IBM Cognos Analytics: Setting up a Gateway Install Using Microsoft's Internet Information Services

Guideline

Product: IBM Cognos Analytics 11.0.1 – 11.0.3
Area of Interest: Infrastructure

IBM Analytics Platform

Copyright and Trademarks

Table of Contents

NOTE: This document is for Cognos Analytics 11.0.1 – 11.0.3

For 11.0.4 and up please use the following link.

https://www.ibm.com/support/knowledgecenter/en/SSEP7J_11.0.0/com.ibm.swg.ba.cognos.inst_cr_winux.doc/t_gateway_iis.html

Introduction

Purpose

This document describes the steps required to configure Internet Information Services (IIS) to an existing IBM Cognos Analytic Server environment.

Applicability

The product behaviours described in this document were validated using:

- IBM Cognos Analytic Server
- Microsoft's Internet Information Services (IIS) 7
- Microsoft's Application Request Routing (ARR) Extension v3

What Has Changed?

IBM Cognos Analytics (ICA) brings on a substantial change in architecture which affects the gateway component. ICA comes with a new user interface called "Glass" which is provided by a micro-service that is hosted at the application tier level. The Glass interface allows clients to access ICA directly on the application tier removing the requirement for an IBM Cognos Analytics gateway component.

When is the IBM Cognos Analytics Server Gateway Required?

There are several scenarios where the IBM Cognos Analytics Server gateway component becomes a required component. The following list briefly touches on these scenarios.

- **Single Sign-On (SSO)**
  Any SSO scenario which relies on authentication to the web tier involving server variables. These include but are not limited to Kerberos SSO to IIS and any authentication to web tier based on the REMOTE_USER variable.
- **Integration with 3rd Party Portals**
  Any integration of IBM Analytics Server Portlets with Microsoft's SharePoint, IBM WebSphere Portal or the SAP Portal.
- **Static Content**
  If there is a need to serve all static content on the webserver
- **External Gateway**
  Any IBM Cognos Analytics Server architecture where the web server is publically available, external to a firewall.

Installation and Configuration

There are two different ways that IIS can be configured depending on the need:

- Method 1: **IIS and Application Request Routing (ARR) Extension configuration**

  This method is used only if an external gateway is needed for any IBM Cognos Analytics Server architecture where the web server is publicly available or external to a firewall.

- Method 2: **IIS and Application Request Routing (ARR) with Cognos Analytics Server gateway configuration**

  This method is used if SSO, integration with 3rd party portals and/or serving up static content is needed.

Installing the ISS Application Request Routing (ARR) Extension

Both install methods need the Application Request Routing Extension installed

Installing this extension, extends the functionality of an existing ISS install to allow it to also function as a reverse proxy.

The following section assumes that the IIS server has internet connectivity and will provide the step by step instructions required to install the ARR extension.

1. On the Web Server launch the **Microsoft Web Platform Installer** (WebPI) using the following link:
   http://www.iis.net/downloads/microsoft/application-request-routing

2. When presented with the Microsoft Web Page, click on the green "**Install this extension**" button.

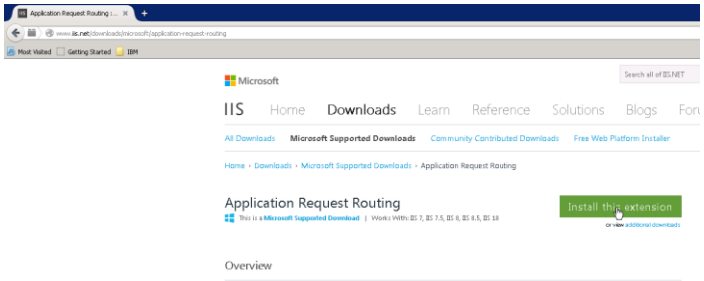

Figure 1: Microsoft's AAR Install Web Page.

3. Click on the green **Install Now** button.

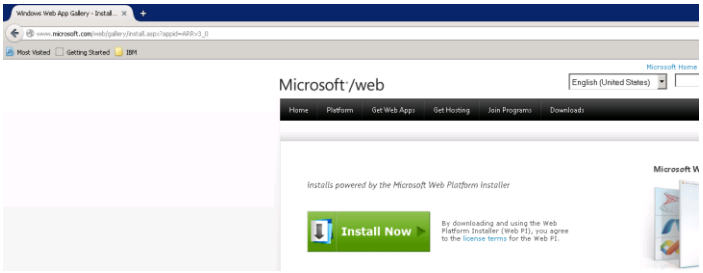

Figure 2: Microsoft's AAR Install Now Button to Initiate the Install.

4. When prompted, click the **Save File** button to save the ARRv3_0.exe into the browser's downloads folder

Figure 3: Save File Dialog box.

5. Once downloaded, initiate the install by **double-clicking** the executable and then **clicking** the Run button.

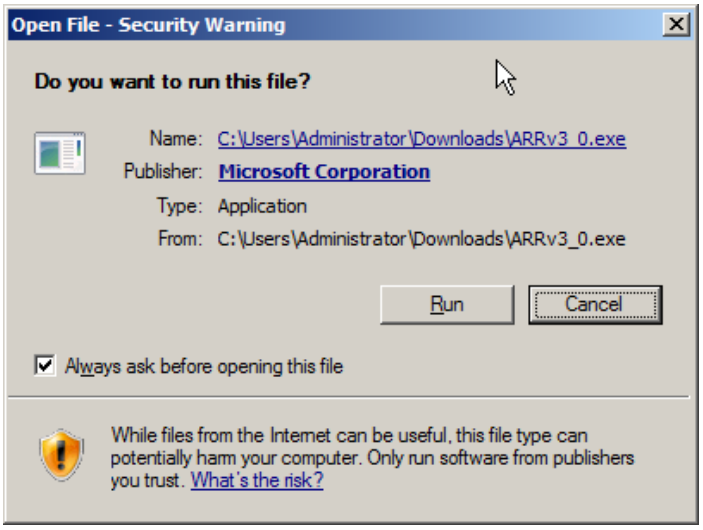

Figure 4: Open File Dialog Box.

6. Once the Web Platform Installer initiates, a license agreement will be displayed. If the license agreement is acceptable click on the **"I Accept"** button to continue the install.

