-xxxxx-err.txt

Tip: The files are InstallAnywhere log files and are automatically generated. The *xxxxx* are numeric characters that are assigned by the InstallAnywhere software.

To resolve errors after the IBM Spectrum Control installation starts, complete the following steps:

1. Navigate to one of the following default directories:
 - For the Windows operating system, go to C:\Program Files\IBM\TPC\logs
 - For the AIX or Linux operating system, go to /opt/IBM/TPC/logs
2. Review these log files:
 - msgTPCInstall.log
 - traceTPCInstall.log
 - sra\install\agent.trace
 - sra\install\agent_*number*.log
3. For agent log files, navigate to one of the following default directories:
 - For the Windows operating system, go to *SRA_location*\log
 - For the AIX or Linux operating system, go to *SRA_location*/logwhere *SRA_location* is where the Storage Resource agent is installed.

If an installation error occurred and you decide to do a partial rollback, the `msgTPCInstall.log` and `traceTPCInstall.log` files are updated with additional information when you resume the installation.

Changing the operating system language

You can change the operating system language that determines the language in which IBM Spectrum Control services and the IBM Spectrum Control GUI are displayed.

To change the AIX operating system language, for example from English to German (`de_DE`), complete the following steps:

1. At the command prompt, run the following commands:

```
chlang -m de_DE de_DE
export LANG=de_DE
```

2. Restart all IBM Spectrum Control services or restart the system.

Adding an installation license

If you installed IBM Spectrum Control and want to add a IBM Spectrum Control license to use additional functions of the software, you can use the installation program or silent-mode installation.

To determine the type of license you have, find these files in the `<component_root>/swidtag` directory:

ibm.com_IBM_Spectrum_Control_Standard_Edition-version.swidtag

Indicates that you have a IBM Spectrum Control Standard Edition license.

ibm.com_IBM_Spectrum_Control_Standard_Select_Edition-version.swidtag

Indicates that you have a IBM Spectrum Control Standard Select Edition license.

ibm.com_IBM_Spectrum_Control_Advanced_Edition-version.swidtag

Indicates that you have a IBM Spectrum Control Advanced Edition license.

ibm.com_IBM_Spectrum_Control_Advanced_Select_Edition-version.swidtag

Indicates that you have a IBM Spectrum Control Advanced Select Edition license.

Depending on the license you purchased, one of the following license key files can be found in the `license\key` sub-directory of the electronic image:

node1ock

IBM Spectrum Control Standard Edition license

node1ock.SEL

IBM Spectrum Control Standard Select Edition license

node1ock.AE

IBM Spectrum Control Advanced Edition license

node1ock.AS

IBM Spectrum Control Advanced Select Edition license

Adding an installation license using the installation program

If you installed IBM Spectrum Control and want to add an IBM Spectrum Control license for additional function, you can do so by using the installation program.

To add the license to your system using the installation program, complete the following steps:

1. If you are adding a license on the AIX or Linux operating system, source the `db2profile`.
2. Log on to the IBM Spectrum Control system with the appropriate user privileges.
3. Start the IBM Spectrum Control installation program.
4. On the Choose Installation Location and Type page, select **License upgrade** and click **Next**.
5. On the Upgrade License page, select which license key file to use and click **Next**.
6. Verify the information on the Preinstallation Summary page and click **Install**.
7. On the Installation Completed page, click **Done**. When the installer upgrades the license, it also stops and restarts the following IBM Spectrum Control servers: Web, Data, and Device.

Related reference:

“Planning for IBM Spectrum Control authentication and authorization” on page 14
 An operating system user name is required to install and log on to IBM Spectrum Control for the first time. After you install IBM Spectrum Control, you can assign roles to users. Roles determine the product functions that are available to users.

Adding an installation license using silent mode

If you installed IBM Spectrum Control and want to add an IBM Spectrum Control license to access more function, you can do so by using silent-mode installation.

To add the license to your system that uses silent mode, complete the following steps:

1. If you are adding a license on the AIX or Linux operating system, source the `db2profile`.
2. Log on to your IBM Spectrum Control system with the appropriate user privileges.
3. Modify the following parameters in the `silent_SingleServerTypical.properties`, `silent_SingleServerCustom.properties`, or `silent_MultipleServer.properties` file:
 - `CHOSEN_INSTALL_TYPE="License Upgrade"`
 - `varUseLicenseKeyOnImage=`
 - `varLicenseKeyFile=`

For more information on the parameters in the response file, see “Editing the response file” on page 62.

4. Save the appropriate response file.
5. Start the IBM Spectrum Control installation program.
 For Windows operating system, run the command:
`setup.bat -l language -i silent -f absolute_path_to_response_file`
 For AIX or Linux operating system, run the following command:
`/setup.bin -l language -i silent -f absolute_path_to_response_file`
6. Stop and restart the IBM Spectrum Control GUI.

Related reference:

“Planning for IBM Spectrum Control authentication and authorization” on page 14
 An operating system user name is required to install and log on to IBM Spectrum Control for the first time. After you install IBM Spectrum Control, you can assign roles to users. Roles determine the product functions that are available to users.

Installing Storage Resource agents

You can install Storage Resource agents by using the IBM Spectrum Control user interface or a command.

You can select one of the following agent installation scenarios:

- To deploy a Storage Resource agent using the GUI, go to the product documentation at http://www.ibm.com/support/knowledgecenter/SS5R93_5.2.15/com.ibm.spectrum.sc.doc/fqz0_r_native_agents.html.
- To install the agent using a command, see “Installing Storage Resource agents by using a command.”
- To install the agent on a Virtual I/O Server, see “Installing Storage Resource agents on the Virtual I/O Server” on page 139.
- To deploy the agent remotely on the Virtual I/O Server, see “Deploying Storage Resource agents remotely” on page 139.

Restriction:

- You cannot use Storage Resource agents as data sources for switches and fabrics. For Brocade switches, you must use CIM agents. For Cisco switches, you must use SNMP agents.
- Before you install or deploy a Storage Resource agent on a system, you must disable the firewall on that system.
- If you are using IBM PowerHA[®] SystemMirror[®] for AIX, a Storage Resource agent must be installed on each node of the cluster and all agents in a cluster must be configured to use the same listening port.
- To scan a cluster resource group, you must configure the cluster resource group to have at least one IP address that is accessible from the IBM Spectrum Control server.

To deploy a Storage Resource agent, you must log in as a user with the following authority:

On Windows operating systems

You must have Windows Administrator authority.

On UNIX or Linux operating systems

You must be logged in as the root user.

Installing Storage Resource agents by using a command

You typically install Storage Resource agents by using the IBM Spectrum Control GUI. However, if you must install Storage Resource agents locally, you can do so with limited support.

During this installation method, a return code of zero means that a successful installation occurred and a nonzero return code means that an unsuccessful installation occurred. If you have an unsuccessful installation, you must review the log files to determine the problem.

The **-force** option can be used when you have a Storage Resource agent pointing to multiple servers. If one server has installed an agent, and another server wants to install an agent in the same location, the second server can use the **-force** option to install the agent.

If you use this installation method, when you enter a directory to install the Storage Resource agent, **do not** add an ending slash mark (\). For example, do not specify C:\agent1\. This action causes the installation to fail.

If you run the agent as a non-daemon service (On-Demand service), you must make sure that at least one protocol is valid for a successful connection from the server to the agent. See Table 20 for the required parameters for each protocol.

Table 20. Parameters required for each protocol

Protocol	Description
SSH	Requires the user ID and password or user ID, certificate, and passphrase.
Windows (SMB)	Requires the user ID and password.
REXEC	Requires user ID and password.
RSH	Requires the user ID.

The Storage Resource Agent image contains the installation images for the Storage Resource agents in the following directory:

DVD_installation_image_location/data/sra/operating_system

See Table 21 for the Storage Resource agent installation images.

Table 21. Storage Resource agent installation images

Operating system	Operating system name
AIX	aix_power
HP-UX	hp-ux_itanium
Linux x86	linux_ix86
Linux for Power Systems Servers	linux_power
Linux s390	linux_s390
Oracle Solaris	solaris_sparc
Windows	windows

To install the Storage Resource agents locally, complete the following steps:

1. Go to the installation image location:

```
cd DVD_installation_image_location
```

2. Run the following command:

```

► bin/Agent -install [ -force ] -serverPort server_secure_port
► -serverIP server_IP_address -installLoc Agent_install_location [ -debug MAX ]
(1)
► -agentPort agent_port -commtype daemon
(2)
► -userID user_ID -password password -certFile certificate_file
(3)
► -passphrase passphrase

```

Notes:

- 1 Parameters when the agent is run as a daemon service.
- 2 Parameters when the agent is run as a non-daemon service. See Table 20 on page 137 to determine which parameter is required for each protocol.
- 3 Parameters when the agent is run as a non-daemon service. See Table 20 on page 137 to determine which parameter is required for each protocol.

The parameters are as follows:

-install

Installs the Storage Resource agent.

-force

This forces the agent to be installed. There are two different situations in which this parameter must be specified:

- If an earlier installation failed and there is residue on the system which causes further installations to fail. You must verify that all the parameters provided are valid, such as the installation location, port, and so on.
- If the agent is already installed from one server and you now must install the agent pointing to another server.

-serverPort *server_secure_port*

The default port for the Data server is 9549.

-serverIP *server_IP_address*

The IP address of the server. If the server can be reached through multiple IP addresses, then multiple IP addresses can be specified with IP addresses separated with a comma.

-installLoc "*Agent_install_location*"

Location where the agent is installed. Enclose the directory name in quotation marks, for example, "C:\Program Files\IBM\TPC_SRA".

-debug MAX

Optional parameter for debugging purposes.

-agentPort *agent_port*

If the agent is run as a daemon service, the agent port must be specified. The default agent port is 9510.

-commtype daemon

If the agent is run as a daemon service, then this parameter must be specified.

-userID *user_ID*

For non-daemon service. The user ID defined on the agent system. This user ID is used by the server to connect to the agent system.



-password *password*

For non-daemon service. Password for the user ID.

-certFile "*certificate_file*"

For non-daemon service. The certificate that is used for SSH communication between the server and agent. This certificate must be stored on the server system. Enclose the directory name in quotation marks, for example, "c:\keys\id_sra".

For information about SSH protocol and SSL protocol certificates, see

 Creating a certificate for the SSH protocol and  Replacing a custom certificate for SSL protocol.

-passphrase *passphrase*

For non-daemon service. The passphrase that is defined for the certificate that is used in SSH communication.

After you install a Storage Resource agent by using a command, you must schedule a probe to collect data about the associated resource. For information about how to schedule a probe, see [Creating probes](#).

Installing Storage Resource agents on the Virtual I/O Server

You can install Storage Resource agents on the Virtual I/O Server.

Local installation

To install the Storage Resource agent on the Virtual I/O Server, complete the following steps:

1. Log in to the Virtual I/O Server using the **padmin** user ID.
2. Run the following command to set up the AIX environment:
`oem_setup_env`
3. Change to the directory where the Storage Resource agent installation image is located.

Note: You can either mount the Storage Resource agent installation DVD or FTP to the Storage Resource agent installation image to the padmin home directory.

4. Run the Storage Resource agent installation command. For information about the Storage Resource agent installation command, see “Installing Storage Resource agents by using a command” on page 136.

Deploying Storage Resource agents remotely

You can deploy Storage Resource agents remotely for the Virtual I/O Server from your local workstation.

Remote deployment

To deploy the Storage Resource agent remotely, complete the following steps:

1. Enable remote access for the **root** user ID. Follow these steps:
 - a. Connect to the Virtual I/O Server using `ssh/telnet` with the **padmin** user ID.
 - b. Run the following command to set up the AIX environment:
`oem_setup_env`
 - c. Run the following command:
`smitty login_user`
 - d. In the **User NAME** field, type **root** and press **Enter**.
 - e. In the **User can LOGIN REMOTELY(rsh,tn,rlogin)?** field, set the value to **true**.
2. Click **Save**.
3. Create an SSH certificate for the **root** user ID. For information about creating the SSH certificate for the **root** user, go to the IBM Knowledge Center at http://www.ibm.com/support/knowledgecenter/SS5R93_5.2.15/com.ibm.spectrum.sc.doc/fqz0_t_sra_vio_create_ssh_certificate.html.
4. Start the remote deployment.

Installing the IBM Spectrum Control Monitoring Agent

The IBM Spectrum Control Monitoring Agent can be used by the IBM Tivoli Enterprise Monitoring Server to monitor systems in your enterprise. This agent is an optional program you can install and use in your enterprise. The Monitoring Agent uses an existing IBM Spectrum Control server in the environment to obtain information.

You will be installing the IBM Spectrum Control Monitoring Agent in the IBM Spectrum Control environment. You will also be installing the agent-specific support files needed by the Tivoli Enterprise Monitoring Server.

Installing and configuring the IBM Spectrum Control Monitoring Agent on Windows

You can install the IBM Spectrum Control Monitoring agent on the Windows operating system.

This procedure describes how to install the Monitoring Agent in the IBM Spectrum Control environment. You can install the agent on the IBM Spectrum Control server or on another computer. This example assumes the following:

- The Tivoli Monitoring Server environment is installed and running.
- You are installing the agent on a computer that is different from the server on which IBM Spectrum Control is installed.

To install the IBM Spectrum Control Monitoring Agent on Windows:

1. Gather information required by the IBM Spectrum Control Monitoring agent installation program. You will need to know the host name and authentication password of the IBM Spectrum Control server.
2. Log on to the system with administrator authority on Windows operating system.

If you are using the installation DVD, the files are located in the itm folder. If you are using the installation image, use the Disk 2 image.

3. In the installation directory, run **setup.exe**.
4. Follow the steps in the program.
5. On the User Data Encryption Key page, enter a data encryption key for encrypted communication.

The Tivoli Enterprise Monitoring server uses a data encryption key for Secure Socket (SSL) communication between the agent and server.

6. Write down the key so that you can configure the Tivoli Monitoring Enterprise server with the encryption key and click **Next** when you have specified the key.

Note: For information about the data encryption key, see **Step 4: Define the node's security environment** in http://publib.boulder.ibm.com/infocenter/tivihelp/v24r1/index.jsp?topic=%2Fcom.ibm.itcamfad.doc_7.1%2FABD003%2Fsection1.html.

7. On the Select Program Folder page, enter a Program Folder name or select a folder from the **Existing Folders** list, and click **Next**.
8. On the Start Copying Files page, review your current setting, and click **Next**. Wait for the installation to complete.
9. On the IBM Spectrum Control Agent Configuration page, in the navigation tree, you see these configuration steps:

- For **Log Configuration**, enter the following information, and click **Next**:

Log File

Directory and file name where the Monitoring Agent log file is created. The default is \$ITM_INSTALL_DIR/tmaitm6/logs/TPCAgent.log..

Log Level

Specify the debugging level for the log file.

- For **TPC Configuration** , enter this information, and click **Next**:

Address

IP address or host name of the Device server.

TPC Device Server Port

Port for connecting to the Device server. The default port is 9550.

TPC Host Authentication Password

Password to use to connect to the Device server.

Confirm TPC Host Authentication Password

Enter the password again.

- For the optional **Server and Data Sources Node**, click **New**, enter a node name, and click **Next**. This node name is internal to IBM Spectrum Control and will not be displayed in the IBM Spectrum Control user interface.
- For the optional **Computers and Hypervisors Node**, click **New**, enter a node name, and click **Next**. This node name is internal to IBM Spectrum Control and will not be displayed in the IBM Spectrum Control user interface.
- For the optional **Storage Systems Node**, click **New**, enter a node name, and click **Next**. This node name is internal to IBM Spectrum Control and will not be displayed in the IBM Spectrum Control user interface.
- For the optional **Fabrics and Switches Node**, click **New** to add a new data node, and enter a node name, and click **OK**. This node name is internal to IBM Spectrum Control will not be displayed in the IBM Spectrum Control user interface.

Tip: You can specify information for the optional nodes if you want IBM Spectrum Control to collect information about those nodes.

If you configure more than one Monitoring Agent to collect information for these optional nodes, use unique node names for the different Monitoring Agents. Using identical names for the same node on more than one agent can result in Tivoli Monitoring Server displaying information for only the nodes on the most recently refreshed Monitoring Agent. For example, do not use the same node name for **Server and Data Sources Node** on more than one Monitoring Agent.

10. If the TEMS connection page is not displayed, open the Manage Tivoli Enterprise Monitoring Services page.
11. Select **Monitoring Agent for TPC**, right-click **Monitoring Agent for TPC**, and select **Reconfigure**.
12. On the Configure Monitoring Agent for TPC, for the TEMS Connection page, enter this information for the **Protocol 1** tab:

TEMS Hostname

Host name of the Tivoli Enterprise Monitoring Server.

Port Number

The default port is 1918.

Protocol

Enter the protocol type. For IP.PIPE settings, enter the port number.

For information about the TEMS connection parameters, see <http://publib.boulder.ibm.com/infocenter/tivihelp/v15r1/index.jsp?topic=/com.ibm.omegamon.mes.doc/zosconfigguide601263.htm>. Your configuration is now complete.

13. Specify port 80 and restart TEMS and TEPS if necessary.

Installing the Monitoring Agent support files in the IBM Tivoli Monitoring Server environment

IBM Spectrum Control has support files that are installed on each of these Tivoli Monitoring components:

- Tivoli Enterprise Monitoring Server (TEMS)
- Tivoli Enterprise Portal Server (TEPS)
- Tivoli Enterprise Portal Desktop Client (TEPDC)

To install the Monitoring Agent in the IBM Tivoli Monitoring Server environment:

1. Log on to the IBM Tivoli Monitoring system with administrator authority on the Windows operating system.
2. Go to the installation directory and run **setup.exe**.
3. Proceed through the program.
4. On the Select Features page, select the features you want to install:
 - a. Expand **Tivoli Enterprise Monitoring Agents - TEMA**, ensuring that you expand all nodes and select all the check boxes.

Tivoli Enterprise Monitoring Server - TEMS
TPC
Tivoli Enterprise Portal Server - TEPS
TPC
TEP Desktop Client - TEPD
TPC

- b. Click **Next**

5. In the IBM Spectrum Control Monitoring - InstallShield program, select all the components related to IBM Spectrum Control:

Note: This panel is displayed when the Monitoring Agent is installed on the Tivoli Monitoring Server.

Tivoli Enterprise Monitoring Agents - TEMA
Tivoli Enterprise Monitoring Agent Framework
TPC
Tivoli Enterprise Services User Interface Extensions
Tivoli Enterprise Monitoring Server - TEMS
TPC
Tivoli Enterprise Portal Server - TEPS
TPC
TEP Desktop Client - TEPD
TPC

6. Ensure that you expand all the nodes and select all the check boxes and click **Next**.
7. Select the appropriate program folder in which the agent will be installed and click **Next**.
8. On the summary page, review the summary information and click **Next**.

9. After installation is complete, on the Configuration Defaults for Connecting to a TEMS page, you can enter connection information for the Tivoli Monitoring server and the IBM Spectrum Control Device server.

Note: This panel is displayed when the Monitoring Agent is installed on the Tivoli Monitoring server.

10. Enter this information for the **Protocol 1** tab and click **OK**:

TEMS Hostname

Host name of the Tivoli Enterprise Monitoring Server.

Protocol

Enter the protocol type. For IP.PIPE settings, enter the port number.

For information about the TEMS connection parameters, go to <http://publib.boulder.ibm.com/infocenter/tivihelp/v15r1/index.jsp?topic=/com.ibm.omegamon.mes.doc/zosconfigguide601263.htm>

Your configuration is now complete. To see the reports that were generated, go to the IBM Knowledge Center and search for **monitoring agent reports**.

Installing and configuring the IBM Spectrum Control Monitoring Agent on AIX or Linux

You can install the IBM Spectrum Control Monitoring Agent on AIX or Linux.

You must have the Korn shell (ksh) script installed on your system before you install the IBM Spectrum Control Monitoring Agent.

Installing the Monitoring Agent and support files in the IBM Spectrum Control environment

This example assumes that the Tivoli Monitoring environment is installed and running and that you are installing the agent in the IBM Spectrum Control environment.

The IBM Spectrum Control installation supports files on each of these Tivoli Monitoring components:

- Tivoli Enterprise Monitoring Server
- Tivoli Enterprise Portal Server
- Tivoli Enterprise Portal Desktop Client

Tip:

- IBM Tivoli Monitor does not support the Tivoli Enterprise Portal Desktop Client on AIX.
- If you installed the Tivoli Enterprise Portal Browser Client, you must also install the Monitoring Agent support files on the browser client.

To install the IBM Spectrum Control Monitoring agent on AIX or Linux, complete the following steps:

1. Gather the following information that is required by the IBM Spectrum Control Monitoring agent installation program, such as the host name and IP address of the Tivoli Enterprise Monitoring Server system.
2. Log on to the system with the root user ID or a user ID that has root access rights.

When using the installation image, depending on your operating system and architecture, the image is in one of the following compressed files:

- TPC_5.2.x.x_disk2_itm_unix1.tar.gz
 - TPC_5.2.x.x_disk2_itm_unix2.tar.gz
3. Identify a group that will be used to secure the installation.
You can use an existing group or create a new group. To secure the files during the installation, the group must exist before you start the installation.
 4. Go to the installation directory and run the **./install.sh** command.
 5. Here is an example of the prompts and responses that you see. This example assumes that you do not have a directory and are creating a directory and are installing the agent on a local host.

```
UPGRADE

Enter the name of the IBM Tivoli Monitoring directory
[ default = /opt/IBM/ITM ]:

"/opt/IBM/ITM" does not exist
Try to create it [ 1=yes, 2=no; "1" is default ]? 1

Select one of the following:

1) Install products to the local host.
2) Install products to depot for remote deployment (requires TEMS).
3) Install TEMS support for remote seeding
4) Exit install.

Please enter a valid number: 1
```

6. This example is a continuation from the previous step and lets you read the license agreement.

```
International Program License Agreement

...
...

Press Enter to continue viewing the license agreement, or
enter "1" to accept the agreement, "2" to decline it, "3"
to print it, "4" to read non-IBM terms, or "99" to go back
to the previous screen.
```

7. Read the license agreement, make a selection, and press **Enter**.
8. This example is a continuation from the previous step and helps you enter an encryption key for a secure connection between the monitoring agent and the Tivoli Enterprise Monitoring Server.

```
Enter a 32-character encryption key, or just press Enter to use the default
Default = IBMTivoliMonitoringEncryptionKey
.....1.....2.....3..
```

9. Enter the encryption key or press **Enter** to use the default key.

Tip: You must use the same key that you used to configure Tivoli Enterprise Monitoring Server. If the server is not yet configured, write down and save the key to use when you configure the server.

10. This example is a continuation from the previous step and helps you select the product packages to install. Make a selection and press **Enter**. For an agent only installation, select 1.

Product packages are available for this operating system and component support categories:

- 1) IBM Tivoli Monitoring components for this operating system
- 2) Tivoli Enterprise Portal Browser Client support
- 3) Tivoli Enterprise Portal Desktop Client support
- 4) Tivoli Enterprise Portal Server support
- 5) Tivoli Enterprise Monitoring Server support
- 6) Other operating systems

Type the number or type "q" to quit selection
[number "1" or "IBM Tivoli Monitoring components for this operating system"
is default]: 1

11. Confirm your selection.

You selected number "1" or "IBM Tivoli Monitoring components
for this operating system"

Is the selection correct [1=Yes, 2=No ; default is "1"] ?

12. At the following prompt, enter 1:

The following products are available for installation:

- 1) Monitoring Agent for TPC V06.30.05.00
- 2) Tivoli Enterprise Services User Interface Extensions V06.30.05.00
- 3) all of the above

Type the numbers for the products you want to install, type "b" to change operating
system, or type "q" to quit selection.

If you enter more than one number, separate the numbers by a comma or a space.

Type your selections here: 1

13. Confirm your selection.

The following products will be installed:

Monitoring Agent for TPC V06.30.05.00

Are your selections correct [1=Yes, 2=No ; default is "1"] ?

14. Check the prerequisites.

```

Do you want to check prerequisites for the above components?
[ 1=Yes, 2=No ; default is "1" ] ? 1
Running Prerequisite Scanner.
This may take a few minutes depending on the number of
components being checked and the machine's performance.
Prerequisite Scanner results for the selected components:
NOT AVAILABLE   Monitoring Agent for TPC
/opt/IBM/ITM/logs/prereqscan/20150716-092433/COMMON/result.txt
NOT AVAILABLE   Tivoli Enterprise-supplied JRE
/opt/IBM/ITM/logs/prereqscan/20150716-092433/COMMON/result.txt
NOT AVAILABLE   IBM Tivoli Monitoring Shared Libraries
/opt/IBM/ITM/logs/prereqscan/20150716-092433/COMMON/result.txt
NOT AVAILABLE   IBM GSKit Security Interface
/opt/IBM/ITM/logs/prereqscan/20150716-092433/COMMON/result.txt

PASS    Prerequisite Scanner Overall Result
/opt/IBM/ITM/logs/prereqscan/20150716-092433/COMMON/result.txt

Do you want to continue with the installation
[ 1=Yes, 2=No ; default is "1" ] ? 1

Installing IBM Global Security Toolkit
GSKit encryption key has been set.
Key File directory: /opt/IBM/ITM/keyfiles

... installing "Monitoring Agent for TPC V06.30.05.00 for
Linux x86_64 R2.6, R3.0 (64 bit)"; please wait.

=> installed "Monitoring Agent for TPC V06.30.05.00 for
Linux x86_64 R2.6, R3.0 (64 bit)".
... Initializing component Monitoring Agent for TPC V06.30.05.00 for
Linux x86_64 R2.6, R3.0 (64 bit).
... Monitoring Agent for TPC V06.30.05.00 for
Linux x86_64 R2.6, R3.0 (64 bit) initialized.

```

15. At the following prompt, enter 2:

```

Do you want to install additional products or product support packages
[ 1=Yes, 2=No ; default is "2" ] ? 2

```

16. The following messages are displayed:

```

... postprocessing; please wait.
... finished postprocessing.
Installation step complete.

You may now configure any locally installed IBM Tivoli Monitoring product via
the "/opt/IBM/ITM/bin/itmcmd config" command.

Automatic start at system initialization has been configured.
Automatic stop at system shutdown has been configured.

The install.sh command creates most of directories and files with world write
permissions. IBM Tivoli Monitoring provides the secureMain utility to helps
you keep the monitoring environment secured. You can secure this installation
now or manually execute the secureMain utility later. For more information
see Appendix G. Securing your IBM Tivoli Monitoring installation on Linux
or UNIX in the IBM Tivoli Monitoring Installation and Setup Guide.

```

17. At the following prompt, enter one of the following options:

- 1 to secure the installation now.
- 2 to secure the installation later.

```

Do you want to secure this IBM Tivoli Monitoring installation
[ 1=yes, 2=no; "2" is default ]?

```

If you entered 2, the installation completes. Proceed to step 19. You can secure your installation later by running the Tivoli Enterprise Monitoring Server `secureMain` utility.

18. After you enter 1, you will be prompted for a group name:

```
Enter common group name: my_itm_group
Executing command: /opt/IBM/ITM/bin/secureMain -g my_itm_group lock
Enter the root password if prompted
secureMain completed successfully
```

where *my_itm_group* is the group that you identified before you started the installation that will be used for securing the installation.

19. After the installation is complete, run the following commands:
- Go to the following directory:
`cd /opt/IBM/ITM/bin`
 - Run this command:
`./itmcmd manage &`
20. The Manage Tivoli Enterprise Monitoring Services window is displayed. Select **Monitoring Agent for TPC**, right-click **Monitoring Agent for TPC**, and click **Configure**.
21. The IBM Spectrum Control Agent Configuration panel is displayed. In the navigation tree view, you see these configuration steps:
- For Log Configuration, enter the following information, and click **Next**.

Log File

Directory and file name where the Monitoring Agent log file is created. For Linux, the default is `$ITM_INSTALL/1x8266/p1/bin/logs/TPCAgent.log`. For AIX, the default is `$ITM_INSTALL/aix523/p1/bin/logs/TPCAgent.log`.

Log Level

Specify the debugging level for the log file.

- For TPC Configuration, enter this information, and click **Next**:

Address

IP address or host name of the Device server.

TPC Device Server Port

Port for connecting to the Device server.

TPC Host Authentication Password

Password to use to connect to the Device server.

Confirm TPC Host Authentication Password

Enter the password again.

- For the optional **Server and Data Sources Node**, click **New**, enter a node name, and click **Next**.

This internal IBM Spectrum Control node name will not be displayed in the IBM Spectrum Control user interface.
- For the optional **Computers and Hypervisors Node**, click **New**, enter a node name, and click **Next**.

This internal IBM Spectrum Control node name will not be displayed in the IBM Spectrum Control user interface.
- For the optional **Storage Systems Node**, click **New**, enter a node name, and click **Next**.

This internal IBM Spectrum Control node name will not be displayed in the IBM Spectrum Control user interface.

- f. For the optional **Fabrics and Switches Node**, click **New**, enter a node name, and click **OK**.

This internal IBM Spectrum Control node name will not be displayed in the IBM Spectrum Control user interface.

Tip: You can specify information for the optional nodes if you want IBM Spectrum Control to collect information about those nodes.

Tip: If you configure more than one Monitoring Agent to collect information for these optional nodes, use unique node names for the different Monitoring Agents. Using identical names for the same node on more than one agent can result in Tivoli Monitoring Server displaying information for only the nodes on the most recently refreshed Monitoring Agent. For example, do not use the same node name for **Server and Data Sources Node** on more than one Monitoring Agent.

22. Click **OK** to save.
23. On the Configure Monitoring Agent for TPC page, for the TEMS Connection page, complete the following steps:
 - a. Ensure that the **No TEMS** check box is *not* selected.
 - b. Enter the following information on the **Protocol 1** tab:

TEMS Hostname
Host name of the Tivoli Enterprise Monitoring Server.

Protocol
Enter the protocol type. For IP.PIPE settings, enter the port number.
 - c. Click **Save** to complete the configuration.
 - d. To start the agent, select the agent, right-click, and select **Start Service**.
24. To reconfigure the **Tivoli Enterprise Portal Server**, **Tivoli Enterprise Monitoring Server**, and **Tivoli Enterprise Portal Desktop Client**, complete the following steps:
 - a. Open the Manage Tivoli Enterprise Monitoring Services console by running the command:

```
itmcmd manage
```
 - b. Right-click **Tivoli Enterprise Portal Server** and click **Rebuild Configuration**.
 - c. Right-click **Tivoli Enterprise Monitoring Server** and click **Rebuild Configuration**.
 - d. Right-click **Tivoli Enterprise Portal Desktop Client** and click **Rebuild Configuration**.
25. To enable the Eclipse Help Server for Tivoli Monitoring Services, open Manage Tivoli Monitoring Services and configure the Eclipse Help Server.
26. Specify that port 80 be used and restart Tivoli Enterprise Monitoring Server and Tivoli Enterprise Portal Server if necessary.

Installing the Monitoring Agent support files in the Tivoli Monitoring Server environment on AIX or Linux:

IBM Spectrum Control has support files that are installed on the Tivoli Monitoring components Tivoli Enterprise Monitoring Server, Tivoli Enterprise Portal Server, and Tivoli Enterprise Portal Desktop Client.

You must have the KornShell (ksh) script installed on your system before you install the IBM Spectrum Control Monitoring Agent support files.

To install the IBM Spectrum Control Monitoring Agent support files in the Tivoli Monitoring Server environment on AIX or Linux, complete the following steps:

1. Gather the following information that is required by the IBM Spectrum Control Monitoring agent installation, such as the host name and IP address of the Tivoli Enterprise Monitoring server.
2. Log on to the system with the root user ID or a user ID that has root access rights.
 - If you are using the installation DVD, the files are in the itm folder.
 - If you are using the installation image, use the Disk 2 image.
3. Create a group to which you can assign group permissions for the files or use the one already created at the Tivoli Enterprise Portal Server installation. If you plan to secure the product during the installation, specify an existing group or create a new group that can be assigned as the primary group for the files.
4. Go to the installation directory and run the `./install.sh` command.
5. Here is an example of the prompts and responses that you see. This example assumes that you do not have a directory and are creating a directory and are installing the agent on a local host.

```
UPGRADE

Enter the name of the IBM Tivoli Monitoring directory
[ default = /opt/IBM/ITM ]:

"/opt/IBM/ITM" does not exist
Try to create it [ 1=yes, 2=no; "1" is default ]? 1

Select one of the following:

1) Install products to the local host.
2) Install products to depot for remote deployment (requires TEMS).
3) Install TEMS support for remote seeding
4) Exit install.

Please enter a valid number: 1
```

6. This example is a continuation from the previous step and helps you read the license agreement.

```
International Program License Agreement

...
...
```

7. Read and agree the license agreement, make a selection, and press **Enter**.
8. This example is a continuation from the previous step and helps you select the product packages to install. Make a selection and press **Enter**. For an agent only installation, select 1.

Product packages are available for this operating system and component support categories:

- 1) IBM Tivoli Monitoring components for this operating system
- 2) Tivoli Enterprise Portal Browser Client support
- 3) Tivoli Enterprise Portal Desktop Client support
- 4) Tivoli Enterprise Portal Server support
- 5) Tivoli Enterprise Monitoring Server support
- 6) Other operating systems

9. At the following prompt, enter the corresponding support that you want to add and press **Enter**.

Do you want to install additional products or product support packages?

10. Install the support files for the IBM Tivoli Monitoring Agent for IBM Spectrum Control for selections from 2 through 5.
11. Your configuration is now complete.

Reinstalling the software if a failure occurs

If an installation failure occurs, you do not have to uninstall components that were successfully installed. IBM Spectrum Control provides an option to partially, or fully, roll back the installation.

A full rollback uninstalls all the components (even if they were installed successfully), and a partial rollback uninstalls only the components that were not successfully installed. The partial rollback option helps you resolve the problems that are causing the installation failure. After you resolve the problem, you can install the remaining components. For example, if the correct libraries were not installed for the Linux operating system, and the installation stops. You can install the correct libraries and resume the installation.

If you install IBM Spectrum Control on the Windows operating system and select **Full Rollback**, you must restart the server after the rollback is complete.

If you originally selected a partial rollback, but decided to completely uninstall, you must run the uninstallation program before you reinstall IBM Spectrum Control.

The following table shows the results from a partial rollback. The components are listed in the order in which they were installed.

