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Introduction

This document gives instructions for installing and configuring IBM® Cognos® Virtual View Manager with IBM Cognos and IBM® Cognos® Framework Manager.

Virtual View Manager is a server product that helps business users query different and distributed information sources and create a unified view of their business information.

Audience
This documentation is for information technology professionals who want to use IBM® Cognos® Virtual View Manager to model data resources. Knowledge of relational data sources, hierarchical data sources, and data modeling is recommended.

Finding information
To find IBM® Cognos® product documentation on the web, including all translated documentation, access one of the IBM Cognos Information Centers at http://publib.boulder.ibm.com/infocenter/cogic/v1r0m0/index.jsp. Updates to Release Notes are published directly to Information Centers.

You can also read PDF versions of the product release notes and installation guides directly from IBM Cognos product disks.

Accessibility features
This product does not currently support accessibility features that help users who have a physical disability, such as restricted mobility or limited vision, to use this product.

Forward-looking statements
This documentation describes the current functionality of the product. References to items that are not currently available may be included. No implication of any future availability should be inferred. Any such references are not a commitment, promise, or legal obligation to deliver any material, code, or functionality. The development, release, and timing of features or functionality remain at the sole discretion of IBM.

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Introduction
Chapter 1: Preparing to Install

Use the following checklist to guide you through the setup process for IBM Cognos Virtual View Manager:

- Review the Release Notes.
- Review supported environments.
- Verify system requirements.

After you complete these tasks, continue with "Installing and Configuring IBM Cognos Virtual View Manager" (p. 9).

Review the Release Notes Before You Install

Before you install your IBM® Cognos® product, it is important to be aware of all issues that may affect your installation strategy.

There may be late-breaking issues that were not known when this installation guide was created.

Review the Release Notes before you install your product. The Release Notes contains late-breaking information about known issues, and documentation updates and deprecation notices. The Release Notes are available from the first page of the installation wizard or from the product disk. Release Notes updates are also available on the IBM Cognos Customer Center (www.ibm.com/software/data/cognos/customercenter/).

Review Supported Environments

To ensure that your product works properly, apply all minimum required operating system patches and use only the versions of other software that are supported for an IBM® Cognos® product.

To review an up-to-date list of environments supported by IBM Cognos products, such as operating systems, patches, browsers, Web servers, directory servers, database servers, and application servers, visit the IBM Cognos Customer Center (www.ibm.com/software/data/cognos/customercenter/).

It is important to note that the Linux® operating system is available in a number of distributions and supports a number of hardware platforms. Ensure that the combination of the operating system and hardware that you are using is supported.

Verify System Requirements

Use the following table to check the minimum hardware and software requirements to install and run IBM Cognos Virtual View Manager component. Additional resources may be required for distributed or production environments.
<table>
<thead>
<tr>
<th>Requirement</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating system</td>
<td>Windows®</td>
</tr>
<tr>
<td></td>
<td>UNIX®</td>
</tr>
<tr>
<td></td>
<td>Linux®</td>
</tr>
<tr>
<td>RAM</td>
<td>200 MB for design and development</td>
</tr>
<tr>
<td></td>
<td>700 MB for deployment</td>
</tr>
<tr>
<td>Disk space</td>
<td>500 MB for the Virtual View Manager installation.</td>
</tr>
<tr>
<td></td>
<td>300 MB for the repository database.</td>
</tr>
<tr>
<td></td>
<td>500 MB for the cache (recommended only; not required for completing the installation)</td>
</tr>
<tr>
<td>Database</td>
<td>You must have one of the following databases available to store IBM Cognos data in a production environment:</td>
</tr>
<tr>
<td></td>
<td>● Informix</td>
</tr>
<tr>
<td></td>
<td>● DB2</td>
</tr>
<tr>
<td></td>
<td>● Oracle</td>
</tr>
<tr>
<td></td>
<td>● MySQL</td>
</tr>
<tr>
<td></td>
<td>● Sybase</td>
</tr>
<tr>
<td>Web browser</td>
<td>For all Web browsers, the following are enabled:</td>
</tr>
<tr>
<td></td>
<td>● cookies</td>
</tr>
<tr>
<td></td>
<td>● JavaScript</td>
</tr>
<tr>
<td></td>
<td>For Microsoft Internet Explorer only, the following are enabled:</td>
</tr>
<tr>
<td></td>
<td>● Run ActiveX controls and plug-ins</td>
</tr>
<tr>
<td></td>
<td>● Script ActiveX controls marked safe for scripting</td>
</tr>
<tr>
<td></td>
<td>● Active scripting</td>
</tr>
<tr>
<td></td>
<td>● Allow META REFRESH</td>
</tr>
</tbody>
</table>
You install IBM® Cognos® Virtual View Manager in your IBM Cognos environment to enhance performance when querying heterogeneous data sources.

Use the following checklist to guide you through the installation and configuration process:

- Choose a Virtual View Manager installation option.
  - Install Virtual View Manager Server.
    Virtual View Manager Server also installs an instance of IBM Informix as the database repository for Virtual View Manager. Informix is installed using default settings.
  - Install Virtual View Manager Studio.
  - Install the Virtual View Manager ODBC driver on each Framework Manager and IBM Cognos report server computer.
  - Optionally, install JDBC Drivers for DB2 and Microsoft SQL Server Data Sources.
    For more information, see the Virtual View Manager User Guide.

- Create users in the cognos domain.
- Configure Virtual View Manager.
- Start Virtual View Manager Studio.
  For more information about using Virtual View Manager Studio, see the Virtual View Manager User Guide or Getting Started Guide.

The Virtual View Manager Windows services and UNIX processes start automatically after the installation has finished. If you experience problems during the installation, check the log files in the installation_location/logs directory or the installation_location/instlogs directory where you installed Virtual View Manager. You can also check the troubleshooting information in this guide. Otherwise, you can start using Virtual View Manager to access metadata.

For more information about installing or using Informix, see the Informix documentation that is provided with the installation. The Informix documentation is available on the Virtual View Manager installation CD, and it is available after installation in the installation_location/apps/informix/release directory.

If you prefer using an Oracle, Sybase, or MySQL database for the repository instead of the Informix database that is installed with Virtual View Manager, you must complete the default installation, then follow the steps provided in the Virtual View Manager Administration Guide to change your repository configuration. Silent mode installation is not applicable for this purpose.
IBM Cognos and Virtual View Manager

You use IBM® Cognos® Virtual View Manager to create a view of the database that is optimized for IBM Cognos, and you use Framework Manager to model the database view and create a single business view.

IBM Cognos components, including Framework Manager, use an ODBC interface to access a Virtual View Manager data service. Virtual View Manager Server accesses the data sources through Java Database Connectivity (JDBC), a Java API, ODBC, the OS File System, or SOAP.

The workflow for using Virtual View Manager is separated into three processes:

- **setting up the environment**
  This process involves installing and configuring the appropriate software and drivers. The installation also installs IBM Informix and creates a repository to contain your Virtual View Manager content.

- **creating a data source using Virtual View Manager Studio**
  This process includes accessing and simplifying the metadata using Virtual View Manager Server. For more information, see "Add a Data Source in IBM Cognos Virtual View Manager Studio" (p. 25).

- **accessing Virtual View Manager views using IBM Cognos**
  This process involves preparing metadata for reporting in IBM Cognos. For more information, see "Accessing IBM Cognos Virtual View Manager with IBM Cognos and IBM Cognos Framework Manager" (p. 25).
IBM Cognos Virtual View Manager Server and IBM Cognos Installation Options

Before using IBM® Cognos® Virtual View Manager, you must decide how to install it in your existing IBM Cognos environment. You can install Virtual View Manager Server and IBM Cognos on one computer, or on separate computers. The best distribution option depends on your reporting requirements, resources, and preferences. Configuration requirements differ depending on whether you install all components on one or multiple computers.

For more information about Virtual View Manager components, see the Virtual View Manager User Guide.

