Senturus Analytics Connector

Installation Guide

Requirements

In order to install the Senturus Analytics Connector, you will need the following permissions and information:

- Administrator permission on the machine(s) the software will be installed on

- **Cognos requirements:**

    o The Cognos version your organization is running (ex. 11.0.12)

    o Cognos Dispatcher URL (ex. http://host:port/p2pd/servlet/dispatch)

    o Cognos Namespace ID (ex. SENTURUS_AD)

    o Cognos CSV settings

        - See *Finding Cognos Installation Information* for details

    o Cognos username and password

    o Access to the Cognos package(s) to be configured

- **MicroStrategy requirements:**

    o MicroStrategy server machine path and port (ex. senturus-mstr.ddns.net:34952)

    o MicroStrategy login mode

    o MicroStrategy username and password

    o Access to the MicroStrategy database(s) and project(s) to be configured

Architecture Overview

The Senturus Analytics Connector supports many different customer environments and use cases. Review the supported architectures below to determine which installation(s) are appropriate for your environment.

We suggest starting with a Desktop Standalone installation and configuration to confirm system settings and access. The configuration information can then be copied to additional installations.

Desktop Standalone Architecture

Installing in Desktop standalone mode allows Desktop tools (Power BI Desktop or Tableau Desktop) to connect to Cognos or MicroStrategy using a locally installed Senturus Analytics Connector ODBC driver. This mode is useful for ad hoc analysis or to design and publish to server deployments.

To install in this mode, follow the *Desktop Standalone Installation* steps.
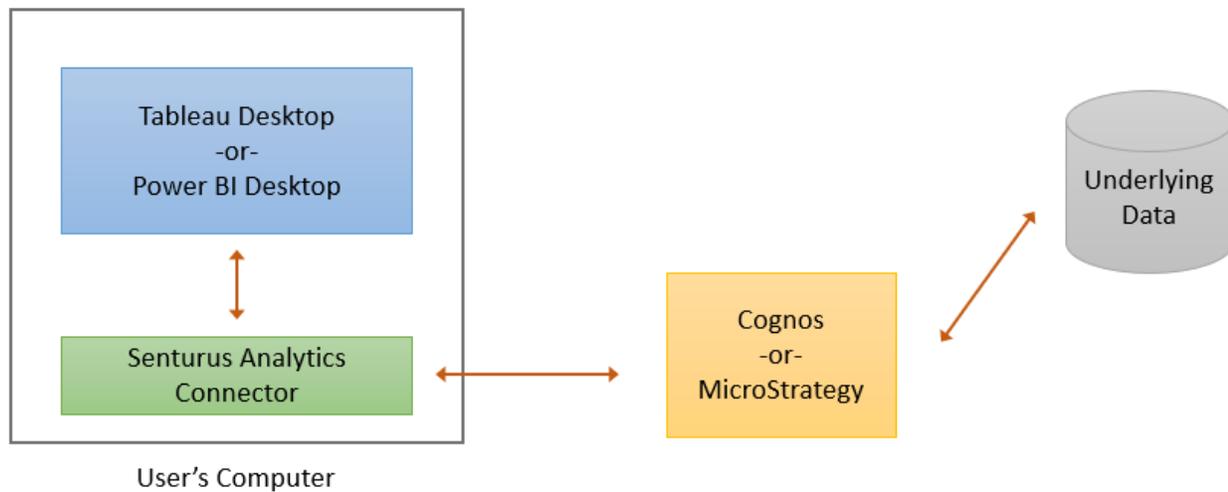
(Cont'd)

Tableau On-Premises Server Architecture

Installing the Senturus Analytics Connector on an on-prem Tableau Server allows Tableau Server to connect to Cognos or MicroStrategy directly. When Analytics Connector is with used with Tableau Desktop, it facilitates publishing visualizations, dashboards, and/or data sources to the Server.

It is not necessary to install the Analytics Connector on other seats of Tableau Desktop that access the published data sources (TDS) through Tableau Server or for users who only view or modify visualizations on Tableau Server using a web browser.

To install in this mode, follow the *Tableau On-Premises Server Installation* steps.
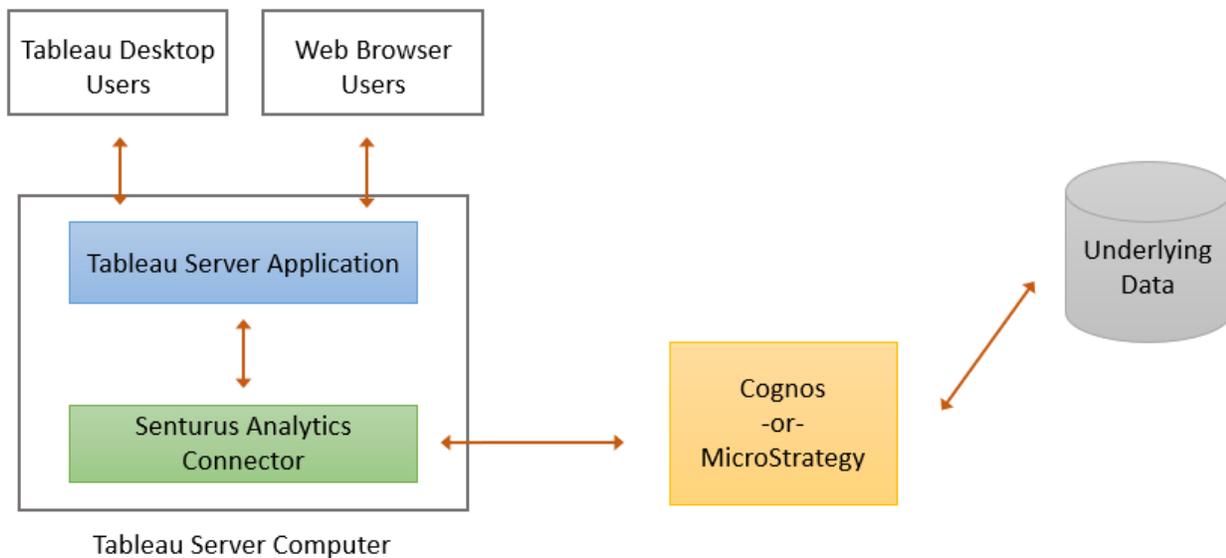
(Cont'd)

Power BI Gateway Architecture

Installing the Senturus Analytics Connector on a Power BI Gateway allows the Microsoft hosted Power BI service to securely access on-premises data from your Cognos or MicroStrategy system. A gateway is required only if you publish Power BI reports containing Cognos or MicroStrategy data sources to the Power BI service.

It is not necessary to install the Analytics Connector on the local machines where Power BI Desktop is used to access the published data sources (Power BI datasets) through the Power BI service or for users who only view or modify visualizations on the Power BI service using a web browser.

It is necessary to install the Analytics Connector on the local machines where Power BI Desktop is used to create, modify, or publish Power BI reports and datasets to the service that use the Analytics Connector as their data source.

To install in this mode, follow the *Power BI Gateway Install Steps*.