Table 22. Results from a partial rollback

If an installation failure occurs when you install this component...	Partial rollback results are...
IBM Spectrum Control common files and Java Runtime Environment	There is no partial rollback. The installation program completes a full rollback.
Database repository	The database repository is uninstalled.
Data server	The Data server is uninstalled.
WebSphere Application Server Liberty profile	WebSphere Application Server Liberty profile is uninstalled.
Alert server	The Alert server is uninstalled.

Table 22. Results from a partial rollback (continued)


If an installation failure occurs when you install this component...	Partial rollback results are...
Device server	The Device server is uninstalled.
Cognos BI reports	Cognos Business Intelligence reports are uninstalled.
IBM Spectrum Control GUI	The IBM Spectrum Control GUI is uninstalled.
CLI	The command-line interface is uninstalled.
Storage Resource agent	The Storage Resource agent is uninstalled.

Taking the first steps after installation

After IBM Spectrum Control is installed, configure it to monitor the resources in your environment.

Access the IBM Spectrum Control GUI

To configure IBM Spectrum Control for your environment, access the GUI.

For more information about how to start the GUI, see  Opening IBM Spectrum Control GUIs and CLIs at http://www.ibm.com/support/knowledgecenter/SS5R93_5.2.15/com.ibm.spectrum.sc.doc/fqz0_t_windows_start_tpc_apps.html.

To set up IBM Spectrum Control for monitoring and managing resources, complete the following tasks:

Add resources for monitoring

You can add the following resources for monitoring:


- Storage systems and CIM agents
- Servers
- Hypervisors
- Switches
- Fabrics
- NetApp Filers

Configure the retention of data in the database repository

Determine how long that IBM Spectrum Control stores data about the resources that are being monitored.

(Optional) Configure the collection of data about the sizes of GPFS snapshots

By default, IBM Spectrum Control does not collect information about the size of GPFS snapshots. To view that information, you must enable IBM Spectrum Control to collect information about the size of GPFS snapshots.

For information about how to configure collection of snapshot size information, see  Collecting information about the sizes of GPFS[™] snapshots.

Configure alert notifications for conditions that are detected on monitored resources

Determining when and how you are alerted to configuration and performance conditions within your storage environment is important to helping you maintain and administer storage resources. Many conditions

can trigger alerts. You can set up IBM Spectrum Control so that it examines the data about your resources for the conditions that you specify.

Specify the users that can access the product and the functions that are available to them

Assign roles to groups of users to determine which functions are available in IBM Spectrum Control. When a user ID is authenticated to IBM Spectrum Control through the GUI, CLI, or APIs, membership in an operating system or LDAP group determines the authorization level of the user.

Deploy Storage Resource agents to set up data features

Deploy Storage Resource agents on servers to enable the data and policy-based management functions and to monitor the fabrics that are visible to the server.

Monitor and manage resources


Access the IBM Spectrum Control GUI to monitor and manage your storage, including the following tasks:

- Monitor the status of resources
- View capacity and asset information about resources
- Troubleshoot the performance of resources
- Set performance thresholds and alerts
- View the relationships between resources
- Optimize storage
- Configure for the cloud and storage provisioning
- Generate detailed reports about resources
- Access the vSphere Web Client extension to manage your virtual environment

Remove the IBM Spectrum Control installation directory from the antivirus scan

Scans that are conducted by antivirus software cause more I/O write operations on the IBM Spectrum Control and server disk drives. For example, the antivirus software can be set to scan any file, record, or process that is written to or read from. The scan includes logs, read/write operations for database records, and Java processes that are used by IBM Spectrum Control. The antivirus software performs write operations on the objects that it identifies with these scans. These additional operations affect product performance and are visible in the performance monitoring tools for the operating system on which the IBM Spectrum Control server is installed. For example, on the Windows operating system, the Reliability and Performance Monitor might show an unusually high number of active write operations for IBM Spectrum Control. To improve performance, update your antivirus software so that it excludes the IBM Spectrum Control installation directory from scans.

For more information about these tasks and how to manage and monitor your resources with IBM Spectrum Control, go to the product documentation at:

 http://www.ibm.com/support/knowledgecenter/SS5R93_5.2.15/com.ibm.spectrum.sc.doc/fqz0_c_wg_managing_resources.html

Chapter 3. Upgrading and migrating

Learn about the key tasks in the upgrade process for IBM Spectrum Control.



The IBM Spectrum Control upgrade process guides you through the steps for upgrading from Tivoli Storage Productivity Center Version 5.1 or later to the current version.

Preparing for an upgrade

You can use the following information to help prepare for your upgrade of IBM Spectrum Control. Good planning helps you avoid delays and problems when you upgrade your system.

General considerations

Review the following considerations before you upgrade IBM Spectrum Control:


- You cannot upgrade from any release before Tivoli Storage Productivity Center Version 5.1. If you are currently running a version of Tivoli Storage Productivity Center earlier than Version 5.1.0, you must upgrade your system to Tivoli Storage Productivity Center Version 5.2.7.1. For more information, see  IBM Spectrum Control interoperability matrix at <http://www.ibm.com/support/docview.wss?uid=swg21386446>. For more information about downloading Tivoli Storage Productivity Center Version 5.2.7.1, see  IBM Spectrum Control latest downloads. Once you are at Tivoli Storage Productivity Center Version 5.2.7.1, you can upgrade to the latest version of IBM Spectrum Control.
- The full X Window System must be installed to display the IBM Spectrum Control installation program on AIX and Linux operating systems.
- On Windows operating systems, ensure that all command prompts are closed. If you have open command prompts that have a current working directory in the IBM Spectrum Control installation directory structure, the upgrade might fail in various places because the upgrade process modifies certain directories.
- On Windows operating systems, ensure that administrators have the Debug programs privileges. Check the current value in your Windows operating system security policy. Debug programs can be found in **Administrative Tools > Local Security Policy > Local Policies > User Rights Assignment**.
- On Windows operating systems, if you installed the IBM Monitoring Agent, stop the Monitoring Agent for Windows OS Primary and Monitoring Agent for Windows OS Watchdog services. After your upgrade is complete, you can start these services again.
- Installing IBM Spectrum Control involves making use of your operating system in manners typical for installing new application software. If your antivirus software is set on the maximum mode, it might prevent some of your changes from being accepted. To verify that your upgrade completes correctly, enable your antivirus software product to allow the following instances:
 - The /etc/hosts file can be edited
 - Files can be created in the /temp directory
 - New executable files can be created in the C:\Program Files directory

- If your upgrade process fails and a component cannot be upgraded, the upgrade process ends and the status of the component is shown as failed. When you start the upgrade process again, the installation program resumes upgrading the failed component.
- If you upgrade Tivoli Storage Productivity Center from a version earlier than Version 5.2.2, your SSL certificates are not updated automatically to 2048-bit encryption keys. Tivoli Storage Productivity Center Version 5.2.2 (or later) uses SSL certificates with 2048-bit encryption keys whereas previous versions of Tivoli Storage Productivity Center used 1024-bit encryption keys.
- After you upgrade IBM Spectrum Control, all trace settings are reset to the default values. If you changed the trace settings, you must reset the trace settings after an upgrade.

Considerations before you upgrade from Tivoli Storage Productivity Center, Version 5.1.1.x

Review the following considerations before you upgrade from Tivoli Storage Productivity Center, Version 5.1.1.x:

- If you intend to install Jazz for Service Management Version 1.1.0.3 and Tivoli Common Reporting Version 3.1.0.2 as part of upgrading to a new version of IBM Spectrum Control, review the “Software requirements” on page 36.
- Do not generate any reports during the upgrade.
- Issues to consider about IBM Spectrum Control reports. The following data is not migrated when you upgrade from an earlier version:
 - The Tivoli Integrated Portal, for example, the roles that were assigned to different users.
 - The custom reports and other reporting data is created in Tivoli Common Reporting.
 - The Cognos Business Intelligence reports.
- Before you manually upgrade reports and upgrade to IBM Spectrum Control, verify that Tivoli Integrated Portal Version 2.2 and Tivoli Common Reporting Version 2.1.1 are running and that the Tivoli Integrated Portal Version 2.2 and Tivoli Common Reporting Version 2.1.1 credentials that are stored by the earlier version of Tivoli Storage Productivity Center are valid. The installation settings from Tivoli Storage Productivity Center Version 5.x are reused during the upgrade to IBM Spectrum Control. If the credentials for Tivoli Integrated Portal Version 2.2 and Tivoli Common Reporting Version 2.1.1 are not correct, the IBM Spectrum Control installation program prompts you to enter the correct credentials.
- To manually migrate your reports, complete one of the following tasks:
 - If you did not configure Tivoli Common Reporting Version 2.1.1 by using an external content store, see [Upgrading from Tivoli Common Reporting 2.1 and 2.1.1](#).
 - If you configured Tivoli Common Reporting Version 2.1.1 by using an external content store such as DB2® or Oracle, see [Upgrading Tivoli Common Reporting 2.1 and 2.1.1 with external Content Store](#).
- On Windows operating systems, after you upgrade reports by using the `trcmd -upgrade` script, you must exit the Windows operating system command prompt where you ran that script.
- You must migrate Business Intelligence and Reporting Tools (BIRT) reports before you upgrade IBM Spectrum Control.

- During the upgrade to IBM Spectrum Control, depending on your environment, you must determine whether you want to uninstall or retain Tivoli Integrated Portal Version 2.2 and Tivoli Common Reporting Version 2.1.1. Uninstall Tivoli Integrated Portal Version 2.2, if it is not being used by other installed products. Uninstalling Tivoli Integrated Portal Version 2.2 and Tivoli Common Reporting Version 2.1.1 means that you cannot use other products that use these products. Retain Tivoli Integrated Portal Version 2.2 that you installed, if you have another product that uses Version 2.2. Retaining Tivoli Integrated Portal Version 2.2 and Tivoli Common Reporting Version 2.1.1 means that resources such as disk space, memory, and processors are used. If you are concerned about resource usage, uninstall these products.
- If you are upgrading from Tivoli Storage Productivity Center Version 5.1 or later to the current release, Tivoli Integrated Portal must be running before you can uninstall Tivoli Integrated Portal.
- The stand-alone GUI is uninstalled as part of the upgrade process. The stand-alone GUI was removed in Version 5.2.8 to consolidate the functions of IBM Spectrum Control into a single GUI. Functions of the stand-alone GUI were moved into the web-based GUI, such as the ability to add and monitor vCenter servers and NetApp filers, and the ability to change the host name or IP address of a resource. However, other functions, such as file system scans, policy management, the topology viewer, database monitoring, and online and batch reporting, are no longer available in version 5.2.8 and later. If you are currently using the stand-alone GUI, ensure that you take a snapshot of your data and set up similar data collection schedules and alerting definitions in the web-based GUI before you upgrade.
- Tivoli Storage Productivity Center for Replication is not delivered with IBM Spectrum Control. Tivoli Storage Productivity Center for Replication is available under the following conditions:
 - In Tivoli Storage Productivity Center V5.2.7 and earlier, Tivoli Storage Productivity Center for Replication is automatically available.
 - In IBM Spectrum Control Version 5.2.8 and later, Tivoli Storage Productivity Center for Replication is only available if you upgrade from Tivoli Storage Productivity Center Version 5.2.7 or earlier. Maintenance is applied to the existing Tivoli Storage Productivity Center for Replication components if you upgraded from Tivoli Storage Productivity Center to IBM Spectrum Control.
- If you are upgrading Tivoli Storage Productivity Center for Replication management servers that are in a high-availability relationship, you can upgrade the active and standby server in any order.
- If you enabled the legacy connection protocols SSLv3 and MD5 hash before the upgrade of IBM Spectrum Control, the upgrade process disables those protocols and you must enable them again after the upgrade. For more information, see  Enabling and disabling legacy protocols.

Considerations before you upgrade from Tivoli Storage Productivity Center, IBM Spectrum Control Version 5.2.x

Review the following considerations before you upgrade from Tivoli Storage Productivity Center, IBM Spectrum Control Version 5.2.x:

- If you upgrade from IBM Spectrum Control Version 5.2.13 or earlier, the upgrade attempts to migrate the current LDAP configuration and web server keystore contents automatically into the new web server. The overall upgrade proceeds even if these migrations are not successful. After the upgrade completes, if you are unable to log on to IBM Spectrum Control using LDAP credentials, add the LDAP repository to IBM Spectrum Control.

For more information, see [Adding an LDAP repository to the federated repositories for IBM Spectrum Control](#). After the upgrade completes, if your web server SSL certificate is incorrect, replace the default SSL certificate for the web server. For more information, see [Replacing the default SSL certificate for the Device, Alert, or Web server](#).

- If your current IBM Spectrum Control server Version 5.2.13 or earlier is running in a Windows Domain environment and you *do not* have LDAP authentication configured using the same Active Directory as your Windows Domain, after you upgrade to IBM Spectrum Control Version 5.2.14 or later, each mapped Domain group that is listed on the User Management page contains the Windows Domain prefix, *domain_name\group_name*.

If your current IBM Spectrum Control server Version 5.2.13 or earlier, is running in a Windows Domain environment and you *do* have LDAP authentication configured using the same Active Directory as your Windows Domain, after you upgrade to IBM Spectrum Control Version 5.2.14 or later, each mapped group listed on the User Management page has the following entries:

- One entry without the Windows Domain prefix, *group_name*
- One entry with the Windows Domain prefix, *domain_name\group_name*

Prior to Version 5.2.14, IBM Spectrum Control did not properly distinguish between local groups, LDAP groups, and Windows Domain groups. During the upgrade, each group is updated with a second entry in order to authorize local users, LDAP users and Windows Domain users correctly following the upgrade.

- If you are running Tivoli Storage Productivity Center Version 5.2.0 with Jazz for Service Management Version 1.1.0.1 and Tivoli Common Reporting Version 3.1.0.1 environment, when you upgrade to IBM Spectrum Control, you also must upgrade Jazz for Service Management and Tivoli Common Reporting.
- Do not generate Cognos Business Intelligence reports during the upgrade process.
- When you upgrade predefined Cognos Business Intelligence reports, the reports are overwritten by the predefined Cognos Business Intelligence reports with the same name in IBM Spectrum Control. The custom reports are migrated without any changes.
- If you are upgrading from Version 5.2.7.1 and earlier, the stand-alone GUI is uninstalled as part of the upgrade process. The stand-alone GUI was removed in Version 5.2.8 to consolidate the functions of IBM Spectrum Control into a single GUI. Functions of the stand-alone GUI were moved into the web-based GUI, such as the ability to add and monitor vCenter servers and NetApp filers, and the ability to change the host name or IP address of a resource. However, other functions, such as file system scans, policy management, the topology viewer, database monitoring, and online and batch reporting, are no longer available in version 5.2.8 and later. If you are currently using the stand-alone GUI, ensure that you take a snapshot of your data and set up similar data collection schedules and alerting definitions in the web-based GUI before you upgrade.
- Tivoli Storage Productivity Center for Replication is not delivered with IBM Spectrum Control. Tivoli Storage Productivity Center for Replication is available under the following conditions:
 - In Tivoli Storage Productivity Center Version 5.2.7.1 and earlier, Tivoli Storage Productivity Center for Replication is automatically available.
 - In IBM Spectrum Control Version 5.2.8 and later, Tivoli Storage Productivity Center for Replication is only available if you upgrade from Tivoli Storage Productivity Center Version 5.2.7.1 or earlier. Maintenance is applied to the

existing Tivoli Storage Productivity Center for Replication components if you upgraded from Tivoli Storage Productivity Center to IBM Spectrum Control.

- If you are upgrading Tivoli Storage Productivity Center for Replication management servers that are in a high-availability relationship, you can upgrade the active and standby server in any order.
- If you enabled the legacy connection protocols SSLv3 and MD5 hash before the upgrade of IBM Spectrum Control, your SSLv3 and MD5 settings are maintained through the upgrade and the same storage subsystem connections persist after the upgrade. For more information, see [Enabling and disabling legacy protocols](#).

Related concepts:

“Backups” on page 158

Before you upgrade, you must back up the entire IBM Spectrum Control system.

“Upgrading Jazz for Service Management and Tivoli Common Reporting” on page 190

If you plan to use Cognos Business Intelligence reports in IBM Spectrum Control, you must upgrade Jazz for Service Management.

“Upgrading Tivoli Storage Productivity Center for Replication management servers in a high-availability relationship” on page 212

If you are upgrading Tivoli Storage Productivity Center for Replication management servers that are in a high-availability relationship, you can upgrade the active and standby server in any order.

Related tasks:

“Replacing server SSL certificates when upgrading from versions earlier than Tivoli Storage Productivity Center Version 5.2.2” on page 217

To upgrade versions of Tivoli Storage Productivity Center Version earlier than Version 5.2.2, you can replace SSL certificates that use 1024-bit encryption keys with SSL certificates that use 2048-bit encryption keys.

Related reference:

“Editing the response file” on page 62

You must edit and save the appropriate response file when you install IBM Spectrum Control by using silent mode. The silent mode installation option for the response file is `-f absolute_path_to_response_file`. For example, in the Windows operating system, you enter `-f C:\installimage\silent_SingleServerTypical.properties`.

“Editing the upgrade response file” on page 168

When you upgrade using the silent mode, use the `silent_Upgrade.properties` file.

“Planning for installation” on page 1

You can install IBM Spectrum Control by using the installation program or the command line in silent mode. Installing IBM Spectrum Control by using console mode is not supported.

“Migrating BIRT reports” on page 218

Before you upgrade from Tivoli Storage Productivity Center to IBM Spectrum Control, you must manually export BIRT reports from IBM Tivoli Common Reporting Version 2.1. You can import BIRT reports later into Tivoli Common Reporting Version 3.1.0.2.

Backups

Before you upgrade, you must back up the entire IBM Spectrum Control system.

The process involves backing up the following parts:

- IBM Spectrum Control database by using DB2 backup utilities.

For more information about backing up your database, see http://www.ibm.com/support/knowledgecenter/SS5R93_5.2.15/com.ibm.spectrum.sc.doc/fqz0_t_backing_up_tpc_database.html.

- The entire IBM Spectrum Control server by using software such as IBM Spectrum Protect.

Tip: The frequency of backups depends on the data protection policies of your company, the IBM Spectrum Control work load, and the size of the IBM Spectrum Control environment. Your backup plan must include documentation with the user names and passwords for DB2, IBM Spectrum Control, and Tivoli Integrated Portal.

If you experience problems during the migration, use these backups to restore your original IBM Spectrum Control system and try to migrate again. For more information about restoring the IBM Spectrum Control database, see

http://www.ibm.com/support/knowledgecenter/SSEPGG_11.1.0/com.ibm.db2.luw.admin.ha.doc/doc/t0006242.html.

Upgrading from 32-Bit DB2 Version 9.7 to 64-Bit DB2 Version 10.5

If you are running an earlier version of IBM Spectrum Control that uses a 32-bit DB2, you must upgrade to 64-bit DB2 Version 10.5 or later.

For example, if you are using 32-bit DB2 Enterprise Server Edition Version 9.7 Fix Pack 4, you must first upgrade to 64-bit DB2 Version 9.7 Fix Pack 4 and then upgrade to 64-bit DB2 Version 10.5 or later before you upgrade to IBM Spectrum Control.

Important: These steps are an example of one way to upgrade from 32-bit DB2 Version 9.7 Fix Pack 4 to 64-bit DB2 Version 10.5 or later on 64-bit Windows 2008 R2.

For more information about upgrading from 32-bit DB2 Version 9.7 to 64-bit DB2 Version 9.7 on Windows operating systems, see [Upgrading DB2 32-bit servers to 64-bit systems \(Windows\)](#). For more information about upgrading to 64-bit DB2 Version 10.5 on Linux and AIX operating systems, see [Upgrading a DB2 server \(Linux and UNIX\)](#). For more information about upgrading to 64-bit DB2 Version 10.5, see [Upgrade to DB2 Version 10.5](#).

To upgrade from 32-bit DB2 Enterprise Server Edition Version 9.7 Fix Pack 4 to 64-bit DB2 Enterprise Server Edition Version 10.5 or later on 64-bit Windows 2008 R2, complete the following steps:

1. Stop all of the Windows services for the servers, including Tivoli Integrated Portal and Tivoli Common Reporting, if it is installed.
2. In a DB2 command window, run the following commands to force all users or applications to disconnect from DB2:

```
db2 force application all
db2 terminate
```

3. In a DB2 command window, run the following command to ensure that no applications are accessing DB2:
`db2 list applications`
4. Create a directory to back up the database (for example, `C:\downloads\db2_backup`).
5. In a DB2 command window, run the following command to back up the IBM Spectrum Control database:
`db2 BACKUP DATABASE database to C:\downloads\db2_backup`

where *database* is the name of the Tivoli Storage Productivity Center database (usually TPCDB). Make a similar backup of the Tivoli Common Reporting database (usually TCRDB), if installed.

6. Stop all DB2 Windows services and exit DB2 in the Windows System Tray.
7. To upgrade DB2 to 64-bit DB2 Version 9.7 Fix Pack 4, complete the following steps:
 - a. In Windows Explorer, navigate to the following directory:
`c:\64bit_DB2_9.7_fixpack4_download_directory\SERVER`
 where *64bit_DB2_9.7_fixpack4_download_directory* is where you downloaded the DB2 installation files.
 - b. >Double-click the `setup.exe` file.
 - c. On the **DB2 Setup Launchpad** navigation tree, click **Install a Product**.
 - d. On the Install a Product page, in the **DB2 Enterprise Server Edition Version 9.7 Fix Pack 4** section, click **Work with Existing**.
 - e. On the Work with an Existing DB2 Copy window, select the DB2 copy for DB2 Version 9.7 Fix Pack 4.
 - f. Click **Launch DB2 Setup wizard**.
 - g. On the Warning window about upgrading DB2, click **OK**.
 - h. On the Warning window that states that 32-bit DB2 Version 9.7 Fix Pack 4 is detected is displayed, click **Yes**.
 - i. In the **DB2 Setup wizard**, complete the following steps:
 - 1) On the Welcome page, click **Next**.
 - 2) On the Software License Agreement page, review and accept the license agreement, and click **Next**.
 - 3) On the Select the installation type page, select **Typical**, and click **Next**.
 - 4) On the Select the installation, response file creation, or both page, keep the default selection, and click **Next**.
 - 5) On the Installation folder page, click **Next**.
 - 6) On the Set the DB2 copy name page, click **Next**.
 - 7) On the Set user information for the default DB2 instance page, enter the correct user name and password values for the existing 32-bit DB2 Version 9.7 Fix Pack 4 installation, and click **Next**.
 - 8) On the Enable operating system security for DB2 objects page, ensure that the settings and values are correct for the existing 32-bit DB2 Version 9.7 Fix Pack 4 installation, and click **Next**.
 - 9) If the Warning window about existing group names is displayed, click **OK**.
 - 10) On the Start copying the files and create response file page, click **Finish**.

- 11) On the Setup is complete page, click **Next**.
- 12) On the Install additional products page, click **Finish**.
8. Restart your computer.
9. Close the DB2 First Steps window.
10. Stop all of the Windows services for the servers, including Tivoli Integrated Portal and Tivoli Common Reporting.
11. To upgrade the database to 64-bit DB2 Version 9.7 Fix Pack 4, complete the following steps:
 - a. In a DB2 command window, run the following command to force all users or applications to disconnect from DB2:


```
db2 force application all
db2 terminate
```
 - b. In a DB2 command window, run the following command to ensure that no applications are accessing DB2:


```
db2 list applications
```
 - c. In a DB2 command window, run the following command to upgrade the database to 64-bit DB2 Version 9.7 Fix Pack 4:


```
db2 UPGRADE DATABASE database USER user_name USING password
```

where *database* is the name of the Tivoli Storage Productivity Center database (usually TPCDB), *user_name* is the user who owns the DB2 instance where the IBM Spectrum Control database is located (usually db2admin), and *password* is the password that is associated with that user name.
 - d. In a DB2 command window, run the following command to upgrade the Tivoli Common Reporting database to 64-bit DB2 Version 9.7 Fix Pack 4:


```
db2 UPGRADE DATABASE database USER user_name USING password
```

where *database* is the name of the Tivoli Common Reporting database (usually TCRDB), *user_name* is the user who owns the DB2 instance where the database is located (usually db2admin), and *password* is the password that is associated with that user name.
12. To update the Windows registry, complete the following steps:
 - a. Open a Windows command window.
 - b. Run the following command to back up the keys that will be deleted:


```
reg export HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\IBM\DB2 IBMDB2.reg
```
 - c. Run the following command to delete the keys:


```
reg delete HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\IBM\DB2
```

Information: Updating the Windows registry is a workaround for DB2 APAR IC76221.
13. In a DB2 command window, run the following command to back up the database:


```
db2 BACKUP DATABASE database to C:\downloads\db2_backup
```

where *database* is the name of the Tivoli Storage Productivity Center database (usually TPCDB).
14. Stop all DB2 Windows services and exit DB2 in the Windows System Tray.
15. You can now upgrade 64-bit DB2 Version 9.7 Fix Pack 4 to DB2 Version 10.5 or later. Complete the following steps:
 - a. In Windows Explorer, navigate to the following directory:

c:\64Bit_DB2_10.5_download_directory\SERVER

where *64Bit_DB2_10.5_download_directory* is where you downloaded the DB2 installation files

- b. Double-click the setup.exe file.
 - c. On the **DB2 Setup Launchpad** navigation tree, click **Install a Product**.
 - d. On the Install a Product page, in the **DB2 Enterprise Server Edition Version 10.5** section, click **Work with Existing**.
 - e. On the "Work with an Existing DB2 Copy" window, select the DB2 copy for DB2 Version 9.7 Fix Pack 4.
 - f. Click **Launch DB2 Setup wizard**.
 - g. On the Warning window about upgrading DB2, click **OK**.
 - h. Complete the following steps in the **DB2 Setup wizard**:
 - 1) On the Welcome page, click **Next**.
 - 2) On the Software License Agreement page, read and accept the terms of the license agreement, and click **Next**.
 - 3) On the "Select the installation type" page, select **Typical**, and click **Next**.
 - 4) On the "Select the installation, response file creation, or both" page, keep the default selection and click **Next**.
 - 5) On the "Installation folder" page, click **Next**.
 - 6) On the "Select the IBM SSH server installation folder and startup option" page, enter the values and settings that are appropriate for your environment, and click **Next**.
 - 7) On the Set the DB2 copy name page, click **Next**.
 - 8) On the Set user information for the default DB2 instance page, enter the correct user name and password for the existing 64-bit DB2 Version 9.7 Fix Pack 4 installation, and click **Next**.
 - 9) On the "Enable operating system security for DB2 objects" page, ensure that the settings and values are correct for the existing 64-bit DB2 Version 9.7 Fix Pack 4 installation, and click **Next**.
 - 10) If the Warning window about existing group names is displayed, click **OK**.
 - 11) On the "Start copying files and create response file" page, click **Finish**.
 - 12) If a Warning window is displayed about a restart being required to complete the setup, click **OK**.
 - 13) On the "Setup is complete" page, click **Next**.
 - 14) On the "Install additional products" page, click **Finish**.
 - i. Close the DB2 First Steps window.
16. Restart your computer.
 17. Stop all of the Windows services for the servers, including Tivoli Integrated Portal and Tivoli Common Reporting, if installed.
 18. If you experience problems when you start DB2 after you upgrade to 64-bit DB2 Version 10.5, examine the Windows Application Log in the Windows Event Viewer. For example, when you run the **db2start** command in a DB2 command window, the SQL1042C message might be displayed.

If you find a SideBySide error in the Windows Application Log that contains content similar to the following message:

Activation context generation failed for
"c:\program files\ibm\gsk8\lib64\gsk8sys_64.dll".
Dependent Assembly Microsoft.VC90.CRT,processorArchitecture="amd64",
publicKeyToken="1fc8b3b9a1e18e3b",type="win32",version="9.0.21022.8"
could not be found. Please use sxstrace.exe for detailed diagnosis.

To resolve the SideBySide error in the Windows Application Log, complete the following steps:

- a. Download and install the *Microsoft Visual C++ 2008 Redistributable Package (x64)* from the Microsoft website: <http://www.microsoft.com/en-us/download/details.aspx?id=15336>.
 - b. After you install the Microsoft package, complete the following steps:
 - 1) Restart your computer.
 - 2) Verify that 64-bit DB2 Version 10.5 starts properly.
 - 3) Stop all servers and Windows services, including Tivoli Integrated Portal and Tivoli Common Reporting.
19. To upgrade the database to 64-bit DB2 Version 10.5 or later, complete the following steps:
- a. In a DB2 command window, run the following command:

```
db2 force application all
db2 terminate
```
 - b. In a DB2 command window, run the following command to ensure that no applications are accessing DB2:

```
db2 list applications
```
 - c. In a DB2 command window, run the following command to upgrade the database to 64-bit DB2 Version 10.5 or later:

```
db2 UPGRADE DATABASE database USER user_name USING password
```

where *database* is the name of the Tivoli Storage Productivity Center database (usually TPCDB), *user_name* is the user who owns the DB2 instance where the database is located (usually db2admin), and *password* is the password that is associated with that user name.
 - d. In a DB2 command window, run the following command to upgrade the Tivoli Common Reporting database to 64-bit DB2 Version 10.5:

```
db2 UPGRADE DATABASE database USER user_name USING password
```

where *database* is the name of the Tivoli Common Reporting database (usually TCRDB), *user_name* is the user who owns the DB2 instance where the database is located (usually db2admin), and *password* is the password that is associated with that user name.
20. Start all of the servers and services, including Tivoli Integrated Portal and Tivoli Common Reporting.

What to do next: You can upgrade to IBM Spectrum Control Version 5.2 or later. For more information about upgrading IBM Spectrum Control in a single-server environment, see “Upgrading IBM Spectrum Control in a single-server environment.” For more information about upgrading IBM Spectrum Control in a multiple-server environment, see “Uninstalling IBM Spectrum Control in a multiple-server environment” on page 226.

Upgrading IBM Spectrum Control in a single-server environment

You can upgrade IBM Spectrum Control by using the installation program or silent mode.

In a single-server environment, to upgrade IBM Spectrum Control, see the following topics:

- “Upgrading IBM Spectrum Control in a single-server environment by using the installation program”
- “Upgrading IBM Spectrum Control in a single-server environment by using silent mode” on page 166

Upgrading IBM Spectrum Control in a single-server environment by using the installation program

You can upgrade IBM Spectrum Control by using the installation program.

Before you upgrade, you must back up the entire IBM Spectrum Control system.

If you upgrade from Tivoli Storage Productivity Center Version 5.1.1.x, you can install Jazz for Service Management and Tivoli Common Reporting as part of the upgrade to IBM Spectrum Control. If you upgrade from Tivoli Storage Productivity Center Version 5.2.0 or later and you do not have JazzSM currently installed, you do not have the opportunity to install Jazz for Service Management and Tivoli Common Reporting as part of the upgrade to IBM Spectrum Control. You can install Jazz for Service Management and Cognos BI reports after you upgrade to the current version of IBM Spectrum Control. If you upgrade from Tivoli Storage Productivity Center Version 5.2.0 and you have Jazz for Service Management Version 1.1.0.1 and Tivoli Common Reporting Version 3.1.0.1 currently installed, you can upgrade Jazz for Service Management and Tivoli Common Reporting as part of the upgrade to IBM Spectrum Control. For more information, see [Upgrading Jazz for Service Management and Tivoli Common Reports and Tivoli Storage Productivity Center reports from 5.2.x to 5.2](#).

To upgrade IBM Spectrum Control in a single-server environment, complete the following steps:

1. Log on to the IBM Spectrum Control computer with the appropriate user privileges.
2. If you are upgrading from Tivoli Storage Productivity Center Version 5.1.1.x, start the Tivoli Integrated Portal. For more information about starting the services, see [Starting the Tivoli Storage Productivity Center services](#). If you are upgrading from Tivoli Storage Productivity Center Version 5.2.0 and later, start the Web server. For more information about starting the services, see [Starting the IBM Spectrum Control services](#).
3. If you have the opportunity to install or upgrade Jazz for Service Management as part of your upgrade to IBM Spectrum Control and you plan to generate Cognos BI reports, download and extract the Jazz for Service Management compressed installation files to the same temporary directory.

For example, if you are installing Jazz for Service Management on the Windows operating system, enter `c:\downloads\jazzSM`. If you are installing Jazz for Service Management on the AIX or Linux operating systems, enter `/downloads/JazzSM`. For more information about the installation files, see [Setting up a local file system for a custom installation](#).

Important: Cognos BI reports are based on the IBM Spectrum Control database schema. If the IBM Spectrum Control database schema is upgraded, and Cognos BI reports are not upgraded, the reports might not work. If you

plan to use Cognos BI reports, upgrade the reports when you upgrade IBM Spectrum Control. If you do not plan to use Cognos BI reports, uninstall the reports.

4. Before you start the IBM Spectrum Control installation program on the AIX or Linux operating systems, you must source the user profile (db2profile) for the instance owner of the DB2 database. The following text is an example of the command you run to source the user profile:

```
. /home/db2inst1/sqllib/db2profile
```

5. Start the IBM Spectrum Control installation program.
6. If you have the opportunity to install or upgrade Jazz for Service Management as part of your upgrade to IBM Spectrum Control, the IBM Spectrum Control installation program displays the Before You Begin page, which you should review:
 - If Jazz for Service Management is not installed on your computer, the Before You Begin page displays an **Install Now** button.
 - If Jazz for Service Management Version 1.1.0.1 and Cognos BI reports are installed on your computer, the Before You Begin page displays an **Upgrade Now** button.

If you do not want to install Jazz for Service Management, click **Next** to proceed to the next page in the IBM Spectrum Control installation program and upgrade IBM Spectrum Control without Cognos BI reports. To install Cognos BI reports after you upgrade IBM Spectrum Control, run the IBM Spectrum Control installation program again.

7. To install or upgrade to Jazz for Service Management Version 1.1.0.3, complete the following steps:
 - a. On the Before You Begin page, click the appropriate button:
 - **Install Now**
 - **Upgrade Now**
 - b. On the Install Jazz for Service Management page or the Upgrade Jazz for Service Management page, complete the following steps:
 - 1) Provide the location where the Jazz for Service Management and Tivoli Common Reporting installation files were extracted.

For example, if you are installing Jazz for Service Management on the Windows operating system, enter c:\downloads\jazzSM. If you are installing Jazz for Service Management on the AIX or Linux operating systems, enter /downloads/JazzSM.
 - 2) If there is a port conflict, specify a new starting value for a 15-port range, and click the **Verify Port Availability** link to ensure that the port range is usable.
 - 3) Click the appropriate button:
 - **Install Now**
 - **Upgrade Now**

The IBM Spectrum Control installation program pauses, and the Jazz for Service Management launchpad starts.