Install IBM Cognos and Virtual View Manager Server on One Computer

You can install Virtual View Manager Server on a computer where IBM Cognos is already installed. Choose this scenario for proof of concept or demonstration environments where the user load is small.

Although you can install Virtual View Manager Server on the same computer as IBM Cognos, check your available system resources and user load.

When deciding whether to install both Virtual View Manager Server and IBM Cognos report server components on the same computer, consider that Virtual View Manager Server and IBM Cognos:

- each run in a separate instance of Tomcat
- each use a Java Virtual Machine (JVM), which consumes resources at startup
- each use its own logging facility

Install IBM Cognos and Virtual View Manager Server on Separate Computers

With this option, you may have one or more IBM Cognos services accessing a single instance of Virtual View Manager Server.

In most environments, install Virtual View Manager Server on a computer separate from IBM Cognos for better performance and availability. Installing one instance of Virtual View Manager Server ensures that there is only one Virtual View Manager modeling repository and that data is consistent for all IBM Cognos services.

Install Virtual View Manager Studio

You can install Virtual View Manager Studio with Virtual View Manager Server or on a separate computer. Virtual View Manager Studio can only be installed on Windows computers.

Create Informix User Account on UNIX or Linux

When you install IBM® Cognos® Virtual View Manager, a user is required for the IBM Informix database. In the Windows installation, you are prompted to enter a password for the informix user name that is automatically created. The installation wizard will then create the user account for you.
On UNIX, you must create an account named informix before you run the installation. Like on Windows, the installation wizard will prompt you for a user name and password, but you must create this user on the computer before you run the installation.

The Informix user must be a member of a group named informix. The Informix user does not need root access or to have administrative privileges.

As a system user, all policies applicable to system users, such as account lock policy and password policy, also apply to the informix user. If, for example, the Informix user account is locked, Virtual View Manager may not work correctly.

Install IBM Cognos Virtual View Manager

Install IBM® Cognos® Virtual View Manager to provide access to additional data sources, such as LDAP, JDBC, Open XML, and WSDL, or to improve performance when querying data from different data sources.

Prerequisite Checklist for Virtual View Manager

☐ Ensure that Virtual View Manager has not already been installed on the computer.

You can have only one instance of Virtual View Manager on a computer.

☐ Ensure your environment is supported.

You can install Virtual View Manager Server on a server running Microsoft Windows, Red Hat Enterprise Linux, Sun Solaris, AIX, or HP-UX. To view a complete list of environments currently supported by IBM Cognos products, visit the IBM Cognos Resource Center (http://www.ibm.com/software/data/support/cognos_crc.html).

☐ Ensure the port that Virtual View Manager uses are available.

The following table lists the default ports used by Virtual View Manager. If you are using any ports other than the ones listed below, ensure that you make note of the port for future reference.

<table>
<thead>
<tr>
<th>Port</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9400</td>
<td>Port used for Virtual View Manager Studio requests to Virtual View Manager Server</td>
</tr>
<tr>
<td>9401</td>
<td>Port used for the JDBC and ODBC connections</td>
</tr>
<tr>
<td>9402</td>
<td>Port used for secure HTTP SSL connections</td>
</tr>
<tr>
<td>9403</td>
<td>Port used for secure JDBC driver communications</td>
</tr>
<tr>
<td>9406</td>
<td>Port used for input and output requests to the network monitor</td>
</tr>
<tr>
<td>9408</td>
<td>Port used for communication with the repository database</td>
</tr>
</tbody>
</table>
If you are installing on UNIX or Linux, ensure that you are a root user.

If you are installing on UNIX or Linux, ensure that you have created a user account called informix in a group named informix before you run the installation.

Notes:

- UNIX is case sensitive.

Ensure that IBM Cognos, including Framework Manager, is installed, configured, and running.

**Steps for Windows**

1. If you are installing to a directory with other IBM Cognos components, stop the IBM Cognos service.

2. Insert the IBM Cognos product disk or go to the location where the installation files were downloaded and extracted.

   The **Welcome** page of the installation wizard appears.

   If no **Welcome** page appears, go to the operating system directory and double-click the issetup.exe file.

3. Select the language to use for the installation.

4. Follow the directions in the installation wizard to copy the required files to your computer.

5. In the **Component Selection** screen, select the components that you want to install.

6. In the **Port Information** screen, use the table in "Prerequisite Checklist for Virtual View Manager" (p. 12) to help you determine if you need to change the port numbers.

7. Enter a **Password** for the Virtual View Manager repository user.

   This user will be created in the database and given appropriate permissions to create and update the repository.

   Please consult your operationg system documentation to ensure that the password you enter conforms to the password policies of your operating system. The installation does not verify whether the password is valid for your computer. Choosing a password that does not conform to these guidelines can result in an unsuccessful installation.

   Virtual View Manager uses this user name and password to access the Informix repository. Other user names and passwords you use for Virtual View Manager are managed using Virtual View Manager Administrator.

8. Click **Finish**.

**Steps for UNIX or Linux**

1. Ensure that you have logged in as a root user.

2. If you are installing to a directory with other IBM Cognos components, stop the IBM Cognos service.
3. On HP-UX, set the _M_ARENA_OPTS environment variable as follows:

   _M_ARENA_OPTS 1:4

   This increases the memory allocation for HP-UX to more closely match that of other UNIX platforms.

   **Important:** To mount the IBM Cognos CD on HP-UX, do the following:
   - Add the pfs_mount directory in your path.
     
     For example,
     
     PATH=/usr/sbin/:$PATH
     export PATH
   - To start the required NFS daemons and run the daemons in the background, type bg pfs_mountd and then type bg pfd
   - To mount the drive, type
     
     pfs_mount -t rrip <device><mount_dir> -o xlat=unix
     
     For example,
     
     pfs_mount /dev/dsk/c0t2d0 /cdrom -o xlat=unix
     
     You can now install or copy files as a non-root user using an IBM Cognos CD from this drive.
   - When the installation is complete, type pfs_umount/cdrom and kill the pfsd and pfs_mountd daemons to unmount the CD.

5. To start the installation wizard, go to the operating system directory on the CD or in the directory where the installations files were downloaded and extracted, and then type

   ./issetup

6. Select the language to use for the installation.

7. Follow the directions in the installation wizard to copy the required files to your computer.
   **Note:** The name of the directory where you install Virtual View Manager must not contain spaces.
   
   If you are installing in a directory that already has other IBM Cognos components, you are prompted for the location of a directory in which to store backup copies of the files that will be overwritten.

8. In the Component Selection screen, select the components that you want to install.

9. In the Port Information screen, use the table in the "Prerequisite Checklist for Virtual View Manager" (p. 12) to help you determine if you need to change the port numbers.

10. Enter the Username and Password for the informix user you created before you ran the installation.
Ensure that the user name and password are correct. The installation does not verify if the values you enter are valid.

This user will be given appropriate permissions to create and update the repository.

Virtual View Manager uses this user name and password to access the Informix repository.

Other user names and passwords you use for Virtual View Manager are managed using Virtual View Manager Administrator.

The installation creates your Virtual View Manager repository and starts both the Virtual View Manager service or UNIX process and starts the Virtual View Manager Server.

Some post-installation configuration tasks are required to ensure that Virtual View Manager works with IBM Cognos.

You must install the Virtual View Manager ODBC driver on each computer running either the IBM Cognos report server or Framework Manager. You must also install the Windows ODBC driver on the same computer as Framework Manager.

**Install the IBM Cognos Virtual View Manager ODBC Driver and Driver Manager (UNIX and Linux only)**

Because IBM® Cognos® uses the IBM® Cognos® Virtual View Manager ODBC driver to access Virtual View Manager data sources, you must install the ODBC driver and driver manager on each instance of IBM Cognos report server installed on UNIX or Linux.

The driver manager routes all IBM Cognos requests to the appropriate ODBC driver to access the data sources. When you add an ODBC DSN using the ODBC Data Source Administrator (p. 29), you are identifying an ODBC driver to the driver manager. The driver manager then knows that the data source associated with this DSN is accessed through a particular ODBC driver.

