IBM Spectrum Control
Version 5.3.1

Installation Guide

SC27-8767-01

IBM Spectrum Control
Version 5.3.1

Installation Guide

SC27-8767-01

Note:
Before using this information and the product it supports, read the information in "Legal notices" on page 237.

This edition applies to version 5, release 3, modification 1 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.

This edition replaces SC27-8767-00.

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Contents

About this guide v
Who should read this guide v
Publications v
Accessing publications online. v
IBM Redbooks vii
Translation vii
Providing feedback about publications vii
IBM Spectrum Control technical community . . . viii
Contacting IBM Software Support viii
Reporting a problem viii
Conventions used in this guide ix

Chapter 1. Planning. 1
Planning for installation 1
Product licenses 4
Planning to install IBM Spectrum Control in a Windows domain. 8
Planning for configuration 13
Planning for capacity 13
Planning for IBM Spectrum Control authentication and authorization 14
User names and passwords 15
Ports used by IBM Spectrum Control 21
Planning for multipath subsystem device drivers 28
Planning for Storage Resource agents. 29
Planning for Internet Protocol Version 6 31
Planning to use LDAP for IBM Spectrum Control authentication 32
Planning for storage management 34
Sudo command privileges 34

Chapter 2. Installing 35
IBM Spectrum Control components 35
Hardware requirements 35
Software requirements. 36
Software requirements for operating systems . . 36
Software requirements for Storage Resource agents 36
Software requirements for the database repository 36
Web browser support 36
Software requirements for LDAP servers . . . 37
Software requirements for CIM agents 37
Installing IBM Spectrum Control 38
Installation checklists for IBM Spectrum Control Db2 38
Starting the installation programs 41
Installing IBM Spectrum Control in a single-server environment 51
Installing IBM Spectrum Control in a multiple-server environment. 54
Accessing IBM Spectrum Control server from a remote computer using Command Line Interface . 63
Installing IBM Spectrum Control on a Windows domain. 70
Verifying the connection to the domain controller computer by using the Dcdiag tool 72
Installing IBM Spectrum Control and associated products using minimal space on the Windows C: drive 75
Verifying the installation 76
Reviewing the log files to resolve installation issues 77
Changing languages 79
Adding an installation license 80
Installing Storage Resource agents. 82
Installing IBM Cognos Analytics 83
Installing Cognos Analytics in a single Windows environment 87
Installing Cognos Analytics in a single Linux environment 88
Installing Cognos Analytics in a single AIX environment 88
Configuring IBM Cognos Analytics 90
Copying JDBC files for Db2 on Windows . . . 91
Copying Db2 files and linking the Db2 library on Linux and AIX 91
Creating a content store and starting Cognos Analytics on Windows. 92
Creating a content store and starting Cognos Analytics on Linux or AIX 92
Creating Cognos Analytics data source for the IBM Spectrum Control database 93
Importing IBM Spectrum Control pre-defined reports package 95
Configuring access to the Cognos Analytics reporting tool. 96
Reinstalling the software if a failure occurs 98
Taking the first steps after installation 98

Chapter 3. Upgrading and migrating 103
Preparing for an upgrade 103
Backups 103
Backing up a replication environment 106
Example of upgrading Db2. 107
Example of Upgrading 32-Bit to 64-Bit DB2 . . . 107
Migrating reports to IBM Cognos Analytics during upgrade 109
Migrating Cognos BI reports to IBM Cognos Analytics in a single Windows environment . . 114
Migrating Cognos BI reports to IBM Cognos Analytics in a multiple-server Windows environment with a remote database 117
Migrating Cognos BI reports to IBM Cognos Analytics in a multiple server Windows environment with remote Jazz for Service Management 125
Migrating Cognos BI reports to IBM Cognos Analytics in a single Linux environment . . . 134

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Migrating Cognos BI reports to IBM Cognos Analytics in a multiple-server Linux environment with a remote database 151
Migrating Cognos BI reports to IBM Cognos Analytics in a multiple server Linux environment with remote Jazz for Service Management 161
Migrating Cognos BI reports to IBM Cognos Analytics in a single AIX environment 170
Migrating Cognos BI reports to IBM Cognos Analytics in a multiple server AIX environment with a remote database 180
Migrating Cognos BI reports to IBM Cognos Analytics in a multiple server AIX environment with remote Jazz for Service Management . . . 189
Upgrading IBM Spectrum Control in a single-server environment 199
Upgrading IBM Spectrum Control in a single-server Windows environment by using the installation program 199
Upgrading IBM Spectrum Control in a single-server AIX or Linux environment by using the installation program 200
Upgrading IBM Spectrum Control in a single-server environment by using silent mode . 202
Editing the upgrade response file. 203
Upgrading IBM Spectrum Control in a multiple-server environment 204
Upgrading from Tivoli Storage Productivity Center Version 5.2.0 and later with a remote database by using the installation program . . 205
Upgrading from Tivoli Storage Productivity Center Version 5.2.0 and later with remote Jazz for Service Management by using the installation program 206
Upgrading IBM Spectrum Control with a remote database by using silent mode 207
Upgrading Storage Resource agents 210
Starting agent upgrades 211
Scheduling agent upgrades 211
Upgrading Storage Resource agents by using a command 212
Upgrading Windows Storage Resource agents from previous versions to 5.2.13 or later . . . 213
Upgrading SMI-S providers for storage systems 213
Upgrading CIM agents 214
Replacing server SSL certificates when upgrading from versions earlier than Tivoli Storage Productivity Center Version 5.2.2 214
Migrating alert definitions 215
Migrating groups 218
Scenario: Changing from LDAP and Local OS authentication to only LDAP or Local OS authentication after an upgrade 219

Chapter 4. Uninstalling 221
Uninstalling IBM Spectrum Control in a single-server environment 221
Uninstalling IBM Spectrum Control in a multiple-server environment 222
Uninstalling IBM Spectrum Control by using silent mode 223
Manually uninstalling IBM Spectrum Control components on AIX or Linux 224
Manually uninstalling IBM Spectrum Control components on Windows 225
Uninstalling Storage Resource agents 226
Uninstalling Storage Resource agents manually 226
Deleting Storage Resource agent registry entries after a failed installation or uninstallation . . . 227
Removing servers 228
Uninstalling Db2 229
Uninstalling Db2 on AIX or Linux 229
Uninstalling Tivoli Common Reporting and Jazz for Service Management 231

Chapter 5. Reference 233
agent.sh command 233

Appendix. Accessibility features for IBM Spectrum Control 235

Legal notices 237
Privacy policy considerations 239
Trademarks 239

Glossary 241
A 241
B 241
C 241
D 242
E 242
F 242
G 242
H 243
J. 243
L 243
M 243
N 243
P 243
R 244
S 244
T 245
V 245
Z 245

Index 247

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
- IBM® 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 get uninstalled. See https://ibm.co/2ut9z0n.

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® Analytics	http://www.ibm.com/support/knowledgecenter/SSEP7J
IBM Copy Services Manager	http://www.ibm.com/support/knowledgecenter/SSESK4
IBM® Db2® Database	http://www.ibm.com/support/knowledgecenter/SSEPGG/welcome

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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 9100	http://www.ibm.com/support/knowledgecenter/STSLR9/
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/us-en/marketplace/flash-storage-virtualization
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.

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

Product	Online location
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.
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 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 technical community

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

Access the IBM Spectrum Control technical community at https://www.ibm.com/developerworks/servicemanagement/.

Use IBM Spectrum Control technical community in the following ways:

- Become involved with transparent development, an ongoing, open engagement between other users and developers of IBM products.
- 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 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 IBM Software Support 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
- Simple Network Management Protocol (SNMP) concepts

Required user privileges for installation

Ensure that you have the required privileges to install Db2 and IBM Spectrum Control. 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.

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For more information about determining whether you have a fully qualified domain name, see http://www.ibm.com/support/knowledgecenter/SS5R93_5.3.1/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® and IBM Spectrum Control by using the 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 and IBM Spectrum Control 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_5.3.1/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 IBM Spectrum Control 5.2.x - Hardware Support: Memory, Processor and Disk Space.

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`

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

- `c:\temp\DB2`

- `c:\temp\SC`

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.

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 IBM Cognos Analytics 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 languages” on page 80.

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 72.

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 prompt, command-line interface, and the API.

Compare the features of these four offerings:

Table 2. Features of the IBM Spectrum Control licenses

Feature	IBM Spectrum Control Standard Edition and IBM Spectrum Control Standard Select Edition	IBM Spectrum Control Advanced Edition and IBM Spectrum Control Advanced Select Edition
Understanding the environment		
Support for a single dashboard view of the environment to manage storage systems, hypervisors, servers, and Fibre Channel fabrics.	✔	✔
Capacity monitoring of storage systems, pools, volumes, file systems, and file sets.	✔	✔
Performance monitoring of storage systems, Fibre Channel networks, applications, and departments.	✔	✔
Defining groups of resources that represent applications or departments.	✔	✔
Defining tiers of storage for planning and reporting.	✔	✔
Health and alerting		
Show health status of hypervisors, networks, servers, and storage systems, and selected internal entities.	✔	✔
Alerting on status changes and thresholds of capacity, performance and error metrics.	✔	✔
Reporting		
Web GUI reports: Reports that you can create from the information in the user-interface tables. You can configure, schedule, and save this information to your file systems. Or you can specify to send it to another user or person by mail.	✔	✔
Web GUI reports: Capacity and inventory reports.	✔	✔
Web GUI reports: Chargeback reports for showing the capacity and the cost of the storage that is used by applications, departments, hypervisors, and physical servers.		✔
Web GUI reports: Consumer reports for showing the capacity and the cost of the block storage that is used by an application, department, hypervisor, and physical server.		✔

Table 2. Features of the IBM Spectrum Control licenses (continued)

Feature	IBM Spectrum Control Standard Edition and IBM Spectrum Control Standard Select Edition	IBM Spectrum Control Advanced Edition and IBM Spectrum Control Advanced Select Edition
Web GUI reports: Roll-up reports in which capacity data is combined from multiple instances of IBM Spectrum Control for reporting purposes.		✔
External reports: Reports that use REST API and Cognos.	✔	✔
Transforming		
For storage systems that run IBM Spectrum Virtualize, the transform storage feature moves volumes, and configures compression and the properties of the volumes.		✔
Analyzing		
Analytics-driven tiering to automatically move volumes to the most cost-effective tier.		✔
Analysis of storage-pool balancing to generate recommendations to help you optimize storage resources.		✔
Storage reclamation that you can realize when the block storage systems in your data center are analyzed, and you determine and reclaim volumes that aren't used for storing data. You can replace the existing storage space instead of purchasing new storage media.		✔
Provisioning		
File provisioning for IBM Storwize V7000 Unified.	✔	✔
Block storage provisioning and file storage provisioning for which you can use service classes or capacity pools to specify your storage requirements, then use the VMware vSphere Web Client extension for IBM Spectrum Control to provision the storage on IBM Spectrum Control.		✔
Other		
Inclusion of the license for IBM Copy Services Manager to manage 2-site replication, 3-site replication, and advanced copy services. Learn more about how to download and install Copy Services Manager at http://www.ibm.com/support/knowledgecenter/SSESK4.	✔	✔

Table 2. Features of the IBM Spectrum Control licenses (continued)

Feature	IBM Spectrum Control Standard Edition and IBM Spectrum Control Standard Select Edition	IBM Spectrum Control Advanced Edition and IBM Spectrum Control Advanced Select Edition
Snapshot-based protection provided by IBM Spectrum Protect™ Snapshot for the applications and databases that IBM Spectrum Control uses.		✔

For more information about the product licenses, see the following topics in the IBM Spectrum Control IBM 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_5.3.1/com.ibm.spectrum.sc.doc/fqz0_r_wg_functions_available.html
- License compliance at http://www.ibm.com/support/knowledgecenter/SS5R93_5.3.1/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

Use the steps in this topic to access definitions of licensing metrics and examples of pricing for IBM Spectrum Control licenses.

The IBM Spectrum Control Standard Edition and 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 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.

1. Go to http://www.ibm.com/common/ssi/index.wss.
2. In the box labeled `Enter keyword, letter or product number`, enter one of the following announcement letter numbers and select **Search for "[announcement letter number]" in letter #**:
   - 218-333 United States
   - AP18-0319 Asia, Pacific
   - A18-0514 Canada
   - ZP18-0401 Europe, Middle East, Africa
   - JP18-0400 Japan
   - LP18-0399 Latin America

   The search returns a link to the announcement letter PDF.

   Note: The announcement letter might not be available in the language of your choice.
3. Click the link to 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 3. 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 10
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 72
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 (TPC/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 Using an access token to acquire users' group information (Windows) .

For more information about the **sysadmin_group** parameter, see System administration authority (SYSADM) .

Related reference:

"Installing IBM Spectrum Control on a Windows domain" on page 72
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 `lsps -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 4. 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 5. 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, see

http://www.ibm.com/support/knowledgecenter/SS5R93_5.3.1/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 72.

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, see 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
These are the rules for using Db2 user names and passwords.

"Worksheet for user names and passwords" on page 20
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 6 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 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 6. 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: • Windows domain user name: *domain_name\user_name format* • Local user name: *machine_name\username format*	No	• A through Z (uppercase characters) • a through z (lowercase characters) • 0 through 9 (numeric characters) • Special characters: '_' and '~' **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 .
IBM Spectrum Control common user passwords	Yes	Yes	• A through Z (uppercase characters) • a through z (lowercase characters) • 0 through 9 (numeric characters) • Special characters: [,], ?, `, ⌂, !, (,), -, _, and . **Restriction:** Passwords cannot contain spaces, must have at least 1 character and must not start with a number, dash character {-}, or underscore.

Table 6. 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: • Windows domain user name: *domain_name\user_name format* • Local user name: *machine_name\username format*	Yes	• A through Z (uppercase characters) • a through z (lowercase characters) • 0 through 9 (numeric characters) • Special characters: ⌂, @, #, %, ⌂, -, ( ),_, { }". **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	• A through Z (uppercase characters) • a through z (lowercase characters) • 0 through 9 (numeric characters) • Special characters: $, ~, @, #, (,), -, _, {, }, and . **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	• A through Z (uppercase characters) • a through z (lowercase characters) • 0 through 9 (numeric characters) • Special characters: ` ~ # % ^ & ( ) - _ { } ' . **Restriction:** User names and passwords cannot contain spaces and must have at least 1 character.

Table 6. 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	• A through Z (uppercase characters) • a through z (lowercase characters) • 0 through 9 (numeric characters) • Special characters: ` ~ @ # % ^ & * ( ) - _ = + [ ] { } \ | ; : ' " , . < > / ? **Restriction:** User names and passwords cannot contain spaces and must have at least 1 character.

Db2 user names and passwords

These are the rules for using 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 7. 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 IBM FlashSystem V9000 IBM FlashSystem 9100	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 7. 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	The Keystone `admin` role. 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`.	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	A role that has permission to browse through data stores. For example: Administrator role or Virtual Machine Power® User role.	Any role
Rollup servers	Performance monitoring is not available	Administrator	Provisioning is not available
Note: * You can add IBM Spectrum Scale 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.			

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 8. User names and passwords for a IBM Spectrum Control installation

Item	Description	Your input
IBM Spectrum Control and Db2 installation user • Windows: local administrator • UNIX: root		
Db2 administrator user name and password	The Db2 administrator user name and password are created when you install Db2 and is required to install IBM Spectrum Control. 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.	
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.	
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.

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 9. 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.
9510 9567	Storage Resource agent 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. If the Storage Resource agent is deployed in non-daemon mode, the Storage Resource agent does not need any listening ports. 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: **22** SSH **512** Remote Execution (REXEC) **514** Remote Shell (rsh) **445** Windows SMB protocol The Storage Resource agent sends responses back to the Data server on port 9549, in both daemon mode and non-daemon mode.

Table 9. IBM Spectrum Control ports used by TCP/IP for incoming communication (continued)

Ports	Component and port information
9554 9568 9569	Web server 9554 is used by WebSphere Application Server Liberty. The following ports are used for the GUI: • 9568 (non-secure) • 9569 (secure) 9569 is used for the REST API.
9562	Export server 9562 listens for communications from the Web server.
50000	Db2 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.

Restrictions: The following restrictions apply to the ports that are listed in Table 9 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 10. Other IBM Spectrum Control IP ports

Resource and ports	Port information

Resources that run IBM Spectrum Virtualize
 	
Ports: 22, 5989
	For native interface:
	• 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.
	
	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.
	
	To change to a custom port range, use the CLI **setdscfg** command to change the values of the following parameters:
	• **NAPI.SVCEventListenerLPortBase**
	• **NAPI.SVCEventListenerLPortMax**
	
	After resetting the value, restart the Device server.
	
	For example, to set the range from 50100 to 65000, run these commands from the *installation_dir*/cli/ subdirectory:
	
	For Windows operating system:
	`tpctool.bat setdscfg -user <user name> -pwd <password>`
	`-property NAPI.SVCEventListenerLPortBase 50100`
	`tpctool.bat setdscfg -user <user name> -pwd <password>`
	`-property NAPI.SVCEventListenerLPortMax 65000`
	
	For AIX and Linux operating systems:
	`./tpctool.sh setdscfg -user <user name> -pwd <password>`
	`-property NAPI.SVCEventListenerLPortBase 50100`
	`./tpctool.sh setdscfg -user <user name> -pwd <password>`
	`-property NAPI.SVCEventListenerLPortMax 65000`

FlashSystem 840 FlashSystem 900 Ports: 22, 5989, 161 (UDP)	For native interface: • 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.

Table 10. Other IBM Spectrum Control IP ports (continued)

Resource and ports	Port information
DS8000 Ports: 1751, 1750, 1755, 8451, 8452	Native interface: 1751 (default) listens for communication from IBM Spectrum Control and other clients. If 1751 is unavailable, uses 1750. 1751 (default) sends hardware management console (HMC) information and events to IBM Spectrum Control. If 1751 is unavailable, uses 1750. 1755 sends and receives data for HTC when logs are being offloaded. 8451, 8452 DS8000 listens on these ports for communication with the DS8000 GUI.
• 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 • File storage ports: 22, 9084 • Object storage ports: 5000, 8080, 35357	• File storage: – 22 listens for SSH communication from IBM Spectrum Control. – 9084 listens for performance data collection on the IBM Spectrum Scale cluster node where the collector component is running. • Object storage: – 5000, 8080, 35357 listen for data about any object storage or OpenStack Swift configurations on the IBM Spectrum Scale 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. If the NetApp storage system is a block storage system, the CIM agent ports are used to listen for communication from the Device server.
IBM Cloud Object Storage Port: 443	443 listens for HTTPS communication from IBM Spectrum Control.

Table 10. Other IBM Spectrum Control IP ports (continued)

Resource and ports	Port information

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

IBM SONAS Port: 22	22 listens for SSH communication from IBM Spectrum Control.

Table 10. Other IBM Spectrum Control IP ports (continued)

Resource and ports	Port information

CIM agents for managed storage systems
 	
Ports: 5988, 5989, 5990
	5988 listens for non-secure communication from the Device server.
	
	5989 listens for secure communication from the Device server.
	
	5990 IBM Spectrum Control listens on this port for events coming from CIM agents for managed storage systems.
	
	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.
	
	For example, to set the port to 7100, run this command from the *installation_dir*/cli/ subdirectory:
	
	For Windows operating system:
	`tpctool.bat setdscfg -user <user name> -pwd <password> -property Indication.PermanentListenerPort 7100`
	
	For AIX and Linux operating systems:
	`./tpctool.sh setdscfg -user <user name> -pwd <password> -property Indication.PermanentListenerPort 7100`

IBM Spectrum Control Device server Ports: 162 (UDP), 5960 (UDP), 49152 (UDP)	162 (UDP) listens for SNMP traps coming from managed storage systems. 5960 (UDP) listens for forwarded SNMP messages. 49152 (UDP) IBM Spectrum Control uses this port to forward SNMP traps. To change these ports, use these steps: 1. Log on to IBM Spectrum Control as a user with administrative privileges. 2. Stop the Device server. 3. Create a backup of the *installation_dir*/device/conf/user.properties file. 4. Change the parameter that corresponds to the port to an available port number and save the file. **162** **SnmpTrapPort** **5960** **SnmpForwardedTrapListeningPort** **49152** **SnmpForwardingPort** 5. Start the Device server.
All monitored resources 7 (ECHO port)	Before you can discover resources, ensure that port 7 (ECHO port) is open on the resources, and Internet Control Message Protocol (ICMP) is available.
IBM Cognos Analytics Port: 9300	Listens for communication from web browsers and other clients.

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_Multiplath 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_5.3.1/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_5.3.1/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_5.3.1/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 11. 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-installation 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.

Sudo command privileges

When you install, operate, or uninstall IBM Spectrum Control as a non-root user on AIX or Linux operating systems, you are required to have sudo privileges to multiple commands. Use command aliases in the `/etc/sudoers` file to configure your sudo privileges for multiple commands.

Example command aliases

The following command aliases are examples that you can create for installing, operating, and uninstalling IBM Spectrum Control:

- ```
  Cmnd_Alias IBMSC_INSTALL = /usr/bin/xauth, /Downloads/Db2_11_image/server_awse_o/db2setup,
  /opt/ibm/db2/V11.1/cfg/db2ln, /Downloads/IBM_Spectrum_Control_image/SC/setup.bin
  ```
- ```
  Cmnd_Alias IBMSC_OPERATION = /opt/IBM/TPC/scripts/*.sh, /opt/IBM/TPC/scripts/ldap/*.sh, /opt/IBM/TPC/agent/bin/agent.sh, \
  /opt/IBM/TPC/service/*.sh, /opt/IBM/TPC/service/changepasswords, /opt/IBM/TPC/client_images/*.sh, \
  /opt/IBM/TPC/cli/*.sh, /opt/IBM/TPC/data/scripts/logCleanup.sh, /opt/IBM/TPC/data/scripts/EncryptPassword.sh, \
  /opt/IBM/TPC/data/server/tools/repocopy, /opt/IBM/TPC/data/server/tools/runTPCDBMaintenance, \
  /opt/IBM/TPC/device/bin/linux/setenv.sh, /opt/IBM/TPC/device/bin/linux/enableapialerts.sh, \
  /opt/IBM/TPC/device/bin/linux/disableapialerts.sh, /opt/IBM/TPC/wlp/bin/server, \
  /opt/IBM/TPC/wlp/bin/securityUtility, /opt/IBM/TPC/jre/bin/ikeyman, /opt/IBM/TPC/jre/bin/ikeycmd, /bin/kill
  ```
- ```
  Cmnd_Alias IBMSC_UNINSTALL = /opt/IBM/TPC/_uninst/uninstall
  ```

The following examples show how to use the command aliases to provide non-root users privileges to the various commands:

```
username1 ALL=(root) SETENV: IBMSC_INSTALL
username2 ALL=(root) SETENV: IBMSC_OPERATION
username3 ALL=(root) SETENV: IBMSC_UNINSTALL
```
```

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
  - Export server
  - Web server
  - IBM Spectrum Control GUI
  - Command-line interface (CLI)
  - Storage Resource agent

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.

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 IBM Spectrum Control 5.2.x - Hardware Support: Memory, Processor and Disk Space.

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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 "Example of Upgrading 32-Bit to 64-Bit DB2" on page 109.

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 information about the LDAP repositories that are supported, see one of the following WebSphere Application Server Liberty web pages. On the **Supported Software** tab, click **LDAP Servers**. See https://ibm.co/2sH8Fwr.

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.

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 12. Prepare your environment for an installation check list

Check	Required for	Task
☐	Antivirus software	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
☐	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.
☐	Hardware prerequisites	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=swg21386446.

Table 12. Prepare your environment for an installation check list (continued)

Check	Required for	Task
☐	Software prerequisites	• 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
☐	Required user privileges	Ensure that you have the required privileges to install Db2 and IBM Spectrum Control. 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. 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 44 and "Installing IBM Spectrum Control in a single-server AIX or Linux environment" on page 55. Ensure that Windows administrators have the Debug programs privilege.
☐	Download packages	You must download the installation packages or images into a separate directory for each product. The following list provides suggested download directory paths: • Windows operating systems: – `c:\downloads\DB2` – `c:\downloads\TPC` • AIX or Linux operating systems: – `/downloads/DB2` – `/downloads/TPC` For more information, see "Planning for installation" on page 1

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 13. Windows domain installation check list

Check	Required for	Task
☐	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

Table 13. Windows domain installation check list (continued)

Check	Required for	Task
☐	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.
☐	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.
☐	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 Advanced Workgroup Server Edition Version 11.1 on Linux, AIX, or Windows operating systems.

Table 14. Db2 installation check list

Check	Required for	Task
☐	Prepare for Db2 installation	• When you install Db2 Advanced Workgroup 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 41.
☐	Install on Windows	For information on how to install Db2 on Windows operating systems, see "Installing Db2 on Windows" on page 42.
☐	Install 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 must have domain administrator access. 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 10.
☐	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 44.
☐	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 46.
☐	Verify Db2 installation	You can verify that Db2 Advanced Workgroup 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 50.

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
☐	Choose installation method	For more information about what methods are available to install IBM Spectrum Control, see “Planning for installation” on page 1
☐	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 54
☐	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 63

Db2

You can install the most recent version of Db2 Advanced Workgroup 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 Advanced Workgroup 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 Advanced Workgroup 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 IBM® Db2® on AIX, Linux, or Windows operating systems.

Installing Db2 on Windows:

Before you can install IBM Spectrum Control, you must install Db2® Advanced Workgroup Server Edition.

If you are installing Db2 in a Windows domain environment: See "Installing Db2 by using a Windows domain user account" on page 10 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 54. 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 63.

Installing Db2 on AIX or Linux:

You can install Db2® Advanced Workgroup 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 Advanced Workgroup 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 db2iadm1`.
   b. Enter `mkgroup id=998 db2fadm1`.
   c. Enter `mkuser id=1004 pgrp=db2iadm1 groups=db2iadm1 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 `db2iadm1` 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:db2iadm1 /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 db2iadm1`.
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:db2iadm1` *new_repository_path* to assign ownership to `db2inst1` and permission to anyone in `db2iadm1`(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® Advanced Workgroup 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 Advanced Workgroup 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 Knowledge 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® Advanced Workgroup 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® Advanced Workgroup 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
Linux for Power Systems™ Servers	linux_power
Linux s390	linux_s390

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

Operating system	Operating system name
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 -xzvf 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 -xzvf 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*.

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 a user who as 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. 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.

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. 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.

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

You can install IBM Spectrum Control by using silent mode. The installation program does not display any configuration options during the installation process.

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 55 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 as 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. Edit and save the appropriate response file.

   For more information about editing the response file, see "Editing the response file" on page 58.
5. 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
   ```
6. 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.

7. 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

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 install the database repository on a remote server and install 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	• **Single Server Install** • **License Upgrade**
silent_SingleServerCustom	• **Single Server Install** • **License Upgrade**
silent_MultipleServer	• **Multiple Server Install** • **License Upgrade**

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:

nodelock
IBM Spectrum Control Standard Edition license

nodelock.SEL
IBM Spectrum Control Standard Select Edition license

nodelock.AE
IBM Spectrum Control Advanced Edition license

nodelock.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\\nodelock.SEL
```

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 db2iadm1 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.

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.

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:

"Ports used by IBM Spectrum Control" on page 21
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.

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.

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 information:

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.

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.

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 55 on both servers before you begin the installation.

Server A will have Db2 Advanced Workgroup Server Edition and the IBM Spectrum Control database repository installed. Server B will have the IBM Spectrum Control servers installed.

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 Advanced Workgroup 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 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
```

c. 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
```

d. 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
```

e. On the Choose Installation Location and Type page, select **Multiple servers** and click **Next**.

f. On the Multiple Server Options: Select the Components page, 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

g. Follow the prompts in the installation program to install the IBM Spectrum Control Servers on Server B.

h. After the installation program is finished, review the message log on Server B to ensure that no errors occurred.

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 63
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 51
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 77
After you install IBM Spectrum Control, you can verify whether the installation was successful.

"Reviewing the log files to resolve installation issues" on page 79
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 55 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 Advanced Workgroup Server Edition and the IBM Spectrum Control database repository installed. Server B will have the IBM Spectrum Control servers 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 Advanced Workgroup 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 58.

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 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
```

c. On Server B, set the following parameters in the `silent_MultipleServer.properties` 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`

For more information about editing the `silent_MultipleServer.properties` file, see "Editing the response file" on page 58.

d. 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
```

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:\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.

f. 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 63
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 51
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 77
After you install IBM Spectrum Control, you can verify whether the installation was successful.

"Reviewing the log files to resolve installation issues" on page 79
If an error occurs during IBM Spectrum Control installation, you can review the error log files to resolve issues and continue the installation.

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/TPCClient`
   - On Linux operating systems, extract the `TPC_CLIENT_LINUX.zip` file to a folder, for example:
     `/opt/IBM/TPCClient`
   - On Windows operating systems, extract the `TPC_CLIENT_WIN.zip` file to a folder, for example:
     `c:/Program Files/IBM/TPCClient`
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/TPCClient/cli/tpctool.sh
     ```
   - On Windows operating systems:
     ```
     C:\Program Files\IBM\TPCClient\cli\tpctool.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 Administrators group and the local Db2 Administrators (DB2ADMNS) group.
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 Administrators group and the local Db2 Administrators (DB2ADMNS) group.

   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 is a member of the local Administrators group and the domain Db2 Administrators (DB2ADMNS) 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 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 10
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 or IBM Spectrum Control 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

Complete the following steps to install IBM Spectrum Control 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.

      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.

      ```
      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 on a drive other than the C: drive.

   Ensure that you set the correct drive and directory on the following pages:
   - Choose the Installation Location and Type page in the 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 use approximately 5 MB on the C: drive.

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 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 *installation_dir*`/wlp/usr/servers/webServer/server.xml` file. The default port is 9569.

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*`/log`

   where *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 languages

You can change the operating system language and web browser that determines the language in which IBM Spectrum Control services and the IBM Spectrum Control GUI are displayed.

Changing the language of the IBM Spectrum Control GUI

Change the language that is displayed in your web browser for the IBM Spectrum Control GUI.

1. Choose one of these options to access the settings page in the web browser:

Option	Description
Mozilla Firefox (ESR 31 and later)	In the menu bar, click **Tools** > **Options**.
Google Chrome	Click the customization control in the upper-right corner of the page and click **Settings**.
Internet Explorer (v11 and later)	In the menu bar, click **Tools** > **Internet Options**.

2. Access the language settings in the web browser:

Option	Description
Mozilla Firefox (ESR 31 and later)	Scroll to the **Language and Appearance** section and click **Choose**.
Google Chrome	Scroll to the bottom of the Settings page and click **Advanced**.
Internet Explorer (v11 and later)	In the **General** tab on the Internet Options page, click **Languages**.

3. Select the language that you want to display:

Option	Description
Mozilla Firefox (ESR 31 and later)	Select the language that you want to display in the browser and click **Move up** until it's at the top of the list. Click **Ok**.

Option	Description
Google Chrome	Scroll to the Languages section, click the action customization next to the language that you want to display, and select **Move to the top**.
Internet Explorer (v11 and later)	Select the language that you want to display in the browser and click **Move up** until it's at the top of the list. Click **Ok** twice to return to the main browser page.

4. Refresh the browser tab where the IBM Spectrum Control GUI is displayed to apply the language setting.

Changing the operating system language for Windows

Change the operating system language for Windows.

To change the operating system language for Windows servers, for example from English to German (`de_DE`), complete these steps:

1. Choose one of these options:

Option	Description
Windows Server 2012	On the Dashboard page, hover the mouse over the lower left corner of the page next to the **Server Manager** taskbar button, and then click **Start**.
Windows 7, Windows 2008, Windows Vista, Windows XP	Click **Start**.

2. Click **Control Panel** .
3. Click **Clock, Language, and Region** > **Region and Language**.

   Tip: The exact links that you click might vary between the different versions of Windows. For example, **Region** and **Language** might be separate links in more recent versions of Windows. In those cases, click **Language**.
4. On the **Format** tab, select a language and click **OK**.

   Tip: The exact links that you click might vary between the different versions of Windows. For example, you might need to click the **Administrative** tab rather than the **Format** tab to change the system locale.
5. Restart all the IBM Spectrum Control services or restart the Windows server.

Changing the operating system language for AIX

Change the operating system language for AIX.

To change the operating system language for AIX systems, for example from English to German (`de_DE`), complete these steps:

1. At the command prompt, run the following commands:

```
chlang -m de_DE de_DE
export LANG=de_DE
```

2. Restart all the IBM Spectrum Control services or restart the AIX 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:

`nodelock`
IBM Spectrum Control Standard Edition license

`nodelock.SEL`
IBM Spectrum Control Standard Select Edition license

`nodelock.AE`
IBM Spectrum Control Advanced Edition license

`nodelock.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 58.
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_5.3.1/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" on page 84.
- To install the agent on a Virtual I/O Server, see "Installing Storage Resource agents on the Virtual I/O Server" on page 86.

- To deploy the agent remotely on the Virtual I/O Server, see "Deploying Storage Resource agents remotely" on page 87.

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 point to multiple servers. If an agent is installed on one server, 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 19 for the required parameters for each protocol.

Table 19. 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.

Table 19. Parameters required for each protocol (continued)

Protocol	Description
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*

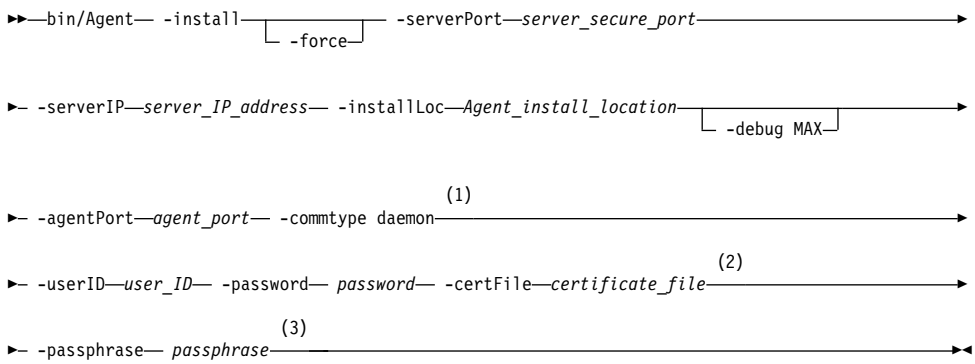
See Table 20 for the Storage Resource agent installation images.