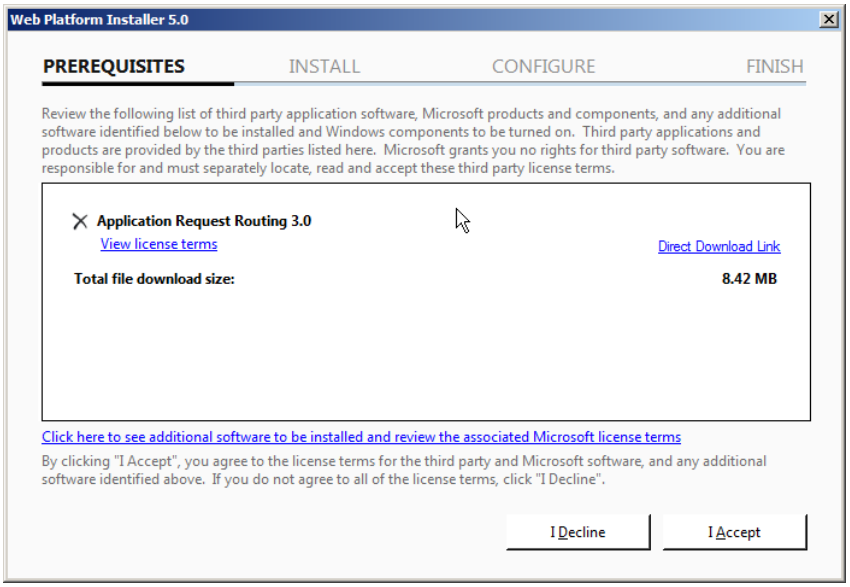

Figure 5: Microsoft's AAR Install License Agreement.

As the install continues, the download and installation progress bar will update accordingly.

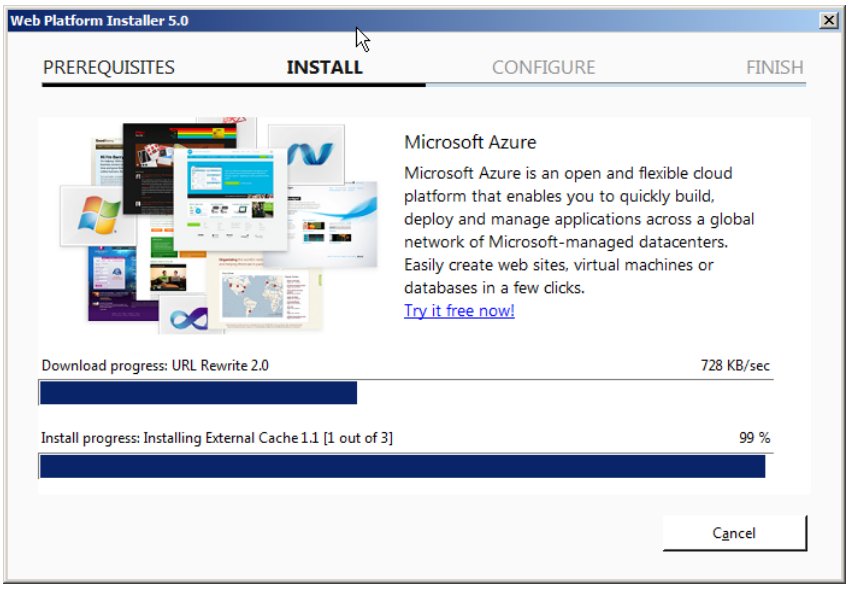

Figure 6: Microsoft's AAR Installation Progress Screen.

7. As the installation completes, the Web Platform dialog box will present an overview screen. Click the **Finish** button to complete the installation.

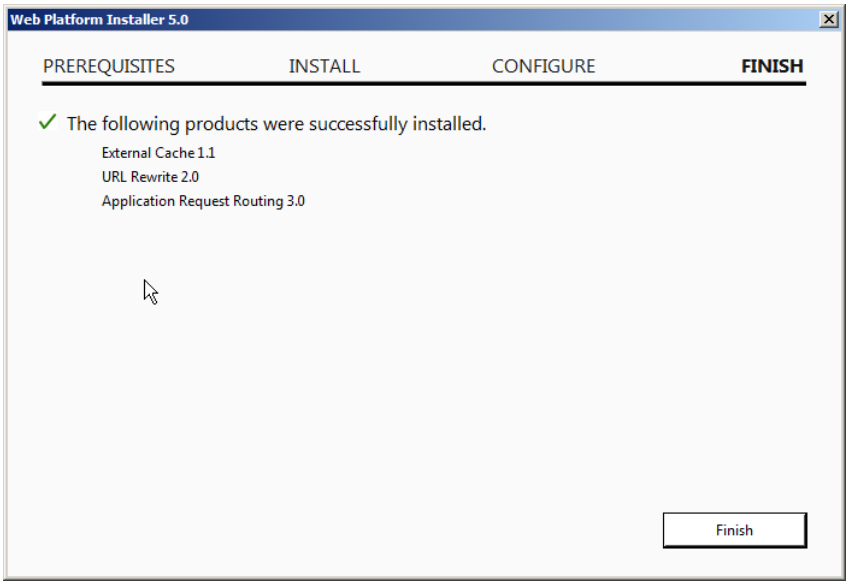

Figure 7: Microsoft's AAR Installation Completed Screen.

8. If presented with an additional add-on page, click the **Exit button** as no additional add-ons are required at this time.

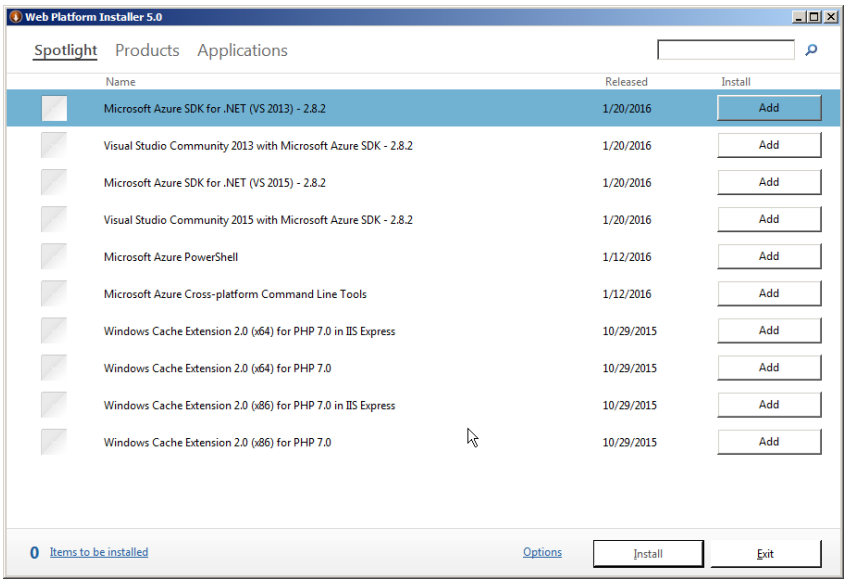

Figure 8: Microsoft's AAR Additional Add-On Screen.