Power BI service		Web Browser Users
Public Internet		Power BI Desktop Users
Private Network		
Power BI Gateway Application		Cognos -or- MicroStrategy
Senturus Analytics Connector		Underlying Data

Gateway Computer
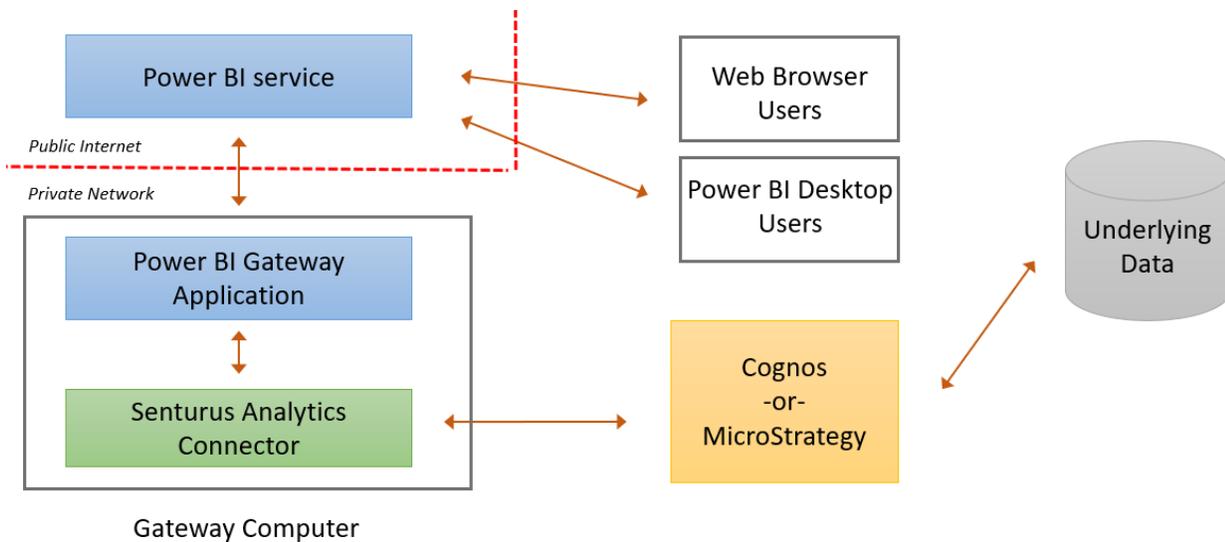
(Cont'd)

Installation Steps

Follow the appropriate steps for the installation architecture(s) you wish to perform.

You will need administrator access on the machine where you are installing the Analytics Connector.

Desktop Standalone Installation

Download the latest version of the Analytics Connector installer to the machine where you will be installing it. You can download this installer here: https://www.senturus.net/connector-download/

Once downloaded, run *AnalyticsConnector_[version]_x64.exe* with administrator privilege.

You will be prompted by **User Access Control (UAC)** to allow this app to make changes to your device.

Click **Yes** to allow the installer to run.

Click **Next** on the welcome page.
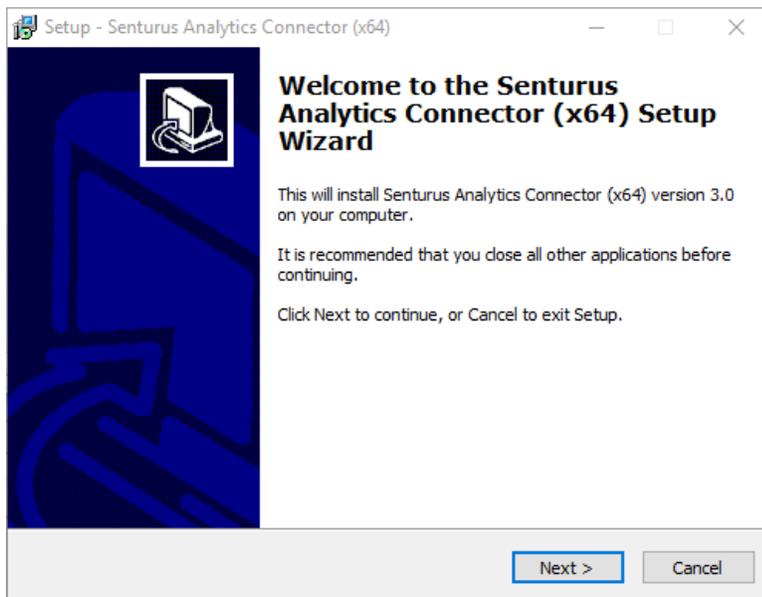
The installer will extract some files to a temporary directory. Once all temporary files are copied over, click **Next**.
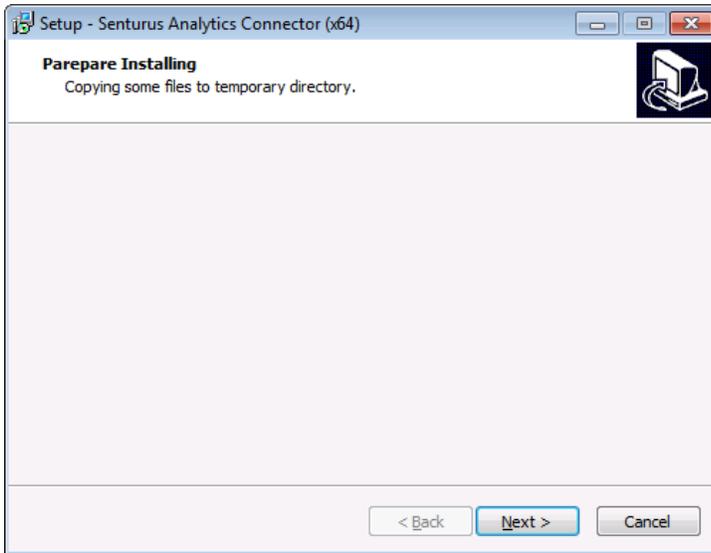
If any prerequisite software is missing, you will be prompted to download and install it.

NOTE: If the machine already has these prerequisites installed, you will automatically skip the next several steps.
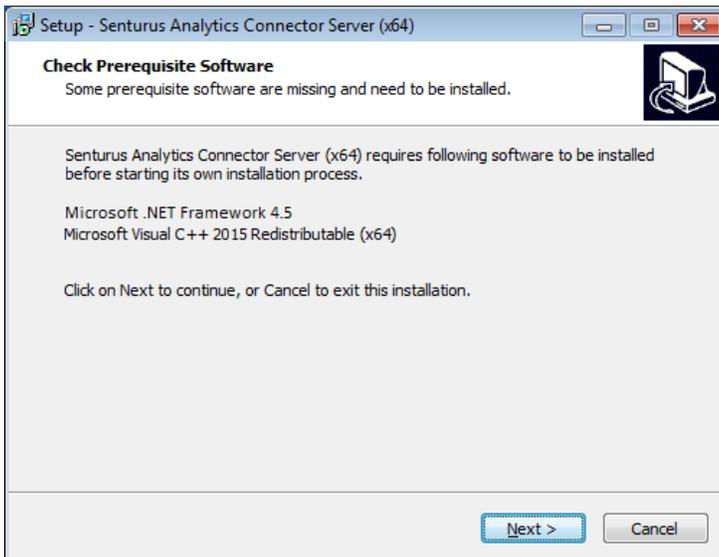
Click **Next** to start downloading prerequisite software installers from the Internet.

Click **Next** once all installers are downloaded.