For instructions on installing the Virtual View Manager ODBC Driver and driver manager, see the Virtual View Manager Administration Guide.

After this installation, you can start Virtual View Manager and connect to the Virtual View Manager Server.

**Start the IBM Cognos Virtual View Manager Service or Process**

On a Windows® operating system, IBM® Cognos® Virtual View Manager uses a Windows service. Starting the service will also start the Virtual View Manager Server component. On UNIX®, the monitor process will start the Virtual View Manager Server.

The service or monitor process will start automatically after the installation.

**Steps To Start the Virtual View Manager Service on Windows**

1. From the Windows Start menu, click Programs, Administrative Tools, Services.
2. Select IBM Cognos Virtual View Manager.
3. Click Action, Start.
To stop the service, click **Action, Stop**.

**Steps To Start the Virtual View Manager Service on UNIX or Linux**
1. Go to the `installation_location/bin` directory on the computer where you installed Virtual View Manager Server.
2. Enter the following command:
   ```bash
   ./virtualviewmanager.sh monitor start
   ```
   Starting the service or monitor process, will also start the Virtual View Manager Server. Stopping the service or process will also stop the Virtual View Manager Server.

**Start IBM Cognos Virtual View Manager Server**
The IBM® Cognos® Virtual View Manager server will start automatically after the installation. On a Windows® operating system, the IBM Cognos Virtual View Manager service is configured to automatically start when the computer starts. The IBM Cognos Virtual View Manager service will also start the Virtual View Manager Server.

If you need to start the Virtual View Manager, you can do so from the **Start** menu on Windows computers and by using the command line on UNIX or Linux computers.

**Step to Start the Server on Windows**
- On the computer where you installed Virtual View Manager Server, click **Start, Programs, IBM Cognos Virtual View Manager, Server, Server Start**.

  This command starts the Virtual View Manager Server. The IBM Cognos Virtual View Manager service must be running before you can start the Server.

**Step to Start the Server on UNIX or Linux**
- On the computer where you installed Virtual View Manager Server, go to the `installation_location/bin` directory, and run the following command:

  ```bash
  virtualviewmanager.sh server start -user username -password password
  ```
  This command starts the Virtual View Manager Server. The Virtual View Manager monitor process must be running before you can start the Server.

**Change Default User Password in the Cognos Domain**
The default user for the cognos domain is admin, and the default password is also admin. The first user to log in should be an administrator, and we recommend that the user also change the password for the default user to ensure the security of your IBM® Cognos® Virtual View Manager content.

**Steps**
1. Open a Web browser, and enter the following URL for Virtual View Manager Administrator:
   ```plaintext
   http://server_name:port_number/manager
   ```
For example, if you are on the same computer as the Virtual View Manager Server, and you have installed it using the default port numbers, the URL would be:

http://localhost:9400/manager

The Virtual View Manager Administrator page log in page appears.

2. Type admin in the Login and Password boxes.

3. Type cognos in the Domain box.

4. Click Sign In.

   The Manager Home page appears.

5. Click the Users tab, and click User Management.

6. Click the admin user in the User Name column.

   The Edit User dialog box appears.

7. In the Current Password box, type admin.

8. In the New Password and Confirm New Password boxes, type a password for your admin user.

9. Click OK.

Your admin user password is now changed from the default.

Create Users in the Cognos Domain

You add users to the IBM® Cognos® Virtual View Manager domain

- to enable multiuser modeling
- to limit access to Virtual View Manager resources, such as data sources and views
- to enable pass-through login for multiple users

After you add users, you can grant them privileges to Virtual View Manager resources.

For instructions on adding users to the cognos domain, see the Virtual View Manager Administration Guide.

Steps

1. Open a Web browser, and enter the following URL for Virtual View Manager Administrator:

   http://server_name:port_number/manager

   For example, if you are on the same computer as the Virtual View Manager Server, and you have installed it using the default port numbers, the URL would be:

   http://localhost:9400/manager

   The Virtual View Manager Administrator page log in page appears.

2. Type your user name in the Login box and your password in the Password box.
3. Type cognos in the **Domain** box.

4. Click **Sign In**.
   
The **Manager Home** page appears.

5. Click the Users tab, and click **User Management**.

6. Click **Add Virtual View Manager User** at the bottom of the table.
   
The Add a Virtual View Manager User dialog box appears.

7. Enter a **User name** and a password in the **New password** and **Confirm password** boxes.

8. In the **User Rights** section, select a **Template** for the new user, or select the check boxes for the user rights.
   
   For more information about the user rights, see the Virtual View Manager **Administration Guide**.

9. Click **OK**.

### Start IBM Cognos Virtual View Manager Studio

After the server has started, you can start the IBM® Cognos® Virtual View Manager Studio.

#### Steps for Windows

1. On the computer where you installed Virtual View Manager Studio, click **Start, Programs, IBM Cognos Virtual View Manager, Studio, Studio**.
   
The log in dialog box appears.

2. Enter a **Username** and **Password**, and select the appropriate **Domain**.
   
   If you are logging in for the first time, the default user name and password are both admin.

3. Enter the **Server** name where the Virtual View Manager Server is installed and running.
   
   If the server is installed on the same computer as the studio, you can enter localhost.

4. Enter the **Port** number on which the server is running.
   
   The default port number is 9400.

5. Click **Connect**.
   
   Virtual View Manager Studio opens.

### Configuring IBM Cognos Virtual View Manager

When you install IBM® Cognos® Virtual View Manager, default configuration settings are set. If you have any reason not to use these default values, you can change them to meet the needs of your reporting environment.

Here are a few examples of the common configuration tasks that you may want to perform:
• change the case sensitivity policy
• change the trailing spaces policy
• enable output for logging (debug output enabled)
• change the location of the temporary file folder
• data access considerations
• enable caching views

When you turn on caching, you can choose between file-based caching or database-managed caching. When you choose file-based caching, the file and the file location are not encrypted. Therefore, you may want to choose database-managed caching (p. 38).

For more information about the configuration settings, see the Virtual View Manager Administration Guide.

After you configure Virtual View Manager to meet your requirements, you can tune it for performance (p. 37).

**Change the Case Sensitivity Policy**

IBM® Cognos® Virtual View Manager uses a case-insensitive string comparison by default. The SQL specification encourages the use of case-sensitive string comparisons. Depending on the database that you are using, you may want to change the way Virtual View Manager compares strings. Performance may be affected if you change the default Virtual View Manager setting. For more information, see the Virtual View Manager Administration Guide.

**Important**: Ensure that the case sensitivity policy of Virtual View Manager matches the policy of your database. Otherwise, you may experience performance issues.

**Steps**

1. Start Virtual View Manager Studio.
2. From the Administration menu, click Configuration.
3. In the configuration tree, under Virtual View Manager Server, expand SQL Engine, and SQL Language, and then click Case Sensitivity.
4. Change the setting as required.
5. Click OK.

**Change the Trailing Spaces Policy**

By default, IBM® Cognos® Virtual View Manager ignores trailing spaces when performing string comparisons. Depending on the database that you are using, you may want to change the way Virtual View Manager compares strings. Performance may be affected if you change the default
Virtual View Manager setting. For more information, see the Virtual View Manager Administration Guide.

**Steps**
1. Start Virtual View Manager Studio.
2. From the Administration menu, click Configuration.
3. In the configuration tree, under Virtual View Manager Server, expand SQL Engine, and SQL Language, and then click Ignore Trailing Spaces.
4. Change the setting as required.
5. Click OK.

**Enable Logging for Debugging**
By default, debug output is not enabled. If you require assistance in resolving issues, you can set the Debug Output Enabled property to true. Because enabling this property can produce large files, enable the output only for a specific period and then disable it to prevent performance from degrading.

**Steps**
1. Start Virtual View Manager Studio.
2. From the Administration menu, click Configuration.
3. In the configuration tree, under Virtual View Manager Server, expand Configuration, and Debugging, and then click Debug Output Enabled.
4. Change the setting as required.
5. Click OK.