9. To ensure that the ARR extension was installed successfully, launch the **IIS Manager** from the Administrator Tools menu in Windows. Once the IIS Manager launches, click on the server name at the top left hand side of the screen to display the available features. Within the middle IIS pane, the **URL rewrite** feature should now be visible.

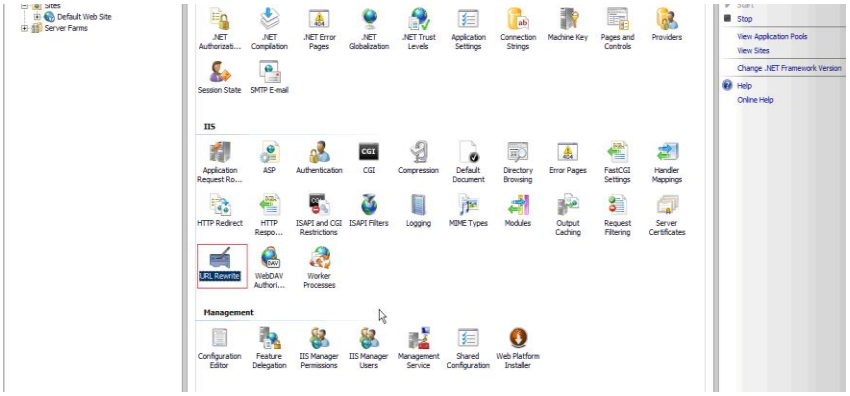

Figure 9: IIS Manager displaying the Installed URL Rewrite feature.

Method 1: IIS and ARR configuration

The following section will provide the steps required to setup the reverse proxy so to allow IIS to rewrite the gateway requests and pass them to the application tier.

1. In IIS, right click your web site and select **Add Virtual Directory**.

2. Under **Alias**, put in any name you want. In this example we will use **CA11**. Under **Physical path** point to any folder on the web server you like.

   Note: In this example an empty folder was created off the root of C: called **CA**.

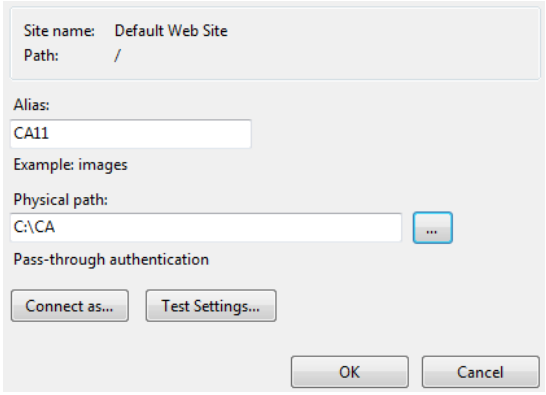

Figure 10 - Virtual Directory Settings

Click **OK**.

Configuring the Reverse Proxy

The URL Rewrite is where you will create Proxy rules that are required to re-direct the web requests from the web tier to the application tier hosted IBM Cognos Analytics Server Glass user interface.

3. Highlight the virtual directory **CA11** in the connections pane and double click on **URL Rewrite** under the IIS section.

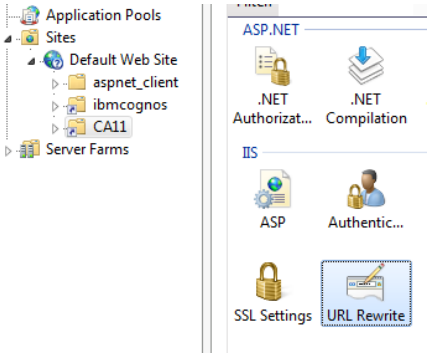

Figure 11 - IIS console showing the URL Rewrite link

4. Within the top right hand side Actions pane, **click** on **Add Rule(s)**.

5. Select **Reverse Proxy** before clicking the OK button.

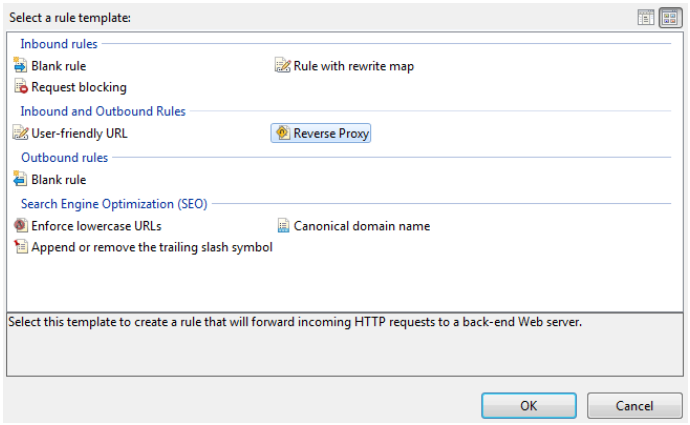

Figure 12 - Reverse proxy rules template

6. In the **Add Reverse Proxy Rule** dialog box, within the Inbound Rules section, **fill in** the "**Enter the server name or the IP address...**" field in the following format.

Server_Application:Port/

For this example, the entry will be **CompanyXYZ:9300/**

Ensure the **Enable SSL Offloading check box** is **checked**.

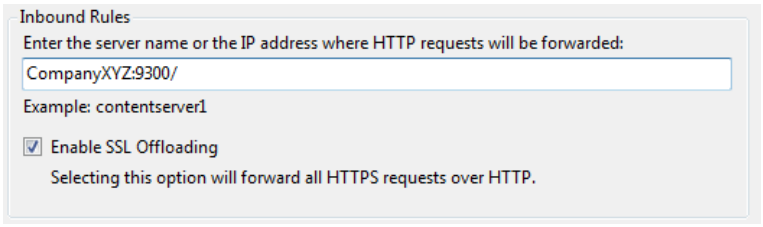

Figure 13 - Reverse proxy inbound rule window

then click the **OK** button.