The *Installing Prerequisite Software* installer window will appear.
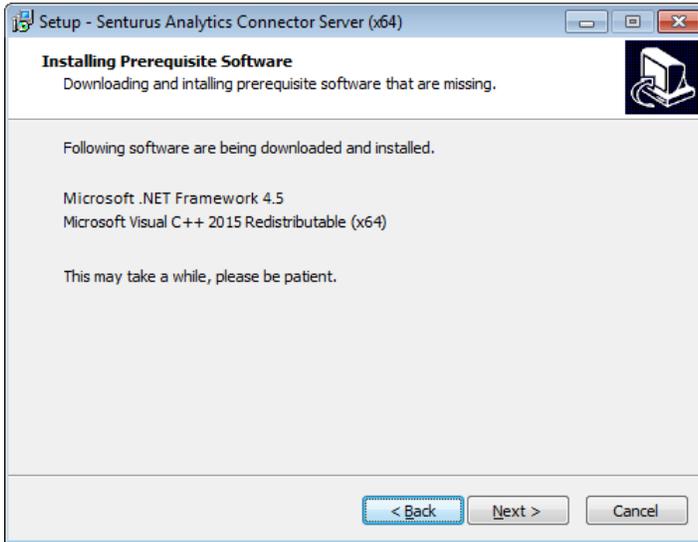
The progress dialog will appear while MS .NET 4.5 and MS Visual C++ 2012 Redistribute (x64) are being installed.

Once the prerequisite software has completed installation, click **Next**.
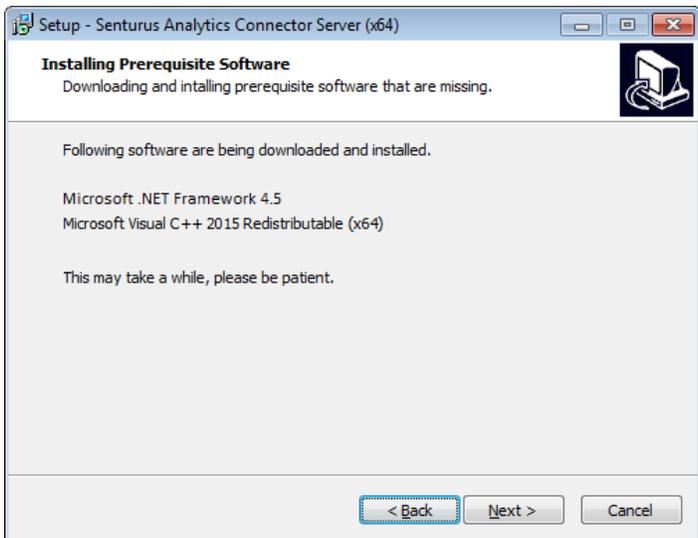
Select an installation directory. The default is *C:\Program Files\Senturus\Analytics Connector*.

Click **Next**.
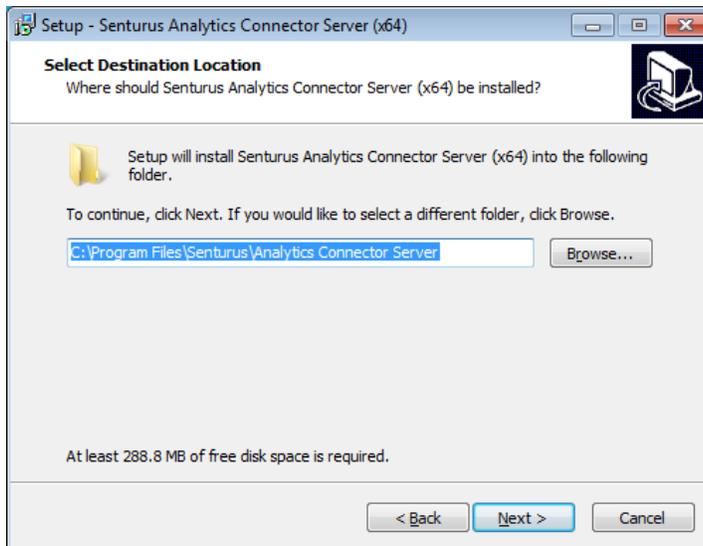
License Key

In order to use the Analytics Connector, you will need a SenturusODBC.key file from Senturus. A free trial key is available by contacting CustomerSupport@senturus.com. Once purchased, you will receive a key from Senturus tied to your purchased licenses.

Open the key file using a text editor (i.e. Notepad).

Copy all the content and paste it into the in **Key File** page input.

NOTE: If you are upgrading and already have a SenturusODBC.key file in the installation directory, the installer will read it and automatically populate the content here.

Click **Next**.

(Cont'd)
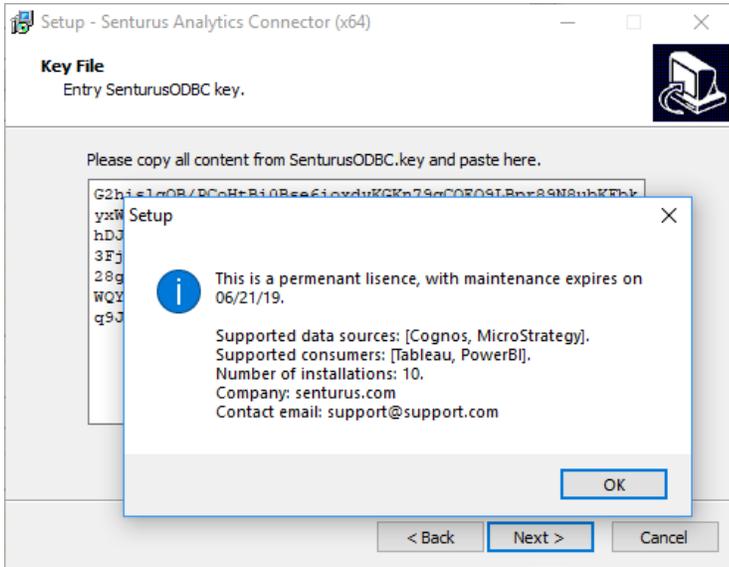
A message window will appear displaying your license key information. Review it and click **OK**.
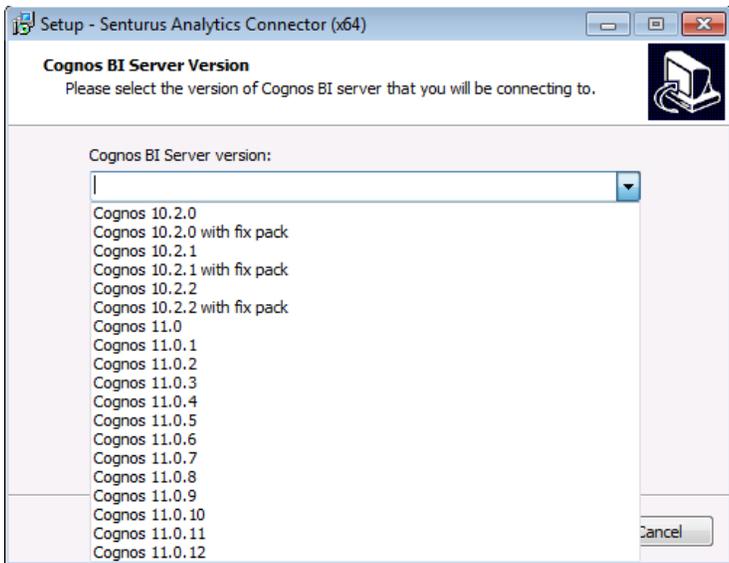
If your license key is for a Cognos data source, the following page will appear. Select the version of your Cognos server. Click **Next**.
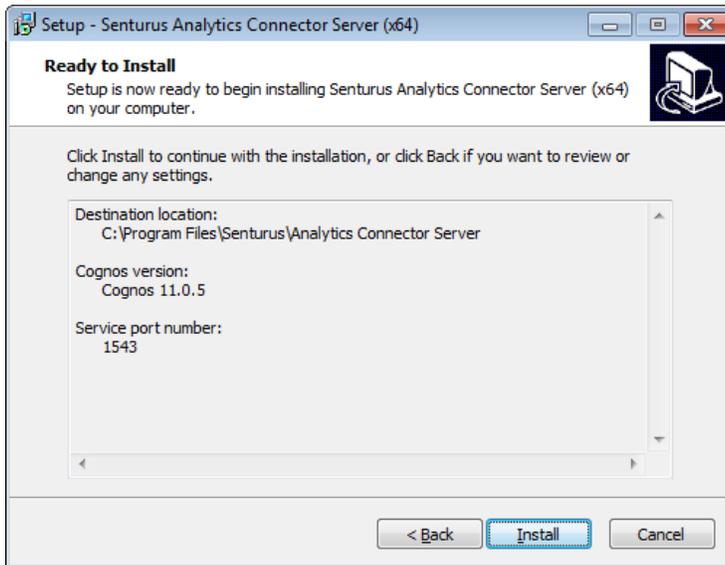
Review installation options, then click **Install**.