**Change the Location of the Temporary File Folder**
You can change the location of the temporary file folder if you require encryption or other security for query results and cached data. The temporary file location is not encrypted.

The amount of disk space used depends on the query characteristics and is dynamic. It is used to keep temporary files, handle large queries, and handle heavy load. We recommend that you have several gigabytes allocated and that you monitor the available free disk space.

**Steps**
1. Start Virtual View Manager Studio.
2. From the Administration menu, click Configuration.
3. In the configuration tree, under Virtual View Manager Server, expand Configuration, and Files, then click Temp Directory (On Server Restart).
4. Change the setting as required.
5. Click OK.

**Data Access Considerations**

Virtual View Manager handles different data source behaviors. Generally, you should try to match Virtual View Manager settings with the underlying data source to avoid performance issues or data integrity problems.

For information about the configuration settings, see the Virtual View Manager *Administration Guide*.

**Data Source Settings**

For best performance, we recommend that you ensure the following server settings are set to true:

- Disable Case Sensitivity Correction
- Disable Ignore Trailing Space Correction
- Push Even If Case Sensitivity Mismatch
- Push Even If Ignore Trailing Space Mismatch

**Steps**

1. Start Virtual View Manager Studio.
2. From the Administration menu, click Configuration.
3. In the configuration tree, under Virtual View Manager Server, expand SQL Engine, and Overrides.
4. Change the settings as required.
5. Click OK.

**Collation Sequences**

When querying heterogeneous data sources, ensure that the collation sequence for each data source that you create in Virtual View Manager is the same. For example, they all must be either case-sensitive or case-insensitive.

Depending on the data sources involved, collation sequences for different database sources in a query can cause errors or inaccurate query results.

For information about collation sequences, see your database vendor documentation.

**Pass-through User Login**

If you intend to set up multiple Virtual View Manager users with the intention of passing through data source logins, you must enable this setting on your data source and clear the Save Passwords check box.

For more information, see the Virtual View Manager *User Guide*. 
IBM Cognos Virtual View Manager Data Services

IBM® Cognos® Virtual View Manager Data Services function like other RDBMS views. They can be combined to create your own views just as you would create views based on other types of data sources.

IBM Cognos and Virtual View Manager use custom application views for SAP, Siebel, and Salesforce.com. You must install these data services from the independent installer located on the Virtual View Manager CD or with the Virtual View Manager installation source files.

Once you have installed the Virtual View Manager Data Service, complete the following steps to connect to the associated data source.

Install Virtual View Manager Data Services for SAP

After you have installed and configured Virtual View Manager, you can install and import data services for SAP.

Steps
1. Install Virtual View Manager Data Services for SAP.
2. Install SAP JCo.
3. Verify a successful installation.
4. Import Virtual View Manager Pre-built Services for SAP.
5. Configure the SAP data source for the local environment.
6. Configure logging.

Install Virtual View Manager Data Services for Siebel

After you have installed and configured Virtual View Manager, you can install and import data services for Siebel.

Steps
1. Install Virtual View Manager Data Services for Siebel.
2. Install Siebel Data Bean JARs.
3. Verify a successful installation.
4. Import Virtual View Manager Pre-built Services for Siebel.
5. Configure the Siebel data source for the local environment.
6. Configure logging.
Install Virtual View Manager Data Services for Salesforce.com

After you have installed and configured Virtual View Manager, you can install and import data services for Salesforce.com.

Steps
1. Install Virtual View Manager Data Services for Salesforce.com.
2. Verify a successful installation.
3. Import Virtual View Manager Services for Salesforce.com.
4. Configure the Salesforce.com data source for the local environment.
5. Configure logging.

Uninstalling IBM Cognos Virtual View Manager

On a Windows® operating system, you must uninstall IBM Informix before you uninstall IBM® Cognos® Virtual View Manager. On UNIX®, uninstalling Virtual View Manager will remove IBM Informix.

The uninstall program will remove all Virtual View Manager components from your computer.

Uninstall Virtual View Manager on Windows

We recommend that you close all programs before you uninstall IBM Cognos. Otherwise, some files may not be removed.

Uninstalling does not remove any files that changed since the installation, such as configuration and user data files. Your installation location remains on your computer, and you retain these files until you delete them.

Steps
1. From the Start menu, click Control Panel, Add or Remove Programs.
2. Select IBM Informix Dynamic Server 11.50, and click Remove.
3. From the Start menu, click Programs, IBM Cognos Virtual View Manager, Uninstall IBM Virtual View Manager, Uninstall IBM Virtual View Manager.
   The Uninstall wizard appears.
4. Follow the instructions to uninstall the components.
   The cognos_uninst_log.txt file records the activities that the Uninstall wizard performs while uninstalling files.
   Tip: To find the log file, look in the Temp directory.
Uninstall Virtual View Manager on UNIX or Linux

On UNIX, uninstalling Virtual View Manager will remove IBM Informix.

Steps

1. Go to the `installation_location/bin` directory on the computer where you installed Virtual View Manager Server.

2. Enter the following command.

   ```
   ./virtualviewmanager.sh monitor stop
   ```

3. Go to the `installation_location/uninstall` directory and type the following command.

   ```
   ./uninst -u uninstall.ini
   ```

4. Follow the prompts to complete the uninstallation.

Uninstalling does not remove any files that changed since the installation, such as configuration and user data files. Your installation location remains on your computer, and you retain these files until you delete them manually.
Chapter 3: Accessing IBM Cognos Virtual View Manager with IBM Cognos and IBM Cognos Framework Manager

Before you can create models in IBM® Cognos® Framework Manager and run reports in your portal, you must make the data source available to Framework Manager.

IBM® Cognos® Virtual View Manager makes additional data sources available to IBM Cognos and improves performance when using heterogeneous data sources.

IBM® Cognos® Framework Manager sees Virtual View Manager data sources as collections of view. Although it is possible to specify index information on Virtual View Manager views, that information is not imported in IBM Cognos Framework Manager.

To make the data source available in IBM Cognos, follow these steps:

❑ Add a data source in Virtual View Manager Studio (p. 25).
❑ Secure metadata (p. 26) (optional).
❑ Optionally, simplify the metadata (p. 27).
❑ Optionally, create a view (p. 27).
❑ Create a Virtual View Manager data service (p. 28).
❑ Publish the data source (p. 28).
❑ Add an ODBC DSN to your installation (p. 29).
❑ Create a data source connection in IBM Cognos (p. 33).
❑ Import the metadata into Framework Manager (p. 34).
❑ Enhance your metadata using Framework Manager (p. 34).
❑ Create a data source connection in Data Manager (p. 35).

After the metadata is available in Framework Manager, you can model the metadata to suit your business needs. For more information about modeling metadata using Framework Manager, see the Framework Manager User Guide.

Add a Data Source in IBM Cognos Virtual View Manager Studio

Before you can model your metadata, you must create a link between your modeling tool and your database. You do this by adding a data source.
A data source is the IBM® Cognos® Virtual View Manager representation of the external, physical data source that is available to the Virtual View Manager Server. The data source is exposed by publishing it to a Virtual View Manager data service.

In IBM Cognos, a data source is a named set of connections to a physical database or other data source. IBM Cognos connects to Virtual View Manager data sources using an ODBC data source connection.

Adding a data source to the Virtual View Manager modeling environment is known as introspection. You must always supply data source authentication when adding a data source.

There are two ways to add a data source: You can add a data source manually and supply all required information, or you can have Virtual View Manager search your network for data sources. You supply the IP connection, and Virtual View Manager Studio scans all commonly used ports and returns a list of all discovered databases.

**Note:** You cannot use spaces when naming data sources. We recommend that you use underscores instead.

**Tip:** If you added a new table to the data source and want it to appear in Virtual View Manager Studio, right-click the object and click Add/Remove Resources.

For instructions on adding data sources in Virtual View Manager Studio, see the Virtual View Manager User Guide.

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**Securing Data and Metadata with IBM Cognos and IBM Cognos Virtual View Manager**

When working with IBM® Cognos® Virtual View Manager, you can specify security at different levels.