7. On the **Rules** page, in the Action pane on the right, click on **View Server Variables**.

8. Click **Add** and type in the variable named:

   HTTP_X_BI_PATH

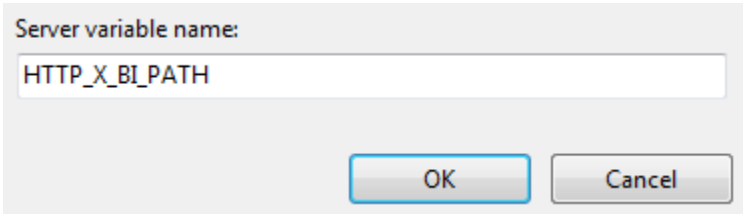

Figure 14 - Server variable name window

Once completed click the **OK** button to create the variable.

9. Within the right hand side **Actions** pane, click **Back to Rules**.

10. Select and highlight the previously created rule and in the Inbound rules pane on the right hand side, click **Edit...**

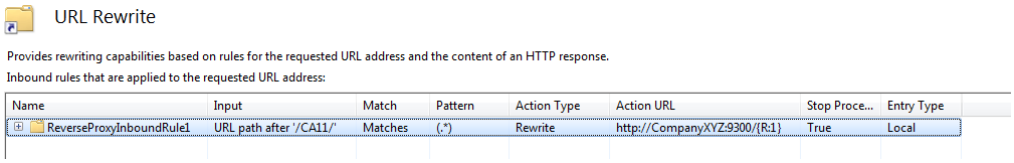

Figure 15 - Main URL Rewrite screen with the new CA rule created.

11. Expand the Server Variables section, if collapsed, by clicking the **down arrow**.

12. Inside the Server Variables section click the **Add** button.

13. In the Set Server Variable dialog, **select** the **HTTP_X_BI_PATH** server variable and set the Value field to:

    /Alias/bi/v1

Alias is the virtual directory that you created at the beginning of this section. In this example **/CA11/bi/v1** will be used.

Ensure the **Replace existing value check box** is checked.

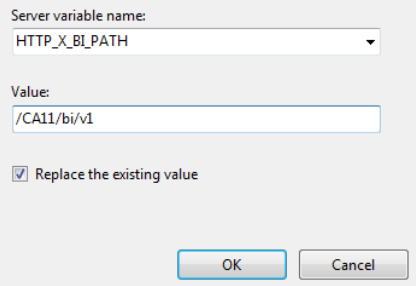

Figure 16 - Server Variable name window

14. Click the **OK** button to save, and then in the top right hand side Action pane, click Apply.
15. In the Action pane on the upper right, click **Back to Rules** to finish defining the rule.
16. Restart the IIS web service for setting to take effect.
17. Test the configuration by entering the following URL pattern using a browser.

    http://<web_server>:<web_server_port>/alias/bi/

    For this example, the URL would be: http://CompanyXYZ:80/CA11/bi/

Method 2: IIS and ARR with Cognos Analytics Server gateway

This section will provide the instructions required to perform a gateway installation using the IBM Cognos Analytics Server installer.

The following steps reflect the installation of Cognos Analytics 11.0.3 and higher. These have slightly changed from 11.0.2 and lower.

Installing the IBM Cognos Analytics Gateway Component

In this task a custom install is performed only selecting the IBM Cognos Analytics gateway component.

1. Locate and **double-click** on the appropriate installer executable. For this example, the installer executable is named ca_srv_winx64_11.0.3.xxxxxxxx.exe. This will launch the following InstallAnywhere dialog box displaying the extraction progress bar.

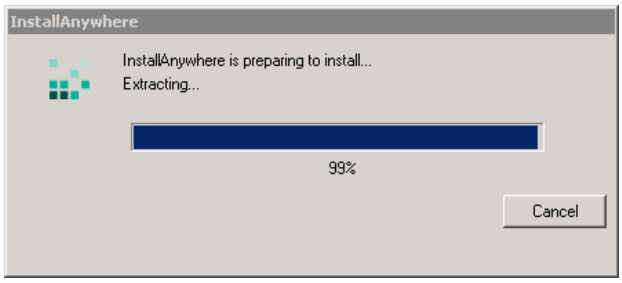

Figure 17 - InstallAnywhere Extraction Bar.

2. Within the IBM Cognos Analytics dialog box select the language from the drop down menu at the bottom of the dialog box and click the **Next** button.

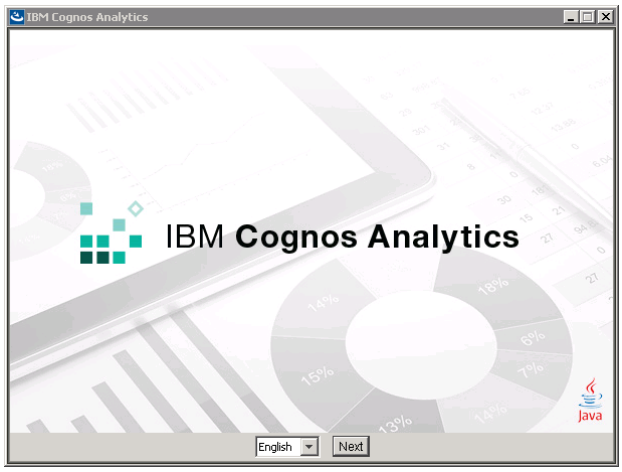

Figure 18: IBM Cognos Analytics Installer Language Selection.

3. Once the License Agreement Dialog box, select the "**I accept...**" if the license agreement is acceptable, then click the **Next** button.