- c. When you exit the Jazz for Service Management launchpad, you are returned to the Install Jazz for Service Management page or to the Upgrade Jazz for Service Management page in IBM Spectrum Control installation program. Click **OK**.

- d. If the installation or upgrade of Jazz for Service Management was successful, you are returned to the Before You Begin page, which now displays a green check mark.

If the installation or upgrade of Jazz for Service Management was not successful, a message is displayed, and you can click one of the following options:

- **Install Now** or **Upgrade Now**, which starts the Jazz for Service Management launchpad again.
- **Continue**, which returns you to the Before You Begin page.

- e. On the Before You Begin page, click **Next**.

8. If the installation of Jazz for Service Management was successful and you clicked **Next** on the Before You Begin page to upgrade IBM Spectrum Control with Cognos BI reports, on the Configure Jazz for Service Management and Tivoli Common Reporting page, enter the following information, and click **OK**:

- The user name that is used to log on to the Jazz for Service Management WebSphere profile.
- The password that is associated with the user name.
- The path for the Jazz for Service Management installation directory.

Jazz for Service Management starts. After Jazz for Service Management starts, it might take some time before all components, including Tivoli Common Reporting, are running.

If the IBM Spectrum Control installation program is unable to communicate with Jazz for Service Management, you can select the **Install Cognos BI reports later** check box, click **OK**, and continue upgrading IBM Spectrum Control without Cognos BI reports. After you upgrade IBM Spectrum Control without Cognos BI reports, and resolve any problems with Jazz for Service Management, start the IBM Spectrum Control installation program again to install Cognos BI reports.

Important: If the installation of Jazz for Service Management was not successful and you clicked **Next** on the Before You Begin page to upgrade IBM Spectrum Control without Cognos BI reports, the Configure Jazz for Service Management and Tivoli Common Reporting page does not display.

9. Follow the prompts in the installation program to upgrade IBM Spectrum Control.
10. After the upgrade is finished, review the message log to ensure that no errors occurred.

Related concepts:

“Backups” on page 158

Before you upgrade, you must back up the entire IBM Spectrum Control system.

Related tasks:

“Redeploying Cognos BI reports” on page 122

If you experienced issues with the Tivoli Common Reporting installation and had to uninstall and install Tivoli Common Reporting again, you can uninstall and install IBM Spectrum Control Cognos Business Intelligence reports again.

“Installing Cognos BI reports later by using the installation program” on page 117
You can install Cognos Business Intelligence reports by using the installation program after you install IBM Spectrum Control.

Related reference:

“Preparing for an upgrade” on page 153

You can use the following information to help prepare for your upgrade of IBM Spectrum Control. Good planning helps you avoid delays and problems when you upgrade your system.

“Reviewing the log files to resolve installation issues” on page 133

If an error occurs during IBM Spectrum Control installation, you can review the error log files to resolve issues and continue the installation.

“Planning for installation” on page 1

You can install IBM Spectrum Control by using the installation program or the command line in silent mode. Installing IBM Spectrum Control by using console mode is not supported.

Upgrading IBM Spectrum Control in a single-server environment by using silent mode

You can upgrade IBM Spectrum Control by using silent mode. This upgrade method is useful if your computer cannot display graphics.

Before you upgrade, you must back up the entire IBM Spectrum Control system.

If Jazz for Service Management is not installed, and you plan to use Cognos BI reports, download, and extract the Jazz for Service Management and Tivoli Common Reporting compressed installation files to the same temporary directory. For example, if you are installing Jazz for Service Management on the Windows operating system, enter `c:\downloads\jazzSM`. If you are installing Jazz for Service Management on the AIX or Linux operating systems, enter `/downloads/JazzSM`. For more information about the installation files, see [Setting up a local file system for a custom installation](#).

Install Jazz for Service Management by using silent mode. For more information about installing Jazz for Service Management by using silent mode, see [Custom installations by using silent mode](#).

To upgrade IBM Spectrum Control in a single-server environment by using silent mode, complete the following steps:

1. Log on to the IBM Spectrum Control computer with the appropriate user privileges.
2. If you are upgrading from Tivoli Storage Productivity Center Version 5.1.1.x, start the Tivoli Integrated Portal. For more information about starting the services, see [Starting the Tivoli Storage Productivity Center services](#). If you are upgrading from Tivoli Storage Productivity Center Version 5.2.0 and later, start the Web server. For more information about starting the services, see [Starting the IBM Spectrum Control services](#).
3. Edit and save the appropriate response file.
 - Edit the `silent_Upgrade.properties` file and set the following parameters:
 - `LICENSE_ACCEPTED=true`
 - `CHOSEN_INSTALL_TYPE="Upgrade"`
 - `varPreserveTIP2x=value`
 - `varJazzSMUsrID=user_name`
 - `varJazzSMUsrPW=password`
 - `JAZZSM_INSTALL_DIR=Location_of_JazzSM_installation_directory`
4. Run the silent mode installation program.

- On Windows operating systems, run the following command:
`setup.bat -l language -i silent -f absolute_path_to_response_file`
 where *language* can be one of the following values:

- Czech - cs
- English - en
- French - fr
- German - de
- Hungarian - hu
- Italian - it
- Japanese - ja
- Korean - ko
- Polish - pl
- Brazilian Portuguese - pt_BR
- Russian - ru
- Spanish - es
- Chinese (Simplified) - zh_CN
- Chinese (Traditional) - zh_TW

absolute_path_to_response_file is the absolute path to the response file. For example, the following command specifies the language and the path:

```
setup.bat -l fr -i silent -f
c:\SpectrumControl\silent_Upgrade.properties
```

- On AIX or Linux operating systems, run the following command:
`./setup.bin -l language -i silent -f /absolute_path_to_response_file`

Where *absolute_path_to_response_file* is the absolute path to the response file. For example, the following command specifies the language and the path:

```
./setup.bin -l de -i silent -f /SpectrumControl/silent_Upgrade.properties
```

On the AIX or Linux operating system, you must source the DB2 profile, *db2profile*, for the instance owner of the DB2 database. The following text is an example of the command you run to source the user profile:

```
. /home/db2inst1/sqllib/db2profile
```

If you do not specify a language or if the language is not specified correctly, the installation program uses the English language as the default.

5. Optional: Monitor the progress of the upgrade.

- To view the progress of the silent mode installation on Windows operating systems, check the trace log in the following path:

```
installation_dir\logs\traceTPCInstall.log
```

- To view the progress of the silent mode installation on AIX or Linux operating systems, check the trace log in the following path:

```
installation_dir/logs/traceTPCInstall.log
```

Related concepts:

“Backups” on page 158

Before you upgrade, you must back up the entire IBM Spectrum Control system.

“Installing Jazz for Service Management and Tivoli Common Reporting” on page 87

If you plan to use Cognos Business Intelligence reports, you must install Jazz for Service Management Version 1.1.0.3 and Tivoli Common Reporting Version 3.1.0.2 before you install Cognos BI reports. You can install these components now or after you install IBM Spectrum Control.

Related reference:

“Planning for IBM Spectrum Control authentication and authorization” on page 14
An operating system user name is required to install and log on to IBM Spectrum Control for the first time. After you install IBM Spectrum Control, you can assign roles to users. Roles determine the product functions that are available to users.

“Editing the upgrade response file”

When you upgrade using the silent mode, use the `silent_Upgrade.properties` file.

“Reviewing the log files to resolve installation issues” on page 133

If an error occurs during IBM Spectrum Control installation, you can review the error log files to resolve issues and continue the installation.

Editing the upgrade response file

When you upgrade using the silent mode, use the `silent_Upgrade.properties` file.

Parameters in the `silent_Upgrade.properties` file

The `silent_Upgrade.properties` file contains the following parameters:

`LICENSE_ACCEPTED=false`

Specifies whether you accept the IBM Spectrum Control license agreement. The options are:

`true`

You accept all the terms and conditions of the IBM Spectrum Control license agreement.

`false` or any other value

You do not accept the IBM Spectrum Control license agreement. The installation program exits.

`CHOSEN_INSTALL_TYPE="Upgrade"`

Specifies the upgrade type.

Important: Do not change the value for this parameter.

`varPreserveTIP2x`

Specify whether to remove or preserve Tivoli Integrated Portal Version 2.2 during the upgrade.

The options are:

0 Remove Tivoli Integrated Portal Version 2.2 (default)

1 Preserve Tivoli Integrated Portal Version 2.2

`varJazzSMUsrID=`

Specifies the Jazz for Service Management user name. This user name was used to install Jazz for Service Management.

`varJazzSMUsrPW=`

Specifies the valid password that has been used with the Jazz for Service Management user name.

JAZZSM_INSTALL_DIR=

Specifies the expected default directory where Jazz for Service Management has been installed.

- For the Windows operating systems, the expected default directory is C:\Program Files\IBM\JAZZSM.
- For the AIX or Linux operating systems, the expected default directory is /opt/IBM/JazzSM.

Related tasks:

“Upgrading IBM Spectrum Control in a single-server environment by using silent mode” on page 166

You can upgrade IBM Spectrum Control by using silent mode. This upgrade method is useful if your computer cannot display graphics.

Upgrading IBM Spectrum Control in a multiple-server environment

To upgrade IBM Spectrum Control in a multiple-server environment, start the installation program on the server on which the database repository is installed. After you complete the installation program on this server, you can start the start the installation program on the other server.

In a multiple-server environment, to upgrade IBM Spectrum Control, see the following topics:

- “Upgrading from Tivoli Storage Productivity Center Version 5.2.0 and later with a remote database by using the installation program”
- “Upgrading from Tivoli Storage Productivity Center Version 5.2.0 and later with remote Jazz for Service Management by using the installation program” on page 172
- “Upgrading from Tivoli Storage Productivity Center Version 5.1 with a remote database by using the installation program” on page 174
- “Upgrading from Tivoli Storage Productivity Center Version 5.1 with remote Tivoli Integrated Portal by using the installation program” on page 177

Upgrading from Tivoli Storage Productivity Center Version 5.2.0 and later with a remote database by using the installation program

You can upgrade from Tivoli Storage Productivity Center Version 5.2.0 and later to IBM Spectrum Control with a remote database by using the installation program.

Before you upgrade, you must back up the entire Tivoli Storage Productivity Center system.

If you upgrade from Tivoli Storage Productivity Center Version 5.2.0 or later, and you do not have Jazz for Service Management currently installed, you do not have the opportunity to install Jazz for Service Management and Tivoli Common Reporting as part of the upgrade to IBM Spectrum Control. You can install Jazz for Service Management and Cognos BI reports after you upgrade to the current version of IBM Spectrum Control. If you upgrade from Tivoli Storage Productivity Center Version 5.2.0 and you have Jazz for Service Management Version 1.1.0.1 Tivoli Common Reporting Version 3.1.0.1 currently installed, you can upgrade Jazz for Service Management and Tivoli Common Reporting as part of the upgrade to

IBM Spectrum Control. For more information, see [Upgrading Jazz for Service Management and Tivoli Common Reports and Tivoli Storage Productivity Center reports from 5.2.x to 5.2.](#)

For this procedure, the terms *Server A* and *Server B* denote the two servers. Server A has DB2 Enterprise Server Edition and the Tivoli Storage Productivity Center database repository installed. Server B has all of the other Tivoli Storage Productivity Center components installed and Jazz for Service Management, if you are using Cognos Business Intelligence reports.

To upgrade using the installation program, complete the following steps:

1. Complete the following steps on Server B:
 - a. Log on to Server B with the appropriate user privileges.
 - b. On Server B, stop all Tivoli Storage Productivity Center services. For more information on stopping the services, see [Stopping the Tivoli Storage Productivity Center servers.](#)
2. Complete the following steps on Server A:
 - a. Log on to Server A with the appropriate user privileges.
 - b. If necessary, upgrade DB2 on Server A to a version that is supported by IBM Spectrum Control. For more information about the supported DB2 versions, see [Database repository.](#) For more information about upgrading DB2, see [Upgrading DB2 servers.](#)

Before you start the IBM Spectrum Control installation program on AIX or Linux operating systems, you must source the user profile, `db2profile`, for the instance owner of the DB2 database. The following text is an example of the command to source the user profile:

```
. /home/db2inst1/sqllib/db2profile
```
 - c. Start the IBM Spectrum Control installation program on Server A.
 - d. Follow the prompts in the installation program to upgrade the database repository on Server A.
 - e. After the upgrade is finished on Server A, review the message log to ensure that no errors occurred.
3. Complete the following steps on Server B:
 - a. Log on to Server B with the appropriate user privileges.
 - b. On Server B, start the Web Server. For more information about starting the services, see [Starting the IBM Spectrum Control services.](#)
 - c. If Jazz for Service Management Version 1.1.0.1 is installed, and you plan to run Cognos Business Intelligence reports, you need to upgrade Jazz for Service Management to Version 1.1.0.3. Download and extract the Jazz for Service Management compressed installation files to the same temporary directory. For example, if you are upgrading Jazz for Service Management on the Windows operating system, enter `c:\downloads\jazzSM`. If you are upgrading Jazz for Service Management on the AIX or Linux operating systems, enter `/downloads/JazzSM`.

For more information about the installation files, see [Setting up a local file system for a custom installation.](#)

Important: Cognos Business Intelligence reports are based on the IBM Spectrum Control database schema. If the IBM Spectrum Control database schema is upgraded, and Cognos Business Intelligence reports are not

upgraded, the reports might not work. If you plan to use Cognos Business Intelligence reports, upgrade the reports when you upgrade IBM Spectrum Control. If you do not plan to use Cognos Business Intelligence reports, uninstall the reports.

- d. Start the IBM Spectrum Control installation program on Server B.
- e. If Jazz for Service Management Version 1.1.0.1 is installed, and you want to upgrade to Jazz for Service Management Version 1.1.0.3, complete the following steps:
 - 1) On the Before You Begin page, click **Upgrade Now**.
 - 2) On the Upgrade Jazz for Service Management page, provide the location where the Jazz for Service Management Version 1.1.0.3 and Tivoli Common Reporting Version 3.1.0.2 installation files were extracted.
For example, if you are upgrading Jazz for Service Management on the Windows operating system, enter `c:\downloads\jazzSM`. If you are upgrading Jazz for Service Management on the AIX or Linux operating systems, enter `/downloads/JazzSM`.
 - 3) Click **Upgrade Now**.
The IBM Spectrum Control installation program pauses and the Jazz for Service Management launchpad starts.
When you exit the Jazz for Service Management launchpad, you are returned to the Upgrade Jazz for Service Management page in the IBM Spectrum Control installation program. Click **OK**.
If the Jazz for Service Management upgrade was successful, a green check mark is displayed on the IBM Spectrum Control Before You Begin page.
If the upgrade was not successful, click **Upgrade Now** to launch the Jazz for Service Management launchpad again.
You must upgrade Jazz for Service Management successfully to continue upgrading Cognos BI reports on Server B.
- f. Follow the prompts in the installation program to upgrade the IBM Spectrum Control components on Server B.
- g. After the upgrade is finished, review the message log file on Server B to ensure that no errors occurred.

If you upgraded IBM Spectrum Control without installing Cognos BI reports on Server B, you can add Cognos BI reports later.

Related concepts:

“Backups” on page 158

Before you upgrade, you must back up the entire IBM Spectrum Control system.

“Upgrading Jazz for Service Management and Tivoli Common Reporting” on page 190

If you plan to use Cognos Business Intelligence reports in IBM Spectrum Control, you must upgrade Jazz for Service Management.

Related tasks:

“Redeploying Cognos BI reports” on page 122

If you experienced issues with the Tivoli Common Reporting installation and had to uninstall and install Tivoli Common Reporting again, you can uninstall and install IBM Spectrum Control Cognos Business Intelligence reports again.

“Installing Cognos BI reports later by using the installation program” on page 117
You can install Cognos Business Intelligence reports by using the installation program after you install IBM Spectrum Control.

Related reference:

“Preparing for an upgrade” on page 153

You can use the following information to help prepare for your upgrade of IBM Spectrum Control. Good planning helps you avoid delays and problems when you upgrade your system.

“Planning for IBM Spectrum Control authentication and authorization” on page 14

An operating system user name is required to install and log on to IBM Spectrum Control for the first time. After you install IBM Spectrum Control, you can assign roles to users. Roles determine the product functions that are available to users.

“Reviewing the log files to resolve installation issues” on page 133

If an error occurs during IBM Spectrum Control installation, you can review the error log files to resolve issues and continue the installation.

“Upgrading from 32-Bit DB2 Version 9.7 to 64-Bit DB2 Version 10.5” on page 158

If you are running an earlier version of IBM Spectrum Control that uses a 32-bit DB2, you must upgrade to 64-bit DB2 Version 10.5 or later.

Upgrading from Tivoli Storage Productivity Center Version 5.2.0 and later with remote Jazz for Service Management by using the installation program

You can upgrade Tivoli Storage Productivity Center Version 5.2.0 and later to IBM Spectrum Control with remote Jazz for Service Management by using the installation program.

Before you upgrade, you must back up the entire Tivoli Storage Productivity Center system.

For this procedure, the terms *Server A* and *Server B* denote the two servers. Server A has DB2 Enterprise Server Edition, the Tivoli Storage Productivity Center database repository and the Tivoli Storage Productivity Center servers installed. Server B has DB2 Enterprise Server Edition, Jazz for Service Management, and Cognos BI reports installed.

To upgrade IBM Spectrum Control by using the installation program, complete the following steps:

1. On Server A, complete the following steps:
 - a. Log on to Server A with the appropriate user privileges.
 - b. If necessary, upgrade DB2 on Server A to a version that is supported by IBM Spectrum Control. For more information about the supported DB2 versions, see [Database repository](#). For more information about upgrading DB2, see [Upgrading DB2 servers](#).
 - c. Before you start the IBM Spectrum Control installation program on the AIX or Linux operating systems, you must source the user profile (db2profile) for the instance owner of the DB2 database. The following text is an example of the command to source the user profile:

```
. /home/db2inst1/sqllib/db2profile
```
 - d. Start the IBM Spectrum Control installation program.
 - e. Follow the prompts in the installation program to upgrade the IBM Spectrum Control database repository and the IBM Spectrum Control servers.
 - f. After the upgrade is finished, review the message log on Server A to ensure that no errors occurred.

2. On Server B, complete the following steps:

- a. Log on to Server B with the appropriate user privileges.
- b. If Jazz for Service Management Version 1.1.0.1 is installed, and you plan to run Cognos Business Intelligence reports, you need to upgrade Jazz for Service Management to Version 1.1.0.3. Download and extract the Jazz for Service Management compressed installation files to the same temporary directory.

For example, if you are upgrading Jazz for Service Management on the Windows operating system, enter `c:\downloads\jazzSM`. If you are upgrading Jazz for Service Management on the AIX or Linux operating systems, enter `/downloads/JazzSM`.

For more information about the installation files, see Setting up a local file system for a custom installation.

- c. Before you start the IBM Spectrum Control installation program on the AIX or Linux operating systems, you must source the user profile (`db2profile`) for the instance owner of the DB2 database. The following text is an example of the command to source the user profile:

```
. /home/db2inst1/sqllib/db2profile
```

- d. Start the IBM Spectrum Control installation program on Server B.
- e. If Jazz for Service Management Version 1.1.0.1 is installed, and you want to upgrade to Jazz for Service Management Version 1.1.0.3, complete the following steps:

- 1) On the Before You Begin page, click **Upgrade Now**.

- 2) On the Upgrade Jazz for Service Management page, provide the location where the Jazz for Service Management Version 1.1.0.3 and Tivoli Common Reporting Version 3.1.0.2 installation files were extracted.

For example, if you are upgrading Jazz for Service Management on the Windows operating system, enter `c:\downloads\jazzSM`. If you are upgrading Jazz for Service Management on the AIX or Linux operating systems, enter `/downloads/JazzSM`.

- 3) Click **Upgrade Now**.

The IBM Spectrum Control installation program pauses and the Jazz for Service Management launchpad starts. For more information about upgrading Jazz for Service Management, see Upgrading Jazz for Service Management and Tivoli Common Reporting.

When you exit the Jazz for Service Management launchpad, you are returned to the Upgrade Jazz for Service Management page in the IBM Spectrum Control installation program. Click **OK**.

If the Jazz for Service Management upgrade was successful, a green check mark is displayed on the IBM Spectrum Control Before You Begin page.

If the upgrade was not successful, click **Upgrade Now** to launch the Jazz for Service Management launchpad again.

You must upgrade Jazz for Service Management successfully to continue upgrading Cognos BI reports on Server B.

3. Follow the prompts in the installation program to upgrade Cognos BI reports.

Related concepts:

“Backups” on page 158

Before you upgrade, you must back up the entire IBM Spectrum Control system.

“Installing Jazz for Service Management and Tivoli Common Reporting” on page 87

If you plan to use Cognos Business Intelligence reports, you must install Jazz for Service Management Version 1.1.0.3 and Tivoli Common Reporting Version 3.1.0.2 before you install Cognos BI reports. You can install these components now or after you install IBM Spectrum Control.

Related tasks:

“DB2” on page 42

You can install the most recent version of DB2 Enterprise Server Edition that IBM Spectrum Control supports on the Linux, AIX, or Windows operating systems.

Related reference:

“Preparing for an upgrade” on page 153

You can use the following information to help prepare for your upgrade of IBM Spectrum Control. Good planning helps you avoid delays and problems when you upgrade your system.

“Upgrading from 32-Bit DB2 Version 9.7 to 64-Bit DB2 Version 10.5” on page 158

If you are running an earlier version of IBM Spectrum Control that uses a 32-bit DB2, you must upgrade to 64-bit DB2 Version 10.5 or later.

“Planning for IBM Spectrum Control authentication and authorization” on page 14

An operating system user name is required to install and log on to IBM Spectrum Control for the first time. After you install IBM Spectrum Control, you can assign roles to users. Roles determine the product functions that are available to users.

“Reviewing the log files to resolve installation issues” on page 133

If an error occurs during IBM Spectrum Control installation, you can review the error log files to resolve issues and continue the installation.

Upgrading from Tivoli Storage Productivity Center Version 5.1 with a remote database by using the installation program

You can upgrade from Tivoli Storage Productivity Center Version 5.1 to IBM Spectrum Control with a remote database by using the installation program.


Before you upgrade, you must back up the entire Tivoli Storage Productivity Center system.

For this procedure, the terms *Server A* and *Server B* denote the two servers. Server A has DB2 Enterprise Server Edition and the Tivoli Storage Productivity Center database repository installed. Server B has all of the other Tivoli Storage Productivity Center components installed.

To upgrade IBM Spectrum Control by using the installation program, complete the following steps:

1. Complete the following steps on Server B:
 - a. Log on to Server B with the appropriate user privileges.
 - b. On Server B, stop all Tivoli Storage Productivity Center services.
See [Stopping the IBM Tivoli Storage Productivity Center services](#).
2. Complete the following steps on Server A:
 - a. Log on to Server A with the appropriate user privileges.
 - b. If necessary, upgrade DB2 on Server A to a version that is supported by IBM Spectrum Control. For more information about the supported DB2 versions, see [Database repository](#). For more information about upgrading DB2, see [Upgrading DB2 servers](#).

- c. On the AIX or Linux operating systems, source the user profile (db2profile) for the instance owner of the DB2 database. The following text is an example of the command to source the user profile:


```
. /home/db2inst1/sqllib/db2profile
```
 - d. Start the IBM Spectrum Control installation program on Server A.
 - e. Follow the prompts in the installation program to upgrade the database repository on Server A.
 - f. After the upgrade is finished on Server A, review the message log to ensure that no errors occurred.
3. Complete the following steps on Server B:
- a. Log on to Server B with the appropriate user privileges.
 - b. If you plan to install Jazz for Service Management and use Cognos BI reports, install DB2 Enterprise Server Edition on Server B. For more information about the software requirements to install Jazz for Service Management and Tivoli Common Reporting, see <http://www-01.ibm.com/support/docview.wss?uid=swg27038732>.
 - c. If Jazz for Service Management is not installed, and you plan to run Cognos Business Intelligence reports, download and extract the Jazz for Service Management compressed installation files to the same temporary directory. For example, if you are installing Jazz for Service Management on the Windows operating system, enter `c:\downloads\jazzSM`. If you are installing Jazz for Service Management on the AIX or Linux operating systems, enter `/downloads/JazzSM`.
For more information about the installation files, see Setting up a local file system for a custom installation.
 - d. On Server B, start Tivoli Integrated Portal. See  Starting the Tivoli Storage Productivity Center services.
 - e. Start the IBM Spectrum Control installation program on Server B.
 - f. Review the Before You Begin page:
 - If Jazz for Service Management is not installed on Server B, the Before You Begin page displays an **Install Now** button.
 - If you do not want to install Jazz for Service Management on Server B, click **Next**, and upgrade without Cognos BI reports on Server B, skip to Step k.
 - g. If Jazz for Service Management is not installed on Server B, and you want to install it on Server B, you can install it now.
 - h. On the Before You Begin page, click **Install Now**.
 - i. On the Install Jazz for Service Management page, complete the following steps:
 - 1) Provide the location where the Jazz for Service Management and Tivoli Common Reporting installation files were extracted.
For example, if you are installing Jazz for Service Management on the Windows operating system, enter `c:\downloads\jazzSM`. If you are installing Jazz for Service Management on the AIX or Linux operating systems, enter `/downloads/JazzSM`.
 - 2) If there is a port conflict, specify a new starting value for a 15 port range, and click the **Verify Port Availability** link to ensure that the port range is usable.
 - 3) Click **Install Now**.

The IBM Spectrum Control installation program pauses and the Jazz for Service Management launchpad starts.

When you complete and exit the Jazz for Service Management launchpad, you are returned to the Install Jazz for Service Management page in the IBM Spectrum Control installation program.

4) Click **OK**.

If the installation of Jazz for Service Management was successful on Server B, you are returned to the Before You Begin page, which now displays a green check mark.

If the installation was not successful: If the installation of Jazz for Service Management was not successful on Server B, a message is displayed, click one of the following options:

- **Install Now**, which starts the Jazz for Service Management launchpad again.
- **Continue**, which returns you to the Before You Begin page.

5) On the Before You Begin page, click **Next**.

- j. If the installation of Jazz for Service Management was successful on Server B, and you clicked **Next** on the Before You Begin page to upgrade IBM Spectrum Control with Cognos BI reports, on the Configure Jazz for Service Management and Tivoli Common Reporting page, enter the following information, and click **OK**:

- The user name that is used to log on to the Jazz for Service Management WebSphere profile
- The password that is associated with the user name
- The path for the Jazz for Service Management installation directory

Jazz for Service Management starts. After Jazz for Service Management starts, it might take some time before all components, including Tivoli Common Reporting, are running.

If the IBM Spectrum Control installation program is unable to communicate with Jazz for Service Management on Server B, you can select the **Install Cognos BI reports later** check box, click **OK**, and continue upgrading IBM Spectrum Control without Cognos BI reports on Server B. After you upgrade IBM Spectrum Control without Cognos BI reports, and resolve any problems with Jazz for Service Management, start the IBM Spectrum Control installation program again on Server B to install Cognos BI reports.

Important: If the installation of Jazz for Service Management was not successful on Server B, and you clicked **Next** on the Before You Begin page to upgrade IBM Spectrum Control without Cognos BI reports, the Configure Jazz for Service Management and Tivoli Common Reporting page does not display.

- k. Follow the prompts in the installation program to upgrade the IBM Spectrum Control components on Server B.
- l. After the upgrade is finished, review the message log file on Server B to ensure that no errors occurred.

If you upgraded IBM Spectrum Control without installing Cognos BI reports on Server B, you can add Cognos BI reports later.

Related concepts:

“Backups” on page 158

Before you upgrade, you must back up the entire IBM Spectrum Control system.

Related tasks:

“Installing Cognos BI reports later by using the installation program” on page 117
You can install Cognos Business Intelligence reports by using the installation program after you install IBM Spectrum Control.

Related reference:

“Preparing for an upgrade” on page 153

You can use the following information to help prepare for your upgrade of IBM Spectrum Control. Good planning helps you avoid delays and problems when you upgrade your system.

“Planning for IBM Spectrum Control authentication and authorization” on page 14
An operating system user name is required to install and log on to IBM Spectrum Control for the first time. After you install IBM Spectrum Control, you can assign roles to users. Roles determine the product functions that are available to users.

“Reviewing the log files to resolve installation issues” on page 133

If an error occurs during IBM Spectrum Control installation, you can review the error log files to resolve issues and continue the installation.

Upgrading from Tivoli Storage Productivity Center Version 5.1 with remote Tivoli Integrated Portal by using the installation program

You can upgrade from Tivoli Storage Productivity Center Version 5.1 in a multiple-server environment with a remote Tivoli Integrated Portal by using the installation program.

Before you upgrade, you must back up the entire Tivoli Storage Productivity Center system.

For this procedure, the terms *Server A* and *Server B* denote the two servers. Server A has DB2 Enterprise Server Edition, the Tivoli Storage Productivity Center database repository and the Tivoli Storage Productivity Center servers installed. Server B has Tivoli Integrated Portal, Tivoli Common Reporting, TCRDB, and the Tivoli Storage Productivity Center web-based GUI installed.

Important: This procedure applies only when you are upgrading from Tivoli Storage Productivity Center Version 5.1.

If your Tivoli Storage Productivity Center Version 5.1 multiple-server environment with a remote Tivoli Integrated Portal, is configured with LDAP authentication, you must complete some additional steps to migrate the LDAP information from Tivoli Storage Productivity Center Version 5.1 to IBM Spectrum Control **before** you complete the upgrade to IBM Spectrum Control. For more information, see “Migrating LDAP information from Tivoli Storage Productivity Center Version 5.1 to IBM Spectrum Control” on page 189.

1. Determine which option is most appropriate for your environment:
 - To convert your multiple-server IBM Spectrum Control environment (Server A and Server B) to a single server environment (Server A), see steps 2 on page 178, 3 on page 178 and 4 on page 178.
 - To maintain your multiple-server IBM Spectrum Control environment, with IBM Spectrum Control database and IBM Spectrum Control servers on Server A and Jazz for Service Management/Tivoli Common Reporting/Cognos BI reports on Server B, see steps 2 on page 178, 3 on page 178 and 5 on page 180.

2. On server B, stop Tivoli Integrated Portal. See [Stopping the IBM Tivoli Storage Productivity Center services](#)
3. On Server A, complete the following steps:
 - a. Log on to Server A with the appropriate user privileges.
 - b. Stop all the Tivoli Storage Productivity Center Version 5.1 services. See [Stopping the IBM Tivoli Storage Productivity Center services](#).
 - c. If necessary, upgrade DB2 on Server A to a version that is supported by IBM Spectrum Control. For more information about the supported DB2 versions, see [Database repository](#). For more information about upgrading DB2, see [Upgrading DB2 servers](#).
 - d. On AIX or Linux operating systems, source the user profile (db2profile) for the instance owner of the DB2 database. The following text is an example of the command to source the user profile:


```
. /home/db2inst1/sqllib/db2profile
```
 - e. Start the IBM Spectrum Control Installation Program.
 - f. Follow the prompts in the installation program to upgrade the IBM Spectrum Control database repository and servers on Server A.
 - g. After the upgrade is finished, review the message log on to ensure that no errors occurred.
4. To convert your multiple-server Tivoli Storage Productivity Center environment (Server A and Server B) to a single server IBM Spectrum Control environment (Server A), complete the following steps:
 - a. On Server B, complete the following steps:
 - 1) Log on to Server B with the appropriate user privileges.
 - 2) On Server B, start the Tivoli Integrated Portal. See [Starting the Tivoli Storage Productivity Center services](#).
 - 3) Start the Tivoli Storage Productivity Center uninstallation program.
 On Windows operating systems, click **Start > Control Panel > Programs > Programs and Features**. Highlight **Tivoli Storage Productivity Center** and click **Uninstall/Change**.
 On AIX or Linux operating systems, run the following command from the root directory:


```
installation_dir/_uninst/uninstall
```

where *installation_dir* is the location where Tivoli Storage Productivity Center is installed.

A window is displayed that indicates that all Tivoli Storage Productivity Center components installed on the system will be uninstalled.
 - 4) Click **Uninstall**. A confirmation is displayed.
 - 5) Click **Next** to start the uninstallation process.
 Remember the following for your operating system:
 - On Windows operating systems, when the uninstallation process is finished, a window is displayed so you can choose to start your system now or later. You must restart the system before you can reinstall IBM Spectrum Control.
 - On AIX or Linux operating systems, you do not have to restart your system.
 - b. On Server A, complete the following steps:

- 1) Log on to Server A with the appropriate user privileges.
- 2) If Jazz for Service Management is not installed, and you plan to run IBM Spectrum Control reports, complete following steps:
 - Download and extract the Jazz for Service Management compressed installation files to the same temporary directory.

For example, if you are installing Jazz for Service Management on the Windows operating system, enter `c:\downloads\jazzSM`. If you are installing Jazz for Service Management on the AIX or Linux operating systems, enter `/downloads/JazzSM`.

For more information about the installation files, see Setting up a local file system for a custom installation.
- 3) On AIX or Linux operating systems, source the user profile (db2profile) for the instance owner of the DB2 database. For example:
`. /home/db2inst1/sqllib/db2profile`
- 4) On Server A, start the IBM Spectrum Control installation program again.
- 5) If Jazz for Service Management is not installed on Server A, and you want to install it on Server A, you can install it now:
 - On the Welcome page, click **Install Now**.
 - On the Install Jazz for Service Management page, provide the location where the Jazz for Service Management and Tivoli Common Reporting installation files were extracted.

For example, if you are installing Jazz for Service Management on the Windows operating system, enter `c:\downloads\jazzSM`. If you are installing Jazz for Service Management on the AIX or Linux operating systems, enter `/downloads/JazzSM`.
 - If there is a port conflict, specify a new starting value for a 15 port range, and click the **Verify Port Availability** link to ensure that the port range is usable.
 - Click **Install Now**.

The IBM Spectrum Control installation program pauses and the Jazz for Service Management launchpad starts.

When you exit the Jazz for Service Management launchpad, you are returned to the Install Jazz for Service Management page in the IBM Spectrum Control installation program. Click **OK**.

If the installation of Jazz for Service Management was successful on Server A, you are returned to the Welcome page, which now displays a green check mark.