By default, Virtual View Manager provides a domain named cognos to secure the application. An administrator, the admin user, can add other users and set their access permissions. You can also specify metadata and data security in Framework Manager.

You can also limit access by using IBM Cognos to secure a DSN that was created using the administrator user ID and password. If you are using pass-through logins you must ensure that your Virtual View Manager users have user IDs and passwords that are valid on the underlying datasource(s).

You must create an ODBC DSN to provide all users connectivity to the Virtual View Manager data source through an ODBC driver. These data sources are local to a computer. All users with the appropriate privileges can access the ODBC data source. The data source name must use fewer than 32 characters.

If you add users to the cognos domain, consider the following:

- You must configure the ODBC DSN to allow specification of a user ID and password. However, it is possible to override this user ID and password in a signon from IBM Cognos. If you enabled pass-through login in Virtual View Manager, you may want to create multiple secured connections with signons within a single data source, or you may prefer to specify a single connection with no signon information and prompt the user at the time of login to provide their credentials.
It is required that the credentials provided by the user match the Virtual View Manager security as well as the underlying data source security.

- Access privileges are not inherited. A user must have Read and Select privileges to a Virtual View Manager data service if you are using it for modeling or reporting. For more information, see the Virtual View Manager User Guide.

Simplifying the Metadata in IBM Cognos Virtual View Manager Studio Before Publishing to IBM Cognos

You may want to simplify your metadata before making it available in IBM Cognos. This can make modeling easier in IBM® Cognos® Framework Manager.

In some situations, we recommend that you model your metadata using IBM® Cognos® Virtual View Manager Studio before publishing to a Virtual View Manager data service. For example, model in Virtual View Manager Studio in the following situations:

- You have heterogeneous data sources that you must combine.
- You want to cache the data.
- The data is always modeled the same way, and you want to ensure that it is processed by Virtual View Manager.
  Examples of this include adding calculations and filters, data that is aggregated for which the details will never be exposed, and creating complex views.
- You are publishing stored procedures.
  Some cursor outputs cannot be detected automatically. You may have to design the cursor manually (p. 47).
- You must resolve SQL traps.
- Your data structure can be collapsed but it can be done in either Virtual View Manager or Framework Manager.
  Examples of this include collapsing master/detail facts and collapsing or denormalizing tables with hierarchical relationships or snowflaked dimensions. This data must be collapsed by creating either a Virtual View Manager view or a Framework Manager query subject.
- To create keys on all views published to IBM Cognos.

For more information about metadata modeling using Virtual View Manager, see the Virtual View Manager User Guide.

Create a View

If you want to access and integrate data from multiple data sources, you can create a view. The view is then published to a IBM® Cognos® Virtual View Manager data service, making it available to IBM Cognos.
If the data that you want is available from individual tables from a single data source, you can publish the database tables directly. For more information, see the Virtual View Manager User Guide.

Note: You cannot use spaces when naming views. We recommend that you use underscores instead. Because index and key information is not imported for views, joins must be explicitly defined. A criterion that can be used to detect joins is the Name field.

It is more difficult to detect usage properties because of the absence of index or key information on views. Index and key information is used with data type information to set usage properties automatically. You must specify determinants in the case where there are multiple joins to the query subject at different keys/key combinations. Determinants must be available to ensure that rollups are calculated properly.

We recommend that you simplify your metadata (p. 27) before making it available to IBM Cognos. For instructions on creating views in Virtual View Manager Studio, see the Virtual View Manager User Guide.

Create a IBM Cognos Virtual View Manager Data Service

A IBM® Cognos® Virtual View Manager data service represents tabular data and procedures that were published as a relational schema or as hierarchical XML data.

You must create a catalog and a schema to import views into Framework Manager that were published in Virtual View Manager.

For instructions on creating a Virtual View Manager data service using Virtual View Manager Studio, see the Virtual View Manager User Guide.

Publish the Data Source

Publishing a data source to a IBM® Cognos® Virtual View Manager data service makes it available to IBM® Cognos® Framework Manager and IBM Cognos.

Object references that are published to a Virtual View Manager data service are exposed to IBM Cognos using ODBC. They appear in IBM® Cognos® Framework Manager as views.

Since published Virtual View Manager data services are actually references to the published Virtual View Manager objects, any change in the Virtual View Manager data source is automatically reflected in the published Virtual View Manager data service.

Tip: To ensure that the updates are shown in IBM® Cognos® Framework Manager, right-click the query subject and click Update Query Subject, or select Project Synchronization from the menu to update the model. For more information, see the IBM® Cognos® Framework Manager User Guide.

You must have Read and Select privileges to a Virtual View Manager data service if you are using it for modeling. Access privileges are not inherited. For information about access privileges, see the Virtual View Manager User Guide.

For views to be accessible for import into Framework Manager, they must be published into the schema level of a Virtual View Manager data service. After selecting the view to publish, click Virtual
View Manager Data Services in the resource tree in Virtual View Manager Studio, then click Databases, and navigate down the tree until you locate the data service name, catalog name, and schema name where you want to publish the view. Create this structure if it does not already exist and publish the view at the schema level.

For instructions on publishing tables and views to a Virtual View Manager data service, see the IBM Cognos Virtual View Manager User Guide.

Add an ODBC Data Source to your Installation

You use ODBC to access the IBM® Cognos® Virtual View Manager data source from IBM Cognos.

On a Windows® operating system, use the ODBC Data Source Administrator to add a system data source. On UNIX® or Linux, use the command line utility named driverConfig to add an ODBC DSN. The data source associates a particular ODBC driver with the data you want to access through that driver.

Before you can create an ODBC DSN, you must have the appropriate permissions for the Virtual View Manager configuration files and libraries.

Steps for Windows

1. Click Start, Settings, then Control Panel.

2. Double-click Administrative Tools, and then double-click Data Sources (ODBC).
   The ODBC Data Source Administrator dialog box appears.

3. Click the System DSN tab.
   Although Virtual View Manager data sources can be accessed using a User DSN, you must create a System DSN for use with IBM Cognos.

4. Click Add, click the Virtual View Manager driver for the version you are using, and then click Finish.
   The Virtual View Manager ODBC Driver Configuration dialog box appears.

5. Enter the appropriate information, considering the following:
   • You cannot have a System DSN and a User DSN with the same name.
   • By default, Virtual View Manager uses port 9401 and the cognos domain. If Virtual View Manager did not encounter conflicts with these settings during the installation, use these values for the Port and Domain settings.
   • By default, the Virtual View Manager host value is set to localhost.
   • You must create a system data source name to provide all users connectivity to the Virtual View Manager data source through an ODBC driver. These data sources are local to a computer. This means that all users with the appropriate privileges can access a system DSN. The data source name must have fewer than 32 characters.
Chapter 3: Accessing IBM Cognos Virtual View Manager with IBM Cognos and IBM Cognos Framework Manager

Tip: Click Refresh for the schema name to be automatically located.

Steps for UNIX or Linux

1. On the computer where the Virtual View Manager ODBC driver is installed, go to the directory
   \installation_location\apps\odbc.

   Before you can create an ODBC DSN, you must have the appropriate permissions for the Virtual View Manager configuration files and libraries. For information about setting environment variables, see the Virtual View Manager Administration Guide.

2. Run the following command:

   ./driverConfig

   The Main Menu for the driverConfig utility appears.

3. At the prompt, type 3

4. At the prompt, type 1

   The Create DSN menu appears.

5. At the DSN name prompt, type the DSN name for your data source and press Enter.

6. At the driver prompt, press Enter to accept the default driver name.

7. At the host prompt, type the IP address of the computer where Virtual View Manager is installed and running and press Enter.

8. At the port prompt, type the port number and press Enter.

   The default port number is 9401.

9. At the username prompt, type the username for this DSN and press Enter.

10. At the password prompt, type the password and press Enter.

11. At the domain prompt, type the domain name and press Enter.

   The default domain name is cognos.