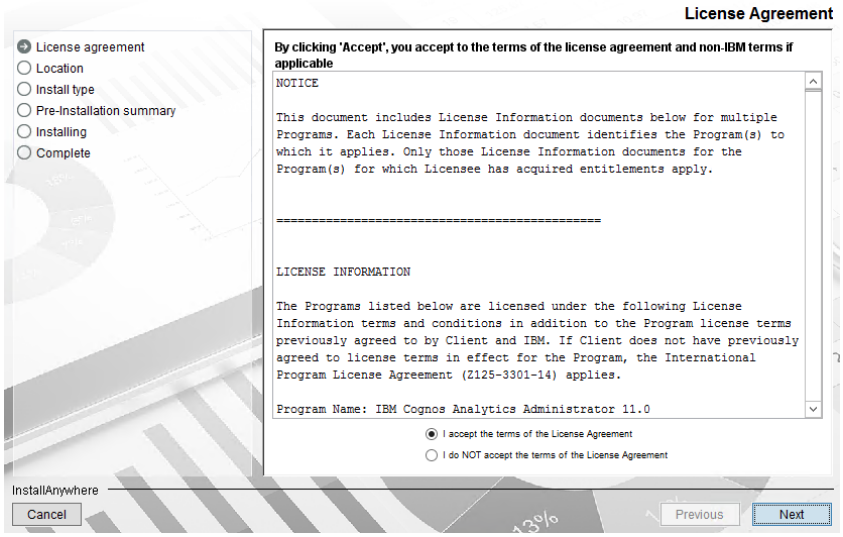

Figure 19: IBM Cognos Analytics License Agreement.

4. When presented with the Location Dialog box, select the desired install directory then click the **Next** button.

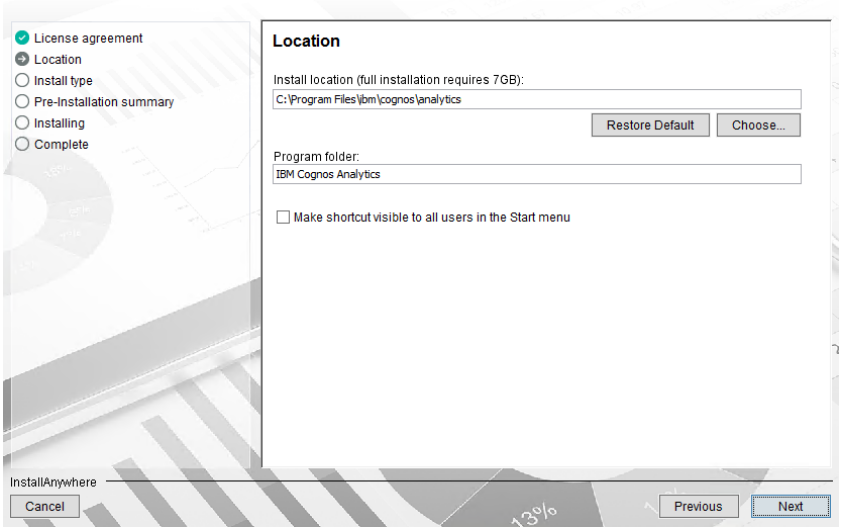

Figure 20: IBM Cognos Analytics Install Location Selection Screen.

5. Within the Installation type dialog box select the **Custom radio button** then click the bottom right hand side **Next** button.

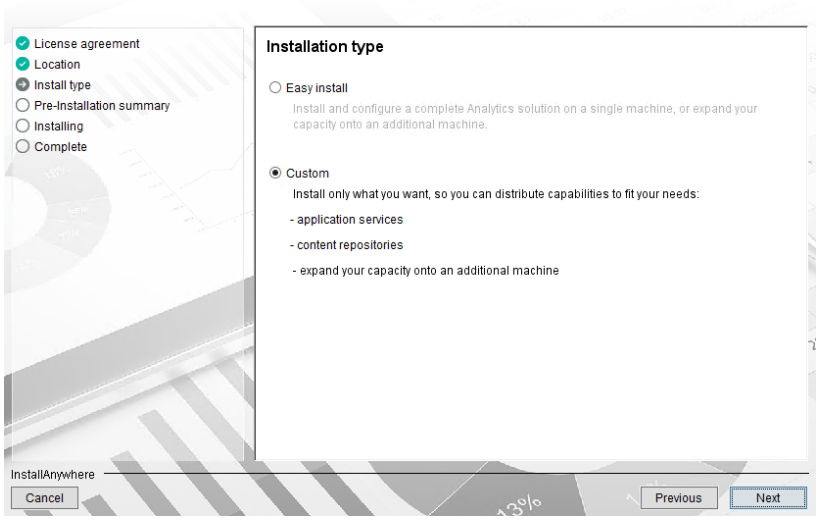

Figure 21: IBM Cognos Analytics Installation Type Selection.

6. Once the Custom dialog box displays, select **First Install** then click the **Next** button.

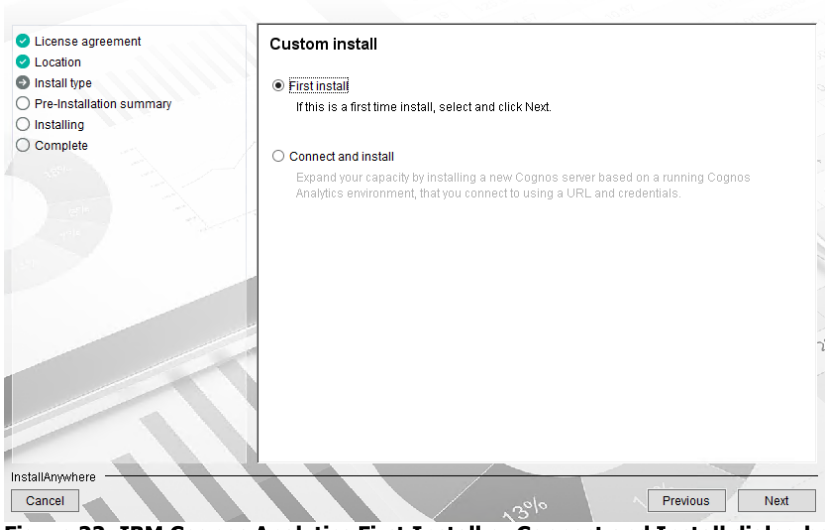

Figure 22: IBM Cognos Analytics First Install or Connect and Install dialog box.

7. As the Custom component box is displayed, select the Optional Gateway checkbox. When completed the screen should represent the following screen capture. Click **Next**.