If the installation of Jazz for Service Management was not successful on Server A, a message is displayed, and you can click one of the following options:

 - **Install Now**, which starts the Jazz for Service Management launchpad again.
 - **Continue**, which returns to the Welcome page.

You must install Jazz for Service Management successfully on Server A to continue installing IBM Spectrum Control reports on Server A.


If the installation of Jazz for Service Management was successful on Server A, and a green check mark is displayed on the Welcome page, click **Next**.

- 6) In the dialog about converting a multiple server installation to a single server installation, click **Yes**.
 - 7) On the Configure Jazz for Service Management and Tivoli Common Reporting page, enter the following information, and click **Next**:
 - The user name that is used to log on to the Jazz for Service Management WebSphere profile
 - The password that is associated with the user name
 - The path for the Jazz for Service Management installation directory

Jazz for Service Management starts. After Jazz for Service Management starts, it might take some time before all components, including Tivoli Common Reporting, are running.

If the IBM Spectrum Control installation program is unable to communicate with Jazz for Service Management on Server A, you must resolve this problem to continue installing IBM Spectrum Control reports.
 - 8) Follow the prompts in the installation program to install IBM Spectrum Control reports on Server A.
 - 9) After the upgrade is finished on Server A, review the message log to ensure that no errors occurred.
 - 10) The conversion of the multiple server IBM Spectrum Control environment to a single server installation is now complete. You can skip step 5.
5. On Server B, if you are planning to maintain your multiple-server IBM Spectrum Control environment, complete the following steps:
 - a. Log on to Server B with the appropriate user privileges.
 - b. Install DB2 Enterprise Server Edition on Server B. For more information about the software requirements to install Jazz for Service Management and Tivoli Common Reporting, see <http://www-01.ibm.com/support/docview.wss?uid=swg27038732>.

Important: DB2 Enterprise Server Edition is installed on Server A and on Server B because even though you are upgrading IBM Spectrum Control in a multiple-server environment, it is expected that you are installing Jazz for Service Management, with a local DB2 Enterprise Server Edition instance.

- c. On Server B, start Tivoli Integrated Portal. For more information about starting Tivoli Storage Productivity Center services, see  Starting the Tivoli Storage Productivity Center services.
- d. If Jazz for Service Management is not installed, and you plan to run Cognos BI reports, complete following steps:
 - Download and extract the Jazz for Service Management compressed installation files to the same temporary directory.

For example, if you are installing Jazz for Service Management on the Windows operating system, enter `c:\downloads\jazzSM`. If you are installing Jazz for Service Management on the AIX or Linux operating systems, enter `/downloads/JazzSM`.

For more information about the installation files, see Setting up a local file system for a custom installation.
- e. On Server B, start the IBM Spectrum Control installation program.
- f. If Jazz for Service Management is not installed on Server B, and you want to install it on Server B, you can install it now:
 - 1) On the Welcome page, click **Install Now**.

- 2) On the Install Jazz for Service Management page, provide the location where the Jazz for Service Management and Tivoli Common Reporting installation files that were extracted.

For example, if you are installing Jazz for Service Management on the Windows operating system, enter `c:\downloads\jazzSM`. If you are installing Jazz for Service Management on the AIX or Linux operating systems, enter `/downloads/JazzSM`.

- 3) If there is a port conflict, specify a new starting value for a 15 port range, and click the **Verify Port Availability** link to ensure that the port range is usable.
- 4) Click **Install Now**.

The IBM Spectrum Control installation program pauses and the Jazz for Service Management launchpad starts.

When you exit the Jazz for Service Management launchpad, you are returned to the Install Jazz for Service Management page in the IBM Spectrum Control installation program. Click **OK**.

If the installation of Jazz for Service Management was successful on Server B, you are returned to the Welcome page, which now displays a green check mark.

If the installation of Jazz for Service Management was not successful on Server B, a message is displayed, and you can click one of the following options:

- **Install Now**, which starts the Jazz for Service Management launchpad again.
- **Continue**, which returns you to the Welcome page.

You must install Jazz for Service Management successfully on Server B to continue installing IBM Spectrum Control reports on Server B.

If the installation of Jazz for Service Management was successful on Server B, and a green check mark is displayed on the Welcome page, click **Next**.

- g. On the Configure Jazz for Service Management and Tivoli Common Reporting page, enter the following information, and click **Next**:
 - The user name that is used to log on to the Jazz for Service Management WebSphere profile
 - The password that is associated with the user name
 - The path for the Jazz for Service Management installation directory

Jazz for Service Management starts. After Jazz for Service Management starts, it might take some time before all components, including Tivoli Common Reporting, are running.

If the IBM Spectrum Control installation program is unable to communicate with Jazz for Service Management, you must resolve this problem to continue installing IBM Spectrum Control reports.

- h. Follow the prompts in the installation program to install IBM Spectrum Control reports on Server B.
- i. After the upgrade is finished on Server B, review the message log to ensure that no errors occurred.

Related concepts:

“Backups” on page 158

Before you upgrade, you must back up the entire IBM Spectrum Control system.

“Installing Jazz for Service Management and Tivoli Common Reporting” on page 87

If you plan to use Cognos Business Intelligence reports, you must install Jazz for Service Management Version 1.1.0.3 and Tivoli Common Reporting Version 3.1.0.2 before you install Cognos BI reports. You can install these components now or after you install IBM Spectrum Control.

Related tasks:

“DB2” on page 42

You can install the most recent version of DB2 Enterprise Server Edition that IBM Spectrum Control supports on the Linux, AIX, or Windows operating systems.

Related reference:

“Preparing for an upgrade” on page 153

You can use the following information to help prepare for your upgrade of IBM Spectrum Control. Good planning helps you avoid delays and problems when you upgrade your system.

“Planning for IBM Spectrum Control authentication and authorization” on page 14
An operating system user name is required to install and log on to IBM Spectrum Control for the first time. After you install IBM Spectrum Control, you can assign roles to users. Roles determine the product functions that are available to users.

“Reviewing the log files to resolve installation issues” on page 133

If an error occurs during IBM Spectrum Control installation, you can review the error log files to resolve issues and continue the installation.

Upgrading from Tivoli Storage Productivity Center Version 5.1 with remote Tivoli Integrated Portal by using silent mode

You can upgrade Tivoli Storage Productivity Center Version 5.1, with a remote Tivoli Integrated Portal, in a multiple-server environment, by using silent mode.


Before you upgrade, you must back up the entire Tivoli Storage Productivity Center system.

For this procedure, the terms *Server A* and *Server B* denote the two servers. Server A has DB2 Enterprise Server Edition, the Tivoli Storage Productivity Center database repository and the Tivoli Storage Productivity Center servers installed. Server B has IBM Tivoli Integrated Portal, IBM Tivoli Common Reporting, TCRDB, and the Tivoli Storage Productivity Center web-based GUI installed.

Important: This procedure applies only when you are upgrading from Tivoli Storage Productivity Center Version 5.1.

If your Tivoli Storage Productivity Center Version 5.1 multiple-server environment with a remote Tivoli Integrated Portal is configured with LDAP authentication, you must complete some additional steps to migrate the LDAP information from Tivoli Storage Productivity Center Version 5.1 to IBM Spectrum Control **before** you complete the upgrade to IBM Spectrum Control. For more information, see “Migrating LDAP information from Tivoli Storage Productivity Center Version 5.1 to IBM Spectrum Control” on page 189.

1. Complete the following steps on Server B:
 - a. Log on to Server B with the appropriate user privileges.
 - b. On Server B, stop the Tivoli Integrated Portal.

For more information about stopping the services, see  Stopping the IBM Tivoli Storage Productivity Center services.

2. Complete the following steps on Server A:
 - a. Log on to Server A with the appropriate user privileges.
 - b. If necessary, upgrade DB2 on Server A to a version that is supported by IBM Spectrum Control. For more information about the supported DB2 versions, see [Database repository](#). For more information about upgrading DB2, see [Upgrading DB2 servers](#).
 - c. Edit and save the response file on Server A.
 Edit the `silent_Upgrade.properties` file and set the following parameters:
 - `LICENSE_ACCEPTED=true`
 - `CHOSEN_INSTALL_TYPE="Upgrade"`
 - d. On AIX or Linux operating systems, source the user profile (`db2profile`) for the instance owner of the DB2 database. For example:


```
. /home/db2inst1/sqllib/db2profile
```
 - e. Run the silent mode installation program on Server A.
 - For Windows operating systems, run the following command:


```
setup.bat -l language -i silent -f absolute_path_to_response_file
```

 where *language* can be one of the following values:
 - Czech - cs
 - English - en
 - French - fr
 - German - de
 - Hungarian - hu
 - Italian - it
 - Japanese - ja
 - Korean - ko
 - Polish - pl
 - Brazilian Portuguese - pt_BR
 - Russian - ru
 - Spanish - es
 - Chinese (Simplified) - zh_CN
 - Chinese (Traditional) - zh_TW

`absolute_path_to_response_file` is the absolute path to the response file. For example, the following command specifies the language and the path:

```
setup.bat -l fr -i silent -f c:\SpectrumControl\silent_Upgrade.properties
```
 - For AIX or Linux operating systems, run the following command:


```
./setup.bin -l language -i silent -f /absolute_path_to_response_file
```

For example, the following command specifies the language and the path:

```
./setup.bin -l de -i silent -f /SpectrumControl/silent_Upgrade.properties
```

If you do not specify a language or if the language is not specified correctly, the installation program uses the English language as the default.
 - f. Optional: Monitor the progress of the upgrade on Server A.
 - To view the progress of the silent mode installation on Windows operating systems, check the trace log in the following path:


```
installation_dir\logs\traceTPCInstall.log
```

- To view the progress of the silent mode installation on AIX or Linux operating systems, check the trace log in the following path:


installation_dir/logs/traceTPCInstall.log

3. Complete the following steps on Server B:

- Log on to Server B with the appropriate user privileges.
- Install DB2 Enterprise Server Edition on Server B. For more information about the software requirements to install Jazz for Service Management and Tivoli Common Reporting, see <http://www-01.ibm.com/support/docview.wss?uid=swg27038732>.

Important: DB2 Enterprise Server Edition is installed on Server A and on Server B because even though you are upgrading IBM Spectrum Control in a multiple-server environment, it is expected that you are installing Jazz for Service Management, with a local DB2 Enterprise Server Edition instance.

- On Server B, start the Tivoli Integrated Portal.

For more information about starting the services, see  Starting the Tivoli Storage Productivity Center services.

- If Jazz for Service Management is not installed on Server B, download and extract the Jazz for Service Management and Tivoli Common Reporting compressed installation files to the same temporary directory.

For example, if you are installing Jazz for Service Management on the Windows operating system, enter `c:\downloads\jazzSM`. If you are installing Jazz for Service Management on the AIX or Linux operating systems, enter `/downloads/JazzSM`.

For more information about the installation files, see Setting up a local file system for a custom installation.

- Install Jazz for Service Management by using silent mode. For more information about installing Jazz for Service Management by using silent mode, see Custom installations by using silent mode.

- Edit and save the appropriate response file on Server B.

Edit the `silent_upgrade.properties` file and set the following parameters:

- `LICENSE_ACCEPTED=true`
- `CHOSEN_INSTALL_TYPE="Upgrade"`
- `varPreserveTIP2x=value`
- `varJazzSMUsrID=user_name`
- `varJazzSMUsrPW=password`
- `JAZZSM_INSTALL_DIR=Location_of_JazzSM_installation_directory`

- Run the silent mode installation program on Server B.

- For Windows operating systems, run the following command:

```
setup.bat -l language -i silent -f absolute_path_to_response_file
```

where *language* can be one of the following values:

- Czech - cs
- English - en
- French - fr
- German - de
- Hungarian - hu
- Italian - it
- Japanese - ja

- Korean - ko
- Polish - pl
- Brazilian Portuguese - pt_BR
- Russian - ru
- Spanish - es
- Chinese (Simplified) - zh_CN
- Chinese (Traditional) - zh_TW

`absolute_path_to_response_file` is the absolute path to the response file. For example, the following command specifies the language and the path:

```
setup.bat -l fr -i silent -f
c:\SpectrumControl\silent_Upgrade.properties.properties
```

- For AIX or Linux operating systems, run the following command:
`./setup.bin -l language -i silent -f /absolute_path_to_response_file`

For example, the following command specifies the language and the path:
`./setup.bin -l de -i silent -f /SpectrumControl/silent_Upgrade.properties`

If you do not specify a language or if the language is not specified correctly, the installation program uses the English language as the default.

- h. Optional: Monitor the progress of the upgrade on Server B.
 - To view the progress of the silent mode installation on Windows operating systems, check the trace log in the following path:
`installation_dir\logs\traceTPCInstall.log`
 - To view the progress of the silent mode installation on AIX or Linux operating systems, check the trace log in the following path:
`installation_dir/logs/traceTPCInstall.log`

Related concepts:

“Backups” on page 158

Before you upgrade, you must back up the entire IBM Spectrum Control system.

“Installing Jazz for Service Management and Tivoli Common Reporting” on page 87

If you plan to use Cognos Business Intelligence reports, you must install Jazz for Service Management Version 1.1.0.3 and Tivoli Common Reporting Version 3.1.0.2 before you install Cognos BI reports. You can install these components now or after you install IBM Spectrum Control.

Related tasks:

“DB2” on page 42

You can install the most recent version of DB2 Enterprise Server Edition that IBM Spectrum Control supports on the Linux, AIX, or Windows operating systems.

Related reference:

“Preparing for an upgrade” on page 153

You can use the following information to help prepare for your upgrade of IBM Spectrum Control. Good planning helps you avoid delays and problems when you upgrade your system.

“Editing the upgrade response file” on page 168

When you upgrade using the silent mode, use the `silent_Upgrade.properties` file.

“Planning for IBM Spectrum Control authentication and authorization” on page 14
 An operating system user name is required to install and log on to IBM Spectrum Control for the first time. After you install IBM Spectrum Control, you can assign roles to users. Roles determine the product functions that are available to users.

“Reviewing the log files to resolve installation issues” on page 133
If an error occurs during IBM Spectrum Control installation, you can review the error log files to resolve issues and continue the installation.

Upgrading IBM Spectrum Control with a remote database by using silent mode

You can upgrade IBM Spectrum Control in a multiple-server environment with a remote database by using silent mode.

Before you upgrade, you must back up the entire IBM Spectrum Control system.

For this procedure, the terms *Server A* and *Server B* denote the two servers. Server A has DB2 Enterprise Server Edition and the IBM Spectrum Control database repository installed. Server B has all of the other IBM Spectrum Control components installed.

To upgrade IBM Spectrum Control by using silent mode, complete the following steps:

1. Complete the following steps on Server B:
 - a. Log on to Server B with the appropriate user privileges.
 - b. On Server B, stop all of the IBM Spectrum Control services.
If you are upgrading from Tivoli Storage Productivity Center Version 5.1, to stop Tivoli Storage Productivity Center Version services, see [Stopping the IBM Tivoli Storage Productivity Center services](#). Otherwise, see [Stopping the IBM Spectrum Control servers by using the GUI](#).
2. Complete the following steps on Server A:
 - a. Log on to Server A with the appropriate user privileges.
 - b. If necessary, upgrade DB2 on Server A to a version that is supported by IBM Spectrum Control. For more information about the supported DB2 versions, see [Database repository](#). For more information about upgrading DB2, see [Upgrading DB2 servers](#).
 - c. Edit and save the appropriate response file.
 - Edit the `silent_upgrade.properties` file and set the following parameters:
 - `LICENSE_ACCEPTED=true`
 - `CHOSEN_INSTALL_TYPE="Upgrade"`
 - d. On AIX or Linux operating systems, source the user profile (`db2profile`) for the instance owner of the DB2 database. For example:

```
. /home/db2inst1/sqllib/db2profile
```
 - e. Run the silent mode installation program on Server A.
 - For Windows operating systems, run the following command:

```
setup.bat -l language -i silent -f absolute_path_to_response_file
```


where *language* can be one of the following values:
 - Czech - cs
 - English - en
 - French - fr
 - German - de
 - Hungarian - hu
 - Italian - it

- Japanese - ja
- Korean - ko
- Polish - pl
- Brazilian Portuguese - pt_BR
- Russian - ru
- Spanish - es
- Chinese (Simplified) - zh_CN
- Chinese (Traditional) - zh_TW

`absolute_path_to_response_file` is the absolute path to the response file. For example, the following command specifies the language and the path:

```
setup.bat -l fr -i silent -f
c:\SpectrumControl\silent_Upgrade.properties
```

- For AIX or Linux operating systems, run the following command:
`./setup.bin -l language -i silent -f /absolute_path_to_response_file`

For example, the following command specifies the language and the path:
`./setup.bin -l de -i silent -f /SpectrumControl/silent_Upgrade.properties`

If you do not specify a language or if the language is not specified correctly, the installation program uses the English language as the default.

- f. Optional: Monitor the progress of the upgrade on Server A.
 - To view the progress of the silent mode installation on Windows operating systems, check the trace log in the following path:
`installation_dir\logs\traceTPCInstall.log`
 - To view the progress of the silent mode installation on AIX or Linux operating systems, check the trace log in the following path:
`installation_dir/logs/traceTPCInstall.log`

3. Complete the following steps on Server B:

- a. Log on to Server B with the appropriate user privileges.
- b. If you are upgrading from Tivoli Storage Productivity Center Version 5.1, start the Tivoli Integrated Portal. For more information about starting the services, see [Starting the Tivoli Storage Productivity Center services](#). If you are upgrading from Tivoli Storage Productivity Center Version 5.2.0 and later, start the Web server. For more information about starting the services, see [Starting the IBM Spectrum Control services](#).
- c. If you are upgrading from Tivoli Storage Productivity Center Version 5.2.0 and have Jazz for Service Management Version 1.1.0.1, Tivoli Common Reporting Version 3.1.0.1, and the Cognos BI Reports installed with the Tivoli Storage Productivity Center Version 5.2.0 servers on Server B, download, and extract the Jazz for Service Management Version 1.1.0.3 and Tivoli Common Reporting Version 3.1.0.2 compressed installation files to the same temporary directory. For example, if you install Jazz for Service Management on the Windows operating system, enter `c:\downloads\jazzSM`.

If you are installing Jazz for Service Management on the AIX® or Linux operating systems, enter `/downloads/JazzSM`.

For more information about the installation files, see [Setting up a local file system for a custom installation](#).

Perform a silent-mode upgrade of Jazz for Service Management and Tivoli Common Reporting, see Silent mode upgrade of Jazz for Service Management and Updating Reporting Services by using silent mode .

d. Edit and save the appropriate response file on Server B.

- Edit the `silent_Upgrade.properties` file and set the following parameters:
 - `LICENSE_ACCEPTED=true`
 - `CHOSEN_INSTALL_TYPE="Upgrade"`
 - `varPreserveTIP2x=value`
 - `varJazzSMUsrID=user_name`
 - `varJazzSMUsrPW=password`
 - `JAZZSM_INSTALL_DIR=Location_of_JazzSM_installation_directory`

e. Run the silent mode installation program on Server B.

- For Windows operating systems, run the following command:
`setup.bat -l language -i silent -f absolute_path_to_response_file`
where *language* can be one of the following values:

- Czech - cs
- English - en
- French - fr
- German - de
- Hungarian - hu
- Italian - it
- Japanese - ja
- Korean - ko
- Polish - pl
- Brazilian Portuguese - pt_BR
- Russian - ru
- Spanish - es
- Chinese (Simplified) - zh_CN
- Chinese (Traditional) - zh_TW

`absolute_path_to_response_file` is the absolute path to the response file. For example, the following command specifies the language and the path:

```
setup.bat -l fr -i silent -f  
c:\SpectrumControl\silent_Upgrade.properties
```

- For AIX or Linux operating systems, run the following command:
`./setup.bin -l language -i silent -f /absolute_path_to_response_file`

For example, the following command specifies the language and the path:
`./setup.bin -l de -i silent -f /SpectrumControl/silent_Upgrade.properties`

If you do not specify a language or if the language is not specified correctly, the installation program uses the English language as the default.

f. Monitor the progress of the upgrade on Server B.

- To view the progress of the silent mode installation on Windows operating systems, check the trace log in the following path:
`installation_dir\logs\traceTPCInstall.log`
- To view the progress of the silent mode installation on AIX or Linux operating systems, check the trace log in the following path:

installation_dir/logs/traceTPCInstall.log

Related concepts:

“Backups” on page 158

Before you upgrade, you must back up the entire IBM Spectrum Control system.

Related reference:

“Preparing for an upgrade” on page 153

You can use the following information to help prepare for your upgrade of IBM Spectrum Control. Good planning helps you avoid delays and problems when you upgrade your system.

“Editing the upgrade response file” on page 168

When you upgrade using the silent mode, use the `silent_Upgrade.properties` file.

“Planning for IBM Spectrum Control authentication and authorization” on page 14
An operating system user name is required to install and log on to IBM Spectrum Control for the first time. After you install IBM Spectrum Control, you can assign roles to users. Roles determine the product functions that are available to users.

“Reviewing the log files to resolve installation issues” on page 133

If an error occurs during IBM Spectrum Control installation, you can review the error log files to resolve issues and continue the installation.

Migrating LDAP information from Tivoli Storage Productivity Center Version 5.1 to IBM Spectrum Control

You can migrate LDAP information in a multiple-server environment where Tivoli Integrated Portal is remote.

Before you begin this procedure, ensure that you did **not** upgrade from IBM Tivoli Storage Productivity Center to IBM Spectrum Control.

In a single-server environment, LDAP information is automatically migrated from Tivoli Integrated Portal to the IBM Spectrum Control web server.

In a multiple-server environment, where Tivoli Integrated Portal is remote, you must complete some additional steps **before** you upgrade to IBM Spectrum Control.

1. Log on to the Tivoli Integrated Portal server with administrative privileges
2. Export the LDAP information from Tivoli Integrated Portal server to a file with one of these commands:
 - On Windows operating systems, enter the following command:

```
IBM_SC_Image_Dir\scripts\tip\exportLDAPRepositories.bat
<TIP_installation_location> -user <TIP_Admin_User>
-password <TIP_Admin_User_password>
<TPC_installation_dir>\config\ldap.conf
```
 - On AIX or Linux operating systems, enter the following command:

```
IBM_SC_Image_Dir/scripts/tip/exportLDAPRepositories.sh
<TIP_installation_location> -user <TIP_Admin_User>
-password <TIP_Admin_User_password>
<TPC_installation_dir>/config/ldap.conf
```

The `IBM_SC_Image_Dir` value is the location of the extracted IBM Spectrum Control product image. The `TIP_installation_location` value is where Tivoli Integrated Portal is installed. The `TIP_Admin_User` value is the administrative user for Tivoli Integrated Portal. The `TIP_Admin_User_password` value is the password that is associated with the administrative user for Tivoli Integrated

Portal, and the *TPC_installation_dir* value is where Tivoli Storage Productivity Center is installed on the Tivoli Integrated Portal server.

3. Transfer the *ldap.conf* file that you created earlier from the Tivoli Integrated Portal server to the Tivoli Storage Productivity Center server and add it to the *TPC_installation_dir/config* directory. The *TPC_installation_dir* value is the installation location of Tivoli Storage Productivity Center.
4. Upgrade from Tivoli Storage Productivity Center to IBM Spectrum Control on the Tivoli Storage Productivity Center server.
5. Upgrade from Tivoli Integrated Portal to Jazz for Service Management and the IBM Spectrum Control Cognos BI Reports on the Tivoli Integrated Portal server.

Related tasks:

“Upgrading from Tivoli Storage Productivity Center Version 5.1 with remote Tivoli Integrated Portal by using the installation program” on page 177

You can upgrade from Tivoli Storage Productivity Center Version 5.1 in a multiple-server environment with a remote Tivoli Integrated Portal by using the installation program.

Upgrading Jazz for Service Management and Tivoli Common Reporting

If you plan to use Cognos Business Intelligence reports in IBM Spectrum Control, you must upgrade Jazz for Service Management.

Before you begin: DB2 was installed as part of IBM Spectrum Control installation process. You do not need to install DB2 as part of the Jazz for Service Management installation process.

Installing the components

When you install Jazz for Service Management and Tivoli Common Reporting, you can run Cognos BI reports.

Important: You must install Jazz for Service Management from the IBM Spectrum Control installation program. For more information about installing IBM Spectrum Control, see “Installing IBM Spectrum Control in a single-server environment” on page 55 or “Installing IBM Spectrum Control in a multiple-server environment” on page 68.

If you do not use the IBM Spectrum Control installation program to install Jazz for Service Management, you might experience the following types of issues:

- The Jazz for Service Management Windows service does not get created. As a result, the Jazz for Service Management server does not automatically start when you restart the computer, which causes Cognos BI reports to fail. You must manually restart Jazz for Service Management server every time you restart the computer on which Jazz for Service Management is installed.
- Jazz for Service Management uses the same default ports as IBM Tivoli Integrated Portal Version 2.2, which can create a port conflict. If there is a port conflict, Jazz for Service Management does not provide an option to use non-default ports. Jazz for Service Management also does not detect the port conflict if the Tivoli Integrated Portal Version 2.2 server is down.
- When you use a Windows domain user account to install Jazz for Service Management, you must right-click the *launchpad64.exe* file and select **Run as Administrator**. If you do not select **Run as Administrator**, the stand-alone Jazz for Service Management installation fails.

If you installed DB2 on a computer that is a member of a Windows domain, and your DB2 user name is a domain user name (for example, *db2admin*), remember the following issues:

- Ensure that the DB2 user name (for example, *db2admin*) is not also a local user name.
- During the Jazz for Service Management installation, on the Specify Credentials page, when you enter the DB2 user name, enter only the user name (for example, *db2admin*) and not the domain name. For example, if the user name is *db2admin* and the domain is *TPC52*, enter *db2admin*. Do not include *TPC52*.

Upgrading Jazz for Service Management and Tivoli Common Reporting on Windows

You can upgrade to Jazz for Service Management Version 1.1.0.3 and Tivoli Common Reporting Version 3.1.0.2 in a Custom workflow on the Windows operating system by using a web browser.

Important: Before you upgrade Jazz for Service Management, you must see “Preparing for an upgrade” on page 153.

To upgrade Jazz for Service Management and Tivoli Common Reporting on Windows, complete the following steps:

1. On the Welcome page for Jazz for Service Management, ensure that you click only **Custom**, not **Full**.
2. On the Custom workflow page, click **Next**.
3. On the Specify Jazz for Service Management Home Location page, click **Next**.

Tip: Since you are upgrading Jazz for Service Management, launchpad provides the path to the existing installation.

4. On the Specify Source Locations page, enter the directory path where the Jazz for Service Management installation images is located. The directory path is the same path that you used to extract the compressed files.

Tip: If you installed a supported version of DB2, you might experience the following issues:

- The IBM DB2 10.1 or later, Enterprise Server Edition installation image field is empty, but you can continue through the launchpad. For more information about the supported versions of DB2, see “Software requirements for the database repository” on page 36.
- If an informational message is displayed, you can close the message, and continue with the installation.

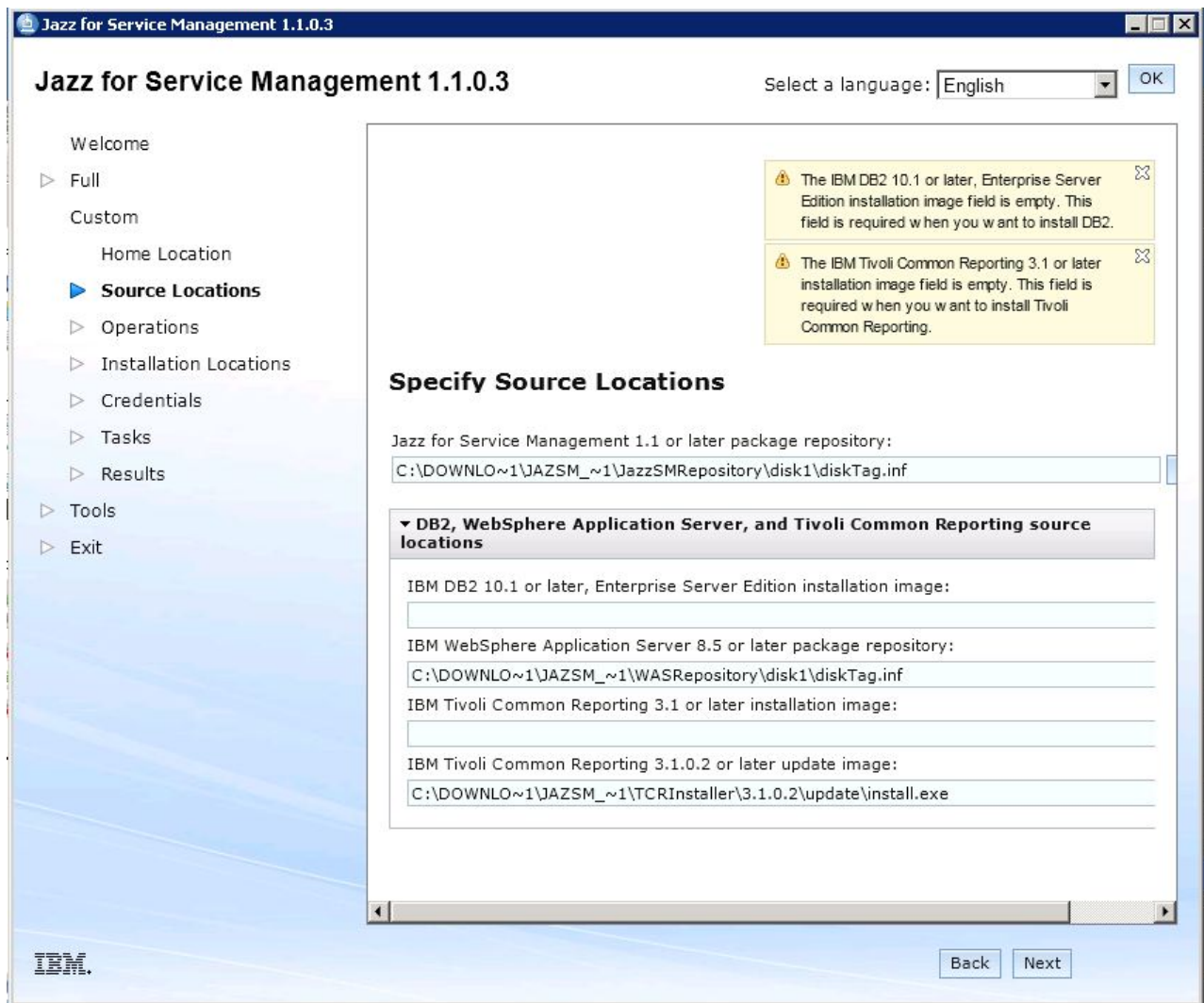


Figure 22. Review Source Locations

5. On the Select Operations page, select **Update** next to **Reporting services**.

Important: If you plan to implement LDAP authentication for IBM System Storage DS8000 Storage Manager or IBM System Storage SAN Volume Controller by using Jazz for Service Management, you must update the **Security Services** option.

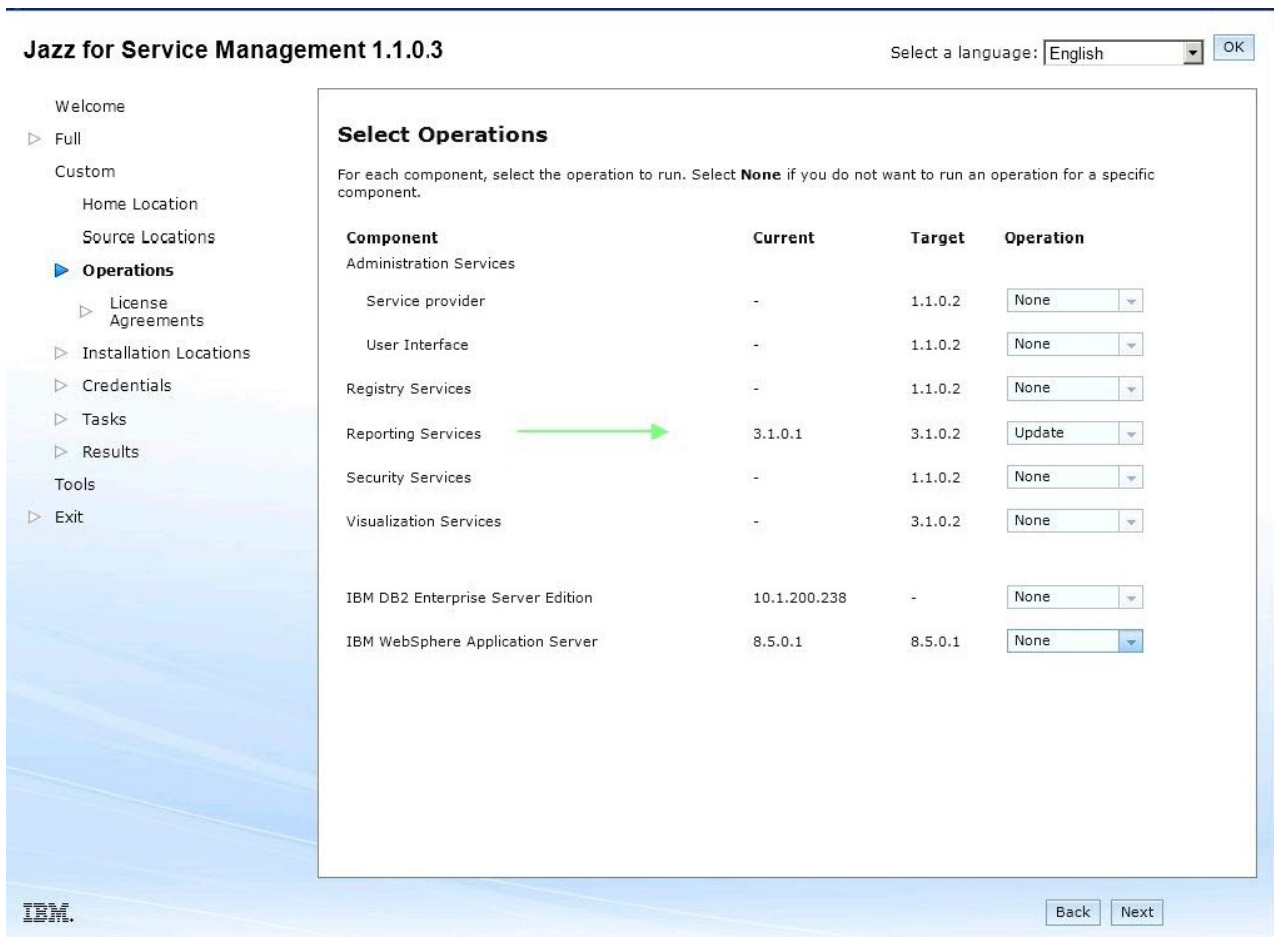


Figure 23. Selecting the components to update

- On the License agreement page, read, accept the license agreement, and click **Next**.
- On the Specify Installation Locations page, review the installation locations for the following components, and click **Next**.
 - Jazz for Service Management (for example, c:\Program Files\IBM\JazzSM)
 - WebSphere Application Server (for example, c:\Program Files\IBM\WebSphere\AppServer)

If DB2 is installed on your computer, the field to enter the DB2 installation location is disabled.