12. At the datasource prompt, type the name of your data source and press Enter.

13. At the catalog prompt, type the name of the catalog and press Enter.

14. At the y/n prompt, type y and press Enter.

15. Repeat steps 3 to 14 for each ODBC DSN that you want to add.

16. At the main menu, type 0 and enter the appropriate information, considering the following:

   • By default, Virtual View Manager uses port 9401 and the cognos domain. If Virtual View Manager did not encounter conflicts with these settings during the installation, use these values for the Port and Domain settings.

   • You must create an ODBC DSN to provide all users connectivity to the Virtual View Manager data source through an ODBC driver. These data sources are local to a computer.
Ensure that all UNIX or Linux accounts have the appropriate rights set. The data source name must have fewer than 32 characters.

- The IBM Cognos daemon must have Read and Execute permissions for the Virtual View Manager configuration files and library files to run with the ODBC driver.

17. Press Enter to exit.

**Accessing an IBM Cognos Virtual View Manager Stored Procedure in IBM Cognos**

To access a stored procedure from IBM® Cognos®, you must create a procedure and publish it to a data source in IBM® Cognos® Virtual View Manager Studio, and then import the data source into Framework Manager. The output parameters for a stored procedure must be mapped before publishing to the data source.

You can map the output parameters using a Virtual View Manager Studio feature called Design By Example. Using this feature, you can identify any potential cursor outputs for a stored procedure. Cursors can be identified by executing the stored procedure. Design By Example invokes the stored procedure and then discovers the outputs. When you have executed this step, the stored procedure can be saved and published to the data source.

**Steps in Virtual View Manager Studio**

1. In Virtual View Manager Studio, create a new data source that contains the stored procedure. For instructions on creating data sources, see the Virtual View Manager User Guide.

2. Open the desired stored procedure from the data source.

3. Select the Design Mode check box. For instructions on editing input and output values for a stored procedure, see the Virtual View Manager User Guide.

4. Click the Design By Example button on the toolbar. The Design By Example dialog box appears.

5. After the input and output parameters have been mapped as required, click OK to accept the new definition and save changes to the stored procedure.

6. Publish your query to a data service available in Framework Manager. For instructions on publishing a query, see the Virtual View Manager User Guide.

**Steps in Framework Manager**

1. Run the Metadata Wizard to select the data source that contains the stored procedure.

2. Select the stored procedure from the list of objects and import it into your model.

3. Open the stored procedure query subject.
Note: It is possible to edit the parameters for the stored procedure and specify default parameter values in Framework Manager. Modifications may be applicable for the size, scale and type properties in cases where they cannot be retrieved from the data source. However, we highly recommend that you check the original source to ensure that all properties are mapped correctly, and that this exercise is performed by an administrator who is familiar with that source.

For instructions on importing a data source, see "Add a Data Source in IBM Cognos Virtual View Manager Studio" (p. 25).

Accessing a WSDL Service from IBM Cognos

To access a WSDL service from IBM® Cognos®, you must create a view based on the WSDL source and publish it to a data source in Virtual View Manager Studio, then import the data source into Framework Manager. There are several steps you must follow for IBM Cognos to access the WSDL service.

Steps in Virtual View Manager Studio

1. Create a new WSDL data source, referencing the URL of the WSDL service.
   For instructions on creating data sources, see the Virtual View Manager User Guide.

2. Create an XSLT transformation using the newly defined WSDL data source.
   For instructions on creating a transformation, see the Virtual View Manager User Guide.

3. Create a new view and drag the transformation into the view. For WSDL sources that contain input parameters, add virtual columns to the SQL definition in this view to pass parameters to the web service from Framework Manager.
   For instructions on creating a view, see the Virtual View Manager User Guide. For more information on adding virtual columns, see the Virtual View Manager Reference Guide.

4. If the view in the previous step was modified to insert virtual columns, create a second view based on the first view so the virtual columns become part of the projection list. This allows Framework Manager to detect the new columns in the Query Subject.

5. Test the view.

6. Publish the view to a data source available in Framework Manager.
   For information about publishing a resource, see the Virtual View Manager User Guide.

Steps in Framework Manager

1. Import the data source to which you published your view.

2. Select the new view and import it into your model.
   For more information, see "Create a Data Source Connection in IBM Cognos" (p. 33).
Create a Data Source Connection in IBM Cognos

Before you can create models in IBM® Cognos® Framework Manager, you must define the data source connection.

A data source connection supplies the parameters that IBM Cognos needs to connect to the database, such as the location of the database and the time-out duration. A connection can also include credential information and signons.

Steps

1. Log on to IBM Cognos Connection as an administrator.

2. In IBM Cognos Connection, in the upper-right corner, click Launch, IBM Cognos Administration.

3. On the Configuration tab, click Data Source Connections.
   
   Tip: To remove a data source, select the check box for the data source and click the delete button.

4. Click the new data source button.

5. In the name and description page, type a unique name for the connection and, if you want, a description and screen tip, and then click Next.

6. On the Connection page, click IBM Cognos Virtual View Manager (ODBC), select an isolation level, and then click Next.

   The connection string page for the selected database appears.

7. Enter any parameters that make up the connection string, and specify any other settings, such as a timeout or a signon.

   The ODBC data source parameter is the ODBC DSN that you added earlier.

   You do not need to specify the ODBC connect string and the collation sequence. We recommend that you open the database asynchronously.

   If you specified signon information when you created your system data source, you do not need to specify it here.

   If you have created an external namespace and wish to use it for signon authentication, you can specify it here. For more information about configuring a namespace, see the IBM Cognos Business Intelligence Installation and Configuration Guide.

   Tip: To test whether parameters are correct, click Test the connection. If prompted, type a user ID and password or select a signon, and then click OK. Because you are testing an ODBC connection to a User DSN, you must be logged on as the creator of the DSN for the test to succeed.

8. Click Finish.

The data source appears as an entry in the Directory tool in the portal, and can be selected when using the Import wizard in Framework Manager.
For more information about configuring pass-through logins, see on "Securing Data and Metadata with IBM Cognos and IBM Cognos Virtual View Manager" (p. 26).

For more information about creating data source connections in IBM Cognos, see the IBM Cognos Administration and Security Guide.

### Import the Metadata into IBM Cognos Framework Manager

IBM® Cognos® Framework Manager can use the metadata from external data sources to build a project. You can import metadata into a new project or an existing project.

All objects that are published by Virtual View Manager appear as views in Framework Manager. The index and key information for these views is not published by Virtual View Manager. For this reason, you cannot import joins and do not need to specify criteria in the Generate Relationships dialog box. Although you can generate relationships using query item names, we do not recommend this because there is insufficient metadata to generate cardinality correctly.

After importing the metadata, all numeric codes appear as measures. This is because the rules that Framework Manager uses to determine the Usage property are based on numeric fields having keys or indexes as identifiers. Numeric fields without keys or indexes are treated as facts.

For instructions on importing metadata into Framework Manager, see the Framework Manager User Guide.

### Enhancing Your Metadata Using IBM Cognos Framework Manager

IBM® Cognos® Framework Manager sees IBM® Cognos® Virtual View Manager data sources as collections of views that do not contain key or index information.

After the Virtual View Manager data source is available in Framework Manager, examine the metadata carefully to ensure that it is ready to be modeled. Do the following:

- **Set the usage properties** (p. 34).
- **Specify dimensional information** (p. 35).
- **Verify the relationships and create joins** (p. 35).
- **Create the star schema grouping** (p. 35).

**Tip:** If you want to add a column from a table in the data source, go back to Virtual View Manager Studio, add the column, save the data source, and publish. To see the change in Framework Manager, right-click the query subject and click Update Query Subject.

### Set the Usage Properties

You must set the usage properties for each query item. The usage property identifies the intended use for the data represented by each query item.
Because the key and index information is not imported for views by Framework Manager, the usage properties may be set incorrectly. For example, all numeric and date codes without key and index information appear as facts. All character data types are set as attributes.

For instructions on setting usage properties and information about the rules governing them, see the Framework Manager User Guide.