Click **OK** once the installation is complete.
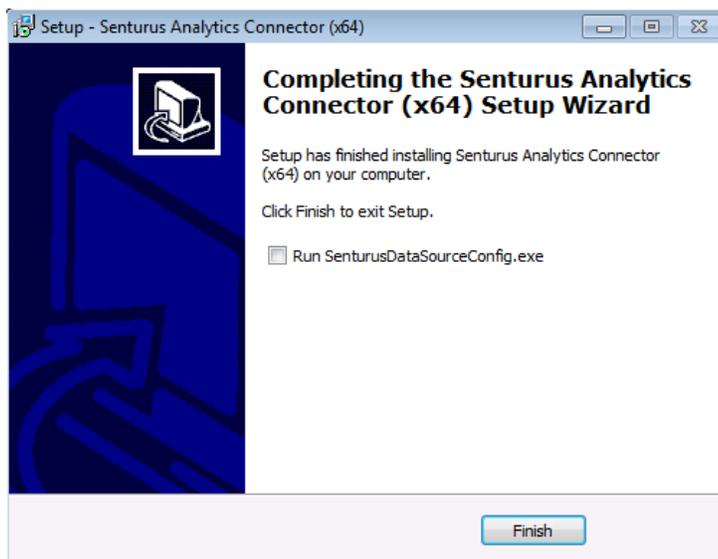
Once complete, this installation completion page will appear.

If this is your first installation, start the configuration tool by checking **Run SenturusDataSourceConfig.exe**

Click **Finish.**

Then follow the *Configuring Cognos* or *Configuring MicroStrategy* steps.

If you have already configured your data source(s) on another system, click **Finish** to exit the installer.

Copy the DataSourceConfig.xml file from that system's installation folder to this system's installation folder, overwriting the existing file.

Tableau On-Premises Server Installation

The Tableau Server installation is performed using the same steps as the *Desktop Standalone Installation*. Follow those steps on your Tableau Server(s) to install the connector. No other steps are necessary.

If this is your first installation, start your configuration tool by checking **Run SenturusDataSourceConfig.exe**. Then follow the steps found in *Configuring Cognos* or *Configuring MicroStrategy*.

If you have already configured your data source(s) on another system, copy the DataSourceConfig.xml file from that system's installation folder to this system's installation folder, overwriting the existing file.

Once installed and configured, workbooks and data sources published to the Tableau Server will be able to leverage the Analytics Connector.

Users who only view or edit workbooks on the server will not need to install the Analytics Connector on their local machines. Similarly, users who use Tableau Desktop to access Cognos or MicroStrategy data sources configured as Tableau Data Sources (TDSs) on the Tableau Server will not need to install the Analytics Connector on their local machine. These users can license the Analytics Connector as Server Users or a Core license can be purchased to cover all users on a server.

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Power BI Gateway Installation

When publishing Power BI Desktop to the Power BI service, a Power BI Gateway will typically be needed to access an on-prem Cognos system and underlying databases.

To install the Power BI Gateway with the Senturus Analytics Connector:

Download and install the latest version of the Power BI on-premises data gateway from Microsoft.

Install the Analytics Connector on the machine that will run the Power BI Gateway application. Follow the *Desktop Standalone Installation* instructions.

If this is your first Analytics Connector installation, run the Configuration Utility then follow the steps for *Configuring Cognos* or *Configuring MicroStrategy*.

If you have already configured your data source(s) on another system, copy the DataSourceConfig.xml file from that system's installation folder to this system's installation folder, overwriting the existing file.

If you did not perform the configuration step on this machine, you will need to copy the Custom Data Connector (SenturusAnalyticsConnector.mez) to *{User}\Documents\Power BI Desktop\Custom Connector*s. See *Configuring the Power BI Custom Data Connector* for details.

Log into the Gateway App using the Microsoft Account associated with your Power BI Service.

On the **Gateway App Connectors** tab, browse to the folder containing the SenturusAnalyticsConnector.mez file *({User}\Documents\Power BI Desktop\Custom Connectors*).

On the **Service Settings** tab, note the account being used for your gateway service account. *NT Service\PBIEgwService* is the default. This user will need to be granted access to the above directory.
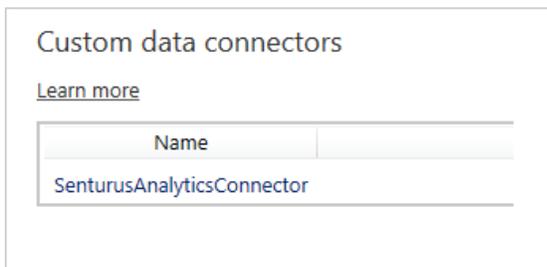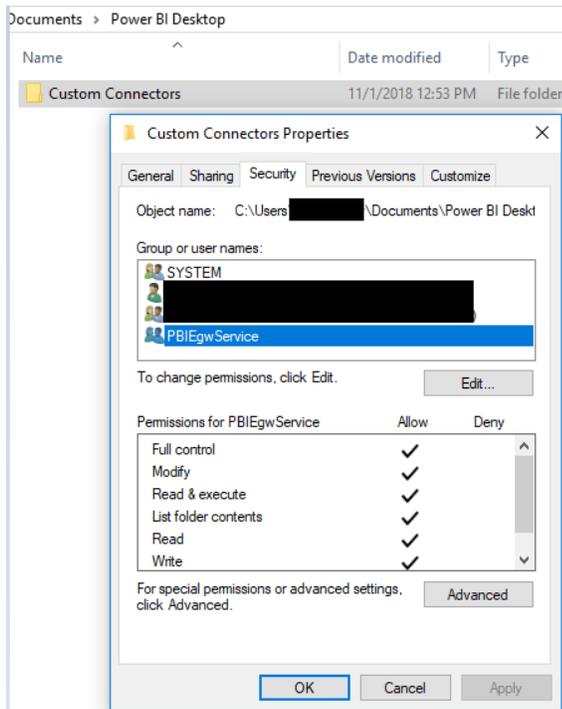
When correctly configured, "Senturus Analytics Connector" will appear as the name listed on the **Connectors** tab.