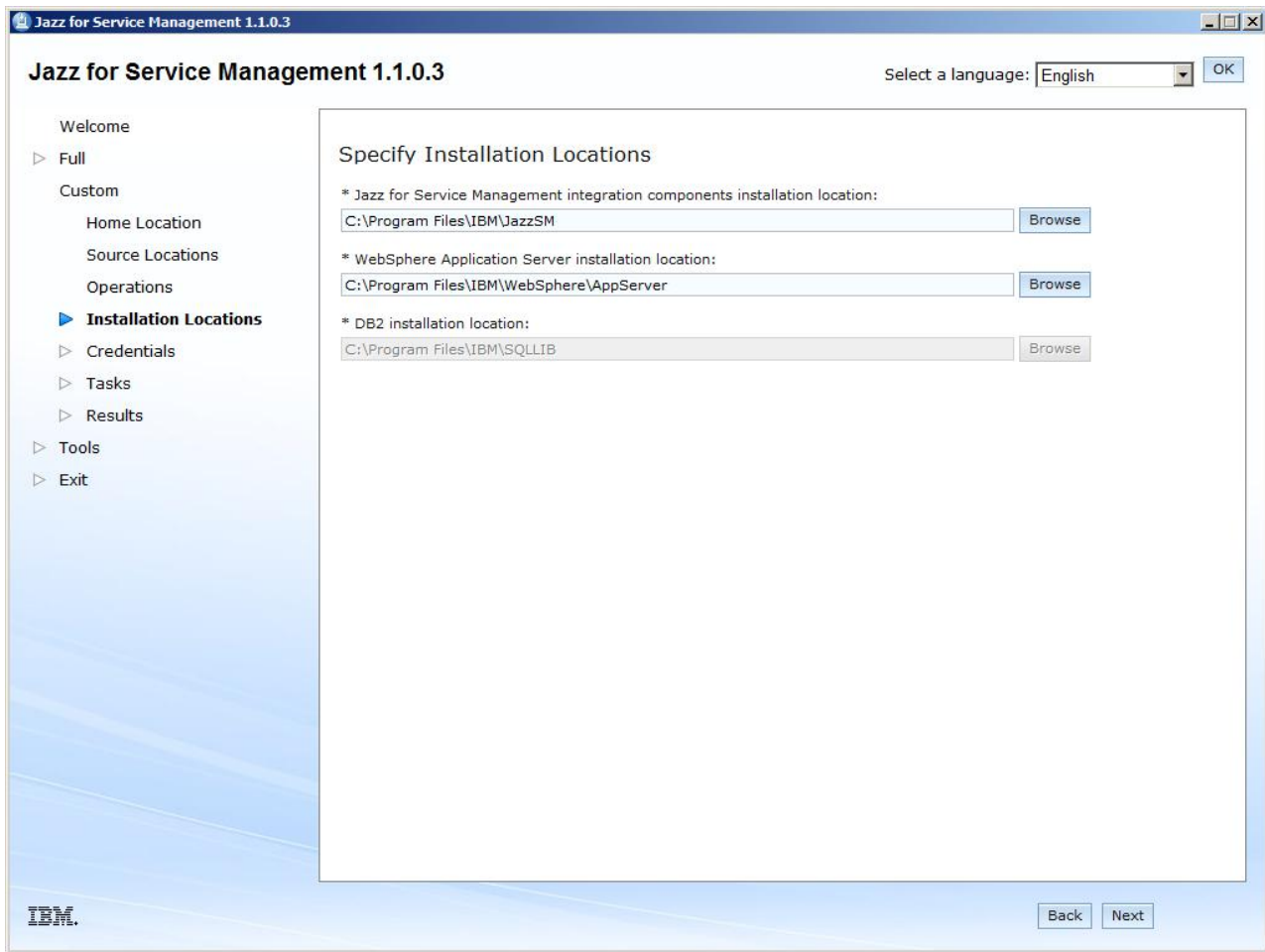


Figure 24. Reviewing the installation locations

8. On the Specify Credentials page, enter the following information:
 - a. WebSphere Application Server credentials.
The user name and password that you entered when you installed Jazz for Service Management.
 - b. Existing DB2 credentials
You must enter the credentials that you created during the installation of DB2.

Remember: Note down the DB2 credentials, because you need the credentials during the IBM Spectrum Control installation.
The credentials are used to connect to DB2 and create the Cognos Content Store database.

Restriction: Before you enter DB2 admin credentials, ensure that you follow these rules:

- Enter only existing DB2 admin credentials. If you use the default or any other credentials, the Jazz for Service Management installation fails.
- If you are installing Jazz for Service Management on a computer that is a member of a Windows domain, and you installed DB2 on that computer so that the DB2 instance user is domain user, enter only the DB2 instance user name (for example, db2admin). Do not enter the Windows domain name as a

prefix to the DB2 instance user name. For example, do not enter mydomain\db2admin). The **Instance user name** field does not accept this format.

If you have an existing DB2 installation and that installation has multiple DB2 instances, the Jazz for Service Management launchpad uses the last DB2 instance that is returned by the **db2ilist** command.

Jazz for Service Management 1.1.0.3

Select a language: English OK

Welcome

Full

Custom

Home Location

Source Locations

Operations

Installation Locations

Credentials

Tasks

Results

Tools

Exit

Specify Credentials

WebSphere Application Server Profile

Administrator name: jsmadmin

Administrator password:

DB2

Instance user name: db2admin

Instance user password:

Back Next

IBM.

Figure 25. Specifying your credentials

9. On the Run Tasks page, review the list of components to be installed, and click **Run**.

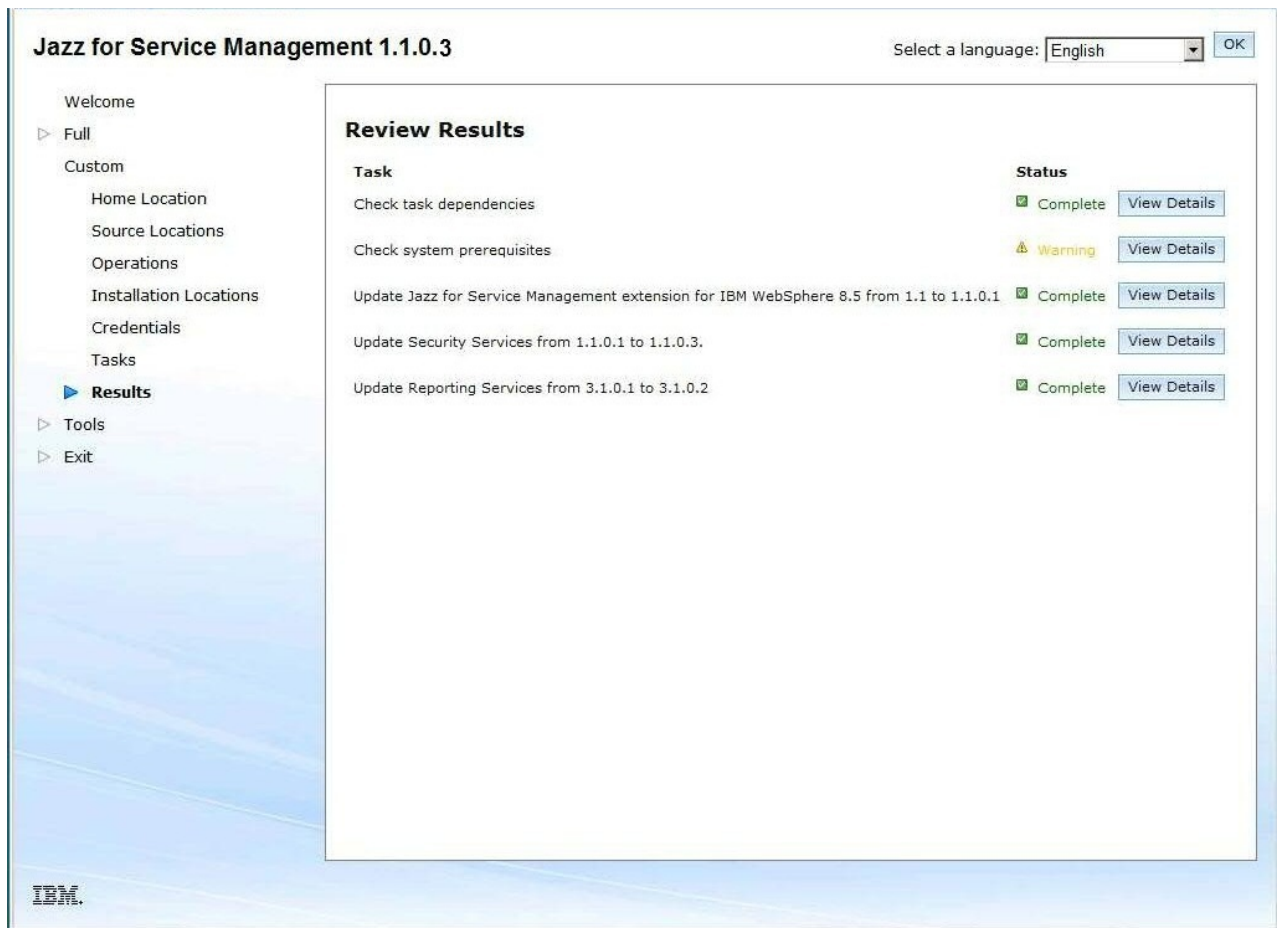


Figure 26. Running the tasks to install the components

Tip: Warnings on the Run Tasks page do not affect the Jazz for Service Management installation.

After you click **Run**, the installation can take an hour or more to install the components.

To resolve the port conflict, see “Resolving port conflicts” on page 211.

Important: After you click **Run**, the installation can take 1 hour or more to install the components.

10. Close the browser window to exit the Jazz for Service Management launchpad.

After you upgrade Jazz for Service Management, you must complete the IBM Spectrum Control upgrade.

For more information about upgrading IBM Spectrum Control in a single-server environment, see “Upgrading IBM Spectrum Control in a single-server environment by using the installation program” on page 163.

For information about upgrading IBM Spectrum Control in a multiple-server environment, see “Upgrading from Tivoli Storage Productivity Center Version 5.2.0 and later with a remote database by using the installation program” on page 169.

Upgrading Jazz for Service Management and Tivoli Common Reporting on Linux

You can upgrade Jazz for Service Management and Tivoli Common Reporting on Linux operating systems by using a web browser.

Important: Before you upgrade Jazz for Service Management, you must see “Preparing for an upgrade” on page 153.

To upgrade Jazz for Service Management and Tivoli Common Reporting on Linux operating systems, complete the following steps:

1. On the Welcome page for Jazz for Service Management, ensure that you click **Custom**, not **Full**.
2. On the Custom workflow page, click **Next**.
3. On the Specify Jazz for Service Management Home Location page, click **Next**.

Tip: Because you are upgrading Jazz for Service Management, launchpad displays the path to the existing installation.

4. On the Specify Source Locations page, review the directory paths where the Jazz for Service Management, WebSphere Application Server, and Tivoli Common Reporting installation images are located.

The directory path is where you extracted the compressed installation files.

Tip: If you installed a supported version of DB2, you might experience the following issues:

- The IBM DB2 10.1 or later, Enterprise Server Edition installation image field is empty, but you can continue through the launchpad. For more information about the supported versions of DB2, see “Software requirements for the database repository” on page 36.
- If an informational message is displayed, you can close the message, and continue with the installation.

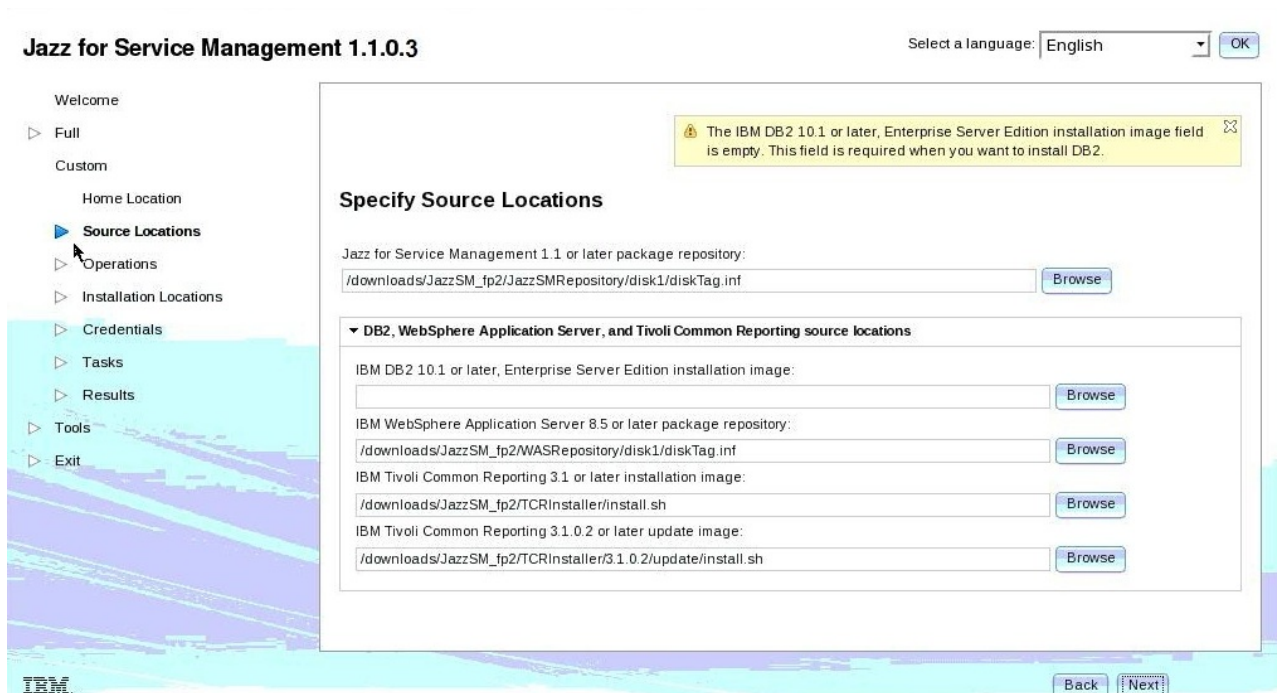


Figure 27. Specifying the Source Locations

5. On the Select Operations page, select **Update** next to **Reporting services**.

Important: If you plan to implement LDAP authentication for IBM System Storage DS8000 Storage Manager or IBM System Storage SAN Volume Controller by using Jazz for Service Management, you must update the **Security Services** option.

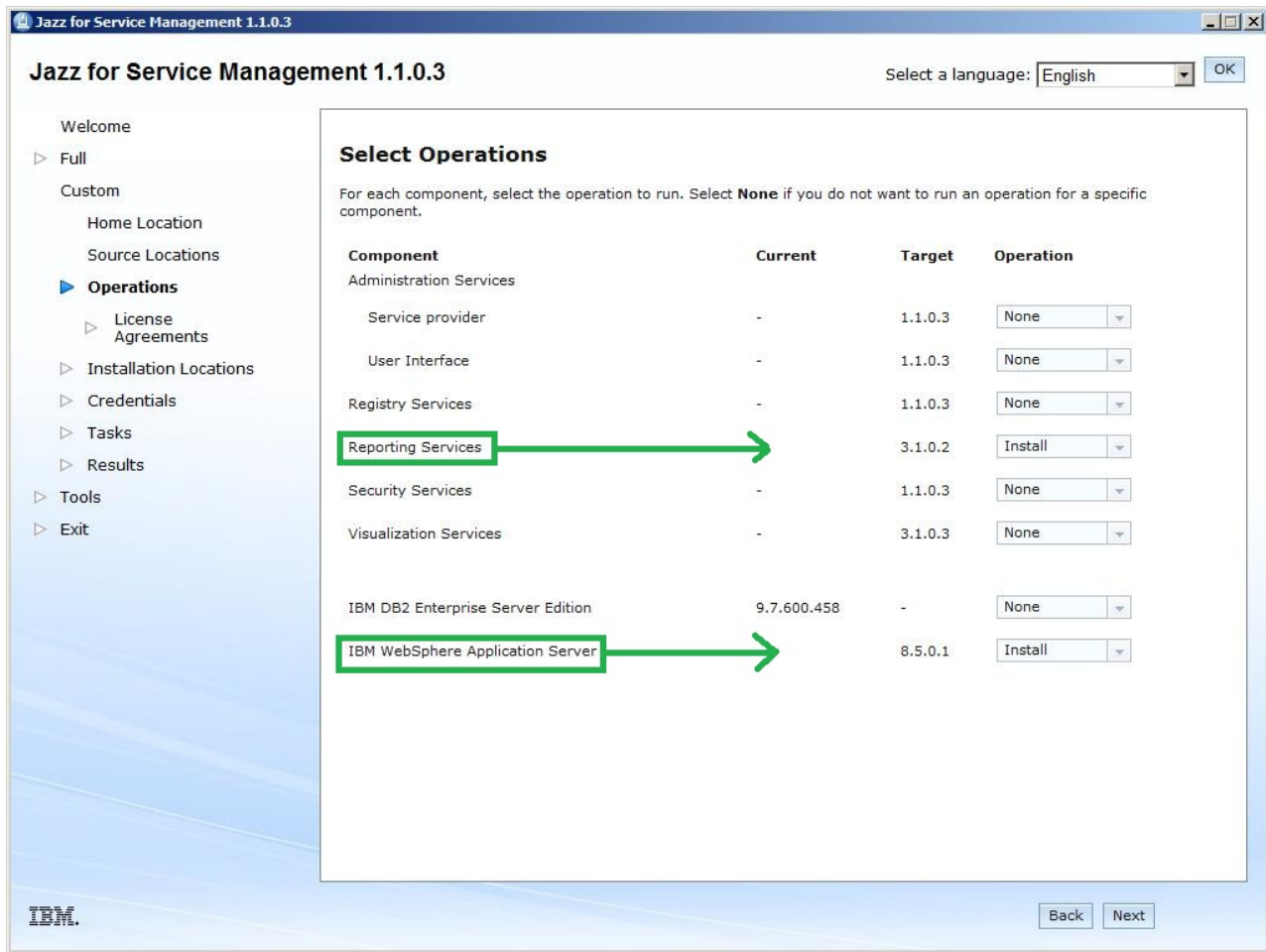


Figure 28. Selecting the components to install

6. On the License agreement page, read and accept the license agreement, and click **Next**.
7. On the Specify Installation Locations page, review the installation locations for the listed components, and click **Next**.

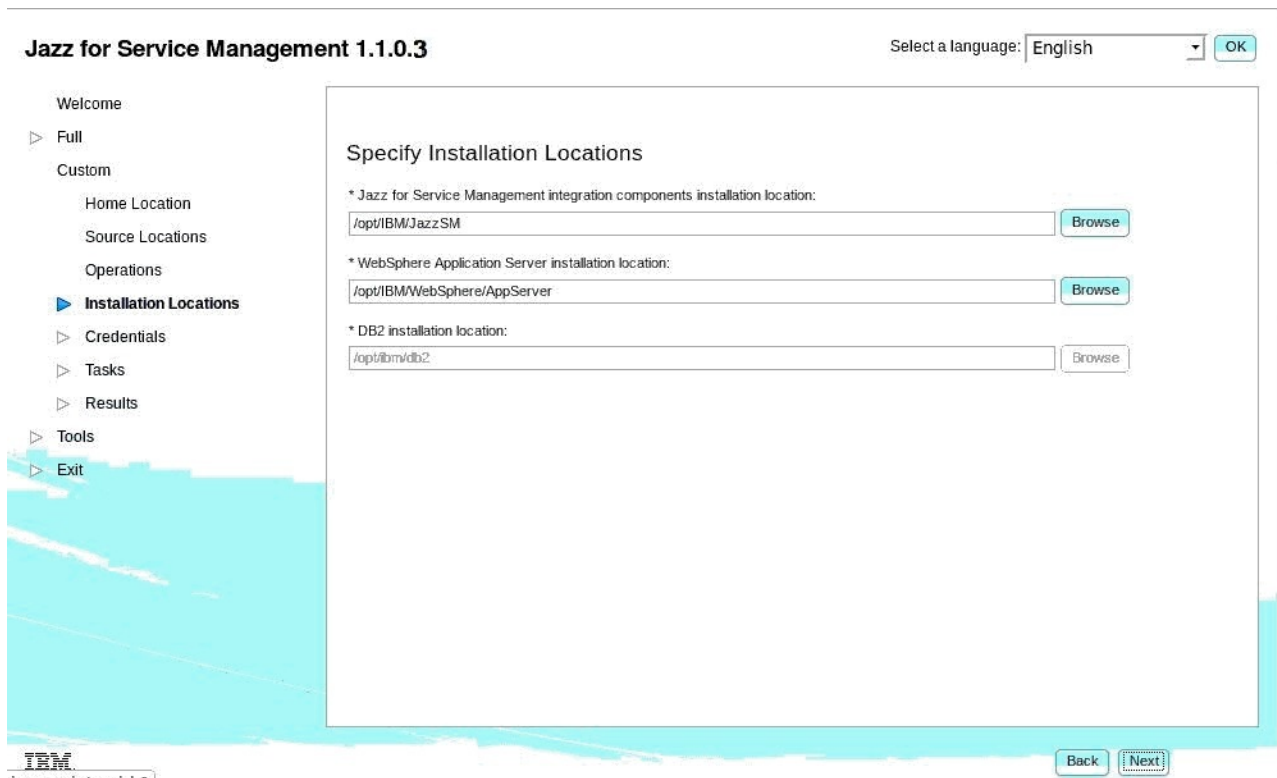


Figure 29. Reviewing installation locations

8. On the Specify Credentials page, enter the following information:
 - a. WebSphere Application Server credentials.
The user name and password that you entered when you installed Jazz for Service Management.
 - b. Existing DB2 credentials.
You must enter the credentials that you created during the installation of DB2.

Remember: Note down the DB2 credentials, because you need the credentials during the IBM Spectrum Control installation.

The credentials are used to connect to DB2 and create the Cognos Content Store database.

The **Confirm instance user password** field is disabled.

Restriction: On the DB2 panel, enter only your existing DB2 administrator credentials. If you use the default (or any other) credentials, the Jazz for Service Management installation fails.

If you have an existing DB2 installation and that installation has multiple DB2 instances, the Jazz for Service Management launchpad uses the last DB2 instance that is returned by the **db2ilist** command.

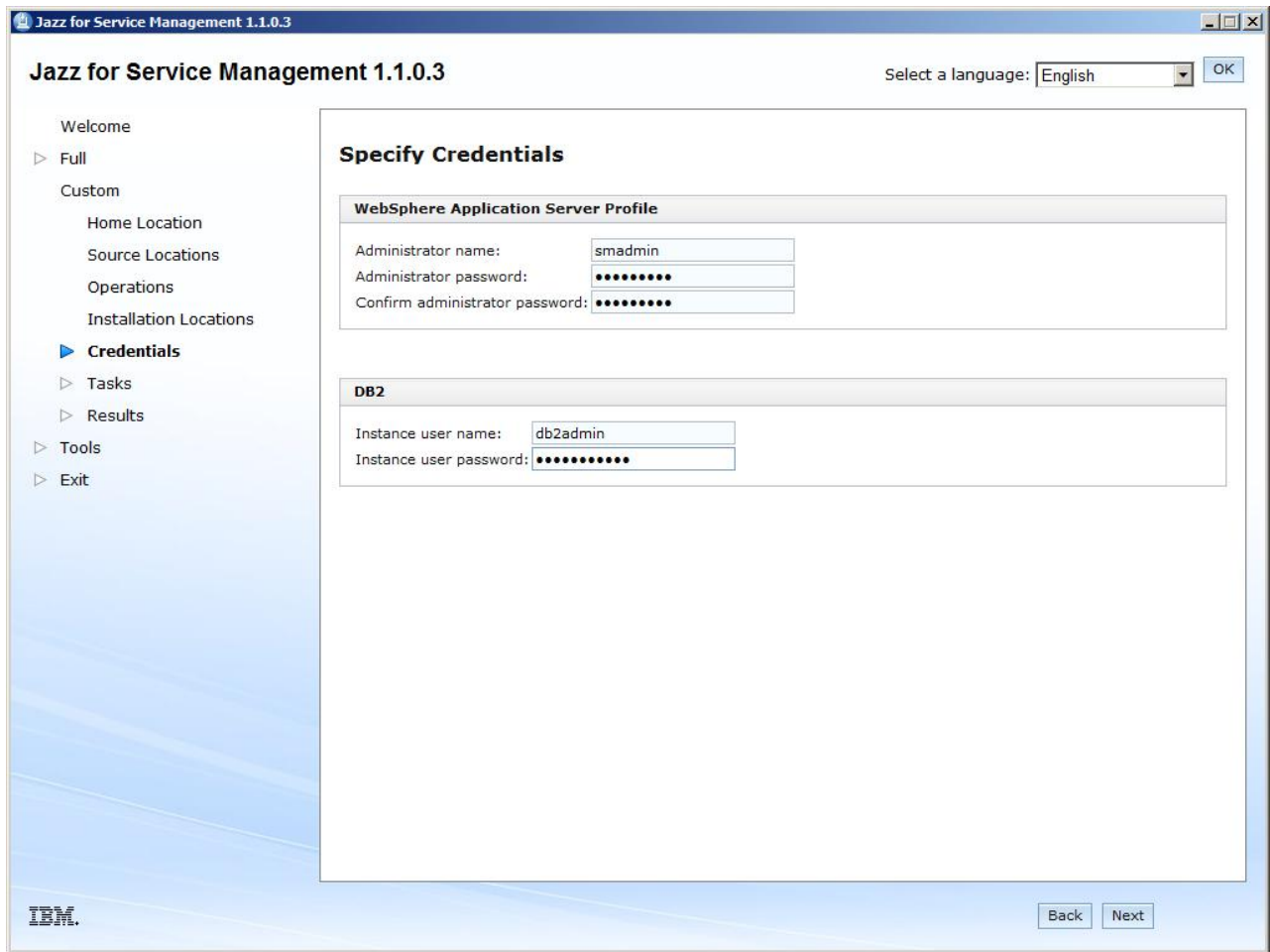


Figure 30. Specifying your credentials

9. On the Run Tasks page, review the list of components that are installed and click **Run**.

Important: After you click **Run**, the installation can take 1 hour or more to install the components.

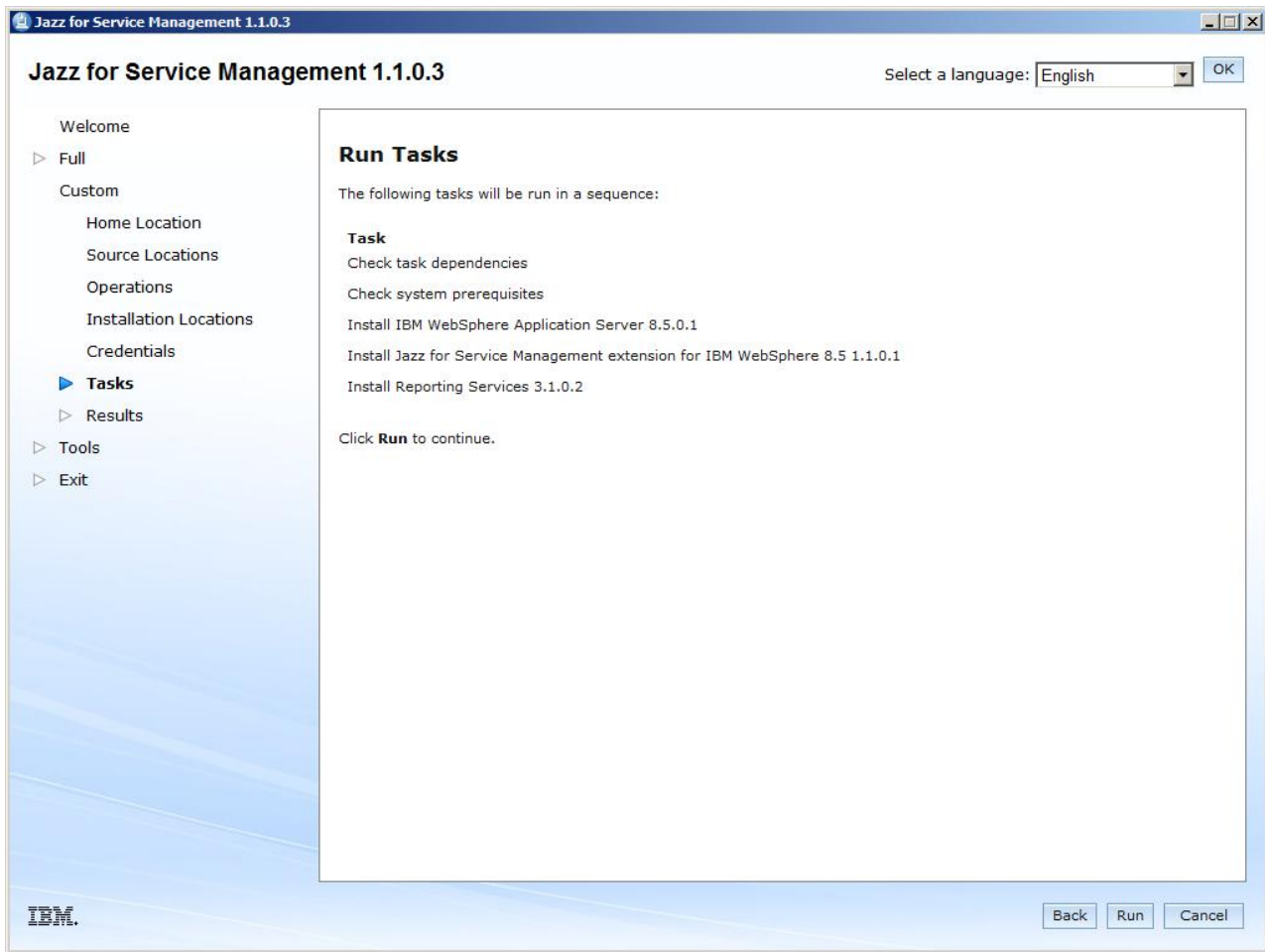


Figure 31. Running the tasks to install the components

To resolve the port conflict, see “Resolving port conflicts” on page 211.

Tip: Warnings on the Run Tasks page do not affect the Jazz for Service Management installation.

10. Close the browser window to exit the Jazz for Service Management launchpad.

After you upgrade Jazz for Service Management, you must complete the IBM Spectrum Control upgrade.

For more information about upgrading IBM Spectrum Control in a single-server environment, see “Upgrading IBM Spectrum Control in a single-server environment by using the installation program” on page 163.

For information about upgrading IBM Spectrum Control in a multiple-server environment, see “Upgrading from Tivoli Storage Productivity Center Version 5.2.0 and later with a remote database by using the installation program” on page 169.

Upgrading Jazz for Service Management and Tivoli Common Reporting on AIX

You can upgrade Jazz for Service Management and Tivoli Common Reporting on AIX operating systems by using a web browser.

Important: Before you upgrade Jazz for Service Management, you must see “Preparing for an upgrade” on page 153.

To upgrade Jazz for Service Management and Tivoli Common Reporting on AIX operating systems, complete the following steps:

1. On the Welcome page for Jazz for Service Management, ensure that you click **Custom**, not **Full**.
2. On the Custom workflow page, click **Next**.
3. On the Specify Jazz for Service Management Home Location page, click **Next**.

Tip: Since you are upgrading Jazz for Service Management, launchpad displays the path to the existing installation.

4. On the Specify Source Locations page, review the directory paths where the Jazz for Service Management, WebSphere Application Server, and Tivoli Common Reporting installation images are located.

The directory path is where you extracted the compressed installation files.

Tip: If you installed a supported version of DB2, you might experience the following issues:

- The IBM DB2 10.1 or later, Enterprise Server Edition installation image field is empty, but you can continue through the launchpad. For more information about the supported versions of DB2, see “Software requirements for the database repository” on page 36.
- If an informational message is displayed, you can close the message, and continue with the installation.

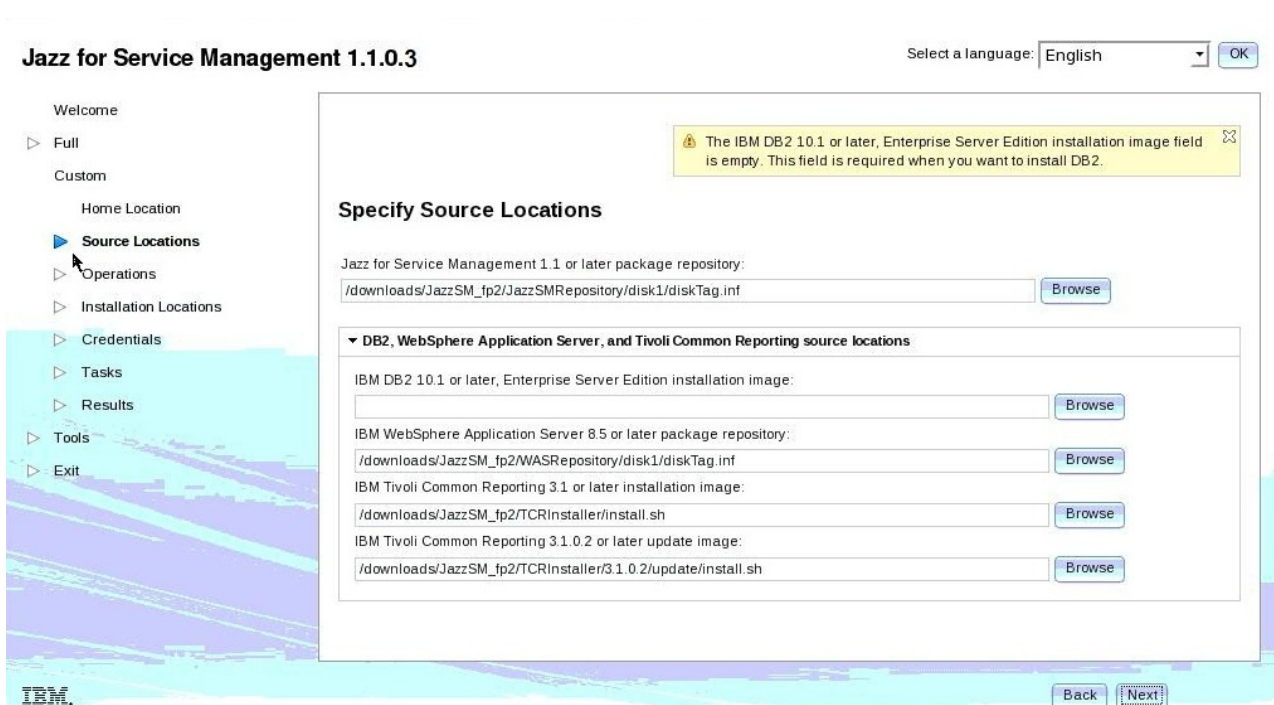


Figure 32. Specifying the Source Locations

5. On the Select Operations page, complete the following tasks:
 - Select **Update** next to **Reporting services**.
 - Select **None** next to **IBM WebSphere Application Server**

To upgrade to Jazz for Service Management Version 1.1.0.3, you must upgrade **Reporting services**, but you do not need to upgrade the version of **IBM WebSphere Application Server**.