Table 20. 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:



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 19 on page 84 to determine which parameter is required for each protocol.

3 Parameters when the agent is run as a non-daemon service. See Table 19 on page 84 to determine which parameter is required for each protocol.

The parameters are as follows.

-install
Installs the Storage Resource agent.

-force
Forces the agent to be installed. The two different situations in which this parameter must be specified are as follows.

- If an earlier installation failed and there is residue on the system that causes further installations to fail. You must verify that all the parameters that are provided are valid, such as the installation location, port .
- 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 SSH protocol and Replacing default SSL certificates with custom certificates.

-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 84.

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_5.3.1/com.ibm.spectrum.sc.doc/fqz0_t_sra_vio_create_ssh_certificate.html.
4. Start the remote deployment.

Installing IBM Cognos Analytics

You can install the optional IBM® Cognos® Analytics Version 11.0.9 or later reporting tool on one computer, on multiple servers for a distributed installation, or you can expand an existing single computer installation to another server to improve performance. Cognos Analytics provides an installation program that guides you through the installation process.

Once you have installed Cognos Analytics you can view predefined reports and create custom reports about IBM Spectrum Control. You can access reports from IBM Spectrum Control, and work with the reports in the Cognos Analytics reporting tool.

Installing Cognos Analytics in a single Windows environment

You can install Cognos Analytics in a Microsoft Windows environment by using the Cognos Analytics installation program.

For Microsoft Windows operating system installations, ensure that you have administrator privileges for the Windows computer you are installing on. Also ensure that your computer has a TEMP system variable that points to the directory where you want to store temporary files. During installation, files from the disk are temporarily copied to this directory.

1. Log in to your Windows computer as a user with administrative privileges.
2. Start the Cognos Analytics installation program.
3. Select the language to use for your installation and click **Next**.
4. On the Product installation page, select **IBM Cognos Analytics (IBM Bundler Edition)** and click **Next**.
5. On the License agreement page, accept the license agreement and click **Next**.
6. On the Location page, provide your installation location and name of the Shortcut folder and click **Next**. `If you want the IBM Cognos Analytics installation to automatically create the installation location for you, click Yes.`
7. On the Installation type page, select **Custom** and click **Next**. The Custom option offers full flexibility to pick and choose the IBM Cognos Analytics components that you want to install. Maybe you want to customize or integrate Cognos Analytics with third-party software? This is the option that you would select.
8. On the Custom install page, accept the default selection, and click **Next**.
9. On the Choose components page, accept the default selections, and click **Next**.
10. On the Pre-installation summary page, review your information for accuracy and click **Install**.
11. When the installation is complete, click **Done**.

Related information:

- How do I run a silent install?
- Uninstall IBM Cognos Analytics on Microsoft Windows operating systems

Installing Cognos Analytics in a single Linux environment

You can install Cognos Analytics in a Linux environment by using the Cognos Analytics installation program. To run the graphical-mode installation program, your computer must support a Java-based graphical user interface.

For Linux operating system installations, ensure that you are a root user for the computer you are installing on.

Cognos Analytics uses 755 permissions. This affects only the installation directories. It does not affect the file permissions within the directories.

You *do not* need to set the **JAVA_HOME** environment variable before you start the IBM Cognos Analytics Version 11.0.9 or later installation program.

Verify that you have the following prerequisite packages installed on a Linux computer for IBM Cognos Analytics Version 11.0.9 or later.

The prerequisite packages for Red Hat Enterprise Linux (RHEL) 6.x are:

```
glibc-2.12-1.166.el6 or later (both i686 and x86_64 packages)
libstdc++-4.4.7-16.el6 or later (both i686 and x86_64 packages)
nspr-4.9.2-1.el6 or later (both i686 and x86_64 packages)
nss-3.14.0.0-12.el6 or later (both i686 and x86_64 packages)
openmotif-2.3.3-5.el6 or later (both i686 and x86_64 packages)
```

The prerequisite packages for Red Hat Enterprise Linux (RHEL) 7.x are:

```
glibc-2.17-55.el7 or later (both i686 and x86_64 packages)
libstdc++-4.8.2-16.el7 or later (both i686 and x86_64 packages)
nspr-4.10.2-4.el7 or later (both i686 and x86_64 packages)
nss-3.15.4-6.el7 or later (both i686 and x86_64 packages)
motif-2.3.4-7.el7 or later (both i686 and x86_64 packages)
```

For more information, see Software Product Compatibility Reports.

You need to set the correct ulimit values in the `/etc/security/limits.conf` file for IBM Cognos Analytics Version 11.0.9 or later.

Here is an example of the entries you might need to add to the `/etc/security/limits.conf` file:

```
*       soft    nproc   unlimited
*       hard    nproc   unlimited
*       soft    nofile  8192
*       hard    nofile  8192
*       soft    stack   unlimited
*       hard    stack   unlimited
```

After you set and save your ulimit values, restart your computer and verify the correct ulimit values.

For more information, see Set the ulimit values on UNIX and Linux operating systems .

1. Log in to your Linux computer as a root user.
2. Start the Cognos Analytics installation program.
3. Select the language to use for your installation and click **Next**.
4. On the Product installation page, select **IBM Cognos Analytics (IBM Bundler Edition)** and click **Next**.
5. On the License agreement page, accept the license agreement and click **Next**.
6. On the Location page, provide your installation location and name of the Shortcut folder and click **Next**. `If you want the IBM Cognos Analytics installation to automatically create the installation location for you, click Yes.`
7. On the Installation type page, select **First install** and click **Next**.
8. On the Choose components page, accept the default selections, and click **Next**.
9. On the Pre-installation summary page, review your information for accuracy and click **Install**.
10. When the installation is complete, click **Done**.

Related information:

- How do I run a silent install?
- Uninstall IBM Cognos Analytics on Linux or AIX operating systems

Installing Cognos Analytics in a single AIX environment

You can install Cognos Analytics in an AIX environment by using the Cognos Analytics installation program. To run the graphical-mode installation program, your computer must support a Java-based graphical user interface.

For AIX operating system installations, ensure that you are a root user for the computer you are installing on.

Cognos Analytics uses 755 permissions. This affects only the installation directories. It does not affect the file permissions within the directories.

You *do not* need to set the **JAVA_HOME** environment variable before you start the IBM Cognos Analytics Version 11.0.9 or later installation program.

Verify that you have the following prerequisite packages installed on a AIX computer for IBM Cognos Analytics Version 11.0.9 or later.

The prerequisites for AIX Version 6.1 are:

- TL7
- SP05 (6100-07-05-1228)
- IBM XL C/C++ for AIX, V12.1 Runtime Environment
- bos.pmapi.lib

The prerequisites for AIX Version 7.1 are:

- IBM XL C/C++ for AIX, V12.1 Runtime Environment
- bos.pmapi.lib

For more information, see Software Product Compatibility Reports.

You need to set the correct ulimit values in the `/etc/security/limits` file for IBM Cognos Analytics Version 11.0.9 or later.

Here is an example of the entries you might need to add to the `/etc/security/limits` file:

```
default:
fsize = -1
core = -1
cpu = -1
rss = -1
stack = 16384
nofiles = 8192
```

After you set and save your ulimit values, restart your computer and verify the correct ulimit values.

For more information, see Set the ulimit values on UNIX and Linux operating systems .

1. Log in to your AIX computer as a root user.
2. Start the Cognos Analytics installation program.
3. Select the language to use for your installation and click **Next**.
4. On the Product installation page, select **IBM Cognos Analytics (IBM Bundler Edition)** and click **Next**.
5. On the License agreement page, accept the license agreement and click **Next**.

6. On the Location page, provide your installation location and name of the Shortcut folder and click **Next**. If you want the IBM Cognos Analytics installation to automatically create the installation location for you, click Yes.
7. On the Installation type page, select **First install** and click **Next**.
8. On the Choose components page, accept the default selections, and click **Next**.
9. On the Pre-installation summary page, review your information for accuracy and click **Install**.
10. When the installation is complete, click **Done**.

Related information:

- How do I run a silent install?
- Uninstall IBM Cognos Analytics on Linux or AIX operating systems

Configuring IBM Cognos Analytics

After you install the optional IBM® Cognos® Analytics, to view predefined reports and create custom reports about IBM Spectrum Control, you must copy Db2® files, create a content store database, save your configuration settings, and start the services.

Important: The configuration procedures assume that you are going to use Db2 for the Cognos Analytics content store. *It is not required* that the Cognos Analytics content store use Db2. Cognos Analytics supports other database products for the content store.

The IBM Spectrum Control database repository uses Db2. If you do not use Db2 for the content store, you still need to copy the Db2 JDBC driver files into the Cognos Analytics installation location and link the 32-Bit Db2 library file (Linux and AIX only) in order for Cognos Analytics to connect to the IBM Spectrum Control database repository.

A general overview to complete the configuration tasks in order to view predefined reports and create custom reports about IBM Spectrum Control:

- Copying Db2 files and linking Db2 libraries
- Creating the content store
- Creating a data source
- Importing pre-defined reports package

Related information:

- Guidelines for creating the content store
- Set up database connectivity for the content store database
- Set Database Connection Properties for the content store

Copying JDBC files for Db2 on Windows

You must copy three JDBC driver files from your Db2® installation directory to your Cognos Analytics installation location.

Copy the following Db2 JDBC driver files from the *Db2_installation_dir*\java\ directory to the *Cognos_installation_dir*\drivers\ directory:

- db2jcc.jar

- db2jcc_license_cu.jar
- db2jcc4.jar

For more information, see Configuration actions that are critical to the success of your installation.

Copying Db2 files and linking the Db2 library on Linux and AIX

You must copy three JDBC driver files from your Db2® installation directory to your Cognos Analytics installation location and then link the Db2 library.

1. Copy the following Db2 JDBC driver files from the *Db2_installation_dir*/java/ directory to the *Cognos_installation_dir*/drivers/ directory:
   - db2jcc.jar
   - db2jcc_license_cu.jar
   - db2jcc4.jar

   For more information, see Configuration actions that are critical to the success of your installation.
2. Enter the following command as the root user:

   ```
   cd Cognos_installation_dir/drivers/
   chmod +x db2jcc*.jar
   ```
3. Enter the following command as the root user:

   On the Linux operating system:

   ```
   ln -s Db2_instance_owner_home directory/sqllib/lib32/libdb2.so Cognos_installation_dir/bin/
   ```

   On the AIX operating system:

   ```
   ln -s Db2_instance_owner_home directory/sqllib/lib32/libdb2.a Cognos_installation_dir/bin/
   ```

   In the IBM Spectrum Control Predefined Reports use Compatibility Query Mode, Cognos Analytics needs to use the 32-Bit Db2 library in order to connect to the IBM Spectrum Control database as a data source.

Creating a content store and starting Cognos Analytics on Windows

The information that you enter in IBM Cognos Configuration for Cognos Analytics is used to generate a script that you use to create the content store database.

1. Create the content store for Cognos Analytics.
   a. From the **Windows Start** menu, select **IBM Cognos Analytics** > **IBM Cognos Configuration**.
   b. In the Explorer window, expand **Data Access** > **Content Manager** and click **Content Store**.
   c. In the **Type** property, enter **DB2 database**.
   d. In the **Database server and port number** property, enter localhost or the fully qualified domain name of the machine where Db2 is installed. For example, localhost:50000 or *FQDN_Of_Your_Machine*:50000 where 50000 is the default port number that is used by Db2. If you are using a different port number, ensure that you use that value. To determine the port that is used by Db2, examine the **varDBPort** parameter in the *SC_installation_dir*\config\InstallVariable.properties file.
   e. In the **User ID and password** property, enter the user name of the owner of the Db2 instance where the content store database will be located and the password that is associated with that user name. Typically, this user name is

db2admin. If the user name is a Windows domain user name, enter the user name *without* a Windows domain name prefix or suffix.

f. In the **Database name** property, verify that the default value is **cm**.

g. From the **File** menu, click **Save**.

h. In the informational window, click **Close**.

i. In the Explorer window, expand **Data Access** > **Content Manager** and click **Content Store**.

j. Right-click **Content Store** and click **Generate DDL**.

k. In the informational window, click **Close**.

l. From the **Windows Start** menu, select **IBM DB2 DB2COPY1 (Default) > DB2 Command Window - Administrator**. Then, enter the following command:

```
db2 -tvf "Cognos_installation_dir\configuration\schemas\content\db2\createDb.sql"
```

On Windows, add quotes around the directory path if it contains spaces. For example:

```
db2 -tvf "C:\Program Files\IBM\Cognos\analytics\configuration\schemas\content\db2\createDb.sql"
```

This process might take a few minutes.

m. From the **Actions** menu, click **Test**. You are testing the connection between content manager and the content store database.

n. In the informational window, click **Close**. For more information, see Generating a script file to create a database for a DB2 content store.

2. Start Cognos Analytics (content manager and application services).

It might take Cognos Analytics a few minutes to start.

a. In IBM Cognos Configuration, in the Explorer window, click **Local Configuration**.

b. From the **Actions** menu, click **Test**.

Tip: If you are not configuring IBM Cognos Analytics to send notifications, you can ignore the testing the mail server connection failure message.

c. From the **Actions** menu, click **Start**.

3. Exit IBM Cognos Configuration.

Creating a content store and starting Cognos Analytics on Linux or AIX

The information that you enter in IBM Cognos Configuration for Cognos Analytics is used to generate a script that you use to create the content store database.

1. Create the content store for Cognos Analytics.

a. Enter the following commands to start IBM Cognos Configuration:

```
cd <Cognos_installation_dir>/bin64/
. /home/db2inst1/sqllib/db2profile
./cogconfig.sh
```

Notice the space between the `.` and the `/` in the second command.

b. In the Explorer window, expand **Data Access** > **Content Manager** and click **Content Store**.

c. In the **Database server and port number** property, enter localhost or the fully qualified domain name of the machine where Db2 is installed. For example, `localhost:50000` or *`FQDN_Of_Your_Machine`*`:50000` where `50000` is the default port number that is used by Db2. If you are using a different

port number, ensure that you use that value. To determine the port that is used by Db2, examine the **varDBPort** parameter in the *SC_installation_dir*/config/InstallVariable.properties file.

d. In the **User ID and password** property, enter the user name of the owner of the Db2 instance where the content store database will be located and the password that is associated with that user name.

e. In the **Database name** property, verify that the default value is **cm**.

f. From the **File** menu, click **Save**.

g. In the Explorer window, go to **Data Access** > **Content Manager** and click **Content Store**.

h. Right-click **Content Store** and click **Generate DDL**.

i. In the informational window, click **Close**.

j. While you are logged into the Linux or AIX operating system as the root user, switch to the user that is the Db2 instance owner (for example, db2inst1).

k. Enter the following Db2 command:

```
db2 -tvf Cognos_installation_dir/configuration/schemas/content/db2/createDb.sql
```

If the results of this command contain the following similar messages, you can safely ignore those messages because the Db2 instance owner already has the necessary privileges:

```
GRANT CREATETAB,BINDADD,CONNECT,IMPLICIT_SCHEMA ON DATABASE TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502

GRANT CREATEIN,DROPIN,ALTERIN ON SCHEMA DB2COGNOS TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502

GRANT USE OF TABLESPACE TSN_USR_cm TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502

GRANT USE OF TABLESPACE TSN_REG_cm TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command.  During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502
```

l. Go back to the root user.

m. From the **Actions** menu, click **Test**. You are testing the connection between content manager and the content store database.

n. In the informational window, click **Close**.

For more information, see Generating a script file to create a database for a DB2 content store.

2. Start Cognos Analytics (content manager and application services).

a. In IBM Cognos Configuration, in the Explorer window, click **Local Configuration**.

b. From the **Actions** menu, click **Test**.

Tip: If you are not configuring Cognos Analytics to send notifications, you can ignore the testing the mail server connection failure message.

c. From the **Actions** menu, click **Start**.

3. When Cognos Analytics starts, exit IBM Cognos Configuration.

Creating Cognos Analytics data source for the IBM Spectrum Control database

Use this procedure to create an IBM Cognos Analytics data source for your IBM Spectrum Control database.

If your IBM Spectrum Control database is on a different computer than the computer where you installed Cognos Analytics, you must catalog the node and database for the remote IBM Spectrum Control database before you create the Cognos Analytics data source for the IBM Spectrum Control database.

To catalog the remote node and the remote database for the IBM Spectrum Control database, complete the following tasks on the machine where you installed Cognos Analytics:

1. If Cognos Analytics is installed on a Windows computer, log in to that Windows computer as a user with administrative privileges.

   If Cognos Analytics is installed on a Linux or AIX computer, log in to that Linux or AIX computer as a user with root privileges.
2. On the Windows operating system, from the **Windows Start** menu, select **IBM DB2 DB2COPY1 (Default) > DB2 Command Window - Administrator**.

   On Linux or AIX operating system, while you are logged in as the root user, switch to the user that is the Db2 instance (for example, *db2inst1*).
3. Open a command prompt and enter the following command to catalog the remote node:

   ```
   db2 catalog tcpip node node_name remote server_fqdn server port
   ```

   Where *node_name* is a new value you provide to name the node. For example, `remoteSC`. You will need to remember the *node_name* value to use later. The *server_fqdn* value is the fully qualified domain name of the machine where the IBM Spectrum Control database resides. For example, `myserver.mycompany.com`. The *port* value is the port number that is used by Db2. The default value is 50000.

   Here is an example of this command:

   ```
   db2 catalog tcpip node remoteSC remote myserver.mycompany.com server 50000
   ```
4. Enter the following command to catalog the remote database:

   ```
   db2 catalog database database_name as alias at node node_name
   ```

   Where *database_name* is the name of the IBM Spectrum Control database. Typically, this name is `TPCDB`. The *alias* value is a new value that you provide to reference the cataloged database. For example, *remDB*. You will need to remember the *alias* value to use later. The *node_name* value is the value that you set in Step 3.

   Here is an example of this command:

   ```
   db2 catalog database TPCDB as remDB at node remoteSC
   ```

To create an IBM Cognos Analytics data source for the IBM Spectrum Control database, complete the following steps:

1. Open a web browser and enter the following URL:

   ```
   http://FQDN_Of_Your_Machine:9300/bi
   ```

   Where `http` is the protocol, and *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*).
2. Select **Manage** > **Administration console**.
3. In the IBM Cognos Administration GUI, select the **Configuration** tab.
4. In the **Configuration** tab, select **Data Source Connections**.

5. On the toolbar, click the **New Data Source** icon. It is the first icon in the list.
6. On the Specify a name and description page, in the **Name** property, enter **TPCDB**. You must enter the **TPCDB** value or the IBM Spectrum Control predefined reports will not generate successfully.
7. On the Specify a name and description page, click **Next**.
8. On the Specify the connection page, select **IBM DB2** from the **Type** field.
9. Verify that **Use the default object gateway** is selected.
10. Unmark **Configure JDBC connection** and click **Next**.
11. On the Specify the IBM DB2 connection string page, in the **DB2 database name** property, complete one of the following steps:
    a. If the IBM Spectrum Control database is on the same computer than where you installed Cognos Analytics, enter the *database_name* of the IBM Spectrum Control database. Typically, this name is *TPCDB*.
    b. If the IBM Spectrum Control database is on a different computer than where you installed Cognos Analytics, enter the *alias* value that you created when you cataloged the remote database. For example, *remDB*.
12. On the Specify the IBM DB2 connection string page, in the **Signon** section, do the following:
    a. Verify that **Signons** is selected.
    b. Select **Password**.
    c. In the **User ID** property, enter the user name of the owner of the Db2 instance where the IBM Spectrum Control database is located. On a Window operating system, this user name is typically *db2admin*. On Linux or AIX operating system, this user name is typically *db2inst1*.
    d. In the **Password** and **Confirm password** properties, enter the password that is associated with the **User ID** property from the previous substep.
13. On the Specify the IBM DB2 connection string page, in the **Testing** section, click **Test the connection**.
14. On the Test the connection page, click **Test**.
15. When the test is successful, on the View the results page, click **Close**.
16. On the Test the connection page, click **Close**.
17. On the Specify the IBM DB2 connection string page, click **Next**.
18. On the Specify the commands page, click **Finish**.
19. Close your web browser.

Related information:

Creating a data source connection

Importing IBM Spectrum Control pre-defined reports package

Complete this procedure to import the IBM Spectrum Control predefined reports package into the IBM Cognos Analytics reporting tool.

1. Copy the IBM Spectrum Control predefined reports package `TPC_deployment_pckg.zip` file from the *`IBM_Spectrum_Control_install_image_location`*`\data\gui\` directory to the *`Cognos_Install_Dir`*`\deployment\` directory on the machine where you installed Cognos Analytics.
2. Import the package into Cognos Analytics.
    a. Open a web browser and enter the following URL:
    `http://`*`machine_FQDN`*`:9300/bi`

Where *machine_FQDN* is the fully qualified domain name of the machine where you installed Cognos Analytics. For example, *mycognos.mycompany.com*.

Note: At this point Cognos Analytics is configured with anonymous access so that anyone is able to access it.

b. Select **Manage** > **Administration console**.
c. In the IBM Cognos Administration GUI, select the **Configuration** tab.
d. In the **Configuration** tab, select **Content Administration**.
e. On the toolbar, click the **New Import** icon. It is the fourth icon in the list.
f. On the Select a deployment archive page, select **TPC_deployment_pckg** and click **Next**.
g. On the Specify a name and description page, enter a name for your import and click **Next**.
h. On the Select the public folders, directory, and library content page, select the following entries:
   - IBM Spectrum Control Packages
   - IBM Spectrum Control Predefined Reports
   - IBM Spectrum Control Report Layouts
i. Click **Next**.
j. On the Specify the general options page, click **Next**.
k. On the Review the summary page, click **Next**.
l. On the Select an action page, select **Save and run once** and click **Finish**.
m. On the Run with Options page, select **Upgrade all report specifications to the latest version** and **Assign new IDs during import**. For more information, see Run an import.
n. Click **Run**.
o. On the IBM Cognos software page, select **View the details of this import after closing this dialog** and click **OK**.
p. On the View run history details page, click **Refresh**. Do *not* log off from the IBM Cognos Administration GUI until the import job is complete.

   Important:

   The import job might take 15 minutes or more to resolve. Click **Refresh** periodically to check the status.
q. After the import job is complete, on the View an import deployment record page, click **Close**.
r. Exit the IBM Cognos Administration GUI and return to the Cognos Analytics GUI.

3. Verify that the imported content is displayed in Cognos Analytics.
   a. Open a web browser and enter the following URL:
      `http://machine_FQDN:9300/bi`

      Where *machine_FQDN* is the fully qualified domain name of the machine where you installed Cognos Analytics. For example, *mycognos.mycompany.com*.
   b. On the IBM Cognos Analytics Welcome page, click **Team content**.
   c. Verify that the following content is listed:
      - IBM Spectrum Control Packages

- IBM Spectrum Control Predefined Reports
- IBM Spectrum Control Report Layouts

Configuring access to the Cognos Analytics reporting tool

Specify which user IDs and groups of user IDs can use reports, report tools, and report administration functions in the Cognos Analytics tool.

You can configure access in the following ways in the Cognos Analytics reporting tool:

- Create user IDs and groups of user IDs so that you can specify access for those users and groups.
- Assign administrative privileges to administrator IDs and remove administrative privileges from other user IDs.
- Specify which user IDs or groups can access individual reports or report folders.
- Specify which user IDs or groups can access individual Cognos Analytics reporting tool functions.

Information about how to configure security for Cognos Analytics is available in the IBM Knowledge Center for Cognos Analytics. Use the following links to view this information:

Table 21. Information about configuring security for Cognos Analytics

Task	Link to information
Learn about the security model, authorization, and the default Cognos namespace in Cognos Analytics.	Security model
Learn about the initial security settings in Cognos Analytics.	Initial security
Learn about the initial access permissions in Cognos Analytics.	Initial access permissions
Learn about users, groups, and roles in Cognos Analytics.	Users, Groups, and Roles
Learn about configuring Cognos Analytics with LDAP authentication.	Configuring authentication providers
Learn about configuring access permissions in Cognos Analytics.	Access Permissions and Credentials Set access permissions for an entry

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.
Device server	The Device server is uninstalled.
Export server	The Export server is 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_5.3.1/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
- 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're 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 data collection 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

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_5.3.1/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 5.2 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:

- IBM Spectrum Control no longer supports Tivoli Storage Productivity Center for Replication. It is strongly recommended that you backup your replication environment before you proceed with any upgrade.

  See "Backing up a replication environment" on page 107 and verify that your replication backup file location is outside of the IBM Spectrum Control installation directory structure or the replication backup file is deleted during the uninstall of replication. IBM Copy Services Manager is the replacement product for replication. To learn more about how to download and install IBM Copy Services Manager, see IBM Copy Services Manager.
- You cannot upgrade from any release before Tivoli Storage Productivity Center Version 5.2.0. If you are currently running a version of Tivoli Storage Productivity Center earlier than Version 5.2.0, you must upgrade your system to Tivoli Storage Productivity Center Version 5.2.7.1. For more information, see IBM Spectrum Control interoperability matrix. 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 IBM Cognos BI Reports component is no longer part of the IBM Spectrum Control product and is uninstalled during the upgrade. It is strongly recommended that you backup your entire IBM Spectrum Control system before you proceed with an upgrade.

  If you plan to migrate your custom report content from Tivoli Common Reporting to IBM Cognos Analytics, see "Migrating reports to IBM Cognos Analytics during upgrade" on page 114

  Important: After you upgrade IBM Spectrum Control and are using IBM Cognos Analytics, import the pre-defined reports package into IBM Cognos Analytics. See "Importing IBM Spectrum Control pre-defined reports package" on page 96.
- When you prepare to upgrade to the latest version of IBM Spectrum Control use the following space requirements:

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  - On a Windows operating system: 1 GB - 2 GB on the drive where you installed IBM Spectrum Control.
  - On a Linux operating system: 100 MB - 300 MB in the `/home` file system and 1 GB - 2 GB in the/ file system.
  - On a AIX operating system: 100 MB - 300 MB in the `/home` file system and 1 GB - 2 GB in the`/opt` file system.
- 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, 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.
- Do not generate Cognos Business Intelligence reports during the upgrade process.
- 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 through IBM Spectrum Control Version 5.2.17, 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.

  – Tivoli Storage Productivity Center for Replication gets uninstalled if you upgrade to IBM Spectrum Control Version 5.3.0 and later.
- 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 information:

Backups
Before you upgrade, you must back up the entire IBM Spectrum Control system.

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`.

Parameters in the silent_Upgrade.properties file
When you upgrade using the silent mode, use the `silent_Upgrade.properties` file.

Antivirus software considerations
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.

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.

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_5.3.1/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 and IBM Spectrum Control.
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 .

Restriction:

Do not restore the IBM Spectrum Control database from one version of IBM Spectrum Control into another version. For example, do not restore a backup from IBM Spectrum Control 5.2.14 into 5.2.15, or any other version.

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 `csmcli.bat` script.
   - On a AIX or Linux operating system, run the `./csmcli.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.

Upgrade to IBM Spectrum Control and uninstall Tivoli Storage Productivity Center for Replication.

Example of upgrading Db2

To complete an upgrade from IBM® DB2® Version 10.5 to IBM® Db2® Version 11.1 or later, stop the IBM Spectrum Control servers before you begin the upgrade.

You can upgrade to the latest version of Db2® that IBM Spectrum Control supports before you install the latest version of IBM Spectrum Control.

Important: The following steps are an example of one way to upgrade from DB2 Version 10.5 to Db2® Version 11.1 on a Windows operating system.

1. Stop all of the Windows services for the IBM Spectrum Control servers, including Jazz for Service Management and Tivoli Common Reporting (if you installed them on your system).
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:
   `db2 BACKUP DATABASE database to C:\downloads\db2_backup`

   Where *database* is the name of the IBM Spectrum Control database (usually TPCDB). If you have the Tivoli Common Reporting database installed (usually TCRDB), make a similar backup of that database.
6. Stop all Db2 Windows services and exit Db2 in the Windows System Tray.
7. In Windows Explorer, go to the following directory:
   `C:\Db2_11.1_download_directory\SERVER_AWSE_O\image`

   Where *Db2_11.1_download_directory* is where you downloaded the Db2 installation files.
8. Double-click the `setup.exe` file.
9. On the **DB2 Setup Launchpad** navigation tree view, click **Install a Product**.
10. On the Install a Product page, in the **DB2 Version 11.1 Workgroup, Enterprise and Advanced Editions** section, click **Work with Existing**.
11. In the Work with an Existing DB2 Copy window, select the DB2 copy for DB2 Version 10.5.
12. Click **Launch DB2 Setup wizard**.
13. On the Warning window about upgrading DB2, click **OK**.
14. In the **DB2 Setup wizard**, complete the following steps:
    a. On the Welcome page, click **Next**.
    b. On the Software License Agreement page, review and accept the license agreement, and click **Next**.
    c. On the Select the installation type page, select **Typical** and click **Next**.
    d. On the Select the installation, response file creation, or both page, keep the default selection and click **Next**.
    e. On the Installation folder page, click **Next**.
    f. On the Set the DB2 copy name page, click **Next**.
    g. On the Set user information for the default DB2 instance page, enter the correct user name and password values for the existing DB2 Version 10.5 installation, and click **Next**.
    h. On the Enable operating system security for DB2 objects page, ensure that the settings and values are correct for the existing DB2 Version 10.5 installation, and click **Next**.
    i. If the Warning window about existing group names is displayed, click **OK**.
    j. On the Start copying files and create response file page, click **Finish**.
    k. If Warning windows are displayed about a restart that is required to complete the setup, click **OK**.
    l. On the Setup is complete page, click **Next**.
    m. On the Install additional products page, click **Finish**.
    n. Close the DB2 First Steps window.
15. In a Db2 command window, run the following command to upgrade the IBM Spectrum Control database to Db2 Version 11.1:
    `db2 UPGRADE DATABASE database USER user_name USING password`

Where *database* is the name of the IBM Spectrum Control 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.

16. In a Db2 command window, run the following command to upgrade the Tivoli Common Reporting (if installed) database to Db2 Version 11.1:

    ```
    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.

    You might encounter the following message when you upgrade the Tivoli Common Reporting database to Db2 Version 11.1:

    ```
    SQL0954C Not enough storage is available in the application heap
    to process the statement.
    ```

    For more information, see All available memory for the application has been used.

17. Restart your computer and ensure that all of the Windows services for the IBM Spectrum Control servers, including Jazz for Service Management and Tivoli Common Reporting are started.

Related information:

- Upgrading a DB2 server (Windows)
- Upgrading a DB2 server (Linux and UNIX)

Example of Upgrading 32-Bit to 64-Bit DB2

If you are running an earlier version of IBM Spectrum Control that uses a 32-bit DB2, you must upgrade to 64-bit DB2.

Upgrading from 32-bit DB2 Version 9.7 to 64-Bit DB2 Version 9.7

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.

Important: The following steps are an example of one way to upgrade from 32-bit DB2 Version 9.7 Fix Pack 4 to 64-bit DB2 Version 9.7 Fix Pack 4 on 64-Bit Windows operating system.

To upgrade from 32-bit DB2 Enterprise Server Edition Version 9.7 Fix Pack 4 to 64-Bit DB2 Enterprise Server Edition Version 9.7 Fix Pack 4, complete the following steps:

1. Stop all of the Windows services for the servers, including Tivoli Integrated Portal and Tivoli Common Reporting, if you installed them on your system.
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 your upgrade to 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. Start all of the servers and services, including Tivoli Integrated Portal and Tivoli Common Reporting.

Upgrading from 64-bit DB2 Version 9.7 to 64-Bit Db2 Version 11.1

Important: The following steps are an example of one way to upgrade from 64-bit DB2 Version 9.7 Fix Pack 4 to 64-bit Db2 Version 11.1 or later on 64-Bit Windows operating system.

To upgrade from 64-bit DB2 Enterprise Server Edition Version 9.7 Fix Pack 4 to 64-Bit Db2 Advanced Workgroup Server Edition Version 11.1 or later, complete the following steps:

1. Stop all of the Windows services for the servers, including Tivoli® Integrated Portal and Tivoli Common Reporting, if you installed them on your system.

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 database:

   ```
   db2 BACKUP DATABASE database to C:\downloads\db2_backup
   ```

   where *database* is the name of the Tivoli Storage Productivity Center database (usually TPCDB).
6. Stop all DB2 Windows services and exit DB2 in the Windows System Tray.
7. To upgrade DB2 to 64-Bit Version 11.1 or later, complete the following steps:
   a. In Windows Explorer, navigate to the following directory:

      ```
      c:\64bit_Db2_11.1_fixpack_download_directory\SERVER
      ```

      where *64bit_Db2_11.1_fixpack_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 Version 11.1 Workgroup, Enterprise and Advanced Edition** 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**.

8. Close the DB2 First Steps window.
9. Restart your computer.
10. Stop the all of the Windows services for the servers, including Tivoli Integrated Portal and Tivoli Common Reporting, if you installed them on your system.
11. If you experience problems when you start Db2 after you upgrade to 64-bit Db2 Version 11.1, 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 11.1 starts correctly.
       3) Stop all servers and Windows services, including Tivoli Integrated Portal and Tivoli Common Reporting.
12. To upgrade the database to 64-bit Db2 Version 11.1 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 11.1 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 11.1:

       ```
       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.

You might encounter the following message when you upgrade the Tivoli Common Reporting database to Db2 Version 11.1:

```
SQL0954C Not enough storage is available in the application heap
to process the statement.
```

For more information, see All available memory for the application has been used.