Sign into Power BI service (https://powerbi.microsoft.com).

Go to **Settings → Manage Gateways**.

Confirm the gateway you have configured is listed.

Confirm the below two options are checked:
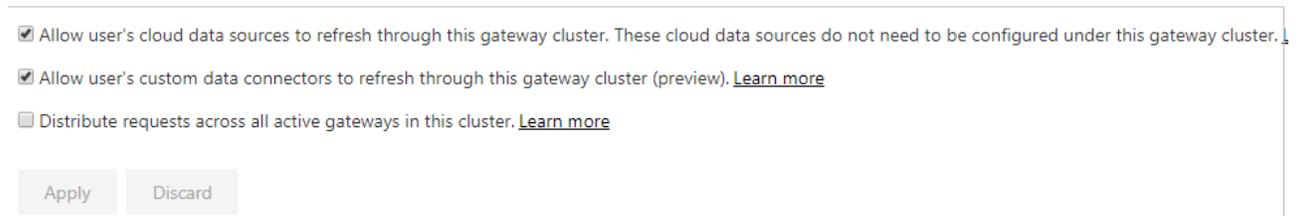
Add a data source to the Gateway: For **DataSource Type,** select *SenturusAnalyticsConnector*

Select **Type** for the server, database, username and password that the gateway will use to communicate with Cognos. You will need to configure a data source here for each gateway.

If other users in the organization need to publish reports to Power BI Service using the same data source, you can grant them permission on the **Users** tab.
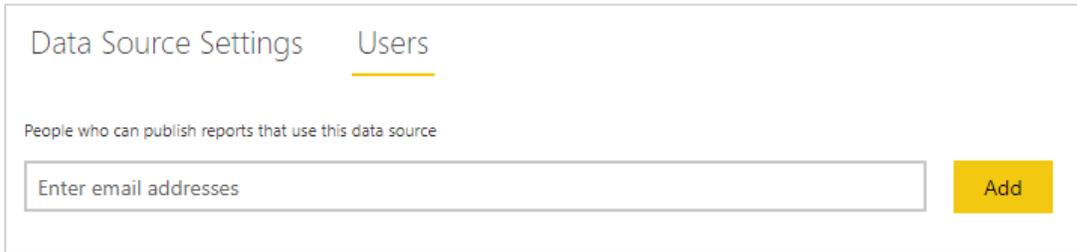
When you (or a user with permission) publish a workbook to the service with the same server and database, the gateway will be able to talk to your on-premises data using the Power BI Enterprise Gateway.

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Configuration

After the Analytics Connector has been installed, the servers and databases need to be configured.

Launching the Senturus Analytics Connector Configuration Utility

The Configuration Utility modifies the DataSourceConfig.xml file in the Installation folder. This file can be created one time and copied to any other machine where you install the Analytics Connector.

To run the Configuration Utility, launch the program located at:

{Analytics Connector Installation Folder}\bin\SenturusDataSourceConfig.exe
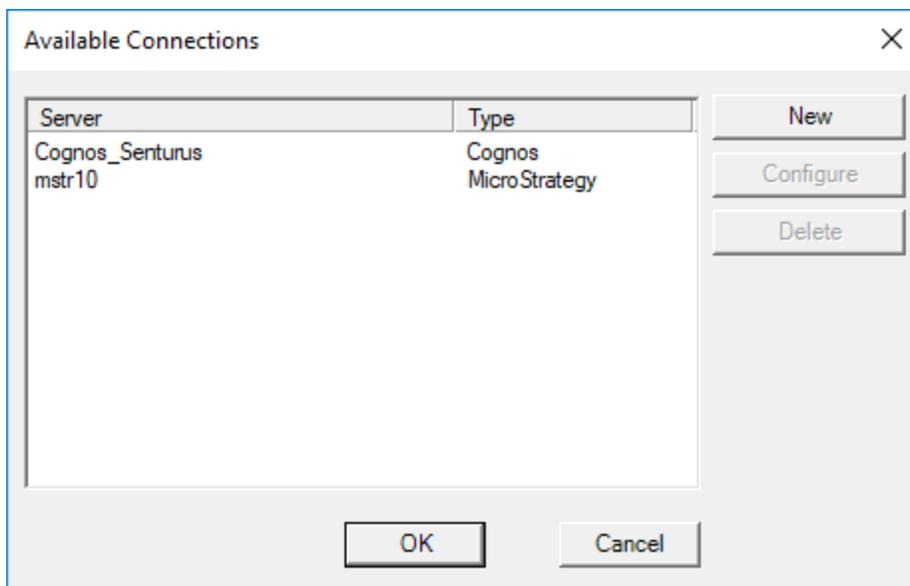
You will see configured Connections and their types listed in the main application.

Click **New** to create a new Connection.

Select the server type for the new connection.
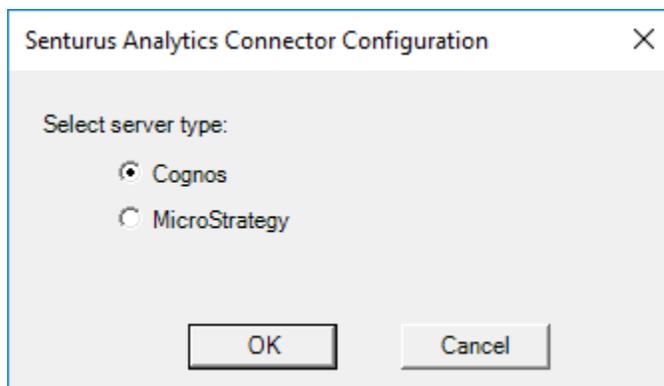
The **Edit Cognos Connection** window will appear.

Alternatively, you can select a Connection and click **Configure** to modify an existing connection.

You will then see the **Edit Cognos Connection** window.

Configuring Cognos

Cognos connections display the **Edit Cognos Connection** window with its three tabs: *Server, Advanced and Database.*

The Server tab

Here you can define server name, dispatcher URLs, namespace IDs and other options. This tab represents server elements (without child nodes).

The default authentication class is *com.senturus.cognos.DispatcherAuthentication*. If Cognos users can authenticate themselves via Dispatcher by providing user name and password, you do not need to change the **Authentication Class Name**. If you want to use a custom authentication provider, contact Senturus for help.

NOTE: Power BI users should select the *AAA_CALCULATIONS* and *AAA_LINK* options as Power BI doesn't work with tables and columns starting with an underscore.

The Advanced tab

This tab lets you define the CSV output format. It also lets you adjust attributes for PowerCube, TM1, Dynamic Cube data sources, and other settings.

See *Finding Cognos Installation Information* for details on your Cognos system's CSV Output settings.

Level attributes for PowerCube, Dynamic Cube and TM1

By default, only levels will be mapped to ODBC columns. To show them, check the corresponding options for the data source.

For TM1 level attributes, specify the list of names (separated by comma) or list of regex expressions. For example, to show all names in simplified Chinese, specify .*_TC$ in *show attributes that match following regular expressions*.