Important: If you plan to implement LDAP authentication for IBM System Storage DS8000 Storage Manager or IBM System Storage SAN Volume Controller by using Jazz for Service Management, you must install the **Security Services** option.

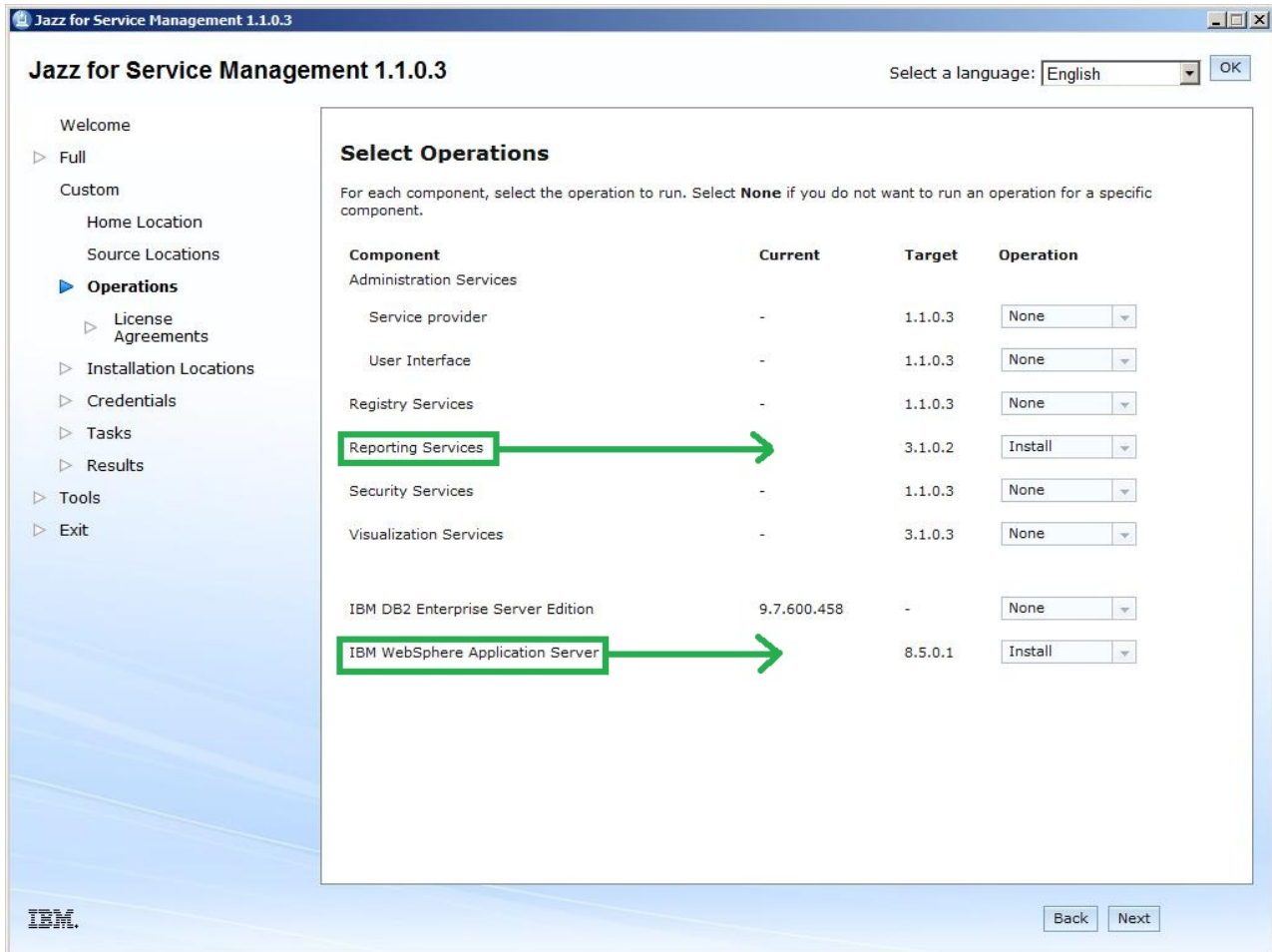


Figure 33. Selecting the components to install

6. On the License agreement page, read and accept the license agreement, and click **Next**.
7. On the Specify Installation Locations page, review the installation locations for the listed components, and click **Next**.

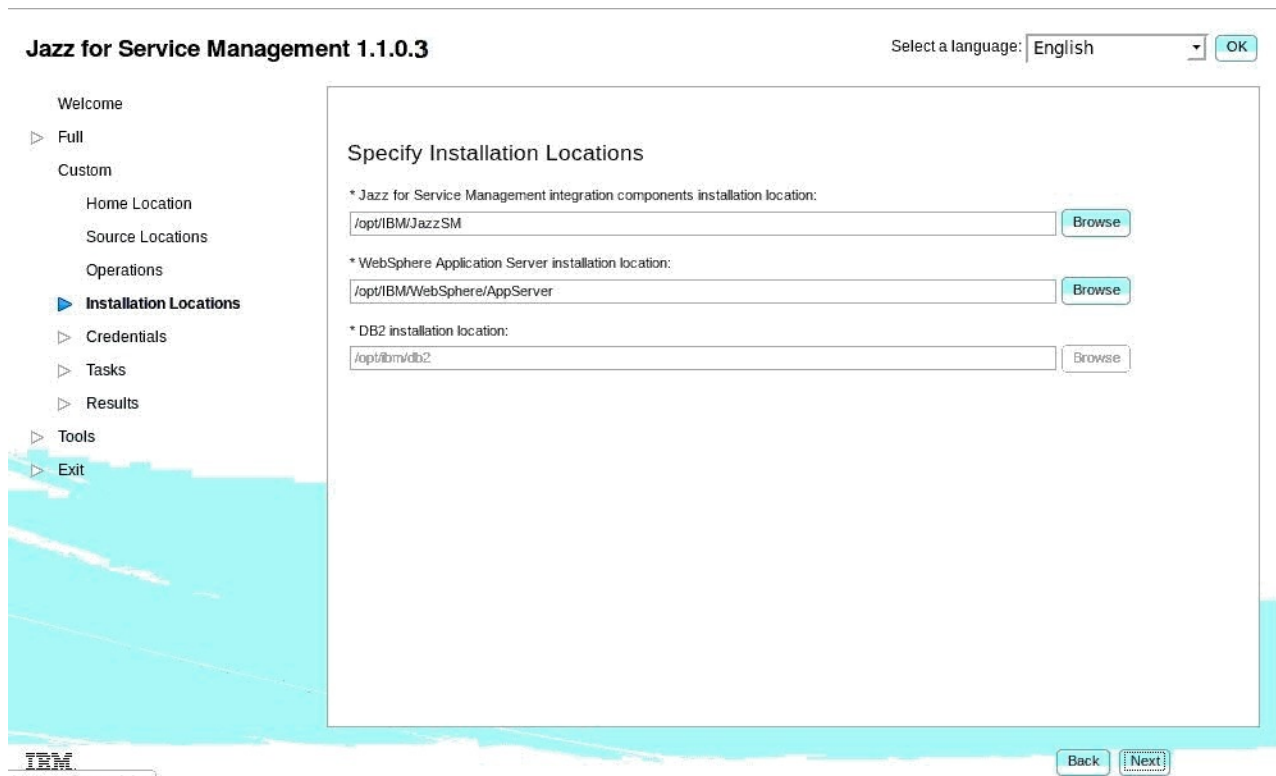


Figure 34. Entering the installation locations

8. On the Specify Credentials page, enter the following information:

a. WebSphere Application Server credentials.

The user name and password that you entered when you installed Jazz for Service Management.

b. Existing DB2 credentials.

You must enter the credentials that you created during the installation of DB2.

Remember: Note down the DB2 credentials, because you need the credentials during the IBM Spectrum Control installation.

The credentials are used to connect to DB2 and create the Cognos Content Store database.

Restriction: On the DB2 panel, enter your existing DB2 administrator credentials. If you use the default (or any other) credentials, the Jazz for Service Management installation fails.

If you have an existing DB2 installation and that installation has multiple DB2 instances, the Jazz for Service Management launchpad uses the last DB2 instance that is returned by the **db2ilist** command.

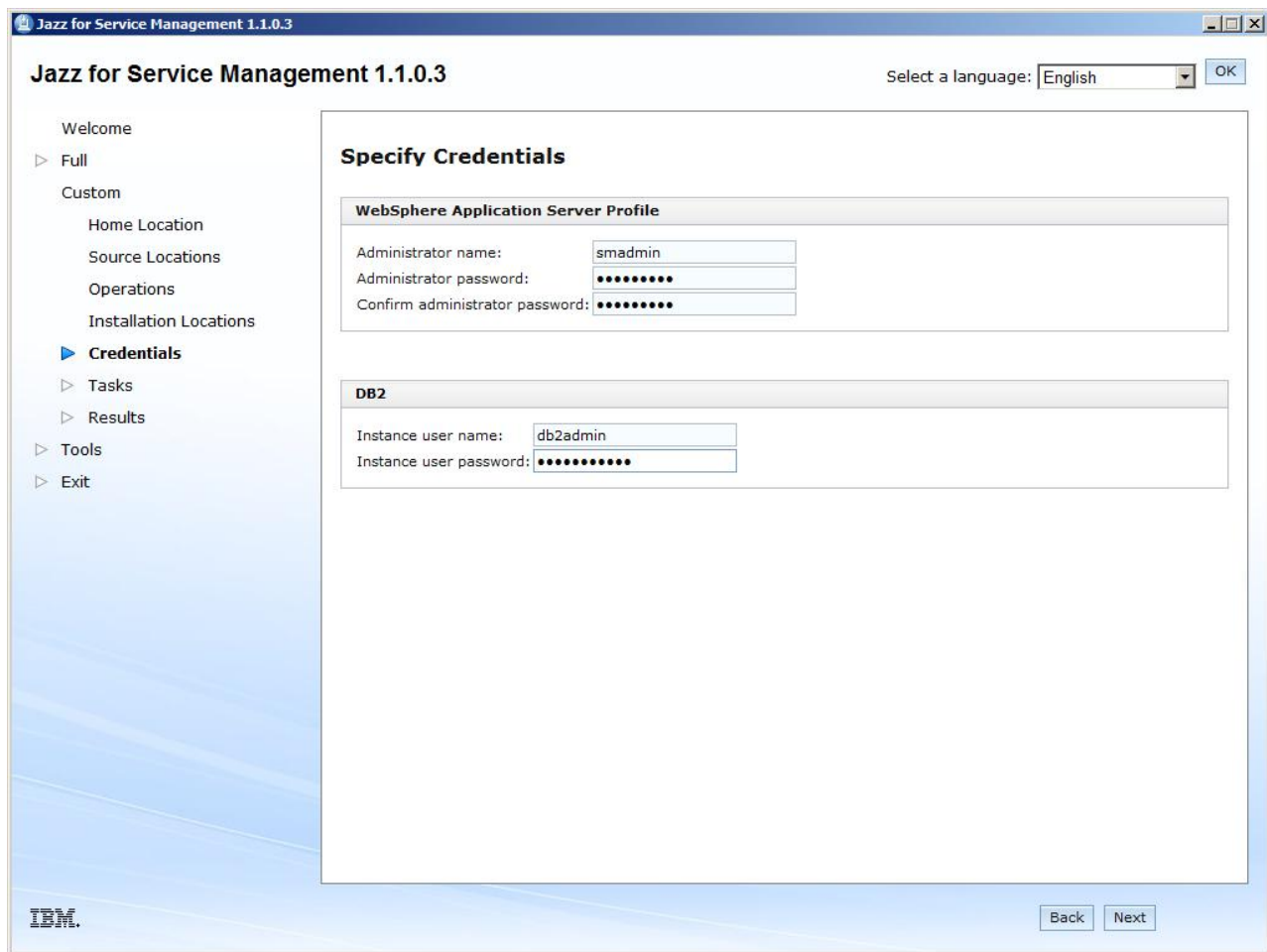


Figure 35. Specifying your credentials

9. On the Run Tasks page, review the list of components that are installed and click **Run**.

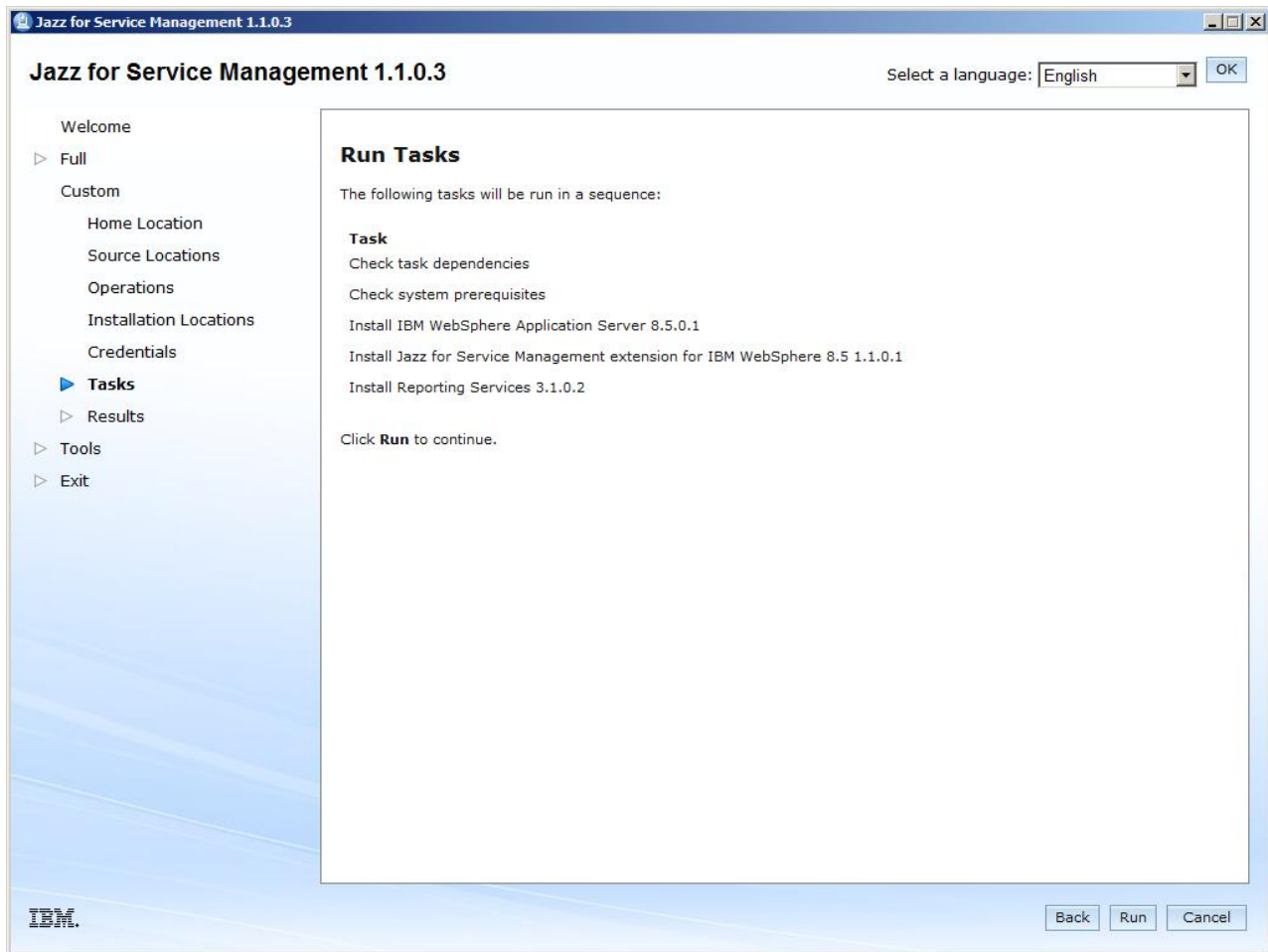


Figure 36. Running the tasks to install the components

Important: After you click **Run**, the installation can take 1 hour or more to install the components.

To resolve the port conflict, see “Resolving port conflicts” on page 211.

10. Close the browser window to exit the Jazz for Service Management launchpad.

After you upgrade Jazz for Service Management, you must complete the IBM Spectrum Control upgrade.

For more information about upgrading IBM Spectrum Control in a single-server environment, see “Upgrading IBM Spectrum Control in a single-server environment by using the installation program” on page 163.

For information about upgrading IBM Spectrum Control in a multiple-server environment, see “Upgrading from Tivoli Storage Productivity Center Version 5.2.0 and later with a remote database by using the installation program” on page 169.

Upgrading Jazz for Service Management and Tivoli Common Reporting on AIX without a web browser

On AIX operating systems, if your target computer does not have a browser, or if your browser is incompatible with the Jazz for Service Management launchpad,

you can upgrade Jazz for Service Management by using IBM Installation Manager. You can upgrade Tivoli Common Reporting by using InstallAnywhere.

Before you begin: Before you upgrade, ensure that the IBM WebSphere Application Server service is stopped by running the following command:

```
/JazzSM_install_directory/profile/bin/stopServer.sh server_name  
-username JazzSM_username -password JazzSM_password
```

JazzSM_install_directory, *server_name*, *JazzSM_username*, and *JazzSM_password* were specified when you installed Jazz for Service Management. The default *JazzSM_install_directory* is /opt/IBM/JazzSM, and the default *server_name* is server1. You can also return the name and status of the server by entering the following WebSphere Application Server command:

```
serverStatus -All
```

Upgrading Jazz for Service Management on AIX without a web browser

If you do not have access to a web browser, you can upgrade Jazz for Service Management on AIX operating systems by using Installation Manager.

Before you begin: Before you upgrade Jazz for Service Management, ensure that you installed Installation Manager Version 1.6.1 or later. For information about upgrading Installation Manager, see “Upgrading Installation Manager” on page 115.

To upgrade Jazz for Service Management by using Installation Manager, complete the following steps:

1. Download the following compressed Jazz for Service Management installation files in a directory:
 - Jazz for Service Management Version 1.1.0.3
 - IBM WebSphere Application Server Version 8.5
2. Extract the compressed files in a directory that is separate from the directory in which you extracted the IBM Spectrum Control and DB2 installation files.
3. In a terminal window, go to the following directory:
`/opt/IBM/InstallationManager/eclipse`
4. To start Installation Manager, run the following command:
`./IBMIM`
5. On the Installation Manager Home page, click **File > Preferences**.
6. On the Repository page, click **Add Repository**.
7. To add the Jazz for Service Management repository, browse to the directory path where you downloaded and extracted the Jazz for Service Management installation files, for example:
`JazzSM_image_folder/JazzSM1102GA/JazzSMRepository/disk1/`
8. On the Preferences page, double-click the path, and in the **Files** column, select the `diskTag.inf` file, and click **OK**.

Tip: After you select the `.inf` files for Jazz for Service Management, the Preferences window can disappear behind the Installation Manager Home page. Ensure that the Preferences window remains active.

9. Click **OK** and then **OK** again.
10. On the Installation Manager Home page, click **Update**.

11. On the Update Packages page, ensure that the following packages are displayed, and click **Next**:
 - **IBM WebSphere Application Server 8.5.0.1**
 - **Core services in Jazz for Service Management**

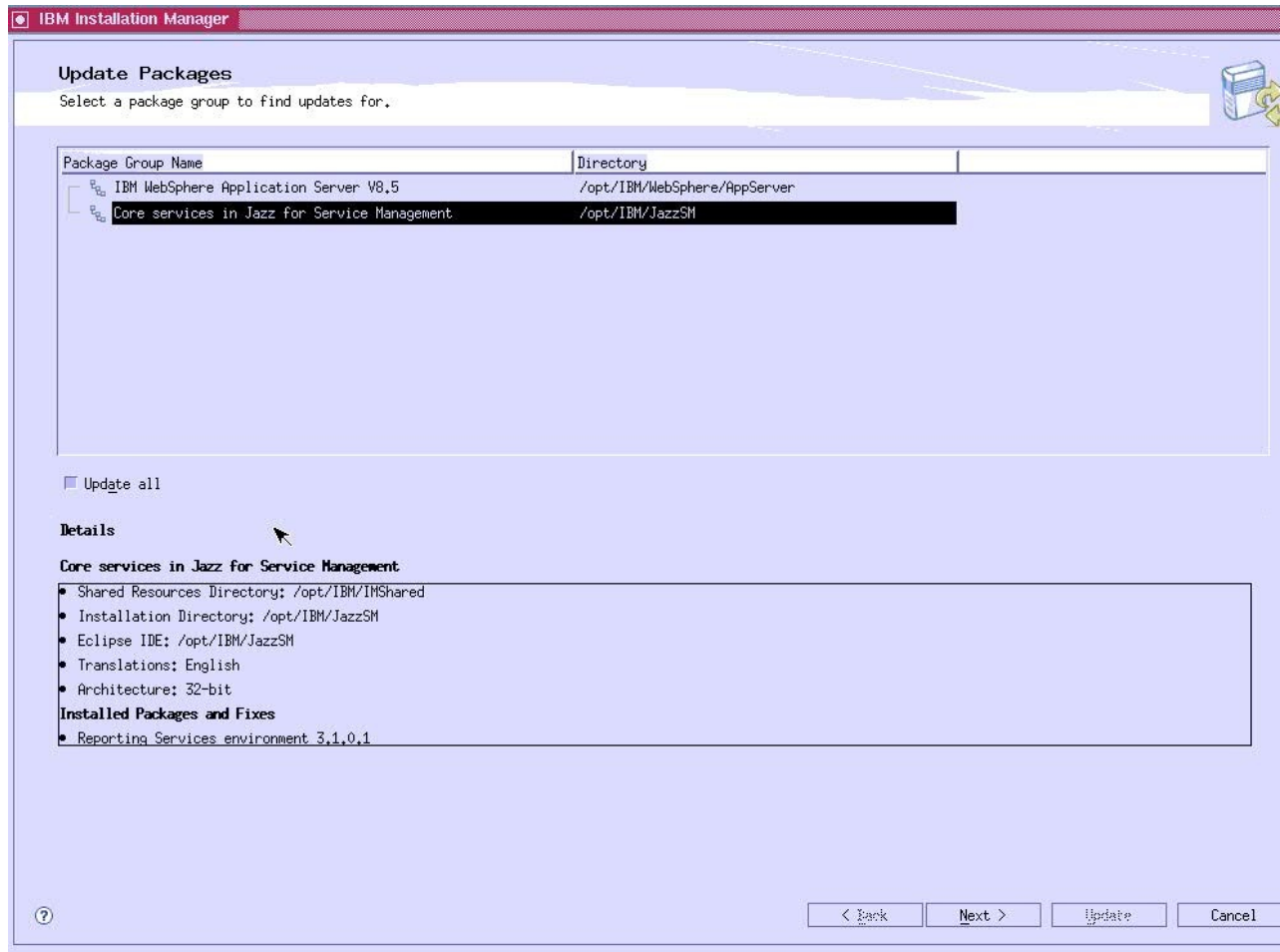


Figure 37. Jazz for Service Management upgrade packages

- Tip:** Installation Manager might take up to 5 minutes to search for updates.
12. Review the page and ensure that all of the update packages are selected and click **Next**.
 13. On the License agreement page, read and accept the license agreement, and click **Next**.
 14. Review the list of packages, ensure that all of the features are selected, and click **Next**.
 15. On the Common Configurations page, enter the user name and password that you used when you installed Jazz for Service Management Version 1.1.0.1.

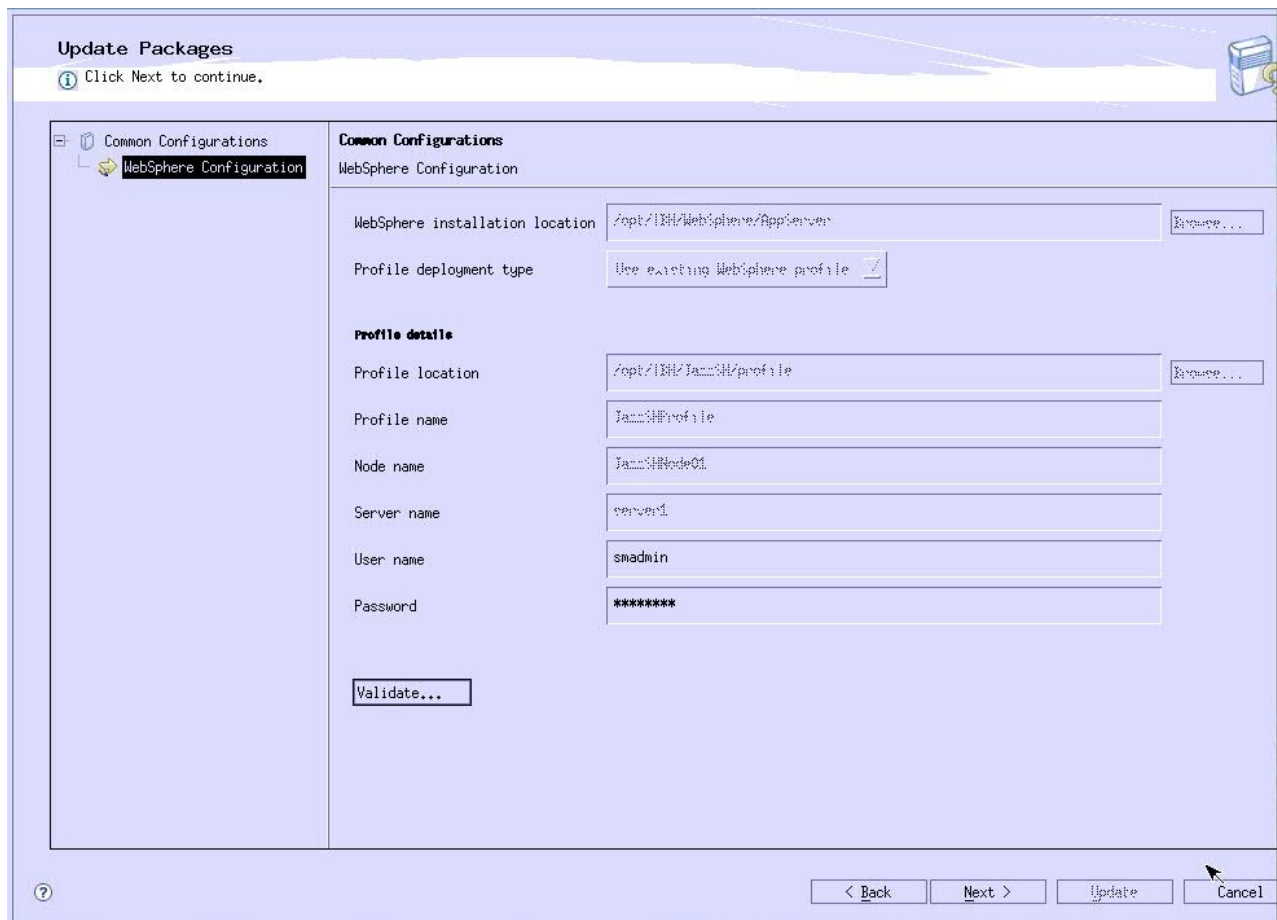


Figure 38. WebSphere Application Server Configuration

16. Click **Validate** and click **Next**.

Tip: When the profile is valid, the **Next** button is active.

17. Click **Finish**.

You are returned to the Installation Manager home page.

Important: If you restart your computer, you must manually restart Jazz for Service Management and Tivoli Common Reporting.

To restart Jazz for Service Management and Tivoli Common Reporting on the AIX operating system, complete the following steps:

1. Go to the `/opt/IBM/JazzSM/profile/bin` directory.
2. Run the following command:

```
./startServer.sh server1
```

For more information about installing Jazz for Service Management, see *Installing Jazz for Service Management*.

What to do next: You must upgrade Tivoli Common Reporting.

Upgrading Tivoli Common Reporting on AIX without a web browser

On AIX operating systems, if your target computer does not have a browser, you can upgrade Tivoli Common Reporting by using InstallAnywhere.

Before you begin: You must download and extract the compressed Tivoli Common Reporting installation files in a directory that is separate from the directory in which you downloaded the Jazz for Service Management upgrade files, the IBM Spectrum Control installation files, and the DB2 installation files.

To upgrade Tivoli Common Reporting, complete the following steps:

1. Go to the directory in which you extracted the Tivoli Common Reporting installation files, for example, `/tmp/TCR/`.
2. Go to the `TCRInstaller/3.1.0.2/update` directory.
3. To start the installation, in a terminal window, run the following command:
`./install.sh`
4. Select a language and click **Go**.
5. Review the Welcome page and click **Next**.
6. Read and accept the license agreement and click **Next**.
7. On the IBM Jazz for Service Management Installation Directory Selection page, review the location of the Jazz for Service Management installation directory and click **Next**.
8. On the IBM Jazz for Service Management Details page, verify the information, and click **Next**.
9. On the WebSphere Information page, enter the user name and password that you used to install WebSphere Application Server during the Jazz for Service Management installation, and click **Next**.
The default user name is `smadmin`.
10. On the Pre-Installation Summary page, verify the information, and click **Install**.
It might take up to 30 minutes to upgrade Tivoli Common Reporting.
11. On the Installation Summary page, click **Done** to complete the upgrade.

Resolving port conflicts

To successfully install Jazz for Service Management, you must resolve port conflicts.

Resolving a port conflict before you install Jazz for Service Management

Before you install Jazz for Service Management as part of upgrading to IBM Spectrum Control, start all of the servers for the Tivoli Storage Productivity Center older version and start the Tivoli Integrated Portal server. The Jazz for Service Management launchpad can identify port conflicts. See [Starting and stopping the IBM Spectrum Control servers](#).

When you upgrade from Tivoli Storage Productivity Center to IBM Spectrum Control, and you select **Do not uninstall Tivoli Integrated Portal 2.2 and Tivoli Common Reporting 2.1.1** in the installation program, a port conflict can occur between Tivoli Common Reporting Version 2.1.1 and Version 3.1.0.2 for port 9362.

To resolve this port conflict, complete the following steps:

1. In a command line window, go to one of the following directories:
 - On Windows operating systems:
`C:\Program Files\IBM\tipv2Components\TCRComponent\cognos\bin\tcr_cogconfig.bat`
 - On AIX and Linux operating systems:
`/opt/IBM/tipv2Components/TCRComponent/cognos/bin/tcr_cogconfig.sh`

Tip: On Windows operating systems, to access the IBM Cognos Configuration page, click **Start > Programs > Tivoli Common Reporting 2.1.1 > IBM Cognos Configuration**.
2. In the navigation tree, select **Environment > Logging**.
3. In the Logging - Command Properties window, specify the **Local log server port number value**.
Specify a port value that is not currently used and that will not be used after you upgrade IBM Spectrum Control.
4. Click **Save**.
5. Click **File > Exit**.
6. Stop and start Tivoli Common Reporting Version 2.1.1.

Resolving a port conflict when you want to uninstall Tivoli Integrated Portal Version 2.2 and Tivoli Common Reporting Version 2.1.1

Port conflicts can occur when you want to uninstall Tivoli Integrated Portal Version 2.2 and Tivoli Common Reporting Version 2.1.1 during an upgrade from Tivoli Storage Productivity Center to IBM Spectrum Control. If a port conflict occurs during the Jazz for Service Management installation, a warning message is displayed for the **Check system prerequisites** option on the Review Results page.

To prevent this port conflict, stop Tivoli Integrated Portal before you install Jazz for Service Management. After you install Jazz for Service Management, start Tivoli Integrated Portal and continue to upgrade IBM Spectrum Control.

Related concepts:

"Installing Jazz for Service Management and Tivoli Common Reporting" on page 87

If you plan to use Cognos Business Intelligence reports, you must install Jazz for Service Management Version 1.1.0.3 and Tivoli Common Reporting Version 3.1.0.2 before you install Cognos BI reports. You can install these components now or after you install IBM Spectrum Control.

Upgrading Tivoli Storage Productivity Center for Replication management servers in a high-availability relationship

If you are upgrading Tivoli Storage Productivity Center for Replication management servers that are in a high-availability relationship, you can upgrade the active and standby server in any order.

For a typical upgrade, the following procedure is a commonly used. In the following steps, *Server 1* refers to the original active server and *Server 2* refers to the original standby server.

Important: If possible, avoid making any configuration changes to Server 1 or Server 2 until after the upgrade process is complete. Because the two servers are not synchronized during the upgrade process, configuration changes can be lost.

1. Issue the takeover command to Server 2. This action makes both Server 1 and Server 2 active.
2. Upgrade Server 2 and ensure that the upgrade was successful.
3. Upgrade Server 1 and ensure that the upgrade was successful.
4. If no changes were made to the configuration of Server 2, re-establish the high-availability function from Server 1 to Server 2.
5. If configuration changes were made to Server 2, synchronize the high-availability function from Server 2 to Server 1. Then, complete a takeover operation on Server 1 and re-establish the high-availability function from Server 1 to Server 2.

Upgrading Storage Resource agents

Upgrade Storage Resource agents to ensure that they are at the same release level as the IBM Spectrum Control server.