13. Start all servers and Windows 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.

Related information:

- Upgrading a Db2 server (Windows)
- Upgrading a Db2 server (Linux and UNIX)
- Upgrade to Db2 Version 11.1
- Upgrading Db2 32-bit servers to 64-bit systems

Migrating reports to IBM Cognos Analytics during upgrade

If you plan to use IBM® Cognos® Business Intelligence reports in IBM Spectrum Control, you can install IBM® Cognos® Analytics Version 11.09 or later and migrate your reports. **If you do not have custom report content, you can skip the migration procedures.**

Important: You no longer need to install Jazz for Service Management and Tivoli® Common Reporting with the latest version of IBM Spectrum Control to run reports.

The migration procedures assume that you are going to use Db2 for the Cognos Analytics content store. *It is not required* that the Cognos Analytics content store use Db2. Cognos Analytics supports other database products for the content store.

The IBM Spectrum Control database repository uses Db2. If you do not use Db2 for the content store, you still need to copy the Db2 JDBC driver files into the Cognos Analytics installation location and link the 32-Bit Db2 library file (Linux and AIX only) in order for Cognos Analytics to connect to the IBM Spectrum Control database repository.

High level overview of upgrade and migration tasks for reports

Complete the following high level tasks for an upgrade and migration to view predefined reports and create custom reports about IBM Spectrum Control:

- Export content from Tivoli Common Reporting.
- Upgrade IBM Spectrum Control.
- (Optional) Uninstall Tivoli Common Reporting, Jazz for Service Management, WebSphere Application Server, and Installation Manager.
- Install and configure Cognos Analytics.
- Import content into Cognos Analytics and then verify the content.

Helpful information

The following information will assist you as you go through the procedure for migrating your reports during an upgrade of IBM Spectrum Control.

Table 23. Helpful information to migrate reports during an upgrade

Product	Information
Jazz for Service Management	Default installation location: • Windows: `C:\Program Files\IBM\JazzSM\` • Linux and AIX: `/opt/IBM/JazzSM/` To determine the installation location of Jazz for Service Management in your particular environment, examine the value of the **JAZZSM_INSTALL_DIR** parameter in the *SC_installation_dir*`\config\InstallVariable.properties` file.Default user on all operating systems: `smadmin` To determine the Jazz for Service Management user in your particular environment, examine the value of the **varJazzSMUsrID** parameter in the *SC_installation_dir*`\config\InstallVariable.properties` file. You will also need to know the password associated with the Jazz for Service Management user.Default secure HTTP port on all operating systems: `16311` To determine the Jazz for Service Management secure HTTP port in your particular environment, examine the value of the **varTCRPort** parameter in the *SC_installation_dir*`\config\InstallVariable.properties` file. Default Jazz for Service Management server name to use when you want to stop Jazz for Service Management on all operating systems: `server1`

Table 23. Helpful information to migrate reports during an upgrade (continued)

Product	Information
Db2	Default installation location: • Windows: `C:\Program Files\IBM\SQLLIB\` • Linux: `/opt/ibm/db2/version/` • AIX: `/opt/IBM/db2/version/` Where *version* can be Version 10.1, 10.5 or 11.1 To determine the installation location of Db2 in your particular environment, examine the value of the **varDBPath** parameter in the *SC_installation_dir*`\config\InstallVariable.properties` file. Default Db2 user: • Windows: `db2admin` • Linux and AIX: `db2inst1` To determine the Db2 user in your particular environment, examine the value of the **varDBAdmUsr** parameter in the *SC_installation_dir*`\config\InstallVariable.properties` file. You will also need to know the password associated with the Db2 user. Default port on all operating systems: `50000` To determine the Db2 port in your particular environment, examine the value of the **varDBPort** parameter in the *SC_installation_dir*`\config\InstallVariable.properties` file.
Cognos Analytics	Default installation location: • Windows: `C:\Program Files\IBM\cognos\analytics\` • Linux and AIX: `/opt/ibm/cognos/analytics/` Default port on all operating systems: `9300`

Video about migrating IBM Spectrum Control custom reports to Cognos Analytics

In the following video, you learn how migrate IBM Spectrum Control custom reports from Cognos Business Intelligence to Cognos Analytics.

Related information:

- IBM Cognos Analytics - One analytics solution for your entire organization
- Guidelines for creating the content store
- Set up database connectivity for the content store database
- Set Database Connection Properties for the content store

Migrating Cognos BI reports to IBM Cognos Analytics in a single Windows environment

If you do not have custom report content, you can skip this migration procedure. You can upgrade to IBM® Cognos® Analytics Version 11.0.9 or later when you upgrade to the latest version of IBM Spectrum Control. Complete this procedure to migrate your existing custom report content from Tivoli Common Reporting to Cognos Analytics.

Review the content of Migrating reports to IBM Cognos Analytics during upgrade before you start this procedure.

This procedure assumes that you installed Db2®, IBM Spectrum Control, Version 5.2.15 or earlier, IBM®Jazz for Service Management, IBM® Tivoli Common Reporting on a single Microsoft® Windows® computer.

Important: Only reports in the Cognos Analytics Public Folders are exported from Tivoli Common Reporting. If you saved reports to Private Folders or My Folder, you *must* save them again in Public Folders before you export them.

If you plan to upgrade Db2 as part of your upgrade to the latest version of IBM Spectrum Control, upgrade Db2, upgrade the IBM Spectrum Control database (TPCDB) and then upgrade the Tivoli Common Reporting Content Store database (TCRDB).

A high level overview of the migration:

- Export content from Tivoli Common Reporting.
- Upgrade IBM Spectrum Control.
- (Optional) Uninstall Tivoli Common Reporting, Jazz for Service Management, IBM® WebSphere® Application Server, and Installation Manager.
- Install and configure Cognos Analytics.
- Import content into Cognos Analytics and then verify the content.

1. Log in to Jazz for Service Management and Tivoli Common Reporting to export content.
   a. Open a web browser and enter the following URL:

      `https://FQDN_Of_Your_Machine:port/tarf/servlet/dispatch`

      Where `https` is the protocol, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*) and the *port* value is the secure HTTP port number that was specified during the installation of Jazz for Service Management. To determine the secure HTTP port number for Jazz for Service Management, open the *JazzSM_installation_dir*`\profile\properties\portdef.props` file. The default *JazzSM_installation_dir* value is `C:\Program Files\IBM\JazzSM`. The port number is the value that is assigned to the **`WC_defaulthost_secure`** parameter. The default value is `16311`.

      If you receive a security certificate warning when you attempt to connect to the server, confirm the security exception and continue to the web page.
   b. Log in to the reporting interface using the Jazz for Service Management user name that was created when you installed Jazz for Service Management. The default value is `smadmin`.
   c. Select **Launch** > **IBM Cognos Administration**.
   d. In the IBM Cognos Administration GUI, select the **Configuration** tab.
   e. In the **Configuration** tab, select **Content Administration**.

f. On the toolbar, click the **New Export** icon. It is the third icon in the list.
g. On the Specify a name and description page, enter a name for your export package and click **Next**.
h. On the Choose a deployment method page, select **Select public folders and directory content** and click **Next**.
i. On the Select the public folders content page, click the **Add** link.
j. On the Select entries page, select the following items to export.
   - Custom content that you saved to Public Folders before running this procedure.
   - IBM Spectrum Control Packages and (or the IBM Tivoli Storage Productivity Center Packages).
   - IBM Spectrum Control Predefined Reports and (or the IBM Tivoli Storage Productivity Center Predefined Reports).
   - IBM Spectrum Control Report Layouts and (or the IBM Tivoli Storage Productivity Center Report Layouts).
k. Click the **Green** arrow to transfer the content to the list.
l. Click **OK**.
m. On the Select the public folders content page, click **Next**.

   Tip: If you want to export your schedules with your IBM® Cognos® Business Intelligence content from Tivoli Common Reporting, complete the following steps:
   1) On the Select the public folders content page, select **Include schedules**.
   2) Set **Conflict resolution** to **Replace existing entries**.
   3) Click **Next**.
n. On the Select the directory content page, select **Include data sources and connections** and **Include signons**.
o. Set **Conflict resolution** to **Replace existing entries** and click **Next**.
p. On the Specify the general options page, click **Next**.
q. On the Specify a deployment archive page, click **Set the encryption password**.
r. On the Enter the encryption password page, enter, and then confirm your password and click **OK**.

   Tip: The encryption password is *not* an existing password in IBM Spectrum Control, Db2 or the operating system. The encryption password is a new password for the purpose of securing the content you are exporting from Jazz for Service Management and Tivoli Common Reporting.

   Make note of your new password. You will need to provide it later in this procedure.
s. On the Specify a deployment archive page, click **Next**.
t. On the Review the summary page, click **Next**.
u. On the Select an action page, select **Save and run once** and click **Finish**.
v. On the Run with options page, click **Run**.
w. On the IBM Cognos software page, select **View the details of this report after closing this dialog** and click **OK**.

x. On the View run history details page, click **Refresh**. *Do not* log off from the IBM Cognos Administration GUI until the export job is complete. You can click **Refresh** periodically to check the status of the export job.

y. After the export job is complete, on the View an export deployment record page, click **Close**.

z. Log off from the reporting interface.

aa. Copy the exported file from the *JazzSM_installation_dir*\reporting\cognos\deployment\ directory to a directory that is outside of the Jazz for Service Management installation directory. Make note of the name and location of this exported file. You will need this information in Step 10.

Tip: If you *do not* copy the exported file outside of the Jazz for Service Management installation directory, the exported file is deleted when you uninstall Tivoli Common Reporting.

2. Upgrade your system to latest version of IBM Spectrum Control; this step uninstalls the IBM Spectrum Control Cognos BI Reports component. For more information, see Upgrading IBM Spectrum Control in a single-server environment.

3. Optional: Uninstall Tivoli Common Reporting, Jazz for Service Management, WebSphere Application Server, and Installation Manager. For more information, see Uninstalling Tivoli Common Reporting and Jazz for Service Management.

   If you *did not* uninstall Tivoli Common Reporting, Jazz for Service Management, WebSphere Application Server, and Installation Manager, you *must* stop Jazz for Service Management and Tivoli Common Reporting before you proceed with the rest of this procedure.

   a. To stop Jazz for Service Management and Tivoli Common Reporting, open a command prompt and enter the following command:

      ```
      JazzSM_Installation_dir\profile\bin\stopServer.bat server_name
      -username JazzSM_username  -password JazzSM_password
      ```

      For example:

      ```
      C:\Program Files\IBM\JazzSM\profile\bin\stopServer.bat server1
      -username smadmin -password abc123
      ```

   b. If you have a Windows Service named **IBM WebSphere Application Server V8.5 - JazzSMProfile**, you *must* change **Startup Type** from **Automatic** to **Manual** so that Jazz for Service Management and Tivoli Common Reporting do not start when you reboot the computer. For more information, see Accessing administration tools.

4. Install IBM Cognos Analytics Version 11.0.9 or later.

   a. Log in to your Windows computer as a user with administrative privileges.

   b. Start the IBM Cognos Analytics installation program.

   c. Select the language to use for your installation and click **Next**.

   d. On the Product installation page, select **IBM Cognos Analytics (IBM Bundler Edition)** and click **Next**.

   e. On the License agreement page, accept the license agreement and click **Next**.

   f. On the Location page, provide your installation location and name of the Shortcut folder and click **Next**. Make note of your Cognos Analytics installation location. You will need to provide it later in this procedure.

Tip: If you want the Cognos Analytics installation to automatically create the installation location for you, click **Yes**.

g. On the Installation type page, select **Custom** and click **Next**. The Custom option offers full flexibility to pick and choose the IBM Cognos Analytics components that you want to install.

h. On the Custom install page, click **Next**.

i. On the Choose components page, accept the default selections and click **Next**.

j. On the Pre-installation summary page, review your information for accuracy and click **Install**.

k. When the installation is complete, click **Done**.

5. Copy the following Db2 JDBC driver files from the `C:\Program Files\IBM\SQLLIB\java\` directory to the *Cognos_installation_dir*`\drivers\` directory: The Cognos Analytics installation location is what you provided in the previous step.
   - `db2jcc.jar`
   - `db2jcc_license_cu.jar`
   - `db2jcc4.jar`
6. Create the content store for Cognos Analytics.
   a. From the **Windows Start** menu, select **IBM Cognos Analytics** > **IBM Cognos Configuration**.

   b. In the Explorer window, expand **Data Access** > **Content Manager** and click **Content Store**.

   c. In the **Type** property, enter **DB2 database**, if it is not already displayed.

   d. In the **Database server and port number** property, enter localhost or the fully qualified domain name of the machine. For example, `localhost:50000` or *FQDN_Of_Your_Machine*`:50000` where `50000` is the default port number that is used by Db2.

      Tip: If you are using a different port number, ensure that you use that value. To determine the port that is used by Db2, examine the **varDBPort** parameter in the *SC_installation_dir*`\config\InstallVariable.properties` file.

   e. In the **User ID and password** property, enter the user name of the owner of the Db2 instance where the content store database will be located and the password that is associated with that user name. Typically, this user name is *db2admin*. If the user name is a Windows domain user name, enter the user name *without* a Windows domain name prefix or suffix.

   f. In the **Database name** property, verify that the default value is **cm**.

   g. From the **File** menu, click **Save**. This step might take a few minutes to complete. Track the progress in the window.

   h. In the informational window, click **Close**.

   i. In the Explorer window, expand **Data Access** > **Content Manager** and click **Content Store**.

   j. Right-click **Content Store** and click **Generate DDL**.

   k. In the informational window, click **Close**.

      Important: Do not exit IBM Cognos Configuration in this step. Wait until Step 9.

l. From the **Windows Start** menu, select **IBM DB2 DB2COPY1 (Default) > DB2 Command Window - Administrator**. Then, enter the following command:

```
db2 -tvf "Cognos_installation_dir\configuration\schemas\content\db2\createDb.sql"
```

On Windows, add quotes around the directory path if it contains spaces. For example:

```
db2 -tvf "C:\Program Files\IBM\Cognos\analytics\configuration\schemas\content\db2\createDb.sql"
```

This process might take a few minutes.

m. In IBM Cognos Configuration, from the **Actions** menu, click **Test**. You are testing the connection between content manager and the content store database.

n. In the informational window, click **Close**.

7. Optional: You can change the IBM Cognos Analytics ports to match the ports that are used by Jazz for Service Management and Tivoli Common Reporting. You would do this so that you do not have to get new firewall exceptions for the default Cognos Analytics ports.

a. While you are still in IBM Cognos Configuration, in the Explorer window, click **Environment**.

b. In the Group Properties window, select the **Value** next to the **URI** property and change the following properties (names):

Table 24. Group Property values

Property	Change the value to...
Gateway URI	• Computer fully qualified domain name (for example, *myserver.mycompany.com*). • The `https` protocol. • The `9300` port to the value of the **`WC_defaulthost_secure`** parameter in the *`JazzSM_installation_dir`*`\profile\properties\portdef.props` file. The default value is 16311.
External dispatcher URI	
Internal dispatcher URI	
Dispatcher URI for external applications	
Content Manager URIs	

c. From the **File** menu, click **Save**.

d. In the informational window, click **Close**.

8. Start Cognos Analytics (content manager and application services).

It might take Cognos Analytics a few minutes to start.

a. While you are still in IBM Cognos Configuration, in the Explorer window, click **Local Configuration**.

b. From the **Actions** menu, click **Test**.

Tip: If you are not configuring Cognos Analytics to send notifications, you can ignore the testing the mail server connection failure message.

c. In the informational window, click **Close**.

d. From the **Actions** menu, click **Start**. It might take Cognos Analytics a few minutes to start.

9. Exit IBM Cognos Configuration.

10. Copy the exported file that you created in Step 1 to the *`Cognos_installation_dir`*`\deployment\` directory.

11. Import content into Cognos Analytics.

a. Open a web browser and enter either of the following URLs:

`http://FQDN_Of_Your_Machine:port/bi`

Or

`https://FQDN_Of_Your_Machine:port/bi`

Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 7 (Optional). If you *did not* perform Step 7, the default port value is 9300.

Note: At this point Cognos Analytics is configured with anonymous access so that anyone is able to access it.

b. In the lower left-hand part of the page, select **Manage** > **Administration console**.

c. In the IBM Cognos Administration GUI, select the **Configuration** tab.

d. In the **Configuration** tab, select **Content Administration**.

e. On the toolbar, click the **New Import** icon. It is the fourth icon in the list.

f. On the Select a deployment archive page, select the name of the file that you exported from Jazz for Service Management in Step 1 and click **Next**.

g. On the Enter the encryption password page, enter the encryption password that you created in Step 1 and click **OK**.

h. On the Specify a name and description page, enter a name for your import (or keep the default setting) and click **Next**.

i. On the Select the public folders, directory, and library content page, select the following items to import:

- Custom content that you exported.
- IBM Spectrum Control Packages and (or the IBM Tivoli Storage Productivity Center Packages).
- IBM Spectrum Control Predefined Reports and (or the IBM Tivoli Storage Productivity Center Predefined Reports).
- IBM Spectrum Control Report Layouts and (or the IBM Tivoli Storage Productivity Center Report Layouts).

j. Accept the default settings in the **Options** section and click **Next**.

Tip: If you want to import your schedules with your IBM® Cognos® Business Intelligence content from Tivoli Common Reporting, complete the following steps:

1) In the **Options** section, verify that **Include schedules** is selected.
2) In the **Options** section, verify that **Conflict resolution** is set to **Replace existing entries**.
3) Click **Next**.

k. On the Select directory content page, verify that **Include data sources and connections** and **Include signons** are selected and that **Conflict resolution** is set to **Replace existing entries** and click **Next**.

l. On the Specify the general options page, click **Next**.

m. On the Review the summary page, click **Next**.

n. On the Select an action page, select **Save and run once** and click **Finish**.

o. On the Run with Options page, select **Upgrade all report specifications to the latest version** and **Assign new IDs during import**.

p. Click **Run**.

q. On the IBM Cognos software page, select **View the details of this import after closing this dialog** and click **OK**.

r. On the View run history details page, click **Refresh**. Check the **Status** field to monitor that the job is executing. Do *not* log off from the IBM Cognos Administration GUI until the import job is complete.

Tip: The import job might take approximately 15 minutes or more to resolve. Click **Refresh** periodically to check the status.

The results of importing the reports and schedules into Cognos Analytics contain the following similar messages:

```
CM-REQ-4328 A problem was encountered while importing the object
"/content/folder[@name="IBM Spectrum Control Predefined Reports"]/
folder[@name="Servers"]/report[@name="Servers Capacity"]/schedule".
CM-REQ-4329 The following references cannot be resolved and were cleared:
"credential: CAMID("VMMProvider:smadmin")/credential[@name='Credential '] ".
```

```
CM-REQ-4328 A problem was encountered while importing the object
"/content/folder[@name="IBM Spectrum Control Predefined Reports"]/
folder[@name="Servers"]/report[@name="Servers Capacity"]/
schedule[@name="2018-04-27T18:03:22.638Z"]".
CM-REQ-3282 The schedule will not run because the credential is missing.
```

You can safely ignore the messages as they are expected.

s. After the import job is complete, check the **Completion time** and **Status** fields to verify that the job is complete. If it is complete, on the View an import deployment record page, click **Close**.

t. To exit the IBM Cognos Administration GUI, close the browser tab.

12. Verify that the imported content is displayed in Cognos Analytics.

a. Return to the browser tab where the Cognos Analytics GUI is running. If it is not running, open a web browser and enter either of the following URLs:

`http://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/bi`

Or

`https://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/bi`

Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 7 (Optional).

If you did perform Step 7, then you will use `https`. If you *did not* perform Step 7, then you use `http`. If you *did not* perform Step 7, the default port value is 9300.

b. On the IBM Cognos Analytics Welcome page, click **Team content**.

c. Verify that the following content is listed:

- Custom content that you saved to Public Folders before you ran this procedure.
- IBM Spectrum Control Packages and (or IBM Tivoli Storage Productivity Center Packages).
- IBM Spectrum Control Predefined Reports and (or IBM Tivoli Storage Productivity Center Predefined Reports).
- IBM Spectrum Control Report Layouts and (or IBM Tivoli Storage Productivity Center Report Layouts).

d. Optional: Attempt to generate a custom report or a predefined report and verify the contents.

Important: If you encounter APAR IT23800 or other problems when generating a predefined report in Cognos Analytics that was migrated from Tivoli Common Reporting, import the predefined reports package for the version of IBM Spectrum Control you are currently running on your system.

If you encounter APAR IT23800 or other problems when generating a custom report in Cognos Analytics that was migrated from Tivoli Common Reporting, you must update or recreate the custom report to use the predefined reports package for the version of IBM Spectrum Control you are currently running and remove references to tables that are no longer used in the IBM Spectrum Control database repository.

13. After you import the report content and schedules into Cognos Analytics, the schedules will not run due to missing credentials. To update the schedules in Cognos Analytics with the correct credentials, complete the following steps:
    a. Return to the browser tab where the Cognos Analytics GUI is running. If it is not running, open a web browser and enter either of the following URLs:

       `http://FQDN_Of_Your_Machine:port/bi`

       Or

       https://*FQDN_Of_Your_Machine*:*port*/bi

       Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 7 (Optional).

       If you did perform Step 7, then you will use `https`. If you *did not* perform Step 7, then you use `http`.

       If you *did not* perform Step 7, the default port value is 9300.
    b. On the IBM Cognos Analytics Welcome page, click **Team content**.
    c. Select a report that has an existing schedule.
    d. Select the **Properties** for the report.
    e. Select the **Schedule** tab.
    f. Select the > icon to open the schedule.
    g. Click **Update** on the schedule page.

    Repeat steps c-g for each migrated report schedule you want to run in Cognos Analytics.

You migrated your custom IBM® Cognos® Business Intelligence reports and upgraded to the latest version of IBM Spectrum Control and are able to use Cognos® BI reports.

Change the configuration of Cognos Analytics from anonymous access to authenticated access.

For more information, see Configuring an LDAP namespace for IBM Directory Server.

For more information, see Configuring an LDAP namespace for Active Directory Server.

For more information, see Managing user authentication.

Related information:

"Importing IBM Spectrum Control pre-defined reports package" on page 96
Complete this procedure to import the IBM Spectrum Control predefined reports package into the IBM Cognos Analytics reporting tool.

- APAR IT23800
- Upgrading Db2 servers
- Upgrading a Db2 server (Windows)
- IBM Cognos Analytics server components
- Install and configure server components
- Installing server components on Windows operating system
- Installing Content Manager on Windows operating system
- Installing the Application services components on Windows operating system

Migrating Cognos BI reports to IBM Cognos Analytics in a multiple-server Windows environment with a remote database

If you do not have custom report content, you can skip this migration procedure. You can upgrade to IBM® Cognos® Analytics Version 11.0.9 or later when you upgrade to the latest version of IBM Spectrum Control. Complete this procedure in a multiple server environment to migrate your existing custom report content from Tivoli Common Reporting to Cognos Analytics.

Review the content of Migrating reports to IBM Cognos Analytics during upgrade before you start this procedure.

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 and DB2® Enterprise Server Edition, Jazz for Service Management, and Tivoli Common Reporting.

Important: Only reports in the Cognos Analytics Public Folders are exported from Tivoli Common Reporting. If you saved reports to Private Folders or My Folder, you *must* save them again in Public Folders before you export them.

If you plan to upgrade Db2 as part of your upgrade to the latest version of IBM Spectrum Control, upgrade Db2 on *Server A*, upgrade the IBM Spectrum Control database (TPCDB) on *Server A*, upgrade Db2 on *Server B* and then upgrade the Tivoli Common Reporting Content Store database (TCRDB) on *Server B*.

A high level overview on completing this upgrade:

- Export content from Tivoli Common Reporting on *Server B*.
- Upgrade IBM Spectrum Control on *Server A*.
- Upgrade IBM Spectrum Control on *Server B*.
- (Optional) Uninstall Tivoli Common Reporting, Jazz for Service Management, IBM® WebSphere® Application Server, and Installation Manager, from *Server B*.
- Install and configure Cognos Analytics on *Server B*.
- Import content into Cognos Analytics on *Server B* and then verify the content.

1. Log in to Jazz for Service Management and Tivoli Common Reporting on *Server B* to export content.

a. Open a web browser and enter the following URL:

   `https://FQDN_Of_Your_Machine:port/tarf/servlet/dispatch`

   Where `https` is the protocol, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*) and the *port* value is the secure HTTP port number that was specified during the installation of Jazz for Service Management. To determine the secure HTTP port number for Jazz for Service Management, open the *JazzSM_installation_dir*`\profile\properties\portdef.props` file. The default *JazzSM_installation_dir* value is `C:\Program Files\IBM\JazzSM`. The port number is the value that is assigned to the **`WC_defaulthost_secure`** parameter. The default value is `16311`.

   If you receive a security certificate warning when you attempt to connect to the server, confirm the security exception and continue to the web page.

b. Log in to the reporting interface using the Jazz for Service Management user name that was created when you installed Jazz for Service Management. The default value is `smadmin`.

c. Select **Launch** > **IBM Cognos Administration**.

d. In the IBM Cognos Administration GUI, select the **Configuration** tab.

e. In the **Configuration** tab, select **Content Administration**.

f. On the toolbar, click the **New Export** icon. It is the third icon in the list.

g. On the Specify a name and description page, enter a name for your export package and click **Next**.

h. On the Choose a deployment method page, select **Select public folders and directory content** and click **Next**.

i. On the Select the public folders content page, click the **Add** link.

j. On the Select entries page, select the following items to export.

   - Custom content that you saved to Public Folders before running this procedure.
   - IBM Spectrum Control Packages and (or the IBM Tivoli Storage Productivity Center Packages).
   - IBM Spectrum Control Predefined Reports and (or the IBM Tivoli Storage Productivity Center Predefined Reports).
   - IBM Spectrum Control Report Layouts and (or the IBM Tivoli Storage Productivity Center Report Layouts).

k. Click the **Green** arrow to transfer the content to the list.

l. Click **OK**.

m. On the Select the public folders content page, click **Next**.

   Tip: If you want to export your schedules with your IBM® Cognos® Business Intelligence content from Tivoli Common Reporting, complete the following steps:

   1) On the Select the public folders content page, select **Include schedules**.
   2) Set **Conflict resolution** to **Replace existing entries**.
   3) Click **Next**.

n. On the Select the directory content page, select **Include data sources and connections** and **Include signons**.

o. Set **Conflict resolution** to **Replace existing entries** and click **Next**.

p. On the Specify the general options page, click **Next**.

q. On the Specify a deployment archive page, click **Set the encryption password**.

r. On the Enter the encryption password page, enter, and then confirm your password and click **OK**.

Tip: The encryption password is *not* an existing password in IBM Spectrum Control, Db2 or the operating system. The encryption password is a new password for the purpose of securing the content you are exporting from Jazz for Service Management and Tivoli Common Reporting.

Make note of your new password. You will need to provide it later in this procedure.

s. On the Specify a deployment archive page, click **Next**.

t. On the Review the summary page, click **Next**.

u. On the Select an action page, select **Save and run once** and click **Finish**.

v. On the Run with options page, click **Run**.

w. On the IBM Cognos software page, select **View the details of this report after closing this dialog** and click **OK**.

x. On the View run history details page, click **Refresh**. *Do not* log off from the IBM Cognos Administration GUI until the export job is complete. You can click **Refresh** periodically to check the status of the export job.

y. After the export job is complete, on the View an export deployment record page, click **Close**.

z. Log off from the reporting interface.

aa. Copy the exported file from the *JazzSM_installation_dir*\reporting\cognos\deployment\ directory to a directory that is outside of the Jazz for Service Management installation directory. Make note of the name and location of this exported file. You will need this information in Step 11.

Tip: If you *do not* copy the exported file outside of the Jazz for Service Management installation directory, the exported file is deleted when you uninstall Tivoli Common Reporting.

2. Upgrade *Server A* to the latest version of IBM Spectrum Control. For more information, see Upgrading from Tivoli Storage Productivity Center Version 5.2.0 and later with a remote database by using the installation program.

3. Upgrade *Server B* to the latest version of IBM Spectrum Control. For more information, see Upgrading from Tivoli Storage Productivity Center Version 5.2.0 and later with a remote database by using the installation program.

4. Optional: Uninstall Tivoli Common Reporting, Jazz for Service Management, WebSphere Application Server, and Installation Manager from *Server B*. For more information, see Uninstalling Tivoli Common Reporting and Jazz for Service Management.

   If you *did not* uninstall Tivoli Common Reporting, Jazz for Service Management, WebSphere Application Server, and Installation Manager, you *must* stop Jazz for Service Management and Tivoli Common Reporting before you proceed with the rest of this procedure.

   a. To stop Jazz for Service Management and Tivoli Common Reporting, open a command prompt and enter the following command:

   ```
   JazzSM_Installation_dir\profile\bin\stopServer.bat server_name
   -username JazzSM_username  -password JazzSM_password
   ```

   For example:

```
C:\Program Files\IBM\JazzSM\profile\bin\stopServer.bat server1
-username smadmin -password abc123
```

b. If you have a Windows Service named **IBM WebSphere Application Server V8.5 - JazzSMProfile**, you *must* change **Startup Type** from **Automatic** to **Manual** so that Jazz for Service Management and Tivoli Common Reporting do not start when you reboot the computer. For more information, see Accessing administration tools.

5. Install IBM Cognos Analytics 11.0.9 or later on *Server B*.
   a. Log in to your Windows computer as a user with administrative privileges.
   b. Start the IBM Cognos Analytics installation program.
   c. Select the language to use for your installation and click **Next**.
   d. On the Product installation page, select **IBM Cognos Analytics (IBM Bundler Edition)** and click **Next**.
   e. On the License agreement page, accept the license agreement and click **Next**.
   f. On the Location page, provide your installation location and name of the Shortcut folder and click **Next**. Make note of your Cognos Analytics installation location. You will need to provide it later in this procedure.

      Tip: If you want the Cognos Analytics installation to automatically create the installation location for you, click **Yes**.
   g. On the Installation type page, select **Custom** and click **Next**. The Custom option offers full flexibility to pick and choose the IBM Cognos Analytics components that you want to install.
   h. On the Custom install page, click **Next**.
   i. On the Choose components page, accept the default selections and click **Next**.
   j. On the Pre-installation summary page, review your information for accuracy and click **Install**.
   k. When the installation is complete, click **Done**.
6. On *Server B*, copy the following Db2 JDBC driver files from the `C:\Program Files\IBM\SQLLIB\java\` directory to the *`Cognos_installation_dir`*`\drivers\` directory: The Cognos Analytics installation location is what you provided in the previous step.
   - `db2jcc.jar`
   - `db2jcc_license_cu.jar`
   - `db2jcc4.jar`
7. Create the content store for Cognos Analytics on *Server B*.
   a. From the **Windows Start** menu, select **IBM Cognos Analytics** > **IBM Cognos Configuration**.
   b. In the Explorer window, expand **Data Access** > **Content Manager** and click **Content Store**.
   c. In the **Type** property, enter **DB2 database**, if it is not already displayed.
   d. In the **Database server and port number** property, enter localhost or the fully qualified domain name of the machine. For example, `localhost:50000` or *`FQDN_Of_Your_Machine`*`:50000` where `50000` is the default port number that is used by Db2.

Tip: If you are using a different port number, ensure that you use that value. To determine the port that is used by Db2, examine the **varDBPort** parameter in the *SC_installation_dir*\config\InstallVariable.properties file.

e. In the **User ID and password** property, enter the user name of the owner of the Db2 instance where the content store database will be located and the password that is associated with that user name. Typically, this user name is *db2admin*. If the user name is a Windows domain user name, enter the user name *without* a Windows domain name prefix or suffix.

f. In the **Database name** property, verify that the default value is **cm**.

g. From the **File** menu, click **Save**. This step might take a few minutes to complete. Track the progress in the window.

h. In the informational window, click **Close**.

i. In the Explorer window, expand **Data Access** > **Content Manager** and click **Content Store**.

j. Right-click **Content Store** and click **Generate DDL**.

k. In the informational window, click **Close**.

Important: Do not exit IBM Cognos Configuration in this step. Wait until Step 10.

l. From the **Windows Start** menu, select **IBM DB2 DB2COPY1 (Default) > DB2 Command Window - Administrator**. Then, enter the following command:

```
db2 -tvf "Cognos_installation_dir\configuration\schemas\content\db2\createDb.sql"
```

On Windows, add quotes around the directory path if it contains spaces. For example:

```
db2 -tvf "C:\Program Files\IBM\Cognos\analytics\configuration\schemas\content\db2\createDb.sql"
```

This process might take a few minutes.

m. In IBM Cognos Configuration, from the **Actions** menu, click **Test**. You are testing the connection between content manager and the content store database.

n. In the informational window, click **Close**.

8. Optional: On *Server B*, you can change the IBM Cognos Analytics ports to match the ports that are used by Jazz for Service Management and Tivoli Common Reporting. You would do this so that you do not have to get new firewall exceptions for the default Cognos Analytics ports.

a. While you are still in IBM Cognos Configuration, in the Explorer window, click **Environment**.

b. In the Group Properties window, select the **Value** next to the **URI** property and change the following properties (names):

Table 25. Group Property values

Property	Change the value to...
Gateway URI	• Computer fully qualified domain name (for example, *myserver.mycompany.com*). • The `https` protocol. • The `9300` port to the value of the **`WC_defaulthost_secure`** parameter in the *`JazzSM_installation_dir`*`\profile\properties\portdef.props` file. The default value is 16311.
External dispatcher URI	
Internal dispatcher URI	
Dispatcher URI for external applications	
Content Manager URIs	

c. From the **File** menu, click **Save**.

d. In the informational window, click **Close**.

9. Start IBM Cognos Analytics (content manager and application services), on *Server B*.

   It might take Cognos Analytics a few minutes to start.

   a. While you are still in IBM Cognos Configuration, in the Explorer window, click **Local Configuration**.

   b. From the **Actions** menu, click **Test**.