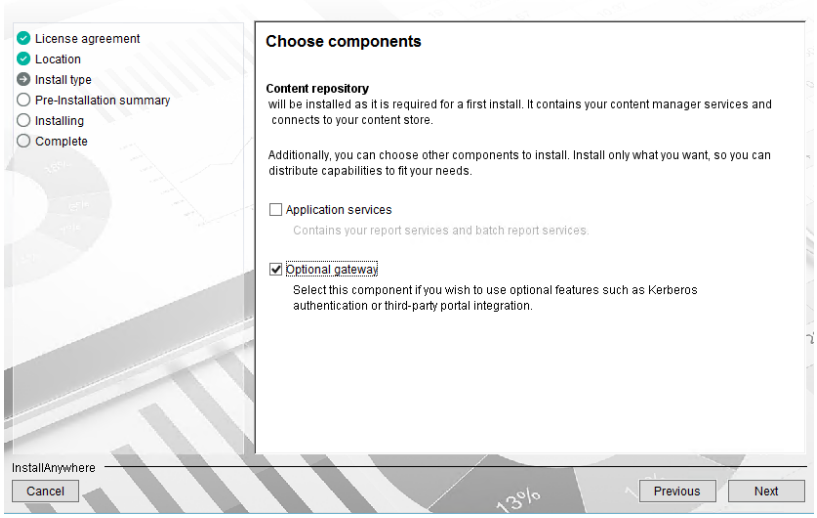

Figure 23: IBM Cognos Analytics Custom Installation Selection.

8. The Installation Summary screen will provide an overview of the components being installed and their location. To initiate the install, click the **Install button**.

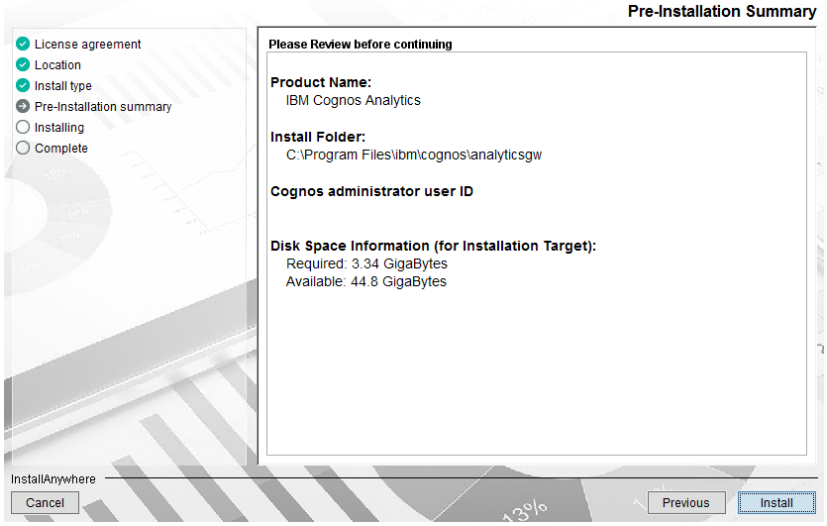

Figure 24: IBM Cognos Analytics Installation Overview.

Clicking the Install button initiates the installation. During the installation, the progress screen will continue to update until it reaches 100%.

Figure 25: IBM Cognos Analytics Installation Progress Screen.

9. Click the **Done** button to complete the IBM Cognos Analytics gateway component install.

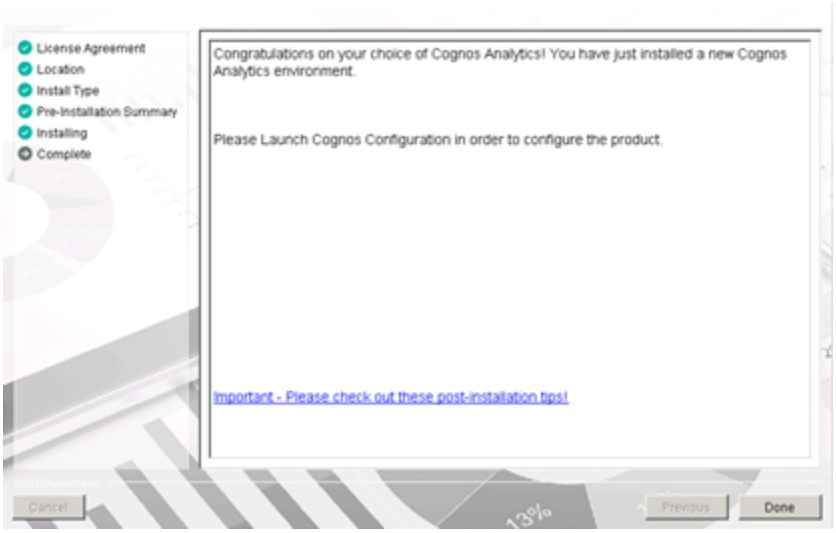

Figure 26: IBM Cognos Analytics Installation Complete Dialog box.

Creating the Application Pool

IBM Cognos Analytics gateway modules will need to be executed in the context of an IIS application pool. While it's most convenient to simply use the Default Application Pool, it's strongly recommended to define a separate application pool for IBM Cognos Analytics. The following section provides the steps required for setting up the Application Pool container.

1. Open the Internet Information Services Manager by clicking Start\Administrative Tools**Internet Information Services (IIS) Manager**.

2. Expand on the <server name> which is located under the Start Page, then click on **Application Pools.**

3. Click on **Add Application Pool...** from the Actions pane at the top right hand side of the screen.

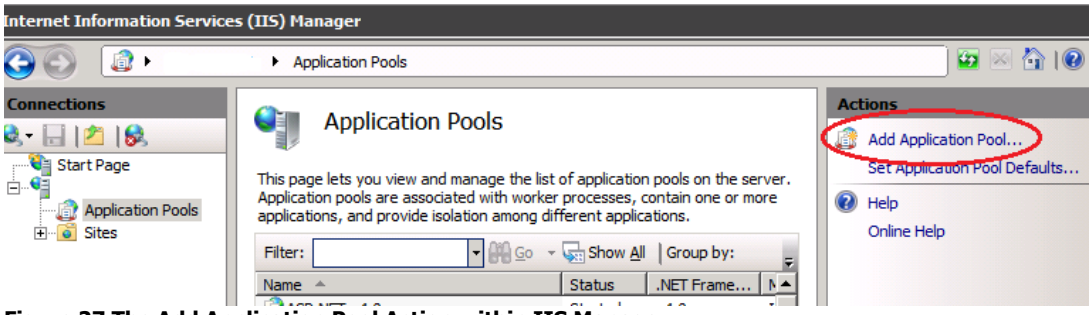

Figure 27 The Add Application Pool Action within IIS Manager.

4. Provide the required details in the **New Application Pool** dialog.
   - In the Name: field; provide a name such as IBM Cognos Analytics for the new application pool.
   - Leave the .Net Framework version: and Managed pipeline mode: fields as the default.