When you apply maintenance to IBM Spectrum Control, you can upgrade Storage Resource agents immediately or at a later time. To ensure that all your agents are at the current release level and to manage your network load, schedule upgrades regularly.

If a Storage Resource agent is not at the same level as the IBM Spectrum Control server, the following limitations occur:

- New functions in the current release might not be available for the resources that are monitored by the agent.
- Problem fixes are not applied to the agent.

You can upgrade Storage Resource agents by using the following methods:

- Use the **Modify Agents > Upgrade** action on the Servers page in the GUI.
- Use a Storage Resource agent command.

To determine if a Storage Resource agent must be upgraded, complete the following steps:

1. In the menu bar, go to **Servers > Servers**.
2. View the values in the **Agent State** column. If the state of the agent is **Upgraded needed**, the Storage Resource agent for the related server must be upgraded.

Starting agent upgrades

Upgrade a Storage Resource agent to the same release level as the IBM Spectrum Control server.

The ability to start the upgrade process for a Storage Resource agent is available when the following conditions are met:

- A Storage Resource agent must be deployed on the server that you want IBM Spectrum Control to monitor.
- An agent upgrade is not currently running for the server.
- The version of the agent that is deployed on the server is earlier than the IBM Spectrum Control server version.

Restriction: It is not possible to run a scheduled upgrade from versions of a Windows Storage Resource agent deployed in non-daemon mode when you upgrade from IBM Spectrum Control version 5.2.8, 5.2.9, 5.2.10 or 5.2.11 to IBM Spectrum Control version 5.2.13 or later versions.

To upgrade a Storage Resource agent that was not upgraded at maintenance time, complete the following steps:

1. In the menu bar, go to **Servers > Servers**.
2. On the Servers page, right-click the server that contains the Storage Resource agent to upgrade and select **Modify Agents > Upgrade**.
3. Select **Immediate** from the **Agent Upgrade** list on the Upgrade Agent window.
4. Click **Upgrade** to start the upgrade process.

Scheduling agent upgrades

Schedule the upgrade process for a Storage Resource agent.

You can schedule the upgrade process for a Storage Resource agent when the following conditions are met:

- A Storage Resource agent must be deployed on the server that you want IBM Spectrum Control to monitor.
- An agent upgrade is not currently running for the server.
- The version of the agent that is deployed on the server is earlier than the IBM Spectrum Control server version.

Tips:

- To manage the workload for a server and the network, schedule the agent upgrade for a time when the server and network are not busy.
- The scheduled time for an agent upgrade is based on the time zone of the IBM Spectrum Control server, not the time zone of the server where the Storage Resource agent is installed. For example, if an agent is installed on a server in the Central (CST) time zone, but the IBM Spectrum Control server is in the Pacific (PST) time zone, the time that is shown in the web-based GUI when you schedule the upgrade is PST.

Restriction: It is not possible to run a scheduled upgrade from versions of a Windows Storage Resource agent deployed in non-daemon mode when you upgrade from IBM Spectrum Control version 5.2.8, 5.2.9, 5.2.10 or 5.2.11 to IBM Spectrum Control version 5.2.13 or later versions.

To schedule the upgrade of a Storage Resource agent that was not upgraded at maintenance time, complete the following steps:

1. In the menu bar, go to **Servers > Servers**.
2. On the Servers page, right-click the server that contains the Storage Resource agent to upgrade and select **Modify Agents > Upgrade**.
3. Select **Scheduled** from the **Agent Upgrade** list on the Upgrade Agent window.
4. Select the date and time and click **Upgrade** to schedule the agent upgrade.

Upgrading Storage Resource agents by using a command

You can manually upgrade Storage Resource agents.

To manually upgrade the Storage Resource agent, complete the following steps:

1. Go to the DVD location of the installation program (by using the Storage Resource Agent image) and go to the bin directory:

```
cd DVD_image_location/data/sra/operating_system_name
```

Where *DVD_image_location* is the location of the installation image for the Storage Resource agent.

2. Run the upgrade command:

```
bin/Agent -upgrade -installLoc agent_install_directory  
  
(1)  
-commType Daemon
```

Notes:

- 1 Parameter when the agent is run as a daemon service.
The parameters are:

-installLoc "agent_install_directory"

Location where the agent is installed. Enclose the directory name in quotation marks, for example, "C:\Program Files\IBM\TPC_SRA\".

-commType Daemon

If the agent is run as a daemon service, then this parameter must be specified.

Here is an example for a daemon-based service by using the default location:

```
bin/Agent -upgrade  
-installLoc "/opt/IBM/TPC/"  
-commType Daemon
```

Here is an example for a non-daemon service by using a non-default location:

```
bin/Agent  
-upgrade -installLoc "C:\Program Files\IBM\TPC_SRA\"
```

Tip: If you run the upgrade program outside of the *DVD_image_location* installation directory, then you must specify the full path.

Upgrading Windows Storage Resource agents from previous versions to 5.2.13 or later

To upgrade a Windows Storage Resource agent in non-daemon mode from versions 5.2.8, 5.2.9, 5.2.10 and 5.2.11 of IBM Spectrum Control to version 5.2.13 or later, require a different process from the standard upgrade steps.

You can use two procedures for upgrading a Windows Storage Resource agent to version 5.2.13 or later.

The manual upgrade procedure from the command prompt preserves the historical data for the Storage Resource agent.

The procedure that uses the IBM Spectrum Control GUI requires creating a new agent and losing the historical data.

Option	Description
Upgrade by using command prompt	<ol style="list-style-type: none"> 1. Download the latest version of IBM Spectrum Control Agent refresh pack from Fix Central. You can access Fix Central at http://www.ibm.com/support/fixcentral/ 2. Open a Windows command prompt in the directory where you downloaded the refresh pack. 3. Run the following command from the command line: Agent.exe -UPGRADE -INSTALLLOC <SRA install location>
Upgrade steps by using the GUI	<ol style="list-style-type: none"> 1. Remove the server that the Storage Resource agent is deployed to. 2. Deploy a new Storage Resource agent. <p>CAUTION: If you use this option, historical data for the Storage Resource agent is lost.</p>

Related tasks:

“Upgrading Storage Resource agents by using a command” on page 214
You can manually upgrade Storage Resource agents.

“Removing servers” on page 234

You can remove servers that you no longer want to monitor with IBM Spectrum Control.

Upgrading SMI-S providers for storage systems

Before you upgrade an SMI-S provider (also called the CIM agent or CIMOM), ensure that IBM Spectrum Control supports the SMI-S provider that you want and that the provider is compatible with the firmware versions of your storage systems.

To ensure that an SMI-S provider is supported, review the supported products list for the current release of IBM Spectrum Control. For more information about the products that are supported by IBM Spectrum Control Version 5.2 (or later), see <http://www.ibm.com/support/docview.wss?uid=swg21386446>. Under Storage, click the link for the appropriate release. If you are uncertain about the CIM agent support, contact IBM customer support to help you with your upgrade plans.

Upgrading CIM agents

To upgrade a Common Information Model (CIM) agent, you must have the upgrade instructions that are supplied by the provider of the agent.

To upgrade the CIM agent, follow these steps:

1. Stop all IBM Spectrum Control server activity that might be dependent on the CIM agent (for example, performance monitor jobs, and discovery or probe jobs).
2. Stop the IBM Spectrum Control server services.
3. If any IBM Spectrum Control server processes remain, shut down the IBM Spectrum Control server for the duration of the CIM agent upgrade. If it is not possible to shut down the IBM Spectrum Control server, stop or kill the running processes.
4. Upgrade the CIM agent.

- a. Refer to the instructions supplied by the CIM agent to perform the upgrade.
 - b. Verify that the CIM agent configuration is intact after the upgrade. Make sure that user accounts and passwords used with IBM Spectrum Control are still in place, and that all devices managed by the CIM agent are still listed.
5. Restart the IBM Spectrum Control server and IBM Spectrum Control server services.
6. Open the IBM Spectrum Control GUI.
7. Run a CIM object manager (CIMOM) discovery job.
8. Run a probe job for each storage system that is managed by the CIM agent.

Replacing server SSL certificates when upgrading from versions earlier than Tivoli Storage Productivity Center Version 5.2.2

To upgrade versions of Tivoli Storage Productivity Center Version earlier than Version 5.2.2, you can replace SSL certificates that use 1024-bit encryption keys with SSL certificates that use 2048-bit encryption keys.

If you upgrade Tivoli Storage Productivity Center from a version earlier than Version 5.2.2, your SSL certificates are not updated automatically to 2048-bit encryption keys. If you want to use 2048-bit encryption keys with previous versions of Tivoli Storage Productivity Center, you must replace the default SSL certificates with custom SSL certificates.

If you chose to remain with 1024-bit encryption and want to deploy more Storage Resource agents later by using the command installation procedure and point those agents to an upgraded server, the agent installation fails due to a certificate mismatch.

The following procedure assumes that the disk image for the Storage Resource agent can be modified. If you use a DVD to install the product, you must copy the installation files to a location where you have write access before you implement the following procedure.

1. Copy the certs.zip file in the `<installation_dir>/data/sra/<agent_operating_system>/certs.zip` directory on the Tivoli Storage Productivity Center server that was upgraded to the `<SRA_image_install_directory>/sra/<agent_operating_system>` directory on the Storage Resource agent system. The `<installation_dir>` is the directory where Tivoli Storage Productivity Center Version 5.2.2 or later is installed.
2. Extract the compressed file to the `<SRA_image_install_directory>/sra/<agent_operating_system>/certs` directory. The `<SRA_image_install_directory>` is the directory where the Storage Resource agent image was extracted from and the `<agent_operating_system>` is the directory for the operating system where the Storage Resource agent is installed.
3. Install the Storage Resource agent.

Related tasks:

“Installing Storage Resource agents” on page 136

You can install Storage Resource agents by using the IBM Spectrum Control user interface or a command.

Migrating BIRT reports

Before you upgrade from Tivoli Storage Productivity Center to IBM Spectrum Control, you must manually export BIRT reports from IBM Tivoli Common Reporting Version 2.1. You can import BIRT reports later into Tivoli Common Reporting Version 3.1.0.2.

This migration does not occur as part of the IBM Spectrum Control upgrade process.

Exporting BIRT reports from Tivoli Common Reporting Version 2.1

To export BIRT reports from Tivoli Common Reporting Version 2.1, complete the following steps:

1. Export the complete Cognos® Content Store from the Tivoli Common Reporting web GUI.
 - a. Select **Launch > Administration**.
 - b. On the **Configuration** tab, select **Content Administration**.
 - c. Create a package to export by clicking **New Export**.
 - d. Follow the program to export the archive.

The exported archive is displayed on the Administration page.

2. Archive the *TCR_component_dir\data* directory in which all BIRT objects are stored.
3. Archive the directory where the report images are stored.

For more information about migrating BIRT reports, see Upgrading from Tivoli Common Reporting 2.1 and 2.1.1.

Tip: The exported package is installed in the directory that you specified in the Cognos Content Manager.

Importing BIRT reports into Tivoli Common Reporting Version 3.1.0.2

To import BIRT reports into Tivoli Common Reporting Version 3.1.0.2, complete one of the following procedures:

- On Windows operating systems:

1. Go to the following directory:
JAZZSM_INSTALL_DIR\reporting\bin

where *JAZZSM_INSTALL_DIR* is the directory in which you installed Jazz for Service Management.

2. Run the following command:

```
trcmd.bat -import -bulk name_file_reports.zip -username user  
-password passwd
```

- On AIX or Linux operating systems:

1. Go to the following directory:
JAZZSM_INSTALL_DIR/reporting/bin/

where *JAZZSM_INSTALL_DIR* is the directory in which you installed Jazz for Service Management.

2. Run the following command:

```
./trcmd.sh -import -bulk name_file_reports.zip -username user  
-password passwd
```

where *user* and *passwd* are the user name and password that you used to install IBM WebSphere Application Server during the Jazz for Service Management installation.

Migrating jobs and agent deployments

When you upgrade from Tivoli Storage Productivity Center Version 5.1 to IBM Spectrum Control, the existing probe and performance monitor jobs are automatically migrated. When the migration completes, each resource is included in a maximum of one data collection job of each job type.

During the migration, if a job definition includes multiple resources, individual data collection jobs are created for each resource in that job. For example, if a probe collects data about three storage systems in Tivoli Storage Productivity Center Version 5.1, three separate probes are created in IBM Spectrum Control, one for each storage system.

Tip: After you upgrade from Tivoli Storage Productivity Center Version 5.1 to IBM Spectrum Control, the status of the migrated probe for each resource that is displayed in some of the GUI pages might not match the actual resource status. This is because the migrated probe status is inherited from the last probe job before the migration. If the status of the resource changes before a post-migration probe is run on that resource, the probe status and the resource status might not match. The probe status is updated to match the resource status after the first probe that runs when the IBM Spectrum Control migration is complete. After the migration to IBM Spectrum Control, you can view the logs for the migrated probe and for all previous probes for a resource.

Job migration rules

The following rules are used to determine which jobs are migrated:

- Only probe and performance monitor jobs are migrated.
- Only jobs that are scheduled to run in the future are migrated. Jobs that are defined with the **Run Once** option and that have not run yet are migrated. Jobs that are completed are not migrated.
- If monitoring groups are used for scheduling, after the migration, each resource will be included in its own job schedule. For example, in Tivoli Storage Productivity Center Version 5.1, if a monitoring group that consists of many servers is used for a probe definition, after the migration, in IBM Spectrum Control, each server has its own probe job.
- In Tivoli Storage Productivity Center Version 5.1, a resource can be included in multiple jobs of the same job type. However, after the migration to IBM Spectrum Control, each resource can be included in a maximum of one job of each job type. For example, in Tivoli Storage Productivity Center Version 5.1, a server can be included in multiple probes. After the migration to IBM Spectrum Control, a server can be included in only one probe.
- If a resource is included in multiple jobs of the same job type, the following priority rules are used to determine which job is migrated:
 - A job that runs repeatedly has the highest priority.

- If there is more than one job that runs repeatedly, the job that is closest to repeating daily is migrated. For example, if a job runs on Monday, Wednesday, and Friday, and another job runs daily, the daily job is migrated.
- If there is more than one job that has the same frequency, the job that is scheduled to run closest to the migration time has the highest priority. For example, a resource is included in two probe jobs that run daily. The Probe_a job is scheduled to run at 9:00 am and the Probe_b job is scheduled to run at 11:00 am. If the migration occurs at 10:30 am, the Probe_b job has the highest priority and is migrated.
- A job that is defined with the **Run Once** option has the lowest priority.
- Jobs that are disabled are not migrated, with the following exceptions:
 - The disabled job is the only job of that job type for the resource. For example, if only one probe job is defined for a resource and the probe job is disabled, the disabled job is migrated.
 - A disabled job that runs repeatedly has a higher priority for migration than a job that is defined with the **Run Once** option. For example, a resource is included in two probe jobs. The Probe_a job runs repeatedly but is disabled. The Probe_b job is defined with the **Run Once** option and is scheduled to run at a future date. The Probe_a job is migrated.

When a disabled job is migrated, the job is also disabled after the migration completes.

Migration rules for Storage Resource agent deployments

When you upgrade from Tivoli Storage Productivity Center Version 5.1 to IBM Spectrum Control, the information that is related to agents that are successfully deployed is automatically migrated.

Note: The agent deployment information is not migrated if the agent deployment is scheduled to occur at a future timestamp.

Migrating alert definitions

When you upgrade from Tivoli Storage Productivity Center 5.2.7 and earlier to IBM Spectrum Control 5.2.10 or later, all the alert definitions for performance and configuration conditions are automatically migrated.

Important: Before you upgrade to IBM Spectrum Control and migrate alert definitions, ensure that you back up the product database. If the upgrade and migration is interrupted, the database might be left in an incomplete state and unusable. This situation might occur because of a power failure or memory issues during the upgrade. If an upgrade is interrupted, use the backups to restore the database to its original state and rerun the upgrade process.



For more information about backing up the product database, see “Backups” on page 158.

For more information about restoring the database, see http://www.ibm.com/support/knowledgecenter/SSEPGG_10.5.0/com.ibm.db2.luw.admin.ha.doc/doc/t0006242.html

Performance alerts

Alert definitions that contain performance thresholds are automatically migrated during the upgrade process. Violations of those thresholds will be detected as they were in previous versions of the product.



The names of the alert definitions are converted to matching names in IBM Spectrum Control. For example, if you defined a *Total I/O Rate Threshold* alert for a storage system in Version 5.2.7, that definition is migrated to version 5.2.10 and is shown as *Total I/O Rate - overall* for that storage system.

Example names of 5.2.7 and earlier performance alerts	Example names of 5.2.8 and later performance alerts
Peak Back-end Write Response Time Threshold Total I/O Rate Threshold	Disk: Response Times  Peak Back-end Write Response Time Volume: I/O Rates  Total I/O Rate - overall

Configuration alerts

Alert definitions that contain configuration conditions are automatically migrated during the upgrade process. Violations of those conditions will be detected as they were in previous versions of the product. Examples of configuration alerts include *Probe Failed*, *resource Missing*, and *resource Discovered*.

The names of the alert definitions are converted to matching names in IBM Spectrum Control. For example, if you defined a *Probe Failed* alert for a storage system in Version 5.2.7, that definition is migrated to version 5.2.10 and is shown as *Probe Status* with a condition of *Error* for that storage system.

Example names of 5.2.7 and earlier configuration alerts	Example names of 5.2.8 and later configuration alerts
Probe Failed Performance Monitor Failed	 Probe Status Error ▾  Performance Monitor Status Error ▾

Restriction for alert log entries: The existing entries for configuration alerts in the alert log are not migrated to IBM Spectrum Control 5.2.10 and later.

Alert notification settings

The global alert notification settings for alerts were consolidated in IBM Spectrum Control. Instead of separate notification settings for performance and configuration alerts, there is a single setting for all types of alerts. During the upgrade process, global alert notification settings are migrated in the following way:

- If alert notification settings were defined for performance alerts only, those settings are used as the global setting for all alerts.
- If alert notification settings were defined for configuration alerts only, those settings are used as the global setting for all alerts.

- If alert notification settings were defined for both performance and configuration alerts, the setting for performance alerts is used as the global setting for all alerts.

To view the global alert notification settings for all alerts, go to **Settings > Alert Notifications**.

Additionally, the alert notification settings that you can define at the resource level were consolidated. In previous releases, you had to define notifications for performance and configuration alerts separately. In IBM Spectrum Control, the notification settings that you define for a resource are automatically applied to both types of alerts. To view the alert notification settings for a specific resource, go to a resource list page, right-click a resource, and click **Edit Alert Notification Settings**.

Alert suppression settings

In IBM Spectrum Control 5.2.10 and later, you can customize how often you receive notifications for configuration and performance alerts. In previous versions, you could only suppress notifications for performance alerts. During an upgrade, any existing suppression settings in alert definitions are migrated. In alert definitions where suppression settings are not specified, or the settings can't be migrated, a default suppression setting is automatically selected for those definitions.

The following suppression settings are available for performance and configuration alerts in IBM Spectrum Control:

Do not suppress alerts

Receive alert notifications whenever an alert violation is detected.

Only alert once until problem clears

Receive one notification for an alert violation, even if the condition is violated multiple times.

Only generate alerts every

Receive one notification when an alert is initially violated. The alert is suppressed and no notifications are sent until both the specified time has passed and the alert is triggered again.

Do not alert until the condition is violated for more than

Do not receive notifications for an alert unless the violation is not cleared for longer than the specified time.

The next steps

After an upgrade to IBM Spectrum Control 5.2.10 or later is complete, the ability to define alerts and be notified of changes and conditions on resources is significantly enhanced. You can define alerts for all the key attributes of a resource, including attributes for status, configuration, capacity, and performance. These new alert definitions include criteria that you can customize to determine when alerts are generated.

For example, for a capacity attribute such as Available Disk Space, you can specify that an alert is generated when the amount of available space on a resource's disks is less than or equal to 50 GiB. The operator (less than or equal to) + a specified amount of space (50) + the unit of measurement (GiB) is the criteria that determines if an alert is generated. For a configuration alert such as Firmware, you




can generate alerts when the firmware version changes, when it is a specific version, or when it contains certain values.

Tip: Because of these enhancements and the overall streamlining of alerting capabilities, a number of configuration alerts in Tivoli Storage Productivity Center 5.2.7 and earlier were either removed, renamed, or consolidated into other alerts in IBM Spectrum Control. For information about the conditions that are available for triggering alerts in IBM Spectrum Control, see [Triggering conditions for alerts](#)

Important note about NetApp Filers: When you upgrade from a previous version to IBM Spectrum Control 5.2.10 or later, the alert definitions for NetApp filers will be migrated. However, to generate alerts for those filers, you must monitor them through direct connections rather than through Storage Resource agents.

In Tivoli Storage Productivity Center 5.2.7 and earlier, you could monitor NetApp filers by using Storage Resource agents. In IBM Spectrum Control, you must add those NetApp filers again and enter the credentials for connecting to them directly. After you add the NetApp filers, the previous entries for the filers are automatically removed and alerts will be generated for the alert definitions that were migrated. For information about how to add NetApp filers, see [Adding and configuring NetApp devices](#)

EMC VMAX storage systems: In IBM Spectrum Control 5.2.12 or earlier, VMAX disk groups were represented as pools within the SMI-S model. When you upgrade from a previous version to IBM Spectrum Control 5.2.13 or later, the alert definitions for VMAX storage systems will be migrated. If disk groups were represented as pools, the following alerts are migrated:

VMAX Pool alerts in 5.2.12 and earlier	VMAX Disk Group alerts in 5.2.13 and later
Status	 Status
Deleted Pool	 Removed Disk Group
New Pool	 New Disk Group

Migrating groups

When you upgrade to IBM Spectrum Control V5.2.10 or later, the reporting, monitoring, and storage resource groups that were created in IBM Tivoli Storage Productivity Center V5.2.7 or earlier are automatically migrated.

Reporting groups and monitoring groups

Reporting groups and monitoring groups were available in the stand-alone GUI of IBM Tivoli Storage Productivity Center Version 5.2.7 and earlier, as the following types of groups:

- Server groups
- File system groups
- Storage system groups, including storage virtualizers
- Fabric monitoring groups

These groups are deprecated since IBM Spectrum Control Version 5.2.8. After you upgrade, copies of the groups are available as general groups in the IBM Spectrum Control GUI, and as storage resource groups in the Cognos BI reporting tool.

If your reporting groups and monitoring groups have more than two hierarchical levels, the hierarchical structure of the groups is changed during migration. For example, if group B is a member of group A, then members of group B become members of group A. Members of group B also remain members of group B. Group B is removed as a member of group A. After migration, you can use subgroups of general groups to organize resources into a hierarchical group.

Restrictions: The following types of reporting groups and monitoring groups are not migrated:

- Groups that are related to databases, directories, OS groups, tapes, and users.
- Default reporting and monitoring groups that were created by IBM Tivoli Storage Productivity Center but never modified.

Storage resource groups

After you upgrade, storage resource groups are available as general groups in the IBM Spectrum Control GUI. The hierarchical structure of storage resource groups is not changed during migration.

Accessing general groups and storage resource groups

Click **Groups > General Groups** to access general groups in the IBM Spectrum Control GUI.

You can access the storage resource groups in the Cognos BI reporting tool under the Capacity and Relationships package. Any updates to the general groups are reflected in the corresponding storage resource groups, but not in the deprecated reporting and monitoring groups.

Chapter 4. Uninstalling

You can uninstall IBM Spectrum Control by using the uninstallation program or by using silent mode from the command line.

To uninstall IBM Spectrum Control, uninstall these components and related software:

- Uninstall any Storage Resource agents installed on your remote systems.
- If all IBM Spectrum Control components are installed on one server, uninstall all components.
- If the Cognos BI Reports are installed on a separate server, uninstall the reports.
- If the database repository is installed on a separate server, uninstall the IBM Spectrum Control components on the first server, and then uninstall the database repository on the second server.
- Uninstall Jazz for Service Management and then uninstall DB2.

Note: On the Windows operating system, before you uninstall IBM Spectrum Control, if you installed the Monitoring Agent service, stop the **Monitoring Agent for Windows OS - Primary** and **Monitoring Agent for Windows OS - Watchdog** services.

Uninstalling IBM Spectrum Control in a single-server environment

In a single-server environment, you can uninstall IBM Spectrum Control by using the uninstallation program. The uninstallation process requires minimal user interaction.

To uninstall the software in a single-server environment:

1. Log on to the IBM Spectrum Control host server with the appropriate user privileges.
2. Start the IBM Spectrum Control uninstallation program for your operating system.
 - For the Windows operating system:
 - a. Click **Start > Control Panel > Programs > Programs and Features**.
 - b. Highlight **IBM Spectrum Control** and click **Uninstall/Change**.
 - For the AIX or Linux operating systems:

Run the following command from the root directory:

```
installation_dir/_uninst/uninstall
```

where *installation_dir* is where IBM Spectrum Control is installed.
3. Review the message that indicates that all the installed IBM Spectrum Control components are uninstalled.
4. Click **Uninstall** and click **Next**. You cannot cancel the uninstallation process after it starts.
5. Restart the system if needed.

For the Windows operating system, you can restart the system now or later. You must restart the system to reinstall IBM Spectrum Control.

For the AIX or Linux operating system, you *do not* have to restart the system.

6. If an error occurred during the uninstallation process, review the installation log files.

Related reference:

“Planning for IBM Spectrum Control authentication and authorization” on page 14
An operating system user name is required to install and log on to IBM Spectrum Control for the first time. After you install IBM Spectrum Control, you can assign roles to users. Roles determine the product functions that are available to users.

“Reviewing the log files to resolve installation issues” on page 133

If an error occurs during IBM Spectrum Control installation, you can review the error log files to resolve issues and continue the installation.

Uninstalling IBM Spectrum Control in a multiple-server environment

You can uninstall IBM Spectrum Control by using the uninstallation program. This uninstallation process requires minimal user interaction.

For this procedure, the terms *Server A* and *Server B* denote the two servers.

- *Configuration A*: The IBM Spectrum Control database repository is installed on Server A, and IBM Spectrum Control servers and (or) Cognos Business Intelligence reports are installed on Server B.
- *Configuration B*: The IBM Spectrum Control database repository and IBM Spectrum Control servers on Server A and Cognos BI reports on Server B.

To uninstall the software in a multiple-server environment, complete the following steps:

1. Complete the following steps for *Configuration A*:
 - a. Complete these steps on Server B for *Configuration A*:
 - 1) Log on to Server B with the appropriate user privileges to uninstall the IBM Spectrum Control components.
 - 2) Start the IBM Spectrum Control uninstallation program.
For the Windows operating system, click **Start > Control Panel > Programs > Programs and Features**. Highlight **IBM Spectrum Control** and click **Uninstall/Change**.
For the AIX or Linux operating system, run the following command from the root directory:

```
installation_dir/_uninst/uninstall
```


where *installation_dir* is the location where IBM Spectrum Control is installed.
A window is displayed that indicates that all IBM Spectrum Control components installed on the system will be uninstalled.
 - 3) Click **Uninstall**. A confirmation is displayed.
 - 4) Click **Next** to start the uninstallation process.

Tip:

Remember the following for your operating system:

- For the Windows operating system, when the uninstallation process is finished, a window is displayed so you can choose to start your system now or later. You must restart the system before you can reinstall IBM Spectrum Control.

- For the AIX or Linux operating system, you do not have to restart your system.
- b. Complete the following steps on Server A:
 - 1) Log on to Server A with the appropriate user privileges to uninstall the IBM Spectrum Control database repository.
 - 2) Start the IBM Spectrum Control uninstallation program.
 - 3) Follow the instructions to uninstall the database repository.
 2. Complete these steps for *Configuration B*:
 - a. Complete the following steps on Server B:
 - 1) Log on to Server B with the appropriate user privileges to uninstall Cognos BI reports.
 - 2) Start the IBM Spectrum Control uninstallation program.
 - 3) Proceed through the pages to uninstall Cognos BI reports.
 - b. Complete the following steps on Server A:
 - 1) Log on to Server A with the appropriate user privileges to uninstall the IBM Spectrum Control components.
 - 2) Start the IBM Spectrum Control uninstallation program.
 - For the Windows operating system, click **Start > Control Panel > Programs > Programs and Features**. Highlight **IBM Spectrum Control** and click **Uninstall/Change**.
 - For the AIX or Linux operating systems, run the following command from the root directory:


```
installation_dir/_uninst/uninstall
```

where *installation_dir* is the location where IBM Spectrum Control is installed.
 - 3) Click **Uninstall**. A confirmation is displayed.
 - 4) Click **Next** to start the uninstallation process.
 - 5) Follow the pages to uninstall IBM Spectrum Control.
 3. If an error occurred during the installation process, review the installation log files.

Related reference:

“Planning for IBM Spectrum Control authentication and authorization” on page 14
 An operating system user name is required to install and log on to IBM Spectrum Control for the first time. After you install IBM Spectrum Control, you can assign roles to users. Roles determine the product functions that are available to users.

“Reviewing the log files to resolve installation issues” on page 133

If an error occurs during IBM Spectrum Control installation, you can review the error log files to resolve issues and continue the installation.

Uninstalling IBM Spectrum Control by using silent mode

You can uninstall IBM Spectrum Control by using silent mode. This mode is useful if your system is running from a terminal that cannot display graphics.

In silent mode, the following server configurations are possible:

Tip: The terms *Server A* and *Server B* denote the two servers in a multiserver environment.

Option 1

All IBM Spectrum Control components are installed on one server (single-server environment).

Option 2

The IBM Spectrum Control database repository is installed on Server A and all other IBM Spectrum Control components are installed on Server B.

Option 3

Cognos Business Intelligence reports are installed on Server B, and the other IBM Spectrum Control components are installed on Server A.

To uninstall IBM Spectrum Control by using silent mode, complete the following steps:

1. Complete the following steps for option 1:

- a. Log on to the IBM Spectrum Control system with the appropriate user privileges.
- b. Start the uninstallation program.
 - For the Windows operating system, run the following in the C:\ directory:
`installation_dir\uninst\uninstall.bat -i silent`
 - For the AIX or Linux operating systems, run the following command from the root directory:
`installation_dir/_uninst/uninstall -i silent`

where *installation_dir* is where IBM Spectrum Control is installed.
- c. Restart the system, if needed.
 - For the Windows operating systems, restart the system after the uninstallation process is complete.
 - For the AIX or Linux operating systems, you do not have to restart your system.

2. Complete the following steps for option 2:

- a. Log on to Server B with the appropriate user privileges to uninstall IBM Spectrum Control.
- b. Start the uninstallation program.
 - For the Windows operating system, run the following from the C:\ directory:
`installation_dir\uninst\uninstall.bat -i silent`
 - For the AIX or Linux operating system, run the following command from the root directory:
`installation_dir/_uninst/uninstall -i silent`
- c. Restart the system, if needed.
 - For the Windows operating systems, restart the system after the uninstallation process is complete.
 - For the AIX or Linux operating systems, you do not have to restart your system.
- d. Log on to Server A with the appropriate user privileges to uninstall the IBM Spectrum Control database repository.
- e. Start the uninstallation program.

- For the Windows operating system, run the following command from the C:\ directory:
`installation_dir_uninst\uninstall.bat -i silent`
 - f. Restart the system, if needed.
 - For the Windows operating systems, restart the system after the uninstallation process is complete.
 - For the AIX or Linux operating systems, you do not have to restart your system.
3. Complete the following steps for option 3:
- a. Log on to Server B with the appropriate user privileges to uninstall Cognos BI reports.
 - b. Start the uninstallation program.
 - For the Windows operating system, run the following from the C:\ directory:
`installation_dir_uninst\uninstall.bat -i silent`
 - For the AIX or Linux operating system, run the following from the root directory:
`installation_dir/_uninst/uninstall -i silent`

where *installation_dir* is where IBM Spectrum Control is installed.
 - c. Restart the system, if needed.
 - For the Windows operating systems, restart the system after the uninstallation process is complete.
 - For the AIX or Linux operating systems, you do not have to restart your system.
 - d. Log on to Server A with the appropriate user privileges to uninstall the IBM Spectrum Control components (including the database repository).
 - e. Start the uninstallation program.
 - For the Windows operating system, run the following from the C:\ directory:
`installation_dir_uninst\uninstall.bat -i silent`

Remember: For the Windows operating system, you must restart the system after the uninstallation process is finished. There is no automatic reboot.

 - For the AIX or Linux operating system, run the following from the root directory:
`installation_dir/_uninst/uninstall -i silent`

where *installation_dir* is where IBM Spectrum Control is installed.

Tip: For the AIX or Linux operating system, you do not have to restart your system.

 - f. If an error occurred during the installation process, review the installation log files.

Related tasks:

“Manually uninstalling IBM Spectrum Control components on Windows” on page 231

If the IBM Spectrum Control uninstallation process fails, you must manually uninstall the components.

“Manually uninstalling IBM Spectrum Control components on AIX or Linux”
If the IBM Spectrum Control uninstallation process fails, you must manually uninstall the components.

Related reference:

“Planning for IBM Spectrum Control authentication and authorization” on page 14
An operating system user name is required to install and log on to IBM Spectrum Control for the first time. After you install IBM Spectrum Control, you can assign roles to users. Roles determine the product functions that are available to users.

“Reviewing the log files to resolve installation issues” on page 133

If an error occurs during IBM Spectrum Control installation, you can review the error log files to resolve issues and continue the installation.

Manually uninstalling IBM Spectrum Control components on AIX or Linux

If the IBM Spectrum Control uninstallation process fails, you must manually uninstall the components.

This procedure assumes the following conditions:

- You installed IBM Spectrum Control in the default directory.
- You used default ports.
- The Storage Resource agent service name is *Agent1*.
- You used the default IBM Spectrum Control database repository named TPCDB.