      Tip: If you are not configuring Cognos Analytics to send notifications, you can ignore the testing the mail server connection failure message.

   c. In the informational window, click **Close**.

   d. From the **Actions** menu, click **Start**. It might take Cognos Analytics a few minutes to start.

10. Exit IBM Cognos Configuration, on *Server B*.

11. On *Server B*, copy the exported file that you created in Step 1 to the *`Cognos_installation_dir`*`\deployment\` directory.

12. Import content into Cognos Analytics on *Server B*.

    a. Open a web browser and enter either of the following URLs:

       `http://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/bi`

       Or

       `https://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/bi`

       Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 8 (Optional). If you *did not* perform Step 8, the default port value is 9300.

       Note: At this point Cognos Analytics is configured with anonymous access so that anyone is able to access it.

    b. In the lower left-hand part of the page, select **Manage** > **Administration console**.

    c. In the IBM Cognos Administration GUI, select the **Configuration** tab.

    d. In the **Configuration** tab, select **Content Administration**.

    e. On the toolbar, click the **New Import** icon. It is the fourth icon in the list.

    f. On the Select a deployment archive page, select the name of the file that you exported from Jazz for Service Management in Step 1 and click **Next**.

g. On the Enter the encryption password page, enter the encryption password that you created in Step 1 and click **OK**.

h. On the Specify a name and description page, enter a name for your import (or keep the default setting) and click **Next**.

i. On the Select the public folders, directory, and library content page, select the following items to import:
   - Custom content that you exported.
   - IBM Spectrum Control Packages and (or the IBM Tivoli Storage Productivity Center Packages).
   - IBM Spectrum Control Predefined Reports and (or the IBM Tivoli Storage Productivity Center Predefined Reports).
   - IBM Spectrum Control Report Layouts and (or the IBM Tivoli Storage Productivity Center Report Layouts).

j. Accept the default settings in the **Options** section and click **Next**.

   Tip: If you want to import your schedules with your IBM® Cognos® Business Intelligence content from Tivoli Common Reporting, complete the following steps:

   1) In the **Options** section, verify that **Include schedules** is selected.
   2) In the **Options** section, verify that **Conflict resolution** is set to **Replace existing entries**.
   3) Click **Next**.

k. On the Select directory content page, verify that **Include data sources and connections** and **Include signons** are selected and that **Conflict resolution** is set to **Replace existing entries** and click **Next**.

l. On the Specify the general options page, click **Next**.

m. On the Review the summary page, click **Next**.

n. On the Select an action page, select **Save and run once** and click **Finish**.

o. On the Run with Options page, select **Upgrade all report specifications to the latest version** and **Assign new IDs during import**.

p. Click **Run**.

q. On the IBM Cognos software page, select **View the details of this import after closing this dialog** and click **OK**.

r. On the View run history details page, click **Refresh**. Check the **Status** field to monitor that the job is executing. Do *not* log off from the IBM Cognos Administration GUI until the import job is complete.

   Tip: The import job might take approximately 15 minutes or more to resolve. Click **Refresh** periodically to check the status.

   The results of importing the reports and schedules into Cognos Analytics contain the following similar messages:

```
CM-REQ-4328 A problem was encountered while importing the object
"/content/folder[@name="IBM Spectrum Control Predefined Reports"]/
folder[@name="Servers"]/report[@name="Servers Capacity"]/schedule".
CM-REQ-4329 The following references cannot be resolved and were cleared:
"credential: CAMID("VMMProvider:smadmin")/credential[@name='Credential '] ".
```

```
CM-REQ-4328 A problem was encountered while importing the object
"/content/folder[@name="IBM Spectrum Control Predefined Reports"]/
folder[@name="Servers"]/report[@name="Servers Capacity"]/
schedule[@name="2018-04-27T18:03:22.638Z"]".
CM-REQ-3282 The schedule will not run because the credential is missing.
```

   You can safely ignore the messages as they are expected.

s. After the import job is complete, check the **Completion time** and **Status** fields to verify that the job is complete. If it is complete, on the View an import deployment record page, click **Close**.

t. To exit the IBM Cognos Administration GUI, close the browser tab.

13. Verify that the imported content is displayed in Cognos Analytics on *Server B*.

a. Return to the browser tab where the Cognos Analytics GUI is running. If it is not running, open a web browser and enter either of the following URLs:

`http://FQDN_Of_Your_Machine:port/bi`

Or

`https://FQDN_Of_Your_Machine:port/bi`

Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 8 (Optional).

If you did perform Step 8, then you will use `https`. If you *did not* perform Step 8, then you use `http`. If you *did not* perform Step 8, the default port value is 9300.

b. On the IBM Cognos Analytics Welcome page, click **Team content**.

c. Verify that the following content is listed:

- Custom content that you saved to Public Folders before you ran this procedure.
- IBM Spectrum Control Packages and (or IBM Tivoli Storage Productivity Center Packages).
- IBM Spectrum Control Predefined Reports and (or IBM Tivoli Storage Productivity Center Predefined Reports).
- IBM Spectrum Control Report Layouts and (or IBM Tivoli Storage Productivity Center Report Layouts).

d. Optional: Attempt to generate a custom report or a predefined report and verify the contents.

Important: If you encounter APAR IT23800 or other problems when generating a predefined report in Cognos Analytics that was migrated from Tivoli Common Reporting, import the predefined reports package for the version of IBM Spectrum Control you are currently running on your system.

If you encounter APAR IT23800 or other problems when generating a custom report in Cognos Analytics that was migrated from Tivoli Common Reporting, you must update or recreate the custom report to use the predefined reports package for the version of IBM Spectrum Control you are currently running and remove references to tables that are no longer used in the IBM Spectrum Control database repository.

14. After you import the report content and schedules into Cognos Analytics, the schedules will not run due to missing credentials. To update the schedules in Cognos Analytics with the correct credentials, complete the following steps:

a. Open a web browser and enter either of the following URLs:

`http://FQDN_Of_Your_Machine:port/bi`

Or

https://*FQDN_Of_Your_Machine*:*port*/bi

Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 8 (Optional).

If you did perform Step 8, then you will use `https`. If you *did not* perform Step 8, then you use `http`.

If you *did not* perform Step 8, the default port value is 9300.

b. On the IBM Cognos Analytics Welcome page, click **Team content**.
c. Select a report that has an existing schedule.
d. Select the **Properties** for the report.
e. Select the **Schedule** tab.
f. Select the > icon to open the schedule.
g. Click **Update** on the schedule page.

Repeat steps c-g for each migrated report schedule you want to run in Cognos Analytics.

You migrated your custom IBM® Cognos® Business Intelligence reports and upgraded to the latest version of IBM Spectrum Control and are able to use Cognos® BI reports.

Change the configuration of IBM Cognos Analytics from anonymous access to authenticated access.

For more information, see Configuring an LDAP namespace for IBM Directory Server.

For more information, see Configuring an LDAP namespace for Active Directory Server.

For more information, see Managing user authentication.

Related information:

"Importing IBM Spectrum Control pre-defined reports package" on page 96
Complete this procedure to import the IBM Spectrum Control predefined reports package into the IBM Cognos Analytics reporting tool.

- APAR IT23800
- Upgrading Db2 servers
- Upgrading a Db2 server (Windows)
- IBM Cognos Analytics server components
- Install and configure server components
- Installing server components on Windows operating system
- Installing Content Manager on Windows operating system
- Installing the Application services components on Windows operating system

Migrating Cognos BI reports to IBM Cognos Analytics in a multiple server Windows environment with remote Jazz for Service Management

If you do not have custom report content, you can skip this migration procedure. You can upgrade to IBM® Cognos® Analytics Version 11.0.9 or later when you upgrade to the latest version of IBM Spectrum Control. Complete this procedure in a multiple server environment to migrate your existing custom report content from Tivoli Common Reporting to Cognos Analytics.

Review the content of Migrating reports to IBM Cognos Analytics during upgrade before you start this procedure.

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 DB2® Enterprise Server Edition, Jazz for Service Management, and Tivoli Common Reporting installed.

Important: Only reports in the Cognos Analytics Public Folders are exported from Tivoli Common Reporting. If you saved reports to Private Folders or My Folder, you *must* save them again in Public Folders before you export them.

If you plan to upgrade Db2 as part of your upgrade to the latest version of IBM Spectrum Control, upgrade Db2 on *Server A*, upgrade the IBM Spectrum Control database (TPCDB) on *Server A*, upgrade Db2 on *Server B* and then upgrade the Tivoli Common Reporting Content Store database (TCRDB) on *Server B*.

A high level overview on completing this upgrade:

- Export content from Tivoli Common Reporting on *Server B*.
- Upgrade IBM Spectrum Control on *Server A*.
- Uninstall IBM Spectrum Control from *Server B*.
- (Optional) Uninstall Tivoli Common Reporting, Jazz for Service Management, IBM® WebSphere® Application Server, and Installation Manager, from *Server B*.
- Install and configure Cognos Analytics on *Server B*.
- Import content into Cognos Analytics on *Server B* and then verify the content.

1. Log in to Jazz for Service Management and Tivoli Common Reporting on *Server B* to export content.
   a. Open a web browser and enter the following URL:

      `https://FQDN_Of_Your_Machine:port/tarf/servlet/dispatch`

      Where `https` is the protocol, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*) and the *port* value is the secure HTTP port number that was specified during the installation of Jazz for Service Management. To determine the secure HTTP port number for Jazz for Service Management, open the *JazzSM_installation_dir*`\profile\properties\portdef.props` file. The default *JazzSM_installation_dir* value is `C:\Program Files\IBM\JazzSM`. The port number is the value that is assigned to the **`WC_defaulthost_secure`** parameter. The default value is `16311`.

      If you receive a security certificate warning when you attempt to connect to the server, confirm the security exception and continue to the web page.
   b. Log in to the reporting interface using the Jazz for Service Management user name that was created when you installed Jazz for Service Management. The default value is `smadmin`.

c. Select **Launch** > **IBM Cognos Administration**.
d. In the IBM Cognos Administration GUI, select the **Configuration** tab.
e. In the **Configuration** tab, select **Content Administration**.
f. On the toolbar, click the **New Export** icon. It is the third icon in the list.
g. On the Specify a name and description page, enter a name for your export package and click **Next**.
h. On the Choose a deployment method page, select **Select public folders and directory content** and click **Next**.
i. On the Select the public folders content page, click the **Add** link.
j. On the Select entries page, select the following items to export.
   - Custom content that you saved to Public Folders before running this procedure.
   - IBM Spectrum Control Packages and (or the IBM Tivoli Storage Productivity Center Packages).
   - IBM Spectrum Control Predefined Reports and (or the IBM Tivoli Storage Productivity Center Predefined Reports).
   - IBM Spectrum Control Report Layouts and (or the IBM Tivoli Storage Productivity Center Report Layouts).
k. Click the **Green** arrow to transfer the content to the list.
l. Click **OK**.
m. On the Select the public folders content page, click **Next**.

   Tip: If you want to export your schedules with your IBM® Cognos® Business Intelligence content from Tivoli Common Reporting, complete the following steps:
   1) On the Select the public folders content page, select **Include schedules**.
   2) Set **Conflict resolution** to **Replace existing entries**.
   3) Click **Next**.
n. On the Select the directory content page, select **Include data sources and connections** and **Include signons**.
o. Set **Conflict resolution** to **Replace existing entries** and click **Next**.
p. On the Specify the general options page, click **Next**.
q. On the Specify a deployment archive page, click **Set the encryption password**.
r. On the Enter the encryption password page, enter, and then confirm your password and click **OK**.

   Tip: The encryption password is *not* an existing password in IBM Spectrum Control, Db2 or the operating system. The encryption password is a new password for the purpose of securing the content you are exporting from Jazz for Service Management and Tivoli Common Reporting.

   Make note of your new password. You will need to provide it later in this procedure.
s. On the Specify a deployment archive page, click **Next**.
t. On the Review the summary page, click **Next**.
u. On the Select an action page, select **Save and run once** and click **Finish**.
v. On the Run with options page, click **Run**.

w. On the IBM Cognos software page, select **View the details of this report after closing this dialog** and click **OK**.

x. On the View run history details page, click **Refresh**. *Do not* log off from the IBM Cognos Administration GUI until the export job is complete. You can click **Refresh** periodically to check the status of the export job.

y. After the export job is complete, on the View an export deployment record page, click **Close**.

z. Log off from the reporting interface.

aa. Copy the exported file from the *JazzSM_installation_dir*\reporting\cognos\deployment\ directory to a directory that is outside of the Jazz for Service Management installation directory. Make note of the name and location of this exported file. You will need this information in Step 11.

Tip: If you *do not* copy the exported file outside of the Jazz for Service Management installation directory, the exported file is deleted when you uninstall Tivoli Common Reporting.

2. Upgrade *Server A* to the latest version of IBM Spectrum Control. For more information, see Upgrading from Tivoli Storage Productivity Center Version 5.2.0 and later with a remote database by using the installation program.

3. Upgrade *Server B* to the latest version of IBM Spectrum Control. You are then instructed to uninstall IBM Spectrum Control from *Server B*. Uninstall IBM Spectrum Control from *Server B*. For more information, see Uninstalling IBM Spectrum Control.

4. Optional: Uninstall Tivoli Common Reporting, Jazz for Service Management, WebSphere Application Server, and Installation Manager from *Server B*. For more information, see Uninstalling Tivoli Common Reporting and Jazz for Service Management.

   If you *did not* uninstall Tivoli Common Reporting, Jazz for Service Management, WebSphere Application Server, and Installation Manager, you *must* stop Jazz for Service Management and Tivoli Common Reporting before you proceed with the rest of this procedure.

   a. To stop Jazz for Service Management and Tivoli Common Reporting, open a command prompt and enter the following command:

      ```
      JazzSM_Installation_dir\profile\bin\stopServer.bat server_name
      -username JazzSM_username  -password JazzSM_password
      ```

      For example:

      ```
      C:\Program Files\IBM\JazzSM\profile\bin\stopServer.bat server1
      -username smadmin -password abc123
      ```

   b. If you have a Windows Service named **IBM WebSphere Application Server V8.5 - JazzSMProfile**, you *must* change **Startup Type** from **Automatic** to **Manual** so that Jazz for Service Management and Tivoli Common Reporting do not start when you reboot the computer. For more information, see Accessing administration tools.

5. Install IBM Cognos Analytics 11.0.9 or later on *Server B*.

   a. Log in to your Windows computer as a user with administrative privileges.

   b. Start the IBM Cognos Analytics installation program.

   c. Select the language to use for your installation and click **Next**.

   d. On the Product installation page, select **IBM Cognos Analytics (IBM Bundler Edition)** and click **Next**.

e. On the License agreement page, accept the license agreement and click **Next**.

f. On the Location page, provide your installation location and name of the Shortcut folder and click **Next**. Make note of your Cognos Analytics installation location. You will need to provide it later in this procedure.

   Tip: If you want the Cognos Analytics installation to automatically create the installation location for you, click **Yes**.

g. On the Installation type page, select **Custom** and click **Next**. The Custom option offers full flexibility to pick and choose the IBM Cognos Analytics components that you want to install.

h. On the Custom install page, click **Next**.

i. On the Choose components page, accept the default selections and click **Next**.

j. On the Pre-installation summary page, review your information for accuracy and click **Install**.

k. When the installation is complete, click **Done**.

6. On *Server B*, copy the following Db2 JDBC driver files from the `C:\Program Files\IBM\SQLLIB\java\` directory to the *Cognos_installation_dir*`\drivers\` directory: The Cognos Analytics installation location is what you provided in the previous step.
   - `db2jcc.jar`
   - `db2jcc_license_cu.jar`
   - `db2jcc4.jar`
7. Create the content store for Cognos Analytics on *Server B*.
   a. From the **Windows Start** menu, select **IBM Cognos Analytics** > **IBM Cognos Configuration**.

   b. In the Explorer window, expand **Data Access** > **Content Manager** and click **Content Store**.

   c. In the **Type** property, enter **DB2 database**, if it is not already displayed.

   d. In the **Database server and port number** property, enter localhost or the fully qualified domain name of the machine. For example, `localhost:50000` or *FQDN_Of_Your_Machine*`:50000` where `50000` is the default port number that is used by Db2.

      Tip: If you are using a different port number, ensure that you use that value. To determine the port that is used by Db2, examine the **varDBPort** parameter in the *SC_installation_dir*`\config\InstallVariable.properties` file.

   e. In the **User ID and password** property, enter the user name of the owner of the Db2 instance where the content store database will be located and the password that is associated with that user name. Typically, this user name is *db2admin*. If the user name is a Windows domain user name, enter the user name *without* a Windows domain name prefix or suffix.

   f. In the **Database name** property, verify that the default value is **cm**.

   g. From the **File** menu, click **Save**. This step might take a few minutes to complete. Track the progress in the window.

   h. In the informational window, click **Close**.

   i. In the Explorer window, expand **Data Access** > **Content Manager** and click **Content Store**.

   j. Right-click **Content Store** and click **Generate DDL**.

k. In the informational window, click **Close**.

Important: Do not exit IBM Cognos Configuration in this step. Wait until Step 10.

l. From the **Windows Start** menu, select **IBM DB2 DB2COPY1 (Default) > DB2 Command Window - Administrator**. Then, enter the following command:

```
db2 -tvf "Cognos_installation_dir\configuration\schemas\content\db2\createDb.sql"
```

On Windows, add quotes around the directory path if it contains spaces. For example:

```
db2 -tvf "C:\Program Files\IBM\Cognos\analytics\configuration\schemas\content\db2\createDb.sql"
```

This process might take a few minutes.

m. In IBM Cognos Configuration, from the **Actions** menu, click **Test**. You are testing the connection between content manager and the content store database.

n. In the informational window, click **Close**.

8. Optional: On *Server B*, you can change the IBM Cognos Analytics ports to match the ports that are used by Jazz for Service Management and Tivoli Common Reporting. You would do this so that you do not have to get new firewall exceptions for the default Cognos Analytics ports.

a. While you are still in IBM Cognos Configuration, in the Explorer window, click **Environment**.

b. In the Group Properties window, select the **Value** next to the **URI** property and change the following properties (names):

Table 26. Group Property values

Property	Change the value to...
Gateway URI	• Computer fully qualified domain name (for example, *myserver.mycompany.com*). • The `https` protocol. • The `9300` port to the value of the **`WC_defaulthost_secure`** parameter in the *`JazzSM_installation_dir`*`\profile\properties\portdef.props` file. The default value is 16311.
External dispatcher URI	
Internal dispatcher URI	
Dispatcher URI for external applications	
Content Manager URIs	

c. From the **File** menu, click **Save**.

d. In the informational window, click **Close**.

9. Start IBM Cognos Analytics (content manager and application services), on *Server B*.

It might take Cognos Analytics a few minutes to start.

a. While you are still in IBM Cognos Configuration, in the Explorer window, click **Local Configuration**.

b. From the **Actions** menu, click **Test**.

Tip: If you are not configuring Cognos Analytics to send notifications, you can ignore the testing the mail server connection failure message.

c. In the informational window, click **Close**.

d. From the **Actions** menu, click **Start**. It might take Cognos Analytics a few minutes to start.

10. Exit IBM Cognos Configuration, on *Server B*.
11. On *Server B*, copy the exported file that you created in Step 1 to the *Cognos_installation_dir*\deployment\ directory.
12. Import content into Cognos Analytics on *Server B*.
    a. Open a web browser and enter either of the following URLs:

       http://*FQDN_Of_Your_Machine*:*port*/bi

       Or

       https://*FQDN_Of_Your_Machine*:*port*/bi

       Where http or https are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 8 (Optional). If you *did not* perform Step 8, the default port value is 9300.

       Note: At this point Cognos Analytics is configured with anonymous access so that anyone is able to access it.
    b. In the lower left-hand part of the page, select **Manage** > **Administration console**.
    c. In the IBM Cognos Administration GUI, select the **Configuration** tab.
    d. In the **Configuration** tab, select **Content Administration**.
    e. On the toolbar, click the **New Import** icon. It is the fourth icon in the list.
    f. On the Select a deployment archive page, select the name of the file that you exported from Jazz for Service Management in Step 1 and click **Next**.
    g. On the Enter the encryption password page, enter the encryption password that you created in Step 1 and click **OK**.
    h. On the Specify a name and description page, enter a name for your import (or keep the default setting) and click **Next**.
    i. On the Select the public folders, directory, and library content page, select the following items to import:
       - Custom content that you exported.
       - IBM Spectrum Control Packages and (or the IBM Tivoli Storage Productivity Center Packages).
       - IBM Spectrum Control Predefined Reports and (or the IBM Tivoli Storage Productivity Center Predefined Reports).
       - IBM Spectrum Control Report Layouts and (or the IBM Tivoli Storage Productivity Center Report Layouts).
    j. Accept the default settings in the **Options** section and click **Next**.

       Tip: If you want to import your schedules with your IBM® Cognos® Business Intelligence content from Tivoli Common Reporting, complete the following steps:

       1) In the **Options** section, verify that **Include schedules** is selected.
       2) In the **Options** section, verify that **Conflict resolution** is set to **Replace existing entries**.
       3) Click **Next**.
    k. On the Select directory content page, verify that **Include data sources and connections** and **Include signons** are selected and that **Conflict resolution** is set to **Replace existing entries** and click **Next**.
    l. On the Specify the general options page, click **Next**.

m. On the Review the summary page, click **Next**.

n. On the Select an action page, select **Save and run once** and click **Finish**.

o. On the Run with Options page, select **Upgrade all report specifications to the latest version** and **Assign new IDs during import**.

p. Click **Run**.

q. On the IBM Cognos software page, select **View the details of this import after closing this dialog** and click **OK**.

r. On the View run history details page, click **Refresh**. Check the **Status** field to monitor that the job is executing. Do *not* log off from the IBM Cognos Administration GUI until the import job is complete.

Tip: The import job might take approximately 15 minutes or more to resolve. Click **Refresh** periodically to check the status.

The results of importing the reports and schedules into Cognos Analytics contain the following similar messages:

```
CM-REQ-4328 A problem was encountered while importing the object
"/content/folder[@name="IBM Spectrum Control Predefined Reports"]/
folder[@name="Servers"]/report[@name="Servers Capacity"]/schedule".
CM-REQ-4329 The following references cannot be resolved and were cleared:
"credential: CAMID("VMMProvider:smadmin")/credential[@name='Credential '] ".
```

```
CM-REQ-4328 A problem was encountered while importing the object
"/content/folder[@name="IBM Spectrum Control Predefined Reports"]/
folder[@name="Servers"]/report[@name="Servers Capacity"]/
schedule[@name="2018-04-27T18:03:22.638Z"]".
CM-REQ-3282 The schedule will not run because the credential is missing.
```

You can safely ignore the messages as they are expected.

s. After the import job is complete, check the **Completion time** and **Status** fields to verify that the job is complete. If it is complete, on the View an import deployment record page, click **Close**.

t. To exit the IBM Cognos Administration GUI, close the browser tab.

13. Verify that the imported content is displayed in Cognos Analytics on *Server B*.

a. Return to the browser tab where the Cognos Analytics GUI is running. If it is not running, open a web browser and enter either of the following URLs:

`http://FQDN_Of_Your_Machine:port/bi`

Or

`https://FQDN_Of_Your_Machine:port/bi`

Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 8 (Optional).

If you did perform Step 8, then you will use `https`. If you *did not* perform Step 8, then you use `http`. If you *did not* perform Step 8, the default port value is 9300.

b. On the IBM Cognos Analytics Welcome page, click **Team content**.

c. Verify that the following content is listed:

- Custom content that you saved to Public Folders before you ran this procedure.
- IBM Spectrum Control Packages and (or IBM Tivoli Storage Productivity Center Packages).
- IBM Spectrum Control Predefined Reports and (or IBM Tivoli Storage Productivity Center Predefined Reports).

- IBM Spectrum Control Report Layouts and (or IBM Tivoli Storage Productivity Center Report Layouts).

d. Optional: Attempt to generate a custom report or a predefined report and verify the contents.

Important: If you encounter APAR IT23800 or other problems when generating a predefined report in Cognos Analytics that was migrated from Tivoli Common Reporting, import the predefined reports package for the version of IBM Spectrum Control you are currently running on your system.

If you encounter APAR IT23800 or other problems when generating a custom report in Cognos Analytics that was migrated from Tivoli Common Reporting, you must update or recreate the custom report to use the predefined reports package for the version of IBM Spectrum Control you are currently running and remove references to tables that are no longer used in the IBM Spectrum Control database repository.

14. After you import the report content and schedules into Cognos Analytics, the schedules will not run due to missing credentials. To update the schedules in Cognos Analytics with the correct credentials, complete the following steps:

a. Open a web browser and enter either of the following URLs:

`http://FQDN_Of_Your_Machine:port/bi`

Or

`https://FQDN_Of_Your_Machine:port/bi`

Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 8 (Optional).

If you did perform Step 8, then you will use `https`. If you *did not* perform Step 8, then you use `http`.

If you *did not* perform Step 8, the default port value is 9300.

b. On the IBM Cognos Analytics Welcome page, click **Team content**.

c. Select a report that has an existing schedule.

d. Select the **Properties** for the report.

e. Select the **Schedule** tab.

f. Select the > icon to open the schedule.

g. Click **Update** on the schedule page.

Repeat steps c-g for each migrated report schedule you want to run in Cognos Analytics.

You migrated your custom IBM® Cognos® Business Intelligence reports and upgraded to the latest version of IBM Spectrum Control and are able to use Cognos® BI reports.

Change the configuration of IBM Cognos Analytics from anonymous access to authenticated access.

For more information, see Configuring an LDAP namespace for IBM Directory Server.

For more information, see Configuring an LDAP namespace for Active Directory Server.

For more information, see Managing user authentication.

Related information:

"Importing IBM Spectrum Control pre-defined reports package" on page 96
Complete this procedure to import the IBM Spectrum Control predefined reports package into the IBM Cognos Analytics reporting tool.

- APAR IT23800
- Upgrading Db2 servers
- Upgrading a Db2 server (Windows)
- IBM Cognos Analytics server components
- Install and configure server components
- Installing server components on Windows operating system
- Installing Content Manager on Windows operating system
- Installing the Application services components on Windows operating system

Migrating Cognos BI reports to IBM Cognos Analytics in a single Linux environment

If you do not have custom report content, you can skip this migration procedure. You can upgrade to IBM® Cognos® Analytics Version 11.0.9 or later when you upgrade to the latest version of IBM Spectrum Control. Complete this procedure to migrate your existing custom report content from Tivoli Common Reporting to Cognos Analytics.

Review the content of Migrating reports to IBM Cognos Analytics during upgrade before you start this procedure.

This procedure assumes that you installed Db2®, IBM Spectrum Control, Version 5.2.15 or earlier, IBM®Jazz for Service Management, IBM® Tivoli Common Reporting on a single Linux computer.

Important:

Only reports in the Cognos Analytics Public Folders are exported from Tivoli Common Reporting. If you saved reports to Private Folders or My Folder, you *must* save them again in Public Folders before you export them.

If you plan to upgrade Db2 as part of your upgrade to the latest version of IBM Spectrum Control, upgrade Db2, upgrade the IBM Spectrum Control database (TPCDB) and then upgrade the Tivoli Common Reporting Content Store database (TCRDB).

A high level overview of the migration:

- Export content from Tivoli Common Reporting.
- Upgrade IBM Spectrum Control.
- (Optional) Uninstall Tivoli Common Reporting, Jazz for Service Management, IBM® WebSphere® Application Server, and Installation Manager.
- Install and configure Cognos Analytics.
- Import content into Cognos Analytics and then verify the content.

Verify that you have the following prerequisite packages installed on a Linux computer for IBM Cognos Analytics Version 11.0.9 or later.

The prerequisite packages for Red Hat Enterprise Linux (RHEL) 6.x are:

```
glibc-2.12-1.166.el6 or later (both i686 and x86_64 packages)
libstdc++-4.4.7-16.el6 or later (both i686 and x86_64 packages)
nspr-4.9.2-1.el6 or later (both i686 and x86_64 packages)
nss-3.14.0.0-12.el6 or later (both i686 and x86_64 packages)
openmotif-2.3.3-5.el6 or later (both i686 and x86_64 packages)
```

The prerequisite packages for Red Hat Enterprise Linux (RHEL) 7.x are:

```
glibc-2.17-55.el7 or later (both i686 and x86_64 packages)
libstdc++-4.8.2-16.el7 or later (both i686 and x86_64 packages)
nspr-4.10.2-4.el7 or later (both i686 and x86_64 packages)
nss-3.15.4-6.el7 or later (both i686 and x86_64 packages)
motif-2.3.4-7.el7 or later (both i686 and x86_64 packages)
```

For more information, see Software Product Compatibility Reports.

You need to set the correct ulimit values in the `/etc/security/limits.conf` file for IBM Cognos Analytics Version 11.0.9 or later.

Here is an example of the entries you might need to add to the `/etc/security/limits.conf` file:

```
*       soft    nproc   unlimited
*       hard    nproc   unlimited
*       soft    nofile  8192
*       hard    nofile  8192
*       soft    stack   unlimited
*       hard    stack   unlimited
```

After you set and save your ulimit values, restart your computer and verify the correct ulimit values.

For more information, see Set the ulimit values on UNIX and Linux operating systems .

1. Log in to Jazz for Service Management and Tivoli Common Reporting to export content.
   a. Open a web browser and enter the following URL:

      `https://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/tarf/servlet/dispatch`

      Where `https` is the protocol, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*) and the *port* value is the secure HTTP port number that was specified during the installation of Jazz for Service Management. To determine the secure HTTP port number for Jazz for Service Management, open the *`JazzSM_installation_dir`*`/profile/properties/portdef.props` file. The default *JazzSM_installation_dir* value is `/opt/IBM/JazzSM`. The port number is the value that is assigned to the **`WC_defaulthost_secure`** parameter. The default value is `16311`.

      If you receive a security certificate warning when you attempt to connect to the server, confirm the security exception and continue to the web page.
   b. Log in to the reporting interface using the Jazz for Service Management user name that was created when you installed Jazz for Service Management. The default value is `smadmin`.
   c. Select **Launch** > **IBM Cognos Administration**.
   d. In the IBM Cognos Administration GUI, select the **Configuration** tab.

e. In the **Configuration** tab, select **Content Administration**.
f. On the toolbar, click the **New Export** icon. It is the third icon in the list.
g. On the Specify a name and description page, enter a name for your export package and click **Next**.
h. On the Choose a deployment method page, select **Select public folders and directory content** and click **Next**.
i. On the Select the public folders content page, click the **Add** link.
j. On the Select entries page, select the following items to export.
   - Custom content that you saved to Public Folders before running this procedure.
   - IBM Spectrum Control Packages and (or the IBM Tivoli Storage Productivity Center Packages).
   - IBM Spectrum Control Predefined Reports and (or the IBM Tivoli Storage Productivity Center Predefined Reports).
   - IBM Spectrum Control Report Layouts and (or the IBM Tivoli Storage Productivity Center Report Layouts).
k. Click the **Green** arrow to transfer the content to the list.
l. Click **OK**.
m. On the Select the public folders content page, click **Next**.

   Tip: If you want to export your schedules with your IBM® Cognos® Business Intelligence content from Tivoli Common Reporting, complete the following steps:
   1) On the Select the public folders content page, select **Include schedules**.
   2) Set **Conflict resolution** to **Replace existing entries**.
   3) Click **Next**.
n. On the Select the directory content page, select **Include data sources and connections** and **Include signons**.
o. Set **Conflict resolution** to **Replace existing entries** and click **Next**.
p. On the Specify the general options page, click **Next**.
q. On the Specify a deployment archive page, click **Set the encryption password**.
r. On the Enter the encryption password page, enter, and then confirm your password and click **OK**.

   Tip: The encryption password is *not* an existing password in IBM Spectrum Control, Db2 or the operating system. The encryption password is a new password for the purpose of securing the content you are exporting from Jazz for Service Management and Tivoli Common Reporting.

   Make note of your new password. You will need to provide it later in this procedure.
s. On the Specify a deployment archive page, click **Next**.
t. On the Review the summary page, click **Next**.
u. On the Select an action page, select **Save and run once** and click **Finish**.
v. On the Run with options page, click **Run**.
w. On the IBM Cognos software page, select **View the details of this report after closing this dialog** and click **OK**.

x. On the View run history details page, click **Refresh**. *Do not* log off from the IBM Cognos Administration GUI until the export job is complete. You can click **Refresh** periodically to check the status of the export job.

y. After the export job is complete, on the View an export deployment record page, click **Close**.

z. Log off from the reporting interface.

aa. Copy the exported file from the *JazzSM_installation_dir*/reporting/cognos/deployment/ directory to a directory that is outside of the Jazz for Service Management installation directory. Make note of the name and location of this exported file. You will need this information in Step 12.

Tip: If you *do not* copy the exported file outside of the Jazz for Service Management installation directory, the exported file is deleted when you uninstall Tivoli Common Reporting.

2. Upgrade your system to latest version of IBM Spectrum Control; this step uninstalls the IBM Spectrum Control Cognos BI Reports component. For more information, see Upgrading IBM Spectrum Control in a single-server environment.

3. Optional: Uninstall Tivoli Common Reporting, Jazz for Service Management, WebSphere Application Server, and Installation Manager. For more information, see Uninstalling Tivoli Common Reporting and Jazz for Service Management.

   If you *did not* uninstall Tivoli Common Reporting, Jazz for Service Management, WebSphere Application Server, and Installation Manager, you *must* stop Jazz for Service Management and Tivoli Common Reporting before you proceed with the rest of this procedure.