5. Then click the **OK** button to create the application pool.

Configuring the Reverse Proxy

The URL Rewrite is where you will create Proxy rules that are required to re-direct the web requests from the web tier to the application tier hosted IBM Cognos Analytics Server Glass user interface.

1. Within IIS, right click your web site and select **Add Virtual Directory**.

2. Under **Alias**, put any name you want. In this example we will use **CAGATE11**. Under Physical path point to the **/analytics/webcontent** folder. Click **OK.**

3. Highlight the **BI** folder under **CAGATE11** in the Connections pane and click on **URL Rewrite** under the IIS section.

4. Within the top right hand side Actions pane, click on **Add Rule(s)**. Then select **Reverse Proxy** before clicking the **OK** button.

5. In the Add Reverse Proxy Rule dialog box, within the Inbound Rules section fill in the "Enter the server name or the IP address…" field in the following format:

   Server2_Application:Port/bi

   For this example, the entry will be **Server2_Application:9300/bi**.
   Ensure the **Enable SSL Offloading check box is checked**, the click the **OK** button.

6. On the Rules page, in the Action pane on the right, click on **View Server Variables**.

7. Click **Add** and type the variable named:

   HTTP_X_BI_PATH

   Once completed click the **OK** button to create the variable.

8. Within the right hand side Actions pane, click **Back to Rules**.

9. Select the previously created rule and in the Inbound rules pane on the right hand side, click **Edit...**
10. Expand the Server Variables section, if collapsed, by clicking the **down arrow**.

11. Inside the Server Variables section click the **Add** button.

12. In the Set Server Variable dialog, select the **HTTP_X_BI_PATH** server variable and set the Value field to:

    /Alias/bi/v1

    Alias is the virtual directory that you created at the beginning of this section. In this example **/CAGATE11/bi/v1** will be used.
    Ensure the **Replace existing value check box** is checked.

13. Click the **OK** button to save, and then in the top right hand side Action pane, click **Apply.**

14. In the Action pane on the upper right, click **Back to Rules** to finish defining the rule.

Creating the application

Creating an IIS Application for cgi-bin will map the IBM Cognos Analytics gateway modules to the application pool created earlier.

1. In the IIS Manager's left explorer pane locate the virtual directory created earlier.
2. Right-click on the virtual directory and select Add Application....

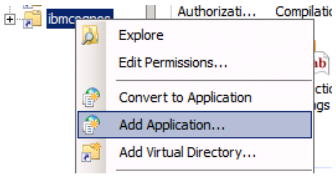

Figure 28 IIS Manager Add Application Dialog Box.

3. Provide the required details in the Add Application dialog.
   - In the Alias: field; specify a value of **cgi-bin**.
   - In the Physical path: field, specify the location of the cgi-bin sub-directory within the IBM Cognos Analytics gateway install. If necessary, use the button with the ellipsis to browse for the directory.
   - In the Application pool: field, select the application pool created in the Configuring an Application Pool section by clicking on the Select... button.
4. Click OK to save the changes.

Setting up the Internet Server Application Programming Interface

IBM Cognos Analytics offers two implementations of gateway modules to be used with IIS, the Internet Server Application Programming Interface and the Common Gateway Interface(CGI). Since it is considered to be best practice to use ISAPI with IIS due to its better performance and resource allocation over CGI; this next section only describes the setup of the ISAPI module.

For the ISAPI module to work there are two steps. First, a module mapping must be configured which routes requests calling cognosisapi.dll to the executable. Second, the module must be added as an allowed extension so IIS does not block its execution. To setup the module mapping:

1. Select the cgi-bin application from the Default Web Site\ibmcognos tree in the left pane of IIS Manager and select the Features View from the lower bar in the middle pane.

2. Double-click on **Handler Mappings** in the middle pane. This will bring up the list of handler mappings for this application in the middle pane.

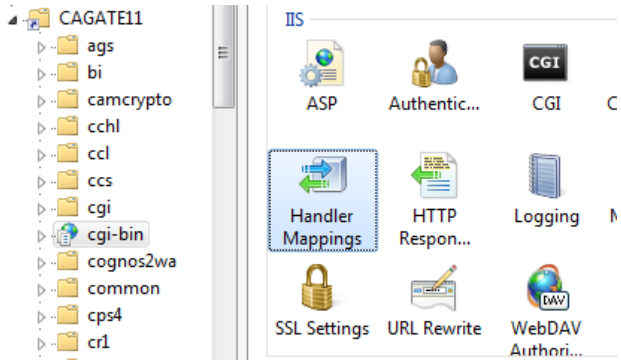

Figure 29 IIS Handler Mapping Feature.

3. Within the top right hand side Actions pane, click Add Module Mapping... to add the ISAPI mapping.
4. Provide the required details to the Add Module Mapping dialog.
    - In the Request path: field, specify the value cognosisapi.dll. This is a mandatory value and cannot be any other value.

    a. In the Module: field; select IsapiModule from the drop down list.
    b. In the Executable (optional): field, specify the path to the cognosisapi.dll within the IBM Cognos Gateway install. This file will be in <COG_ROOT>/cgi-bin, where <COG_ROOT> refers to the IBM Cognos BI installation directory. In this example the directory would be D:\Apps\IBM\CognosAnalytics\cgi-bin.
    c. In the Name: field; specify a name for this module (for example, IBMCOGNOS-ISAPI).
5. Click **OK**.
6. A dialog will appear to confirm that this new ISAPI extension should be allowed. Click Yes.

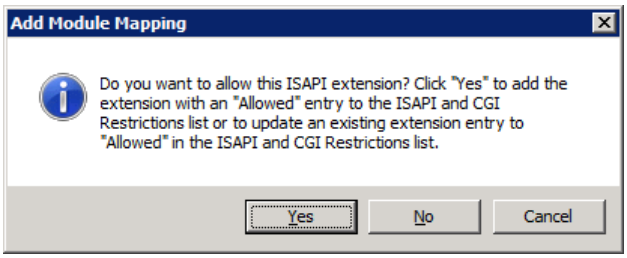

Figure 30 Add Module Mapping Confirmation Dialog Box.

7. Back at the Handler Mappings screen, the newly added handler will appear under the Enabled section. In this example the handler was named IBMCOGNOS-ISAPI.