The Analytics Connector supports both named and unnamed TM1 hierarchy levels. However, if levels are not named in a TM1 hierarchy, the Analytics Connector needs to send a query to Cognos to detect the names of all levels within this hierarchy.

NOTE: This query may significantly increase the connecting time if this hierarchy has many elements. As a best practice, we recommended you name all levels in TM1 first.

For more information regarding TM1 named hierarchy levels, refer to the Using Named Hierarchy Levels with TM1 Dimensions documentation on the IBM Knowledge Center website.

The Database tab

This tab lets you define packages to which you want to connect. Packages are represented as databases in the Analytics Connector.

Double click a database name to edit it. Delete the name and press Enter to remove a database. Double click the *<new>* entry and provide a name to create a new database.

You now need to specify search paths for the packages, connections and report folders.

NOTE: You can type the search paths into the appropriate text boxes if you know them.

Use the search tool to easily find your search path. Select a database, then click the magnifying glass Q to search for the package, connection or report folder.
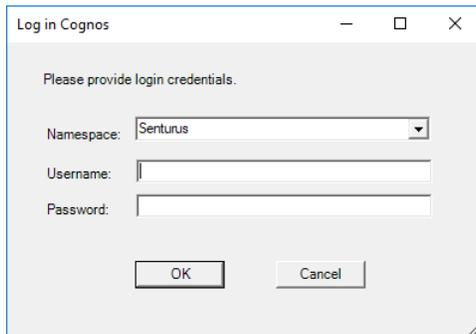
You must first login to Cognos.

Select the correct namespace and enter your Username and Password.

Click **OK**.

The **Select Cognos package** dialog appears. Navigate to the package by double clicking folders. Double click the top ".." row to move up a folder. The current path is displayed in the top text box.

Select the desired package, then click **OK**.

The search path will be placed in the related text box on the **Database** tab.

Configuring MicroStrategy

MicroStrategy connections display the MicroStrategy Connection screen with its two tabs: *Server* and *Database*.

The Server tab

The Server tab allows you to define the server name, MicroStrategy Intelligence server host and port, and login modes. It also lets you establish automatic reconnect settings.

The Database tab

The Database tab allows you define the MicroStrategy project name and mapping database name. It also lets you define report folders to include in each database.

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Configuring the Power BI Custom Data Connector

Power BI Desktop and Gateway require a custom data connector in order to use DirectQuery mode with ODBC data sources. DirectQuery passes queries to the underlying data source, which is highly desirable.

The Senturus Configuration Utility will create or refresh a custom data connector for your use when you click **OK** to close the Configuration Utility.

The custom data connector can be found in:

{Analytics Connector Installation Folder}\PowerBI\SenturusDataConnector.mez

On the machine where you run the Configuration Utility, this file is also automatically copied to:

{User}\Documents\Power BI Desktop\Custom Connectors

On other Power BI Desktop or Gateway machines, you will need to install the Analytics Connector and then copy this file to the user's machine in the same named folder. You may need to create one or more of the bolded folders shown in the path below.

{User}\Documents\Power BI Desktop\Custom Connectors

Power BI looks at the above folder to discover the custom data connectors.

To enable this custom data connector to run, go **to File → Options and settings → Options → Security.**
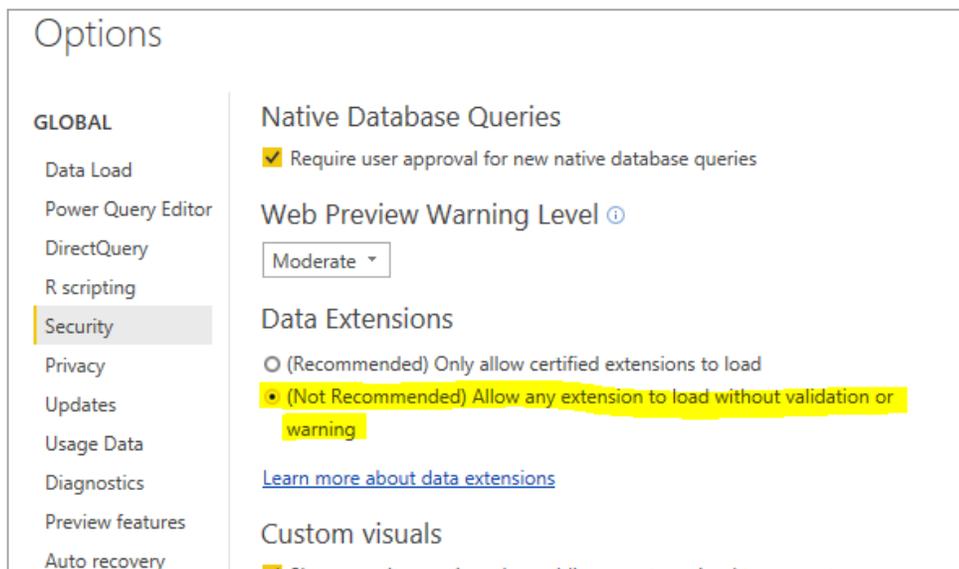
Under **Data Extensions**, choose *Allow any extension to load without validation or warning.*

Configuring a DSN

Like any other ODBC driver, you can define a Data Source Name (DSN) using the ODBC administrator tool from the Windows Control Panel. You can then use the DSN in Tableau or other applications.

To create a new DSN:

Open the 64-bit ODBC administrator.

Add a system or user DSN (based on your permissions and requirements).

Select *Senturus Analytics Connector* when prompted to select a driver.
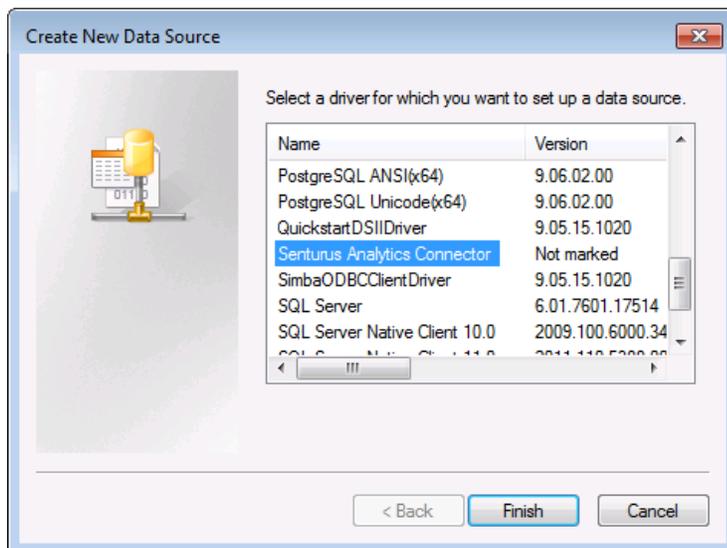
Edit Connections will launch the Configuration Utility. If you have not configured the desired Connection, you can do so from here.