   To stop Jazz for Service Management and Tivoli Common Reporting, open a command prompt and enter the following command:

   ```
   JazzSM_installation_dir/profile/bin/stopServer.sh server_name
   -username JazzSM_username  -password JazzSM_password
   ```

   For example:

   ```
   /opt/IBM/JazzSM/profile/bin/stopServer.sh server1 -username smadmin -password abc123
   ```

4. Install IBM Cognos Analytics Version 11.0.9 or later.

   Tip: You do not need to set the **JAVA_HOME** environment variable before you start the IBM Cognos Analytics Version 11.0.9 or later installation program.

   a. Log in to your computer as a user with root privileges.

   b. Start the IBM Cognos Analytics installation program.

   c. Select the language to use for your installation and click **Next**.

   d. On the Product installation page, select **IBM Cognos Analytics (IBM Bundler Edition)** and click **Next**.

   e. On the License agreement page, accept the License Agreement and click **Next**.

   f. On the Location page, provide your installation location and click **Next**. Make note of your Cognos Analytics installation location. You will need to provide it later in this procedure.

   Tip: If you want the IBM Cognos Analytics installation to automatically create the installation location for you, click **Yes**.

   g. On the Installation type page, select **First install** and click **Next**.

   h. On the Choose components page, accept the default selections, and click **Next**.

i. On the Pre-installation summary page, review your information for accuracy and click **Install**.

j. When the installation is complete, click **Done**.

5. Copy the following Db2 JDBC driver files from the /opt/ibm/db2/*version*/java/ directory to the *Cognos_installation_dir*/drivers/ directory:
   - db2jcc.jar
   - db2jcc_license_cu.jar
   - db2jcc4.jar
6. Open a command prompt and enter the following command as the root user:

   ```
   cd Cognos_installation_dir/drivers/
   chmod +x db2jcc*.jar
   ```
7. Open a command prompt and enter the following command as the root user:

   ```
   ln -s Db2_instance_owner_home_directory/sqllib/lib32/libdb2.so
   Cognos_installation_dir/bin/
   ```

   IBM Spectrum Control Predefined Reports use Compatibility Query Mode. IBM Cognos Analytics needs to use the 32-Bit Db2 library in order to connect to the IBM Spectrum Control database as a data source.
8. Create the content store for Cognos Analytics.

   a. Open a command prompt and enter the following commands to start IBM Cognos Configuration:

      ```
      cd Cognos_installation_dir/bin64/
      . /home/db2inst1/sqllib/db2profile
      ./cogconfig.sh
      ```

      Notice the space between the **.** and the **/** in the second command.

   b. In the Explorer window, expand **Data Access** > **Content Manager** and click **Content Store**.

   c. In the **Type** property, enter **DB2 database**, if it is not already displayed.

   d. In the **Database server and port number** property, enter localhost or the fully qualified domain name of the machine. For example, localhost:50000 or *FQDN_Of_Your_Machine*:50000 where 50000 is the default port number that is used by Db2.

      Tip: If you are using a different port number, ensure that you use that value. To determine the port that is used by Db2, examine the **varDBPort** parameter in the *SC_installation_dir*/config/InstallVariable.properties file.

   e. In the **User ID and password** property, enter the user name of the owner of the Db2 instance where the content store database will be located and the password that is associated with that user name Typically, this user name is *db2inst1*.

   f. In the **Database name** property, verify that the default value is **cm**.

   g. From the **File** menu, click **Save**. This step might take a few minutes to complete. Track the progress in the window.

   h. In the informational window, click **Close**.

   i. In the Explorer window, expand **Data Access** > **Content Manager** and click **Content Store**.

   j. Right-click **Content Store** and click **Generate DDL**.

   k. In the informational window, click **Close**.

Important: Do not exit IBM Cognos Configuration in this step. Wait until Step 11.

l. While you are logged into the Linux operating system as the root user, switch to the user that is the Db2 instance owner (for example, *db2inst1*).

m. Open a command prompt and enter the following Db2 command:

```
db2 -tvf Cognos_installation_dir/configuration/schemas/content/db2/createDb.sql
```

If the results of this command contain the following similar messages, you can safely ignore those messages because the Db2 instance owner already has the necessary privileges:

```
GRANT CREATETAB,BINDADD,CONNECT,IMPLICIT_SCHEMA ON DATABASE TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502

GRANT CREATEIN,DROPIN,ALTERIN ON SCHEMA DB2COGNOS TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502

GRANT USE OF TABLESPACE TSN_USR_cm TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502

GRANT USE OF TABLESPACE TSN_REG_cm TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command.  During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502
```

n. Go back to the root user.

o. In IBM Cognos Configuration, from the **Actions** menu, click **Test**. You are testing the connection between content manager and the content store database.

p. In the informational window, click **Close**.

9. Optional: You can change the IBM Cognos Analytics ports to match the ports that are used by Jazz for Service Management and Tivoli Common Reporting. You would do this so that you do not have to get new firewall exceptions for the default Cognos Analytics ports.

a. While you are still in IBM Cognos Configuration, in the Explorer window, click **Environment**.

b. In the Group Properties window, select the **Value** next to the **URI** property and change the following properties (names):

Table 27. Group Property values

Property	Change the value to...
Gateway URI	• Computer fully qualified domain name (for example, *myserver.mycompany.com*). • The `https` protocol. • The `9300` port to the value of the **`WC_defaulthost_secure`** parameter in the *`JazzSM_installation_dir`*`\profile\properties\portdef.props` file. The default value is 16311.
External dispatcher URI	
Internal dispatcher URI	
Dispatcher URI for external applications	
Content Manager URIs	

c. From the **File** menu, click **Save**.

d. In the informational window, click **Close**.

10. Start Cognos Analytics (content manager and application services).

It might take Cognos Analytics a few minutes to start.

a. While you are still in IBM Cognos Configuration, in the Explorer window, click **Local Configuration**.
b. From the **Actions** menu, click **Test**.

   Tip: If you are not configuring Cognos Analytics to send notifications, you can ignore the testing the mail server connection failure message.
c. In the informational window, click **Close**.
d. From the **Actions** menu, click **Start**. It might take Cognos Analytics a few minutes to start.

11. Exit IBM Cognos Configuration.
12. Copy the exported file that you created in Step 1 to the *Cognos_installation_dir*/deployment/ directory.
13. Import content into Cognos Analytics.
    a. Open a web browser and enter either of the following URLs:

       `http://FQDN_Of_Your_Machine:port/bi`

       Or

       `https://FQDN_Of_Your_Machine:port/bi`

       Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 9 (Optional). If you *did not* perform Step 9, the default port value is 9300.

       Note: At this point Cognos Analytics is configured with anonymous access so that anyone is able to access it.
    b. In the lower left-hand part of the page, select **Manage** > **Administration console**.
    c. In the IBM Cognos Administration GUI, select the **Configuration** tab.
    d. In the **Configuration** tab, select **Content Administration**.
    e. On the toolbar, click the **New Import** icon. It is the fourth icon in the list.
    f. On the Select a deployment archive page, select the name of the file that you exported from Jazz for Service Management in Step 1 and click **Next**.
    g. On the Enter the encryption password page, enter the encryption password that you created in Step 1 and click **OK**.
    h. On the Specify a name and description page, enter a name for your import (or keep the default setting) and click **Next**.
    i. On the Select the public folders, directory, and library content page, select the following items to import:
       - Custom content that you exported.
       - IBM Spectrum Control Packages and (or the IBM Tivoli Storage Productivity Center Packages).
       - IBM Spectrum Control Predefined Reports and (or the IBM Tivoli Storage Productivity Center Predefined Reports).
       - IBM Spectrum Control Report Layouts and (or the IBM Tivoli Storage Productivity Center Report Layouts).
    j. Accept the default settings in the **Options** section and click **Next**.

Tip: If you want to import your schedules with your IBM® Cognos® Business Intelligence content from Tivoli Common Reporting, complete the following steps:

1) In the **Options** section, verify that **Include schedules** is selected.
2) In the **Options** section, verify that **Conflict resolution** is set to **Replace existing entries**.
3) Click **Next**.

k. On the Select directory content page, verify that **Include data sources and connections** and **Include signons** are selected and that **Conflict resolution** is set to **Replace existing entries** and click **Next**.

l. On the Specify the general options page, click **Next**.

m. On the Review the summary page, click **Next**.

n. On the Select an action page, select **Save and run once** and click **Finish**.

o. On the Run with Options page, select **Upgrade all report specifications to the latest version** and **Assign new IDs during import**.

p. Click **Run**.

q. On the IBM Cognos software page, select **View the details of this import after closing this dialog** and click **OK**.

r. On the View run history details page, click **Refresh**. Check the **Status** field to monitor that the job is executing. Do *not* log off from the IBM Cognos Administration GUI until the import job is complete.

Tip: The import job might take approximately 15 minutes or more to resolve. Click **Refresh** periodically to check the status.

The results of importing the reports and schedules into Cognos Analytics contain the following similar messages:

```
CM-REQ-4328 A problem was encountered while importing the object
"/content/folder[@name="IBM Spectrum Control Predefined Reports"]/
folder[@name="Servers"]/report[@name="Servers Capacity"]/schedule".
CM-REQ-4329 The following references cannot be resolved and were cleared:
"credential: CAMID("VMMProvider:smadmin")/credential[@name='Credential '] ".
```

```
CM-REQ-4328 A problem was encountered while importing the object
"/content/folder[@name="IBM Spectrum Control Predefined Reports"]/
folder[@name="Servers"]/report[@name="Servers Capacity"]/
schedule[@name="2018-04-27T18:03:22.638Z"]".
CM-REQ-3282 The schedule will not run because the credential is missing.
```

You can safely ignore the messages as they are expected.

s. After the import job is complete, check the **Completion time** and **Status** fields to verify that the job is complete. If it is complete, on the View an import deployment record page, click **Close**.

t. To exit the IBM Cognos Administration GUI, close the browser tab.

14. Verify that the imported content is displayed in Cognos Analytics.

a. Return to the browser tab where the Cognos Analytics GUI is running. If it is not running, open a web browser and enter either of the following URLs:

`http://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/bi`

Or

`https://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/bi`

Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 9 (Optional).

If you did perform Step 9, then you will use `https`. If you *did not* perform Step 9, then you use `http`. If you *did not* perform Step 9, the default port value is 9300.

b. On the IBM Cognos Analytics Welcome page, click **Team content**.

c. Verify that the following content is listed:
   - Custom content that you saved to Public Folders before you ran this procedure.
   - IBM Spectrum Control Packages and (or IBM Tivoli Storage Productivity Center Packages).
   - IBM Spectrum Control Predefined Reports and (or IBM Tivoli Storage Productivity Center Predefined Reports).
   - IBM Spectrum Control Report Layouts and (or IBM Tivoli Storage Productivity Center Report Layouts).

d. Optional: Attempt to generate a custom report or a predefined report and verify the contents.

   Important: If you encounter APAR IT23800 or other problems when generating a predefined report in Cognos Analytics that was migrated from Tivoli Common Reporting, import the predefined reports package for the version of IBM Spectrum Control you are currently running on your system.

   If you encounter APAR IT23800 or other problems when generating a custom report in Cognos Analytics that was migrated from Tivoli Common Reporting, you must update or recreate the custom report to use the predefined reports package for the version of IBM Spectrum Control you are currently running and remove references to tables that are no longer used in the IBM Spectrum Control database repository.

15. After you import the report content and schedules into Cognos Analytics, the schedules will not run due to missing credentials. To update the schedules in Cognos Analytics with the correct credentials, complete the following steps:

a. Return to the browser tab where the Cognos Analytics GUI is running. If it is not running, open a web browser and enter either of the following URLs:

   `http://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/bi`

   Or

   `https://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/bi`

   Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 9 (Optional).

   If you did perform Step 9, then you will use `https`. If you *did not* perform Step 9, then you use `http`.

   If you *did not* perform Step 9, the default port value is 9300.

b. On the IBM Cognos Analytics Welcome page, click **Team content**.

c. Select a report that has an existing schedule.

d. Select the **Properties** for the report.

e. Select the **Schedule** tab.

f. Select the > icon to open the schedule.

g. Click **Update** on the schedule page.

Repeat steps c-g for each migrated report schedule you want to run in Cognos Analytics.

You migrated your custom IBM® Cognos® Business Intelligence reports and upgraded to the latest version of IBM Spectrum Control and are able to use Cognos® BI reports.

Change the configuration of IBM Cognos Analytics from anonymous access to authenticated access.

For more information, see Configuring an LDAP namespace for IBM Directory Server.

For more information, see Configuring an LDAP namespace for Active Directory Server.

For more information, see Managing user authentication.

Related information:

"Importing IBM Spectrum Control pre-defined reports package" on page 96
Complete this procedure to import the IBM Spectrum Control predefined reports package into the IBM Cognos Analytics reporting tool.

- APAR IT23800
- Upgrading Db2 servers
- Upgrading a Db2 server (Linux and UNIX)
- IBM Cognos Analytics server components
- Install and configure server components
- Installing server components on UNIX or Linux operating systems
- Installing Content Manager on UNIX or Linux operating systems
- Installing the Application services components on UNIX or Linux operating systems

Migrating Cognos BI reports to IBM Cognos Analytics in a multiple-server Linux environment with a remote database

If you do not have custom report content, you can skip this migration procedure. You can upgrade to IBM® Cognos® Analytics Version 11.0.9 or later when you upgrade to the latest version of IBM Spectrum Control. Complete this procedure to migrate your existing custom report content from Tivoli Common Reporting to Cognos Analytics.

Review the content of Migrating reports to IBM Cognos Analytics during upgrade before you start this procedure.

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 and DB2® Enterprise Server Edition, Jazz for Service Management, and Tivoli Common Reporting.

Important: Only reports in the Cognos Analytics Public Folders are migrated to IBM® Cognos® Analytics Version 11.0.9 or later. If you saved reports to My Folder, you must save them again in Public Folders before you migrate them.

If you plan to upgrade Db2 as part of your upgrade to the latest version of IBM Spectrum Control, upgrade Db2 on *Server A*, upgrade the IBM Spectrum Control database (TPCDB) on *Server A*, upgrade Db2 on *Server B* and then upgrade the Tivoli Common Reporting Content Store database (TCRDB) on *Server B*.

A high level overview on completing this upgrade:

- Export content from Tivoli Common Reporting on *Server B*.
- Upgrade IBM Spectrum Control on *Server A*.
- Upgrade IBM Spectrum Control on *Server B*.
- (Optional) Uninstall Tivoli Common Reporting, Jazz for Service Management, IBM® WebSphere® Application Server, and Installation Manager, from *Server B*.
- Install and configure Cognos Analytics on *Server B*.
- Import content into IBM Cognos Analytics on *Server B* and then verify the content.

Verify that you have the following prerequisite packages installed on *Server B* for IBM Cognos Analytics Version 11.0.9 or later.

The prerequisite packages for Red Hat Enterprise Linux (RHEL) 6.x are:

```
glibc-2.12-1.166.el6 or later (both i686 and x86_64 packages)
libstdc++-4.4.7-16.el6 or later (both i686 and x86_64 packages)
nspr-4.9.2-1.el6 or later (both i686 and x86_64 packages)
nss-3.14.0.0-12.el6 or later (both i686 and x86_64 packages)
openmotif-2.3.3-5.el6 or later (both i686 and x86_64 packages)
```

The prerequisite packages for Red Hat Enterprise Linux (RHEL) 7.x are:

```
glibc-2.17-55.el7 or later (both i686 and x86_64 packages)
libstdc++-4.8.2-16.el7 or later (both i686 and x86_64 packages)
nspr-4.10.2-4.el7 or later (both i686 and x86_64 packages)
nss-3.15.4-6.el7 or later (both i686 and x86_64 packages)
motif-2.3.4-7.el7 or later (both i686 and x86_64 packages)
```

For more information, see Software Product Compatibility Reports.

You need to set the correct ulimit values for *Server B* in the `/etc/security/limits.conf` file for Cognos Analytics.

Here is an example of the entries you might need to add to the `/etc/security/limits.conf` file:

```
*       soft    nproc   unlimited
*       hard    nproc   unlimited
*       soft    nofile  8192
*       hard    nofile  8192
*       soft    stack   unlimited
*       hard    stack   unlimited
```

After you set and save your ulimit values, restart your computer and verify the correct ulimit values.

For more information, see Set the ulimit values on UNIX and Linux operating systems .

1. Log in to Jazz for Service Management and Tivoli Common Reporting on *Server B* to export content.
   a. Open a web browser and enter the following URL:

      `https://FQDN_Of_Your_Machine:port/tarf/servlet/dispatch`

      Where `https` is the protocol, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*) and the *port* value is the secure HTTP port number that was specified during the installation of Jazz for Service Management. To determine the secure HTTP port number for Jazz for Service Management, open the *JazzSM_installation_dir*`/profile/properties/portdef.props` file. The default *JazzSM_installation_dir* value is `/opt/IBM/JazzSM`. The port number is the value that is assigned to the **`WC_defaulthost_secure`** parameter. The default value is `16311`.

      If you receive a security certificate warning when you attempt to connect to the server, confirm the security exception and continue to the web page.
   b. Log in to the reporting interface using the Jazz for Service Management user name that was created when you installed Jazz for Service Management. The default value is `smadmin`.
   c. Select **Launch** > **IBM Cognos Administration**.
   d. In the IBM Cognos Administration GUI, select the **Configuration** tab.
   e. In the **Configuration** tab, select **Content Administration**.
   f. On the toolbar, click the **New Export** icon. It is the third icon in the list.
   g. On the Specify a name and description page, enter a name for your export package and click **Next**.
   h. On the Choose a deployment method page, select **Select public folders and directory content** and click **Next**.
   i. On the Select the public folders content page, click the **Add** link.
   j. On the Select entries page, select the following items to export.
      - Custom content that you saved to Public Folders before running this procedure.
      - IBM Spectrum Control Packages and (or the IBM Tivoli Storage Productivity Center Packages).
      - IBM Spectrum Control Predefined Reports and (or the IBM Tivoli Storage Productivity Center Predefined Reports).
      - IBM Spectrum Control Report Layouts and (or the IBM Tivoli Storage Productivity Center Report Layouts).
   k. Click the **Green** arrow to transfer the content to the list.
   l. Click **OK**.
   m. On the Select the public folders content page, click **Next**.

      Tip: If you want to export your schedules with your IBM® Cognos® Business Intelligence content from Tivoli Common Reporting, complete the following steps:

      1) On the Select the public folders content page, select **Include schedules**.
      2) Set **Conflict resolution** to **Replace existing entries**.
      3) Click **Next**.
   n. On the Select the directory content page, select **Include data sources and connections** and **Include signons**.
   o. Set **Conflict resolution** to **Replace existing entries** and click **Next**.

p. On the Specify the general options page, click **Next**.

q. On the Specify a deployment archive page, click **Set the encryption password**.

r. On the Enter the encryption password page, enter, and then confirm your password and click **OK**.

   Tip: The encryption password is *not* an existing password in IBM Spectrum Control, Db2 or the operating system. The encryption password is a new password for the purpose of securing the content you are exporting from Jazz for Service Management and Tivoli Common Reporting.

   Make note of your new password. You will need to provide it later in this procedure.

s. On the Specify a deployment archive page, click **Next**.

t. On the Review the summary page, click **Next**.

u. On the Select an action page, select **Save and run once** and click **Finish**.

v. On the Run with options page, click **Run**.

w. On the IBM Cognos software page, select **View the details of this report after closing this dialog** and click **OK**.

x. On the View run history details page, click **Refresh**. *Do not* log off from the IBM Cognos Administration GUI until the export job is complete. You can click **Refresh** periodically to check the status of the export job.

y. After the export job is complete, on the View an export deployment record page, click **Close**.

z. Log off from the reporting interface.

aa. Copy the exported file from the *JazzSM_installation_dir*/reporting/cognos/deployment/ directory to a directory that is outside of the Jazz for Service Management installation directory. Make note of the name and location of this exported file. You will need this information in Step 13.

    Tip: If you *do not* copy the exported file outside of the Jazz for Service Management installation directory, the exported file is deleted when you uninstall Tivoli Common Reporting.

2. Upgrade *Server A* to the latest version of IBM Spectrum Control. For more information, see Upgrading from Tivoli Storage Productivity Center Version 5.2.0 and later with a remote database by using the installation program.

3. Upgrade *Server B* to the latest version of IBM Spectrum Control. For more information, see Upgrading from Tivoli Storage Productivity Center Version 5.2.0 and later with a remote database by using the installation program.

4. Optional: Uninstall Tivoli Common Reporting, Jazz for Service Management, WebSphere Application Server, and Installation Manager from *Server B*. For more information, see Uninstalling Tivoli Common Reporting and Jazz for Service Management.

   If you *did not* uninstall Tivoli Common Reporting, Jazz for Service Management, WebSphere Application Server, and Installation Manager, you *must* stop Jazz for Service Management and Tivoli Common Reporting before you proceed with the rest of this procedure.

   To stop Jazz for Service Management and Tivoli Common Reporting, open a command prompt and enter the following command:

   ```
   JazzSM_installation_dir/profile/bin/stopServer.sh server_name
   -username JazzSM_username  -password JazzSM_password
   ```

   For example:

```
/opt/IBM/JazzSM/profile/bin/stopServer.sh server1 -username smadmin -password abc123
```

5. Install IBM Cognos Analytics 11.0.9 or later on *Server B*.

   Tip: You do not need to set the **JAVA_HOME** environment variable before you start the IBM Cognos Analytics Version 11.0.9 or later installation program.

   a. Log in to your computer as a user with root privileges.
   b. Start the IBM Cognos Analytics installation program.
   c. Select the language to use for your installation and click **Next**.
   d. On the Product installation page, select **IBM Cognos Analytics (IBM Bundler Edition)** and click **Next**.
   e. On the License agreement page, accept the License Agreement and click **Next**.
   f. On the Location page, provide your installation location and click **Next**. Make note of your Cognos Analytics installation location. You will need to provide it later in this procedure.

      Tip: If you want the IBM Cognos Analytics installation to automatically create the installation location for you, click **Yes**.

   g. On the Installation type page, select **First install** and click **Next**.
   h. On the Choose components page, accept the default selections, and click **Next**.
   i. On the Pre-installation summary page, review your information for accuracy and click **Install**.
   j. When the installation is complete, click **Done**.

6. On *Server B*, copy the following Db2 JDBC driver files from the `/opt/ibm/db2/version/java/` directory to the *Cognos_installation_dir*`/drivers/` directory :
   - `db2jcc.jar`
   - `db2jcc_license_cu.jar`
   - `db2jcc4.jar`

7. On *Server B*, open a command prompt and enter the following command as the root user:

   ```
   cd Cognos_installation_dir/drivers/
   chmod +x db2jcc*.jar
   ```

8. On *Server B*, open a command prompt and enter the following command as the root user:

   ```
   ln -s Db2_instance_owner_home_directory/sqllib/lib32/libdb2.so
   Cognos_installation_dir/bin/
   ```

   IBM Spectrum Control Predefined Reports use Compatibility Query Mode. IBM Cognos Analytics needs to use the 32-Bit Db2 library in order to connect to the IBM Spectrum Control database as a data source.

9. Create the content store for Cognos Analytics on *Server B*.

   a. Open a command prompt and enter the following commands to start IBM Cognos Configuration:

      ```
      cd Cognos_installation_dir/bin64/
      . /home/db2inst1/sqllib/db2profile
      ./cogconfig.sh
      ```

      Notice the space between the `.` and the `/` in the second command.

   b. In the Explorer window, expand **Data Access** > **Content Manager** and click **Content Store**.

c. In the **Type** property, enter **DB2 database**, if it is not already displayed.

d. In the **Database server and port number** property, enter localhost or the fully qualified domain name of the machine. For example, `localhost:50000` or *`FQDN_Of_Your_Machine`*`:50000` where `50000` is the default port number that is used by Db2.

   Tip: If you are using a different port number, ensure that you use that value. To determine the port that is used by Db2, examine the **varDBPort** parameter in the *`SC_installation_dir`*`/config/InstallVariable.properties` file.

e. In the **User ID and password** property, enter the user name of the owner of the Db2 instance where the content store database will be located and the password that is associated with that user name Typically, this user name is *db2inst1*.

f. In the **Database name** property, verify that the default value is **cm**.

g. From the **File** menu, click **Save**. This step might take a few minutes to complete. Track the progress in the window.

h. In the informational window, click **Close**.

i. In the Explorer window, expand **Data Access** > **Content Manager** and click **Content Store**.

j. Right-click **Content Store** and click **Generate DDL**.

k. In the informational window, click **Close**.

   Important: Do not exit IBM Cognos Configuration in this step. Wait until Step 12.

l. While you are logged into the Linux operating system as the root user, switch to the user that is the Db2 instance owner (for example, *db2inst1*).

m. Open a command prompt and enter the following Db2 command:

```
db2 -tvf Cognos_installation_dir/configuration/schemas/content/db2/createDb.sql
```

   If the results of this command contain the following similar messages, you can safely ignore those messages because the Db2 instance owner already has the necessary privileges:

```
GRANT CREATETAB,BINDADD,CONNECT,IMPLICIT_SCHEMA ON DATABASE TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502

GRANT CREATEIN,DROPIN,ALTERIN ON SCHEMA DB2COGNOS TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502

GRANT USE OF TABLESPACE TSN_USR_cm TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502

GRANT USE OF TABLESPACE TSN_REG_cm TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command.  During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502
```

n. Go back to the root user.

o. In IBM Cognos Configuration, from the **Actions** menu, click **Test**. You are testing the connection between content manager and the content store database.

p. In the informational window, click **Close**.

10. Optional: On *Server B*, you can change the IBM Cognos Analytics ports to match the ports that are used by Jazz for Service Management and Tivoli Common Reporting. You would do this so that you do not have to get new firewall exceptions for the default Cognos Analytics ports.
    a. While you are still in IBM Cognos Configuration, in the Explorer window, click **Environment**.
    b. In the Group Properties window, select the **Value** next to the **URI** property and change the following properties (names):

Table 28. Group Property values

Property	Change the value to...
Gateway URI	• Computer fully qualified domain name (for example, *myserver.mycompany.com*). • The `https` protocol. • The `9300` port to the value of the **`WC_defaulthost_secure`** parameter in the *`JazzSM_installation_dir`*`\profile\properties\portdef.props` file. The default value is 16311.
External dispatcher URI	
Internal dispatcher URI	
Dispatcher URI for external applications	
Content Manager URIs	

    c. From the **File** menu, click **Save**.
    d. In the informational window, click **Close**.
11. Start IBM Cognos Analytics (content manager and application services), on *Server B*.

    It might take Cognos Analytics a few minutes to start.
    a. While you are still in IBM Cognos Configuration, in the Explorer window, click **Local Configuration**.
    b. From the **Actions** menu, click **Test**.

       Tip: If you are not configuring Cognos Analytics to send notifications, you can ignore the testing the mail server connection failure message.
    c. In the informational window, click **Close**.
    d. From the **Actions** menu, click **Start**. It might take Cognos Analytics a few minutes to start.
12. Exit IBM Cognos Configuration on *Server B*.
13. On *Server B*, copy the exported file that you created in Step 1 to the *`Cognos_installation_dir`*`/deployment/` directory.
14. Import content into Cognos Analytics on *Server B*.
    a. Open a web browser and enter either of the following URLs:

       `http://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/bi`

       Or

       `https://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/bi`

       Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 10 (Optional). If you *did not* perform Step 10, the default port value is 9300.

       Note: At this point Cognos Analytics is configured with anonymous access so that anyone is able to access it.

b. In the lower left-hand part of the page, select **Manage** > **Administration console**.
c. In the IBM Cognos Administration GUI, select the **Configuration** tab.
d. In the **Configuration** tab, select **Content Administration**.
e. On the toolbar, click the **New Import** icon. It is the fourth icon in the list.
f. On the Select a deployment archive page, select the name of the file that you exported from Jazz for Service Management in Step 1 and click **Next**.
g. On the Enter the encryption password page, enter the encryption password that you created in Step 1 and click **OK**.
h. On the Specify a name and description page, enter a name for your import (or keep the default setting) and click **Next**.
i. On the Select the public folders, directory, and library content page, select the following items to import:
   - Custom content that you exported.
   - IBM Spectrum Control Packages and (or the IBM Tivoli Storage Productivity Center Packages).
   - IBM Spectrum Control Predefined Reports and (or the IBM Tivoli Storage Productivity Center Predefined Reports).
   - IBM Spectrum Control Report Layouts and (or the IBM Tivoli Storage Productivity Center Report Layouts).
j. Accept the default settings in the **Options** section and click **Next**.

   Tip: If you want to import your schedules with your IBM® Cognos® Business Intelligence content from Tivoli Common Reporting, complete the following steps:
   1) In the **Options** section, verify that **Include schedules** is selected.
   2) In the **Options** section, verify that **Conflict resolution** is set to **Replace existing entries**.
   3) Click **Next**.
k. On the Select directory content page, verify that **Include data sources and connections** and **Include signons** are selected and that **Conflict resolution** is set to **Replace existing entries** and click **Next**.
l. On the Specify the general options page, click **Next**.
m. On the Review the summary page, click **Next**.
n. On the Select an action page, select **Save and run once** and click **Finish**.
o. On the Run with Options page, select **Upgrade all report specifications to the latest version** and **Assign new IDs during import**.
p. Click **Run**.
q. On the IBM Cognos software page, select **View the details of this import after closing this dialog** and click **OK**.
r. On the View run history details page, click **Refresh**. Check the **Status** field to monitor that the job is executing. Do *not* log off from the IBM Cognos Administration GUI until the import job is complete.

   Tip: The import job might take approximately 15 minutes or more to resolve. Click **Refresh** periodically to check the status.

   The results of importing the reports and schedules into Cognos Analytics contain the following similar messages:

```
CM-REQ-4328 A problem was encountered while importing the object
"/content/folder[@name="IBM Spectrum Control Predefined Reports"]/
folder[@name="Servers"]/report[@name="Servers Capacity"]/schedule".
CM-REQ-4329 The following references cannot be resolved and were cleared:
"credential: CAMID("VMMProvider:smadmin")/credential[@name='Credential '] ".

CM-REQ-4328 A problem was encountered while importing the object
"/content/folder[@name="IBM Spectrum Control Predefined Reports"]/
folder[@name="Servers"]/report[@name="Servers Capacity"]/
schedule[@name="2018-04-27T18:03:22.638Z"]".
CM-REQ-3282 The schedule will not run because the credential is missing.
```

You can safely ignore the messages as they are expected.

s. After the import job is complete, check the **Completion time** and **Status** fields to verify that the job is complete. If it is complete, on the View an import deployment record page, click **Close**.

t. To exit the IBM Cognos Administration GUI, close the browser tab.

15. Verify that the imported content is displayed in Cognos Analytics on *Server B*.

a. Return to the browser tab where the Cognos Analytics GUI is running. If it is not running, open a web browser and enter either of the following URLs:

`http://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/bi`

Or

`https://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/bi`

Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 10 (Optional).

If you did perform Step 10, then you will use `https`. If you *did not* perform Step 10, then you use `http`. If you *did not* perform Step 10, the default port value is 9300.

b. On the IBM Cognos Analytics Welcome page, click **Team content**.

c. Verify that the following content is listed:

- Custom content that you saved to Public Folders before you ran this procedure.
- IBM Spectrum Control Packages and (or IBM Tivoli Storage Productivity Center Packages).
- IBM Spectrum Control Predefined Reports and (or IBM Tivoli Storage Productivity Center Predefined Reports).
- IBM Spectrum Control Report Layouts and (or IBM Tivoli Storage Productivity Center Report Layouts).

d. Optional: Attempt to generate a custom report or a predefined report and verify the contents.

Important: If you encounter APAR IT23800 or other problems when generating a predefined report in Cognos Analytics that was migrated from Tivoli Common Reporting, import the predefined reports package for the version of IBM Spectrum Control you are currently running on your system.

If you encounter APAR IT23800 or other problems when generating a custom report in Cognos Analytics that was migrated from Tivoli Common Reporting, you must update or recreate the custom report to use the predefined reports package for the version of IBM Spectrum Control you are currently running and remove references to tables that are no longer used in the IBM Spectrum Control database repository.

16. After you import the report content and schedules into Cognos Analytics, the schedules will not run due to missing credentials. To update the schedules in Cognos Analytics with the correct credentials, complete the following steps:
    a. Return to the browser tab where the Cognos Analytics GUI is running. If it is not running, open a web browser and enter either of the following URLs:

       `http://FQDN_Of_Your_Machine:port/bi`

       Or

       https://*FQDN_Of_Your_Machine*:*port*/bi

       Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 10 (Optional).

       If you did perform Step 10, then you will use `https`. If you *did not* perform Step 10, then you use `http`.

       If you *did not* perform Step 10, the default port value is 9300.
    b. On the IBM Cognos Analytics Welcome page, click **Team content**.
    c. Select a report that has an existing schedule.
    d. Select the **Properties** for the report.
    e. Select the **Schedule** tab.
    f. Select the > icon to open the schedule.
    g. Click **Update** on the schedule page.

    Repeat steps c-g for each migrated report schedule you want to run in Cognos Analytics.

You migrated your custom IBM® Cognos® Business Intelligence reports and upgraded to the latest version of IBM Spectrum Control and are able to use Cognos® BI reports.

Change the configuration of IBM Cognos Analytics from anonymous access to authenticated access.

For more information, see Configuring an LDAP namespace for IBM Directory Server.

For more information, see Configuring an LDAP namespace for Active Directory Server.

For more information, see Managing user authentication.

Related information:

"Importing IBM Spectrum Control pre-defined reports package" on page 96
Complete this procedure to import the IBM Spectrum Control predefined reports package into the IBM Cognos Analytics reporting tool.

- APAR IT23800
- Upgrading Db2 servers
- Upgrading a Db2 server (Linux and UNIX)
- IBM Cognos Analytics server components
- Install and configure server components
- Installing server components on UNIX or Linux operating systems

Installing Content Manager on UNIX or Linux operating systems

Installing the Application services components on UNIX or Linux operating systems

Migrating Cognos BI reports to IBM Cognos Analytics in a multiple server Linux environment with remote Jazz for Service Management

If you do not have custom report content, you can skip this migration procedure. You can upgrade to IBM® Cognos® Analytics Version 11.0.9 or later when you upgrade to the latest version of IBM Spectrum Control. Complete this procedure to migrate your existing custom report content from Tivoli Common Reporting to Cognos Analytics.