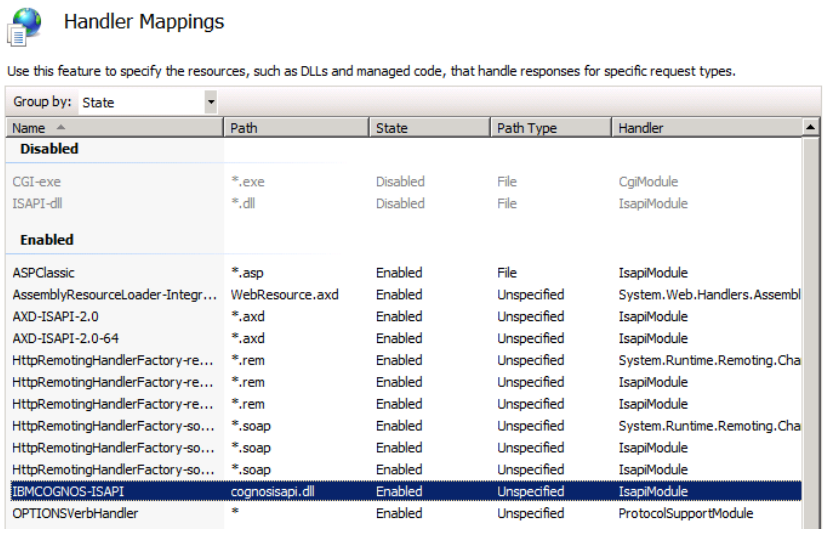

Figure 31 Completed Handler Mapping List Displaying the ISAPI Handler.

Test the configuration by entering the following URL pattern using a browser.
http(s)://<web_server>:<web_server_port>/alias/cgi-bin/cognosIsapi.dll?b_action=xts.run&m=portal/main.xts&m_redirect=/alias/bi/

For this example, the URL would be:

http://Server1_Gateway:80/CAGATE11/cgi-bin/cognosIsapi.dll?b_action=xts.run&m=portal/main.xts&m_redirect=/CAGATE11/bi/

The URL above logs you in through cognosIsapi.dll and then once login is complete, it redirects you back to the main portal

Optional: Automatic Redirect (CA 11.0.3 or higher)

Instead of using the long URL you can configure the gateway so the initial request is routed through cognosIsapi.dll all the time.

1. On the application server that your gateway install is configured to open windows explorer and go to the /analytics/configuration folder
2. Make a backup of the bi-services.xml file
3. Edit bi-services.xml
4. Add the following line below the <jndiEntry jndiName="glass/rootFolder" entry

```
<jndiEntry jndiName="glass/sso/login" value="/alias/cgi-bin/cognosisapi.dll"/>
```

   Replace the word alias with the virtual directory name you made in IIS. In this example it would be CAGATE11.

   Example:

```
<jndiEntry jndiName="glass/sso/login" value="/CAGATE11/cgi-bin/cognosisapi.dll"/>
```

5. Save bi-services.xml
6. Restart the App server.

Setting a namespace

Within IIS, you can specify a Cognos Analytics namespace to your configuration.

If your environment uses multiple namespaces, or if anonymous access is enabled and IBM Cognos components use one namespace, you can configure the gateway to connect to that one namespace.

1. Click on URL rewrite in the directory where the reverse proxy rule was created

   IIS and ARR with Analytics Server gateway configuration: **/alias**
   IIS and ARR configuration: **/alias/bi**

2. On the right hand side, click on **View Server Variables**
3. On the top right corner, click on **Add**
4. In the Add Server Variable box, type the following name:

   HTTP_CAM_Namespace

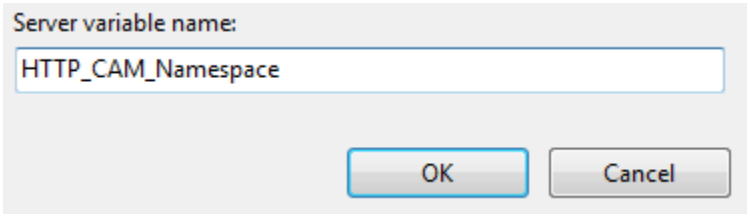

Figure 32 - Server Variable name displaying the HTTP_CAM_Namespace variable

   Click **OK**.

5. On the right hand side, click on **Back to Rules**
6. Double click on the Reverse Proxy rule you created
7. Expand **Server Variables**
8. Click on **Add**
9. In the Set Server Variable window set:

   Server variable name: **HTTP_CAM_Namespace**
   Value: **Your Namespace ID set in Cognos Configuration**

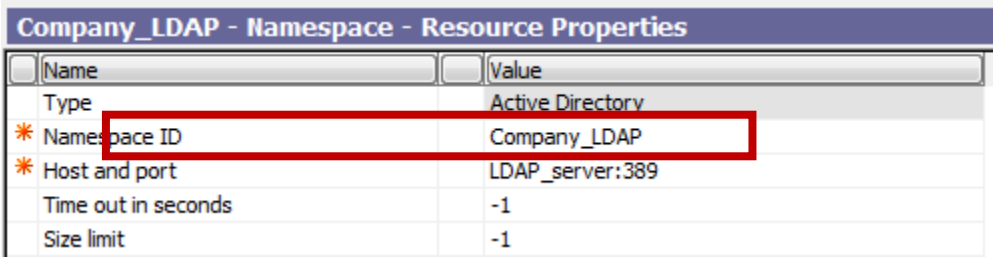

Figure 33 - IBM Cognos Configuration dsiplaying the Comapny_LDAP screen

The window should look like the following

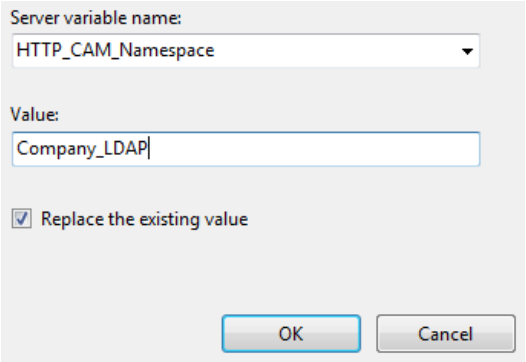

Figure 34 - Server Variable displaying the Campany_LDAP variable

10. In the top right corner, click **Apply** then click **Back to Rules**
11. Restart IIS
12. Open a browser session, clear browser cache and login to the Cognos Analytics Portal. If you had multiple namespaces you will only see the one now.