Specify Determinants

Determinants define unique sets within the data and assist in the prevention of double counting. For example, days roll up to months and months roll up to years. Under normal circumstances, determinants are defined during import using keys and indexes. In the absence of index and key information, you must use determinants to ensure that rollups are performed correctly.

For instructions on specifying determinants, see the IBM® Cognos® Framework Manager User Guide.

Verify Relationships and Create Joins

You should verify the relationships and create joins accordingly. A relationship defines the connection between two query subjects. Without relationships, query subjects are isolated pieces of information. Under normal circumstances, keys, indexes, and names can be used to detect relationships. In the absence of key and index information, only names can be used.

For instructions on verifying relationships and creating joins, see the IBM® Cognos® Framework Manager User Guide.

Create the Star Schema Grouping

A dimensional model often uses a star schema design. One common form of a star is quantitative, where transactional data is contained in a central fact table. Related dimension tables radiate out from the fact table.

For instructions on creating star schema groupings, see the IBM® Cognos® Framework Manager User Guide.

Accessing IBM Cognos Virtual View Manager with Data Manager

Accessing IBM® Cognos® Virtual View Manager for access to data in Data Manager is performed in the same way as for other ODBC sources.

For more information on creating a database connection in Data Manager and using this connection for extraction, transformation, and delivery of data, see the Data Manager User Guide.
Chapter 4: Tuning IBM Cognos Virtual View Manager

After IBM® Cognos® Virtual View Manager is installed and configured, you may decide to make changes to some of the settings to better suit your environment.

The following sections describe how to

- enable persistent caching
- optimize your queries
- change the database connection properties
- change the size of the metadata cache

Persistent Caching

IBM® Cognos® Virtual View Manager can be configured to enable persistent caching. With persistent caching, the query result set is cached to improve performance or lighten the load on an underlying data source. The cache persists even after the session ends. The Virtual View Manager Server optimizes the running of queries by having the underlying data source do the query computations.

You may want to cache data if

- the query is complex
  For example, you may want to use caching to eliminate sub-trees in the query structure.
- the query takes a long time to run
- the same data is being queried repeatedly
- the data source is not always available
- the data changes significantly during peak periods

Caching at a specific time means that users can see a consistent view of data when it is changing rapidly.

By default, caching is not enabled. If you enable caching, you can cache the data to a local file or to a database. If you cache the data to a file, the file and the directory where the file is located are not encrypted. Therefore, you may want to consider other methods to secure the folder where the cache file is located.

Only views can be cached. Stored procedures and tables taken directly from the data source cannot be cached unless they are wrapped in a view. Virtual View Manager Server can generate a persistent cache for views that can be refreshed manually from Virtual View Manager Studio or on a scheduled basis.
A user may not be able to identify whether the cached data is current. If the cached data is not current, the query results retrieved from the cache can be meaningless or misleading. Therefore, we recommend that you include a timestamp, such as CURRENT_TIMESTAMP, in the Virtual View Manager view to indicate when the cache data was last refreshed.

If you want to cache an entire data source, create views for each table and apply caching to each view. You can then publish these views to a Virtual View Manager data service, making them available to IBM Cognos.

For instructions on enabling caching in Virtual View Manager Studio, see the User Guide.

**File-based Caching**

Depending on your usage, file-based caching is typically sufficient. With file-based caching, the query result set is saved in a local file. The file does not require an administrator to manage it because it is managed automatically on the Virtual View Manager Server.

If a cache refresh is unable to complete, the data is rolled back.

Local caching is not recommended for queries with large result sets. When the query makes a call to the cached data, the file-based cache must scan the data and read every row. If the cache is large, this may detract from the performance enhancements that are typical when using cached data.

The cached data in system files cannot be shared by multiple Virtual View Manager server installations.

You can customize the location of the cached file.

The directory where the system file is located is not encrypted. To secure the cached data, use folder permissions or an encryption file system. For more information, see the Microsoft Windows help.

**Database Caching**

We recommend database caching if your SQL query makes selections against the cached view or when result sets are large.

A database cache can contain indexing, which speeds up data selections. If the cached data is used in a join, the query is processed by the original data source, resulting in improved performance.

If you store a cached view in a database, you must manually create the database table to match the column names and types of the view.

Any available data source with permissions can be a cache container. The account used to update the database table must have insert, update, and delete privileges. The cache should be optimized by your database administrator.

If you want to cache an entire data source, you must create views for each table and apply caching to each view. If the data in a table is volatile, you can schedule automatic or manual updates to refresh the cached data so that users see a consistent view of data.
Optimize a Query

A query causes data to be fetched from the appropriate data sources. Letting the underlying data source process as much of the query as possible minimizes the amount of data returned and improves performance and speed of data retrieval.

IBM® Cognos® Virtual View Manager Server examines the query and optimizes the relationships in the data source before running it. These optimizations can be viewed in the query plan.

Understanding how a query is processed is crucial to writing good queries. This becomes especially difficult when using queries that span multiple data sources. You may face some of the following issues:

- network latency
- limited capabilities of disparate data sources, such as the fact that .csv files do not support joins
- limited access to data sources, which is dependent on the driver capabilities
- inability to monitor fluctuations in the amount of available data

Virtual View Manager applies rule-based optimizations automatically, requiring no user input. This reduces the number of rows fetched from the data source, which reduces the amount of work done by Virtual View Manager Server and returns the result set as quickly as possible.

Cost-based optimizations analyze the join algorithms to explore the nature of the data. These statistics are used to develop the best possible query plan.

For instructions on optimizing your queries, see the Virtual View Manager User Guide.

Query Plans

Query plans are generated when any query runs. Query plans are relationship-based and not flow-based. This means that views can be used to represent business processes, but when the query is run, the view is flattened. The relationships are examined and, using the rules of the underlying data source, an optimized query plan is reassembled before accessing the data source.

When two queries have the same signature, Virtual View Manager Server attempts to reuse the previous query plan, thereby improving performance and decreasing the time to process the query.

Change Connection Pool Properties

When you add a data source, you can change the properties of its connection pool.

A connection pool is a set of database connections that are available for an application to use. There is one connection pool for each data source, and the pool is created on demand.

Before running a command, a connection to a database must be established. Sometimes creating and removing the connection is more costly than running the command. For this reason, connection pools are created to maintain connections. After a connection is created, it is placed in the connection pool for future use. If all the connections in the pool are being used, new connections are automatically created and made available through the pool.
Each data source always has configurable connections open (the connection pool minimum size), a maximum number of allowed connections (the connection pool maximum size), and a time-out period (the connection pool time-out). Connection pools are never removed.

**Tip:** To release a connection, you must stop and restart the IBM® Cognos® Virtual View Manager Server.

For information about connection pool properties, see Adding Data Sources in the Virtual View Manager User Guide.

### Change the Metadata Cache Size

IBM® Cognos® Virtual View Manager Server uses a metadata repository to process query requests. To enhance performance, it maintains a dynamic cache of metadata information during run time. The default size of the cache is sufficient for most installations, but you can change the size of this cache if necessary. We recommend that you set the cache size to approximately the same size as the ALL_RESOURCES system table in Virtual View Manager Server.

**Tip:** To find the size, introspect all data sources to which you connect with Virtual View Manager Server and run a count query.
Chapter 5: Upgrading

New versions of IBM® Cognos® Virtual View Manager provide enhancements that may affect many components, such as product features and functionality, performance and scalability, and usability. Because of these improvements, upgrading may not be simple, and should be considered a process that you perform in stages.

Before you upgrade to a new version, you must back up your resources, configuration, and users. Virtual View Manager provides a full server backup feature.

As part of the upgrade process, ensure that your applications work as expected in the new version. Sometimes, changes may introduce unexpected results. It is important to test your applications before you move them.

Upgrading to a new version of Virtual View Manager involves the following steps:

- Backing up the resources
- Uninstalling the previous version of Virtual View Manager
- Installing the new version of Virtual View Manager
- Importing the resources

For uninstall information, see "Uninstalling IBM Cognos Virtual View Manager" (p. 23).