Review the content of Migrating reports to IBM Cognos Analytics during upgrade before you start this procedure.

For this procedure, the terms *Server A* and *Server B* denote the two servers. *Server A* has DB2® Enterprise Server Edition, IBM Spectrum Control database repository, and the IBM Spectrum Control servers installed. *Server B* has DB2® Enterprise Server Edition, Jazz for Service Management, and Cognos Analytics installed.

Important: Only reports in the Cognos Analytics Public Folders are migrated to IBM® Cognos® Analytics Version 11.0.9 or later. If you saved reports to My Folder, you must save them again in Public Folders before you migrate them.

If you plan to upgrade Db2 as part of your upgrade to the latest version of IBM Spectrum Control, upgrade Db2 on *Server A*, upgrade the IBM Spectrum Control database (TPCDB) on *Server A*, upgrade Db2 on *Server B* and then upgrade the Tivoli Common Reporting Content Store database (TCRDB) on *Server B*.

A high level overview on completing this upgrade:

- Export content from Tivoli Common Reporting on *Server B*.
- Upgrade IBM Spectrum Control on *Server A*.
- Uninstall IBM Spectrum Control on *Server B*.
- (Optional) Uninstall Tivoli Common Reporting, Jazz for Service Management, IBM® WebSphere® Application Server, and Installation Manager, from *Server B*.
- Install and configure Cognos Analytics on *Server B*.
- Import content into IBM Cognos Analytics on *Server B* and then verify the content.

Verify that you have the following prerequisite packages installed on *Server B* for IBM Cognos Analytics Version 11.0.9 or later.

The prerequisite packages for Red Hat Enterprise Linux (RHEL) 6.x are:

```
glibc-2.12-1.166.el6 or later (both i686 and x86_64 packages)
libstdc++-4.4.7-16.el6 or later (both i686 and x86_64 packages)
nspr-4.9.2-1.el6 or later (both i686 and x86_64 packages)
nss-3.14.0.0-12.el6 or later (both i686 and x86_64 packages)
openmotif-2.3.3-5.el6 or later (both i686 and x86_64 packages)
```

The prerequisite packages for Red Hat Enterprise Linux (RHEL) 7.x are:

```
glibc-2.17-55.el7 or later (both i686 and x86_64 packages)
libstdc++-4.8.2-16.el7 or later (both i686 and x86_64 packages)
nspr-4.10.2-4.el7 or later (both i686 and x86_64 packages)
nss-3.15.4-6.el7 or later (both i686 and x86_64 packages)
motif-2.3.4-7.el7 or later (both i686 and x86_64 packages)
```

For more information, see Software Product Compatibility Reports.

You need to set the correct ulimit values for *Server B* in the `/etc/security/limits.conf` file for Cognos Analytics.

Here is an example of the entries you might need to add to the `/etc/security/limits.conf` file:

```
*       soft    nproc   unlimited
*       hard    nproc   unlimited
*       soft    nofile  8192
*       hard    nofile  8192
*       soft    stack   unlimited
*       hard    stack   unlimited
```

After you set and save your ulimit values, restart your computer and verify the correct ulimit values.

For more information, see Set the ulimit values on UNIX and Linux operating systems .

1. Log in to Jazz for Service Management and Tivoli Common Reporting on *Server B* to export content.
   a. Open a web browser and enter the following URL:

      `https://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/tarf/servlet/dispatch`

      Where `https` is the protocol, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*) and the *port* value is the secure HTTP port number that was specified during the installation of Jazz for Service Management. To determine the secure HTTP port number for Jazz for Service Management, open the *JazzSM_installation_dir*`/profile/properties/portdef.props` file. The default *JazzSM_installation_dir* value is `/opt/IBM/JazzSM`. The port number is the value that is assigned to the **`WC_defaulthost_secure`** parameter. The default value is `16311`.

      If you receive a security certificate warning when you attempt to connect to the server, confirm the security exception and continue to the web page.
   b. Log in to the reporting interface using the Jazz for Service Management user name that was created when you installed Jazz for Service Management. The default value is `smadmin`.
   c. Select **Launch** > **IBM Cognos Administration**.
   d. In the IBM Cognos Administration GUI, select the **Configuration** tab.
   e. In the **Configuration** tab, select **Content Administration**.
   f. On the toolbar, click the **New Export** icon. It is the third icon in the list.
   g. On the Specify a name and description page, enter a name for your export package and click **Next**.
   h. On the Choose a deployment method page, select **Select public folders and directory content** and click **Next**.
   i. On the Select the public folders content page, click the **Add** link.
   j. On the Select entries page, select the following items to export.

- Custom content that you saved to Public Folders before running this procedure.
- IBM Spectrum Control Packages and (or the IBM Tivoli Storage Productivity Center Packages).
- IBM Spectrum Control Predefined Reports and (or the IBM Tivoli Storage Productivity Center Predefined Reports).
- IBM Spectrum Control Report Layouts and (or the IBM Tivoli Storage Productivity Center Report Layouts).

k. Click the **Green** arrow to transfer the content to the list.

l. Click **OK**.

m. On the Select the public folders content page, click **Next**.

Tip: If you want to export your schedules with your IBM® Cognos® Business Intelligence content from Tivoli Common Reporting, complete the following steps:

1) On the Select the public folders content page, select **Include schedules**.
2) Set **Conflict resolution** to **Replace existing entries**.
3) Click **Next**.

n. On the Select the directory content page, select **Include data sources and connections** and **Include signons**.

o. Set **Conflict resolution** to **Replace existing entries** and click **Next**.

p. On the Specify the general options page, click **Next**.

q. On the Specify a deployment archive page, click **Set the encryption password**.

r. On the Enter the encryption password page, enter, and then confirm your password and click **OK**.

Tip: The encryption password is *not* an existing password in IBM Spectrum Control, Db2 or the operating system. The encryption password is a new password for the purpose of securing the content you are exporting from Jazz for Service Management and Tivoli Common Reporting.

Make note of your new password. You will need to provide it later in this procedure.

s. On the Specify a deployment archive page, click **Next**.

t. On the Review the summary page, click **Next**.

u. On the Select an action page, select **Save and run once** and click **Finish**.

v. On the Run with options page, click **Run**.

w. On the IBM Cognos software page, select **View the details of this report after closing this dialog** and click **OK**.

x. On the View run history details page, click **Refresh**. *Do not* log off from the IBM Cognos Administration GUI until the export job is complete. You can click **Refresh** periodically to check the status of the export job.

y. After the export job is complete, on the View an export deployment record page, click **Close**.

z. Log off from the reporting interface.

aa. Copy the exported file from the *JazzSM_installation_dir*/reporting/cognos/deployment/ directory to a directory that is outside of the Jazz for

Service Management installation directory. Make note of the name and location of this exported file. You will need this information in Step 13.

Tip: If you *do not* copy the exported file outside of the Jazz for Service Management installation directory, the exported file is deleted when you uninstall Tivoli Common Reporting.

2. Upgrade *Server A* to the latest version of IBM Spectrum Control. For more information, see Upgrading from Tivoli Storage Productivity Center Version 5.2.0 and later with a remote database by using the installation program.
3. Upgrade *Server B* to the latest version of IBM Spectrum Control. You are then instructed to uninstall IBM Spectrum Control from *Server B*. Uninstall IBM Spectrum Control from *Server B*. For more information, see Uninstalling IBM Spectrum Control.
4. Optional: Uninstall Tivoli Common Reporting, Jazz for Service Management, WebSphere Application Server, and Installation Manager from *Server B*. For more information, see Uninstalling Tivoli Common Reporting and Jazz for Service Management.

   If you *did not* uninstall Tivoli Common Reporting, Jazz for Service Management, WebSphere Application Server, and Installation Manager, you *must* stop Jazz for Service Management and Tivoli Common Reporting before you proceed with the rest of this procedure.

   To stop Jazz for Service Management and Tivoli Common Reporting, open a command prompt and enter the following command:

   ```
   JazzSM_installation_dir/profile/bin/stopServer.sh server_name
   -username JazzSM_username  -password JazzSM_password
   ```

   For example:

   ```
   /opt/IBM/JazzSM/profile/bin/stopServer.sh server1 -username smadmin -password abc123
   ```

5. Install IBM Cognos Analytics 11.0.9 or later on *Server B*.

   Tip: You do not need to set the **JAVA_HOME** environment variable before you start the IBM Cognos Analytics Version 11.0.9 or later installation program.

   a. Log in to your computer as a user with root privileges.
   b. Start the IBM Cognos Analytics installation program.
   c. Select the language to use for your installation and click **Next**.
   d. On the Product installation page, select **IBM Cognos Analytics (IBM Bundler Edition)** and click **Next**.
   e. On the License agreement page, accept the License Agreement and click **Next**.
   f. On the Location page, provide your installation location and click **Next**. Make note of your Cognos Analytics installation location. You will need to provide it later in this procedure.

      Tip: If you want the IBM Cognos Analytics installation to automatically create the installation location for you, click **Yes**.

   g. On the Installation type page, select **First install** and click **Next**.
   h. On the Choose components page, accept the default selections, and click **Next**.
   i. On the Pre-installation summary page, review your information for accuracy and click **Install**.
   j. When the installation is complete, click **Done**.

6. On *Server B*, copy the following Db2 JDBC driver files from the /opt/ibm/db2/*version*/java/ directory to the *Cognos_installation_dir*/drivers/ directory :
   - db2jcc.jar
   - db2jcc_license_cu.jar
   - db2jcc4.jar
7. On *Server B*, open a command prompt and enter the following command as the root user:

   ```
   cd Cognos_installation_dir/drivers/
   chmod +x db2jcc*.jar
   ```
8. On *Server B*, open a command prompt and enter the following command as the root user:

   ```
   ln -s Db2_instance_owner_home_directory/sqllib/lib32/libdb2.so
   Cognos_installation_dir/bin/
   ```

   IBM Spectrum Control Predefined Reports use Compatibility Query Mode. IBM Cognos Analytics needs to use the 32-Bit Db2 library in order to connect to the IBM Spectrum Control database as a data source.
9. Create the content store for Cognos Analytics on *Server B*.
   a. Open a command prompt and enter the following commands to start IBM Cognos Configuration:

      ```
      cd Cognos_installation_dir/bin64/
      . /home/db2inst1/sqllib/db2profile
      ./cogconfig.sh
      ```

      Notice the space between the **.** and the / in the second command.
   b. In the Explorer window, expand **Data Access** > **Content Manager** and click **Content Store**.
   c. In the **Type** property, enter **DB2 database**, if it is not already displayed.
   d. In the **Database server and port number** property, enter localhost or the fully qualified domain name of the machine. For example, localhost:50000 or *FQDN_Of_Your_Machine*:50000 where 50000 is the default port number that is used by Db2.

      Tip: If you are using a different port number, ensure that you use that value. To determine the port that is used by Db2, examine the **varDBPort** parameter in the *SC_installation_dir*/config/InstallVariable.properties file.
   e. In the **User ID and password** property, enter the user name of the owner of the Db2 instance where the content store database will be located and the password that is associated with that user name Typically, this user name is *db2inst1*.
   f. In the **Database name** property, verify that the default value is **cm**.
   g. From the **File** menu, click **Save**. This step might take a few minutes to complete. Track the progress in the window.
   h. In the informational window, click **Close**.
   i. In the Explorer window, expand **Data Access** > **Content Manager** and click **Content Store**.
   j. Right-click **Content Store** and click **Generate DDL**.
   k. In the informational window, click **Close**.

Important: Do not exit IBM Cognos Configuration in this step. Wait until Step 12.

l. While you are logged into the Linux operating system as the root user, switch to the user that is the Db2 instance owner (for example, *db2inst1*).

m. Open a command prompt and enter the following Db2 command:

```
db2 -tvf Cognos_installation_dir/configuration/schemas/content/db2/createDb.sql
```

If the results of this command contain the following similar messages, you can safely ignore those messages because the Db2 instance owner already has the necessary privileges:

```
GRANT CREATETAB,BINDADD,CONNECT,IMPLICIT_SCHEMA ON DATABASE TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502

GRANT CREATEIN,DROPIN,ALTERIN ON SCHEMA DB2COGNOS TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502

GRANT USE OF TABLESPACE TSN_USR_cm TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502

GRANT USE OF TABLESPACE TSN_REG_cm TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command.  During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502
```

n. Go back to the root user.

o. In IBM Cognos Configuration, from the **Actions** menu, click **Test**. You are testing the connection between content manager and the content store database.

p. In the informational window, click **Close**.

10. Optional: On *Server B*, you can change the IBM Cognos Analytics ports to match the ports that are used by Jazz for Service Management and Tivoli Common Reporting. You would do this so that you do not have to get new firewall exceptions for the default Cognos Analytics ports.

a. While you are still in IBM Cognos Configuration, in the Explorer window, click **Environment**.

b. In the Group Properties window, select the **Value** next to the **URI** property and change the following properties (names):

Table 29. Group Property values

Property	Change the value to...
Gateway URI	• Computer fully qualified domain name (for example, *myserver.mycompany.com*). • The `https` protocol. • The `9300` port to the value of the **`WC_defaulthost_secure`** parameter in the *`JazzSM_installation_dir`*`\profile\properties\portdef.props` file. The default value is 16311.
External dispatcher URI	
Internal dispatcher URI	
Dispatcher URI for external applications	
Content Manager URIs	

c. From the **File** menu, click **Save**.

d. In the informational window, click **Close**.

11. Start IBM Cognos Analytics (content manager and application services), on *Server B*.

It might take Cognos Analytics a few minutes to start.

a. While you are still in IBM Cognos Configuration, in the Explorer window, click **Local Configuration**.
b. From the **Actions** menu, click **Test**.

   Tip: If you are not configuring Cognos Analytics to send notifications, you can ignore the testing the mail server connection failure message.
c. In the informational window, click **Close**.
d. From the **Actions** menu, click **Start**. It might take Cognos Analytics a few minutes to start.

12. Exit IBM Cognos Configuration on *Server B*.
13. On *Server B*, copy the exported file that you created in Step 1 to the *Cognos_installation_dir*/deployment/ directory.
14. Import content into Cognos Analytics on *Server B*.
    a. Open a web browser and enter either of the following URLs:

       `http://FQDN_Of_Your_Machine:port/bi`

       Or

       `https://FQDN_Of_Your_Machine:port/bi`

       Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 10 (Optional). If you *did not* perform Step 10, the default port value is 9300.

       Note: At this point Cognos Analytics is configured with anonymous access so that anyone is able to access it.
    b. In the lower left-hand part of the page, select **Manage** > **Administration console**.
    c. In the IBM Cognos Administration GUI, select the **Configuration** tab.
    d. In the **Configuration** tab, select **Content Administration**.
    e. On the toolbar, click the **New Import** icon. It is the fourth icon in the list.
    f. On the Select a deployment archive page, select the name of the file that you exported from Jazz for Service Management in Step 1 and click **Next**.
    g. On the Enter the encryption password page, enter the encryption password that you created in Step 1 and click **OK**.
    h. On the Specify a name and description page, enter a name for your import (or keep the default setting) and click **Next**.
    i. On the Select the public folders, directory, and library content page, select the following items to import:
       - Custom content that you exported.
       - IBM Spectrum Control Packages and (or the IBM Tivoli Storage Productivity Center Packages).
       - IBM Spectrum Control Predefined Reports and (or the IBM Tivoli Storage Productivity Center Predefined Reports).
       - IBM Spectrum Control Report Layouts and (or the IBM Tivoli Storage Productivity Center Report Layouts).
    j. Accept the default settings in the **Options** section and click **Next**.

Tip: If you want to import your schedules with your IBM® Cognos® Business Intelligence content from Tivoli Common Reporting, complete the following steps:

1) In the **Options** section, verify that **Include schedules** is selected.
2) In the **Options** section, verify that **Conflict resolution** is set to **Replace existing entries**.
3) Click **Next**.

k. On the Select directory content page, verify that **Include data sources and connections** and **Include signons** are selected and that **Conflict resolution** is set to **Replace existing entries** and click **Next**.

l. On the Specify the general options page, click **Next**.

m. On the Review the summary page, click **Next**.

n. On the Select an action page, select **Save and run once** and click **Finish**.

o. On the Run with Options page, select **Upgrade all report specifications to the latest version** and **Assign new IDs during import**.

p. Click **Run**.

q. On the IBM Cognos software page, select **View the details of this import after closing this dialog** and click **OK**.

r. On the View run history details page, click **Refresh**. Check the **Status** field to monitor that the job is executing. Do *not* log off from the IBM Cognos Administration GUI until the import job is complete.

Tip: The import job might take approximately 15 minutes or more to resolve. Click **Refresh** periodically to check the status.

The results of importing the reports and schedules into Cognos Analytics contain the following similar messages:

```
CM-REQ-4328 A problem was encountered while importing the object
"/content/folder[@name="IBM Spectrum Control Predefined Reports"]/
folder[@name="Servers"]/report[@name="Servers Capacity"]/schedule".
CM-REQ-4329 The following references cannot be resolved and were cleared:
"credential: CAMID("VMMProvider:smadmin")/credential[@name='Credential '] ".
```

```
CM-REQ-4328 A problem was encountered while importing the object
"/content/folder[@name="IBM Spectrum Control Predefined Reports"]/
folder[@name="Servers"]/report[@name="Servers Capacity"]/
schedule[@name="2018-04-27T18:03:22.638Z"]".
CM-REQ-3282 The schedule will not run because the credential is missing.
```

You can safely ignore the messages as they are expected.

s. After the import job is complete, check the **Completion time** and **Status** fields to verify that the job is complete. If it is complete, on the View an import deployment record page, click **Close**.

t. To exit the IBM Cognos Administration GUI, close the browser tab.

15. Verify that the imported content is displayed in Cognos Analytics on *Server B*.

a. Return to the browser tab where the Cognos Analytics GUI is running. If it is not running, open a web browser and enter either of the following URLs:

`http://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/bi`

Or

`https://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/bi`

Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 10 (Optional).

If you did perform Step 10, then you will use `https`. If you *did not* perform Step 10, then you use `http`. If you *did not* perform Step 10, the default port value is 9300.

b. On the IBM Cognos Analytics Welcome page, click **Team content**.

c. Verify that the following content is listed:
   - Custom content that you saved to Public Folders before you ran this procedure.
   - IBM Spectrum Control Packages and (or IBM Tivoli Storage Productivity Center Packages).
   - IBM Spectrum Control Predefined Reports and (or IBM Tivoli Storage Productivity Center Predefined Reports).
   - IBM Spectrum Control Report Layouts and (or IBM Tivoli Storage Productivity Center Report Layouts).

d. Optional: Attempt to generate a custom report or a predefined report and verify the contents.

   Important: If you encounter APAR IT23800 or other problems when generating a predefined report in Cognos Analytics that was migrated from Tivoli Common Reporting, import the predefined reports package for the version of IBM Spectrum Control you are currently running on your system.

   If you encounter APAR IT23800 or other problems when generating a custom report in Cognos Analytics that was migrated from Tivoli Common Reporting, you must update or recreate the custom report to use the predefined reports package for the version of IBM Spectrum Control you are currently running and remove references to tables that are no longer used in the IBM Spectrum Control database repository.

16. After you import the report content and schedules into Cognos Analytics, the schedules will not run due to missing credentials. To update the schedules in Cognos Analytics with the correct credentials, complete the following steps:

a. Return to the browser tab where the Cognos Analytics GUI is running. If it is not running, open a web browser and enter either of the following URLs:

   `http://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/bi`

   Or

   `https://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/bi`

   Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 10 (Optional).

   If you did perform Step 10, then you will use `https`. If you *did not* perform Step 10, then you use `http`.

   If you *did not* perform Step 10, the default port value is 9300.

b. On the IBM Cognos Analytics Welcome page, click **Team content**.

c. Select a report that has an existing schedule.

d. Select the **Properties** for the report.

e. Select the **Schedule** tab.

f. Select the > icon to open the schedule.

g. Click **Update** on the schedule page.

Repeat steps c-g for each migrated report schedule you want to run in Cognos Analytics.

You migrated your custom IBM® Cognos® Business Intelligence reports and upgraded to the latest version of IBM Spectrum Control and are able to use Cognos® BI reports.

Change the configuration of IBM Cognos Analytics from anonymous access to authenticated access.

For more information, see Configuring an LDAP namespace for IBM Directory Server.

For more information, see Configuring an LDAP namespace for Active Directory Server.

For more information, see Managing user authentication.

Related information:

"Importing IBM Spectrum Control pre-defined reports package" on page 96
Complete this procedure to import the IBM Spectrum Control predefined reports package into the IBM Cognos Analytics reporting tool.

- APAR IT23800
- Upgrading Db2 servers
- Upgrading a Db2 server (Linux and UNIX)
- IBM Cognos Analytics server components
- Install and configure server components
- Installing server components on UNIX or Linux operating systems
- Installing Content Manager on UNIX or Linux operating systems
- Installing the Application services components on UNIX or Linux operating systems

Migrating Cognos BI reports to IBM Cognos Analytics in a single AIX environment

If you do not have custom report content, you can skip this migration procedure. You can upgrade to IBM® Cognos® Analytics Version 11.0.9 or later when you upgrade to the latest version of IBM Spectrum Control. Complete this procedure to migrate your existing custom report content from Tivoli Common Reporting to Cognos Analytics.

Review the content of Migrating reports to IBM Cognos Analytics during upgrade before you start this procedure.

This procedure assumes that you installed Db2®, IBM Spectrum Control, Version 5.2.15 or earlier, IBM®Jazz for Service Management, IBM® Tivoli Common Reporting on a single AIX® computer.

Important:

Only reports in the Cognos Analytics Public Folders are exported from Tivoli Common Reporting. If you saved reports to Private Folders or My Folder, you *must* save them again in Public Folders before you export them.

If you plan to upgrade Db2 as part of your upgrade to the latest version of IBM Spectrum Control, upgrade Db2, upgrade the IBM Spectrum Control database (TPCDB) and then upgrade the Tivoli Common Reporting Content Store database (TCRDB).

A high level overview of the migration:

- Export content from Tivoli Common Reporting.
- Upgrade IBM Spectrum Control.
- (Optional) Uninstall Tivoli Common Reporting, Jazz for Service Management, IBM® WebSphere® Application Server, and Installation Manager.
- Install and configure Cognos Analytics.
- Import content into Cognos Analytics and then verify the content.

Verify that you have the following prerequisite packages installed on a AIX computer for IBM Cognos Analytics Version 11.0.9 or later.

The prerequisites for AIX Version 6.1 are:

- TL7
- SP05 (6100-07-05-1228)
- IBM XL C/C++ for AIX, V12.1 Runtime Environment
- bos.pmapi.lib

The prerequisites for AIX Version 7.1 are:

- IBM XL C/C++ for AIX, V12.1 Runtime Environment
- bos.pmapi.lib

For more information, see Software Product Compatibility Reports.

You need to set the correct ulimit values in the `/etc/security/limits` file for IBM Cognos Analytics Version 11.0.9 or later.

Here is an example of the entries you might need to add to the `/etc/security/limits` file:

```
default:
fsize = -1
core = -1
cpu = -1
rss = -1
stack = 16384
nofiles = 8192
```

After you set and save your ulimit values, restart your computer and verify the correct ulimit values.

For more information, see Set the ulimit values on UNIX and Linux operating systems .

1. Log in to Jazz for Service Management and Tivoli Common Reporting to export content.
   a. Open a web browser and enter the following URL:

`https://FQDN_Of_Your_Machine:port/tarf/servlet/dispatch`

Where `https` is the protocol, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*) and the *port* value is the secure HTTP port number that was specified during the installation of Jazz for Service Management. To determine the secure HTTP port number for Jazz for Service Management, open the *JazzSM_installation_dir*`/profile/properties/portdef.props` file. The default *JazzSM_installation_dir* value is `/opt/IBM/JazzSM`. The port number is the value that is assigned to the **`WC_defaulthost_secure`** parameter. The default value is `16311`.

If you receive a security certificate warning when you attempt to connect to the server, confirm the security exception and continue to the web page.

b. Log in to the reporting interface using the Jazz for Service Management user name that was created when you installed Jazz for Service Management. The default value is `smadmin`.
c. Select **Launch** > **IBM Cognos Administration**.
d. In the IBM Cognos Administration GUI, select the **Configuration** tab.
e. In the **Configuration** tab, select **Content Administration**.
f. On the toolbar, click the **New Export** icon. It is the third icon in the list.
g. On the Specify a name and description page, enter a name for your export package and click **Next**.
h. On the Choose a deployment method page, select **Select public folders and directory content** and click **Next**.
i. On the Select the public folders content page, click the **Add** link.
j. On the Select entries page, select the following items to export.
   - Custom content that you saved to Public Folders before running this procedure.
   - IBM Spectrum Control Packages and (or the IBM Tivoli Storage Productivity Center Packages).
   - IBM Spectrum Control Predefined Reports and (or the IBM Tivoli Storage Productivity Center Predefined Reports).
   - IBM Spectrum Control Report Layouts and (or the IBM Tivoli Storage Productivity Center Report Layouts).
k. Click the **Green** arrow to transfer the content to the list.
l. Click **OK**.
m. On the Select the public folders content page, click **Next**.

   Tip: If you want to export your schedules with your IBM® Cognos® Business Intelligence content from Tivoli Common Reporting, complete the following steps:

   1) On the Select the public folders content page, select **Include schedules**.
   2) Set **Conflict resolution** to **Replace existing entries**.
   3) Click **Next**.

n. On the Select the directory content page, select **Include data sources and connections** and **Include signons**.
o. Set **Conflict resolution** to **Replace existing entries** and click **Next**.
p. On the Specify the general options page, click **Next**.
q. On the Specify a deployment archive page, click **Set the encryption password**.

r. On the Enter the encryption password page, enter, and then confirm your password and click **OK**.

Tip: The encryption password is *not* an existing password in IBM Spectrum Control, Db2 or the operating system. The encryption password is a new password for the purpose of securing the content you are exporting from Jazz for Service Management and Tivoli Common Reporting.

Make note of your new password. You will need to provide it later in this procedure.

s. On the Specify a deployment archive page, click **Next**.

t. On the Review the summary page, click **Next**.

u. On the Select an action page, select **Save and run once** and click **Finish**.

v. On the Run with options page, click **Run**.

w. On the IBM Cognos software page, select **View the details of this report after closing this dialog** and click **OK**.

x. On the View run history details page, click **Refresh**. *Do not* log off from the IBM Cognos Administration GUI until the export job is complete. You can click **Refresh** periodically to check the status of the export job.

y. After the export job is complete, on the View an export deployment record page, click **Close**.

z. Log off from the reporting interface.

aa. Copy the exported file from the *JazzSM_installation_dir*/reporting/cognos/deployment/ directory to a directory that is outside of the Jazz for Service Management installation directory. Make note of the name and location of this exported file. You will need this information in Step 12.

Tip: If you *do not* copy the exported file outside of the Jazz for Service Management installation directory, the exported file is deleted when you uninstall Tivoli Common Reporting.

2. Upgrade your system to latest version of IBM Spectrum Control; this step uninstalls the IBM Spectrum Control Cognos BI Reports component. For more information, see Upgrading IBM Spectrum Control in a single-server environment.

3. Optional: Uninstall Tivoli Common Reporting, Jazz for Service Management, WebSphere Application Server, and Installation Manager. For more information, see Uninstalling Tivoli Common Reporting and Jazz for Service Management.

   If you *did not* uninstall Tivoli Common Reporting, Jazz for Service Management, WebSphere Application Server, and Installation Manager, you *must* stop Jazz for Service Management and Tivoli Common Reporting before you proceed with the rest of this procedure.

   To stop Jazz for Service Management and Tivoli Common Reporting, open a command prompt and enter the following command:

   ```
   JazzSM_installation_dir/profile/bin/stopServer.sh server_name
   -username JazzSM_username  -password JazzSM_password
   ```

   For example:

   ```
   /opt/IBM/JazzSM/profile/bin/stopServer.sh server1 -username smadmin -password abc123
   ```

4. Install IBM Cognos Analytics Version 11.0.9 or later.

   Tip: You do not need to set the **JAVA_HOME** environment variable before you start the IBM Cognos Analytics Version 11.0.9 or later installation program.

a. Log in to your computer as a user with root privileges.
b. Start the IBM Cognos Analytics installation program.
c. Select the language to use for your installation and click **Next**.
d. On the Product installation page, select **IBM Cognos Analytics (IBM Bundler Edition)** and click **Next**.
e. On the License agreement page, accept the License Agreement and click **Next**.
f. On the Location page, provide your installation location and click **Next**. Make note of your Cognos Analytics installation location. You will need to provide it later in this procedure.

   Tip: If you want the IBM Cognos Analytics installation to automatically create the installation location for you, click **Yes**.
g. On the Installation type page, select **First install** and click **Next**.
h. On the Choose components page, accept the default selections, and click **Next**.
i. On the Pre-installation summary page, review your information for accuracy and click **Install**.
j. When the installation is complete, click **Done**.

5. Copy the following Db2 JDBC driver files from the `/opt/IBM/db2/version/java/` directory to the *Cognos_installation_dir*`/drivers/` directory :
   - `db2jcc.jar`
   - `db2jcc_license_cu.jar`
   - `db2jcc4.jar`
6. Open a command prompt and enter the following command as the root user:
   ```
   cd Cognos_installation_dir/drivers/
   chmod +x db2jcc*.jar
   ```
7. Open a command prompt and enter the following command as the `root` user:
   ```
   ln -s Db2_instance_owner_home_directory/sqllib/lib32/libdb2.a Cognos_installation_dir/bin/
   ```

   IBM Spectrum Control Predefined Reports use Compatibility Query Mode. Cognos Analytics needs to use the 32-Bit Db2 library in order to connect to the IBM Spectrum Control database as a data source.
8. Create the content store for Cognos Analytics.
   a. Open a command prompt and enter the following commands to start IBM Cognos Configuration:
      ```
      cd Cognos_installation_dir/bin64/
      . /home/db2inst1/sqllib/db2profile
      ./cogconfig.sh
      ```

      Notice the space between the `.` and the `/` in the second command.
   b. In the Explorer window, expand **Data Access** > **Content Manager** and click **Content Store**.
   c. In the **Type** property, enter **DB2 database**, if it is not already displayed.
   d. In the **Database server and port number** property, enter localhost or the fully qualified domain name of the machine. For example, `localhost:50000` or *FQDN_Of_Your_Machine*`:50000` where `50000` is the default port number that is used by Db2.

Tip: If you are using a different port number, ensure that you use that value. To determine the port that is used by Db2, examine the **varDBPort** parameter in the *SC_installation_dir*/config/InstallVariable.properties file.

e. In the **User ID and password** property, enter the user name of the owner of the Db2 instance where the content store database will be located and the password that is associated with that user name Typically, this user name is *db2inst1*.

f. In the **Database name** property, verify that the default value is **cm**.

g. From the **File** menu, click **Save**. This step might take a few minutes to complete. Track the progress in the window.

h. In the informational window, click **Close**.

i. In the Explorer window, expand **Data Access** > **Content Manager** and click **Content Store**.

j. Right-click **Content Store** and click **Generate DDL**.

k. In the informational window, click **Close**.

Important: Do not exit IBM Cognos Configuration in this step. Wait until Step 11.

l. While you are logged into the AIX operating system as the root user, switch to the user that is the Db2 instance owner (for example, *db2inst1*).

m. Open a command prompt and enter the following Db2 command:

```
db2 -tvf Cognos_installation_dir/configuration/schemas/content/db2/createDb.sql
```

If the results of this command contain the following similar messages, you can safely ignore those messages because the Db2 instance owner already has the necessary privileges:

```
GRANT CREATETAB,BINDADD,CONNECT,IMPLICIT_SCHEMA ON DATABASE TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502

GRANT CREATEIN,DROPIN,ALTERIN ON SCHEMA DB2COGNOS TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502

GRANT USE OF TABLESPACE TSN_USR_cm TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502

GRANT USE OF TABLESPACE TSN_REG_cm TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command.  During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502
```

n. Go back to the root user.

o. In IBM Cognos Configuration, from the **Actions** menu, click **Test**. You are testing the connection between content manager and the content store database.

p. In the informational window, click **Close**.

9. Optional: You can change the IBM Cognos Analytics ports to match the ports that are used by Jazz for Service Management and Tivoli Common Reporting. You would do this so that you do not have to get new firewall exceptions for the default Cognos Analytics ports.

a. While you are still in IBM Cognos Configuration, in the Explorer window, click **Environment**.

b. In the Group Properties window, select the **Value** next to the **URI** property and change the following properties (names):

Table 30. Group Property values

Property	Change the value to...
Gateway URI	• Computer fully qualified domain name (for example, *myserver.mycompany.com*). • The `https` protocol. • The `9300` port to the value of the **`WC_defaulthost_secure`** parameter in the *`JazzSM_installation_dir`*`\profile\properties\portdef.props` file. The default value is 16311.
External dispatcher URI	
Internal dispatcher URI	
Dispatcher URI for external applications	
Content Manager URIs	

c. From the **File** menu, click **Save**.

d. In the informational window, click **Close**.

10. Start Cognos Analytics (content manager and application services).

    It might take Cognos Analytics a few minutes to start.

    a. While you are still in IBM Cognos Configuration, in the Explorer window, click **Local Configuration**.

    b. From the **Actions** menu, click **Test**.

    Tip: If you are not configuring Cognos Analytics to send notifications, you can ignore the testing the mail server connection failure message.

    c. In the informational window, click **Close**.

    d. From the **Actions** menu, click **Start**. It might take Cognos Analytics a few minutes to start.

11. Exit IBM Cognos Configuration.

12. Copy the exported file that you created in Step 1 to the *`Cognos_installation_dir`*`/deployment/` directory.

13. Import content into Cognos Analytics.

    a. Open a web browser and enter either of the following URLs:

    `http://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/bi`

    Or

    `https://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/bi`

    Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 9 (Optional). If you *did not* perform Step 9, the default port value is 9300.