To manually uninstall IBM Spectrum Control components, complete the following steps:

1. Run the following command to stop the Storage Resource agent:

```
kill -9 `ps -aef | grep /opt/IBM/TPC/agent | grep -v grep | awk '{ print $2 }'` 2> /dev/null
```
2. Run the following command to stop the Data server:

```
kill -9 `ps -aef | grep data | grep -v grep | awk '{ print $2 }'` 2> /dev/null
```
3. Run the following command to stop the Device server:

```
kill -9 `ps -aef | grep deviceServer | grep -v grep | awk '{ print $2 }'` 2> /dev/null
```
4. Run the following command to stop the Alert server:

```
kill -9 `ps -aef | grep alertServer | grep -v grep | awk '{ print $2 }'` 2> /dev/null
```
5. If you are upgraded from an earlier version of Tivoli Storage Productivity Center that included Replication, run the following command to stop the Replication server:

```
kill -9 `ps -aef | grep replicationServer | grep -v grep | awk '{ print $2 }'` 2> /dev/null
```
6. Run the following command to stop the GUI:

```
kill -9 `ps -aef | grep webServer | grep -v grep | awk '{ print $2 }'` 2> /dev/null
```
7. Delete the following files and folders:
 - `rm -r `find /etc -name *tpcdsrv* -print``
 - `rm -r `find / -name *itsanm* -print``
 - `rm -r /etc/Tivoli/TSRM/registry`
 - `rm -r /etc/Tivoli/TSRM/registryNA`
 - `rm -r /etc/Tivoli/TSRM/lock`
 - `rm -fr /opt/IBM/TPC`
8. Drop the database by completing the following steps:
 - a. Source the db2profile.

- b. Enter `db2 drop db TPCDB`.
9. Go to the `/db2_admin_home/db2_instance_name/` directory and ensure that the database directory is deleted.

Manually uninstalling IBM Spectrum Control components on Windows

If the IBM Spectrum Control uninstallation process fails, you must manually uninstall the components.

This procedure assumes that the following conditions are met:

- You installed IBM Spectrum Control in the default directory.
- You used default ports.
- The Storage Resource agent service name is *Agent1*.
- You used the default IBM Spectrum Control database repository name *TPCDB*.

To manually uninstall IBM Spectrum Control components, complete the following steps in a Windows command window:

1. To uninstall the Storage Resource agent, run the following command:

```
sc stop Agent1
sc delete Agent1
```

2. To remove the Storage Resource agent registry entries, run the following command:

```
reg delete HKLM\SOFTWARE\Wow6432Node\IBM\TPCAGENT\1
```

where 1 is the instance of the Agent.

If you do not have multiple agents, you can also run the following command:

```
reg delete HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\IBM\TPCAGENT
```

Important: If you have multiple agents and you run this command, all of the agents are deleted.

3. To uninstall the Data server, run the following commands:

```
sc stop TSRMsrv1
sc delete TSRMsrv1
```

4. To stop the Device server, run the following command:

```
cd C:\Program Files\IBM\TPC\scripts
stopTPCdevice.bat
```

Tip: If the script does not exist, run the following command to stop the Device server:

```
sc stop deviceServer
```

5. To delete the Device server, run the following command:

```
sc delete deviceServer
```

6. To stop the Alert server, run the following commands:

```
cd C:\Program Files\IBM\TPC\scripts
stopTPCAalert.bat
```

Tip: If the script does not exist, run the following command to stop the Alert server:

```
sc stop alertServer
```

7. To delete the Alert server, run the following command:

```
sc delete alertServer
```

8. If you upgraded from an earlier version, that included Replication, to stop the Replication server, run the following commands:

```
cd C:\Program Files\IBM\TPC\scripts
stopTPCReplication.bat
```

Tip: If the script does not exist, run the following command to stop the Replication server:

```
sc stop replicationServer
```

9. If you upgraded from an earlier version, that included Replication, to delete the Replication server, run the following command:

```
sc delete replicationServer
```

10. Delete the `webtpcrlink.vbs` file from the following directories:

```
C:\Program Files\IBM\TPC\wlp\usr\servers\replicationServer\scripts
C:\Program Files\IBM\TPC\replication\Scripts
```

11. Run the following commands to delete the following file:

```
cd C:\Program Files\IBM\TPC\wlp\usr\servers
del replicationServer
```

12. Run the following commands to uninstall the web server:

```
sc stop webServer
sc delete webServer
```

13. Run the following commands to delete the `wlp` directories:

```
cd C:\Program Files\IBM\TPC
del wlp
```

14. Run the following command to remove the IBM Spectrum Control directories:

```
rmdir /s/q "C:\Program Files\IBM\TPC"
```

15. Restart your computer.

Uninstalling Storage Resource agents

You can uninstall locally or remotely installed Storage Resource agents.

To uninstall a Storage Resource agent, use the GUI to remove the server that the agent is deployed on.

Uninstalling Storage Resource agents manually

You can manually uninstall Storage Resource agents.

To uninstall a Storage Resource agent, complete the following steps:

1. If the Storage Resource agent is on the Virtual I/O system, complete the following steps:

- a. Log in with the **padmin** user ID.
- b. Run the following command to set up the AIX environment:

```
oem_setup_env
```

2. Go to the directory where the agent is installed:

```
agent_install_location
```

where *agent_install_location* is where the Storage Resource agent is installed.

3. Run the uninstallation command:

Restriction: Do not delete the Storage Resource agent component from the IBM Spectrum Control server by using the GUI or the command-line interface. This component must exist on the server to complete the uninstall process.

```

➤ bin/Agent--uninstall [-force] --serverName=TPC_server_name [-debug MAX] ➤

```

Where:

-uninstall

Uninstalls the agent.

-force

This optional parameter forces an uninstallation. If you use this parameter, do not provide the `serverName` parameter.

-serverName *TPC_server_name*

TPC_server_name is the Data server name as defined in IBM Spectrum Control. You can check the configuration file for the server name:

agent_install_location/config/Agent.config

where *agent_install_location* is where the agent is installed.

-debug MAX

This optional parameter is for debugging purposes. If you set the **-debug** parameter, then some files are not deleted.

Tip: If you run the uninstallation program from the bin directory, the bin directory is not deleted.

If you run the uninstallation program outside of the agent installation directory, then you must specify the full path.

If the uninstallation fails, you must look at the return codes. For more information about return codes, see http://www.ibm.com/support/knowledgecenter/SS5R93_5.2.15/com.ibm.spectrum.sc.doc/fqz0_r_return_codes_used_by_strg_resource_agent.html.

Deleting Storage Resource agent registry entries after a failed installation or uninstallation

If your IBM Spectrum Control installation or uninstallation fails, you must find and manually delete the Storage Resource agent registry entries that remain.

Deleting registry files in the Windows operating system

To delete registry entries after a failed installation or uninstallation in the Windows operating system:

1. In Windows Registry Editor, navigate to HKEY_LOCAL_MACHINE > SOFTWARE > IBM > TPCAGENT > NUMBER or HKEY_LOCAL_MACHINE > SOFTWARE > Wow6432Node > IBM > TPCAGENT > NUMBER.
2. Delete this entry:

```

[HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\IBM\TPCAGENT\1]
"Home"="C:\Program Files\IBM\TPC"
"Port"="9510"

```
3. If the Storage Resource agent is running as a daemon service, delete the service. For example, `sc delete AgentX`, where AgentX is the name of the Storage Resource agent.
4. Delete the folder in which the agent was installed.
 Display the agent name and folder by running `services.msc` and right-click the service to see the properties.
5. For daemon agents, verify that the associated CAP file was deleted.

The CAP file is located in the %ALLUSERSPROFILE%\Application Data\IBM\CAP folder. The naming convention for this file is `srainstance_default.xml`.

Remember: After uninstalling a daemon agent, you must restart your system.

Deleting registry files on the UNIX or Linux operating systems

To delete registry entries after a failed installation or uninstallation on the UNIX or Linux operating systems:

1. Delete the Storage Resource agent entry that is associated with the IBM Spectrum Control installation on the local server.

The terms *Server A* and *Server B* are used in this procedure to denote the different servers.

When you install IBM Spectrum Control on Server A, a Storage Resource agent is also installed on Server A. When you deploy another Storage Resource agent from IBM Spectrum Control Server B to Server A, an entry is added to the file `/etc/Tivoli/TSRM/registryNA` on Server A. This entry is associated with the Storage Resource agent deployed from Server B.

If a failure occurs when you install or uninstall the Storage Resource agent from Server A, you must delete the entry from the `/etc/Tivoli/TSRM/registryNA` file that is associated with the agent on Server A. For example, you would delete these lines from the file:

```
Instance=1
Home=/opt/IBM/TPC
Port=9567
```

2. If the agent was a daemon, verify that the process is running and stop it.

- To list all the running processes, run the following command:

```
ps -ef
```

- To stop a process, run the following command:

```
kill -9 process_number
```

3. For daemon agents, verify that the associated CAP File was deleted.

The CAP file is located in the `/opt/IBM/CAP` directory. The naming convention for this file is `srainstance_default.xml`.

Removing servers

You can remove servers that you no longer want to monitor with IBM Spectrum Control.

You can use the GUI to remove servers. If a Storage Resource agent is deployed to the server, the agent is uninstalled.

When the server is removed, it is no longer monitored by IBM Spectrum Control. All the data that was collected about the server is removed from the database repository.

Tip: When you remove a server, it is only removed from IBM Spectrum Control. The server is not physically deleted from the storage environment.

To remove a server, complete the following steps:

1. In the menu bar, go to **Servers > Servers**.
2. On the Servers page, right-click the server where the agent is deployed and select **Remove**.

3. Click **Remove** to confirm that you want to remove the server.

Uninstalling DB2

Uninstall DB2 after you uninstall IBM Spectrum Control. You must use the DB2 uninstallation program to uninstall DB2.

For information about uninstalling DB2 Version 10.1 on the Windows operating system, go to [Uninstalling your DB2 database product \(Windows\)](#).

For information about uninstalling DB2 Version 10.5 on the Windows operating system, go to [Uninstalling your DB2 database product \(Windows\)](#).

For information about uninstalling DB2 Version 11.1 on the Windows operating system, go to [Uninstalling your DB2 database product \(Windows\)](#).

Uninstalling DB2 on AIX or Linux

You can uninstall DB2 on UNIX or Linux systems.

Note: This example applies to DB2 10.1 Fix Pack 6 or later.

To uninstall DB2 on AIX and Linux, complete the following steps:

1. As the DB2 instance user (typically `db2inst1`), drop the databases, and stop DB2.
 - a. If you are the user with root authority, run the **`su - db2inst1`** command to switch the user to the DB2 instance user. Otherwise, log in as the DB2 instance user.
 - b. Run the **`db2 list db directory`** command to list the databases that might not have been removed by the IBM Spectrum Control uninstallation program.
 - c. For each database name listed by the command in the previous step, run the *database_name* command. For example:

```
Command:
$ db2 drop db tcpdb
Response:
DB20000I The DROP DATABASE command completed successfully.
$ db2 drop db ibmcdb
Response:
DB20000I The DROP DATABASE command completed successfully.
```
 - d. Run the **`db2stop force`** command. The following messages are displayed:

```
08/10/2015 21:46:13      0      0      SQL1064N  DB2STOP processing was successful.
SQL1064N  DB2STOP processing was successful.
```
 - e. Run **`db2 terminate`**. The following message is displayed:

```
DB20000I The TERMINATE command completed successfully.
```
 - f. Run the **`exit`** command to close the su shell or log out.
2. Drop the DB2 instance.

Note: This step must be performed as a user with root authority and run in a shell that has not had the `db2profile` sourced.

- a. Log in as a user with root authority.
- b. Change to the DB2 instance directory. The default path depends on your operating system.
On AIX, run the **`cd /opt/IBM/db2/V11.1/instance`** command.
On Linux, run the **`cd /opt/ibm/db2/V11.1/instance`** command.

- c. Run the **./db2ilist** command to list the db2instance name (typically db2inst1).
 - d. Run the **./db2idrop db2inst1** command where "db2inst1" is the instance name reported by the **db2ilist** command in the previous step.
3. As the DB2 administration server (DAS) user (typically dasusr1), stop DAS.
 - a. If you are the user with root authority, run **su - dasusr1** to switch user to the DAS user. Otherwise, log in as the DAS user.
 - b. Run the **db2admin stop** command. The following message is displayed:
SQL4407W The DB2 Administration Server was stopped successfully.
 - c. Run the **exit** command to close the su shell or log out.
4. Remove the DB2 administration server. You must remove the DB2 administration server before you remove the DB2 product.
 - a. Log in as a user with **root** authority.
 - b. Change to the DB2 instance directory. The default path depends on your operating system.
On AIX, run the **cd /opt/IBM/db2/V11.1/instance**.
On Linux, run the **cd /opt/ibm/db2/V11.1/instance**.
 - c. Run the **./dasdrop** command. The following messages are displayed:
SQL4410W The DB2 Administration Server is not active.
DBI1070I Program dasdrop completed successfully.
5. Uninstall DB2. Use the **db2_deinstall** command to remove DB2 products or DB2 components. The **db2_deinstall** command removes all DB2 products from your system.
 - a. Change to the DB2 installation directory. The default path depends on your operating system.
On AIX, run **cd /opt/IBM/db2/V11.1/install**.
On Linux, run **cd /opt/IBM/db2/V11.1/install**.
 - b. Run the **./db2_deinstall -a** command. The following messages are displayed:
DBI1016I Program db2_deinstall is performing uninstallation.
Please wait.
The execution completed successfully.
For more information see the DB2 uninstallation log at
"/tmp/db2_deinstall.log.pid".
6. Delete DB2 users and groups. The default user and group names are shown in the following commands.
 - a. Run the following commands to remove the users:
userdel -r dasusr1
userdel -r db2inst1
userdel -r db2fenc1
 - b. Run the appropriate commands for your operating system to remove the groups.
On AIX run the following commands:
rmgroup dasadm1
rmgroup db2iadm1
rmgroup db2fadm1
On Linux run the following commands:
groupdel dasadm1
groupdel db2iadm1
groupdel db2fadm1
7. Remove the DB2 directory.
 - a. Run the **cd** command.

- b. Run the command to remove the DB2 directory on your operating system:
On AIX, run the **rm -r /opt/IBM/db2** command.
On Linux, run **rm -r /opt/ibm/db2** command.
8. Remove any DB2 definitions from `/etc/services`.

Uninstalling Tivoli Storage Productivity Center for Replication

If Tivoli Storage Productivity Center for Replication exists on your system, you can manually uninstall it from IBM Spectrum Control.

Backing up a replication environment

Before you uninstall Tivoli Storage Productivity Center for Replication, back up your replication environment.

To back up your replication environment, complete these steps:

1. Log on to IBM Spectrum Control server with administrative privileges.
2. Open a command prompt and change the directory.
 - On a Windows operating system, change the directory to:
`installation_dir\cli`
 - On a AIX or Linux operating system, change the directory to:
`installation_dir/cli`
3. Run a replication CLI script and provide the necessary credentials to access the replication CLI.
 - On a Windows operating system, run the `csmdi.bat` script.
 - On a AIX or Linux operating system, run the `./csmdi.sh` script.
4. From the replication CLI, run the **mkbackup** command.
5. Note the location of your replication backup file.
6. Copy or move the replication backup file to a directory outside of the IBM Spectrum Control installation directory.

Important: If you do not copy or move the backup file location outside of the IBM Spectrum Control installation directory structure, the backup file will get deleted when you uninstall replication.

You successfully performed a backup of your replication environment.

Manually uninstall Tivoli Storage Productivity Center for Replication from IBM Spectrum Control.

Related tasks:

“Manually uninstalling Tivoli Storage Productivity Center for Replication”


You can manually uninstall Tivoli Storage Productivity Center for Replication from IBM Spectrum Control at anytime.

Manually uninstalling Tivoli Storage Productivity Center for Replication

You can manually uninstall Tivoli Storage Productivity Center for Replication from IBM Spectrum Control at anytime.

To manually uninstall Tivoli Storage Productivity Center for Replication from IBM Spectrum Control, complete these steps:


1. Log on to the IBM Spectrum Control server with administrative privileges.
2. Open a command prompt and change the directory.
 - On a Windows operating system, change the directory to:
`installation_dir\uninst`
 - On a AIX or Linux operating system, change the directory to:
`installation_dir/_uninst`
3. Run the uninstall script.
 - On a Windows operating system, run the `uninstall_tpc_replication.bat` script.
 - On a AIX or Linux operating system, run the `./uninstall_tpc_replication.sh` script.
4. Verify that replication was successfully uninstalled by examining the `uninstall_tpc_replication_output.txt` log file or check that the `rep=build_name` line is no longer displayed in the `.tpcreg` file.
 - On a Windows operating system:
`installation_dir\uninst\tpcreg`
 - On a AIX or Linux operating system:
`installation_dir/_uninst/.tpcreg`

Tip: For your replication needs, IBM Copy Services Manager provides automation for 2-site replication, 3-site replication, and advanced copy services from a single point of control across multiple platforms. To learn more about how to download and install it, see  IBM Copy Services Manager.

You successfully uninstalled Tivoli Storage Productivity Center for Replication from your environment.

Uninstalling Tivoli Common Reporting and Jazz for Service Management

To uninstall Jazz for Service Management and Tivoli Common Reporting, follow the procedures in the Jazz for Service Management documentation.

Use the steps to uninstall Jazz for Service Management and related software that are provided in  http://www-01.ibm.com/support/knowledgecenter/SSEKCU_1.1.0.3/com.ibm.psc.doc_1.1.0.3/install/psc_c_install_uninstall_oview.html.

If you are uninstalling Jazz for Service Management and Tivoli Common Reporting, but not IBM Spectrum Control, follow the steps in “Redeploying Cognos BI reports” on page 122 to uninstall *only* the IBM Spectrum Control Cognos Business Intelligence reports from Tivoli Common Reporting.

Uninstalling the IBM Spectrum Control Monitoring Agent

You can uninstall the IBM Spectrum Control Monitoring Agent.

Uninstalling the IBM Spectrum Control Monitoring Agent on Windows

You can uninstall the IBM Spectrum Control Monitoring Agent on Windows.

To uninstall the IBM Spectrum Control Monitoring Agent on Windows:

1. Stop the IBM Tivoli Monitoring agent before you uninstall the agent. For more information about stopping the Windows agent, go to [Stopping the agents](#).
2. Log on to the Windows system as a local administrator with administrative authority.
3. Exit the Tivoli Enterprise Portal Desktop Application if it is open.
4. Click **Start > Settings > Control Panel > Add/Remove Programs**.
5. Select **IBM Tivoli Monitoring** and click **Uninstall**.
6. On the IBM Tivoli Monitoring - InstallShield Wizard Welcome page, select **Modify** and then click **Next**.
7. On the Add or Remove Features page, clear the **Monitoring Agent for TPC** check box and click **Next**.
8. On the **Summary Information** page, review the information and click **Uninstall**.
9. Clear all the check boxes on the **Setup Type** page.
10. Click **Finish**.

Uninstalling the IBM Spectrum Control Monitoring Agent on UNIX or Linux

You can uninstall the IBM Spectrum Control Monitoring Agent on UNIX or Linux.

To uninstall the IBM Spectrum Control Monitoring Agent on UNIX or Linux, complete the following steps:

1. Stop the IBM Tivoli Monitoring agent before you uninstall the agent. For information about stopping the agent on UNIX or Linux operating systems, go to [Starting or stopping an agent on UNIX and Linux systems](#).
2. For UNIX and Linux, ensure that you have root authority.

Tip: On UNIX and Linux systems, you must source the DB2 profile before you uninstall the IBM Spectrum Control Monitoring Agent.

3. Open a terminal session and go to the Tivoli Monitoring Services installation directory.
4. Run the uninstallation program from this default directory:
`/opt/IBM/ITM/bin/uninstall.sh`
5. On the Manage Tivoli Enterprise Monitoring Services window, select **Monitoring Agent for TPC** and press **Enter**.
6. Confirm your selection by entering 1 and pressing **Enter** again.
7. Wait for the uninstallation program to complete.

For more information about uninstalling an agent from Tivoli Monitoring Services, see [Uninstalling an individual IBM Tivoli Monitoring agent or component](#).

Chapter 5. Reference

agent.sh command

The **agent.sh** command lets you start, stop, and restart the Storage Resource agent. You can also display the status and version of the Storage Resource agent.

Note:

- You must have root authority to run this command.
- For Windows, the status, stop, and start functions are handled through the Windows Services panel.

►—agent.sh—┐ status ┐ start ┐ stop ┐ restart ┐ version ┐ versionall ┐◄

Parameters:

status

Displays the current status of the Storage Resource agent. The status is returned is running or not running.

start

Starts the Storage Resource agent.

stop

Stops the Storage Resource agent.

restart

Stop and then start the Storage Resource agent.

version

Displays the current version of the Storage Resource agent.

versionall

Displays the version of the Storage Resource agent and its related components.

Appendix. Accessibility features for IBM Spectrum Control

Accessibility features help users who have a disability, such as restricted mobility or limited vision, to use information technology products successfully.

Accessibility features

The following list includes the major accessibility features in IBM Spectrum Control:

- Keyboard-only operation in the GUI.
- A Knowledge Center that includes the following accessibility features:
 - The Knowledge Center is provided in XHTML 1.0 format, which is viewable in most web browsers. With XHTML, you can view documentation according to the display preferences that are set in your browser. XHTML supports screen readers and other assistive technologies.
 - All documentation for IBM Spectrum Control is available in Adobe Portable Document Format (PDF) by using the Adobe Acrobat Reader. To access PDFs, go to http://www.ibm.com/support/knowledgecenter/SS5R93_5.2.15/com.ibm.spectrum.sc.doc/fqz0_r_printable_doc.html.
 - All images in the Knowledge Center are provided with alternative text, so that visually impaired users can understand the contents of the images.
- Interfaces that are commonly used by screen readers.

The setting for the automatic-refresh button in the screen reader is toggled to the ON position by default. If you want the screen reader to read the previous text, complete the following steps:

1. Navigate to the Accessibility Settings Navigation region by using the arrow keys. The region is located after the IBM Spectrum Control application title.
2. Click **Enter** to toggle the automatic-refresh button to the OFF position. (An alert sounds to make you aware that the turn-off automatic-refresh toggle button was pressed.)
3. To move backward to the previously read text so that the screen reader can read it again, use the arrow keys. You can move backwards and forwards through the page.
4. When you are ready to move on, click **Enter** to toggle the automatic-refresh button to the ON position and to refresh the page. (An alert sounds to make you aware that the turn-on, automatic-refresh toggle button was pressed.)

Tip: Alternatively, let the toggle setting persist, and refresh as needed by pressing the F5 key.

Keyboard navigation

Most of the features of the IBM Spectrum Control GUI are accessible by using the keyboard. For those features that are not accessible, equivalent function is available by using the command-line interface (CLI), except as noted in the product release notes.

You can use keys or key combinations to perform operations and initiate many menu actions that can also be done through mouse actions. The following sections describe the keys or key combinations for different parts of the GUI:

For navigating in the GUI and the context-sensitive help system:

- To navigate to the next link, button, or topic within a panel, press Tab.
- To move to the previous link, button, or topic within a panel, press Shift+Tab.
- To select an object, when the object is in focus, press Enter.

For actions menus:

- To navigate to the grid header, press Tab.
- To reach the drop-down field, press the Left Arrow or Right Arrow key.
- To open the drop-down menu, press Enter.
- To select the menu items, press the Up Arrow or Down Arrow key.
- To start the action, press Enter.

For filters:

To specify a filter option and text:

1. Press Tab to navigate to the magnifying glass icon.
2. Press the Up Arrow or Down Arrow key to navigate the filtering list.
3. Press Enter to select a filtering option.
4. When a filtering option is selected, the cursor moves to the filter text box. Type the filter text and press Enter. To reset a filter, press Enter.

For text fields:

- To navigate to text fields, press Tab.
- To navigate to the fields that are available for editing, press Tab.
- To navigate to the next field or to the **Submit** button, press Tab.

For tables or lists:

- To navigate between column headers, focus on a column header and use the Left Arrow and Right Arrow keys to move to other column headers.
- To navigate between data cells, focus on a data cell and use the Left, Right, Up, Down, Pageup, and Pagedown Arrow keys.
- To sort a column, focus on a column header and press Enter. The focus remains on the column header after the sort occurs.
- To change the size of a column, focus on the column header, hold Shift+Control, and press the Left or Right Arrow keys.
- To follow a link in a data cell, focus on a data cell and press Shift+F9.
- To open a menu for a table row, focus on the row and press Shift+F10.
- To select consecutive rows, select the first row and hold Shift, press the Up or Down Arrow keys to go to the last row in the range, and press the Space bar to add the new rows to the selection.
- To select non-consecutive rows, select a row and hold Control, press the Up or Down Arrow keys, and press the Space bar to add the new row to the selection.

Restriction: For Chinese languages, the keyboard combination Control+Space bar is not enabled for selecting multiple rows at the same time.

IBM and accessibility

For more information about IBM's commitment to accessibility, see the IBM Human Ability and Accessibility Center website at  <http://www.ibm.com/able/>.

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Glossary

This glossary provides terms and definitions for the IBM Spectrum Control software and products.

The following cross-references are used in this glossary:

- *See* refers you from a nonpreferred term to the preferred term or from an abbreviation to the spelled-out form.
- *See also* refers you to a related or contrasting term.

For other terms and definitions, see the IBM Terminology website ([opens in new window](#)).

A

active management server

A management server from which the storage environment can be monitored and managed. The active management server replicates its database to the standby server.

B

business continuity

The capability of a business to withstand outages and to operate mission-critical services normally and without interruption in accordance with predefined service-level agreements.

C

CIM See Common Information Model.

CIM agent

The code that consists of common building blocks that can be used instead of proprietary software or device-specific programming interfaces to manage devices that are compliant with the Common Information Model (CIM).

CKD See count key data.

cluster

1. In IBM System Storage DS8000, a partition capable of performing all DS8000 series functions. With two clusters in the DS8000 storage unit,

any operational cluster can take over the processing of a failing cluster.

2. A collection of complete systems that work together to provide a single, unified computing capability.
3. In Storwize® V7000, a pair of nodes that provides a single configuration and service interface.
4. A loosely coupled collection of independent systems (or nodes) organized into a network for the purpose of sharing resources and communicating with each other.

Common Information Model (CIM)

An implementation-neutral, object-oriented schema for describing network management or systems management information. The Distributed Management Task Force (DMTF) develops and maintains CIM specifications.

community name

The part of an SNMP message that represents a password-like name and that is used to authenticate the SNMP message.

consistency group

A group of copy relationships between virtual volumes or data sets that are maintained with the same time reference so that all copies are consistent in time.

copy set

The set of source volumes or target volumes involved in a FlashCopy operation.

count key data (CKD)

A data recording format that uses self-defining record formats in which each record on a volume is represented by up to three fields: a count field identifying the record and specifying its format, an optional key field that can be used to identify the data area contents, and an optional data field that typically contains the user data.

D

data collection

The process of obtaining performance and availability monitoring data and providing that data to a metric evaluator. Examples of data collectors include Domain Name System (DNS) probes, web page analyzers, or database analyzers. See also discovery.

data source

A storage resource or agent that provides data about a storage environment.

discovery

The process of finding resources within an enterprise, including finding the new location of monitored resources that were moved. See also data collection.

E

ECKD See extended count key data.

enterprise repository

A component of the data server that records and stores all information about the monitored computers' storage assets and their usage over time. The repository is organized into relational database tables and is accessed by the data server using Java Database Connectivity (JDBC).

event An occurrence of significance to a task or system. Events can include completion or failure of an operation, a user action, or the change in state of a process.

extended count key data (ECKD)

An extension of the count-key-data (CKD) architecture. It includes additional commands that can be used to improve performance.

F

fileset See file set.

file set

1. A subset of a file system that provides granularity of functions such as snapshots or quotas within the file system.
2. A hierarchical grouping of files managed as a unit for balancing workload across a cluster.

FlashCopy

1. Pertaining to a point-in-time copy where a virtual copy of a volume is created. The target volume maintains the contents of the volume at the point in time when the copy was established. Any subsequent write operations to the source volume are not reflected on the target volume.
2. An optional feature of the Storage System DS family that can make an instant copy of data, that is, a point-in-time copy of a volume.

freeze An operation in which a storage system blocks I/O from the host system to the affected volumes on the primary site. A freeze operation stops mirroring between the primary and secondary volumes to ensure data consistency at the secondary site. See also thaw.

G

Global Copy

A non-synchronous long-distance copy option for data migration and backup. See also Global Mirror, Metro Mirror, remote mirror and copy.

Globally Unique Identifier (GUID)

An algorithmically determined number that uniquely identifies an entity within a system.

Global Mirror

An optional capability of the remote mirror and copy feature that provides a two-site extended-distance remote copy. Data that is written by the host to the storage unit at the local site is automatically maintained at the remote site. See also Global Copy, Metro Mirror, remote mirror and copy.

grain size

The unit size for allocating space on thin-provisioned volumes, such as 32, 64, 128, and 256 kibibyte. The grain size is defined when a volume is created.

GUID See Globally Unique Identifier.

H

Hardware Management Console (HMC)

In a system storage environment, a system that acts as the focal point for configuration, management of Copy Services functions, and maintenance.

heat map

A color-coded data chart in which colors are used to differentiate values in a data set.

HMC See Hardware Management Console.

host volume

A volume that represents the volume functional role from an application point of view. The host volume can be connected to a host or server. It receives read, write, and update application I/O, depending on the site to which the application is writing.

hypervisor

Software or a physical device that enables multiple instances of operating systems to run simultaneously on the same hardware.

J

journal volume

A volume that holds a consistent copy of data until a new consistent copy is formed. The journal volume restores the last consistent point during a recovery.

L

launch-in-context

An operation in which a user starts a secondary application from a primary application to perform a specific task. Using the parameters, navigation instructions, and user credentials that are supplied by the primary application, the secondary application opens to the specific place in which to complete the task.

logical unit number (LUN)

In the Small Computer System Interface (SCSI) standard, a unique identifier used to differentiate devices, each of which is a logical unit (LU).

LUN See logical unit number.

M

Management Information Base (MIB)

In the Simple Network Management Protocol (SNMP), a database of objects that can be queried or set by a network management system.

management server

A system that provides a central point of control for managing data replication.

management server relationship

A connection between two replication servers, where one server acts as the active server and replicates the data that is necessary for the standby server to take control of the replication environment.

Metro Global Mirror

A three-site, high availability, disaster recovery solution. Metro Global Mirror uses synchronous replication to mirror data between a local site and an intermediate site, and asynchronous replication to mirror data from an intermediate site to a remote site.

Metro Mirror

A function of the remote mirror and copy feature that constantly updates a secondary copy of a volume to match changes made to a source volume. See also Global Copy, Global Mirror, remote mirror and copy.

MIB See Management Information Base.

N

namespace

The scope within which a Common Information Model (CIM) schema applies.

native interface

An interface that is specific to a system or subsystem.

P

ping

1. The command that sends an Internet Control Message Protocol (ICMP) echo-request packet to a gateway, router, or host with the expectation of receiving a reply.
2. A job that tracks the availability of assets and that is performed by an

agent. Several ping jobs can be used to monitor the availability of any computer or subset of computers in the network.

pool A grouping of storage space that consists of volumes, logical unit numbers (LUNs), or addresses that share a common set of administrative characteristics.

practice volume
A volume that can be used to test disaster-recovery actions while maintaining disaster-recovery capability.

primary site
A physical or virtual site that is made up of hardware, network, and storage resources. Typically, production operations run at the primary site. Data can be replicated to a secondary site for disaster recovery and failover operations. See also secondary site.

primordial pool
Storage capacity that is unallocated on a storage device. Storage pools are created by allocating storage capacity from primordial pools.

probe A data collection job that itemizes and creates an inventory of assets, such as computers, controllers, disk drives, file systems, and logical units.

R

recovery point objective
The maximum amount of data loss that can be tolerated during a service interruption.

remote mirror and copy
A feature of a storage server that constantly updates a secondary copy of a logical volume to match changes made to a primary logical volume. The primary and secondary volumes can be on the same storage server or on separate storage servers. See also Global Copy, Global Mirror, Metro Mirror.

resource
In a storage environment, an entity that is monitored. Resources can include fabrics, switches, computers, and storage systems.

role A job function that identifies the tasks that a user can perform and the resources

to which a user has access. A user can be assigned one or more roles.

role pair

The association of two volume roles in a session that take part in a copy relationship. For example, in a Metro Mirror session, the role pair can be the association between host volumes at the primary site and host volumes at the secondary site (H1-H2).

S

scan A data collection job that monitors storage usage and file statistics on the resources in an environment.

secondary site
A physical or virtual site that is made up of the hardware, network, and storage resources that support the recovery needs of the primary site. When a failure occurs at the primary site, operations can continue at the secondary site. See also primary site.

session
A collection of source and target volumes that are managed to create consistent copies of data. The type of data replication that is associated with the session determines the actions that can be conducted for the volumes.

site awareness
The association of a location with each storage system in a session. Site awareness ensures that a volume can only be selected for a session if it matches the location of the site. Site awareness helps to prevent both reversing a hardware relationship and selecting volumes at the wrong location.

SMI-S See Storage Management Initiative Specification.

standby management server
A management server that is a backup for the active server. The replication environment cannot be monitored or managed from the standby server.

Storage Management Initiative Specification (SMI-S)

A design specification developed by the Storage Networking Industry Association (SNIA) that specifies a secure and reliable

interface with which storage management systems (SMSs) can identify, classify, monitor, and control physical and logical resources in a storage area network (SAN). The interface integrates the various devices to be managed in a SAN and the tools used to manage them.

storage pod

A logical entity of components of a system consisting of two storage nodes, and one or two storage subsystems directly connected with these storage nodes.

storage resource group

A named collection of logically related resources that are monitored by IBM Spectrum Control. Monitored resources can include fabrics, switches, computers, storage systems, and other storage resource groups.

T

target volume

A volume that receives data from a host volume or another intermediate volume.

thaw An operation in which a storage system releases the block of the I/O from the host system to the affected volumes on the primary site. A thaw operation can occur after a freeze operation ends and consistency is formed on the secondary site. See also freeze.

thin provisioning

A mechanism that provides the ability to define logical volume sizes that are larger than the physical capacity installed on the system.

track space-efficient volume (TSE volume)

A volume in which storage space is allocated on an as-needed basis by using space on the target volume only when tracks are copied from the source volume to the target volume.

TSE volume

See track space-efficient volume.

V

virtualization

The substitution of virtual resources for actual resources, where the virtual resources have the same functions and

external interfaces as their counterparts, but differ in attributes, such as size, performance, and cost. Virtualization is commonly applied to physical hardware resources by combining multiple physical resources into shared pools from which users receive virtual resources.

virtual storage area network (VSAN)

A fabric within the storage area network (SAN).

VSAN See virtual storage area network.

Z

zone A logical grouping of switches, switch ports, and their attached devices in a fabric.

zone alias

A name that is given to a collection of one or more zone members to be managed together.

zone set

A group of zones that function together on a fabric.

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