For installation information, see "Installing and Configuring IBM Cognos Virtual View Manager" (p. 9).

Backing Up the Resources

IBM® Cognos® Virtual View Manager offers the capability to perform a full server backup. This capability is available only for those with these administrative rights: Access Tools, Read All Resources, Read All Users, and Read All Config. This option is functionally similar to the backup_export command-line program.

After you back up your resources you can uninstall Virtual View Manager.

Steps to Back up a full server

1. Select the Administration > Full Server Backup menu option.
   
   The Full Server Backup window opens.

2. Click the Browse button to specify a file to store the exported resource.
   
   The Save window appears for specifying/locating an export file.

3. Do one of the following:
   
   - Create a new export file by typing a name for it in the File name field.
     
     You don’t need to specify the filename extension (.CAR) since it is automatically added.
Use an existing CAR file; locate it through Browse and click Save.

Note: If you use an existing CAR file, its contents will be overwritten when you complete the export process.

4. If required, type a description for the export file in the Description box.

**Importing the Resources**

After you install the new version of IBM® Cognos® Virtual View Manager, you can import the .CAR file that you backed up.

You import CAR files into to replicate Virtual View Manager resources and resource configurations. CAR files are created by export of resources, and they usually contain many object resources or they may even contain a full server backup.

**Steps to Import Your Resource**

1. Right-click the desired container into which you want to import a resource, and select Import. Alternatively, select the resource and then the option: File, Import Into <resource>.

   The Import into window opens.

2. Use the Browse button to locate and upload the desired CAR file.

3. Select or deselect import options in the Include Resource Information section as required.

4. Select the Show Rebinding Options box for binding a resource to an underlying source for the first time.

5. Click Import to import the resources.

**Migrating an Existing Repository**

You can migrate a previous version of a repository to use it with IBM® Cognos® Virtual View Manager.

The process for migrating a repository involves the following steps:

- Creating a CAR file export from Composite Information Server
- Renaming the file name extension to ZIP
- Extracting the contents
- Modifying some of the files in the export
- Recreating a ZIP file, and rename the file name extension from ZIP to CAR
- Importing the CAR file to Virtual View Manager

**Steps to Export Your Repository**

1. Export your repository to a CAR file.
For more information about exporting and importing resources, see the IBM® Cognos® Virtual View Manager User Guide.

2. Change the extension of your exported file from CAR to ZIP.
   For example, if you named your export file myrepo.car, change the name to myrepo.zip.

3. Extract the ZIP file to a folder.
   The folder can contain the following files:
   - settings.xml
   - users.xml
   - metadata.xml
   - contents.xml
   - binary.xml
   You may also have a file named resourcelocks.xml if some resources were locked at the time of the export.
   Depending on what was selected during the export, some files may not be in the folder. For example, users.xml will not appear if the option to export users or groups was not selected.

**Steps to Modify the File Named settings.xml**

1. Open the file named settings.xml in an XML editor, and change the following line from
   
   `<ownerDomain>composite</ownerDomain>`
   
   to
   
   `<ownerDomain>cognos</ownerDomain>`

2. Save the file.

**Steps to Modify the File Named users.xml**

1. Open the file named users.xml in an XML editor, and change the following text from
   
   `domainName="composite"`  
   
   to
   
   `domainName="cognos"`

2. Change the following text from
   
   `type="COMPOSITE"`  
   
   to
   
   `type="COGNOS"`
3. Save the file.

**Steps to Modify the File Named metadata.xml**

1. Open the file named metadata.xml in an XML editor, and change the following text from
   
   \[
   \text{domain} = \text{"composite"}
   \]
   
   to
   
   \[
   \text{domain} = \text{"cognos"}
   \]
   
2. Change the following text from
   
   \[
   /\text{users/composite}
   \]
   
   to
   
   \[
   /\text{users/cognos}
   \]
   
3. Change the following text from
   
   \[
   \text{metadata name} = \text{"composite"}
   \]
   
   to
   
   \[
   \text{metadata name} = \text{"cognos"}
   \]
   
4. Save the file.

**Steps to Modify the File Named contents.xml**

1. Open the file named contents.xml in an XML editor, and change the following line from
   
   \[
   \text{<userDomain>composite</userDomain>}
   \]
   
   to
   
   \[
   \text{<userDomain>cognos</userDomain>}
   \]
   
2. Save the file.

**Steps to Modify the File Named metadata.xml**

1. Open the file named metadata.xml in an XML editor, and change the following text from
   
   \[
   \text{domainName} = \text{"composite"}
   \]
   
   to
   
   \[
   \text{domainName} = \text{"cognos"}
   \]
   
2. Change the following text from
   
   \[
   /\text{users/composite}
   \]
   
   to
   
   \[
   /\text{users/cognos}
   \]
3. Save the file.

Steps to Import the Modified Files to Virtual View Manager
1. Select the contents of the folder, and create a ZIP file.
   Ensure you select all of the file extracted from the original ZIP file.
2. Change the extension of your exported file from ZIP to CAR.
   For example, if you named your file myrepo.zip, change the name to myrepo.car.
3. Import the recreated CAR file using Virtual View Manager Studio.
   For more information about exporting and importing resources, see the Virtual View Manager User Guide.
Chapter 5: Upgrading
Chapter 6: Troubleshooting

Use this troubleshooting information as a resource to help you solve specific problems that you may encounter during or after the installation of IBM® Cognos® Virtual View Manager components.

Problems are characterized by their symptoms. Each symptom can be traced to one or more causes by using specific troubleshooting tools and techniques. After being identified, each problem can be fixed by implementing a series of actions.

Virtual View Manager provides log files about installation, system events, and user activities. These log files are located in the installation_location\logs folder. For more information, see the Administration Guide.

Data Sources Appear Empty After Importing into IBM Cognos Framework Manager

After importing metadata from a IBM® Cognos® Virtual View Manager data source, the data source appears empty in Framework Manager.

In Virtual View Manager, when you publish the data source to a Virtual View Manager data service, you must publish at the schema level of the data service, as described in "Publish the Data Source" (p. 28). Otherwise, the data source appears empty in Framework Manager.

If the data source appears empty, go back to Virtual View Manager Studio and republish the data source to the schema level of a Virtual View Manager data service. You must re-import the metadata into the Framework Manager project.

Result Set Not Shown for Functions and Stored Procedures

IBM® Cognos® Virtual View Manager Studio exposes functions and stored procedures to Framework Manager as procedures that may contain only the return value from the procedure or view. To see the full result set in Framework Manager, the cursor outputs must be identified.

In some cases, the cursor outputs for functions and stored procedures cannot be detected automatically. If the result set does not appear when you run a function or stored procedure, you can use the Design By Example function in Virtual View Manager Studio to design a cursor that defines the result set that the user wants to see.

For information about designing a cursor using Design By Example, see the Virtual View Manager User Guide.
Web API Error When Trying to Open IBM Cognos Virtual View Manager Studio

You try to open IBM® Cognos® Virtual View Manager Studio and see a Web API Error. The server appears to be started.

On startup, the Virtual View Manager server requires a few minutes to initialize before you can use it.

Metadata Synchronization Problems Between IBM Cognos Virtual View Manager and IBM Cognos Framework Manager

If changes are made to a IBM® Cognos® Virtual View Manager data source while you are connected, IBM® Cognos® Framework Manager is not automatically updated. As a result, you will see errors if you try to model data in IBM® Cognos® Framework Manager that no longer exists or was renamed.

If the existing Virtual View Manager views were changed, you can update the query subject in Framework Manager to refresh the data.

If new views or tables were added, you must re-import the metadata into your IBM® Cognos® Framework Manager project to refresh the data.

Supported SQL Syntax

If you attempt to use SQL syntax that is not currently supported by IBM® Cognos® Virtual View Manager, error messages appear.

For information about the SQL syntax currently supported by Virtual View Manager, see the IBM® Cognos® Virtual View Manager Reference Guide.
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