    Note: At this point Cognos Analytics is configured with anonymous access so that anyone is able to access it.

    b. In the lower left-hand part of the page, select **Manage** > **Administration console**.

    c. In the IBM Cognos Administration GUI, select the **Configuration** tab.

    d. In the **Configuration** tab, select **Content Administration**.

    e. On the toolbar, click the **New Import** icon. It is the fourth icon in the list.

    f. On the Select a deployment archive page, select the name of the file that you exported from Jazz for Service Management in Step 1 and click **Next**.

g. On the Enter the encryption password page, enter the encryption password that you created in Step 1 and click **OK**.

h. On the Specify a name and description page, enter a name for your import (or keep the default setting) and click **Next**.

i. On the Select the public folders, directory, and library content page, select the following items to import:
   - Custom content that you exported.
   - IBM Spectrum Control Packages and (or the IBM Tivoli Storage Productivity Center Packages).
   - IBM Spectrum Control Predefined Reports and (or the IBM Tivoli Storage Productivity Center Predefined Reports).
   - IBM Spectrum Control Report Layouts and (or the IBM Tivoli Storage Productivity Center Report Layouts).

j. Accept the default settings in the **Options** section and click **Next**.

   Tip: If you want to import your schedules with your IBM® Cognos® Business Intelligence content from Tivoli Common Reporting, complete the following steps:

   1) In the **Options** section, verify that **Include schedules** is selected.
   2) In the **Options** section, verify that **Conflict resolution** is set to **Replace existing entries**.
   3) Click **Next**.

k. On the Select directory content page, verify that **Include data sources and connections** and **Include signons** are selected and that **Conflict resolution** is set to **Replace existing entries** and click **Next**.

l. On the Specify the general options page, click **Next**.

m. On the Review the summary page, click **Next**.

n. On the Select an action page, select **Save and run once** and click **Finish**.

o. On the Run with Options page, select **Upgrade all report specifications to the latest version** and **Assign new IDs during import**.

p. Click **Run**.

q. On the IBM Cognos software page, select **View the details of this import after closing this dialog** and click **OK**.

r. On the View run history details page, click **Refresh**. Check the **Status** field to monitor that the job is executing. Do *not* log off from the IBM Cognos Administration GUI until the import job is complete.

   Tip: The import job might take approximately 15 minutes or more to resolve. Click **Refresh** periodically to check the status.

   The results of importing the reports and schedules into Cognos Analytics contain the following similar messages:

```
CM-REQ-4328 A problem was encountered while importing the object
"/content/folder[@name="IBM Spectrum Control Predefined Reports"]/
folder[@name="Servers"]/report[@name="Servers Capacity"]/schedule".
CM-REQ-4329 The following references cannot be resolved and were cleared:
"credential: CAMID("VMMProvider:smadmin")/credential[@name='Credential '] ".
```

```
CM-REQ-4328 A problem was encountered while importing the object
"/content/folder[@name="IBM Spectrum Control Predefined Reports"]/
folder[@name="Servers"]/report[@name="Servers Capacity"]/
schedule[@name="2018-04-27T18:03:22.638Z"]".
CM-REQ-3282 The schedule will not run because the credential is missing.
```

   You can safely ignore the messages as they are expected.

s. After the import job is complete, check the **Completion time** and **Status** fields to verify that the job is complete. If it is complete, on the View an import deployment record page, click **Close**.

t. To exit the IBM Cognos Administration GUI, close the browser tab.

14. Verify that the imported content is displayed in Cognos Analytics.

a. Return to the browser tab where the Cognos Analytics GUI is running. If it is not running, open a web browser and enter either of the following URLs:

`http://FQDN_Of_Your_Machine:port/bi`

Or

`https://FQDN_Of_Your_Machine:port/bi`

Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 9 (Optional).

If you did perform Step 9, then you will use `https`. If you *did not* perform Step 9, then you use `http`. If you *did not* perform Step 9, the default port value is 9300.

b. On the IBM Cognos Analytics Welcome page, click **Team content**.

c. Verify that the following content is listed:

- Custom content that you saved to Public Folders before you ran this procedure.
- IBM Spectrum Control Packages and (or IBM Tivoli Storage Productivity Center Packages).
- IBM Spectrum Control Predefined Reports and (or IBM Tivoli Storage Productivity Center Predefined Reports).
- IBM Spectrum Control Report Layouts and (or IBM Tivoli Storage Productivity Center Report Layouts).

d. Optional: Attempt to generate a custom report or a predefined report and verify the contents.

Important: If you encounter APAR IT23800 or other problems when generating a predefined report in Cognos Analytics that was migrated from Tivoli Common Reporting, import the predefined reports package for the version of IBM Spectrum Control you are currently running on your system.

If you encounter APAR IT23800 or other problems when generating a custom report in Cognos Analytics that was migrated from Tivoli Common Reporting, you must update or recreate the custom report to use the predefined reports package for the version of IBM Spectrum Control you are currently running and remove references to tables that are no longer used in the IBM Spectrum Control database repository.

15. After you import the report content and schedules into Cognos Analytics, the schedules will not run due to missing credentials. To update the schedules in Cognos Analytics with the correct credentials, complete the following steps:

a. Return to the browser tab where the Cognos Analytics GUI is running. If it is not running, open a web browser and enter either of the following URLs:

`http://FQDN_Of_Your_Machine:port/bi`

Or

`https://FQDN_Of_Your_Machine:port/bi`

Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 9 (Optional).

If you did perform Step 9, then you will use `https`. If you *did not* perform Step 9, then you use `http`.

If you *did not* perform Step 9, the default port value is 9300.

b. On the IBM Cognos Analytics Welcome page, click **Team content**.

c. Select a report that has an existing schedule.

d. Select the **Properties** for the report.

e. Select the **Schedule** tab.

f. Select the > icon to open the schedule.

g. Click **Update** on the schedule page.

Repeat steps c-g for each migrated report schedule you want to run in Cognos Analytics.

You migrated your custom IBM® Cognos® Business Intelligence reports and upgraded to the latest version of IBM Spectrum Control and are able to use Cognos® BI reports.

Change the configuration of IBM Cognos Analytics from anonymous access to authenticated access.

For more information, see Configuring an LDAP namespace for IBM Directory Server.

For more information, see Configuring an LDAP namespace for Active Directory Server.

For more information, see Managing user authentication.

Related information:

"Importing IBM Spectrum Control pre-defined reports package" on page 96
Complete this procedure to import the IBM Spectrum Control predefined reports package into the IBM Cognos Analytics reporting tool.

- APAR IT23800
- Upgrading DB2 servers
- Upgrading a DB2 server (Linux and UNIX)
- IBM Cognos Analytics server components
- Install and configure server components
- Installing server components on UNIX or Linux operating systems
- Installing Content Manager on UNIX or Linux operating systems
- Installing the Application services components on UNIX or Linux operating systems

Migrating Cognos BI reports to IBM Cognos Analytics in a multiple server AIX environment with a remote database

If you do not have custom report content, you can skip this migration procedure. You can upgrade to IBM® Cognos® Analytics Version 11.0.9 or later when you upgrade to the latest version of IBM Spectrum Control. Complete this procedure to migrate your existing custom report content from Tivoli Common Reporting to Cognos Analytics.

Review the content of Migrating reports to IBM Cognos Analytics during upgrade before you start this procedure.

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 and DB2® Enterprise Server Edition, Jazz for Service Management, and Tivoli Common Reporting.

Important: Only reports in the Cognos Analytics Public Folders are migrated to IBM® Cognos® Analytics Version 11.0.9 or later. If you saved reports to My Folder, you must save them again in Public Folders before you migrate them.

If you plan to upgrade Db2 as part of your upgrade to the latest version of IBM Spectrum Control, upgrade Db2 on *Server A*, upgrade the IBM Spectrum Control database (TPCDB) on *Server A*, upgrade Db2 on *Server B* and then upgrade the Tivoli Common Reporting Content Store database (TCRDB) on *Server B*.

A high level overview on completing this upgrade:

- Export content from Tivoli Common Reporting on *Server B*.
- Upgrade IBM Spectrum Control on *Server A*.
- Upgrade IBM Spectrum Control on *Server B*.
- (Optional) Uninstall Tivoli Common Reporting, Jazz for Service Management, IBM® WebSphere® Application Server, and Installation Manager, from *Server B*.
- Install and configure Cognos Analytics on *Server B*.
- Import content into Cognos Analytics on *Server B* and then verify the content.

Verify that you have the following prerequisite packages installed on *Server B* for IBM Cognos Analytics Version 11.0.9 or later.

The prerequisites for AIX Version 6.1 are:

- TL7
- SP05 (6100-07-05-1228)
- IBM XL C/C++ for AIX, V12.1 Runtime Environment
- bos.pmapi.lib

The prerequisites for AIX Version 7.1 are:

- IBM XL C/C++ for AIX, V12.1 Runtime Environment
- bos.pmapi.lib

For more information, see Software Product Compatibility Reports.

You need to set the correct ulimit values for *Server B* in the `/etc/security/limits` file for Cognos Analytics.

Here is an example of the entries you might need to add to the `/etc/security/limits` file:

```
default:
fsize = -1
core = -1
cpu = -1
rss = -1
stack = 16384
nofiles = 8192
```

After you set and save your ulimit values, restart your computer and verify the correct ulimit values.

For more information, see Set the ulimit values on UNIX and Linux operating systems .

1. Log in to Jazz for Service Management and Tivoli Common Reporting on *Server B* to export content.
   a. Open a web browser and enter the following URL:

      `https://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/tarf/servlet/dispatch`

      Where `https` is the protocol, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*) and the *port* value is the secure HTTP port number that was specified during the installation of Jazz for Service Management. To determine the secure HTTP port number for Jazz for Service Management, open the *`JazzSM_installation_dir`*`/profile/properties/portdef.props` file. The default *JazzSM_installation_dir* value is `/opt/IBM/JazzSM`. The port number is the value that is assigned to the **`WC_defaulthost_secure`** parameter. The default value is `16311`.

      If you receive a security certificate warning when you attempt to connect to the server, confirm the security exception and continue to the web page.
   b. Log in to the reporting interface using the Jazz for Service Management user name that was created when you installed Jazz for Service Management. The default value is `smadmin`.
   c. Select **Launch** > **IBM Cognos Administration**.
   d. In the IBM Cognos Administration GUI, select the **Configuration** tab.
   e. In the **Configuration** tab, select **Content Administration**.
   f. On the toolbar, click the **New Export** icon. It is the third icon in the list.
   g. On the Specify a name and description page, enter a name for your export package and click **Next**.
   h. On the Choose a deployment method page, select **Select public folders and directory content** and click **Next**.
   i. On the Select the public folders content page, click the **Add** link.
   j. On the Select entries page, select the following items to export.
      - Custom content that you saved to Public Folders before running this procedure.
      - IBM Spectrum Control Packages and (or the IBM Tivoli Storage Productivity Center Packages).
      - IBM Spectrum Control Predefined Reports and (or the IBM Tivoli Storage Productivity Center Predefined Reports).
      - IBM Spectrum Control Report Layouts and (or the IBM Tivoli Storage Productivity Center Report Layouts).
   k. Click the **Green** arrow to transfer the content to the list.

l. Click **OK**.

m. On the Select the public folders content page, click **Next**.

Tip: If you want to export your schedules with your IBM® Cognos® Business Intelligence content from Tivoli Common Reporting, complete the following steps:

1) On the Select the public folders content page, select **Include schedules**.
2) Set **Conflict resolution** to **Replace existing entries**.
3) Click **Next**.

n. On the Select the directory content page, select **Include data sources and connections** and **Include signons**.

o. Set **Conflict resolution** to **Replace existing entries** and click **Next**.

p. On the Specify the general options page, click **Next**.

q. On the Specify a deployment archive page, click **Set the encryption password**.

r. On the Enter the encryption password page, enter, and then confirm your password and click **OK**.

Tip: The encryption password is *not* an existing password in IBM Spectrum Control, Db2 or the operating system. The encryption password is a new password for the purpose of securing the content you are exporting from Jazz for Service Management and Tivoli Common Reporting.

Make note of your new password. You will need to provide it later in this procedure.

s. On the Specify a deployment archive page, click **Next**.

t. On the Review the summary page, click **Next**.

u. On the Select an action page, select **Save and run once** and click **Finish**.

v. On the Run with options page, click **Run**.

w. On the IBM Cognos software page, select **View the details of this report after closing this dialog** and click **OK**.

x. On the View run history details page, click **Refresh**. *Do not* log off from the IBM Cognos Administration GUI until the export job is complete. You can click **Refresh** periodically to check the status of the export job.

y. After the export job is complete, on the View an export deployment record page, click **Close**.

z. Log off from the reporting interface.

aa. Copy the exported file from the *JazzSM_installation_dir*/reporting/cognos/deployment/ directory to a directory that is outside of the Jazz for Service Management installation directory. Make note of the name and location of this exported file. You will need this information in Step 13.

Tip: If you *do not* copy the exported file outside of the Jazz for Service Management installation directory, the exported file is deleted when you uninstall Tivoli Common Reporting.

2. Upgrade *Server A* to the latest version of IBM Spectrum Control. For more information, see Upgrading from Tivoli Storage Productivity Center Version 5.2.0 and later with a remote database by using the installation program.

3. Upgrade *Server B* to the latest version of IBM Spectrum Control. For more information, see Upgrading from Tivoli Storage Productivity Center Version 5.2.0 and later with a remote database by using the installation program.
4. Optional: Uninstall Tivoli Common Reporting, Jazz for Service Management, WebSphere Application Server, and Installation Manager from *Server B*. For more information, see Uninstalling Tivoli Common Reporting and Jazz for Service Management.

   If you *did not* uninstall Tivoli Common Reporting, Jazz for Service Management, WebSphere Application Server, and Installation Manager, you *must* stop Jazz for Service Management and Tivoli Common Reporting before you proceed with the rest of this procedure.

   To stop Jazz for Service Management and Tivoli Common Reporting, open a command prompt and enter the following command:

   ```
   JazzSM_installation_dir/profile/bin/stopServer.sh server_name
   -username JazzSM_username  -password JazzSM_password
   ```

   For example:

   ```
   /opt/IBM/JazzSM/profile/bin/stopServer.sh server1 -username smadmin -password abc123
   ```
5. Install IBM Cognos Analytics 11.0.9 or later on *Server B*.

   Tip: You do not need to set the **JAVA_HOME** environment variable before you start the IBM Cognos Analytics Version 11.0.9 or later installation program.

   a. Log in to your computer as a user with root privileges.
   b. Start the IBM Cognos Analytics installation program.
   c. Select the language to use for your installation and click **Next**.
   d. On the Product installation page, select **IBM Cognos Analytics (IBM Bundler Edition)** and click **Next**.
   e. On the License agreement page, accept the License Agreement and click **Next**.
   f. On the Location page, provide your installation location and click **Next**. Make note of your Cognos Analytics installation location. You will need to provide it later in this procedure.

      Tip: If you want the IBM Cognos Analytics installation to automatically create the installation location for you, click **Yes**.
   g. On the Installation type page, select **First install** and click **Next**.
   h. On the Choose components page, accept the default selections, and click **Next**.
   i. On the Pre-installation summary page, review your information for accuracy and click **Install**.
   j. When the installation is complete, click **Done**.
6. On *Server B*, copy the following Db2 JDBC driver files from the `/opt/IBM/db2/version/java/` directory to the `Cognos_installation_dir/drivers/` directory :
   - `db2jcc.jar`
   - `db2jcc_license_cu.jar`
   - `db2jcc4.jar`
7. On *Server B*, open a command prompt and enter the following command as the root user:

   ```
   cd Cognos_installation_dir/drivers/
   chmod +x db2jcc*.jar
   ```

8. On *Server B*, open a command prompt and enter the following command as the root user:

   ```
   ln -s Db2_instance_owner_home_directory/sqllib/lib32/libdb2.a Cognos_installation_dir/bin/
   ```

   IBM Spectrum Control Predefined Reports use Compatibility Query Mode. Cognos Analytics needs to use the 32-Bit Db2 library in order to connect to the IBM Spectrum Control database as a data source.
9. Create the content store for Cognos Analytics on *Server B*.
   a. Open a command prompt and enter the following commands to start IBM Cognos Configuration:

      ```
      cd Cognos_installation_dir/bin64/
      . /home/db2inst1/sqllib/db2profile
      ./cogconfig.sh
      ```

      Notice the space between the `.` and the `/` in the second command.
   b. In the Explorer window, expand **Data Access** > **Content Manager** and click **Content Store**.
   c. In the **Type** property, enter **DB2 database**, if it is not already displayed.
   d. In the **Database server and port number** property, enter localhost or the fully qualified domain name of the machine. For example, `localhost:50000` or *FQDN_Of_Your_Machine*`:50000` where `50000` is the default port number that is used by Db2.

      Tip: If you are using a different port number, ensure that you use that value. To determine the port that is used by Db2, examine the **varDBPort** parameter in the *SC_installation_dir*`/config/InstallVariable.properties` file.
   e. In the **User ID and password** property, enter the user name of the owner of the Db2 instance where the content store database will be located and the password that is associated with that user name Typically, this user name is *db2inst1*.
   f. In the **Database name** property, verify that the default value is **cm**.
   g. From the **File** menu, click **Save**. This step might take a few minutes to complete. Track the progress in the window.
   h. In the informational window, click **Close**.
   i. In the Explorer window, expand **Data Access** > **Content Manager** and click **Content Store**.
   j. Right-click **Content Store** and click **Generate DDL**.
   k. In the informational window, click **Close**.

      Important: Do not exit IBM Cognos Configuration in this step. Wait until Step 12.
   l. While you are logged into the AIX operating system as the root user, switch to the user that is the Db2 instance owner (for example, *db2inst1*).
   m. Open a command prompt and enter the following Db2 command:

      ```
      db2 -tvf Cognos_installation_dir/configuration/schemas/content/db2/createDb.sql
      ```

      If the results of this command contain the following similar messages, you can safely ignore those messages because the Db2 instance owner already has the necessary privileges:

```
GRANT CREATETAB,BINDADD,CONNECT,IMPLICIT_SCHEMA ON DATABASE TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502

GRANT CREATEIN,DROPIN,ALTERIN ON SCHEMA DB2COGNOS TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502

GRANT USE OF TABLESPACE TSN_USR_cm TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502

GRANT USE OF TABLESPACE TSN_REG_cm TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command.  During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502
```

n. Go back to the root user.

o. In IBM Cognos Configuration, from the **Actions** menu, click **Test**. You are testing the connection between content manager and the content store database.

p. In the informational window, click **Close**.

10. Optional: On *Server B*, you can change the IBM Cognos Analytics ports to match the ports that are used by Jazz for Service Management and Tivoli Common Reporting. You would do this so that you do not have to get new firewall exceptions for the default Cognos Analytics ports.

a. While you are still in IBM Cognos Configuration, in the Explorer window, click **Environment**.

b. In the Group Properties window, select the **Value** next to the **URI** property and change the following properties (names):

Table 31. Group Property values

Property	Change the value to...
Gateway URI	• Computer fully qualified domain name (for example, *myserver.mycompany.com*). • The `https` protocol. • The `9300` port to the value of the **`WC_defaulthost_secure`** parameter in the *`JazzSM_installation_dir`*`\profile\properties\portdef.props` file. The default value is 16311.
External dispatcher URI	
Internal dispatcher URI	
Dispatcher URI for external applications	
Content Manager URIs	

c. From the **File** menu, click **Save**.

d. In the informational window, click **Close**.

11. Start IBM Cognos Analytics (content manager and application services), on *Server B*.

It might take Cognos Analytics a few minutes to start.

a. While you are still in IBM Cognos Configuration, in the Explorer window, click **Local Configuration**.

b. From the **Actions** menu, click **Test**.

Tip: If you are not configuring Cognos Analytics to send notifications, you can ignore the testing the mail server connection failure message.

c. In the informational window, click **Close**.

d. From the **Actions** menu, click **Start**. It might take Cognos Analytics a few minutes to start.

12. Exit IBM Cognos Configuration on *Server B*.
13. On *Server B*, copy the exported file that you created in Step 1 to the *Cognos_installation_dir*/deployment/ directory.
14. Import content into Cognos Analytics on *Server B*.
    a. Open a web browser and enter either of the following URLs:

       http://*FQDN_Of_Your_Machine*:*port*/bi

       Or

       https://*FQDN_Of_Your_Machine*:*port*/bi

       Where http or https are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 10 (Optional). If you *did not* perform Step 10, the default port value is 9300.

       Note: At this point Cognos Analytics is configured with anonymous access so that anyone is able to access it.

    b. In the lower left-hand part of the page, select **Manage** > **Administration console**.
    c. In the IBM Cognos Administration GUI, select the **Configuration** tab.
    d. In the **Configuration** tab, select **Content Administration**.
    e. On the toolbar, click the **New Import** icon. It is the fourth icon in the list.
    f. On the Select a deployment archive page, select the name of the file that you exported from Jazz for Service Management in Step 1 and click **Next**.
    g. On the Enter the encryption password page, enter the encryption password that you created in Step 1 and click **OK**.
    h. On the Specify a name and description page, enter a name for your import (or keep the default setting) and click **Next**.
    i. On the Select the public folders, directory, and library content page, select the following items to import:
       - Custom content that you exported.
       - IBM Spectrum Control Packages and (or the IBM Tivoli Storage Productivity Center Packages).
       - IBM Spectrum Control Predefined Reports and (or the IBM Tivoli Storage Productivity Center Predefined Reports).
       - IBM Spectrum Control Report Layouts and (or the IBM Tivoli Storage Productivity Center Report Layouts).
    j. Accept the default settings in the **Options** section and click **Next**.

       Tip: If you want to import your schedules with your IBM® Cognos® Business Intelligence content from Tivoli Common Reporting, complete the following steps:

       1) In the **Options** section, verify that **Include schedules** is selected.
       2) In the **Options** section, verify that **Conflict resolution** is set to **Replace existing entries**.
       3) Click **Next**.

k. On the Select directory content page, verify that **Include data sources and connections** and **Include signons** are selected and that **Conflict resolution** is set to **Replace existing entries** and click **Next**.

l. On the Specify the general options page, click **Next**.

m. On the Review the summary page, click **Next**.

n. On the Select an action page, select **Save and run once** and click **Finish**.

o. On the Run with Options page, select **Upgrade all report specifications to the latest version** and **Assign new IDs during import**.

p. Click **Run**.

q. On the IBM Cognos software page, select **View the details of this import after closing this dialog** and click **OK**.

r. On the View run history details page, click **Refresh**. Check the **Status** field to monitor that the job is executing. Do *not* log off from the IBM Cognos Administration GUI until the import job is complete.

Tip: The import job might take approximately 15 minutes or more to resolve. Click **Refresh** periodically to check the status.

The results of importing the reports and schedules into Cognos Analytics contain the following similar messages:

```
CM-REQ-4328 A problem was encountered while importing the object
"/content/folder[@name="IBM Spectrum Control Predefined Reports"]/
folder[@name="Servers"]/report[@name="Servers Capacity"]/schedule".
CM-REQ-4329 The following references cannot be resolved and were cleared:
"credential: CAMID("VMMProvider:smadmin")/credential[@name='Credential '] ".

CM-REQ-4328 A problem was encountered while importing the object
"/content/folder[@name="IBM Spectrum Control Predefined Reports"]/
folder[@name="Servers"]/report[@name="Servers Capacity"]/
schedule[@name="2018-04-27T18:03:22.638Z"]".
CM-REQ-3282 The schedule will not run because the credential is missing.
```

You can safely ignore the messages as they are expected.

s. After the import job is complete, check the **Completion time** and **Status** fields to verify that the job is complete. If it is complete, on the View an import deployment record page, click **Close**.

t. To exit the IBM Cognos Administration GUI, close the browser tab.

15. Verify that the imported content is displayed in Cognos Analytics on *Server B*.

a. Return to the browser tab where the Cognos Analytics GUI is running. If it is not running, open a web browser and enter either of the following URLs:

`http://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/bi`

Or

`https://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/bi`

Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 10 (Optional).

If you did perform Step 10, then you will use `https`. If you *did not* perform Step 10, then you use `http`. If you *did not* perform Step 10, the default port value is 9300.

b. On the IBM Cognos Analytics Welcome page, click **Team content**.

c. Verify that the following content is listed:

- Custom content that you saved to Public Folders before you ran this procedure.

- IBM Spectrum Control Packages and (or IBM Tivoli Storage Productivity Center Packages).
- IBM Spectrum Control Predefined Reports and (or IBM Tivoli Storage Productivity Center Predefined Reports).
- IBM Spectrum Control Report Layouts and (or IBM Tivoli Storage Productivity Center Report Layouts).

d. Optional: Attempt to generate a custom report or a predefined report and verify the contents.

Important: If you encounter APAR IT23800 or other problems when generating a predefined report in Cognos Analytics that was migrated from Tivoli Common Reporting, import the predefined reports package for the version of IBM Spectrum Control you are currently running on your system.

If you encounter APAR IT23800 or other problems when generating a custom report in Cognos Analytics that was migrated from Tivoli Common Reporting, you must update or recreate the custom report to use the predefined reports package for the version of IBM Spectrum Control you are currently running and remove references to tables that are no longer used in the IBM Spectrum Control database repository.

16. After you import the report content and schedules into Cognos Analytics, the schedules will not run due to missing credentials. To update the schedules in Cognos Analytics with the correct credentials, complete the following steps:
    a. Return to the browser tab where the Cognos Analytics GUI is running. If it is not running, open a web browser and enter either of the following URLs:

    `http://FQDN_Of_Your_Machine:port/bi`

    Or

    `https://FQDN_Of_Your_Machine:port/bi`

    Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 10 (Optional).

    If you did perform Step 10, then you will use `https`. If you *did not* perform Step 10, then you use `http`.

    If you *did not* perform Step 10, the default port value is 9300.

    b. On the IBM Cognos Analytics Welcome page, click **Team content**.
    c. Select a report that has an existing schedule.
    d. Select the **Properties** for the report.
    e. Select the **Schedule** tab.
    f. Select the > icon to open the schedule.
    g. Click **Update** on the schedule page.

    Repeat steps c-g for each migrated report schedule you want to run in Cognos Analytics.

You migrated your custom IBM® Cognos® Business Intelligence reports and upgraded to the latest version of IBM Spectrum Control and are able to use Cognos® BI reports.

Change the configuration of IBM Cognos Analytics from anonymous access to authenticated access.

For more information, see Configuring an LDAP namespace for IBM Directory Server.

For more information, see Configuring an LDAP namespace for Active Directory Server.

For more information, see Managing user authentication.

Related information:

"Importing IBM Spectrum Control pre-defined reports package" on page 96
Complete this procedure to import the IBM Spectrum Control predefined reports package into the IBM Cognos Analytics reporting tool.

- APAR IT23800
- Upgrading DB2 servers
- Upgrading a DB2 server (Linux and UNIX)
- IBM Cognos Analytics server components
- Install and configure server components
- Installing server components on UNIX or Linux operating systems
- Installing Content Manager on UNIX or Linux operating systems
- Installing the Application services components on UNIX or Linux operating systems

Migrating Cognos BI reports to IBM Cognos Analytics in a multiple server AIX environment with remote Jazz for Service Management

If you do not have custom report content, you can skip this migration procedure. You can upgrade to IBM® Cognos® Analytics Version 11.0.9 or later when you upgrade to the latest version of IBM Spectrum Control. Complete this procedure to migrate your existing custom report content from Tivoli Common Reporting to Cognos Analytics.

Review the content of Migrating reports to IBM Cognos Analytics during upgrade before you start this procedure.

For this procedure, the terms *Server A* and *Server B* denote the two servers. *Server A* has DB2® Enterprise Server Edition, IBM Spectrum Control database repository, and the IBM Spectrum Control servers installed. *Server B* has DB2® Enterprise Server Edition, Jazz for Service Management and Tivoli Common Reporting installed.

Important: Only reports in the Cognos Analytics Public Folders are migrated to IBM® Cognos® Analytics Version 11.0.9 or later. If you saved reports to My Folder, you must save them again in Public Folders before you migrate them.

If you plan to upgrade Db2 as part of your upgrade to the latest version of IBM Spectrum Control, upgrade Db2 on *Server A*, upgrade the IBM Spectrum Control database (TPCDB) on *Server A*, upgrade Db2 on *Server B* and then upgrade the Tivoli Common Reporting Content Store database (TCRDB) on *Server B*.

A high level overview on completing this upgrade:

- Export content from Tivoli Common Reporting on *Server B*.
- Upgrade IBM Spectrum Control on *Server A*.
- Uninstall IBM Spectrum Control on *Server B*.
- (Optional) Uninstall Tivoli Common Reporting, Jazz for Service Management, IBM® WebSphere® Application Server, and Installation Manager, from *Server B*.
- Install and configure Cognos Analytics on *Server B*.
- Import content into Cognos Analytics on *Server B* and then verify the content.

Verify that you have the following prerequisite packages installed on *Server B* for IBM Cognos Analytics Version 11.0.9 or later.

The prerequisites for AIX Version 6.1 are:

- TL7
- SP05 (6100-07-05-1228)
- IBM XL C/C++ for AIX, V12.1 Runtime Environment
- bos.pmapi.lib

The prerequisites for AIX Version 7.1 are:

- IBM XL C/C++ for AIX, V12.1 Runtime Environment
- bos.pmapi.lib

For more information, see Software Product Compatibility Reports.

You need to set the correct ulimit values on *Server B* in the `/etc/security/limits` file for Cognos Analytics.

Here is an example of the entries you might need to add to the `/etc/security/limits` file:

```
default:
fsize = -1
core = -1
cpu = -1
rss = -1
stack = 16384
nofiles = 8192
```

After you set and save your ulimit values, restart your computer and verify the correct ulimit values.

For more information, see Set the ulimit values on UNIX and Linux operating systems .

1. Log in to Jazz for Service Management and Tivoli Common Reporting on *Server B* to export content.
   a. Open a web browser and enter the following URL:

      `https://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/tarf/servlet/dispatch`

      Where `https` is the protocol, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*) and the *port* value is the secure HTTP port number that was specified during the installation of Jazz for Service Management. To determine the secure HTTP port number for Jazz for Service Management, open the *JazzSM_installation_dir*`/profile/properties/portdef.props` file. The

default *JazzSM_installation_dir* value is `/opt/IBM/JazzSM`. The port number is the value that is assigned to the **`WC_defaulthost_secure`** parameter. The default value is `16311`.

If you receive a security certificate warning when you attempt to connect to the server, confirm the security exception and continue to the web page.

b. Log in to the reporting interface using the Jazz for Service Management user name that was created when you installed Jazz for Service Management. The default value is `smadmin`.
c. Select **Launch** > **IBM Cognos Administration**.
d. In the IBM Cognos Administration GUI, select the **Configuration** tab.
e. In the **Configuration** tab, select **Content Administration**.
f. On the toolbar, click the **New Export** icon. It is the third icon in the list.
g. On the Specify a name and description page, enter a name for your export package and click **Next**.
h. On the Choose a deployment method page, select **Select public folders and directory content** and click **Next**.
i. On the Select the public folders content page, click the **Add** link.
j. On the Select entries page, select the following items to export.
   - Custom content that you saved to Public Folders before running this procedure.
   - IBM Spectrum Control Packages and (or the IBM Tivoli Storage Productivity Center Packages).
   - IBM Spectrum Control Predefined Reports and (or the IBM Tivoli Storage Productivity Center Predefined Reports).
   - IBM Spectrum Control Report Layouts and (or the IBM Tivoli Storage Productivity Center Report Layouts).
k. Click the **Green** arrow to transfer the content to the list.
l. Click **OK**.
m. On the Select the public folders content page, click **Next**.

   Tip: If you want to export your schedules with your IBM® Cognos® Business Intelligence content from Tivoli Common Reporting, complete the following steps:

   1) On the Select the public folders content page, select **Include schedules**.
   2) Set **Conflict resolution** to **Replace existing entries**.
   3) Click **Next**.

n. On the Select the directory content page, select **Include data sources and connections** and **Include signons**.
o. Set **Conflict resolution** to **Replace existing entries** and click **Next**.
p. On the Specify the general options page, click **Next**.
q. On the Specify a deployment archive page, click **Set the encryption password**.
r. On the Enter the encryption password page, enter, and then confirm your password and click **OK**.

   Tip: The encryption password is *not* an existing password in IBM Spectrum Control, Db2 or the operating system. The encryption password is a new password for the purpose of securing the content you are exporting from Jazz for Service Management and Tivoli Common Reporting.

Make note of your new password. You will need to provide it later in this procedure.

s. On the Specify a deployment archive page, click **Next**.

t. On the Review the summary page, click **Next**.

u. On the Select an action page, select **Save and run once** and click **Finish**.

v. On the Run with options page, click **Run**.

w. On the IBM Cognos software page, select **View the details of this report after closing this dialog** and click **OK**.

x. On the View run history details page, click **Refresh**. *Do not* log off from the IBM Cognos Administration GUI until the export job is complete. You can click **Refresh** periodically to check the status of the export job.

y. After the export job is complete, on the View an export deployment record page, click **Close**.

z. Log off from the reporting interface.

aa. Copy the exported file from the *JazzSM_installation_dir*/reporting/cognos/deployment/ directory to a directory that is outside of the Jazz for Service Management installation directory. Make note of the name and location of this exported file. You will need this information in Step 13.

Tip: If you *do not* copy the exported file outside of the Jazz for Service Management installation directory, the exported file is deleted when you uninstall Tivoli Common Reporting.

2. Upgrade *Server A* to the latest version of IBM Spectrum Control. For more information, see Upgrading from Tivoli Storage Productivity Center Version 5.2.0 and later with a remote database by using the installation program.

3. Upgrade *Server B* to the latest version of IBM Spectrum Control. You are then instructed to uninstall IBM Spectrum Control from *Server B*. Uninstall IBM Spectrum Control from *Server B*. For more information, see Uninstalling IBM Spectrum Control.