(See *Configuring Cognos* or *Configuring MicroStrategy* for details)
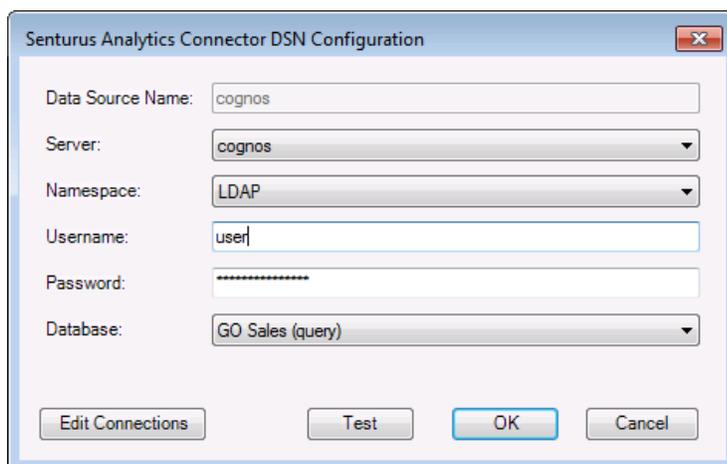
Select the desired server, namespace and database. Optionally, you can enter a username and password and test the connection.

Advanced Topics & Notes

Additional technical information related to the Analytics Connector.

Finding Cognos Installation Information

Dispatcher URI

One or more Cognos dispatchers can be configured for each Connection.

Namespace ID

The Cognos namespace IDs are not necessarily the same as the namespace display names.

The Namespace ID value can be found in the **Cognos Configuration** application, under **Security → Authentication → <namespace>**.
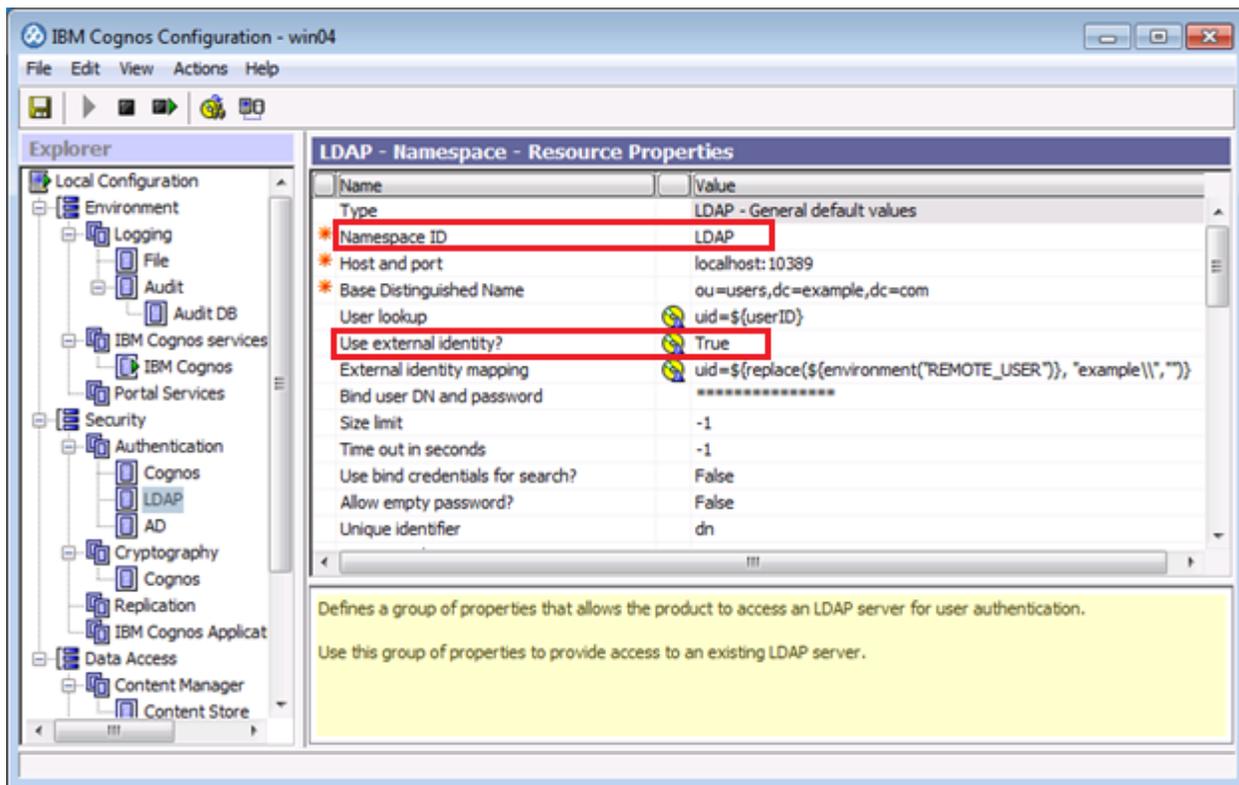
CSV Settings

Your Cognos CSV settings can be found on the Cognos Administration page.

In Cognos 10, this is found under **Status → System → Setting-System → Advanced**.

In Cognos 11, this is found **under Status page → System window → Environment**

SSL

If you are using SSL over Cognos dispatcher, or using SSL over Cognos gateway and have set authentication class to *NTLMAuthentication/SiteMinderBasicAuthentication*, then you need to configure the truststore so the Analytics Connector can communicate with your server over SSL.

To configure the truststore:

Obtain the certificate issued to your Cognos server, or any intermediate or root certificate.

Save it into your local drive, for example *C:\Temp\root.cer*.

Create *{Analytics Connector Installation Folder}\SSL* directory if it does not exist.

Open a prompt window.

Change directories to the *{Analytics Connector Installation Folder}* directory.

Execute the following command:

JRE\x64\bin\keytool -import -alias root -file C:\Temp\localhost.cer -keystore SSL\truststore - storepass changeit

Review the information. If it looks correct, type **yes** and **Enter**.
truststore should be created under *{Analytics Connector Installation Folder}\SSL*.

OPTIONAL: To verify newly created truststore, execute the following command:

JRE\x64\bin\keytool -list -v -alias root -keystore SSL\truststore -storepass changeit

NOTE: The password we use for truststore is *changeit*, which also matches the default password stored in Windows registry table.

If you want to use a different password, you will need the password above as well as the Windows registry table. This password is stored under key *HKEY_LOCAL_MACHINE\SOFTWARE\Senturus\ODBC\Driver*, within JNIConfig value.

Silent Installation

To perform a silent installation, execute the following command:

AnalyticsConnector_[version]_x64.exe /SILENT /DIR="C:\Program Files\Senturus\Analytics Connector" /CognosVersion="Cognos 11.0.5" /ServicePort="1543" /LicenseKey="SenturusODBC.key"

"/SILENT" instructs installer to do a silent installation.

"/DIR=" defines the installation directory. This is an optional parameter. The default value, if not provided via command line, is *C:\Senturus\Analytics Connector*.

CognosVersion tells the installer the version and fix pack level of the Cognos BI server you want to connect to. This is a mandatory parameter. For a complete list of all target versions, run the installer in interactive mode and check the options.

ServicePort defines the port number that Windows service will listen to.

LicenseKey provides the Senturus ODBC license key to the installer.

The command above will bring the installation progress dialog though. If you want to suppress the progress dialog as well, replace */SILENT* with */VERYSILENT*.

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Install Prerequisites Manually

If you do not have Internet access, or your access to prerequisite installers is blocked, you may need to download and install prerequisites manually before installing the Senturus Analytics Connector.