4. Optional: Uninstall Tivoli Common Reporting, Jazz for Service Management, WebSphere Application Server, and Installation Manager from *Server B*. For more information, see Uninstalling Tivoli Common Reporting and Jazz for Service Management.

   If you *did not* uninstall Tivoli Common Reporting, Jazz for Service Management, WebSphere Application Server, and Installation Manager, you *must* stop Jazz for Service Management and Tivoli Common Reporting before you proceed with the rest of this procedure.

   To stop Jazz for Service Management and Tivoli Common Reporting, open a command prompt and enter the following command:

   ```
   JazzSM_installation_dir/profile/bin/stopServer.sh server_name
   -username JazzSM_username  -password JazzSM_password
   ```

   For example:

   ```
   /opt/IBM/JazzSM/profile/bin/stopServer.sh server1 -username smadmin -password abc123
   ```

5. Install IBM Cognos Analytics 11.0.9 or later on *Server B*.

   Tip: You do not need to set the **JAVA_HOME** environment variable before you start the IBM Cognos Analytics Version 11.0.9 or later installation program.

   a. Log in to your computer as a user with root privileges.

   b. Start the IBM Cognos Analytics installation program.

   c. Select the language to use for your installation and click **Next**.

d. On the Product installation page, select **IBM Cognos Analytics (IBM Bundler Edition)** and click **Next**.
e. On the License agreement page, accept the License Agreement and click **Next**.
f. On the Location page, provide your installation location and click **Next**. Make note of your Cognos Analytics installation location. You will need to provide it later in this procedure.

   Tip: If you want the IBM Cognos Analytics installation to automatically create the installation location for you, click **Yes**.
g. On the Installation type page, select **First install** and click **Next**.
h. On the Choose components page, accept the default selections, and click **Next**.
i. On the Pre-installation summary page, review your information for accuracy and click **Install**.
j. When the installation is complete, click **Done**.

6. On *Server B*, copy the following Db2 JDBC driver files from the `/opt/IBM/db2/version/java/` directory to the *Cognos_installation_dir*`/drivers/` directory :
   - `db2jcc.jar`
   - `db2jcc_license_cu.jar`
   - `db2jcc4.jar`
7. On *Server B*, open a command prompt and enter the following command as the root user:

   ```
   cd Cognos_installation_dir/drivers/
   chmod +x db2jcc*.jar
   ```
8. On *Server B*, open a command prompt and enter the following command as the root user:

   ```
   ln -s Db2_instance_owner_home_directory/sqllib/lib32/libdb2.a Cognos_installation_dir/bin/
   ```

   IBM Spectrum Control Predefined Reports use Compatibility Query Mode. Cognos Analytics needs to use the 32-Bit Db2 library in order to connect to the IBM Spectrum Control database as a data source.
9. Create the content store for Cognos Analytics on *Server B*.
   a. Open a command prompt and enter the following commands to start IBM Cognos Configuration:

      ```
      cd Cognos_installation_dir/bin64/
      . /home/db2inst1/sqllib/db2profile
      ./cogconfig.sh
      ```

      Notice the space between the `.` and the `/` in the second command.
   b. In the Explorer window, expand **Data Access** > **Content Manager** and click **Content Store**.
   c. In the **Type** property, enter **DB2 database**, if it is not already displayed.
   d. In the **Database server and port number** property, enter localhost or the fully qualified domain name of the machine. For example, `localhost:50000` or *FQDN_Of_Your_Machine*`:50000` where `50000` is the default port number that is used by Db2.

Tip: If you are using a different port number, ensure that you use that value. To determine the port that is used by Db2, examine the **varDBPort** parameter in the *SC_installation_dir*/config/InstallVariable.properties file.

e. In the **User ID and password** property, enter the user name of the owner of the Db2 instance where the content store database will be located and the password that is associated with that user name Typically, this user name is *db2inst1*.

f. In the **Database name** property, verify that the default value is **cm**.

g. From the **File** menu, click **Save**. This step might take a few minutes to complete. Track the progress in the window.

h. In the informational window, click **Close**.

i. In the Explorer window, expand **Data Access** > **Content Manager** and click **Content Store**.

j. Right-click **Content Store** and click **Generate DDL**.

k. In the informational window, click **Close**.

Important: Do not exit IBM Cognos Configuration in this step. Wait until Step 12.

l. While you are logged into the AIX operating system as the root user, switch to the user that is the Db2 instance owner (for example, *db2inst1*).

m. Open a command prompt and enter the following Db2 command:

```
db2 -tvf Cognos_installation_dir/configuration/schemas/content/db2/createDb.sql
```

If the results of this command contain the following similar messages, you can safely ignore those messages because the Db2 instance owner already has the necessary privileges:

```
GRANT CREATETAB,BINDADD,CONNECT,IMPLICIT_SCHEMA ON DATABASE TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502

GRANT CREATEIN,DROPIN,ALTERIN ON SCHEMA DB2COGNOS TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502

GRANT USE OF TABLESPACE TSN_USR_cm TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502

GRANT USE OF TABLESPACE TSN_REG_cm TO USER db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command.  During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502
```

n. Go back to the root user.

o. In IBM Cognos Configuration, from the **Actions** menu, click **Test**. You are testing the connection between content manager and the content store database.

p. In the informational window, click **Close**.

10. Optional: On *Server B*, you can change the IBM Cognos Analytics ports to match the ports that are used by Jazz for Service Management and Tivoli Common Reporting. You would do this so that you do not have to get new firewall exceptions for the default Cognos Analytics ports.

a. While you are still in IBM Cognos Configuration, in the Explorer window, click **Environment**.

b. In the Group Properties window, select the **Value** next to the **URI** property and change the following properties (names):

Table 32. Group Property values

Property	Change the value to...
Gateway URI	• Computer fully qualified domain name (for example, *myserver.mycompany.com*). • The `https` protocol. • The `9300` port to the value of the **`WC_defaulthost_secure`** parameter in the *`JazzSM_installation_dir`*`\profile\properties\portdef.props` file. The default value is 16311.
External dispatcher URI	
Internal dispatcher URI	
Dispatcher URI for external applications	
Content Manager URIs	

c. From the **File** menu, click **Save**.

d. In the informational window, click **Close**.

11. Start IBM Cognos Analytics (content manager and application services), on *Server B*.

    It might take Cognos Analytics a few minutes to start.

    a. While you are still in IBM Cognos Configuration, in the Explorer window, click **Local Configuration**.

    b. From the **Actions** menu, click **Test**.

    Tip: If you are not configuring Cognos Analytics to send notifications, you can ignore the testing the mail server connection failure message.

    c. In the informational window, click **Close**.

    d. From the **Actions** menu, click **Start**. It might take Cognos Analytics a few minutes to start.

12. Exit IBM Cognos Configuration on *Server B*.

13. On *Server B*, copy the exported file that you created in Step 1 to the *`Cognos_installation_dir`*`/deployment/` directory.

14. Import content into Cognos Analytics on *Server B*.

    a. Open a web browser and enter either of the following URLs:

    `http://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/bi`

    Or

    `https://`*`FQDN_Of_Your_Machine`*`:`*`port`*`/bi`

    Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 10 (Optional). If you *did not* perform Step 10, the default port value is 9300.

    Note: At this point Cognos Analytics is configured with anonymous access so that anyone is able to access it.

    b. In the lower left-hand part of the page, select **Manage** > **Administration console**.

    c. In the IBM Cognos Administration GUI, select the **Configuration** tab.

    d. In the **Configuration** tab, select **Content Administration**.

    e. On the toolbar, click the **New Import** icon. It is the fourth icon in the list.

f. On the Select a deployment archive page, select the name of the file that you exported from Jazz for Service Management in Step 1 and click **Next**.

g. On the Enter the encryption password page, enter the encryption password that you created in Step 1 and click **OK**.

h. On the Specify a name and description page, enter a name for your import (or keep the default setting) and click **Next**.

i. On the Select the public folders, directory, and library content page, select the following items to import:

- Custom content that you exported.
- IBM Spectrum Control Packages and (or the IBM Tivoli Storage Productivity Center Packages).
- IBM Spectrum Control Predefined Reports and (or the IBM Tivoli Storage Productivity Center Predefined Reports).
- IBM Spectrum Control Report Layouts and (or the IBM Tivoli Storage Productivity Center Report Layouts).

j. Accept the default settings in the **Options** section and click **Next**.

Tip: If you want to import your schedules with your IBM® Cognos® Business Intelligence content from Tivoli Common Reporting, complete the following steps:

1) In the **Options** section, verify that **Include schedules** is selected.
2) In the **Options** section, verify that **Conflict resolution** is set to **Replace existing entries**.
3) Click **Next**.

k. On the Select directory content page, verify that **Include data sources and connections** and **Include signons** are selected and that **Conflict resolution** is set to **Replace existing entries** and click **Next**.

l. On the Specify the general options page, click **Next**.

m. On the Review the summary page, click **Next**.

n. On the Select an action page, select **Save and run once** and click **Finish**.

o. On the Run with Options page, select **Upgrade all report specifications to the latest version** and **Assign new IDs during import**.

p. Click **Run**.

q. On the IBM Cognos software page, select **View the details of this import after closing this dialog** and click **OK**.

r. On the View run history details page, click **Refresh**. Check the **Status** field to monitor that the job is executing. Do *not* log off from the IBM Cognos Administration GUI until the import job is complete.

Tip: The import job might take approximately 15 minutes or more to resolve. Click **Refresh** periodically to check the status.

The results of importing the reports and schedules into Cognos Analytics contain the following similar messages:

```
CM-REQ-4328 A problem was encountered while importing the object
"/content/folder[@name="IBM Spectrum Control Predefined Reports"]/
folder[@name="Servers"]/report[@name="Servers Capacity"]/schedule".
CM-REQ-4329 The following references cannot be resolved and were cleared:
"credential: CAMID("VMMProvider:smadmin")/credential[@name='Credential '] ".
```

```
CM-REQ-4328 A problem was encountered while importing the object
"/content/folder[@name="IBM Spectrum Control Predefined Reports"]/
folder[@name="Servers"]/report[@name="Servers Capacity"]/
schedule[@name="2018-04-27T18:03:22.638Z"]".
CM-REQ-3282 The schedule will not run because the credential is missing.
```

You can safely ignore the messages as they are expected.

s. After the import job is complete, check the **Completion time** and **Status** fields to verify that the job is complete. If it is complete, on the View an import deployment record page, click **Close**.

t. To exit the IBM Cognos Administration GUI, close the browser tab.

15. Verify that the imported content is displayed in Cognos Analytics on *Server B*.

a. Return to the browser tab where the Cognos Analytics GUI is running. If it is not running, open a web browser and enter either of the following URLs:

`http://FQDN_Of_Your_Machine:port/bi`

Or

`https://FQDN_Of_Your_Machine:port/bi`

Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 10 (Optional).

If you did perform Step 10, then you will use `https`. If you *did not* perform Step 10, then you use `http`. If you *did not* perform Step 10, the default port value is 9300.

b. On the IBM Cognos Analytics Welcome page, click **Team content**.

c. Verify that the following content is listed:

- Custom content that you saved to Public Folders before you ran this procedure.
- IBM Spectrum Control Packages and (or IBM Tivoli Storage Productivity Center Packages).
- IBM Spectrum Control Predefined Reports and (or IBM Tivoli Storage Productivity Center Predefined Reports).
- IBM Spectrum Control Report Layouts and (or IBM Tivoli Storage Productivity Center Report Layouts).

d. Optional: Attempt to generate a custom report or a predefined report and verify the contents.

Important: If you encounter APAR IT23800 or other problems when generating a predefined report in Cognos Analytics that was migrated from Tivoli Common Reporting, import the predefined reports package for the version of IBM Spectrum Control you are currently running on your system.

If you encounter APAR IT23800 or other problems when generating a custom report in Cognos Analytics that was migrated from Tivoli Common Reporting, you must update or recreate the custom report to use the predefined reports package for the version of IBM Spectrum Control you are currently running and remove references to tables that are no longer used in the IBM Spectrum Control database repository.

16. After you import the report content and schedules into Cognos Analytics, the schedules will not run due to missing credentials. To update the schedules in Cognos Analytics with the correct credentials, complete the following steps:

a. Return to the browser tab where the Cognos Analytics GUI is running. If it is not running, open a web browser and enter either of the following URLs:

`http://FQDN_Of_Your_Machine:port/bi`

Or

`https://FQDN_Of_Your_Machine:port/bi`

Where `http` or `https` are protocols, *FQDN_Of_Your_Machine* is your fully qualified domain name, (for example, *myserver.mycompany.com*), and the *port* value is the value that you set when you updated Cognos Analytics, in Step 10 (Optional).

If you did perform Step 10, then you will use `https`. If you *did not* perform Step 10, then you use `http`.

If you *did not* perform Step 10, the default port value is 9300.

b. On the IBM Cognos Analytics Welcome page, click **Team content**.

c. Select a report that has an existing schedule.

d. Select the **Properties** for the report.

e. Select the **Schedule** tab.

f. Select the > icon to open the schedule.

g. Click **Update** on the schedule page.

Repeat steps c-g for each migrated report schedule you want to run in Cognos Analytics.

You migrated your custom IBM® Cognos® Business Intelligence reports and upgraded to the latest version of IBM Spectrum Control and are able to use Cognos® BI reports.

Change the configuration of IBM Cognos Analytics from anonymous access to authenticated access.

For more information, see Configuring an LDAP namespace for IBM Directory Server.

For more information, see Configuring an LDAP namespace for Active Directory Server.

For more information, see Managing user authentication.

Related information:

"Importing IBM Spectrum Control pre-defined reports package" on page 96
Complete this procedure to import the IBM Spectrum Control predefined reports package into the IBM Cognos Analytics reporting tool.

- APAR IT23800
- Upgrading DB2 servers
- Upgrading a DB2 server (Linux and UNIX)
- IBM Cognos Analytics server components
- Install and configure server components
- Installing server components on UNIX or Linux operating systems
- Installing Content Manager on UNIX or Linux operating systems
- Installing the Application services components on UNIX or Linux operating systems

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 Windows environment by using the installation program"
- "Upgrading IBM Spectrum Control in a single-server environment by using silent mode" on page 202

Upgrading IBM Spectrum Control in a single-server Windows 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.

To upgrade IBM Spectrum Control in a single-server Windows 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 5.2.0 and later, start the Web server. For more information about starting the services, see
   Starting the IBM Spectrum Control services.
3. Start the IBM Spectrum Control installation program.
   a. Download the image into a directory.
   b. Extract the image files.
   c. Enter the following command: `cd` *`image_directory`*`\SC` and then enter `setup.bat`.
4. Follow the prompts in the installation program to upgrade IBM Spectrum Control.
5. After the upgrade is finished, review the message log to ensure that no errors occurred.

Related concepts:

"Backups" on page 106
Before you upgrade, you must back up the entire IBM Spectrum Control system.

Related reference:

"Preparing for an upgrade" on page 103
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 79
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.

"Starting the installation programs" on page 51
There are various methods to start the IBM Spectrum Control installation programs and on various operating systems.

Upgrading IBM Spectrum Control in a single-server AIX or Linux environment by using the installation program

You can upgrade 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 upgrade IBM Spectrum Control as a non-root user, you must have sudo privileges on the target AIX or Linux server.

Before you upgrade, you must back up the entire IBM Spectrum Control system.

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

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

- If you are upgrading IBM Spectrum Control on an AIX server, install sudo on the server. The default AIX distribution does not include sudo privileges. 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.)
  - **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, /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 upgrading 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 upgrade 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 upgrade IBM Spectrum Control in silent mode.

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

1. Log on to the IBM Spectrum Control computer as the root user or as the non-root user who has sudo privileges.
2. 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. Start the IBM Spectrum Control installation program.
   a. Create a directory. Enter:
      ```
      mkdir /SpectrumControl
      ```
   b. Download the image into the `SpectrumControl` directory.
   c. Enter the following command to extract the image files:
      ```
      tar -xzvf filename.tar.gz
      ```
   d. 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 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.
   e. Go to the `/SpectrumControl/SC` directory:
      ```
      cd /SpectrumControl/SC
      ```
   f. 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`.
   g. Start the installation program by running the **./setup.bin** or **sudo -E ./setup.bin** command from the same command shell that you used in the previous step.
4. Follow the prompts in the installation program to upgrade IBM Spectrum Control.
5. After the upgrade is finished, review the message log to ensure that no errors occurred.

Related concepts:

"Backups" on page 106
Before you upgrade, you must back up the entire IBM Spectrum Control system.

Related reference:

"Preparing for an upgrade" on page 103
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 79
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.

"Starting the installation programs" on page 51
There are various methods to start the IBM Spectrum Control installation programs and on various operating systems.

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.

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 5.2.0 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"`
     - `CONFIRM_REPLICATION_UNINSTALL=true`
     - `CONFIRM_REPORTS_UNINSTALL=true`
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 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
  ```

- 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
  ```

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 106
Before you upgrade, you must back up the entire IBM Spectrum Control system.

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 79
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.

CONFIRM_REPLICATION_UNINSTALL=false
Acknowledges the uninstall of the Replication server during the upgrade.

The options are:

false
You do not acknowledge the uninstall of the Replication server and the upgrade does not proceed.

true
You do acknowledge the uninstall of the Replication server and the upgrade does proceed.

CONFIRM_REPORTS_UNINSTALL=false
Acknowledges the uninstall of the Cognos BI Reports component during the upgrade.

The options are:

false
You do not acknowledge the uninstall of the Cognos BI Reports and the upgrade does not proceed.

true
You do acknowledge the uninstall of the Cognos BI Reports and the upgrade does proceed.

Related tasks:

"Upgrading IBM Spectrum Control in a single-server environment by using silent mode" on page 202
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 topic:

- "Upgrading from Tivoli Storage Productivity Center Version 5.2.0 and later with a remote database by using the installation program" on page 205

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.

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 TPC components installed.

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. Start the IBM Spectrum Control installation program on Server B.
   d. Follow the prompts in the installation program to upgrade the IBM Spectrum Control components on Server B.
   e. After the upgrade is finished, review the message log file on Server B to ensure that no errors occurred.

Related concepts:

"Backups" on page 106
Before you upgrade, you must back up the entire IBM Spectrum Control system.

Related reference:

"Preparing for an upgrade" on page 103
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 79
If an error occurs during IBM Spectrum Control installation, you can review the error log files to resolve issues and continue the installation.

"Example of Upgrading 32-Bit to 64-Bit DB2" on page 109
If you are running an earlier version of IBM Spectrum Control that uses a 32-bit DB2, you must upgrade to 64-bit DB2.

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 with remote Jazz for Service Management to IBM Spectrum Control, on a single machine 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 Analytics reports installed.

The IBM Cognos BI reports component is no longer part of the IBM Spectrum Control product. The upgrade on Server B will instruct you to uninstall IBM Spectrum Control from Server B. Therefore, after you complete this upgrade procedure, all of the IBM Spectrum Control components will be on Server A and no part of IBM Spectrum Control will be on Server B.

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. 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
      ```
   c. Start the IBM Spectrum Control installation program.
   d. Follow the prompts in the installation program to upgrade the IBM Spectrum Control database repository and the IBM Spectrum Control servers.
   e. 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. 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
      ```
   c. Start the IBM Spectrum Control installation program on Server B.
   d. The upgrade will instruct you to uninstall IBM Spectrum Control from Server B. Quit the IBM Spectrum Control installation program.
   e. Uninstall IBM Spectrum Control from Server B.

After you complete this upgrade procedure, all of the IBM Spectrum Control components will be on Server A and no part of IBM Spectrum Control will be on Server B.

Related concepts:

"Backups" on page 106
Before you upgrade, you must back up the entire IBM Spectrum Control system.

Related tasks:

"Db2" on page 41
You can install the most recent version of Db2 Advanced Workgroup Server Edition that IBM Spectrum Control supports on the Linux, AIX, or Windows operating systems.

Related reference:

"Preparing for an upgrade" on page 103
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.

"Example of Upgrading 32-Bit to 64-Bit DB2" on page 109
If you are running an earlier version of IBM Spectrum Control that uses a 32-bit DB2, you must upgrade to 64-bit DB2.

"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 79
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 Advanced Workgroup 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. 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 5.2.0 and later, start the Web server. For more information about starting the services, see Starting the IBM Spectrum Control services.
   c. 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"
        – CONFIRM_REPORTS_UNINSTALL=true
        – CONFIRM_REPLICATION_UNINSTALL=true
   d. 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.

e. 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 106
Before you upgrade, you must back up the entire IBM Spectrum Control system.

Related reference:

"Preparing for an upgrade" on page 103
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 203
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 79
If an error occurs during IBM Spectrum Control installation, you can review the error log files to resolve issues and continue the installation.

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	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	1. Remove the server that the Storage Resource agent is deployed to. 2. Deploy a new Storage Resource agent. **CAUTION:** **If you use this option, historical data for the Storage Resource agent is lost.**

Related information:

Upgrading Storage Resource agents by using a command
You can manually upgrade Storage Resource agents.

Removing servers
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*>/certsdirectory. 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 83
You can install Storage Resource agents by using the IBM Spectrum Control user interface or a command.

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 106.

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	

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	

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 to 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 Deleted Pool New Pool	

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 Analytics 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.

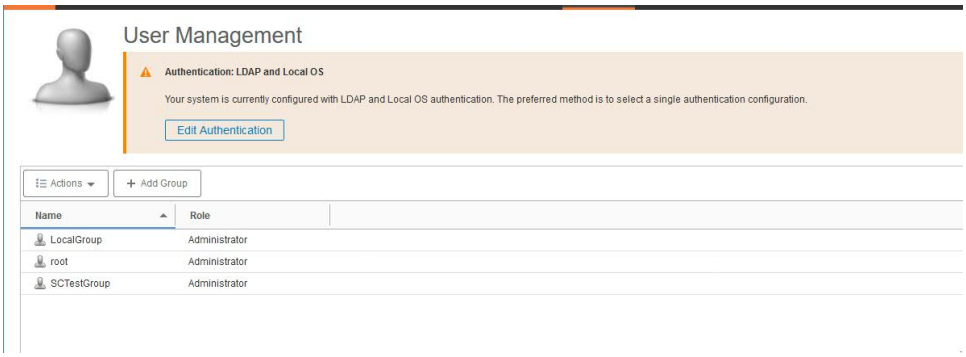
You can access the storage resource groups in the Cognos Analytics reporting tool under the Capacity and Relationships package. Any updates to the general groups are reflected in the corresponding storage resource groups, but not in the deprecated reporting and monitoring groups.

Scenario: Changing from LDAP and Local OS authentication to only LDAP or Local OS authentication after an upgrade

In this scenario, you change from LDAP and Local OS authentication to only LDAP or Local OS authentication.

You were running an earlier version of IBM Spectrum Control with both LDAP and Local OS authentication configured. You upgraded to the latest version of IBM Spectrum Control. The preferred method of authentication is to select either LDAP or Local OS authentication.

1. Back up the `ldapregistry.xml` file in the *`installation_dir`*`/wlp/usr/servers/webServer/registry/` directory.
2. Log on as an administrator to the IBM Spectrum Control GUI.
3. Click **Settings** > **User Management**.



4. Click **Edit Authentication**.
   a. On the Authentication Configuration page, uncheck **LDAP**, if you want to change from LDAP and Local OS authentication to *only* Local OS authentication, and click **Save**.
   b. On the Authentication Configuration page, uncheck **Local OS**, if you want to change from LDAP and Local OS authentication to *only* LDAP authentication and you **do not** want to alter your LDAP settings, and click **Save**.
   c. On the Authentication Configuration page, uncheck **Local OS**, if you want to change from LDAP and Local OS authentication to *only* LDAP

authentication and you **do** want to alter your LDAP settings, then start with Step 6 in Adding an LDAP repository to the federated repositories for IBM Spectrum Control

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 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 IBM® 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.

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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 79
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. The IBM Spectrum Control database repository is installed on *Server A* and the IBM Spectrum Control servers are installed on *Server B*.

To uninstall the software in a multiple-server environment, complete the following steps:

1. Complete these steps on *Server B*:
   a. Log on to *Server B* with the appropriate user privileges to uninstall the IBM Spectrum Control components.
   b. 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.
   c. Click **Uninstall**. A confirmation is displayed.
   d. 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.
2. Complete these steps for *Server A*:
   a. Log on to *Server A* with the appropriate user privileges to uninstall the IBM Spectrum Control database repository.
   b. Start the IBM Spectrum Control uninstallation program.

c. Follow the instructions to uninstall the database repository.

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 79
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.

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.

Related tasks:

"Manually uninstalling IBM Spectrum Control components on Windows" on page 225
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 79
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.
- 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. Run the following command to stop the Export server:
   ```
   kill -9 `ps -aef | grep export | 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. Run the following command to stop the data collector:
   ```
   kill -9 `ps -aef | grep collector | grep -v grep | awk '{ print $2 }'` 2> /dev/null
   ```
9. Drop the database by completing the following steps:
   a. Source the `db2profile`.
   b. Enter `db2 drop db TPCDB`.
10. 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 and data collector, 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
```

If the script does not exist, run the following command to stop the data collector:

```
sc stop datacollector1
```

5. To delete the Device server, run the following command:

```
sc delete deviceServer
```

6. To delete the data collector, run the following command:

```
sc delete datacollector1
```

7. Run the following commands to uninstall the Alert server:

```
sc stop alertServer
sc delete alertServer
```

8. Run the following commands to uninstall the Export server:

```
sc stop exportServer
sc delete exportServer
```

9. Run the following commands to uninstall the Web server:

```
sc stop webServer
sc delete webServer
```

10. Run the following commands to delete the `wlp` directories:

```
cd C:\Program Files\IBM\TPC
del wlp
```

11. Run the following command to remove the IBM Spectrum Control directories:

```
rmdir /s/q "C:\Program Files\IBM\TPC"
```

12. 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:

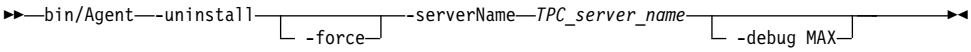
1. If the Storage Resource agent is on the Virtual I/O system, complete the following steps:

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.



   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 is 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_5.3.1/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 `sra`*`instance`*`_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 `sra`*`instance`*`_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 IBM® 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 IBM® 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 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 your Deployment Engine, which is a component of Tivoli Common Reporting, is corrupt or partially installed, use the steps to uninstall the Deployment Engine, that are provided in https://www.ibm.com/support/knowledgecenter/SSEKCU_1.1.0.3/com.ibm.psc.doc_1.1.0.3/tcr_original/ttcr_uninstal_manually.html

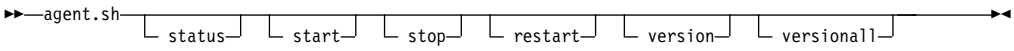
Chapter 5. Reference

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.



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.

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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 Printable documentation.
  - 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:

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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.

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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.

Index

A

about this document viii
access
  Cognos Analytics, configuring 98
accessibility features
  for IBM Spectrum Control 235
adding
  installation license 82, 83
adding a computer to a Windows domain 10
agent.sh command
  syntax 233
agents
  planning for Storage Resource agents 29
  scheduling a Storage Resource agent upgrade 211
  starting a Storage Resource agent upgrade 211
  uninstalling a Storage Resource agent 229
  upgrading Storage Resource agents 210
AIX 224
AIX, Linux 55
alerts
  migrating 215
authentication
  configuring 219

B

back up
  migrating 106
backing up 107
browsers supported 37

C

changing from
  LDAP and Local OS authentication 219
  to LDAP or Local OS authentication 219
changing the browser language 80
changing the language of Spectrum Control 80
changing the operating system language 80
changing the operating system language for AIX 81
changing the operating system language for Windows 81
CIM agents
  software requirements 37
commands
  agent.sh 233
comments, sending viii
common user, about 14
components 224, 225
configuration
  guidelines 13
configuring
  IBM Cognos Analytics 91
copyingDb2 on Windows
  JDBC files 91
copyinglinking Db2 library on Linux and AIX
  JDBC files 92
creatingIBM Spectrum Control
  IBM Cognos Analytics data source 95
creatingstarting IBM Cognos Analytics on Linux or AIX
  content store database 93
creatingstarting IBM Cognos Analytics on Windows
  content store database 92

D

database repository
  software requirements 36
Db2
  installing on AIX 44, 48
  installing on AIX with command line 46
  installing on Linux 44
  uninstalling 229
  upgrading 107
  verifying installation 50
  verifying installation using CLP 50
  verifying installation using First Steps 50
DB2
  upgrading 109
DB2 Version 10.5 to Db2 Version 11.1 107
Db2®
  installing on Windows 42
  preparing to install on UNIX 42
  preparing to install on Windows 41

E

EMC PowerPath Multipathing
  planning for 28

F

fully qualified host names
  host names
    fully qualified host names
      required 1
  required 1

G

glossary 241
groups
  migrating 218

H

hardware requirements 35
hypervisors
  user roles 18

I

IBM Cognos Analytics
  installing in AIX 90
  installing in Linux 88
  installing in Windows 88
  migrating reports 134, 161, 189
  upgrading 117, 125, 151, 180
  upgrading IBM Spectrum Control 142, 170
IBM Cognos BI reports
  migrating in Windows 117
  migrating, multiple server AIX environment 180
  migrating, multiple server AIX environment with remote Jazz for Service Management 189
  migrating, multiple server Linux environment 151
  migrating, multiple server Linux environment with remote Jazz for Service Management 161
  migrating, multiple server Windows environment 125
  migrating, multiple server Windows environment with remote Jazz for Service Management 134
  migrating, single AIX environment 170
  migrating, single Linux environment 142
IBM Spectrum Control
  hardware requirements 35
  installing 38
  software requirements 36
  uninstalling 221, 222, 223
  uninstalling the agents 226
IBM Spectrum Control server on a separate computer 71
importingIBM Cognos analytics
  IBM Spectrum Control pre-defined report package 96
installation
  program, single-server environment 54, 55
  reinstalling 98
  silent mode, multiple-server environment 66
  silent mode, single-server environment 56

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installation *(continued)*
upgrading on a single server AIX or Linux using installation program 200
upgrading on a single server Windows using installation program 199
installation failure
deleting registry files 227
installing 71
agents 83
components 35
Db2 42
Db2 on AIX 44
Db2 on AIX POWER7 Systems 48
Db2 on Linux 44
Db2® on Windows 42
Db2®, preparing for installation on UNIX 42
Db2®, preparing for installation on Windows 41
deploying Storage Resource agents remotely 87
GUI 1
IBM Cognos Analytics 88
IBM Spectrum Control in a Windows domain 8
multiple-server environment 63
new installation 1
on a Windows domain 72
single-server environment 54
starting installation program 51
Storage Resource agents locally 84
Storage Resource agents on the Virtual I/O Server 87
when no X Window System is installed 2
Windows domain
Dcdiag tool 75
Windows domain or local 8
with no X Window System 1
installing in a Windows domain
creating a Windows domain common user account 11
Db2 by using a Windows domain user account 10
granting Db2 SYSADM authority 12
installing remote database 64
installing with command line
Db2 on AIX 46
IPv6
planning for 31

L

language
changing for AIX 81
changing for the Spectrum Control GUI 80
changing for Windows 81
LDAP 219
planning for 33
LDAP servers
software requirements 37
license
adding 82, 83
Linux 224
Local OS 219
log files
installation error 79

M

migrating
alerts 215
groups 218
multipath subsystem device drivers
planning for 28
upgrading 28

O

operating systems supported 36

P

passwords
valid characters 15
planning
authorization for users 14
for Solaris Storage Resource agents 30
IPv6 support 31
managing storage 34
overview 1
problems
report viii
program installation
root, non-root user 55
single-server environment 54, 55

R

reader feedback, sending viii
replication 107
reporting
access
configuring for Cognos Analytics software 98
Cognos Analytics
configuring access 98
configuring security 98
security
configuring for Cognos Analytics software 98
reporting problems viii
rollup servers
user roles 18
root, non-root user 55

S

SAN Volume Controller
publications v
security
Cognos Analytics, configuring 98
sending comments viii
servers
removing 229
service viii
service management connect viii
silent mode installation
multiple-server environment 66
single-server environment 56
silent-mode upgrade 202
SMC viii
software requirements
Data Studio 49
database repository 36
for CIM agents 37
for LDAP servers 37
IBM Data Studio 49
operating systems 36
Storage Resource agent support 36
storage management
planning 34
Storage Resource agents
deploying remotely 87
installing locally 84
installing on the Virtual I/O Server 87
planning for 29
planning for Solaris 30
protocol support 29
scheduling an upgrade 211
starting an upgrade 211
uninstalling manually 226
uninstalling using GUI 229
upgrading 210
upgrading manually 212
storage systems
user roles 18
subsystem device drivers
planning for 28
upgrading 28
Sudo command privileges
using 34
support viii
Support
contact viii

T

TCP/IP ports
planning for 21, 24
Tivoli Storage Productivity Center for Replication
uninstalling 221, 222, 223
trademarks 239
translations
browser locale requirement vii

U

uninstall 224, 225
uninstalling
Db2 229
IBM Spectrum Control 221, 222, 223
IBM Spectrum Control agents 226
Jazz for Service Management and Tivoli Common Reporting 231
Storage Resource agent manually 226
Tivoli Storage Productivity Center for Replication 221, 222, 223
upgrading
in silent mode 202
multiple-server environment 204

upgrading *(continued)*
remote DB2 and remote Cognos BI reports 206
scheduling a Storage Resource agent upgrade 211
silent mode 207
single-server environment 199
SMI-S providers for storage systems 213
starting a Storage Resource agent upgrade 211
Storage Resource agents 210
Storage Resource agents manually 212
upgrading from version
upgrading by using the installation program 205
user authentication 15
Db2 user names and passwords 18
work sheets 21
user names
valid characters 15
user roles
hypervisors 18
rollup servers 18
storage systems 18
VMware vSphere data sources 18
using
Sudo command privileges 34

W

windows 225
Windows 54

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