On another computer where you can download prerequisite installers:

Download Microsoft .net Framework 4.5 from
https://download.microsoft.com/download/6/A/A/6AA4EDFF-645B-48C5-81CC-ED5963AEAD48/vc_redist.x64.exe (64bit)

OR from
https://download.microsoft.com/download/9/3/F/93FCF1E7-E6A4-478B-96E7-D4B285925B00/vc_redist.x86.exe (32bit)

Download Microsoft Visual C++ 2015 Redistributable (x64) from
https://download.microsoft.com/download/6/A/A/6AA4EDFF-645B-48C5-81CC-ED5963AEAD48/vc_redist.x64.exe

OR Microsoft Visual C++ 2015 Redistributable (x86) from
https://download.microsoft.com/download/6/A/A/6AA4EDFF-645B-48C5-81CC-ED5963AEAD48/vc_redist.x86.exe.

Copy to your target computer and install them by running these executables. Once those prerequisites are installed, you can launch the Senturus Analytics Connector installer.

Other Software usage

In addition to the above pieces of 3rd party redistributable software, the following software is used within or by the Analytics Connector:

- Oracle Java JRE (https://java.com)– The customer is responsible for this license

- Cognos SDK – The customer is responsible for this license as part of the Cognos system

- SimbaEngine SDK – Senturus is licensed to redistribute

- Open source software code - all in use allow us to redistribute commercially

Upgrade or reinstall the Analytics Connector

If you need to upgrade the Analytics Connector to a newer version or need to upgrade the Cognos SDK version to reflect a Cognos upgrade, re-run the installer.

First, ensure that the Analytics Connector is not being used by any application. For Power BI Gateway, you will need to stop the service to ensure it releases file locks. Make sure Power BI Desktop and/or Tableau Desktop are closed.

If you are upgrading the connector, download the new Analytics Connector version from https://www.senturus.net/connector-download/.

Run the installer. Choose the same installation directory. Select the appropriate Cognos version. The installer will detect the installed key and will not overwrite your configured data sources.

Uninstall the Analytics Connector

You can uninstall the Analytics Connector in two ways:

1. Use the Windows Control Panel and select **Uninstall a program**.
2. Go to the Analytics Connector **Installation** folder (Typically *C:\Program Files\Senturus\Analytics Connector* and run *unins000.exe*.

DataSourceConfig.xml Specifications

The screenshot below shows the default DataSourceConfig.xml file.

```
<dataSources>
    <server name="cognos" type="Cognos" namespaces="Senturus,LDAP,AD" autoReconnect="fals
            dispatcher="http://192.168.1.224:9300/p2pd/servlet/dispatch, http://192.168.1
            authenticationClass="com.senturus.cognos.DispatcherAuthentication">
        <database name="GO Sales (query)" package="/content/folder[@name='Samples']/folde
            <dataSourceConnection path="CAMID(&quot;::&quot;)/dataSource[@name='great_outd
            <reportFolder name="Sample Reports" path="/content/folder[@name='Samples']/fo
            <reportFolder name="Connector Reports" path="/content/folder[@name='Connector
        </database>
        <database name="GO Sales (analysis)" package="/content/folder[@name='Samples']/fo
        <setting name="RSVP.CSV.ENCODING" value="utf-16le"/>
        <setting name="RSVP.CSV.DELIMITER" value="TAB"/>
        <setting name="RSVP.CSV.QUALIFIER" value="&quot;"/>
        <setting name="RSVP.CSV.TERMINATOR" value="LF"/>
    </server>
    <server name="mstr" type="MicroStrategy" host="192.168.1.243:34952" loginModes="Stand
        <database name="Tutorial" project="MicroStrategy Tutorial" />
        <database name="tdvt" project="tdvt" />
    </server>
</dataSources>
```

server element: this defines a connection to one Cognos or MicroStrategy BI server.

@**type**: either Cognos or MicroStrategy.

@**name**: the user-friendly name that appears in the **Login** dialog.

@**dispatcher**: (for Cognos only) the URL string points to Cognos dispatcher. To support fail over, you can specify multiple dispatchers separated by commas. **NOTE**: Put the more reliable dispatchers first because the Analytics Connector will try each dispatcher in the order they are specified here.

@**namespaces**: (for Cognos only) comma separated list of Cognos namespace IDs. Leave this blank if you want to log into Cognos anonymously.

@**autoReconnect**: Cognos and MicroStrategy servers may disconnect clients after a period of inactive time. Set **autoReconnect** to *true* if you want the Analytics Connector to automatically reconnect to the BI server. The default value is *false*.

@**authenticationClass**: (for Cognos only) the default value is *com.senturus.cognos.DispatcherAuthentication.* This default works in most cases where you can log into Cognos dispatcher directly with namespace/uid/password combination. However, in cases where users cannot login to the dispatcher directly (e.g. when namespace is a LDAP using external identity from Windows/IIS authentication), then you can use another class *com.senturus.cognos.NTLMAuthentication* instead. For other authentication scenarios, contact Senturus for help.

@**calcuationsTableName**: (for Cognos only) Cognos Framework Manager allows you to create standalone calculations under a namespace (without putting them within a query subject). This option allows you to choose which name you want to use: *_AAA_CALCULATIONS* or *_CALCULATIONS_*.

@**linkColumnName**: Tableau does not allow you to drop tables into a data source without a join to other existing tables. But when using Cognos packages or MicroStrategy project metadata, there is no need (or it is impossible) to define joins.

The Analytics Connector creates an extra column in each table so you can join these link columns to satisfy Tableau. Prior to version 2.4, the column name is *_LINK_COLUMN_.* But because Tableau automatically picks join columns by alphabetic order, _LINK_COLUMN_ column pairs may not be its first choice. Since version 2.4, you can choose either *AAA_LINK* or *_LINK_COLUMN_* as link column names.

@**host**: (for MicroStrategy only) the host name or IP and port number of MicroStrategy Intelligence server.

@**loginModes**: (for MicroStrategy only) comma separated list of the login modes of the MicroStrategy Intelligence server. Only standard and LDAP are support.

database element: This defines a published package in Cognos Connection or a project in MicroStrategy.

> @**name**: the user-friendly name that displays in login dialog.

> @**package**: (for Cognos only) the search path of this Cognos package.

> @**project**: (for MicroStrategy only) the name of MicroStrategy project.

> **dataSourceConnection** element: (for Cognos only) Cognos packages reference data sources and one data source may have multiple data source connections. If users have access to more than one connection, you need to specify which connection to use when running reports. Omit this element if users have access to only one connection.

> @**Path**: the search path of data source connection.

reportFolder element: You can define from which folder you want to pull Cognos reports, report views and queries, and present them as tables within an ODBC schema. For MicroStrategy, grid report and intelligence cube will be pulled from defined folder.

> @**name**: the name of schema that will show in ODBC.

> @**Path**: the search path of Cognos folder.

> @**includeSubFolders**: set this to true to include reports in sub folders recursively.

setting element: (for Cognos only). Cognos administrators can customize the CSV output format instead of using Cognos defaults. Setting elements pass these customizations to the Senturus Analytics Connector so it can consume Cognos output correctly.

You can also customize which levels/attributes to retrieve from cube data sources, using setting elements.

The default DataSourceConfig.xml lists the default Cognos settings, so you can leave them as is or you can remove one or all of them if your Cognos server uses default.

Questions?

The latest version of the Analytics Connector along with related documentation and contact information can be found at https://www.senturus.net/connector-download/.

If you have any additional questions, please contact us at CustomerSupport@senturus.com.